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**Chevron Environmental Management Company**

# 2011 Offsite Assessment Report

Former Chevron Facility 301726
Lot 5A, Block 10, West Ramp
Fairbanks, Alaska

ADEC File No. 100.38.066

February 13, 2012

ARCADIS

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## Acronyms and Abbreviations

| | |
|---|---|
| ADEC | Alaska Department of Environmental Conservation |
| bgs | below ground surface |
| BTEX | benzene, toluene, ethylbenzene, and xylenes |
| Chevron | Chevron Environmental Management Company |
| CL | cleanup level |
| COPC | contaminant of potential concern |
| DRO | diesel range organics |
| EDB | 1,2-dibromoethane |
| FIA | Fairbanks International Airport |
| GCL | groundwater cleanup level |
| GRO | gasoline range organics |
| LNAPL | light nonaqueous phase liquid |
| µg/L | micrograms per liter |
| mg/kg | milligrams per kilogram |
| mg/L | milligrams per liter |
| PAHs | polynuclear aromatic hydrocarbons |
| PID | photo ionization detector |
| PVC | polyvinyl chloride |
| RPD | relative percent difference |
| RRO | residual range organics |
| USEPA | United States Environmental Protection Agency |
| UST | underground storage tank |
| VOC | volatile organic compound |

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## 1. Introduction

On behalf of Chevron Environmental Management Company (Chevron EMC), ARCADIS U.S., Inc. (ARCADIS) has prepared this report to summarize the 2011 offsite assessment at the former Texaco Facility 301726 located at Lot 5A, Block 10 in Fairbanks, Alaska. The assessment was completed to further delineate the extent of petroleum impacts in soil and groundwater in the vicinity of monitoring well MW-1 and to determine if impacts have migrated offsite. The assessment activities were performed as outlined in the Work Plan for Installation of Groundwater Monitoring Wells (ARCADIS 2011). The site assessment activities were completed on August 6, 2011. This work was conducted under the direction of a "qualified person" [18 AAC 75. 990 (100) and 18 AAC 78.995 (118)]. The site location and surrounding area are shown on **Figure 1**. The site features are shown on **Figure 2.**

## 2. Site Description

The site is a former Texaco bulk terminal. It is approximately one acre and located on the southwestern portion of the Fairbanks International Airport (FIA), west of Airport Industrial Road. The site was originally designated as Block 10, Lots 5A and 5B, however, the lots were subsequently combined and are now referred to as Block 10, Lot 5A.

The site is currently vacant with no features remaining associated with the previous land uses, with the exception of an abandoned six-inch diameter fuel pipeline crossing through the southeast portion of the site. This portion of the site is now covered with dirt, gravel, and groundcover vegetation. It is used for truck staging and as an access road for a business adjacent to the northeast portion of the site. The northwestern portion of the site is primarily unimproved land that is covered with mature vegetation. The Chena River is located approximately 700 feet west of the site.

Land use in the site vicinity is mixed industrial/commercial and unimproved (vegetation). The nearest residential properties are located approximately 600 feet west of the site. Airplane hangars, tarmacs, and other facilities associated with airport land uses are to the southeast across Airport Industrial Road from the site.

The former Texaco bulk fuel terminal began operation at the site in July 1969 and was closed in September 1989. There were three 25,000-gallon aboveground storage tanks (ASTs) and a warehouse. The three ASTs and associated structures were relocated to

another facility in 1989 by MAPCO Alaska Petroleum, Inc. The parcel has since remained vacant.

Seven documented petroleum releases of aviation fuel and diesel fuel occurred at the site during operation. Petroleum hydrocarbons have been detected and observed during routine utility maintenance operations, site investigations since 1992, and in groundwater samples collected since 2004. There are six monitoring wells on site: MW-1 through MW-6. The well locations are shown on the Site Map included as **Figure 2.**

## 3. Site Geology and Hydrogeology

The subject site is situated on unconsolidated alluvium deposited by the Chena and Tanana Rivers consisting of sand and gravel mixtures. Silt filled swales and oxbows from former stream and river courses are common in the area. The airport and surrounding areas have been graded, and there are areas of imported fill and borrow sources. Available boring logs generated during this investigation and installation of groundwater monitoring wells at 5250 Airport Industrial Road, located approximately 200 feet northeast of the subject site were reviewed. The logs indicate that the area is overlain by gravel fill material to depths of up to 5 feet below ground surface (bgs), underlain by silty sand that becomes generally coarser with depth and grades into a gravelly sand (SAIC, 2008).

The alluvial sediment thickness in the Fairbanks area ranges from 400 to 800 feet based on seismic interpretations. The bedrock under the Fairbanks area is pelitic schist consisting of metamorphosed marine silt deposits. In some areas, the pelitic schist grades to calcium-mica schist referred to as the Birch Creek Schist, marble or quartzite.

Groundwater elevation data has been collected from site monitoring wells since 2004. Historical groundwater elevation data indicate a variation in groundwater flow directions across the site. Horizontal hydraulic gradients have been calculated to be 0.0003 to 0.0006 ft/ft, respectively.

Groundwater elevation data collected in May, June and August of 2011 indicate a generally consistent southwesterly groundwater flow directions. During the June 11, 2011 site monitoring well gauging event, the depth to groundwater in wells MW-1 through MW-6 ranged from 9.53 to 9.96 feet btoc. Groundwater elevations ranged

from 417.07 to 417.20 feet amsl. The 2011 groundwater elevation data indicate a drop of more than three feet in the water table since August 2004.

## 4. Historical Groundwater and Soil Assessment

A site assessment was conducted by SAIC in August of 2004. The investigation consisted of the advancement of 13 soil borings and the installation of six monitoring wells. The soil borings ranged in depth from five to eight feet bgs. Soil samples were collected during the advancement of each soil boring and submitted to the laboratory for: gasoline range organics (GRO), diesel range organics (DRO), benzene, toluene, ethylbenzene, total xylenes (BTEX), and Lead analysis. GRO was detected above the ADEC Soil Cleanup Levels (SCL) in soil samples collected from B-12 and MW-1 at 3.5 and 4 feet bgs, respectively. DRO also exceeded ADEC SCLs in soil samples collected at 3.5 to 8 ft bgs in soil borings B-3, B-4, B-5, B-11, B-12, and MW-1. Each of these borings was advanced within 15 feet of the 6-inch diameter FIA fuel pipeline that crosses the site, with the exception of B-5. Boring B-5 was advanced at the location of a former above ground storage tank (ARCADIS 2011).

BTEX constituents were also detected above their applicable ADEC SCLs in soil samples collected from and B-4 and MW-1 at concentrations of up to 16.9 mg/kg benzene, 18.5 mg/kg toluene, 10.6 mg/kg ethylbenzene, and 76.5 mg/kg xylenes. Lead was not detected above the ADEC SCL.

Two soil borings, B-1 and B-13, were placed in the immediate vicinity of the water main installed in the public right-of-way of Airport Industrial Road where hydrocarbon odors were noted during the water main installation in 1992. No petroleum hydrocarbons were detected above the ADEC SCLs in any soil samples collected from B-1 or B-13. The historical soil analytical results are presented in **Table 1.** The historical soil analytical results and locations are also presented in **Figures 3** and **4**.

Groundwater monitoring has been completed at the site since 2004 from monitoring wells MW-1 through MW-6. GRO, DRO, RRO, benzene and toluene concentrations were above the ADEC GCLs and contain the highest concentrations in well MW-1. GRO concentrations were above the ADEC GCL in well MW-1 ranging from 3,960 micrograms per liter (ug/L) to 27,200 ug/L. DRO concentrations have also been detected above the ADEC GCL in wells MW-2, MW-3, and MW-5. DRO concentrations range from 980 ug/L to 33,400 ug/L from well MW-1. RRO concentrations range from 2,120 ug/L (MW-3) to 79,000 ug/L (MW-1). Benzene concentrations were above the ADEC GCL in well MW-1 ranging from 28 ug/L to

1,770 ug/L. The toluene concentration (3,790 ug/L) was above the ADEC GCL in well MW-1. Lead was detected above the ADEC GCL at concentrations of 15.5 ug/L (MW-4) and 20.8 ug/L (MW-5). The results for historical and recent groundwater analytical results for GRO, DRO, RRO, BTEX, and lead are presented in **Table 4.**

## 5. Constituents of Potential Concern

Constituents of potential concern for this site and their associated ADEC cleanup levels (CLs) for soil and groundwater are presented in the table below, as well as their applicable laboratory analysis method and laboratory detection limits.

| Constituents of Potential Concern (COPC) | Soil Cleanup Level (mg/kg) | Groundwater Cleanup Level (mg/L) | Laboratory Method | Detection Limit: Soil (mg/kg)/Water (mg/L) |
|---|---|---|---|---|
| GRO | 300 | 2.2 | Alaska Method AK 101 | 0.6 / 0.010 |
| DRO | 250 | 1.5 | Alaska Method AK 102 | 4.4 / 0.05 |
| Benzene | 0.025 | 0.005 | USEPA Method 8021B | 0.005 / 0.0005 |
| Ethylbenzene | 6.9 | 0.7 | USEPA Method 8021B | 0.005 / 0.0005 |
| Toluene | 6.5 | 1 | USEPA Method 8021B | 0.005 / 0.0005 |
| Total Xylenes | 63 | 10 | USEPA Method 8021B | 0.02 / 0.0015 |
| Ethylene dibromide (EDB) | .00016 | .00005 | USEPA Method 8260B & 8011 | 0.065/0.0005 |
| 1,1-dichloroethylene | 0.030 | 0.007 | USEPA Method 8260B | NA/0.0008 |
| RCRA 8 Metals (Arsenic and chromium) | 3.9/25 | 0.010/0.10 | USEPA , 6020 | 0.0984/0.00095 0.148/0.0006 |

| Constituents of Potential Concern (COPC) | Soil Cleanup Level (mg/kg) | Groundwater Cleanup Level (mg/L) | Laboratory Method | Detection Limit: Soil (mg/kg)/Water (mg/L) |
|---|---|---|---|---|
| Lead(total for soil) (dissolved for GW) | 400 | 0.015 | USEPA Method 6020 | 0.04 / 0.0001 |

mg/kg = milligrams per kilograms
NA = not applicable
mg/L = milligrams per liter
-- = no set limit
USEPA = Untied States Environmental Protection Agency

CL = 18 AAC 75 Oil and Other Hazardous Substances Pollution Control, rev. October 9, 2008; Table B1. Method Two - Soil Cleanup Levels (Migration to Groundwater) & Table C. Groundwater Cleanup Levels

## 6. 2011 Site Assessment Activities

The 2011 site assessment was completed to further delineate the extent of petroleum impacts in soil and groundwater in the vicinity of monitoring well MW-1 and to determine if impacts have migrated offsite. The following activities were completed as part of the assessment:

- advanced one soil boring,
- the soil boring was completed as a temporary monitoring well,
- collection of soil and groundwater samples, and
- abandonment of temporary monitoring well.

These activities are described Sections6.1 through6.11.

### 6.1 Soil Boring Advancement

The soil boring/temporary well (TW-1) was advanced/installed to delineate the extent of petroleum impacts in the vicinity of monitoring well MW-1. Boring TW-1 was advanced southeast of monitoring well MW-1 to confirm whether soil and groundwater impacts

have migrated to the southeast across Airport Industrial Road. The location was selected based on accessibility and field observations. The location of TW-1 is shown on the Site Map included as **Figure 2**.

ARCADIS retained a private utility locating company to conduct utility clearance in the vicinity of the proposed boring/temporary well location. During the survey, no utilities were located near the proposed location.

Soil boring TW-1 was advanced until field screening and field conditions indicated that the vertical extent was defined to final depth of 17 feet bgs. During the advancement of TW-1, soil samples were collected for lab analysis at depths of 2, 8, 8-10 and 15-17 feet bgs (one duplicate soil sample was collected from TW-1 at a depth of 8 feet bgs).

### 6.2 Soil Sample Collection Methods

The boring was cleared to a depth of 8 feet bgs using a vacuum truck to perform utility clearance. At 2-foot intervals the vacuum was stopped and a hand auger was advanced to collect an undisturbed sample for screening using a photo ionization detector (PID) and classification using the United Soil Classification System (USCS). The soil borings were then advanced using a hollow stem auger drill rig completed by Discovery Drilling (Discovery), located in Anchorage, Alaska. Soil samples were collected continuously using split spoon soil samplers to the final depth of the boring at 17 feet below ground surface (bgs). ARCADIS field staff inspected each split spoon and collected analytical samples based on field screening. Four samples per boring were collected for laboratory analysis. One sample was collected at 2 feet bgs to assess surface soils. Two samples were collected at 8 feet bgs and 8-10 feet bgs to assess the groundwater interface zone and one sample was collected from the bottom of the borehole (15-17 feet bgs).

Analytical samples were placed directly into clean, laboratory-supplied containers and preserved specific to the analysis to be performed. The soil was immediately preserved by submerging the samples in surrogate methanol. Soil only came into contact with properly decontaminated or disposable materials and handling of the soils was kept at a minimum to prevent volatilization or possible cross-contamination. Samples were collected in accordance with ADEC Draft Field Sampling Guidance (ADEC 2010).

Sample containers were labeled to include the date, time, location and depth of the sample collection, and were immediately stored in an iced cooler, and kept at a temperature of 2 to 6 degrees Celsius. The samples were retained at this temperature

and accompanied by the chain-of-custody through delivery to the laboratory. Collected samples were referenced on field boring logs included as **Appendix A** and in field note documents included as **Appendix B**.

### 6.3 Field Screening

Soil samples were field screened continuously during drilling activities using a PID and visually classified using the Unified Soil Classification System (USCS) by trained ARCADIS field staff. Soils from each split spoon sampler were placed into a sealable plastic bag and allowed to volatilize for at least 10 minutes, but no more than 60 minutes. A PID was then inserted into a small opening of the plastic bag and used to read the level of volatile organic compounds (VOCs) in the bag. The VOC reading was recorded on the boring logs and field sheets used to document drilling activities. Field screening for volatiles also included a visual inspection of soils for the presence of LNAPL, hydrocarbon odor or hydrocarbon sheen. Field screening values, lithology descriptions and soil classifications were conducted by trained ARCADIS field staff and recorded on boring logs included in **Appendix A**.

### 6.4 Soil Analytical Methods

Soil sample analysis was conducted by Lancaster Laboratories in Lancaster, Pennsylvania, with a standard turnaround time of 10 days. The laboratory sample bottles and preservatives needed to complete this project are listed in the table below.

| Constituent | Soil | Laboratory Method |
|---|---|---|
| GRO | One 125 milliliter (mL) wide-mouth amber glass jar (methanol [MeOH] with surrogate preservative) | Alaska Method AK 101 |
| DRO and RRO | One 125 mL wide-mouth amber glass jar (unpreserved) | Alaska Method AK 102 and 103 |
| BTEX | Three 40 mL wide-mouth amber glass jar (MeOH with surrogate preservative) | USEPA Method 8021B |
| RCRA 8 Metals | One 125 mL wide-mouth clear glass jar (unpreserved) | USEPA Method 6020 and 6010B |
| EDB | One 125 mL wide-mouth amber glass jar (MeOH with surrogate preservative) | USEPA Method 8260B |
| Polycyclic aromatic hydrocarbons (PAHs) | One 125 mL wide-mouth amber glass jar (MeOH with surrogate preservative) | USEPA Method 8270D |
| VOCs | One 125 mL widemouth amber glass jar (MeOH with surrogate preservative) | USEPA Method 8260B/ |
| **Notes:**<br>**mL = milliter**<br>USEPA =United States Environmental Protection Agency | | |

### 6.5 Soil Analytical Results

Soil analytical results were reported on a dry-weight basis. Soil analytical results are presented in **Tables 1, 2 and 3**. Soil boring and monitoring well locations with soil analytical results are presented on **Figures 3 and 4**.

#### 6.5.1 GRO, DRO, RRO, and BTEX

None of the soil samples collected from boring TW-1 contained concentrations of GRO, DRO, RRO, or BTEX detected greater than their applicable ADEC Soil Cleanup Level (SCL).

#### 6.5.2 PAHs, VOCs and EDB

The laboratory Method Detection Limit (MDL) for EDB was greater than the ADEC SCLs (0.00016 mg/kg) for the soil samples collected from boring TW-1. Communications with Lancaster Laboratories revealed that the low-limit level MDL that can be reached for EDB in soil using methanol preservative is 0.050 mg/kg. The low-

limit level for EDB using USEPA Method 8260B is 0.001 mg/kg. None of the soil samples collected had VOC or PAH constituent concentrations above their applicable ADEC SCLs. Soil analytical data for VOCs, PAHs and EDB are presented in **Table 2**.

6.5.3 Metals

Arsenic was detected in soil samples above the ADEC SGL (3.9 mg/kg) in samples collected at 2 feet bgs (9.32 mg/kg), 8 feet bgs (5.42 mg/kg), 8-10 feet bgs (4.06 mg/kg), and 15-17 feet bgs (3.95 mg/kg). Chromium was detected above the ADEC SCL (25 mg/kg) at 2 feet bgs (26.6 mg/kg).

### 6.6 Monitoring Well Construction

Upon completion of boring TW-1, a temporary monitoring well was installed in accordance with the ADEC's Monitoring Well Guidance document (ADEC 2009a). The monitoring wells were constructed of 2-inch-diameter schedule 40 polyvinyl chloride (PVC) well casing, with 0.010-inch factory-slotted screen and 2-inch solid schedule 40 PVC riser. The well was set at 16 feet bgs, with a screened interval from 6 to 16 feet bgs. The depth to water on site was encountered at 7.7 feet bgs. A standard sand pack (#10/20 silica sand) was placed from the bottom of the borehole to approximately 1 foot above the screened interval.

Monitoring well construction is shown on the boring logs included in **Appendix A**.

### 6.7 Monitoring Well Development

Well development occurred after the temporary monitoring well installation. Well development was performed by purging the well until the purge water was relatively free of suspended sediments and/or until approximately 20 gallons were removed.

### 6.8 Groundwater Collection Methods

Following the well development the temporary monitoring well was sampled using a disposable Teflon bailer. Analytical samples were placed directly into clean, laboratory supplied containers and preserved specific to the analysis to be performed. Samples only came into contact with properly decontaminated or disposable materials and were collected in accordance with ADEC Draft Field Sampling Guidance (ADEC 2010).

Sample containers were labeled to include the date, time, location and depth of the sample collection, and were immediately stored in an iced cooler, and kept at a temperature of 2 to 6 degrees Celsius. The samples were retained at this temperature and accompanied by the chain-of-custody through delivery to the laboratory. Collected samples were referenced on field boring logs (**Appendix A**) and in field note documents (**Appendix B**).

### 6.9 Groundwater Analytical Methods

| Constituent | Groundwater | Laboratory Method |
|---|---|---|
| GRO | Three 40 mL HCl-preserved amber glass vials | Alaska Method AK 101 |
| DRO and RRO | Two 1L HCl-preserved amber glass bottles | Alaska Method AK 102 and 103 |
| BTEX | Three 40 mL HCl preserved amber glass vials | USEPA Method 8021B |
| RCRA 8 Metals | One 250 mL HNO3-preserved plastic bottle | USEPA Method 6020 and 6010B |
| EDB | Three 40 mL HCl preserved glass vials | USEPA 8011 |
| PAHs | Three 40 mL HCl preserved glass vials | USEPA Method 8270C SIM |
| VOCs | Three 40 mL HCl-preserved amber glass vials | USEPA Method 8260B |

**Notes:**
USEPA =United States Environmental Protection Agency
HCL = Hydrochloric Acid
HNO3 = Nitric Acid
mL = Millilter
SIM = Selected ion monitoring

### 6.10 Groundwater Analytical Results

One groundwater sample was collected from temporary monitoring well TW-1 and submitted to Lancaster Laboratory for the following analysis: GRO, DRO, RRO, BTEX, EDB, VOCs, PAHs and Metals.

The groundwater sample collected did not have concentrations of GRO, DRO, RRO, BTEX, VOCs, PAH, or metals constituents detected greater than their applicable ADEC GCLs. The concentration of the VOC 1,1-dichloroethylene contained a concentration equal to the ADEC GCL of 7 µg/L.

### 6.11 Temporary Well Abandonment

Following the collection of the groundwater sample, the temporary well (constructed of a 2-inch-diameter schedule 40 PVC well casing, with 0.010-inch factory-slotted screen and 2-inch solid schedule 40 PVC riser) was removed. Once the temporary well was removed, it was backfilled with 2 bags of bentonite chips and placed in pea gravel and cold packed to completion by ADEC *Recommended Practices for Monitoring Well Design, Installation, and Decommissioning* (ADEC 1992).

## 7. Laboratory Data Quality Assurance Summary

As required by the ADEC (2009b), ARCADIS completed a laboratory data review checklist for the Lancaster Laboratories reports from the 2011 off site assessment. The laboratory analytical reports are included in **Appendix C** and the ADEC data review checklists are included in **Appendix D**.

### 7.1 Accuracy

The data meets accuracy objectives by laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for laboratory reports.

### 7.2 Precision

Based on the LCS/LCSD, MS and matrix spike duplicate RPDs; the data meets precision objectives for laboratory reports with the following exceptions:

- In laboratory report 1260739, the RPD was greater than the recommended value for petroleum hydrocarbons in soil: toluene (83 percent), RRO (2 percent).

### 7.3 Representativeness

The data appear to be representative of on- and off-site conditions and are generally consistent with objectives to further delineate the site impacts.

### 7.4 Comparability

The laboratory results are presented in the same units as previous reports to allow for comparison between reports.

### 7.5 Completeness

Soil sample results (laboratory report 1260739) appear to be valid and usable, with the following exceptions:

- In laboratory report 1260739, the laboratory MDL for EDB exceeded the cleanup levels for groundwater sample TW-1. According to Lancaster Laboratories, gas chromatography/mass spectrometry method 8260B could not achieve an MDL below the cleanup level established, even with no dilution factor.

### 7.6 Sensitivity

The sensitivity of the analyses for soil was adequate for the soil samples because the MDLs were less than the ADEC cleanup levels compounds which were not detected.

## 8. Management of Investigation-Derived Wastes

Development water and soil cuttings generated during the field activities were contained in DOT-approved, 55-gallon steel drum and supersack (Drum-1 and TW-1 respectively). The investigation-derived waste was appropriately labeled and disposed of by Alaska Soil Recycling (soil cuttings) and Emerald-Alaska (development water).

## 9. Preliminary Conceptual Site Model

The site is currently vacant with no features remaining associated with the previous land uses, with the exception of an abandoned six-inch diameter fuel pipeline crossing through the southeast portion of the site. The site is a former Texaco bulk terminal. It is approximately one acre and located on the southwestern portion of the FIA, west of Airport Industrial Road. The southwest portion of the site is now covered with dirt, gravel, and groundcover vegetation and is used for truck staging and as an access road for a business located adjacent to the northeast portion of the site. The northwestern portion of the site is primarily unimproved land that is covered with mature vegetation. The Chena River is located approximately 700 feet west of the site.

Land use in the site vicinity is mixed commercial/industrial and unimproved (vegetation). The nearest residential properties are located approximately 600 feet west of the site. Airplane hangars, tarmacs, and other facilities associated with airport land uses are across Airport Industrial Road from the site.

The environmental impact caused by the release of petroleum hydrocarbons on the site property is believed to be limited to soil and groundwater.

Current and future potential receptors include future residents, commercial employees, site visitors, and construction/excavation workers. A well search and mail survey was conducted by ARCADIS in 2008 and identified a number of private wells in the vicinity of the site on Fairbanks International Airport (FIA) property. Based on records supplied by FIA, none of these wells are used for drinking water or public water supply. Other receptors which were considered and were ruled out include farmers or subsistence harvesters and subsistence. These receptors were excluded because the site is located in a commercial/industrial area of Fairbanks.

Completed ADEC Human Health Conceptual Site Model scoping forms are included in **Appendix E**.

## 10. Summary & Conclusions

One soil boring and one temporary monitoring well (TW-1) was advanced/installed during the 2011 assessment activities. TW-1 was installed southeast of the well MW-1 on the opposite side of Airport Industrial Road to further delineate the petroleum impacted groundwater and soil in the vicinity of monitoring well MW-1.

None of the soil samples collected contained concentrations of GRO, DRO, RRO, BTEX, EDB or VOC constituents detected greater than their applicable ADEC SCLs.

Arsenic was detected in soil samples above the ADEC SGL (3.9 mg/kg) in samples collected at 2 feet bgs (9.32 mg/kg), 8 feet bgs (5.42 mg/kg), 8-10 feet bgs (4.06 mg/kg), and 15-17 feet bgs (3.95 mg/kg). Chromium was detected above the ADEC SCL (25 mg/kg) at 2 feet bgs (26.6 mg/kg). The concentrations of arsenic and chromium may be attributed to natural background levels for the Fairbanks region.

One groundwater sample was collected from temporary monitoring well TW-1. The groundwater sample collected did not have concentrations of GRO, DRO, RRO, BTEX, VOCs, PAHs or metal constituents detected greater than their applicable ADEC GCLs.

Based on the results of the 2011 offsite assessment, the extent of impacts has been defined and is limited to the vicinity around monitoring well MW-1 and soil borings B-3, B-4, B-11, and B-12. The highest petroleum impacts are located in the vicinity of well MW-1 at approximately 4 feet bgs. The historical soil data are presented on **Table 1** and **Figure 5.**

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**References**

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**Tables**

**Table 1**
**Soil Analytical Data - GRO, DRO, RRO, BTEX and Lead**
Former Texaco Facility 301726
Lot 5A, Block 10, West Ramp
Fairbanks International Airport, Fairbanks, Alaska

| Location | Sample Depth/ Interval (feet) | Sample Date | GRO | DRO | RRO | Benzene | Toluene | Ethylbenzene | Total Xylenes | Lead |
|---|---|---|---|---|---|---|---|---|---|---|
| **ADEC Soil Cleanup Levels[1]** | | | **300** | **250** | **11,000** | **0.025** | **6.5** | **6.9** | **63** | **400** |
| **B-1** | 4 | 08/17/04 | <1.31 | <29.2 | <58.3 | <0.00654 | <0.0131 | <0.0131 | <0.0196 | 6.42 |
| | 8 | 08/17/04 | <1.05 | <28.8 | <57.7 | <0.00526 | <0.0105 | 0.0132 | 0.0367 | 3.03 |
| **B-2** | 3.5 | 08/17/04 | <1.13 | <29.2 | <58.4 | <0.00563 | <0.0113 | <0.0113 | <0.0203 | 6.10 |
| | 6.5 | 08/17/04 | <1.02 | <29.2 | <58.4 | <0.00509 | <0.0102 | <0.0102 | <0.0153 | 5.25 |
| **B-3** | 3.5 | 08/17/04 | 18.90 | 1,570 | <57.9 | <0.00481 | <0.00961 | 0.0829 | 0.3140 | 3.71 |
| | 6.5 | 08/17/04 | 2.61 | 2,430 | <56.3 | <0.00558 | <0.0112 | <0.0112 | 0.0300 | 4.36 |
| **B-4** | 3.5 | 08/17/04 | 222 | 1,770 | <58.1 | 4.49 | 8.34 | 10.6 | 22.30 | 7.44 |
| | 6.5 | 08/17/04 | 12.70 | <28.8 | <57.6 | 0.174 | 0.11 | 0.171 | 0.5470 | 3.94 |
| **B-5** | 3.5 | 08/17/04 | <1.02 | 284 | <58.4 | 0.0207 | <0.0102 | <0.0102 | <0.0153 | 2.86 |
| | 6.5 | 08/17/04 | 5.35 | <29.0 | <58.0 | <0.00576 | <0.0115 | <0.0115 | <0.0173 | 5.71 |
| **B-6** | 6.5 | 08/17/04 | <0.952 | <28.1 | <56.2 | <0.00476 | <0.00952 | <0.00952 | <0.0143 | 4.71 |
| **B-7** | 3.5 | 08/17/04 | <1.03 | <29.0 | <58.0 | <0.00515 | <0.0103 | <0.0103 | <0.0155 | 3.83 |
| | 6.5 | 08/17/04 | <1.06 | <29.3 | <58.6 | <0.0053 | <0.0106 | <0.0106 | <0.0159 | 4.46 |
| **B-8** | 6.5 | 08/17/04 | <.934 | 28.9 | <57.8 | 0.00794 | <0.00934 | <0.00934 | <0.014 | 6.65 |
| **B-9** | 6.5 | 08/17/04 | <1.01 | <28.6 | <57.2 | <0.00507 | <0.0101 | <0.0101 | <0.0152 | 5.22 |
| **B-11** | 5.0 | 08/18/04 | 86.20 | 2,640 | <57.6 | <0.0757 | <0.151 | 0.222 | 15.90 | 9.09 |
| **B-12** | 3.5 | 08/18/04 | 330 | 306 | <57.2 | <0.218 | 0.838 | 3.910 | 38.00 | 8.82 |
| | 6.5 | 08/18/04 | <1.26 | <28.1 | <56.3 | <0.0063 | <0.0126 | <0.0126 | 0.1100 | 6.80 |
| **B-13** | 5.0 | 08/18/04 | <1.42 | <29.3 | <58.7 | <0.00709 | <0.0142 | <0.0142 | <0.0213 | 6.69 |
| **MW-1** | 4 | 08/17/04 | 339 | 30,900 | <58.20 | 16.9 | 18.50 | 9.54 | 76.50 | 10.20 |
| | 8 | 08/17/04 | 67.50 | 1,170 | <58.2 | 0.362 | 1.18 | 0.384 | 9.80 | 4.68 |
| | 14.5 | 08/18/04 | 222 | 198 | <56.7 | 0.732 | 9.82 | 2.57 | 31.70 | 3.47 |
| **MW-2** | 3.5 | 08/17/04 | <1.83 | <28.8 | <57.6 | 0.0113 | <0.0183 | <0.0183 | <0.0275 | 5.56 |
| | 6.5 | 08/17/04 | <1.12 | <29.3 | <58.6 | <0.0058 | <0.0112 | <0.0112 | <0.0167 | 4.64 |
| | 14.5 | 08/18/04 | <1.35 | <29.2 | <58.3 | <0.00673 | <0.0135 | <0.0135 | <0.0202 | 3.00 |
| **MW-3** | 6.5 | 08/17/04 | <0.941 | <29.1 | <58.2 | <0.00471 | <0.00941 | <0.00941 | <0.0141 | 5.98 |
| **MW-4** | 6.5 | 08/18/04 | <1.06 | <29 | <58.1 | <0.00528 | <0.0106 | <0.0106 | <0.0158 | 4.26 |
| **MW-5** | 6.5 | 08/18/04 | <1.03 | <28.2 | <56.4 | <0.00514 | <0.0103 | <0.0103 | <0.0154 | 5.38 |
| **MW-6** | 3.5 | 08/18/04 | <1.42 | <28.5 | <56.9 | <0.0071 | <0.0142 | <0.0142 | 0.0228 | 6.42 |
| | 6.5 | 08/18/04 | <1.05 | <28.6 | <57.2 | <0.00523 | <0.0105 | <0.0105 | <0.0157 | 4.15 |
| | 14.5 | 08/18/04 | <1.11 | <29.2 | <58.4 | <0.00553 | <0.0111 | <0.0111 | <0.0166 | 3.34 |
| **SP-1-Comp** | -- | 08/18/04 | 23.90 | -- | -- | 0.0166 | 0.0659 | 0.254 | 2.22 | 4.75 |
| **TW-1** | **2.0** | **08/06/11** | **<0.7** | **<5.4** | **7.1** | **0.0072** | **0.0510** | **<0.0068** | **<0.02** | **8.00** |
| | **8.0** | **08/06/11** | **<0.7** | **<6.2** | **10.0** | **<0.0073** | **0.0630** | **<0.0073** | **<0.022** | **6.92** |
| **Duplicate** | **8.0** | **08/06/11** | **<0.7** | **<6.8** | **9.8** | **<0.0071** | **0.0260** | **<0.0071** | **<0.021** | **--** |
| | **8-10** | **08/06/11** | **<0.7** | **<5.5** | **<5.5** | **<0.0069** | **0.0870** | **<0.0069** | **<0.021** | **3.90** |
| | **15-17** | **08/06/11** | **<0.9** | **<6.3** | **<6.0** | **0.0096** | **0.1100** | **0.010** | **0.03** | **3.88** |

**Notes:**

All results are reported in milligrams per kilogram (mg/kg).
ADEC = Alaska Department of Environmental Conservation

Bold results are from recent event.

Gasoline range organics (GRO) was analyzed by AK Method 101.

Diesel range organics (DRO) and residual range organics (RRO) were analyzed by AK Method 102.

Benzene, toluene, ethylbenzene, and total xylenes (BTEX) analyzed by EPA Method 8021B.

Lead analyzed by EPA Method 6020 (Total Lead).

Highlighted cell indicates concentration exceeds respective soil cleanup level.

Data associated with current monitoring event in bold.

-- = not applicable/not available.

< = not detected greater than the laboratory reporting limit indicated.

[1] ADEC Soil Cleanup Levels (SCLs) per 18 AAC 75.355, Table B1. Register 188, January 2009, & Technical Memorandum 02-006. Migration to Groundwater.

# Table 2
## Soil Analytical Data - VOCs and PAHs
Former Texaco Facility 301726
Lot 5A, Block 10, West Ramp
Fairbanks International Airport, Fairbanks, Alaska

| Location | Sample Depth/ Interval | Sample Date | MTBE | EDB | Naphthalene | Acenaphthylene |
|---|---|---|---|---|---|---|
| **ADEC Soil Cleanup Levels[1]** | | | **1.3** | **0.00016** | **20** | **180** |
| **TW-1** | **2.0** | **08/06/11** | **<0.032** | **<0.065** | **<0.04** | **<0.04** |
| | **8.0** | **08/06/11** | **<0.032** | **<0.066** | **<0.05** | **0.006** |
| **Duplicate** | **8.0** | **08/06/11** | **<0.039** | **<0.79** | **<0.079** | **--** |
| | **8-10** | **08/06/11** | **<0.03** | **<0.059** | **<0.04** | **<0.04** |
| | **15-17** | **08/06/11** | **<0.39** | **<0.78** | **<0.04** | **<0.04** |

**Notes:**

All results are reported in milligrams per kilogram (mg/kg).

ADEC = Alaska Department of Environmental Conservation

Bold results are from most recent event.

VOCs analyzed by EPA Method 8260

PAHs analyzed by EPA Method 8270D

Data associated with current monitoring event in bold.

-- = not applicable/not available.

< = not detected greater than the laboratory reporting limit indicated.

[1] ADEC Soil Cleanup Levels (SCLs) per 18 AAC 75.355, Table B1. Register 188, January 2009, & Technical Memorandum 02-006. Migration to Groundwater.

Only constituents with laboratory detections are presented in table.

**TABLE 3**

**Soil Analytical Data - Metals**

Former Texaco Facility 301726

Lot 5A, Block 10, West Ramp

Fairbanks International Airport, Fairbanks, Alaska

| Location | Sample Depth/ Interval | Sample Date | Barium | Silver | Arsenic | Cadmium | Chromium | Lead | Selenium |
|---|---|---|---|---|---|---|---|---|---|
| **ADEC Soil Cleanup Levels[1]** | | | **1,100** | **11.2** | **3.9** | **5** | **25** | **400*** | **3.4** |
| **TW-1** | **2.0** | **08/06/11** | **82** | **<0.087** | **9.32** | **0.159** | **26.6** | **8** | **0.1960** |
| | **8.0** | **08/06/11** | **77.6** | **<0.101** | **5.42** | **0.106** | **16.5** | **6.92** | **0.0943** |
| | **8-10** | **08/06/11** | **96.5** | **<.087** | **4.06** | **0.0699** | **14.4** | **3.9** | **0.0716** |
| | **15-17** | **08/06/11** | **72.3** | **<.101** | **3.95** | **0.0981** | **16.4** | **3.88** | **0.1050** |

**Notes:**

All results are reported in milligrams per kilogram (mg/kg).

ADEC = Alaska Department of Environmental Conservation

Bold results from most recent event.

Metals analyzed by EPA Method 6020 and 6010B (Total Lead).

Highlighted cell indicates concentration exceeds respective soil cleanup level.

Data associated with current monitoring event in bold.

-- = not applicable/not available.

< = not detected greater than the laboratory reporting limit indicated.

[1] ADEC Soil Cleanup Levels (SCLs) per 18 AAC 75.355, Table B1. Register 188, January 2009, & Technical Memorandum 02-006. Migration to Groundwater.

* = SCL used is for Under 40 inch Zone Direct Contact

**TABLE 4**
**Groundwater Analytical Data**
Former Texaco Facility 301726
Lot 5A, Block 10, West Ramp
Fairbanks International Airport, Fairbanks, Alaska

| Monitoring Well ID | Sample Date | DRO | RRO | GRO | Benzene | Toluene | Ethylbenzene | Total Xylenes | EDB | Lead |
|---|---|---|---|---|---|---|---|---|---|---|
| **ADEC Groundwater Cleanup Levels [1]** | | **1,500** | **1,100** | **2,200** | **5** | **1,000** | **700** | **10,000** | **470** | **15** |
| **MW-1** | 08/19/04 | 33,400 | <480 | 27,200 | 1,770 | 3,790 | 261 | 3,750 | -- | -- |
| | 03/30/05 | 436 | <388 | 9,000 | 729 | 343 | 186 | 936 | -- | -- |
| | 09/19/05 | 8,660 | <397 | <2,500 | 153 | 150 | <25 | 116 | -- | -- |
| | 09/11/08 | 12,000 | <708 | 6,680 | 357 | 413 | 124 | 815 | -- | -- |
| | 05/10/09 | 980 | <420 | 3,960 | 28 | 75.7 | 72.7 | 392 | -- | -- |
| | 10/04/09 | Not Sampled-LNAPL Detected | | | | | | | | |
| | 07/20/10 | 4,700 | 79000 | <6,600 | 100 | 240 | 65 | 440 | 0.0097 | 9.8 |
| | 08/21/11 | 10,000 | 57000 | <3,300 | 180 | 270 | 170 | 1400 | -- | -- |
| | 8/21/2011[D] | 6,500 | -- | -- | 130 | 140 | 190 | 1,000 | -- | -- |
| **MW-2** | 08/19/04 | -- | -- | <50.0 | <0.200 | <0.500 | <0.500 | <1.00 | -- | -- |
| | 03/30/05 | 4,040 | 427 | <50.0 | <0.500 | <0.500 | <0.500 | <1.50 | -- | -- |
| | 09/19/05 | <417 | <417 | <50.0 | <0.500 | <0.500 | <0.500 | <1.50 | -- | -- |
| | 09/11/08 | <94.3 | <708 | <50.0 | <0.200 | <0.500 | <0.500 | <1.00 | -- | -- |
| | 09/11/08 [D] | <95.2 | <714 | <50.0 | <0.200 | <0.500 | <0.500 | <1.00 | -- | -- |
| | 05/10/09 | <403 | <403 | <50.0 | 0.333 | <0.500 | <0.500 | <1.00 | -- | -- |
| | 10/04/09 | <391 | <391 | <50.0 | <0.500 | <1.00 | <1.00 | <3.00 | -- | -- |
| | 07/19/10 | 22 | 1800.00 | 210 | 0.8 | <0.5 | 0.70 | <1.5 | -- | 2.0 |
| | 08/21/11 | <10 | 120 | 130 | <0.5 | <0.5 | <0.5 | <1.5 | -- | -- |
| **MW-3** | 08/19/04 | 1,190 | <480 | 89 | 0.774 | <0.500 | 5.83 | 3.18 | -- | -- |
| | 03/30/05 | <391 | <391 | 181 | 0.979 | <0.500 | 24.1 | 6.94 | -- | -- |
| | 09/19/05 | 6,730 | 2,120 | <50.0 | 0.556 | <0.500 | 1.73 | <1.50 | -- | -- |
| | 09/11/08 | 12,000 | <708 | 60.3 | 0.448 | <0.500 | 0.653 | 1.96 | -- | -- |
| | 10/04/09 | 1,290 | 438 | <50.0 | <0.500 | <1.00 | <1.00 | <3.00 | -- | -- |
| | 10/04/09 | 2,640 | 459 | <50.0 | <0.500 | <1.00 | <1.00 | <3.00 | -- | -- |
| | 07/19/10 | <10 | 88.00 | 160 | <0.5 | <0.5 | <0.5 | <1.5 | 0.0097 | 12.9 |
| | 08/21/11 | <10 | 170.00 | 370 | <0.5 | <0.5 | <0.5 | <1.5 | -- | -- |
| **MW-4** | 08/19/04 | <400 | <480 | <50.0 | 0.3 | <0.500 | <0.500 | <1.00 | -- | -- |
| | 03/30/05 | <385 | <385 | <50.0 | <0.500 | <0.500 | <0.500 | <1.50 | -- | -- |
| | 09/19/05 | 1,310 | 815 | <50.0 | <0.500 | <0.500 | <0.500 | <1.50 | -- | -- |
| | 09/11/08 | <94.3 | <708 | <50.0 | <0.200 | <0.500 | <0.500 | <1.00 | -- | -- |
| | 05/10/09 | <403 | <403 | <50.0 | <0.200 | <0.500 | <0.500 | <1.00 | | |
| | 05/10/09 [D] | <427 | <427 | <50.0 | <0.200 | <0.500 | <0.500 | <1.00 | -- | -- |
| | 10/04/09 | <385 | <385 | <50.0 | <0.500 | <1.00 | <1.00 | <3.00 | -- | -- |
| | 07/19/10 | <10 | 210 | 460 | <0.5 | <0.5 | <0.5 | <1.5 | -- | 15.5 |
| | 08/21/11 | <10 | 200 | 590 | <0.5 | <0.5 | <0.5 | <1.5 | -- | -- |
| **MW-5** | 08/19/04 | <400 | <480 | <50.0 | <0.2 | <0.500 | <0.500 | <1.00 | -- | -- |
| | 03/30/05 | 3,310 | 435 | <50.0 | <0.500 | <0.500 | <0.500 | <1.50 | -- | -- |
| | 09/19/05 | <431 | 782 | <50.0 | <0.5 | <0.500 | <0.500 | <1.50 | -- | -- |
| | 09/11/08 | 150 | <708 | <50.0 | <0.2 | <0.500 | <0.500 | <1.00 | -- | -- |
| | 10/04/09 | 559 | <403 | <50.0 | <0.500 | <1.00 | <1.00 | <3.00 | | |
| | 07/20/10 | <10 | 110 | 180 | <0.5 | <0.5 | <0.5 | <1.5 | 0.0097 | 20.8 |
| | 08/21/11 | <10 | 120 | 350 | <0.5 | <0.5 | <0.5 | <1.5 | -- | -- |
| **MW-6** | 08/19/04 | <400 | <480 | <50.0 | 0.351 | <0.500 | <0.500 | <1.00 | -- | -- |
| | 03/30/05 | <388 | <388 | <50.0 | <0.5 | <0.500 | <0.500 | <1.50 | -- | -- |
| | 09/19/05 | <403 | <403 | <50.0 | <0.5 | <0.500 | <0.500 | <1.50 | -- | -- |
| | 09/11/08 | <100 | <750 | <50.0 | <0.2 | <0.500 | <0.500 | <1.0 | -- | -- |
| | 05/10/09 | <427 | <427 | <50.0 | <0.200 | <0.500 | <0.500 | <1.00 | -- | -- |
| | 10/04/09 | <385 | <385 | <50.0 | <0.500 | <1.00 | <1.00 | <3.00 | -- | -- |
| | 07/19/10 | <10 | 74 | 110 | <0.5 | <0.5 | <0.5 | <1.5 | -- | 0.95 |
| | 08/21/11 | <10 | 150 | 210 | <0.5 | <0.5 | <0.5 | <1.5 | -- | -- |
| **TW-1** | **08/06/11** | **24** | **<0.068** | **66** | **<0.5** | **0.5** | **<0.5** | **<1.5** | **<0.01** | **0.09** |

Notes:
Diesel range organics (DRO) was analyzed by AK Method 102.
Residual range organics (RRO) was analyzed by AK Method 103.
Gasoline range organics (GRO) was analyzed by AK Method 101.
Benzene, toluene, ethylbenzene, and total xylenes (BTEX) were analyzed by EPA Method 8021B.
1,2-Dibromoethane (EDB) was analyzed by EPA Method 8011
ADEC= Alaska Department of Environmental Conservation
[1]ADEC Groundwater Cleanup Levels (GCLs) per 18 AAC 75.345, Table C, Register 188, January 2009.
µg/L = micrograms per liter
"--" = indicates analyte was not sampled or analyzed
Highlighted cell indicates concentration exceeds groundwater cleanup level
"<" = Indicates analyte not detected greater than laboratory reporting limit indicated.
[D] = Indicates sample is a duplicate
Bold results are from most recent event.

**Table 5**
**Groundwater Analytical Data - PAHs**
Former Texaco Facility 301726
Lot 5A, Block 10, West Ramp
Fairbanks International Airport, Fairbanks, Alaska

| Monitoring Well ID | Sample Date | Naphthalene | Acenaphthylene | Acenaphthene | Fluorene |
|---|---|---|---|---|---|
| **ADEC Groundwater Cleanup Levels[1]** | | **730** | **2,200** | **2,200** | **1,500** |
| **TW-1** | **08/06/11** | **23** | **0.01** | **0.019** | **0.061** |

**Notes:**
PAHs were analyzed by EPA Method 8270C
All other PAHs constituents were below the laboratory detection limits
ADEC = Alaska Department of Environmental Conservation
[1]ADEC Groundwater Cleanup Levels (GCLs) per 18 AAC 75.345, Table C, Register 188, January 200
Bold results from most recent event.

**Table 6**
**Groundwater Analytical Data - VOCs and EDB**
Former Texaco Facility 301726
Lot 5A, Block 10, West Ramp
Fairbanks International Airport, Fairbanks, Alaska

| Monitoring Well ID | Sample Date | 1,1-dichloroethylene | 1,2,4-Trimethylbenzene | Ttrichloroflouromethane |
|---|---|---|---|---|
| **ADEC Groundwater Cleanup Levels[1]** | | **7** | **1,800** | **11,000** |
| **TW-1** | **8/6/11** | **7** | **2** | **8** |

**Notes:**
VOCs analyzed by EPA Method 8260
All other VOCs constituents analyzed were below the laboratory detection limits
ADEC = Alaska Department of Environmental Conservation
[1] ADEC Groundwater Cleanup Levels (GCLs) per 18 AAC 75.355, Table C.
Register 188, January 2009, & Technical Memorandum 02-006.
(µg/L) = micrograms per liter
Bold results from most recent event.

# Table 7
## Groundwater Analytical Data - Metals
Former Texaco Facility 301726
Lot 5A, Block 10, West Ramp
Fairbanks International Airport, Fairbanks, Alaska

| Monitoring Well ID | Sample Date | Barium | Silver | Arsenic | Cadmium | Chromium | Lead | Selenium |
|---|---|---|---|---|---|---|---|---|
| **ADEC Groundwater Cleanup Levels[1]** | | **2,000** | **100** | **10** | **5** | **100** | **15** | **50** |
| **TW-1** | **08/06/11** | **151** | **<0.91** | **<0.95** | **<0.2** | **<0.08** | **0.09** | **<0.27** |

**Notes:**

All results are reported in milligrams per kilogram (µg/L).

Barium and Silver analyzed by EPA Method 6010B.

Arsenic, cadmium, chromium, lead and selenium analyzed by EPA Method 6020.

< = not detected greater than the laboratory reporting limit indicated.

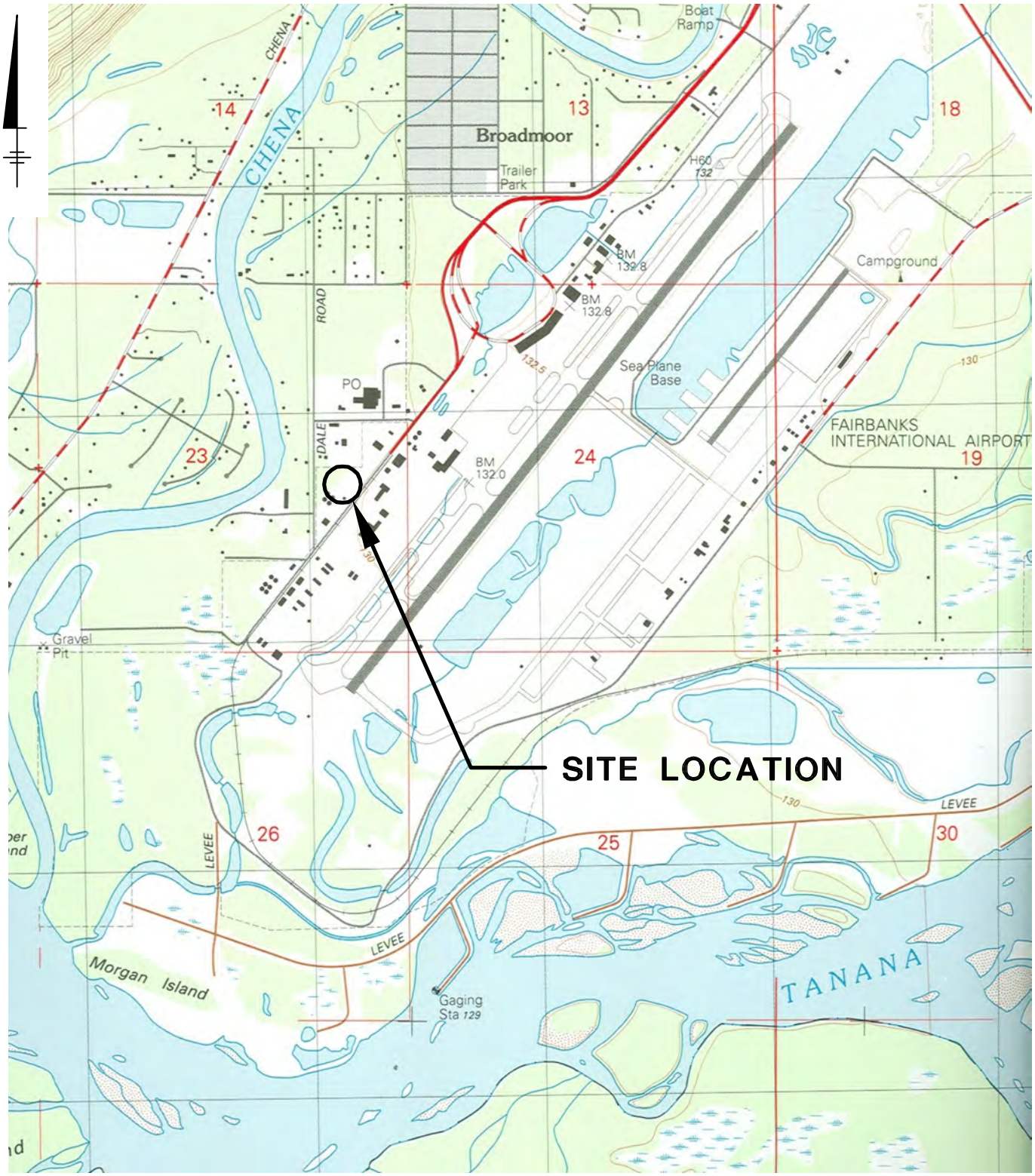
ADEC = Alaska Department of Environmental Conservation

[1] ADEC Groundwater Cleanup Levels (GCLs) per 18 AAC 75.355, Table C. Register 188, January 2009, & Technical Memorandum 02-006.

Bold results from most recent event.

ARCADIS

**Figures**




SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE: FAIRBANKS (D-2) SW, AK., 1992, FAIRBANKS NORTH STAR BOROUGH, SECTION: 24, TOWNSHIP: 1S, RANGE: 2W


0 2000' 4000'

APPROXIMATE GRAPHIC SCALE

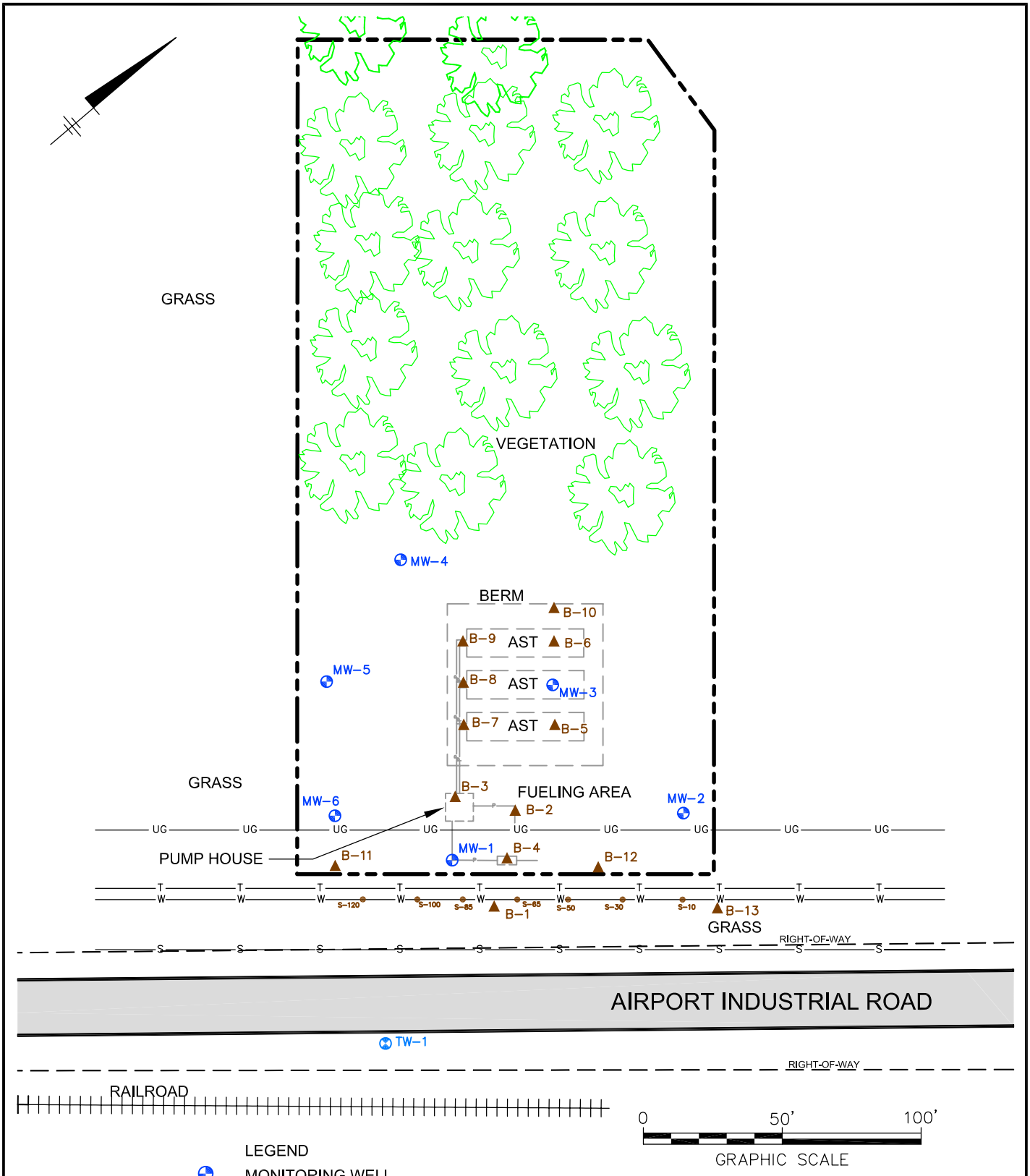
FORMER CHEVRON FACILITY NO. 301726
FAIRBANKS INT. AIRPORT, FAIRBANKS, ALASKA
**2011 OFF SITE ASSESSMENT REPORT**

## SITE LOCATION MAP

ARCADIS

FIGURE
**1**


CITY:TMAPA,FL DIV/GROUP:85 DB:JAR LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\TAMPA\ACT\Chevron\USA\Chevron 301726\B0046269\0005\00003\Additional OffSite\B0046269N01.dwg LAYOUT: 1SAVED: 1/12/2012 8:07 AM ACADVER: 18.0S (LMS TECH) PAGESETUP: PDF-AP PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 1/12/2012 8:08 AM BY: RICHARDS, JIM
XREFS: IMAGES: ALASKA.jpg Fairbanks-SW.jpg PROJECTNAME: ---




SOURCE: Base map digitized from "SAIC", Date 10/19/05, Scale 1"=30'

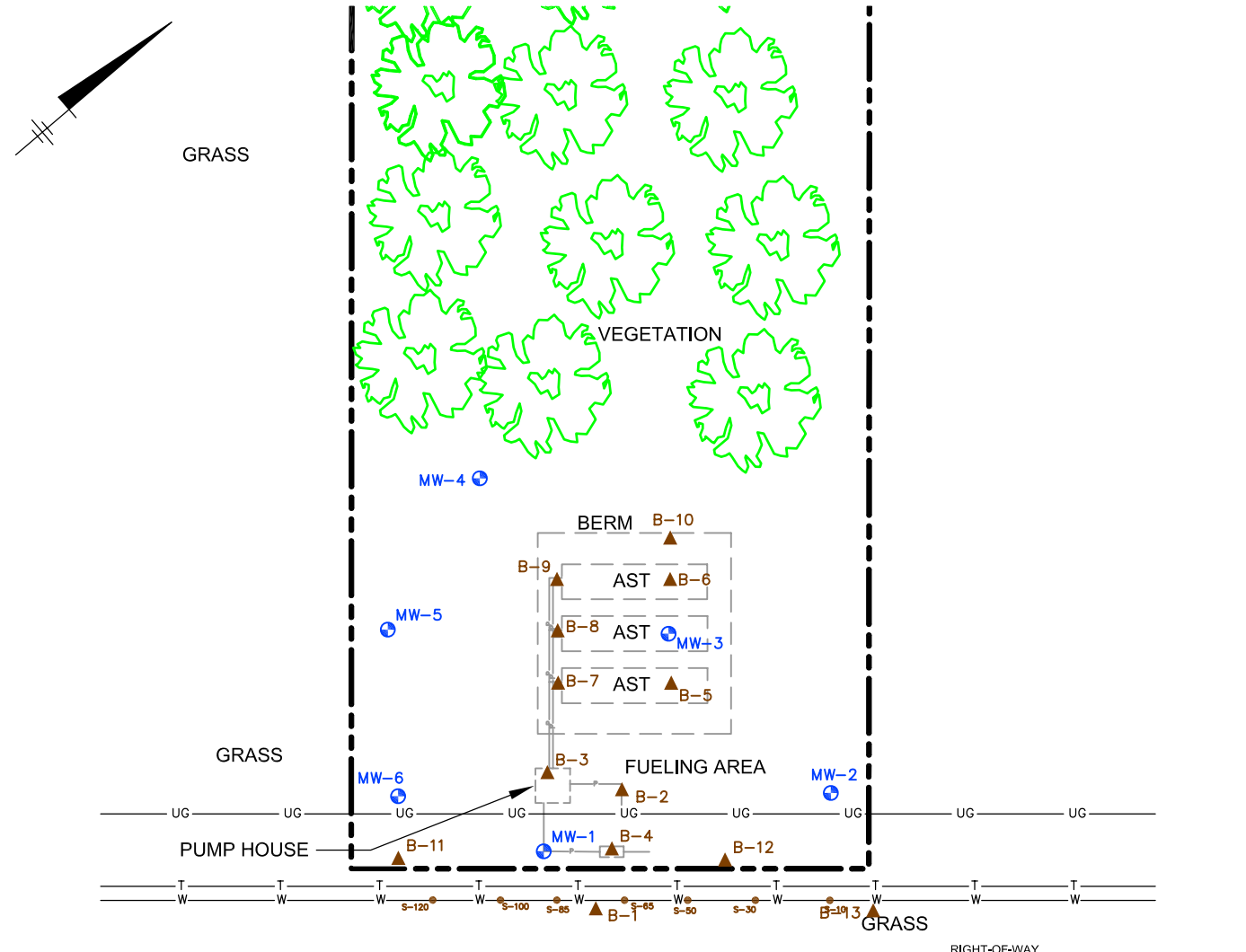
FORMER CHEVRON FACILITY NO. 301726
FAIRBANKS INT. AIRPORT, FAIRBANKS, ALASKA
**2011 OFF SITE ASSESSMENT REPORT**

# SITE MAP WITH SAMPLING LOCATIONS

ARCADIS

FIGURE
**2**


CITY:TAMPA DIV/GROUP:85 DB:JAR LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\Tampa-BVACT\B0046269 3017260005\00003\Additional OffSite\B0046269B01.dwg LAYOUT: 2 SAVED: 11/10/2011 1:12 PM ACADVER: 18.0S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 11/10/2011 1:13 PM BY: RICHARDS, JIM
XREFS: IMAGES: PROJECTNAME: --




| TW-1 | | | | |
|---|---|---|---|---|
| Date | 8/6/2011 | | | |
| Depth | 2 FT | 8 FT | 8–10 FT | 15–17 FT |
| GRO | <0.7 | <0.7/<0.7 | <0.7 | <0.9 |
| DRO | <5.4 | <6.2/<6.8 | <5.5 | <6.3 |
| RRO | 7.1 | 10/9.8 | <5.5 | <6.0 |
| B | <0.0072 | <0.0073/<0.0071 | <0.0069 | 0.0096 |
| T | 0.05 | 0.0063/0.026 | 0.0087 | 0.11 |
| E | <0.0068 | <0.0073/<0.0071 | <0.0069 | 0.01 |
| X | <0.02 | <0.022/<0.021 | <0.021 | 0.03 |
| Pb | 8.0 | 6.92/NS | 3.9 | 3.8 |

LEGEND

- MONITORING WELL
- TEMPORARY MONITORING WELL
- BOUNDARY LINE

| Sample Location | |
|---|---|
| Date | Date Collected |
| Depth | Sample Depth |
| GRO | Gasoline Range Organics |
| DRO | Range Organics |
| B | Benzene |
| T | Toluene |
| E | Ethylbenzene |
| X | Total Xylenes |
| Pb | LEAD |

RESULTS REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg)
NS = NOT SAMPLED
<1.00/<1.00 = DUPLICATE SAMPLE COLLECTED
GRO BY AK METHOD 101
DRO BY AK METHOD 102
BTEX BY EPA METHOD 8021B
LEAD BY EPA METHOD 6020

SOURCE: Base map digitized from "SAIC", Date 10/19/05, Scale 1"=30'

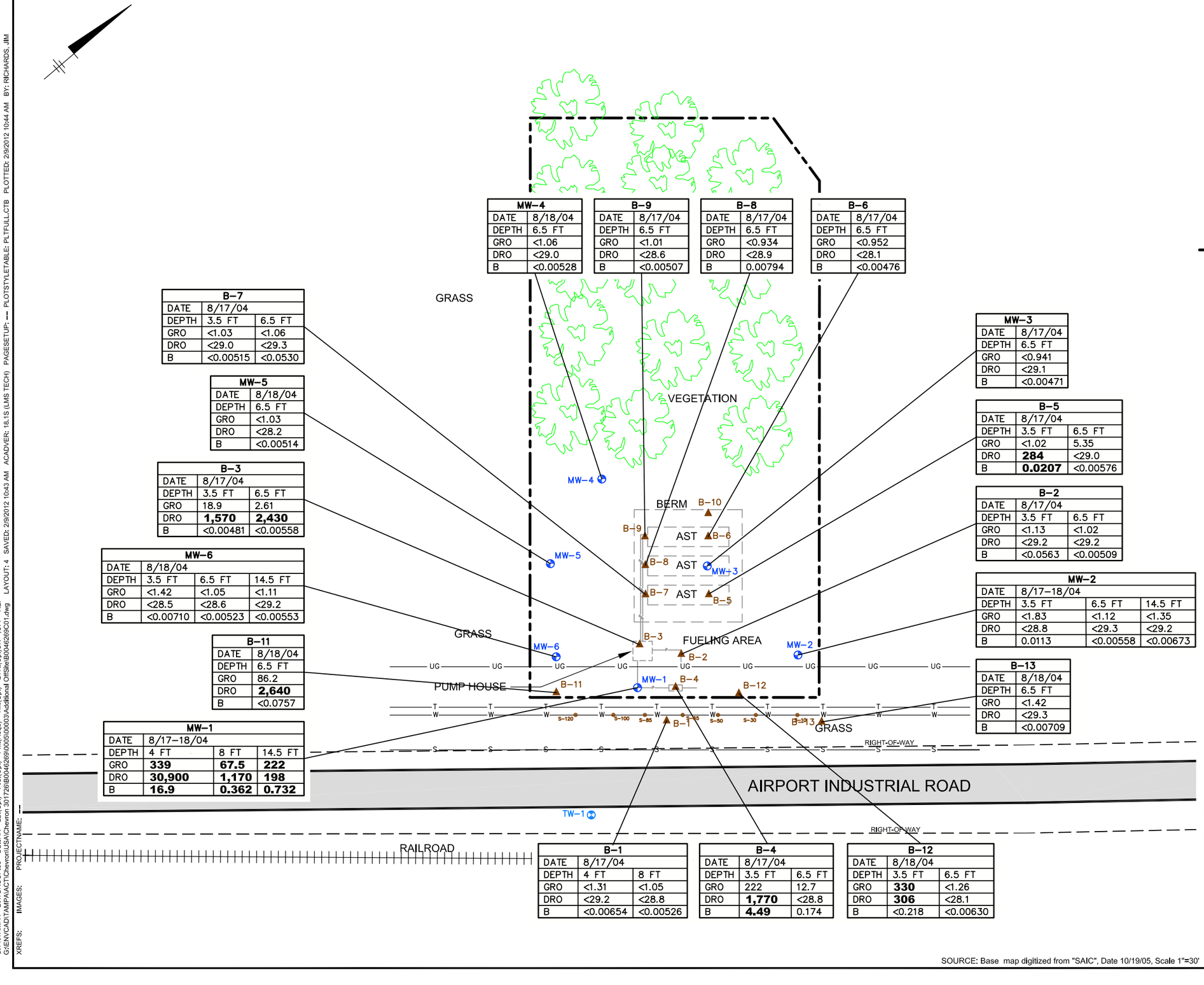
0 50' 100'
GRAPHIC SCALE

FORMER CHEVRON FACILITY NO. 301726
FAIRBANKS INT. AIRPORT, FAIRBANKS, ALASKA
**2011 OFF SITE ASSESSMENT REPORT**

# SOIL ANALYTICAL RESULTS PETROLEUM HYDROCARBONS AND LEAD

ARCADIS

FIGURE
**3**



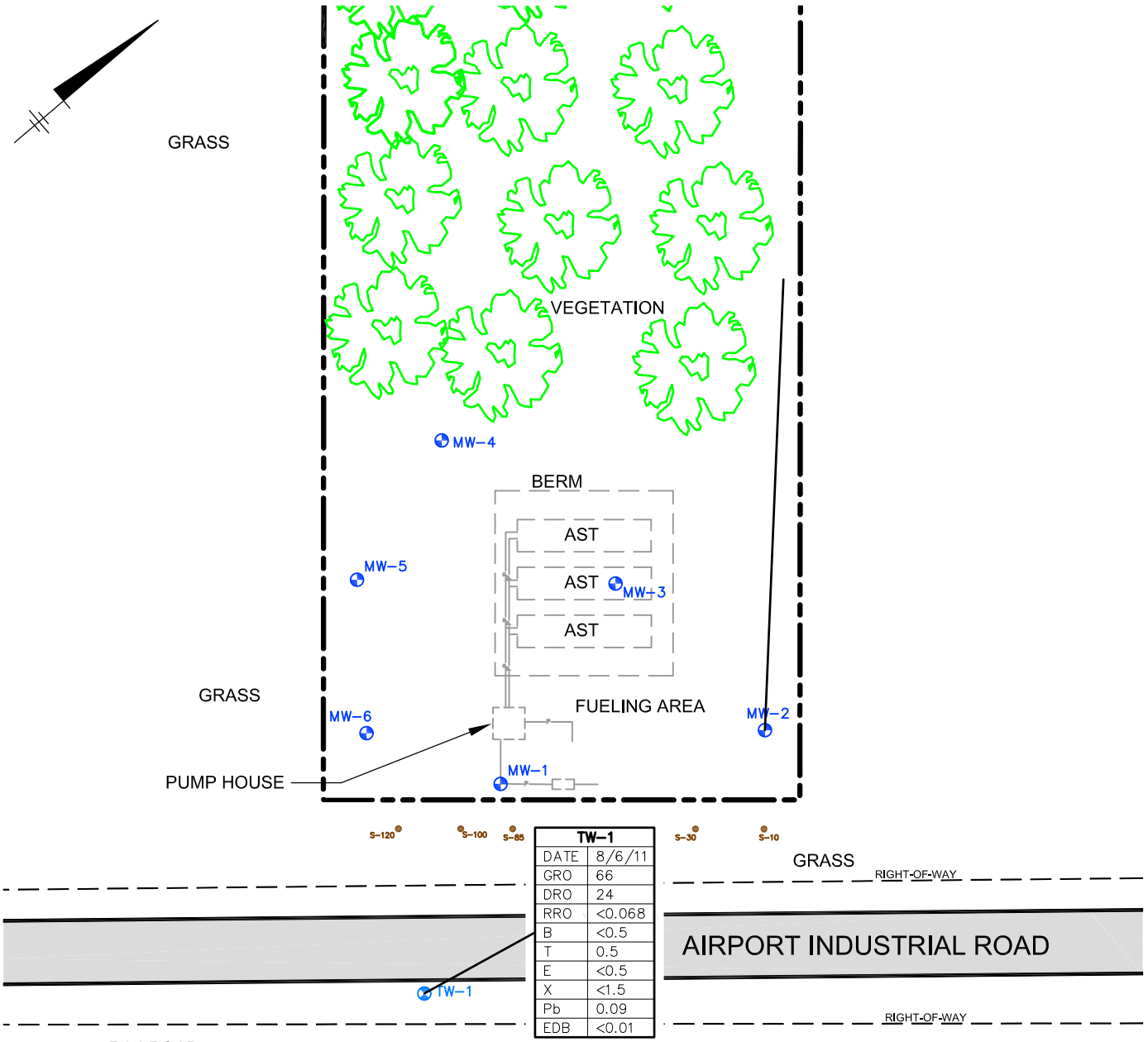

SOURCE: Base map digitized from "SAIC", Date 10/19/05, Scale 1"=30'

FORMER CHEVRON FACILITY NO. 301726
FAIRBANKS INT. AIRPORT, FAIRBANKS, ALASKA
**2011 OFF SITE ASSESSMENT REPORT**

## HISTORICAL SOIL ANALYTICAL DATA

ARCADIS

FIGURE 4




| TW-1 | |
|---|---|
| DATE | 8/6/11 |
| GRO | 66 |
| DRO | 24 |
| RRO | <0.068 |
| B | <0.5 |
| T | 0.5 |
| E | <0.5 |
| X | <1.5 |
| Pb | 0.09 |
| EDB | <0.01 |

LEGEND

MONITORING WELL

BOUNDARY LINE

TEMPORARY MONITORING WELL

| SAMPLE LOCATION | |
|---|---|
| DATE | Sample Date |
| GRO | Gasoline Range Organics |
| DRO | Diesel Range Organics |
| RRO | Residual Range Organics |
| B | Benzene |
| T | Toluene |
| E | Ethlybenzene |
| X | Total Xylenes |
| Pb | Lead |
| EDB | Ethylene Dibromide |

0 50' 100'

GRAPHIC SCALE

RESULTS REPORTED IN MICROGRAMS PER LITER (µg/L)
BOLD INDICATES CONCENTRATION EXCEEDS RESPECTIVE GROUNDWATER CLEANUP LEVEL
* = BENZENE CONCENTRATION DETECTED IN USEPA METHOD 8260
ADEC = ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
NS = NOT SAMPLED
<1.00/<1.00 = DUPLICATE SAMPLE COLLECTED
GRO BY AK METHOD 101
DRO BY AK METHOD 102
RRO BY AK METHOD 103
BTEX BY EPA METHOD 8021B
EDB BY EPA METHOD 8011

SOURCE: Base map digitized from "SAIC", Date 10/19/05, Scale 1"=30'

FORMER CHEVRON FACILITY NO. 301726
FAIRBANKS INT. AIRPORT, FAIRBANKS, ALASKA
**2011 OFF SITE ASSESSMENT REPORT**

# GROUNDWATER ANALYTICAL RESULTS PETROLEUM HYDROCARBONS AND LEAD

ARCADIS

FIGURE 5

## Appendix A

Boring Logs

| | | |
|---|---|---|
| **Date Start/Finish:** 8/6/11 - 8/11/11<br>**Drilling Company:** Discovery Drilling<br>**Driller's Name:**<br>**Drilling Method:** Hollow Stem Auger<br>**Auger Size:** 8" OD<br>**Rig Type:** CME<br>**Sampling Method:** Split Spoon | **Northing:**<br>**Easting:**<br>**Casing Elevation:** NA<br><br>**Borehole Depth:** 17<br>**Surface Elevation:**<br><br>**Descriptions By:** DB | **Well/Boring ID:** **TW-1**<br>**Client:** EMC<br><br>**Location:** FIA TEXACO 301726 |

| DEPTH | ELEVATION | Sample Run Number | Sample/Int/Type | Recovery (feet) | Blow Counts | N - Value | PID Headspace (ppm) | Analytical Sample | USCS Code | Geologic Column | Stratigraphic Description | Well/Boring Construction |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | | | | | | 2.1 | | SW | | SAND, medium grain, well graded, small angular gravel. | Annular Space<br>2" PVC Well Casing |
| | | | | | | | 2.0 | | | | | |
| 5 | -5 | | | | | | 0.5 | | SM | | | |
| | | | | | | | 0.2 | | SP | | Sand, medium grain, well graded, little rock fragments, < 2mm. | |
| | | 1 | | 2 | 1 4 10 9 | 14 | 56 | | SW | | SAND, medium grain, well graded, small subangular gravel, moist. | First Encounter Groundwater |
| 10 | -10 | 2 | | 2 | 9 9 / 12 | 14 | 13 | | | | | 2" PVC 0.01 Slot Well Screen |
| | | 3 | | 2 | / 5 3 3 | 8 | 2.6 | | | | | |
| | | 4 | | 2 | 2 3 3 2 | 6 | 1.8 | | | | | |
| 15 | -15 | | | 1 | 4 5 | | 0.6 | | | | Boring terminated at 17 below ground surface | Hydrated Bentonite |

ARCADIS
Infrastructure, environment, buildings

**Remarks:**
The Temporary Well was abandon upon completion of development and sampling. The casing and well screen were removed and backfill with hydrated bentonite, peas gravel and an asphalt cold patch.

**Water Level Data**

| Date | Depth | Elev. |
|---|---|---|
| | | |
| | | |
| | | |

Depth measured from top of casing

## Appendix B

Field Notes

Location Lot 5A, Block 10 Fairbanks Date 8/06/2011

Project / Client FIA Tesoro 301726 / Chevron

TK-1 Drilling - 2011 offsite Assessment

0 ARCADIS Arrive Onsite

Personnel

Activity: Soil boring / Temp well install - off site Assessment

Weather: 40-50°F partly cloudy

5 - Stateside Petro Svs arrive onsite - Track Cat

- Alaska Pipeline Services arrive onsite - Soil Vac

- Discovery drilling arrives onsite

Complete PTW, review JLA, LPSA, LPO, ~~Permits~~, Hazard ID, HASP, Stop work Authority

HASP Signed & Tool Completed by personnel onsite

AK Pipeliner cleared Soil boring to 5' bgs using vac truck - soils screened w/ PID cont'

Samples collected 2' bgs & 5' bgs. BP-1 collected from 8' bgs.

Discovery Continue drilling - continuous split spoon Sampling 8' to 17' bgs - stopped down to leave in augers - Soil Sample 8-10' & 15-17' bgs - 2" sch 40 PVC well w/ 10 slot screen set 6.1-16.1' bgs - filter packed to 4' bgs - purge 20 gallons - Sample GW any bailer. - TK-1 pulled - 2 bags of bentonite placed in annulus - pea gravel & cold patch completion.

30 Mobilize off site

Location Lot 5A, Block 10 Fairbanks Date 8/11/2011

Project / Client FIA Tesoro 301726

Drum / Super Sack Sampling

Personnel: Dave Beardsley

Activity: Waste Sampling - Soil off site Assessment

Weather: 59°F

17:30 D. Beardsley onsite to sample waste soil & drum/purge water onsite

18:30 Drum #1 / Drum Water Sample to be analyzed 8021B / AK 101 & 6020

18:45 TK-1 Waste Soils sampled for 8021B & AK 101 analysis

19:20 Mob off site to storage unit.

ARCADIS

## Appendix C

Laboratory Analytical Results

Lancaster Laboratories

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# Analysis Report

ANALYTICAL RESULTS

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

Prepared for:

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

September 15, 2011

Project: 301726

Submittal Date: 08/09/2011
Group Number: 1260739
SDG: LST28
PO Number: 0015074818
Release Number: CARRIER
State of Sample Origin: AK

| Client Sample Description | Lancaster Labs (LLI) # |
|---|---|
| TW-1 Grab Water Sample | 6370700 |
| TW-1 Filtered Grab Water Sample | 6370701 |
| Trip_Blank Water Sample | 6370702 |
| TW-1 2' Grab Soil Sample | 6370703 |
| TW-1 8' Grab Soil Sample | 6370704 |
| TW-1 8-10' Grab Soil Sample | 6370705 |
| TW-1 15-17' Grab Soil Sample | 6370706 |
| BD-1 Grab Soil Sample | 6370707 |
| Trip_Blank Methanol Sample | 6370708 |

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

| | | |
|---|---|---|
| ELECTRONIC COPY TO | Arcadis | Attn: David Beaudoin |
| ELECTRONIC COPY TO | Arcadis | Attn: Greg Montgomery |
| ELECTRONIC COPY TO | Arcadis | Attn: Russ Greisler |
| 1 COPY TO | Data Package Group | |

Lancaster Laboratories

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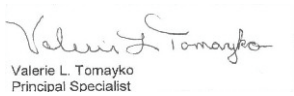
# Analysis Report

Questions? Contact your Client Services Representative
Elizabeth A Leonhardt at (510) 232-8894

Respectfully Submitted,



Valerie L. Tomayko
Principal Specialist

Lancaster Laboratories

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# Analysis Report



**Sample Description: TW-1 Grab Water Sample**
**Facility# 301726**
**Block 10, Lot 5A - Fairbanks, AK**

**LLI Sample # WW 6370700**
**LLI Group # 1260739**
**Account # 11964**

**Project Name: 301726**

Collected: 08/06/2011 10:15 by MM

Submitted: 08/09/2011 09:10
Reported: 09/15/2011 15:26

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

5AF01 SDG#: LST28-01

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit | Dilution Factor |
|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260B** | | **mg/l** | **mg/l** | |
| 10905 | Acetone | 67-64-1 | N.D. | 0.006 | 1 |
| 10905 | t-Amyl methyl ether | 994-05-8 | N.D. | 0.0005 | 1 |
| 10905 | Benzene | 71-43-2 | N.D. | 0.0005 | 1 |
| 10905 | Bromobenzene | 108-86-1 | N.D. | 0.001 | 1 |
| 10905 | Bromochloromethane | 74-97-5 | N.D. | 0.001 | 1 |
| 10905 | Bromodichloromethane | 75-27-4 | N.D. | 0.001 | 1 |
| 10905 | Bromoform | 75-25-2 | N.D. | 0.001 | 1 |
| 10905 | Bromomethane | 74-83-9 | N.D. | 0.001 | 1 |
| 10905 | 2-Butanone | 78-93-3 | N.D. | 0.003 | 1 |
| 10905 | t-Butyl alcohol | 75-65-0 | N.D. | 0.005 | 1 |
| 10905 | n-Butylbenzene | 104-51-8 | N.D. | 0.001 | 1 |
| 10905 | sec-Butylbenzene | 135-98-8 | N.D. | 0.001 | 1 |
| 10905 | tert-Butylbenzene | 98-06-6 | N.D. | 0.001 | 1 |
| 10905 | Carbon Disulfide | 75-15-0 | N.D. | 0.001 | 1 |
| 10905 | Carbon Tetrachloride | 56-23-5 | N.D. | 0.001 | 1 |
| 10905 | Chlorobenzene | 108-90-7 | N.D. | 0.0008 | 1 |
| 10905 | Chloroethane | 75-00-3 | N.D. | 0.001 | 1 |
| 10905 | 2-Chloroethyl Vinyl Ether | 110-75-8 | N.D. | 0.002 | 1 |
| | 2-Chloroethyl vinyl ether may not be recovered if acid was used to preserve this sample. | | | | |
| 10905 | Chloroform | 67-66-3 | N.D. | 0.0008 | 1 |
| 10905 | Chloromethane | 74-87-3 | N.D. | 0.001 | 1 |
| 10905 | 2-Chlorotoluene | 95-49-8 | N.D. | 0.001 | 1 |
| 10905 | 4-Chlorotoluene | 106-43-4 | N.D. | 0.001 | 1 |
| 10905 | 1,2-Dibromo-3-chloropropane | 96-12-8 | N.D. | 0.002 | 1 |
| 10905 | Dibromochloromethane | 124-48-1 | N.D. | 0.001 | 1 |
| 10905 | 1,2-Dibromoethane | 106-93-4 | N.D. | 0.0005 | 1 |
| 10905 | Dibromomethane | 74-95-3 | N.D. | 0.001 | 1 |
| 10905 | 1,2-Dichlorobenzene | 95-50-1 | N.D. | 0.001 | 1 |
| 10905 | 1,3-Dichlorobenzene | 541-73-1 | N.D. | 0.001 | 1 |
| 10905 | 1,4-Dichlorobenzene | 106-46-7 | N.D. | 0.001 | 1 |
| 10905 | Dichlorodifluoromethane | 75-71-8 | N.D. | 0.002 | 1 |
| 10905 | 1,1-Dichloroethane | 75-34-3 | N.D. | 0.001 | 1 |
| 10905 | 1,2-Dichloroethane | 107-06-2 | N.D. | 0.0005 | 1 |
| 10905 | 1,1-Dichloroethene | 75-35-4 | 0.007 | 0.0008 | 1 |
| 10905 | cis-1,2-Dichloroethene | 156-59-2 | N.D. | 0.0008 | 1 |
| 10905 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | 0.0008 | 1 |
| 10905 | 1,2-Dichloropropane | 78-87-5 | N.D. | 0.001 | 1 |
| 10905 | 1,3-Dichloropropane | 142-28-9 | N.D. | 0.001 | 1 |
| 10905 | 2,2-Dichloropropane | 594-20-7 | N.D. | 0.001 | 1 |
| 10905 | 1,1-Dichloropropene | 563-58-6 | N.D. | 0.001 | 1 |
| 10905 | cis-1,3-Dichloropropene | 10061-01-5 | N.D. | 0.001 | 1 |
| 10905 | trans-1,3-Dichloropropene | 10061-02-6 | N.D. | 0.001 | 1 |
| 10905 | Ethanol | 64-17-5 | N.D. | 0.050 | 1 |
| 10905 | Ethyl t-butyl ether | 637-92-3 | N.D. | 0.0005 | 1 |
| 10905 | Ethylbenzene | 100-41-4 | N.D. | 0.0005 | 1 |
| 10905 | Freon 113 | 76-13-1 | N.D. | 0.002 | 1 |
| 10905 | Hexachlorobutadiene | 87-68-3 | N.D. | 0.002 | 1 |
| 10905 | 2-Hexanone | 591-78-6 | N.D. | 0.003 | 1 |
| 10905 | di-Isopropyl ether | 108-20-3 | N.D. | 0.0005 | 1 |

**Sample Description:** TW-1 Grab Water Sample
Facility# 301726
Block 10, Lot 5A - Fairbanks, AK

**LLI Sample # WW 6370700**
**LLI Group # 1260739**
**Account # 11964**

**Project Name: 301726**

Collected: 08/06/2011 10:15 by MM

Submitted: 08/09/2011 09:10
Reported: 09/15/2011 15:26

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

5AF01 SDG#: LST28-01

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit | Dilution Factor |
|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260B** | | **mg/l** | **mg/l** | |
| 10905 | Isopropylbenzene | 98-82-8 | N.D. | 0.001 | 1 |
| 10905 | p-Isopropyltoluene | 99-87-6 | N.D. | 0.001 | 1 |
| 10905 | Methyl Tertiary Butyl Ether | 1634-04-4 | N.D. | 0.0005 | 1 |
| 10905 | 4-Methyl-2-pentanone | 108-10-1 | N.D. | 0.003 | 1 |
| 10905 | Methylene Chloride | 75-09-2 | N.D. | 0.002 | 1 |
| 10905 | Naphthalene | 91-20-3 | N.D. | 0.001 | 1 |
| 10905 | n-Propylbenzene | 103-65-1 | N.D. | 0.001 | 1 |
| 10905 | Styrene | 100-42-5 | N.D. | 0.001 | 1 |
| 10905 | 1,1,1,2-Tetrachloroethane | 630-20-6 | N.D. | 0.001 | 1 |
| 10905 | 1,1,2,2-Tetrachloroethane | 79-34-5 | N.D. | 0.001 | 1 |
| 10905 | Tetrachloroethene | 127-18-4 | N.D. | 0.0008 | 1 |
| 10905 | Toluene | 108-88-3 | 0.0006 | 0.0005 | 1 |
| 10905 | 1,2,3-Trichlorobenzene | 87-61-6 | N.D. | 0.001 | 1 |
| 10905 | 1,2,4-Trichlorobenzene | 120-82-1 | N.D. | 0.001 | 1 |
| 10905 | 1,1,1-Trichloroethane | 71-55-6 | N.D. | 0.0008 | 1 |
| 10905 | 1,1,2-Trichloroethane | 79-00-5 | N.D. | 0.0008 | 1 |
| 10905 | Trichloroethene | 79-01-6 | N.D. | 0.001 | 1 |
| 10905 | Trichlorofluoromethane | 75-69-4 | 0.008 | 0.002 | 1 |
| 10905 | 1,2,3-Trichloropropane | 96-18-4 | N.D. | 0.001 | 1 |
| 10905 | 1,2,4-Trimethylbenzene | 95-63-6 | 0.002 | 0.001 | 1 |
| 10905 | 1,3,5-Trimethylbenzene | 108-67-8 | N.D. | 0.001 | 1 |
| 10905 | Vinyl Chloride | 75-01-4 | N.D. | 0.001 | 1 |
| 10905 | m+p-Xylene | n.a. | 0.0009 | 0.0005 | 1 |
| 10905 | o-Xylene | 95-47-6 | N.D. | 0.0005 | 1 |
| **GC/MS Semivolatiles** | **SW-846 8270C SIM** | | **mg/l** | **mg/l** | |
| 08357 | Acenaphthene | 83-32-9 | 0.000019 | 0.0000098 | 1 |
| 08357 | Acenaphthylene | 208-96-8 | 0.000010 | 0.0000098 | 1 |
| 08357 | Anthracene | 120-12-7 | N.D. | 0.0000098 | 1 |
| 08357 | Benzo(a)anthracene | 56-55-3 | N.D. | 0.0000098 | 1 |
| 08357 | Benzo(a)pyrene | 50-32-8 | N.D. | 0.0000098 | 1 |
| 08357 | Benzo(b)fluoranthene | 205-99-2 | N.D. | 0.0000098 | 1 |
| 08357 | Benzo(g,h,i)perylene | 191-24-2 | N.D. | 0.0000098 | 1 |
| 08357 | Benzo(k)fluoranthene | 207-08-9 | N.D. | 0.0000098 | 1 |
| 08357 | Chrysene | 218-01-9 | N.D. | 0.0000098 | 1 |
| 08357 | Dibenz(a,h)anthracene | 53-70-3 | N.D. | 0.0000098 | 1 |
| 08357 | Fluoranthene | 206-44-0 | N.D. | 0.0000098 | 1 |
| 08357 | Fluorene | 86-73-7 | 0.000061 | 0.0000098 | 1 |
| 08357 | Indeno(1,2,3-cd)pyrene | 193-39-5 | N.D. | 0.0000098 | 1 |
| 08357 | Naphthalene | 91-20-3 | 0.00023 | 0.000029 | 1 |
| 08357 | Phenanthrene | 85-01-8 | N.D. | 0.000029 | 1 |
| 08357 | Pyrene | 129-00-0 | N.D. | 0.0000098 | 1 |
| **GC Volatiles** | **AK 101** | | **mg/l** | **mg/l** | |
| 01440 | TPH-GRO AK water C6-C10 | n.a. | 0.066 | 0.010 | 1 |
| **GC Volatiles** | **SW-846 8021B** | | **mg/l** | **mg/l** | |
| 02102 | Benzene | 71-43-2 | N.D. | 0.0005 | 1 |
| 02102 | Ethylbenzene | 100-41-4 | N.D. | 0.0005 | 1 |

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# Analysis Report



**Sample Description: TW-1 Grab Water Sample**
**Facility# 301726**
**Block 10, Lot 5A - Fairbanks, AK**

**LLI Sample # WW 6370700**
**LLI Group # 1260739**
**Account # 11964**

**Project Name: 301726**

Collected: 08/06/2011 10:15 by MM

Submitted: 08/09/2011 09:10
Reported: 09/15/2011 15:26

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

5AF01 SDG#: LST28-01

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit | Dilution Factor |
|---|---|---|---|---|---|
| **GC Volatiles** | **SW-846 8021B** | | **mg/l** | **mg/l** | |
| 02102 | Toluene | 108-88-3 | 0.0005 | 0.0005 | 1 |
| 02102 | Total Xylenes | 1330-20-7 | N.D. | 0.0015 | 1 |
| **GC Miscellaneous** | **SW-846 8011** | | **mg/l** | **mg/l** | |
| 07879 | Ethylene dibromide | 106-93-4 | N.D. | 0.000010 | 1 |
| **GC Petroleum Hydrocarbons** | **AK 102/103 4/08/02 modified** | | **mg/l** | **mg/l** | |
| 02923 | C10-<C25 DRO | n.a. | 0.24 | 0.049 | 1 |
| 02923 | C25-C36 RRO | n.a. | N.D. | 0.068 | 1 |

## General Sample Comments

State of Alaska Lab Certification No. UST-061

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 10905 | 8260 Full List w/ Sep. Xylenes | SW-846 8260B | 1 | W112281AA | 08/16/2011 19:43 | Emily R Styer | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030B | 1 | W112281AA | 08/16/2011 19:43 | Emily R Styer | 1 |
| 08357 | PAHs in waters by SIM | SW-846 8270C SIM | 1 | 11222WAB026 | 08/17/2011 11:02 | Joseph M Gambler | 1 |
| 10470 | BNA Water Extraction (SIM) | SW-846 3510C | 1 | 11222WAB026 | 08/10/2011 18:00 | Nicholas W Shroyer | 1 |
| 01440 | TPH-GRO AK water C6-C10 | AK 101 | 1 | 11223A53A | 08/13/2011 03:36 | Laura M Krieger | 1 |
| 02102 | Method 8021 Water Master | SW-846 8021B | 1 | 11223A53A | 08/13/2011 03:36 | Laura M Krieger | 1 |
| 01146 | GC VOA Water Prep | SW-846 5030B | 1 | 11223A53A | 08/13/2011 03:36 | Laura M Krieger | 1 |
| 07879 | EDB in Wastewater | SW-846 8011 | 1 | 112240020A | 08/15/2011 15:51 | Anita M Dale | 1 |
| 07786 | EDB Extraction | SW-846 8011 | 1 | 112240020A | 08/13/2011 12:00 | Kelli M Barto | 1 |
| 02923 | TPH-DRO/RRO (AK) water | AK 102/103 4/08/02 modified | 1 | 112220029A | 08/13/2011 04:06 | Heather E Williams | 1 |
| 11185 | AK DRO/ORO Waters Extraction | AK 102/AK 103 04/08/02 | 1 | 112220029A | 08/11/2011 09:00 | Cynthia J Salvatori | 1 |

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# Analysis Report



**Sample Description:** TW-1 Filtered Grab Water Sample
Facility# 301726
Block 10, Lot 5A - Fairbanks, AK

**LLI Sample # WW 6370701**
**LLI Group # 1260739**
**Account # 11964**

**Project Name: 301726**

Collected: 08/06/2011 10:15 by MM

Submitted: 08/09/2011 09:10
Reported: 09/15/2011 15:26

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

5AF1F SDG#: LST28-02

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit | Dilution Factor |
|---|---|---|---|---|---|
| **Metals Dissolved** | **SW-846 6010B** | | **mg/l** | **mg/l** | |
| 07046 | Barium | 7440-39-3 | 0.151 | 0.00026 | 1 |
| 07066 | Silver | 7440-22-4 | N.D. | 0.00091 | 1 |
| | **SW-846 6020** | | **mg/l** | **mg/l** | |
| 06025 | Arsenic | 7440-38-2 | N.D. | 0.00095 | 1 |
| 06028 | Cadmium | 7440-43-9 | N.D. | 0.00020 | 1 |
| 06031 | Chromium | 7440-47-3 | N.D. | 0.00060 | 1 |
| 06035 | Lead | 7439-92-1 | 0.000090 | 0.000080 | 1 |
| 06041 | Selenium | 7782-49-2 | N.D. | 0.00027 | 1 |

## General Sample Comments

State of Alaska Lab Certification No. UST-061
This sample was filtered in the lab for dissolved metals.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07046 | Barium | SW-846 6010B | 3 | 112551848005 | 09/14/2011 10:11 | Joanne M Gates | 1 |
| 07066 | Silver | SW-846 6010B | 2 | 112551848005 | 09/14/2011 10:11 | Joanne M Gates | 1 |
| 06025 | Arsenic | SW-846 6020 | 2 | 112556050007A | 09/15/2011 00:49 | David K Beck | 1 |
| 06028 | Cadmium | SW-846 6020 | 2 | 112556050007A | 09/15/2011 00:49 | David K Beck | 1 |
| 06031 | Chromium | SW-846 6020 | 2 | 112556050007A | 09/15/2011 00:49 | David K Beck | 1 |
| 06035 | Lead | SW-846 6020 | 2 | 112556050007A | 09/15/2011 00:49 | David K Beck | 1 |
| 06041 | Selenium | SW-846 6020 | 2 | 112556050007B | 09/15/2011 00:49 | David K Beck | 1 |
| 01848 | WW SW846 ICP Digest (tot rec) | SW-846 3005A | 1 | 112501848002 | 09/07/2011 14:54 | James L Mertz | 1 |
| 01848 | WW SW846 ICP Digest (tot rec) | SW-846 3005A | 2 | 112551848005 | 09/13/2011 10:39 | Denise K Conners | 1 |
| 06050 | ICP/MS SW-846 Water Digest | SW-846 3010A modified | 1 | 112506050001 | 09/07/2011 13:50 | James L Mertz | 1 |
| 06050 | ICP/MS SW-846 Water Digest | SW-846 3010A modified | 2 | 112556050007 | 09/13/2011 09:41 | Denise K Conners | 1 |

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# Analysis Report



**Sample Description:** Trip_Blank Water Sample
Facility# 301726
Block 10, Lot 5A - Fairbanks, AK

**LLI Sample # WW 6370702**
**LLI Group # 1260739**
**Account # 11964**

**Project Name: 301726**

Collected: 08/06/2011 by MM

Submitted: 08/09/2011 09:10
Reported: 09/15/2011 15:26

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

5AFWT SDG#: LST28-03TB

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit | Dilution Factor |
|---|---|---|---|---|---|
| **GC Volatiles** | **AK 101** | | **mg/l** | **mg/l** | |
| 01440 | TPH-GRO AK water C6-C10 | n.a. | N.D. | 0.010 | 1 |
| **GC Volatiles** | **SW-846 8021B** | | **mg/l** | **mg/l** | |
| 02102 | Benzene | 71-43-2 | N.D. | 0.0005 | 1 |
| 02102 | Ethylbenzene | 100-41-4 | N.D. | 0.0005 | 1 |
| 02102 | Toluene | 108-88-3 | N.D. | 0.0005 | 1 |
| 02102 | Total Xylenes | 1330-20-7 | N.D. | 0.0015 | 1 |

## General Sample Comments

State of Alaska Lab Certification No. UST-061

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 01440 | TPH-GRO AK water C6-C10 | AK 101 | 1 | 11223A53A | 08/12/2011 20:01 | Laura M Krieger | 1 |
| 02102 | Method 8021 Water Master | SW-846 8021B | 1 | 11223A53A | 08/12/2011 20:01 | Laura M Krieger | 1 |
| 01146 | GC VOA Water Prep | SW-846 5030B | 1 | 11223A53A | 08/12/2011 20:01 | Laura M Krieger | 1 |

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# Analysis Report



**Sample Description:** TW-1 2' Grab Soil Sample
Facility# 301726
Block 10, Lot 5A - Fairbanks, AK

**LLI Sample #** SW 6370703
**LLI Group #** 1260739
**Account #** 11964

**Project Name:** 301726

Collected: 08/06/2011 08:50 by MM

Submitted: 08/09/2011 09:10
Reported: 09/15/2011 15:26

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

5AF12 SDG#: LST28-04

| CAT No. | Analysis Name | CAS Number | Dry Result | Dry Method Detection Limit | Dilution Factor |
|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260B** | | mg/kg | mg/kg | |
| 10950 | Acetone | 67-64-1 | N.D. | 0.45 | 59.96 |
| 10950 | t-Amyl methyl ether | 994-05-8 | N.D. | 0.065 | 59.96 |
| 10950 | Benzene | 71-43-2 | N.D. | 0.032 | 59.96 |
| 10950 | Bromobenzene | 108-86-1 | N.D. | 0.065 | 59.96 |
| 10950 | Bromochloromethane | 74-97-5 | N.D. | 0.065 | 59.96 |
| 10950 | Bromodichloromethane | 75-27-4 | N.D. | 0.065 | 59.96 |
| 10950 | Bromoform | 75-25-2 | N.D. | 0.065 | 59.96 |
| 10950 | Bromomethane | 74-83-9 | N.D. | 0.13 | 59.96 |
| 10950 | 2-Butanone | 78-93-3 | N.D. | 0.26 | 59.96 |
| 10950 | t-Butyl alcohol | 75-65-0 | N.D. | 1.3 | 59.96 |
| 10950 | n-Butylbenzene | 104-51-8 | N.D. | 0.065 | 59.96 |
| 10950 | sec-Butylbenzene | 135-98-8 | N.D. | 0.065 | 59.96 |
| 10950 | tert-Butylbenzene | 98-06-6 | N.D. | 0.065 | 59.96 |
| 10950 | Carbon Disulfide | 75-15-0 | N.D. | 0.065 | 59.96 |
| 10950 | Carbon Tetrachloride | 56-23-5 | N.D. | 0.065 | 59.96 |
| 10950 | Chlorobenzene | 108-90-7 | N.D. | 0.065 | 59.96 |
| 10950 | Chloroethane | 75-00-3 | N.D. | 0.13 | 59.96 |
| 10950 | 2-Chloroethyl Vinyl Ether | 110-75-8 | N.D. | 0.13 | 59.96 |
| 10950 | Chloroform | 67-66-3 | N.D. | 0.065 | 59.96 |
| 10950 | Chloromethane | 74-87-3 | N.D. | 0.13 | 59.96 |
| 10950 | 2-Chlorotoluene | 95-49-8 | N.D. | 0.065 | 59.96 |
| 10950 | 4-Chlorotoluene | 106-43-4 | N.D. | 0.065 | 59.96 |
| 10950 | 1,2-Dibromo-3-chloropropane | 96-12-8 | N.D. | 0.13 | 59.96 |
| 10950 | Dibromochloromethane | 124-48-1 | N.D. | 0.065 | 59.96 |
| 10950 | 1,2-Dibromoethane | 106-93-4 | N.D. | 0.065 | 59.96 |
| 10950 | Dibromomethane | 74-95-3 | N.D. | 0.065 | 59.96 |
| 10950 | 1,2-Dichlorobenzene | 95-50-1 | N.D. | 0.065 | 59.96 |
| 10950 | 1,3-Dichlorobenzene | 541-73-1 | N.D. | 0.065 | 59.96 |
| 10950 | 1,4-Dichlorobenzene | 106-46-7 | N.D. | 0.065 | 59.96 |
| 10950 | Dichlorodifluoromethane | 75-71-8 | N.D. | 0.13 | 59.96 |
| 10950 | 1,1-Dichloroethane | 75-34-3 | N.D. | 0.065 | 59.96 |
| 10950 | 1,2-Dichloroethane | 107-06-2 | N.D. | 0.065 | 59.96 |
| 10950 | 1,1-Dichloroethene | 75-35-4 | N.D. | 0.065 | 59.96 |
| 10950 | cis-1,2-Dichloroethene | 156-59-2 | N.D. | 0.065 | 59.96 |
| 10950 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | 0.065 | 59.96 |
| 10950 | 1,2-Dichloropropane | 78-87-5 | N.D. | 0.065 | 59.96 |
| 10950 | 1,3-Dichloropropane | 142-28-9 | N.D. | 0.065 | 59.96 |
| 10950 | 2,2-Dichloropropane | 594-20-7 | N.D. | 0.065 | 59.96 |
| 10950 | 1,1-Dichloropropene | 563-58-6 | N.D. | 0.065 | 59.96 |
| 10950 | cis-1,3-Dichloropropene | 10061-01-5 | N.D. | 0.065 | 59.96 |
| 10950 | trans-1,3-Dichloropropene | 10061-02-6 | N.D. | 0.065 | 59.96 |
| 10950 | Ethanol | 64-17-5 | N.D. | 6.5 | 59.96 |
| 10950 | Ethyl t-butyl ether | 637-92-3 | N.D. | 0.065 | 59.96 |
| 10950 | Ethylbenzene | 100-41-4 | N.D. | 0.065 | 59.96 |
| 10950 | Freon 113 | 76-13-1 | N.D. | 0.13 | 59.96 |
| 10950 | Hexachlorobutadiene | 87-68-3 | N.D. | 0.13 | 59.96 |
| 10950 | 2-Hexanone | 591-78-6 | N.D. | 0.19 | 59.96 |
| 10950 | di-Isopropyl ether | 108-20-3 | N.D. | 0.065 | 59.96 |
| 10950 | Isopropylbenzene | 98-82-8 | N.D. | 0.065 | 59.96 |
| 10950 | p-Isopropyltoluene | 99-87-6 | N.D. | 0.065 | 59.96 |

**Sample Description:** TW-1 2' Grab Soil Sample
Facility# 301726
Block 10, Lot 5A - Fairbanks, AK

**LLI Sample # SW 6370703**
**LLI Group # 1260739**
**Account # 11964**

**Project Name: 301726**

Collected: 08/06/2011 08:50 by MM

Submitted: 08/09/2011 09:10
Reported: 09/15/2011 15:26

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

5AF12 SDG#: LST28-04

| CAT No. | Analysis Name | CAS Number | Dry Result | Dry Method Detection Limit | Dilution Factor |
|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260B** | | **mg/kg** | **mg/kg** | |
| 10950 | Methyl Tertiary Butyl Ether | 1634-04-4 | N.D. | 0.032 | 59.96 |
| 10950 | 4-Methyl-2-pentanone | 108-10-1 | N.D. | 0.19 | 59.96 |
| 10950 | Methylene Chloride | 75-09-2 | N.D. | 0.13 | 59.96 |
| 10950 | Naphthalene | 91-20-3 | N.D. | 0.065 | 59.96 |
| 10950 | n-Propylbenzene | 103-65-1 | N.D. | 0.065 | 59.96 |
| 10950 | Styrene | 100-42-5 | N.D. | 0.065 | 59.96 |
| 10950 | 1,1,1,2-Tetrachloroethane | 630-20-6 | N.D. | 0.065 | 59.96 |
| 10950 | 1,1,2,2-Tetrachloroethane | 79-34-5 | N.D. | 0.065 | 59.96 |
| 10950 | Tetrachloroethene | 127-18-4 | N.D. | 0.065 | 59.96 |
| 10950 | Toluene | 108-88-3 | N.D. | 0.065 | 59.96 |
| 10950 | 1,2,3-Trichlorobenzene | 87-61-6 | N.D. | 0.065 | 59.96 |
| 10950 | 1,2,4-Trichlorobenzene | 120-82-1 | N.D. | 0.065 | 59.96 |
| 10950 | 1,1,1-Trichloroethane | 71-55-6 | N.D. | 0.065 | 59.96 |
| 10950 | 1,1,2-Trichloroethane | 79-00-5 | N.D. | 0.065 | 59.96 |
| 10950 | Trichloroethene | 79-01-6 | N.D. | 0.065 | 59.96 |
| 10950 | Trichlorofluoromethane | 75-69-4 | N.D. | 0.13 | 59.96 |
| 10950 | 1,2,3-Trichloropropane | 96-18-4 | N.D. | 0.065 | 59.96 |
| 10950 | 1,2,4-Trimethylbenzene | 95-63-6 | N.D. | 0.065 | 59.96 |
| 10950 | 1,3,5-Trimethylbenzene | 108-67-8 | N.D. | 0.065 | 59.96 |
| 10950 | Vinyl Chloride | 75-01-4 | N.D. | 0.065 | 59.96 |
| 10950 | m+p-Xylene | n.a. | N.D. | 0.065 | 59.96 |
| 10950 | o-Xylene | 95-47-6 | N.D. | 0.065 | 59.96 |
| **GC/MS Semivolatiles** | **SW-846 8270D** | | **mg/kg** | **mg/kg** | |
| 10726 | Acenaphthene | 83-32-9 | N.D. | 0.004 | 1 |
| 10726 | Acenaphthylene | 208-96-8 | N.D. | 0.004 | 1 |
| 10726 | Anthracene | 120-12-7 | N.D. | 0.004 | 1 |
| 10726 | Benzo(a)anthracene | 56-55-3 | N.D. | 0.004 | 1 |
| 10726 | Benzo(a)pyrene | 50-32-8 | N.D. | 0.004 | 1 |
| 10726 | Benzo(b)fluoranthene | 205-99-2 | N.D. | 0.004 | 1 |
| 10726 | Benzo(g,h,i)perylene | 191-24-2 | N.D. | 0.004 | 1 |
| 10726 | Benzo(k)fluoranthene | 207-08-9 | N.D. | 0.004 | 1 |
| 10726 | Chrysene | 218-01-9 | N.D. | 0.004 | 1 |
| 10726 | Dibenz(a,h)anthracene | 53-70-3 | N.D. | 0.004 | 1 |
| 10726 | Fluoranthene | 206-44-0 | N.D. | 0.004 | 1 |
| 10726 | Fluorene | 86-73-7 | N.D. | 0.004 | 1 |
| 10726 | Indeno(1,2,3-cd)pyrene | 193-39-5 | N.D. | 0.004 | 1 |
| 10726 | Naphthalene | 91-20-3 | N.D. | 0.004 | 1 |
| 10726 | Phenanthrene | 85-01-8 | N.D. | 0.004 | 1 |
| 10726 | Pyrene | 129-00-0 | N.D. | 0.004 | 1 |
| **GC Volatiles** | **AK 101** | | **mg/kg** | **mg/kg** | |
| 01451 | TPH-GRO AK soil C6-C10 | n.a. | N.D. | 0.7 | 31.54 |
| **GC Volatiles** | **SW-846 8021B** | | **mg/kg** | **mg/kg** | |
| 08179 | Benzene | 71-43-2 | 0.0072 | 0.0068 | 31.54 |
| 08179 | Ethylbenzene | 100-41-4 | N.D. | 0.0068 | 31.54 |
| 08179 | Toluene | 108-88-3 | 0.051 | 0.0068 | 31.54 |
| 08179 | Total Xylenes | 1330-20-7 | N.D. | 0.020 | 31.54 |

**Sample Description:** TW-1 2' Grab Soil Sample
Facility# 301726
Block 10, Lot 5A - Fairbanks, AK

**LLI Sample # SW 6370703**
**LLI Group # 1260739**
**Account # 11964**

**Project Name: 301726**

Collected: 08/06/2011 08:50 by MM

Submitted: 08/09/2011 09:10
Reported: 09/15/2011 15:26

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

5AF12 SDG#: LST28-04

| CAT No. | Analysis Name | CAS Number | Dry Result | Dry Method Detection Limit | Dilution Factor |
|---|---|---|---|---|---|
| **GC Petroleum Hydrocarbons** | **AK 102/AK 103 04/08/02** | | **mg/kg** | **mg/kg** | |
| 01738 | C10-<C25 DRO | n.a. | N.D. | 5.4 | 1 |
| 01738 | C25-C36 RRO | n.a. | 7.1 | 5.4 | 1 |
| **Metals** | **SW-846 6010B** | | **mg/kg** | **mg/kg** | |
| 06946 | Barium | 7440-39-3 | 82.0 | 0.0190 | 1 |
| 06966 | Silver | 7440-22-4 | N.D. | 0.0877 | 1 |
| | **SW-846 6020** | | **mg/kg** | **mg/kg** | |
| 06125 | Arsenic | 7440-38-2 | 9.32 | 0.0862 | 2 |
| 06128 | Cadmium | 7440-43-9 | 0.159 | 0.0474 | 2 |
| 06131 | Chromium | 7440-47-3 | 26.6 | 0.129 | 2 |
| 06135 | Lead | 7439-92-1 | 8.00 | 0.0110 | 2 |
| 06141 | Selenium | 7782-49-2 | 0.196 | 0.0625 | 2 |
| **Wet Chemistry** | **SM20 2540 G** | | **%** | **%** | |
| 00111 | Moisture | n.a. | 7.2 | 0.50 | 1 |

"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.

## General Sample Comments

State of Alaska Lab Certification No. UST-061

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 10950 | 8260 Full List + Sep Xylenes | SW-846 8260B | 1 | Q112281AA | 08/16/2011 17:10 | Nicholas R Rossi | 59.96 |
| 06173 | GC/MS - Field Preserved (Ak) | SW-846 5035 | 1 | 201122225164 | 08/06/2011 08:50 | Client Supplied | 1 |
| 10726 | PAHs 8270D Soil Microwave | SW-846 8270D | 1 | 11228SLB026 | 08/27/2011 11:12 | Brian K Graham | 1 |
| 10813 | BNA Soil Microwave APP IX | SW-846 3546 | 1 | 11228SLB026 | 08/17/2011 03:15 | Roman Kuropatkin | 1 |
| 01451 | TPH-GRO AK soil C6-C10 | AK 101 | 1 | 11227A31A | 08/16/2011 06:14 | Marie D John | 31.54 |
| 08179 | BTEX by 8021 | SW-846 8021B | 1 | 11227A31A | 08/16/2011 06:14 | Marie D John | 31.54 |
| 06119 | GC - Field Preserved (AK-101) | AK 101 | 1 | 201122225164 | 08/06/2011 08:50 | Client Supplied | 1 |
| 01738 | TPH-DRO/RRO (AK) | AK 102/AK 103 04/08/02 | 1 | 112220017A | 08/15/2011 13:30 | Heather E Williams | 1 |
| 11223 | AK DRO/ORO Soils Extraction | AK 102/AK 103 04/08/02 | 1 | 112220017A | 08/10/2011 18:00 | JoElla L Rice | 1 |
| 06946 | Barium | SW-846 6010B | 1 | 112235708001 | 08/12/2011 18:55 | John P Hook | 1 |

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# Analysis Report



**Sample Description:** TW-1 2' Grab Soil Sample
Facility# 301726
Block 10, Lot 5A - Fairbanks, AK

**LLI Sample # SW 6370703**
**LLI Group # 1260739**
**Account # 11964**

**Project Name: 301726**

Collected: 08/06/2011 08:50 by MM

Submitted: 08/09/2011 09:10
Reported: 09/15/2011 15:26

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

5AF12 SDG#: LST28-04

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 06966 | Silver | SW-846 6010B | 1 | 112235708001 | 08/12/2011 18:55 | John P Hook | 1 |
| 06125 | Arsenic | SW-846 6020 | 1 | 112231026003A | 08/12/2011 12:35 | Choon Y Tian | 2 |
| 06128 | Cadmium | SW-846 6020 | 1 | 112231026003A | 08/12/2011 12:35 | Choon Y Tian | 2 |
| 06131 | Chromium | SW-846 6020 | 1 | 112231026003A | 08/12/2011 12:35 | Choon Y Tian | 2 |
| 06135 | Lead | SW-846 6020 | 1 | 112231026003A | 08/12/2011 12:35 | Choon Y Tian | 2 |
| 06141 | Selenium | SW-846 6020 | 1 | 112231026003B | 08/12/2011 12:35 | Choon Y Tian | 2 |
| 05708 | SW SW846 ICP Digest | SW-846 3050B | 1 | 112235708001 | 08/11/2011 20:12 | Annamaria Stipkovits | 1 |
| 11026 | SW SW846 ICP-MS Digest | SW-846 3050B | 1 | 112231026003 | 08/11/2011 21:17 | Annamaria Stipkovits | 1 |
| 00111 | Moisture | SM20 2540 G | 2 | 11224820004B | 08/12/2011 19:35 | Scott W Freisher | 1 |

Lancaster Laboratories

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# Analysis Report



**Sample Description:** TW-1 8' Grab Soil Sample
Facility# 301726
Block 10, Lot 5A - Fairbanks, AK

**LLI Sample #** SW 6370704
**LLI Group #** 1260739
**Account #** 11964

**Project Name:** 301726

Collected: 08/06/2011 09:00 by MM

Submitted: 08/09/2011 09:10
Reported: 09/15/2011 15:26

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

5AF18 SDG#: LST28-05

| CAT No. | Analysis Name | CAS Number | Dry Result | Dry Method Detection Limit | Dilution Factor |
|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260B** | | mg/kg | mg/kg | |
| 10950 | Acetone | 67-64-1 | N.D. | 0.45 | 52.31 |
| 10950 | t-Amyl methyl ether | 994-05-8 | N.D. | 0.065 | 52.31 |
| 10950 | Benzene | 71-43-2 | N.D. | 0.032 | 52.31 |
| 10950 | Bromobenzene | 108-86-1 | N.D. | 0.065 | 52.31 |
| 10950 | Bromochloromethane | 74-97-5 | N.D. | 0.065 | 52.31 |
| 10950 | Bromodichloromethane | 75-27-4 | N.D. | 0.065 | 52.31 |
| 10950 | Bromoform | 75-25-2 | N.D. | 0.065 | 52.31 |
| 10950 | Bromomethane | 74-83-9 | N.D. | 0.13 | 52.31 |
| 10950 | 2-Butanone | 78-93-3 | N.D. | 0.26 | 52.31 |
| 10950 | t-Butyl alcohol | 75-65-0 | N.D. | 1.3 | 52.31 |
| 10950 | n-Butylbenzene | 104-51-8 | N.D. | 0.065 | 52.31 |
| 10950 | sec-Butylbenzene | 135-98-8 | N.D. | 0.065 | 52.31 |
| 10950 | tert-Butylbenzene | 98-06-6 | N.D. | 0.065 | 52.31 |
| 10950 | Carbon Disulfide | 75-15-0 | N.D. | 0.065 | 52.31 |
| 10950 | Carbon Tetrachloride | 56-23-5 | N.D. | 0.065 | 52.31 |
| 10950 | Chlorobenzene | 108-90-7 | N.D. | 0.065 | 52.31 |
| 10950 | Chloroethane | 75-00-3 | N.D. | 0.13 | 52.31 |
| 10950 | 2-Chloroethyl Vinyl Ether | 110-75-8 | N.D. | 0.13 | 52.31 |
| 10950 | Chloroform | 67-66-3 | N.D. | 0.065 | 52.31 |
| 10950 | Chloromethane | 74-87-3 | N.D. | 0.13 | 52.31 |
| 10950 | 2-Chlorotoluene | 95-49-8 | N.D. | 0.065 | 52.31 |
| 10950 | 4-Chlorotoluene | 106-43-4 | N.D. | 0.065 | 52.31 |
| 10950 | 1,2-Dibromo-3-chloropropane | 96-12-8 | N.D. | 0.13 | 52.31 |
| 10950 | Dibromochloromethane | 124-48-1 | N.D. | 0.065 | 52.31 |
| 10950 | 1,2-Dibromoethane | 106-93-4 | N.D. | 0.065 | 52.31 |
| 10950 | Dibromomethane | 74-95-3 | N.D. | 0.065 | 52.31 |
| 10950 | 1,2-Dichlorobenzene | 95-50-1 | N.D. | 0.065 | 52.31 |
| 10950 | 1,3-Dichlorobenzene | 541-73-1 | N.D. | 0.065 | 52.31 |
| 10950 | 1,4-Dichlorobenzene | 106-46-7 | N.D. | 0.065 | 52.31 |
| 10950 | Dichlorodifluoromethane | 75-71-8 | N.D. | 0.13 | 52.31 |
| 10950 | 1,1-Dichloroethane | 75-34-3 | N.D. | 0.065 | 52.31 |
| 10950 | 1,2-Dichloroethane | 107-06-2 | N.D. | 0.065 | 52.31 |
| 10950 | 1,1-Dichloroethene | 75-35-4 | N.D. | 0.065 | 52.31 |
| 10950 | cis-1,2-Dichloroethene | 156-59-2 | N.D. | 0.065 | 52.31 |
| 10950 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | 0.065 | 52.31 |
| 10950 | 1,2-Dichloropropane | 78-87-5 | N.D. | 0.065 | 52.31 |
| 10950 | 1,3-Dichloropropane | 142-28-9 | N.D. | 0.065 | 52.31 |
| 10950 | 2,2-Dichloropropane | 594-20-7 | N.D. | 0.065 | 52.31 |
| 10950 | 1,1-Dichloropropene | 563-58-6 | N.D. | 0.065 | 52.31 |
| 10950 | cis-1,3-Dichloropropene | 10061-01-5 | N.D. | 0.065 | 52.31 |
| 10950 | trans-1,3-Dichloropropene | 10061-02-6 | N.D. | 0.065 | 52.31 |
| 10950 | Ethanol | 64-17-5 | N.D. | 6.5 | 52.31 |
| 10950 | Ethyl t-butyl ether | 637-92-3 | N.D. | 0.065 | 52.31 |
| 10950 | Ethylbenzene | 100-41-4 | N.D. | 0.065 | 52.31 |
| 10950 | Freon 113 | 76-13-1 | N.D. | 0.13 | 52.31 |
| 10950 | Hexachlorobutadiene | 87-68-3 | N.D. | 0.13 | 52.31 |
| 10950 | 2-Hexanone | 591-78-6 | N.D. | 0.19 | 52.31 |
| 10950 | di-Isopropyl ether | 108-20-3 | N.D. | 0.065 | 52.31 |
| 10950 | Isopropylbenzene | 98-82-8 | N.D. | 0.065 | 52.31 |
| 10950 | p-Isopropyltoluene | 99-87-6 | N.D. | 0.065 | 52.31 |

**Sample Description:** TW-1 8' Grab Soil Sample
Facility# 301726
Block 10, Lot 5A - Fairbanks, AK

**LLI Sample # SW 6370704**
**LLI Group # 1260739**
**Account # 11964**

**Project Name: 301726**

Collected: 08/06/2011 09:00 by MM

Submitted: 08/09/2011 09:10
Reported: 09/15/2011 15:26

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

5AF18 SDG#: LST28-05

| CAT No. | Analysis Name | CAS Number | Dry Result | Dry Method Detection Limit | Dilution Factor |
|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260B** | | **mg/kg** | **mg/kg** | |
| 10950 | Methyl Tertiary Butyl Ether | 1634-04-4 | N.D. | 0.032 | 52.31 |
| 10950 | 4-Methyl-2-pentanone | 108-10-1 | N.D. | 0.19 | 52.31 |
| 10950 | Methylene Chloride | 75-09-2 | N.D. | 0.13 | 52.31 |
| 10950 | Naphthalene | 91-20-3 | N.D. | 0.065 | 52.31 |
| 10950 | n-Propylbenzene | 103-65-1 | N.D. | 0.065 | 52.31 |
| 10950 | Styrene | 100-42-5 | N.D. | 0.065 | 52.31 |
| 10950 | 1,1,1,2-Tetrachloroethane | 630-20-6 | N.D. | 0.065 | 52.31 |
| 10950 | 1,1,2,2-Tetrachloroethane | 79-34-5 | N.D. | 0.065 | 52.31 |
| 10950 | Tetrachloroethene | 127-18-4 | N.D. | 0.065 | 52.31 |
| 10950 | Toluene | 108-88-3 | N.D. | 0.065 | 52.31 |
| 10950 | 1,2,3-Trichlorobenzene | 87-61-6 | N.D. | 0.065 | 52.31 |
| 10950 | 1,2,4-Trichlorobenzene | 120-82-1 | N.D. | 0.065 | 52.31 |
| 10950 | 1,1,1-Trichloroethane | 71-55-6 | N.D. | 0.065 | 52.31 |
| 10950 | 1,1,2-Trichloroethane | 79-00-5 | N.D. | 0.065 | 52.31 |
| 10950 | Trichloroethene | 79-01-6 | N.D. | 0.065 | 52.31 |
| 10950 | Trichlorofluoromethane | 75-69-4 | N.D. | 0.13 | 52.31 |
| 10950 | 1,2,3-Trichloropropane | 96-18-4 | N.D. | 0.065 | 52.31 |
| 10950 | 1,2,4-Trimethylbenzene | 95-63-6 | N.D. | 0.065 | 52.31 |
| 10950 | 1,3,5-Trimethylbenzene | 108-67-8 | N.D. | 0.065 | 52.31 |
| 10950 | Vinyl Chloride | 75-01-4 | N.D. | 0.065 | 52.31 |
| 10950 | m+p-Xylene | n.a. | N.D. | 0.065 | 52.31 |
| 10950 | o-Xylene | 95-47-6 | N.D. | 0.065 | 52.31 |
| **GC/MS Semivolatiles** | **SW-846 8270D** | | **mg/kg** | **mg/kg** | |
| 10726 | Acenaphthene | 83-32-9 | N.D. | 0.004 | 1 |
| 10726 | Acenaphthylene | 208-96-8 | 0.006 | 0.004 | 1 |
| 10726 | Anthracene | 120-12-7 | N.D. | 0.004 | 1 |
| 10726 | Benzo(a)anthracene | 56-55-3 | N.D. | 0.004 | 1 |
| 10726 | Benzo(a)pyrene | 50-32-8 | N.D. | 0.004 | 1 |
| 10726 | Benzo(b)fluoranthene | 205-99-2 | N.D. | 0.004 | 1 |
| 10726 | Benzo(g,h,i)perylene | 191-24-2 | N.D. | 0.004 | 1 |
| 10726 | Benzo(k)fluoranthene | 207-08-9 | N.D. | 0.004 | 1 |
| 10726 | Chrysene | 218-01-9 | N.D. | 0.004 | 1 |
| 10726 | Dibenz(a,h)anthracene | 53-70-3 | N.D. | 0.004 | 1 |
| 10726 | Fluoranthene | 206-44-0 | N.D. | 0.004 | 1 |
| 10726 | Fluorene | 86-73-7 | N.D. | 0.004 | 1 |
| 10726 | Indeno(1,2,3-cd)pyrene | 193-39-5 | N.D. | 0.004 | 1 |
| 10726 | Naphthalene | 91-20-3 | N.D. | 0.004 | 1 |
| 10726 | Phenanthrene | 85-01-8 | N.D. | 0.004 | 1 |
| 10726 | Pyrene | 129-00-0 | N.D. | 0.004 | 1 |
| **GC Volatiles** | **AK 101** | | **mg/kg** | **mg/kg** | |
| 01451 | TPH-GRO AK soil C6-C10 | n.a. | N.D. | 0.7 | 29.44 |
| **GC Volatiles** | **SW-846 8021B** | | **mg/kg** | **mg/kg** | |
| 08179 | Benzene | 71-43-2 | N.D. | 0.0073 | 29.44 |
| 08179 | Ethylbenzene | 100-41-4 | N.D. | 0.0073 | 29.44 |
| 08179 | Toluene | 108-88-3 | 0.063 | 0.0073 | 29.44 |
| 08179 | Total Xylenes | 1330-20-7 | N.D. | 0.022 | 29.44 |

**Sample Description:** TW-1 8' Grab Soil Sample
Facility# 301726
Block 10, Lot 5A - Fairbanks, AK

**LLI Sample # SW 6370704**
**LLI Group # 1260739**
**Account # 11964**

**Project Name: 301726**

Collected: 08/06/2011 09:00 by MM

Submitted: 08/09/2011 09:10
Reported: 09/15/2011 15:26

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

5AF18 SDG#: LST28-05

| CAT No. | Analysis Name | CAS Number | Dry Result | Dry Method Detection Limit | Dilution Factor |
|---|---|---|---|---|---|
| **GC Petroleum Hydrocarbons** | **AK 102/AK 103 04/08/02** | | **mg/kg** | **mg/kg** | |
| 01738 | C10-<C25 DRO | n.a. | N.D. | 6.2 | 1 |
| 01738 | C25-C36 RRO | n.a. | 10 | 6.2 | 1 |
| **Metals** | **SW-846 6010B** | | **mg/kg** | **mg/kg** | |
| 06946 | Barium | 7440-39-3 | 77.6 | 0.0219 | 1 |
| 06966 | Silver | 7440-22-4 | N.D. | 0.101 | 1 |
| | **SW-846 6020** | | **mg/kg** | **mg/kg** | |
| 06125 | Arsenic | 7440-38-2 | 5.42 | 0.0991 | 2 |
| 06128 | Cadmium | 7440-43-9 | 0.106 | 0.0545 | 2 |
| 06131 | Chromium | 7440-47-3 | 16.5 | 0.149 | 2 |
| 06135 | Lead | 7439-92-1 | 6.92 | 0.0126 | 2 |
| 06141 | Selenium | 7782-49-2 | 0.0943 | 0.0719 | 2 |
| **Wet Chemistry** | **SM20 2540 G** | | **%** | **%** | |
| 00111 | Moisture | n.a. | 19.3 | 0.50 | 1 |

"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.

## General Sample Comments

State of Alaska Lab Certification No. UST-061

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 10950 | 8260 Full List + Sep Xylenes | SW-846 8260B | 1 | Q112281AA | 08/16/2011 17:34 | Nicholas R Rossi | 52.31 |
| 06173 | GC/MS - Field Preserved (Ak) | SW-846 5035 | 1 | 201122225164 | 08/06/2011 09:00 | Client Supplied | 1 |
| 10726 | PAHs 8270D Soil Microwave | SW-846 8270D | 1 | 11228SLB026 | 08/27/2011 11:38 | Brian K Graham | 1 |
| 10813 | BNA Soil Microwave APP IX | SW-846 3546 | 1 | 11228SLB026 | 08/17/2011 03:15 | Roman Kuropatkin | 1 |
| 01451 | TPH-GRO AK soil C6-C10 | AK 101 | 1 | 11227A31A | 08/16/2011 06:51 | Marie D John | 29.44 |
| 08179 | BTEX by 8021 | SW-846 8021B | 1 | 11227A31A | 08/16/2011 06:51 | Marie D John | 29.44 |
| 06119 | GC - Field Preserved (AK-101) | AK 101 | 1 | 201122225164 | 08/06/2011 09:00 | Client Supplied | 1 |
| 01738 | TPH-DRO/RRO (AK) | AK 102/AK 103 04/08/02 | 1 | 112220017A | 08/15/2011 13:57 | Heather E Williams | 1 |
| 11223 | AK DRO/ORO Soils Extraction | AK 102/AK 103 04/08/02 | 1 | 112220017A | 08/10/2011 18:00 | JoElla L Rice | 1 |
| 06946 | Barium | SW-846 6010B | 1 | 112235708001 | 08/12/2011 18:59 | John P Hook | 1 |

Lancaster Laboratories

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# Analysis Report



**Sample Description: TW-1 8' Grab Soil Sample**
**Facility# 301726**
**Block 10, Lot 5A - Fairbanks, AK**

**LLI Sample # SW 6370704**
**LLI Group # 1260739**
**Account # 11964**

**Project Name: 301726**

Collected: 08/06/2011 09:00 by MM

Submitted: 08/09/2011 09:10
Reported: 09/15/2011 15:26

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

5AF18 SDG#: LST28-05

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 06966 | Silver | SW-846 6010B | 1 | 112235708001 | 08/12/2011 18:59 | John P Hook | 1 |
| 06125 | Arsenic | SW-846 6020 | 1 | 112231026003A | 08/12/2011 12:38 | Choon Y Tian | 2 |
| 06128 | Cadmium | SW-846 6020 | 1 | 112231026003A | 08/12/2011 12:38 | Choon Y Tian | 2 |
| 06131 | Chromium | SW-846 6020 | 1 | 112231026003A | 08/12/2011 12:38 | Choon Y Tian | 2 |
| 06135 | Lead | SW-846 6020 | 1 | 112231026003A | 08/12/2011 12:38 | Choon Y Tian | 2 |
| 06141 | Selenium | SW-846 6020 | 1 | 112231026003B | 08/12/2011 12:38 | Choon Y Tian | 2 |
| 05708 | SW SW846 ICP Digest | SW-846 3050B | 1 | 112235708001 | 08/11/2011 20:12 | Annamaria Stipkovits | 1 |
| 11026 | SW SW846 ICP-MS Digest | SW-846 3050B | 1 | 112231026003 | 08/11/2011 21:17 | Annamaria Stipkovits | 1 |
| 00111 | Moisture | SM20 2540 G | 1 | 11223820005B | 08/11/2011 17:15 | Scott W Freisher | 1 |

Lancaster Laboratories

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# Analysis Report



**Sample Description:** TW-1 8-10' Grab Soil Sample
Facility# 301726
Block 10, Lot 5A - Fairbanks, AK

**LLI Sample # SW 6370705**
**LLI Group # 1260739**
**Account # 11964**

**Project Name: 301726**

Collected: 08/06/2011 09:45 by MM

Submitted: 08/09/2011 09:10
Reported: 09/15/2011 15:26

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

5AF10 SDG#: LST28-06

| CAT No. | Analysis Name | CAS Number | Dry Result | Dry Method Detection Limit | Dilution Factor |
|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260B** | | mg/kg | mg/kg | |
| 10950 | Acetone | 67-64-1 | N.D. | 0.41 | 53.73 |
| 10950 | t-Amyl methyl ether | 994-05-8 | N.D. | 0.059 | 53.73 |
| 10950 | Benzene | 71-43-2 | N.D. | 0.030 | 53.73 |
| 10950 | Bromobenzene | 108-86-1 | N.D. | 0.059 | 53.73 |
| 10950 | Bromochloromethane | 74-97-5 | N.D. | 0.059 | 53.73 |
| 10950 | Bromodichloromethane | 75-27-4 | N.D. | 0.059 | 53.73 |
| 10950 | Bromoform | 75-25-2 | N.D. | 0.059 | 53.73 |
| 10950 | Bromomethane | 74-83-9 | N.D. | 0.12 | 53.73 |
| 10950 | 2-Butanone | 78-93-3 | N.D. | 0.24 | 53.73 |
| 10950 | t-Butyl alcohol | 75-65-0 | N.D. | 1.2 | 53.73 |
| 10950 | n-Butylbenzene | 104-51-8 | N.D. | 0.059 | 53.73 |
| 10950 | sec-Butylbenzene | 135-98-8 | N.D. | 0.059 | 53.73 |
| 10950 | tert-Butylbenzene | 98-06-6 | N.D. | 0.059 | 53.73 |
| 10950 | Carbon Disulfide | 75-15-0 | N.D. | 0.059 | 53.73 |
| 10950 | Carbon Tetrachloride | 56-23-5 | N.D. | 0.059 | 53.73 |
| 10950 | Chlorobenzene | 108-90-7 | N.D. | 0.059 | 53.73 |
| 10950 | Chloroethane | 75-00-3 | N.D. | 0.12 | 53.73 |
| 10950 | 2-Chloroethyl Vinyl Ether | 110-75-8 | N.D. | 0.12 | 53.73 |
| 10950 | Chloroform | 67-66-3 | N.D. | 0.059 | 53.73 |
| 10950 | Chloromethane | 74-87-3 | N.D. | 0.12 | 53.73 |
| 10950 | 2-Chlorotoluene | 95-49-8 | N.D. | 0.059 | 53.73 |
| 10950 | 4-Chlorotoluene | 106-43-4 | N.D. | 0.059 | 53.73 |
| 10950 | 1,2-Dibromo-3-chloropropane | 96-12-8 | N.D. | 0.12 | 53.73 |
| 10950 | Dibromochloromethane | 124-48-1 | N.D. | 0.059 | 53.73 |
| 10950 | 1,2-Dibromoethane | 106-93-4 | N.D. | 0.059 | 53.73 |
| 10950 | Dibromomethane | 74-95-3 | N.D. | 0.059 | 53.73 |
| 10950 | 1,2-Dichlorobenzene | 95-50-1 | N.D. | 0.059 | 53.73 |
| 10950 | 1,3-Dichlorobenzene | 541-73-1 | N.D. | 0.059 | 53.73 |
| 10950 | 1,4-Dichlorobenzene | 106-46-7 | N.D. | 0.059 | 53.73 |
| 10950 | Dichlorodifluoromethane | 75-71-8 | N.D. | 0.12 | 53.73 |
| 10950 | 1,1-Dichloroethane | 75-34-3 | N.D. | 0.059 | 53.73 |
| 10950 | 1,2-Dichloroethane | 107-06-2 | N.D. | 0.059 | 53.73 |
| 10950 | 1,1-Dichloroethene | 75-35-4 | N.D. | 0.059 | 53.73 |
| 10950 | cis-1,2-Dichloroethene | 156-59-2 | N.D. | 0.059 | 53.73 |
| 10950 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | 0.059 | 53.73 |
| 10950 | 1,2-Dichloropropane | 78-87-5 | N.D. | 0.059 | 53.73 |
| 10950 | 1,3-Dichloropropane | 142-28-9 | N.D. | 0.059 | 53.73 |
| 10950 | 2,2-Dichloropropane | 594-20-7 | N.D. | 0.059 | 53.73 |
| 10950 | 1,1-Dichloropropene | 563-58-6 | N.D. | 0.059 | 53.73 |
| 10950 | cis-1,3-Dichloropropene | 10061-01-5 | N.D. | 0.059 | 53.73 |
| 10950 | trans-1,3-Dichloropropene | 10061-02-6 | N.D. | 0.059 | 53.73 |
| 10950 | Ethanol | 64-17-5 | N.D. | 5.9 | 53.73 |
| 10950 | Ethyl t-butyl ether | 637-92-3 | N.D. | 0.059 | 53.73 |
| 10950 | Ethylbenzene | 100-41-4 | N.D. | 0.059 | 53.73 |
| 10950 | Freon 113 | 76-13-1 | N.D. | 0.12 | 53.73 |
| 10950 | Hexachlorobutadiene | 87-68-3 | N.D. | 0.12 | 53.73 |
| 10950 | 2-Hexanone | 591-78-6 | N.D. | 0.18 | 53.73 |
| 10950 | di-Isopropyl ether | 108-20-3 | N.D. | 0.059 | 53.73 |
| 10950 | Isopropylbenzene | 98-82-8 | N.D. | 0.059 | 53.73 |
| 10950 | p-Isopropyltoluene | 99-87-6 | N.D. | 0.059 | 53.73 |

**Sample Description:** TW-1 8-10' Grab Soil Sample
Facility# 301726
Block 10, Lot 5A - Fairbanks, AK

**LLI Sample # SW 6370705**
**LLI Group # 1260739**
**Account # 11964**

**Project Name: 301726**

Collected: 08/06/2011 09:45 by MM

Submitted: 08/09/2011 09:10
Reported: 09/15/2011 15:26

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

5AF10 SDG#: LST28-06

| CAT No. | Analysis Name | CAS Number | Dry Result | Dry Method Detection Limit | Dilution Factor |
|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260B** | | **mg/kg** | **mg/kg** | |
| 10950 | Methyl Tertiary Butyl Ether | 1634-04-4 | N.D. | 0.030 | 53.73 |
| 10950 | 4-Methyl-2-pentanone | 108-10-1 | N.D. | 0.18 | 53.73 |
| 10950 | Methylene Chloride | 75-09-2 | N.D. | 0.12 | 53.73 |
| 10950 | Naphthalene | 91-20-3 | N.D. | 0.059 | 53.73 |
| 10950 | n-Propylbenzene | 103-65-1 | N.D. | 0.059 | 53.73 |
| 10950 | Styrene | 100-42-5 | N.D. | 0.059 | 53.73 |
| 10950 | 1,1,1,2-Tetrachloroethane | 630-20-6 | N.D. | 0.059 | 53.73 |
| 10950 | 1,1,2,2-Tetrachloroethane | 79-34-5 | N.D. | 0.059 | 53.73 |
| 10950 | Tetrachloroethene | 127-18-4 | N.D. | 0.059 | 53.73 |
| 10950 | Toluene | 108-88-3 | 0.083 | 0.059 | 53.73 |
| 10950 | 1,2,3-Trichlorobenzene | 87-61-6 | N.D. | 0.059 | 53.73 |
| 10950 | 1,2,4-Trichlorobenzene | 120-82-1 | N.D. | 0.059 | 53.73 |
| 10950 | 1,1,1-Trichloroethane | 71-55-6 | N.D. | 0.059 | 53.73 |
| 10950 | 1,1,2-Trichloroethane | 79-00-5 | N.D. | 0.059 | 53.73 |
| 10950 | Trichloroethene | 79-01-6 | N.D. | 0.059 | 53.73 |
| 10950 | Trichlorofluoromethane | 75-69-4 | N.D. | 0.12 | 53.73 |
| 10950 | 1,2,3-Trichloropropane | 96-18-4 | N.D. | 0.059 | 53.73 |
| 10950 | 1,2,4-Trimethylbenzene | 95-63-6 | N.D. | 0.059 | 53.73 |
| 10950 | 1,3,5-Trimethylbenzene | 108-67-8 | N.D. | 0.059 | 53.73 |
| 10950 | Vinyl Chloride | 75-01-4 | N.D. | 0.059 | 53.73 |
| 10950 | m+p-Xylene | n.a. | N.D. | 0.059 | 53.73 |
| 10950 | o-Xylene | 95-47-6 | N.D. | 0.059 | 53.73 |
| **GC/MS Semivolatiles** | **SW-846 8270D** | | **mg/kg** | **mg/kg** | |
| 10726 | Acenaphthene | 83-32-9 | N.D. | 0.004 | 1 |
| 10726 | Acenaphthylene | 208-96-8 | N.D. | 0.004 | 1 |
| 10726 | Anthracene | 120-12-7 | N.D. | 0.004 | 1 |
| 10726 | Benzo(a)anthracene | 56-55-3 | N.D. | 0.004 | 1 |
| 10726 | Benzo(a)pyrene | 50-32-8 | N.D. | 0.004 | 1 |
| 10726 | Benzo(b)fluoranthene | 205-99-2 | N.D. | 0.004 | 1 |
| 10726 | Benzo(g,h,i)perylene | 191-24-2 | N.D. | 0.004 | 1 |
| 10726 | Benzo(k)fluoranthene | 207-08-9 | N.D. | 0.004 | 1 |
| 10726 | Chrysene | 218-01-9 | N.D. | 0.004 | 1 |
| 10726 | Dibenz(a,h)anthracene | 53-70-3 | N.D. | 0.004 | 1 |
| 10726 | Fluoranthene | 206-44-0 | N.D. | 0.004 | 1 |
| 10726 | Fluorene | 86-73-7 | N.D. | 0.004 | 1 |
| 10726 | Indeno(1,2,3-cd)pyrene | 193-39-5 | N.D. | 0.004 | 1 |
| 10726 | Naphthalene | 91-20-3 | N.D. | 0.004 | 1 |
| 10726 | Phenanthrene | 85-01-8 | N.D. | 0.004 | 1 |
| 10726 | Pyrene | 129-00-0 | N.D. | 0.004 | 1 |
| **GC Volatiles** | **AK 101** | | **mg/kg** | **mg/kg** | |
| 01451 | TPH-GRO AK soil C6-C10 | n.a. | N.D. | 0.7 | 31.39 |
| **GC Volatiles** | **SW-846 8021B** | | **mg/kg** | **mg/kg** | |
| 08179 | Benzene | 71-43-2 | N.D. | 0.0069 | 31.39 |
| 08179 | Ethylbenzene | 100-41-4 | N.D. | 0.0069 | 31.39 |
| 08179 | Toluene | 108-88-3 | 0.087 | 0.0069 | 31.39 |
| 08179 | Total Xylenes | 1330-20-7 | N.D. | 0.021 | 31.39 |

**Sample Description:** TW-1 8-10' Grab Soil Sample
Facility# 301726
Block 10, Lot 5A - Fairbanks, AK

**LLI Sample # SW 6370705**
**LLI Group # 1260739**
**Account # 11964**

**Project Name: 301726**

Collected: 08/06/2011 09:45 by MM

Submitted: 08/09/2011 09:10
Reported: 09/15/2011 15:26

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

5AF10 SDG#: LST28-06

| CAT No. | Analysis Name | CAS Number | Dry Result | Dry Method Detection Limit | Dilution Factor |
|---|---|---|---|---|---|
| **GC Petroleum Hydrocarbons** | **AK 102/AK 103 04/08/02** | | **mg/kg** | **mg/kg** | |
| 01738 | C10-<C25 DRO | n.a. | N.D. | 5.5 | 1 |
| 01738 | C25-C36 RRO | n.a. | N.D. | 5.5 | 1 |
| **Metals** | **SW-846 6010B** | | **mg/kg** | **mg/kg** | |
| 06946 | Barium | 7440-39-3 | 96.5 | 0.0190 | 1 |
| 06966 | Silver | 7440-22-4 | N.D. | 0.0877 | 1 |
| | **SW-846 6020** | | **mg/kg** | **mg/kg** | |
| 06125 | Arsenic | 7440-38-2 | 4.06 | 0.0862 | 2 |
| 06128 | Cadmium | 7440-43-9 | 0.0699 | 0.0474 | 2 |
| 06131 | Chromium | 7440-47-3 | 14.4 | 0.129 | 2 |
| 06135 | Lead | 7439-92-1 | 3.90 | 0.0110 | 2 |
| 06141 | Selenium | 7782-49-2 | 0.0716 | 0.0625 | 2 |
| **Wet Chemistry** | **SM20 2540 G** | | **%** | **%** | |
| 00111 | Moisture | n.a. | 9.0 | 0.50 | 1 |

"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.

## General Sample Comments

State of Alaska Lab Certification No. UST-061

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 10950 | 8260 Full List + Sep Xylenes | SW-846 8260B | 1 | Q112281AA | 08/16/2011 17:57 | Nicholas R Rossi | 53.73 |
| 06173 | GC/MS - Field Preserved (Ak) | SW-846 5035 | 1 | 201122225164 | 08/06/2011 09:45 | Client Supplied | 1 |
| 10726 | PAHs 8270D Soil Microwave | SW-846 8270D | 1 | 11228SLB026 | 08/27/2011 12:03 | Brian K Graham | 1 |
| 10813 | BNA Soil Microwave APP IX | SW-846 3546 | 1 | 11228SLB026 | 08/17/2011 03:15 | Roman Kuropatkin | 1 |
| 01451 | TPH-GRO AK soil C6-C10 | AK 101 | 1 | 11227A31A | 08/16/2011 07:27 | Marie D John | 31.39 |
| 08179 | BTEX by 8021 | SW-846 8021B | 1 | 11227A31A | 08/16/2011 07:27 | Marie D John | 31.39 |
| 06119 | GC - Field Preserved (AK-101) | AK 101 | 1 | 201122225164 | 08/06/2011 09:45 | Client Supplied | 1 |
| 01738 | TPH-DRO/RRO (AK) | AK 102/AK 103 04/08/02 | 1 | 112220017A | 08/15/2011 14:24 | Heather E Williams | 1 |
| 11223 | AK DRO/ORO Soils Extraction | AK 102/AK 103 04/08/02 | 1 | 112220017A | 08/10/2011 18:00 | JoElla L Rice | 1 |
| 06946 | Barium | SW-846 6010B | 1 | 112235708001 | 08/12/2011 19:04 | John P Hook | 1 |

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# Analysis Report



**Sample Description: TW-1 8-10' Grab Soil Sample**
**Facility# 301726**
**Block 10, Lot 5A - Fairbanks, AK**

**LLI Sample # SW 6370705**
**LLI Group # 1260739**
**Account # 11964**

**Project Name: 301726**

Collected: 08/06/2011 09:45 by MM

Submitted: 08/09/2011 09:10
Reported: 09/15/2011 15:26

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

5AF10 SDG#: LST28-06

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 06966 | Silver | SW-846 6010B | 1 | 112235708001 | 08/12/2011 19:04 | John P Hook | 1 |
| 06125 | Arsenic | SW-846 6020 | 1 | 112231026003A | 08/12/2011 12:41 | Choon Y Tian | 2 |
| 06128 | Cadmium | SW-846 6020 | 1 | 112231026003A | 08/12/2011 12:41 | Choon Y Tian | 2 |
| 06131 | Chromium | SW-846 6020 | 1 | 112231026003A | 08/12/2011 12:41 | Choon Y Tian | 2 |
| 06135 | Lead | SW-846 6020 | 1 | 112231026003A | 08/12/2011 12:41 | Choon Y Tian | 2 |
| 06141 | Selenium | SW-846 6020 | 1 | 112231026003B | 08/12/2011 12:41 | Choon Y Tian | 2 |
| 05708 | SW SW846 ICP Digest | SW-846 3050B | 1 | 112235708001 | 08/11/2011 20:12 | Annamaria Stipkovits | 1 |
| 11026 | SW SW846 ICP-MS Digest | SW-846 3050B | 1 | 112231026003 | 08/11/2011 21:17 | Annamaria Stipkovits | 1 |
| 00111 | Moisture | SM20 2540 G | 1 | 11223820005B | 08/11/2011 17:15 | Scott W Freisher | 1 |

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# Analysis Report



**Sample Description:** TW-1 15-17' Grab Soil Sample
Facility# 301726
Block 10, Lot 5A - Fairbanks, AK

**LLI Sample #** SW 6370706
**LLI Group #** 1260739
**Account #** 11964

**Project Name:** 301726

Collected: 08/06/2011 09:55 by MM

Submitted: 08/09/2011 09:10
Reported: 09/15/2011 15:26

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

5AF15 SDG#: LST28-07

| CAT No. | Analysis Name | CAS Number | Dry Result | Dry Method Detection Limit | Dilution Factor |
|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260B** | | mg/kg | mg/kg | |
| 10950 | Acetone | 67-64-1 | N.D. | 0.55 | 61.61 |
| 10950 | t-Amyl methyl ether | 994-05-8 | N.D. | 0.078 | 61.61 |
| 10950 | Benzene | 71-43-2 | N.D. | 0.039 | 61.61 |
| 10950 | Bromobenzene | 108-86-1 | N.D. | 0.078 | 61.61 |
| 10950 | Bromochloromethane | 74-97-5 | N.D. | 0.078 | 61.61 |
| 10950 | Bromodichloromethane | 75-27-4 | N.D. | 0.078 | 61.61 |
| 10950 | Bromoform | 75-25-2 | N.D. | 0.078 | 61.61 |
| 10950 | Bromomethane | 74-83-9 | N.D. | 0.16 | 61.61 |
| 10950 | 2-Butanone | 78-93-3 | N.D. | 0.31 | 61.61 |
| 10950 | t-Butyl alcohol | 75-65-0 | N.D. | 1.6 | 61.61 |
| 10950 | n-Butylbenzene | 104-51-8 | N.D. | 0.078 | 61.61 |
| 10950 | sec-Butylbenzene | 135-98-8 | N.D. | 0.078 | 61.61 |
| 10950 | tert-Butylbenzene | 98-06-6 | N.D. | 0.078 | 61.61 |
| 10950 | Carbon Disulfide | 75-15-0 | N.D. | 0.078 | 61.61 |
| 10950 | Carbon Tetrachloride | 56-23-5 | N.D. | 0.078 | 61.61 |
| 10950 | Chlorobenzene | 108-90-7 | N.D. | 0.078 | 61.61 |
| 10950 | Chloroethane | 75-00-3 | N.D. | 0.16 | 61.61 |
| 10950 | 2-Chloroethyl Vinyl Ether | 110-75-8 | N.D. | 0.16 | 61.61 |
| 10950 | Chloroform | 67-66-3 | N.D. | 0.078 | 61.61 |
| 10950 | Chloromethane | 74-87-3 | N.D. | 0.16 | 61.61 |
| 10950 | 2-Chlorotoluene | 95-49-8 | N.D. | 0.078 | 61.61 |
| 10950 | 4-Chlorotoluene | 106-43-4 | N.D. | 0.078 | 61.61 |
| 10950 | 1,2-Dibromo-3-chloropropane | 96-12-8 | N.D. | 0.16 | 61.61 |
| 10950 | Dibromochloromethane | 124-48-1 | N.D. | 0.078 | 61.61 |
| 10950 | 1,2-Dibromoethane | 106-93-4 | N.D. | 0.078 | 61.61 |
| 10950 | Dibromomethane | 74-95-3 | N.D. | 0.078 | 61.61 |
| 10950 | 1,2-Dichlorobenzene | 95-50-1 | N.D. | 0.078 | 61.61 |
| 10950 | 1,3-Dichlorobenzene | 541-73-1 | N.D. | 0.078 | 61.61 |
| 10950 | 1,4-Dichlorobenzene | 106-46-7 | N.D. | 0.078 | 61.61 |
| 10950 | Dichlorodifluoromethane | 75-71-8 | N.D. | 0.16 | 61.61 |
| 10950 | 1,1-Dichloroethane | 75-34-3 | N.D. | 0.078 | 61.61 |
| 10950 | 1,2-Dichloroethane | 107-06-2 | N.D. | 0.078 | 61.61 |
| 10950 | 1,1-Dichloroethene | 75-35-4 | N.D. | 0.078 | 61.61 |
| 10950 | cis-1,2-Dichloroethene | 156-59-2 | N.D. | 0.078 | 61.61 |
| 10950 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | 0.078 | 61.61 |
| 10950 | 1,2-Dichloropropane | 78-87-5 | N.D. | 0.078 | 61.61 |
| 10950 | 1,3-Dichloropropane | 142-28-9 | N.D. | 0.078 | 61.61 |
| 10950 | 2,2-Dichloropropane | 594-20-7 | N.D. | 0.078 | 61.61 |
| 10950 | 1,1-Dichloropropene | 563-58-6 | N.D. | 0.078 | 61.61 |
| 10950 | cis-1,3-Dichloropropene | 10061-01-5 | N.D. | 0.078 | 61.61 |
| 10950 | trans-1,3-Dichloropropene | 10061-02-6 | N.D. | 0.078 | 61.61 |
| 10950 | Ethanol | 64-17-5 | N.D. | 7.8 | 61.61 |
| 10950 | Ethyl t-butyl ether | 637-92-3 | N.D. | 0.078 | 61.61 |
| 10950 | Ethylbenzene | 100-41-4 | N.D. | 0.078 | 61.61 |
| 10950 | Freon 113 | 76-13-1 | N.D. | 0.16 | 61.61 |
| 10950 | Hexachlorobutadiene | 87-68-3 | N.D. | 0.16 | 61.61 |
| 10950 | 2-Hexanone | 591-78-6 | N.D. | 0.23 | 61.61 |
| 10950 | di-Isopropyl ether | 108-20-3 | N.D. | 0.078 | 61.61 |
| 10950 | Isopropylbenzene | 98-82-8 | N.D. | 0.078 | 61.61 |
| 10950 | p-Isopropyltoluene | 99-87-6 | N.D. | 0.078 | 61.61 |

**Sample Description:** TW-1 15-17' Grab Soil Sample
Facility# 301726
Block 10, Lot 5A - Fairbanks, AK

**LLI Sample #** SW 6370706
**LLI Group #** 1260739
**Account #** 11964

**Project Name:** 301726

Collected: 08/06/2011 09:55 by MM

Submitted: 08/09/2011 09:10
Reported: 09/15/2011 15:26

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

5AF15 SDG#: LST28-07

| CAT No. | Analysis Name | CAS Number | Dry Result | Dry Method Detection Limit | Dilution Factor |
|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260B** | | **mg/kg** | **mg/kg** | |
| 10950 | Methyl Tertiary Butyl Ether | 1634-04-4 | N.D. | 0.039 | 61.61 |
| 10950 | 4-Methyl-2-pentanone | 108-10-1 | N.D. | 0.23 | 61.61 |
| 10950 | Methylene Chloride | 75-09-2 | N.D. | 0.16 | 61.61 |
| 10950 | Naphthalene | 91-20-3 | N.D. | 0.078 | 61.61 |
| 10950 | n-Propylbenzene | 103-65-1 | N.D. | 0.078 | 61.61 |
| 10950 | Styrene | 100-42-5 | N.D. | 0.078 | 61.61 |
| 10950 | 1,1,1,2-Tetrachloroethane | 630-20-6 | N.D. | 0.078 | 61.61 |
| 10950 | 1,1,2,2-Tetrachloroethane | 79-34-5 | N.D. | 0.078 | 61.61 |
| 10950 | Tetrachloroethene | 127-18-4 | N.D. | 0.078 | 61.61 |
| 10950 | Toluene | 108-88-3 | N.D. | 0.078 | 61.61 |
| 10950 | 1,2,3-Trichlorobenzene | 87-61-6 | N.D. | 0.078 | 61.61 |
| 10950 | 1,2,4-Trichlorobenzene | 120-82-1 | N.D. | 0.078 | 61.61 |
| 10950 | 1,1,1-Trichloroethane | 71-55-6 | N.D. | 0.078 | 61.61 |
| 10950 | 1,1,2-Trichloroethane | 79-00-5 | N.D. | 0.078 | 61.61 |
| 10950 | Trichloroethene | 79-01-6 | N.D. | 0.078 | 61.61 |
| 10950 | Trichlorofluoromethane | 75-69-4 | N.D. | 0.16 | 61.61 |
| 10950 | 1,2,3-Trichloropropane | 96-18-4 | N.D. | 0.078 | 61.61 |
| 10950 | 1,2,4-Trimethylbenzene | 95-63-6 | N.D. | 0.078 | 61.61 |
| 10950 | 1,3,5-Trimethylbenzene | 108-67-8 | N.D. | 0.078 | 61.61 |
| 10950 | Vinyl Chloride | 75-01-4 | N.D. | 0.078 | 61.61 |
| 10950 | m+p-Xylene | n.a. | N.D. | 0.078 | 61.61 |
| 10950 | o-Xylene | 95-47-6 | N.D. | 0.078 | 61.61 |
| **GC/MS Semivolatiles** | **SW-846 8270D** | | **mg/kg** | **mg/kg** | |
| 10726 | Acenaphthene | 83-32-9 | N.D. | 0.004 | 1 |
| 10726 | Acenaphthylene | 208-96-8 | N.D. | 0.004 | 1 |
| 10726 | Anthracene | 120-12-7 | N.D. | 0.004 | 1 |
| 10726 | Benzo(a)anthracene | 56-55-3 | N.D. | 0.004 | 1 |
| 10726 | Benzo(a)pyrene | 50-32-8 | N.D. | 0.004 | 1 |
| 10726 | Benzo(b)fluoranthene | 205-99-2 | N.D. | 0.004 | 1 |
| 10726 | Benzo(g,h,i)perylene | 191-24-2 | N.D. | 0.004 | 1 |
| 10726 | Benzo(k)fluoranthene | 207-08-9 | N.D. | 0.004 | 1 |
| 10726 | Chrysene | 218-01-9 | N.D. | 0.004 | 1 |
| 10726 | Dibenz(a,h)anthracene | 53-70-3 | N.D. | 0.004 | 1 |
| 10726 | Fluoranthene | 206-44-0 | N.D. | 0.004 | 1 |
| 10726 | Fluorene | 86-73-7 | N.D. | 0.004 | 1 |
| 10726 | Indeno(1,2,3-cd)pyrene | 193-39-5 | N.D. | 0.004 | 1 |
| 10726 | Naphthalene | 91-20-3 | N.D. | 0.004 | 1 |
| 10726 | Phenanthrene | 85-01-8 | N.D. | 0.004 | 1 |
| 10726 | Pyrene | 129-00-0 | N.D. | 0.004 | 1 |
| **GC Volatiles** | **AK 101** | | **mg/kg** | **mg/kg** | |
| 01451 | TPH-GRO AK soil C6-C10 | n.a. | N.D. | 0.9 | 35.69 |
| **GC Volatiles** | **SW-846 8021B** | | **mg/kg** | **mg/kg** | |
| 08179 | Benzene | 71-43-2 | 0.0096 | 0.0090 | 35.69 |
| 08179 | Ethylbenzene | 100-41-4 | 0.0095 | 0.0090 | 35.69 |
| 08179 | Toluene | 108-88-3 | 0.11 | 0.0090 | 35.69 |
| 08179 | Total Xylenes | 1330-20-7 | 0.031 | 0.027 | 35.69 |

**Sample Description:** TW-1 15-17' Grab Soil Sample
Facility# 301726
Block 10, Lot 5A - Fairbanks, AK

**LLI Sample # SW 6370706**
**LLI Group # 1260739**
**Account # 11964**

**Project Name: 301726**

Collected: 08/06/2011 09:55 by MM

Submitted: 08/09/2011 09:10
Reported: 09/15/2011 15:26

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

5AF15 SDG#: LST28-07

| CAT No. | Analysis Name | CAS Number | Dry Result | Dry Method Detection Limit | Dilution Factor |
|---|---|---|---|---|---|
| **GC Petroleum Hydrocarbons** | **AK 102/AK 103 04/08/02** | | **mg/kg** | **mg/kg** | |
| 01738 | C10-<C25 DRO | n.a. | N.D. | 6.3 | 1 |
| 01738 | C25-C36 RRO | n.a. | N.D. | 6.3 | 1 |
| **Metals** | **SW-846 6010B** | | **mg/kg** | **mg/kg** | |
| 06946 | Barium | 7440-39-3 | 72.3 | 0.0219 | 1 |
| 06966 | Silver | 7440-22-4 | N.D. | 0.101 | 1 |
| | **SW-846 6020** | | **mg/kg** | **mg/kg** | |
| 06125 | Arsenic | 7440-38-2 | 3.95 | 0.0984 | 2 |
| 06128 | Cadmium | 7440-43-9 | 0.0981 | 0.0541 | 2 |
| 06131 | Chromium | 7440-47-3 | 16.4 | 0.148 | 2 |
| 06135 | Lead | 7439-92-1 | 3.88 | 0.0126 | 2 |
| 06141 | Selenium | 7782-49-2 | 0.105 | 0.0714 | 2 |
| **Wet Chemistry** | **SM20 2540 G** | | **%** | **%** | |
| 00111 | Moisture | n.a. | 21.1 | 0.50 | 1 |

"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.

## General Sample Comments

State of Alaska Lab Certification No. UST-061

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 10950 | 8260 Full List + Sep Xylenes | SW-846 8260B | 1 | Q112281AA | 08/16/2011 18:21 | Nicholas R Rossi | 61.61 |
| 06173 | GC/MS - Field Preserved (Ak) | SW-846 5035 | 1 | 201122225164 | 08/06/2011 09:55 | Client Supplied | 1 |
| 10726 | PAHs 8270D Soil Microwave | SW-846 8270D | 1 | 11228SLB026 | 08/27/2011 12:28 | Brian K Graham | 1 |
| 10813 | BNA Soil Microwave APP IX | SW-846 3546 | 1 | 11228SLB026 | 08/17/2011 03:15 | Roman Kuropatkin | 1 |
| 01451 | TPH-GRO AK soil C6-C10 | AK 101 | 1 | 11228A31A | 08/16/2011 21:21 | Marie D John | 35.69 |
| 08179 | BTEX by 8021 | SW-846 8021B | 1 | 11228A31A | 08/16/2011 21:21 | Marie D John | 35.69 |
| 06119 | GC - Field Preserved (AK-101) | AK 101 | 1 | 201122225164 | 08/06/2011 09:55 | Client Supplied | 1 |
| 01738 | TPH-DRO/RRO (AK) | AK 102/AK 103 04/08/02 | 1 | 112220017A | 08/15/2011 14:51 | Heather E Williams | 1 |
| 11223 | AK DRO/ORO Soils Extraction | AK 102/AK 103 04/08/02 | 1 | 112220017A | 08/10/2011 18:00 | JoElla L Rice | 1 |
| 06946 | Barium | SW-846 6010B | 1 | 112235708001 | 08/12/2011 19:08 | John P Hook | 1 |

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# Analysis Report



**Sample Description:** TW-1 15-17' Grab Soil Sample
Facility# 301726
Block 10, Lot 5A - Fairbanks, AK

**LLI Sample # SW 6370706**
**LLI Group # 1260739**
**Account # 11964**

**Project Name: 301726**

Collected: 08/06/2011 09:55 by MM

Submitted: 08/09/2011 09:10
Reported: 09/15/2011 15:26

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

5AF15 SDG#: LST28-07

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 06966 | Silver | SW-846 6010B | 1 | 112235708001 | 08/12/2011 19:08 | John P Hook | 1 |
| 06125 | Arsenic | SW-846 6020 | 1 | 112231026003A | 08/12/2011 12:44 | Choon Y Tian | 2 |
| 06128 | Cadmium | SW-846 6020 | 1 | 112231026003A | 08/12/2011 12:44 | Choon Y Tian | 2 |
| 06131 | Chromium | SW-846 6020 | 1 | 112231026003A | 08/12/2011 12:44 | Choon Y Tian | 2 |
| 06135 | Lead | SW-846 6020 | 1 | 112231026003A | 08/12/2011 12:44 | Choon Y Tian | 2 |
| 06141 | Selenium | SW-846 6020 | 1 | 112231026003B | 08/12/2011 12:44 | Choon Y Tian | 2 |
| 05708 | SW SW846 ICP Digest | SW-846 3050B | 1 | 112235708001 | 08/11/2011 20:12 | Annamaria Stipkovits | 1 |
| 11026 | SW SW846 ICP-MS Digest | SW-846 3050B | 1 | 112231026003 | 08/11/2011 21:17 | Annamaria Stipkovits | 1 |
| 00111 | Moisture | SM20 2540 G | 1 | 11223820005B | 08/11/2011 17:15 | Scott W Freisher | 1 |

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# Analysis Report



**Sample Description:** BD-1 Grab Soil Sample
Facility# 301726
Block 10, Lot 5A - Fairbanks, AK

**LLI Sample #** SW 6370707
**LLI Group #** 1260739
**Account #** 11964

**Project Name:** 301726

Collected: 08/06/2011 by MM

Submitted: 08/09/2011 09:10
Reported: 09/15/2011 15:26

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

5AFFD SDG#: LST28-08FD

| CAT No. | Analysis Name | CAS Number | Dry Result | Dry Method Detection Limit | Dilution Factor |
|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260B** | | mg/kg | mg/kg | |
| 10950 | Acetone | 67-64-1 | N.D. | 0.55 | 58.34 |
| 10950 | t-Amyl methyl ether | 994-05-8 | N.D. | 0.079 | 58.34 |
| 10950 | Benzene | 71-43-2 | N.D. | 0.039 | 58.34 |
| 10950 | Bromobenzene | 108-86-1 | N.D. | 0.079 | 58.34 |
| 10950 | Bromochloromethane | 74-97-5 | N.D. | 0.079 | 58.34 |
| 10950 | Bromodichloromethane | 75-27-4 | N.D. | 0.079 | 58.34 |
| 10950 | Bromoform | 75-25-2 | N.D. | 0.079 | 58.34 |
| 10950 | Bromomethane | 74-83-9 | N.D. | 0.16 | 58.34 |
| 10950 | 2-Butanone | 78-93-3 | N.D. | 0.32 | 58.34 |
| 10950 | t-Butyl alcohol | 75-65-0 | N.D. | 1.6 | 58.34 |
| 10950 | n-Butylbenzene | 104-51-8 | N.D. | 0.079 | 58.34 |
| 10950 | sec-Butylbenzene | 135-98-8 | N.D. | 0.079 | 58.34 |
| 10950 | tert-Butylbenzene | 98-06-6 | N.D. | 0.079 | 58.34 |
| 10950 | Carbon Disulfide | 75-15-0 | N.D. | 0.079 | 58.34 |
| 10950 | Carbon Tetrachloride | 56-23-5 | N.D. | 0.079 | 58.34 |
| 10950 | Chlorobenzene | 108-90-7 | N.D. | 0.079 | 58.34 |
| 10950 | Chloroethane | 75-00-3 | N.D. | 0.16 | 58.34 |
| 10950 | 2-Chloroethyl Vinyl Ether | 110-75-8 | N.D. | 0.16 | 58.34 |
| 10950 | Chloroform | 67-66-3 | N.D. | 0.079 | 58.34 |
| 10950 | Chloromethane | 74-87-3 | N.D. | 0.16 | 58.34 |
| 10950 | 2-Chlorotoluene | 95-49-8 | N.D. | 0.079 | 58.34 |
| 10950 | 4-Chlorotoluene | 106-43-4 | N.D. | 0.079 | 58.34 |
| 10950 | 1,2-Dibromo-3-chloropropane | 96-12-8 | N.D. | 0.16 | 58.34 |
| 10950 | Dibromochloromethane | 124-48-1 | N.D. | 0.079 | 58.34 |
| 10950 | 1,2-Dibromoethane | 106-93-4 | N.D. | 0.079 | 58.34 |
| 10950 | Dibromomethane | 74-95-3 | N.D. | 0.079 | 58.34 |
| 10950 | 1,2-Dichlorobenzene | 95-50-1 | N.D. | 0.079 | 58.34 |
| 10950 | 1,3-Dichlorobenzene | 541-73-1 | N.D. | 0.079 | 58.34 |
| 10950 | 1,4-Dichlorobenzene | 106-46-7 | N.D. | 0.079 | 58.34 |
| 10950 | Dichlorodifluoromethane | 75-71-8 | N.D. | 0.16 | 58.34 |
| 10950 | 1,1-Dichloroethane | 75-34-3 | N.D. | 0.079 | 58.34 |
| 10950 | 1,2-Dichloroethane | 107-06-2 | N.D. | 0.079 | 58.34 |
| 10950 | 1,1-Dichloroethene | 75-35-4 | N.D. | 0.079 | 58.34 |
| 10950 | cis-1,2-Dichloroethene | 156-59-2 | N.D. | 0.079 | 58.34 |
| 10950 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | 0.079 | 58.34 |
| 10950 | 1,2-Dichloropropane | 78-87-5 | N.D. | 0.079 | 58.34 |
| 10950 | 1,3-Dichloropropane | 142-28-9 | N.D. | 0.079 | 58.34 |
| 10950 | 2,2-Dichloropropane | 594-20-7 | N.D. | 0.079 | 58.34 |
| 10950 | 1,1-Dichloropropene | 563-58-6 | N.D. | 0.079 | 58.34 |
| 10950 | cis-1,3-Dichloropropene | 10061-01-5 | N.D. | 0.079 | 58.34 |
| 10950 | trans-1,3-Dichloropropene | 10061-02-6 | N.D. | 0.079 | 58.34 |
| 10950 | Ethanol | 64-17-5 | N.D. | 7.9 | 58.34 |
| 10950 | Ethyl t-butyl ether | 637-92-3 | N.D. | 0.079 | 58.34 |
| 10950 | Ethylbenzene | 100-41-4 | N.D. | 0.079 | 58.34 |
| 10950 | Freon 113 | 76-13-1 | N.D. | 0.16 | 58.34 |
| 10950 | Hexachlorobutadiene | 87-68-3 | N.D. | 0.16 | 58.34 |
| 10950 | 2-Hexanone | 591-78-6 | N.D. | 0.24 | 58.34 |
| 10950 | di-Isopropyl ether | 108-20-3 | N.D. | 0.079 | 58.34 |
| 10950 | Isopropylbenzene | 98-82-8 | N.D. | 0.079 | 58.34 |
| 10950 | p-Isopropyltoluene | 99-87-6 | N.D. | 0.079 | 58.34 |

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# Analysis Report



**Sample Description: BD-1 Grab Soil Sample**
**Facility# 301726**
**Block 10, Lot 5A - Fairbanks, AK**

**LLI Sample # SW 6370707**
**LLI Group # 1260739**
**Account # 11964**

**Project Name: 301726**

Collected: 08/06/2011 by MM

Submitted: 08/09/2011 09:10
Reported: 09/15/2011 15:26

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

5AFFD SDG#: LST28-08FD

| CAT No. | Analysis Name | CAS Number | Dry Result | Dry Method Detection Limit | Dilution Factor |
|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260B** | | **mg/kg** | **mg/kg** | |
| 10950 | Methyl Tertiary Butyl Ether | 1634-04-4 | N.D. | 0.039 | 58.34 |
| 10950 | 4-Methyl-2-pentanone | 108-10-1 | N.D. | 0.24 | 58.34 |
| 10950 | Methylene Chloride | 75-09-2 | N.D. | 0.16 | 58.34 |
| 10950 | Naphthalene | 91-20-3 | N.D. | 0.079 | 58.34 |
| 10950 | n-Propylbenzene | 103-65-1 | N.D. | 0.079 | 58.34 |
| 10950 | Styrene | 100-42-5 | N.D. | 0.079 | 58.34 |
| 10950 | 1,1,1,2-Tetrachloroethane | 630-20-6 | N.D. | 0.079 | 58.34 |
| 10950 | 1,1,2,2-Tetrachloroethane | 79-34-5 | N.D. | 0.079 | 58.34 |
| 10950 | Tetrachloroethene | 127-18-4 | N.D. | 0.079 | 58.34 |
| 10950 | Toluene | 108-88-3 | N.D. | 0.079 | 58.34 |
| 10950 | 1,2,3-Trichlorobenzene | 87-61-6 | N.D. | 0.079 | 58.34 |
| 10950 | 1,2,4-Trichlorobenzene | 120-82-1 | N.D. | 0.079 | 58.34 |
| 10950 | 1,1,1-Trichloroethane | 71-55-6 | N.D. | 0.079 | 58.34 |
| 10950 | 1,1,2-Trichloroethane | 79-00-5 | N.D. | 0.079 | 58.34 |
| 10950 | Trichloroethene | 79-01-6 | N.D. | 0.079 | 58.34 |
| 10950 | Trichlorofluoromethane | 75-69-4 | N.D. | 0.16 | 58.34 |
| 10950 | 1,2,3-Trichloropropane | 96-18-4 | N.D. | 0.079 | 58.34 |
| 10950 | 1,2,4-Trimethylbenzene | 95-63-6 | N.D. | 0.079 | 58.34 |
| 10950 | 1,3,5-Trimethylbenzene | 108-67-8 | N.D. | 0.079 | 58.34 |
| 10950 | Vinyl Chloride | 75-01-4 | N.D. | 0.079 | 58.34 |
| 10950 | m+p-Xylene | n.a. | N.D. | 0.079 | 58.34 |
| 10950 | o-Xylene | 95-47-6 | N.D. | 0.079 | 58.34 |
| **GC Volatiles** | **AK 101** | | **mg/kg** | **mg/kg** | |
| 01451 | TPH-GRO AK soil C6-C10 | n.a. | N.D. | 0.7 | 26.15 |
| **GC Volatiles** | **SW-846 8021B** | | **mg/kg** | **mg/kg** | |
| 08179 | Benzene | 71-43-2 | N.D. | 0.0071 | 26.15 |
| 08179 | Ethylbenzene | 100-41-4 | N.D. | 0.0071 | 26.15 |
| 08179 | Toluene | 108-88-3 | 0.026 | 0.0071 | 26.15 |
| 08179 | Total Xylenes | 1330-20-7 | N.D. | 0.021 | 26.15 |
| **GC Petroleum Hydrocarbons** | **AK 102/AK 103 04/08/02** | | **mg/kg** | **mg/kg** | |
| 01738 | C10-<C25 DRO | n.a. | N.D. | 6.8 | 1 |
| 01738 | C25-C36 RRO | n.a. | 9.8 | 6.8 | 1 |
| **Wet Chemistry** | **SM20 2540 G** | | **%** | **%** | |
| 00111 | Moisture | n.a. | 26.1 | 0.50 | 1 |

"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.

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# Analysis Report



**Sample Description: BD-1 Grab Soil Sample**
**Facility# 301726**
**Block 10, Lot 5A - Fairbanks, AK**

**LLI Sample # SW 6370707**
**LLI Group # 1260739**
**Account # 11964**

**Project Name: 301726**

Collected: 08/06/2011 by MM

Submitted: 08/09/2011 09:10
Reported: 09/15/2011 15:26

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

5AFFD SDG#: LST28-08FD

## General Sample Comments

State of Alaska Lab Certification No. UST-061

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 10950 | 8260 Full List + Sep Xylenes | SW-846 8260B | 1 | Q112281AA | 08/16/2011 18:43 | Nicholas R Rossi | 58.34 |
| 06173 | GC/MS - Field Preserved (Ak) | SW-846 5035 | 1 | 201122225164 | 08/06/2011 00:00 | Client Supplied | 1 |
| 01451 | TPH-GRO AK soil C6-C10 | AK 101 | 1 | 11228A31A | 08/16/2011 21:58 | Marie D John | 26.15 |
| 08179 | BTEX by 8021 | SW-846 8021B | 1 | 11228A31A | 08/16/2011 21:58 | Marie D John | 26.15 |
| 06119 | GC - Field Preserved (AK-101) | AK 101 | 1 | 201122225164 | 08/06/2011 00:00 | Client Supplied | 1 |
| 01738 | TPH-DRO/RRO (AK) | AK 102/AK 103 04/08/02 | 1 | 112220017A | 08/15/2011 15:18 | Heather E Williams | 1 |
| 11223 | AK DRO/ORO Soils Extraction | AK 102/AK 103 04/08/02 | 1 | 112220017A | 08/10/2011 18:00 | JoElla L Rice | 1 |
| 00111 | Moisture | SM20 2540 G | 1 | 11223820005B | 08/11/2011 17:15 | Scott W Freisher | 1 |

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# Analysis Report



**Sample Description:** Trip_Blank Methanol Sample
Facility# 301726
Block 10, Lot 5A - Fairbanks, AK

**LLI Sample # G5 6370708**
**LLI Group # 1260739**
**Account # 11964**

**Project Name: 301726**

Collected: 08/06/2011

Submitted: 08/09/2011 09:10
Reported: 09/15/2011 15:26

Chevron
6001 Bollinger Canyon Rd L4310
San Ramon CA 94583

5AFST SDG#: LST28-09TB*

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit | Dilution Factor |
|---|---|---|---|---|---|
| **GC Volatiles** | **AK 101** | | **mg/kg** | **mg/kg** | |
| 01451 | TPH-GRO AK soil C6-C10 | n.a. | N.D. | 0.5 | 25 |
| **GC Volatiles** | **SW-846 8021B** | | **mg/kg** | **mg/kg** | |
| 08179 | Benzene | 71-43-2 | N.D. | 0.0050 | 25 |
| 08179 | Ethylbenzene | 100-41-4 | N.D. | 0.0050 | 25 |
| 08179 | Toluene | 108-88-3 | 0.019 | 0.0050 | 25 |
| 08179 | Total Xylenes | 1330-20-7 | N.D. | 0.015 | 25 |

## General Sample Comments

State of Alaska Lab Certification No. UST-061

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 01451 | TPH-GRO AK soil C6-C10 | AK 101 | 1 | 11228A31A | 08/16/2011 20:44 | Marie D John | 25 |
| 08179 | BTEX by 8021 | SW-846 8021B | 1 | 11228A31A | 08/16/2011 20:44 | Marie D John | 25 |
| 06119 | GC - Field Preserved (AK-101) | AK 101 | 1 | 201122225164 | 08/06/2011 00:00 | Client Supplied | 1 |

## Quality Control Summary

Client Name: Chevron Group Number: 1260739
Reported: 09/15/11 at 03:26 PM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

## Laboratory Compliance Quality Control

| Analysis Name | Blank Result | Blank MDL | Report Units | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Max |
|---|---|---|---|---|---|---|---|---|
| Batch number: Q112281AA | Sample number(s): 6370703-6370707 | | | | | | | |
| Acetone | N.D. | 0.35 | mg/kg | 95 | 105 | 32-209 | 11 | 30 |
| t-Amyl methyl ether | N.D. | 0.050 | mg/kg | 92 | 94 | 69-124 | 2 | 30 |
| Benzene | N.D. | 0.025 | mg/kg | 94 | 97 | 80-120 | 3 | 30 |
| Bromobenzene | N.D. | 0.050 | mg/kg | 104 | 108 | 79-120 | 3 | 30 |
| Bromochloromethane | N.D. | 0.050 | mg/kg | 93 | 96 | 79-124 | 4 | 30 |
| Bromodichloromethane | N.D. | 0.050 | mg/kg | 86 | 90 | 78-120 | 4 | 30 |
| Bromoform | N.D. | 0.050 | mg/kg | 84 | 84 | 70-120 | 1 | 30 |
| Bromomethane | N.D. | 0.10 | mg/kg | 145 | 111 | 32-162 | 27 | 30 |
| 2-Butanone | N.D. | 0.20 | mg/kg | 78 | 80 | 46-153 | 3 | 30 |
| t-Butyl alcohol | N.D. | 1.0 | mg/kg | 104 | 108 | 71-122 | 3 | 30 |
| n-Butylbenzene | N.D. | 0.050 | mg/kg | 91 | 95 | 72-120 | 5 | 30 |
| sec-Butylbenzene | N.D. | 0.050 | mg/kg | 95 | 99 | 75-120 | 4 | 30 |
| tert-Butylbenzene | N.D. | 0.050 | mg/kg | 97 | 101 | 75-120 | 4 | 30 |
| Carbon Disulfide | N.D. | 0.050 | mg/kg | 74 | 74 | 67-122 | 1 | 30 |
| Carbon Tetrachloride | N.D. | 0.050 | mg/kg | 81 | 81 | 69-122 | 0 | 30 |
| Chlorobenzene | N.D. | 0.050 | mg/kg | 101 | 105 | 80-120 | 3 | 30 |
| Chloroethane | N.D. | 0.10 | mg/kg | 140 | 132 | 37-154 | 6 | 30 |
| 2-Chloroethyl Vinyl Ether | N.D. | 0.10 | mg/kg | 88 | 92 | 43-146 | 4 | 30 |
| Chloroform | N.D. | 0.050 | mg/kg | 92 | 95 | 80-120 | 4 | 30 |
| Chloromethane | N.D. | 0.10 | mg/kg | 74 | 73 | 54-132 | 1 | 30 |
| 2-Chlorotoluene | N.D. | 0.050 | mg/kg | 101 | 105 | 78-120 | 3 | 30 |
| 4-Chlorotoluene | N.D. | 0.050 | mg/kg | 102 | 107 | 79-120 | 4 | 30 |
| 1,2-Dibromo-3-chloropropane | N.D. | 0.10 | mg/kg | 93 | 95 | 58-120 | 2 | 30 |
| Dibromochloromethane | N.D. | 0.050 | mg/kg | 95 | 96 | 77-120 | 2 | 30 |
| 1,2-Dibromoethane | N.D. | 0.050 | mg/kg | 104 | 105 | 80-120 | 1 | 30 |
| Dibromomethane | N.D. | 0.050 | mg/kg | 90 | 94 | 80-120 | 4 | 30 |
| 1,2-Dichlorobenzene | N.D. | 0.050 | mg/kg | 100 | 105 | 79-120 | 4 | 30 |
| 1,3-Dichlorobenzene | N.D. | 0.050 | mg/kg | 100 | 104 | 78-120 | 4 | 30 |
| 1,4-Dichlorobenzene | N.D. | 0.050 | mg/kg | 100 | 104 | 79-120 | 4 | 30 |
| Dichlorodifluoromethane | N.D. | 0.10 | mg/kg | 44 | 41 | 20-120 | 9 | 30 |
| 1,1-Dichloroethane | N.D. | 0.050 | mg/kg | 91 | 94 | 80-120 | 4 | 30 |
| 1,2-Dichloroethane | N.D. | 0.050 | mg/kg | 96 | 97 | 71-129 | 2 | 30 |
| 1,1-Dichloroethene | N.D. | 0.050 | mg/kg | 85 | 85 | 73-123 | 0 | 30 |
| cis-1,2-Dichloroethene | N.D. | 0.050 | mg/kg | 93 | 96 | 80-120 | 3 | 30 |
| trans-1,2-Dichloroethene | N.D. | 0.050 | mg/kg | 89 | 90 | 79-120 | 1 | 30 |
| 1,2-Dichloropropane | N.D. | 0.050 | mg/kg | 92 | 95 | 80-120 | 3 | 30 |
| 1,3-Dichloropropane | N.D. | 0.050 | mg/kg | 106 | 107 | 80-120 | 1 | 30 |
| 2,2-Dichloropropane | N.D. | 0.050 | mg/kg | 84 | 84 | 72-123 | 0 | 30 |
| 1,1-Dichloropropene | N.D. | 0.050 | mg/kg | 87 | 87 | 77-120 | 0 | 30 |
| cis-1,3-Dichloropropene | N.D. | 0.050 | mg/kg | 89 | 92 | 80-120 | 4 | 30 |
| trans-1,3-Dichloropropene | N.D. | 0.050 | mg/kg | 95 | 97 | 77-120 | 2 | 30 |
| Ethanol | N.D. | 5.0 | mg/kg | 90 | 101 | 47-157 | 11 | 30 |
| Ethyl t-butyl ether | N.D. | 0.050 | mg/kg | 92 | 97 | 70-122 | 6 | 30 |
| Ethylbenzene | N.D. | 0.050 | mg/kg | 100 | 103 | 80-120 | 3 | 30 |
| Freon 113 | N.D. | 0.10 | mg/kg | 71 | 68 | 61-126 | 4 | 30 |

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

# Quality Control Summary

Client Name: Chevron Group Number: 1260739
Reported: 09/15/11 at 03:26 PM

| Analysis Name | Blank Result | Blank MDL | Report Units | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Max |
|---|---|---|---|---|---|---|---|---|
| Hexachlorobutadiene | N.D. | 0.10 | mg/kg | 63 | 70 | 57-120 | 10 | 30 |
| 2-Hexanone | N.D. | 0.15 | mg/kg | 99 | 100 | 45-155 | 1 | 30 |
| di-Isopropyl ether | N.D. | 0.050 | mg/kg | 94 | 96 | 73-121 | 2 | 30 |
| Isopropylbenzene | N.D. | 0.050 | mg/kg | 99 | 101 | 76-120 | 2 | 30 |
| p-Isopropyltoluene | N.D. | 0.050 | mg/kg | 93 | 97 | 75-120 | 4 | 30 |
| Methyl Tertiary Butyl Ether | N.D. | 0.025 | mg/kg | 95 | 98 | 74-121 | 3 | 30 |
| 4-Methyl-2-pentanone | N.D. | 0.15 | mg/kg | 93 | 96 | 61-134 | 3 | 30 |
| Methylene Chloride | N.D. | 0.10 | mg/kg | 96 | 98 | 76-124 | 2 | 30 |
| Naphthalene | N.D. | 0.050 | mg/kg | 94 | 97 | 59-123 | 3 | 30 |
| n-Propylbenzene | N.D. | 0.050 | mg/kg | 100 | 103 | 77-120 | 3 | 30 |
| Styrene | N.D. | 0.050 | mg/kg | 100 | 103 | 76-120 | 3 | 30 |
| 1,1,1,2-Tetrachloroethane | N.D. | 0.050 | mg/kg | 97 | 100 | 80-120 | 3 | 30 |
| 1,1,2,2-Tetrachloroethane | N.D. | 0.050 | mg/kg | 100 | 104 | 71-123 | 4 | 30 |
| Tetrachloroethene | N.D. | 0.050 | mg/kg | 96 | 97 | 77-120 | 1 | 30 |
| Toluene | N.D. | 0.050 | mg/kg | 101 | 104 | 80-120 | 3 | 30 |
| 1,2,3-Trichlorobenzene | N.D. | 0.050 | mg/kg | 86 | 93 | 64-120 | 7 | 30 |
| 1,2,4-Trichlorobenzene | N.D. | 0.050 | mg/kg | 84 | 89 | 68-120 | 6 | 30 |
| 1,1,1-Trichloroethane | N.D. | 0.050 | mg/kg | 84 | 86 | 71-125 | 2 | 30 |
| 1,1,2-Trichloroethane | N.D. | 0.050 | mg/kg | 101 | 103 | 80-120 | 2 | 30 |
| Trichloroethene | N.D. | 0.050 | mg/kg | 88 | 91 | 80-120 | 3 | 30 |
| Trichlorofluoromethane | N.D. | 0.10 | mg/kg | 71 | 69 | 58-133 | 3 | 30 |
| 1,2,3-Trichloropropane | N.D. | 0.050 | mg/kg | 105 | 108 | 71-123 | 3 | 30 |
| 1,2,4-Trimethylbenzene | N.D. | 0.050 | mg/kg | 98 | 103 | 79-120 | 4 | 30 |
| 1,3,5-Trimethylbenzene | N.D. | 0.050 | mg/kg | 100 | 104 | 78-120 | 5 | 30 |
| Vinyl Chloride | N.D. | 0.050 | mg/kg | 69 | 67 | 53-120 | 3 | 30 |
| m+p-Xylene | N.D. | 0.050 | mg/kg | 101 | 104 | 80-120 | 3 | 30 |
| o-Xylene | N.D. | 0.050 | mg/kg | 101 | 104 | 80-120 | 3 | 30 |
| Batch number: W112281AA | Sample number(s): 6370700 | | | | | | | |
| Acetone | N.D. | 0.006 | mg/l | 118 | 123 | 49-234 | 4 | 30 |
| t-Amyl methyl ether | N.D. | 0.0005 | mg/l | 100 | 102 | 77-120 | 2 | 30 |
| Benzene | N.D. | 0.0005 | mg/l | 115 | 116 | 79-120 | 2 | 30 |
| Bromobenzene | N.D. | 0.001 | mg/l | 105 | 107 | 80-120 | 2 | 30 |
| Bromochloromethane | N.D. | 0.001 | mg/l | 103 | 103 | 80-120 | 0 | 30 |
| Bromodichloromethane | N.D. | 0.001 | mg/l | 104 | 106 | 80-120 | 2 | 30 |
| Bromoform | N.D. | 0.001 | mg/l | 88 | 90 | 61-120 | 2 | 30 |
| Bromomethane | N.D. | 0.001 | mg/l | 90 | 92 | 44-120 | 2 | 30 |
| 2-Butanone | N.D. | 0.003 | mg/l | 123 | 124 | 66-151 | 1 | 30 |
| t-Butyl alcohol | N.D. | 0.005 | mg/l | 101 | 103 | 62-129 | 2 | 30 |
| n-Butylbenzene | N.D. | 0.001 | mg/l | 111 | 114 | 74-120 | 3 | 30 |
| sec-Butylbenzene | N.D. | 0.001 | mg/l | 111 | 116 | 78-120 | 5 | 30 |
| tert-Butylbenzene | N.D. | 0.001 | mg/l | 106 | 111 | 80-120 | 5 | 30 |
| Carbon Disulfide | N.D. | 0.001 | mg/l | 98 | 103 | 62-120 | 5 | 30 |
| Carbon Tetrachloride | N.D. | 0.001 | mg/l | 101 | 101 | 75-123 | 0 | 30 |
| Chlorobenzene | N.D. | 0.0008 | mg/l | 109 | 110 | 80-120 | 1 | 30 |
| Chloroethane | N.D. | 0.001 | mg/l | 90 | 94 | 49-129 | 4 | 30 |
| 2-Chloroethyl Vinyl Ether | N.D. | 0.002 | mg/l | 133* | 129 | 56-129 | 3 | 30 |
| Chloroform | N.D. | 0.0008 | mg/l | 107 | 110 | 77-122 | 3 | 30 |
| Chloromethane | N.D. | 0.001 | mg/l | 132* | 133* | 60-129 | 0 | 30 |
| 2-Chlorotoluene | N.D. | 0.001 | mg/l | 108 | 112 | 80-120 | 4 | 30 |
| 4-Chlorotoluene | N.D. | 0.001 | mg/l | 115 | 113 | 80-120 | 2 | 30 |
| 1,2-Dibromo-3-chloropropane | N.D. | 0.002 | mg/l | 96 | 98 | 56-126 | 3 | 30 |
| Dibromochloromethane | N.D. | 0.001 | mg/l | 98 | 99 | 80-120 | 1 | 30 |
| 1,2-Dibromoethane | N.D. | 0.0005 | mg/l | 107 | 109 | 80-120 | 2 | 30 |
| Dibromomethane | N.D. | 0.001 | mg/l | 108 | 109 | 80-120 | 1 | 30 |
| 1,2-Dichlorobenzene | N.D. | 0.001 | mg/l | 106 | 111 | 80-120 | 4 | 30 |
| 1,3-Dichlorobenzene | N.D. | 0.001 | mg/l | 104 | 109 | 80-120 | 4 | 30 |
| 1,4-Dichlorobenzene | N.D. | 0.001 | mg/l | 105 | 108 | 80-120 | 3 | 30 |

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

# Quality Control Summary

Client Name: Chevron Group Number: 1260739
Reported: 09/15/11 at 03:26 PM

| Analysis Name | Blank Result | Blank MDL | Report Units | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Max |
|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | N.D. | 0.002 | mg/l | 96 | 98 | 47-120 | 3 | 30 |
| 1,1-Dichloroethane | N.D. | 0.001 | mg/l | 112 | 114 | 79-120 | 2 | 30 |
| 1,2-Dichloroethane | N.D. | 0.0005 | mg/l | 114 | 112 | 70-130 | 2 | 30 |
| 1,1-Dichloroethene | N.D. | 0.0008 | mg/l | 107 | 108 | 74-123 | 1 | 30 |
| cis-1,2-Dichloroethene | N.D. | 0.0008 | mg/l | 107 | 109 | 80-120 | 2 | 30 |
| trans-1,2-Dichloroethene | N.D. | 0.0008 | mg/l | 108 | 108 | 80-120 | 0 | 30 |
| 1,2-Dichloropropane | N.D. | 0.001 | mg/l | 113 | 114 | 78-120 | 1 | 30 |
| 1,3-Dichloropropane | N.D. | 0.001 | mg/l | 112 | 115 | 80-120 | 3 | 30 |
| 2,2-Dichloropropane | N.D. | 0.001 | mg/l | 100 | 104 | 77-124 | 4 | 30 |
| 1,1-Dichloropropene | N.D. | 0.001 | mg/l | 111 | 112 | 80-120 | 1 | 30 |
| cis-1,3-Dichloropropene | N.D. | 0.001 | mg/l | 104 | 107 | 80-120 | 2 | 30 |
| trans-1,3-Dichloropropene | N.D. | 0.001 | mg/l | 101 | 102 | 79-120 | 2 | 30 |
| Ethanol | N.D. | 0.050 | mg/l | 88 | 91 | 54-149 | 4 | 30 |
| Ethyl t-butyl ether | N.D. | 0.0005 | mg/l | 103 | 107 | 76-120 | 4 | 30 |
| Ethylbenzene | N.D. | 0.0005 | mg/l | 111 | 114 | 79-120 | 2 | 30 |
| Freon 113 | N.D. | 0.002 | mg/l | 101 | 103 | 69-128 | 2 | 30 |
| Hexachlorobutadiene | N.D. | 0.002 | mg/l | 83 | 90 | 58-120 | 8 | 30 |
| 2-Hexanone | N.D. | 0.003 | mg/l | 117 | 122 | 65-136 | 4 | 30 |
| di-Isopropyl ether | N.D. | 0.0005 | mg/l | 110 | 113 | 71-124 | 3 | 30 |
| Isopropylbenzene | N.D. | 0.001 | mg/l | 114 | 115 | 77-120 | 1 | 30 |
| p-Isopropyltoluene | N.D. | 0.001 | mg/l | 108 | 113 | 80-120 | 4 | 30 |
| Methyl Tertiary Butyl Ether | N.D. | 0.0005 | mg/l | 103 | 106 | 76-120 | 3 | 30 |
| 4-Methyl-2-pentanone | N.D. | 0.003 | mg/l | 118 | 122* | 70-121 | 3 | 30 |
| Methylene Chloride | N.D. | 0.002 | mg/l | 109 | 110 | 80-120 | 1 | 30 |
| Naphthalene | N.D. | 0.001 | mg/l | 88 | 91 | 62-120 | 4 | 30 |
| n-Propylbenzene | N.D. | 0.001 | mg/l | 114 | 117 | 80-120 | 3 | 30 |
| Styrene | N.D. | 0.001 | mg/l | 110 | 113 | 80-120 | 3 | 30 |
| 1,1,1,2-Tetrachloroethane | N.D. | 0.001 | mg/l | 103 | 105 | 80-120 | 2 | 30 |
| 1,1,2,2-Tetrachloroethane | N.D. | 0.001 | mg/l | 108 | 110 | 71-120 | 2 | 30 |
| Tetrachloroethene | N.D. | 0.0008 | mg/l | 105 | 107 | 80-121 | 2 | 30 |
| Toluene | N.D. | 0.0005 | mg/l | 112 | 113 | 79-120 | 1 | 30 |
| 1,2,3-Trichlorobenzene | N.D. | 0.001 | mg/l | 92 | 95 | 65-120 | 3 | 30 |
| 1,2,4-Trichlorobenzene | N.D. | 0.001 | mg/l | 93 | 95 | 67-120 | 2 | 30 |
| 1,1,1-Trichloroethane | N.D. | 0.0008 | mg/l | 105 | 107 | 75-127 | 2 | 30 |
| 1,1,2-Trichloroethane | N.D. | 0.0008 | mg/l | 107 | 108 | 80-120 | 0 | 30 |
| Trichloroethene | N.D. | 0.001 | mg/l | 109 | 111 | 80-120 | 2 | 30 |
| Trichlorofluoromethane | N.D. | 0.002 | mg/l | 87 | 90 | 64-129 | 3 | 30 |
| 1,2,3-Trichloropropane | N.D. | 0.001 | mg/l | 102 | 107 | 80-120 | 5 | 30 |
| 1,2,4-Trimethylbenzene | N.D. | 0.001 | mg/l | 109 | 113 | 74-120 | 4 | 30 |
| 1,3,5-Trimethylbenzene | N.D. | 0.001 | mg/l | 113 | 116 | 75-120 | 3 | 30 |
| Vinyl Chloride | N.D. | 0.001 | mg/l | 100 | 104 | 65-125 | 4 | 30 |
| m+p-Xylene | N.D. | 0.0005 | mg/l | 111 | 116 | 80-120 | 4 | 30 |
| o-Xylene | N.D. | 0.0005 | mg/l | 110 | 113 | 80-120 | 2 | 30 |
| Batch number: 11222WAB026 | Sample number(s): 6370700 | | | | | | | |
| Acenaphthene | N.D. | 0.00001 0 | mg/l | 97 | 94 | 74-109 | 3 | 30 |
| Acenaphthylene | N.D. | 0.00001 0 | mg/l | 100 | 96 | 70-110 | 4 | 30 |
| Anthracene | N.D. | 0.00001 0 | mg/l | 97 | 96 | 66-111 | 0 | 30 |
| Benzo(a)anthracene | N.D. | 0.00001 0 | mg/l | 97 | 96 | 72-114 | 1 | 30 |
| Benzo(a)pyrene | N.D. | 0.00001 0 | mg/l | 87 | 85 | 60-127 | 2 | 30 |
| Benzo(b)fluoranthene | N.D. | 0.00001 0 | mg/l | 93 | 92 | 58-151 | 1 | 30 |
| Benzo(g,h,i)perylene | N.D. | 0.00001 | mg/l | 90 | 87 | 57-131 | 3 | 30 |

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

## Quality Control Summary

Client Name: Chevron Group Number: 1260739
Reported: 09/15/11 at 03:26 PM

| Analysis Name | Blank Result | Blank MDL | Report Units | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Max |
|---|---|---|---|---|---|---|---|---|
| Benzo(k)fluoranthene | N.D. | 0.00001 0 | mg/l | 90 | 87 | 59-130 | 4 | 30 |
| Chrysene | N.D. | 0.00001 0 | mg/l | 102 | 100 | 76-116 | 2 | 30 |
| Dibenz(a,h)anthracene | N.D. | 0.00001 0 | mg/l | 91 | 89 | 55-134 | 3 | 30 |
| Fluoranthene | N.D. | 0.00001 0 | mg/l | 94 | 92 | 75-116 | 3 | 30 |
| Fluorene | N.D. | 0.00001 0 | mg/l | 100 | 97 | 75-114 | 4 | 30 |
| Indeno(1,2,3-cd)pyrene | N.D. | 0.00001 0 | mg/l | 88 | 86 | 53-158 | 1 | 30 |
| Naphthalene | N.D. | 0.00003 0 | mg/l | 96 | 93 | 72-109 | 3 | 30 |
| Phenanthrene | N.D. | 0.00003 0 | mg/l | 99 | 98 | 76-111 | 2 | 30 |
| Pyrene | N.D. | 0.00001 0 | mg/l | 108 | 106 | 69-118 | 2 | 30 |
| Batch number: 11228SLB026 | Sample number(s): 6370703-6370706 | | | | | | | |
| Acenaphthene | N.D. | 0.003 | mg/kg | 100 | | 83-111 | | |
| Acenaphthylene | N.D. | 0.003 | mg/kg | 108 | | 68-120 | | |
| Anthracene | N.D. | 0.003 | mg/kg | 105 | | 83-111 | | |
| Benzo(a)anthracene | N.D. | 0.003 | mg/kg | 94 | | 82-111 | | |
| Benzo(a)pyrene | N.D. | 0.003 | mg/kg | 106 | | 63-138 | | |
| Benzo(b)fluoranthene | N.D. | 0.003 | mg/kg | 99 | | 61-133 | | |
| Benzo(g,h,i)perylene | N.D. | 0.003 | mg/kg | 101 | | 63-130 | | |
| Benzo(k)fluoranthene | N.D. | 0.003 | mg/kg | 107 | | 71-135 | | |
| Chrysene | N.D. | 0.003 | mg/kg | 95 | | 81-111 | | |
| Dibenz(a,h)anthracene | N.D. | 0.003 | mg/kg | 102 | | 67-129 | | |
| Fluoranthene | N.D. | 0.003 | mg/kg | 103 | | 80-113 | | |
| Fluorene | N.D. | 0.003 | mg/kg | 100 | | 81-117 | | |
| Indeno(1,2,3-cd)pyrene | N.D. | 0.003 | mg/kg | 98 | | 64-128 | | |
| Naphthalene | N.D. | 0.003 | mg/kg | 99 | | 83-112 | | |
| Phenanthrene | N.D. | 0.003 | mg/kg | 101 | | 83-109 | | |
| Pyrene | N.D. | 0.003 | mg/kg | 100 | | 80-121 | | |
| Batch number: 11223A53A | Sample number(s): 6370700,6370702 | | | | | | | |
| Benzene | N.D. | 0.0002 | mg/l | 110 | 105 | 80-120 | 5 | 30 |
| Ethylbenzene | N.D. | 0.0002 | mg/l | 105 | 100 | 80-120 | 5 | 30 |
| Toluene | N.D. | 0.0002 | mg/l | 105 | 105 | 80-120 | 0 | 30 |
| TPH-GRO AK water C6-C10 | N.D. | 0.010 | mg/l | 100 | 100 | 60-120 | 0 | 20 |
| Total Xylenes | N.D. | 0.0006 | mg/l | 108 | 105 | 80-120 | 3 | 30 |
| Batch number: 11227A31A | Sample number(s): 6370703-6370705 | | | | | | | |
| Benzene | N.D. | 0.0020 | mg/kg | 91 | 88 | 76-118 | 3 | 30 |
| Ethylbenzene | N.D. | 0.0020 | mg/kg | 89 | 87 | 77-115 | 2 | 30 |
| Toluene | N.D. | 0.0020 | mg/kg | 89 | 87 | 80-120 | 2 | 30 |
| TPH-GRO AK soil C6-C10 | N.D. | 0.5 | mg/kg | 89 | 90 | 60-120 | 2 | 20 |
| Total Xylenes | N.D. | 0.0050 | mg/kg | 91 | 89 | 78-115 | 3 | 30 |
| Batch number: 11228A31A | Sample number(s): 6370706-6370708 | | | | | | | |
| Benzene | N.D. | 0.0020 | mg/kg | 95 | 92 | 76-118 | 4 | 30 |
| Ethylbenzene | N.D. | 0.0020 | mg/kg | 99 | 94 | 77-115 | 5 | 30 |
| Toluene | N.D. | 0.0020 | mg/kg | 97 | 92 | 80-120 | 5 | 30 |
| TPH-GRO AK soil C6-C10 | N.D. | 0.5 | mg/kg | 87 | 80 | 60-120 | 9 | 20 |
| Total Xylenes | N.D. | 0.0050 | mg/kg | 101 | 96 | 78-115 | 5 | 30 |

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

## Quality Control Summary

Client Name: Chevron Group Number: 1260739
Reported: 09/15/11 at 03:26 PM

| Analysis Name | Blank Result | Blank MDL | Report Units | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Max |
|---|---|---|---|---|---|---|---|---|
| Batch number: 112240020A | Sample number(s): 6370700 | | | | | | | |
| Ethylene dibromide | N.D. | 0.00001<br>0 | mg/l | 96 | | 60-140 | | |
| Batch number: 112220017A | Sample number(s): 6370703-6370707 | | | | | | | |
| C10-<C25 DRO | N.D. | 5.0 | mg/kg | 86 | 83 | 75-125 | 3 | 50 |
| C25-C36 RRO | N.D. | 5.0 | mg/kg | 97 | 97 | 75-125 | 0 | 50 |
| Batch number: 112220029A | Sample number(s): 6370700 | | | | | | | |
| C10-<C25 DRO | N.D. | 0.050 | mg/l | 86 | 90 | 75-125 | 5 | 20 |
| C25-C36 RRO | N.D. | 0.070 | mg/l | 100 | 100 | 60-120 | 0 | 20 |
| Batch number: 112231026003A | Sample number(s): 6370703-6370706 | | | | | | | |
| Arsenic | N.D. | 0.0800 | mg/kg | 105 | | 78-122 | | |
| Cadmium | N.D. | 0.0440 | mg/kg | 105 | | 81-119 | | |
| Chromium | N.D. | 0.120 | mg/kg | 115 | | 77-123 | | |
| Lead | N.D. | 0.0102 | mg/kg | 105 | | 77-123 | | |
| Batch number: 112231026003B | Sample number(s): 6370703-6370706 | | | | | | | |
| Selenium | N.D. | 0.0580 | mg/kg | 107 | | 77-123 | | |
| Batch number: 112235708001 | Sample number(s): 6370703-6370706 | | | | | | | |
| Barium | N.D. | 0.0180 | mg/kg | 104 | | 80-120 | | |
| Silver | N.D. | 0.0830 | mg/kg | 106 | | 66-134 | | |
| Batch number: 112551848005 | Sample number(s): 6370701 | | | | | | | |
| Barium | N.D. | 0.00026 | mg/l | 100 | | 90-110 | | |
| Silver | N.D. | 0.00091 | mg/l | 98 | | 83-120 | | |
| Batch number: 112556050007A | Sample number(s): 6370701 | | | | | | | |
| Arsenic | N.D. | 0.00095 | mg/l | 103 | | 86-111 | | |
| Cadmium | N.D. | 0.00020 | mg/l | 108 | | 90-114 | | |
| Chromium | N.D. | 0.00060 | mg/l | 108 | | 90-118 | | |
| Lead | N.D. | 0.00008<br>0 | mg/l | 111 | | 90-115 | | |
| Batch number: 112556050007B | Sample number(s): 6370701 | | | | | | | |
| Selenium | N.D. | 0.00027 | mg/l | 109 | | 85-114 | | |
| Batch number: 11223820005B | Sample number(s): 6370704-6370707 | | | | | | | |
| Moisture | | | | 100 | | 99-101 | | |
| Batch number: 11224820004B | Sample number(s): 6370703 | | | | | | | |
| Moisture | | | | 100 | | 99-101 | | |

## Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

| Analysis Name | MS %REC | MSD %REC | MS/MSD Limits | RPD | RPD MAX | BKG Conc | DUP Conc | DUP RPD | Dup RPD Max |
|---|---|---|---|---|---|---|---|---|---|
| Batch number: 11228SLB026 | Sample number(s): 6370703-6370706 UNSPK: P366465 | | | | | | | | |

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

## Quality Control Summary

Client Name: Chevron Group Number: 1260739
Reported: 09/15/11 at 03:26 PM

### Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

| Analysis Name | MS %REC | MSD %REC | MS/MSD Limits | RPD | RPD MAX | BKG Conc | DUP Conc | DUP RPD | Dup RPD Max |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 103 | 101 | 41-135 | 2 | 30 | | | | |
| Acenaphthylene | 107 | 105 | 47-137 | 2 | 30 | | | | |
| Anthracene | 100 | 98 | 40-147 | 2 | 30 | | | | |
| Benzo(a)anthracene | 86 | 86 | 32-150 | 0 | 30 | | | | |
| Benzo(a)pyrene | 93 | 90 | 57-129 | 4 | 30 | | | | |
| Benzo(b)fluoranthene | 82 | 79 | 53-131 | 3 | 30 | | | | |
| Benzo(g,h,i)perylene | 104 | 97 | 60-123 | 7 | 30 | | | | |
| Benzo(k)fluoranthene | 102 | 92 | 61-131 | 9 | 30 | | | | |
| Chrysene | 82 | 82 | 76-114 | 0 | 30 | | | | |
| Dibenz(a,h)anthracene | 103 | 103 | 37-151 | 0 | 30 | | | | |
| Fluoranthene | 93 | 88 | 48-122 | 5 | 30 | | | | |
| Fluorene | 102 | 99 | 35-140 | 4 | 30 | | | | |
| Indeno(1,2,3-cd)pyrene | 97 | 91 | 61-123 | 5 | 30 | | | | |
| Naphthalene | 97 | 96 | 25-149 | 2 | 30 | | | | |
| Phenanthrene | 99 | 97 | 34-147 | 3 | 30 | | | | |
| Pyrene | 95 | 93 | 76-124 | 2 | 30 | | | | |
| Batch number: 112240020A | Sample number(s): 6370700 UNSPK: P367348 BKG: P367349 | | | | | | | | |
| Ethylene dibromide | 78 | | 65-135 | | | 0.00026 | 0.00025 | 4 | 30 |
| Batch number: 112220017A | Sample number(s): 6370703-6370707 UNSPK: P370535 | | | | | | | | |
| C10-<C25 DRO | 1500 (2) | -186 (2) | 60-140 | 21 | 50 | | | | |
| C25-C36 RRO | 0* | 0* | 60-140 | 0 | 50 | | | | |
| Batch number: 112231026003A | Sample number(s): 6370703-6370706 UNSPK: P372682 BKG: P372682 | | | | | | | | |
| Arsenic | 247* | 184* | 75-125 | 13 | 20 | 5.67 | 6.02 | 6 | 20 |
| Cadmium | 167* | 151* | 75-125 | 8 | 20 | 0.260 | 0.286 | 9 (1) | 20 |
| Chromium | 267* | 200* | 75-125 | 14 | 20 | 23.3 | 24.7 | 6 | 20 |
| Lead | 381 (2) | 221 (2) | 75-125 | 19 | 20 | 15.3 | 16.8 | 10 | 20 |
| Batch number: 112231026003B | Sample number(s): 6370703-6370706 UNSPK: P372682 BKG: P372682 | | | | | | | | |
| Selenium | 135* | 118 | 75-125 | 12 | 20 | 0.281 | 0.261 | 8 (1) | 20 |
| Batch number: 112235708001 | Sample number(s): 6370703-6370706 UNSPK: P372270 BKG: P372270 | | | | | | | | |
| Barium | -72 (2) | -114 (2) | 75-125 | 13 | 20 | 849 | 1,010 | 17 | 20 |
| Silver | 110 | 110 | 75-125 | 1 | 20 | 0.275 | 0.153 | 57* (1) | 20 |
| Batch number: 112551848005 | Sample number(s): 6370701 UNSPK: P401673 BKG: P401673 | | | | | | | | |
| Barium | 104 | 101 | 78-118 | 3 | 20 | 0.210 | 0.210 | 0 | 20 |
| Silver | 96 | 95 | 75-125 | 2 | 20 | N.D. | N.D. | 0 (1) | 20 |
| Batch number: 112556050007A | Sample number(s): 6370701 UNSPK: P401788 BKG: P401788 | | | | | | | | |
| Arsenic | 103 | 101 | 75-125 | 2 | 20 | N.D. | N.D. | 0 (1) | 20 |
| Cadmium | 103 | 107 | 79-118 | 4 | 20 | N.D. | N.D. | 0 (1) | 20 |
| Chromium | 107 | 102 | 83-116 | 5 | 20 | N.D. | N.D. | 0 (1) | 20 |
| Lead | 109 | 108 | 83-120 | 1 | 20 | 0.00016 | 0.00016 | 4 (1) | 20 |
| Batch number: 112556050007B | Sample number(s): 6370701 UNSPK: P401788 BKG: P401788 | | | | | | | | |
| Selenium | 110 | 110 | 75-125 | 1 | 20 | N.D. | N.D. | 0 (1) | 20 |
| Batch number: 11223820005B | Sample number(s): 6370704-6370707 BKG: P370703 | | | | | | | | |

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

# Quality Control Summary

Client Name: Chevron Group Number: 1260739
Reported: 09/15/11 at 03:26 PM

## Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

| Analysis Name | MS %REC | MSD %REC | MS/MSD Limits | RPD | RPD MAX | BKG Conc | DUP Conc | DUP RPD | Dup RPD Max |
|---|---|---|---|---|---|---|---|---|---|
| Moisture | | | | | | 8.1 | 6.7 | 19* | 15 |
| Batch number: 11224820004B | Sample number(s): 6370703 | | | BKG: 6370703 | | | | | |
| Moisture | | | | | | 7.2 | 7.5 | 4 | 15 |

## Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: VOCs by 8260B - Solid
Batch number: Q112281AA

| | Dibromofluoromethane | 1,2-Dichloroethane-d4 | Toluene-d8 | 4-Bromofluorobenzene |
|---|---|---|---|---|
| 6370703 | 99 | 105 | 113 | 108 |
| 6370704 | 97 | 104 | 112 | 107 |
| 6370705 | 100 | 106 | 113 | 108 |
| 6370706 | 99 | 106 | 113 | 108 |
| 6370707 | 101 | 106 | 114 | 110 |
| Blank | 85 | 90 | 98 | 101 |
| LCS | 85 | 91 | 96 | 98 |
| LCSD | 84 | 89 | 94 | 94 |
| Limits: | 71-114 | 70-109 | 70-123 | 70-111 |

Analysis Name: VOCs by 8260B(Extended) -Water
Batch number: W112281AA

| | Dibromofluoromethane | 1,2-Dichloroethane-d4 | Toluene-d8 | 4-Bromofluorobenzene |
|---|---|---|---|---|
| 6370700 | 97 | 103 | 101 | 97 |
| Blank | 98 | 101 | 101 | 95 |
| LCS | 98 | 104 | 102 | 101 |
| LCSD | 98 | 104 | 103 | 102 |
| Limits: | 80-116 | 77-113 | 80-113 | 78-113 |

Analysis Name: PAHs in waters by SIM
Batch number: 11222WAB026

| | Nitrobenzene-d5 | 2-Fluorobiphenyl | Terphenyl-d14 |
|---|---|---|---|
| 6370700 | 113 | 102 | 108 |
| Blank | 117 | 116 | 125 |
| LCS | 116 | 112 | 117 |
| LCSD | 114 | 110 | 118 |
| Limits: | 64-147 | 68-132 | 53-129 |

Analysis Name: SVOA 8270D (microwave)
Batch number: 11228SLB026

| | Phenol-d6 | 2-Fluorophenol | 2,4,6-Tribromophenol | Nitrobenzene-d5 | 2-Fluorobiphenyl | Terphenyl-d14 |
|---|---|---|---|---|---|---|

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

# Quality Control Summary

Client Name: Chevron Group Number: 1260739
Reported: 09/15/11 at 03:26 PM

## Surrogate Quality Control

| | | | | | | |
|---|---|---|---|---|---|---|
| 6370703 | 111 | 77 | 50 | 67 | 72 | 84 |
| 6370704 | 102 | 98 | 69 | 82 | 102 | 84 |
| 6370705 | 110 | 146* | 79 | 90 | 96 | 87 |
| 6370706 | 103 | 100 | 71 | 83 | 89 | 83 |
| Blank | 98 | 94 | 84 | 86 | 86 | 79 |
| LCS | 115 | 107 | 88 | 96 | 95 | 88 |
| MS | 105 | 100 | 86 | 92 | 94 | 88 |
| MSD | 105 | 102 | 84 | 93 | 95 | 87 |
| Limits: | 42-130 | 39-136 | 28-139 | 45-123 | 56-121 | 43-124 |

Analysis Name: TPH-GRO AK water C6-C10
Batch number: 11223A53A

| | Trifluorotoluene-F | Trifluorotoluene-P |
|---|---|---|
| 6370700 | 69 | 70 |
| 6370702 | 70 | 71 |
| Blank | 70 | 70 |
| LCS | 87 | 71 |
| LCSD | 89 | 72 |
| Limits: | 60-120 | 58-146 |

Analysis Name: TPH-GRO AK soil C6-C10
Batch number: 11227A31A

| | Trifluorotoluene-F | Trifluorotoluene-P |
|---|---|---|
| 6370703 | 93 | 88 |
| 6370704 | 67 | 63* |
| 6370705 | 85 | 80 |
| Blank | 94 | 89 |
| LCS | 110 | 95 |
| LCSD | 115 | 93 |
| Limits: | 60-120 | 73-117 |

Analysis Name: TPH-GRO AK soil C6-C10
Batch number: 11228A31A

| | Trifluorotoluene-F | Trifluorotoluene-P |
|---|---|---|
| 6370706 | 72 | 73 |
| 6370707 | 66 | 64* |
| 6370708 | 99 | 94 |
| Blank | 105 | 95 |
| LCS | 107 | 94 |
| LCSD | 100 | 88 |
| Limits: | 60-120 | 73-117 |

Analysis Name: EDB in Wastewater
Batch number: 112240020A

| | 1,1,2,2-Tetrachloroethane |
|---|---|
| 6370700 | 113 |
| Blank | 109 |

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

# Quality Control Summary

Client Name: Chevron Group Number: 1260739
Reported: 09/15/11 at 03:26 PM

## Surrogate Quality Control

DUP 52
LCS 99
MS 51

Limits: 46-136

Analysis Name: TPH-DRO/RRO (AK)
Batch number: 112220017A

| | Orthoterphenyl | n-Triacontane-d62 |
|---|---|---|
| 6370703 | 84 | 74 |
| 6370704 | 87 | 75 |
| 6370705 | 89 | 76 |
| 6370706 | 91 | 78 |
| 6370707 | 87 | 77 |
| Blank | 84 | 71 |
| LCS | 92 | 74 |
| LCSD | 87 | 71 |
| MS | 59 | 73 |
| MSD | 42* | 76 |
| Limits: | 50-150 | 50-150 |

Analysis Name: TPH-DRO/RRO (AK) water
Batch number: 112220029A

| | Orthoterphenyl | n-Triacontane-d62 |
|---|---|---|
| 6370700 | 94 | 83 |
| Blank | 94 | 81 |
| LCS | 95 | 78 |
| LCSD | 98 | 80 |
| Limits: | 50-150 | 50-150 |

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

# Chevron Generic Analysis Request/Chain of Custody

Lancaster Laboratories
Where quality is a science.

Acct. #: 11964 For Lancaster Laboratories use only Sample #: 6370700-08 SCR#: 015183 10841C

C# 1260739

Facility #: 301726
Site Address: Lot 5A, Block 10 W. Ramp Fairbanks, AK
Chevron PM: Dan Carrier Lead Consultant: ARCADIS
Consultant/Office: 2300 East Lake Ave E. Ste 200 Seattle WA 98102
Consultant Prj. Mgr.: Gregory Montgomery
Consultant Phone #: 206-726-4782 Fax #:
Sampler: Mik MacDaniel
Service Order #: NWTRB-007726-1-L6 ☐ Non SAR:

**Matrix**: ☐ Potable ☐ NPDES; Soil, Water, Oil ☐ Air ☐

**Analyses Requested** / **Preservation Codes**

Preservation Codes: H = HCl, T = Thiosulfate, N = $HNO_3$, B = NaOH, S = $H_2SO_4$, O = Other

☐ J value reporting needed
☐ Must meet lowest detection limits possible for 8260 compounds
8021 MTBE Confirmation
☐ Confirm MTBE + Naphthalene
☐ Confirm highest hit by 8260
☐ Confirm all hits by 8260
☐ Run ____ oxy's on highest hit
☐ Run ____ oxy's on all hits

| Sample Identification | Date Collected | Time Collected | Grab | Composite | Soil | Water | Oil ☐ Air ☐ | Total Number of Containers | BTEX + MTBE 8021 ☒ 8260 ☐ Naphth ☐ (H) | 8260 full scan (H) | Oxygenates PAH 8270 SIM (H) | TPH GRO AK101 (H) | TPH D ☐ Extended Range AK102 ☐ Silica Gel Cleanup (H) | Lead Total ☐ Diss. ☐ Method ____ (H) | VPH/EPH TRH RRO AK103 (H) | NWTPH H HCID ☐ quantification (H) | EDB 8260 (T) | US EPA 6020A Dissolved ☐ (N) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TW-1 | 8-06-11 | 10:15 | X | | | X | | 14 | X | X | X | X | X | | X | | X | X |
| Trip Blank | — | — | | | | X | | 1 | X | | ~~X~~ | | | | | | | |
| TW-1 2' | 8-06-11 | 8:50 | X | | X | | | 4 | X | X | | X | X | | X | | X | X |
| TW-1 8' | 8-06-11 | 9:00 | X | | X | | | 4 | X | X | | X | X | | X | | X | X |
| TW-1 8-10' | 8-06-11 | 9:45 | X | | X | | | 4 | X | X | | X | X | | X | | X | X |
| TW-1 [redacted] 15-17' DUP | 8-06-11 | 9:55 | X | | X | | | 4 | X | X | | X | X | | X | | X | X |
| BD-1 | 8-06-11 | — | X | | X | | | 4 | X | X | | X | X | | X | | X | X |
| Trip Blank | — | — | | | | | | 1 | | | | | | | | | | |

Comments / Remarks
* PAH Soils 8270D
* 6020 Soils

**Turnaround Time Requested (TAT)** (please circle)
STD. TAT | 72 hour | 48 hour | 24 hour | 4 day | 5 day

**Data Package Options** (please circle if required)
QC Summary | Type I - Full | Type VI (Raw Data) | Disk / EDD | WIP (RWQCB) | Standard Format | Disk | Type III | Other

| Relinquished by: | Date | Time | Received by: | Date | Time |
|---|---|---|---|---|---|
| Ken T. Hunt | 8-19-11 | 1300 | | | |
| | 8-08-11 | 12:00 | | | |
| | | | | | |

Relinquished by Commercial Carrier: UPS (FedEx) Other ____
Temperature Upon Receipt 2.2 C°

Received by: Brandy Bardley 8-9-11 910
Custody Seals Intact? (Yes) No

# Explanation of Symbols and Abbreviations

*The following defines common symbols and abbreviations used in reporting technical data:*

| | | | |
|---|---|---|---|
| **RL** | Reporting Limit | **BMQL** | Below Minimum Quantitation Level |
| **N.D.** | none detected | **MPN** | Most Probable Number |
| **TNTC** | Too Numerous To Count | **CP Units** | cobalt-chloroplatinate units |
| **IU** | International Units | **NTU** | nephelometric turbidity units |
| **umhos/cm** | micromhos/cm | **ng** | nanogram(s) |
| **C** | degrees Celsius | **F** | degrees Fahrenheit |
| **meq** | milliequivalents | **lb.** | pound(s) |
| **g** | gram(s) | **kg** | kilogram(s) |
| **ug** | microgram(s) | **mg** | milligram(s) |
| **ml** | milliliter(s) | **l** | liter(s) |
| **m3** | cubic meter(s) | **ul** | microliter(s) |

**<** less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

**>** greater than

**J** estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

**ppm** parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

**ppb** parts per billion

**Dry weight basis** Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

*U.S. EPA CLP Data Qualifiers:*

**Organic Qualifiers**

| | |
|---|---|
| **A** | TIC is a possible aldol-condensation product |
| **B** | Analyte was also detected in the blank |
| **C** | Pesticide result confirmed by GC/MS |
| **D** | Compound quantitated on a diluted sample |
| **E** | Concentration exceeds the calibration range of the instrument |
| **N** | Presumptive evidence of a compound (TICs only) |
| **P** | Concentration difference between primary and confirmation columns >25% |
| **U** | Compound was not detected |
| **X,Y,Z** | Defined in case narrative |

**Inorganic Qualifiers**

| | |
|---|---|
| **B** | Value is <CRDL, but ≥IDL |
| **E** | Estimated due to interference |
| **M** | Duplicate injection precision not met |
| **N** | Spike sample not within control limits |
| **S** | Method of standard additions (MSA) used for calculation |
| **U** | Compound was not detected |
| **W** | Post digestion spike out of control limits |
| ***** | Duplicate analysis not within control limits |
| **+** | Correlation coefficient for MSA <0.995 |

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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## Appendix D

ADEC Data Review Checklists

# Laboratory Data Review Checklist

| | | | |
|---|---|---|---|
| Completed by: | Tammy Parise | | |
| Title: | Environmental Scientist | Date: | 9/26/2011 |
| CS Report Name: | | Report Date: | 9/15/2011 |
| Consultant Firm: | ARCADIS | | |
| Laboratory Name: | Lancaster Laboratories | Laboratory Report Number: | 1260739 |
| ADEC File Number: | 100.38.066 | 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:

Lancaster analyzed samples-ADEC CS approved

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:

No issues with sample conditions

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:

No discrepancies

e. Data quality or usability affected? (Please explain)

Comments:

Data not affected

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:

No actions taken

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

Comments:

Not affected

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:

Not affected

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:

Trip blank-methanol

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

Trip blank methanol-Toluene 0.019, MDL 0.0050

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

○ Yes ◉ No ○ NA (Please explain) Comments:

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

Not affected

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

i. Organics - One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

◉ Yes ○ No ○ NA (Please explain) Comments:

ii. Metals/Inorganics - One LCS and one sample duplicate reported per matrix, analysis and 20 samples?

◉ Yes ○ No ○ NA (Please explain) Comments:

iii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

◉ Yes ○ No ○ NA (Please explain) Comments:

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:

None affected

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:

Not affected

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:

* Outside of specification

iv. Data quality or usability affected? (Use the comment box to explain.). Comments:

Not affected

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:

Trip blank methanol-toluene results 0.019, MDL is 0.0050

v. Data quality or usability affected? (Please explain.)

Comments:

Not affected

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:

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:

Toluene 83% soil R1=0.063, R2=0.026

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

○ Yes ◉ No ○ NA (Please explain) Comments:

f. Decontamination or Equipment Blank (if applicable)

○ Yes ◉ No ○ NA (Please explain) Comments:

i. All results less than PQL?

○ Yes ○ No ◉ NA (Please explain) Comments:

No equipment blank

ii. If above PQL, what samples are affected?

Comments:

Not applicable

iii. Data quality or usability affected? (Please explain.)

Comments:

Not applicable

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

a. Defined and appropriate?

○ Yes ○ No ◉ NA (Please explain) Comments:

No flags

Reset Form

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## Appendix E

Conceptual Site Model and Eco-Scoping Form

Print Form

# Human Health Conceptual Site Model Scoping Form

**Site Name:** Chevron Facility 301726 "FIA Texaco"

**File Number:** 100.38.066

**Completed by:** Dana Ramquist

**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:

* bgs - below ground surface

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

a) Direct Contact -

1. Incidental Soil Ingestion

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

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

Comments:

2. Dermal Absorption of Contaminants from Soil

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

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

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

Comments:

b) Ingestion -

1. Ingestion of Groundwater

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

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

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

Comments:

2. Ingestion of Surface Water

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

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

*If both boxes are checked, label this pathway complete:* Incomplete

Comments:

There are no nearby surface water bodies that could be used for a drinking water source.

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:

The area is not used for hunting, fishing, or harvesting of wild or farmed foods.

c) Inhalation-

1. Inhalation of Outdoor Air

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

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

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

Comments:

2. Inhalation of Indoor Air

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

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

*If both boxes are checked, label this pathway complete:* Incomplete

Comments:

No buildings exist within the specified distances that could be affected by intrusive vapors.

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

**Dermal Exposure to Contaminants in Groundwater and Surface Water**

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

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

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

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

Comments:

**Inhalation of Volatile Compounds in Tap Water**

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

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

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

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

Comments:

**Inhalation of Fugitive Dust**

Inhalation of fugitive dust may be a complete pathway if:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers (Particulate Matter - $PM_{10}$). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.
- Chromium is present in soil that can be dispersed as dust particles of any size.

Generally, DEC direct contact soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because it is assumed most dust particles are incidentally ingested instead of inhaled to the lower lungs. The inhalation pathway only needs to be evaluated when very small dust particles are present (e.g., along a dirt roadway or where dusts are a nuisance). This is not true in the case of chromium. Site specific cleanup levels will need to be calculated in the event that inhalation of dust containing chromium is a complete pathway at a site.

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

Comments:

**Direct Contact with Sediment**

This pathway involves people's hands being exposed to sediment, such as during some recreational, subsistence, or industrial activity. People then incidentally ingest sediment from normal hand-to-mouth activities. In addition, dermal absorption of contaminants may be of concern if the the contaminants are able to permeate the skin (see Appendix B in the guidance document). This type of exposure should be investigated if:

- Climate permits recreational activities around sediment.
- The community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

Generally, DEC direct contact soil cleanup levels in 18 AAC 75, Table B1, are assumed to be protective of direct contact with sediment.

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

Comments:

**4. Other Comments** *(Provide other comments as necessary to support the information provided in this form.)*

# HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

*Site:* Chevron Facility 301726 "FIA Texaco"

*Completed By:* Dana Ramquist

*Date Completed:* 10/26/2011

***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 | C/F | C/F | | | |
| | ☑ Dermal Absorption of Contaminants from Soil | C/F | C/F | C/F | C/F | | | |
| | ☑ Inhalation of Fugitive Dust | C/F | C/F | C/F | C/F | | | |
| ☑ groundwater | ☑ Ingestion of Groundwater | C/F | C/F | C/F | C/F | | | |
| | ☑ Dermal Absorption of Contaminants in Groundwater | C/F | C/F | C/F | C/F | | | |
| | ☑ Inhalation of Volatile Compounds in Tap Water | F | F | F | F | | | |
| ☑ air | ☑ Inhalation of Outdoor Air | C/F | C/F | C/F | C/F | | | |
| | ☐ Inhalation of Indoor Air | | | | | | | |
| | ☑ Inhalation of Fugitive Dust | C/F | C/F | C/F | C/F | | | |
| ☐ 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