EUREKA LODGE
SITE CHARACTERIZATION REPORT

MILE 128 GLENN HIGHWAY, ALASKA

ADEC File Number 210.28.006

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TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

ACRONYMS AND ABBREVIATIONS

AAC ..... Alaska Administrative Code
ADEC ..... Alaska Department of Environmental Conservation
AK101 ..... Alaska Method AK 101
AK102 ..... Alaska Method AK 102
AK103 ..... Alaska Method AK 103
AST ..... Above-ground storage tank
bgs ..... Below ground surface
BTEX ..... Benzene, toluene, ethylbenzene, and total xylenes
°C ..... Degrees Celsius
CPD ..... Crowley Petroleum Distribution, Inc.
CSM ..... Conceptual site model
CoC ..... Chain-of-custody
CS ..... Contaminated Sites
DO ..... Dissolved oxygen
DRO ..... Diesel-range organics
DTW ..... Depth-to-water
EPA ..... United States Environmental Protection Agency
ESC ..... ESC Lab Sciences, Inc.
GRO ..... Gasoline-range organics
mg/kg ..... Milligrams per kilogram
mg/L ..... Milligrams per liter
MLFA ..... Michael L. Foster & Associates
OASIS ..... OASIS Environmental, Inc.
ORP ..... Oxidation-reduction potential
PAH ..... Polynuclear aromatic hydrocarbon
PID ..... Photo-ionization detector
QA/QC ..... Quality assurance/quality control
QAR ..... Quality Assurance Report
RRO ..... Residual-range organics
SCLs ..... Soil Cleanup Levels (ADEC Method Two)
SIM ..... Selective ion monitoring
SPAR ..... Spill Prevention and Response Program
SW ..... Solid Waste
TAH ..... Total aromatic hydrocarbons
TAqH ..... Total aqueous hydrocarbons

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EXECUTIVE SUMMARY

OASIS Environmental, Inc. conducted site characterization activities at the Eureka Lodge above-ground storage (AST) tank site located near Glennallen, Alaska in June 2011. The objective of characterization activities was to evaluate the nature and extent of petroleum hydrocarbon impact to soil, groundwater, and surface water at the site related an overfill-spill by Crowley Petroleum Distribution (CPD) of unleaded gasoline at one of two ASTs located east of the Eureka Lodge. The spill occurred on June 11, 2010.

In response to the spill, Michael L. Foster & Associates, Inc. (MLFA) conducted two separate soil removals: one in June 2010; and, one in September 2010. On June 15 and 16, 2010, MLFA and CPD hand-excavated and removed impacted soil from adjacent to and below the East Tank to a depth ranging from 11 to 18 inches below ground surface (bgs). On September 28 and 29, 2010, MLFA returned to the site and conducted additional soil excavation below the east tank and an adjacent shed, which were both moved to gain access to impacted soil. MLFA excavated approximately 57 cubic yards (86 tons) of contaminated soil. The September excavation averaged 12 feet wide by 23 feet long and varied in depth from four feet bgs on the northern side to seven feet bgs throughout the remainder of the excavation. Analytical results from excavation sidewall and floor confirmation samples collected prior to back fill indicated that petroleum hydrocarbon impacts remained. Groundwater was not observed in the excavation at the time the removal was conducted.

Based on the evidence of remaining impact to soil, OASIS conducted site characterization sampling that included an attempt to delineate horizontally and vertically the impact to soil; evaluate any impact to groundwater; and, evaluate the adjacent surface water that is also used as the area's drinking water source. OASIS installed eight soil borings, each to 20 feet bgs and sampled at depths where impact was evident, or, if not evident, at the bottom of the boring. Except at two soil borings, OASIS did not observe impact to subsurface soils north and east of the ASTs. Two soil borings installed to the south indicated impact with benzene and DRO between 9 and 13 feet bgs. Soil borings were extended until either groundwater was reached or no evidence of impact was found. All borings were advanced to 20 feet. Delineation in this direct was not completed at the request of the landowner who did not want borings placed through a newly asphalted area.

At three soil-boring locations, OASIS installed permanent monitoring wells to evaluate groundwater. Of the three wells installed, groundwater was evident in only one, MW-2, located on the east side of the site. During drilling of MW-1 at the impacted south side of the site, groundwater was evident; however after completion of the well, water did not flow into the casing. The northern well, located between the surface water and the ASTs also was dry. Analytical results for MW-2, located in a clean soil area, indicated no impact to groundwater.

Analytical results for two surface water samples collected at the northern unnamed lake indicated no impact to surface water. A sheen test conducted on the shoreline did not produce sheen.

Based on the findings presented herein, impact to subsurface soil remains at the southern side of the site.

1. INTRODUCTION

This site characterization report presents the results of subsurface soil, groundwater, and surface water sampling activities conducted by OASIS Environmental, Inc. (OASIS) in May 2011 at the Eureka Lodge above-ground storage tank (AST) site located near Glennallen, Alaska,

Site assessment activities were conducted in accordance with the letter work plan *Site Characterization Work Plan; Eureka Lodge; Mile 128 Glenn Highway* dated March 3, 2011, as approved by the Alaska Department of Environmental Conservation (ADEC; OASIS 2011). The ADEC file number for the site is 210.28.006. This report was prepared in accordance with Title 18 of the Alaska Administrative Code, Chapter 75 (18 AAC 75), Article 3, entitled *Oil and Hazardous Substance Pollution Control Regulations, Discharge Reporting, Cleanup, and Disposal of Oil and Other Hazardous Substances*, revised as of October 9, 2008 (ADEC 2008) and *Site Characterization Work Plan and Reporting Guidance for Investigation of Contaminated Sites* (ADEC 2009).

The primary objective of the site assessment activities were to evaluate the nature and extent of petroleum hydrocarbon impact to subsurface soil, groundwater, and surface water resulting from a spill of supreme unleaded fuel during supply truck to tank filling operations.

The ADEC-qualified persons conducting the sample collection activities for OASIS were Ms. Ashley Hansen and Mr. Blake Delaney. Ms. Melissa Pike evaluated analytical data. Ms. Hansen and Mr. Daniel Frank conducted data interpretation and reporting.

This document outlines the technical and analytical approaches employed during fieldwork and characterizes actual contaminants detected. This document includes site background information (Section 2); investigation activities (Section 3); site observations and analytical results (Section 4); a conceptual site model (Section 5); conclusions (Section 6); and references (Section 7).

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2. SITE BACKGROUND

2.1. Site Location and Description

Eureka Lodge is located at mile 128 of the Glenn Highway, approximately a 2.5-hour drive from Anchorage, Alaska and 30 miles west of Glennallen, Alaska (Figure 1). The above ground storage tanks are located at approximately 61°56'17.39" north latitude and -147°10'20.73" west longitude, on the north side of the Glenn Highway, east of the Lodge (Figure 2). The site is located within Bureau of Land Management Public Land Survey Section 1, Township 21 North, Range 12 East, Seward Meridian.

2.2. Site Operations and History

The lodge and fuel tanks are owned and operated by the Eureka Lodge (Mr. and Mrs. Jim and Daria Fimpel). The fuel tanks are filled as needed by Crowley Petroleum Distribution (CPD). There are two fuel ASTs at the site: a west tank, with an 8,000-gallon capacity utilized for regular unleaded gasoline, and a 6,000-gallon duel compartment east tank comprised of a 2,000-gallon northern compartment used for supreme unleaded and a 4,000-gallon southern compartment used for diesel fuel. Both tanks are skid mounted.

2.3. Previous Site Investigations

2.3.1. June 2010 Removal

On June 11, 2010, during normal filling operations, CPD overfilled one of two ASTs located at the Eureka Lodge. A total of ten gallons of supreme unleaded were reported as spilled. CDP contacted Michael L. Foster & Associates, Inc. (MLFA) and an initial removal of impacted soil was conducted on June 15 and 16, 2010.

On June 15 and 16, 2010, MLFA and CPD hand-excavated and removed impacted soil from adjacent to and below the East Tank to a depth ranging from 11 to 18 inches below ground surface (bgs). Depth of excavation was limited by harder soils located beyond 18 inches bgs. Field observations and analytical results indicated that not all fuel-impacted soil was removed and that impact from a previous release event was encountered.

After conducting the June 2010 removal, MLFA collected soil samples from the excavation floor near the release center and at the north and south excavation extents. Analytical results from the excavation floor indicate gasoline-range organics (GRO), diesel-range organics (DRO), and benzene, toluene, ethyl-benzene, and total xylenes (BTEX) remain present above the associated ADEC Method Two cleanup concentrations. A total of nine super-sacks containing 13 tons of soil were shipped to Alaska Soil Recycling in Anchorage, Alaska for thermal remediation. The excavation was not backfilled; instead it was kept open but covered in anticipation of the need for further excavation and removal work.

2.3.2. September Removal

On September 28 and 29, 2010, MLFA returned to the site under contract to Crowley and conducted additional soil excavation and remedial activities. The east tank and an adjacent shed were moved temporarily to gain access to contaminated soil. MLFA excavated approximately 57 cubic yards (86 tons) of contaminated soil. The excavation material consisted primarily of fill material comprised of dry, brownish/grey silt and silty gravel from the surface to six feet bgs. Dark, grey moist silt was encountered below 6 feet bgs. Groundwater was not encountered during excavation activities. The excavation ranged from four feet bgs on the northern side to seven feet bgs throughout the remainder of the excavation. The excavation averaged 12 feet wide by 23 feet long. The excavation continued on the west wall until further excavation may have affected the stability of the adjacent AST. Excavation sidewall and floor confirmation samples collected prior to back fill contained up to 21.2 milligrams per kilogram (mg/kg) benzene, 604 mg/kg GRO, 19.2 mg/kg ethylbenzene, 84.7 mg/kg xylenes, and 10,900 mg/kg DRO.

The excavation was backfilled with clean material on September 30, 2010. Polyethylene sheeting was placed along the excavation walls prior to backfilling to delineate the clean backfill extents. ADEC assigned spill number 10239916202 to the site and transferred site administration from Spill Prevention and Response Program (SPAR) to the Contaminated Sites (CS) program within ADEC.

2.4. Geology and Hydrogeology

Soil at the site consists primarily of dense, brown silt with fines and approximately 15% fine gravel. Groundwater is not used for drinking water at the site. A past attempt to install a groundwater drinking water well indicated no productive aquifer to 150 feet bgs. OASIS did encounter shallow unconfined groundwater as evident by water accumulation in one of the three groundwater monitoring wells at the site.

2.5. Site Assessment Objectives

The scope of the project is to characterize the nature and extent of petroleum hydrocarbon impact to soil, groundwater, and surface water at the Eureka Lodge AST Tank Site (Figure 2). OASIS's approach will comply with ADEC criteria for implementing this objective. The following tasks will be performed to meet this objective:

- Evaluate the potential vertical and horizontal impacts to the soil and groundwater by using direct push technology (Geoprobe®) to screen soils from the surface to groundwater using continuous MacroCore® samplers;
- Install a maximum of 20 soil borings to delineate the potential impact to the subsurface soil;
- Field screen the length of each 5-foot MacroCore® sample "in situ" using a photo-ionization detector (PID);

- Collect soil samples for off-site laboratory analysis from the depth with the highest PID result or, if no significant response is indicated by the PID, from the groundwater interface;
- Install and sample three permanent groundwater-monitoring wells;
- Collect two surface water samples at the south shore of the unnamed lake; alternatively, one surface water sample may be substituted for a sample from the "well" that is located within the lake itself.
- Conduct an elevation survey to determine the relative elevation of groundwater in each well, the surface water elevation of the unnamed lake to the north will also be recorded;
- Prepare a report detailing the results of field screening, and off-site analytical data as compared to relevant ADEC soil, groundwater, and surface water criteria.

2.6. Regulatory Standards

Analytical results are compared to relevant State of Alaska cleanup criteria. The State of Alaska, through ADEC, has established cleanup criteria for petroleum-contaminated sites. Cleanup standards are defined in 18 AAC 75, Article 3, entitled *Oil and Hazardous Substance Pollution Control Regulations, Discharge Reporting, Cleanup, and Disposal of Oil and Other Hazardous Substances* (ADEC 2008). For this report, soil sample results are compared to ADEC Method Two soil cleanup levels found in Tables B1 and B2 of 18 AAC 75.341. OASIS utilized the most conservative cleanup values (for sites in areas receiving less than 40 inches of rain) when evaluating each contaminant of concern. Groundwater analysis results are evaluated against the cleanup levels listed in 18 AAC 75.345, Table C. The applicable ADEC soil and groundwater cleanup levels are provided with the sample results on sample summary tables.

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3. SITE ASSESSMENT ACTIVITIES

This section describes field activities conducted in support of the Eureka Lodge site assessment objectives. Deviations from the work plan include the following:

- Only eight of the maximum 20 soil borings were installed due to a request made by the lodge owners not penetrate the newly asphalt finished parking lot south of the tanks.
- Due to over site by the field team, PAH samples were not collected from the three soil borings closest to the east tank, as stated in the work plan. Analysis of groundwater and surface water did not indicate the presence of PAHs in those media.
- Only one (MW-2) of the three permanent groundwater monitoring wells were sampled due to the absence of water in the wells located north and south of the ASTs.

A summary of sample collection and analyses by date, time, location, and matrix is provided in Table 1. Figure 3 presents the 2011 soil bore locations and analytical results. Figure 4 depicts the three permanent monitoring well locations, the sample analytical results from MW-2, and the surface water sample locations and associated analytical results.

Monitoring well construction and land survey details are provided in Table 2 for each of the three permanent wells installed as part of this field effort. Relative groundwater and surface water elevations, based on an arbitrarily elevation datum, are presented in Table 3. Field gathered water quality parameters are presented in Table 4. Table 5 presents the soil analytical results, Table 6 presents the groundwater analytical results, and Table 7 presents the surface water analytical results.

Field notes and field-generated forms are included as Appendix A. A Photographic Log is included as Appendix B. Draft soil boring logs are included as Appendix C.

3.1. Soil Borings

A total of eight soil borings were drilled using Geoprobe® direct-push technology. The soil borings were sampled using continuous MacroCore® samplers in 5-foot increments. Soil borings were drilled to a depth of 20 feet bgs. Prior to collecting samples for off-site analysis, the length of each 5-foot MacroCore® sample was screened *in-situ* using a PID. At each boring location, one soil sample was collected: one from where groundwater interfaced with soil or from where any hydrocarbon odor or high PID readings were found. Soil samples were alternatively collected from the bottom of each boring where clean soils were evident to confirm the absence of impact vertically.

3.1.1. Field Screening

Soil borings were field screened *in-situ* using a PID. The PID was calibrated to 100 parts per million (ppm) isobutylene at the beginning of each day. *In-situ* field screening was conducted by placing the PID probe within ½ inch from the soil contained within the soil

bore core liner. A dedicated stainless-steel spoon was used to open soils within the MacroCore® during field screening *In-situ*. *In-situ* PID results were noted on the draft soil boring log form for each boring (Appendix C). At locations where samples were collected for off-site analysis, the associated PID result is reported along with laboratory analytical results in the soil data summary table.

3.1.2. Soil Sampling

A total of ten project soil samples were collected for laboratory analysis. Field personnel used dedicated personal protective equipment and single-use, disposable sampling scoops to prevent cross-contamination between samples. Soil samples were submitted for analysis GRO, DRO, residual-range organic (RRO), and BTEX.

The field team collected soils intended for volatile analyses (BTEX and GRO) first, without homogenization. Personnel collected a minimum of 25 grams of soil and placed it into pre-tared jars with a Teflon®-lined septum fused to the lid. Samplers then added the contents of one vial containing 25 milliliters of methanol to the jar, completely submerging the soil sample in order to preserve it. The remaining sample fraction was then homogenized, taking care to remove rocks larger than approximately ¼ inch and any vegetative material.

Soil samples collected for DRO and RRO analysis were homogenized and placed into laboratory-supplied, unpreserved sample jars. Sample jars were labeled with field sample identification numbers, the date and times of collection, and analyses requested.

Duplicate samples were collected at a frequency of 10% per method for quality assurance/quality control (QA/QC) purposes. Laboratory prepared trip blanks accompanied all BTEX and GRO samples from the laboratory, to the field, and back to the laboratory.

Field personnel placed all soil samples into a cooler with gel ice, maintaining the required temperature range of 4 degrees Celsius (°C) ± 2°C. Chain-of-custody (CoC) procedures were followed. Table 1 summarizes the soil samples collected, locations, and requested analyses.

3.2. Groundwater Sampling

OASIS collected groundwater samples from only one (MW-2) of the three the permanent monitoring wells installed as no groundwater was found in the remaining wells. Wells where allowed 72 hours to charge prior to demobilization of the field team.

Prior to sampling, each well was gauged for depth-to-groundwater (DTW). No free-phase hydrocarbons were encountered at any of the well locations. General construction details and relative DTW are presented in Table 2. Table 3 presents groundwater elevation calculations for the permanent monitoring wells.

After recording the DTW measurements, wells were purged using low-flow techniques that minimize purge volume and well draw down. The field team monitored and recorded on low-flow groundwater data sheets (Appendix A) successive readings for pH, temperature, specific conductivity, and dissolved oxygen (DO). Prior to sampling, a final

set of groundwater quality parameters were recorded, additionally including values for oxidation-reduction potential (ORP). The field team monitored pH (within ± 0.1), temperature (within 0.2°C), conductivity (within 3%), and DO (within ± 10%) to monitor for well water stability. Final readings for each field-gathered water quality parameter, including field observations of groundwater color and odor, are presented in Table 4.

After purging, samples were collected for laboratory analysis. All groundwater samples were submitted for analysis GRO, DRO, RRO, BTEX, and poly aromatic hydrocarbons (PAHs).

Water samples were collected directly into laboratory provided and, as appropriate, pre-preserved sample containers. Sample containers were labeled with field sample identification numbers, the date and times of collection, and analyses requested.

Duplicate samples were collected at a frequency of 10% per method for QA/QC purposes. Laboratory prepared trip blanks accompanied all BTEX and GRO samples from the laboratory, to the field, and back to the laboratory.

Field personnel placed all groundwater samples into a cooler with gel ice, maintaining the required temperature range of 4°C ± 2°C. CoC procedures were followed. Table 1 summarizes the groundwater samples collected, locations, and requested analyses.

Laboratory analytical results are discussed in Section 4.

3.3. Surface Water Sampling

The field team collected on surface water sample from the south shore of the unmanned lake located approximately 40 feet north of the ASTs and one sample from the water collected from the well intake prior to the water entering the water treatment system. Prior to sampling the south shoreline of the unnamed lake was evaluated for sheen, with no sheen noted by the field team. Samples were analyzed for GRO, DRO, RRO, BTEX, and PAHs. The concentration of total aromatic hydrocarbons (TAH) and total aqueous hydrocarbons (TAqH) was calculated and is presented in Table 7.

Field personnel placed all surface water samples into a cooler with gel ice, maintaining the required temperature range of 4°C ± 2°C. CoC procedures were followed. Table 1 summarizes the surface water samples collected, locations, and requested analyses.

Laboratory analytical results are discussed in Section 4.

3.3.1. Monitoring Well Survey

The measuring point elevations and top-of-casing elevations of the permanent monitoring wells and the elevation of the unnamed lake were surveyed by OASIS personnel using a Trimble Laser Level LL500 and station rod with a laser receiver HR550. An arbitrary datum set at 100 feet was assigned for conducting the vertical elevation survey. Swing ties were used to locate the horizontal positions of monitoring wells and soil borings.

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4. SITE OBSERVATIONS AND ANALYTICAL RESULTS

This section presents a discussion of field observations and the analytical results of soil, groundwater, and surface water sampling. A summary of samples collected and analyses performed is presented in Table 1. Groundwater well construction details are presented in Table 2. Survey data is presented in Table 3. Field-gathered water quality data are summarized in Table 4. Soil analytical results along with the regulatory standards used to evaluate the analytical data are presented in Table 5 and on Figure 3. Groundwater analytical results along with the regulatory standards used to evaluate the analytical data are presented in Table 6 and on Figure 4. Surface water analytical results along with the regulatory standards used to evaluate the analytical data are presented in Table 7 and on Figure 4.

Laboratory analytical results and ADEC checklists (ADEC 2010a) for each sample delivery group are provided in Appendix D. The completed Quality Assurance Report (QAR) is included as Appendix E.

4.1. Field Observations

4.1.1. Soil Lithology Observations

Soil borings were drilled in June 2011. Soil logs from each boring characterized soil at the site as generally consisting of dense, brown silt with fines, and 0-15% fine gravel. Draft soil boring logs for the June 2011 drilling are provided in Appendix C.

4.1.2. Groundwater Table Observations

Groundwater was present in MW-2, located east of the ASTs, at approximately 13.5 feet bgs. MW-1 and MW-3, located south and north of the ASTs, respectively, were dry. Although there was no soil/water interface indicated on the boring logs for SB-02/MW-1 and SB-07/MW-3, prior to well installation, groundwater was measured in the open boring at 15.32 feet bgs in MW-1 with a total depth measured at 18.84 feet bgs and 18.00 feet bgs in MW-3 with a total depth measured at 18.64 feet bgs. The groundwater elevation of MW-2 (based on an arbitrary datum set at 100) is lower than the surface water elevation of the unnamed lake to the north. It remains unknown if there is groundwater flow across the site. Two of the three wells installed were dry. No separate-phase hydrocarbons were observed at MW-2 during well installation, development, purging, or sampling.

4.1.3. Water Quality Observations

Groundwater at MW-2 and the surface water location was clear with no odor indicated.

Utilizing a YSI® water quality meter with flow-through cell, OASIS recorded pH, temperature, conductivity, DO, and ORP. The pH in MW-2 indicated a favorable range for both aerobic and anaerobic attenuation, with the final pH reading 7.09. Conductivity was consistent during purging. The final DO value was 1.39 milligram/liter (mg/L),

indicating marginally aerobic conditions. ORP at MW-2 was below 250 millivolts, the final reading being 13.22, indicating a reducing environment.

4.2. Laboratory Analytical Results

4.2.1. Analytical Methods

Soil sample analytical results are summarized in Table 5 and on Figure 3. Groundwater analytical results are summarized in Table 6 and on Figure 4. Surface water analytical results are summarized in Table 7 and on Figure 4. All samples were submitted to the project laboratory, ESC Lab Sciences (ESC) in Mount Juliet, Tennessee, in accordance with standard CoC procedures outlined in the work plan. Duplicate samples were collected at a frequency of 10% per method and matrix for QA/QC purposes. All samples were preserved and stored at a temperature of 4°C ± 2°C prior to shipment to ESC for laboratory analysis.

Soil samples were submitted for analysis for the following target analytes using the methods specified:

- GRO/BTEX (Alaska Method AK 101 [AK101]/U.S. Environmental Protection Agency [EPA] Solid Waste (SW) Method SW8021B); and,
- DRO/RRO (Alaska Method AK 102 [AK102]/Alaska Method AK 103 [AK103]).

Groundwater and surface water samples were analyzed for the following site assessment target analytes using the methods specified:

- GRO/BTEX (AK101/EPA SW8260B); and,
- DRO/RRO (AK102/103).
- PAHs (EPA SW8270C with select ion monitoring [SIM]).

4.2.2. Soil Analytical Results

OASIS installed a total of eight soil borings to the north, east, and south of the ASTs. Soil borings could not be installed to the west of the ASTs due to infrastructure and miscellaneous debris. Additionally, stepping out to the south of the ASTs (after an odor was indicated) was not possible based on a request made by the lodge owner not to penetrate the recently applied asphalt.

All soil analytical result were reported at concentrations below associated ADEC Method Two soil cleanup levels (SCLs) with the exception of two samples. In the sample collected from 9.0-9.5 feet bgs at SB-02, DRO and benzene were detected at 4,000 and 0.049 mg/kg, above the ADEC Method Two SCL of 250 and 0.025 mg/kg, respectively. The sample collected from SB-03 from 12.5-13.5 feet bgs contained benzene that was detected above ADEC Method Two SCL of 0.025 mg/kg at 18 mg/kg in the primary sample and 16 mg/kg in the duplicate sample. The laboratory qualified this data with an E, indicating that the stated results are greater than the upper calibration limit; the actual value is known to be greater than the upper calibration range. Both SB-02 and SB-03 are located south of the ASTs.

4.2.3. Groundwater Sampling Analytical Results

Groundwater was only present at one of the three permanent groundwater well installed at the site.

Groundwater analytical results are presented in Table 6 and summarized on Figure 4.

The samples were analyzed for GRO, DRO, RRO, BTEX, and PAHs. All analytical results were reported as non-detect for GRO, RRO, BTEX, and PAHs. DRO was detected at 0.14 milligrams per liter (mg/L) in the primary sample and 0.15 mg/L in the duplicate sample, both below the ADEC groundwater cleanup level of 1.5 mg/L for DRO.

4.2.4. Surface Water Sampling Results

OASIS collected one sample from the unnamed lake located approximately 40 north of the ASTs and one sample from the spigot located in the water treatment building, before the water is processed through the treatment system. The water at the spigot is drawn from the lake from an insulated house as depicted on Figure 4. The samples were analyzed for GRO, DRO, RRO, BTEX, and PAHs. GRO, RRO, BTEX, and PAH results were reported as not detected above the method detection limits. DRO was detected in both samples at 0.051 mg/L from the spigot and 0.054 mg/L from the unnamed lake; both of which are below the method detection limit for DRO of 0.20 mg/L.

Analytical results are summarized in Table 7 and on Figure 4.

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5. CONCEPTUAL SITE MODEL

5.1. Conceptual Site Model

An updated ADEC conceptual site model (CSM) has been developed for the site based on known impacts, available site assessment results, and current soil, groundwater, and surface water analytical data presented in this report. The completed ADEC CSM scoping form and graphic are included in Appendix F. The CSM was developed in accordance with ADEC *Policy Guidance on Developing Conceptual Site Models* (ADEC 2010). The site is considered a commercial facility located at a gas station associated with the Eureka Lodge near Glennallen, Alaska.

5.1.1. Source

The spill of 10-gallons of supreme unleaded gasoline is the source of impact to surface and subsurface soil and possibly groundwater at the site. The spill occurred in June 2010, when a 6,000-gallon duel-compartment AST (East Tank) comprised of a 2,000-gallon northern compartment used for supreme unleaded and a 4,000-gallon southern compartment used for diesel fuel was overfilled. Previous releases include a release of heating oil (3.5 gallons) in 2009 at the East Tank. Soil removal was conducted at the East Tank in 2009 and twice in 2010. Clean backfill material was placed in the excavation after the 2009 removal and the second 2010 removal.

5.1.2. Impacted Media

The analytical evidence presented in the *Spill Response Remedial Action Report* (MLFA 2010) indicates that surface and subsurface soil was impacted by petroleum hydrocarbons directly below the tank. Approximately 86-tons of contaminated soil have been excavated from the site. Based on analytical results from excavation confirmation samples, soil with petroleum hydrocarbons concentrations exceeding ADEC Method Two SCLs criteria where left in place.

Based on the soil analytical results from this sampling event, DRO and benzene were detected above ADEC method two SCLs in two borings at 9.0 feet bgs and 12.5 feet bgs. Both borings are located on the south side of the tanks. The field team was unable to install additional boring further south of the tank due to the lodge owners request not to penetrate the newly applied asphalt parking lot which extends 115 feet to the south and boarders a ditch adjacent to the Glenn Highway.

Only one groundwater monitoring well (MW-2, located east of the tanks) of the three permanent monitoring wells installed was sampled due to the absence of water in MW-1 and MW-3. DRO was detected in MW-2 at 0.14 mg/L, below the ADEC Table C groundwater cleanup level of 1.5 mg/L; all other analytes were reported as non-detect.

Soil contamination at the site does not include a compound that is considered a dermal exposure risk (ADEC Policy Guidance on Developing Conceptual Site Models; Appendix B). However, PAH analysis has not been conducted in soil; therefore the potential for a dermal exposure is possible until PAH analysis is conducted. Benzene was detected in

soil at the site, which is considered a volatile of potential concern by ADEC (ADEC Policy Guidance on Developing Conceptual Site Models; Appendix D).

5.1.3. Transport Mechanisms

The impacted media is contaminated subsurface soil, secondarily; leaching from impacted soil may impact groundwater. Air may also be affected, as benzene was detected in the soil from 9-13 feet bgs. All transport mechanisms are identified in the CSM graphic included in Appendix G.

5.1.4. Exposure Media

Potential exposure media at the site include soil, groundwater, and air.

5.1.5. Human Health Exposure Routes and Receptors

The identified routes of exposure include ingestion, inhalation, and dermal contact.

Possible receptors include current and future residence, current and future commercial or industrial workers, and current and future construction workers.

The human health exposure routes via soil media are complete for current and future residence, current and future commercial and current and future industrial workers, and current and future construction workers at the site that would be engaged in or exposed to excavation activities in areas where petroleum hydrocarbons, benzene, and PAH impacts are present. The exposure routes include incidental ingestion and dermal absorption

The exposure route by ingestion via groundwater media is considered complete, however insignificant for current and future residence, current and future commercial and current and future industrial workers, and current and future construction workers. Although groundwater at the site is not used for drinking water it is reserved by the State of Alaska as a future drinking water source. Currently, the drinking water supplied to the lodge and adjacent residence is pumped and treated from the surface water body approximately 40 feet north of the site. An analytical sample was collected from the unnamed lake and from the spigot in the water treatment building before the water was processed through the treatment system. All analytes were non-detect or both the ADEC Table C groundwater cleanup levels as well as 18 AAC 70 surface water quality criteria. Surface water at the site is estimated to be upgradient of the impacted soil area as the surface water elevation is higher than the elevation of groundwater found in one well located on the south side of the tanks. Several soil borings located between the spill area and the lake indicated no impact to soil and no presence of groundwater.

The human health exposure route by absorption via groundwater media is also considered complete however insignificant for current and future residence, current and future commercial and current and future industrial workers, and current and future construction workers. Groundwater is not readily available at the site. Two of the three monitoring wells installed to 20 feet bgs at the site were dry. Analytical results from the

well that was sampled, located east of the tanks, indicate no impact to groundwater at this location.

The human health exposure route via air media is complete for current and future residence, current and future commercial and current and future industrial workers, and current and future construction workers at the site that would be engaged in or be exposed to excavation activities in areas where petroleum hydrocarbons and benzene impacts are present. The exposure route for site visitors, trespassers, or recreational users is also complete, however insignificant, due to limited exposure time. The exposure route includes inhalation of outdoor air only. Exposure by the inhalation of indoor air is considered a complete exposure route for current and future residents present in buildings located within 30 feet of the impacted soil area.

Receptors and completed pathways are presented in the ADEC CSM checklist and graphic CSM provided in Appendix F.

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6. CONCLUSIONS AND RECOMMENDATIONS

Site assessment activities were conducted by OASIS at the Eureka Lodge AST site located near Glennallen, Alaska in June 2011. A total of eight soil borings were advanced and three co-located permanent monitoring well were installed, with groundwater sampled at one well where water was present. Additionally, surface water was characterized by collecting two surface water samples. One surface water sample was collected from the unnamed lake located approximately 40 feet north of the site and one surface water sample was collected from the spigot located inside of the water treatment building, before the water is processed through the treatment system.

6.1. Conclusions

Soil

Subsurface soil is impacted below the ASTs, deeper than 7.5 feet bgs, which was the limit of the 2010 excavation. Soil boring results indicate DRO and benzene impact to soil located at 9 to 13 feet bgs along the southern side of the ASTs (soil borings SB-2 and SB-3). Horizontally, limited impact (benzene) remains on the northern side as evident from analytical results reported by MLFA for one excavation sidewall sample collected at 2 feet bgs and extends to the south under the ASTs. Delineation to the south was not conducted because of new asphalt that the lodge owner requested not be drill through. The paved area extends 115 feet to the south and boarders a ditch along the Glenn Highway. Impact to soil east and north is not evident in soil samples collected from boring in these directions.

Groundwater

Three permanent monitoring wells were installed with only one sampled due to the absence of water in the remaining two wells. The sampled well, MW-2, is located on the east side of the tanks. All groundwater analytical results for MW-2 were either non-detect or below ADEC Table C groundwater cleanup levels. The shallow groundwater at the site does not appear to be a productive aquifer. Impact to groundwater is not evident at MW-2. Due to the lack of water in the other two wells, no determination regarding groundwater flow direction can be made.

Surface Water

Analytical results for two surface water samples collected to the north of the site indicate no impact to the surface water. Also, a sheen test conducted on the south shore of the unnamed lake was negative for sheen. The lake does not appear to be impacted.

6.2. Recommendations

OASIS recommends no further site characterization or delineation of hydrocarbon impacts to soil at the site.

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7. REFERENCES

Alaska Department of Environmental Conservation (ADEC) 2008. Alaska Administrative Code*, Title 18, Environmental Conservation Chapter 75, Oil and Other Hazardous Substances Pollution Control.* October 9.

———. 2009. *Site Characterization Work Plan and Reporting Guidance for Investigation of Contaminated Sites*. September 23.

———. 2010. Policy Guidance on Developing Conceptual Site Models. October.

Michael L. Foster & Associates. 2010. *Spill Response Remedial Action Report.* 2010.

OASIS Environmental, Inc. (OASIS). 2011. *Site Characterization Work Plan, Eureka Lodge; Mile 128 Glenn Highway, Alaska.* March 2011.

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TABLES

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TABLE 1
SAMPLE COLLECTION SUMMARY
2011 Eureka Lodge Site Characterization
Crowley Maritime Corporation
Mile 128 Glenn Highway, Alaska

Location	Sample No. (11-EUR-)	Depth in Feet	Duplicate	MS/MSD	Sample Date	Sample Time	Laboratory Analysis				
							GRO (AK 101)	BTEX (EPA8260B)	DRO (AK 102)	RRO (AK 103)	PAH (EPA 8270-SIM)
Soil Samples											
SB-01	SB-01-01-SO	17.0 - 17.5			6/6/2011	1130	✓(2)	✓(2)	✓	✓	
SB-02/MW-1	SB-02-01-SO	9.0 - 9.5			6/6/2011	1235	✓(2)	✓(2)	✓	✓	
SB-03	SB-03-01-SO	19.5 - 20.0			6/6/2011	1440	✓(2)	✓(2)	✓	✓	
	SB-03-02-SO	12.5 -13.0			6/6/2011	1450	✓(2)	✓(2)	✓	✓	
	SB-20-01-SO	12.5 -13.0	✓		6/6/2011	2000	✓(2)	✓(2)	✓	✓	
SB-04	SB-04-01-SO	19.5 - 20.0		✓	6/6/2011	1550	✓(2)	✓(2)	✓	✓	
SB-05	SB-05-01-SO	19.5 - 20.0			6/6/2011	1640	✓(2)	✓(2)	✓	✓	
SB-06	SB-06-01-SO	19.5 - 20.0			6/6/2011	1710	✓(2)	✓(2)	✓	✓	
SB-07	SB-07-01-SO	19.5 - 20.0			6/6/2011	1750	✓(2)	✓(2)	✓	✓	
SB-08	SB-08-01-SO	17.0 - 17.5			6/7/2011	935	✓(2)	✓(2)	✓	✓	
Groundwater Samples											
MW-2	MW-2-01-GW	--			6/9/2011	1121	✓(1)	✓(1)	✓	✓	✓
MW-2	MW-2-02-GW	--	✓		6/9/2011	1245	✓(1)	✓(1)	✓	✓	✓
Surface Water Samples											
Well House	WH01-01-SW	--			6/7/2011	1020	✓(1)	✓(1)	✓	✓	✓
Lake	LK01-01-SW	--		✓	6/7/2011	1100	✓(1)	✓(1)	✓	✓	✓
QA Samples											
--	Trip Blank (520543)	--			NA	NA	✓	✓			
--	Trip Blank (520391)	--			6/7/2011	0950	✓	✓			

Notes: (1) = assisted with Trip Blank 520543
(2) = assisted with Trip Blank 520391

Key:
AK = Alaska
BTEX = Benzene, toluene, ethylbenzene, total xylenes
DRO = Diesel-range organics
EPA = United States Environmental Protection Agency
GRO = Gasoline-range organics
MS/MSD = Matrix spike/duplicate matrix spike
NA = not assigned
PAH = Polycyclic aromatic hydrocarbons
QA = quality assurance trip blanks for volatile fraction
RRO = Residual range organics
SIM = Selective ion monitoring

TABLE 2
MONITORING WELL CONSTRUCTION AND SURVEY DETAILS
2011 Eureka Lodge Site Characterization
Crowley Maritime Corporation
Mile 128 Glenn Highway, Alaska

Well ID	Installation Date	Well Construction Details[1]							Land Survey Details[2]		June 2011 DTW (BTOC)
		Casing Diameter (inches)	Depth to Top of Screen (bgs)	Depth to Bottom of Screen (bgs)	Screen Length	Total Depth (bgs)	Top of Screen (BTOC)	Bottom of Screen (BTOC)	Measuring Point Elevation	Ground Surface Elevation	
MW-1	6/7/2011	2	10.00	20.00	10.00	20.00	85.25	75.25	94.37	95.25	--
MW-2	6/7/2011	2	10.00	20.00	10.00	20.00	84.71	74.71	94.06	94.71	80.33
MW-3	6/7/2011	2	10.00	20.00	10.00	20.00	84.62	74.62	94.11	94.62	--

Notes:
[1] All measurements are in units of feet unless otherwise indicated.
[2] Arbitrary Datum - 100 ft above mean sea level; on June 8, 2011.

Key:
-- = None measured (dry/no recharge)
bgs = Below ground surface
BTOC = Below top of casing, a.k.a. below measuring point
DTW = Depth to water
MW = Monitoring well

TABLE 3
GROUNDWATER SURFACE WATER ELEVATION DATA
2011 Eureka Lodge Site Characterization
Crowley Maritime Corporation
Mile 128 Glenn Highway, Alaska

Well ID	MP Elevation (feet)	Gauge Date	Depth to Product (feet BTOC)	Depth to Water (feet BTOC)	Actual Product Thickness (feet)	Water Elevation (feet MSL)	Higher or Lower Than Lake Elevation?
Permanent Wells							
MW-1	94.37	6/7/2011	*Dry*				
		6/8/2011	*Dry*				--
		6/9/2011	*Dry*				--
MW-2	94.06	6/7/2011	--	18.28	--	75.78	lower
		6/8/2011	--	18.42	--	75.64	lower
		6/9/2011	--	13.11	--	80.95	lower
MW-3	94.11	6/7/2011	*Dry*				--
		6/8/2011	*Dry*				--
		6/9/2011	*Dry*				--

Lake Elevation - June 8, 2011:	**93.61**

Key:
-- = Not applicable
BTOC = Below top of casing, a.k.a. below measuring point
MP = Measuring point (a.k.a. PVC Elevation/top of casing)
MSL = Mean seal level

TABLE 4
FIELD-COLLECTED GROUNDWATER QUALITY PARAMETERS
2011 Eureka Lodge Site Characterization
Crowley Maritime Corporation
Mile 128 Glenn Highway, Alaska

Location	Purge/Sample Date	Color	Odor	pH	Temperature (°C)	Conductivity (mS/cm)	DO (mg/L)	ORP (mV)
Groundwater								
MW-1	DRY							
MW-2	6/9/2011	Clear	None noted	7.09	2.40	0.474	1.39	13.2
MW-3	DRY							
Surface Water								
Lake Surface	6/7/2011	Clear	None noted	5.49	10.4	0.032	9.06	139

Key:

°C = Degrees Celsius

DO = Dissolved oxygen

mS/cm = Millisiemens per centimeter

mg/L = Milligrams per liter

mV = Millivolts

ORP = Oxidation-reduction potential

TABLE 5
SOIL SAMPLE ANALYTICAL RESULTS SUMMARY
2011 Eureka Lodge Site Characterization
Crowley Maritime Corporation
Mile 128 Glenn Highway, Alaska

Location:	ADEC Method Two Soil Cleanup Levels (mg/kg)	SB-01	SB-02/MW-1	SB-03			SB-04	SB-05	SB-06	SB-07/MW-3	SB-08/MW-2	TRIP BLANK
Sample ID (11-EUR-):		SB-01-01-SO	SB-02-01-SO	SB-03-01-SO	SB-03-02-SO	SB-20-01-SO (Dup of SB-03-02)	SB-04-01-SO	SB-05-01-SO	SB-06-01-SO	SB-07-01-SO	SB-08-01-SO	TRIP BLANK
Depth (ft bgs):		17.0 - 17.5	9.0 - 9.5	19.5 - 20.0	12.5 -13.0	12.5 -13.0	19.5 - 20.0	19.5 - 20.0	19.5 - 20.0	19.5 - 20.0	17.0 - 17.5	--
Sample Date:		6/6/2011	6/6/2011	6/6/2011	6/6/2011	6/6/2011	6/6/2011	6/6/2011	6/6/2011	6/6/2011	6/7/2011	6/6/2011
PID Reading (ppm):		0.0	11.7	0.0	12.9	12.9	0.0	0.0	0.0	0.0	0.0	--
ADEC Fuels (AK 101, AK 102, AK103; mg/kg)												
Gasoline Range Organics	300[1]	ND (4.0)	88.0	ND (5.5)	44.0	39.0	ND (5.6)	ND (6.2)	ND (4.8)	ND (5.8)	ND (4.4)	ND (0.10)
Diesel Range Organics	250[1]	1.2	**4,000**	4.5 J	3.1 J	3.1 J	5.3 J	3.5 J	1.8 J	3.3 J	ND (22)	--
Residual Range Organics	10,000[2]	ND (110)	130	4.9 J	ND (130)	ND (130)	4.8 J	5 J	ND (110)	4.3 J	ND (110)	--
BTEX (EPA 8260B; mg/kg)												
Benzene	0.025[3]	ND (0.040)	**0.049**	ND (0.055)	**18 E**	**16 E**	ND (0.056)	ND (0.062)	ND (0.048)	ND (0.058)	ND (0.044)	ND (0.0010)
Toluene	6.5[3]	ND (0.20)	0.14 J	ND (0.28)	0.19 J	0.21 J	ND (0.28)	ND (0.31)	ND (0.24)	ND (0.29)	ND (0.22)	ND (0.0050)
Ethylbenzene	6.9[3]	ND (0.040)	0.02 J	ND (0.055)	1.1	1.2	ND (0.056)	ND (0.062)	ND (0.048)	ND (0.058)	ND (0.044)	ND (0.0010)
Total Xylenes	63[3]	ND (0.12)	0.15	ND (0.17)	3.8	4.0	ND (0.17)	ND (0.19)	ND (0.14)	ND (0.17)	ND (0.13)	ND (0.0030)
Total Solids (%)	--	92.4	86.4	79.4	77.3	77	78.6	79.7	91.4	79.6	89.5	--

Note:
Results above ADEC cleanup values are underlined & bolded.
[1] ADEC Method Two Petroleum Hydrocarbon Soil Cleanup Levels (18 AAC 75.341); Table B2, Under 40 Inches, Migration to Groundwater Pathway
[2] ADEC Method Two Petroleum Hydrocarbon Soil Cleanup Levels; Table B2, Under 40 Inches, Ingestion Pathway
[3] ADEC Method Two Soil Cleanup Levels; Table B1; Under 40 Inches, Migration to Groundwater Pathway
Key:
-- = Not applicable
% = Percent
ADEC = Alaska Department of Environmental Conservation
AK = Alaska
bgs = Below ground surface
BTEX = Benzene, toluene, ethylbenzene, and total xylenes
E = Greater than upper calibration limit, actual value is known to be greater than the upper calibration range
EPA = United States Environmental Protection Agency
ft = Feet
J = Estimated value
ND = Not detected at the associated reported detection limit
mg/kg = Milligrams per kilograms
ppm = Parts per million

TABLE 6
GROUNDWATER SAMPLE ANALYTICAL RESULTS SUMMARY
2011 Eureka Lodge Site Characterization
Crowley Maritime Corporation
Mile 128 Glenn Highway, Alaska

Location:	ADEC Groundwater Cleanup Levels [1] (mg/L)	MW-2		TRIP BLANK
Sample ID (11-EUR-):		MW2-01-GW	MW2-02-GW	TRIP BLANK
Sample Date:		6/9/2011	6/9/2011	6/6/2011
ADEC Fuels (AK 101, AK 102, AK103; mg/L)				
Gasoline Range Organics	2.2	ND (0.10)	ND (0.10)	ND (0.10)
Diesel Range Organics	1.5	0.14	0.15	--
Residual Range Organics	1.1	ND (0.20)	ND (0.20)	--
BTEX (EPA 8260B; mg/L)				
Benzene	0.005	ND (0.0010)	ND (0.0010)	ND (0.0010)
Toluene	1.0	ND (0.0050)	ND (0.0050)	0.00044 J
Ethylbenzene	0.7	ND (0.0010)	ND (0.0010)	ND (0.0010)
Total Zylenes	10	ND (0.0030)	ND (0.0030)	ND (0.0030)
PAHs (EPA 8270-SIM; mg/L)				
Anthracene	11	ND (0.000050)	ND (0.000050)	--
Acenaphthylene	2.2	ND (0.000050)	ND (0.000050)	--
Acenaphthene	2.2	ND (0.000050)	ND (0.000050)	--
Benzo(a)anthracene	0.0012	ND (0.000050)	ND (0.000050)	--
Benzo(a)pyrene	0.0002	ND (0.000050) UJ-I	ND (0.000050) UJ-I	--
Benzo(b)fluoranthene	0.0012	ND (0.000050) UJ-I	ND (0.000050) UJ-I	--
Benzo(g,h,I)perylene	1.1	ND (0.000050) UJ-I	ND (0.000050) UJ-I	--
Benzo(k)fluoranthene	0.012	ND (0.000050) UJ-I	ND (0.000050) UJ-I	--
Chrysene	0.12	ND (0.000050)	ND (0.000050)	--
Dibenzo(a,h) anthracene	0.00012	ND (0.000050) UJ-I	ND (0.000050) UJ-I	--
Fluoranthene	1.5	ND (0.000050)	ND (0.000050)	--
Fluorene	1.5	ND (0.000050)	ND (0.000050)	--
Indeno(1,2,3-c,d) pyrene	0.0012	ND (0.000050) UJ-I	ND (0.000050) UJ-I	--
Naphthalene	0.73	ND (0.00025)	ND (0.00025)	--
Phenanthrene	11	ND (0.000050)	ND (0.000050)	--
Pyrene	1.1	ND (0.000050)	ND (0.000050)	--
1-Methylnaphthalene	0.15	ND (0.00025)	ND (0.00025)	--
2-Methylnaphthalene	2.9	ND (0.00025)	ND (0.00025)	--
2-Chloronaphthalene	2.9	ND (0.00025)	ND (0.00025)	--

Notes:
Results above ADEC cleanup values are underlined and bolded.
[1] 18 AAC 75.345, Table C

Key:
-- = Not analyzed
ADEC = Alaska Department of Environmental Conservation
AK = Alaska
BTEX = Benzene, toluene, ethylbenzene, and total xylenes
EPA = United States Environmental Protection Agency
J = Estimated value
ND = Not detected at the associated reported detection limit
mg/L = Milligrams per Liter
UJ-I - Estimated non-detect due to low internal standard recovery
PAH = Poly aromatic hydrocarbons
SIM = Selected-ion monitoring

TABLE 7
SURFACE WATER SAMPLE ANALYTICAL RESULTS SUMMARY
2011 Eureka Lodge Site Characterization
Crowley Maritime Corporation
Mile 128 Glenn Highway, Alaska

Location:	ADEC Groundwater Cleanup Levels [1] (mg/L)	Surface Water Intake	Lake Surface Water	TRIP BLANK
Sample ID (11-EUR-):		**WH01-01-SW**	**LK01-01-SW**	**TRIP BLANK**
Sample Date:		**6/9/2011**	**6/9/2011**	**6/6/2011**
ADEC Fuels (AK 101, AK 102, AK103; mg/L)				
Gasoline Range Organics	2.2	ND (0.10)	ND (0.10)	ND (0.10)
Diesel Range Organics	1.5	0.054 J	0.051 J	--
Residual Range Organics	1.1	ND (0.20)	ND (0.20)	--
BTEX (EPA 8260B; mg/L)				
Benzene	0.005	ND (0.0010)	ND (0.0010)	ND (0.0010)
Toluene	1.0	ND (0.0050)	ND (0.0050)	0.00044 J
Ethylbenzene	0.7	ND (0.0010)	ND (0.0010)	ND (0.0010)
Total Zylenes	10	ND (0.0030)	ND (0.0030)	ND (0.0030)
PAHs (EPA 8270-SIM; mg/L)				
Anthracene	11	ND (0.000050)	ND (0.000050)	--
Acenaphthylene	2.2	ND (0.000050)	ND (0.000050)	--
Acenaphthene	2.2	ND (0.000050)	ND (0.000050)	--
Benzo(a)anthracene	0.0012	ND (0.000050)	ND (0.000050)	--
Benzo(a)pyrene	0.0002	ND (0.000050)	ND (0.000050)	--
Benzo(b)fluoranthene	0.0012	ND (0.000050)	ND (0.000050)	--
Benzo(g,h,I)perylene	1.1	ND (0.000050)	ND (0.000050)	--
Benzo(k)fluoranthene	0.012	ND (0.000050)	ND (0.000050)	--
Chrysene	0.12	ND (0.000050)	ND (0.000050)	--
Dibenzo(a,h) anthracene	0.00012	ND (0.000050)	ND (0.000050)	--
Fluoranthene	1.5	ND (0.000050)	ND (0.000050)	--
Fluorene	1.5	ND (0.000050)	ND (0.000050)	--
Indeno(1,2,3-c,d) pyrene	0.0012	ND (0.000050)	ND (0.000050)	--
Naphthalene	0.73	ND (0.00025)	ND (0.00025)	--
Phenanthrene	11	ND (0.000050)	ND (0.000050)	--
Pyrene	1.1	ND (0.000050)	ND (0.000050)	--
1-Methylnaphthalene	0.15	ND (0.00025)	ND (0.00025)	--
2-Methylnaphthalene	2.9	ND (0.00025)	ND (0.00025)	--
2-Chloronaphthalene	2.9	ND (0.00025)	ND (0.00025)	--
Surface Water Quality (mg/L)				
TAH[2] (sum of BTEX)	0.010	ND (0.0050)	ND (0.0050)	--
TAqH[2] (BTEX + PAH)	0.015	ND (0.0050)	ND (0.0050)	--

Notes:
Results above ADEC cleanup values are underlined and bolded.
[1] 18 AAC 75.345, Table C
[2] 18 AAC 70
Key:
-- = Not analyzed
ADEC = Alaska Department of Environmental Conservation
AK = Alaska
BTEX = Benzene, toluene, ethylbenzene, and total xylenes
EPA = United States Environmental Protection Agency
J = Estimated value
ND = Not detected at the associated reported detection limit
mg/L = Milligrams per Liter
PAH = Poly aromatic hydrocarbons
SIM = Selected-ion monitoring
TAH = Total aromatic hydrocarbons
TAqH =Total aqueous hydrocarbons

FIGURES

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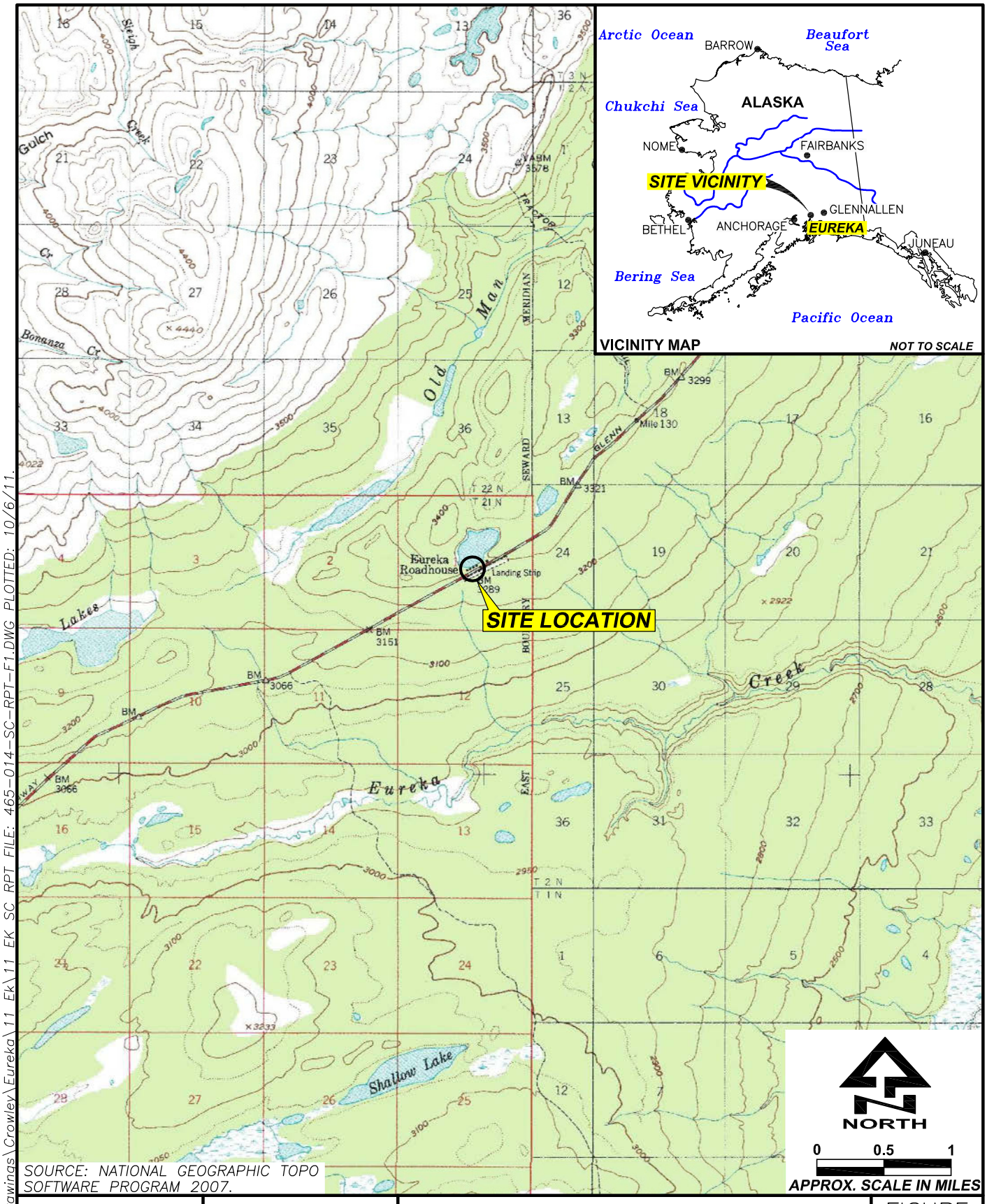

SOURCE: NATIONAL GEOGRAPHIC TOPO SOFTWARE PROGRAM 2007.

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oasis ENVIRONMENTAL

DATE: OCTOBER 2011
CHKD: D.J.F.
DRAWN: S.M.C.
PROJ. No.: 465-014

825 W. 8th Ave., Anchorage, AK 99501, (907) 258-4880

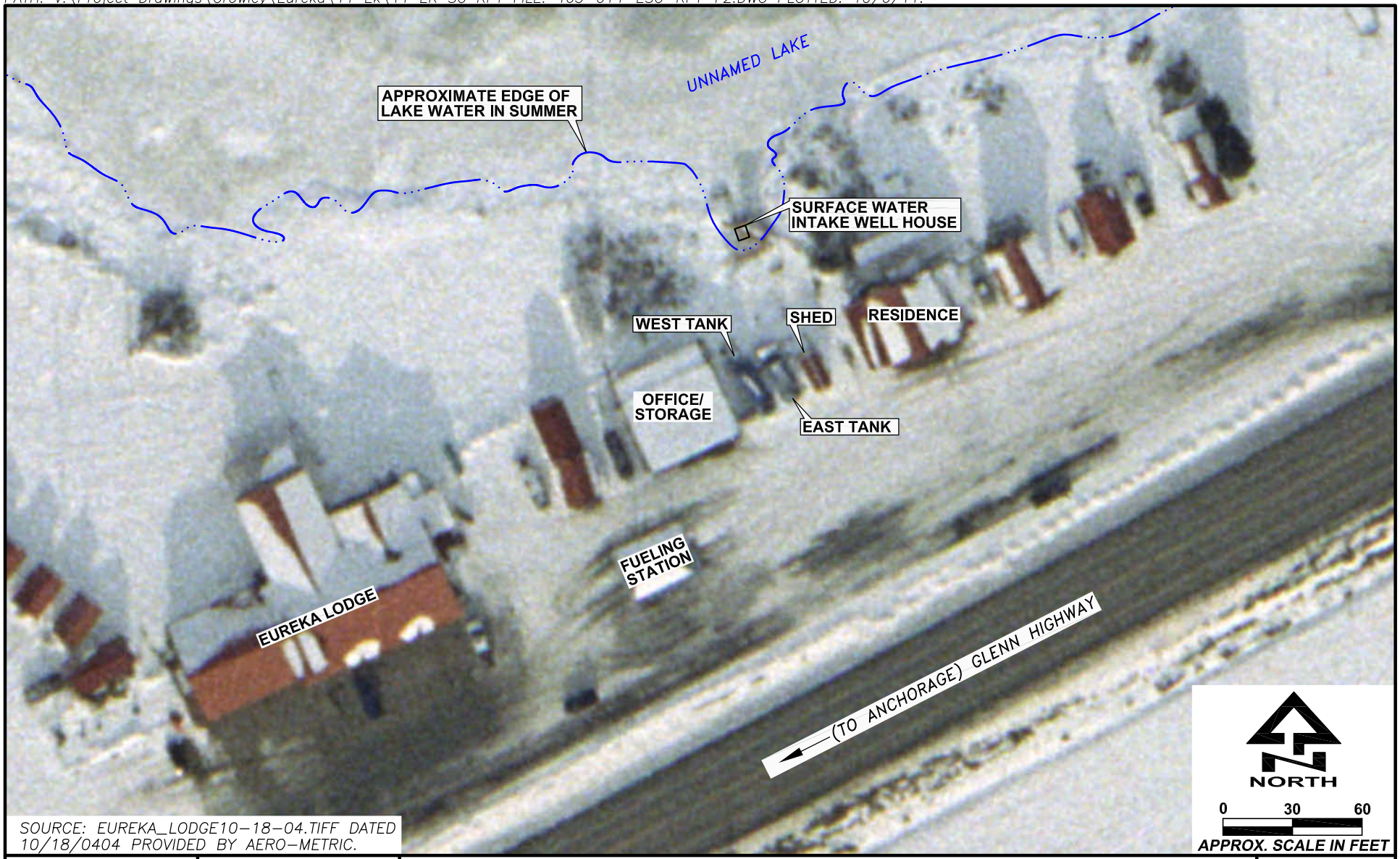
SITE LOCATION MAP

EUREKA LODGE
SITE CHARACTERIZATION REPORT
CROWLEY MARITIME CORPORATION
Mile Post 128 – Glenn Highway, Alaska

FIGURE

1

PATH: V:\Project Drawings\Crowley\Eureka\11 Ek\11 EK SC RPT FILE: 465-014-ESC-RPT-F2.DWG PLOTTED: 10/6/11.



SOURCE: EUREKA_LODGE10-18-04.TIFF DATED 10/18/0404 PROVIDED BY AERO-METRIC.

oasis ENVIRONMENTAL

DATE: OCTOBER 2011
CHKD: D.J.F.
DRAWN: S.M.C.
PROJ. No.: 465-014

825 W. 8th Ave., Anchorage, AK 99501, (907) 258-4880

SITE PLAN

EUREKA LODGE SITE CHARACTERIZATION REPORT
CROWLEY MARITIME CORPORATION
Mile Post 128 – Glenn Highway, Alaska

FIGURE

2

EXPLANATION

◒	SOIL BORING/MONITORING WELL LOCATION
⊕	SOIL BORING LOCATION
GRO	GASOLINE–RANGE ORGANICS
DRO	DIESEL–RANGE ORGANICS
BTEX	BENZENE, TOLUENE, ETHYLBENZENE, AND TOTAL XYLENES
ND	NOT DETECTED
J	ESTIMATED VALUE
mg/kg	MILLIGRAM/KILOGRAM
ft	FEET
ppm	PARTS PER MILLION
PID	PHOTO–IONIZATION DETECTOR
RRO	RESIDUAL–RANGE ORGANICS
E	EXCEEDS UPPER CALIBRATION LIMIT

NOTE:
BOLD/RED TEXT = VALUE ABOVE ADEC METHOD TWO SOIL CLEANUP LEVEL.

UNNAMED LAKE

WELL HOUSE

SHORELINE

RESIDENCE

OFFICE/ STORAGE

WEST TANK

EAST TANK

SHED

SB-05 (mg/kg)

SAMPLE ID	SB-05-01-S0
	PRIMARY
DEPTH (ft)	19.5–20.0
PID (ppm)	0.0
GRO	ND
DRO	3.5J
RRO	5J
B	ND
T	ND
E	ND
X	ND

SB-07/MW-3 (mg/kg)

SAMPLE ID	SB-07-01-S0
	PRIMARY
DEPTH (ft)	19.5–20.0
PID (ppm)	0.0
GRO	ND
DRO	3.3J
RRO	4.3J
B	ND
T	ND
E	ND
X	ND

SB-06 (mg/kg)

SAMPLE ID	SB-06-01-S0
	PRIMARY
DEPTH (ft)	19.5–20.0
PID (ppm)	0.0
GRO	ND
DRO	1.8J
RRO	ND
B	ND
T	ND
E	ND
X	ND

SB-04 (mg/kg)

SAMPLE ID	SB-04-01-S0
	PRIMARY
DEPTH (ft)	19.5–20.0
PID (ppm)	0.0
GRO	ND
DRO	5.3J
RRO	4.8J
B	ND
T	ND
E	ND
X	ND

SB-08/MW-2 (mg/kg)

SAMPLE ID	SB-08-01-S0
	PRIMARY
DEPTH (ft)	17.0–17.5
PID (ppm)	0.0
GRO	ND
DRO	ND
RRO	ND
B	ND
T	ND
E	ND
X	ND

SB-01 (mg/kg)

SAMPLE ID	SB-01-01-S0
	PRIMARY
DEPTH (ft)	17.0–17.5
PID (ppm)	0.0
GRO	ND
DRO	1.2
RRO	ND
B	ND
T	ND
E	ND
X	ND

SB-02/MW-1 (mg/kg)

SAMPLE ID	SB-02-01-S0
	PRIMARY
DEPTH (ft)	9.0–9.5
PID (ppm)	77.7
GRO	88
DRO	**4,000**
RRO	130
B	**0.049**
T	0.14J
E	0.02J
X	0.15

SB-03 (mg/kg)

SAMPLE ID	SB-03-01-S0	SB-01-02-S0	SB-20-01-S0
	PRIMARY	PRIMARY	DUPLICATE
DEPTH (ft)	19.5–20.0'	12.5–13.0	
PID (ppm)	0.0	12.9	
GRO	ND	44	39
DRO	4.5J	3.1J	3.1J
RRO	4.9J	ND	ND
B	ND	**18 E**	**16 E**
T	ND	0.19J	0.21J
E	ND	1.1	1.2
X	ND	3.8	4

NORTH

0 5 10

APPROX. SCALE IN FEET

SOIL BORING ANALYTICAL RESULTS

EUREKA LODGE SITE CHARACTERIZATION REPORT
CROWLEY MARITIME CORPORATION
Mile Post 128 – Glenn Highway, Alaska

FIGURE 3

DATE: OCTOBER 2011
CHKD: D.J.F.
DRAWN: S.M.C.
PROJ. No.: 465–014

825 W. 8th Ave., Anchorage, AK 99501, (907) 258–4880

oasis ENVIRONMENTAL

PATH: V:\Project Drawings\Crowley\Eureka\11 Ek\11 EK SC RPT FILE: 465–014–SC–RPT–F3.DWG PLOTTED: 10/6/11.

EXPLANATION

⊕	SOIL BORING/MONITORING WELL LOCATION
	SOIL BORING LOCATION
GRO	GASOLINE–RANGE ORGANICS
DRO	DIESEL–RANGE ORGANICS
BTEX	BENZENE, TOLUENE, ETHYLBENZENE, AND TOTAL XYLENES
PAHs	POLYAROMATIC HYDROCARBONS
TAH	TOTAL AROMATIC HYDROCARBONS
TAqH	TOTAL AQUEOUS HYDROCARBONS
ND	NOT DETECTED
J	ESTIMATED VALUE
mg/L	MILLIGRAMS PER LITER
'	FEET
RRO	RESIDUAL–RANGE ORGANICS

NOTE: ELEVATION IS BASED ON A FIELD–ESTABLISHED ARBITRARY DATUM OF 100 FEET.

*SAMPLE COLLECTED FROM SPIGOT IN WATER TREATMENT BUILDING

UNNAMED LAKE

SHORELINE

LAKE SURFACE WATER (mg/L)	
DATE	6/9/11
ELEVATION	93.61'
SAMPLE ID	LK01–01–SW
	PRIMARY
GRO	ND
DRO	0.054J
RRO	ND
B	ND
T	ND
E	ND
X	ND
PAHs	ND
TAH	ND
TAqH	ND

*SURFACE WATER INTAKE WELL HOUSE

WELL HOUSE

SURFACE WATER INTAKE (mg/L)	
DATE	6/9/11
SAMPLE ID	WH01–01–SW
	PRIMARY
GRO	ND
DRO	0.051J
RRO	ND
B	ND
T	ND
E	ND
X	ND
PAHs	ND
TAH	ND
TAqH	ND

RESIDENCE

MW-3 (DRY)

OFFICE/ STORAGE

WEST TANK

EAST TANK

SHED

MW-1 (DRY)

MW-2 (mg/L)		
DATE	6/9/11	6/9/11
ELEVATION	80.95'	
SAMPLE ID	MW2–01–GW	MW2–02–GW
	PRIMARY	DUPLICATE
GRO	ND	ND
DRO	0.14	0.15
RRO	ND	ND
B	ND	ND
T	ND	ND
E	ND	ND
X	ND	ND
PAHs	ND	ND

NORTH

0 5 10

APPROX. SCALE IN FEET

FIGURE 4

GROUNDWATER AND SURFACE WATER ANALYTICAL RESULTS

EUREKA LODGE SITE CHARACTERIZATION REPORT
CROWLEY MARITIME CORPORATION
Mile Post 128 – Glenn Highway, Alaska

DATE: OCTOBER 2011
CHKD: D.J.F.
DRAWN: S.M.C.
PROJ. No.: 465–014

825 W. 8th Ave., Anchorage, AK 99501, (907) 258–4880

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APPENDIX A

Field Notes and Field Generated Forms

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Crowley
Eureka Lodge

Rite in the Rain®
ALL-WEATHER
FIELD
№ 353N

465-014

"Rite in the Rain"®
ALL-WEATHER WRITING PAPER

Name OASIS Environmental

Address 825 W 8th AVE
Anchorage AK 99501

Phone (907) 258-4880

Project Crowley Eureka Lodge

465-014

"Rite in the Rain" - a unique all-weather writing surface created to shed water and to enhance the written image. Makes it possible to write sharp, legible field data in any kind of weather.

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TACOMA, WA 98424-1017 USA
www.RiteintheRain.com

CONTENTS

PAGE	REFERENCE	DATE

PM - Dan Frank (907) 350-4897

Lodge owner:
Jim + Darla Fimpel:
(907) 822-3808

Field Team:
Ashley Hansen (907) 268-9024
Blake Delaney (907) 952-1273

Crowley PM: Steven Wilson
C-(206) 953-2292
O-(206) 332-8033

Monday 6/5/11 — Eureka Lodge 465-014 — A. Hansen, B. Delaney — 1

50°F, Sunny, 5mph wind

0800 OASIS met Geotek onsite Darla (the lodge owner) came out and had a chat. They are concerned that they will be held liable for the spill or their operation would be shut down. After our chat she feels a lot better about the work we are performing. She would like to have a conference call w/ steven wilson, to OASIS, ~~and~~ D. Frank is on his way up to the site from ANC

0840 moved objects that were in the way (a van + 2 trailers)

0900 Conducted tailgate safety meeting.

0915 calibrated the PID. See MR-1 log book.

1030 After much discussion on where to drill (since only

Ashley Hansen 1/5

Eureka Lodge
465-014

A. Hansen
B. Delaney

60°F, Sunny, 5mph

Telecom locates have been complete, we decided to start drilling in and immediately adjacent to the previously excavated area.

1030 D. Frank arrives onsite. Started Drilling SB-1 on southeast corner of the east tank.

1130 Collected sample from H2O interface 17.0' - 17.5' bgs
11-EUR-SB01-01-SO
BTEX/GRO
DRO/RRO

1135 Started drilling @ second location SB-2/MW-1, on the South side of the east tank middle of the tank. Had to re-drill 5-10' + 1 foot west of hole, sample sleeve.

1235 collected sample from highest PID reading 11.1 from 9.0-9.5'
11-EUR-SB02-01-SO
GRO/BTEX
DRO/RRO

Eureka Lodge
465-014

A. Hansen
B. Delaney

40°F, Sunny, 5mph wind

1300 Break for lunch.

1400 Back from lunch. Started drilling on SB-3 south of the tanks, middle of west tank.

1440 Collected sample from bottom of boring 19.5-20'
11-EUR-SB03-01-SO
GRO/BTEX
DRO/RRO
11-EUR-SB20-01-SO @ 2000
Duplicate

1445 Started drilling @ SB-04 located on the north side of the west tank.

1530 Started drilling SB-05 on the north side of the east Tank.

1550 Collected sample from SB-04 19.5-20.0
11-EUR-SB04-01-SO
BTEX/GRO > MS/MSD
DRO/RRO

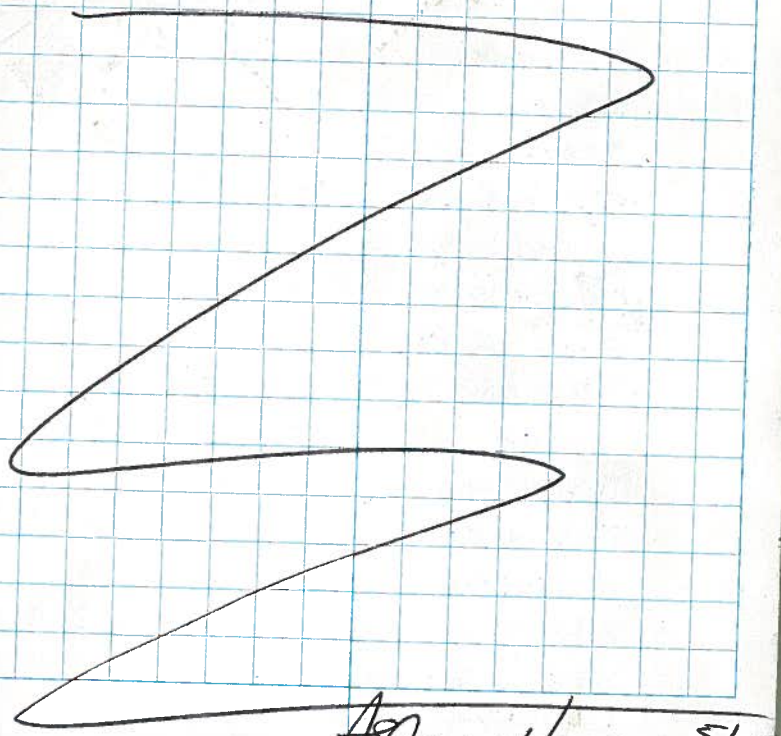
60°F, Sunny, 5mph

1630 D. Frank departs site
1640 Collect sample @ SB05 from bottom of boring 19.5-20'
11-EUR-SB05-01-SO
BTEX/GRO
DRO/RRO
1635 Started Drilling @ SB06 on the ~~south~~ north side of the tanks, middle of the shed.
1710 Started drilling SB-07 North of previously excavated area.
Collected sample from SB-06
11-EUR-SB06-01-SO
GRO/BTEX
DRO/RRO
1750 Collected sample @ SB-07
11-EUR-SB07-01-SO
GRO/BTEX
DRO/RRO
1810 Collected sample from well pre treatment system
11-EUR-WH01-01-SW
GRO/BTEX PAH
DRO/RRO

A. Hansen 4/5

60°F, Sunny, 5mph

only enough H2O to fill VOAs. Will ask Daria tomorrow if there is anything else we need to do.
1820 Pack up rest of equipment and headed back to Sheep mt. for the day.
1900 Arrived @ Sheep mt.



A. Hansen 5/5

Tuesday 6/7/11 — Eureka Lodge 465-014 — A. Hansen, B. Delaney

60°F, cloudy, light wind

0800 Arrived onsite. conducted tailgate safety meeting.

0820 Set up on SB-8. B. Delaney conducting sheen test on the east and west side of the well house. NO sheen present.

0900 SB-03
TD = 8.35
DTW = 4.04
NO odor

SB-02
DTW = 7.77 NO odor
TD = 9.45

SB-01
DTW = 15.32
TD = 18.84
NO odor

SB-07
DTW = 18.00
TD = 18.64
NO odor

SB-04
DTW = 19.52
TD = 19.71
NO odor

Asmyth 1/4

Tuesday 6/7/11 — Eureka Lodge 465-014 — A. Hansen, B. Delaney

60°F, cloudy, light wind

SB-05
DTW = 17.09 NO odor
TD = 17.77

SB-06
DTW = 15.13 NO odor
TD = 19.00

SB-08
DTW = ~~18.62~~ 15.00 ##
TD = 18.62
NO odor

0930 Screen 10-20' bgs (SB-08/MW-2)
10/20 Silica Sand 20-9' bgs
bentonite 9-0.5' bgs 10' riser
concrete 0.5'-0.0 bgs.

0935 Collected sample from SB-08 from the interface ~ 17.00'-17.5'
11-EUR-SB08-01-SO
GRO/BTEX
DRO/RRO

0950 Recorded time for the trip blank

1000 Collected swing tie measurements

1020 Tried collecting well house

Asmyth 2/4

8 Tuesday 6/7/11 — Eureka Lodge 465-014 — A. Hansen, B. Delaney — 60°F, Cloudy, light wind

water pre-treatment system again. H2O is only available when the pump is running. This will take some time.

1025 B. Delaney stayed to collect well house sample. A. Hansen setup to collect the surface H2O sample.

1100 collected sample from surface H2O location west of well house.

~~H15 AH Set~~

11-EUR-LK01-01-SW
GRO/BTEX
DRO/RRO } MS/MSD
PAH

1115 setup on SB-07/mw-3.
TD = 20'
Screen = 10-20' 10' riser
Silica = 20-9'
bentonite = 9'-0.5'
Concrete = 0.5'-0.0'

1220 TOOK lunch

1300 Back from lunch

3/4

Tuesday 6/7/11 — Eureka Lodge 465-014 — A. Hansen, B. Delaney — 60°F, Cloudy, light wind

Setup on SB-02/mw-3

1310 Setup on mw-2 to develop.

1340 mw-2 pumped dry after ~1 gal. will move to mw-3 to let mw-2 recharge.

1345 mw-3 has no H2O. Called D. Frank to re-evaluate game plan. will develop wells tomorrow. B. Delaney to stay Thursday + sample.

1409 installed mw-3 to 20'
screen - 10-20' 10' riser
Silica sand - 20-9'
bentonite - 9-0.5'
Concrete - 0.5-0.0'

1500 finishing off monitoring wells
cut 0.82' from mw-3
" 1.91' from mw-2
" 1' from mw-1

1800 Depart site for Sheep Mt. GeoTek is staying the night + departing in the A.M.

4/4

10 Wednesday 6/8/11 Eureka Lodge 465-014 A. Hansen B. Delaney

50°F, light rain, light wind.

0800 Arrive onsite. ETTA has departed for ANC. Conduct tailgate safety meeting.

0830 Setup on mw-2. Purged 2 6 gal of H2O. well had 4.17' ~~gal~~ in water column
TD = 18.42
DTW = 13.72

0920 moved to mw-3. No water in well. will try again tomorrow

0930 moved to mw-1 ~~no~~ water

0945 Called D. Frank to make a game plan. We will survey in the wells and surface H2O elevation to day. A. Hansen will depart site. B. Delaney will had to Glennallen to obtain a 3rd 55-gal drum. B. Delaney will manage

A. Hansen 1/2

Wednesday 6/8/11 Eureka Lodge 465-014 A. Hansen B. Delaney

the rest of the soil cuttings and Gauge mw-2 + mw-1 tomorrow, develop & Sample if possible. Also Sample mw-2.

1000

MW	Surface	PVC	
mw-1	4.22'	5.00'	0.88
mw-2	4.8'	5.45'	0.65
mw-3	4.4 (5.53)	4.92 (6.04)	0.51

Surface H2O = 6.4'
2nd station elevation 5.21' > 1.12
1st station elevation 4.09

1030 Second try with only 1 location

Surface elevation

mw-1	4.75	5.63	PVC elc.
mw-2	5.29	5.94	
mw-3	5.38	5.89	
Surface H2O	6.39		

Benchmark - southern most Post on the residence over hang 5.42'

1430 A. Hansen Departed site for ANC.

A. Hansen 2/2

Sunny 50° | Eureka Lodge 465-014 | 1 of 1

June 9th 2011 B. Delaney

0900 - arrived on site w/ sampling gear & new drum for soil cuttings. Drummed up soil cuttings & placed drum near existing soil drums.

1020 - began setting up on MW-2. Water column today is 7.09 ft.

1121 - Stability was reached and sampling took place.
11-EUR-MW2-01-GW contained 3 VOA, 2-1 Liter DRO preserved and 2-1 Liter unpreserved for PAH.
11-EUR-MW2-02-GW - dup. time for dup was 1245.
3 VOA, 2-1 Liter DRO preserved and 2-1 Liter unpreserved.

1130 - Contacted Don to let him know that both MW1, MW3 were completely dry.

1145 - tried to spread out remaining soil cuttings but did not spread due to pouring rain. Small amount of cuttings still exist on MW closest to lake.

Water Samples

Sample ID: (11-EUR-)	Time	Date	Analyte: PAH	BTEX	DRO	GRO	VOC	QA/QC
WH01-01-SW	1810	6/6/11	x					
"	1020	6/7/11			x	x		
LK01-01-SW	1100	6/7/11	x		x	x		MS/MSD
MW2-01-GW	1121	6/9/11						Prime
MW2-02-GW	1245	6/9/11						Dup

Soil Samples

								Depth
SB01-01-SO	1130	6/6/11	x		x	x		17.0-17.5
SB02-01-SO	1235				x	x		9.0-9.5
SB03-01-SO	1440				x	x		19.5-20.0
SB03-02-SO	1450				x	x		12.5-13.0
SB20-01-SO	2000				x	x		Dup MS/MSD 19.5-20.0
SB04-01-SO	1550				x	x		19.5-20.0
SB05-01-SO	1640				x	x		19.5-20.0
SB06-01-SO	1710				x	x		19.5-20.0
SB07-01-SO	1750				x	x		19.5-20.0
SB08-01-SO	0935	6/7/11			x	x		17.5-17.5

GROUNDWATER - DEVELOPMENT / SAMPLE DATA SHEET

Project Number: 465-014
Project Name: Eureka Lodge
Client: Crowley
Sampler: A. Hanson / B. Delaney

Sample Location (ie. MW1): MW-1
~~Sample ID~~:
Date ~~Sample Collected~~: 6/8/11
Time sampled: 0940

Well Information

Groundwater: _____ Casing Diameter (in): _____

Other: _____

a) Well Depth (ft): _____
b) Water Depth (ft): _____
c) Water Column (ft): _____
d) Calc. Purge Vol. (gal): _____

Calculating Purge Volume

Well Casing Diameter	Multiply c) by:
2	0.16
4	0.65
6	1.47

Sand Pack Diameter	Multiply C) by:
8	0.71
10	1
12	1.28

Example 1- purging only well casing volume
You have 2-inch casing and 6-foot water column.
One Purge Volume= 0.16 X 6 = 0.96 gallons water

Note: assuming sand pack has 29% porosity
Example 2- purging well casing and sand pack volume
You have 2-inch casing, 8-inch sand pack, and 6-foot water column
One Purge Volume= (0.16 X 6)+(0.71 X 6) = 5.22 gallons water

FIELD MEASUREMENTS

Time	Volume (gallons)	pH	Conductivity (mS)	Temperature (F)	Color	Turbidity	Redox (ORP)	Dissolved O_2 (mg/L)	Other

Purge Rate (low flow): _____
Total Volume Purged: _____
Odor: _____

Measured Drawdown (ft): _____
Free Product (y/n): _____
Sheen (y/n): _____

Purge Method (disposable bailer, teflon bailer, submersible pump, etc.)

Sample Method (disposable bailer, teflon bailer, submersible pump, etc.)

Well Integrity (condition of casing, flush mount sealing properly, cement seal intact, etc.)

Remarks (well recovery, unusual conditions/observations):

Duplicate Sample ID: _____
Split Sample ID: _____

Signed: _____ Date: _____

Signed/reviewer: _____ Date: _____

GROUNDWATER - DEVELOPMENT / SAMPLE DATA SHEET

Project Number: 465-014
Project Name: Eureka lodge
Client: Crowley
~~Sampler~~: A Hanson / B. Delaney

Sample Location (ie. MW1): MW-2
~~Sample ID~~:
Date ~~Sample~~ Collected: 6/7/11 / 7/8/11
Time ~~sampled~~: 1315 / 0840

Well Information

Groundwater:
Other:
Casing Diameter (in): 2"

a) Well Depth (ft):	13.72	20.40
b) Water Depth (ft):	13.42*	20.19
c) Water Column (ft):	0.7	0.21
d) Calc. Purge Vol. (gal):	0.75	

Calculating Purge Volume

Well Casing Diameter	Multiply c) by:
2	0.16
4	0.65
6	1.47

Sand Pack Diameter	Multiply C) by:
8	0.71
10	1
12	1.28

Note: assuming sand pack has 29% porosity

Example 1- purging only well casing volume
You have 2-inch casing and 6-foot water column.
One Purge Volume= 0.16 X 6 = 0.96 gallons water

Example 2- purging well casing and sand pack volume
You have 2-inch casing, 8-inch sand pack, and 6-foot water column
One Purge Volume= (0.16 X 6)+(0.71 X 6) = 5.22 gallons water

FIELD MEASUREMENTS

Time	Volume (gallons)	pH	Conductivity (mS)	Temperature (°C)	Color	Turbidity	Redox (ORP)	Dissolved O_2 (mg/L)	Other
0905	3.00	5.86	0.501	1.07	Cloudy	Low	158.4	2.28	
0908	3.75	6.103	0.499	1.02	Cloudy	Low	148.7	2.05	
0911	4.50	6.22	0.496	1.00	Cloudy	Low	139.4	1.78	
0914	5.25	6.35	0.498	0.98	Cloudy	None	134.0	1.68	
0917	6.00	6.48	0.497	0.98	Clear	None	128.0	1.51	

Purge Rate (low flow): 0.5L/min
Total Volume Purged: 6.0 gal
Odor: NO

Measured Drawdown (ft):
Free Product (y/n): NO
Sheen (y/n): NO

Purge Method (disposable bailer, teflon bailer, submersible pump, etc.)
Peri Pump

Sample Method (disposable bailer, teflon bailer, submersible pump, etc.)

Well Integrity (condition of casing, flush mount sealing properly, cement seal intact, etc.)

Remarks (well recovery, unusual conditions/observations):
Purged ~ 1 gal, well pumped dry (6/7/11)

Duplicate Sample ID:
Split Sample ID:

Signed: Date:

Signed/reviewer: Date:

* measured before raiser was cut.

GROUNDWATER - DEVELOPMENT / SAMPLE DATA SHEET

Project Number: 465-014
Project Name: Eureka Lodge
Client: Crowley
Sampler: A. Hanson / B. Delaney

Sample Location (ie. MW1): MW-3
~~Sample ID:~~
Date ~~Sample Collected:~~ 6/7/11 / 6/8/11
Time ~~sampled:~~ 1345 / 0930

Well Information

Groundwater:
Other:
Casing Diameter (in): 2"

a) Well Depth (ft): 20.40
b) Water Depth (ft):
c) Water Column (ft):
d) Calc. Purge Vol. (gal):

Calculating Purge Volume

Well Casing Diameter	Multiply c) by:
2	0.16
4	0.65
6	1.47

Sand Pack Diameter	Multiply C) by:
8	0.71
10	1
12	1.28

Note: assuming sand pack has 29% porosity

Example 1- purging only well casing volume
You have 2-inch casing and 6-foot water column.
One Purge Volume= 0.16 X 6 = 0.96 gallons water

Example 2- purging well casing and sand pack volume
You have 2-inch casing, 8-inch sand pack, and 6-foot water column
One Purge Volume= (0.16 X 6)+(0.71 X 6) = 5.22 gallons water

FIELD MEASUREMENTS

Time	Volume (gallons)	pH	Conductivity (mS)	Temperature (F)	Color	Turbidity	Redox (ORP)	Dissolved O_2 (mg/L)	Other

Purge Rate (low flow):
Total Volume Purged:
Odor:
Measured Drawdown (ft):
Free Product (y/n):
Sheen (y/n):

Purge Method (disposable bailer, teflon bailer, submersible pump, etc.)

Sample Method (disposable bailer, teflon bailer, submersible pump, etc.)

Well Integrity (condition of casing, flush mount sealing properly, cement seal intact, etc.)

Remarks (well recovery, unusual conditions/observations):
* NO H2O when gauged @ 6/7/11 or 6/8/11

Duplicate Sample ID:
Split Sample ID:

Signed:
Date:

Signed/reviewer:
Date:

Surface Water Sample Sheet

Project No. 465-014

Sample ID 11-EUR-LK01-01-SW
Site Eureka Lodge
Location west of well house
Stat

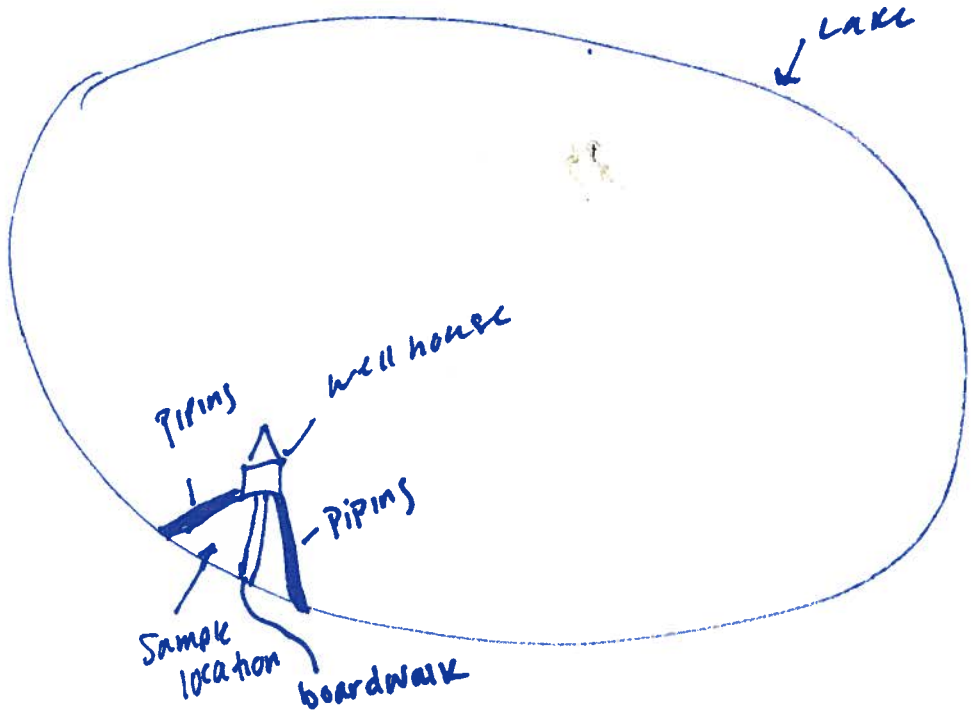
Date 6/7/11 Time 1100
Sampler AH / BD
☐ QA/QC Sample
☒ Associated QA/QC Sample
MS/MSD
Split
Duplicate

☐ Marine ☒ Lake/Pond (LK) Sample Depth ~2.8'
☐ Brackish ☐ River (RV) Total Depth ?
☐ Freshwater ☐ Stream/Creek (SP) Velocity (ft./sec.)
☐ Seep/Spring (SE) ☐ Other Flow Direction
☐ Emergent Vegetation

Temperature °C 10.40
pH 5.49
Conductivity ~~(µS/cm)~~ mS/cm 0.032
Dissolved O_2 mg/L 9.06
Redox 139.0

☐ Color Clear
☐ Odor NO
☐ Sheen NO
☐ Debris ~~NO~~ some vegetation
☐ Turbidity NO

Location Diagram/Notes



Low-Flow Groundwater Sampling with Minimal Drawdown Worksheet

Well ID: MW-2

Project #: 465-014 Date: 6/9/11

Project Name: Crowley Start Time: 1030

Site: Eureka Lodge End Time: 1145

Field Team: B. Delaney

Sample ID: 11-EUR-MW2-02-GW Time: 1245 primary (dup) split ms/msd

Sample ID: 11-EUR-MW2-01-GW Time: 1121 (primary) dup split ms/msd

Sample ID: Time: primary dup split ms/msd

Purging and Sampling Method (e.g. peristaltic, bladder, submersible): Peri

Total Volume Purged: ≈ 4.0 gal.

Weather Conditions: Sunny 50°

Depth to Top of Product (ft BTOC): ~~13.11~~ Depth to Water (ft BTOC): 13.11

Depth to Oil/Water Interface* (ft BTOC): — Total Depth (ft BTOC): 20.20

* Note: Same as depth to water

Criteria for Stable Parameters

Parameter	Working Range	Stability Criteria	Notes
Temperature	>0.00 °C	± 2° C	
pH	0-14	± 0.1	
Conductivity	0-999 mS/m	± 3%	
ORP	± 1999 mV		
Dissolved Oxygen	0-19.99 mg/L	10%	
Turbidity	0-800 NTU		

Sensory Observations

Color: (Clear) Amber, Tan, Brown, Grey, Milky White, Other:

Odor: (None) Low, Medium, High, Very Strong, H2S, Fuel Like, Chemical ?, Unknown

Turbidity: (None) Low, Medium, High, Very Turbid, Heavy Silts

Instrument Observations

Round	Time	Temp °C	pH	Conduct'ity (mS)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)	Color	Odor	Water Level (ft BTOC)	Draw-down
1	1045	5.18	6.20	.494	—		147.5	clear	—	13.11	
2	1048	3.65	5.78	.479	—		160.2	clear	—	13.22	-.11
3	1051	2.36	5.66	474	—		160.8	clear	—	13.23	-.01
4	1054	2.05	5.79	.472	—		153.0	clear	—	13.23	0
5	1057	1.93	5.99	.471	—		133.7	clear	—	13.24	0
6	1100	2.13	6.33	.471	—		118.5	clear	—	13.24	0
7	1103	2.18	6.59	.471	—	1.51	111.5	clear	—	13.25	-.01
8	1106	2.27	6.75	.471	—	1.49	109.6	clear	—	13.23	+.02
9	1109	2.33	6.86	.472	—	1.47	106.3	clear	—	13.23	—
10	1112	2.41	6.99	.474	—	1.46	103.1	clear	—	13.23	—
11	1115	2.46	7.01	.474	—	1.42	100.8	clear	—	13.22	+.01
12	1118	2.48	7.09	.474	—	1.40	99.9	clear	—	13.22	—
	1121	2.40	7.09	.474	—	1.39	99.5	clear	—	13.22	—

Notes: Drawdown should be less than 0.3 feet while sampling. Minimal drawdown shall be achieved and measured by pumping at a low rate (approximately 0.1 to 0.5 liter/minute) and continually measuring water levels in the well. Note that site's hydrogeology may make it difficult to achieve this specification.

Analyses	# of Bottles Collected
VBO/BTEX	6
DRO/BRO	4
PAH	4

Comments: Dup. samples taken: MW2-02-GW time 1245

Signed: Date:

Signed/reviewer Date:

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APPENDIX B

Photographic Log

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PHOTOGRAPH 1: VIEW OF THE SOUTHERN PORTION OF THE SITE, LOOKING NORTH (JUNE 2011)

PHOTOGRAPH 2: VIEW OF THE SOUTHERN PORTION OF THE SITE AND THE ADJACENT GAS STATION, LOOKING NORTHWEST (JUNE 2011)

PHOTOGRAPH 3: CLOSER VIEW OF THE SOUTHERN PORTION OF THE ASTS, LOOKING NORTHWEST (JUNE 2011)

PHOTOGRAPH 4: CLOSER VIEW OF THE SOUTHERN PORTION OF THE ASTS, LOOKING NORTHEAST (JUNE 2011)

PHOTOGRAPH 5: VIEW OF THE SOUTHERN PORTION OF THE SITE, LOOKING EAST (JUNE 2011)

PHOTOGRAPH 6: VIEW OF THE SOUTHERN PORTION OF THE SITE, LOOKING EAST (JUNE 2011)

PHOTOGRAPH 7: VIEW OF THE EASTERN PORTION OF THE SITE, THE UNMANED LAKE, AND THE WELL HOUSE, LOOKING NORTHWEST (JUNE 2011)

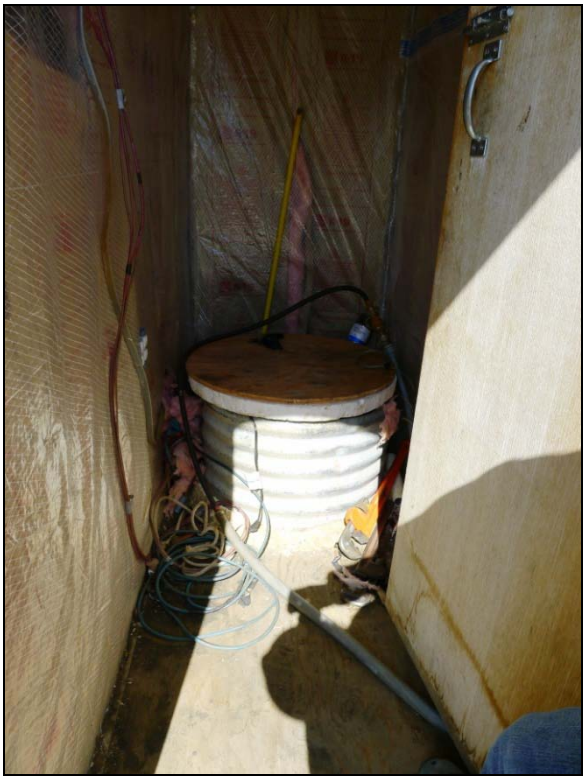
PHOTOGRAPH 8: VIEW OF THE NORTHERN PORTION OF THE SITE, LOOKING WEST (JUNE 2011)

PHOTOGRAPH 9: VIEW OF THE NOTHERN PORTION OF THE SITE AND THE UNMANED LAKE, LOOKING NORTHWEST (JUNE 2011)

PHOTOGRAPH 10: VIEW OF THE NOTHERN PORTION OF THE SITE, LOOKING SOUTHWEST (JUNE 2011)

PHOTOGRAPH 11: VIEW OF THE NORTHERN PORTION OF THE SITE AND THE WELL HOUSE, LOOKING WEST (JUNE 2011)

PHOTOGRAPH 12: VIEW OF THE WELL HOUSE AND UNNAMED LAKE, LOOKING NORTH (JUNE 2011)



PHOTOGRAPH 13: INSIDE THE WELL HOUSE (JUNE 2011)

PHOTOGRAPH 14: VIEW OF THE FIELD TEAM IDENTIFING THE SOIL LITHOLOGY, LOOKING SOUTH (JUNE 2011)

APPENDIX C

Borehole/Monitoring Well Installation Logs

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LOG OF EXPLORATORY BOREHOLE

BOREHOLE / WELL DESIGNATION: SB-01

PROJECT NAME: Eureka Lodge
LOCATION: South of Tanks
PROJECT MANAGER: Dan Frank
LOGGED BY: A. Hansen
PROJECT NUMBER: 465-014
DATUM ELEVATION:

START TIME / END TIME: 1030/1130
DATE COMPLETED: 6/6/11
TOTAL BOREHOLE DEPTH: 20 feet
DRILLING CONTRACTOR: GeoTek
DRILL RIG TYPE: GeoProbe
SAMPLING METHOD: Direct Push

Recovered / Driven (Feet)	In Situ PID (ppm)	Analytical Sample Results (mg/kg)	GW Depth (feet)	Depth (feet)	USCS Class	Lithologic Column	Lithologic Description
	0.0						**Silt w/Fines and Gravel** Brown, damp, silt w/fines and 15% fine gravel. No odor.
	0.0			1.0			
	0.0						
	0.0			2.0			
5/3.85	0.0				ML/GM		
	0.0			3.0			
	0.0						
	0.0			4.0			
	0.0						
	0.0			5.0			**Silt w/Fines** Brown, frozen, silt w/fines.
	0.0						
	0.0			6.0			
	0.0						
5/5	0.0			7.0	ML		
	0.0						
	0.0			8.0			
	0.0						
	0.0			9.0			
	0.0						
	0.0			10.0			**Silt w/Fines** Brown, damp, silt w/fines.
	0.0						
	0.0			11.0	ML		
	0.0						
4/4.7	0.0			12.0			**Silt w/Fines and some gravel** Brown, damp, silt w/fines and 15% fine gravel. No odor.
	0.0						
	0.0			13.0	ML/GM		
	0.0						
	0.0			14.0			**Silt w/Fines and Gravel** Brown, damp, silt w/fines and 20% fine gravel. No odor. Wet at 17 feet.
	0.0						
	0.0			15.0			
	0.0						
	0.0			16.0			
	0.0				ML/GM		
6/4.2	0.0	11-EUR-SB01-01-SO; DRO = 1.2J	▼	17.0			
	0.0						
	0.0			18.0			
	0.0						
	0.0			19.0			
	0.0						
	0.0			20.0			

DATE: 9/23/11
DRAWN BY: A. Hansen
CHECKED BY: D. Frank
PROJECT NUMBER: 465-014

COMMENTS:

oasis ENVIRONMENTAL

LOG OF EXPLORATORY BOREHOLE

BOREHOLE / WELL DESIGNATION: SB-02/MW-1

PROJECT NAME: Eureka Lodge
LOCATION: South of Tanks
PROJECT MANAGER: Dan Frank
LOGGED BY: A. Hansen
PROJECT NUMBER: 465-014
DATUM ELEVATION:

START TIME / END TIME: 1135/1230
DATE COMPLETED: 6/6/11
TOTAL BOREHOLE DEPTH: 20 feet
DRILLING CONTRACTOR: GeoTek
DRILL RIG TYPE: GeoProbe
SAMPLING METHOD: Direct Push

% Recovered	In Situ PID (ppm)	Analytical Sample Results (mg/kg)	GW Depth (feet)	Well Detail	Depth (feet)	USGS Class	Lithologic Column	Lithologic Description
72	0.0			Concrete; Protective Housing; Bentonite Chips; 2" Unslotted PVC; 10/20 Silica Sand; 2" 10-Slot Screen PVC	1.0	ML-GM		**Silt w/Fines and Gravel** Brown, damp, silt w/fines and 15% fine gravel, no HC odor.
	0.0				2.0			
	0.0				3.0			
	0.0				4.0	ML		**Silt w/Fines and Gravel** Brown, moist, silt w/fines and less than 5% fine gravel, no HC odor.
	0.0				5.0			
100	0.0				6.0			**Silt w/Fines and Gravel** Brown, damp, silt w/fines and 15% fine gravel, slight HC odor at 9.0 feet.
	0.0				7.0	ML-GM		
	0.0				8.0			
	0.0				9.0			
	10.1	11-EUR-SB02-01-SO; GRO=88, DRO=4000, RRO=130, B=0.049, T=0.14J,E=0.02J, X=0.15			10.0			**Silt** Brown, dense, frozen silt, no HC odor.
	11.7				11.0			
100	1.1				12.0	ML		
	0.0				13.0			
	0.0				14.0			
	0.0				15.0			**Silt w/Fines** Grey/brown, dense, silt w/fines, no HC odor.
	0.0				16.0			
100	0.0				17.0	ML		
	0.0				18.0			
	0.0				19.0			
	0.0				20.0			

DATE: 10/7/11
DRAWN BY: A. Hansen
CHECKED BY: D. Frank
PROJECT NUMBER: 465-014

COMMENTS:

oasis ENVIRONMENTAL

LOG OF EXPLORATORY BOREHOLE

BOREHOLE / WELL DESIGNATION: SB-03

PROJECT NAME: Eureka Lodge
LOCATION: South of Tanks
PROJECT MANAGER: Dan Frank
LOGGED BY: A. Hansen
PROJECT NUMBER: 465-014
DATUM ELEVATION:

START TIME / END TIME: 1400/1440
DATE COMPLETED: 6/6/11
TOTAL BOREHOLE DEPTH: 20 Feet
DRILLING CONTRACTOR: GeoTek
DRILL RIG TYPE: GeoProbe
SAMPLING METHOD: Direct Push

Recovered / Driven (Feet)	In Situ PID (ppm)	Analytical Sample Results (mg/kg)	GW Depth (feet)	Depth (feet)	USCS Class	Lithologic Column	Lithologic Description
	0.0						**Silt w/Sand and Gravel**
	0.0			1.0			Brown silt w/fine to coarse grained sand and 15% fine gravel, slight HC odor increasing with depth.
	0.0						
	0.0			2.0			
5/2	0.0						
	0.0			3.0			
	0.0						
	0.0			4.0			
	0.0				SM-GM		
	0.0			5.0			
	0.0						
	0.0			6.0			
	0.0						
	0.0			7.0			
5/4.8	0.0						
	0.0			8.0			
	1.4						
	4.0			9.0			**Silt**
	2.6						Brown, frozen, dense silt, slight HC odor.
	3.5			10.0			
	3.8						
	1.3			11.0			
	8.4				ML		
	3.9			12.0			
5/5	9.5	11-EUR-SB03-02-SO (Prime); GRO=44, B=18E, T= 0.19J, E=1.1, X=3.8, DRO=3.J					
	12.9			13.0			
	4.2						
	4.6			14.0	SM		**Silty Sand**
	3.5						Brown, fine grained silty sand, damp, slight HC odor.
	1.1			15.0			**Silt**
	0.0						Brown, frozen, dense silt, no HC odor.
	0.0			16.0			
	0.0				ML		
	0.0			17.0			
5/5	0.0						
	0.0			18.0			
	0.0						
	0.0			19.0			
	0.0	11-EUR-SB03-01-SO; DRO=4.5J, RRO=4.9J			OL		**Silty Clay**
	0.0			20.0			Grey, dense, silty clay, no HC odor.

DATE: 9/23/11
DRAWN BY: A. Hansen
CHECKED BY: D. Frank
PROJECT NUMBER: 465-014

COMMENTS:

oasis ENVIRONMENTAL

LOG OF EXPLORATORY BOREHOLE

BOREHOLE / WELL DESIGNATION: SB-04

PROJECT NAME: Eureka Lodge
LOCATION: North of Tanks
PROJECT MANAGER: Dan Frank
LOGGED BY: A. Hansen
PROJECT NUMBER: 465-014
DATUM ELEVATION:

START TIME / END TIME: 1445/1525
DATE COMPLETED: 6/6/11
TOTAL BOREHOLE DEPTH: 20
DRILLING CONTRACTOR: GeoTek
DRILL RIG TYPE: GeoProbe
SAMPLING METHOD: Direct Push

Recovered / Driven (Feet)	In Situ PID (ppm)	Analytical Sample Results (mg/kg)	GW Depth (feet)	Depth (feet)	USCS Class	Lithologic Column	Lithologic Description
	0.0				ML-GM		**Silt w/Fines and Gravel** Brown silt w/fines and 10% fine gravel and trace organics, damp, no HC odor.
	0.0			1.0			
	0.0				GP		**Gravel** Poorly-graded, coarse gravel, no HC odor.
	0.0			2.0			
5/5	0.0				ML-GM		**Silt w/Fines and Gravel** Brown silt w/fines and 10% fine gravel and trace organics, damp, no HC odor.
	0.0			3.0			
	0.0				SP		**Sand** Brown fine grained sand, less than 5% fine gravel, damp, no HC odor.
	0.0			4.0			
	0.0						**Silt** Brown, frozen, silt w/5% fine gravel. Gravel increasing with depth.
	0.0			5.0			
	0.0						
	0.0			6.0			
	0.0						
5/5	0.0			7.0	ML		
	0.0						
	0.0			8.0			
	0.0						
	0.0			9.0			
	0.0						
	0.0			10.0			
	0.0						
	0.0			11.0			
	0.0						
	0.0			12.0			
5/4	0.0				GP		**Gravel** Coarse gravel, no HC odor.
	0.0			13.0			
	0.0				SP		**Sand** Brown, damp, fine to medium grained sand w/some silt and less than 5% fine gravel, no HC odor.
	0.0			14.0			
	0.0						**Silt** Brown, damp, dense, silt. No HC odor.
	0.0			15.0			
	0.0						
	0.0			16.0			
	0.0						
	0.0			17.0	ML		
5/5	0.0						
	0.0			18.0			
	0.0						
	0.0			19.0			
	0.0	11-EUR-SB04-01-SO; DRO=5.3J, RRO=4.8J					
	0.0			20.0			

DATE: 10/6/11
DRAWN BY: A. Hansen
CHECKED BY: D. Frank
PROJECT NUMBER: 465-014

COMMENTS:

oasis ENVIRONMENTAL

LOG OF EXPLORATORY BOREHOLE

BOREHOLE / WELL DESIGNATION: SB-05

PROJECT NAME: Eureka Lodge
LOCATION: North of Tanks
PROJECT MANAGER: Dan Frank
LOGGED BY: A. Hansen
PROJECT NUMBER: 465-014
DATUM ELEVATION:

START TIME / END TIME: 1530/1640
DATE COMPLETED: 6/6/11
TOTAL BOREHOLE DEPTH: 20
DRILLING CONTRACTOR: GeoTek
DRILL RIG TYPE: GeoProbe
SAMPLING METHOD: Direct Push

Recovered / Driven (Feet)	In Situ PID (ppm)	Analytical Sample Results (mg/kg)	GW Depth (feet)	Depth (feet)	USCS Class	Lithologic Column	Lithologic Description
	0.0						**Silt w/Fines and Gravel** Brown, damp, silt w/fines and 10% fine gravel, no HC odor.
	0.0			1.0			
	0.0						
	0.0			2.0	SM-GP		
5/3	0.0						
	0.0			3.0			
	0.0						
	0.0			4.0			
	0.0						**Silt** Brown, frozen, dense silt w/10% fine gravel, no HC odor.
	0.0			5.0	ML		
	0.0						
	0.0			6.0			**Silt** Brown, damp, dense silt w/10% fine gravel, no HC odor.
	0.0						
	0.0			7.0			
5/5	0.0						
	0.0			8.0			
	0.0						
	0.0			9.0			
	0.0						
	0.0			10.0			
	0.0						
	0.0			11.0			
	0.0						
	0.0			12.0	ML		
5/5	0.0						
	0.0			13.0			
	0.0						
	0.0			14.0			
	0.0						
	0.0			15.0			
	0.0						
	0.0			16.0			
	0.0						
	0.0			17.0			
5/4.2	0.0						
	0.0			18.0			
	0.0						
	0.0			19.0			
	0.0	11-EURSB05-01-SO; DRO=3.5J, RRO=5.0J					
	0.0			20.0			

DATE: 10/6/11
DRAWN BY: A. Hansen
CHECKED BY: D. Frank
PROJECT NUMBER: 465-014

COMMENTS:

oasis ENVIRONMENTAL

LOG OF EXPLORATORY BOREHOLE

BOREHOLE / WELL DESIGNATION: SB-06

PROJECT NAME: Eureka Lodge
LOCATION: North of Tanks
PROJECT MANAGER: Dan Frank
LOGGED BY: A. Hansen
PROJECT NUMBER: 465-014
DATUM ELEVATION:

START TIME / END TIME: 1635/1715
DATE COMPLETED: 6/6/11
TOTAL BOREHOLE DEPTH: 20 feet
DRILLING CONTRACTOR: GeoTek
DRILL RIG TYPE: GeoProbe
SAMPLING METHOD: Direct Push

Recovered / Driven (Feet)	In Situ PID (ppm)	Analytical Sample Results (mg/kg)	GW Depth (feet)	Depth (feet)	USCS Class	Lithologic Column	Lithologic Description
	0.0				ML		**Silt w/Fines and Gravel** Dark brown, damp, silt w/fines and less than 5% fine gravel, no HC odor.
	0.0			1.0			
	0.0				ML		**Silt w/Fines and Gravel** Brown, damp, silt w/fines and less than 5% fine gravel, no HC odor.
	0.0			2.0	SM		
5/4	0.0						**Silty Sand** Brown, damp, silty sand w/less than 5% fine gravel, no HC odor.
	0.0			3.0			
	0.0						
	0.0			4.0	ML		**Silt w/Fines and Gravel** Brown, damp, silt w/fines and 5% fine gravel, no HC odor.
	0.0						
	0.0			5.0			
	0.0						
	0.0			6.0			
	0.0				ML-GM		**Gravelly Silt** Brown, damp, silt w/20% fine gravel, no HC odor.
	0.0			7.0			
5/5	0.0.				ML		**Silt w/Fines and Gravel** Brown, damp, silt w/fines and 10% fine gravel, no HC odor.
	0.0			8.0			
	0.0				SM		**Sandy Silt w/Gravel** Dark grey fine to medium grained sandy silt w/5% fine gravel, no HC odor.
	0.0			9.0			
	0.0						
	0.0			10.0	ML		**Silt** Brown, frozen, silt w/fines, no HC odor. Damp at 10.5 feet.
	0.0						
	0.0			11.0			
	0.0						**Silt w/Fines and Gravel** Brown, damp silt w/fines and 25% fine gravel, no HC odor. Moist at 17.5 feet.
	0.0			12.0			
5/3	0.0						
	0.0			13.0			
	0.0						
	0.0			14.0			
	0.0						
	0.0			15.0			
	0.0				ML-GM		
	0.0			16.0			
	0.0						
	0.0			17.0			
5/3.5	0.0						
	0.0			18.0			
	0.0						
	0.0			19.0			
	0.0	11-EUR-SB06-01-SO; DRO=1.8J					
	0.0			20.0			

DATE: 10/6/11
DRAWN BY: A. Hansen
CHECKED BY: D. Frank
PROJECT NUMBER: 465-014

COMMENTS:

oasis ENVIRONMENTAL

LOG OF EXPLORATORY BOREHOLE

BOREHOLE / WELL DESIGNATION: SB-07/MW-3

PROJECT NAME: Eureka Lodge
LOCATION: East of Tanks
PROJECT MANAGER: Dan Frank
LOGGED BY: A. Hansen
PROJECT NUMBER: 465-014
DATUM ELEVATION:

START TIME / END TIME: 1710/1750
DATE COMPLETED: 6/7/11
TOTAL BOREHOLE DEPTH: 20 feet
DRILLING CONTRACTOR: GeoTek
DRILL RIG TYPE: GeoProbe
SAMPLING METHOD: Direct Push

% Recovered	In Situ PID (ppm)	Analytical Sample Results (mg/kg)	GW Depth (feet)	Well Detail	Depth (feet)	USGS Class	Lithologic Column	Lithologic Description
	0.0				1.0	ML		**Silt w/Fines and Gravel** Brown, damp, silt w/fines and 5% fine gravel, trace organics, no HC odor.
	0.0							
	0.0				2.0	ML-SM		
	0.0							**Sandy Silt** Brown, damp, fine to medium grained sandy silt, no HC odor.
100	0.0				3.0	ML		
	0.0							
	0.0				4.0			**Silt w/Fines** Brown, damp, silt w/fines, no HC odor.
	0.0							
	0.0				5.0	ML		**Silt w/Fines and Gravel** Brown, damp, dense, silt w/fines and 10% fine gravel, no HC odor.
	0.0							
	0.0				6.0			
	0.0							
100	0.0				7.0			
	0.0							
	0.0				8.0			**Silt** Brown, dense, silt, no HC odor.
	0.0							
	0.0				9.0			
	0.0							
	0.0				10.0			
	0.0							
	0.0				11.0			
	0.0							
	0.0				12.0			
100	0.0							
	0.0				13.0	ML		
	0.0							
	0.0				14.0			
	0.0							
	0.0				15.0			
	0.0							
	0.0				16.0			
	0.0							
	0.0				17.0			
100	0.0							
	0.0				18.0			
	0.0							
	0.0				19.0			
	0.0	11-EUR-SB07-01-SO; DRO=3.3J, RRO=4.3J						
	0.0				20.0			

Concrete
Protective Housing
Bentonite Chips
2" Unslotted PVC
10/20 Silica Sand
2" 10-Slot Screen PVC

DATE: 10/7/11
DRAWN BY: A. Hansen
CHECKED BY: D. Frank
PROJECT NUMBER: 465-014

COMMENTS:

oasis ENVIRONMENTAL

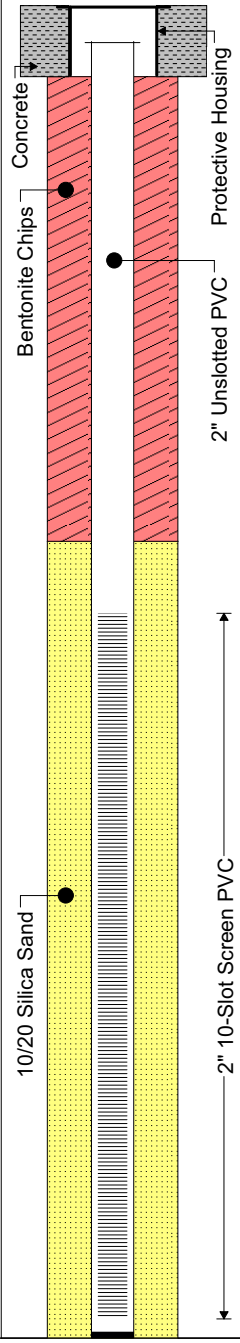
LOG OF EXPLORATORY BOREHOLE

BOREHOLE / WELL DESIGNATION: SB-08/MW-2

PROJECT NAME: Eureka Lodge
LOCATION: East of Tanks
PROJECT MANAGER: Dan Frank
LOGGED BY: A. Hansen
PROJECT NUMBER: 465-014
DATUM ELEVATION:

START TIME / END TIME: 0825/0950
DATE COMPLETED: 6/7/11
TOTAL BOREHOLE DEPTH: 20 feet
DRILLING CONTRACTOR: GeoTek
DRILL RIG TYPE: GeoProbe
SAMPLING METHOD: Direct Push

% Recovered	In Situ PID (ppm)	Analytical Sample Results (mg/kg)	GW Depth (feet)	Depth (feet)	USGS Class	Lithologic Description
	0.0				ML	**Silt w/Fines and Gravel** Brown, damp, silt w/fines and 10% fine gravel, trace organics, no HC odor.
	0.0			1.0		
	0.0				ML	
	0.0			2.0		
90	0.0				ML	**Silt w/Fines and Gravel** Brown, damp, silt w/fines and less than 5% fine gravel, no HC odor.
	0.0			3.0	ML-SM	
	0.0					
	0.0			4.0		
	0.0				ML	**Silt** Brown, damp, silt, no HC odor.
	1.4			5.0		
	0.0					**Sandy Silt** Brown, damp, fine to coarse grained sandy silt, 5% fine gravel, no HC odor.
	0.0			6.0		
	0.0					
	0.0			7.0		
100	0.0					**Silt** Grey/brown, dense, frozen, silt, no HC odor. Slight HC odor at 5 feet.
	0.0			8.0	ML	
	0.0					
	0.0			9.0		
	0.0					
	0.0			10.0		**Silty Sand** Grey/brown, damp, fine to medium grained sand, 5-10% fine gravel, no HC odor.
	0.0					
	0.0			11.0		
	0.0					
	0.0			12.0	ML-GM	**Silty Sand** Grey/brown, damp, fine to medium grained sand, 20% fine gravel, no HC odor.
90	0.0					
	0.0			13.0		
	0.0					
	0.0			14.0		
	0.0					
	0.0			15.0		**Silty Sand** Grey/brown, damp, fine to medium grained sand, 10-15% fine gravel, no HC odor. Wet at 17 feet.
	0.0					
	0.0	11-EUR-SB08-01-SO; All ND		16.0		
	0.0					
75	0.0			17.0	ML-GM	
	0.0					
	0.0			18.0		
	0.0					
	0.0			19.0		
	0.0					
	0.0			20.0		



DATE: 10/7/11
DRAWN BY: A. Hansen
CHECKED BY: D. Frank
PROJECT NUMBER: 465-014

COMMENTS:

oasis ENVIRONMENTAL

APPENDIX D

ESC Analytical Results

ADEC Data Review Checklists

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Est. 1970

Quality Control Summary
SDG: L520284

For: OASIS Environmental - Anchorage, AK
Project: Euraka Lodge Crowley
June 17, 2011

Sample Receiving and Handling

All sample aliquots were received at the correct temperature, in the proper containers, and with the appropriate preservatives. All method specified holding times were met.

Semi-volatile Organic Compounds by Method 8270C-SIM

Laboratory Control Sample

Sample L520284-01 was analyzed in analytical batch WG540038. The laboratory control sample associated with this sample was within the laboratory control limits for all compounds.

Matrix Spike/Matrix Spike Duplicate

For analytical batch WG540038 matrix spike/matrix spike duplicate analysis was performed on sample L520459-04. The matrix spike recoveries and relative percent differences were within laboratory control limits for all target analytes.

For analytical batch WG540038 matrix spike/matrix spike duplicate analysis was performed on sample L520284-01. The matrix spike recoveries were within laboratory control limits for all target analytes. The relative percent difference exceeded laboratory limits for 2-Chloronaphthalene, 2-Methylnaphthalene, Acenaphthene, Acenaphthylene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Chrysene, Dibenz(a,h)anthracene, Fluoranthene, Fluorene, Indeno(1,2,3-cd)pyrene, Naphthalene, Phenanthrene, Benzo(b)fluoranthene, and Pyrene.

Blank Analysis

The method blank, the initial, and all continuing calibration blanks contained no analytes at concentrations above the method reporting limit.

AK102 / AK103

Laboratory Control Sample

Sample L520284-01 was analyzed in analytical batch WG540042. The laboratory control sample associated with this sample was within the laboratory control limits.

Matrix Spike/Matrix Spike Duplicate

For analytical batch WG540042, matrix spike/matrix spike duplicate analysis was performed on sample L520284-01. The matrix spike recoveries and relative percent differences were within laboratory control limits for all target analytes.

Blank Analysis

The method blank, the initial, and all continuing calibration blanks contained no analytes at concentrations above the method reporting limit.

Nancy F. Winters
ESC Representative
ESC Lab Sciences

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Dan Frank
OASIS Environmental - Anchorage, AK
825 W. 8th Ave.
Anchorage, AK 99501

Report Summary

Friday June 17, 2011

Report Number: L520284
Samples Received: 06/10/11
Client Project:

Description: Eureka

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By: 

T. Alan Harvill , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140
NJ - TN002,NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A,
TX - T104704245, OK-9915

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.
Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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REPORT OF ANALYSIS

Dan Frank
OASIS Environmental - Anchorage, AK
825 W. 8th Ave.
Anchorage, AK 99501

June 17, 2011

ESC Sample # : L520284-01

Date Received : June 10, 2011
Description : Euraka Lodge Crowley

Site ID :

Sample ID : 11-EUR-LK01-01-SW

Project # :

Collected By : AH/BD
Collection Date : 06/07/11 11:00

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
AK102 DRO C10-C25	48.	22.	800	ug/l	J	AK102/1	06/15/11	1
AK103 RRO C25-C36	U	66.	200	ug/l		AK102/1	06/15/11	1
Surrogate Recovery								
o-Terphenyl	83.0			% Rec.		AK102/1	06/15/11	1
Polynuclear Aromatic Hydrocarbons								
Anthracene	U	0.013	0.050	ug/l		8270C-S	06/15/11	1
Acenaphthene	U	0.0082	0.050	ug/l	J3	8270C-S	06/15/11	1
Acenaphthylene	U	0.011	0.050	ug/l	J3	8270C-S	06/15/11	1
Benzo(a)anthracene	U	0.012	0.050	ug/l	J3	8270C-S	06/15/11	1
Benzo(a)pyrene	U	0.016	0.050	ug/l	J3	8270C-S	06/15/11	1
Benzo(b)fluoranthene	U	0.019	0.050	ug/l	J3	8270C-S	06/15/11	1
Benzo(g,h,i)perylene	U	0.016	0.050	ug/l	J3	8270C-S	06/15/11	1
Benzo(k)fluoranthene	U	0.026	0.050	ug/l	J3	8270C-S	06/15/11	1
Chrysene	U	0.014	0.050	ug/l	J3	8270C-S	06/15/11	1
Dibenz(a,h)anthracene	U	0.0045	0.050	ug/l	J3	8270C-S	06/15/11	1
Fluoranthene	U	0.016	0.050	ug/l	J3	8270C-S	06/15/11	1
Fluorene	U	0.0090	0.050	ug/l	J3	8270C-S	06/15/11	1
Indeno(1,2,3-cd)pyrene	U	0.0074	0.050	ug/l	J3	8270C-S	06/15/11	1
Naphthalene	U	0.012	0.25	ug/l	J3	8270C-S	06/15/11	1
Phenanthrene	U	0.018	0.050	ug/l	J3	8270C-S	06/15/11	1
Pyrene	U	0.016	0.050	ug/l	J3	8270C-S	06/15/11	1
1-Methylnaphthalene	U	0.019	0.25	ug/l		8270C-S	06/15/11	1
2-Methylnaphthalene	U	0.016	0.25	ug/l	J3	8270C-S	06/15/11	1
2-Chloronaphthalene	U	0.016	0.25	ug/l	J3	8270C-S	06/15/11	1
Surrogate Recovery								
Nitrobenzene-d5	66.9			% Rec.		8270C-S	06/15/11	1
2-Fluorobiphenyl	69.5			% Rec.		8270C-S	06/15/11	1
p-Terphenyl-d14	74.5			% Rec.		8270C-S	06/15/11	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
Note:
The reported analytical results relate only to the sample submitted.

.
Reported: 06/17/11 12:04 Printed: 06/17/11 12:05

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L520284-01	WG540042	SAMP	AK102 DRO C10-C25	R1723990	J
	WG540038	SAMP	Acenaphthene	R1723652	J3
	WG540038	SAMP	Acenaphthylene	R1723652	J3
	WG540038	SAMP	Benzo(a)anthracene	R1723652	J3
	WG540038	SAMP	Benzo(a)pyrene	R1723652	J3
	WG540038	SAMP	Benzo(b)fluoranthene	R1723652	J3
	WG540038	SAMP	Benzo(g,h,i)perylene	R1723652	J3
	WG540038	SAMP	Benzo(k)fluoranthene	R1723652	J3
	WG540038	SAMP	Chrysene	R1723652	J3
	WG540038	SAMP	Dibenz(a,h)anthracene	R1723652	J3
	WG540038	SAMP	Fluoranthene	R1723652	J3
	WG540038	SAMP	Fluorene	R1723652	J3
	WG540038	SAMP	Indeno(1,2,3-cd)pyrene	R1723652	J3
	WG540038	SAMP	Naphthalene	R1723652	J3
	WG540038	SAMP	Phenanthrene	R1723652	J3
	WG540038	SAMP	Pyrene	R1723652	J3
	WG540038	SAMP	2-Methylnaphthalene	R1723652	J3
	WG540038	SAMP	2-Chloronaphthalene	R1723652	J3

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J	(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.
J3	The associated batch QC was outside the established quality control range for precision.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed
06/17/11 at 12:05:09

TSR Signing Reports: 358

Need cooler receipt form on ALL samples. All samples get QC2MODCN.

Sample: L520284-01 Account: OASISAAK Received: 06/10/11 11:15 Due Date: 06/17/11 00:00 RPT Date: 06/17/11 12:04
please ms/msd sample

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Quality Control Summary
SDG: L520284
OASIS Environmental - Anchorage, AK

Test:	AK102 / AK103		
Project No:		Matrix:	Water - mg/L
Project:	Euraka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/7/2011	**Analytic Batch:**	**WG540042**
Analysis Date:	6/15/2011	Analyst:	280
Instrument ID:	SVGC16	Extraction Date:	6/11/2011
Sample Numbers:	L520284-01		

Method Blank

Analyte	CAS	PQL	Qualifiers
AK DRO C10-C25		<0.80	
AK RRO C25-C36		<0.20	

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
AK DRO C10-C36	1.50	1.39	92.4	75 - 125	

Laboratory Control Sample Duplicate (LCSD)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
AK DRO C10-C36	1.50	1.38	92.2	75 - 125	

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Quality Control Summary
SDG: L520284
OASIS Environmental - Anchorage, AK

Test:	AK102 / AK103		
Project No:		Matrix:	Water - mg/L
Project:	Euraka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/7/2011	**Analytic Batch:**	**WG540042**
Analysis Date:	6/15/2011	Analyst:	280
Instrument ID:	SVGC16	Extraction Date:	6/11/2011
Sample Numbers:	L520284-01		

Surrogate Summary

Laboratory Sample ID	o-terphenylD ppm	% Rec
Blank WG540042	0.0189	94.7
LCS WG540042	0.0193	96.3
LCSD WG540042	0.0191	95.7
MS WG540042	0.0190	94.9
MSD WG540042	0.0180	89.9
L520284-01	0.0166	83.0

o-terphenyl Limits - 50 - 150

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Quality Control Summary
SDG: L520284
OASIS Environmental - Anchorage, AK

Test:	AK102 / AK103		
Project No:		Matrix:	Water - mg/L
Project:	Euraka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/7/2011	**Analytic Batch:**	**WG540042**
Analysis Date:	6/15/2011	Analyst:	280
Instrument ID:	SVGC16	Extraction Date:	6/11/2011
Sample Numbers:	L520284-01		

Laboratory Control Sample/ Laboratory Control Sample Duplicate

Analyte	Spike	LCS	% Rec	LCSD	% Rec	Control Limits	Qualifier	% RPD	Control Limits	Qualifier
AK DRO C10-C36	1.50	1.39	92.4	1.38	92.2	75-125		0.3	20	

Matrix Spike/Matrix Spike Duplicate

L520284-01

Analyte	Spike Value	Sample	MS	% Rec	MSD	% Rec	Control Limits	% Rec Qualifier	% RPD	Control Limits	RPD Qual
AK DRO C10-C36	1.50	0.048	1.38	88.8	1.35	86.8	75-125		2.6	20	

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Quality Control Summary
SDG: L520284
OASIS Environmental - Anchorage, AK

Test:	Semi-Volatiles by Method 8270C-SIM		
Project No:		Matrix:	Water - mg/L
Project:	Euraka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/7/2011	**Analytic Batch:**	**WG540038**
Analysis Date:	6/15/2011	Analyst:	0
Instrument ID:	BNAMS9	Extraction Date:	6/11/2011
Sample Numbers:	L520284-01		

Method Blank

Analyte	CAS	PQL	Qualifiers
Naphthalene	91-20-3	<0.000250	
2-Methylnaphthalene	91-57-6	<0.000250	
1-Methylnaphthalene	90-12-0	<0.000250	
2-Chloronaphthalene	91-58-7	<0.000250	
Acenaphthylene	208-96-8	<0.0000500	
Acenaphthene	83-32-9	<0.0000500	
Fluorene	86-73-7	<0.0000500	
Phenanthrene	85-01-8	<0.0000500	
Anthracene	120-12-7	<0.0000500	
Fluoranthene	206-44-0	<0.0000500	
Pyrene	129-00-0	<0.0000500	
Benzo(a)anthracene	56-55-3	<0.0000500	
Chrysene	218-01-9	<0.0000500	
Benzo(b)fluoranthene	205-99-2	<0.0000500	
Benzo(k)fluoranthene	207-08-9	<0.0000500	
Benzo(a)pyrene	50-32-8	<0.0000500	
Indeno(1,2,3-cd)pyrene	193-39-5	<0.0000500	
Dibenz(a,h)anthracene	53-70-3	<0.0000500	
Benzo(g,h,i)perylene	191-24-2	<0.0000500	

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Est. 1970

Quality Control Summary
SDG: L520284
OASIS Environmental - Anchorage, AK

Test:	Semi-volatile Organic Compounds by Method 8270C-SIM		
Project No:		Matrix:	Water - mg/L
Project:	Euraka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/7/2011	**Analytic Batch:**	**WG540038**
Analysis Date:	6/15/2011 10:22:00 AM	Analyst:	0
Instrument ID:	BNAMS9	Extraction Date:	6/11/2011
Sample Numbers:	L520284-01		

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
1-Methylnaphthalene	0.00100	0.000698	69.8	30 - 123	
2-Chloronaphthalene	0.00100	0.000730	73.0	34 - 120	
2-Methylnaphthalene	0.00100	0.000721	72.1	29 - 116	
Acenaphthene	0.00100	0.000822	82.2	40 - 113	
Acenaphthylene	0.00100	0.000823	82.3	36 - 115	
Anthracene	0.00100	0.000869	86.9	45 - 118	
Benzo(a)anthracene	0.00100	0.000768	76.8	36 - 129	
Benzo(a)pyrene	0.00100	0.000870	87.0	44 - 124	
Benzo(b)fluoranthene	0.00100	0.000921	92.1	43 - 126	
Benzo(g,h,i)perylene	0.00100	0.000950	95.0	39 - 128	
Benzo(k)fluoranthene	0.00100	0.000851	85.1	44 - 127	
Chrysene	0.00100	0.000901	90.1	36 - 137	
Dibenz(a,h)anthracene	0.00100	0.000925	92.5	39 - 129	
Fluoranthene	0.00100	0.000878	87.8	45 - 123	
Fluorene	0.00100	0.000878	87.8	41 - 118	
Indeno(1,2,3-cd)pyrene	0.00100	0.000936	93.6	39 - 129	
Naphthalene	0.00100	0.000680	68.0	26 - 111	
Phenanthrene	0.00100	0.000832	83.2	41 - 116	
Pyrene	0.00100	0.000854	85.4	32 - 136	

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Quality Control Summary
SDG: L520284
OASIS Environmental - Anchorage, AK

Test:	Semi-volatile Organic Compounds by Method 8270C-SIM		
Project No:		Matrix:	Water - mg/L
Project:	Euraka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/7/2011	**Analytic Batch:**	**WG540038**
Analysis Date:	6/15/2011 10:22:00 AM	Analyst:	0
Instrument ID:	BNAMS9	Extraction Date:	6/11/2011
Sample Numbers:	L520284-01		

Laboratory Control Sample Duplicate (LCSD)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
1-Methylnaphthalene	0.00100	0.000817	81.7	30 - 123	
2-Chloronaphthalene	0.00100	0.000832	83.2	34 - 120	
2-Methylnaphthalene	0.00100	0.000807	80.7	29 - 116	
Acenaphthene	0.00100	0.000861	86.1	40 - 113	
Acenaphthylene	0.00100	0.000840	84.0	36 - 115	
Anthracene	0.00100	0.000903	90.3	45 - 118	
Benzo(a)anthracene	0.00100	0.000793	79.3	36 - 129	
Benzo(a)pyrene	0.00100	0.000897	89.7	44 - 124	
Benzo(b)fluoranthene	0.00100	0.000965	96.5	43 - 126	
Benzo(g,h,i)perylene	0.00100	0.000980	98.0	39 - 128	
Benzo(k)fluoranthene	0.00100	0.000912	91.2	44 - 127	
Chrysene	0.00100	0.000963	96.3	36 - 137	
Dibenz(a,h)anthracene	0.00100	0.000949	94.9	39 - 129	
Fluoranthene	0.00100	0.000916	91.6	45 - 123	
Fluorene	0.00100	0.000938	93.8	41 - 118	
Indeno(1,2,3-cd)pyrene	0.00100	0.000976	97.6	39 - 129	
Naphthalene	0.00100	0.000800	80.0	26 - 111	
Phenanthrene	0.00100	0.000870	87.0	41 - 116	
Pyrene	0.00100	0.000856	85.6	32 - 136	

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Quality Control Summary
SDG: L520284
OASIS Environmental - Anchorage, AK

Test:	Semi-Volatiles by Method 8270C-SIM		
Project No:		Matrix:	Water - mg/L
Project:	Euraka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/7/2011	**Analytic Batch:**	**WG540038**
Analysis Date:	6/15/2011	Analyst:	0
Instrument ID:	BNAMS9	Extraction Date:	6/11/2011
Sample Numbers:	L520284-01		

Surrogate Summary

Laboratory	NBZ		2FP		TRP	
Sample ID	ppb	% Rec	ppb	% Rec	ppb	% Rec
Blank WG540038	0.946	94.6	0.879	87.9	0.904	90.4
LCS WG540038	0.724	72.4	0.798	79.8	0.837	83.7
LCSD WG540038	0.833	83.3	0.835	83.5	0.875	87.5
L520284-01	0.669	66.9	0.695	69.5	0.745	74.5
MS WG540038	0.644	64.4	0.730	73.0	0.708	70.8
MSD WG540038	0.964	96.4	0.977	97.7	0.996	99.6

NBZ - Nitrobenzene-d5	10-139
2FP - 2-Fluorobiphenyl	31-121
TPH - Terphneyl-d14	21-136

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Quality Control Summary
SDG: L520284
OASIS Environmental - Anchorage, AK

Test: Semi-volatile Organic Compounds by Method 8270C-SIM
Project No:
Project: Euraka Lodge Crowley
Collection Date: 6/7/2011
Analysis Date: 6/15/2011 10:22:00 AM
Instrument ID: BNAMS9
Sample Numbers: L520284-01

Matrix: Water - mg/L
EPA ID: TN00003
Analytic Batch: WG540038
Analyst: 0
Extraction Date: 6/11/2011

Matrix Spike/Matrix Spike Duplicate

L520284-01

Analyte	Spike Value	Sample	MS	% Rec	MSD	% Rec	Control Limits	% Rec Qualifier	% RPD	Control Limits	RPD Qual
1-Methylnaphthalene	0.00100	0.00000	0.00063	63.1	0.00086	86.0	30-123		31	32	
2-Chloronaphthalene	0.00100	0.00000	0.00066	66.3	0.00094	94.1	34-120		35	30	J3
2-Methylnaphthalene	0.00100	0.00000	0.00064	64.8	0.00096	96.2	29-116		39	31	J3
Acenaphthene	0.00100	0.00000	0.00069	69.1	0.00092	92.9	40-113		29	25	J3
Acenaphthylene	0.00100	0.00000	0.00073	73.7	0.00100	100	36-115		30	25	J3
Anthracene	0.00100	0.00000	0.00074	74.8	0.00094	94.8	45-118		24	26	
Benzo(a)anthracene	0.00100	0.00000	0.00070	70.9	0.00094	94.3	36-129		28	26	J3
Benzo(a)pyrene	0.00100	0.00000	0.00074	74.5	0.00102	102	44-124		31	21	J3
Benzo(b)fluoranthene	0.00100	0.00000	0.00074	74.9	0.00111	111	43-126		38	38	J3
Benzo(g,h,i)perylene	0.00100	0.00000	0.00077	77.6	0.00112	112	39-128		36	20	J3
Benzo(k)fluoranthene	0.00100	0.00000	0.00067	67.9	0.00102	102	44-127		40	39	J3
Chrysene	0.00100	0.00000	0.00072	72.4	0.00094	94.0	36-137		26	22	J3
Dibenz(a,h)anthracene	0.00100	0.00000	0.00077	77.4	0.00108	108	39-129		33	20	J3
Fluoranthene	0.00100	0.00000	0.00080	80.1	0.00105	105	45-123		27	25	J3
Fluorene	0.00100	0.00000	0.00078	78.0	0.00109	109	41-118		33	26	J3
Indeno(1,2,3-cd)pyrene	0.00100	0.00000	0.00077	77.8	0.00110	110	39-129		34	20	J3
Naphthalene	0.00100	0.00000	0.00062	62.6	0.00091	91.2	26-111		37	32	J3
Phenanthrene	0.00100	0.00000	0.00073	73.8	0.00099	99.7	41-116		30	25	J3
Pyrene	0.00100	0.00000	0.00073	73.9	0.00101	101	32-136		31	22	J3

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Est. 1970

Quality Control Summary
SDG: L520284
OASIS Environmental - Anchorage, AK

Test: Semi-volatile Organic Compounds by Method 8270C-SIM
Project No:
Project: Euraka Lodge Crowley
Collection Date: 6/7/2011
Analysis Date: 6/15/2011 10:22:00 AM
Instrument ID: BNAMS9
Sample Numbers: L520284-01

Matrix: Water - mg/L
EPA ID: TN00003
Analytic Batch: WG540038
Analyst: 0
Extraction Date: 6/11/2011

Matrix Spike/Matrix Spike Duplicate
L520459-04

Analyte	Spike Value	Sample	MS	% Rec	MSD	% Rec	Control Limits	% Rec Qualifier	% RPD	Control Limits	RPD Qual
1-Methylnaphthalene	0.00100	0.00000	0.00082	82.5	0.00086	86.9	30-123		5.1	32	
2-Chloronaphthalene	0.00100	0.00000	0.00087	87.4	0.00091	91.1	34-120		4.2	30	
2-Methylnaphthalene	0.00100	0.00000	0.00091	91.6	0.00095	95.9	29-116		4.6	31	
Acenaphthene	0.00100	0.00000	0.00090	90.7	0.00092	92.6	40-113		2.0	25	
Acenaphthylene	0.00100	0.00000	0.00096	96.9	0.00095	95.3	36-115		1.7	25	
Anthracene	0.00100	0.00000	0.00090	90.6	0.00097	97.4	45-118		7.3	26	
Benzo(a)anthracene	0.00100	0.00000	0.00086	86.9	0.00088	88.9	36-129		2.3	26	
Benzo(a)pyrene	0.00100	0.00000	0.00072	72.6	0.00077	77.8	44-124		6.9	21	
Benzo(b)fluoranthene	0.00100	0.00000	0.00078	78.0	0.00084	84.6	43-126		8.2	38	
Benzo(g,h,i)perylene	0.00100	0.00000	0.00042	42.7	0.00048	48.5	39-128		13	20	
Benzo(k)fluoranthene	0.00100	0.00000	0.00070	70.4	0.00072	72.2	44-127		2.5	39	
Chrysene	0.00100	0.00000	0.00079	79.9	0.00080	80.6	36-137		0.9	22	
Dibenz(a,h)anthracene	0.00100	0.00000	0.00043	43.6	0.00048	48.0	39-129		9.5	20	
Fluoranthene	0.00100	0.00000	0.00099	99.1	0.00102	102	45-123		3.0	25	
Fluorene	0.00100	0.00000	0.00101	101	0.00106	106	41-118		4.4	26	
Indeno(1,2,3-cd)pyrene	0.00100	0.00000	0.00045	45.5	0.00050	50.5	39-129		11	20	
Naphthalene	0.00100	0.00000	0.00084	84.7	0.00089	89.3	26-111		5.3	32	
Phenanthrene	0.00100	0.00000	0.00098	98.3	0.00100	100	41-116		1.8	25	
Pyrene	0.00100	0.00000	0.00089	89.0	0.00092	92.1	32-136		3.4	22	

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Quality Control Summary
SDG: L520284
OASIS Environmental - Anchorage, AK

Test: Semi-volatile Organic Compounds by Method 8270C-SIM
Project No:
Project: Euraka Lodge Crowley
Collection Date: 6/7/2011
Analysis Date: 6/15/2011 10:22:00 AM
Instrument ID: BNAMS9
Sample Numbers: L520284-01

Matrix: Water - mg/L
EPA ID: TN00003
Analytic Batch: WG540038
Analyst: 0
Extraction Date: 6/11/2011

Laboratory Control Sample/ Laboratory Control Sample Duplicate

Analyte	Spike	LCS	% Rec	LCSD	% Rec	Control Limits	Qualifier	% RPD	Control Limits	Qualifier
1-Methylnaphthalene	0.00100	0.00069	69.8	0.00081	81.7	30-123		16	32	
2-Chloronaphthalene	0.00100	0.00073	73.0	0.00083	83.2	34-120		13	30	
2-Methylnaphthalene	0.00100	0.00072	72.1	0.00080	80.7	29-116		11	31	
Acenaphthene	0.00100	0.00082	82.2	0.00086	86.1	40-113		4.6	25	
Acenaphthylene	0.00100	0.00082	82.3	0.00084	84.0	36-115		2.0	25	
Anthracene	0.00100	0.00086	86.9	0.00090	90.3	45-118		3.8	26	
Benzo(a)anthracene	0.00100	0.00076	76.8	0.00079	79.3	36-129		3.3	26	
Benzo(a)pyrene	0.00100	0.00087	87.0	0.00089	89.7	44-124		3.1	21	
Benzo(b)fluoranthene	0.00100	0.00092	92.1	0.00096	96.5	43-126		4.6	38	
Benzo(g,h,i)perylene	0.00100	0.00095	95.0	0.00098	98.0	39-128		3.1	20	
Benzo(k)fluoranthene	0.00100	0.00085	85.1	0.00091	91.2	44-127		6.8	39	
Chrysene	0.00100	0.00090	90.1	0.00096	96.3	36-137		6.6	22	
Dibenz(a,h)anthracene	0.00100	0.00092	92.5	0.00094	94.9	39-129		2.6	20	
Fluoranthene	0.00100	0.00087	87.8	0.00091	91.6	45-123		4.2	25	
Fluorene	0.00100	0.00087	87.8	0.00093	93.8	41-118		6.5	26	
Indeno(1,2,3-cd)pyrene	0.00100	0.00093	93.6	0.00097	97.6	39-129		4.2	20	
Naphthalene	0.00100	0.00068	68.0	0.00080	80.0	26-111		16	32	
Phenanthrene	0.00100	0.00083	83.2	0.00087	87.0	41-116		4.4	25	
Pyrene	0.00100	0.00085	85.4	0.00085	85.6	32-136		0.1	22	

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Quality Control Summary
SDG: L520284
OASIS Environmental - Anchorage, AK

Test:	Semi-Volatiles by Method 8270C-SIM		
Project No:		Matrix:	Water - mg/L
Project:	Euraka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/7/2011	**Analytic Batch:**	**WG540038**
Analysis Date:	6/15/2011	Analyst:	0
Instrument ID:	BNAMS9	Extraction Date:	6/11/2011
Sample Numbers:	L520284-01		

Internal Standard Response and Retention Time Summary

FileID:0615_02.D Date:6/15/2011 Time:8:42 AM

	IS1		IS2		IS3	
	Response	RT	Response	RT	Response	RT
12 Hour Std			409500	5.6	189849	6.63
Upper Limit			819000	6.1	379698	7.13
Lower Limit			204750	5.1	94924.5	6.13
Sample ID	Response	RT	Response	RT	Response	RT
Blank WG540038			355698	5.60	183246	6.63
L520284-01			421404	5.60	196076	6.63
LCS WG540038			422222	5.60	193923	6.63
LCSD WG540038			390962	5.60	183762	6.63
MS WG540038			441200	5.60	193375	6.63
MS WG540038			471869	5.60	215610	6.63
MSD WG540038			416527	5.60	190434	6.63
MSD WG540038			464503	5.60	218897	6.63

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Quality Control Summary
SDG: L520284
OASIS Environmental - Anchorage, AK

Test:	Semi-Volatiles by Method 8270C-SIM		
Project No:		Matrix:	Water - mg/L
Project:	Euraka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/7/2011	**Analytic Batch:**	**WG540038**
Analysis Date:	6/15/2011	Analyst:	0
Instrument ID:	BNAMS9	Extraction Date:	6/11/2011
Sample Numbers:	L520284-01		

Internal Standard Response and Retention Time Summary

FileID:0615_02.D Date:6/15/2011 Time:8:42 AM

	IS4		IS5		IS6	
	Response	RT	Response	RT	Response	RT
12 Hour Std	293104	7.5	230699	9.06	269654	10.25
Upper Limit	586208	8	461398	9.56	539308	10.75
Lower Limit	146552	7	115349.5	8.56	134827	9.75
Sample ID	Response	RT	Response	RT	Response	RT
Blank WG540038	288826	7.50	218576	9.07	246350	10.26
L520284-01	304792	7.50	233964	9.06	264503	10.26
LCS WG540038	299110	7.50	224817	9.06	271090	10.26
LCSD WG540038	282853	7.50	217019	9.06	262524	10.26
MS WG540038	308864	7.50	239893	9.06	277335	10.26
MS WG540038	342988	7.50	268205	9.06	311599	10.26
MSD WG540038	317952	7.50	231814	9.06	251367	10.26
MSD WG540038	346612	7.50	271212	9.06	309403	10.26

B141

Chain of Custody Page 1 of 1

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L520284

CoCode **OASISAAK** (lab use only)
Template/Prelogin T70868 / P352877
Shipped Via:

Company Name/Address:
OASIS Environmental - Anchorage, AK
825 W. 8th Ave.
Anchorage,AK 99501

Billing Information:
Accounts Payable
825 W. 8th Ave.
Anchorage,AK 99501

Report to: Dan Frank
Email to: D.Frank@oasisenviro.com
Project Description: Eureka Lodge Crowley
City/State Collected:
Phone: (907) 350-4897
FAX: (907) 258-4033
Client Project #:
ESC Key:
Collected by: (print) A.Hansin/B.Delaney
Site/Facility ID#:
P.O.#: 465-014
Collected by: (signature) A Hansin
Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day.....200%
___ Next Day.....100%
___ Two Day.....50%
___ Three Day.....25%

Date Results Needed: 10day STD
Email? __No__Yes
FAX? __No__Yes

Analysis/Container/Preserv

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	DRO/RRO AK102/103 1-Liter Amber HCl Preserved	PAH 8270 SIM 1-Liter Amber					Remarks/Contaminant	Sample # (lab only)
11-EUR-LK01-01-SW	Grab	SW		6/7/11	1100	8	X	X					MS/MSD	-01

*Matrix: **SS** - Soil/Solid **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other SW (Surface Water)

Remarks: 4135593188203

pH ___ Temp ___ Flow ___ Other ___

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
A Hansin	6/8/11	1500	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)
			Kim Walen

Samples returned via: ☐ UPS ☒ FedEx ☐ Courier ☐ ___
Temp: 2.5c Bottles Received: 8
Date: 6/10/11 Time: 1115

Condition: (lab use only) OK
CoC Seals Intact ✓ Y ___ N ___ NA
pH Checked: NCF:

ESC
L·A·B S·C·I·E·N·C·E·S

Cooler Receipt Form

Client: DASISAAK

Cooler Received On: 6-10-11 and Opened On: 6.10.11 By: Kevin Wallace

Kevin Woodson
(Signature)

Temperature of cooler when opened: 2.5° Degrees Celsius/ Was sufficient ice used: Yes ☐ No ☐

What kind of packing material was used? Bubblewrap ☑ Peanuts ☐ Other ☐ None ☐

	Yes	No
Were custody seals on outside of cooler and intact?	☑	☐
Were custody papers properly filled out (ink, signed, etc.)?	☑	☐
Did you sign the custody papers in the appropriate place?	☑	☐
Did all bottles arrive in good condition?	☑	☐
Were all bottle labels complete? (#, date, signed, pres, etc)?	☑	☐
Did all bottle labels and tags agree with custody papers?	☑	☐
Were correct bottles used for the analyses requested?	☑	☐
Was sufficient amount of sample sent in each bottle?	☑	☐
Were correct preservatives used?	☑	☐
If applicable, was an observable VOA headspace present?	☐ NA	☐
Non Conformance Generated: *(See attached NCF if yes)*	☐	☑

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Quality Control Summary
SDG: L520288

For: OASIS Environmental - Anchorage, AK
Project: Eureka
June 17, 2011

Sample Receiving and Handling

All sample aliquots were received at the correct temperature, in the proper containers, and with the appropriate preservatives. All method specified holding times were met.

Semi-volatile Organic Compounds by Method 8270C-SIM

Laboratory Control Sample

Samples L520288-01 and 02 were analyzed in analytical batch WG540038. The laboratory control sample associated with these samples was within the laboratory control limits for all compounds.

Matrix Spike/Matrix Spike Duplicate

For analytical batch WG540038 matrix spike/matrix spike duplicate analysis was performed on sample L520284-01. The matrix spike recoveries and relative percent differences were within laboratory control limits for all target analytes.

For analytical batch WG540038 matrix spike/matrix spike duplicate analysis was performed on sample L520459-04. The matrix spike recoveries were within laboratory control limits for all target analytes. The relative percent difference exceeded laboratory limits for 2-Chloronaphthalene, 2-Methylnaphthalene, Acenaphthene, Acenaphthylene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Chrysene, Dibenz(a,h)anthracene, Fluoranthene, Fluorene, Indeno(1,2,3-cd)pyrene, Naphthalene, Phenanthrene, Benzo(b)fluoranthene, and Pyrene.

Blank Analysis

The method blank, the initial, and all continuing calibration blanks contained no analytes at concentrations above the method reporting limit.

AK102 / AK103

Laboratory Control Sample

Samples L520288-01 and 02 were analyzed in analytical batch WG540042. The laboratory control sample associated with these samples was within the laboratory control limits.

Matrix Spike/Matrix Spike Duplicate

For analytical batch WG540042, matrix spike/matrix spike duplicate analysis was performed on sample L520284-01. The matrix spike recoveries and relative percent differences were within laboratory control limits for all target analytes.

Blank Analysis

The method blank, the initial, and all continuing calibration blanks contained no analytes at concentrations above the method reporting limit.

Nancy F. Winters
ESC Representative
ESC Lab Sciences

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Dan Frank
OASIS Environmental - Anchorage, AK
825 W. 8th Ave.
Anchorage, AK 99501

Report Summary

Friday June 17, 2011

Report Number: L520288
Samples Received: 06/10/11
Client Project:

Description: Eureka

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By: 

T. Alan Harvill , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140
NJ - TN002,NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A,
TX - T104704245, OK-9915

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.
Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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REPORT OF ANALYSIS

Dan Frank
OASIS Environmental - Anchorage, AK
825 W. 8th Ave.
Anchorage, AK 99501

June 17, 2011

ESC Sample # : L520288-01

Date Received : June 10, 2011
Description : Eureka

Site ID :

Sample ID : 11-EUR-WH01-01-SW

Project # :

Collected By :
Collection Date : 06/07/11 10:20

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
AK102 DRO C10-C25	54.	22.	800	ug/l	J	AK102/1	06/15/11	1
AK103 RRO C25-C36	U	66.	200	ug/l		AK102/1	06/15/11	1
Surrogate Recovery								
o-Terphenyl	90.8			% Rec.		AK102/1	06/15/11	1
Polynuclear Aromatic Hydrocarbons								
Anthracene	U	0.013	0.050	ug/l		8270C-S	06/15/11	1
Acenaphthene	U	0.0082	0.050	ug/l		8270C-S	06/15/11	1
Acenaphthylene	U	0.011	0.050	ug/l		8270C-S	06/15/11	1
Benzo(a)anthracene	U	0.012	0.050	ug/l		8270C-S	06/15/11	1
Benzo(a)pyrene	U	0.016	0.050	ug/l		8270C-S	06/15/11	1
Benzo(b)fluoranthene	U	0.019	0.050	ug/l		8270C-S	06/15/11	1
Benzo(g,h,i)perylene	U	0.016	0.050	ug/l		8270C-S	06/15/11	1
Benzo(k)fluoranthene	U	0.026	0.050	ug/l		8270C-S	06/15/11	1
Chrysene	U	0.014	0.050	ug/l		8270C-S	06/15/11	1
Dibenz(a,h)anthracene	U	0.0045	0.050	ug/l		8270C-S	06/15/11	1
Fluoranthene	U	0.016	0.050	ug/l		8270C-S	06/15/11	1
Fluorene	U	0.0090	0.050	ug/l		8270C-S	06/15/11	1
Indeno(1,2,3-cd)pyrene	U	0.0074	0.050	ug/l		8270C-S	06/15/11	1
Naphthalene	U	0.012	0.25	ug/l		8270C-S	06/15/11	1
Phenanthrene	U	0.018	0.050	ug/l		8270C-S	06/15/11	1
Pyrene	U	0.016	0.050	ug/l		8270C-S	06/15/11	1
1-Methylnaphthalene	U	0.019	0.25	ug/l		8270C-S	06/15/11	1
2-Methylnaphthalene	U	0.016	0.25	ug/l		8270C-S	06/15/11	1
2-Chloronaphthalene	U	0.016	0.25	ug/l		8270C-S	06/15/11	1
Surrogate Recovery								
Nitrobenzene-d5	71.7			% Rec.		8270C-S	06/15/11	1
2-Fluorobiphenyl	81.3			% Rec.		8270C-S	06/15/11	1
p-Terphenyl-d14	81.6			% Rec.		8270C-S	06/15/11	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
Note:
The reported analytical results relate only to the sample submitted.

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Reported: 06/17/11 12:04 Printed: 06/17/11 12:05

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REPORT OF ANALYSIS

Dan Frank
OASIS Environmental - Anchorage, AK
825 W. 8th Ave.
Anchorage, AK 99501

June 17, 2011

ESC Sample # : L520288-02

Date Received : June 10, 2011
Description : Eureka

Site ID :

Sample ID : 11-EUR-LK01-01-SW

Project # :

Collected By :
Collection Date : 06/07/11 11:00

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
AK102 DRO C10-C25	51.	22.	800	ug/l	J	AK102/1	06/15/11	1
AK103 RRO C25-C36	U	66.	200	ug/l		AK102/1	06/15/11	1
Surrogate Recovery								
o-Terphenyl	93.7			% Rec.		AK102/1	06/15/11	1
Polynuclear Aromatic Hydrocarbons								
Anthracene	U	0.013	0.050	ug/l		8270C-S	06/15/11	1
Acenaphthene	U	0.0082	0.050	ug/l		8270C-S	06/15/11	1
Acenaphthylene	U	0.011	0.050	ug/l		8270C-S	06/15/11	1
Benzo(a)anthracene	U	0.012	0.050	ug/l		8270C-S	06/15/11	1
Benzo(a)pyrene	U	0.016	0.050	ug/l		8270C-S	06/15/11	1
Benzo(b)fluoranthene	U	0.019	0.050	ug/l		8270C-S	06/15/11	1
Benzo(g,h,i)perylene	U	0.016	0.050	ug/l		8270C-S	06/15/11	1
Benzo(k)fluoranthene	U	0.026	0.050	ug/l		8270C-S	06/15/11	1
Chrysene	U	0.014	0.050	ug/l		8270C-S	06/15/11	1
Dibenz(a,h)anthracene	U	0.0045	0.050	ug/l		8270C-S	06/15/11	1
Fluoranthene	U	0.016	0.050	ug/l		8270C-S	06/15/11	1
Fluorene	U	0.0090	0.050	ug/l		8270C-S	06/15/11	1
Indeno(1,2,3-cd)pyrene	U	0.0074	0.050	ug/l		8270C-S	06/15/11	1
Naphthalene	U	0.012	0.25	ug/l		8270C-S	06/15/11	1
Phenanthrene	U	0.018	0.050	ug/l		8270C-S	06/15/11	1
Pyrene	U	0.016	0.050	ug/l		8270C-S	06/15/11	1
1-Methylnaphthalene	U	0.019	0.25	ug/l		8270C-S	06/15/11	1
2-Methylnaphthalene	U	0.016	0.25	ug/l		8270C-S	06/15/11	1
2-Chloronaphthalene	U	0.016	0.25	ug/l		8270C-S	06/15/11	1
Surrogate Recovery								
Nitrobenzene-d5	61.3			% Rec.		8270C-S	06/15/11	1
2-Fluorobiphenyl	74.9			% Rec.		8270C-S	06/15/11	1
p-Terphenyl-d14	75.7			% Rec.		8270C-S	06/15/11	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
Note:
The reported analytical results relate only to the sample submitted.

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Reported: 06/17/11 12:04 Printed: 06/17/11 12:05

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L520288-01	WG540042	SAMP	AK102 DRO C10-C25	R1723990	J
L520288-02	WG540042	SAMP	AK102 DRO C10-C25	R1723990	J

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J	(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed
06/17/11 at 12:05:17

TSR Signing Reports: 358

Need cooler receipt form on ALL samples. All samples get QC2MODCN.

Sample: L520288-01 Account: OASISAAK Received: 06/10/11 11:15 Due Date: 06/17/11 00:00 RPT Date: 06/17/11 12:04
Run AK102/103 from 40ml vials using the 3511 extraction. jw
Sample: L520288-02 Account: OASISAAK Received: 06/10/11 11:15 Due Date: 06/17/11 00:00 RPT Date: 06/17/11 12:04
Run AK102/103 from 40ml vials using the 3511 extraction. jw

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Quality Control Summary
SDG: L520288
OASIS Environmental - Anchorage, AK

Test:	AK102 / AK103		
Project No:		Matrix:	Water - mg/L
Project:	Eureka	EPA ID:	TN00003
Collection Date:	6/7/2011	**Analytic Batch:**	**WG540042**
Analysis Date:	6/15/2011	Analyst:	280
Instrument ID:	SVGC16	Extraction Date:	6/11/2011
Sample Numbers:	L520288-01, -02		

Method Blank

Analyte	CAS	PQL	Qualifiers
AK DRO C10-C25		<0.80	
AK RRO C25-C36		<0.20	

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
AK DRO C10-C36	1.50	1.39	92.4	75 - 125	

Laboratory Control Sample Duplicate (LCSD)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
AK DRO C10-C36	1.50	1.38	92.2	75 - 125	

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Quality Control Summary
SDG: L520288
OASIS Environmental - Anchorage, AK

Test:	AK102 / AK103		
Project No:		Matrix:	Water - mg/L
Project:	Eureka	EPA ID:	TN00003
Collection Date:	6/7/2011	**Analytic Batch:**	**WG540042**
Analysis Date:	6/15/2011	Analyst:	280
Instrument ID:	SVGC16	Extraction Date:	6/11/2011
Sample Numbers:	L520288-01, -02		

Surrogate Summary

Laboratory Sample ID	o-terphenylD ppm	% Rec
Blank WG540042	0.0189	94.7
LCS WG540042	0.0193	96.3
LCSD WG540042	0.0191	95.7
MS WG540042	0.0190	94.9
MSD WG540042	0.0180	89.9
L520288-01	0.0182	90.8
L520288-02	0.0187	93.7

o-terphenyl Limits - 50 - 150

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Quality Control Summary
SDG: L520288
OASIS Environmental - Anchorage, AK

Test: AK102 / AK103
Project No:
Project: Eureka
Collection Date: 6/7/2011
Analysis Date: 6/15/2011
Instrument ID: SVGC16
Sample Numbers: L520288-01, -02

Matrix: Water - mg/L
EPA ID: TN00003
Analytic Batch: WG540042
Analyst: 280
Extraction Date: 6/11/2011

Laboratory Control Sample/ Laboratory Control Sample Duplicate

Analyte	Spike	LCS	% Rec	LCSD	% Rec	Control Limits	Qualifier	% RPD	Control Limits	Qualifier
AK DRO C10-C36	1.50	1.39	92.4	1.38	92.2	75-125		0.3	20	

Matrix Spike/Matrix Spike Duplicate

L520284-01

Analyte	Spike Value	Sample	MS	% Rec	MSD	% Rec	Control Limits	% Rec Qualifier	% RPD	Control Limits	RPD Qual
AK DRO C10-C36	1.50	0.048	1.38	88.8	1.35	86.8	75-125		2.6	20	

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Quality Control Summary
SDG: L520288
OASIS Environmental - Anchorage, AK

Test:	Semi-Volatiles by Method 8270C-SIM		
Project No:		Matrix:	Water - mg/L
Project:	Eureka	EPA ID:	TN00003
Collection Date:	6/7/2011	**Analytic Batch:**	**WG540038**
Analysis Date:	6/15/2011	Analyst:	0
Instrument ID:	BNAMS9	Extraction Date:	6/11/2011
Sample Numbers:	L520288-01, -02		

Method Blank

Analyte	CAS	PQL	Qualifiers
Naphthalene	91-20-3	<0.000250	
2-Methylnaphthalene	91-57-6	<0.000250	
1-Methylnaphthalene	90-12-0	<0.000250	
2-Chloronaphthalene	91-58-7	<0.000250	
Acenaphthylene	208-96-8	<0.0000500	
Acenaphthene	83-32-9	<0.0000500	
Fluorene	86-73-7	<0.0000500	
Phenanthrene	85-01-8	<0.0000500	
Anthracene	120-12-7	<0.0000500	
Fluoranthene	206-44-0	<0.0000500	
Pyrene	129-00-0	<0.0000500	
Benzo(a)anthracene	56-55-3	<0.0000500	
Chrysene	218-01-9	<0.0000500	
Benzo(b)fluoranthene	205-99-2	<0.0000500	
Benzo(k)fluoranthene	207-08-9	<0.0000500	
Benzo(a)pyrene	50-32-8	<0.0000500	
Indeno(1,2,3-cd)pyrene	193-39-5	<0.0000500	
Dibenz(a,h)anthracene	53-70-3	<0.0000500	
Benzo(g,h,i)perylene	191-24-2	<0.0000500	

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Quality Control Summary
SDG: L520288
OASIS Environmental - Anchorage, AK

Test:	Semi-volatile Organic Compounds by Method 8270C-SIM		
Project No:		Matrix:	Water - mg/L
Project:	Eureka	EPA ID:	TN00003
Collection Date:	6/7/2011	**Analytic Batch:**	**WG540038**
Analysis Date:	6/15/2011 10:05:00 AM	Analyst:	0
Instrument ID:	BNAMS9	Extraction Date:	6/11/2011
Sample Numbers:	L520288-01, -02		

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
1-Methylnaphthalene	0.00100	0.000698	69.8	30 - 123	
2-Chloronaphthalene	0.00100	0.000730	73.0	34 - 120	
2-Methylnaphthalene	0.00100	0.000721	72.1	29 - 116	
Acenaphthene	0.00100	0.000822	82.2	40 - 113	
Acenaphthylene	0.00100	0.000823	82.3	36 - 115	
Anthracene	0.00100	0.000869	86.9	45 - 118	
Benzo(a)anthracene	0.00100	0.000768	76.8	36 - 129	
Benzo(a)pyrene	0.00100	0.000870	87.0	44 - 124	
Benzo(b)fluoranthene	0.00100	0.000921	92.1	43 - 126	
Benzo(g,h,i)perylene	0.00100	0.000950	95.0	39 - 128	
Benzo(k)fluoranthene	0.00100	0.000851	85.1	44 - 127	
Chrysene	0.00100	0.000901	90.1	36 - 137	
Dibenz(a,h)anthracene	0.00100	0.000925	92.5	39 - 129	
Fluoranthene	0.00100	0.000878	87.8	45 - 123	
Fluorene	0.00100	0.000878	87.8	41 - 118	
Indeno(1,2,3-cd)pyrene	0.00100	0.000936	93.6	39 - 129	
Naphthalene	0.00100	0.000680	68.0	26 - 111	
Phenanthrene	0.00100	0.000832	83.2	41 - 116	
Pyrene	0.00100	0.000854	85.4	32 - 136	

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Quality Control Summary
SDG: L520288
OASIS Environmental - Anchorage, AK

Test:	Semi-volatile Organic Compounds by Method 8270C-SIM		
Project No:		Matrix:	Water - mg/L
Project:	Eureka	EPA ID:	TN00003
Collection Date:	6/7/2011	**Analytic Batch:**	**WG540038**
Analysis Date:	6/15/2011 10:05:00 AM	Analyst:	0
Instrument ID:	BNAMS9	Extraction Date:	6/11/2011
Sample Numbers:	L520288-01, -02		

Laboratory Control Sample Duplicate (LCSD)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
1-Methylnaphthalene	0.00100	0.000817	81.7	30 - 123	
2-Chloronaphthalene	0.00100	0.000832	83.2	34 - 120	
2-Methylnaphthalene	0.00100	0.000807	80.7	29 - 116	
Acenaphthene	0.00100	0.000861	86.1	40 - 113	
Acenaphthylene	0.00100	0.000840	84.0	36 - 115	
Anthracene	0.00100	0.000903	90.3	45 - 118	
Benzo(a)anthracene	0.00100	0.000793	79.3	36 - 129	
Benzo(a)pyrene	0.00100	0.000897	89.7	44 - 124	
Benzo(b)fluoranthene	0.00100	0.000965	96.5	43 - 126	
Benzo(g,h,i)perylene	0.00100	0.000980	98.0	39 - 128	
Benzo(k)fluoranthene	0.00100	0.000912	91.2	44 - 127	
Chrysene	0.00100	0.000963	96.3	36 - 137	
Dibenz(a,h)anthracene	0.00100	0.000949	94.9	39 - 129	
Fluoranthene	0.00100	0.000916	91.6	45 - 123	
Fluorene	0.00100	0.000938	93.8	41 - 118	
Indeno(1,2,3-cd)pyrene	0.00100	0.000976	97.6	39 - 129	
Naphthalene	0.00100	0.000800	80.0	26 - 111	
Phenanthrene	0.00100	0.000870	87.0	41 - 116	
Pyrene	0.00100	0.000856	85.6	32 - 136	

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Quality Control Summary
SDG: L520288
OASIS Environmental - Anchorage, AK

Test:	Semi-Volatiles by Method 8270C-SIM		
Project No:		Matrix:	Water - mg/L
Project:	Eureka	EPA ID:	TN00003
Collection Date:	6/7/2011	**Analytic Batch:**	**WG540038**
Analysis Date:	6/15/2011	Analyst:	0
Instrument ID:	BNAMS9	Extraction Date:	6/11/2011
Sample Numbers:	L520288-01, -02		

Surrogate Summary

Laboratory	NBZ		2FP		TRP	
Sample ID	ppb	% Rec	ppb	% Rec	ppb	% Rec
Blank WG540038	0.946	94.6	0.879	87.9	0.904	90.4
LCS WG540038	0.724	72.4	0.798	79.8	0.837	83.7
LCSD WG540038	0.833	83.3	0.835	83.5	0.875	87.5
L520288-02	0.612	61.2	0.748	74.8	0.757	75.7
L520288-01	0.716	71.6	0.813	81.3	0.816	81.6
MS WG540038	0.644	64.4	0.730	73.0	0.708	70.8
MSD WG540038	0.964	96.4	0.977	97.7	0.996	99.6

NBZ - Nitrobenzene-d5	10-139
2FP - 2-Fluorobiphenyl	31-121
TPH - Terphneyl-d14	21-136

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Quality Control Summary
SDG: L520288
OASIS Environmental - Anchorage, AK

Test: Semi-volatile Organic Compounds by Method 8270C-SIM
Project No:
Project: Eureka
Collection Date: 6/7/2011
Analysis Date: 6/15/2011 10:05:00 AM
Instrument ID: BNAMS9
Sample Numbers: L520288-01, -02

Matrix: Water - mg/L
EPA ID: TN00003
Analytic Batch: WG540038
Analyst: 0
Extraction Date: 6/11/2011

Matrix Spike/Matrix Spike Duplicate

L520284-01

Analyte	Spike Value	Sample	MS	% Rec	MSD	% Rec	Control Limits	% Rec Qualifier	% RPD	Control Limits	RPD Qual
1-Methylnaphthalene	0.00100	0.00000	0.00063	63.1	0.00086	86.0	30-123		31	32	
2-Chloronaphthalene	0.00100	0.00000	0.00066	66.3	0.00094	94.1	34-120		35	30	J3
2-Methylnaphthalene	0.00100	0.00000	0.00064	64.8	0.00096	96.2	29-116		39	31	J3
Acenaphthene	0.00100	0.00000	0.00069	69.1	0.00092	92.9	40-113		29	25	J3
Acenaphthylene	0.00100	0.00000	0.00073	73.7	0.00100	100	36-115		30	25	J3
Anthracene	0.00100	0.00000	0.00074	74.8	0.00094	94.8	45-118		24	26	
Benzo(a)anthracene	0.00100	0.00000	0.00070	70.9	0.00094	94.3	36-129		28	26	J3
Benzo(a)pyrene	0.00100	0.00000	0.00074	74.5	0.00102	102	44-124		31	21	J3
Benzo(b)fluoranthene	0.00100	0.00000	0.00074	74.9	0.00111	111	43-126		38	38	J3
Benzo(g,h,i)perylene	0.00100	0.00000	0.00077	77.6	0.00112	112	39-128		36	20	J3
Benzo(k)fluoranthene	0.00100	0.00000	0.00067	67.9	0.00102	102	44-127		40	39	J3
Chrysene	0.00100	0.00000	0.00072	72.4	0.00094	94.0	36-137		26	22	J3
Dibenz(a,h)anthracene	0.00100	0.00000	0.00077	77.4	0.00108	108	39-129		33	20	J3
Fluoranthene	0.00100	0.00000	0.00080	80.1	0.00105	105	45-123		27	25	J3
Fluorene	0.00100	0.00000	0.00078	78.0	0.00109	109	41-118		33	26	J3
Indeno(1,2,3-cd)pyrene	0.00100	0.00000	0.00077	77.8	0.00110	110	39-129		34	20	J3
Naphthalene	0.00100	0.00000	0.00062	62.6	0.00091	91.2	26-111		37	32	J3
Phenanthrene	0.00100	0.00000	0.00073	73.8	0.00099	99.7	41-116		30	25	J3
Pyrene	0.00100	0.00000	0.00073	73.9	0.00101	101	32-136		31	22	J3

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Quality Control Summary
SDG: L520288
OASIS Environmental - Anchorage, AK

Test: Semi-volatile Organic Compounds by Method 8270C-SIM
Project No:
Project: Eureka
Collection Date: 6/7/2011
Analysis Date: 6/15/2011 10:05:00 AM
Instrument ID: BNAMS9
Sample Numbers: L520288-01, -02

Matrix: Water - mg/L
EPA ID: TN00003
Analytic Batch: WG540038
Analyst: 0
Extraction Date: 6/11/2011

Matrix Spike/Matrix Spike Duplicate
L520459-04

Analyte	Spike Value	Sample	MS	% Rec	MSD	% Rec	Control Limits	% Rec Qualifier	% RPD	Control Limits	RPD Qual
1-Methylnaphthalene	0.00100	0.00000	0.00082	82.5	0.00086	86.9	30-123		5.1	32	
2-Chloronaphthalene	0.00100	0.00000	0.00087	87.4	0.00091	91.1	34-120		4.2	30	
2-Methylnaphthalene	0.00100	0.00000	0.00091	91.6	0.00095	95.9	29-116		4.6	31	
Acenaphthene	0.00100	0.00000	0.00090	90.7	0.00092	92.6	40-113		2.0	25	
Acenaphthylene	0.00100	0.00000	0.00096	96.9	0.00095	95.3	36-115		1.7	25	
Anthracene	0.00100	0.00000	0.00090	90.6	0.00097	97.4	45-118		7.3	26	
Benzo(a)anthracene	0.00100	0.00000	0.00086	86.9	0.00088	88.9	36-129		2.3	26	
Benzo(a)pyrene	0.00100	0.00000	0.00072	72.6	0.00077	77.8	44-124		6.9	21	
Benzo(b)fluoranthene	0.00100	0.00000	0.00078	78.0	0.00084	84.6	43-126		8.2	38	
Benzo(g,h,i)perylene	0.00100	0.00000	0.00042	42.7	0.00048	48.5	39-128		13	20	
Benzo(k)fluoranthene	0.00100	0.00000	0.00070	70.4	0.00072	72.2	44-127		2.5	39	
Chrysene	0.00100	0.00000	0.00079	79.9	0.00080	80.6	36-137		0.9	22	
Dibenz(a,h)anthracene	0.00100	0.00000	0.00043	43.6	0.00048	48.0	39-129		9.5	20	
Fluoranthene	0.00100	0.00000	0.00099	99.1	0.00102	102	45-123		3.0	25	
Fluorene	0.00100	0.00000	0.00101	101	0.00106	106	41-118		4.4	26	
Indeno(1,2,3-cd)pyrene	0.00100	0.00000	0.00045	45.5	0.00050	50.5	39-129		11	20	
Naphthalene	0.00100	0.00000	0.00084	84.7	0.00089	89.3	26-111		5.3	32	
Phenanthrene	0.00100	0.00000	0.00098	98.3	0.00100	100	41-116		1.8	25	
Pyrene	0.00100	0.00000	0.00089	89.0	0.00092	92.1	32-136		3.4	22	

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Quality Control Summary
SDG: L520288
OASIS Environmental - Anchorage, AK

Test: Semi-volatile Organic Compounds by Method 8270C-SIM
Project No:
Project: Eureka
Collection Date: 6/7/2011
Analysis Date: 6/15/2011 10:05:00 AM
Instrument ID: BNAMS9
Sample Numbers: L520288-01, -02

Matrix: Water - mg/L
EPA ID: TN00003
Analytic Batch: WG540038
Analyst: 0
Extraction Date: 6/11/2011

Laboratory Control Sample/ Laboratory Control Sample Duplicate

Analyte	Spike	LCS	% Rec	LCSD	% Rec	Control Limits	Qualifier	% RPD	Control Limits	Qualifier
1-Methylnaphthalene	0.00100	0.00069	69.8	0.00081	81.7	30-123		16	32	
2-Chloronaphthalene	0.00100	0.00073	73.0	0.00083	83.2	34-120		13	30	
2-Methylnaphthalene	0.00100	0.00072	72.1	0.00080	80.7	29-116		11	31	
Acenaphthene	0.00100	0.00082	82.2	0.00086	86.1	40-113		4.6	25	
Acenaphthylene	0.00100	0.00082	82.3	0.00084	84.0	36-115		2.0	25	
Anthracene	0.00100	0.00086	86.9	0.00090	90.3	45-118		3.8	26	
Benzo(a)anthracene	0.00100	0.00076	76.8	0.00079	79.3	36-129		3.3	26	
Benzo(a)pyrene	0.00100	0.00087	87.0	0.00089	89.7	44-124		3.1	21	
Benzo(b)fluoranthene	0.00100	0.00092	92.1	0.00096	96.5	43-126		4.6	38	
Benzo(g,h,i)perylene	0.00100	0.00095	95.0	0.00098	98.0	39-128		3.1	20	
Benzo(k)fluoranthene	0.00100	0.00085	85.1	0.00091	91.2	44-127		6.8	39	
Chrysene	0.00100	0.00090	90.1	0.00096	96.3	36-137		6.6	22	
Dibenz(a,h)anthracene	0.00100	0.00092	92.5	0.00094	94.9	39-129		2.6	20	
Fluoranthene	0.00100	0.00087	87.8	0.00091	91.6	45-123		4.2	25	
Fluorene	0.00100	0.00087	87.8	0.00093	93.8	41-118		6.5	26	
Indeno(1,2,3-cd)pyrene	0.00100	0.00093	93.6	0.00097	97.6	39-129		4.2	20	
Naphthalene	0.00100	0.00068	68.0	0.00080	80.0	26-111		16	32	
Phenanthrene	0.00100	0.00083	83.2	0.00087	87.0	41-116		4.4	25	
Pyrene	0.00100	0.00085	85.4	0.00085	85.6	32-136		0.1	22	

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Est. 1970

Quality Control Summary
SDG: L520288
OASIS Environmental - Anchorage, AK

Test:	Semi-Volatiles by Method 8270C-SIM		
Project No:		Matrix:	Water - mg/L
Project:	Eureka	EPA ID:	TN00003
Collection Date:	6/7/2011	**Analytic Batch:**	**WG540038**
Analysis Date:	6/15/2011	Analyst:	0
Instrument ID:	BNAMS9	Extraction Date:	6/11/2011
Sample Numbers:	L520288-01, -02		

Internal Standard Response and Retention Time Summary

FileID:0615_02.D Date:6/15/2011 Time:8:42 AM

	IS1		IS2		IS3	
	Response	RT	Response	RT	Response	RT
12 Hour Std			409500	5.6	189849	6.63
Upper Limit			819000	6.1	379698	7.13
Lower Limit			204750	5.1	94924.5	6.13
Sample ID	Response	RT	Response	RT	Response	RT
Blank WG540038			355698	5.60	183246	6.63
L520288-01			416303	5.60	186912	6.63
L520288-02			403991	5.60	177825	6.63
LCS WG540038			422222	5.60	193923	6.63
LCSD WG540038			390962	5.60	183762	6.63
MS WG540038			441200	5.60	193375	6.63
MS WG540038			471869	5.60	215610	6.63
MSD WG540038			416527	5.60	190434	6.63
MSD WG540038			464503	5.60	218897	6.63

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Quality Control Summary
SDG: L520288
OASIS Environmental - Anchorage, AK

Test:	Semi-Volatiles by Method 8270C-SIM		
Project No:		Matrix:	Water - mg/L
Project:	Eureka	EPA ID:	TN00003
Collection Date:	6/7/2011	**Analytic Batch:**	**WG540038**
Analysis Date:	6/15/2011	Analyst:	0
Instrument ID:	BNAMS9	Extraction Date:	6/11/2011
Sample Numbers:	L520288-01, -02		

Internal Standard Response and Retention Time Summary

FileID:0615_02.D Date:6/15/2011 Time:8:42 AM

	IS4		IS5		IS6	
	Response	RT	Response	RT	Response	RT
12 Hour Std	293104	7.5	230699	9.06	269654	10.25
Upper Limit	586208	8	461398	9.56	539308	10.75
Lower Limit	146552	7	115349.5	8.56	134827	9.75
Sample ID	Response	RT	Response	RT	Response	RT
Blank WG540038	288826	7.50	218576	9.07	246350	10.26
L520288-01	296896	7.50	224324	9.07	264728	10.25
L520288-02	280125	7.50	223346	9.07	263816	10.26
LCS WG540038	299110	7.50	224817	9.06	271090	10.26
LCSD WG540038	282853	7.50	217019	9.06	262524	10.26
MS WG540038	308864	7.50	239893	9.06	277335	10.26
MS WG540038	342988	7.50	268205	9.06	311599	10.26
MSD WG540038	317952	7.50	231814	9.06	251367	10.26
MSD WG540038	346612	7.50	271212	9.06	309403	10.26

Company Name/Address:
OASIS Environmental - Anchorage, AK
825 W. 8th Ave.
Anchorage.AK 99501

Billing Information:
Accounts Payable
825 W. 8th Ave.
Anchorage,AK 99501

Report to: Dan Frank
Email to: D.frank@oasisenv.ro.com
Project Description: Eureka Lodge Crowley
City/Sate Collected:
Phone: (907) 350-4897
FAX: (907) 258-4033
Client Project #:
ESC Key:
Collected by: (print) A. Hansen / B. Delaney
Site/Facility ID#:
P.O.#: 465-014
Collected by (signature):
Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day..... 200%
___ Next Day..... 100%
___ Two Day..... 50%
___ Three Day..... 25%

Date Results Needed:
Email? __No__Yes
FAX? __No__Yes

Analysis/Container/Preservative

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	DRO/12RO AK 102/103 HCl 1-liter Amber	PAH 8270 Sim 1-liter Amber						Remarks/Contaminant	Sample # (lab only)
11-EUR-WH01-01-SW	Grab	SW		6/7/11	1020	4	X	X							L520886
11-EUR-LK01-01-SW	"	SW		"	1100	4	X	X						~~WAS/WASD~~ AH	02

Chain of Custody Page 1 of 1

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G039

CoCode OASISAAK (lab use only)
Template/Prelogin T708681P352877
Shipped Via:

*Matrix: **SS** - Soil/Solid **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other SW (Surface water)

Remarks:

pH ___ Temp ___
Flow ___ Other ___

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☒ FedEx ☐ Courier ☐ ___
Temp: 3.7c
Bottles Received: 8 + TB
Date: 6/10/11
Time: 1115

Condition: (lab use only)
CoC Seals Intact (Y) ___ N ___ NA TD
pH Checked: 2
NCF:

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Quality Control Summary
SDG: L520391

For: OASIS Environmental - Anchorage, AK
Project: Eureka Lodge Crowley
June 22, 2011

Sample Receiving and Handling

All sample aliquots were received at the correct temperature, in the proper containers, and with the appropriate preservatives. All method specified holding times were met.

Total Solids by Method 2540G

Laboratory Control Sample

Samples L520391-01 and 02 were analyzed in analytical batch WG540506. The laboratory control sample associated with these samples was within the laboratory control limits.

Samples L520391-05, -04, -09, -10, -07, -08, -06, and -03 were analyzed in analytical batch WG540508. The laboratory control sample associated with these samples was within the laboratory control limits.

Sample Duplicate Analysis

For analytical batch WG540506 sample duplicate analysis was performed on sample L520391-02. The relative percent difference exceeded the method limits for Total Solids.

For analytical batch WG540508 sample duplicate analysis was performed on sample L520391-10. The relative percent differences were within the method limits.

Blank Analysis

The method blank, the initial, and all continuing calibration blanks contained no analytes at concentrations above the method reporting limit.

Method AK101

Laboratory Control Sample

Samples L520391-02, -07, -09, -05, -08, -03, -04, -06, -01, and -10 were analyzed in analytical batch WG539955. The laboratory control sample associated with these samples was within the laboratory control limits for all compounds.

Sample L520391-11 was analyzed in analytical batch WG539958. The laboratory control sample associated with this sample was within the laboratory control limits for all compounds.

Matrix Spike/Matrix Spike Duplicate

For analytical batch WG539955 matrix spike/matrix spike duplicate analysis was performed on sample L520391-06. The matrix spike recoveries and relative percent differences were within laboratory control limits for all target analytes.

For analytical batch WG539958 matrix spike/matrix spike duplicate analysis was performed on sample L520257-01. The matrix spike recoveries and relative percent differences were within laboratory control limits for all target analytes.

Blank Analysis

The method blank, the initial, and all continuing calibration blanks contained no analytes at concentrations above the method reporting limit.

Volatile Organic Compounds by Method 8260B

Laboratory Control Sample

Sample L520391-11 was analyzed in analytical batch WG539948. The laboratory control sample associated with this sample was within the laboratory control limits for all compounds.

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Quality Control Summary
SDG: L520391
For: OASIS Environmental - Anchorage, AK
Project: Eureka Lodge Crowley
June 22, 2011

Samples L520391-06, -07, -09, -10, -01, -03, -05, -02, -08, and -04 were analyzed in analytical batch WG540138. The laboratory control sample associated with these samples was within the laboratory control limits for all compounds.

Matrix Spike/Matrix Spike Duplicate
For analytical batch WG539948 matrix spike/matrix spike duplicate analysis was performed on sample L520399-01. The matrix spike recoveries and relative percent differences were within laboratory control limits for all target analytes.

For analytical batch WG540138 matrix spike/matrix spike duplicate analysis was performed on sample L520391-06. The matrix spike recoveries and relative percent differences were within laboratory control limits for all target analytes.

Blank Analysis
The method blank, the initial, and all continuing calibration blanks contained no analytes at concentrations above the method reporting limit.

AK102 / AK103
Laboratory Control Sample
Samples L520391-06, -09, -01, -04, -08, -10, -02, -07, -03, and -05 were analyzed in analytical batch WG540437. The laboratory control sample associated with these samples was above method limits control.

Matrix Spike/Matrix Spike Duplicate
For analytical batch WG540437, matrix spike/matrix spike duplicate analysis was performed on sample L520391-06. The matrix spike recoveries and relative percent differences were within laboratory control limits for all target analytes.

Blank Analysis
The method blank, the initial, and all continuing calibration blanks contained no analytes at concentrations above the method reporting limit.

Nancy F. Winters
ESC Representative
ESC Lab Sciences

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Dan Frank
OASIS Environmental - Anchorage, AK
825 W. 8th Ave.
Anchorage, AK 99501

Report Summary

Tuesday June 21, 2011

Report Number: L520391
Samples Received: 06/10/11
Client Project:

Description: Eureka

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By: Jarred Willis

Jarred Willis , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140
NJ - TN002,NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A,
TX - T104704245, OK-9915

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.
Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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REPORT OF ANALYSIS

Dan Frank
OASIS Environmental - Anchorage, AK
825 W. 8th Ave.
Anchorage, AK 99501

June 21,2011

ESC Sample # : L520391-01

Date Received : June 10, 2011
Description : Eureka Lodge Crowley

Site ID :

Sample ID : 11-EUR-SB01-SO

Project # :

Collected By : AH/BD
Collection Date : 06/06/11 11:30

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	92.			%		2540G	06/16/11	1
TPHGAK C6 to C10	U	1.1	4.0	mg/kg		AK101	06/11/11	37.5
Surrogate Recovery-%								
a,a,a-Trifluorotoluene(FID)	96.7			% Rec.		AK101	06/11/11	37.5
Benzene	U	0.016	0.040	mg/kg		8260B	06/13/11	37.5
Toluene	U	0.012	0.20	mg/kg		8260B	06/13/11	37.5
Ethylbenzene	U	0.012	0.040	mg/kg		8260B	06/13/11	37.5
Total Xylenes	U	0.017	0.12	mg/kg		8260B	06/13/11	37.5
Surrogate Recovery								
Toluene-d8	106.			% Rec.		8260B	06/13/11	37.5
Dibromofluoromethane	104.			% Rec.		8260B	06/13/11	37.5
a,a,a-Trifluorotoluene	106.			% Rec.		8260B	06/13/11	37.5
4-Bromofluorobenzene	101.			% Rec.		8260B	06/13/11	37.5
AK102 DRO C10-C25	1.2	1.1	22.	mg/kg	J	AK102/10	06/20/11	1
AK103 RRO C25-C36	U	2.2	110	mg/kg		AK102/10	06/20/11	1
Surrogate Recovery								
o-Terphenyl	87.5			% Rec.		AK102/10	06/20/11	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD
RDL = Reported Detection Limit = LOQ = PQL = EQL
Note:

The reported analytical results relate only to the sample submitted
Reported: 06/21/11 07:31 Printed: 06/21/11 07:31

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REPORT OF ANALYSIS

Dan Frank
OASIS Environmental - Anchorage, AK
825 W. 8th Ave.
Anchorage, AK 99501

June 21,2011

ESC Sample # : L520391-02

Date Received : June 10, 2011
Description : Eureka Lodge Crowley

Site ID :

Sample ID : 11-EUR-SB02-01-SO

Project # :

Collected By : AH/BD
Collection Date : 06/06/11 12:35

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	86.			%	J3	2540G	06/16/11	1
TPHGAK C6 to C10	88.	1.2	4.7	mg/kg		AK101	06/11/11	40.5
Surrogate Recovery-%								
a,a,a-Trifluorotoluene(FID)	97.5			% Rec.		AK101	06/11/11	40.5
Benzene	0.049	0.017	0.047	mg/kg		8260B	06/13/11	40.5
Toluene	0.14	0.013	0.23	mg/kg	J	8260B	06/13/11	40.5
Ethylbenzene	0.020	0.013	0.047	mg/kg	J	8260B	06/13/11	40.5
Total Xylenes	0.15	0.019	0.14	mg/kg		8260B	06/13/11	40.5
Surrogate Recovery								
Toluene-d8	108.			% Rec.		8260B	06/13/11	40.5
Dibromofluoromethane	103.			% Rec.		8260B	06/13/11	40.5
a,a,a-Trifluorotoluene	108.			% Rec.		8260B	06/13/11	40.5
4-Bromofluorobenzene	142.			% Rec.	J1	8260B	06/13/11	40.5
AK102 DRO C10-C25	4000	56.	1200	mg/kg		AK102/10	06/20/11	50
AK103 RRO C25-C36	130	2.2	120	mg/kg		AK102/10	06/20/11	1
Surrogate Recovery								
o-Terphenyl	0.00			% Rec.	J7	AK102/10	06/20/11	50

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD
RDL = Reported Detection Limit = LOQ = PQL = EQL
Note:

The reported analytical results relate only to the sample submitted
Reported: 06/21/11 07:31 Printed: 06/21/11 07:31

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REPORT OF ANALYSIS

Dan Frank
OASIS Environmental - Anchorage, AK
825 W. 8th Ave.
Anchorage, AK 99501

June 21,2011

ESC Sample # : L520391-03

Date Received : June 10, 2011
Description : Eureka Lodge Crowley

Site ID :

Sample ID : 11-EUR-SB03-01-SO

Project # :

Collected By : AH/BD
Collection Date : 06/06/11 14:40

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	79.			%		2540G	06/16/11	1
TPHGAK C6 to C10	U	1.3	5.5	mg/kg		AK101	06/12/11	44
Surrogate Recovery-%								
a,a,a-Trifluorotoluene(FID)	97.7			% Rec.		AK101	06/12/11	44
Benzene	U	0.019	0.055	mg/kg		8260B	06/13/11	44
Toluene	U	0.015	0.28	mg/kg		8260B	06/13/11	44
Ethylbenzene	U	0.014	0.055	mg/kg		8260B	06/13/11	44
Total Xylenes	U	0.020	0.17	mg/kg		8260B	06/13/11	44
Surrogate Recovery								
Toluene-d8	105.			% Rec.		8260B	06/13/11	44
Dibromofluoromethane	100.			% Rec.		8260B	06/13/11	44
a,a,a-Trifluorotoluene	105.			% Rec.		8260B	06/13/11	44
4-Bromofluorobenzene	103.			% Rec.		8260B	06/13/11	44
AK102 DRO C10-C25	4.5	1.1	25.	mg/kg	J	AK102/10	06/20/11	1
AK103 RRO C25-C36	4.9	2.2	120	mg/kg	J	AK102/10	06/20/11	1
Surrogate Recovery								
o-Terphenyl	79.9			% Rec.		AK102/10	06/20/11	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD
RDL = Reported Detection Limit = LOQ = PQL = EQL
Note:

The reported analytical results relate only to the sample submitted
Reported: 06/21/11 07:31 Printed: 06/21/11 07:31

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REPORT OF ANALYSIS

Dan Frank
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825 W. 8th Ave.
Anchorage, AK 99501

June 21,2011

ESC Sample # : L520391-04

Date Received : June 10, 2011
Description : Eureka Lodge Crowley

Site ID :

Sample ID : 11-EUR-SB03-02-SO

Project # :

Collected By : AH/BD
Collection Date : 06/06/11 14:50

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	77.			%		2540G	06/16/11	1
TPHGAK C6 to C10	44.	1.3	5.8	mg/kg		AK101	06/12/11	45
Surrogate Recovery-%								
a,a,a-Trifluorotoluene(FID)	93.5			% Rec.		AK101	06/12/11	45
Benzene	18.	0.019	0.058	mg/kg	E	8260B	06/13/11	45
Toluene	0.19	0.015	0.29	mg/kg	J	8260B	06/13/11	45
Ethylbenzene	1.1	0.014	0.058	mg/kg		8260B	06/13/11	45
Total Xylenes	3.8	0.021	0.17	mg/kg		8260B	06/13/11	45
Surrogate Recovery								
Toluene-d8	106.			% Rec.		8260B	06/13/11	45
Dibromofluoromethane	98.6			% Rec.		8260B	06/13/11	45
a,a,a-Trifluorotoluene	107.			% Rec.		8260B	06/13/11	45
4-Bromofluorobenzene	101.			% Rec.		8260B	06/13/11	45
AK102 DRO C10-C25	3.1	1.1	26.	mg/kg	J	AK102/10	06/20/11	1
AK103 RRO C25-C36	U	2.2	130	mg/kg		AK102/10	06/20/11	1
Surrogate Recovery								
o-Terphenyl	76.6			% Rec.		AK102/10	06/20/11	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD
RDL = Reported Detection Limit = LOQ = PQL = EQL
Note:

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Reported: 06/21/11 07:31 Printed: 06/21/11 07:31

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REPORT OF ANALYSIS

Dan Frank
OASIS Environmental - Anchorage, AK
825 W. 8th Ave.
Anchorage, AK 99501

June 21,2011

ESC Sample # : L520391-05

Date Received : June 10, 2011
Description : Eureka Lodge Crowley

Site ID :

Sample ID : 11-EUR-SB20-01-SO

Project # :

Collected By : AH/BD
Collection Date : 06/06/11 20:00

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	77.			%		2540G	06/16/11	1
TPHGAK C6 to C10	39.	1.3	5.8	mg/kg		AK101	06/12/11	44.5
Surrogate Recovery-%								
a,a,a-Trifluorotoluene(FID)	95.7			% Rec.		AK101	06/12/11	44.5
Benzene	16.	0.019	0.058	mg/kg	E	8260B	06/13/11	44.5
Toluene	0.21	0.015	0.29	mg/kg	J	8260B	06/13/11	44.5
Ethylbenzene	1.2	0.014	0.058	mg/kg		8260B	06/13/11	44.5
Total Xylenes	4.0	0.020	0.17	mg/kg		8260B	06/13/11	44.5
Surrogate Recovery								
Toluene-d8	104.			% Rec.		8260B	06/13/11	44.5
Dibromofluoromethane	101.			% Rec.		8260B	06/13/11	44.5
a,a,a-Trifluorotoluene	104.			% Rec.		8260B	06/13/11	44.5
4-Bromofluorobenzene	99.7			% Rec.		8260B	06/13/11	44.5
AK102 DRO C10-C25	3.1	1.1	26.	mg/kg	J	AK102/10	06/20/11	1
AK103 RRO C25-C36	U	2.2	130	mg/kg		AK102/10	06/20/11	1
Surrogate Recovery								
o-Terphenyl	75.1			% Rec.		AK102/10	06/20/11	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD
RDL = Reported Detection Limit = LOQ = PQL = EQL
Note:

The reported analytical results relate only to the sample submitted
Reported: 06/21/11 07:31 Printed: 06/21/11 07:31

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Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Dan Frank
OASIS Environmental - Anchorage, AK
825 W. 8th Ave.
Anchorage, AK 99501

June 21,2011

ESC Sample # : L520391-06

Date Received : June 10, 2011
Description : Eureka Lodge Crowley

Site ID :

Sample ID : 11-EUR-SB04-01-SO

Project # :

Collected By : AH/BD
Collection Date : 06/06/11 15:50

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	79.			%		2540G	06/16/11	1
TPHGAK C6 to C10	U	1.3	5.6	mg/kg		AK101	06/11/11	44
Surrogate Recovery-%								
a,a,a-Trifluorotoluene(FID)	96.4			% Rec.		AK101	06/11/11	44
Benzene	U	0.019	0.056	mg/kg		8260B	06/13/11	44
Toluene	U	0.015	0.28	mg/kg		8260B	06/13/11	44
Ethylbenzene	U	0.014	0.056	mg/kg		8260B	06/13/11	44
Total Xylenes	U	0.020	0.17	mg/kg		8260B	06/13/11	44
Surrogate Recovery								
Toluene-d8	105.			% Rec.		8260B	06/13/11	44
Dibromofluoromethane	104.			% Rec.		8260B	06/13/11	44
a,a,a-Trifluorotoluene	105.			% Rec.		8260B	06/13/11	44
4-Bromofluorobenzene	103.			% Rec.		8260B	06/13/11	44
AK102 DRO C10-C25	5.3	1.1	25.	mg/kg	J	AK102/10	06/20/11	1
AK103 RRO C25-C36	4.8	2.2	130	mg/kg	J	AK102/10	06/20/11	1
Surrogate Recovery								
o-Terphenyl	79.3			% Rec.		AK102/10	06/20/11	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD
RDL = Reported Detection Limit = LOQ = PQL = EQL
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The reported analytical results relate only to the sample submitted
Reported: 06/21/11 07:31 Printed: 06/21/11 07:31

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REPORT OF ANALYSIS

Dan Frank
OASIS Environmental - Anchorage, AK
825 W. 8th Ave.
Anchorage, AK 99501

June 21,2011

ESC Sample # : L520391-07

Date Received : June 10, 2011
Description : Eureka Lodge Crowley

Site ID :

Sample ID : 11-EUR-SB05-01-SO

Project # :

Collected By : AH/BD
Collection Date : 06/06/11 16:40

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	80.			%		2540G	06/16/11	1
TPHGAK C6 to C10	U	1.4	6.2	mg/kg		AK101	06/12/11	49.5
Surrogate Recovery-%								
a,a,a-Trifluorotoluene(FID)	96.9			% Rec.		AK101	06/12/11	49.5
Benzene	U	0.021	0.062	mg/kg		8260B	06/13/11	49.5
Toluene	U	0.016	0.31	mg/kg		8260B	06/13/11	49.5
Ethylbenzene	U	0.016	0.062	mg/kg		8260B	06/13/11	49.5
Total Xylenes	U	0.023	0.19	mg/kg		8260B	06/13/11	49.5
Surrogate Recovery								
Toluene-d8	105.			% Rec.		8260B	06/13/11	49.5
Dibromofluoromethane	100.			% Rec.		8260B	06/13/11	49.5
a,a,a-Trifluorotoluene	104.			% Rec.		8260B	06/13/11	49.5
4-Bromofluorobenzene	102.			% Rec.		8260B	06/13/11	49.5
AK102 DRO C10-C25	3.5	1.1	25.	mg/kg	J	AK102/10	06/20/11	1
AK103 RRO C25-C36	5.0	2.2	120	mg/kg	J	AK102/10	06/20/11	1
Surrogate Recovery								
o-Terphenyl	61.2			% Rec.		AK102/10	06/20/11	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD
RDL = Reported Detection Limit = LOQ = PQL = EQL
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REPORT OF ANALYSIS

Dan Frank
OASIS Environmental - Anchorage, AK
825 W. 8th Ave.
Anchorage, AK 99501

June 21,2011

ESC Sample # : L520391-08

Date Received : June 10, 2011
Description : Eureka Lodge Crowley

Site ID :

Sample ID : 11-EUR-SB06-01-SO

Project # :

Collected By : AH/BD
Collection Date : 06/06/11 17:10

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	91.			%		2540G	06/16/11	1
TPHGAK C6 to C10	U	1.3	4.8	mg/kg		AK101	06/12/11	44
Surrogate Recovery-%								
a,a,a-Trifluorotoluene(FID)	96.8			% Rec.		AK101	06/12/11	44
Benzene	U	0.019	0.048	mg/kg		8260B	06/13/11	44
Toluene	U	0.015	0.24	mg/kg		8260B	06/13/11	44
Ethylbenzene	U	0.014	0.048	mg/kg		8260B	06/13/11	44
Total Xylenes	U	0.020	0.14	mg/kg		8260B	06/13/11	44
Surrogate Recovery								
Toluene-d8	106.			% Rec.		8260B	06/13/11	44
Dibromofluoromethane	97.5			% Rec.		8260B	06/13/11	44
a,a,a-Trifluorotoluene	105.			% Rec.		8260B	06/13/11	44
4-Bromofluorobenzene	105.			% Rec.		8260B	06/13/11	44
AK102 DRO C10-C25	1.8	1.1	22.	mg/kg	J	AK102/10	06/20/11	1
AK103 RRO C25-C36	U	2.2	110	mg/kg		AK102/10	06/20/11	1
Surrogate Recovery								
o-Terphenyl	73.7			% Rec.		AK102/10	06/20/11	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD
RDL = Reported Detection Limit = LOQ = PQL = EQL
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REPORT OF ANALYSIS

Dan Frank
OASIS Environmental - Anchorage, AK
825 W. 8th Ave.
Anchorage, AK 99501

June 21,2011

ESC Sample # : L520391-09

Date Received : June 10, 2011
Description : Eureka Lodge Crowley

Site ID :

Sample ID : 11-EUR-SB07-01-SO

Project # :

Collected By : AH/BD
Collection Date : 06/06/11 17:50

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	80.			%		2540G	06/16/11	1
TPHGAK C6 to C10	U	1.3	5.8	mg/kg		AK101	06/12/11	46
Surrogate Recovery-%								
a,a,a-Trifluorotoluene(FID)	96.6			% Rec.		AK101	06/12/11	46
Benzene	U	0.020	0.058	mg/kg		8260B	06/13/11	46
Toluene	U	0.015	0.29	mg/kg		8260B	06/13/11	46
Ethylbenzene	U	0.014	0.058	mg/kg		8260B	06/13/11	46
Total Xylenes	U	0.021	0.17	mg/kg		8260B	06/13/11	46
Surrogate Recovery								
Toluene-d8	104.			% Rec.		8260B	06/13/11	46
Dibromofluoromethane	101.			% Rec.		8260B	06/13/11	46
a,a,a-Trifluorotoluene	105.			% Rec.		8260B	06/13/11	46
4-Bromofluorobenzene	104.			% Rec.		8260B	06/13/11	46
AK102 DRO C10-C25	3.3	1.1	25.	mg/kg	J	AK102/10	06/20/11	1
AK103 RRO C25-C36	4.3	2.2	120	mg/kg	J	AK102/10	06/20/11	1
Surrogate Recovery								
o-Terphenyl	73.6			% Rec.		AK102/10	06/20/11	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD
RDL = Reported Detection Limit = LOQ = PQL = EQL
Note:

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REPORT OF ANALYSIS

Dan Frank
OASIS Environmental - Anchorage, AK
825 W. 8th Ave.
Anchorage, AK 99501

June 21, 2011

ESC Sample # : L520391-10

Date Received : June 10, 2011
Description : Eureka Lodge Crowley

Site ID :

Sample ID : 11-EUR-SB08-01-SO

Project # :

Collected By : AH/BD
Collection Date : 06/06/11 09:35

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	90.			%		2540G	06/16/11	1
TPHGAK C6 to C10	U	1.1	4.4	mg/kg		AK101	06/12/11	39.5
Surrogate Recovery-%								
a,a,a-Trifluorotoluene(FID)	97.8			% Rec.		AK101	06/12/11	39.5
Benzene	U	0.017	0.044	mg/kg		8260B	06/13/11	39.5
Toluene	U	0.013	0.22	mg/kg		8260B	06/13/11	39.5
Ethylbenzene	U	0.012	0.044	mg/kg		8260B	06/13/11	39.5
Total Xylenes	U	0.018	0.13	mg/kg		8260B	06/13/11	39.5
Surrogate Recovery								
Toluene-d8	105.			% Rec.		8260B	06/13/11	39.5
Dibromofluoromethane	102.			% Rec.		8260B	06/13/11	39.5
a,a,a-Trifluorotoluene	105.			% Rec.		8260B	06/13/11	39.5
4-Bromofluorobenzene	97.0			% Rec.		8260B	06/13/11	39.5
AK102 DRO C10-C25	U	1.1	22.	mg/kg		AK102/10	06/20/11	1
AK103 RRO C25-C36	U	2.2	110	mg/kg		AK102/10	06/20/11	1
Surrogate Recovery								
o-Terphenyl	78.6			% Rec.		AK102/10	06/20/11	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD
RDL = Reported Detection Limit = LOQ = PQL = EQL
Note:

The reported analytical results relate only to the sample submitted
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REPORT OF ANALYSIS

Dan Frank
OASIS Environmental - Anchorage, AK
825 W. 8th Ave.
Anchorage, AK 99501

June 21, 2011

ESC Sample # : L520391-11

Date Received : June 10, 2011
Description : Eureka Lodge Crowley

Site ID :

Sample ID : TRIP BLANK

Project # :

Collected By : AH/BD
Collection Date : 06/06/11 09:50

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
TPHGAK C6 to C10	U	41.	100	ug/l		AK101	06/11/11	1
Surrogate Recovery-%								
a,a,a-Trifluorotoluene(FID)	94.0			% Rec.		AK101	06/11/11	1
Benzene	U	0.23	1.0	ug/l		8260B	06/11/11	1
Toluene	U	0.32	5.0	ug/l		8260B	06/11/11	1
Ethylbenzene	U	0.22	1.0	ug/l		8260B	06/11/11	1
Total Xylenes	U	0.86	3.0	ug/l		8260B	06/11/11	1
Surrogate Recovery								
Toluene-d8	101.			% Rec.		8260B	06/11/11	1
Dibromofluoromethane	102.			% Rec.		8260B	06/11/11	1
a,a,a-Trifluorotoluene	104.			% Rec.		8260B	06/11/11	1
4-Bromofluorobenzene	93.7			% Rec.		8260B	06/11/11	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
Note:
The reported analytical results relate only to the sample submitted.

.
Reported: 06/21/11 07:31 Printed: 06/21/11 07:31

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L520391-01	WG540437	SAMP	AK102 DRO C10-C25	R1730510	J
L520391-02	WG540506	SAMP	Total Solids	R1725620	J3
	WG540437	SAMP	o-Terphenyl	R1730510	J7
	WG540138	SAMP	Toluene	R1723829	J
	WG540138	SAMP	Ethylbenzene	R1723829	J
	WG540138	SAMP	4-Bromofluorobenzene	R1723829	J1
L520391-03	WG540437	SAMP	AK102 DRO C10-C25	R1730510	J
	WG540437	SAMP	AK103 RRO C25-C36	R1730510	J
L520391-04	WG540437	SAMP	AK102 DRO C10-C25	R1730510	J
	WG540138	SAMP	Benzene	R1723829	E
	WG540138	SAMP	Toluene	R1723829	J
L520391-05	WG540437	SAMP	AK102 DRO C10-C25	R1730510	J
	WG540138	SAMP	Benzene	R1723829	E
	WG540138	SAMP	Toluene	R1723829	J
L520391-06	WG540437	SAMP	AK102 DRO C10-C25	R1730510	J
	WG540437	SAMP	AK103 RRO C25-C36	R1730510	J
L520391-07	WG540437	SAMP	AK102 DRO C10-C25	R1730510	J
	WG540437	SAMP	AK103 RRO C25-C36	R1730510	J
L520391-08	WG540437	SAMP	AK102 DRO C10-C25	R1730510	J
L520391-09	WG540437	SAMP	AK102 DRO C10-C25	R1730510	J
	WG540437	SAMP	AK103 RRO C25-C36	R1730510	J

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
E	GTL (EPA) - Greater than upper calibration limit: Actual value is known to be greater than the upper calibration range.
J	(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits
J3	The associated batch QC was outside the established quality control range for precision.
J7	Surrogate recovery limits cannot be evaluated; surrogates were diluted out

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed
06/21/11 at 07:31:57

TSR Signing Reports: 358

Need cooler receipt form on ALL samples. All samples get QC2MODCN.

Sample: L520391-01 Account: OASISAAK Received: 06/10/11 11:15 Due Date: 06/17/11 00:00 RPT Date: 06/21/11 07:31

Sample: L520391-02 Account: OASISAAK Received: 06/10/11 11:15 Due Date: 06/17/11 00:00 RPT Date: 06/21/11 07:31

Sample: L520391-03 Account: OASISAAK Received: 06/10/11 11:15 Due Date: 06/17/11 00:00 RPT Date: 06/21/11 07:31

Sample: L520391-04 Account: OASISAAK Received: 06/10/11 11:15 Due Date: 06/17/11 00:00 RPT Date: 06/21/11 07:31

Sample: L520391-05 Account: OASISAAK Received: 06/10/11 11:15 Due Date: 06/17/11 00:00 RPT Date: 06/21/11 07:31

Sample: L520391-06 Account: OASISAAK Received: 06/10/11 11:15 Due Date: 06/17/11 00:00 RPT Date: 06/21/11 07:31
Please ms/msd sample please
Sample: L520391-07 Account: OASISAAK Received: 06/10/11 11:15 Due Date: 06/17/11 00:00 RPT Date: 06/21/11 07:31

Sample: L520391-08 Account: OASISAAK Received: 06/10/11 11:15 Due Date: 06/17/11 00:00 RPT Date: 06/21/11 07:31

Sample: L520391-09 Account: OASISAAK Received: 06/10/11 11:15 Due Date: 06/17/11 00:00 RPT Date: 06/21/11 07:31

Sample: L520391-10 Account: OASISAAK Received: 06/10/11 11:15 Due Date: 06/17/11 00:00 RPT Date: 06/21/11 07:31

Sample: L520391-11 Account: OASISAAK Received: 06/10/11 11:15 Due Date: 06/17/11 00:00 RPT Date: 06/21/11 07:31

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Quality Control Summary
SDG: L520391
OASIS Environmental - Anchorage, AK

Test:	Total Solids by Method 2540G		
Project No:		Matrix:	Soil - mg/kg
Project:	Eureka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/6/2011	**Analytic Batch:**	**WG540506**
Analysis Date:	6/16/2011 9:43:00 AM	Analyst:	487
Instrument ID:	LOGBAL1	Extraction Date:	6/14/2011
Sample Numbers:	L520391-01, -02		

Method Blank

Analyte	CAS	PQL	Qualifiers
Total Solids		<0.100	

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Total Solids	50.0	50.0	100	85 - 155	

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Quality Control Summary
SDG: L520391
OASIS Environmental - Anchorage, AK

Test:	Total Solids by Method 2540G		
Project No:		Matrix:	Soil - mg/kg
Project:	Eureka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/6/2011	**Analytic Batch:**	**WG540508**
Analysis Date:	6/16/2011 9:36:00 AM	Analyst:	487
Instrument ID:	LOGBAL1	Extraction Date:	6/14/2011
Sample Numbers:	L520391-05, -04, -09, -10, -07, -08, -06, -03		

Method Blank

Analyte	CAS	PQL	Qualifiers
Total Solids		<0.100	

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Total Solids	50.0	50.0	100.0	85 - 155	

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Quality Control Summary
SDG: L520391
OASIS Environmental - Anchorage, AK

Test:	Total Solids by Method 2540G		
Project No:		Matrix:	Soil - mg/kg
Project:	Eureka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/6/2011	**Analytic Batch:**	**WG540506**
Analysis Date:	6/16/2011 9:43:00 AM	Analyst:	487
Instrument ID:	LOGBAL1	Extraction Date:	6/14/2011
Sample Numbers:	L520391-01, -02		

Sample Duplicate
L520391-02

Name	Sample Results	Duplic Results	%RPD	Limit	Qualifiers
Total Solids	86.4	93.8	8.2	5	J3

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Quality Control Summary
SDG: L520391
OASIS Environmental - Anchorage, AK

Test:	Total Solids by Method 2540G		
Project No:		Matrix:	Soil - mg/kg
Project:	Eureka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/6/2011	**Analytic Batch:**	**WG540508**
Analysis Date:	6/16/2011 9:36:00 AM	Analyst:	487
Instrument ID:	LOGBAL1	Extraction Date:	6/14/2011
Sample Numbers:	L520391-05, -04, -09, -10, -07, -08, -06, -03		

Sample Duplicate
L520391-10

Name	Sample Results	Duplic Results	%RPD	Limit	Qualifiers
Total Solids	89.5	90.5	1.1	5	

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Quality Control Summary
SDG: L520391
OASIS Environmental - Anchorage, AK

Test:	Method AK101		
Project No:		Matrix:	Soil - mg/kg
Project:	Eureka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/6/2011	**Analytic Batch:**	**WG539955**
Analysis Date:	6/11/2011	Analyst:	171
Instrument ID:	VOCGC7		

Sample Numbers: L520391-02, -07, -09, -05, -08, -03, -04, -06, -01, -10

Method Blank

Analyte	CAS	PQL	Qualifiers
TPHGAK C6 to C10		<5.00	

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
TPHGAK C6 to C10	5.50	5.42	98.5	60 - 120	

Laboratory Control Sample Duplicate (LCSD)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
TPHGAK C6 to C10	5.50	5.07	92.1	60 - 120	

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Quality Control Summary
SDG: L520391
OASIS Environmental - Anchorage, AK

Test:	Method AK101		
Project No:		Matrix:	Water - mg/L
Project:	Eureka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/6/2011	**Analytic Batch:**	**WG539958**
Analysis Date:	6/11/2011	Analyst:	171
Instrument ID:	VOCGC4		
Sample Numbers:	L520391-11		

Method Blank

Analyte	CAS	PQL	Qualifiers
TPHGAK C6 to C10		<0.100	

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
TPHGAK C6 to C10	5.50	5.71	104	60 - 120	

Laboratory Control Sample Duplicate (LCSD)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
TPHGAK C6 to C10	5.50	5.85	106	60 - 120	

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Quality Control Summary
SDG: L520391
OASIS Environmental - Anchorage, AK

Test:	Method AK101		
Project No:		Matrix:	Soil - mg/kg
Project:	Eureka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/6/2011	**Analytic Batch:**	**WG539955**
Analysis Date:	6/11/2011	Analyst:	171
Instrument ID:	VOCGC7		

Sample Numbers: L520391-02, -07, -09, -05, -08, -03, -04, -06, -01, -10

Surrogate Summary

Laboratory Sample ID	a,a,a-Trifluorotoluene - FID ppb	a,a,a-Trifluorotoluene - FID % Rec	a,a,a-Trifluorotoluene - PID ppb	a,a,a-Trifluorotoluene - PID % Rec
LCS WG539955	211	106		
LCSD WG539955	207	103		
MS WG539955	207	104		
MSD WG539955	206	103		
Blank WG539955	194	97.2		
L520391-06	193	96.4		
L520391-01	193	96.7		
L520391-02	195	97.5		
L520391-03	195	97.7		
L520391-04	187	93.5		
L520391-05	191	95.7		
L520391-07	194	96.8		
L520391-08	193	96.7		
L520391-09	193	96.6		
L520391-10	196	97.8		

a,a,a-Trifluorotoluene (FID)	200 ppb	Limits - 59 - 128
a,a,a-Trifluorotoluene (PID)	200 ppb	Limits - 0 - 0

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Quality Control Summary
SDG: L520391
OASIS Environmental - Anchorage, AK

Test:	Method AK101		
Project No:		Matrix:	Water - mg/L
Project:	Eureka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/6/2011	**Analytic Batch:**	**WG539958**
Analysis Date:	6/11/2011	Analyst:	171
Instrument ID:	VOCGC4		
Sample Numbers:	L520391-11		

Surrogate Summary

Laboratory Sample ID	a,a,a-Trifluorotoluene - FID ppb	% Rec	a,a,a-Trifluorotoluene - PID ppb	% Rec
LCS WG539958	191	95.6		
LCSD WG539958	192	96.2		
MS WG539958	189	94.5		
MSD WG539958	187	93.4		
Blank WG539958	188	94.2		
L520391-11	188	94.0		

a,a,a-Trifluorotoluene (FID)	200 ppb	Limits - 62 - 128
a,a,a-Trifluorotoluene (PID)	200 ppb	Limits - 0 - 0

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Quality Control Summary
SDG: L520391
OASIS Environmental - Anchorage, AK

Test: Method AK101
Project No:
Project: Eureka Lodge Crowley
Collection Date: 6/6/2011
Analysis Date: 6/11/2011
Instrument ID: VOCGC7
Sample Numbers: L520391-02, -07, -09, -05, -08, -03, -04, -06, -01, -10

Matrix: Soil - mg/kg
EPA ID: TN00003
Analytic Batch: WG539955
Analyst: 171

Laboratory Control Sample/ Laboratory Control Sample Duplicate

Analyte	Spike	LCS	% Rec	LCSD	% Rec	Control Limits	Qualifier	% RPD	Control Limits	Qualifier
TPHGAK C6 to C10	5.50	5.42	98.5	5.07	92.1	60-120		6.7	20	

Matrix Spike/Matrix Spike Duplicate

L520391-06

Analyte	Spike Value	Sample	MS	% Rec	MSD	% Rec	Control Limits	% Rec Qualifier	% RPD	Control Limits	RPD Qual
TPHGAK C6 to C10	242	0.587	248	102	213	87.8	55-109		15	20	

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Quality Control Summary
SDG: L520391
OASIS Environmental - Anchorage, AK

Test: Method AK101
Project No:
Project: Eureka Lodge Crowley
Collection Date: 6/6/2011
Analysis Date: 6/11/2011
Instrument ID: VOCGC4
Sample Numbers: L520391-11

Matrix: Water - mg/L
EPA ID: TN00003
Analytic Batch: WG539958
Analyst: 171

Laboratory Control Sample/ Laboratory Control Sample Duplicate

Analyte	Spike	LCS	% Rec	LCSD	% Rec	Control Limits	Qualifier	% RPD	Control Limits	Qualifier
TPHGAK C6 to C10	5.50	5.71	104	5.85	106	60-120		2.4	20	

Matrix Spike/Matrix Spike Duplicate

L520257-01

Analyte	Spike Value	Sample	MS	% Rec	MSD	% Rec	Control Limits	% Rec Qualifier	% RPD	Control Limits	RPD Qual
TPHGAK C6 to C10	5.50	0.0000	5.36	97.5	5.61	102	58-122		4.5	20	

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Quality Control Summary
SDG: L520391
OASIS Environmental - Anchorage, AK

Test:	Method AK101		
Project No:		Matrix:	Soil - mg/kg
Project:	Eureka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/6/2011	**Analytic Batch:**	**WG539955**
Analysis Date:	6/11/2011	Analyst:	171
Instrument ID:	VOCGC7		

Sample Numbers: L520391-02, -07, -09, -05, -08, -03, -04, -06, -01, -10

Internal Standard Response and Retention Time Summary

FileID:0611_03.D Date:6/11/2011 Time:4:52 PM

	IS - FID		IS - PID	
	Response	RT	Response	RT
12 Hour Std	8458860	4.67	5337	4.51
Upper Limit	16917720	5.17	10674	5.01
Lower Limit	4229430	4.17	2668.5	4.01

Sample ID	Response	RT	Response	RT
Blank WG539955	8267381	4.67		
L520391-01	7251869	4.67		
L520391-02	6007747	4.67		
L520391-06	7441815	4.67		
LCS WG539955	8007063	4.67		
LCSD WG539955	8697606	4.67		
MS WG539955	7189229	4.68		
MSD WG539955	8300820	4.67		

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Quality Control Summary
SDG: L520391
OASIS Environmental - Anchorage, AK

Test:	Method AK101		
Project No:		Matrix:	Soil - mg/kg
Project:	Eureka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/6/2011	**Analytic Batch:**	**WG539955**
Analysis Date:	6/11/2011	Analyst:	171
Instrument ID:	VOCGC7		

Sample Numbers: L520391-02, -07, -09, -05, -08, -03, -04, -06, -01, -10

Internal Standard Response and Retention Time Summary

FileID:0611_21.D Date:6/12/2011 Time:12:37 AM

	IS - FID		IS - PID	
	Response	RT	Response	RT
12 Hour Std	8003668	4.67	4350	4.8
Upper Limit	16007336	5.17	8700	5.3
Lower Limit	4001834	4.17	2175	4.3

Sample ID	Response	RT	Response	RT
L520391-03	7606871	4.67		
L520391-04	7094352	4.67		
L520391-05	7578772	4.67		
L520391-07	7010008	4.67		
L520391-08	7179818	4.67		
L520391-09	7244958	4.67		
L520391-10	7050157	4.67		

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Quality Control Summary
SDG: L520391
OASIS Environmental - Anchorage, AK

Test:	Method AK101		
Project No:		Matrix:	Water - mg/L
Project:	Eureka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/6/2011	**Analytic Batch:**	**WG539958**
Analysis Date:	6/11/2011	Analyst:	171
Instrument ID:	VOCGC4		
Sample Numbers:	L520391-11		

Internal Standard Response and Retention Time Summary

FileID:0610_14.D Date:6/10/2011 Time:11:14 PM

	IS - FID		IS - PID	
	Response	RT	Response	RT
12 Hour Std	5931455	6.67	686	6.67
Upper Limit	11862910	7.17	1372	7.17
Lower Limit	2965727.5	6.17	343	6.17

Sample ID	Response	RT	Response	RT
Blank WG539958	5556642	6.67		
L520391-11	5599608	6.67		
LCS WG539958	6105321	6.67		
LCSD WG539958	6144537	6.67		
MS WG539958	6385918	6.66		
MSD WG539958	6290126	6.66		

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Quality Control Summary
SDG: L520391
OASIS Environmental - Anchorage, AK

Test:	Volatile Organic Compounds by Method 8260B		
Project No:		Matrix:	Water - mg/L
Project:	Eureka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/6/2011	**Analytic Batch:**	**WG539948**
Analysis Date:	6/11/2011	Analyst:	74
Instrument ID:	VOCMS6		
Sample Numbers:	L520391-11		

Method Blank

Analyte	CAS	PQL	Qualifiers
Benzene	71-43-2	<0.0010	
Toluene	108-88-3	<0.0050	
Ethylbenzene	100-41-4	<0.0010	
m&p-Xylene	1330-20-7	<0.0030	
o-Xylene	1330-20-7	<0.0030	

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Benzene	0.0250	0.0282	113	67 - 126	
Toluene	0.0250	0.0286	114	72 - 122	
Ethylbenzene	0.0250	0.0275	110	76 - 129	
m&p-Xylene	0.0500	0.0557	111	74 - 128	
o-Xylene	0.0250	0.0275	110	78 - 128	

Laboratory Control Sample Duplicate (LCSD)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Benzene	0.0250	0.0262	105	67 - 126	
Toluene	0.0250	0.0264	105	72 - 122	
Ethylbenzene	0.0250	0.0255	102	76 - 129	
m&p-Xylene	0.0500	0.0520	104	74 - 128	
o-Xylene	0.0250	0.0255	102	78 - 128	

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Quality Control Summary
SDG: L520391
OASIS Environmental - Anchorage, AK

Test:	Volatile Organic Compounds by Method 8260B		
Project No:		Matrix:	Soil - mg/kg
Project:	Eureka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/6/2011	**Analytic Batch:**	**WG540138**
Analysis Date:	6/13/2011	Analyst:	156
Instrument ID:	VOCMS7		
Sample Numbers:	L520391-06, -07, -09, -10, -01, -03, -05, -02, -08, -04		

Method Blank

Analyte	CAS	PQL	Qualifiers
Benzene	71-43-2	<0.0010	
Toluene	108-88-3	<0.0050	
Ethylbenzene	100-41-4	<0.0010	
m&p-Xylene	1330-20-7	<0.0030	
o-Xylene	1330-20-7	<0.0030	

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Benzene	0.0250	0.0277	111	65 - 128	
Toluene	0.0250	0.0248	99.3	70 - 120	
Ethylbenzene	0.0250	0.0258	103	74 - 128	
m&p-Xylene	0.0500	0.0512	102	73 - 127	
o-Xylene	0.0250	0.0264	106	75 - 129	

Laboratory Control Sample Duplicate (LCSD)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Benzene	0.0250	0.0279	112	65 - 128	
Toluene	0.0250	0.0254	102	70 - 120	
Ethylbenzene	0.0250	0.0247	98.7	74 - 128	
m&p-Xylene	0.0500	0.0491	98.2	73 - 127	
o-Xylene	0.0250	0.0249	99.6	75 - 129	

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Quality Control Summary
SDG: L520391
OASIS Environmental - Anchorage, AK

Test: Volatile Organic Compounds by Method 8260B
Project No:
Project: Eureka Lodge Crowley
Collection Date: 6/6/2011
Analysis Date: 6/11/2011
Instrument ID: VOCMS6
Sample Numbers: L520391-11

Matrix: Water - mg/L
EPA ID: TN00003
Analytic Batch: WG539948
Analyst: 74

Surrogate Summary

Laboratory	Dibromofluoromethane		Toluene-d8		4-Bromofluorobenzene		**Alternate Surrogate** a,a,a-Trifluorotoluene	
Sample ID	ppb	% Rec	ppb	% Rec	ppb	% Rec	ppb	% Rec
LCS WG539948	40.5	101	40.6	101	38.8	97.1	41.4	103
LCSD WG539948	41.2	103	40.8	102	39.8	99.6	41.5	104
MS WG539948	40.6	102	40.8	102	39.8	99.5	40.7	102
MSD WG539948	41.3	103	40.9	102	40.0	99.9	41.4	103
Blank WG539948	40.7	102	40.0	99.9	37.7	94.3	41.1	103
L520391-11	40.6	102	40.5	101	37.5	93.7	41.6	104

Dibromofluoromethane	40 ppb	79 - 125
Toluene - d8	40 ppb	87 - 114
4-Bromofluorobenzene	40 ppb	75 - 128
Alternate Surrogate		
a,a,a-Trifluorotoluene	40 ppb	84 - 114

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Quality Control Summary
SDG: L520391
OASIS Environmental - Anchorage, AK

Test: Volatile Organic Compounds by Method 8260B
Project No: Matrix: Soil - mg/kg
Project: Eureka Lodge Crowley EPA ID: TN00003
Collection Date: 6/6/2011 **Analytic Batch: WG540138**
Analysis Date: 6/13/2011 Analyst: 156
Instrument ID: VOCMS7
Sample Numbers: L520391-06, -07, -09, -10, -01, -03, -05, -02, -08, -04

Surrogate Summary

Laboratory	Dibromofluoromethane		Toluene-d8		4-Bromofluorobenzene			Alternate Surrogate a,a,a-Trifluorotoluene	
Sample ID	ppb	% Rec	ppb	% Rec	ppb	% Rec		ppb	% Rec
LCS WG540138	43.1	108	41.2	103	38.0	95.1		42.0	105
LCSD WG540138	42.2	106	42.6	106	37.6	94.0		41.5	104
MS WG540138	42.4	106	41.5	104	39.8	99.5		42.5	106
MSD WG540138	41.0	102	42.4	106	40.9	102		41.6	104
Blank WG540138	41.2	103	41.8	105	38.4	95.9		42.1	105
L520391-06	41.5	104	42.1	105	41.2	103		42.1	105
L520391-01	41.6	104	42.2	106	40.5	101		42.3	106
L520391-02	41.4	103	43.2	108	56.8	142	*	43.1	108
L520391-03	40.1	100	42.1	105	41.4	103		42.0	105
L520391-04	39.4	98.5	42.3	106	40.4	101		42.9	107
L520391-05	40.2	101	41.6	104	39.9	99.6		41.4	104
L520391-07	40.0	100.0	41.9	105	40.9	102		41.6	104
L520391-08	39.0	97.5	42.5	106	42.2	105		42.1	105
L520391-09	40.5	101	41.5	104	41.8	104		42.0	105
L520391-10	40.8	102	42.1	105	38.8	97.0		42.1	105

Dibromofluoromethane	40 ppb	63 - 139
Toluene - d8	40 ppb	84 - 116
4-Bromofluorobenzene	40 ppb	59 - 140
Alternate Surrogate		
a,a,a-Trifluorotoluene	40 ppb	80 - 118

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Quality Control Summary
SDG: L520391
OASIS Environmental - Anchorage, AK

Test: Volatile Organic Compounds by Method 8260B
Project No:
Project: Eureka Lodge Crowley
Collection Date: 6/6/2011
Analysis Date: 6/11/2011
Instrument ID: VOCMS6
Sample Numbers: L520391-11

Matrix: Water - mg/L
EPA ID: TN00003
Analytic Batch: WG539948
Analyst: 74

Laboratory Control Sample/ Laboratory Control Sample Duplicate

Analyte	Spike	LCS	% Rec	LCSD	% Rec	Control Limits	Qualifier	% RPD	Control Limits	Qualifier
Benzene	0.0250	0.0282	113	0.0262	105	67-126		7.4	20	
Toluene	0.0250	0.0286	114	0.0264	105	72-122		8.2	20	
Ethylbenzene	0.0250	0.0275	110	0.0255	102	76-129		7.5	20	
m&p-Xylene	0.0500	0.0557	111	0.0520	104	74-128		6.8	20	
o-Xylene	0.0250	0.0275	110	0.0255	102	78-128		7.8	20	

Matrix Spike/Matrix Spike Duplicate

L520399-01

Analyte	Spike Value	Sample	MS	% Rec	MSD	% Rec	Control Limits	% Rec Qualifier	% RPD	Control Limits	RPD Qual
Benzene	0.0250	0.0000	0.0247	98.8	0.0239	95.6	16-158		3.3	21	
Toluene	0.0250	0.0000	0.0250	99.9	0.0240	96.0	22-152		4.0	22	
Ethylbenzene	0.0250	0.0000	0.0244	97.8	0.0237	94.9	29-150		3.0	24	
m&p-Xylene	0.0500	0.0000	0.0494	98.9	0.0474	94.8	24-151		4.3	23	
o-Xylene	0.0250	0.0000	0.0250	99.9	0.0243	97.1	32-151		2.8	23	

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Quality Control Summary
SDG: L520391
OASIS Environmental - Anchorage, AK

Test: Volatile Organic Compounds by Method 8260B
Project No: Matrix: Soil - mg/kg
Project: Eureka Lodge Crowley EPA ID: TN00003
Collection Date: 6/6/2011 **Analytic Batch: WG540138**
Analysis Date: 6/13/2011 Analyst: 156
Instrument ID: VOCMS7
Sample Numbers: L520391-06, -07, -09, -10, -01, -03, -05, -02, -08, -04

Laboratory Control Sample/ Laboratory Control Sample Duplicate

Analyte	Spike	LCS	% Rec	LCSD	% Rec	Control Limits	Qualifier	% RPD	Control Limits	Qualifier
Benzene	0.0250	0.0277	111	0.0279	112	65-128		0.7	20	
Toluene	0.0250	0.0248	99.3	0.0254	102	70-120		2.3	20	
Ethylbenzene	0.0250	0.0258	103	0.0247	98.7	74-128		4.6	20	
m&p-Xylene	0.0500	0.0512	102	0.0491	98.2	73-127		4.3	20	
o-Xylene	0.0250	0.0264	106	0.0249	99.6	75-129		6.1	20	

Matrix Spike/Matrix Spike Duplicate

L520391-06

Analyte	Spike Value	Sample	MS	% Rec	MSD	% Rec	Control Limits	% Rec Qualifier	% RPD	Control Limits	RPD Qual
Benzene	1.10	0.0083	1.15	104	1.16	105	16-143		1.1	31	
Toluene	1.10	0.0000	1.05	95.2	1.08	98.4	12-136		3.3	32	
Ethylbenzene	1.10	0.0000	1.15	104	1.17	107	12-137		2.0	36	
m&p-Xylene	2.20	0.0000	2.27	103	2.33	106	10-135		2.8	37	
o-Xylene	1.10	0.0000	1.16	105	1.14	104	14-140		1.5	35	

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Est. 1970

Quality Control Summary
SDG: L520391
OASIS Environmental - Anchorage, AK

Test:	Volatile Organic Compounds by Method 8260B		
Project No:		Matrix:	Water - mg/L
Project:	Eureka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/6/2011	**Analytic Batch:**	**WG539948**
Analysis Date:	6/11/2011	Analyst:	74
Instrument ID:	VOCMS6		
Sample Numbers:	L520391-11		

Internal Standard Response and Retention Time Summary

FileID:0611_02.D Date:6/11/2011 Time:12:01 PM

	IS1		IS2		IS3		IS4	
	Response	RT	Response	RT	Response	RT	Response	RT
12 Hour Std	398250	4.36	617183	4.69	78055	5.84	281561	8.21
Upper Limit	796500	4.86	1234366	5.19	156110	6.34	563122	8.71
Lower Limit	199125	3.86	308591.5	4.19	39027.5	5.34	140780.5	7.71
Sample ID	Response	RT	Response	RT	Response	RT	Response	RT
Blank WG539948	373069	4.36	580204	4.69	71264	5.84	232553	8.21
L520391-11	339822	4.36	521463	4.69	65040	5.84	213926	8.21
LCS WG539948	371806	4.36	573187	4.69	73101	5.84	256950	8.21
LCSD WG539948	378376	4.36	585325	4.69	73390	5.84	262383	8.21
MS WG539948	409853	4.36	634542	4.69	80758	5.84	287048	8.21
MSD WG539948	398317	4.36	617851	4.69	78521	5.84	280747	8.21

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Quality Control Summary
SDG: L520391
OASIS Environmental - Anchorage, AK

Test: Volatile Organic Compounds by Method 8260B
Project No:
Project: Eureka Lodge Crowley
Collection Date: 6/6/2011
Analysis Date: 6/13/2011
Instrument ID: VOCMS7
Sample Numbers: L520391-06, -07, -09, -10, -01, -03, -05, -02, -08, -04

Matrix: Soil - mg/kg
EPA ID: TN00003
Analytic Batch: WG540138
Analyst: 156

Internal Standard Response and Retention Time Summary

FileID:0613_02.D Date:6/13/2011 Time:1:02 AM

	IS1		IS2		IS3		IS4	
	Response	RT	Response	RT	Response	RT	Response	RT
12 Hour Std	187181	4.68	278898	5.1	36132	6.65	137627	10.04
Upper Limit	374362	5.18	557796	5.6	72264	7.15	275254	10.54
Lower Limit	93590.5	4.18	139449	4.6	18066	6.15	68813.5	9.54
Sample ID	Response	RT	Response	RT	Response	RT	Response	RT
Blank WG540138	174039	4.68	263397	5.1	34148	6.65	125889	10.04
L520391-01	181879	4.67	269788	5.09	33536	6.65	130556	10.04
L520391-02	175734	4.67	266240	5.09	33324	6.65	140003	10.04
L520391-03	192843	4.68	287975	5.09	35626	6.64	141781	10.04
L520391-04	199594	4.68	297001	5.09	37715	6.64	143383	10.04
L520391-05	201772	4.67	299711	5.09	38474	6.64	144365	10.04
L520391-06	186026	4.68	280203	5.1	34651	6.65	131362	10.04
L520391-07	197264	4.67	297395	5.09	37960	6.65	147652	10.04
L520391-08	201130	4.68	295044	5.09	36455	6.64	143891	10.04
L520391-09	199785	4.68	297747	5.09	37099	6.64	143729	10.04
L520391-10	199210	4.68	292709	5.09	38248	6.64	143584	10.04
LCS WG540138	185668	4.67	276057	5.1	35677	6.65	129547	10.04
LCSD WG540138	190244	4.68	283450	5.1	39244	6.65	145228	10.04
MS WG540138	196033	4.67	287664	5.1	35347	6.65	137126	10.04
MSD WG540138	196092	4.67	291752	5.1	36546	6.65	146370	10.04

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Quality Control Summary
SDG: L520391
OASIS Environmental - Anchorage, AK

Test:	AK102 / AK103		
Project No:		Matrix:	Soil - mg/kg
Project:	Eureka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/6/2011	**Analytic Batch:**	**WG540437**
Analysis Date:	6/20/2011	Analyst:	280
Instrument ID:	SVGC16	Extraction Date:	6/14/2011

Sample Numbers: L520391-06, -09, -01, -04, -08, -10, -02, -07, -03, -05

Method Blank

Analyte	CAS	PQL	Qualifiers
AK DRO C10-C25		<20.0	
AK RRO C25-C36		<100	

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
AK DRO C10-C36	60.0	58.3	97.2	75 - 125	

Laboratory Control Sample Duplicate (LCSD)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
AK DRO C10-C36	60.0	53.7	89.5	75 - 125	

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Quality Control Summary
SDG: L520391
OASIS Environmental - Anchorage, AK

Test:	AK102 / AK103		
Project No:		Matrix:	Soil - mg/kg
Project:	Eureka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/6/2011	**Analytic Batch:**	**WG540437**
Analysis Date:	6/20/2011	Analyst:	280
Instrument ID:	SVGC16	Extraction Date:	6/14/2011

Sample Numbers: L520391-06, -09, -01, -04, -08, -10, -02, -07, -03, -05

Surrogate Summary

Laboratory Sample ID	o-terphenylD ppm	% Rec
Blank WG540437	0.742	92.8
LCS WG540437	0.802	100
LCSD WG540437	0.737	92.1
L520391-01	0.700	87.5
L520391-03	0.639	79.9
L520391-04	0.613	76.6
L520391-05	0.601	75.1
L520391-06	0.634	79.3
MS WG540437	0.731	91.4
MSD WG540437	0.619	77.3
L520391-07	0.489	61.2
L520391-08	0.589	73.7
L520391-09	0.589	73.6
L520391-10	0.629	78.6
L520391-02	D	D

o-terphenyl Limits - 50 - 150

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Est. 1970

Quality Control Summary
SDG: L520391
OASIS Environmental - Anchorage, AK

Test:	AK102 / AK103		
Project No:		Matrix:	Soil - mg/kg
Project:	Eureka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/6/2011	**Analytic Batch:**	**WG540437**
Analysis Date:	6/20/2011	Analyst:	280
Instrument ID:	SVGC16	Extraction Date:	6/14/2011

Sample Numbers: L520391-06, -09, -01, -04, -08, -10, -02, -07, -03, -05

Laboratory Control Sample/ Laboratory Control Sample Duplicate

Analyte	Spike	LCS	% Rec	LCSD	% Rec	Control Limits	Qualifier	% RPD	Control Limits	Qualifier
AK DRO C10-C36	60.0	58.3	97.2	53.7	89.5	75-125		8.2	20	

Matrix Spike/Matrix Spike Duplicate

L520391-06

Analyte	Spike Value	Sample	MS	% Rec	MSD	% Rec	Control Limits	% Rec Qualifier	% RPD	Control Limits	RPD Qual
AK DRO C10-C36	60.0	0.00	59.5	99.2	50.3	83.8	75-125		17	20	

Company Name/Address:

OASIS Environmental - Anchorage, AK

825 W. 8th Ave.
Anchorage,AK 99501

Billing Information:

Accounts Payable
825 W. 8th Ave.

Anchorage,AK 99501

Analysis/Container/Preserv

F135

Chain of Custody Page 1 of 2

ESC LAB SCIENCES
12065 Lebanon Road
Mt. Juliet, TN 37122

Phone: (800) 767-5859
Phone: (615) 758-5858
Fax: (615) 758-5859

Report to: Dan Frank

Email to: D.Frank@oasisenviro.com

Project Description: Eureka Lodge Crowley

City/Sate Collected

Phone: (907) 350-4897

FAX: (907) 258-4033

Client Project #:

ESC Key:

Collected by: (print) A. Hanson / B. Delaney

Site/Facility ID#:

P.O.#: 465-014

Collected by (signature): [signature]

Immediately Packed on Ice N___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day......200%
___ Next Day........100%
___ Two Day........50%
___ Three Day......25%

Date Results Needed: STD 10 day

Email? __No__Yes

FAX? __No__Yes

CoCode **OASISAAK** (lab use only)

Template/Prelogin T70866 | P352876

Shipped Via:

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	GRO/BTEX AK101/8260 methanol	DRO/RRO AK102/103 4oz Amber	Total Solid 2oz Clear					Remarks/Contaminant	Sample # (lab only)
11-EUR-SB01-01-SO	Grab	Soil		6/6/11	1130	3	X	X	X					L520391	-01
11-EUR-SB02-01-SO	"	"		"	1235	3	X	X	X						-02
11-EUR-SB03-01-SO	"	"		"	1440	3	X	X	X						-03
11-EUR-SB03-02-SO	"	"		"	1450	3	X	X	X						-04
11-EUR-SB20-01-SO	"	"		"	2000	3	X	X	X						-05
11-EUR-SB04-01-SO	"	"		"	1550	3	X	X	X					MS/MSD	-06
11-EUR-SB05-01-SO	"	"		"	1640	3	X	X	X						-07
11-EUR-SB06-01-SO	"	"		"	1710	3	X	X	X						-08
11-EUR-SB07-01-SO	"	"		"	1750	3	X	X	X						-09

*Matrix: **SS** - Soil/Solid **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other__________

pH ________ Temp ________

Remarks:

4355 1318 8188

Flow ________ Other ________

Relinquished by: (Signature) [signature] Date: 6/8/11 Time: 1500 Received by: (Signature)

Samples returned via: ☐ UPS ☒ FedEx ☐ Courier ☐ ______

Condition: (lab use only)

Relinquished by: (Signature) Date: Time: Received by: (Signature)

Temp: 2.6°C

Bottles Received: 31

CoC Seals Intact ___ Y ___ N ___ NA

Relinquished by: (Signature) Date: Time: Received for lab by: (Signature) [signature]

Date: 6/10/11

Time: 11:15

pH Checked: NCF:

Company Name/Address:
OASIS Environmental - Anchorage, AK
825 W. 8th Ave.
Anchorage.AK 99501

Billing Information:
Accounts Payable
825 W. 8th Ave.
Anchorage,AK 99501

Report to: Dan Frank
Email to: D.Frank@oasisenviro.com

Project Description: Eureka Lodge Crowley
City/State Collected:

Phone: (907) 350-4897
FAX: (907) 258-4033

Client Project #:
ESC Key:

Collected by: (print) A. Hanson / B. Delaney
Site/Facility ID#:
P.O.#: 465-014

Collected by (signature): Ashley Han
Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day..... 200%
___ Next Day..... 100%
___ Two Day..... 50%
___ Three Day..... 25%

Date Results Needed: 10 day STD.
Email? __No__Yes
FAX? __No__Yes

Analysis/Container/Preservative

Chain of Custody
Page 2 of 2

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CoCode OASISAAK (lab use only)
Template/Prelogin
Shipped Via:

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	GRO/BTEX 4K10118260 methanol	DRO/ORO 4K10211/03 4oz Amber	TOTAL SOLIDS 2oz Clear	40ml VOA - Methanol GRO/BTEX 4K10118260	Remarks/Contaminant	Sample # (lab only)
11-EUR-SB08-01-SO	Grab	Soil		6/7/11	0935	3	X	X	X		L520391	-10
Trip Blank				6/7/11	0950	1				X		-11

*Matrix: **SS** - Soil/Solid **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Ashley Han	6/8/11	1500	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)
			Ken Green

Samples returned via: ☐ UPS ☒ FedEx ☐ Courier ☐ _____

Temp:	Bottles Received:	Condition: (lab use only)
2.6°C	21	CoC Seals Intact ✓ Y ___ N ___ NA
Date: 6/10/11	Time: 1115	pH Checked: ___ NCF: ___

ESC
L·A·B S·C·I·E·N·C·E·S

Cooler Receipt Form

Client: OASISAAK

Cooler Received On: 6-10-11 and Opened On: 6-10-11 By: Kevin Wallace

Kevin Wallace
(Signature)

Temperature of cooler when opened: 2.6° Degrees Celsius/ Was sufficient ice used: Yes ☐ No ☐

What kind of packing material was used? Bubblewrap ☑ Peanuts ☐ Other ☐ None ☐

	Yes	No
Were custody seals on outside of cooler and intact?	☑	☐
Were custody papers properly filled out (ink, signed, etc.)?	☑	☐
Did you sign the custody papers in the appropriate place?	☑	☐
Did all bottles arrive in good condition?	☑	☐
Were all bottle labels complete? (#, date, signed, pres, etc)?	☑	☐
Did all bottle labels and tags agree with custody papers?	☑	☐
Were correct bottles used for the analyses requested?	☑	☐
Was sufficient amount of sample sent in each bottle?	☑	☐
Were correct preservatives used?	☐ NA	☐
If applicable, was an observable VOA headspace present?	☐ NA	☐
Non Conformance Generated: *(See attached NCF if yes)*	☐	☑

ESC
L·A·B S·C·I·E·N·C·E·S
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Quality Control Summary
SDG: L520482

For: OASIS Environmental - Anchorage, AK
Project: Eureka Lodge Crowley
June 17, 2011

Sample Receiving and Handling

All sample aliquots were received at the correct temperature, in the proper containers, and with the appropriate preservatives. All method specified holding times were met.

Semi-volatile Organic Compounds by Method 8270C-SIM

Laboratory Control Sample

Samples L520482-01 and 02 were analyzed in analytical batch WG540038. The laboratory control sample associated with these samples was within the laboratory control limits for all compounds.

Matrix Spike/Matrix Spike Duplicate

For analytical batch WG540038 matrix spike/matrix spike duplicate analysis was performed on sample L520284-01. The matrix spike recoveries and relative percent differences were within laboratory control limits for all target analytes.

For analytical batch WG540038 matrix spike/matrix spike duplicate analysis was performed on sample L520459-04. The matrix spike recoveries were within laboratory control limits for all target analytes. The relative percent difference exceeded laboratory limits for 2-Chloronaphthalene, 2-Methylnaphthalene, Acenaphthene, Acenaphthylene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Chrysene, Dibenz(a,h)anthracene, Fluoranthene, Fluorene, Indeno(1,2,3-cd)pyrene, Naphthalene, Phenanthrene, Benzo(b)fluoranthene, and Pyrene.

Blank Analysis

The method blank, the initial, and all continuing calibration blanks contained no analytes at concentrations above the method reporting limit.

AK102 / AK103

Laboratory Control Sample

Samples L520482-01 and 02 were analyzed in analytical batch WG540042. The laboratory control sample associated with these samples was within the laboratory control limits.

Matrix Spike/Matrix Spike Duplicate

For analytical batch WG540042, matrix spike/matrix spike duplicate analysis was performed on sample L520284-01. The matrix spike recoveries and relative percent differences were within laboratory control limits for all target analytes.

Blank Analysis

The method blank, the initial, and all continuing calibration blanks contained no analytes at concentrations above the method reporting limit.

Nancy F. Winters
ESC Representative
ESC Lab Sciences

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Est. 1970

Dan Frank
OASIS Environmental - Anchorage, AK
825 W. 8th Ave.
Anchorage, AK 99501

Report Summary

Friday June 17, 2011

Report Number: L520482
Samples Received: 06/11/11
Client Project:

Description: Eureka Lodge Crowley

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By: 

T. Alan Harvill , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140
NJ - TN002,NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A,
TX - T104704245, OK-9915

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.
Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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Est. 1970

REPORT OF ANALYSIS

Dan Frank
OASIS Environmental - Anchorage, AK
825 W. 8th Ave.
Anchorage, AK 99501

June 17, 2011

ESC Sample # : L520482-01

Date Received : June 11, 2011
Description : Eureka Lodge Crowley

Site ID :

Sample ID : 11-EUR-MW2-01-GW

Project # :

Collected By : Blake Delaney
Collection Date : 06/09/11 11:21

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
AK102 DRO C10-C25	140	22.	800	ug/l	J	AK102/1	06/15/11	1
AK103 RRO C25-C36	U	66.	200	ug/l		AK102/1	06/15/11	1
Surrogate Recovery								
o-Terphenyl	94.2			% Rec.		AK102/1	06/15/11	1
Polynuclear Aromatic Hydrocarbons								
Anthracene	U	0.013	0.050	ug/l		8270C-S	06/14/11	1
Acenaphthene	U	0.0082	0.050	ug/l		8270C-S	06/14/11	1
Acenaphthylene	U	0.011	0.050	ug/l		8270C-S	06/14/11	1
Benzo(a)anthracene	U	0.012	0.050	ug/l		8270C-S	06/14/11	1
Benzo(a)pyrene	U	0.016	0.050	ug/l		8270C-S	06/14/11	1
Benzo(b)fluoranthene	U	0.019	0.050	ug/l		8270C-S	06/14/11	1
Benzo(g,h,i)perylene	U	0.016	0.050	ug/l		8270C-S	06/14/11	1
Benzo(k)fluoranthene	U	0.026	0.050	ug/l		8270C-S	06/14/11	1
Chrysene	U	0.014	0.050	ug/l		8270C-S	06/14/11	1
Dibenz(a,h)anthracene	U	0.0045	0.050	ug/l		8270C-S	06/14/11	1
Fluoranthene	U	0.016	0.050	ug/l		8270C-S	06/14/11	1
Fluorene	U	0.0090	0.050	ug/l		8270C-S	06/14/11	1
Indeno(1,2,3-cd)pyrene	U	0.0074	0.050	ug/l		8270C-S	06/14/11	1
Naphthalene	U	0.012	0.25	ug/l		8270C-S	06/14/11	1
Phenanthrene	U	0.018	0.050	ug/l		8270C-S	06/14/11	1
Pyrene	U	0.016	0.050	ug/l		8270C-S	06/14/11	1
1-Methylnaphthalene	U	0.019	0.25	ug/l		8270C-S	06/14/11	1
2-Methylnaphthalene	U	0.016	0.25	ug/l		8270C-S	06/14/11	1
2-Chloronaphthalene	U	0.016	0.25	ug/l		8270C-S	06/14/11	1
Surrogate Recovery								
Nitrobenzene-d5	74.0			% Rec.		8270C-S	06/14/11	1
2-Fluorobiphenyl	85.8			% Rec.		8270C-S	06/14/11	1
p-Terphenyl-d14	105.			% Rec.		8270C-S	06/14/11	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
Note:
The reported analytical results relate only to the sample submitted.

.
Reported: 06/17/11 12:05 Printed: 06/17/11 12:05

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Mt. Juliet, TN 37122
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Est. 1970

REPORT OF ANALYSIS

Dan Frank
OASIS Environmental - Anchorage, AK
825 W. 8th Ave.
Anchorage, AK 99501

June 17, 2011

ESC Sample # : L520482-02

Date Received : June 11, 2011
Description : Eureka Lodge Crowley

Site ID :

Sample ID : 11-EUR-MW2-02-GW

Project # :

Collected By : Blake Delaney
Collection Date : 06/09/11 12:45

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
AK102 DRO C10-C25	150	22.	800	ug/l	J	AK102/1	06/15/11	1
AK103 RRO C25-C36	U	66.	200	ug/l		AK102/1	06/15/11	1
Surrogate Recovery								
o-Terphenyl	89.7			% Rec.		AK102/1	06/15/11	1
Polynuclear Aromatic Hydrocarbons								
Anthracene	U	0.013	0.050	ug/l		8270C-S	06/14/11	1
Acenaphthene	U	0.0082	0.050	ug/l		8270C-S	06/14/11	1
Acenaphthylene	U	0.011	0.050	ug/l		8270C-S	06/14/11	1
Benzo(a)anthracene	U	0.012	0.050	ug/l		8270C-S	06/14/11	1
Benzo(a)pyrene	U	0.016	0.050	ug/l		8270C-S	06/14/11	1
Benzo(b)fluoranthene	U	0.019	0.050	ug/l		8270C-S	06/14/11	1
Benzo(g,h,i)perylene	U	0.016	0.050	ug/l		8270C-S	06/14/11	1
Benzo(k)fluoranthene	U	0.026	0.050	ug/l		8270C-S	06/14/11	1
Chrysene	U	0.014	0.050	ug/l		8270C-S	06/14/11	1
Dibenz(a,h)anthracene	U	0.0045	0.050	ug/l		8270C-S	06/14/11	1
Fluoranthene	U	0.016	0.050	ug/l		8270C-S	06/14/11	1
Fluorene	U	0.0090	0.050	ug/l		8270C-S	06/14/11	1
Indeno(1,2,3-cd)pyrene	U	0.0074	0.050	ug/l		8270C-S	06/14/11	1
Naphthalene	U	0.012	0.25	ug/l		8270C-S	06/14/11	1
Phenanthrene	U	0.018	0.050	ug/l		8270C-S	06/14/11	1
Pyrene	U	0.016	0.050	ug/l		8270C-S	06/14/11	1
1-Methylnaphthalene	U	0.019	0.25	ug/l		8270C-S	06/14/11	1
2-Methylnaphthalene	U	0.016	0.25	ug/l		8270C-S	06/14/11	1
2-Chloronaphthalene	U	0.016	0.25	ug/l		8270C-S	06/14/11	1
Surrogate Recovery								
Nitrobenzene-d5	73.2			% Rec.		8270C-S	06/14/11	1
2-Fluorobiphenyl	86.1			% Rec.		8270C-S	06/14/11	1
p-Terphenyl-d14	105.			% Rec.		8270C-S	06/14/11	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
Note:
The reported analytical results relate only to the sample submitted.

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Reported: 06/17/11 12:05 Printed: 06/17/11 12:05

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L520482-01	WG540042	SAMP	AK102 DRO C10-C25	R1723990	J
L520482-02	WG540042	SAMP	AK102 DRO C10-C25	R1723990	J

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J	(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed
06/17/11 at 12:05:58

TSR Signing Reports: 358

Sample: L520482-01 Account: OASISAAK Received: 06/11/11 09:00 Due Date: 06/17/11 00:00 RPT Date: 06/17/11 12:05

Sample: L520482-02 Account: OASISAAK Received: 06/11/11 09:00 Due Date: 06/17/11 00:00 RPT Date: 06/17/11 12:05

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Est. 1970

Quality Control Summary
SDG: L520482
OASIS Environmental - Anchorage, AK

Test:	AK102 / AK103		
Project No:		Matrix:	Water - mg/L
Project:	Eureka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/9/2011	**Analytic Batch:**	**WG540042**
Analysis Date:	6/15/2011	Analyst:	280
Instrument ID:	SVGC16	Extraction Date:	6/11/2011
Sample Numbers:	L520482-01, -02		

Method Blank

Analyte	CAS	PQL	Qualifiers
AK DRO C10-C25		<0.80	
AK RRO C25-C36		<0.20	

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
AK DRO C10-C36	1.50	1.39	92.4	75 - 125	

Laboratory Control Sample Duplicate (LCSD)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
AK DRO C10-C36	1.50	1.38	92.2	75 - 125	

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Quality Control Summary
SDG: L520482
OASIS Environmental - Anchorage, AK

Test:	AK102 / AK103		
Project No:		Matrix:	Water - mg/L
Project:	Eureka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/9/2011	**Analytic Batch:**	**WG540042**
Analysis Date:	6/15/2011	Analyst:	280
Instrument ID:	SVGC16	Extraction Date:	6/11/2011
Sample Numbers:	L520482-01, -02		

Surrogate Summary

Laboratory Sample ID	o-terphenylD ppm	% Rec
Blank WG540042	0.0189	94.7
LCS WG540042	0.0193	96.3
LCSD WG540042	0.0191	95.7
MS WG540042	0.0190	94.9
MSD WG540042	0.0180	89.9
L520482-01	0.0188	94.2
L520482-02	0.0179	89.7

o-terphenyl Limits - 50 - 150

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Quality Control Summary
SDG: L520482
OASIS Environmental - Anchorage, AK

Test:	AK102 / AK103		
Project No:		Matrix:	Water - mg/L
Project:	Eureka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/9/2011	**Analytic Batch:**	**WG540042**
Analysis Date:	6/15/2011	Analyst:	280
Instrument ID:	SVGC16	Extraction Date:	6/11/2011
Sample Numbers:	L520482-01, -02		

Laboratory Control Sample/ Laboratory Control Sample Duplicate

Analyte	Spike	LCS	% Rec	LCSD	% Rec	Control Limits	Qualifier	% RPD	Control Limits	Qualifier
AK DRO C10-C36	1.50	1.39	92.4	1.38	92.2	75-125		0.3	20	

Matrix Spike/Matrix Spike Duplicate

L520284-01

Analyte	Spike Value	Sample	MS	% Rec	MSD	% Rec	Control Limits	% Rec Qualifier	% RPD	Control Limits	RPD Qual
AK DRO C10-C36	1.50	0.048	1.38	88.8	1.35	86.8	75-125		2.6	20	

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Quality Control Summary
SDG: L520482
OASIS Environmental - Anchorage, AK

Test:	Semi-Volatiles by Method 8270C-SIM		
Project No:		Matrix:	Water - mg/L
Project:	Eureka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/9/2011	**Analytic Batch:**	**WG540038**
Analysis Date:	6/15/2011	Analyst:	0
Instrument ID:	BNAMS9	Extraction Date:	6/11/2011
Sample Numbers:	L520482-01, -02		

Method Blank

Analyte	CAS	PQL	Qualifiers
Naphthalene	91-20-3	<0.000250	
2-Methylnaphthalene	91-57-6	<0.000250	
1-Methylnaphthalene	90-12-0	<0.000250	
2-Chloronaphthalene	91-58-7	<0.000250	
Acenaphthylene	208-96-8	<0.0000500	
Acenaphthene	83-32-9	<0.0000500	
Fluorene	86-73-7	<0.0000500	
Phenanthrene	85-01-8	<0.0000500	
Anthracene	120-12-7	<0.0000500	
Fluoranthene	206-44-0	<0.0000500	
Pyrene	129-00-0	<0.0000500	
Benzo(a)anthracene	56-55-3	<0.0000500	
Chrysene	218-01-9	<0.0000500	
Benzo(b)fluoranthene	205-99-2	<0.0000500	
Benzo(k)fluoranthene	207-08-9	<0.0000500	
Benzo(a)pyrene	50-32-8	<0.0000500	
Indeno(1,2,3-cd)pyrene	193-39-5	<0.0000500	
Dibenz(a,h)anthracene	53-70-3	<0.0000500	
Benzo(g,h,i)perylene	191-24-2	<0.0000500	

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Quality Control Summary
SDG: L520482
OASIS Environmental - Anchorage, AK

Test:	Semi-volatile Organic Compounds by Method 8270C-SIM		
Project No:		Matrix:	Water - mg/L
Project:	Eureka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/9/2011	**Analytic Batch:**	**WG540038**
Analysis Date:	6/15/2011	Analyst:	0
Instrument ID:	BNAMS9	Extraction Date:	6/11/2011
Sample Numbers:	L520482-01, -02		

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
1-Methylnaphthalene	0.00100	0.000698	69.8	30 - 123	
2-Chloronaphthalene	0.00100	0.000730	73.0	34 - 120	
2-Methylnaphthalene	0.00100	0.000721	72.1	29 - 116	
Acenaphthene	0.00100	0.000822	82.2	40 - 113	
Acenaphthylene	0.00100	0.000823	82.3	36 - 115	
Anthracene	0.00100	0.000869	86.9	45 - 118	
Benzo(a)anthracene	0.00100	0.000768	76.8	36 - 129	
Benzo(a)pyrene	0.00100	0.000870	87.0	44 - 124	
Benzo(b)fluoranthene	0.00100	0.000921	92.1	43 - 126	
Benzo(g,h,i)perylene	0.00100	0.000950	95.0	39 - 128	
Benzo(k)fluoranthene	0.00100	0.000851	85.1	44 - 127	
Chrysene	0.00100	0.000901	90.1	36 - 137	
Dibenz(a,h)anthracene	0.00100	0.000925	92.5	39 - 129	
Fluoranthene	0.00100	0.000878	87.8	45 - 123	
Fluorene	0.00100	0.000878	87.8	41 - 118	
Indeno(1,2,3-cd)pyrene	0.00100	0.000936	93.6	39 - 129	
Naphthalene	0.00100	0.000680	68.0	26 - 111	
Phenanthrene	0.00100	0.000832	83.2	41 - 116	
Pyrene	0.00100	0.000854	85.4	32 - 136	

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Quality Control Summary
SDG: L520482
OASIS Environmental - Anchorage, AK

Test:	Semi-volatile Organic Compounds by Method 8270C-SIM		
Project No:		Matrix:	Water - mg/L
Project:	Eureka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/9/2011	**Analytic Batch:**	**WG540038**
Analysis Date:	6/15/2011	Analyst:	0
Instrument ID:	BNAMS9	Extraction Date:	6/11/2011
Sample Numbers:	L520482-01, -02		

Laboratory Control Sample Duplicate (LCSD)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
1-Methylnaphthalene	0.00100	0.000817	81.7	30 - 123	
2-Chloronaphthalene	0.00100	0.000832	83.2	34 - 120	
2-Methylnaphthalene	0.00100	0.000807	80.7	29 - 116	
Acenaphthene	0.00100	0.000861	86.1	40 - 113	
Acenaphthylene	0.00100	0.000840	84.0	36 - 115	
Anthracene	0.00100	0.000903	90.3	45 - 118	
Benzo(a)anthracene	0.00100	0.000793	79.3	36 - 129	
Benzo(a)pyrene	0.00100	0.000897	89.7	44 - 124	
Benzo(b)fluoranthene	0.00100	0.000965	96.5	43 - 126	
Benzo(g,h,i)perylene	0.00100	0.000980	98.0	39 - 128	
Benzo(k)fluoranthene	0.00100	0.000912	91.2	44 - 127	
Chrysene	0.00100	0.000963	96.3	36 - 137	
Dibenz(a,h)anthracene	0.00100	0.000949	94.9	39 - 129	
Fluoranthene	0.00100	0.000916	91.6	45 - 123	
Fluorene	0.00100	0.000938	93.8	41 - 118	
Indeno(1,2,3-cd)pyrene	0.00100	0.000976	97.6	39 - 129	
Naphthalene	0.00100	0.000800	80.0	26 - 111	
Phenanthrene	0.00100	0.000870	87.0	41 - 116	
Pyrene	0.00100	0.000856	85.6	32 - 136	

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Quality Control Summary
SDG: L520482
OASIS Environmental - Anchorage, AK

Test:	Semi-Volatiles by Method 8270C-SIM		
Project No:		Matrix:	Water - mg/L
Project:	Eureka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/9/2011	**Analytic Batch:**	**WG540038**
Analysis Date:	6/15/2011	Analyst:	0
Instrument ID:	BNAMS9	Extraction Date:	6/11/2011
Sample Numbers:	L520482-01, -02		

Surrogate Summary

Laboratory	NBZ		2FP		TRP	
Sample ID	ppb	% Rec	ppb	% Rec	ppb	% Rec
Blank WG540038	0.946	94.6	0.879	87.9	0.904	90.4
LCS WG540038	0.724	72.4	0.798	79.8	0.837	83.7
LCSD WG540038	0.833	83.3	0.835	83.5	0.875	87.5
MS WG540038	0.644	64.4	0.730	73.0	0.708	70.8
MSD WG540038	0.964	96.4	0.977	97.7	0.996	99.6
L520482-01	0.740	74.0	0.858	85.8	1.05	105
L520482-02	0.732	73.2	0.861	86.1	1.05	105

NBZ - Nitrobenzene-d5	10-139
2FP - 2-Fluorobiphenyl	31-121
TPH - Terphneyl-d14	21-136

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Quality Control Summary
SDG: L520482
OASIS Environmental - Anchorage, AK

Test: Semi-volatile Organic Compounds by Method 8270C-SIM
Project No:
Project: Eureka Lodge Crowley
Collection Date: 6/9/2011
Analysis Date: 6/15/2011
Instrument ID: BNAMS9
Sample Numbers: L520482-01, -02

Matrix: Water - mg/L
EPA ID: TN00003
Analytic Batch: WG540038
Analyst: 0
Extraction Date: 6/11/2011

Matrix Spike/Matrix Spike Duplicate

L520284-01

Analyte	Spike Value	Sample	MS	% Rec	MSD	% Rec	Control Limits	% Rec Qualifier	% RPD	Control Limits	RPD Qual
1-Methylnaphthalene	0.00100	0.00000	0.00063	63.1	0.00086	86.0	30-123		31	32	
2-Chloronaphthalene	0.00100	0.00000	0.00066	66.3	0.00094	94.1	34-120		35	30	J3
2-Methylnaphthalene	0.00100	0.00000	0.00064	64.8	0.00096	96.2	29-116		39	31	J3
Acenaphthene	0.00100	0.00000	0.00069	69.1	0.00092	92.9	40-113		29	25	J3
Acenaphthylene	0.00100	0.00000	0.00073	73.7	0.00100	100	36-115		30	25	J3
Anthracene	0.00100	0.00000	0.00074	74.8	0.00094	94.8	45-118		24	26	
Benzo(a)anthracene	0.00100	0.00000	0.00070	70.9	0.00094	94.3	36-129		28	26	J3
Benzo(a)pyrene	0.00100	0.00000	0.00074	74.5	0.00102	102	44-124		31	21	J3
Benzo(b)fluoranthene	0.00100	0.00000	0.00074	74.9	0.00111	111	43-126		38	38	J3
Benzo(g,h,i)perylene	0.00100	0.00000	0.00077	77.6	0.00112	112	39-128		36	20	J3
Benzo(k)fluoranthene	0.00100	0.00000	0.00067	67.9	0.00102	102	44-127		40	39	J3
Chrysene	0.00100	0.00000	0.00072	72.4	0.00094	94.0	36-137		26	22	J3
Dibenz(a,h)anthracene	0.00100	0.00000	0.00077	77.4	0.00108	108	39-129		33	20	J3
Fluoranthene	0.00100	0.00000	0.00080	80.1	0.00105	105	45-123		27	25	J3
Fluorene	0.00100	0.00000	0.00078	78.0	0.00109	109	41-118		33	26	J3
Indeno(1,2,3-cd)pyrene	0.00100	0.00000	0.00077	77.8	0.00110	110	39-129		34	20	J3
Naphthalene	0.00100	0.00000	0.00062	62.6	0.00091	91.2	26-111		37	32	J3
Phenanthrene	0.00100	0.00000	0.00073	73.8	0.00099	99.7	41-116		30	25	J3
Pyrene	0.00100	0.00000	0.00073	73.9	0.00101	101	32-136		31	22	J3

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Quality Control Summary
SDG: L520482
OASIS Environmental - Anchorage, AK

Test:	Semi-volatile Organic Compounds by Method 8270C-SIM		
Project No:		Matrix:	Water - mg/L
Project:	Eureka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/9/2011	**Analytic Batch:**	**WG540038**
Analysis Date:	6/15/2011	Analyst:	0
Instrument ID:	BNAMS9	Extraction Date:	6/11/2011
Sample Numbers:	L520482-01, -02		

Matrix Spike/Matrix Spike Duplicate

L520459-04

Analyte	Spike Value	Sample	MS	% Rec	MSD	% Rec	Control Limits	% Rec Qualifier	% RPD	Control Limits	RPD Qual
1-Methylnaphthalene	0.00100	0.00000	0.00082	82.5	0.00086	86.9	30-123		5.1	32	
2-Chloronaphthalene	0.00100	0.00000	0.00087	87.4	0.00091	91.1	34-120		4.2	30	
2-Methylnaphthalene	0.00100	0.00000	0.00091	91.6	0.00095	95.9	29-116		4.6	31	
Acenaphthene	0.00100	0.00000	0.00090	90.7	0.00092	92.6	40-113		2.0	25	
Acenaphthylene	0.00100	0.00000	0.00096	96.9	0.00095	95.3	36-115		1.7	25	
Anthracene	0.00100	0.00000	0.00090	90.6	0.00097	97.4	45-118		7.3	26	
Benzo(a)anthracene	0.00100	0.00000	0.00086	86.9	0.00088	88.9	36-129		2.3	26	
Benzo(a)pyrene	0.00100	0.00000	0.00072	72.6	0.00077	77.8	44-124		6.9	21	
Benzo(b)fluoranthene	0.00100	0.00000	0.00078	78.0	0.00084	84.6	43-126		8.2	38	
Benzo(g,h,i)perylene	0.00100	0.00000	0.00042	42.7	0.00048	48.5	39-128		13	20	
Benzo(k)fluoranthene	0.00100	0.00000	0.00070	70.4	0.00072	72.2	44-127		2.5	39	
Chrysene	0.00100	0.00000	0.00079	79.9	0.00080	80.6	36-137		0.9	22	
Dibenz(a,h)anthracene	0.00100	0.00000	0.00043	43.6	0.00048	48.0	39-129		9.5	20	
Fluoranthene	0.00100	0.00000	0.00099	99.1	0.00102	102	45-123		3.0	25	
Fluorene	0.00100	0.00000	0.00101	101	0.00106	106	41-118		4.4	26	
Indeno(1,2,3-cd)pyrene	0.00100	0.00000	0.00045	45.5	0.00050	50.5	39-129		11	20	
Naphthalene	0.00100	0.00000	0.00084	84.7	0.00089	89.3	26-111		5.3	32	
Phenanthrene	0.00100	0.00000	0.00098	98.3	0.00100	100	41-116		1.8	25	
Pyrene	0.00100	0.00000	0.00089	89.0	0.00092	92.1	32-136		3.4	22	

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Quality Control Summary
SDG: L520482
OASIS Environmental - Anchorage, AK

Test: Semi-volatile Organic Compounds by Method 8270C-SIM
Project No:
Project: Eureka Lodge Crowley
Collection Date: 6/9/2011
Analysis Date: 6/15/2011
Instrument ID: BNAMS9
Sample Numbers: L520482-01, -02

Matrix: Water - mg/L
EPA ID: TN00003
Analytic Batch: WG540038
Analyst: 0
Extraction Date: 6/11/2011

Laboratory Control Sample/ Laboratory Control Sample Duplicate

Analyte	Spike	LCS	% Rec	LCSD	% Rec	Control Limits	Qualifier	% RPD	Control Limits	Qualifier
1-Methylnaphthalene	0.00100	0.00069	69.8	0.00081	81.7	30-123		16	32	
2-Chloronaphthalene	0.00100	0.00073	73.0	0.00083	83.2	34-120		13	30	
2-Methylnaphthalene	0.00100	0.00072	72.1	0.00080	80.7	29-116		11	31	
Acenaphthene	0.00100	0.00082	82.2	0.00086	86.1	40-113		4.6	25	
Acenaphthylene	0.00100	0.00082	82.3	0.00084	84.0	36-115		2.0	25	
Anthracene	0.00100	0.00086	86.9	0.00090	90.3	45-118		3.8	26	
Benzo(a)anthracene	0.00100	0.00076	76.8	0.00079	79.3	36-129		3.3	26	
Benzo(a)pyrene	0.00100	0.00087	87.0	0.00089	89.7	44-124		3.1	21	
Benzo(b)fluoranthene	0.00100	0.00092	92.1	0.00096	96.5	43-126		4.6	38	
Benzo(g,h,i)perylene	0.00100	0.00095	95.0	0.00098	98.0	39-128		3.1	20	
Benzo(k)fluoranthene	0.00100	0.00085	85.1	0.00091	91.2	44-127		6.8	39	
Chrysene	0.00100	0.00090	90.1	0.00096	96.3	36-137		6.6	22	
Dibenz(a,h)anthracene	0.00100	0.00092	92.5	0.00094	94.9	39-129		2.6	20	
Fluoranthene	0.00100	0.00087	87.8	0.00091	91.6	45-123		4.2	25	
Fluorene	0.00100	0.00087	87.8	0.00093	93.8	41-118		6.5	26	
Indeno(1,2,3-cd)pyrene	0.00100	0.00093	93.6	0.00097	97.6	39-129		4.2	20	
Naphthalene	0.00100	0.00068	68.0	0.00080	80.0	26-111		16	32	
Phenanthrene	0.00100	0.00083	83.2	0.00087	87.0	41-116		4.4	25	
Pyrene	0.00100	0.00085	85.4	0.00085	85.6	32-136		0.1	22	

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Quality Control Summary
SDG: L520482
OASIS Environmental - Anchorage, AK

Test:	Semi-Volatiles by Method 8270C-SIM		
Project No:		Matrix:	Water - mg/L
Project:	Eureka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/9/2011	**Analytic Batch:**	**WG540038**
Analysis Date:	6/15/2011	Analyst:	0
Instrument ID:	BNAMS9	Extraction Date:	6/11/2011
Sample Numbers:	L520482-01, -02		

Internal Standard Response and Retention Time Summary

FileID:0615_02.D Date:6/15/2011 Time:8:42 AM

	IS1		IS2		IS3	
	Response	RT	Response	RT	Response	RT
12 Hour Std			409500	5.6	189849	6.63
Upper Limit			819000	6.1	379698	7.13
Lower Limit			204750	5.1	94924.5	6.13
Sample ID	Response	RT	Response	RT	Response	RT
Blank WG540038			355698	5.60	183246	6.63
LCS WG540038			422222	5.60	193923	6.63
LCSD WG540038			390962	5.60	183762	6.63
MS WG540038			441200	5.60	193375	6.63
MS WG540038			471869	5.60	215610	6.63
MSD WG540038			416527	5.60	190434	6.63
MSD WG540038			464503	5.60	218897	6.63

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Quality Control Summary
SDG: L520482
OASIS Environmental - Anchorage, AK

Test:	Semi-Volatiles by Method 8270C-SIM		
Project No:		Matrix:	Water - mg/L
Project:	Eureka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/9/2011	**Analytic Batch:**	**WG540038**
Analysis Date:	6/15/2011	Analyst:	0
Instrument ID:	BNAMS9	Extraction Date:	6/11/2011
Sample Numbers:	L520482-01, -02		

Internal Standard Response and Retention Time Summary

FileID:0615_02.D Date:6/15/2011 Time:8:42 AM

	IS4		IS5		IS6	
	Response	RT	Response	RT	Response	RT
12 Hour Std	293104	7.5	230699	9.06	269654	10.25
Upper Limit	586208	8	461398	9.56	539308	10.75
Lower Limit	146552	7	115349.5	8.56	134827	9.75
Sample ID	Response	RT	Response	RT	Response	RT
Blank WG540038	288826	7.50	218576	9.07	246350	10.26
LCS WG540038	299110	7.50	224817	9.06	271090	10.26
LCSD WG540038	282853	7.50	217019	9.06	262524	10.26
MS WG540038	308864	7.50	239893	9.06	277335	10.26
MS WG540038	342988	7.50	268205	9.06	311599	10.26
MSD WG540038	317952	7.50	231814	9.06	251367	10.26
MSD WG540038	346612	7.50	271212	9.06	309403	10.26

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Quality Control Summary
SDG: L520482
OASIS Environmental - Anchorage, AK

Test:	Semi-Volatiles by Method 8270C-SIM		
Project No:		Matrix:	Water - mg/L
Project:	Eureka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/9/2011	**Analytic Batch:**	**WG540038**
Analysis Date:	6/15/2011	Analyst:	0
Instrument ID:	BNAMS9	Extraction Date:	6/11/2011
Sample Numbers:	L520482-01, -02		

Internal Standard Response and Retention Time Summary

FileID:0614_02.D Date:6/14/2011 Time:1:13 PM

	IS1		IS2		IS3	
	Response	RT	Response	RT	Response	RT
12 Hour Std			380550	5.6	179843	6.63
Upper Limit			761100	6.1	359686	7.13
Lower Limit			190275	5.1	89921.5	6.13
Sample ID	Response	RT	Response	RT	Response	RT
L520482-01			431962	5.60	193430	6.63
L520482-02			390847	5.60	169619	6.63

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Quality Control Summary
SDG: L520482
OASIS Environmental - Anchorage, AK

Test:	Semi-Volatiles by Method 8270C-SIM		
Project No:		Matrix:	Water - mg/L
Project:	Eureka Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/9/2011	**Analytic Batch:**	**WG540038**
Analysis Date:	6/15/2011	Analyst:	0
Instrument ID:	BNAMS9	Extraction Date:	6/11/2011
Sample Numbers:	L520482-01, -02		

Internal Standard Response and Retention Time Summary

FileID:0614_02.D Date:6/14/2011 Time:1:13 PM

	IS4		IS5		IS6		
	Response	RT	Response	RT	Response	RT	
12 Hour Std	270854	7.5	208902	9.06	247802	10.25	
Upper Limit	541708	8	417804	9.56	495604	10.75	
Lower Limit	135427	7	104451	8.56	123901	9.75	
Sample ID	Response	RT	Response	RT	Response	RT	
L520482-01	319749	7.50	246219	9.06	112487	10.26	*
L520482-02	300108	7.50	213203	9.07	82651	10.26	*

D190

of Custody 1 of 1

Company Name/Address:
OASIS Environmental - Anchorage, AK
825 W. 8th Ave.
Anchorage.AK 99501

Billing Information:
Accounts Payable
825 W. 8th Ave.
Anchorage,AK 99501

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Phone: (800) 767-5859
Phone: (615) 758-5858
Fax: (615) 758-5859

Report to: Dan Frank

Email to: d.frank@oasisenviro.com

Project Description: Eureka lodge Crowley

City/Sate Collected:

Phone: (907) 350-4897
FAX: (907) 258-4033

Client Project #:

ESC Key:

Collected by: (print) Blake Delaney

Site/Facility ID#:

P.O.#: 465-014

Collected by (signature): [signature]

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day.......200%
___ Next Day........100%
___ Two Day.........50%
___ Three Day.......25%

Date Results Needed: 10 day STD
Email? __No__Yes
FAX? __No__Yes

Analysis/Container/Preservative:
- DRO/RRO AK 102/103 1-Liter Amber x2 HCl Preserved
- PAH 8270 Sim 1-liter Amber

CoCode **OASISAAK** (lab use only)
Template/Prelogin
Shipped Via:

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	DRO/RRO AK 102/103 1-Liter Amber x2 HCl Preserved	PAH 8270 Sim 1-liter Amber						Remarks/Contaminant	Sample # (lab only)
11-EUR-MW2-01-GW	Grab	GW		6/9/11	1121	4	x	x						L520482	-01
11-EUR-MW2-02-GW	Grab	GW		6/9/11	1245	4	x	x							-02

*Matrix: **SS** - Soil/Solid **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other________

pH ________ Temp ________

Remarks:

873133720023 Flow ________ Other ________

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Samples returned via:		Condition: (lab use only)
[signature]	6/10/11	1130		☐ UPS ☒ FedEx ☐ Courier ☐ ______		OK
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: 3.1°C	Bottles Received: 8	CoC Seals Intact ✓ Y ___ N ___ NA
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature) [signature]	Date: 6/11/11	Time: 0900	pH Checked: <2 NCF:

L520482

ESC
L·A·B S·C·I·E·N·C·E·S

Cooler Receipt Form

Client: OASIS Environmental

Cooler Received On: 06/11/11 and Opened On: 06/11/11 By: Kevin Wallace

Kevin Wallace
(Signature)

Temperature of cooler when opened: 3.1°C Degrees Celsius/ Was sufficient ice used: Yes ☐ No ☐

What kind of packing material was used?	Bubblewrap	Peanuts	Other	None
	☒	☐	☐	☐

	Yes	No
Were custody seals on outside of cooler and intact?	☒	☐
Were custody papers properly filled out (ink, signed, etc.)?	☒	☐
Did you sign the custody papers in the appropriate place?	☒	☐
Did all bottles arrive in good condition?	☒	☐
Were all bottle labels complete? (#, date, signed, pres, etc)?	☒	☐
Did all bottle labels and tags agree with custody papers?	☒	☐
Were correct bottles used for the analyses requested?	☒	☐
Was sufficient amount of sample sent in each bottle?	☒	☐
Were correct preservatives used?	☒	☐
If applicable, was an observable VOA headspace present?	☐	☐
Non Conformance Generated: *(See attached NCF if yes)*	☐	☐

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Quality Control Summary
SDG: L520543

For: OASIS Environmental - Anchorage, AK
Project: Lodge Crowley
June 30, 2011

Sample Receiving and Handling

All sample aliquots were received at the correct temperature, in the proper containers, and with the appropriate preservatives. All method specified holding times were met.

Method 8021

Laboratory Control Sample

Samples L520543-01, -05, -03, -04, and -02 were analyzed in analytical batch WG540104. The laboratory control sample associated with these samples was within the laboratory control limits for all compounds.

Matrix Spike/Matrix Spike Duplicate

For analytical batch WG540104 matrix spike/matrix spike duplicate analysis was performed on sample L520497-04. The matrix spike recoveries and relative percent differences were within laboratory control limits for all target analytes.

For analytical batch WG540104 matrix spike/matrix spike duplicate analysis was performed on sample L520451-01. The matrix spike recoveries and relative percent differences were within laboratory control limits for all target analytes.

Blank Analysis

The method blank, the initial, and all continuing calibration blanks contained no analytes at concentrations above the method reporting limit.

Volatile Organic Compounds by Method 8260B

Laboratory Control Sample

Sample L520543-02 was analyzed in analytical batch WG540137. The laboratory control sample associated with this sample was within the laboratory control limits for all compounds.

Samples L520543-03 and 04 were analyzed in analytical batch WG540200. The laboratory control sample associated with these samples was within the laboratory control limits for all compounds.

Sample L520543-01 was analyzed in analytical batch WG540386. The laboratory control sample associated with this sample was within the laboratory control limits for all compounds.

Sample L520543-05 was analyzed in analytical batch WG540857. The laboratory control sample associated with this sample was within the laboratory control limits for all compounds.

Matrix Spike/Matrix Spike Duplicate

For analytical batch WG540137 matrix spike/matrix spike duplicate analysis was performed on sample L520527-01. The matrix spike recoveries and relative percent differences were within laboratory control limits for all target analytes.

For analytical batch WG540200 matrix spike/matrix spike duplicate analysis was performed on sample L520099-07. The matrix spike recoveries and relative percent differences were within laboratory control limits for all target analytes.

For analytical batch WG540386 matrix spike/matrix spike duplicate analysis was performed on sample L520728-02. The matrix spike recoveries and relative percent differences were within laboratory control limits for all target analytes.

For analytical batch WG540857 matrix spike/matrix spike duplicate analysis was performed on sample L520926-02. The matrix spike recoveries and relative percent differences were within laboratory control limits for all target analytes.

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Quality Control Summary
SDG: L520543

For: OASIS Environmental - Anchorage, AK
Project: Lodge Crowley
June 30, 2011

Blank Analysis
The method blank, the initial, and all continuing calibration blanks contained no analytes at concentrations above the method reporting limit.

Nancy F. Winters
ESC Representative
ESC Lab Sciences

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Dan Frank
OASIS Environmental - Anchorage, AK
825 W. 8th Ave.
Anchorage, AK 99501

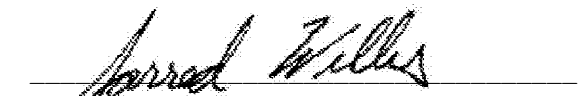
Report Summary

Monday June 20, 2011

Report Number: L520543
Samples Received: 06/11/11
Client Project:

Description: Eureka

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By: 

Jarred Willis , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140
NJ - TN002,NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A,
TX - T104704245, OK-9915

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.
Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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REPORT OF ANALYSIS

Dan Frank
OASIS Environmental - Anchorage, AK
825 W. 8th Ave.
Anchorage, AK 99501

June 20, 2011

ESC Sample # : L520543-01

Date Received : June 11, 2011
Description : Lodge Crowley

Site ID :

Sample ID : 11-EUR-WH01-01-SW

Project # :

Collected By : B. Delaney
Collection Date : 06/06/11 18:10

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
TPHGAK C6 to C10	U	41.	100	ug/l		AK101	06/13/11	1
Surrogate Recovery-%								
a,a,a-Trifluorotoluene(FID)	96.8			% Rec.		AK101	06/13/11	1
Benzene	U	0.23	1.0	ug/l		8260B	06/15/11	1
Toluene	U	0.32	5.0	ug/l		8260B	06/15/11	1
Ethylbenzene	U	0.22	1.0	ug/l		8260B	06/15/11	1
Total Xylenes	U	0.86	3.0	ug/l		8260B	06/15/11	1
Surrogate Recovery								
Toluene-d8	99.7			% Rec.		8260B	06/15/11	1
Dibromofluoromethane	93.0			% Rec.		8260B	06/15/11	1
a,a,a-Trifluorotoluene	106.			% Rec.		8260B	06/15/11	1
4-Bromofluorobenzene	91.6			% Rec.		8260B	06/15/11	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
Note:
The reported analytical results relate only to the sample submitted.

.
Reported: 06/17/11 18:30 Revised: 06/20/11 18:36

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REPORT OF ANALYSIS

Dan Frank
OASIS Environmental - Anchorage, AK
825 W. 8th Ave.
Anchorage, AK 99501

June 20, 2011

ESC Sample # : L520543-02

Date Received : June 11, 2011
Description : Lodge Crowley

Site ID :

Sample ID : 11-EUR-LK01-01-SW

Project # :

Collected By : B. Delaney
Collection Date : 06/07/11 11:00

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
TPHGAK C6 to C10	U	41.	100	ug/l		AK101	06/13/11	1
Surrogate Recovery-%								
a,a,a-Trifluorotoluene(FID)	97.6			% Rec.		AK101	06/13/11	1
Benzene	U	0.23	1.0	ug/l		8260B	06/13/11	1
Toluene	U	0.32	5.0	ug/l		8260B	06/13/11	1
Ethylbenzene	U	0.22	1.0	ug/l		8260B	06/13/11	1
Total Xylenes	U	0.86	3.0	ug/l		8260B	06/13/11	1
Surrogate Recovery								
Toluene-d8	99.4			% Rec.		8260B	06/13/11	1
Dibromofluoromethane	97.5			% Rec.		8260B	06/13/11	1
a,a,a-Trifluorotoluene	102.			% Rec.		8260B	06/13/11	1
4-Bromofluorobenzene	92.2			% Rec.		8260B	06/13/11	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
Note:
The reported analytical results relate only to the sample submitted.

.
Reported: 06/17/11 18:30 Revised: 06/20/11 18:36

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REPORT OF ANALYSIS

Dan Frank
OASIS Environmental - Anchorage, AK
825 W. 8th Ave.
Anchorage, AK 99501

June 20, 2011

ESC Sample # : L520543-03

Date Received : June 11, 2011
Description : Lodge Crowley

Site ID :

Sample ID : 11-EUR-MW2-02-GW

Project # :

Collected By : B. Delaney
Collection Date : 06/09/11 12:45

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
TPHGAK C6 to C10	U	41.	100	ug/l		AK101	06/13/11	1
Surrogate Recovery-%								
a,a,a-Trifluorotoluene(FID)	96.9			% Rec.		AK101	06/13/11	1
Benzene	U	0.23	1.0	ug/l		8260B	06/13/11	1
Toluene	U	0.32	5.0	ug/l		8260B	06/13/11	1
Ethylbenzene	U	0.22	1.0	ug/l		8260B	06/13/11	1
Total Xylenes	U	0.86	3.0	ug/l		8260B	06/13/11	1
Surrogate Recovery								
Toluene-d8	105.			% Rec.		8260B	06/13/11	1
Dibromofluoromethane	110.			% Rec.		8260B	06/13/11	1
a,a,a-Trifluorotoluene	103.			% Rec.		8260B	06/13/11	1
4-Bromofluorobenzene	96.8			% Rec.		8260B	06/13/11	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
Note:
The reported analytical results relate only to the sample submitted.

.
Reported: 06/17/11 18:30 Revised: 06/20/11 18:36

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REPORT OF ANALYSIS

Dan Frank
OASIS Environmental - Anchorage, AK
825 W. 8th Ave.
Anchorage, AK 99501

June 20, 2011

ESC Sample # : L520543-04

Date Received : June 11, 2011
Description : Lodge Crowley

Site ID :

Sample ID : 11-EUR-MW2-01-GW

Project # :

Collected By : B. Delaney
Collection Date : 06/09/11 11:21

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
TPHGAK C6 to C10	U	41.	100	ug/l		AK101	06/13/11	1
Surrogate Recovery-%								
a,a,a-Trifluorotoluene(FID)	97.3			% Rec.		AK101	06/13/11	1
Benzene	U	0.23	1.0	ug/l		8260B	06/13/11	1
Toluene	U	0.32	5.0	ug/l		8260B	06/13/11	1
Ethylbenzene	U	0.22	1.0	ug/l		8260B	06/13/11	1
Total Xylenes	U	0.86	3.0	ug/l		8260B	06/13/11	1
Surrogate Recovery								
Toluene-d8	104.			% Rec.		8260B	06/13/11	1
Dibromofluoromethane	113.			% Rec.		8260B	06/13/11	1
a,a,a-Trifluorotoluene	103.			% Rec.		8260B	06/13/11	1
4-Bromofluorobenzene	95.0			% Rec.		8260B	06/13/11	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
Note:
The reported analytical results relate only to the sample submitted.

.
Reported: 06/17/11 18:30 Revised: 06/20/11 18:36

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Est. 1970

REPORT OF ANALYSIS

Dan Frank
OASIS Environmental - Anchorage, AK
825 W. 8th Ave.
Anchorage, AK 99501

June 20, 2011

ESC Sample # : L520543-05

Date Received : June 11, 2011
Description : Lodge Crowley

Site ID :

Sample ID : TRIP BLANK

Project # :

Collected By : B. Delaney
Collection Date : 06/09/11 00:00

Parameter	Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
TPHGAK C6 to C10	U	41.	100	ug/l		AK101	06/13/11	1
Surrogate Recovery-%								
a,a,a-Trifluorotoluene(FID)	97.2			% Rec.		AK101	06/13/11	1
Benzene	U	0.23	1.0	ug/l		8260B	06/16/11	1
Toluene	0.44	0.32	5.0	ug/l	J	8260B	06/16/11	1
Ethylbenzene	U	0.22	1.0	ug/l		8260B	06/16/11	1
Total Xylenes	U	0.86	3.0	ug/l		8260B	06/16/11	1
Surrogate Recovery								
Toluene-d8	105.			% Rec.		8260B	06/16/11	1
Dibromofluoromethane	100.			% Rec.		8260B	06/16/11	1
a,a,a-Trifluorotoluene	104.			% Rec.		8260B	06/16/11	1
4-Bromofluorobenzene	111.			% Rec.		8260B	06/16/11	1

U = ND (Not Detected)
RDL = Reported Detection Limit = LOQ = PQL = EQL
MDL = Minimum Detection Limit = LOD = SQL(TRRP)
Note:
The reported analytical results relate only to the sample submitted.

.
Reported: 06/17/11 18:30 Revised: 06/20/11 18:36

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L520543-05	WG540857	SAMP	Toluene	R1726529	J

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J	(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

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Quality Control Summary
SDG: L520543
OASIS Environmental - Anchorage, AK

Test: Method 8021
Project No:
Project: Lodge Crowley
Collection Date: 6/6/2011
Analysis Date: 6/12/2011
Instrument ID: VOCGC10
Sample Numbers: L520543-01, -05, -03, -04, -02

Matrix: Water - mg/L
EPA ID: TN00003
Analytic Batch: WG540104
Analyst: 171

Method Blank

Analyte	CAS	PQL	Qualifiers
TPHGAK C6 to C10		<0.100	
Methyl tert-butyl ether	1634-04-4	<0.0050	
Benzene	71-43-2	<0.0005	
Toluene	108-88-3	<0.0050	
Ethylbenzene	100-41-4	<0.0005	
m&p-Xylene	1330-20-7	<0.0015	
o-Xylene	1330-20-7	<0.0015	

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Methyl tert-butyl ether	0.0500	0.0476	95.3	64 - 125	
Benzene	0.0500	0.0457	91.4	79 - 114	
Toluene	0.0500	0.0491	98.2	79 - 112	
Ethylbenzene	0.0500	0.0467	93.3	80 - 116	
m&p-Xylene	0.100	0.0910	91.0	85 - 120	
o-Xylene	0.0500	0.0467	93.3	82 - 116	
TPHGAK C6 to C10	5.50	5.74	104	60 - 120	

Laboratory Control Sample Duplicate (LCSD)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Methyl tert-butyl ether	0.0500	0.0494	98.7	64 - 125	
Benzene	0.0500	0.0458	91.7	79 - 114	
Toluene	0.0500	0.0493	98.6	79 - 112	
Ethylbenzene	0.0500	0.0465	92.9	80 - 116	
m&p-Xylene	0.100	0.0900	90.0	85 - 120	
o-Xylene	0.0500	0.0458	91.7	82 - 116	
TPHGAK C6 to C10	5.50	5.69	103	60 - 120	

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Quality Control Summary
SDG: L520543
OASIS Environmental - Anchorage, AK

Test: Method 8021
Project No:
Project: Lodge Crowley
Collection Date: 6/6/2011
Analysis Date: 6/12/2011
Instrument ID: VOCGC10
Sample Numbers: L520543-01, -05, -03, -04, -02

Matrix: Water - mg/L
EPA ID: TN00003
Analytic Batch: WG540104
Analyst: 171

Surrogate Summary

Laboratory Sample ID	a,a,a-Trifluorotoluene - FID ppb	% Rec	a,a,a-Trifluorotoluene - PID ppb	% Rec
LCS WG540104	196	98.0	204	102
LCSD WG540104	194	97.1	203	102
LCS WG540104	205	102	226	113
LCSD WG540104	204	102	226	113
MS WG540104	195	97.5	204	102
MSD WG540104	195	97.3	203	102
MS WG540104	204	102	224	112
MSD WG540104	206	103	221	111
Blank WG540104	194	97.2	204	102
L520543-01	194	96.8	202	101
L520543-05	194	97.2	205	103
L520543-02	195	97.6	205	102
L520543-03	194	96.9	203	101
L520543-04	195	97.3	203	102

a,a,a-Trifluorotoluene (FID)	200 ppb	Limits - 70 - 130
a,a,a-Trifluorotoluene (PID)	200 ppb	Limits - 55 - 122

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Quality Control Summary
SDG: L520543
OASIS Environmental - Anchorage, AK

Test: Method 8021
Project No:
Project: Lodge Crowley
Collection Date: 6/6/2011
Analysis Date: 6/12/2011
Instrument ID: VOCGC10
Sample Numbers: L520543-01, -05, -03, -04, -02

Matrix: Water - mg/L
EPA ID: TN00003
Analytic Batch: WG540104
Analyst: 171

Laboratory Control Sample/ Laboratory Control Sample Duplicate

Analyte	Spike	LCS	% Rec	LCSD	% Rec	Control Limits	Qualifier	% RPD	Control Limits	Qualifier
Methyl tert-butyl ether	0.0500	0.0476	95.3	0.0494	98.7	64-125		3.5	20	
Benzene	0.0500	0.0457	91.4	0.0458	91.7	79-114		0.3	20	
Toluene	0.0500	0.0491	98.2	0.0493	98.6	79-112		0.5	20	
Ethylbenzene	0.0500	0.0467	93.3	0.0465	92.9	80-116		0.4	20	
m&p-Xylene	0.100	0.0910	91.0	0.0900	90.0	85-120		1.1	20	
o-Xylene	0.0500	0.0467	93.3	0.0458	91.7	82-116		1.8	20	
TPHGAK C6 to C10	5.50	5.74	104	5.69	103	60-120		0.9	20	

Matrix Spike/Matrix Spike Duplicate

L520497-04

Analyte	Spike Value	Sample	MS	% Rec	MSD	% Rec	Control Limits	% Rec Qualifier	% RPD	Control Limits	RPD Qual
Methyl tert-butyl ether	0.0500	0.0198	0.0688	98.0	0.0685	97.4	37-147		0.4	20	
Benzene	0.0500	0.0198	0.0610	82.5	0.0630	86.3	35-147		3.1	20	
Toluene	0.0500	0.0023	0.0497	94.9	0.0516	98.7	35-148		3.8	20	
Ethylbenzene	0.0500	0.0038	0.0484	89.1	0.0497	91.7	39-141		2.6	20	
m&p-Xylene	0.100	0.0043	0.0915	87.2	0.0939	89.6	26-157		2.6	20	
o-Xylene	0.0500	0.0011	0.0451	88.0	0.0468	91.4	40-145		3.7	20	

Matrix Spike/Matrix Spike Duplicate

L520451-01

Analyte	Spike Value	Sample	MS	% Rec	MSD	% Rec	Control Limits	% Rec Qualifier	% RPD	Control Limits	RPD Qual
TPHGAK C6 to C10	5.50	0.0000	5.70	104	5.84	106	58-122		2.5	20	

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Quality Control Summary
SDG: L520543
OASIS Environmental - Anchorage, AK

Test:	Method 8021		
Project No:		Matrix:	Water - mg/L
Project:	Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/6/2011	**Analytic Batch:**	**WG540104**
Analysis Date:	6/12/2011	Analyst:	171
Instrument ID:	VOCGC10		
Sample Numbers:	L520543-01, -05, -03, -04, -02		

Internal Standard Response and Retention Time Summary

FileID:0612_03.D Date:6/12/2011 Time:6:29 PM

	IS - FID		IS - PID	
	Response	RT	Response	RT
12 Hour Std	224610090	5.89	181842222	5.89
Upper Limit	449220180	6.39	363684444	6.39
Lower Limit	112305045	5.39	90921111	5.39
Sample ID	Response	RT	Response	RT
Blank WG540104	216431925	5.89	179283498	5.89
L520543-01	218567639	5.89	180678663	5.89
LCS WG540104	217104809	5.89	183136322	5.89
LCS WG540104	229770040	5.89	185901274	5.89
LCSD WG540104	219678571	5.89	184072996	5.89
LCSD WG540104	234195427	5.89	190148829	5.89
MS WG540104	218293392	5.89	183629499	5.89
MS WG540104	233002789	5.89	187747663	5.89
MSD WG540104	220664993	5.89	184934004	5.89
MSD WG540104	227948422	5.89	182699006	5.89

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Quality Control Summary
SDG: L520543
OASIS Environmental - Anchorage, AK

Test:	Method 8021		
Project No:		Matrix:	Water - mg/L
Project:	Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/6/2011	**Analytic Batch:**	**WG540104**
Analysis Date:	6/12/2011	Analyst:	171
Instrument ID:	VOCGC10		
Sample Numbers:	L520543-01, -05, -03, -04, -02		

Internal Standard Response and Retention Time Summary

FileID:0612_26.D Date:6/13/2011 Time:4:25 AM

	IS - FID		IS - PID	
	Response	RT	Response	RT
12 Hour Std	224879520	5.89	181663505	5.89
Upper Limit	449759040	6.39	363327010	6.39
Lower Limit	112439760	5.39	90831752.5	5.39
Sample ID	Response	RT	Response	RT
L520543-02	213186369	5.89	176767848	5.89
L520543-03	217334111	5.89	180809134	5.89
L520543-04	213141224	5.89	177837126	5.89
L520543-05	218986241	5.89	181119022	5.89

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Quality Control Summary
SDG: L520543
OASIS Environmental - Anchorage, AK

Test:	Volatile Organic Compounds by Method 8260B		
Project No:		Matrix:	Water - mg/L
Project:	Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/6/2011	**Analytic Batch:**	**WG540137**
Analysis Date:	6/13/2011	Analyst:	74
Instrument ID:	VOCMS4		
Sample Numbers:	L520543-02		

Method Blank

Analyte	CAS	PQL	Qualifiers
Benzene	71-43-2	<0.0010	
Toluene	108-88-3	<0.0050	
Ethylbenzene	100-41-4	<0.0010	
m&p-Xylene	1330-20-7	<0.0030	
o-Xylene	1330-20-7	<0.0030	

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Benzene	0.0250	0.0239	95.6	67 - 126	
Toluene	0.0250	0.0227	90.7	72 - 122	
Ethylbenzene	0.0250	0.0271	108	76 - 129	
m&p-Xylene	0.0500	0.0533	107	74 - 128	
o-Xylene	0.0250	0.0278	111	78 - 128	

Laboratory Control Sample Duplicate (LCSD)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Benzene	0.0250	0.0236	94.5	67 - 126	
Toluene	0.0250	0.0232	92.6	72 - 122	
Ethylbenzene	0.0250	0.0278	111	76 - 129	
m&p-Xylene	0.0500	0.0548	110	74 - 128	
o-Xylene	0.0250	0.0282	113	78 - 128	

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Quality Control Summary
SDG: L520543
OASIS Environmental - Anchorage, AK

Test: Volatile Organic Compounds by Method 8260B
Project No:
Project: Lodge Crowley
Collection Date: 6/6/2011
Analysis Date: 6/13/2011
Instrument ID: VOCMS26
Sample Numbers: L520543-03, -04

Matrix: Water - mg/L
EPA ID: TN00003
Analytic Batch: WG540200
Analyst: 74

Method Blank

Analyte	CAS	PQL	Qualifiers
Benzene	71-43-2	<0.0010	
Toluene	108-88-3	<0.0050	
Ethylbenzene	100-41-4	<0.0010	
m&p-Xylene	1330-20-7	<0.0030	
o-Xylene	1330-20-7	<0.0030	

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Benzene	0.0250	0.0259	104	67 - 126	
Toluene	0.0250	0.0240	95.9	72 - 122	
Ethylbenzene	0.0250	0.0248	99.3	76 - 129	
m&p-Xylene	0.0500	0.0504	101	74 - 128	
o-Xylene	0.0250	0.0249	99.7	78 - 128	

Laboratory Control Sample Duplicate (LCSD)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Benzene	0.0250	0.0267	107	67 - 126	
Toluene	0.0250	0.0246	98.6	72 - 122	
Ethylbenzene	0.0250	0.0259	104	76 - 129	
m&p-Xylene	0.0500	0.0525	105	74 - 128	
o-Xylene	0.0250	0.0259	104	78 - 128	

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Quality Control Summary
SDG: L520543
OASIS Environmental - Anchorage, AK

Test:	Volatile Organic Compounds by Method 8260B		
Project No:		Matrix:	Water - mg/L
Project:	Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/6/2011	**Analytic Batch:**	**WG540386**
Analysis Date:	6/15/2011	Analyst:	74
Instrument ID:	VOCMS20		
Sample Numbers:	L520543-01		

Method Blank

Analyte	CAS	PQL	Qualifiers
Benzene	71-43-2	<0.0010	
Toluene	108-88-3	<0.0050	
Ethylbenzene	100-41-4	<0.0010	
m&p-Xylene	1330-20-7	<0.0030	
o-Xylene	1330-20-7	<0.0030	

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Benzene	0.0250	0.0228	91.1	67 - 126	
Toluene	0.0250	0.0232	92.8	72 - 122	
Ethylbenzene	0.0250	0.0263	105	76 - 129	
m&p-Xylene	0.0500	0.0541	108	74 - 128	
o-Xylene	0.0250	0.0259	104	78 - 128	

Laboratory Control Sample Duplicate (LCSD)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Benzene	0.0250	0.0234	93.8	67 - 126	
Toluene	0.0250	0.0199	79.5	72 - 122	
Ethylbenzene	0.0250	0.0282	113	76 - 129	
m&p-Xylene	0.0500	0.0571	114	74 - 128	
o-Xylene	0.0250	0.0284	113	78 - 128	

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Quality Control Summary
SDG: L520543
OASIS Environmental - Anchorage, AK

Test:	Volatile Organic Compounds by Method 8260B		
Project No:		Matrix:	Water - mg/L
Project:	Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/6/2011	**Analytic Batch:**	**WG540857**
Analysis Date:	6/16/2011	Analyst:	209
Instrument ID:	VOCMS24		
Sample Numbers:	L520543-05		

Method Blank

Analyte	CAS	PQL	Qualifiers
Benzene	71-43-2	<0.0010	
Toluene	108-88-3	<0.0050	
Ethylbenzene	100-41-4	<0.0010	
m&p-Xylene	1330-20-7	<0.0030	
o-Xylene	1330-20-7	<0.0030	

Laboratory Control Sample (LCS)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Benzene	0.0250	0.0256	102	67 - 126	
Toluene	0.0250	0.0257	103	72 - 122	
Ethylbenzene	0.0250	0.0240	95.9	76 - 129	
m&p-Xylene	0.0500	0.0488	97.6	74 - 128	
o-Xylene	0.0250	0.0246	98.4	78 - 128	

Laboratory Control Sample Duplicate (LCSD)

Analyte	True Value	Found	Recovery %	Control Limits	Qualifiers
Benzene	0.0250	0.0258	103	67 - 126	
Toluene	0.0250	0.0256	102	72 - 122	
Ethylbenzene	0.0250	0.0243	97.2	76 - 129	
m&p-Xylene	0.0500	0.0474	94.9	74 - 128	
o-Xylene	0.0250	0.0243	97.2	78 - 128	

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Quality Control Summary
SDG: L520543
OASIS Environmental - Anchorage, AK

Test: Volatile Organic Compounds by Method 8260B
Project No:
Project: Lodge Crowley
Collection Date: 6/6/2011
Analysis Date: 6/13/2011
Instrument ID: VOCMS4
Sample Numbers: L520543-02

Matrix: Water - mg/L
EPA ID: TN00003
Analytic Batch: WG540137
Analyst: 74

Surrogate Summary

Laboratory	Dibromofluoromethane		Toluene-d8		4-Bromofluorobenzene		**Alternate Surrogate** a,a,a-Trifluorotoluene	
Sample ID	ppb	% Rec	ppb	% Rec	ppb	% Rec	ppb	% Rec
LCS WG540137	37.0	92.4	37.0	92.5	40.0	99.9	41.5	104
LCSD WG540137	36.5	91.3	39.1	97.7	41.8	105	42.7	107
MS WG540137	37.7	94.2	38.5	96.2	41.7	104	42.0	105
MSD WG540137	36.7	91.6	38.1	95.4	42.9	107	42.3	106
Blank WG540137	36.6	91.5	38.4	95.9	40.3	101	42.5	106
L520543-02	39.0	97.5	39.8	99.4	36.9	92.2	40.9	102

Dibromofluoromethane	40 ppb	79 - 125
Toluene - d8	40 ppb	87 - 114
4-Bromofluorobenzene	40 ppb	75 - 128
Alternate Surrogate		
a,a,a-Trifluorotoluene	40 ppb	84 - 114

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Quality Control Summary
SDG: L520543
OASIS Environmental - Anchorage, AK

Test: Volatile Organic Compounds by Method 8260B
Project No:
Project: Lodge Crowley
Collection Date: 6/6/2011
Analysis Date: 6/13/2011
Instrument ID: VOCMS26
Sample Numbers: L520543-03, -04

Matrix: Water - mg/L
EPA ID: TN00003
Analytic Batch: WG540200
Analyst: 74

Surrogate Summary

Laboratory	Dibromofluoromethane		Toluene-d8		4-Bromofluorobenzene		**Alternate Surrogate** a,a,a-Trifluorotoluene	
Sample ID	ppb	% Rec	ppb	% Rec	ppb	% Rec	ppb	% Rec
LCS WG540200	45.0	113	41.5	104	37.5	93.7	40.4	101
LCSD WG540200	44.8	112	42.1	105	38.5	96.2	40.5	101
MS WG540200	44.7	112	41.1	103	38.4	96.0	40.4	101
MSD WG540200	44.5	111	41.3	103	37.8	94.6	40.4	101
Blank WG540200	45.1	113	41.2	103	38.6	96.4	40.8	102
L520543-03	44.0	110	41.8	105	38.7	96.8	41.1	103
L520543-04	45.1	113	41.5	104	38.0	95.0	41.1	103

Dibromofluoromethane	40 ppb	79 - 125
Toluene - d8	40 ppb	87 - 114
4-Bromofluorobenzene	40 ppb	75 - 128
Alternate Surrogate		
a,a,a-Trifluorotoluene	40 ppb	84 - 114

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Quality Control Summary
SDG: L520543
OASIS Environmental - Anchorage, AK

Test: Volatile Organic Compounds by Method 8260B

Project No:		Matrix:	Water - mg/L
Project:	Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/6/2011	**Analytic Batch:**	**WG540386**
Analysis Date:	6/15/2011	Analyst:	74
Instrument ID:	VOCMS20		
Sample Numbers:	L520543-01		

Surrogate Summary

Laboratory	Dibromofluoromethane		Toluene-d8		4-Bromofluorobenzene		**Alternate Surrogate** a,a,a-Trifluorotoluene	
Sample ID	ppb	% Rec	ppb	% Rec	ppb	% Rec	ppb	% Rec
LCS WG540386	35.6	89.0	40.3	101	41.2	103	44.1	110
LCSD WG540386	37.1	92.6	36.4	91.1	43.3	108	41.1	103
MS WG540386	38.5	96.3	38.3	95.7	44.1	110	39.7	99.1
MSD WG540386	36.0	90.1	39.7	99.3	39.9	99.8	41.8	105
Blank WG540386	38.3	95.6	39.5	98.8	39.6	98.9	43.1	108
L520543-01	37.2	93.0	39.9	99.7	36.6	91.6	42.6	106

Dibromofluoromethane	40 ppb	79 - 125
Toluene - d8	40 ppb	87 - 114
4-Bromofluorobenzene	40 ppb	75 - 128
Alternate Surrogate		
a,a,a-Trifluorotoluene	40 ppb	84 - 114

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Quality Control Summary
SDG: L520543
OASIS Environmental - Anchorage, AK

Test:	Volatile Organic Compounds by Method 8260B		
Project No:		Matrix:	Water - mg/L
Project:	Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/6/2011	**Analytic Batch:**	**WG540857**
Analysis Date:	6/16/2011	Analyst:	209
Instrument ID:	VOCMS24		
Sample Numbers:	L520543-05		

Surrogate Summary

Laboratory	Dibromofluoromethane		Toluene-d8		4-Bromofluorobenzene		**Alternate Surrogate** a,a,a-Trifluorotoluene	
Sample ID	ppb	% Rec	ppb	% Rec	ppb	% Rec	ppb	% Rec
LCS WG540857	42.7	107	42.1	105	40.7	102	41.2	103
LCSD WG540857	43.0	107	41.9	105	40.5	101	40.8	102
Blank WG540857	41.3	103	41.9	105	42.1	105	40.6	102
MS WG540857	42.4	106	41.9	105	40.2	100	41.0	103
MSD WG540857	42.2	105	41.8	105	40.7	102	41.1	103
L520543-05	40.1	100	42.2	105	44.3	111	41.6	104

Dibromofluoromethane	40 ppb	79 - 125
Toluene - d8	40 ppb	87 - 114
4-Bromofluorobenzene	40 ppb	75 - 128
Alternate Surrogate		
a,a,a-Trifluorotoluene	40 ppb	84 - 114

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Quality Control Summary
SDG: L520543
OASIS Environmental - Anchorage, AK

Test: Volatile Organic Compounds by Method 8260B
Project No:
Project: Lodge Crowley
Collection Date: 6/6/2011
Analysis Date: 6/13/2011
Instrument ID: VOCMS4
Sample Numbers: L520543-02

Matrix: Water - mg/L
EPA ID: TN00003
Analytic Batch: WG540137
Analyst: 74

Laboratory Control Sample/ Laboratory Control Sample Duplicate

Analyte	Spike	LCS	% Rec	LCSD	% Rec	Control Limits	Qualifier	% RPD	Control Limits	Qualifier
Benzene	0.0250	0.0239	95.6	0.0236	94.5	67-126		1.2	20	
Toluene	0.0250	0.0227	90.7	0.0232	92.6	72-122		2.1	20	
Ethylbenzene	0.0250	0.0271	108	0.0278	111	76-129		2.5	20	
m&p-Xylene	0.0500	0.0533	107	0.0548	110	74-128		2.9	20	
o-Xylene	0.0250	0.0278	111	0.0282	113	78-128		1.3	20	

Matrix Spike/Matrix Spike Duplicate

L520527-01

Analyte	Spike Value	Sample	MS	% Rec	MSD	% Rec	Control Limits	% Rec Qualifier	% RPD	Control Limits	RPD Qual
Benzene	0.0250	0.0000	0.0231	92.6	0.0247	98.7	16-158		6.4	21	
Toluene	0.0250	0.0000	0.0223	89.3	0.0241	96.5	22-152		7.7	22	
Ethylbenzene	0.0250	0.0000	0.0270	108	0.0304	122	29-150		12	24	
m&p-Xylene	0.0500	0.0000	0.0538	108	0.0594	119	24-151		9.9	23	
o-Xylene	0.0250	0.0000	0.0276	111	0.0301	120	32-151		8.5	23	

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Quality Control Summary
SDG: L520543
OASIS Environmental - Anchorage, AK

Test: Volatile Organic Compounds by Method 8260B
Project No:
Project: Lodge Crowley
Collection Date: 6/6/2011
Analysis Date: 6/13/2011
Instrument ID: VOCMS26
Sample Numbers: L520543-03, -04

Matrix: Water - mg/L
EPA ID: TN00003
Analytic Batch: WG540200
Analyst: 74

Laboratory Control Sample/ Laboratory Control Sample Duplicate

Analyte	Spike	LCS	% Rec	LCSD	% Rec	Control Limits	Qualifier	% RPD	Control Limits	Qualifier
Benzene	0.0250	0.0259	104	0.0267	107	67-126		2.8	20	
Toluene	0.0250	0.0240	95.9	0.0246	98.6	72-122		2.8	20	
Ethylbenzene	0.0250	0.0248	99.3	0.0259	104	76-129		4.2	20	
m&p-Xylene	0.0500	0.0504	101	0.0525	105	74-128		4.2	20	
o-Xylene	0.0250	0.0249	99.7	0.0259	104	78-128		3.9	20	

Matrix Spike/Matrix Spike Duplicate

L520099-07

Analyte	Spike Value	Sample	MS	% Rec	MSD	% Rec	Control Limits	% Rec Qualifier	% RPD	Control Limits	RPD Qual
Benzene	0.0250	0.0000	0.0247	98.7	0.0266	106	16-158		7.6	21	
Toluene	0.0250	0.0000	0.0223	89.1	0.0235	94.2	22-152		5.5	22	
Ethylbenzene	0.0250	0.0000	0.0241	96.3	0.0247	98.6	29-150		2.4	24	
m&p-Xylene	0.0500	0.0000	0.0481	96.2	0.0495	99.0	24-151		2.9	23	
o-Xylene	0.0250	0.0000	0.0237	94.7	0.0245	98.0	32-151		3.4	23	

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Quality Control Summary
SDG: L520543
OASIS Environmental - Anchorage, AK

Test: Volatile Organic Compounds by Method 8260B
Project No:
Project: Lodge Crowley
Collection Date: 6/6/2011
Analysis Date: 6/15/2011
Instrument ID: VOCMS20
Sample Numbers: L520543-01

Matrix: Water - mg/L
EPA ID: TN00003
Analytic Batch: WG540386
Analyst: 74

Laboratory Control Sample/ Laboratory Control Sample Duplicate

Analyte	Spike	LCS	% Rec	LCSD	% Rec	Control Limits	Qualifier	% RPD	Control Limits	Qualifier
Benzene	0.0250	0.0228	91.1	0.0234	93.8	67-126		2.9	20	
Toluene	0.0250	0.0232	92.8	0.0199	79.5	72-122		15	20	
Ethylbenzene	0.0250	0.0263	105	0.0282	113	76-129		6.8	20	
m&p-Xylene	0.0500	0.0541	108	0.0571	114	74-128		5.4	20	
o-Xylene	0.0250	0.0259	104	0.0284	113	78-128		9.0	20	

Matrix Spike/Matrix Spike Duplicate

L520728-02

Analyte	Spike Value	Sample	MS	% Rec	MSD	% Rec	Control Limits	% Rec Qualifier	% RPD	Control Limits	RPD Qual
Benzene	0.0250	0.0000	0.0222	88.9	0.0220	88.0	16-158		1.0	21	
Toluene	0.0250	0.0000	0.0204	81.5	0.0216	86.2	22-152		5.6	22	
Ethylbenzene	0.0250	0.0000	0.0266	106	0.0242	96.7	29-150		9.6	24	
m&p-Xylene	0.0500	0.0000	0.0549	110	0.0489	97.9	24-151		11	23	
o-Xylene	0.0250	0.0000	0.0268	107	0.0245	97.8	32-151		9.3	23	

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Quality Control Summary
SDG: L520543
OASIS Environmental - Anchorage, AK

Test: Volatile Organic Compounds by Method 8260B
Project No:
Project: Lodge Crowley
Collection Date: 6/6/2011
Analysis Date: 6/16/2011
Instrument ID: VOCMS24
Sample Numbers: L520543-05

Matrix: Water - mg/L
EPA ID: TN00003
Analytic Batch: WG540857
Analyst: 209

Laboratory Control Sample/ Laboratory Control Sample Duplicate

Analyte	Spike	LCS	% Rec	LCSD	% Rec	Control Limits	Qualifier	% RPD	Control Limits	Qualifier
Benzene	0.0250	0.0256	102	0.0258	103	67-126		1.0	20	
Toluene	0.0250	0.0257	103	0.0256	102	72-122		0.4	20	
Ethylbenzene	0.0250	0.0240	95.9	0.0243	97.2	76-129		1.4	20	
m&p-Xylene	0.0500	0.0488	97.6	0.0474	94.9	74-128		2.8	20	
o-Xylene	0.0250	0.0246	98.4	0.0243	97.2	78-128		1.2	20	

Matrix Spike/Matrix Spike Duplicate

L520926-02

Analyte	Spike Value	Sample	MS	% Rec	MSD	% Rec	Control Limits	% Rec Qualifier	% RPD	Control Limits	RPD Qual
Benzene	0.0250	0.0000	0.0250	100	0.0247	98.9	16-158		1.3	21	
Toluene	0.0250	0.0000	0.0255	102	0.0256	102	22-152		0.4	22	
Ethylbenzene	0.0250	0.0000	0.0234	93.7	0.0237	94.8	29-150		1.2	24	
m&p-Xylene	0.0500	0.0000	0.0468	93.5	0.0474	94.7	24-151		1.3	23	
o-Xylene	0.0250	0.0000	0.0238	95.3	0.0241	96.3	32-151		1.1	23	

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Quality Control Summary
SDG: L520543
OASIS Environmental - Anchorage, AK

Test:	Volatile Organic Compounds by Method 8260B		
Project No:		Matrix:	Water - mg/L
Project:	Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/6/2011	**Analytic Batch:**	**WG540137**
Analysis Date:	6/13/2011	Analyst:	74
Instrument ID:	VOCMS4		
Sample Numbers:	L520543-02		

Internal Standard Response and Retention Time Summary

FileID:0613_02.D Date:6/13/2011 Time:1:01 AM

	IS1		IS2		IS3		IS4	
	Response	RT	Response	RT	Response	RT	Response	RT
12 Hour Std	446960	6.03	757116	6.53	114022	8.16	343522	11.01
Upper Limit	893920	6.53	1514232	7.03	228044	8.66	687044	11.51
Lower Limit	223480	5.53	378558	6.03	57011	7.66	171761	10.51
Sample ID	Response	RT	Response	RT	Response	RT	Response	RT
Blank WG540137	430547	6.03	732805	6.53	110780	8.16	327325	11.01
L520543-02	296192	6.03	519915	6.53	85473	8.16	226038	11.01
LCS WG540137	447675	6.03	773662	6.53	111476	8.17	321558	11.02
LCSD WG540137	447186	6.03	748069	6.53	112277	8.16	339255	11
MS WG540137	457598	6.04	781766	6.53	115489	8.16	346949	11.01
MSD WG540137	454885	6.04	776419	6.53	111908	8.16	345041	11.01

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Quality Control Summary
SDG: L520543
OASIS Environmental - Anchorage, AK

Test: Volatile Organic Compounds by Method 8260B
Project No:
Project: Lodge Crowley
Collection Date: 6/6/2011
Analysis Date: 6/13/2011
Instrument ID: VOCMS26
Sample Numbers: L520543-03, -04

Matrix: Water - mg/L
EPA ID: TN00003
Analytic Batch: WG540200
Analyst: 74

Internal Standard Response and Retention Time Summary

FileID:0613_26.D Date:6/13/2011 Time:1:22 PM

	IS1		IS2		IS3		IS4	
	Response	RT	Response	RT	Response	RT	Response	RT
12 Hour Std	475870	5.69	884202	6.19	133433	7.88	410068	11.07
Upper Limit	951740	6.19	1768404	6.69	266866	8.38	820136	11.57
Lower Limit	237935	5.19	442101	5.69	66716.5	7.38	205034	10.57
Sample ID	Response	RT	Response	RT	Response	RT	Response	RT
Blank WG540200	424965	5.69	799279	6.19	112535	7.88	341366	11.07
L520543-03	378978	5.69	705478	6.19	98162	7.88	307185	11.07
L520543-04	369036	5.69	693671	6.19	97649	7.88	304290	11.07
LCS WG540200	469755	5.69	869183	6.19	130426	7.88	393699	11.07
LCSD WG540200	480202	5.69	884772	6.19	130786	7.88	410022	11.07
MS WG540200	471824	5.69	876098	6.19	126833	7.88	387222	11.07
MSD WG540200	466559	5.69	866689	6.19	129953	7.88	391461	11.07

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Quality Control Summary
SDG: L520543
OASIS Environmental - Anchorage, AK

Test:	Volatile Organic Compounds by Method 8260B		
Project No:		Matrix:	Water - mg/L
Project:	Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/6/2011	**Analytic Batch:**	**WG540386**
Analysis Date:	6/15/2011	Analyst:	74
Instrument ID:	VOCMS20		
Sample Numbers:	L520543-01		

Internal Standard Response and Retention Time Summary

FileID:0615_02.D Date:6/15/2011 Time:1:35 AM

	IS1		IS2		IS3		IS4	
	Response	RT	Response	RT	Response	RT	Response	RT
12 Hour Std	520381	6.49	782700	6.95	105173	8.48	369641	11.22
Upper Limit	1040762	6.99	1565400	7.45	210346	8.98	739282	11.72
Lower Limit	260190.5	5.99	391350	6.45	52586.5	7.98	184820.5	10.72
Sample ID	Response	RT	Response	RT	Response	RT	Response	RT
Blank WG540386	472859	6.49	775192	6.95	100662	8.48	335108	11.22
L520543-01	483294	6.49	758187	6.95	99704	8.48	314469	11.22
LCS WG540386	516568	6.48	777939	6.95	105762	8.48	351893	11.22
LCSD WG540386	482468	6.48	754545	6.94	86392	8.48	319195	11.22
MS WG540386	472708	6.48	765366	6.94	88425	8.48	340814	11.22
MSD WG540386	497271	6.49	766884	6.95	104305	8.48	351941	11.22

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Quality Control Summary
SDG: L520543
OASIS Environmental - Anchorage, AK

Test:	Volatile Organic Compounds by Method 8260B		
Project No:		Matrix:	Water - mg/L
Project:	Lodge Crowley	EPA ID:	TN00003
Collection Date:	6/6/2011	**Analytic Batch:**	**WG540857**
Analysis Date:	6/16/2011	Analyst:	209
Instrument ID:	VOCMS24		
Sample Numbers:	L520543-05		

Internal Standard Response and Retention Time Summary

FileID:0616_02.D Date:6/16/2011 Time:9:43 AM

	IS1		IS2		IS3		IS4	
	Response	RT	Response	RT	Response	RT	Response	RT
12 Hour Std	340790	5.38	674388	5.87	132345	7.55	296821	10.78
Upper Limit	681580	5.88	1348776	6.37	264690	8.05	593642	11.28
Lower Limit	170395	4.88	337194	5.37	66172.5	7.05	148410.5	10.28
Sample ID	Response	RT	Response	RT	Response	RT	Response	RT
Blank WG540857	323261	5.38	646495	5.87	118406	7.55	269236	10.78
L520543-05	391994	5.38	762981	5.87	136415	7.55	330468	10.78
LCS WG540857	351014	5.38	688073	5.87	133526	7.55	301954	10.78
LCSD WG540857	356893	5.38	700829	5.87	137749	7.55	308415	10.78
MS WG540857	320290	5.38	619459	5.87	123731	7.55	277044	10.78
MSD WG540857	339507	5.38	645354	5.87	127813	7.55	284414	10.78

Chain of Custody Page 1 of 1

ESC L·A·B S·C·I·E·N·C·E·S

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E130

Company Name/Address:

OASIS Environmental - Anchorage, AK
825 W. 8th Ave.
Anchorage, AK 99501

Billing Information:

Accounts Payable
825 W. 8th Ave.

Anchorage, AK 99501

Report to: Dan Frank

Email to: D.Frank@OASISenviro.com

Project Description: Eureka Lodge Crowley

City/Sate Collected

Phone: (907) 350-4897

FAX: (907) 258-4033

Client Project #:

ESC Key:

Collected by: (print) A. Hansen / B. Delaney

Site/Facility ID#:

P.O.#: 465-014

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day.......200%
___ Next Day.......100%
___ Two Day.......50%
___ Three Day.......25%

Date Results Needed: 10 day STD
Email? __No__Yes
FAX? __No__Yes

Analysis/Container/Preservative:
- BTEX/GRO 8260/AK101 - HCl - 40ml VOA
- Methanol GRO/BTEX AK101/8260 40 mL VOA

CoCode **OASISAAK** (lab use only)
Template/Prelogin T70808 / P352877
Shipped Via:

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	BTEX/GRO 8260/AK101 - HCl - 40ml VOA	Methanol GRO/BTEX AK101/8260 40 mL VOA	Remarks/Contaminant	Sample # (lab only)
11-EUR-WH01-01-SW	Grab	SW		6/6/11	1810	3	X			L520543-01
11-EUR-LK01-01-SW	"	SW		6/7/11	1100	9	X		MS/MSD	-02
11-EUR-MW2-02-GW	Grab	GW		6/9/11	1245	3	X			-03
11-EUR-MW2-01-GW	Grab	GW		6/9/11	1121	3	X			-04
Trip blank								X		-05

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other SW surface water

Remarks:

pH ______ Temp ______

Flow ______ Other ______

8734 3322 0034

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
[signature]	6/10/11	1130	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature) [signature]

Samples returned via: ☐ UPS ☒ FedEx ☐ Courier ☐

Temp: 3.4 | Bottles Received: 19

Date: 6/11/11 | Time: 0900

Condition: OK (lab use only)

CoC Seals Intact ✓ Y ___ N ___ NA

pH Checked: | NCF:

ENVIRONMENTAL SCIENCE CORP.

Cooler Receipt Form

Client: OASISAAK L520543

Cooler Received On: 6/11/11 and Opened On: 6/11/11 By: Thomas Chase

(Signature)

1. Temperature of cooler when opened: 3.4° Degrees Celsius
2. Were custody seals on outside of cooler and intact? (YES) NO
   a. If yes, what kind and where: Paper/label on l.d.
   b. Were the signature and date correct? (YES) NO
3. Were custody seals on containers intact? YES NO N/A
4. Were custody papers inside cooler? (YES) NO
5. Were custody papers properly filled out (ink, signed, etc.) (YES) NO
6. Did you sign the custody papers in the appropriate place? (YES) NO
7. What kind of packing material was used? (Bubblewrap) Peanuts Other None
8. Was sufficient ice used (if appropriate)? (YES) NO
9. Did all bottles arrive in good condition? (YES) NO
10. Were all bottle labels complete? (#, date, signed, pres, etc)? (YES) NO
11. Did all bottle labels and tags agree with custody papers? (YES) NO
12. Were correct bottles used for the analyses requested? (YES) NO
13. If applicable, was an observable VOA headspace present? YES (NO)
14. Was sufficient amount of sample sent in each bottle? (YES) NO
15. Were correct preservatives used? (YES) NO
16. Corrective action taken, if necessary:
    a. Name of person contacted: See attached for resolution if needed
    b. Date: _____

Laboratory Data Review Checklist

Completed by:	Melissa Pike		
Title:	Environmental Scientist	Date:	Jun 29, 2011
CS Report Name:	Eureka Lodge	Report Date:	
Consultant Firm:	Oasis Environmental		
Laboratory Name:	ESC Lab Sciences	Laboratory Report Number:	L520288
ADEC File Number:	210.28.006	ADEC RecKey Number:	25595

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 (Please explain) Comments:

Samples were not transferred to another network laboratory or subcontracted.

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:

b. Sample preservation acceptable - acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

c. Sample condition documented - broken, leaking (Methanol), zero headspace (VOC vials)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

Samples arrived in good condition.

d. If there were any discrepancies, were they documented? - For example, incorrect sample containers/ preservation, sample temperature outside of acceptance range, insufficient or missing samples, etc.?

( ) Yes ( ) No (•) NA (Please explain) Comments:

There are no discrepancies.

e. Data quality or usability affected? (Please explain)

Comments:

Data quality and usability is not affected with respect to the sample receipt documentation.

4. Case Narrative

a. Present and understandable?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

( ) Yes ( ) No (•) NA (Please explain) Comments:

There are no discrepancies, errors or QC failures.

c. Were all corrective actions documented?

( ) Yes ( ) No (•) NA (Please explain) Comments:

There are no corrective actions.

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

Comments:

Data quality and usability are not affected with respect to the case narrative.

5. Samples 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:

There are no soil samples.

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:

e. Data quality or usability affected? (Please explain)

Comments:

Data quality and usability is not affected with respect to the reported sample results.

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? Comments:

All are below the PQL.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

○ Yes ○ No ◉ NA (Please explain) Comments:

All are below the PQL.

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

Data quality and usability are not affected with respect to the reported method blank results.

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:

There are no metal or inorganic analyses.

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:

iv. Precision - All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/DMSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

○ Yes ◉ No ○ NA (Please explain) Comments:

The PAH MSD RPD for several analytes exceeded the limits.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Sample 11-EUR-LK01-01-SW

vi. Do the affected samples(s) have data flags? If so, are the data flags clearly defined?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

vii. Data quality or usability affected? (Please explain) Comments:

Data quality and usability are not affected. The LCS/LCSD and MS are all within limits. No data has been qualified. All data is suitable for use.

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:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

( ) Yes ( ) No (•) NA (Please explain) Comments:

There are no failed surrogate recoveries.

iv. Data quality or usability affected? (Use the comment box to explain.).

Comments:

Data quality and usability is not affected with respect to the reported surrogate results.

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

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

( ) Yes ( ) No (•) NA (Please explain.) Comments:

Trip blank was not required; there were no VOC analyses.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

( ) Yes ( ) No (•) NA (Please explain.) Comments:

Trip blank was not required; there were no VOC analyses.

iii. All results less than PQL?

○ Yes ○ No ◉ NA (Please explain.) Comments:

Trip blank was not required; there were no VOC analyses.

iv. If above PQL, what samples are affected?

Comments:

Trip blank was not required; there were no VOC analyses.

v. Data quality or usability affected? (Please explain.)

Comments:

NA. Trip blank was not required; there were no VOC analyses.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

○ Yes ◉ No ○ NA (Please explain) Comments:

ii. Submitted blind to lab?

○ Yes ○ No ◉ NA (Please explain.) Comments:

No field duplicates were submitted.

iii. Precision - All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute Value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

○ Yes ○ No ◉ NA (Please explain) Comments:

No field duplicates were submitted.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

○ Yes ○ No ◉ NA (Please explain) Comments:

Data quality and usability is not affected. No field duplicates were submitted in this report.

f. Decontamination or Equipment Blank (if applicable)

○ Yes ○ No ◉ NA (Please explain) Comments:

All sampling equipment was disposable.

i. All results less than PQL?

○ Yes ○ No ◉ NA (Please explain) Comments:

NA. All sampling equipment was disposable.

ii. If above PQL, what samples are affected?

Comments:

NA. All sampling equipment was disposable.

iii. Data quality or usability affected? (Please explain.)

Comments:

NA. All sampling equipment was disposable.

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

a. Defined and appropriate?

○ Yes ○ No ◉ NA (Please explain) Comments:

There are no other data flags or qualifiers.

Reset Form

Laboratory Data Review Checklist

Completed by:	Melissa Pike		
Title:	Environmental Scientist	Date:	Jun 29, 2011
CS Report Name:	Eureka Lodge	Report Date:	
Consultant Firm:	Oasis Environmental		
Laboratory Name:	ESC Lab Sciences	Laboratory Report Number:	L520288
ADEC File Number:	210.28.006	ADEC RecKey Number:	25595

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 (Please explain) Comments:

Samples were not transferred to another network laboratory or subcontracted.

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:

b. Sample preservation acceptable - acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

c. Sample condition documented - broken, leaking (Methanol), zero headspace (VOC vials)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

Samples arrived in good condition.

d. If there were any discrepancies, were they documented? - For example, incorrect sample containers/ preservation, sample temperature outside of acceptance range, insufficient or missing samples, etc.?

( ) Yes ( ) No (•) NA (Please explain) Comments:

There are no discrepancies.

e. Data quality or usability affected? (Please explain)

Comments:

Data quality and usability is not affected with respect to the sample receipt documentation.

4. Case Narrative

a. Present and understandable?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

( ) Yes ( ) No (•) NA (Please explain) Comments:

There are no discrepancies, errors or QC failures.

c. Were all corrective actions documented?

( ) Yes ( ) No (•) NA (Please explain) Comments:

There are no corrective actions.

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

Comments:

Data quality and usability are not affected with respect to the case narrative.

5. Samples 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:

There are no soil samples.

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:

e. Data quality or usability affected? (Please explain)

Comments:

Data quality and usability is not affected with respect to the reported sample results.

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? Comments:

All are below the PQL.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

○ Yes ○ No ◉ NA (Please explain) Comments:

All are below the PQL.

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

Data quality and usability are not affected with respect to the reported method blank results.

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:

There are no metal or inorganic analyses.

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:

iv. Precision - All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/DMSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

○ Yes ◉ No ○ NA (Please explain) Comments:

The PAH MSD RPD for several analytes exceeded the limits.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Sample 11-EUR-WH01-01-SW

vi. Do the affected samples(s) have data flags? If so, are the data flags clearly defined?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

vii. Data quality or usability affected? (Please explain) Comments:

Data quality and usability are not affected. The LCS/LCSD and MS are all within limits. No data has been qualified. All data is suitable for use.

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:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

( ) Yes ( ) No (•) NA (Please explain) Comments:

There are no failed surrogate recoveries.

iv. Data quality or usability affected? (Use the comment box to explain.).

Comments:

Data quality and usability is not affected with respect to the reported surrogate results.

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

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

( ) Yes ( ) No (•) NA (Please explain.) Comments:

No volatile analyses.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

( ) Yes ( ) No (•) NA (Please explain.) Comments:

No volatile analyses.

iii. All results less than PQL?

○ Yes ○ No ◉ NA (Please explain.) Comments:

No volatile analyses.

iv. If above PQL, what samples are affected?

Comments:

No volatile analyses.

v. Data quality or usability affected? (Please explain.)

Comments:

Data quality and usability is not affected. No volatile analyses. Trip blank was not required.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

○ Yes ○ No ◉ NA (Please explain) Comments:

Field duplicates were not submitted.

ii. Submitted blind to lab?

○ Yes ○ No ◉ NA (Please explain.) Comments:

Field duplicates were not submitted.

iii. Precision - All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute Value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

○ Yes ○ No ◉ NA (Please explain) Comments:

Field duplicates were not submitted.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

○ Yes ○ No ◉ NA (Please explain) Comments:

Field duplicates were not submitted.

f. Decontamination or Equipment Blank (if applicable)

○ Yes ○ No ◉ NA (Please explain) Comments:

All sampling equipment was disposable.

i. All results less than PQL?

○ Yes ○ No ◉ NA (Please explain) Comments:

NA. All sampling equipment was disposable.

ii. If above PQL, what samples are affected?

Comments:

NA. All sampling equipment was disposable.

iii. Data quality or usability affected? (Please explain.)

Comments:

NA. All sampling equipment was disposable.

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

a. Defined and appropriate?

○ Yes ○ No ◉ NA (Please explain) Comments:

There are no other data flags or qualifiers.

Reset Form

Laboratory Data Review Checklist

Completed by:	Melissa Pike		
Title:	Environmental Scientist	Date:	Jun 28, 2011
CS Report Name:	Eureka Lodge	Report Date:	
Consultant Firm:	Oasis Environmental		
Laboratory Name:	ESC Lab Sciences	Laboratory Report Number:	L520391
ADEC File Number:	210.28.006	ADEC RecKey Number:	25595

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 (Please explain) Comments:

Samples were not transferred to another network laboratory or subcontracted.

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:

b. Sample preservation acceptable - acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

c. Sample condition documented - broken, leaking (Methanol), zero headspace (VOC vials)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

Samples arrived in good condition.

d. If there were any discrepancies, were they documented? - For example, incorrect sample containers/ preservation, sample temperature outside of acceptance range, insufficient or missing samples, etc.?

( ) Yes ( ) No (•) NA (Please explain) Comments:

There are no discrepancies.

e. Data quality or usability affected? (Please explain)

Comments:

Data quality and usability is not affected with respect to the sample receipt documentation.

4. Case Narrative

a. Present and understandable?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

( ) Yes ( ) No (•) NA (Please explain) Comments:

There are no discrepancies, errors or QC failures.

c. Were all corrective actions documented?

( ) Yes ( ) No (•) NA (Please explain) Comments:

There are no corrective actions.

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

Comments:

Data quality and usability are not affected with respect to the case narrative.

5. Samples 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:

e. Data quality or usability affected? (Please explain)

Comments:

Data quality and usability is not affected with respect to the reported sample results.

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? Comments:

All are below the PQL.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

○ Yes ○ No ◉ NA (Please explain) Comments:

All are below the PQL.

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

Data quality and usability are not affected with respect to the reported method blank results.

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:

There are no metal or inorganic analyses.

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:

iv. Precision - All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/DMSD, 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?

Comments:

No %R or RPDs are outside the acceptable limits.

vi. Do the affected samples(s) have data flags? If so, are the data flags clearly defined?

○ Yes ○ No ◉ NA (Please explain) Comments:

No %R or RPDs are outside the acceptable limits.

vii. Data quality or usability affected? (Please explain) Comments:

Data quality and usability are not affected with respect to the reported LCS/LCSD results.

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:

A high DRO concentration in sample 11-EUR-SB02-01-SO caused the laboratory to run the sample a 50x dilution. The surrogate DRO and RRO percent recovery for o-terphenyl was below the QC limits.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

◉ Yes ○ No ○ NA (Please explain) Comments:

iv. Data quality or usability affected? (Use the comment box to explain.).

Comments:

Data quality and usability is somewhat affected with respect to the reported surrogate results. The associated DRO and RRO results have been flagged J, as estimated.

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

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

◉ Yes ○ No ○ NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

◉ Yes ○ No ○ NA (Please explain.) Comments:

iii. All results less than PQL?

◉ Yes ○ No ○ NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?

Comments:

NA. All sample results were below the PQL.

v. Data quality or usability affected? (Please explain.)

Comments:

Data quality and usability is not affected with respect to the reported trip blank results.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

◉ Yes ○ No ○ NA (Please explain) Comments:

Primary sample 11-EUR-SB03-02-SO and duplicate 11-EUR-SB20-01-SO.

ii. Submitted blind to lab?

◉ Yes ○ No ○ NA (Please explain.) Comments:

iii. Precision - All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute Value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

◉ Yes ○ No ○ NA (Please explain) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

○ Yes ◉ No ○ NA (Please explain) Comments:

Data quality and usability is not affected with respect to the reported field duplicate results.

f. Decontamination or Equipment Blank (if applicable)

○ Yes ○ No ◉ NA (Please explain) Comments:

All sampling equipment was disposable.

i. All results less than PQL?

○ Yes ○ No ◉ NA (Please explain) Comments:

NA. All sampling equipment was disposable.

ii. If above PQL, what samples are affected?

Comments:

NA. All sampling equipment was disposable.

iii. Data quality or usability affected? (Please explain.)

Comments:

NA. All sampling equipment was disposable.

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

a. Defined and appropriate?

○ Yes ○ No ◉ NA (Please explain) Comments:

There are no other data flags or qualifiers.

Reset Form

Laboratory Data Review Checklist

Completed by:	Robert Beckman		
Title:	Environmental Scientist	Date:	Aug 16, 2011
CS Report Name:	Eureka Lodge	Report Date:	Jun 17, 2011
Consultant Firm:	Oasis Environmental		
Laboratory Name:	ESC Lab Sciences	Laboratory Report Number:	L520482
ADEC File Number:		ADEC RecKey Number:	

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 (Please explain) Comments:

Samples were not transferred to another network laboratory or subcontracted.

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:

Cooler received at 3.1° C

b. Sample preservation acceptable - acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

c. Sample condition documented - broken, leaking (Methanol), zero headspace (VOC vials)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

Samples arrived in good condition.

d. If there were any discrepancies, were they documented? - For example, incorrect sample containers/ preservation, sample temperature outside of acceptance range, insufficient or missing samples, etc.?

( ) Yes ( ) No (•) NA (Please explain) Comments:

There are no discrepancies.

e. Data quality or usability affected? (Please explain)

Comments:

Data quality and usability is not affected with respect to the sample receipt documentation.

4. Case Narrative

a. Present and understandable?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

c. Were all corrective actions documented?

( ) Yes ( ) No (•) NA (Please explain) Comments:

There are no corrective actions.

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

Comments:

Data quality and usability are not affected with respect to the case narrative.

5. Samples 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:

There are no soil samples.

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:

e. Data quality or usability affected? (Please explain)

Comments:

Data quality and usability is not affected with respect to the reported sample results.

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? Comments:

All are below the PQL.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

○ Yes ○ No ◉ NA (Please explain) Comments:

All are below the PQL.

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

Data quality and usability are not affected with respect to the reported method blank results.

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:

There are no metal or inorganic analyses.

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:

iv. Precision - All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/DMSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

○ Yes ◉ No ○ NA (Please explain) Comments:

The RPDs in MS/MSD was outside of ranges for several analytes in PAH analysis.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

MS/MSDwas not requested or submitted by OASIS. No samples are affected.

vi. Do the affected samples(s) have data flags? If so, are the data flags clearly defined?

○ Yes ○ No ◉ NA (Please explain) Comments:

No affected samples to flag.

vii. Data quality or usability affected? (Please explain) Comments:

Data quality and usability are not affected. Batches are accepted on LCS/LCSD within limits.

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:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

○ Yes ○ No ◉ NA (Please explain) Comments:

There are no failed surrogate recoveries.

iv. Data quality or usability affected? (Use the comment box to explain.). Comments:

Data quality and usability is not affected with respect to the reported surrogate results.

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

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

◉ Yes ○ No ◉ NA (Please explain.) Comments:

No volatile analyses requested.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

◉ Yes ○ No ◉ NA (Please explain.) Comments:

No volatile analyses requested.

iii. All results less than PQL?

○ Yes ○ No ◉ NA (Please explain.) Comments:

A trip blank was not submitted with this SDG.

iv. If above PQL, what samples are affected?

Comments:

v. Data quality or usability affected? (Please explain.)

Comments:

Data quality and usability is not affected.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

◉ Yes ○ No ○ NA (Please explain) Comments:

Primary sample 11-EUR-MW2-01-GW and duplicate 11-EUR-MW2-02-GW.

ii. Submitted blind to lab?

◉ Yes ○ No ○ NA (Please explain.) Comments:

iii. Precision - All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute Value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

◉ Yes ○ No ○ NA (Please explain) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

○ Yes ◉ No ○ NA (Please explain) Comments:

Data quality and usability is not affected with respect to the reported field duplicate results.

f. Decontamination or Equipment Blank (if applicable)

○ Yes ○ No ◉ NA (Please explain) Comments:

All sampling equipment was disposable.

i. All results less than PQL?

○ Yes ○ No ◉ NA (Please explain) Comments:

NA. All sampling equipment was disposable.

ii. If above PQL, what samples are affected?

Comments:

NA. All sampling equipment was disposable.

iii. Data quality or usability affected? (Please explain.)

Comments:

NA. All sampling equipment was disposable.

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

a. Defined and appropriate?

○ Yes ○ No ◉ NA (Please explain) Comments:

There are no other data flags or qualifiers.

Reset Form

Laboratory Data Review Checklist

Completed by:	Melissa Pike		
Title:	Environmental Scientist	Date:	Jun 28, 2011
CS Report Name:	Eureka Lodge	Report Date:	
Consultant Firm:	Oasis Environmental		
Laboratory Name:	ESC Lab Sciences	Laboratory Report Number:	L520543
ADEC File Number:	210.28.006	ADEC RecKey Number:	25595

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 (Please explain) Comments:

Samples were not transferred to another network laboratory or subcontracted.

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:

b. Sample preservation acceptable - acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

c. Sample condition documented - broken, leaking (Methanol), zero headspace (VOC vials)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

Samples arrived in good condition.

d. If there were any discrepancies, were they documented? - For example, incorrect sample containers/ preservation, sample temperature outside of acceptance range, insufficient or missing samples, etc.?

( ) Yes ( ) No (•) NA (Please explain) Comments:

There are no discrepancies.

e. Data quality or usability affected? (Please explain)

Comments:

Data quality and usability is not affected with respect to the sample receipt documentation.

4. Case Narrative

a. Present and understandable?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

( ) Yes ( ) No (•) NA (Please explain) Comments:

There are no discrepancies, errors or QC failures.

c. Were all corrective actions documented?

( ) Yes ( ) No (•) NA (Please explain) Comments:

There are no corrective actions.

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

Comments:

Data quality and usability are not affected with respect to the case narrative.

5. Samples 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:

There are no soil samples.

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:

e. Data quality or usability affected? (Please explain)

Comments:

Data quality and usability is not affected with respect to the reported sample results.

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? Comments:

All are below the PQL.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

○ Yes ○ No ◉ NA (Please explain) Comments:

All are below the PQL.

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

Data quality and usability are not affected with respect to the reported method blank results.

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:

There are no metal or inorganic analyses.

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:

iv. Precision - All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/DMSD, 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?

Comments:

No %R or RPDs are outside the acceptable limits.

vi. Do the affected samples(s) have data flags? If so, are the data flags clearly defined?

○ Yes ○ No ◉ NA (Please explain) Comments:

No %R or RPDs are outside the acceptable limits.

vii. Data quality or usability affected? (Please explain) Comments:

Data quality and usability are not affected with respect to the reported LCS/LCSD results.

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:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

○ Yes ○ No ◉ NA (Please explain) Comments:

There are no failed surrogate recoveries.

iv. Data quality or usability affected? (Use the comment box to explain.).

Comments:

Data quality and usability is not affected with respect to the reported surrogate results.

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

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

◉ Yes ○ No ○ NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

◉ Yes ○ No ○ NA (Please explain.) Comments:

iii. All results less than PQL?

○ Yes ◉ No ○ NA (Please explain.) Comments:

Toluene was present in TB at 0.44 ug/L.

iv. If above PQL, what samples are affected?

Comments:

Samples affected include 11-EUR-WH01-01-SW, 11-EUR-LK01-SW, 11-EUR-MW2-01-GW and 11-EWR-MW2-02-GW.

v. Data quality or usability affected? (Please explain.)

Comments:

Data quality and usability is not affected. Associated sample results were all ND. No data has been flagged.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

◉ Yes ○ No ○ NA (Please explain) Comments:

Primary sample 11-EUR-MW2-01-GW and duplicate 11-EUR-MW2-02-GW.

ii. Submitted blind to lab?

◉ Yes ○ No ○ NA (Please explain.) Comments:

iii. Precision - All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute Value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

◉ Yes ○ No ○ NA (Please explain) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

○ Yes ◉ No ○ NA (Please explain) Comments:

Data quality and usability is not affected with respect to the reported field duplicate results.

f. Decontamination or Equipment Blank (if applicable)

○ Yes ○ No ◉ NA (Please explain) Comments:

All sampling equipment was disposable.

i. All results less than PQL?

○ Yes ○ No ◉ NA (Please explain) Comments:

NA. All sampling equipment was disposable.

ii. If above PQL, what samples are affected?

Comments:

NA. All sampling equipment was disposable.

iii. Data quality or usability affected? (Please explain.)

Comments:

NA. All sampling equipment was disposable.

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

a. Defined and appropriate?

○ Yes ○ No ◉ NA (Please explain) Comments:

There are no other data flags or qualifiers.

Reset Form

APPENDIX E

Quality Assurance Report

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MEMORANDUM

DATE:	November 29, 2011
FROM:	Melissa Pike, Associate Environmental Scientist, OASIS, Anchorage, Alaska
TO:	Daniel Frank, Project Manager, OASIS, Anchorage, Alaska
SUBJ:	Quality Assurance Review, Crowley, Eureka Lodge, Eureka, AK
REF:	Project: 465-014

Laboratory Quality Assurance/Quality Control (QA/QC) data associated with the analysis of project samples has been reviewed to evaluate the integrity of the analytical data generated during June 2011 Initial Site Characterization at the Eureka Lodge located in Eureka, Alaska.

ADEC Environmental Laboratory Data and Quality Assurance Requirements guided the preparation of this report (ADEC 2010). Additionally, United States Environmental Protection Agency (USEPA) National Functional Guidelines for Organic Data Review (USEPA 2008) was followed for this report. The data were reviewed to determine the data quality and to evaluate potential impact on the usability of the data. The data quality objectives for the project were established to support the nature of the investigation. The review was performed using Level II reports that were provided by ESC Laboratory, Inc. Analytical data, chain-of-custody documents, and ADEC data review checklists supporting this review are also provided.

Samples were tested using the following methods for the associated analytes:

- Method AK101 – Gasoline-range organic (GRO) analysis
- Method AK102 – Diesel-range organic (DRO) analysis
- Method AK103 – Residual-range Organic (RRO) analysis
- EPA 8621B – Benzene, toluene, ethylbenzene, and xylenes (BTEX) analysis
- EPA 8270C – Poly aromatic hydrocarbons (PAH) by selected-ion monitoring (SIM) analysis (water sampling only)

Sample Handling and Chain of Custody

Water and soil samples were delivered to ESC Lab Sciences in Mt. Juliet, Tennessee, in five sample delivery groups (SDGs): L520284, L520288, L520391 and L520543, and L520482. Samples were collected, reported, and shipped to in general accordance with the Alaska Department of Environmental Conservation (ADEC)-approved work plan (OASIS 2011).

All samples were extracted, digested, and/or analyzed within the holding time criteria for the applicable analytical methods and in accordance with the work plan specifications. The sample cooler was delivered with custody seals in place, unbroken and intact. All sample containers in the sample coolers were received at the laboratory intact, with proper documentation, and within the specified temperature range of 4°C ± 2°C.

Field QA/QC

Field QA/QC protocols are designed to monitor for possible contamination during collection and transport of samples collected in the field. Collection and analysis of field duplicates also facilitates an evaluation of precision that takes into account potential variables associated with sampling procedures and laboratory analyses. For this project, trip blanks and field duplicates were submitted for analysis.

Trip Blanks

Trip blank were prepared by the laboratory, shipped to the site with the empty sample bottles/containers, stored with sample containers during the field event, and transported with the collected samples back to the laboratory for analysis. The trip blanks were placed the same cooler as the other project volatile organics samples (GRO/BTEX). Trip blanks were non-detect for all analytes, with the following exception.

In report number L520543, toluene was present in the trip blank a 0.00044 micrograms/liter (mg/L). The following samples were potentially impacted: 11-EUR-WH01-01-SW, 11-EUR-LK01-SW, 11-EUR-MW2-01-GW and 11-EWR-MW2-02-GW. Data quality and usability was not affected. Associated sample results were all non-detect. No data was qualified and all data is suitable for use.

Field Duplicates

Out of fourteen primary samples submitted, there were two duplicates collected and analyzed for this project – primary 11-EUR-SB03-02-SO with duplicate 11-EUR-SB20-01-SO; and primary 11-EUR-MW2-01-GW with duplicate 11-EUR-MW2-02-GW. The RPD between primary and duplicates met the ADEC recommended limit of <30% for water and <50% for soil. The frequency of field duplicate collection met the 10% frequency requirements specified in the work plan. Overall, there was adequate comparability of field duplicate results to meet project data quality objectives.

Laboratory QA/QC

Method Blanks

Method blanks were analyzed concurrent with a batch of 20 or fewer primary samples for each of the analytical procedures performed for this project. Method blanks were analyzed at the required frequency and target analytes were not detected in the blanks at concentrations above the analytical reporting limit or practical quantitation limit (PQL).

Laboratory Control Samples/ Matrix Spikes

Analysis of laboratory control samples (LCS) and LCS duplicates (LCSD) for target analytes met laboratory and project QC goals for target analytes. Precision and accuracy were evaluated by comparing field duplicates, MS/MSD, and LCS/LSCD pairs for this project. Recoveries and RPDs for all LCS/LSCD and MS/MSD samples were within required limits.

Internal Standard Recoveries

Internal standards are chemical substances that are added in a constant amount to samples, the blank and calibration standards and are used for instrumentation calibration. All internal standard recoveries met laboratory and project QC goals for target analytes in all SDGs, with the following exceptions.

In Method SW8270-SIM (report number L520482), the internal standard response was below the acceptable limits and the sixth internal standard recovered low. The sixth internal standard in samples 11-EUR-MW-2-01-GW and 11-EUR-MW2-02-GW recovered below acceptance criteria. OASIS requested further information, including chromatograms, from the ESC in order to justify the qualification of the associated sample results. Additional information provided by ESC showed that the following not-detected results for compounds Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, and Benzo(g,h,i)perylene can be qualified as UJ-l because the standards were found above the level of detectability, within the 20-50% area count range.

Surrogates

When performing analysis for AK102/AK103, ESC used one surrogate, o-terphenyl. Surrogate o- elutes in the DRO-range. Therefore, RRO analysis did not have a corresponding surrogate eluting within the RRO-range. RRO is not a required analyte for diesel and gasoline contamination; therefore there was no significant impact to the data quality required for this site contamination. ESC will be including an RRO surrogate during future AK102/AK103 analyses.

Surrogate recoveries were within prescribed control limits for all primary samples, LCS/LCSD and MS/MSD, with the following exception. In report number L520391, the high DRO concentration in sample 11-EUR-SB02-01-SO caused the laboratory to run the sample at a 50x dilution. Therefore, the surrogate DRO and RRO percent recovery for o-terphenyl was below the QC limits. Due to the surrogate percent recovery results below QC limits, associated positive data results have been flagged J. Results were considered estimated due to certain QC criteria not being met. All data is usable.

Method Reporting Limits (Sensitivity)

Method Reporting Limits (MRLs) and PQLs met or were below established criteria specified for all analyses in the project work plan. The reporting limits were also below the ADEC established cleanup levels.

Analytical Methods

The following sections summarize whether quality control criteria were met for each analytical method. Sample results below the method detection limits are flagged “U” or non-detect, “ND.” Results between the method detection limit and the method reporting limit have been flagged “J” as estimates due to the low level of quantization. Results that are estimated due to minor QA/QC deficiencies have been flagged “J” as estimated. Twelve PAH results with internal standard QA/QC deficiencies have been flagged “UJ-I” as non-detect–estimated.

Precision and Accuracy

Precision criteria monitor analytical reproducibility. Accuracy criteria monitor agreement of measured results with “true values” established by spiking applicable samples with a known quantity of analyte or surrogate. Precision and accuracy were evaluated by comparing LCS/LCSDs and MS/MSDs for this project. Recoveries and RPDs for all LCS/LSCD samples were within required limits. Data Quality Objectives of an overall 90% accuracy in QC samples were met.

Completeness

Data completeness is defined as the percentage of usable data (usable data divided by the total possible data). The overall project completeness goal is 90%:

$$\% \text{ completeness} = \frac{\text{number of valid (i.e., non-R flagged) results}}{\text{number of possible results}}$$

All requested analyses were performed in accordance with work plan specifications. No results were qualified as unusable (i.e., "R"). Completeness for this project is 100%.

Representativeness

Data representativeness expresses the degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, or environmental condition. The number and selection of samples were specified in the Work Plan and verified in the field to account accurately for site variations and sample matrices. The DQO for representativeness was met.

Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared to another. Data produced for this project followed applicable field sampling techniques and specific analytical methodology. The DQO for comparability was met.

Data Summary

Based upon the information provided, the data are acceptable for use with the above stated data qualifications. All requested analyses were performed in accordance with work plan specifications. Completeness for this project is 100%.

In general, the overall quality of the data was acceptable. The USEPA National Functional Guidelines (USEPA 2008) were used to evaluate the acceptability of the data. Overall, data quality meets the data quality objectives established in the work plan for this project. The associated sample results are usable for the purpose of this investigation.

REFERENCES

Alaska Department of Environmental Conservation (ADEC). 2010a. Laboratory Data Review Checklist. Version 2.7. ADEC Division of Spill Prevention and Response, Contaminated Sites Program form, downloaded from: http://dec.alaska.gov/spar/guidance.htm#methods. January.

OASIS Environmental, Inc. (OASIS), 2011. Site Characterization Work Plan; Eureka Lodge; Mile 128 Glenn Highway. March 3.

United States Environmental Protection Agency (USEPA). 2008. USEPA Contract Laboratory Program, National Functional Guidelines for Superfund Organic Methods Data Review. June.

ESC
L·A·B S·C·I·E·N·C·E·S

12065 LEBANON RD.
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November 11, 2011

Dan Frank
OASIS Environmental - Anchorage, AK
825 W. 8th Ave.
Anchorage, AK 99501

Re: Discussion of the PAH 8270SIM analysis for samples L520482-01 and –02:

Samples 11-EUR-MW2-01-GW and 11-EUR-MW2-02 were collected on 06/09/11 and received at ESC Lab Sciences on 06/11/11. The samples were analyzed by method 8270sim. It was noted that the sixth internal standard had a response less than the acceptance limits for both of the samples. The compounds that were associated with this internal standard and reported as non-detected were invalidated due to this failure. The criteria from the National Functional Guidelines are illustrated in Table 38: Internal Standard actions for Semi-volatiles Analysis. The flagging action for area counts of <50% from the 12 hour standard shows an "R**" for non-detected compounds. The ** is further explained as a footnote on page 125.

"** For area counts in the range of 20-50%, non-detected compounds may be qualified as UJ based on further evaluations on the data. The evaluations may include but are not limited to review of the chromatograms, mass spectra and statistical studies of signal-to-noise ratios. Such data qualifications shall be performed on a project-by-project basis."

It can be demonstrated that the compounds remained above the level of detectibly and that using the 20-50% flagging criteria is appropriate in this case. When compared to the 12 hour standard, the internal standard for 11-EUR-MW2-01-GW recovered at 45.4% and 11-EUR-MW2-02 at 33.4%. This illustrates the worst-case scenario as the compounds are responding 3 times lower than an analysis where the recovery of the internal standard is 100%. If the compounds were responding 3 times low, then a 0.050 ppb result would yield a response equivalent to 0.017 ppb. All of the affected compounds have minimum detection limits that are lower than 0.017 on this instrument with the exception of benzo(b) flouranthene at 0.0191 ppb. These are shown on the attached mdl study. Therefore, the MDL's demonstrate the compounds would have been detected at the level reported with the exception of Benzo(b)flouranthene. Benzo(b) flouranthene would very likely be detected at the 0.017 ppb level given the overall response of this compound and signal to noise ratio, but a worst-case detectible amount would be at 0.060 ppb using the MDL for this compound. The Alaska Groundwater clean-up level from 18 AAC 75.345 Table C lists the cleanup level for Benzo(b)fluoranthene at 1.2 ppb. The impact of raising this reporting limit if necessary to 0.060 ppb is negligible since the elevated RDL remains lower than the 1.2 ppb clean-up level.

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ESC will provide any additional information requested to confirm that the intent of the National Functional Guidelines have been met since all of the compounds are able to be detected and are at a level that is below the action levels provided in the Alaska Groundwater clean-up level from 18 AAC 75.345 Table C. Please feel free to contact us with any questions.

Sincerely,

William Mock
VP Lab Operations
ESC Lab Sciences
12065 Lebanon Road
Mt. Juliet, TN 37122

ENVIRONMENTAL SCIENCE CORPORATION
12065 Lebanon Road, Mount Juliet, Tennessee 37122
Phone: (615) 758-5858; Facsimile: (615) 758-5859

Method Detection Limit Study
Certification Statement

Date: 12/29/2010 **Page** 1 **of** 248

Matrix: Water	
Analyst: Brian Ford	**Analysis Method #:** 8270C/D PAHSIM
Prep. Technician:	**Prep. Method #:** 3510C
Analysis SOP & Revision #: 330345 R13	
Prep. SOP & Revision #: 330702 R11	

We, the undersigned, CERTIFY that:

1. ***This Method detection limit study was conducted in compliance with CFR Title 40, Part 136 Appendix B.***
2. ***The personnel mentioned herein performed the analyses/preparation of these samples using the procedures cited above.***
3. ***A copy of the test method(s) and laboratory specific SOPs are available for all personnel on-site.***
4. ***The data associated with the method detection limit study are true, accurate, complete and self-explanatory.***
5. ***All raw data (including a copy of this certification form) necessary to reconstruct and validate these analyses have been retained at the facility, and the associated information is well-organized and available for review by authorized assessors.***

	Print Name	Signature	Date
Department Manager:	Chris Johnson		
QA Representative:	Shari Prestanski		

Method: 8270C/D PAHSIM
Laboratory: Environmental Science Corp.
Analyst: Brian Ford
Date: 10/12/2010

Instrument: SVGCMS9
Matrix: Water
Prep Method: 3510C

Method Detection Limit Study 0.02 ppb

Analyte	Avg	SD	N	T(s)	MDL	Units	Conc	% Rec	PQL	10X Value	10X Criteria P/F	PQL Criteria	PQL: MDL Ratio	PQL 3X Criteria P/F
Benzo(g,h,i)perylene	0.0172	0.005	7	3.143	0.0157	ug/L	0.02	86%	0.05	1.3	P	P	3.2	P
Indeno(1,2,3-cd)pyrene	0.0157	0.00134	7	3.143	0.00421	ug/L	0.02	79%	0.05	4.8	P	P	11.9	P

Method: 8270C/D PAHSIM
Laboratory: Environmental Science Corp.
Analyst: Brian Ford
Date: 10/12/2010

Instrument: SVGCMS9
Matrix: Water
Prep Method: 3510C

Method Detection Limit Study 0.05 ppb

Analyte	Avg	SD	N	T(s)	MDL	Units	Conc	% Rec	PQL	10X Value	10X Criteria P/F	PQL Criteria	PQL: MDL Ratio	PQL 3X Criteria P/F
1-Methylnaphthalene	0.0315	0.00311	7	3.143	0.00977	ug/L	0.05	63%	0.25	5.1	P	P	25.6	P
2-Chloronaphthalene	0.031	0.00378	7	3.143	0.0119	ug/L	0.05	62%	0.25	4.2	P	P	21.0	P
2-Methylnaphthalene	0.0284	0.00285	7	3.143	0.00897	ug/L	0.05	57%	0.25	5.6	P	P	27.9	P
Acenaphthene	0.0354	0.00262	7	3.143	0.00823	ug/L	0.05	71%	0.05	6.1	P	P	6.1	P
Acenaphthylene	0.0323	0.00202	7	3.143	0.00636	ug/L	0.05	65%	0.05	7.9	P	P	7.9	P
Anthracene	0.0422	0.00311	7	3.143	0.00979	ug/L	0.05	84%	0.05	5.1	P	P	5.1	P
Benzo(a)anthracene	0.0489	0.00396	7	3.143	0.0124	ug/L	0.05	98%	0.05	4.0	P	P	4.0	P
Benzo(a)pyrene	0.0309	0.00353	7	3.143	0.0111	ug/L	0.05	62%	0.05	4.5	P	P	4.5	P
Benzo(b)fluoranthene	0.0344	0.00609	7	3.143	0.0191	ug/L	0.05	69%	0.05	2.6	P	P	2.6	P
Benzo(k)fluoranthene	0.0429	0.00412	7	3.143	0.013	ug/L	0.05	86%	0.05	3.8	P	P	3.8	P
Chrysene	0.0499	0.00459	7	3.143	0.0144	ug/L	0.05	100%	0.05	3.5	P	P	3.5	P
Fluoranthene	0.0427	0.00523	7	3.143	0.0165	ug/L	0.05	85%	0.05	3.0	P	P	3.0	P
Fluorene	0.0372	0.00226	7	3.143	0.0071	ug/L	0.05	74%	0.05	7.0	P	P	7.0	P
Naphthalene	0.0328	0.00327	7	3.143	0.0103	ug/L	0.05	66%	0.25	4.9	P	P	24.3	P
Phenanthrene	0.0474	0.00569	7	3.143	0.0179	ug/L	0.05	95%	0.05	2.8	P	P	2.8	P
Pyrene	0.0415	0.00228	7	3.143	0.00717	ug/L	0.05	83%	0.05	7.0	P	P	7.0	P

Method: 8270C/D PAHSIM
Laboratory: Environmental Science Corp.
Analyst: Brian Ford
Date: 10/22/2010

Instrument: SVGCMS9
Matrix: Water
Prep Method: 3510C

Method Detection Limit Study 0.02 ppb

Analyte	Avg	SD	N	T(s)	MDL	Units	Conc	% Rec	PQL	10X Value	10X Criteria P/F	PQL Criteria	PQL: MDL Ratio	PQL 3X Criteria P/F
Dibenz(a,h)anthracene	0.0178	0.00144	7	3.143	0.00454	ug/L	0.02	89%	0.05	4.4	P	P	11.0	P

APPENDIX F

ADEC Conceptual Site Model Human Health Scoping Form and Graphic

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Print Form

Human Health Conceptual Site Model
Scoping Form

Site Name: Eureka Lodge, Mile 128 Glenn Highway, Alaska

File Number: 210.28.006

Completed by: OASIS Environmental, 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:

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: The pathway for site visitors, trespassers, and recreational users is complete but insignificant.

* 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:

Contaminated soil at the site has been excavated to 7.0 feet bgs and backfilled with clean fill.

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:

Contaminated soil at the site has been excavated to 7.0 feet bgs and backfilled with clean fill.

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:

Groundwater at the site has not been fully investigated. It appears at this time that groundwater is not readily available at the site. Two of the three permanent wells installed were dry.

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: Incomplete

Comments:

The surface water body located ~40 feet north of the site is used as the drinking water source for the lodge. Samples were collected from the unnamed lake and from a spigot in the water treatment building before the water was treated. All analytical results were non-detect or well below cleanup levels.

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: Incomplete

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:

Contaminated soil at the site has been excavated to 7.0 feet bgs and backfilled with clean fill. Based on analytical results from this sampling event, benzene impacted soil at the site can be found from 9.0-13.0 feet bgs.

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:

Occupied buildings are within 30 feet of the site and benzene was detected about ADEC method two soil cleanup levels.

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:

The surface water at the site has not been impacted. Also, groundwater is not readily available at the site. Two of the three permanent monitoring wells installed were dry.

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:

The tap water was sampled before being processed through the water treatment system, all analytes were either non-detect or well below ADEC Table C Groundwater Cleanup Levels.

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:

Surface water at the site has not been impacted. Also, a sheen test was conducted on the south side of the unnamed lake located ~40 feet north of the site, no sheen was present.

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.

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: Eureka Lodge, Mile 128 Glenn Highway, Alaska

Completed By: OASIS Environmental, Inc.

Date Completed: 9/5/2011

***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.*

Media	Transport Mechanisms	
☐ Surface Soil (0-2 ft bgs)	☐ Direct release to surface soil	check soil
	☐ Migration to subsurface	check soil
	☐ Migration to groundwater	check groundwater
	☐ 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
	☑ Migration to groundwater	check groundwater
	☑ Volatilization	check air
	☐ Uptake by plants or animals	check biota
	☐ Other (list):	
☑ Ground-water	☐ Direct release to groundwater	check groundwater
	☑ Volatilization	check air
	☐ Flow to surface water body	check surface water
	☐ Flow to sediment	check sediment
	☐ Uptake by plants or animals	check biota
	☐ Other (list):	
☐ Surface Water	☐ Direct release to surface water	check surface water
	☐ Volatilization	check air
	☐ Sedimentation	check sediment
	☐ Uptake by plants or animals	check biota
	☐ Other (list):	
☐ Sediment	☐ Direct release to sediment	check sediment
	☐ Resuspension, runoff, or erosion	check surface water
	☐ Uptake by plants or animals	check biota
	☐ Other (list):	

(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

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
☑ soil	☑ Incidental Soil Ingestion	C/F	C/F	I	C/F			
	☑ Dermal Absorption of Contaminants from Soil	C/F	C/F	I	C/F			
	☐ Inhalation of Fugitive Dust							
☑ groundwater	☑ Ingestion of Groundwater	I	I	I	I			
	☑ Dermal Absorption of Contaminants in Groundwater	I	I	I	I			
	☐ Inhalation of Volatile Compounds in Tap Water							
☑ air	☑ Inhalation of Outdoor Air	C/F	C/F	I	C/F			
	☑ Inhalation of Indoor Air	C/F	C/F	I	C/F			
	☐ Inhalation of Fugitive Dust							
☐ surface water	☐ Ingestion of Surface Water							
	☐ Dermal Absorption of Contaminants in Surface Water							
	☐ Inhalation of Volatile Compounds in Tap Water							
☐ sediment	☐ Direct Contact with Sediment							
☐ biota	☐ Ingestion of Wild or Farmed Foods							

Revised, 10/01/2010