From: Dan McMahon II [mailto:DXM@shanwil.com]
Sent: Thursday, July 28, 2011 4:55 PM
To: Olson, Eileen A (DEC)
Subject: 360 E 100th Ave

17399-002 Final Report.pdf

Eileen,

We are submitted the attached report on behalf of Mr. Miles Schlosberg of ActiveSpace. The report is for the property located at 360 E 100th Avenue, Anchorage with ADEC File Number 2100.38.198. Our client will be in Anchorage on August 17th and would like to meet with the ADEC concerning his property. Do you have time on August 17th for a meeting? Thank you.

SHANNON & WILSON, INC.
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Site Characterization
360 East 100th Avenue
Anchorage, Alaska

July 2011

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ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
AK	Alaska Method
ASR	Alaska Soil Recycling
BGES	BGES, Inc.
bgs	Below Ground Surface
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes
CSM	Conceptual Site Model
cy	cubic yards
Discovery	Discovery Drilling
DQO	Data Quality Objective
DRO	Diesel Range Organics
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
GRO	Gasoline Range Organics
ID	Inside Diameter
LCS/LCSD	Laboratory Control Sample/Laboratory Control Sample Duplicate
Ml	Milliliter
Mg/kg	Milligrams per kilogram
Mg/L	Milligrams per liter
MS/MSD	Matrix Spike/Matrix Spike Duplicate
OD	Outside Diameter
PCE	Tetrachloroethene
PID	Photoionization Detector
ppm	Parts Per Million
PVC	Polyvinyl Chloride
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
RRO	Residual Range Organics
SGS	SGS North America, Inc.
TCLP	Toxicity Characteristic Leaching Procedure
UOSS	Udelhoven Oilfield Support Services, Inc.
VOCs	Volatile Organic Compounds

SITE CHARACTERIZATION
360 EAST 100TH AVENUE
ANCHORAGE, ALASKA

ADEC File No. 2100.38.198

1.0 INTRODUCTION

This report documents the results of Shannon & Wilson, Inc.'s site characterization activities at 360 East 100th Avenue, Anchorage, Alaska (Property). The overall project purpose is to progress towards a Cleanup Complete status with the ADEC. The specific data collection objective of this assessment was to further characterize areas of concern identified by Shannon & Wilson's 2010 sampling activities. This work was authorized by Miles Schlosberg of Active Space, LLC on April 18, 2011. The work was conducted in general accordance with our March 29, 2011 work plan, which was conditionally approved by Ms. Eileen Olson of the Alaska Department of Environmental Conservation (ADEC) on April 15, 2011.

2.0 SITE DESCRIPTION & BACKGROUND

The Property is currently occupied by a U-shaped building on the southeastern portion, a "tent" building on the southwest portion, and a yard consisting of asphalt, concrete, and/or unpaved surfaces.

According to ADEC records, the Property was previously used as an unauthorized landfill for peat, silt, and construction waste, and was later covered with unspecified fill material, from before 1972 until as late as 1983. The Property was developed in 1984 to 1985 with the construction of a warehouse with six service bays and two office wings. The Property was used as a truck maintenance facility until 1991. From 1991 to 1997, the Property was used for metal fabrication and other industrial and commercial activities.

The ADEC contaminated sites database states that surface contamination by petroleum hydrocarbons was reported at the Property in 1991. The contamination was reportedly caused by a 200-gallon gasoline spill and used oil, diesel, and other petroleum hydrocarbons released to the ground in association with drum storage and equipment parking and maintenance. Cleanup and assessment activities occurred in 1991 and 1992, and the ADEC assigned a No Further Action status to the site in 1992.

In 1998 a Phase I and Phase II Environmental Site Assessment (ESA) and additional cleanup activities were conducted at the Property. The 1998 cleanup activities consisted of sludge and fluid removal from ten blind sumps within the shop building, and excavation and stockpiling an estimated 110 cubic yards (cy) of petroleum contaminated soil from two areas on

the Property. Approximately 75 cy of contaminated soil was excavated from an area adjacent to the south end of the shop building, and transported to Anchorage Soil Recycling (ASR) for thermal treatment. The origin of the contaminated soil was reportedly "drips from leaking hydraulic and engine oil systems, draining of contaminated fuel and crankcase oil, etc." Approximately 35 cy of contaminated soil was excavated from an asphalt-paved location beneath a former diesel and gasoline aboveground tank storage area in the southwest corner of the Property, and transported to ASR for thermal treatment. In 2008 Site Closure was granted by the ADEC for the Property based on the determination that soil and groundwater at the site met the applicable ADEC cleanup levels. Additional information about the site is contained in ADEC's January 2008 *Site Closure and Record of Decision (ROD).*

BGES, Inc. (BGES) conducted a Phase I and Phase II ESA of the Property in 2008. In their Phase I ESA report, BGES stated, "While staining associated with parked vehicles was observed throughout the subject property, it is likely that this staining would be considered to be of a de minimis quantity, as determined by the ADEC." However, BGES also reported that "several areas, however, exhibited excessive evidence of staining associated with onsite equipment and fuel/used oil storage." BGES stated that "when considered in aggregate, this staining might be considered to be greater than de minimus in quantity by the ADEC." BGES recommended that further assessment of the excessive stained areas be conducted to delineate the vertical and horizontal extent of potential impact, and that impacted soil be removed and disposed of according to ADEC regulations. In 2008 BGES conducted limited Phase II ESA activities to further evaluate the areas identified with excessive staining. BGES reported that "none of the on-site stained areas assessed as described above exhibited visual signs of impact exceeding a depth of 3 inches below ground surface (bgs), and no olfactory evidence of contamination was noted of the soils screening samples collected from depths in excess of six inches. For these reasons, and because no Photoionization Detector (PID) soil screening readings were identified in excess of 0 parts per million (ppm); it is likely that the contamination in the above-described assessed areas is localized, and that the contamination does not likely extend beyond 1 foot bg." No analytical samples were collected as part of that effort. Additional information is contained in BGES' August 2008 *Phase I Environmental Site Assessment 360 E 100th Ave. & 351 E. 104th Ave. Anchorage, AK* and August 2008 *Limited Phase II Environmental Site Assessment Activities at 360 East 100th Avenue, Anchorage, Alaska* reports.

In September and October 2010, Udelhoven Oilfield Support Systems, Inc. (UOSS), the lessee of the Property, retained Shannon & Wilson to assess the general environmental condition of the site's surface and near-surface soil. As documented in Shannon & Wilson's November 2010 *Limited Environmental Baseline Study, 360 E. 100th Avenue, Anchorage, Alaska,* four

general areas of environmental concern were identified with the Property. Sample locations and contaminant concentrations exceeding ADEC cleanup criteria and typical background concentrations are shown on Figure 1. Note that although ethylbenzene, toluene, and xylenes were detected in one or more soil samples, benzene, toluene, ethylbenzene, and xylenes (BTEX) were not detected above the most stringent ADEC Method 2 cleanup criteria. The general nature of the four concerns is summarized below.

1. Tetrachloroethene (PCE) concentrations greater than the most stringent ADEC Method 2 cleanup criterion (0.024 milligrams per kilogram (mg/kg)) were measured in surface soil Samples SS1 and SS3 collected from the southwest corner of the property. Sample SS3 was collected southwest of the surface stain shown in Photo 1, and from loose soil between concrete/asphalt surfaces, as shown in Photo 2. Samples SS1 and SS3 contained PCE concentrations of 0.214 and 70.7 mg/kg, respectively. Based on the PCE concentrations detected in Sample SS3, the impacted material has the potential to be classified as a Resource Conservation and Recovery Act (RCRA) hazardous waste if excavated.

2. Diesel range organics (DRO) and residual range organics (RRO) concentrations greater than the most stringent ADEC Method 2 cleanup levels (250 and 10,000 mg/kg, respectively) were measured in ten surface soil samples collected at surface stains throughout the site. Five samples contained DRO and/or RRO concentrations greater than the ADEC maximum allowable concentrations (12,500 and 22,000 mg/kg, respectively), as shown on Figure 1. DRO concentrations exceeding ADEC cleanup levels ranged from 472 to 64,800 mg/kg. RRO concentrations exceeding ADEC cleanup levels ranged from 10,100 to 106,000 mg/kg.

3. Chromium was detected above the most stringent ADEC Method 2 cleanup criterion (25 mg/kg total chromium) and typical background concentrations (25 to 35 mg/kg) in four of the surface soil samples collected from the western portion of the property (44.3 to 68.2 mg/kg) and the four samples from a soil stockpile present at the Property's north end (41.3 to 66.5 mg/kg). The soil stockpile was subsequently landspread on the northeastern portion of the Property in September 2010 (See Figure 1). Typical background concentrations of chromium are considered to be in the range of 25 to 35 mg/kg, based on our experience with Anchorage-area soils. However, background soils can exhibit a wide variance of chromium concentrations, and an area-specific background determination has not been conducted.

   Two samples from the western portion of the property with the highest total chromium concentrations (Samples SS2 and SS4) were analyzed for hexavalent

chromium 30 days outside of their holding time. Samples SS2 and SS4 contained 0.54 and 3.5 mg/kg hexavalent chromium, which is less than the ADEC cleanup level (25 mg/kg). The sample results are considered qualified as estimates, due to the holding time exceedance and a laboratory surrogate failure.

4. RRO (1.85 milligrams per liter (mg/L) was detected above the ADEC cleanup criterion (1.1 mg/L) in a groundwater sample collected from Test Pit TP2, but appeared to be organic in origin.

An aerial photograph review was conducted by Shannon & Wilson on March 8, 2011 at Aero-Metric, Inc in order to gain an understanding of the site use history and try to identify potential sources for the contaminants found during the 2010 assessment activities. Photos from the years 1960, 1970, 1975, 1978, 1979, 1980, 1981, 1982, 1984, 1997, 2000, 2002, 2003, 2004, and 2010 were reviewed. An obvious source for the surface stained areas or PCE-impacted soil was not identified during this review. Although not clearly discernable, the 2004 aerial photograph showed signs that the Property was paved with asphalt.

3.0 FIELD ACTIVITIES

Field activities consisted of advancing soil probes, collecting surface and subsurface soil samples, and installing one groundwater monitoring well point. Discovery Drilling (Discovery) of Anchorage provided the personnel and materials to advance the soil probes. SGS North America, Inc. (SGS) of Anchorage, Alaska provided the analytical laboratory testing services. SGS and Discovery were subcontracted to Shannon & Wilson. The 2010 sample locations were relocated using swing tie measurements and photographs taken during the 2010 field activities. Figure 1 provides a site plan of the area. Site photos taken during field activities are presented in Appendix A.

3.1 Sample Collection and Screening Methods

3.1.1 Soil Probes

Discovery provided a GeoProbe 66DT direct-push drill rig mounted on a rubber-tracked vehicle, equipped with 2-inch outside diameter (OD) direct push samplers, to advance six soil probes. Soil samples were collected by driving 5-foot long samplers using a vibratory hammer. The samplers include a 1-5/8-inch inside-diameter (ID) clear plastic sleeve, which was pushed out of the sampler onto a work stand. The push probe was used to collect continuous soil samples from the probes. Additional drilling information, including soil stratigraphy, is presented on the drilling boring logs provided in Appendix B.

Upon recovery, each sample sleeve was split open to reveal the soil core. The soil was observed and visual soil classifications were logged. Several locations from each 5-foot sampler interval were selected for field screening and/or laboratory analysis, based on data collection objectives. Recovered soil within the plastic sleeve sampler that was not submitted for analytical testing was containerized in a covered 5-gallon buckets, labeled, and stored on site. After drilling was completed at each location, the borehole was backfilled with bentonite chips and hydrated with water to form an impermeable seal. Gravel material was used to cover the bentonite at the ground surface.

3.1.2 Surface and Near-Surface Samples

Surface soil samples were collected using stainless steel sampling spoons. Due to utility conflicts at four proposed soil probe locations, Shannon & Wilson personnel advanced hand-dug test pits to a depth of approximately 6 inches bgs using a pick axe and shovel. Near-surface soil samples were collected at approximately 6 inches bgs. The soil was observed and visual soil classifications were logged. Field screening and/or analytical samples were collected based on data collection objectives.

3.1.3 Field Screening and Analytical Sampling

Field screening for volatile organic compounds (VOCs) was performed with a Thermo Instruments OVM 580B PID calibrated with 100 ppm isobutylene standard gas, using an ADEC-approved headspace sampling method. Analytical soil samples were placed in the laboratory-supplied jars using clean, stainless-steel spoons. Soil samples analyzed for volatile compounds were extracted in the field using 25-ml aliquots of methanol in accordance with AK 101.

3.2 Area-Specific Characterization

3.2.1 Petroleum Surface Soil Stains

Soil Probe B1 was advanced to characterize the vertical extent of surface stains in the vicinity of Shannon & Wilson's October 2010 Sample SS7. A surface stain was observed at this location in October 2010, as shown in Photo 3, but was not observed in April 2011. Soil Probe B1 was planned to be advanced to the soil-water interface. However, B1 was advanced to a total depth of about 20 feet bgs, and groundwater was not encountered in the soil probe. Photo 4 shows Probe B1 being advanced. Field screening samples were collected from one or two locations from each 5-foot sampler interval. One analytical sample was collected from surface soil at Probe B1. A second analytical sample was collected from approximately 5 to 5.5 feet bgs, based on field screening results.

Shannon & Wilson's October 2010 Sample SS5 was collected from surface soil in a surface-stained area underneath of a dumpster, as shown in Photo 5. The surface stain was not visible during 2011. A soil probe was planned to be advanced in the vicinity of this location; however, this probe could not be drilled due to a buried natural gas line. Instead surface soil Sample SS10 was collected at the location, and near-surface soil Sample SS11 was collected at about 6 inches bgs from a hand-dug test pit, as shown in Photo 6. The surface soil sample was not submitted for analysis, as it appeared that it contained pieces of asphalt.

3.2.2 Co-located PCE and Petroleum Surface Soil Stains

Soil Probes B2 through B6 were advanced in the vicinity of the October 2010 Samples SS2 and SS3, shown in Photos 1 and 2, to characterize the vertical and lateral extent of contamination. As shown in Photo 7, Probe B2 was positioned at the approximate location of Shannon & Wilson's October 13, 2010 Sample SS3. This location was within an unpaved section of soil leading into the "tent" building, as shown in Photo 2. The unpaved soil section appeared to have been a place where wooden planks were embedded in surrounding cement; however the wooden planks were no longer present at the sample location. The area was similar during the 2010 and 2011 field activities, although the surface staining was not apparent in the area in April 2011. Probes B3 through B6 were advanced at the locations shown on Figure 1 to delineate the vertical and lateral extent of contamination. Probes B2 through B6 were planned to be advanced to the soil-water interface, which was anticipated at 5 feet bgs. However, because groundwater was not encountered in Probe B1 at 20 feet bgs, Probes B2 through B6 were only advanced to about 5 feet bgs. Field screening samples were collected from two or three locations from each 5-foot sampler interval. Two or three analytical samples were collected from Probes B2 through B6 based on field screening results.

Three soil probes were also planned to be advanced in the vicinity of Shannon & Wilson's October 13, 2010 Sample SS1. However a soil probe was not advanced at this location due to underground utilities in the vicinity. Instead, hand-dug test pits were used to collect surface soil samples at the three locations (Samples SS4/SS5, SS6/SS7, and SS8/SS9) shown on Figure 1. At each location, one sample was collected in the top 2 inches bgs, and a second sample was collected about 6 inches bgs.

One temporary monitoring well point was installed adjacent to Probe B2 to about 6 feet bgs. The monitoring well point was constructed of 1.25-inch diameter steel casing, with a 3-foot screened section containing 0.010-inch, machine-cut slots extending about 3 to 6 feet bgs. The well point was allowed to equilibrate for about 2.5 hours, and groundwater was not observed in the well point. The monitoring well point was then removed, and the annular space was backfilled with bentonite chips and hydrated with potable water to form an impermeable seal.

3.2.3 Previously Landspread Soil Stockpile Area

Surface soil samples were collected from the area where the former soil stockpile was leadspread to document hexavalent chromium concentrations. Because the stockpile was approximately 100 cubic yards, three soil samples were collected from spatially representative locations within the landspread area. Because the only contaminant of concern for these soils is chromium, the samples were not screened in the field.

4.0 LABORATORY ANALYSES

Twenty-four soil samples were submitted to SGS North America Inc. (SGS) of Anchorage, Alaska using chain-of-custody procedures. Quality control samples consisted of one soil trip blank. Soil samples from the petroleum surface soil areas were analyzed by SGS for DRO by Alaska Method (AK) 102 and RRO by AK 103. The soil samples from the co-located PCE and petroleum surface stains were analyzed by SGS for DRO, RRO, and PCE by Environmental Protection Agency (EPA) Method 8260B. The surface soil sample collected at the approximate location of Shannon & Wilson's October 13, 2010 Sample SS3 was also analyzed for Toxicity Characteristic Leaching Procedure (TCLP) PCE by EPA Method 1311/8260B. The soil samples from the landspread soil stockpile area were analyzed by SGS for total chromium by EPA Method SW6020 and hexavalent chromium by EPA Method 7196A.

The quality control sample consisted of one methanol soil trip blank. The trip blank was used to evaluate potential cross contamination of volatile constituents. The trip blank was analyzed for PCE by EPA Method 8260B. The analytical results of the soil samples are summarized in Table 2 and copies of the SGS laboratory reports and ADEC checklists are provided in Appendix C.

Under the sample numbering scheme used for this project, a typical analytical sample number is 17399-B1S1A for soil probe samples and 17399-SS1 for surface soil samples. The '17399-' indicates the Shannon & Wilson project number, and the 'B1S1A', and 'SS1' designations represent the sample identification numbers for the probes and surface soil samples. For brevity in the text of this report, the '17399-' prefix is omitted.

5.0 SUBSURFACE CONDITIONS

The description of subsurface conditions is based on our April 19 and 20, 2011 field observations. Slightly silty, sandy gravel was encountered in Soil Probe B1 from the surface to about 7 feet bgs. A layer of gravelly silt was observed in Soil Probe B1 from about 7 feet to the base of the borehole at about 20 feet bgs. Slightly silty, sandy gravel was encountered in Soil Probes B2 through B5 from the ground surface to about 3 feet bgs, and an underlying gravelly

silt layer was observed from 3 to 5 feet bgs. Soil Probe B6 contained slightly silty, sandy gravel from the ground surface to about 5 feet bgs. The surface soil generally samples consisted of slightly silty, sandy gravel. Pieces of broken asphalt may have been present in the surface soil at the site, but were not clearly discernable in the soil samples collected. Groundwater contact was not encountered during drilling of Soil Probes B1 through B6. Soil conditions documented during drilling are recorded in Table 1, and on the boring logs included in Appendix B.

6.0 DISCUSSION OF RESULTS

Contaminant concentrations in the soil samples were compared to the cleanup levels listed in the Oil and Other Hazardous Substances Pollution Control Regulations (18 Alaska Administrative Code (AAC) 75, Section 341, October 2008). The soil cleanup criteria are based on the most stringent Method 2 cleanup levels listed in Tables B1 and B2 for the "under 40-inch (precipitation) zone".

6.1 Petroleum Surface Soil Stains

Shannon & Wilson's October 2010 Sample SS7 was collected from surface soil in a surface-stained area adjacent to the ditch, and near an area where drums were reported to have been stored, and contained DRO (11,800 mg/kg) above the ADEC cleanup level and RRO (71,800 mg/kg) above the ADEC maximum allowable cleanup level. In April 2011, Probe B1 was placed at the same location to assess the vertical extent of impact, although a surface stain was not observed in April 2011. Sample B1S1A contained detectable concentrations of DRO (208 mg/kg) and RRO (3,180 mg/kg) below the ADEC cleanup levels. April 2011 Sample B1S2A was collected at about 5 feet bgs, contained lower concentrations of DRO (47.5 mg/kg) and RRO (432 mg/kg) than Sample B1S1A, which were also below the ADEC cleanup levels. Neither sample reproduced the results of the 2010 Sample SS7, with respect to the magnitude of contaminant concentrations.

Shannon & Wilson's October 2010 October Sample SS5 was collected from surface soil in a surface-stained area beneath a dumpster that contained DRO (64,800 mg/kg) and RRO (64,500 mg/kg) concentrations greater than the ADEC maximum allowable cleanup level. Sample SS5 also contained multiple VOC concentrations below the ADEC cleanup levels. The surface stain was not observed at this location in April 2011, as the area was covered with wood chips. April 2011 Sample SS11, collected from soil at about 6 inches bgs at the same location, contained DRO (657 mg/kg) and RRO (10,700 mg/kg) concentrations above the ADEC cleanup levels, but significantly lower than the concentrations in SS5. The laboratory noted that Sample SS11 had a pattern consistent with lube oil for RRO. The laboratory compared the

chromatogram of Sample SS11 to a library chromatogram of asphalt tar, and noted that the chromatograms were "clearly different".

6.2 Co-located PCE and Petroleum Surface Soil Stains

Shannon & Wilson's October 2010 Sample SS3 was collected in a surface-stained area located in a soil area near the "tent" building. The ground surface surrounding the area near Sample SS3 appeared to consist of intermittent asphalt and concrete. Shannon & Wilson's October 2010 Sample SS3 contained PCE concentrations above the ADEC cleanup level, and DRO and RRO concentrations above the ADEC maximum allowable concentration. April 2011 Sample B2S1A contained DRO (5,600 mg/kg), RRO (29,200 mg/kg), and PCE (22.6 mg/kg) above the ADEC cleanup level. RRO concentrations detected in Sample B2S1A were above the maximum allowable ADEC cleanup level. PCE was not detected in the TCLP PCE results (<0.12 mg/L) for Sample B1S1A. April Sample B2S1C was collected from soil about 5 feet bgs at the same location, and contained DRO concentrations (288 mg/kg) above the ADEC cleanup level and detectable RRO (4,500 mg/kg) and PCE concentrations (0.0155 mg/kg) below the ADEC cleanup levels. Soil samples collected from probes in the vicinity of October 2010 Sample SS3 and April 2011 Sample B2S1A (Probes B3 to B6) contained detectable concentrations of DRO, RRO, and PCE that were below the ADEC cleanup levels. The laboratory noted that the patterns associated with DRO/RRO concentrations detected in the samples are consistent with lube oil.

Shannon & Wilson's October 2010 Sample SS1 contained PCE concentrations above the ADEC cleanup level, and DRO and RRO concentrations above the ADEC maximum allowable concentration. April 2011 Sample SS4 contained DRO (504 mg/kg) above the ADEC cleanup level, RRO (5,360 mg/kg) below the ADEC cleanup level, and PCE was not detected in the sample. April 2011 Sample SS5 was collected from soil about 6 inches bgs at the same location, and did not contain detectable concentrations of PCE, DRO, or RRO. Samples SS6 through SS9 contained DRO (399 – 624 mg/kg) concentrations above the ADEC cleanup level, but did not contain concentrations of PCE or RRO above the ADEC cleanup level. The laboratory noted that the patterns associated with DRO/RRO concentrations detected in the samples are consistent with lube oil. Sample results from 2011 did not reproduce the results of the 2010 Sample SS1; therefore we were unable to delineate the extent of contamination.

6.3 Previously Landspread Soil Stockpile Area

Chromium was detected above the most stringent ADEC Method 2 cleanup criterion (25 mg/kg total chromium) and typical background concentrations (25 to 35 mg/kg) in the four samples from a soil stockpile present at the Property's north end (41.3 to 66.5 mg/kg). Total

chromium was detected at concentrations (22.9 to 41.2 mg/kg) above the ADEC cleanup level in each of the three soil samples collected from the area of the landspread soil stockpile. Hexavalent chromium was also detected in each of the three soil samples at estimated concentrations of 0.12 to 0.27 mg/kg, which are below the ADEC cleanup level.

6.4 Quality Control

The project laboratory follows on-going quality assurance/quality control procedures to evaluate conformance to applicable ADEC data quality objectives (DQO). Internal laboratory controls to assess data quality for this project include method blanks, surrogates, laboratory control sample/laboratory control sample duplicates (LCS/LCSD), and matrix spike/matrix spike duplicates (MS/MSD) to determine precision, accuracy, and matrix bias. If a DQO was not met, the project laboratory provides a report specific note identifying the problem in the Case Narrative section of their Laboratory Analysis Report (See Appendix C). Shannon & Wilson reviewed the laboratory data deliverables and completed the ADEC's Laboratory Data Review Checklist, which is included in Appendix C. Based on our review of SGS's data reports, the project data meet the ADEC DQOs with following exceptions.

The temperature blank which accompanied the sample cooler was recorded as -0.3 °C, which is below the acceptable range. The laboratory did not note that ice was present in the soil samples associated with the below-range temperature, and it is not likely the cold temperatures affected data quality or usability for soil results.

Samples B1S1A, B5S1A, SS6, SS6, SS7, and SS8 were diluted due to a dark color of extract; therefore the LOQ was elevated for DRO analysis by AK 102. Samples B5S1A, SS6, SS7, and SS8 had LOQs greater than the cleanup level. The DRO concentrations reported for the project samples with elevated DRO LOQs are estimated values (J-flagged results). Note that each reported concentration was greater than the applicable ADEC cleanup level and the results are considered usable.

PCE was recovered below quality control (QC) limits (biased low) in the LCSD, and concentrations of PCE were detected in project samples. Therefore, the concentrations of PCE in the associated project samples are flagged as estimated concentrations (J-flagged) that may be biased low.

PCE was recovered below QC limits in the MS/MSD samples, and concentrations of PCE were detected in project samples. However, these MS/MSD was not associated with the project samples. Therefore, the data quality/usability of the project samples should not be affected.

Surrogate recoveries were outside of QC criteria in several samples. The DRO and RRO concentrations in Sample B1S1A, SS4, SS6, SS7, SS8, and SS11 are flagged (J) as estimated concentrations. The PCE concentration in Samples B5S1A and SS8 are flagged (J) as estimated concentrations.

External quality controls include field records and trip blanks. Data validation was performed to assess the field records and analytical test results. Field logs and records were checked for completeness, accuracy, and adherence to field procedures established in ADEC's guidance documents. No discrepancies were identified in the field records that would impact the validity of the data.

One soil trip blank accompanied the sample jars from the laboratory to the site during sampling activities and back to the laboratory. PCE was not detected in the trip blank, indicating that the samples were not contaminated during the sample handling and storage process.

7.0 CONCEPTUAL SITE MODEL

A conceptual site model (CSM) was prepared to identify known and potential exposure pathways associated with petroleum hydrocarbons at the subject site. The CSM was developed in general accordance with the ADEC's *Policy Guidance on Developing Conceptual Site Models* (October 2010), using ADEC's CSM Human Health Graphic and Scoping Forms. Copies of the Human Health Graphic and Scoping Forms are included as Appendix D.

The CSM includes a discussion of exposure routes, potential receptors, and potentially complete or complete exposure pathways. The CSM is based on the current site use. Reevaluation of potential exposure pathways may be needed based on changes to land use, access, or other site conditions. The narrative also includes descriptions of site-specific considerations that increase or decrease the viability of each pathway at this site.

The primary release mechanisms at the site are assumed to be historic spills and leaks associated with industrial land use of the site. Current potential human receptors include commercial workers, and site visitors or trespassers. DRO, RRO and PCE are the predominant contaminants of concern at the site. Lower levels of GRO, thirteen VOCs, and the 8 RCRA metals have been documented at the site.

7.1 Soil Direct Contact

Incidental ingestion of impacted soil, dermal absorption, and inhalation of fugitive dust are potentially complete exposure pathways for on-site commercial workers, site visitors, and/or future construction workers.

Several VOCs and RCRA metals that are listed in Appendix B (Soil Contaminants Evaluated for Dermal Exposure) of ADEC's October 2010 *Policy Guidance on Developing Conceptual Site Models* were detected at the site at concentrations greater than $1/10^{th}$ of the ADEC cleanup level. Therefore, dermal absorption is considered a potentially complete pathway for on-site commercial workers, site visitors, and/or future construction workers.

Because nonvolatile metal compounds have been detected in surface soil, which could be dispersed in the wind as dust particles, inhalation of fugitive dust is also considered a potentially complete pathway for on-site and off-site residents, commercial workers, site visitors, and/or future construction workers.

7.2 Groundwater Ingestion

ADEC guidance stipulates that ingestion of groundwater be considered a complete exposure pathway unless a groundwater use determination is conducted in accordance with 18 AAC 75.350, and that determination finds that the groundwater is not "a currently or reasonably expected future source of drinking water." Because a formal groundwater use determination has not been conducted, ingestion of groundwater is considered a potentially complete pathway. Dermal absorption of contaminants in groundwater is a potentially complete exposure pathway for future workers and visitors, in the event that the groundwater at the site is used for household purposes. It is noted that contaminants were not documented above the ADEC cleanup levels below a depth of 4.5 feet bgs, and groundwater was not encountered in the April 2011 probes to a maximum depth of 20 feet bgs.

7.3 Air

Because the presence of DRO, RRO, PCE, and other VOCs have been identified at the site at greater than $1/10^{th}$ of the inhalation cleanup level, the inhalation of contaminant gases and/or vapors in indoor and outdoor air are considered potentially complete pathways.

7.4 Other

Other impacted media, including sediment, surface water and biota, were not identified at the subject property. Because surface water and sediment were not observed at the Property, surface water and sediment exposure pathways are not considered complete.

8.0 CONCLUSIONS

The following areas of concern were identified with the property at 360 E 100th Avenue, based on Shannon & Wilson's sampling activities.

8.1 Petroleum Surface Soil Stains

Samples collected from Probe B1 and soil sample SS11 were collected to characterize the vertical extent of surface stains in the vicinity of Shannon & Wilson's October 2010 Samples SS5 and SS7 that contained DRO and RRO concentrations exceeding the ADEC maximum allowable concentrations.

A surface stain was not present in the vicinity of Probe B1 in April 2011, and the analytical results from October 2010 Sample SS7 could not be reproduced. Based on analytical results and visual observations, it is likely that the October 2010 Sample SS7 represents a localized surface or near-surface stain in the area adjacent to the ditch.

Surface soil Sample SS11, collected from the location of October 2010 Sample SS5, contained DRO and RRO concentrations above the ADEC cleanup levels, but significantly lower than the concentrations in SS5. Because pieces of asphalt were observed in the top 2 inches of soil at this location, it is possible that the DRO and RRO concentrations in October Sample SS5 and April Sample SS11 are at least partially attributable to asphalt. However, the surface stain visible in October 2010, the low level VOCs present in October Sample SS5, and the chromatograph of Sample SS11 suggest that the source of the DRO and RRO concentrations is not exclusively asphalt. Based on analytical results and visual observations, the contaminants concentrations decreased at about 6 inches bgs.

The higher levels of DRO and RRO concentrations found in the October 2010 samples were not reproduced in the three samples collected in April 2011 to characterize the petroleum stains. There is no confirmed source for these petroleum stains. The stains may be discrete surface stains typical of industrial sites. Other stained soil areas with contaminant concentrations exceeding ADEC cleanup levels in 2010 were not further evaluated in April 2011.

8.2 Co-located PCE and Petroleum Surface Soil Stains

The surface soil samples from Probe B2 confirmed the presence of DRO, RRO, and PCE above the ADEC cleanup levels, but at concentrations less than the October 2010 Sample SS3. A source for the PCE-impacted material has not been confirmed. Based on the vertical concentration gradient, comparison of visual observations of the surface soil conditions in 2010

and 2011, and the changes in contaminant concentrations between sampling events, it is possible that a surface discharge occurred shortly before the 2010 sampling event, and that reduction in concentrations reflects volatilization/degradation of the contaminants over time and/or normal site activity on the surface soil. Because April Sample B2S1C, collected from soil about 5 feet bgs at the same location as October 2010 Sample SS3, contained detectable RRO and PCE concentrations below the ADEC cleanup levels, it is likely that the material is limited to the surface or near-surface soil.

Soil samples collected from probes positioned radially outward from Probe B2 did not contain concentrations of PCE above the ADEC cleanup levels. Therefore, it is likely that October Sample SS3 and April Sample B2S1A do not represent a wide-spread PCE-impacted area. PCE was not detected in the TCLP PCE analysis for Sample B2S1A, and the soil would likely not be considered hazardous waste if excavated.

April 2011 Samples SS4 and SS5, collected from surface soil at the location of October 2010 Sample SS1, contained only a DRO concentration above the ADEC cleanup level in the top 2 inches of soil. Because the 2010 PCE concentration could not be reproduced in the 2011 samples at the same location or the vicinity, it is likely that October 2010 Sample SS1 represents a localized PCE impact that may have since volatized.

8.3 Previously Landspread Soil Stockpile Area

Total chromium was detected above the ADEC cleanup level in each of the three soil samples collected from the area of the landspread soil stockpile. The concentrations were greater than the most stringent ADEC Method 2 cleanup level, but were within the upper range of naturally-occurring background levels. Hexavalent chromium concentrations in each of the three soil samples were less than the ADEC cleanup level.

9.0 CLOSURE/LIMITATIONS

This report was prepared for the exclusive use of our client and their representatives in the study of this structure. The findings presented within this report are based on the limited research, sampling, and analyses that we conducted. They should not be construed as definite conclusions regarding the site's soil quality. It is possible that our subsurface tests missed higher levels of target analytes, although our intention was to sample areas most likely to be impacted, based on visual observations and project-specific sampling objectives. As a result, the analyses and sampling performed can only provide you with our professional judgment as to the environmental characteristics of the subject site, and in no way guarantees that an agency or its staff will reach the same conclusions as Shannon & Wilson, Inc. The data presented in this report should be considered representative of the time of our site assessment. Changes in site

conditions can occur over time, due to natural forces or human activity. In addition, changes in government codes, regulations, or laws may occur. Because of such changes beyond our control, our observations and interpretations may need to be revised.

You are advised that various state and federal agencies (ADEC, EPA, etc.) may require the reporting of this information. Shannon & Wilson does not assume the responsibility for reporting these findings and therefore has not, and will not, disclose the results of this study, unless specifically requested by you or as required by law.

Copies of documents that may be relied upon by our client are limited to the printed copies (or hard copies) that are signed or sealed by Shannon & Wilson with a wet, blue ink signature. Files provided in electronic media format are furnished solely for the convenience of the client. Any conclusion or information obtained or derived from such electronic files shall be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, or you question the authenticity of the report please contact the undersigned.

Shannon & Wilson has prepared the information in Appendix E, "Important Information About Your Geotechnical/Environmental Report," to assist you and others in understanding the use and limitations of our report.

We appreciate the opportunity to be of service and your continued confidence in our firm. Please call the undersigned or Dan McMahon at (907) 561-2120 if you have questions regarding the contents of this report.

Sincerely,

SHANNON & WILSON, INC.

Jessica Morris
Environmental Engineer

Matthew S. Hemry, P.E.
Vice President

TABLE 1 - SAMPLE LOCATIONS AND DESCRIPTIONS

Sample Number	Date	Sample Location (See Figure 1)	Depth (feet)~	Headspace (ppm) ^	Sample Classification** (see boring logs in Appendix B)
Surface Soil Samples					
* SS1	4/19/2011	Landspread Soil Stockpile Area	0 - 0.2	-	Brown, slightly silty, sandy GRAVEL; moist to wet
* SS2	4/19/2011	Landspread Soil Stockpile Area	0 - 0.2	-	Brown, slightly silty, sandy GRAVEL; moist to wet
* SS3	4/19/2011	Landspread Soil Stockpile Area	0 - 0.2	-	Brown, slightly silty, sandy GRAVEL; moist to wet
* SS4	4/20/2011	Southern Portion of Property Near October 2010 Sample SS1	0 - 0.2	5.4	Brown, slightly silty, sandy GRAVEL; moist
* SS5	4/20/2011	Southern Portion of Property Near October 2010 Sample SS1	0.4 - 0.5	5.2	Brown, slightly silty, sandy GRAVEL; moist
* SS6	4/20/2011	Southern Portion of Property Near October 2010 Sample SS1	0 - 0.2	5.8	Brown, slightly silty, sandy GRAVEL; moist
* SS7	4/20/2011	Southern Portion of Property Near October 2010 Sample SS1	0.4 - 0.5	7.3	Brown, slightly silty, sandy GRAVEL; moist
* SS8	4/20/2011	Southern Portion of Property Near October 2010 Sample SS1	0 - 0.2	2.6	Brown, slightly silty, sandy GRAVEL; moist
* SS9	4/20/2011	Southern Portion of Property Near October 2010 Sample SS1	0.4 - 0.5	3.8	Brown, slightly silty, sandy GRAVEL; moist
SS10	4/20/2011	Southern Portion of Property Near Location of October 2010 Sample SS5	0 - 0.2	3.5	Brown, slightly silty, sandy GRAVEL; moist
* SS11	4/20/2011	Southern Portion of Property Near Location of October 2010 Sample SS5	0.4 - 0.5	5.5	Brown, slightly silty, sandy GRAVEL; moist
Soil Boring Samples					
Boring B1					
* B1S1A	4/20/2011	Northwest Portion of Property Near Location of October 2010 Sample SS7	0 - 0.5	3.0	Brown, slightly silty, sandy GRAVEL; moist
B1S1B	4/20/2011	Northwest Portion of Property Near Location of October 2010 Sample SS7	4.5 - 5.0	4.2	Brown, slightly silty, sandy GRAVEL; moist
* B1S2A	4/20/2011	Northwest Portion of Property Near Location of October 2010 Sample SS7	5.0 - 5.5	7.3	Brown, slightly silty, sandy GRAVEL; moist
B1S2B	4/20/2011	Northwest Portion of Property Near Location of October 2010 Sample SS7	9.5 - 10.0	1.1	Brown, gravelly SILT; moist
B1S3	4/20/2011	Northwest Portion of Property Near Location of October 2010 Sample SS7	10 - 15	5.6	Brown, gravelly SILT; moist
B1S4	4/20/2011	Northwest Portion of Property Near Location of October 2010 Sample SS7	15 - 20	2.6	Brown/gray, gravelly SILT; moist
Boring B2					
* B2S1A	4/20/2011	Southwest Portion of Property Near Location of October 2010 Sample SS3	0 - 0.5	4.7	Brown, slightly silty, sandy GRAVEL; moist
* B2S1B	4/20/2011	Southwest Portion of Property Near Location of October 2010 Sample SS3	2.5 - 3.0	2.4	Brown, slightly silty, sandy GRAVEL; moist
* B2S1C	4/20/2011	Southwest Portion of Property Near Location of October 2010 Sample SS3	4.0 - 4.5	2.8	Brown, gravelly SILT; moist
Boring B3					
* B3S1A	4/20/2011	Southwest Portion of Property Near Location of October 2010 Sample SS3	0 - 0.5	1.6	Brown, slightly silty, sandy GRAVEL; moist
* B3S1B	4/20/2011	Southwest Portion of Property Near Location of October 2010 Sample SS3	2.0 - 2.5	0.0	Brown, slightly silty, sandy GRAVEL; moist
Boring B4					
* B4S1A	4/20/2011	Southwest Portion of Property Near Location of October 2010 Sample SS3	0.5 - 1.0	0.0	Brown, slightly silty, sandy GRAVEL; moist
* B4S1B	4/20/2011	Southwest Portion of Property Near Location of October 2010 Sample SS3	2.5 - 3.0	0.0	Brown, slightly silty, sandy GRAVEL; moist
Boring B5					
* B5S1A	4/20/2011	Southwest Portion of Property Near Location of October 2010 Sample SS3	0.0 - 0.5	0.0	Brown, slightly silty, sandy GRAVEL; moist
* B5S1B	4/20/2011	Southwest Portion of Property Near Location of October 2010 Sample SS3	2.5 - 3.0	0.0	Brown, slightly silty, sandy GRAVEL; moist
Boring B6					
* B6S1A	4/20/2011	Southwest Portion of Property Near Location of October 2010 Sample SS3	0.0 - 0.5	6.0	Brown, slightly silty, sandy GRAVEL; moist
* B6S1B	4/20/2011	Southwest Portion of Property Near Location of October 2010 Sample SS3	2.5 - 3.0	4.3	Brown, slightly silty, sandy GRAVEL; moist
Quality Control Samples					
* TB1	-	Soil Trip Blank	-	-	Ottawa sand with methanol added in the laboratory

KEY	DESCRIPTION
*	Sample analyzed by the project laboratory (See Table 2)
**	Sample classification applies to the portion of the specified sample interval from which the sample was collected
^	Field screening instrument was a ThermoInstruments 580B photoionization detector (PID)
-	Measurement not recorded or not applicable
ppm	parts per million
~	Depths for soil samples were measured below ground surface.

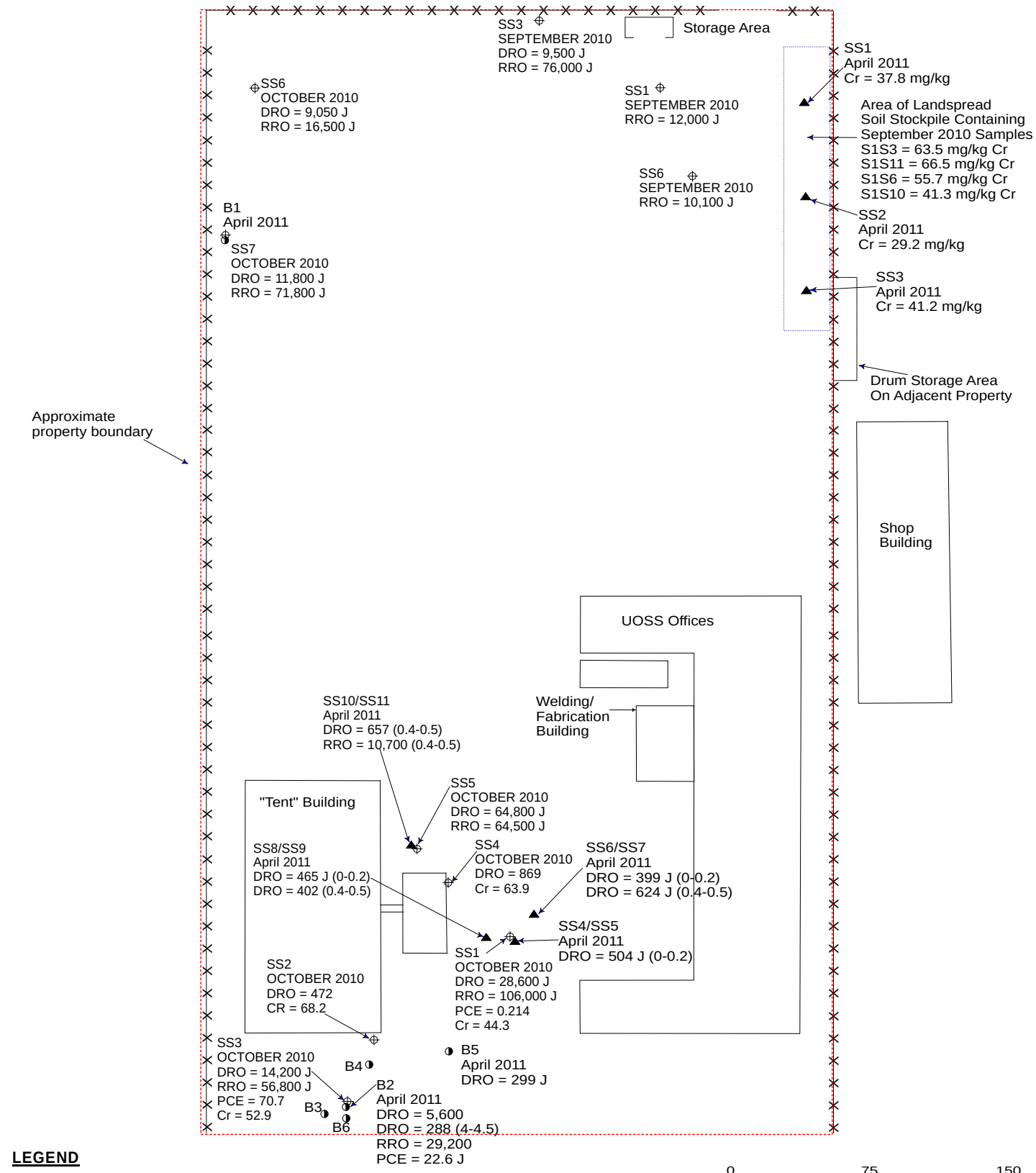
TABLE 2 - SUMMARY OF SOIL ANALYTICAL RESULTS

Parameter Tested	Method*	Cleanup Level (mg/kg)**	Sample ID Number^, and Collection Depth in Feet: Landspread Soil Stockpile SS1 0 - 0.2	SS2 0 - 0.2	SS3 0 - 0.2	Petroleum Surface Soil Stains B1S1A 0 - 0.5	B1S2A 5 - 5.5	SS11 0.4 - 0.5
PID Headspace Reading - ppm	OVM 580B	-	-	-	-	3.0	7.3	5.5
Percent Solids - percent	SM20 2540G	-	88.2	91.6	86.5	91.9	88.1	88.3
Total Chromium - mg/kg	EPA SW6020	25	37.8	29.2	41.2	-	-	-
Hexavalent Chromium - mg/kg	EPA SW6020	25	0.12 J	0.22 J	0.27 J	-	-	-
Diesel Range Organics (DRO) - mg/kg	AK 102	250	-	-	-	208 J	47.5	**657 J**
Residual Range Organics (RRO) - mg/kg	AK 103	10,000	-	-	-	3,180	432	**10,700 J**

Parameter Tested	Method*	Cleanup Level (mg/kg)**	Sample ID Number^, and Collection Depth in Feet: Co-located PCE and Petroleum Surface Soil Stains B2S1A 0 - 0.5	B2S1B 2.5 - 3.0	B2S1C 4 - 4.5	B3S1A 0 - 0.5	B3S1B 2 - 2.5	B4S1A 0.5 - 1	B4S1B 2.5 - 3.0	B5S1A 0 - 0.5	B5S1B 2.5 - 3.0
PID Headspace Reading - ppm	OVM 580B		4.7	2.4	2.8	1.6	0.0	0.0	0.0	0.0	0.0
Percent Solids - percent	SM20 2540G	-	93.8	93.6	87.6	95.9	88.5	90.5	92.8	94.7	92.0
Diesel Range Organics (DRO) - mg/kg	AK 102	250	**5,600**	<13.1	**288**	106	<13.9	59.5	<13.2	**299 J**	<13.4
Residual Range Organics (RRO) - mg/kg	AK 103	10,000	**29,200**	<13.1	4,500	1,110	<13.9	576	9.80 J	5,520	<13.4
Tetrachloroethene (PCE) - mg/kg	EPA 8260B	0.024	**22.6 J**	0.00569 J	0.0155 J	0.00919 J	0.0085 J	<0.0102 J	<0.00934 J	<0.00774 J	<0.00858 J
TCLP PCE - mg/L	EPA 1311/8260B	0.7	<0.124	-	-	-	-	-	-	-	-

Parameter Tested	Method*	Cleanup Level (mg/kg)**	Sample ID Number^, and Collection Depth in Feet: Co-located PCE and Petroleum Surface Soil Stains B6S1A 0 - 0.5	B6S1B 2.5 - 3.0	SS4 0 - 0.2	SS5 0.4 - 0.5	SS6 0 - 0.2	SS7 0.4 - 0.5	SS8 0 - 0.2	SS9 0.4 - 0.5	QC TB1 -
PID Headspace Reading - ppm	OVM 580B		6.0	4.3	5.4	5.2	5.8	7.3	2.6	3.8	-
Percent Solids - percent	SM20 2540G	-	93.9	94.8	90.3	94.1	92.1	94.4	91.0	93.2	-
Diesel Range Organics (DRO) - mg/kg	AK 102	250	47.8	<13.0	**504 J**	<13.1	**399 J**	**624J**	**465J**	**402**	-
Residual Range Organics (RRO) - mg/kg	AK 103	10,000	403	<13.0	5,360 J	<13.1	7,360 J	6,220 J	5,930 J	5,900	-
Tetrachloroethene (PCE) - mg/kg	EPA 8260B	0.024	<0.00976 J	<0.00990 J	<0.0134 J	<0.00776 J	<0.00676 J	<0.00726 J	<0.00287 J	<0.00902 J	< 0.00102

KEY	DESCRIPTION
*	See Appendix C for compounds tested, methods, and laboratory reporting limits
**	Soil cleanup level is the most stringent ADEC Method 2 standard listed in Table B1 or B2, 18 AAC 75 (October 9, 2008), for the "under 40 inches (precipitation) zone"
^	Sample ID No. preceded by "17399" on the chain of custody form
<13.1	Analyte not detected; laboratory reporting limit of 13.1 mg/kg
-	Not applicable or sample not tested for this analyte
J	Results are estimate concentrations due to issues with laboratory quality control
mg/kg	Milligrams per kilogram
ppm	Parts per million
TCLP	Toxicity Characteristic Leaching Procedure
QC	Quality Control



LEGEND

- ⌖ SS1 = Approximate location of Surface Soil Sample SS1 collected in 2010.
- ▲ SS1 = Approximate location of Surface Soil Sample SS1 collected in 2011
- ◑ B1 = Approximate location of Soil Probe B1 advanced in 2011

Soil analytical results reported in milligrams per kilogram (mg/kg) and depths are in feet. Surface soil samples were collected from 0 to 0.5 feet unless otherwise noted. Note: only results that exceed ADEC Method 2 cleanup levels and typical background concentrations (25-35 mg/kg chromium) are shown.

J = estimated concentration
Cr = Chromium
PCE = Tetrachloroethene
RRO = Residual Range Organics
DRO = Diesel Range Organics

360 East 100th Avenue
Anchorage, Alaska

SITE PLAN

July 2011 32-1-17399-002

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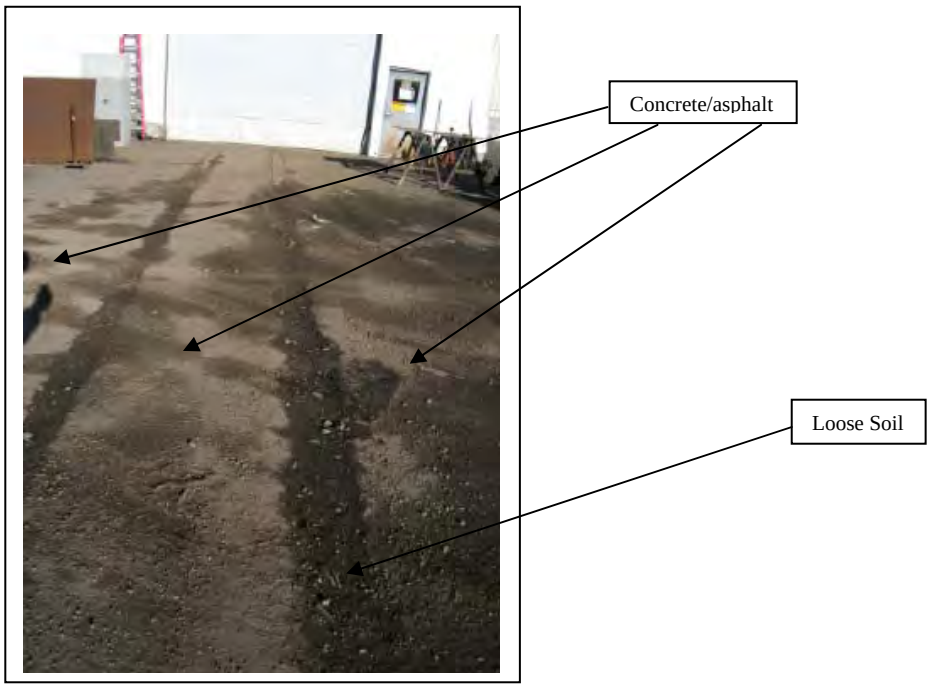
Geotechnical & Environmental Consultants

Fig. 1

APPENDIX A

SITE PHOTOGRAPHS

Photograph 1: Looking at surface stain in the southwestern portion of the property near where Sample SS2 was collected in October 2010. (Fall 2010 photo provided by UOSS)



Photograph 2: Looking at north at southwest entrance leading into the "tent" building. October 2010 Sample SS3 was collected in the loose soil between the concrete/asphalt surfaces. (October 2010)

360 East 100th Avenue
Anchorage, AK

PHOTOGRAPHS 1 and 2

July 2011

32-1-17399-002

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Photograph 3: Looking north at surface stain adjacent to the ditch in the northwestern portion of the property where Sample SS7 was collected in October 2010. (October 2010)

Photograph 4: Looking northwest, Boring B1 was advanced in the northwest corner of the property. (April 2011)

360 East 100th Avenue
Anchorage, AK

PHOTOGRAPHS 3 AND 4

July 2011 32-1-17399-002

Photograph 5: Looking at surface stain underneath dumpster in the southwestern portion of the property where Sample SS5 was collected in October 2010. (October 2010)

Photograph 6: Looking at a hand-dug test pit where April 2011 Samples SS10 and SS11 were collected. (April 2011)

Photograph 7: Looking northeast, Boring B2 was advanced in the southwestern portion of the property, near October 2010 Sample SS3. (April 2011)

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Anchorage, AK

PHOTOGRAPH 7

July 2011

32-1-17399-002

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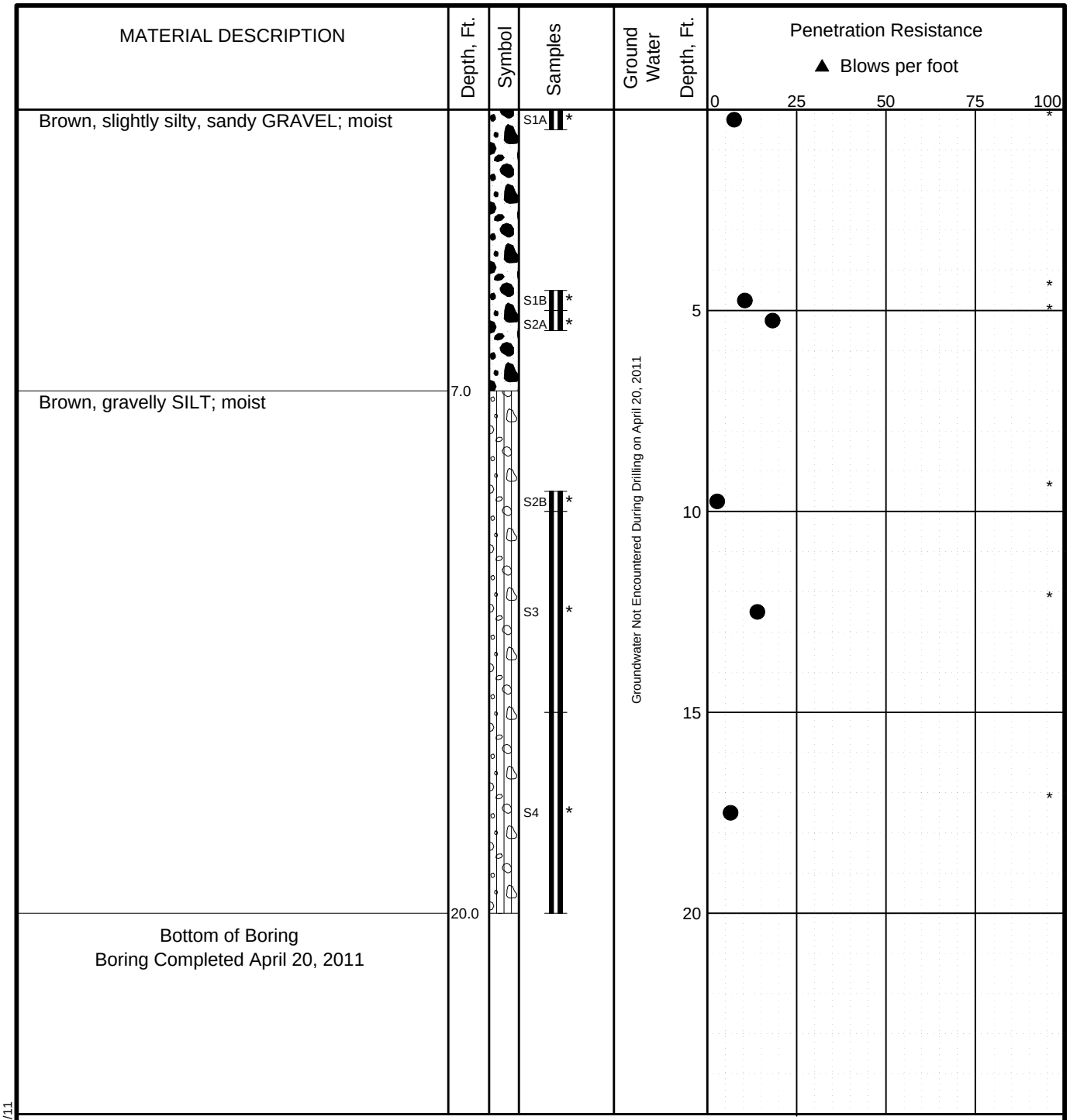
APPENDIX B

BORING LOGS



LEGEND

* Macro-core sampler was driven at 5-foot intervals.

II Direct Push

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.
4. USC letter symbol based on visual classification.

360 East 100th Avenue
Anchorage, Alaska

LOG OF BORING B1

July 2011 32-1-17399-002

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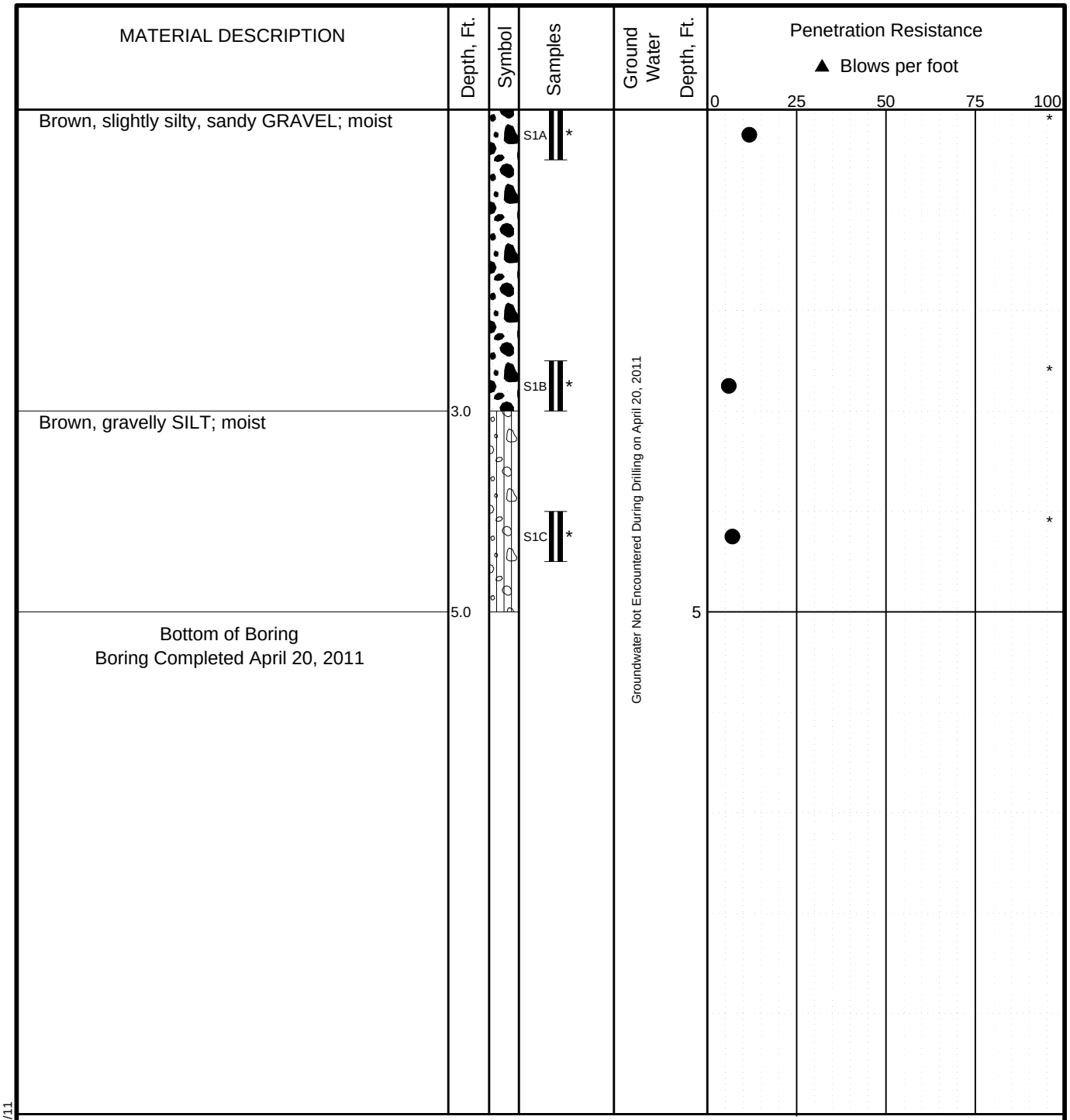
Fig. B-1

ENVIRONMENTAL LOG 17399 LOGS.GPJ S&W GEO1.GDT 7/12/11



LEGEND

* Macro-core sampler was driven at 5-foot intervals.

Direct Push

NOTES

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2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
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LOG OF BORING B2

July 2011 32-1-17399-002

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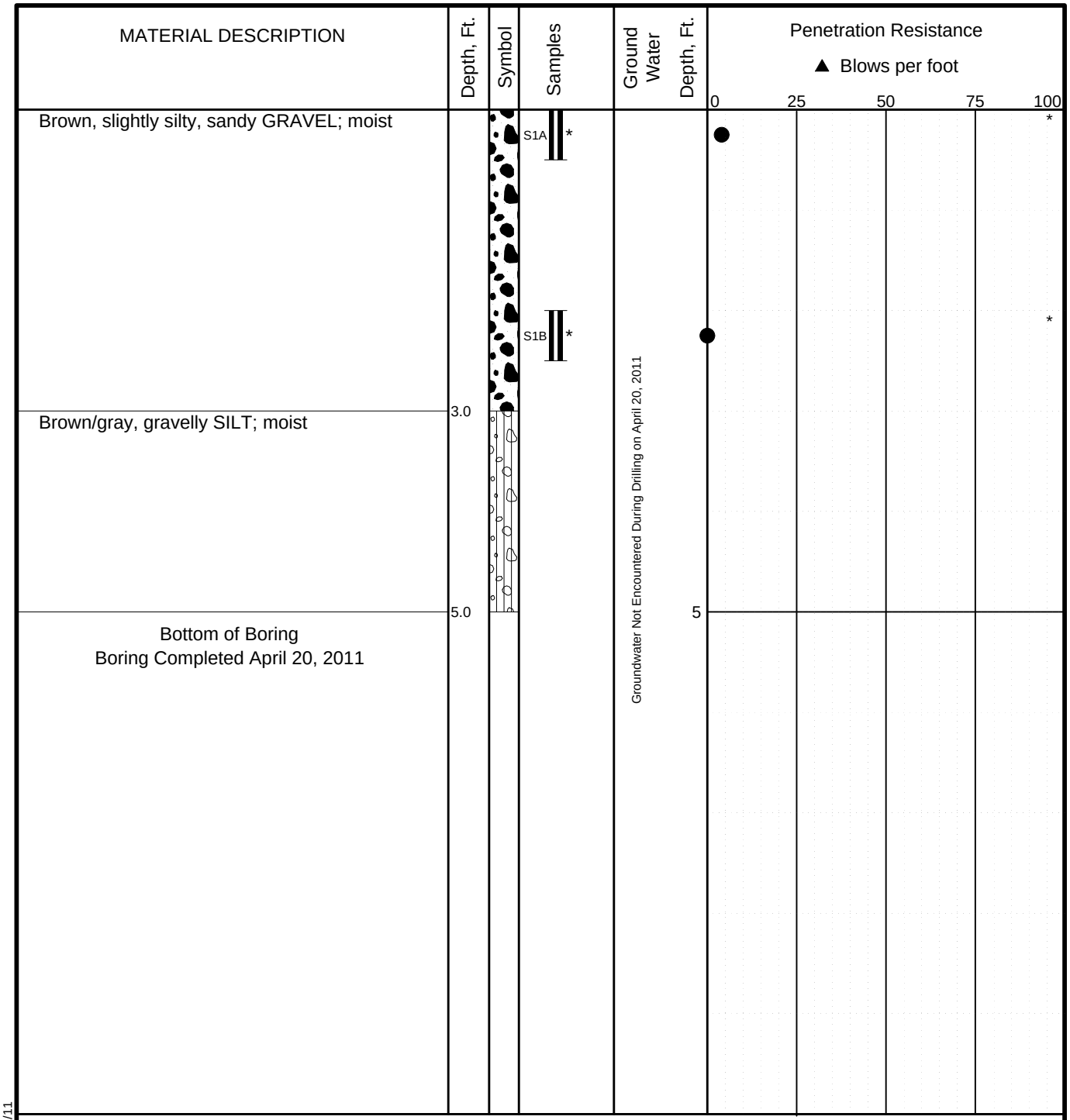
Fig. B-2

ENVIRONMENTAL LOG 17399 LOGS.GPJ S&W GEO1.GDT 7/12/11



LEGEND

* Macro-core sampler was driven at 5-foot intervals.

Direct Push

NOTES

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2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
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LOG OF BORING B3

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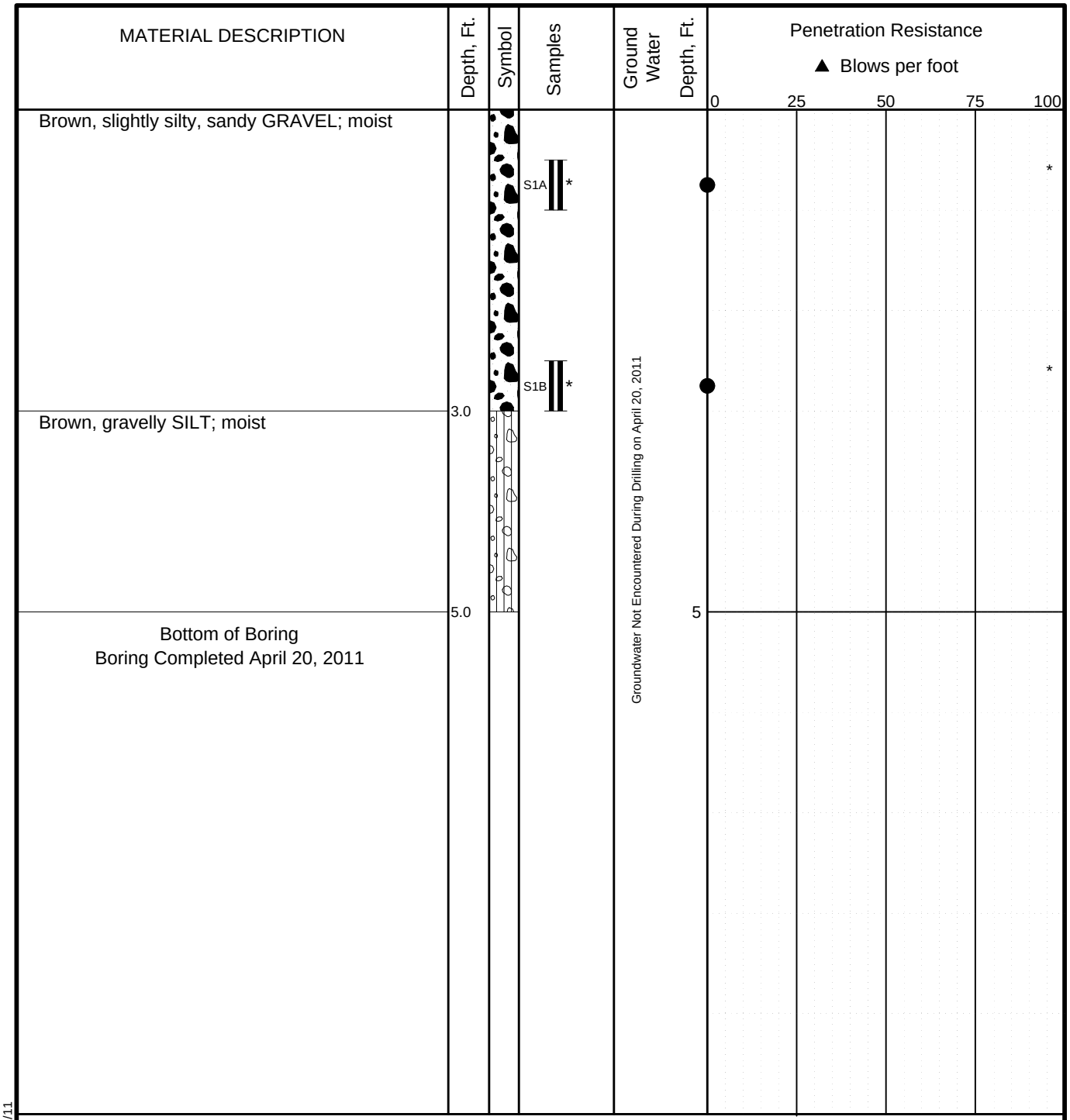
Fig. B-3

ENVIRONMENTAL LOG 17399 LOGS.GPJ S&W GEO1.GDT 7/12/11



LEGEND

* Macro-core sampler was driven at 5-foot intervals.

Direct Push

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
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LOG OF BORING B4

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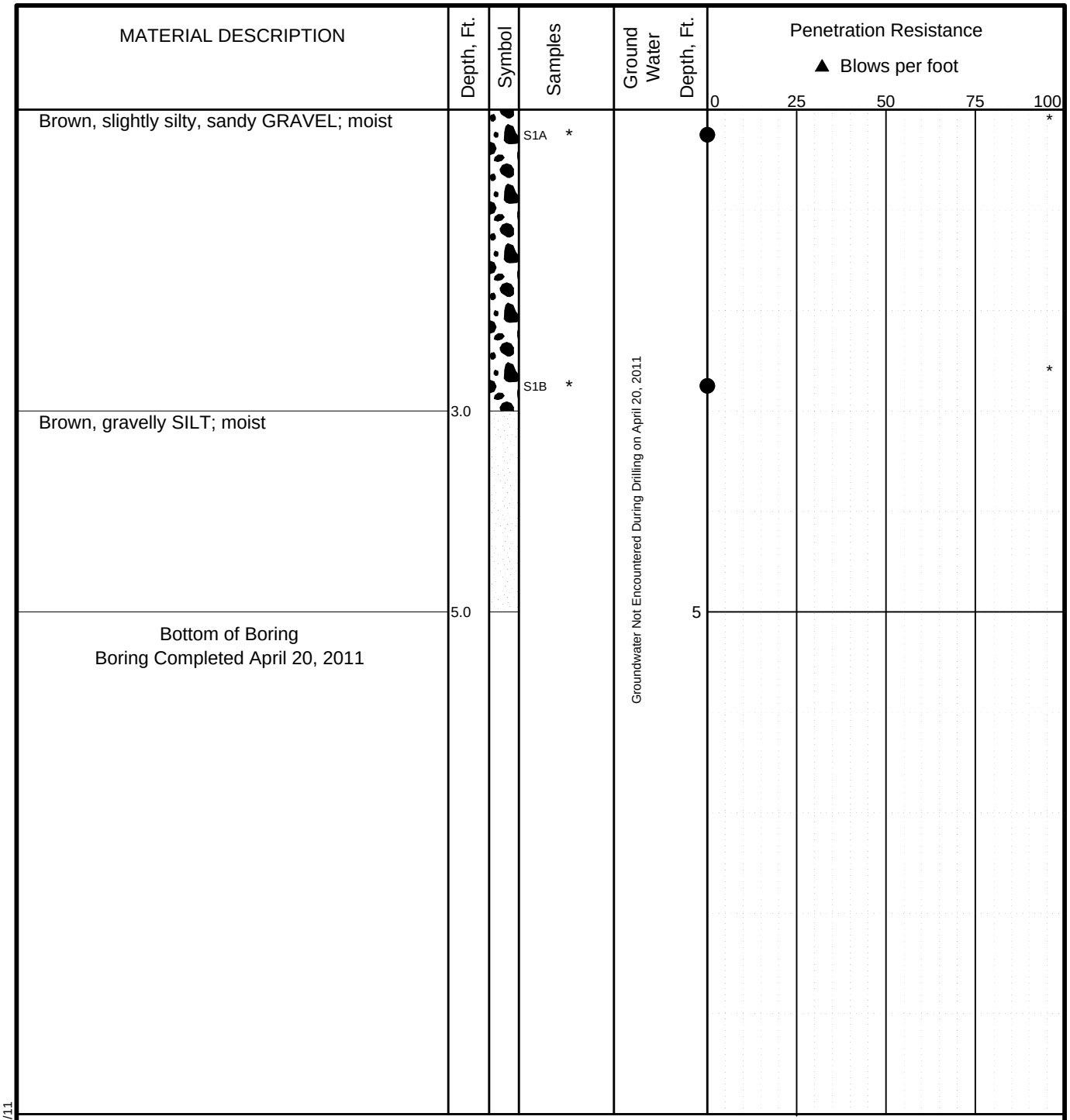
Fig. B-4

ENVIRONMENTAL LOG 17399 LOGS.GPJ S&W GEO1.GDT 7/12/11



LEGEND

* Macro-core sampler was driven at 5-foot intervals.

Direct Push

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.
4. USC letter symbol based on visual classification.

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LOG OF BORING B5

July 2011 32-1-17399-002

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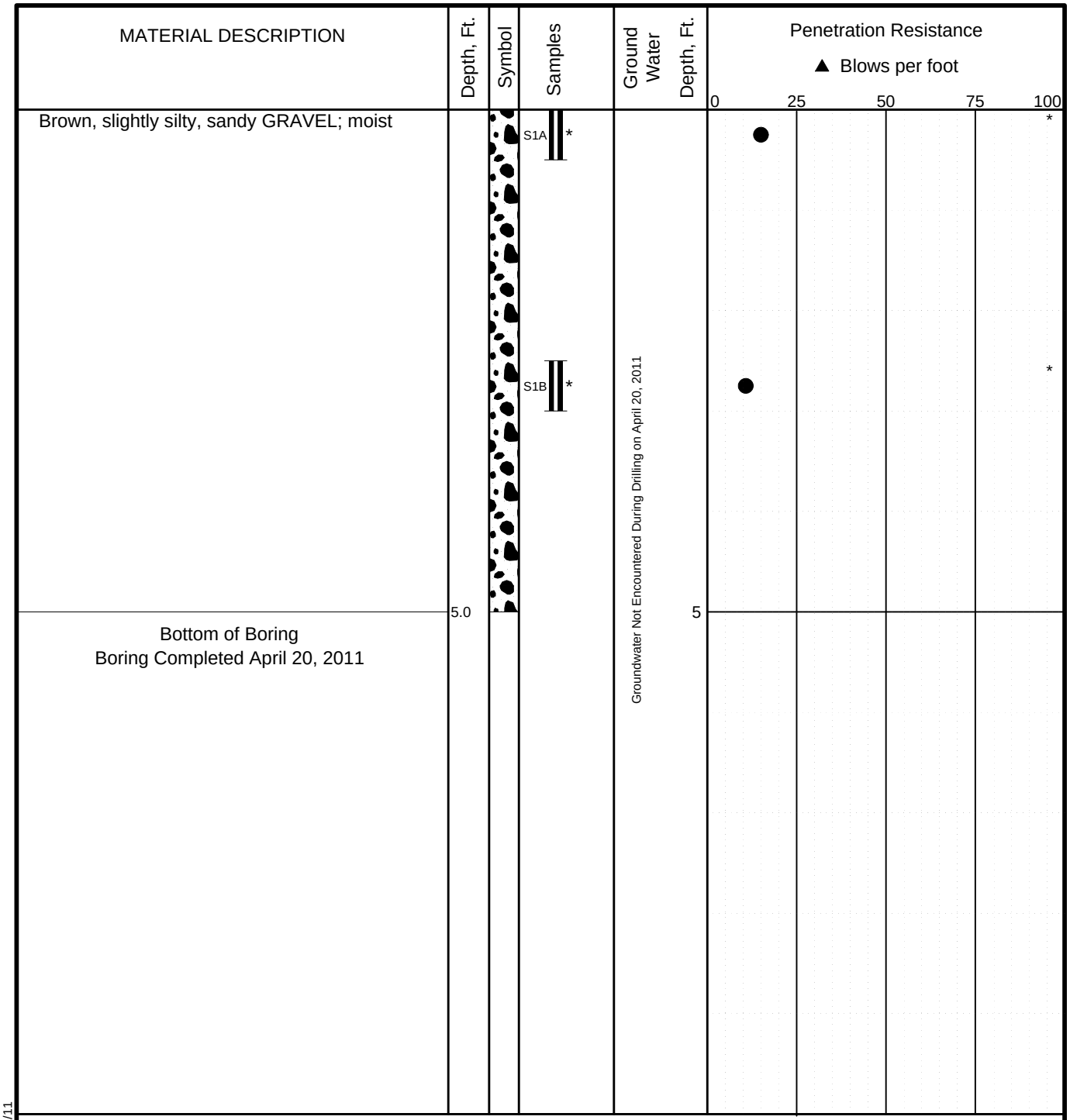
Fig. B-5

ENVIRONMENTAL LOG 17399 LOGS.GPJ S&W GEO1.GDT 7/12/11



LEGEND

* Macro-core sampler was driven at 5-foot intervals.

II Direct Push

NOTES

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2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.
4. USC letter symbol based on visual classification.

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Anchorage, Alaska

LOG OF BORING B6

July 2011 32-1-17399-002

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Fig. B-6

ENVIRONMENTAL LOG 17399 LOGS.GPJ S&W GEO1.GDT 7/12/11

APPENDIX C

RESULTS OF ANALYTICAL TESTING BY
SGS NORTH AMERICA, INC.
OF ANCHORAGE, ALASKA

AND

ADEC LABORATORY DATA REVIEW CHECKLIST

LABORATORY DATA REVIEW CHECKLIST

CS Report Name: 360 East 100th Avenue **Date:** May 2011

Laboratory Report Date: May 18, 2011

Consultant Firm: Shannon & Wilson, Inc.

Completed by: Jessica Morris
Title: Environmental Engineer

Laboratory Name: SGS North America, Inc.
Work Order Number: 1111497

ADEC File Number: *2100.38.198*
ADEC RecKey Number:
(**NOTE**: ***NA*** = not applicable; Text in *italics* added by Shannon & Wilson, Inc.)

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses? **Yes / No / NA (Please explain.)**
Comments:

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS-approved?
Yes / No / NA
Comments: *Samples were shipped to Columbia Analytical Services (CAS) in Simi Valley, California for analysis of hexavalent chromium. ADEC does not require laboratory certification for hexavalent chromium analysis. However, CAS is certified under the ADEC CS program.*

2. Chain of Custody (COC)

a. COC information completed, signed, and dated (including released/received by)?
Yes / No / NA (Please explain.)
Comments**:**

b. Correct analyses requested? **Yes / No / *NA* (Please explain.)**
Comments**:**

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
Yes / No / NA (Please explain.)
Comments: *The temperature blank was -0.3° C.*

b. Sample preservation acceptable - acidified waters, Methanol-preserved VOC soil (GRO, BTEX, VOCs, etc.)? **Yes / No / NA (Please explain.)**
Comments:

c. Sample condition documented - broken, leaking (soil MeOH), zero headspace (VOC vials)? **Yes / No / NA (Please explain.)**
Comments:

d. If there were any discrepancies, were they documented (e.g., incorrect sample containers/preservation, sample temperatures outside range, insufficient sample size, missing samples)? **Yes / No / NA (Please explain.)**
Comments:

e. Data quality or usability affected? **(Please Explain.)** ***NA***
Comments: *The temperature blank was recorded as -0.3 °C, which is below the acceptable range. The laboratory did not note that ice was present in the soil samples associated with the below-range temperature, and it is not likely the cold temperatures affected data quality or usability for soil results.*

4. Case Narrative

a. Present and understandable? **Yes / No / NA (Please explain.)**
Comments:

b. Discrepancies, errors or QC failures noted by the lab? **Yes / No / NA (Please explain.)**
Comments: *Samples 17399-B1S1A, 17399-B5S1A 17399-SS6, 17399-SS6, 17399-SS7, and 17399-SS8 were diluted due to a dark color of extract; therefore the LOQ was elevated for DRO analysis by AK 102.*

Surrogate recoveries were outside of QC criteria for Samples 17399-B1S1A, 17399-B5S1A, 17399-SS4, 17399-SS6, 17399-SS7, and 17399-SS8.

MS/MSD recoveries for tetrachloroethene do not meet QC criteria.

LCSD recovery for tetrachloroethene does not meet QC criteria (biased low).

c. Were corrective actions documented? **Yes / No / NA (Please explain.)**
Comments: *No corrective actions were noted.*

d. What is the effect on data quality/usability, according to the case narrative?

Comments: *The effects of the discrepancies are described in the case narrative on the data quality/usability is further described in other sections of this checklist.*

5. Sample Results

a. Correct analyses performed/reported as requested on COC? **Yes / No / NA (Please explain.)**
Comments:

b. All applicable holding times met? **Yes / No / NA (Please explain.)**
Comments:

c. All soils reported on a dry-weight basis? **Yes / No / NA (Please explain.)**
Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project? **Yes / No / NA (Please explain.)**
Comments:
Samples 17399-B1S1A, 17399-B5S1A, 17399-SS6, 17399-SS6, 17399-SS7, and 17399-SS8 were diluted due to a dark color of extract; therefore the LOQ was elevated for DRO analysis by AK 102. Samples 17399-B5S1A, 17399-SS6, 17399-SS7, and 17399-SS8 had LOQs greater than the cleanup level.

e. Data quality or usability affected? **(Please explain.)**
Comments: *The DRO concentrations reported for the project samples with elevated DRO LOQs are estimated values (J-flagged results). Note that each reported concentration was greater than the applicable ADEC cleanup level and the results are considered usable.*

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis, and 20 samples?
Yes / No / NA (Please explain.)
Comments:

ii. All method blank results less than PQL? **Yes / No / NA (Please explain.)**
Comments:

iii. If above PQL, what samples are affected? ***NA***
Comments:

iv. Do the affected sample(s) have data flags? **Yes / No / NA**
Comments:

If so, are the data flags clearly defined? **Yes / No / NA**
Comments:

v. Data quality or usability affected? **(Please explain.)** ***NA***
Comments:

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics - One LCS/LCSD reported per matrix, analysis, and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846) **Yes / No / *NA* (Please explain.)**
Comments:

ii. Metals/Inorganics - One LCS and one sample duplicate reported per matrix, analysis and 20 samples? **Yes / No / NA (Please explain.)**
Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages) **Yes / No / NA (Please explain.)**
Comments:

Tetrachloroethene was recovered below QC limits (biased low) in the LCSD. Concentrations of tetrachloroethene were detected in project samples.

Tetrachloroethene was recovered below QC limits in the MS/MSD samples. Concentrations of tetrachloroethene were detected in project samples. However, these MS/MSD was not associated with the project samples.

iv. Precision – All relative percent differences (RPDs) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages) **Yes / No / NA (Please explain.)**
Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected? ***NA***
Comments: *Samples 17399-B2S1A, 17399-B2S1B, 17399-B2S1C, 17399-B3S1A, 17399-B3S1B, and 17399-SS8.*

vi. Do the affected samples(s) have data flags? **Yes / No / NA**
Comments:

If so, are the data flags clearly defined? **Yes / No / NA**

Comments:

vii. Data quality or usability affected? Explain. ***NA***
Comments: *Because tetrachloroethene was recovered outside of QC limits in the LCSD, the concentrations of tetrachloroethene in the associated project samples will be flagged as estimated concentrations (J-flagged). The tetrachloroethene recovered below QC limits in the MS/MSD sample should not affect the data quality/usability because the MS/MSD was not associated with the project samples.*

c. Surrogates - Organics Only

i. Are surrogate recoveries reported for organic analyses, field, QC and laboratory samples? **Yes / No / NA (Please explain.)**
Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages) **Yes / No / NA (Please explain.)**
Comments: *Surrogate recoveries were outside of QC criteria for Samples 17399-B1S1A, 17399-B5S1A, 17399-SS4, 17399-SS6, 17399-SS7, and 17399-SS8.*

iii. Do the sample results with failed surrogate recoveries have data flags? **Yes / No / NA (Please explain.)**
Comments:

If so, are the data flags clearly defined? **Yes / No / NA**
Comments:

iv. Data quality or usability affected? Explain. ***NA***
Comments: *The DRO and RRO concentrations in Sample 17399-B1S1A, 17399-SS4, 17399-SS6, 17399-SS7, 17399-SS8, and 17399-SS11 will be flagged (J) as estimated concentrations. The tetrachloroethene concentration in Sample 17399-B5S1A and 17399-SS8 will be flagged (J) as estimated concentrations.*

d. Trip Blank - Volatile analyses only (GRO, BTEX, VOCs, etc.) Water and Soil

i. One trip blank reported per matrix, analysis and cooler? **Yes / No / NA (Please explain.)**
Comments:

ii. Is the cooler used to transport the trip blank and volatile samples clearly indicated on the COC? **Yes / No / NA (Please explain if NA or no.)**

iii. All results less than PQL? **Yes / No / NA (Please explain.)**
Comments:

iv. If above PQL, what samples are affected? ***NA***
Comments**:**

v. Data quality or usability affected? Explain. ***NA***
Comments:

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
Yes / No / NA (Please explain.)
Comments: *Duplicates were not included in this project.*

ii. Were the field duplicates submitted blind to the lab? **Yes / No / NA (Please explain.)**
Comments: *Duplicates were not included in this project.*

iii. Precision – All relative percent differences (RPDs) less than specified DQOs?
(Recommended: 30% for water, 50% for soil) **Yes / No / NA (Please explain.)**
Comments: *Duplicates were not included in this project.*

iv. Data quality or usability affected? Explain. ***NA***
Comments:

f. Decontamination or Equipment Blank (if not applicable, a comment stating why must be entered below)
Yes / No / NA (Please explain.)

i. All results less than PQL? **Yes / No / NA (Please explain.)**
Comments:

ii. If results are above PQL, what samples are affected? ***NA***
Comments:

iii. Data quality or usability affected? Explain. ***NA***
Comments:

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab-specific, etc.)

a. Are they defined and appropriate? **Yes / No / NA**
Comments:

SGS North America Inc.
Alaska Division
Level II Laboratory Data Report

Project:	17399-002 360 E 100th
Client:	Shannon & Wilson, Inc.
SGS Work Order:	1111497

Released by:

Contents:

Note:
Unless otherwise noted, all quality assurance/quality control criteria is in compliance with the standards set forth by the proper regulatory authority, the SGS Quality Assurance Program Plan, and the National Environmental Accreditation Conference.

Case Narrative

Customer: SHANNOT **Shannon & Wilson, Inc.**

Project: 1111497 **17399-002 360 E 100th**

Refer to the sample receipt form for information on sample condition.

1111497001 PS **17399-SS1**

Hexavalent Chromium was analyzed by CAS in Kelso, WA.

1111497002 PS **17399-SS2**

Hexavalent Chromium was analyzed by CAS in Kelso, WA.

1111497003 PS **17399-SS3**

Hexavalent Chromium was analyzed by CAS in Kelso, WA.

1111497004 PS **17399-B1S1A**

AK103 - The pattern is consistent with a lube oil.

AK102 - Sample was diluted due to dark color of extract; therefore the LOQ was elevated.

1111497005 PS **17399-B1S2A**

AK102/103 - Unknown hydrocarbon with several peaks is present.

1111497006 PS **17399-B2S1A**

AK102/103 - The pattern is consistent with a lube oil.

AK102/103 - 5a-Androstane and n-triacontane (surrogates) recoveries are outside QC criteria due to sample matrix.

1111497008 PS **17399-B2S1C**

AK102/103 - The pattern is consistent with a lube oil.

1111497009 PS **17399-B3S1A**

AK102/103 - The pattern is consistent with a lube oil.

1111497011 PS **17399-B4S1A**

AK102/103 - The pattern is consistent with a lube oil.

1111497013 PS **17399-B5S1A**

8260B - Sample surrogate recovery for 1,2-dichloroethane-D4 does not meet QC criteria. Analytes relative to this surrogate are not reported.

AK103 - The pattern is consistent with a lube oil.

AK102 - Sample was diluted due to dark color of extract; therefore the LOQ was elevated.

1111497015 PS **17399-B6S1A**

AK102/103 - Unknown hydrocarbon with several peaks is present.

1111497017 PS **17399-SS4**

AK102/103 - The pattern is consistent with a lube oil.

AK103 - n-Triacontane (surrogate) recovery is outside QC criteria due to sample matrix.

1111497019 PS **17399-SS6**

AK103 - The pattern is consistent with a lube oil.

AK102 - Sample was diluted due to dark color of extract; therefore the LOQ was elevated.

AK103 - n-Triacontane (surrogate) recovery is outside QC criteria due to sample matrix.

1111497020 PS **17399-SS7**

AK103 - The pattern is consistent with a lube oil.

AK103 - n-Triacontane (surrogate) recovery is outside QC criteria due to sample matrix.

AK102 - Sample was diluted due to dark color of extract; therefore the LOQ was elevated.

* QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to the associated field samples.

Case Narrative

Customer: SHANNOT **Shannon & Wilson, Inc.**

Project: 1111497 **17399-002 360 E 100th**

1111497021 PS **17399-SS8**

8260B - 1,2-Dichloroethane-D4 (surrogate) recovery does not meet QC criteria (biased high). Analytes associated with this surr were not detected above the LOQ in the sample.

AK103 - The pattern is consistent with a lube oil.

AK102 - Sample was diluted due to dark color of extract; therefore the LOQ was elevated.

AK103 - n-Triacontane (surrogate) recovery is outside QC criteria due to sample matrix.

1111497022 PS **17399-SS9**

AK102/103 - The pattern is consistent with a lube oil.

1111497024 PS **17399-SS11**

AK102/103 - The pattern is consistent with a lube oil.

AK103 - n-Triacontane (surrogate) recovery is outside QC criteria due to sample matrix.

1021889 MS **1021886MS**

8260B - MS recovery for tetrachloroethene does not meet QC criteria. Refer to LCS.

1021890 MSD **1021886MSD**

8260B - MSD recovery for tetrachloroethene does not meet QC criteria (biased high). Refer to LCS.

1021951 MS **1021950MS**

8260B - MS recovery for tetrachloroethene does not meet QC criteria. Refer to LCS.

1021952 MSD **1021950MSD**

8260B - MSD recovery for tetrachloroethene does not meet QC criteria. Refer to LCS.

1022760 LCSD **VXX/2208**

8260B - LCSD recovery for tetrachloroethene does not meet QC criteria (biased low). This analyte recovered within QC criteria in the LCS and CCV.

* QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to the associated field samples.

Laboratory Analytical Report

Client: **Shannon & Wilson, Inc.**
5430 Fairbanks Street, Suite 3
Anchorage, AK 99518

Attn: **Jessi Morris**
T: (907)561-2120 F:
JAM@shanwil.com

Project: **17399-002 360 E 100th**

Workorder No.: **1111497**

Certification:

This data package is in compliance with the terms and conditions of the contract, both technically and for completeness, unless otherwise noted on the sample data sheet(s) and/or case narrative. This certification applies only to the tested parameters and the specific sample(s) received at the laboratory. If you have any questions regarding this report, or if we can be of further assistance, please contact your SGS Project Manager.

Steve Crupi

steven.crupi@sgs.com
Project Manager

Contents (Bookmarked in PDF):

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. If you have any questions regarding this report, or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. All work is provided under SGS general terms and conditions (<http://www.sgs.com/terms_and_conditions.htm>), unless other written agreements have been accepted by both parties.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and AK100001 for NELAP (RCRA methods: 1020A, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035B, 6010B, 6020, 7470A, 7471B, 8021B, 8081B, 8082A, 8260B, 8270D, 8270D-SIM, 9040B, 9045C, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, the National Environmental Laboratory Accreditation Program and other regulatory authorities. The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV	Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 2xDL)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RL	Reporting Limit
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content.
All DRO/RRO analyses are integrated per SOP.

SAMPLE SUMMARY

Print Date: 5/17/2011 2:13 pm

Client Name: Shannon & Wilson, Inc.
Project Name: 17399-002 360 E 100th
Workorder No.: 1111497

Analytical Methods

Method Description	Analytical Method
Diesel/Residual Range Organics	AK102
Diesel/Residual Range Organics	AK103
Metals by ICP-MS (S)	SW6020
Percent Solids SM2540G	SM20 2540G
TCLP Volatile Organic Compounds 8260	SW8260B TCLP
VOC 8260 (S) Field Extracted	SW8260B

Sample ID Cross Reference

Lab Sample ID	Client Sample ID
1111497001	17399-SS1
1111497002	17399-SS2
1111497003	17399-SS3
1111497004	17399-B1S1A
1111497005	17399-B1S2A
1111497006	17399-B2S1A
1111497007	17399-B2S1B
1111497008	17399-B2S1C
1111497009	17399-B3S1A
1111497010	17399-B3S1B
1111497011	17399-B4S1A
1111497012	17399-B4S1B
1111497013	17399-B5S1A
1111497014	17399-B5S1B
1111497015	17399-B6S1A
1111497016	17399-B6S1B
1111497017	17399-SS4
1111497018	17399-SS5
1111497019	17399-SS6
1111497020	17399-SS7
1111497021	17399-SS8
1111497022	17399-SS9
1111497023	17399-SS10
1111497024	17399-SS11
1111497025	TB1

Detectable Results Summary

Print Date: 5/17/2011 2:13 pm

Client Sample ID: **17399-SS1**
SGS Ref. #: 1111497001

Parameter	Result	Units
Metals by ICP/MS		
Chromium	37.8	mg/Kg

Client Sample ID: **17399-SS2**
SGS Ref. #: 1111497002

Parameter	Result	Units
Metals by ICP/MS		
Chromium	29.2	mg/Kg

Client Sample ID: **17399-SS3**
SGS Ref. #: 1111497003

Parameter	Result	Units
Metals by ICP/MS		
Chromium	41.2	mg/Kg

Client Sample ID: **17399-B1S1A**
SGS Ref. #: 1111497004

Parameter	Result	Units
Semivolatile Organic Fuels Department		
Diesel Range Organics	208J	mg/Kg
Residual Range Organics	3180	mg/Kg

Client Sample ID: **17399-B1S2A**
SGS Ref. #: 1111497005

Parameter	Result	Units
Semivolatile Organic Fuels Department		
Diesel Range Organics	47.5	mg/Kg
Residual Range Organics	432	mg/Kg

Client Sample ID: **17399-B2S1A**
SGS Ref. #: 1111497006

Parameter	Result	Units
Semivolatile Organic Fuels Department		
Diesel Range Organics	5600	mg/Kg
Residual Range Organics	29200	mg/Kg
Volatile Gas Chromatography/Mass Spectroscopy		
Tetrachloroethene	22600	ug/Kg

Client Sample ID: **17399-B2S1B**
SGS Ref. #: 1111497007

Parameter	Result	Units
Volatile Gas Chromatography/Mass Spectroscopy		
Tetrachloroethene	5.69J	ug/Kg

Detectable Results Summary

Print Date: 5/17/2011 2:13 pm

Client Sample ID: **17399-B2S1C**
SGS Ref. #: 1111497008

Parameter	Result	Units
Semivolatile Organic Fuels Department		
Diesel Range Organics	288	mg/Kg
Residual Range Organics	4500	mg/Kg
Volatile Gas Chromatography/Mass Spectroscopy		
Tetrachloroethene	15.5	ug/Kg

Client Sample ID: **17399-B3S1A**
SGS Ref. #: 1111497009

Parameter	Result	Units
Semivolatile Organic Fuels Department		
Diesel Range Organics	106	mg/Kg
Residual Range Organics	1110	mg/Kg
Volatile Gas Chromatography/Mass Spectroscopy		
Tetrachloroethene	9.19J	ug/Kg

Client Sample ID: **17399-B3S1B**
SGS Ref. #: 1111497010

Parameter	Result	Units
Volatile Gas Chromatography/Mass Spectroscopy		
Tetrachloroethene	8.50J	ug/Kg

Client Sample ID: **17399-B4S1A**
SGS Ref. #: 1111497011

Parameter	Result	Units
Semivolatile Organic Fuels Department		
Diesel Range Organics	59.5	mg/Kg
Residual Range Organics	576	mg/Kg

Client Sample ID: **17399-B4S1B**
SGS Ref. #: 1111497012

Parameter	Result	Units
Semivolatile Organic Fuels Department		
Residual Range Organics	9.80J	mg/Kg

Client Sample ID: **17399-B5S1A**
SGS Ref. #: 1111497013

Parameter	Result	Units
Semivolatile Organic Fuels Department		
Diesel Range Organics	299J	mg/Kg
Residual Range Organics	5520	mg/Kg

Detectable Results Summary

Print Date: 5/17/2011 2:13 pm

Client Sample ID: **17399-B6S1A**
SGS Ref. #: 1111497015

Parameter	Result	Units
Semivolatile Organic Fuels Department		
Diesel Range Organics	47.8	mg/Kg
Residual Range Organics	403	mg/Kg

Client Sample ID: **17399-SS4**
SGS Ref. #: 1111497017

Parameter	Result	Units
Semivolatile Organic Fuels Department		
Diesel Range Organics	504	mg/Kg
Residual Range Organics	5360	mg/Kg

Client Sample ID: **17399-SS6**
SGS Ref. #: 1111497019

Parameter	Result	Units
Semivolatile Organic Fuels Department		
Diesel Range Organics	399J	mg/Kg
Residual Range Organics	7360	mg/Kg

Client Sample ID: **17399-SS7**
SGS Ref. #: 1111497020

Parameter	Result	Units
Semivolatile Organic Fuels Department		
Diesel Range Organics	624J	mg/Kg
Residual Range Organics	6220	mg/Kg

Client Sample ID: **17399-SS8**
SGS Ref. #: 1111497021

Parameter	Result	Units
Semivolatile Organic Fuels Department		
Diesel Range Organics	465J	mg/Kg
Residual Range Organics	5930	mg/Kg
Volatile Gas Chromatography/Mass Spectroscopy		
Tetrachloroethene	2.87J	ug/Kg

Client Sample ID: **17399-SS9**
SGS Ref. #: 1111497022

Parameter	Result	Units
Semivolatile Organic Fuels Department		
Diesel Range Organics	402	mg/Kg
Residual Range Organics	5900	mg/Kg

Detectable Results Summary

Print Date: 5/17/2011 2:13 pm

Client Sample ID: **17399-SS11**

SGS Ref. #: 1111497024

Semivolatile Organic Fuels Department

Parameter	Result	Units
Diesel Range Organics	657	mg/Kg
Residual Range Organics	10700	mg/Kg

Client Sample ID: **17399-SS1**
SGS Ref. #: 1111497001
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 88.2

Collection Date/Time: 04/19/11 11:15
Receipt Date/Time: 04/21/11 10:25

Metals by ICP/MS

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Chromium	37.8	0.449	0.135	mg/Kg	10	MMS6968	MXX24165	

Batch Information

Analytical Batch: MMS6968
Analytical Method: SW6020
Analysis Date/Time: 04/28/11 13:39
Dilution Factor: 10

Prep Batch: MXX24165
Prep Method: SW3050B
Prep Date/Time: 04/26/11 12:40

Initial Prep Wt./Vol.: 1.01 g
Prep Extract Vol.: 50 mL
Container ID:1111497001-A
Analyst: NRB

Client Sample ID: **17399-SS1**
SGS Ref. #: 1111497001
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 88.2

Collection Date/Time: 04/19/11 11:15
Receipt Date/Time: 04/21/11 10:25

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	88.2			%	1	SPT8361		

Batch Information

Analytical Batch: SPT8361
Analytical Method: SM20 2540G
Analysis Date/Time: 04/22/11 16:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1111497001-A
Analyst: SLD

Client Sample ID: **17399-SS2**
SGS Ref. #: 1111497002
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 91.6

Collection Date/Time: 04/19/11 11:20
Receipt Date/Time: 04/21/11 10:25

Metals by ICP/MS

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Chromium	29.2	0.413	0.124	mg/Kg	10	MMS6968	MXX24165	

Batch Information

Analytical Batch: MMS6968
Analytical Method: SW6020
Analysis Date/Time: 04/28/11 13:51
Dilution Factor: 10

Prep Batch: MXX24165
Prep Method: SW3050B
Prep Date/Time: 04/26/11 12:40

Initial Prep Wt./Vol.: 1.059 g
Prep Extract Vol.: 50 mL
Container ID:1111497002-A
Analyst: NRB

Client Sample ID: **17399-SS2**
SGS Ref. #: 1111497002
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 91.6

Collection Date/Time: 04/19/11 11:20
Receipt Date/Time: 04/21/11 10:25

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	91.6			%	1	SPT8361		

Batch Information

Analytical Batch: SPT8361
Analytical Method: SM20 2540G
Analysis Date/Time: 04/22/11 16:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1111497002-A
Analyst: SLD

Client Sample ID: **17399-SS3**
SGS Ref. #: 1111497003
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 86.5

Collection Date/Time: 04/19/11 11:25
Receipt Date/Time: 04/21/11 10:25

Metals by ICP/MS

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Chromium	41.2	0.462	0.139	mg/Kg	10	MMS6968	MXX24165	

Batch Information

Analytical Batch: MMS6968
Analytical Method: SW6020
Analysis Date/Time: 04/28/11 13:53
Dilution Factor: 10

Prep Batch: MXX24165
Prep Method: SW3050B
Prep Date/Time: 04/26/11 12:40

Initial Prep Wt./Vol.: 1.001 g
Prep Extract Vol.: 50 mL
Container ID:1111497003-A
Analyst: NRB

Client Sample ID: **17399-SS3**
SGS Ref. #: 1111497003
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 86.5

Collection Date/Time: 04/19/11 11:25
Receipt Date/Time: 04/21/11 10:25

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	86.5			%	1	SPT8361		

Batch Information

Analytical Batch: SPT8361
Analytical Method: SM20 2540G
Analysis Date/Time: 04/22/11 16:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1111497003-A
Analyst: SLD

Client Sample ID: **17399-B1S1A**
SGS Ref. #: 1111497004
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 91.9

Collection Date/Time: 04/20/11 08:15
Receipt Date/Time: 04/21/11 10:25

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	208J	218	67.4	mg/Kg	5	XFC9790	XXX24614	
Residual Range Organics	3180	218	67.4	mg/Kg	5	XFC9790	XXX24614	
5a Androstane <surr>	86.1	50-150		%	5	XFC9790	XXX24614	
n-Triacontane-d62 <surr>	126	50-150		%	5	XFC9790	XXX24614	

Batch Information

Analytical Batch: XFC9790
Analytical Method: AK102
Analysis Date/Time: 04/28/11 18:23
Dilution Factor: 5
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.019 g
Prep Extract Vol.: 2 mL
Container ID:1111497004-A
Analyst: LCE

Analytical Batch: XFC9790
Analytical Method: AK103
Analysis Date/Time: 04/28/11 18:23
Dilution Factor: 5
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.019 g
Prep Extract Vol.: 2 mL
Container ID:1111497004-A
Analyst: LCE

Client Sample ID: **17399-B1S1A**
SGS Ref. #: 1111497004
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 91.9

Collection Date/Time: 04/20/11 08:15
Receipt Date/Time: 04/21/11 10:25

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	91.9			%	1	SPT8361		

Batch Information

Analytical Batch: SPT8361
Analytical Method: SM20 2540G
Analysis Date/Time: 04/22/11 16:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1111497004-A
Analyst: SLD

Client Sample ID: **17399-B1S2A**
SGS Ref. #: 1111497005
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 88.1

Collection Date/Time: 04/20/11 08:35
Receipt Date/Time: 04/21/11 10:25

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	47.5	22.6	7.01	mg/Kg	1	XFC9787	XXX24614	
Residual Range Organics	432	22.6	7.01	mg/Kg	1	XFC9787	XXX24614	
5a Androstane <surr>	81.7	50-150		%	1	XFC9787	XXX24614	
n-Triacontane-d62 <surr>	86.4	50-150		%	1	XFC9787	XXX24614	

Batch Information

Analytical Batch: XFC9787
Analytical Method: AK102
Analysis Date/Time: 04/27/11 18:25
Dilution Factor: 1
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.132 g
Prep Extract Vol.: 1 mL
Container ID:1111497005-A
Analyst: MCS

Analytical Batch: XFC9787
Analytical Method: AK103
Analysis Date/Time: 04/27/11 18:25
Dilution Factor: 1
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.132 g
Prep Extract Vol.: 1 mL
Container ID:1111497005-A
Analyst: MCS

Client Sample ID: **17399-B1S2A**
SGS Ref. #: 1111497005
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 88.1

Collection Date/Time: 04/20/11 08:35
Receipt Date/Time: 04/21/11 10:25

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	88.1			%	1	SPT8361		

Batch Information

Analytical Batch: SPT8361
Analytical Method: SM20 2540G
Analysis Date/Time: 04/22/11 16:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1111497005-A
Analyst: SLD

Client Sample ID: **17399-B2S1A**
SGS Ref. #: 1111497006
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 93.8

Collection Date/Time: 04/20/11 10:50
Receipt Date/Time: 04/21/11 10:25

Semivolatile Organic Fuels Department

Parameter	Result		LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	5600		1820	565	mg/Kg	10	XFC9790	XXX24614	
Residual Range Organics	29200		1820	565	mg/Kg	10	XFC9790	XXX24614	
5a Androstane <surr>	0	*	50-150		%	10	XFC9790	XXX24614	
n-Triacontane-d62 <surr>	0	*	50-150		%	10	XFC9790	XXX24614	

Batch Information

Analytical Batch: XFC9790
Analytical Method: AK102
Analysis Date/Time: 04/28/11 13:52
Dilution Factor: 10
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 20.364 g
Prep Extract Vol.: 5.8 mL
Container ID:1111497006-A
Analyst: LCE

Analytical Batch: XFC9790
Analytical Method: AK103
Analysis Date/Time: 04/28/11 13:52
Dilution Factor: 10
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 20.364 g
Prep Extract Vol.: 5.8 mL
Container ID:1111497006-A
Analyst: LCE

Client Sample ID: **17399-B2S1A**
SGS Ref. #: 1111497006
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 93.8

Collection Date/Time: 04/20/11 10:50
Receipt Date/Time: 04/21/11 10:25

Volatile Gas Chromatography/Mass Spectroscopy

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Tetrachloroethene	22600	1320	411	ug/Kg	100	VMS12030		
1,2-Dichloroethane-D4 <surr>	112	80-117		%	100	VMS12030		
4-Bromofluorobenzene <surr>	109	68-136		%	100	VMS12030		
Toluene-d8 <surr>	104	85-121		%	100	VMS12030		

Batch Information

Analytical Batch: VMS12030
Analytical Method: SW8260B
Analysis Date/Time: 04/26/11 01:28
Dilution Factor: 100

Initial Prep Wt./Vol.: 57.826 g
Container ID:1111497006-B
Analyst: SCL

Client Sample ID: **17399-B2S1A**
SGS Ref. #: 1111497006
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 93.8

Collection Date/Time: 04/20/11 10:50
Receipt Date/Time: 04/21/11 10:25

TCLP Volatiles GC/MS

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Tetrachloroethene	0.124 U	0.200	0.0620	mg/L	200	VMS12040	VXX22080	
1,2-Dichloroethane-D4 <surr>	100	73-120		%	200	VMS12040	VXX22080	
4-Bromofluorobenzene <surr>	116	76-120		%	200	VMS12040	VXX22080	
Toluene-d8 <surr>	99.6	80-120		%	200	VMS12040	VXX22080	

Batch Information

Analytical Batch: VMS12040
Analytical Method: SW8260B TCLP
Analysis Date/Time: 04/28/11 16:44
Dilution Factor: 200

Prep Batch: VXX22080
Prep Method: SW5030B
Prep Date/Time: 04/28/11 08:48

Initial Prep Wt./Vol.: 5 mL
Prep Extract Vol.: 5 mL
Container ID:1111497006-B
Analyst: SCL

Client Sample ID: **17399-B2S1A**
SGS Ref. #: 1111497006
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 93.8

Collection Date/Time: 04/20/11 10:50
Receipt Date/Time: 04/21/11 10:25

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	93.8			%	1	SPT8361		

Batch Information

Analytical Batch: SPT8361
Analytical Method: SM20 2540G
Analysis Date/Time: 04/22/11 16:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1111497006-A
Analyst: SLD

Client Sample ID: **17399-B2S1B**
SGS Ref. #: 1111497007
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 93.6

Collection Date/Time: 04/20/11 11:00
Receipt Date/Time: 04/21/11 10:25

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	13.1 U	21.2	6.57	mg/Kg	1	XFC9785	XXX24614	
Residual Range Organics	13.1 U	21.2	6.57	mg/Kg	1	XFC9785	XXX24614	
5a Androstane <surr>	83.8	50-150		%	1	XFC9785	XXX24614	
n-Triacontane-d62 <surr>	104	50-150		%	1	XFC9785	XXX24614	

Batch Information

Analytical Batch: XFC9785
Analytical Method: AK102
Analysis Date/Time: 04/26/11 00:54
Dilution Factor: 1
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.239 g
Prep Extract Vol.: 1 mL
Container ID:1111497007-A
Analyst: MCS

Analytical Batch: XFC9785
Analytical Method: AK103
Analysis Date/Time: 04/26/11 00:54
Dilution Factor: 1
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.239 g
Prep Extract Vol.: 1 mL
Container ID:1111497007-A
Analyst: MCS

Client Sample ID: **17399-B2S1B**
SGS Ref. #: 1111497007
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 93.6

Collection Date/Time: 04/20/11 11:00
Receipt Date/Time: 04/21/11 10:25

Volatile Gas Chromatography/Mass Spectroscopy

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Tetrachloroethene	5.69J	13.5	4.22	ug/Kg	1	VMS12030		
1,2-Dichloroethane-D4 <surr>	94	80-117		%	1	VMS12030		
4-Bromofluorobenzene <surr>	106	68-136		%	1	VMS12030		
Toluene-d8 <surr>	105	85-121		%	1	VMS12030		

Batch Information

Analytical Batch: VMS12030
Analytical Method: SW8260B
Analysis Date/Time: 04/26/11 00:55
Dilution Factor: 1

Initial Prep Wt./Vol.: 56.528 g
Container ID:1111497007-B
Analyst: SCL

Client Sample ID: **17399-B2S1B**
SGS Ref. #: 1111497007
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 93.6

Collection Date/Time: 04/20/11 11:00
Receipt Date/Time: 04/21/11 10:25

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	93.6			%	1	SPT8361		

Batch Information

Analytical Batch: SPT8361
Analytical Method: SM20 2540G
Analysis Date/Time: 04/22/11 16:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1111497007-A
Analyst: SLD

Client Sample ID: **17399-B2S1C**
SGS Ref. #: 1111497008
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 87.6

Collection Date/Time: 04/20/11 11:02
Receipt Date/Time: 04/21/11 10:25

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	288	198	61.3	mg/Kg	1	XFC9787	XXX24614	
Residual Range Organics	4500	198	61.3	mg/Kg	1	XFC9787	XXX24614	
5a Androstane <surr>	93.8	50-150		%	1	XFC9787	XXX24614	
n-Triacontane-d62 <surr>	82.8	50-150		%	1	XFC9787	XXX24614	

Batch Information

Analytical Batch: XFC9787
Analytical Method: AK102
Analysis Date/Time: 04/27/11 18:46
Dilution Factor: 1
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.126 g
Prep Extract Vol.: 8.7 mL
Container ID:1111497008-A
Analyst: MCS

Analytical Batch: XFC9787
Analytical Method: AK103
Analysis Date/Time: 04/27/11 18:46
Dilution Factor: 1
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.126 g
Prep Extract Vol.: 8.7 mL
Container ID:1111497008-A
Analyst: MCS

Client Sample ID: **17399-B2S1C**
SGS Ref. #: 1111497008
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 87.6

Collection Date/Time: 04/20/11 11:02
Receipt Date/Time: 04/21/11 10:25

Volatile Gas Chromatography/Mass Spectroscopy

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Tetrachloroethene	15.5	15.5	4.83	ug/Kg	1	VMS12025		
1,2-Dichloroethane-D4 <surr>	92.7	80-117		%	1	VMS12025		
4-Bromofluorobenzene <surr>	104	68-136		%	1	VMS12025		
Toluene-d8 <surr>	107	85-121		%	1	VMS12025		

Batch Information

Analytical Batch: VMS12025
Analytical Method: SW8260B
Analysis Date/Time: 04/22/11 19:13
Dilution Factor: 1

Initial Prep Wt./Vol.: 59.824 g
Container ID:1111497008-B
Analyst: JPI

Client Sample ID: **17399-B2S1C**
SGS Ref. #: 1111497008
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 87.6

Collection Date/Time: 04/20/11 11:02
Receipt Date/Time: 04/21/11 10:25

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	87.6			%	1	SPT8361		

Batch Information

Analytical Batch: SPT8361
Analytical Method: SM20 2540G
Analysis Date/Time: 04/22/11 16:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1111497008-A
Analyst: SLD

Client Sample ID: **17399-B3S1A**
SGS Ref. #: 1111497009
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 95.9

Collection Date/Time: 04/20/11 11:25
Receipt Date/Time: 04/21/11 10:25

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	106	103	32.0	mg/Kg	5	XFC9790	XXX24614	
Residual Range Organics	1110	103	32.0	mg/Kg	5	XFC9790	XXX24614	
5a Androstane <surr>	82	50-150		%	5	XFC9790	XXX24614	
n-Triacontane-d62 <surr>	122	50-150		%	5	XFC9790	XXX24614	

Batch Information

Analytical Batch: XFC9790
Analytical Method: AK102
Analysis Date/Time: 04/28/11 16:52
Dilution Factor: 5
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.315 g
Prep Extract Vol.: 1 mL
Container ID:1111497009-A
Analyst: LCE

Analytical Batch: XFC9790
Analytical Method: AK103
Analysis Date/Time: 04/28/11 16:52
Dilution Factor: 5
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.315 g
Prep Extract Vol.: 1 mL
Container ID:1111497009-A
Analyst: LCE

Client Sample ID: **17399-B3S1A**
SGS Ref. #: 1111497009
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 95.9

Collection Date/Time: 04/20/11 11:25
Receipt Date/Time: 04/21/11 10:25

Volatile Gas Chromatography/Mass Spectroscopy

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Tetrachloroethene	9.19J	19.1	5.97	ug/Kg	1	VMS12025		
1,2-Dichloroethane-D4 <surr>	97.6	80-117		%	1	VMS12025		
4-Bromofluorobenzene <surr>	98.7	68-136		%	1	VMS12025		
Toluene-d8 <surr>	111	85-121		%	1	VMS12025		

Batch Information

Analytical Batch: VMS12025
Analytical Method: SW8260B
Analysis Date/Time: 04/23/11 01:56
Dilution Factor: 1

Initial Prep Wt./Vol.: 36.069 g
Container ID:1111497009-B
Analyst: JPI

Client Sample ID: **17399-B3S1A**
SGS Ref. #: 1111497009
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 95.9

Collection Date/Time: 04/20/11 11:25
Receipt Date/Time: 04/21/11 10:25

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	95.9			%	1	SPT8361		

Batch Information

Analytical Batch: SPT8361
Analytical Method: SM20 2540G
Analysis Date/Time: 04/22/11 16:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1111497009-A
Analyst: SLD

Client Sample ID: **17399-B3S1B**
SGS Ref. #: 1111497010
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 88.5

Collection Date/Time: 04/20/11 11:30
Receipt Date/Time: 04/21/11 10:25

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	13.9 U	22.4	6.95	mg/Kg	1	XFC9785	XXX24614	
Residual Range Organics	13.9 U	22.4	6.95	mg/Kg	1	XFC9785	XXX24614	
5a Androstane <surr>	85.5	50-150		%	1	XFC9785	XXX24614	
n-Triacontane-d62 <surr>	106	50-150		%	1	XFC9785	XXX24614	

Batch Information

Analytical Batch: XFC9785
Analytical Method: AK102
Analysis Date/Time: 04/26/11 01:04
Dilution Factor: 1
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.248 g
Prep Extract Vol.: 1 mL
Container ID:1111497010-A
Analyst: MCS

Analytical Batch: XFC9785
Analytical Method: AK103
Analysis Date/Time: 04/26/11 01:04
Dilution Factor: 1
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.248 g
Prep Extract Vol.: 1 mL
Container ID:1111497010-A
Analyst: MCS

Client Sample ID: **17399-B3S1B**
SGS Ref. #: 1111497010
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 88.5

Collection Date/Time: 04/20/11 11:30
Receipt Date/Time: 04/21/11 10:25

Volatile Gas Chromatography/Mass Spectroscopy

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Tetrachloroethene	8.50J	13.7	4.28	ug/Kg	1	VMS12025		
1,2-Dichloroethane-D4 <surr>	95.3	80-117		%	1	VMS12025		
4-Bromofluorobenzene <surr>	104	68-136		%	1	VMS12025		
Toluene-d8 <surr>	102	85-121		%	1	VMS12025		

Batch Information

Analytical Batch: VMS12025
Analytical Method: SW8260B
Analysis Date/Time: 04/22/11 19:46
Dilution Factor: 1

Initial Prep Wt./Vol.: 67.481 g
Container ID:1111497010-B
Analyst: JPI

Client Sample ID: **17399-B3S1B**
SGS Ref. #: 1111497010
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 88.5

Collection Date/Time: 04/20/11 11:30
Receipt Date/Time: 04/21/11 10:25

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	88.5			%	1	SPT8361		

Batch Information

Analytical Batch: SPT8361
Analytical Method: SM20 2540G
Analysis Date/Time: 04/22/11 16:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1111497010-A
Analyst: SLD

Client Sample ID: **17399-B4S1A**
SGS Ref. #: 1111497011
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 90.5

Collection Date/Time: 04/20/11 11:45
Receipt Date/Time: 04/21/11 10:25

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	59.5	21.9	6.79	mg/Kg	1	XFC9787	XXX24614	
Residual Range Organics	576	21.9	6.79	mg/Kg	1	XFC9787	XXX24614	
5a Androstane <surr>	86.6	50-150		%	1	XFC9787	XXX24614	
n-Triacontane-d62 <surr>	91.8	50-150		%	1	XFC9787	XXX24614	

Batch Information

Analytical Batch: XFC9787
Analytical Method: AK102
Analysis Date/Time: 04/27/11 19:28
Dilution Factor: 1
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.274 g
Prep Extract Vol.: 1 mL
Container ID:1111497011-A
Analyst: MCS

Analytical Batch: XFC9787
Analytical Method: AK103
Analysis Date/Time: 04/27/11 19:28
Dilution Factor: 1
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.274 g
Prep Extract Vol.: 1 mL
Container ID:1111497011-A
Analyst: MCS

Client Sample ID: **17399-B4S1A**
SGS Ref. #: 1111497011
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 90.5

Collection Date/Time: 04/20/11 11:45
Receipt Date/Time: 04/21/11 10:25

Volatile Gas Chromatography/Mass Spectroscopy

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Tetrachloroethene	10.2 U	16.4	5.12	ug/Kg	1	VMS12025		
1,2-Dichloroethane-D4 <surr>	93.6	80-117		%	1	VMS12025		
4-Bromofluorobenzene <surr>	104	68-136		%	1	VMS12025		
Toluene-d8 <surr>	106	85-121		%	1	VMS12025		

Batch Information

Analytical Batch: VMS12025
Analytical Method: SW8260B
Analysis Date/Time: 04/22/11 20:20
Dilution Factor: 1

Initial Prep Wt./Vol.: 50.104 g
Container ID:1111497011-B
Analyst: JPI

Client Sample ID: **17399-B4S1A**
SGS Ref. #: 1111497011
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 90.5

Collection Date/Time: 04/20/11 11:45
Receipt Date/Time: 04/21/11 10:25

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	90.5			%	1	SPT8361		

Batch Information

Analytical Batch: SPT8361
Analytical Method: SM20 2540G
Analysis Date/Time: 04/22/11 16:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1111497011-A
Analyst: SLD

Client Sample ID: **17399-B4S1B**
SGS Ref. #: 1111497012
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 92.8

Collection Date/Time: 04/20/11 11:50
Receipt Date/Time: 04/21/11 10:25

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	13.2 U	21.4	6.62	mg/Kg	1	XFC9785	XXX24614	
Residual Range Organics	9.80J	21.4	6.62	mg/Kg	1	XFC9785	XXX24614	
5a Androstane <surr>	85.6	50-150		%	1	XFC9785	XXX24614	
n-Triacontane-d62 <surr>	107	50-150		%	1	XFC9785	XXX24614	

Batch Information

Analytical Batch: XFC9785
Analytical Method: AK102
Analysis Date/Time: 04/26/11 01:34
Dilution Factor: 1
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.253 g
Prep Extract Vol.: 1 mL
Container ID:1111497012-A
Analyst: MCS

Analytical Batch: XFC9785
Analytical Method: AK103
Analysis Date/Time: 04/26/11 01:34
Dilution Factor: 1
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.253 g
Prep Extract Vol.: 1 mL
Container ID:1111497012-A
Analyst: MCS

Client Sample ID: **17399-B4S1B**
SGS Ref. #: 1111497012
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 92.8

Collection Date/Time: 04/20/11 11:50
Receipt Date/Time: 04/21/11 10:25

Volatile Gas Chromatography/Mass Spectroscopy

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Tetrachloroethene	9.34 U	15.0	4.67	ug/Kg	1	VMS12025		
1,2-Dichloroethane-D4 <surr>	86.9	80-117		%	1	VMS12025		
4-Bromofluorobenzene <surr>	105	68-136		%	1	VMS12025		
Toluene-d8 <surr>	108	85-121		%	1	VMS12025		

Batch Information

Analytical Batch: VMS12025
Analytical Method: SW8260B
Analysis Date/Time: 04/22/11 20:54
Dilution Factor: 1

Initial Prep Wt./Vol.: 51.658 g
Container ID:1111497012-B
Analyst: JPI

Client Sample ID: **17399-B4S1B**
SGS Ref. #: 1111497012
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 92.8

Collection Date/Time: 04/20/11 11:50
Receipt Date/Time: 04/21/11 10:25

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	92.8			%	1	SPT8361		

Batch Information

Analytical Batch: SPT8361
Analytical Method: SM20 2540G
Analysis Date/Time: 04/22/11 16:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1111497012-A
Analyst: SLD

Client Sample ID: **17399-B5S1A**
SGS Ref. #: 1111497013
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 94.7

Collection Date/Time: 04/20/11 12:30
Receipt Date/Time: 04/21/11 10:25

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	299J	459	142	mg/Kg	5	XFC9790	XXX24614	
Residual Range Organics	5520	459	142	mg/Kg	5	XFC9790	XXX24614	
5a Androstane <surr>	64.4	50-150		%	5	XFC9790	XXX24614	
n-Triacontane-d62 <surr>	113	50-150		%	5	XFC9790	XXX24614	

Batch Information

Analytical Batch: XFC9790
Analytical Method: AK102
Analysis Date/Time: 04/28/11 18:33
Dilution Factor: 5
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 29.005 g
Prep Extract Vol.: 4.2 mL
Container ID:1111497013-A
Analyst: LCE

Analytical Batch: XFC9790
Analytical Method: AK103
Analysis Date/Time: 04/28/11 18:33
Dilution Factor: 5
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 29.005 g
Prep Extract Vol.: 4.2 mL
Container ID:1111497013-A
Analyst: LCE

Client Sample ID: **17399-B5S1A**
SGS Ref. #: 1111497013
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 94.7

Collection Date/Time: 04/20/11 12:30
Receipt Date/Time: 04/21/11 10:25

Volatile Gas Chromatography/Mass Spectroscopy

Parameter	Result		LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Tetrachloroethene	7.74 U		12.4	3.87	ug/Kg	1	VMS12025		
1,2-Dichloroethane-D4 <surr>	78.9	*	80-117		%	1	VMS12025		
4-Bromofluorobenzene <surr>	104		68-136		%	1	VMS12025		
Toluene-d8 <surr>	102		85-121		%	1	VMS12025		

Batch Information

Analytical Batch: VMS12025
Analytical Method: SW8260B
Analysis Date/Time: 04/22/11 21:27
Dilution Factor: 1

Initial Prep Wt./Vol.: 59.921 g
Container ID:1111497013-B
Analyst: JPI

Client Sample ID: **17399-B5S1A**
SGS Ref. #: 1111497013
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 94.7

Collection Date/Time: 04/20/11 12:30
Receipt Date/Time: 04/21/11 10:25

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	94.7			%	1	SPT8361		

Batch Information

Analytical Batch: SPT8361
Analytical Method: SM20 2540G
Analysis Date/Time: 04/22/11 16:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1111497013-A
Analyst: SLD

Client Sample ID: **17399-B5S1B**
SGS Ref. #: 1111497014
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 92.0

Collection Date/Time: 04/20/11 12:35
Receipt Date/Time: 04/21/11 10:25

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	13.4 U	21.6	6.71	mg/Kg	1	XFC9785	XXX24614	
Residual Range Organics	13.4 U	21.6	6.71	mg/Kg	1	XFC9785	XXX24614	
5a Androstane <surr>	87.2	50-150		%	1	XFC9785	XXX24614	
n-Triacontane-d62 <surr>	112	50-150		%	1	XFC9785	XXX24614	

Batch Information

Analytical Batch: XFC9785
Analytical Method: AK102
Analysis Date/Time: 04/26/11 01:14
Dilution Factor: 1
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.142 g
Prep Extract Vol.: 1 mL
Container ID:1111497014-A
Analyst: MCS

Analytical Batch: XFC9785
Analytical Method: AK103
Analysis Date/Time: 04/26/11 01:14
Dilution Factor: 1
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.142 g
Prep Extract Vol.: 1 mL
Container ID:1111497014-A
Analyst: MCS

Client Sample ID: **17399-B5S1B**
SGS Ref. #: 1111497014
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 92.0

Collection Date/Time: 04/20/11 12:35
Receipt Date/Time: 04/21/11 10:25

Volatile Gas Chromatography/Mass Spectroscopy

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Tetrachloroethene	8.58 U	13.7	4.29	ug/Kg	1	VMS12025		
1,2-Dichloroethane-D4 <surr>	88.9	80-117		%	1	VMS12025		
4-Bromofluorobenzene <surr>	103	68-136		%	1	VMS12025		
Toluene-d8 <surr>	103	85-121		%	1	VMS12025		

Batch Information

Analytical Batch: VMS12025
Analytical Method: SW8260B
Analysis Date/Time: 04/22/11 22:01
Dilution Factor: 1

Initial Prep Wt./Vol.: 58.807 g
Container ID:1111497014-B
Analyst: JPI

Client Sample ID: **17399-B5S1B**
SGS Ref. #: 1111497014
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 92.0

Collection Date/Time: 04/20/11 12:35
Receipt Date/Time: 04/21/11 10:25

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	92.0			%	1	SPT8361		

Batch Information

Analytical Batch: SPT8361
Analytical Method: SM20 2540G
Analysis Date/Time: 04/22/11 16:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1111497014-A
Analyst: SLD

Client Sample ID: **17399-B6S1A**
SGS Ref. #: 1111497015
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 93.9

Collection Date/Time: 04/20/11 13:35
Receipt Date/Time: 04/21/11 10:25

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	47.8	30.8	9.54	mg/Kg	1	XFC9787	XXX24614	
Residual Range Organics	403	30.8	9.54	mg/Kg	1	XFC9787	XXX24614	
5a Androstane <surr>	87.8	50-150		%	1	XFC9787	XXX24614	
n-Triacontane-d62 <surr>	70.8	50-150		%	1	XFC9787	XXX24614	

Batch Information

Analytical Batch: XFC9787
Analytical Method: AK102
Analysis Date/Time: 04/27/11 19:49
Dilution Factor: 1
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 20.766 g
Prep Extract Vol.: 1 mL
Container ID:1111497015-A
Analyst: MCS

Analytical Batch: XFC9787
Analytical Method: AK103
Analysis Date/Time: 04/27/11 19:49
Dilution Factor: 1
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 20.766 g
Prep Extract Vol.: 1 mL
Container ID:1111497015-A
Analyst: MCS

Client Sample ID: **17399-B6S1A**
SGS Ref. #: 1111497015
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 93.9

Collection Date/Time: 04/20/11 13:35
Receipt Date/Time: 04/21/11 10:25

Volatile Gas Chromatography/Mass Spectroscopy

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Tetrachloroethene	9.76 U	15.6	4.88	ug/Kg	1	VMS12025		
1,2-Dichloroethane-D4 <surr>	97.7	80-117		%	1	VMS12025		
4-Bromofluorobenzene <surr>	102	68-136		%	1	VMS12025		
Toluene-d8 <surr>	107	85-121		%	1	VMS12025		

Batch Information

Analytical Batch: VMS12025
Analytical Method: SW8260B
Analysis Date/Time: 04/22/11 22:34
Dilution Factor: 1

Initial Prep Wt./Vol.: 47.418 g
Container ID:1111497015-B
Analyst: JPI

Client Sample ID: **17399-B6S1A**
SGS Ref. #: 1111497015
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 93.9

Collection Date/Time: 04/20/11 13:35
Receipt Date/Time: 04/21/11 10:25

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	93.9			%	1	SPT8361		

Batch Information

Analytical Batch: SPT8361
Analytical Method: SM20 2540G
Analysis Date/Time: 04/22/11 16:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1111497015-A
Analyst: SLD

Client Sample ID: **17399-B6S1B**
SGS Ref. #: 1111497016
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 94.8

Collection Date/Time: 04/20/11 13:40
Receipt Date/Time: 04/21/11 10:25

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	13.0 U	21.0	6.52	mg/Kg	1	XFC9785	XXX24614	
Residual Range Organics	13.0 U	21.0	6.52	mg/Kg	1	XFC9785	XXX24614	
5a Androstane <surr>	85.7	50-150		%	1	XFC9785	XXX24614	
n-Triacontane-d62 <surr>	95.3	50-150		%	1	XFC9785	XXX24614	

Batch Information

Analytical Batch: XFC9785
Analytical Method: AK102
Analysis Date/Time: 04/26/11 01:25
Dilution Factor: 1
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.082 g
Prep Extract Vol.: 1 mL
Container ID:1111497016-A
Analyst: MCS

Analytical Batch: XFC9785
Analytical Method: AK103
Analysis Date/Time: 04/26/11 01:25
Dilution Factor: 1
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.082 g
Prep Extract Vol.: 1 mL
Container ID:1111497016-A
Analyst: MCS

Client Sample ID: **17399-B6S1B**
SGS Ref. #: 1111497016
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 94.8

Collection Date/Time: 04/20/11 13:40
Receipt Date/Time: 04/21/11 10:25

Volatile Gas Chromatography/Mass Spectroscopy

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Tetrachloroethene	9.90 U	15.9	4.95	ug/Kg	1	VMS12025		
1,2-Dichloroethane-D4 <surr>	83	80-117		%	1	VMS12025		
4-Bromofluorobenzene <surr>	103	68-136		%	1	VMS12025		
Toluene-d8 <surr>	107	85-121		%	1	VMS12025		

Batch Information

Analytical Batch: VMS12025
Analytical Method: SW8260B
Analysis Date/Time: 04/22/11 23:08
Dilution Factor: 1

Initial Prep Wt./Vol.: 45.509 g
Container ID:1111497016-B
Analyst: JPI

Client Sample ID: **17399-B6S1B**
SGS Ref. #: 1111497016
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 94.8

Collection Date/Time: 04/20/11 13:40
Receipt Date/Time: 04/21/11 10:25

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	94.8			%	1	SPT8361		

Batch Information

Analytical Batch: SPT8361
Analytical Method: SM20 2540G
Analysis Date/Time: 04/22/11 16:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1111497016-A
Analyst: SLD

Client Sample ID: **17399-SS4**
SGS Ref. #: 1111497017
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 90.3

Collection Date/Time: 04/20/11 14:25
Receipt Date/Time: 04/21/11 10:25

Semivolatile Organic Fuels Department

Parameter	Result		LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	504		203	62.8	mg/Kg	1	XFC9790	XXX24614	
Residual Range Organics	5360		203	62.8	mg/Kg	1	XFC9790	XXX24614	
5a Androstane <surr>	108		50-150		%	1	XFC9790	XXX24614	
n-Triacontane-d62 <surr>	0	*	50-150		%	1	XFC9790	XXX24614	

Batch Information

Analytical Batch: XFC9790
Analytical Method: AK102
Analysis Date/Time: 04/28/11 18:13
Dilution Factor: 1
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.153 g
Prep Extract Vol.: 9.2 mL
Container ID:1111497017-A
Analyst: LCE

Analytical Batch: XFC9790
Analytical Method: AK103
Analysis Date/Time: 04/28/11 18:13
Dilution Factor: 1
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.153 g
Prep Extract Vol.: 9.2 mL
Container ID:1111497017-A
Analyst: LCE

Client Sample ID: **17399-SS4**
SGS Ref. #: 1111497017
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 90.3

Collection Date/Time: 04/20/11 14:25
Receipt Date/Time: 04/21/11 10:25

Volatile Gas Chromatography/Mass Spectroscopy

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Tetrachloroethene	13.4 U	21.5	6.72	ug/Kg	1	VMS12025		
1,2-Dichloroethane-D4 <surr>	81.8	80-117		%	1	VMS12025		
4-Bromofluorobenzene <surr>	91.9	68-136		%	1	VMS12025		
Toluene-d8 <surr>	99.4	85-121		%	1	VMS12025		

Batch Information

Analytical Batch: VMS12025
Analytical Method: SW8260B
Analysis Date/Time: 04/22/11 23:42
Dilution Factor: 1

Initial Prep Wt./Vol.: 36.677 g
Container ID:1111497017-B
Analyst: JPI

Client Sample ID: **17399-SS4**
SGS Ref. #: 1111497017
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 90.3

Collection Date/Time: 04/20/11 14:25
Receipt Date/Time: 04/21/11 10:25

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	90.3			%	1	SPT8361		

Batch Information

Analytical Batch: SPT8361
Analytical Method: SM20 2540G
Analysis Date/Time: 04/22/11 16:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1111497017-A
Analyst: SLD

Client Sample ID: **17399-SS5**
SGS Ref. #: 1111497018
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 94.1

Collection Date/Time: 04/20/11 14:35
Receipt Date/Time: 04/21/11 10:25

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	13.1 U	21.2	6.57	mg/Kg	1	XFC9793	XXX24614	
Residual Range Organics	13.1 U	21.2	6.57	mg/Kg	1	XFC9793	XXX24614	
5a Androstane <surr>	78	50-150		%	1	XFC9793	XXX24614	
n-Triacontane-d62 <surr>	99.9	50-150		%	1	XFC9793	XXX24614	

Batch Information

Analytical Batch: XFC9793
Analytical Method: AK102
Analysis Date/Time: 04/29/11 17:37
Dilution Factor: 1
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.068 g
Prep Extract Vol.: 1 mL
Container ID:1111497018-A
Analyst: LCE

Analytical Batch: XFC9793
Analytical Method: AK103
Analysis Date/Time: 04/29/11 17:37
Dilution Factor: 1
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.068 g
Prep Extract Vol.: 1 mL
Container ID:1111497018-A
Analyst: LCE

Client Sample ID: **17399-SS5**
SGS Ref. #: 1111497018
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 94.1

Collection Date/Time: 04/20/11 14:35
Receipt Date/Time: 04/21/11 10:25

Volatile Gas Chromatography/Mass Spectroscopy

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Tetrachloroethene	7.76 U	12.4	3.88	ug/Kg	1	VMS12025		
1,2-Dichloroethane-D4 <surr>	90.2	80-117		%	1	VMS12025		
4-Bromofluorobenzene <surr>	101	68-136		%	1	VMS12025		
Toluene-d8 <surr>	107	85-121		%	1	VMS12025		

Batch Information

Analytical Batch: VMS12025
Analytical Method: SW8260B
Analysis Date/Time: 04/23/11 00:15
Dilution Factor: 1

Initial Prep Wt./Vol.: 61.05 g
Container ID:1111497018-B
Analyst: JPI

Client Sample ID: **17399-SS5**
SGS Ref. #: 1111497018
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 94.1

Collection Date/Time: 04/20/11 14:35
Receipt Date/Time: 04/21/11 10:25

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	94.1			%	1	SPT8361		

Batch Information

Analytical Batch: SPT8361
Analytical Method: SM20 2540G
Analysis Date/Time: 04/22/11 16:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1111497018-A
Analyst: SLD

Client Sample ID: **17399-SS6**
SGS Ref. #: 1111497019
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 92.1

Collection Date/Time: 04/20/11 14:40
Receipt Date/Time: 04/21/11 10:25

Semivolatile Organic Fuels Department

Parameter	Result		LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	399J		942	292	mg/Kg	5	XFC9790	XXX24614	
Residual Range Organics	7360		942	292	mg/Kg	5	XFC9790	XXX24614	
5a Androstane <surr>	103		50-150		%	5	XFC9790	XXX24614	
n-Triacontane-d62 <surr>	0	*	50-150		%	5	XFC9790	XXX24614	

Batch Information

Analytical Batch: XFC9790
Analytical Method: AK102
Analysis Date/Time: 04/28/11 18:43
Dilution Factor: 5
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.085 g
Prep Extract Vol.: 8.7 mL
Container ID:1111497019-A
Analyst: LCE

Analytical Batch: XFC9790
Analytical Method: AK103
Analysis Date/Time: 04/28/11 18:43
Dilution Factor: 5
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.085 g
Prep Extract Vol.: 8.7 mL
Container ID:1111497019-A
Analyst: LCE

Client Sample ID: **17399-SS6**
SGS Ref. #: 1111497019
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 92.1

Collection Date/Time: 04/20/11 14:40
Receipt Date/Time: 04/21/11 10:25

Volatile Gas Chromatography/Mass Spectroscopy

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Tetrachloroethene	6.76 U	10.8	3.38	ug/Kg	1	VMS12025		
1,2-Dichloroethane-D4 <surr>	98.2	80-117		%	1	VMS12025		
4-Bromofluorobenzene <surr>	104	68-136		%	1	VMS12025		
Toluene-d8 <surr>	108	85-121		%	1	VMS12025		

Batch Information

Analytical Batch: VMS12025
Analytical Method: SW8260B
Analysis Date/Time: 04/23/11 00:49
Dilution Factor: 1

Initial Prep Wt./Vol.: 78.063 g
Container ID:1111497019-B
Analyst: JPI

Client Sample ID: **17399-SS6**
SGS Ref. #: 1111497019
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 92.1

Collection Date/Time: 04/20/11 14:40
Receipt Date/Time: 04/21/11 10:25

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	92.1			%	1	SPT8361		

Batch Information

Analytical Batch: SPT8361
Analytical Method: SM20 2540G
Analysis Date/Time: 04/22/11 16:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1111497019-A
Analyst: SLD

Client Sample ID: **17399-SS7**
SGS Ref. #: 1111497020
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 94.4

Collection Date/Time: 04/20/11 14:45
Receipt Date/Time: 04/21/11 10:25

Semivolatile Organic Fuels Department

Parameter	Result		LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	624J		737	229	mg/Kg	5	XFC9790	XXX24614	
Residual Range Organics	6220		737	229	mg/Kg	5	XFC9790	XXX24614	
5a Androstane <surr>	150		50-150		%	5	XFC9790	XXX24614	
n-Triacontane-d62 <surr>	0	*	50-150		%	5	XFC9790	XXX24614	

Batch Information

Analytical Batch: XFC9790
Analytical Method: AK102
Analysis Date/Time: 04/28/11 18:53
Dilution Factor: 5
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.168 g
Prep Extract Vol.: 7 mL
Container ID:1111497020-A
Analyst: LCE

Analytical Batch: XFC9790
Analytical Method: AK103
Analysis Date/Time: 04/28/11 18:53
Dilution Factor: 5
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.168 g
Prep Extract Vol.: 7 mL
Container ID:1111497020-A
Analyst: LCE

Client Sample ID: **17399-SS7**
SGS Ref. #: 1111497020
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 94.4

Collection Date/Time: 04/20/11 14:45
Receipt Date/Time: 04/21/11 10:25

Volatile Gas Chromatography/Mass Spectroscopy

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Tetrachloroethene	7.26 U	11.6	3.63	ug/Kg	1	VMS12025		
1,2-Dichloroethane-D4 <surr>	84.9	80-117		%	1	VMS12025		
4-Bromofluorobenzene <surr>	95.8	68-136		%	1	VMS12025		
Toluene-d8 <surr>	107	85-121		%	1	VMS12025		

Batch Information

Analytical Batch: VMS12025
Analytical Method: SW8260B
Analysis Date/Time: 04/23/11 01:23
Dilution Factor: 1

Initial Prep Wt./Vol.: 65.166 g
Container ID:1111497020-B
Analyst: JPI

Client Sample ID: **17399-SS7**
SGS Ref. #: 1111497020
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 94.4

Collection Date/Time: 04/20/11 14:45
Receipt Date/Time: 04/21/11 10:25

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	94.4			%	1	SPT8361		

Batch Information

Analytical Batch: SPT8361
Analytical Method: SM20 2540G
Analysis Date/Time: 04/22/11 16:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1111497020-A
Analyst: SLD

Client Sample ID: **17399-SS8**
SGS Ref. #: 1111497021
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 91.0

Collection Date/Time: 04/20/11 15:00
Receipt Date/Time: 04/21/11 10:25

Semivolatile Organic Fuels Department

Parameter	Result		LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	465J		656	203	mg/Kg	5	XFC9790	XXX24614	
Residual Range Organics	5930		656	203	mg/Kg	5	XFC9790	XXX24614	
5a Androstane <surr>	103		50-150		%	5	XFC9790	XXX24614	
n-Triacontane-d62 <surr>	0	*	50-150		%	5	XFC9790	XXX24614	

Batch Information

Analytical Batch: XFC9790
Analytical Method: AK102
Analysis Date/Time: 04/28/11 19:03
Dilution Factor: 5
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.135 g
Prep Extract Vol.: 6 mL
Container ID:1111497021-A
Analyst: LCE

Analytical Batch: XFC9790
Analytical Method: AK103
Analysis Date/Time: 04/28/11 19:03
Dilution Factor: 5
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.135 g
Prep Extract Vol.: 6 mL
Container ID:1111497021-A
Analyst: LCE

Client Sample ID: **17399-SS8**
SGS Ref. #: 1111497021
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 91.0

Collection Date/Time: 04/20/11 15:00
Receipt Date/Time: 04/21/11 10:25

Volatile Gas Chromatography/Mass Spectroscopy

Parameter	Result		LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Tetrachloroethene	2.87J		7.17	2.24	ug/Kg	1	VMS12030		
1,2-Dichloroethane-D4 <surr>	121	*	80-117		%	1	VMS12030		
4-Bromofluorobenzene <surr>	124		68-136		%	1	VMS12030		
Toluene-d8 <surr>	111		85-121		%	1	VMS12030		

Batch Information

Analytical Batch: VMS12030
Analytical Method: SW8260B
Analysis Date/Time: 04/26/11 00:21
Dilution Factor: 1

Initial Prep Wt./Vol.: 145.774 g
Container ID:1111497021-B
Analyst: SCL

Client Sample ID: **17399-SS8**
SGS Ref. #: 1111497021
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 91.0

Collection Date/Time: 04/20/11 15:00
Receipt Date/Time: 04/21/11 10:25

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	91.0			%	1	SPT8361		

Batch Information

Analytical Batch: SPT8361
Analytical Method: SM20 2540G
Analysis Date/Time: 04/22/11 16:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1111497021-A
Analyst: SLD

Client Sample ID: **17399-SS9**
SGS Ref. #: 1111497022
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 93.2

Collection Date/Time: 04/20/11 15:15
Receipt Date/Time: 04/21/11 10:25

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	402	205	63.6	mg/Kg	1	XFC9787	XXX24614	
Residual Range Organics	5900	205	63.6	mg/Kg	1	XFC9787	XXX24614	
5a Androstane <surr>	96	50-150		%	1	XFC9787	XXX24614	
n-Triacontane-d62 <surr>	88.9	50-150		%	1	XFC9787	XXX24614	

Batch Information

Analytical Batch: XFC9787
Analytical Method: AK102
Analysis Date/Time: 04/27/11 20:10
Dilution Factor: 1
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.121 g
Prep Extract Vol.: 9.6 mL
Container ID:1111497022-A
Analyst: MCS

Analytical Batch: XFC9787
Analytical Method: AK103
Analysis Date/Time: 04/27/11 20:10
Dilution Factor: 1
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.121 g
Prep Extract Vol.: 9.6 mL
Container ID:1111497022-A
Analyst: MCS

Client Sample ID: **17399-SS9**
SGS Ref. #: 1111497022
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 93.2

Collection Date/Time: 04/20/11 15:15
Receipt Date/Time: 04/21/11 10:25

Volatile Gas Chromatography/Mass Spectroscopy

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Tetrachloroethene	9.02 U	14.5	4.51	ug/Kg	1	VMS12024		
1,2-Dichloroethane-D4 <surr>	99.2	80-117		%	1	VMS12024		
4-Bromofluorobenzene <surr>	98.9	68-136		%	1	VMS12024		
Toluene-d8 <surr>	104	85-121		%	1	VMS12024		

Batch Information

Analytical Batch: VMS12024
Analytical Method: SW8260B
Analysis Date/Time: 04/22/11 22:18
Dilution Factor: 1

Initial Prep Wt./Vol.: 53.124 g
Container ID:1111497022-B
Analyst: JPI

Client Sample ID: **17399-SS9**
SGS Ref. #: 1111497022
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 93.2

Collection Date/Time: 04/20/11 15:15
Receipt Date/Time: 04/21/11 10:25

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	93.2			%	1	SPT8361		

Batch Information

Analytical Batch: SPT8361
Analytical Method: SM20 2540G
Analysis Date/Time: 04/22/11 16:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1111497022-A
Analyst: SLD

Client Sample ID: **17399-SS11**
SGS Ref. #: 1111497024
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 88.3

Collection Date/Time: 04/20/11 15:50
Receipt Date/Time: 04/21/11 10:25

Semivolatile Organic Fuels Department

Parameter	Result		LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	657		610	189	mg/Kg	5	XFC9790	XXX24614	
Residual Range Organics	10700		610	189	mg/Kg	5	XFC9790	XXX24614	
5a Androstane <surr>	141		50-150		%	5	XFC9790	XXX24614	
n-Triacontane-d62 <surr>	0	*	50-150		%	5	XFC9790	XXX24614	

Batch Information

Analytical Batch: XFC9790
Analytical Method: AK102
Analysis Date/Time: 04/28/11 19:13
Dilution Factor: 5
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.083 g
Prep Extract Vol.: 5.4 mL
Container ID:1111497024-A
Analyst: LCE

Analytical Batch: XFC9790
Analytical Method: AK103
Analysis Date/Time: 04/28/11 19:13
Dilution Factor: 5
Prep Batch: XXX24614
Prep Method: SW3550C
Prep Date/Time: 04/25/11 07:30
Initial Prep Wt./Vol.: 30.083 g
Prep Extract Vol.: 5.4 mL
Container ID:1111497024-A
Analyst: LCE

Client Sample ID: **17399-SS11**
SGS Ref. #: 1111497024
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)
Percent Solids: 88.3

Collection Date/Time: 04/20/11 15:50
Receipt Date/Time: 04/21/11 10:25

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	88.3			%	1	SPT8361		

Batch Information

Analytical Batch: SPT8361
Analytical Method: SM20 2540G
Analysis Date/Time: 04/22/11 16:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1111497024-A
Analyst: SLD

Client Sample ID: **TB1**
SGS Ref. #: 1111497025
Project ID: 17399-002 360 E 100th
Matrix: Soil/Solid (dry weight)

Collection Date/Time: 04/19/11 08:00
Receipt Date/Time: 04/21/11 10:25

Volatile Gas Chromatography/Mass Spectroscopy

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Tetrachloroethene	10.2 U	16.3	5.10	ug/Kg	1	VMS12030		
1,2-Dichloroethane-D4 <surr>	115	80-117		%	1	VMS12030		
4-Bromofluorobenzene <surr>	99.3	68-136		%	1	VMS12030		
Toluene-d8 <surr>	107	85-121		%	1	VMS12030		

Batch Information

Analytical Batch: VMS12030
Analytical Method: SW8260B
Analysis Date/Time: 04/25/11 18:45
Dilution Factor: 1

Initial Prep Wt./Vol.: 38.239 g
Container ID:1111497025-A
Analyst: SCL

SGS Ref.#	1021833	Method Blank	**Printed Date/Time**	05/17/2011	14:13
Client Name	Shannon & Wilson, Inc.		**Prep Batch**	XXX24614	
Project Name/#	17399-002 360 E 100th		**Method**	SW3550C	
Matrix	Soil/Solid (dry weight)		**Date**	04/25/2011	

QC results affect the following production samples:

1111497004, 1111497005, 1111497006, 1111497007, 1111497008, 1111497009, 1111497010, 1111497011, 1111497012, 1111497013, 1111497014, 1111497015, 1111497016, 1111497017, 1111497018, 1111497019, 1111497020, 1111497021, 1111497022, 1111497024

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
Semivolatile Organic Fuels Department					
Diesel Range Organics	12.4 U	20.0	6.20	mg/Kg	04/26/11
Surrogates					
5a Androstane <surr>	76.6	60-120		%	04/26/11
Batch XFC9784					
Method AK102					
Instrument HP 6890 Series II FID SV D R					
Residual Range Organics	12.4 U	20.0	6.20	mg/Kg	04/26/11
Surrogates					
n-Triacontane-d62 <surr>	100	60-120		%	04/26/11
Batch XFC9784					
Method AK103					
Instrument HP 6890 Series II FID SV D R					

SGS Ref.#	1021871	Method Blank	**Printed Date/Time**	05/17/2011 14:13
Client Name	Shannon & Wilson, Inc.		**Prep Batch**	
Project Name/#	17399-002 360 E 100th		**Method**	
Matrix	Soil/Solid (dry weight)		**Date**	

QC results affect the following production samples:

1111497001, 1111497002, 1111497003, 1111497004, 1111497005, 1111497006, 1111497007, 1111497008, 1111497009, 1111497010, 1111497011, 1111497012, 1111497013, 1111497014, 1111497015, 1111497016, 1111497017, 1111497018, 1111497019, 1111497020, 1111497021, 1111497022, 1111497024

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
Solids					
Total Solids	100			%	04/22/11
Batch SPT8361					
Method SM20 2540G					
Instrument					

SGS Ref.#	1021887	Method Blank	**Printed Date/Time**	05/17/2011 14:13
Client Name	Shannon & Wilson, Inc.		**Prep Batch**	
Project Name/#	17399-002 360 E 100th		**Method**	
Matrix	Soil/Solid (dry weight)		**Date**	

QC results affect the following production samples:

1111497022

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
Volatile Gas Chromatography/Mass Spectroscopy					
Tetrachloroethene	7.80 U	12.5	3.90	ug/Kg	04/22/11
Surrogates					
1,2-Dichloroethane-D4 <surr>	102	80-117		%	04/22/11
4-Bromofluorobenzene <surr>	101	68-136		%	04/22/11
Toluene-d8 <surr>	99.7	85-121		%	04/22/11

Batch VMS12024
Method SW8260B
Instrument HP 5890 Series II MS5 VLA

SGS Ref.#	1021948	Method Blank	**Printed Date/Time**	05/17/2011 14:13
Client Name	Shannon & Wilson, Inc.		**Prep Batch**	
Project Name/#	17399-002 360 E 100th		**Method**	
Matrix	Soil/Solid (dry weight)		**Date**	

QC results affect the following production samples:

1111497008, 1111497009, 1111497010, 1111497011, 1111497012, 1111497013, 1111497014, 1111497015, 1111497016, 1111497017, 1111497018, 1111497019, 1111497020

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
Volatile Gas Chromatography/Mass Spectroscopy					
Tetrachloroethene	7.80 U	12.5	3.90	ug/Kg	04/22/11
Surrogates					
4-Bromofluorobenzene <surr>	103	68-136		%	04/22/11
Toluene-d8 <surr>	105	85-121		%	04/22/11

Batch VMS12025
Method SW8260B
Instrument HP 5890 Series II MS5 VLA

SGS Ref.#	1022149	Method Blank	**Printed Date/Time**		05/17/2011 14:13
Client Name	Shannon & Wilson, Inc.		**Prep**	**Batch**	MXX24165
Project Name/#	17399-002 360 E 100th			**Method**	SW3050B
Matrix	Soil/Solid (dry weight)			**Date**	04/26/2011

QC results affect the following production samples:

1111497001, 1111497002, 1111497003

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
Metals by ICP/MS					
Chromium	0.240 U	0.400	0.120	mg/Kg	04/28/11
Batch	MMS6968				
Method	SW6020				
Instrument	Perkin Elmer Sciex ICP-MS P3				

SGS Ref.#	1022344	Method Blank	**Printed Date/Time**	05/17/2011 14:13
Client Name	Shannon & Wilson, Inc.		**Prep Batch**	
Project Name/#	17399-002 360 E 100th		**Method**	
Matrix	Soil/Solid (dry weight)		**Date**	

QC results affect the following production samples:

1111497006, 1111497007, 1111497021, 1111497025

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
Volatile Gas Chromatography/Mass Spectroscopy					
Tetrachloroethene	7.80 U	12.5	3.90	ug/Kg	04/25/11
Surrogates					
1,2-Dichloroethane-D4 <surr>	110	80-117		%	04/25/11
4-Bromofluorobenzene <surr>	97.2	68-136		%	04/25/11
Toluene-d8 <surr>	96.7	85-121		%	04/25/11

Batch VMS12030
Method SW8260B
Instrument HP 5890 Series II MS5 VLA

SGS Ref.#	1022417 Leaching Blank		**Printed Date/Time**	05/17/2011 14:13
Client Name	Shannon & Wilson, Inc.		**Prep Batch**	VXX22080
Project Name/#	17399-002 360 E 100th		**Method**	SW5030B
Matrix	Water (Surface, Eff., Ground)		**Date**	04/28/2011

QC results affect the following production samples:

1111497006

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
TCLP Volatiles GC/MS					
Tetrachloroethene	0.124 U	0.200	0.0620	mg/L	04/28/11
Surrogates					
1,2-Dichloroethane-D4 <surr>	100	73-120		%	04/28/11
4-Bromofluorobenzene <surr>	117	76-120		%	04/28/11
Toluene-d8 <surr>	101	80-120		%	04/28/11

Batch VMS12040
Method SW8260B TCLP
Instrument HP 5890 Series II MS3 VNA

SGS Ref.#	1022754	Method Blank	**Printed Date/Time**	05/17/2011	14:13
Client Name	Shannon & Wilson, Inc.		**Prep Batch**	VXX22080	
Project Name/#	17399-002 360 E 100th		**Method**	SW5030B	
Matrix	Water (Surface, Eff., Ground)		**Date**	04/28/2011	

QC results affect the following production samples:

1111497006

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
Volatile Gas Chromatography/Mass Spectroscopy					
Tetrachloroethene	0.000620 U	0.00100	0.000310	mg/L	04/28/11
Surrogates					
1,2-Dichloroethane-D4 <surr>	97.8	73-120		%	04/28/11
4-Bromofluorobenzene <surr>	119	76-120		%	04/28/11
Toluene-d8 <surr>	101	80-120		%	04/28/11

Batch VMS12040
Method SW8260B TCLP
Instrument HP 5890 Series II MS3 VNA

SGS Ref.#	1021872	Duplicate	**Printed Date/Time**	05/17/2011 14:13
Client Name	Shannon & Wilson, Inc.		**Prep Batch**	
Project Name/#	17399-002 360 E 100th		**Method**	
Original	1111497002		**Date**	
Matrix	Soil/Solid (dry weight)			

QC results affect the following production samples:

1111497001, 1111497002, 1111497003, 1111497004, 1111497005, 1111497006, 1111497007, 1111497008, 1111497009, 1111497010, 1111497011, 1111497012, 1111497013, 1111497014, 1111497015, 1111497016, 1111497017, 1111497018, 1111497019, 1111497020, 1111497021, 1111497022, 1111497024

Parameter	Original Result	QC Result	Units	RPD	RPD Limits	Analysis Date
Solids						
Total Solids	91.6	91.3	%	0	(< 15)	04/22/2011

Batch SPT8361
Method SM20 2540G
Instrument

SGS Ref.#	1021834 Lab Control Sample	**Printed Date/Time**	05/17/2011	14:13
	1021835 Lab Control Sample Duplicate	**Prep Batch**	XXX24614	
Client Name	Shannon & Wilson, Inc.	**Method**	SW3550C	
Project Name/#	17399-002 360 E 100th	**Date**	04/25/2011	
Matrix	Soil/Solid (dry weight)			

QC results affect the following production samples:

1111497004, 1111497005, 1111497006, 1111497007, 1111497008, 1111497009, 1111497010, 1111497011, 1111497012, 1111497013, 1111497014, 1111497015, 1111497016, 1111497017, 1111497018, 1111497019, 1111497020, 1111497021, 1111497022, 1111497024

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Semivolatile Organic Fuels Department								
Diesel Range Organics	LCS	142	85	(75-125)			167 mg/Kg	04/26/2011
	LCSD	145	87		2	(< 20)	167 mg/Kg	04/26/2011
Surrogates								
5a Androstane <surr>	LCS		73	(60-120)				04/26/2011
	LCSD		76		4			04/26/2011
Batch XFC9784 **Method** AK102 **Instrument** HP 6890 Series II FID SV D R								
Residual Range Organics	LCS	144	87	(60-120)			167 mg/Kg	04/26/2011
	LCSD	151	90		4	(< 20)	167 mg/Kg	04/26/2011
Surrogates								
n-Triacontane-d62 <surr>	LCS		97	(60-120)				04/26/2011
	LCSD		100		4			04/26/2011
Batch XFC9784 **Method** AK103 **Instrument** HP 6890 Series II FID SV D R								

SGS Ref.#	1021888	Lab Control Sample	**Printed Date/Time**	05/17/2011	14:13
			Prep Batch		
Client Name	Shannon & Wilson, Inc.		**Method**		
Project Name/#	17399-002 360 E 100th		**Date**		
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1111497022

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Gas Chromatography/Mass Spectroscopy								
Tetrachloroethene	LCS	733	98	(79-128)			750 ug/Kg	04/22/2011
Surrogates								
1,2-Dichloroethane-D4 <surr>	LCS		99	(80-117)				04/22/2011
4-Bromofluorobenzene <surr>	LCS		94	(68-136)				04/22/2011
Toluene-d8 <surr>	LCS		99	(85-121)				04/22/2011

Batch VMS12024
Method SW8260B
Instrument HP 5890 Series II MS5 VLA

SGS Ref.#	1021949 Lab Control Sample	**Printed Date/Time**	05/17/2011 14:13
		Prep Batch	
Client Name	Shannon & Wilson, Inc.	**Method**	
Project Name/#	17399-002 360 E 100th	**Date**	
Matrix	Soil/Solid (dry weight)		

QC results affect the following production samples:

1111497008, 1111497009, 1111497010, 1111497011, 1111497012, 1111497013, 1111497014, 1111497015, 1111497016, 1111497017, 1111497018, 1111497019, 1111497020

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Gas Chromatography/Mass Spectroscopy								
Tetrachloroethene	LCS	726	97	(79-128)			750 ug/Kg	04/22/2011
Surrogates								
1,2-Dichloroethane-D4 <surr>	LCS		90	(80-117)				04/22/2011
4-Bromofluorobenzene <surr>	LCS		97	(68-136)				04/22/2011
Toluene-d8 <surr>	LCS		97	(85-121)				04/22/2011

Batch VMS12025
Method SW8260B
Instrument HP 5890 Series II MS5 VLA

SGS Ref.#	1022150 Lab Control Sample	**Printed Date/Time**	05/17/2011 14:13
		Prep Batch	MXX24165
Client Name	Shannon & Wilson, Inc.	**Method**	SW3050B
Project Name/#	17399-002 360 E 100th	**Date**	04/26/2011
Matrix	Soil/Solid (dry weight)		

QC results affect the following production samples:

1111497001, 1111497002, 1111497003

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Metals by ICP/MS								
Chromium	LCS	19.0	95	(80-120)			20 mg/Kg	04/28/2011

Batch MMS6968
Method SW6020
Instrument Perkin Elmer Sciex ICP-MS P3

SGS Ref.#	1022345	Lab Control Sample	**Printed Date/Time**	05/17/2011	14:13
			Prep Batch		
Client Name	Shannon & Wilson, Inc.		**Method**		
Project Name/#	17399-002 360 E 100th		**Date**		
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1111497006, 1111497007, 1111497021, 1111497025

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Gas Chromatography/Mass Spectroscopy								
Tetrachloroethene	LCS	766	102	(79-128)			750 ug/Kg	04/25/2011
Surrogates								
1,2-Dichloroethane-D4 <surr>	LCS		110	(80-117)				04/25/2011
4-Bromofluorobenzene <surr>	LCS		95	(68-136)				04/25/2011
Toluene-d8 <surr>	LCS		102	(85-121)				04/25/2011

Batch VMS12030
Method SW8260B
Instrument HP 5890 Series II MS5 VLA

SGS Ref.#	1022755	Lab Control Sample	**Printed Date/Time**	05/17/2011	14:13
	1022760	Lab Control Sample Duplicate	**Prep Batch**	VXX22080	
Client Name	Shannon & Wilson, Inc.		**Method**	SW5030B	
Project Name/#	17399-002 360 E 100th		**Date**	04/28/2011	
Matrix	Water (Surface, Eff., Ground)				

QC results affect the following production samples:

1111497006

Parameter		QC Results	Pct Recov		LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Gas Chromatography/Mass Spectroscopy									
Tetrachloroethene	LCS	0.0250	83		(79-122)			0.0300 mg/L	04/28/2011
	LCSD	0.0232	77	*		7	(< 20)	0.0300 mg/L	04/28/2011
Surrogates									
1,2-Dichloroethane-D4 <surr>	LCS		98		(73-120)				04/28/2011
	LCSD		95			3			04/28/2011
4-Bromofluorobenzene <surr>	LCS		107		(76-120)				04/28/2011
	LCSD		105			2			04/28/2011
Toluene-d8 <surr>	LCS		101		(80-120)				04/28/2011
	LCSD		100			1			04/28/2011

Batch	VMS12040
Method	SW8260B TCLP
Instrument	HP 5890 Series II MS3 VNA

SGS Ref.#	1021889	Matrix Spike	**Printed Date/Time**	05/17/2011 14:13
	1021890	Matrix Spike Duplicate	**Prep Batch**	
			Method	
			Date	
Original	1021886			
Matrix	Solid/Soil (Wet Weight)			

QC results affect the following production samples:

1111497022

Parameter	Qualifiers	Original Result	QC Result	Pct Recov	MS/MSD Limits	RPD	RPD Limits	Spiked Amount		Analysis Date
Volatile Gas Chromatography/Mass Spectroscopy										
Tetrachloroethene	MS	14900	15100	34*	(79-128)			606	ug/Kg	04/22/2011
	MSD		15900	162*		5	(< 20)	606	ug/Kg	04/22/2011
Surrogates										
1,2-Dichloroethane-D4 <surr>	MS		576	95	(80-117)					04/22/2011
	MSD		601	99		4				04/22/2011
4-Bromofluorobenzene <surr>	MS		1470	91	(68-136)					04/22/2011
	MSD		1460	90		1				04/22/2011
Toluene-d8 <surr>	MS		608	100	(85-121)					04/22/2011
	MSD		646	107		6				04/22/2011

Batch VMS12024
Method SW8260B
Instrument HP 5890 Series II MS5 VLA

SGS Ref.#	1021951	Matrix Spike	**Printed Date/Time**	05/17/2011 14:13
	1021952	Matrix Spike Duplicate	**Prep Batch**	
			Method	
			Date	
Original	1021950			
Matrix	Solid/Soil (Wet Weight)			

QC results affect the following production samples:

1111497008, 1111497009, 1111497010, 1111497011, 1111497012, 1111497013, 1111497014, 1111497015, 1111497016, 1111497017, 1111497018, 1111497019, 1111497020

Parameter	Qualifiers		Original Result	QC Result	Pct Recov	MS/MSD Limits	RPD	RPD Limits	Spiked Amount		Analysis Date
Volatile Gas Chromatography/Mass Spectroscopy											
Tetrachloroethene		MS	14100	14000	-13*	(79-128)			606	ug/Kg	04/22/2011
		MSD		13800	-47*		2	(< 20)	606	ug/Kg	04/22/2011
Surrogates											
1,2-Dichloroethane-D4 <surr>		MS		552	91	(80-117)					04/22/2011
		MSD		494	82		11				04/22/2011
4-Bromofluorobenzene <surr>		MS		1470	91	(68-136)					04/22/2011
		MSD		1440	89		2				04/22/2011
Toluene-d8 <surr>		MS		631	104	(85-121)					04/22/2011
		MSD		604	100		4				04/22/2011

Batch	VMS12025
Method	SW8260B
Instrument	HP 5890 Series II MS5 VLA

SGS Ref.#	1022151	Matrix Spike	**Printed Date/Time**	05/17/2011 14:13
	1022152	Matrix Spike Duplicate	**Prep Batch**	MXX24165
			Method	Soils/Solids Digest for Metals b
			Date	04/26/2011
Original	1111497001			
Matrix	Soil/Solid (dry weight)			

QC results affect the following production samples:

1111497001, 1111497002, 1111497003

Parameter	Qualifiers		Original Result	QC Result	Pct Recov	MS/MSD Limits	RPD	RPD Limits	Spiked Amount		Analysis Date
Metals by ICP/MS											
Chromium		MS	37.8	61.5	113	(80-120)			21.0	mg/Kg	04/28/2011
		MSD		62.8	111		2	(< 20)	22.4	mg/Kg	04/28/2011

Batch	MMS6968
Method	SW6020
Instrument	Perkin Elmer Sciex ICP-MS P3

SGS Ref.#	1022346	Matrix Spike	**Printed Date/Time**	05/17/2011 14:13
	1022347	Matrix Spike Duplicate	**Prep Batch**	
			Method	
			Date	
Original	1111527014			
Matrix	Soil/Solid (dry weight)			

QC results affect the following production samples:

1111497006, 1111497007, 1111497021, 1111497025

Parameter	Qualifiers	Original Result	QC Result	Pct Recov	MS/MSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Gas Chromatography/Mass Spectroscopy									
Surrogates									
1,2-Dichloroethane-D4 <surr>		MS	620	109	(80-117)				04/25/2011
		MSD	606	107		2			04/25/2011
4-Bromofluorobenzene <surr>		MS	1477	97	(68-136)				04/25/2011
		MSD	1507	100		3			04/25/2011
Toluene-d8 <surr>		MS	600	106	(85-121)				04/25/2011
		MSD	586	103		2			04/25/2011

Batch VMS12030
Method SW8260B
Instrument HP 5890 Series II MS5 VLA

1111497

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

CHAIN-OF-CUSTODY RECORD

400 N. 34th Street, Suite 100
Seattle, WA 98103
(206) 632-8020

2043 Westport Center Drive
St. Louis, MO 63146-3564
(314) 392-0050

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

2055 Hill Road
Fairbanks, AK 99709
(907) 479-0600

5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907) 561-2120

2255 S.W. Canyon Road
Portland, OR 97201-2498
(503) 223-6147

1200 17th Street, Suite 1024
Denver, Co 80202
(303) 825-3800

Laboratory SGS
Attn: Steve Crupi

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

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	DRO AK102 RRO AK103	PCE EPA 8260B	TCLP PCE EPA 1311/8260B	Total Chromium EPA 6020	Hexavalent Cr EPA 7196A	VOCs EPA 8260B	Total Number of Containers	Remarks/Matrix
17399-SS1	(1) A,B	1115	4/19/11		X				X	X			Soil
17399-SS2	(2) ↓	1120	4/19/11		X				X	X			"
17399-SS3	(3) ↓	1125	4/19/11		X				X	X			"
17399-B1S1A	(4) A	0815	4/20/11		X	X							"
17399-B1S2A	(5) A	0835	4/20/11		X	X							"
17399-B2S1A	(6) A-C	1050	4/20/11		X	X	X	X					"
17399-B2S1B	(7) A,B	1100	4/20/11		X	X	X						"
17399-B2S1C	(8) ↓	1102	4/20/11		X	X	X						"
17399-B3S1A	(9)	1125	4/20/11		X	X	X						"
17399-B3S1B	(10) ↓	1130	4/20/11		X	X	X						"

Project Information	
Project Number:	17399-002
Project Name:	3600E100th NK
Contact:	Jessi Morris
Ongoing Project?	Yes ☐ No ☒
Sampler:	Jessi Morris

Sample Receipt	
Total Number of Containers	
COC Seals/Intact? Y/N/NA	
Received Good Cond./Cold	
Delivery Method: (attach shipping bill, if any)	Client

Instructions	
Requested Turnaround Time:	Standard
Special Instructions:	Quote 9747

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time: 1625	Signature: Time:	Signature: Time:
Printed Name: Jessi Morris Date: 4/21/11	Printed Name: Date:	Printed Name: Date:
Company: Shannon & Wilson	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time:	Signature: Time:	Signature: Time: 1625
Printed Name: Date:	Printed Name: Date:	Printed Name: Carmen Beebe Date: 4/21
Company:	Company:	Company: SGS

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

06-04117

F-19-91/UR

-03 13d

No. 27517

1111497

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

400 N. 34th Street, Suite 100
Seattle, WA 98103
(206) 632-8020

2055 Hill Road
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1200 17th Street, Suite 1024
Denver, Co 80202
(303) 825-3800

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

CHAIN OF CUSTODY RECORD

Laboratory SGS
Attn: Steve Crippen

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

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	DRO AK102 RRO AK103	PCE EPA 8260B					Total Number of Containers	Remarks/Matrix
17399-B4S1A	(11) A,B	1145	4/20/11		X	X	X						
17399-B4S1B	(12)	1150	4/20/11		X	X	X						
17399-B5S1A	(13)	1230	4/20/11		X	X	X						
17399-B5S1B	(14)	1235	4/20/11		X	X	X						
17399-B6S1A	(15)	1335	4/20/11		X	X	X						
17399-B6S1B	(16)	1340	4/20/11		X	X	X						
17399-SS4	(17)	1425	4/20/11		X	X	X						
17399-SS5	(18)	1435	4/20/11		X	X	X						
17399-SS6	(19)	1440	4/20/11		X	X	X						
17399-SS7	(20)	1445	4/20/11		X	X	X						

Project Information	
Project Number:	
Project Name:	
Contact:	
Ongoing Project? Yes ☐ No ☐	
Sampler:	

Sample Receipt	
Total Number of Containers	
COC Seals/Intact? Y/N/NA	
Received Good Cond./Cold	
Delivery Method:	
(attach shipping bill, if any)	

Instructions
Requested Turnaround Time:
Special Instructions:

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time: 1035	Signature: Time:	Signature: Time:
Printed Name: Jessi Morris Date: 4/21/11	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Company:
Received By: 1.	**Received By: 2.**	**Received By: 3.**
Signature: Time:	Signature: Time:	Signature: Time: 1035
Printed Name: Date:	Printed Name: Date:	Printed Name: CARMON BEANE Date: 4/21
Company:	Company:	Company: SGS

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

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F-19-91/UR

No. 27518

1111497

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

CHAIN-OF-CUSTODY RECORD

Laboratory SGS
Attn: Steve Crupi

400 N. 34th Street, Suite 100
Seattle, WA 98103
(206) 632-8020

2043 Westport Center Drive
St. Louis, MO 63146-3564
(314) 699-9660

303 Wellsian Way
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(907) 561-2120

2255 S.W. Canyon Road
Portland, OR 97201-2498
(503) 223-6147

1200 17th Street, Suite 1024
Denver, Co 80202
(303) 825-3800

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

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	DRO AK102 RRO AK103	PCB's EPA 8260B				Total Number of Containers	Remarks/Matrix
17399-SS8	(21) A,B	1500	4/20/11		X	X	X					
17399-SS9	(22) ↓	1515	4/20/11		X	X	X					
17399-SS10	(23) A	1545	4/20/11		X	X						Place ON Hold
17399-SS11	(24) ↓	1550	4/20/11		X	X						
TB1	(25) A	0900	4/19/11		X	X	X					

Project Information	Sample Receipt
Project Number:	Total Number of Containers
Project Name:	COC Seals/Intact? Y/N/NA
Contact:	Received Good Cond./Cold
Ongoing Project? Yes ☐ No ☐	Delivery Method:
Sampler:	(attach shipping bill, if any)

Instructions
Requested Turnaround Time:
Special Instructions:

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time: 1025	Signature: Time:	Signature: Time:
Printed Name: Jessi Mortis Date: 4/21/11	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time:	Signature: Time:	Signature: Time: 1025
Printed Name: Date:	Printed Name: Date:	Printed Name: CARMEN BERNE Date: 4/22
Company:	Company:	Company: SGS

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

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F-19-91/UR

No. 29586

SGS

1111497

SAMPLE RECEIPT FORM

Review Criteria:	Condition:	Comments/Action Taken:
Were **custody seals** intact? Note # & location, if applicable. COC accompanied samples?	~~Yes~~ No N/A ~~Yes~~ No N/A	
Temperature blank compliant* (i.e., 0-6°C after correction factor)? * *Note: Exemption permitted for chilled samples collected less than 8 hours ago.* Cooler ID: 1 @ -0.3 w/ Therm.ID: 13D Cooler ID: ____ @ ____ w/ Therm.ID: ____ Cooler ID: ____ @ ____ w/ Therm.ID: ____ Cooler ID: ____ @ ____ w/ Therm.ID: ____ Cooler ID: ____ @ ____ w/ Therm.ID: ____ *Note: If non-compliant, use form FS-0029 to document affected samples/analyses.* If samples are received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "**COOLER TEMP**" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled." **If temperature(s) <0°C, were all sample containers ice free?**	Yes ~~No~~ N/A Yes No N/A	Run Per Client soil, can't tell.
Delivery method (specify all that apply): ~~Client~~ USPS Alert Courier Road Runner AK Air Lynden Carlile ERA PenAir FedEx UPS NAC Other:	Note airbill/tracking # See Attached or N/A	
→ For samples received with payment, note amount ($) and cash / check / CC (circle one).		~~N/A~~
→ For samples received in FBKS, ANCH staff will verify all criteria are reviewed.		SRF Initiated by: ~~N/A~~
Do samples **match COC*** (i.e., sample IDs, dates/times collected)? * *Note: Exemption permitted if collection times differ by less than an hour; in which case, the times on the COC will be used.* Are analyses requested unambiguous?	Yes No N/A Yes No N/A	
Were samples in **good condition** (no leaks/cracks/breakage)? Packing material used (specify all that apply): Bubble Wrap Separate plastic bags Vermiculite Other:	Yes No N/A	
Were all VOA vials **free of headspace** (i.e., bubbles ≤6 mm)? Were all soil VOAs **field extracted** with MeOH+BFB? Were the bottles provided by SGS? (Note apparent exceptions.)	Yes No ~~N/A~~ Yes No N/A	
Were **proper containers** (type/mass/volume/preservative*) used? * *Note: Exemption permitted for waters to be analyzed for metals.* Were **Trip Blanks** (i.e., VOAs, LL-Hg) in cooler with samples?	Yes No N/A Yes No ~~N/A~~	
For preserved waters (other than VOA vials, LL-Mercury or microbiological analyses), was **pH verified and compliant**? If pH was adjusted, were bottles flagged (i.e., stickers)? *Refer to attached bottle sheet (form F066) for documentation.*	Yes No ~~N/A~~ Yes No N/A	
For **RUSH** or **SHORT HOLD TIME** samples, were the COC & this SRF flagged, bottles flagged (e.g., stickers) and lab notified?	Yes No N/A	
For client requested, **site-specific QC** (e.g., MS/MSD/DUP), were bottles flagged (e.g., stickers) and numbered accordingly?	Yes No N/A	
For **special handling** (e.g., "MI" or foreign soils, lab filter, limited volume, Ref Lab), were bottles/paperwork flagged (e.g., sticker)?	Yes No N/A	Hex Chrome.
Was the WO# recorded in Front Counter/Sample Receiving log? **For any question answered "No," has the PM been notified and the problem resolved (or paperwork put in their bin)?**	Yes No N/A Yes No N/A	SRF Completed by: Bottle Sheet by: PM = N/A
Was **PEER REVIEW** of sample numbering completed (i.e., compare WO# on containers to COC, container ID on containers to COC, unique lab ID on each container?)	Yes No N/A	Peer Reviewed by: Metrics:
Additional notes (if applicable):		

WO# (7 digits)	Sample # - Sample #	Container ID - Container ID	Matrix	QC	Preservative (CHECKED)	TEST GROUP	PRINT LABELS	Notes: ANOMALIES - *e.g., preservative added* or SPECIAL HANDLING - *e.g., Multi-Incremental (MI), Field Filter (FF), Lab Filter (LF), use "same jar as" (SJA) for QC, 2xMeOH, bubbles, etc.*
SAMPLE ID			TYPE		CONTAINERS	ANALYSIS		Type comments below:
1111497	001 - 003	A - A	2 Soil		N/A	S_Weigh_Out		
1111497	001 - 003	B - B	2 Soil		N/A	S_REF_LAB		
1111497	004 - 005	A - A	2 Soil		N/A	S_Weigh_Out		
1111497	006 - 006	A - A	2 Soil		N/A	S_Weigh_Out		
1111497	006 - 006	B - B	2 Soil		N/A	S_EPTOX_VOC		
1111497	006 - 006	C - C	2 Soil		MeOH+BFB *	S_GRO/VOC		
1111497	007 - 022	A - A	2 Soil		N/A	S_Weigh_Out		
1111497	007 - 022	B - B	2 Soil		MeOH+BFB *	S_GRO/VOC		
1111497	023 - 024	A - A	2 Soil		N/A	S_Weigh_Out		
1111497	025 - 025	A - A	2 Soil	Trip Blank	MeOH+BFB *	S_GRO/VOC		

SGS North America Inc.

TCLP Sample Characterization

HSN#: 1497-6B **Date:** 21 Apr '11 **Analyst:** MAK

Sample Volume (mL): 131.2y
Top: ~~0~~ % (xylene miscible)
Middle: % (water miscible)
Bottom: 100 % (solids)

Container Volume (mL): 125
Description / Notes:
Description / Notes:
Description / Notes: Rocky Soil

Percent Solids Determination:

Original Sample & Container weight (g):
Empty ~~Original~~ Container weight (g):
Clean Container weight (g):
Original Sample weight (g):
Filter weight (g):
Clean Container & Liquid weight (g):
Liquid weight (g):
Filter & Solid Sample weight (g):
Solid weight (g):

Solid % of sample:
Liquid % of sample:
Weight solids extracted (g):
Extraction Fluid:
Vol. Original Liquid Added Back (mL):
Liquid Volume (mL):
Equation: %solids= $\frac{\text{weight solid}}{\text{total weight of waste}}$ x 100

Notes:

HSN#: **Date:** **Analyst:**

Sample Volume (mL):
Top: % (xylene miscible)
Middle: % (water miscible)
Bottom: % (solids)

Container Volume (mL):
Description / Notes:
Description / Notes:
Description / Notes:

Percent Solids Determination:

Original Sample & Container weight (g):
Empty Original Container weight (g):
Clean Container weight (g):
Original Sample weight (g):
Filter weight (g):
Clean Container & Liquid weight (g):
Liquid weight (g):
Filter & Solid Sample weight (g):
Solid weight (g):

Solid % of sample:
Liquid % of sample:
Weight solids extracted (g):
Extraction Fluid:
Vol. Original Liquid Added Back (mL):
Liquid Volume (mL):
Equation: %solids= $\frac{\text{weight solid}}{\text{total weight of waste}}$ x 100

Notes:

Columbia Analytical Services, Inc.
1317 S. 13th Avenue, Kelso, WA 98626 | 360.577.7222 | 360.636.1068 (fax) | www.caslab.com

May 16, 2011 Analytical Report for Service Request No: K1103596

Forest Taylor
SGS Environmental Services, Inc.
200 W. Potter Drive
Anchorage, AK 99518-1605

RE: 1111497

Dear Forest:

Enclosed are the results of the samples submitted to our laboratory on April 26, 2011. For your reference, these analyses have been assigned our service request number K1103596.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3364. You may also contact me via Email at HHolmes@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Howard Holmes
Project Chemist

HH/jw

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value that was detected outside the quantitation range.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	In accordance with the 2007 EPA Methods Update Rule published in the Federal Register, the holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value that was detected outside the quantitation range.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value that was detected outside the quantitation range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Agency	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
Florida DOH	E87412
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DEQ	WA100010
South Carolina DHEC	61002
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	SGS Environmental Services	**Service Request No.:**	K1103596
Project:	1111497	**Date Received:**	4/26/11
Sample Matrix:	Soil		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Additional quality control analyses reported herein include: Laboratory Duplicate (DUP), Matrix/Duplicate Matrix Spike (MS/DMS), and Laboratory Control Sample (LCS).

Sample Receipt

Three soil samples were received for analysis at Columbia Analytical Services on 4/26/11. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

Hexavalent Chromium by EPA Method 7196A:
The matrix spike recovery of 14% for Hexavalent Chromium for sample 17399-SS3 was outside the CAS control limit due to the reducing characteristic of the sample matrix. As per the methodology, a tenfold dilution of the samples was prepared, analyzed, and reported. This was done simultaneously with the undiluted samples as part of CAS standard operating procedure to allow hold time to be met if reductive interference was encountered. The matrix spike recovery for the diluted samples as well as the Laboratory Control Sample (LCS) for the batch were both within control limits. No further corrective action was required.

No other anomalies associated with the analysis of these samples were observed.

Approved by Howard Holmes **Date** 5-17-11

SGS Environmental Services Inc.
CHAIN OF CUSTODY RECORD

K1103596

Locations Nationwide

Alaska, Maryland, New Jersey, New York, North Carolina, Ohio, West Virgina

www.us.sgs.com

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CLIENT: SGS - AK

CONTACT: Julie Shumway PHONE NO: 907-562-2343

PROJECT: 1111497 SITE/PWSID#:

REPORTS TO: Julie Shumway E-MAIL: julie.shumway@sgs.com

INVOICE T QUOTE

P.O. #: 1111497

SGS Reference: CAS Kelso

page 1 of 1

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX/ MATRIX CODE	# CONTAINERS	Preserv Used	SAMPLE TYPE C = COMP G = GRAB MI = Multi Incremental Samples	Hexavalent Chromium (None)									REMARKS/ LOC ID
	17399-SS1	**04/19/11**	**1115**	**S**	1		**GRA**	☒									**1111497001**
	17399-SS2	**04/19/11**	**1120**	**S**	1		**GRA**	☒									**1111497002**
	17399-SS3	**04/19/11**	**1125**	**S**	1		**GRA**	☒									**1111497003**

Collected/Relinquished By: (1) Jennifer Taylor	Date 4/25/11	Time 1115	Received By: K Smith CAS	4/26/11 1020
Relinquished By: (2)	Date	Time	Received By:	
Relinquished By: (3)	Date	Time	Received By:	
Relinquished By: (4)	Date	Time	Received For Laboratory By:	

DOD Project? YES (NO)

Cooler ID

Special Deliverable Requirements:
Level II (Data + QC)
Excel EDD

Requested Turnaround Time and-or Special Instructions:

Samples Received Cold? YES NO

Cooler TB

Temperature °C:

Chain of Custody Seal: (Circle)
INTACT BROKEN ABSENT

- 200 W. Potter Drive **Anchorage, AK 99518** Tel: (907) 562-2343 Fax: (907) 561-5301
- 5500 Business Drive **Wilmington, NC 28405** Tel: (910) 350-1903 Fax: (910) 350-1557

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC Howard

Client / Project: SGS Service Request *K11* 3596

Received: 4/21/11 Opened: 4/21/11 By: KD Unloaded: 4/21/11 By: KD

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
.5	2.0	205		1ZA86 19W 01 5804 2200	

7. Packing material used. *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Sleeves* *Other* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
15. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: SGS Environmental Services, Inc. **Service Request:** K1103596
Project: 1111497
Sample Matrix: Soil

Total Solids

Prep Method: NONE **Units:** PERCENT
Analysis Method: 160.3M **Basis:** Wet
Test Notes:

Sample Name	Lab Code	Date Collected	Date Received	Date Analyzed	Result	Result Notes
17399-SS1	K1103596-001	04/19/2011	04/26/2011	04/28/2011	87.2	
17399-SS2	K1103596-002	04/19/2011	04/26/2011	04/28/2011	90.8	
17399-SS3	K1103596-003	04/19/2011	04/26/2011	04/28/2011	88.1	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	SGS Environmental Services, Inc.	**Service Request:**	K1103596
Project:	1111497	**Date Collected:**	04/19/2011
Sample Matrix:	Soil	**Date Received:**	04/26/2011
		Date Analyzed:	04/28/2011

Duplicate Sample Summary
Total Solids

Prep Method:	NONE	**Units:**	PERCENT
Analysis Method:	160.3M	**Basis:**	Wet
Test Notes:			

Sample Name	Lab Code	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
17399-SS2	K1103596-002	90.8	91.0	90.9	<1	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	SGS Environmental Services, Inc.	**Service Request:**	K1103596
Project:	1111497	**Date Collected:**	4/19/2011
Sample Matrix:	Soil	**Date Received:**	4/26/2011

Chromium, Hexavalent

Prep Method:	EPA 3060A	Units:	mg/Kg (ppm)
Analysis Method:	7196A	Basis:	Dry
Test Notes:			

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
17399-SS1	K1103596-001	0.56	0.10	1	5/4/2011	5/5/2011	0.12	J
17399-SS2	K1103596-002	0.56	0.09	1	5/4/2011	5/5/2011	0.22	J
17399-SS3	K1103596-003	0.56	0.09	1	5/4/2011	5/5/2011	0.27	J
Method Blank	K1103596-MB	0.50	0.08	1	5/4/2011	5/5/2011	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SGS Environmental Services, Inc.
Project: 1111497
Sample Matrix: Soil

Service Request: K1103596
Date Collected: 4/19/2011
Date Received: 4/26/2011
Date Extracted: NA
Date Analyzed: 5/5/2011

Duplicate Summary
Chromium, Hexavalent

Sample Name: 17399-SS3
Lab Code: K1103596-003DUP
Test Notes:

Units: mg/Kg (ppm)
Basis: Dry

Analyte	Prep Method	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Chromium, Hexavalent	EPA 3060A	7196A	0.56	0.12J	0.31J	0.215	16	

DUP/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SGS Environmental Services, Inc.
Project: 1111497
Sample Matrix: Soil

Service Request: K1103596
Date Collected: 4/19/2011
Date Received: 4/26/2011
Date Extracted:
Date Analyzed: 5/5/2011

Matrix Spike/Duplicate Matrix Spike Summary
Chromium, Hexavalent

Sample Name: 17399-SS3
Lab Code: K1103596-003MS, K1103596-003DMS
Test Notes:

Units: mg/Kg (ppm)
Basis: Dry

Analyte	Prep Method	Analysis Method	MRL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Chromium, Hexavalent	EPA 3060A	7196A	0.5	113	224	0.27	16.3	41.0	14	18	80-120	4	*

DMS/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: SGS Environmental Services, Inc.
Project: 1111497
LCS Matrix: Soil

Service Request: K1103596
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 5/5/2011

Laboratory Control Sample Summary
Chromium, Hexavalent

Sample Name: Lab Control Sample
Lab Code: K1103596-LCS
Test Notes:

Units: mg/Kg (ppm)
Basis: Dry

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	3060A	7196A	145	159	110	80-120	

LCS/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	SGS Environmental Services, Inc.	**Service Request:**	K1103596
Project:	1111497	**Date Collected:**	4/19/2011
Sample Matrix:	Soil	**Date Received:**	4/26/2011

pH

Prep Method:	NA	Units:	pH
Analysis Method:	9045C	Basis:	NA
Test Notes:			

Sample Name	Lab Code	MRL	Dilution Factor	Date Analyzed	Result	Result Notes
17399-SS3	K1103596-003	-	1	5/5/2011	8.34	

1A/052595

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	SGS Environmental Services, Inc.	**Service Request:**	K1103596
Project:	1111497	**Date Collected:**	4/19/2011
Sample Matrix:	Soil	**Date Received:**	4/26/2011

Oxidation-Reduction Potential (ORP)

Prep Method:	NA	Units:	mV
Analysis Method:	ASTM D1498-76	Basis:	NA
Test Notes:			

Sample Name	Lab Code	MRL	Dilution Factor	Date Analyzed	Result	Result Notes
17399-SS3	K1103596-003	-	1	5/5/2011	202	

1A/052595

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	SGS Environmental Services, Inc.	**Service Request:**	K1103596
Project:	1111497	**Date Collected:**	4/19/2011
Sample Matrix:	Soil	**Date Received:**	4/26/2011
		Date Prepared:	NA
		Date Analyzed:	5/5/2011

Post Matrix Spike Summary
Chromium, Hexavalent

Sample Name:	17399-SS3	Units:	mg/L (ppm)
Lab Code:	K1103596-001PS	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Chromium, Hexavalent	EPA 3060A	7196A	0.050	0.400	0.011	0.412	100	85-115	*

APPENDIX D

CONCEPTUAL SITE MODEL GRAPHIC AND SCOPING FORM

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: 360 East 100th Avenue, Anchorage, Alaska
ADEC File No. 2100.38.198

Completed By: Shannon & Wilson, Inc.
Date Completed: 6/2/2011

***Instructions*: Follow the numbered directions below. Do not consider contaminant concentrations or engineering/land use controls when describing pathways.**

(1)
Check the media that could be directly affected by the release.

(2)
For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Check additional media under (1) if the media acts as a secondary source.

(3)
Check all exposure media identified in (2).

(4)
*Check all pathways that could be complete. The pathways identified in this column **must** agree with Sections 2 and 3 of the Human Health CSM Scoping Form.*

(5)
Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, "C/F" for both current and future receptors, or "I" for insignificant exposure.

Current & Future Receptors

Media	Transport Mechanisms	Exposure Media	Exposure Pathway/Route	Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
☑ Surface Soil (0-2 ft bgs)	☑ Direct release to surface soil — check soil	☑ soil	☑ Incidental Soil Ingestion		F/C	F/C	F			
	☑ Migration to subsurface — check soil		☑ Dermal Absorption of Contaminants from Soil		F/C	F/C	F			
	☑ Migration to groundwater — check groundwater		☑ Inhalation of Fugitive Dust		F/C	F/C	F			
	☑ Volatilization — check air									
	☐ Runoff or erosion — check surface water									
	☐ Uptake by plants or animals — check biota									
	☐ Other (list):									
☑ Subsurface Soil (2-15 ft bgs)	☑ Direct release to subsurface soil — check soil	☑ groundwater	☑ Ingestion of Groundwater		F	F	F			
	☑ Migration to groundwater — check groundwater		☑ Dermal Absorption of Contaminants in Groundwater		F	F	F			
	☑ Volatilization — check air		☐ Inhalation of Volatile Compounds in Tap Water							
	☐ Uptake by plants or animals — check biota									
	☐ Other (list):									
☐ Ground-water	☐ Direct release to groundwater — check groundwater	☑ air	☑ Inhalation of Outdoor Air		F/C	F/C	F			
	☐ Volatilization — check air		☑ Inhalation of Indoor Air		F/C	F/C	F			
	☐ Flow to surface water body — check surface water		☐ Inhalation of Fugitive Dust							
	☐ Flow to sediment — check sediment									
	☐ Uptake by plants or animals — check biota									
	☐ Other (list):									
☐ Surface Water	☐ Direct release to surface water — check surface water	☐ surface water	☐ Ingestion of Surface Water							
	☐ Volatilization — check air		☐ Dermal Absorption of Contaminants in Surface Water							
	☐ Sedimentation — check sediment		☐ Inhalation of Volatile Compounds in Tap Water							
	☐ Uptake by plants or animals — check biota									
	☐ Other (list):									
☐ Sediment	☐ Direct release to sediment — check sediment	☐ sediment	☐ Direct Contact with Sediment							
	☐ Resuspension, runoff, or erosion — check surface water									
	☐ Uptake by plants or animals — check biota	☐ biota	☐ Ingestion of Wild or Farmed Foods							
	☐ Other (list):									

Revised, 10/01/2010

Print Form

Human Health Conceptual Site Model
Scoping Form

Site Name: 360 East 100th Avenue, Anchorage, Alaska

File Number: 2100.38.198

Completed by: Shannon & Wilson, Inc.

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, summary text about the CSM and a graphic depicting exposure pathways should be submitted with the site characterization work plan and updated as needed in later reports.

General Instructions: Follow the italicized instructions in each section below.

1. General Information:

Sources *(check potential sources at the site)*

- ☒ USTs
- ☒ ASTs
- ☐ Dispensers/fuel loading racks
- ☒ Drums
- ☒ Vehicles
- ☒ Landfills
- ☐ Transformers
- ☒ Other: Equipment Leaks and Spills

Release Mechanisms *(check potential release mechanisms at the site)*

- ☒ Spills
- ☒ Leaks
- ☐ Direct discharge
- ☐ Burning
- ☐ Other:

Impacted Media *(check potentially-impacted media at the site)*

- ☒ Surface soil (0-2 feet bgs*)
- ☒ Subsurface soil (>2 feet bgs)
- ☒ Air
- ☐ Sediment
- ☒ Groundwater
- ☐ Surface water
- ☐ Biota
- ☐ Other:

Receptors *(check receptors that could be affected by contamination at the site)*

- ☐ Residents (adult or child)
- ☒ Commercial or industrial worker
- ☒ Construction worker
- ☐ Subsistence harvester (i.e. gathers wild foods)
- ☐ Subsistence consumer (i.e. eats wild foods)
- ☒ Site visitor
- ☒ Trespasser
- ☐ Recreational user
- ☐ Farmer
- ☐ Other:

* bgs - below ground surface

2. Exposure Pathways: *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact -

1. Incidental Soil Ingestion

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site-specific basis.) ☒

If the box is checked, label this pathway complete: Complete

Comments:

2. Dermal Absorption of Contaminants from Soil

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Can the soil contaminants permeate the skin (see Appendix B in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

b) Ingestion -

1. Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, or are contaminants expected to migrate to groundwater in the future? ☒

Could the potentially affected groundwater be used as a current or future drinking water source? Please note, only leave the box unchecked if DEC has determined the ground-water is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350. ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

2. Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water, or are contaminants expected to migrate to surface water in the future? ☐

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities). ☐

If both boxes are checked, label this pathway complete:

Comments:

3. Ingestion of Wild and Farmed Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild or farmed foods? ☐

Do the site contaminants have the potential to bioaccumulate (see Appendix C in the guidance document)? ☐

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. soil within the root zone for plants or burrowing depth for animals, in groundwater that could be connected to surface water, etc.) ☐

If all of the boxes are checked, label this pathway complete:

Comments:

c) Inhalation-

1. Inhalation of Outdoor Air

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Are the contaminants in soil volatile (see Appendix D in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

2. Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be occupied or placed on the site in an area that could be affected by contaminant vapors? (within 30 horizontal or vertical feet of petroleum contaminated soil or groundwater; within 100 feet of non-petroleum contaminted soil or groundwater; or subject to "preferential pathways," which promote easy airflow like utility conduits or rock fractures) ☒

Are volatile compounds present in soil or groundwater (see Appendix D in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

3. **Additional Exposure Pathways:** *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Dermal exposure to contaminants in groundwater and surface water may be a complete pathway if:

- Climate permits recreational use of waters for swimming.
- Climate permits exposure to groundwater during activities, such as construction.
- Groundwater or surface water is used for household purposes, such as bathing or cleaning.

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are assumed to be protective of this pathway.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Inhalation of Volatile Compounds in Tap Water

Inhalation of volatile compounds in tap water may be a complete pathway if:

- The contaminated water is used for indoor household purposes such as showering, laundering, and dish washing.
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix D in the guidance document.)

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are assumed to be protective of this pathway.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Inhalation of Fugitive Dust

Inhalation of fugitive dust may be a complete pathway if:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers (Particulate Matter - PM_{10}). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.
- Chromium is present in soil that can be dispersed as dust particles of any size.

Generally, DEC direct contact soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because it is assumed most dust particles are incidentally ingested instead of inhaled to the lower lungs. The inhalation pathway only needs to be evaluated when very small dust particles are present (e.g., along a dirt roadway or where dusts are a nuisance). This is not true in the case of chromium. Site specific cleanup levels will need to be calculated in the event that inhalation of dust containing chromium is a complete pathway at a site.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during some recreational, subsistence, or industrial activity. People then incidentally ingest sediment from normal hand-to-mouth activities. In addition, dermal absorption of contaminants may be of concern if the the contaminants are able to permeate the skin (see Appendix B in the guidance document). This type of exposure should be investigated if:

- Climate permits recreational activities around sediment.
- The community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

Generally, DEC direct contact soil cleanup levels in 18 AAC 75, Table B1, are assumed to be protective of direct contact with sediment.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

4. Other Comments *(Provide other comments as necessary to support the information provided in this form.)*

APPENDIX A

BIOACCUMULATIVE COMPOUNDS OF POTENTIAL CONCERN

Organic compounds are identified as bioaccumulative if they have a BCF equal to or greater than 1,000 or a log K_{ow} greater than 3.5. Inorganic compounds are identified as bioaccumulative if they are listed as such by EPA (2000). Those compounds in Table B-1 of 18 AAC 75.341 that are bioaccumulative, based on the definition above, are listed below.

Aldrin	DDT	Lead
Arsenic	Dibenzo(a,h)anthracene	Mercury
Benzo(a)anthracene	Dieldrin	Methoxychlor
Benzo(a)pyrene	Dioxin	Nickel
Benzo(b)fluoranthene	Endrin	PCBs
Benzo(k)fluoranthene	Fluoranthene	
Cadmium	Heptachlor	Pyrene
Chlordane	Heptachlor epoxide	Selenium
Chrysene	Hexachlorobenzene	Silver
Copper	Hexachlorocyclopentadiene	Toxaphene
DDD	Indeno(1,2,3-c,d)pyrene	Zinc
DDE		

Because BCF values can relatively easily be measured or estimated, the BCF is frequently used to determine the potential for a chemical to bioaccumulate. A compound with a BCF greather than 1,000 is considered to bioaccumulate in tissue (EPA 2004b).

For inorganic compounds, the BCF approach has not been shown to be effective in estimating the compound's ability to bioaccumulate. Information available, either through scientific literature or site-specific data, regarding the bioaccumulative potential of an inorganic site contaminant should be used to determine if the pathway is complete.

The list was developed by including organic compounds that either have a BCF equal to or greater than 1,000 or a log K_{ow} greater than 3.5 and inorganic compounds that are listed by the United States Environmental Protection Agency (EPA) as being bioaccumulative (EPA 2000).

The list was developed by including organic compounds that either have a BCF equal to or greater than 1,000 or a log K_{ow} greater than 3.5 and inorganic compounds that are listed by the United States Environmental Protection Agency (EPA) as being bioaccumulative (EPA 2000). The BCF can also be estimated from a chemical's physical and chemical properties. A chemical's octanol-water partitioning coefficient (K_{ow}) along with defined regression equations can be used to estimate the BCF. EPA's Persistent, Bioaccumulative, and Toxic (PBT) Profiler (EPA 2004) can be used to estimate the BCF using the K_{ow} and linear regressions presented by Meylan et al. (1996). The PBT Profiler is located at http://www.pbtprofiler.net/. For compounds not found in the PBT Profiler, DEC recommends using a log K_{ow} greater than 3.5 to determine if a compound is bioaccumulative.

APPENDIX B

VOLATILE COMPOUNDS OF POTENTIAL CONCERN

A chemical is identified here as sufficiently volatile and toxic for further evaluation if the Henry's Law constant is 1 x 10^{-5} atm-m^3/mol or greater, the molecular weight is less than 200 g/mole (EPA 2004a), and the vapor concentration of the pure component posed an incremental lifetime cancer risk greater than 10^{-6} or a non-cancer hazard quotient of 0.1, or other available scientific data indicates the chemical should be considered a volatile. Chemicals that are solid at typical soil temperatures and do not sublime are generally not considered volatile.

Acetone	Mercury (elemental)
Benzene	Methyl bromide (Bromomethane)
Bis(2-chloroethyl)ether	Methyl chloride (Chloromethane)
Bromodichloromethane	Methyl ethyl ketone (MEK)
Bromoform	Methyl isobutyl ketone (MIBK)
n-Butylbenzene	Methylene bromide
sec-Butylbenzene	Methylene chloride
tert-Buytlbenzene	**1-Methylnaphthalene**
Carbon disulfide	**2-Methylnaphthalene**
Carbon tetrachloride	Methyl *tert*-butyl ether (MTBE)
Chlorobenzene	**Naphthalene**
Chlorodibromomethane (Dibromochloromethane)	Nitrobenzene
Chloroethane	n-Nitrosodimethylamine
Chloroform	**n-Propylbenzene**
2-Chlorophenol	**Styrene**
1,2-Dichlorobenzene	1,1,2,2-Tetrachlorethane
1,3-Dichlorobenzene	Tetrachloroethylene (PCE)
1,4-Dichlorobenzene	**Toluene**

Dichlorodifluoromethane	1,2,4-Trichlorobenzene
1,1-Dichloroethane	1,1,1-Trichloroethane
1,2-Dichloroethane	1,1,2-Trichloroethane
1,1-Dichloroethylene	Trichloroethane
cis-1,2-Dichloroethylene	2,4,6-Trichlorophenol
trans-1,2-Dichloroethylene	1,2,3-Trichloropropane
1,2-Dichloropropane	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)
1,3-Dichloropropane	Trichlorofluoromethane (Freon-11)
Ethylbenzene	**1,2,4-Trimethylbenzene**
Ethylene dibromide (1,2-Dibromoethane)	**1,3,5-Trimethylbenzene**
Hexachlorobenzene	Vinyl acetate
Hexachloro-1,3-butadiene	Vinyl chloride (Chloroethene)
Hexachlorocyclopentadiene	**Xylenes (total)**
Hexachloroethane	GRO (see note 3 below)
Hydrazine	DRO (see note 3 below)
Isopropylbenzene (Cumene)	RRO (see note 3 below)

Notes:

1. Bolded chemicals should be investigated as volatile compounds when petroleum is present. If fuel containing additives (e.g., 1,2-dichloroethane, ethylene dibromide, methyl *tert*-butyl ether) were spilled, these chemicals should also be investigated.
2. If a chemical is not on this list, and not in Tables B of 18 AAC 75.345, the chemical has not been evaluated for volatility. Contact the ADEC risk assessor to determine if the chemical is volatile.
3. At this time, ADEC does not require evaluation of petroleum ranges GRO, DRO, or RRO for the indoor air inhalation (vapor intrusion) pathway.

APPENDIX E

"IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL/ENVIRONMENTAL REPORT"

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Attachment to and part of Report 32-1-17399-002

Date: July 2011
To: ActiveSpace, LLC
Re: Site Characterization
360 E. 100th Avenue, Anchorage, Alaska

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