# FINAL REPORT
# FEDERAL AVIATION ADMINISTRATION DECOMMISSIONING AND INVESTIGATION FAA STATION FORT YUKON, ALASKA

**Contract Number DTFAAL-10-D-00002**
**Task Order Number 0059**

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**Prepared For:**

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## APPROVAL PAGE

This report for the groundwater sampling, well decommissioning, and site investigation activities at the Federal Aviation Administration (FAA) Station in Fort Yukon, Alaska has been prepared for the FAA by Ahtna Engineering Services, LLC (AES). The following people have reviewed and approved this report.

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## ACRONYMS AND ABBREVIATIONS

AAC .....Alaska Administrative Code
ADEC.....Alaska Department of Environmental Conservation
AES .....Ahtna Environmental Services, LLC
AI .....air injection
AOC .....area of concern
bgs .....below ground surface
BTEX .....benzene, toluene, ethylbenzene, and xylenes
CSM .....conceptual site model
COPC .....contaminants of potential concern
COTR.....Contracting Officer's Technical Representative
DO.....dissolved oxygen
DRO .....diesel-range organics
EPA .....United States Environmental Protection Agency
FAA.....Federal Aviation Administration
GAC .....granular activated carbon
GRO .....gasoline-range organics
HLA .....Harding Lawson Associates
IDW.....investigation-derived waste
ITRC .....Interstate Technology and Regulatory Council
mL.....milliliter
mg/kg .....milligrams per kilogram
mg/L.....milligrams per liter
MP.....monitoring point
MW .....monitoring well
ND.....non-detect or not detected
ORP.....oxidation-reduction potential
PAH.....polynuclear aromatic hydrocarbon
PVC.....polyvinyl chloride
RRO .....residual-range organics
SI.....site investigation
SIM .....selective ion monitoring
SOW.....scope of work
SVE.....soil vapor extraction
USFWS .....United States Fish and Wildlife Service
USGS .....United States Geological Survey
UST.....underground storage tank
VE .....vapor extraction
WP .....work plan
YFHC.....Yukon Flats Health Clinic
YSI .....Yellow Springs Instruments

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## EXECUTIVE SUMMARY

This report describes the activities and findings of the groundwater and soil sampling and well decommissioning, activities performed at the Federal Aviation Administration (FAA) Station Fort Yukon from June 28 to July 1, 2013. This work was performed under Contract No.DTFAAL-10-D-00002, Task Order 0059. The work was performed in conformance with contract documents including the task Scope of Work (SOW), The Alaska Department of Environmental Conservation (ADEC) approved work plan (WP), and local, state, and federal regulations. The primary field activities included the following.

1) Assess petroleum constituents in groundwater associated with each of two remediation systems located at both the former Yukon Flats Health Clinic (YFHC) and Building 100;
2) Assess residual petroleum hydrocarbon soil concentrations at the former underground storage tank (UST) excavations at the YFHC and Building 100; and
3) Decommission the remediation system equipment including soil vapor extraction (SVE), air injection (AI) wells, and monitoring points (MP) per ADEC requirements. Decommissioning activities also included removal and shipment of blower buildings and blowers to Anchorage.

Three wells and two monitoring points were decommissioned at Building 100. Two wells and three monitoring points were decommissioned at the YFHC.

Soil sample results from samples collected at Building 100 indicate DRO contamination remains in the subsurface soils at the former UST area of concern (AOC). Soil sample results ranged from non-detect (ND) to 3,450 milligrams per kilogram (mg/kg) from 8 to 9 feet below the ground surface (bgs) at Building 100. Monitoring well MW-2 at Building 100 had diesel-range organics (DRO) water sample concentration of 3.88 milligrams per liter (mg/L) in the field duplicate sample. DRO contamination greater than the ADEC migration to groundwater cleanup level remains in the soil at the Building 100 AOC. DRO contamination in groundwater greater than the ADEC groundwater cleanup level remains in the Building 100 AOC.

Soil sample results from samples collected at the former YFHC indicate DRO contamination remains in the subsurface soils at the former UST location AOC. Soil sample results ranged from 1,260 mg/kg to 5,440 mg/kg at the YFHC from 7 feet to 8 feet bgs. DRO contamination greater than the ADEC migration to groundwater cleanup level remains in the soil at the YFHC.

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# 1.0 INTRODUCTION

Ahtna Engineering Services, LLC (AES) has developed this report for the Federal Aviation Administration (FAA) to detail the soil and groundwater sampling and well decommissioning activities performed at the FAA Station in Fort Yukon, Alaska under Contract Number DTFAAL-10-D-00002, Task Order 0059.The work was performed in conformance with contract documents including the task Scope of Work (SOW), the Alaska Department of Environmental Conservation (ADEC)-approved work plan (WP), and local, state, and federal regulations. ADEC approval of the WP was dated June 26, 2013.

The ADEC File and Hazard Identification numbers for the Fort Yukon FAA Station are 740.38.01and 25396 (Building 100), respectively. There is not an ADEC file number for the former YFHC.

## 1.1 Project Objectives

Field work for this project was performed June 28 through July1, 2013 at the Fort Yukon FAA Station (Figure 1). The primary objectives of the field activities are summarized below.

1) Assess petroleum constituents in groundwater associated with each of two remediation systems located at both the former Yukon Flats Health Clinic (YFHC) and Building 100;
2) Assess residual petroleum hydrocarbon soil concentrations at the former underground storage tank (UST) excavations at the YFHC and Building 100; and
3) Decommission the remediation system equipment including soil vapor extraction (SVE), air injection (AI) wells, and monitoring points per ADEC requirements. Decommissioning activities also included removal and shipment of blower buildings and blowers to Anchorage.

## 1.2 Historical Information

The Fort Yukon FAA Station facility (Figure 2) is an active air navigation station operated by the FAA. FAA involvement at Fort Yukon began with the construction of air navigational facilities in 1943. At one time, the facility consisted of approximately 127 acres, but over time land and facility transactions have added to and subtracted from the total station area utilized by FAA. AES understands that FAA ownership in the Quarters Area, including the site area, has been reduced to an approximate one-acre footprint consisting of the Shop Building 300 and associated access way. A general outline of the buildings present at the Fort Yukon FAA Station facilities is shown on Figure 2, Site Plan.

A 2-inch AI well, a 4-inch SVE well, and two monitoring points (MP-3 and MP-4) were installed at the Building 100 site in July 1996. A prefabricated shelter housing the blowers was placed approximately 55 feet from the Building 100 structure. Piping from the AI and SVE wells to the in-situ shelter was routed underground directly across the yard. MP-3 was placed 5 feet west of the SVE well to measure soil vapor, gases, and pressures in the contaminated vadose-zone soil. MP-4 was placed 22 feet east and upgradient of the SVE well. MP-4 was placed outside of the assumed contaminated area to measure background soil gas pressure and contaminants.

However, hydrocarbons were detected in MP-4 during installation. MP-4 is currently used to verify the radius of sparge influence.

A 4-inch SVE well and three monitoring points (MP-1, MP-2, and MP-5) were installed at the YFHC Storage Building site. During the 1995 site investigation, no groundwater contamination was detected at this site; therefore, only SVE was recommended as a remediation strategy. MP-1 and MP-2 are 6 feet and 20 feet east of VE-1, respectively (CH2M Hill, 2002).

## 1.3 Location and Physical Setting

The FAA's Fort Yukon facilities are located in the City of Fort Yukon in northeastern Alaska, approximately 145 miles northeast of Fairbanks (Figure 1). Fort Yukon is located at the confluence of the Porcupine and Yukon Rivers and is surrounded by the Yukon Flats National Wildlife Refuge.

The FAA facilities are surrounded by relatively flat, vegetated terrain and underlain by discontinuous permafrost that may reach depths of over 300 feet. The average annual precipitation at Fort Yukon is 6.61 inches of rainfall and 42 inches of snow (CH2MHill, 2002).

The FAA facilities were constructed on fill material above the native alluvium. The fill material consists of medium to coarse grained gravel with varying amounts of silt and sand. The native soil consists of layers of sand, sandy silt, and sandy gravel.

During the release investigations conducted by Harding Lawson Associates (HLA) in 1995, groundwater was measured between 10 and 12 feet below ground surface (bgs); however, it was previously measured at depths of 20 to 30 feet bgs (HLA, 1996). Groundwater levels at this location generally are low between March and April and high between August and October. Groundwater flows north toward the Yukon River and then northwest toward the confluence of the Yukon and Porcupine rivers (United States Geologic Survey [USGS], 1994).

### 1.3.1 Geology and Soils

Fort Yukon is located within the Yukon Flats physiographic area which consists of marshy lake dotted flats rising from 300 feet in elevation on the west to elevations ranging from 590 to 885 feet on the north and east. Cliff-forming silt and gravel covered marginal terraces rise 150 to 590 feet in height above the flats and slope gradually upward to elevations of approximately 1,475 feet, where they merge with the base of surrounding uplands and mountains. The marginal terraces are capped with gravel on which rests a layer of wind borne silt (loess).

Flood plain and low terrace alluvium consists of well stratified layers and lenses of coarse to fine well sorted gravel and minor amounts of sand and silt, mantled by as much as 26 feet of well stratified layers and lenses of silt, sand and organic matter. The thickness of alluvium at Fort Yukon is estimated at 100 feet.

Eolian sand deposits consist of massive well sorted homogeneous sand and silty sand ranging from 6 to 65 feet in thickness. Permafrost is generally present with sporadic ground ice masses.

Alluvial fan and related terrace deposits consist of well stratified layers and lenses of well sorted coarse to fine grained gravel containing minor amounts of sand and silt and a few layers or lenses of organic material. This alluvium is predominantly pebble to boulder gravel deposited by the Yukon River and its larger tributaries. Gravelly deposits are mantled by silt, sand, and organic material as thick as 25 feet. The total thickness of this deposit is not known, but is estimated to exceed 100 feet.

Fort Yukon lies within a region of discontinuous permafrost. However, because the region is so far north and near the border of the continuous permafrost zone, permafrost likely underlies most of the area. Exceptions are under rivers, recently abandoned meander belts, and large thaw lakes. A U.S. Army Cold Regions Research and Engineering Laboratory study of ground temperatures at Fort Yukon showed that the maximum seasonal depth of thaw was about 2.4 meters, below which the temperature remained below freezing. Ground ice masses form wedges 1.5 to 3 feet thick in a polygonal network and are found in local areas where the silt mantle is greater than 8 feet thick (USGS, 1994).

### 1.3.2 Hydrology

The Yukon Flats area is drained by the Yukon River which is Alaska's largest river and the fifth largest river in North America in terms of drainage area and runoff. The Porcupine River enters the Yukon River less than 2 miles downstream from the airport. Most other tributaries to these rivers drain surrounding uplands and mountains, and have meandering courses through the flats. Thaw lakes are abundant throughout the flats and are common on the marginal terraces. Runoff rates are very low and the chemical quality of surface waters is generally good.

Surface-water bodies within a 2.5-mile radius of Fort Yukon include the Yukon River, Porcupine River, Hospital Lake, Yllota Slough, and Laura Lake. Hospital Lake, to the northwest of the runway, is used as a float plane base and for recreational boating, fishing, and waterfowl hunting. The lake is directly connected to the Yukon River by a 0.5-mile long outlet.

Groundwater recharge to the Fort Yukon area occurs from precipitation, infiltration, and normal groundwater movement from areas near the slopes of the surrounding highlands. Groundwater discharge takes place into local surface water streams and sloughs which drain into the Yukon River. Flow paths for groundwater movement are influenced by impermeable lenses or layers of permafrost acting as a barrier to horizontal and vertical movement of the groundwater. The area-wide variability in the presence of permafrost accounts for the local occurrence of sub-intra, and supra-permafrost, ground water.

Alluvium is likely unfrozen beneath the bed of the Yukon River throughout its course in Alaska. Most of the wells in villages on the Yukon River from Canada to the Bering Sea are along the riverbank where the warming effect of the river affects the thickness of frozen ground. Water levels observed in the wells fluctuate with the stage of the river. In general, groundwater flows west toward the Yukon River and then northwestward in the direction of the flow of the river. The depth to water from the ground surface is approximately 10 to 12 feet, based on drill log data for the Fort Yukon municipal well and on data from a site contamination study by Woodward-Clyde Consultants (USGS, 1994).

### 1.3.3 Ecology

The areas of the FAA Station that were impacted as part of this project are located within previously developed areas. No sensitive environments are believed to be present within the areas of concern (AOCs).

Vegetation north of the Arctic Circle near Fort Yukon consists of closed spruce-hardwood forest along the rivers and widespread open, low-growing spruce. Closed spruce-hardwood forests consist of white and black spruce, paper birch, aspen, and balsam poplar located on moderate to well drained sites. Open, low growing spruce forests consist primarily of black spruce with sporadic stands of paper birch, and willows with some locally interspersed treeless bogs.

Near the Fort Yukon airport, the land cover is generally treeless to the northeast and south-west. The small stands of black spruce that are visible on aerial photographs taken in springtime are concentrated along the shoreline of Hospital Lake and the banks of the Yukon River (USGS, 1994).

Large mammals in the Yukon Flats area include moose, black and grizzly bears, wolves, and to a lesser extent, caribou and Dall sheep. The Yukon Flats area is known to have more than 150 species of birds in the summer months including waterfowl, songbirds, and raptors. The Yukon River, along with 10 major drainages and more than 20,000 lakes, provides habitat for 18 species of fish in the Yukon Flats area. Salmon species in the region include king, dog, and silver salmon. Resident fish in the Yukon Flats include Arctic grayling, burbot, northern pike, and several species of whitefish (United Stated Fish and Wildlife Service [USFWS], 2013).

## 1.4 Scope of Work

In order to meet the project objectives, the scope of work for this project included the following items:

- Mobilize personnel, equipment, and materials to the FAA Station in Fort Yukon;
- Perform groundwater sampling for monitoring wells MW-1 at the former YFHC and MW-2 at Building 100, if the wells were still in good condition;
- Excavate test pits at the former UST excavation areas. Collect 3 soil samples at each area for both the YFHC and Building 100;
- Decommission each SVE/AI remediation system at the YFHC and Building 100;
- Survey sample locations;
- Demobilize personnel, equipment, and materials (including all investigation-derived waste [IDW]) from Fort Yukon; and
- Prepare the closeout report.

# 2.0 REGULATORY SETTING AND CLEANUP CRITERIA

## 2.1 Soil Cleanup Criteria

During site investigation (SI) activities, analytical results for soil samples collected at the YFHC and Building 100 former UST excavation sites at the Fort Yukon FAA Station were evaluated against ADEC Method Two, Under 40-Inch Zone, Migration to Groundwater soil cleanup levels listed in 18 Alaska Administrative Code (AAC) 75.341 Tables B1 and B2 (ADEC, 2012). Table 2-1 of this report summarizes the soil cleanup levels.

**TABLE 2-1: SUMMARY OF SOIL CLEANUP LEVELS**

| Analyte | Ingestion (mg/kg) | Inhalation (mg/kg) | Migration to Groundwater (mg/kg) |
|---|---|---|---|
| **GRO/DRO/RRO (Alaska Method AK 101/102/103)** | | | |
| GRO | 1400 | 1400 | 300 |
| DRO | 10250 | 12500 | 250 |
| RRO | 10000 | 22000 | 11000 |
| **Analyte** | **Direct Contact (mg/kg)** | **Inhalation (mg/kg)** | **Migration to Groundwater (mg/kg)** |
| **BTEX (EPA Method 8021B)** | | | |
| Benzene | 150 | 11 | 0.025 |
| Toluene | 8100 | 220 | 6.5 |
| Ethylbenzene | 10100 | 110 | 6.9 |
| Xylenes (total) | 20300 | 63 | 63 |
| **PAH (EPA Method 8270c-SIM)** | | | |
| Acenaphthene | 2800 | - | 180 |
| Acenaphthylene | 2800 | - | 180 |
| Anthracene | 20600 | | 3000 |
| Benzo(a)pyrene | 0.49 | - | 2.1 |
| Benzo(a)anthracene | 4.9 | - | 3.6 |
| Benzo(b)fluoranthene | 4.9 | - | 12 |
| Benzo(g,h,i)perylene | 1400 | - | 38700 |
| Benzo(k)fluoranthene | 49 | - | 120 |
| Chrysene | 490 | - | 360 |
| Dibenzo(a,h)anthracene | 0.49 | - | 4.0 |
| Fluoranthene | 1900 | - | 1400 |
| Fluorene | 2300 | - | 220 |
| Indeno(1,2,3-c,d)pyrene | 4.9 | - | 41 |
| Naphthalene | 1400 | 28 | 20 |
| Phenanthrene | 20600 | - | 3000 |
| Pyrene | 1400 | - | 1000 |

**Notes:**
Based on ADEC Method Two, Under 40 Inch Zone cleanup levels provided in 18 AAC 75, Table B1 and Table B2

| | |
|---|---|
| AAC | Alaska Administrative Code |
| BTEX | benzene, toluene, ethylbenzene, xylenes |
| DRO | diesel-range organics |
| EPA | US Environmental Protection Agency |
| GRO | gasoline-range organics |
| mg/kg | milligrams per kilogram |
| PAH | polynuclear aromatic hydrocarbons |
| RRO | residual-range organics |
| SIM | selective ion monitoring |

## 2.2 Groundwater Cleanup Criteria

During SI activities, analytical results for groundwater samples collected at the YFHC and Building 100 sites at the Fort Yukon FAA Station were evaluated against ADEC 18 AAC 75 Table C cleanup levels (ADEC, 2012). Table 2-2 of this report summarizes the groundwater cleanup levels.

**TABLE 2-2: SUMMARY OF GROUNDWATER CLEANUP LEVELS**

| Analyte | Groundwater Cleanup Level (mg/L) |
|---|---|
| **GRO/DRO/RRO(AK101/AK102/AK103)** | |
| GRO | 2.2 |
| DRO | 1.5 |
| RRO | 1.1 |
| **BTEX (EPA Method 8021B)** | |
| Benzene | 0.005 |
| Toluene | 1.0 |
| Ethylbenzene | 0.7 |
| Xylenes | 10.0 |
| **PAHs (EPA Method 8270c SIM)** | |
| Acenaphthene | 2.2 |
| Acenaphthylene | 2.2 |
| Anthracene | 11 |
| Benzo(a)anthracene | 0.0012 |
| Benzo(a)pyrene | 0.0002 |
| Benzo(b)fluoranthene | 0.0012 |
| Benzo(g,h,i)perylene | 1.1 |
| Benzo(k)fluoranthene | 0.012 |
| Chrysene | 0.12 |
| Dibenzo(a,h)anthracene | 0.00012 |
| Fluoranthene | 1.5 |
| Fluorene | 1.5 |
| Indeno(1,2,3-cd)pyrene | 0.0012 |
| 1-Methylnaphthalene | 0.15 |
| 2-Methylnaphthalene | 0.15 |
| Naphthalene | 0.73 |
| Phenanthrene | 11 |
| Pyrene | 1.1 |

**Notes:**
Groundwater cleanup levels are provided in 18 AAC 75.345 Table C.
BTEX benzene, toluene, ethylbenzene, and xylenes
DRO diesel-range organics
GRO gasoline-range organics
mg/L milligrams per liter
PAH polynuclear aromatic hydrocarbons
RRO residual-range organics

## 2.3 Conceptual Site Model

It is necessary to understand the current and past uses of the site to evaluate the potential risks contamination may pose at the FAA Station in Fort Yukon. The information used to generate the conceptual site model (CSM) for this project, in accordance with ADEC requirements, was

obtained primarily from previous investigations at the FAA Station in Fort Yukon and the ADEC *Guidance on Developing Conceptual Site Models* (ADEC, 2010b).

### 2.3.1 Sources and Release Mechanisms

The primary release mechanisms for petroleum contamination at the FAA Station in Fort Yukon are spills and leaks from former heating oil USTs at the former YFHC and Building 100. The fuel known to have been present at the FAA Station is heating oil. Potentially impacted media are soil, indoor and outdoor air, groundwater, and surface water.

### 2.3.2 Contaminants of Potential Concern

Based on Appendix F of the ADEC *Draft Field Sampling Guidance* (ADEC, 2010a), contaminants of potential concern (COPCs) include gasoline-range organics (GRO), diesel-range organics (DRO), residual-range organics (RRO), benzene, toluene, ethylbenzene, and xylenes (BTEX), and polynuclear aromatic hydrocarbons (PAHs).

Most of these potential contaminants of concern have been tested for during previous site investigations. Based on sample results, DRO is the only contaminant that is present in soil at the site at concentrations greater than ADEC Method Two, Under 40 Inch Zone, Migration to Groundwater cleanup level.

### 2.3.3 Impacted Media

Both surface and subsurface soil are considered media directly impacted in the CSM because releases have occurred from the UST and buried piping to the soil. Groundwater has been impacted by DRO at the Building 100 site but not at the YFHC. Surface water and sediment have not been found to be impacted. air, surface water, and biota are potentially impacted indirectly. Surface water, sediment, air, and biota have not been sampled at either site.

### 2.3.4 Potential Receptors

Access to the FAA Station in Fort Yukon is not restricted due to its accessibility within the city limits. Based on this information, potential receptors include residents, site workers, site visitors, or trespassers. Exposure duration is unlimited for residents as there is no controlled access to the site and the former YFHC building is still in use today. Exposure duration for site workers, site visitors, or trespassers is limited to days or weeks in a lifetime.

### 2.3.5 Exposure Media and Pathways

Exposure pathways include direct contact, ingestion, and inhalation. Each is described below in relation to the Fort Yukon FAA Station.

According to ADEC *Guidance on Developing Conceptual Site Models* (ADEC, 2010b), the soil ingestion pathway must be considered complete if contamination is present in soil at depths between 0 to 15 feet bgs. The site is currently in use and will likely continue to be used in the future. The surface and subsurface soil ingestion pathways are complete in this CSM because soil is known to be contaminated at depths between 0 and 15 feet bgs. Areas of the site are in

use, and access to the site is not restricted. People may be exposed to and incidentally ingest soils from normal hand-to-mouth activities. None of the contaminants at the site are able to permeate the skin and therefore the dermal absorption pathway is not considered complete.

Groundwater at this site has been tested for petroleum impacts. Previously installed wells show that groundwater is at depths of 10 to 15 feet with DRO greater than the cleanup level in MW-2 at Building 100 and has been detected, albeit at levels below the cleanup level, in MW-1 at the former YFHC site. Ingestion of groundwater is considered a complete pathway. However, for the present scenario, the pathway is insignificant as groundwater is not used as a drinking water resource in this area.

Surface water is considered a complete pathway in the CSM because surface water bodies in the form of wetlands and marshes could be located downgradient of the AOCs. However, this pathway is considered insignificant at this time as it is unlikely that the low concentrations present in groundwater would reach a surface water body and because it is unlikely surface water will be used as a water supply source.

Bioaccumulative compounds listed in Appendix C of ADEC *Guidance on Developing Conceptual Site Models* (ADEC, 2010b) have not been detected in soil samples collected at the AOCs. There is little to no accumulation of petroleum hydrocarbons in plant roots, wood, stems, leaves, or fruit (Interstate Technology and Regulatory Council [ITRC], 2009). Hence, the animals feeding on the plants are not significantly exposed. The wild meat ingestion route is interpreted to be incomplete at this time for all receptors. Additionally, in the immediate vicinity of the buildings, little vegetation is present that would be fed on by animals or provide subsistence gathering opportunities.

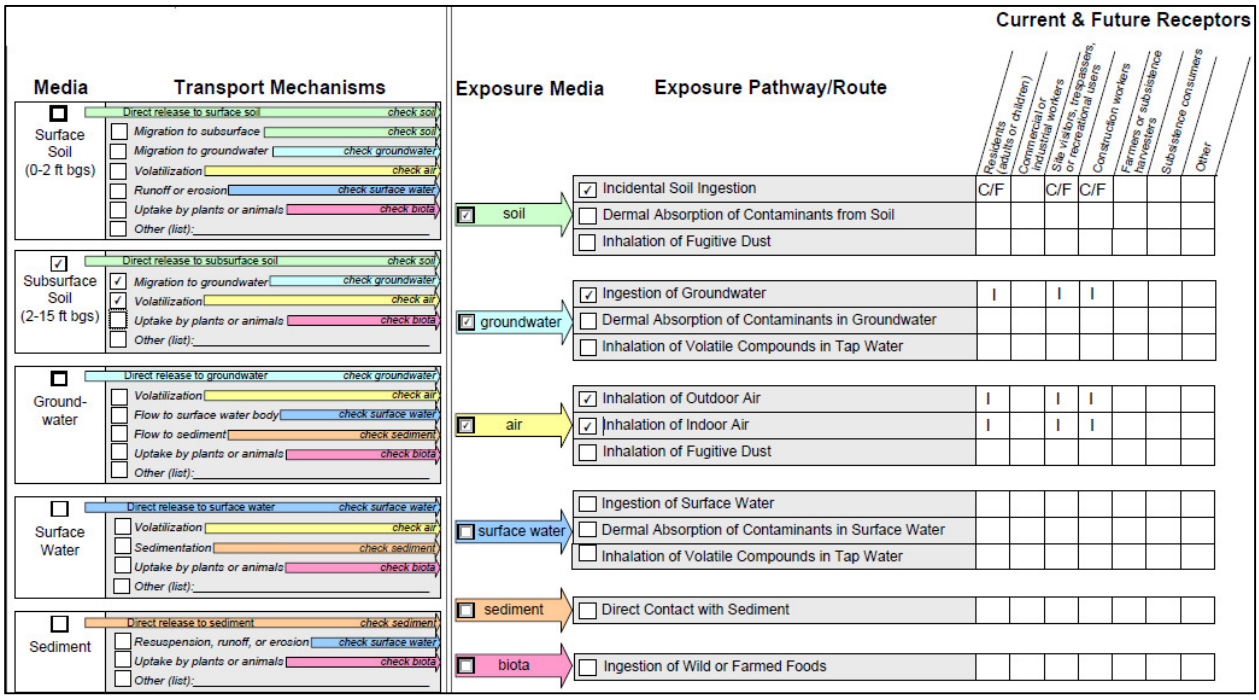
Based on the 2001 soil sampling event performed by CH2MHill, outdoor air inhalation is a complete pathway at Building 100. DRO was present at a level greater than the outdoor air cleanup level. At the former YFHC site, the pathway is complete but 2001 soil sampling showed the pathway to be insignificant as DRO concentrations were an order of magnitude below the cleanup level. Building 100 and the former YFHC building are located within 30 feet of potential volatile contamination. For this reason, the indoor air inhalation is considered a complete pathway.

Table 2-3 below shows a summary of the exposure pathways, whether the pathway is complete, and a short discussion. Model 1 shows a graphic depiction of the CSM.

**TABLE 2-3: EXPOSURE PATHWAY SUMMARY**

| Exposure Pathway | Current Pathway Complete? | Discussion |
|---|---|---|
| Incidental soil ingestion | Yes | Soil contamination found above 15 feet bgs. |
| Dermal absorption | No | Soil contamination found above 15 feet bgs. None of the contaminants can permeate the skin. |
| Ingestion of groundwater | Yes, Insignificant | Contamination is present in groundwater at the Building 100 site, but not the YHFC site. Groundwater is not used on site for drinking water. However, ADEC has not made the determination per 18 AAC 75.350. |
| Ingestion of surface water | Yes, Insignificant | Surface water may be present downgradient of contamination. Unlikely for contaminants to reach surface water or for it to be used for drinking water. |
| Ingestion of wild food | No | Bioaccumulative compounds have not been evaluated in soil; subsistence gathering vegetation not present near buildings. |
| Inhalation of outdoor air | Yes, Insignificant | Pathway is present but insignificant as contaminants are at depths of 7 to 8 feet bgs at Building 100 and the YFHC. |
| Inhalation of indoor air | Yes, Insignificant | Buildings are located within 30 feet of volatile hydrocarbon contamination, however potential exposure duration is extremely short at the present. |

**MODEL 1: CONCEPTUAL SITE MODEL**



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# 3.0 FIELD ACTIVITIES

All field and sampling procedures were performed in general accordance with those specified in ADEC's *Draft Field Sampling Guidance* (ADEC, 2010a), unless noted otherwise. Descriptions of field activities and other project specific details are presented below. Site photographs, field notes, and groundwater sampling forms documenting field activities are provided in Appendix A.

Prior to field mobilization, AES was informed that the shelter units for the remediation systems at Building 100 and the former YFHC had been disconnected and removed from the FAA facility. Therefore, shipping and handling of the shelter units was not performed as originally planned for this project.

## 3.1 Mobilization

An AES field team consisting of a scientist/field team leader and an equipment operator mobilized to the Fort Yukon FAA Station on June 28, 2013via a charter aircraft located in Fairbanks, Alaska. A Case 580 backhoe was mobilized via barge in early June to perform test pit excavations for collecting soil samples at the former UST excavation areas at the former YFHC and Building 100.

## 3.2 Groundwater Sampling

Water quality parameter readings and groundwater analytical samples were collected from MW-1 at the former YFHC and MW-2 at Building 100 using low flow (i.e., purging rate creates less than 0.3 feet drawdown) sampling techniques. A stainless steel submergible pump with new disposable polyethylene tubing was used to collect groundwater samples. A Yellow Springs Instruments (YSI) water quality meter and flow through cell were used to collect measurements of dissolved oxygen (DO), specific conductance, temperature, pH, and oxidation-reduction potential (ORP). Purge water was collected in 5-gallon buckets for treatment. Typically, purging continued until the groundwater quality parameters met the following stabilization criteria for three consecutive readings.

- pH ±0.1,
- conductivity ±3%,
- temperature ±3%,
- ORP ±10 millivolts, and
- DO ±10%.

Field parameters were recorded at a rate of approximately one reading every 3-5 minutes during purging. The water quality parameters did not stabilize in either MW-1 or MW-2.Analytical samples were collected after approximately five well casing volumes were removed from each well. Groundwater analytical samples were analyzed for DRO, RRO, GRO,BTEX, and PAH.

## 3.3 Well Decommissioning

A total of three wells and two monitoring points were decommissioned at Building 100 (Figure 3). The wells consisted of 2-inchpolyvinyl chloride (PVC) schedule 40 pipe and the monitoring

points were constructed of 3/4-inch iron pipe. The Case 580 backhoe was used to decommission the wells and monitoring points by attaching a nylon strap around the casing of the well. The strap was attached to the bucket of the backhoe with a shackle. Monitoring well MW-1 and vapor extraction well VE-2 were completely removed and the remaining hole from the casing was filled with bentonite chips and hydrated with 5 gallons of water as the hole was filled with bentonite. Air injection well SP-1 could not be removed in its entirety. The casing was cut at 5 feet bgs. The remaining well casing and screen were filled with bentonite chips and hydrated with water as the bentonite was poured into the pipe.

The horizontal piping from the former blower system that was connected to SP-1 was cut and capped with a 2-inch PVC cap. The remaining air injection piping that was formerly housed in the blower shelter was cut 2 feet bgs. The horizontal piping was left in place. Three metal bollards were removed from the former blower shelter area.

The monitoring points MP-3 and MP-4 were pulled from the subsurface with the backhoe. The remaining holes were not filled with bentonite as the holes were too small in diameter to allow placement of bentonite chips after they were removed.

A total of two wells and three monitoring points were decommissioned at the former YFHC (Figure 4) in the same manner used at Building 100. The well casings for MW-1 and vapor extraction well VE-1 were completely removed. Bentonite chips were added to the casing holes for the wells after the casing was removed and hydrated in place.

## 3.4 Soil Sampling at Former UST Excavation Areas

The Case 580 backhoe was used to excavate test pits in the former UST footprints at Building 100 and the former YFHC. A hand auger was used to collect samples from the bottom of the test pits at the Building 100 location .In the Building 100 test pits, petroleum contamination was observed from approximately 8.5 feet to 12 feet bgs. A total of three soil samples were collected in the contaminated soil to assess the contaminant concentrations remaining in the soil at Building 100.

Two soil samples were collected directly from the backhoe bucket at the former YFHC test pits. Contamination was observed from approximately 7 feet to 9 beet bgs in two locations at the former YFHC.

Discrete grab sampling procedures were used to collect analytical soil samples from the test pit excavations in accordance with the *Draft Field Sampling Guidance* (ADEC, 2010a). Soil samples collected directly from the backhoe bucket were collected after a minimum of six inches of soil was removed from sampling locations. A combined total of five primary and one field duplicate discrete grab samples were collected from test pits at both sites. Based on field observations, samples were collected from locations that appeared the most impacted. Soil samples were submitted to the laboratory for analysis of GRO, BTEX, DRO, RRO, and PAH.

GRO and BTEX soil samples were immediately measured into approximately 25 gram aliquots, placed in laboratory supplied sample jars, preserved with 25 milliliters (mL) methanol, and

placed in a chilled sample cooler. All other analytes were collected by placing soil in the appropriate sample jars, which were then stored in the chilled sample cooler.

## 3.5 Decontamination Procedures

All reusable sampling equipment such as stainless steel sampling tools were decontaminated after every use. The decontamination procedure involved scrubbing the tools in a Liquinox and water solution, rinsing in clean water, and rinsing again in deionized water. The stainless steel pump used to collect water samples was decontaminated in between sampling MW-1 and MW-2. The pump was decontaminated by running the pump for 5 minutes in a Liquinox and water solution, a 5 minute rinse in clean water followed by a second 5 minute rinse in clean water.

## 3.6 Project-Generated Waste and Investigation Derived Wastes

Waste generated from the project activities included PVC screen and pipe casing from the removed monitoring and remediation system wells at both Building 100 and the former YFHC. Iron piping was generated from the removal of the monitoring probes at both AOCs. Three protective metal bollards were removed from in front of the former blower house area located south of Building 100. All waste was disposed of as general debris at the local Fort Yukon landfill.

Minimal quantities of investigation derived waste were generated during the course of field activities. Non-hazardous solid wastes, including used nitrile gloves, paper towels, Ziploc® bags, and other miscellaneous materials, were disposed of at the local Fort Yukon landfill.

Well purge water and wastewater were collected and treated through a 5-gallon bucket with a granular activated carbon (GAC) filter and deposited on the ground surface within the test pit foot print at each sampling location.

## 3.7 Work Plan Deviations

The original SOW did not include the decommissioning of the two monitoring wells MW-1 and MW-2. AES personnel were directed in the field by the FAA Contracting Officer's Technical Representative (COTR) to decommission the two monitoring wells.

One test pit was not able to be excavated at the former YFHC due to existing infrastructure located near the planned test pit. The area of contamination was estimated to be small in size and therefore it was deemed that relocating the test pit to an area that could be excavated would likely be outside of the contaminated area.

The remediation system housing structures were not located at the project site at the time of decommissioning activities. The structures were not transported to Anchorage as required in the project SOW.

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# 4.0 ANALYTICAL SAMPLE RESULTS

## 4.1 Building 100 Soil Sample Results

Analytical soil sampling results for Building 100 are summarized in Tables 1 and 2. DRO was detected in two of the three soil samples collected from the three test pits completed at the former UST excavation at Building 100 (Figure 3). Only soil sample FYU13SSQ003(8.5-9) had a DRO result greater than the ADEC soil cleanup level of 250 mg/kg at a concentration of 3,450 mg/kg. GRO was detected in one of the three soil samples but less than the ADEC cleanup level of 300 mg/kg. Multiple PAH compounds were detected in each soil sample collected from the three Building 100 test pits. All PAH sample results were below their respective ADEC soil cleanup levels. RRO and BTEX were not detected in any of the three soil samples collected from the Building 100 test pits.

## 4.2 Building 100 Groundwater Sample Results

Analytical groundwater sample results are summarized in Tables 3 and 4. Analytical groundwater sample results for MW-2 (FYU12WMW2), and the duplicate sample FYU12WMW3, had DRO results of 3.53 and 3.88 mg/L, respectively, greater than the 1.5 mg/L ADEC groundwater cleanup level. The duplicate sample FYU12WMW3 had a RRO result of 0.498 mg/L, less than the 1.1 mg/L ADEC cleanup level. All BTEX compounds were ND for the MW-2 samples. Multiple PAH compounds were detected in the MW-2 primary and duplicate water samples; all results were less than the applicable ADEC cleanup levels.

## 4.3 YFHC Soil Sample Results

Tables 1 and 2 summarize the soil sample results for YFHC. DRO was detected greater than the ADEC soil cleanup level in all the soil samples collected from the two test pits completed at the former UST excavation (Figure 4). Soil sample FYU13SSH001(7-8) had a DRO result of 5,440 mg/kg; soil sample FYU13SSH002(7.5-8) and its duplicate FYU13SSH003(7.5-8) had DRO concentrations of 850mg/kg and 1,260 mg/kg, respectively. GRO was detected in one of the two test pits in soil sample FYU13SSH001(7-8) but less than the ADEC cleanup level. Multiple PAH compounds were detected in each soil sample collected from the two YFHC test pits but all at concentrations below cleanup levels. RRO and BTEX were not detected in any of the three soil samples collected in the YFHC test pits.

## 4.4 YFHC Groundwater Sample Results

Analytical groundwater sample results for MW-1 are summarized in Tables 3 and 4. Analytical groundwater sample results for the water sample collected from MW-1 were ND for DRO, RRO, GRO, and BTEX. 1-Methylnaphthalene was the only PAH compound detected in the MW-1 water sample with a result of 0.029 micrograms per liter (µg/L), less than the 150 µg/L ADEC groundwater cleanup level.

## 4.5 Data Quality Review

The following summarizes the review of data quality. A more detailed laboratory data quality review is provided in Appendix B along with the laboratory report and an ADEC Laboratory Data Review Checklist.

Based on the review completed on the one laboratory SDG data, no data were rejected. Qualifications were necessary due to poor field sample duplicate precision of four analytes in the primary and duplicate samples. All other sample results are considered to be valid with no data qualifiers assigned.

# 5.0 CONCLUSIONS

## 5.1 Former YFHC

Soil sample results from samples collected the YFHC indicate DRO impacts greater than the ADEC soil cleanup level remain in the subsurface soils. Soil DRO results ranged from 1,260 mg/kg to 5,440 mg/kg at 7.5 feet to 8 feet bgs. No petroleum analytes were detected in groundwater at the YFHC.

All remediation and sampling wells and all monitoring points at the site have been decommissioned.

## 5.2 Building 100

Soil sample results from samples collected at Building 100 indicate DRO impacts greater than the ADEC soil cleanup level; DRO was detected at 3,450 mg/kg from 8 feet to 9 feet bgs. The water sample collected at monitoring well MW-2 had a DRO concentration of 3.88 mg/L, which is greater than the ADEC groundwater cleanup level.

All remediation and sampling wells and all monitoring points at the site have been decommissioned.

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# 6.0 REFERENCES

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**TABLES**

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# Table 1 DRO, RRO, GRO, and BTEX Soil Data
# Building 100 and Yukon Flats Health Clinic, Fort Yukon, AK

| Sample Depth (ft) | Sample Date | Method | AK102 | AK103 | AK101 | 8021B | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **Analyte** | **DRO** | **RRO** | **GRO** | **Benzene** | **Toluene** | **Ethylbenzene** | **Xylenes** |
| | | **Sample Name** | Result (mg/kg) | Result (mg/kg) | Result (mg/kg) | Result (mg/kg) | Result (mg/kg) | Result (mg/kg) | Result (mg/kg) |
| | | *Cleanup Levels** | *250* | *11000* | *300* | *0.025* | *6.5* | *6.9* | *63* |
| **Building 100** | | | | | | | | | |
| 11-11.5 | 6/29/13 | FYU13SSQ001(11-11.5) | 156 | ND (3.93) | ND (0.306) | ND (0.00107) | ND (0.00107) | ND (0.00160) | ND (0.00426) |
| 11.5-12 | 6/30/13 | FYU13SSQ002(11.5-12) | ND (4.52) | ND (3.96) | ND (0.221) | ND (0.000768) | ND (0.000768) | ND (0.00115) | ND (0.00307) |
| 8.5-9 | 6/30/13 | FYU13SSQ003(8.5-9) | **3450** | ND (77.1) | 17.7 | ND (0.00131) | ND (0.00131) | ND (0.00197) | ND (0.00525) |
| **YFHC** | | | | | | | | | |
| 7-8 | 6/30/13 | FYU13SSH001(7-8) | **5440** | ND (75.1) | 46.9 | ND (0.00107) | ND (0.00107) | ND (0.00160) | ND (0.00428) |
| 7.5-8 | 6/30/13 | FYU13SSH002(7.5-8) Primary | **850** | ND (3.75) | ND (0.341) | ND (0.00119) | ND (0.00119) | ND (0.00178) | ND (0.00475) |
| | | FYU13SSH003(7.5-8) Duplicate | **1260** | ND (3.70) | ND (0.345) | ND (0.00120) | ND (0.0120) | ND (0.00180) | ND (0.00480) |

**Notes:**
* = ADEC Method Two, Under 40-Inch Zone, Migration to Groundwater Cleanup Levels
ADEC = Alaska Department of Environmental Conservation
AK = Alaska
DRO = diesel-range organics
GRO = gasoline-range organics
mg/kg = milligrams per kilogram
ND (4.52) = not detected at a concentration greater than the method detection limit shown in parentheses

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## Table 2 PAH Soil Data
## Building 100 and Yukon Flats Health Clinic, Fort Yukon, AK

| Sample Location | | Building 100 | | Building 100 | | Building 100 | | YFHC | | YFHC | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Name | | FYU13SSQ001(11-11.5) | | FYU13SSQ002 (11.5-12) | | FYU13SSQ003 (8.5-9) | | FYU13SSH001 (7-8) | | FYU13SSH002 (7.5-8) Primary | | FYU13SSH003 (7.5-8) Duplicate | |
| Depth (ft bgs) | | 11 - 11.5 | | 11.5 - 12 | | 8.5 - 9 | | 7 - 8 | | 7.5 - 8 | | | |
| Analyte | ADEC Cleanup Level (µg/kg) | Result (ug/kg) | Detection Limit (ug/kg) | Result (ug/kg) | Detection Limit (ug/kg) | Result (ug/kg) | Detection Limit (ug/kg) | Result (ug/kg) | Detection Limit (ug/kg) | Result (ug/kg) | Detection Limit (ug/kg) | Result (ug/kg) | Detection Limit (ug/kg) |
| Naphthalene | 20000 | 10 | 2.2 | ND | 2.1 | 89 | 23 | 11 | 2.2 | 15 | 2.1 | 13 | 2.1 |
| 2-Methylnaphthalene | 6200 | 17 | 2.2 | ND | 2.1 | 230 | 23 | ND | 2.2 | ND UJ,J | 2.1 | 88 UJ,J | 2.1 |
| 1-Methylnaphthalene | 6100 | 8.4 | 1.7 | ND | 1.6 | ND | 17 | ND | 1.7 | ND | 1.6 | ND | 1.6 |
| Acenaphthylene | 180000 | 6.7 | 1.7 | ND | 1.6 | 75 | 17 | 18 | 1.7 | 24 | 1.6 | 23 | 1.6 |
| Acenaphthene | 180000 | ND | 1.7 | ND | 1.6 | ND | 17 | ND | 1.7 | 30 | 1.6 | 29 | 1.6 |
| Fluorene | 220000 | ND | 1.7 | ND | 1.6 | ND | 17 | ND | 1.7 | 37 J | 1.6 | 22 J | 1.6 |
| Phenanthrene | 3000 | ND | 1.7 | ND | 1.6 | ND | 17 | 5.8 | 1.7 | ND | 1.6 | 6.8 | 1.6 |
| Anthracene | 3000000 | ND | 1.7 | ND | 1.6 | ND | 17 | ND | 1.7 | ND | 1.6 | ND | 1.6 |
| Fluoranthene | 1400000 | ND | 1.7 | ND | 1.6 | 380 | 17 | 6.7 | 1.7 | ND | 1.6 | ND | 1.6 |
| Pyrene | 1000000 | 61 | 1.7 | 6.8 | 1.6 | 610 | 17 | 11 | 1.7 | ND | 1.6 | ND | 1.6 |
| Benzo[a]anthracene | 3600 | 11 | 1.7 | ND | 1.6 | 200 | 17 | ND | 1.7 | ND | 1.6 | ND | 1.6 |
| Chrysene | 360000 | 25 | 1.7 | ND | 1.6 | 260 | 17 | ND | 1.7 | ND | 1.6 | ND | 1.6 |
| Benzo[a]pyrene | 2100 | 32 | 1.7 | ND | 1.6 | 120 | 17 | ND | 1.7 | ND | 1.6 | ND | 1.6 |
| Indeno[1,2,3-cd]pyrene | 41000 | 22 | 1.7 | ND | 1.6 | 64 | 17 | ND | 1.7 | ND | 1.6 | ND | 1.6 |
| Dibenz(a,h)anthracene | 4000 | ND | 1.7 | ND | 1.6 | ND | 17 | ND | 1.7 | ND | 1.6 | ND | 1.6 |
| Benzo[g,h,i]perylene | 38700000 | 17 | 1.7 | ND | 1.6 | ND | 17 | ND | 1.7 | ND | 1.6 | ND | 1.6 |
| Benzo[b]fluoranthene | 12000 | 44 | 1.7 | ND | 1.6 | 180 | 17 | ND | 1.7 | ND | 1.6 | ND | 1.6 |
| Benzo[k]fluoranthene | 120000 | 22 | 1.7 | ND | 1.6 | 91 | 17 | ND | 1.7 | ND | 1.6 | ND | 1.6 |

**Notes:**
ADEC = Alaska Department of Environmental Conservation
J = The associated numerical value is an estimated quantity because the Quality Control criteria were not met
ug/kg = micrograms per kilogram
ND = not detected
PAH = Polynuclear Aromatic Hydrocarbons
UJ = The reported quantitation limit is estimated because quality control criteria were not met. Element or compound was not detected.
YFHC = Yukon Flats Health Clinic

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# Table 3 DRO, RRO, GRO, and BTEX Groundwater Data
# Building 100 and Yukon Flats Health Clinic, Fort Yukon, AK

| Sample Location | Sample Name | Method | AK102 | AK103 | AK101 | 8021B | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **Analtye** | **DRO** | **RRO** | **GRO** | **Benzene** | **Toluene** | **Ethylbenzene** | **Xylenes** |
| | | **Sample Date** | Result (mg/L) | Result (mg/L) | Result (µg/L) | Result (µg/L) | Result (µg/L) | Result (µg/L) | Result (µg/L) |
| | | *Cleanup Levels** | *1.5* | *1.1* | *2200* | *5* | *1000* | *70* | *10,000* |
| **YFHC** | | | | | | | | | |
| MW-1 | FYU13WMW1 | 6/29/13 | ND (0.140) | ND (0.101) | ND (13.9) | ND (0.09) | ND (0.1) | ND (0.07) | ND (0.32) |
| **Building 100** | | | | | | | | | |
| MW-2 | FYU13WMW2 Primary | 6/29/13 | **3.53** | 0.453 | ND (13.9) | ND (0.09) | ND (0.1) | ND (0.07) | ND (0.32) |
| | FYU13WMW3 Duplicate | 6/29/13 | **3.88** | 0.498 | ND (13.9) | ND (0.09) | ND (0.1) | ND (0.07) | ND (0.32) |

**Notes:**
* = ADEC Table C Groundwater cleanup levels (18 AAC 75.345 Table C)
AAC = Alaska Administrative Code
ADEC = Alaska Department of Environmental Conservation
AK = Alaska
DRO = diesel-range organics
GRO = gasoline-range organics
µg/l = micrograms per liter
mg/L = milligrams per liter
MW = Monitoring well
ND (0.141) = not detected at a concentration greater than the method detection/reporting limit shown in parentheses
RRO = Residual-range organics
YFHC = Yukon Flats Health Center
**Yellow highlighted and bolded** results indicate concentrations greater than ADEC groundwater cleanup levels

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# Table 4 PAH Groundwater Data
# Building 100 and Yukon Flats Health Clinic, Fort Yukon, AK

| Sample Location | | YFHC MW-1 | | Building 100 MW-2 | | | |
|---|---|---|---|---|---|---|---|
| Sample Name | | FYU13WMW1 | | FYU13WMW2 Primary | | FYU13WMW3 Duplicate | |
| Analyte | ADEC Cleanup Level µg/L | Result (µg/L) | Detection Limit (µg/L) | Result (µg/L) | Detection Limit (µg/L) | Result (µg/L) | Detection Limit (µg/L) |
| 1-Methylnaphthalene | 150 | 0.029 | 0.0057 | 0.13 | 0.0057 | 0.02 | 0.0068 |
| 2-Methylnaphthalene | 150 | ND | 0.0057 | 0.036 | 0.0057 | 0.036 | 0.0057 |
| Acenaphthene | 2200 | ND | 0.0057 | ND | 0.0057 | 0.13 | 0.0057 |
| Acenaphthylene | 2200 | ND | 0.0057 | ND | 0.0057 | ND | 0.0057 |
| Anthracene | 11000 | ND | 0.0057 | ND | 0.0057 | ND | 0.0057 |
| Benzo[a]anthracene | 1.2 | ND | 0.0057 | 0.034 | 0.0058 | ND | 0.0057 |
| Benzo[a]pyrene | 0.2 | ND | 0.0057 | 0.14 J | 0.0058 | ND J | 0.0057 |
| Benzo[b]fluoranthene | 1.2 | ND | 0.0057 | 0.16 J | 0.0058 | ND J | 0.0057 |
| Benzo[g,h,i]perylene | 1100 | ND | 0.0057 | 0.06 J | 0.0058 | 0.023 J | 0.0057 |
| Benzo[k]fluoranthene | 12 | ND | 0.0057 | 0.091 J | 0.0058 | 0.17 J | 0.0057 |
| Chrysene | 120 | ND | 0.0057 | 0.065 J | 0.0058 | 0.026 J | 0.0057 |
| Dibenzo(a,h)anthracene | 0.1 | ND | 0.0057 | 0.023 | 0.0058 | 0.039 | 0.0057 |
| Fluoranthene | 1500 | ND | 0.0057 | 0.023 | 0.0057 | 0.1 | 0.0057 |
| Fluorene | 1500 | ND | 0.0057 | ND | 0.0057 | 0.043 | 0.0057 |
| Indeno[1,2,3-cd]pyrene | 1.2 | ND | 0.0057 | 0.083 J | 0.0058 | 0.092 J | 0.0057 |
| Naphthalene | 730 | ND | 0.0068 | 0.02 | 0.0068 | 0.056 | 0.0057 |
| Phenanthrene | 11000 | ND | 0.0057 | ND | 0.0057 | ND | 0.0057 |
| Pyrene | 1100 | ND | 0.0057 | 0.18 | 0.0058 | 0.04 | 0.0057 |

**Notes:**
ADEC = Alaska Department of Environmental Conservation
J =The associated numerical value is an estimated quantity because the quality control criteria were not met
µg/L = micrograms per liter
MW = monitoring well
ND = not detected
PAH = Polynuclear Aromatic Hydrocarbons
YFHC = Yukon Flats Health Clinic

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**FIGURES**

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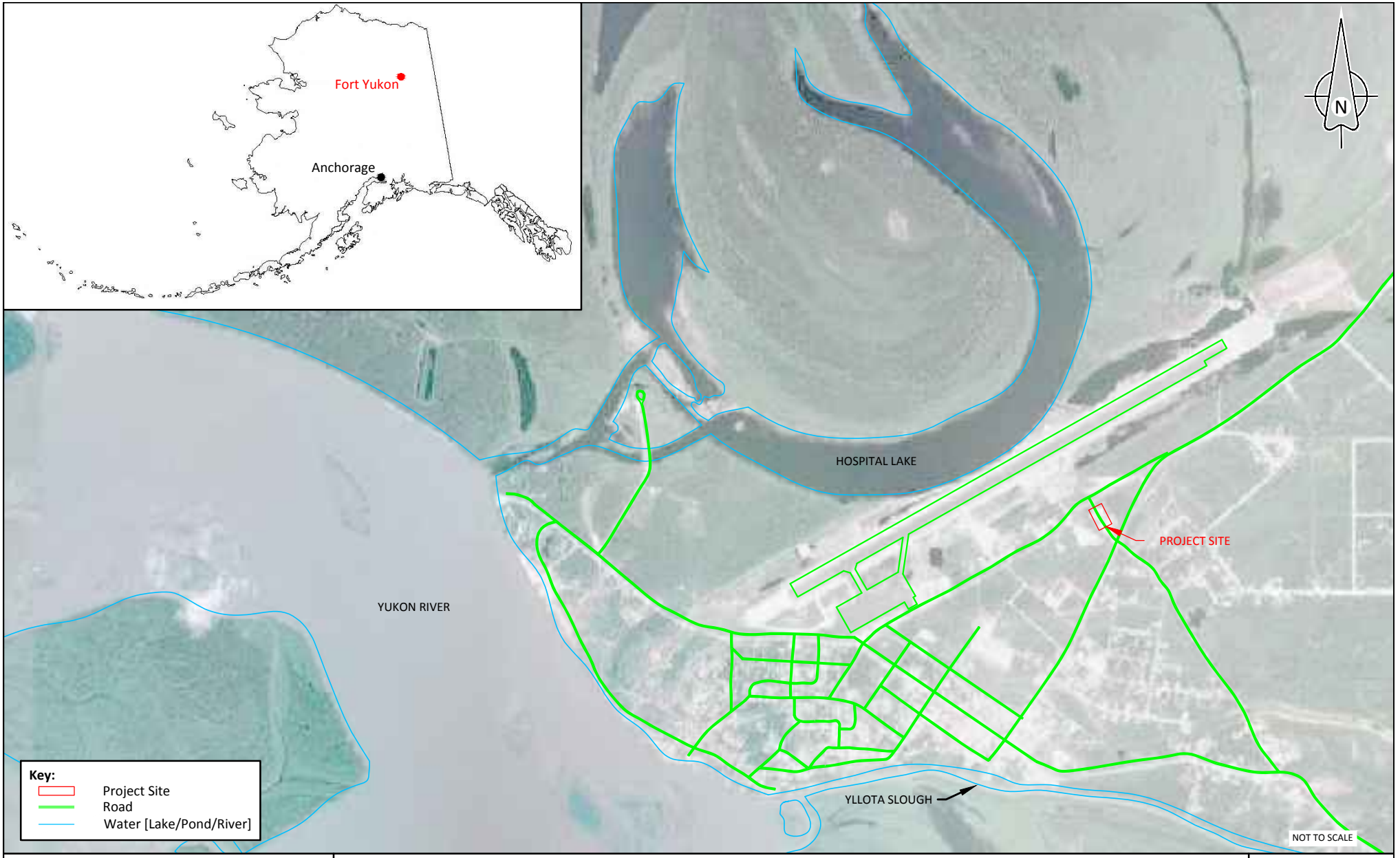


**Notes:**

1. All locations are approximate.
2. Building locations based on:
   a. "Yukon Flats Health Center". Google Earth, 6/6/2011.
3. Fuel line locations based on:
   a. YFHL Storage Building and Building 100 Site Plan. HLA, 1997.

Decommissioning and Investigation Report
FAA Station Fort Yukon, Alaska

Ahtna Engineering

**State and Site Vicinity**

| Project Number: | Figure Number: |
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| Date: 03-18-2013 | |
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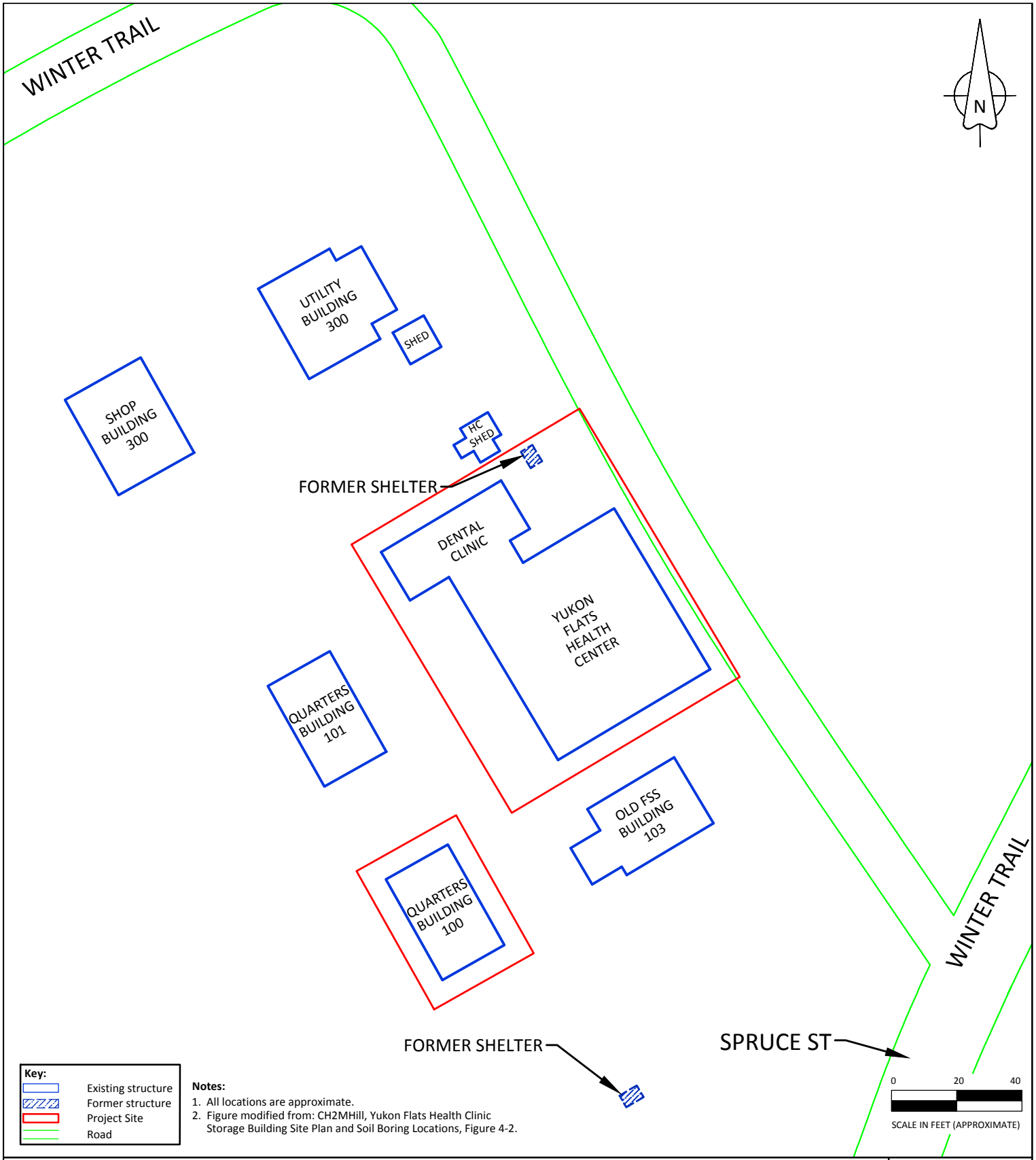


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**Site Plan**

| Project Number: | Figure Number: |
|---|---|
| 20125.059 | 2 |
| Date: 03-26-2013 | |
| Drawn By: G.R. | |

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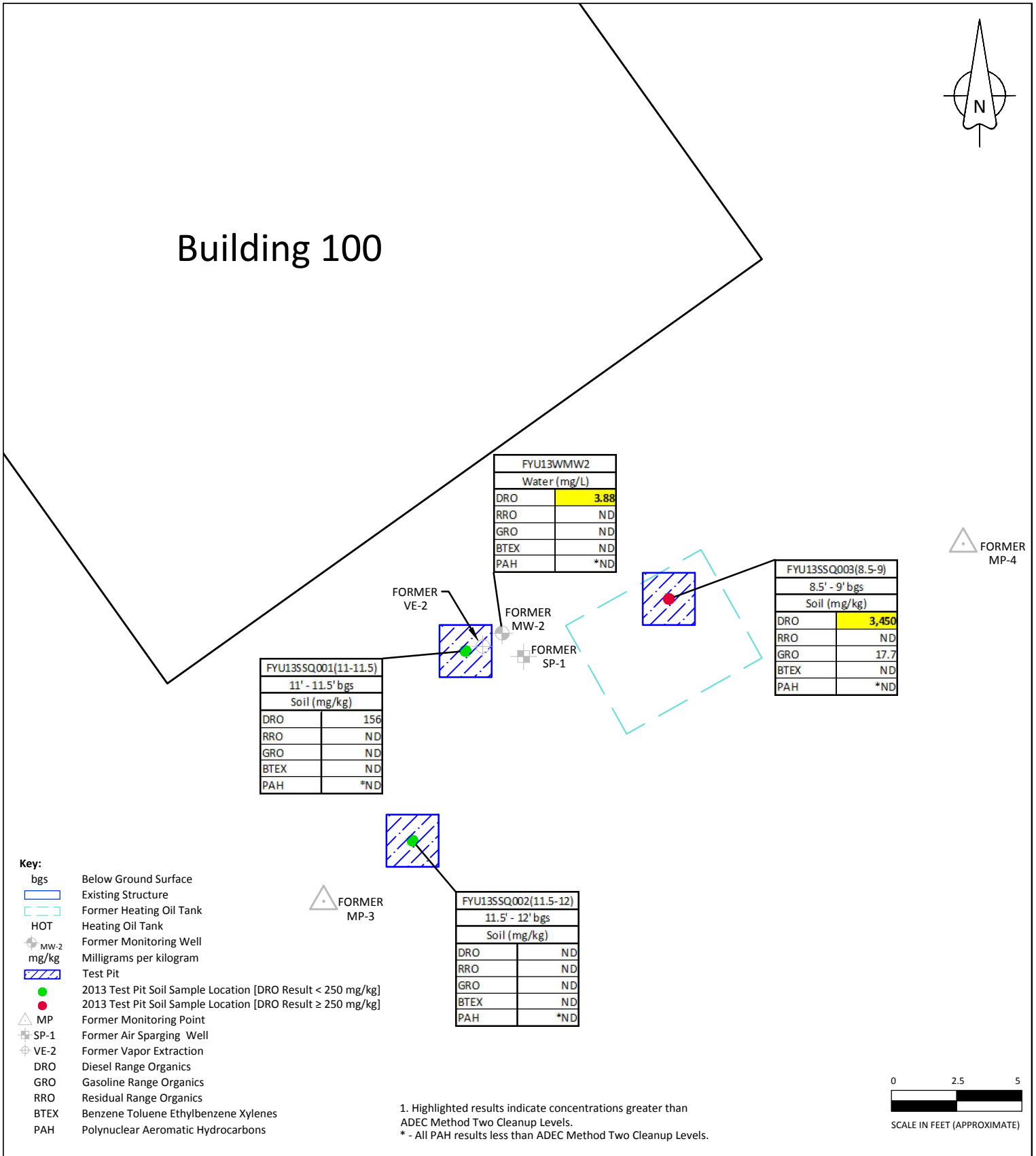


Decommissioning and Investigation Report
FAA Station Fort Yukon, Alaska

Ahtna Engineering

**Building 100 - Analytical Sample Locations and Results**

Project Number: 20125.059
Date: 10.17.2013
Drawn By: G.R.
Figure Number: 3

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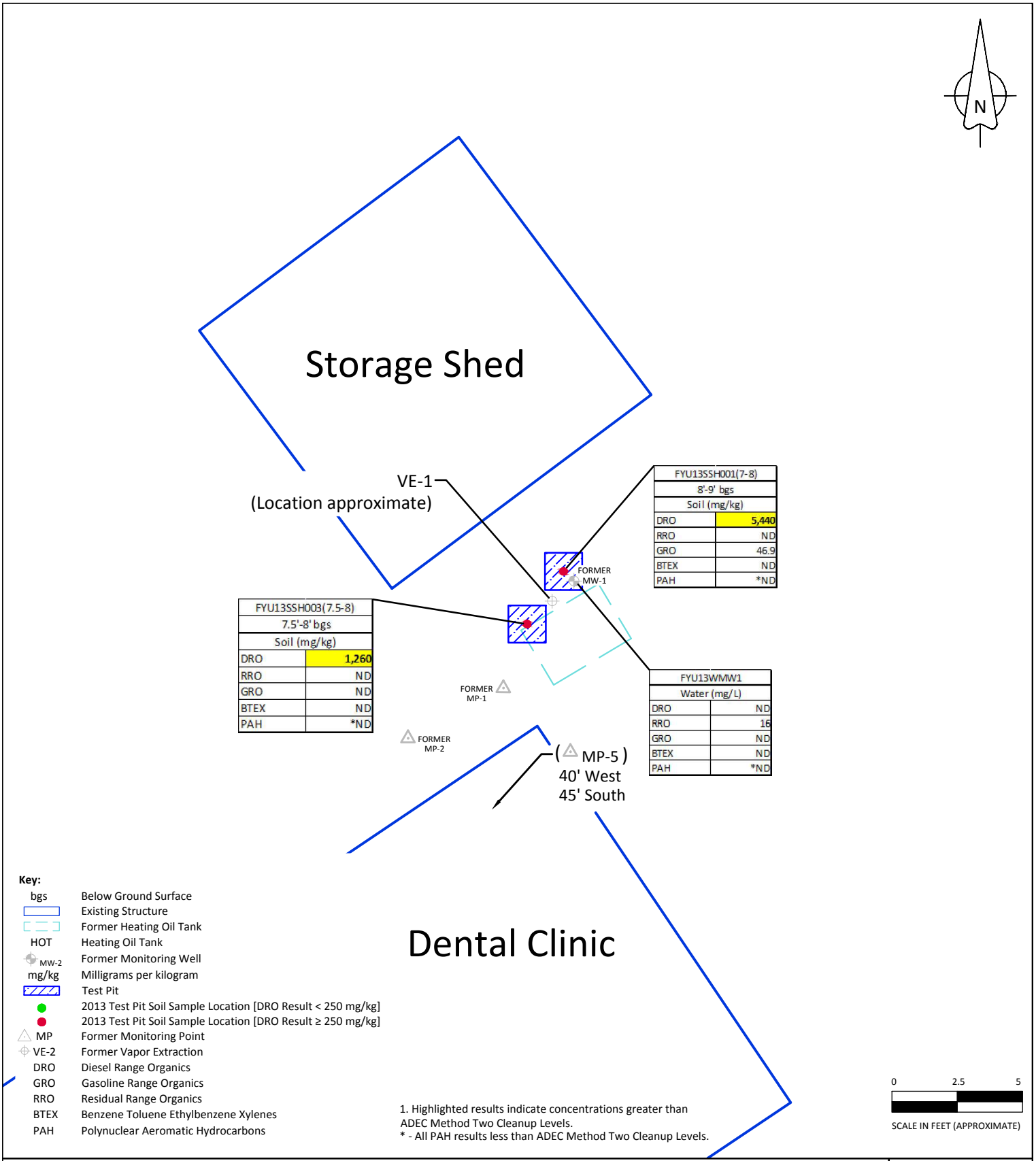


**Key:**

| | |
|---|---|
| bgs | Below Ground Surface |
| | Existing Structure |
| | Former Heating Oil Tank |
| HOT | Heating Oil Tank |
| MW-2 | Former Monitoring Well |
| mg/kg | Milligrams per kilogram |
| | Test Pit |
| | 2013 Test Pit Soil Sample Location [DRO Result < 250 mg/kg] |
| | 2013 Test Pit Soil Sample Location [DRO Result ≥ 250 mg/kg] |
| MP | Former Monitoring Point |
| VE-2 | Former Vapor Extraction |
| DRO | Diesel Range Organics |
| GRO | Gasoline Range Organics |
| RRO | Residual Range Organics |
| BTEX | Benzene Toluene Ethylbenzene Xylenes |
| PAH | Polynuclear Aeromatic Hydrocarbons |

1. Highlighted results indicate concentrations greater than ADEC Method Two Cleanup Levels.
* - All PAH results less than ADEC Method Two Cleanup Levels.

0 2.5 5

SCALE IN FEET (APPROXIMATE)

Decommissioning and Investigation Report
FAA Station Fort Yukon, Alaska

Ahtna Engineering

**Yukon Flats Health Center - Analytical Sample Locations and Results**

Project Number: 20125.059
Date: 10.17.2013
Drawn By: G.R.
Figure Number: 4

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**APPENDIX A**

SUPPLEMENTAL FIELD INFORMATION

A-1

SITE PHOTOGRAPHS

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Photograph 1: Building 100 wells prior to decommissioning. UST fill pipe with cover on the rightof yellow painted monitoring well protective corrugated pipe (facing northeast).


Photograph 2: Removing MW-2 casing at Building 100 (facing east).

Photograph 3: Exposing air supply pipe in order to cut and cap pipe for removal of sparging well SP-1 (facing west).

Photograph 4: Backhoe removing protective bollards from former blower house location south of Building 100 (facing south).


Photograph 5: Removal of remaining air sparging system at former blower house location for Building 100 remedial system(facing southwest).

Photograph 6: Excavating test pit 1 at the YFHC. Removed vapor extraction well VE-1 in the foreground(looking west).

Photograph 7:Excavating Test Pit 2 at the YFHC (facing west).

Photograph 8: Excavating Test Pit 2 at Building 100 (facing southeast).

Photograph 9: Graded and seeded disturbed area at the YFHC (facing west).

Photograph 10: Graded and seeded disturbed area at Building 100 (looking west).

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**APPENDIX A**

SUPPLEMENTAL FIELD INFORMATION

A-2

FIELD NOTES

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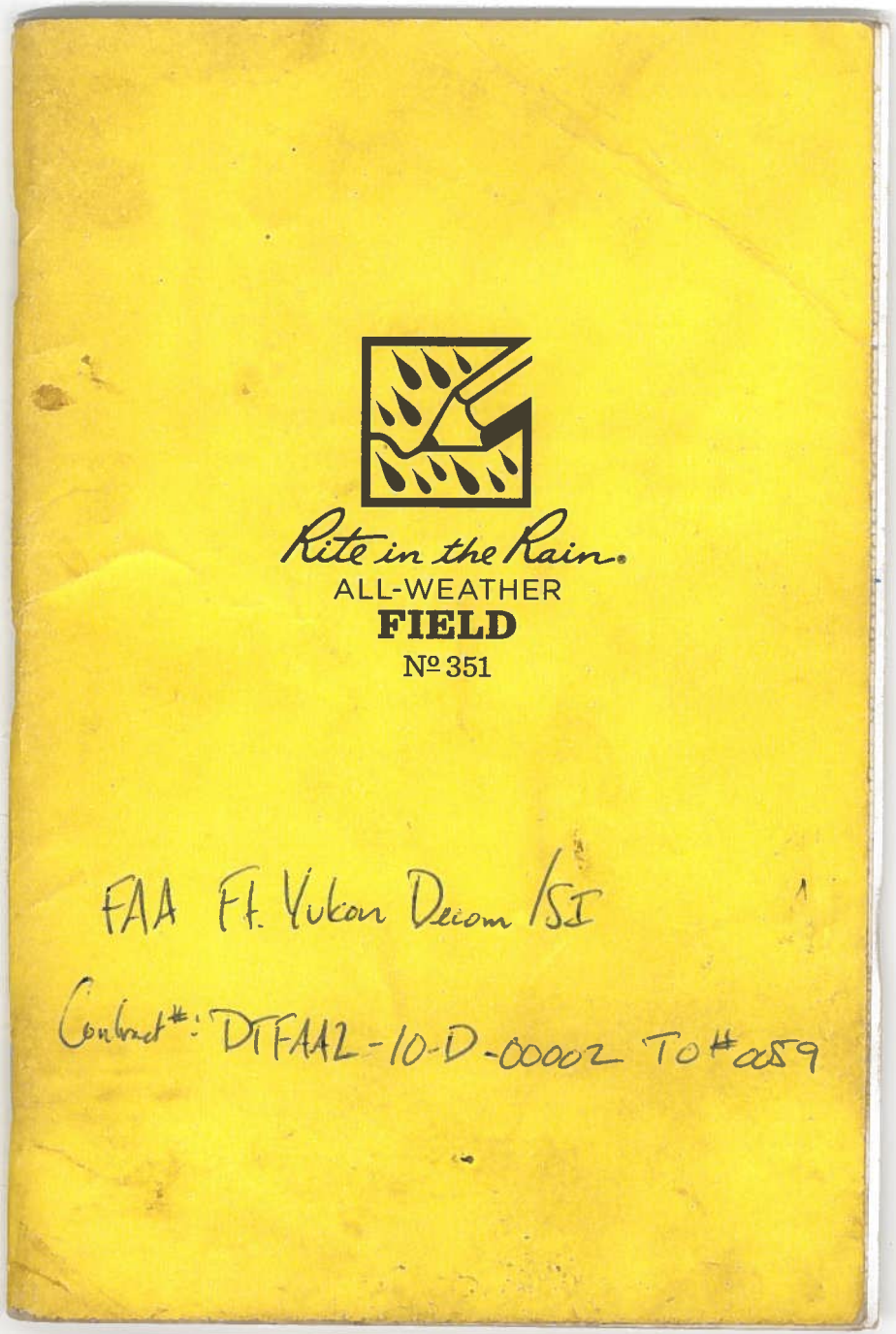
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| | Tony Carroll - | |
| | - 662-#5170 - | |
| | - PO Box 205 - | |
| | Ft, Yukon, AK 99740 | |

6/28/13, FRIDAY, SUNNY-

0530 - ARRIVE ANC AIRPORT FOR FLIGHT TO FAI
0640 - DEPART ANC
0730 - ARRIVE FBX
0800 - ARRIVE FEVERS AND CARGO - NO FREIGHT
0930 - ZACK RASMUSSEN ARRIVES AT EVENTT'S AC FROM DELTA
1030 - DROPOFF PERSONAL GEAR AT ARCTIC AIR TAXI.
1230 - TRUCK IN FROM ANC WITH FREIGHT.
1300 - ARRIVE ARCTIC AIR TAXI FOR CHARTER FLIGHT TO FORT YUKON
1330 - DEPART FOR YUKON
1430 - ARRIVE FORT YUKON
- LOCAL AC MANAGER GUES RIDE TO RHINO / ~~BACHER~~ NEAR RIVER
1500 - RHINO WILL NOT START - ~~GOOD~~ TO = GO TO GAS STATION
1530 - TOW RHINO TO FAA FACILITY, PUT IN SHOP - ATTEMPT TO CLEAN PUMP (FUEL)
1700 - RHINO STILL DOESN'T START. AFTER CLEANING FUEL PUMP
- ASSESS WELLS AND TEST PIT AREAS -
1730 - DONE FOR DAY

6/28/13



6/29/13 SATURDAY, OVERCAST AM, 65°F

0700 - HOLD H/S SAFETY MEETING,
AES: TIM DOBSON, ZACK RASMUSSEN
FAA LANCE RAYMORE
- DISCUSS SAFETY NEAR EQUIPMENT, PROPER PPE, PROPER SAMPLING METHOD, PPE
0715 - SET UP TO BEGIN SAMPLING MW2 AT BLDG LOD
0820 - BEGIN PURGING MW2 - INITIAL CHARTER LEVEL 14.38 - @ 500 ml/min
0850 - PURGE ≈ 5.25 GALLONS - BEGIN COLLECTING MW1 SAMPLE FYU13WMW2
DUPLICATE SAMPLE FYU13WMW3 - AT 0930
0905 - COMPLETE SAMPLING MW2
- MOVE GEAR TO MW1 BY YFHC
- DECON PUMP - 5 MIN LOOP, 5 MIN RI
5 MIN R2
0955 - BEGIN PURGING MW1 AT YFHC
1044 - CEASE PURGING MW1 - ≈ 5 WELL VOLUMES AT 4.7 GALLONS IN BUCKET
COLLECT @ FYU13WMW1
1050 - CEASE SAMPLING MW1 - DECON PUMP
1115 - TALK BREAK TO EAT
1145 - PREPARE TO DECON MW2 / AND SOURCE

6/29/13

6/29/13 SATURDAY, 80° P.CLOUDY

WELLS AT BLALOCK LANE BUILDING Q100 PER COC

1220 - COMPLETE REMOVAL OF MW2 - USE ≈ 1/2 BAG OF BENTONITE TO WITHIN 2' BGS - FILL REMAINING HOLE 0-2' BGS WITH NATIVE MATERIAL

1230 - BEGIN REMOVAL OF SP1 -

1300 - REMOVE LINE - CAP INTO SP1

1400 - EXCAVATE AROUND SP1 TO EXPOSE NOZZLE PIPE

1430 - CUT SP1 5' BGS - REMOVE PIPE - FILL REMAINING HOLE WITH BENTONITE. HYDRATE -

HEAD TO AC STORE FOR SUPPLIES

1520 - BEGIN REMOVAL OF VE1 -

1550 - COMPLETE REMOVAL - DECOM OF VE1 - CUT OFF AT 5' BGS - FILL PIPE W/ BENTONITE - HYDRATE 1/2 WAY AND AT TOP OF CUT SECTION

1600 - BEGIN EXCAVATING TP1 AT QUARTERS BUILDING

1645 - COLLECT Q001 FOR GRO/BTEX, DRO/RRO PAH - TAPE SWING TIE - 18'10" OF EAST SIDE OF LOG 11'6" OF WEST SIDE OF BUILDING - Q001 COLLECTED FROM 11' - 11'6 BGS

1655 - BACKFILL TP1 -

1720 - COMPLETE BACKFILL OF TP1 - FUEL BACKHOE - FILL BACKHOE WITH DIESEL

1745 - REMOVE MONITORING POINTS MP3 AND MP4

6/29/13



6/29/13 SATURDAY, 80° P CLOUDY

- PROBE POINT OF MP4 WAS BROKEN/RUSTED OFF WHEN PULLED FROM THE GROUND.
- 3/4" LINE WAS NOT BACKFILLED AS BOTH POINT HOLES CLOSED UP WHEN PULLED OUT

1810 REMOVE BOLLARDS FROM IN FRONT OF OLD BLOWER HOUSE. - 5 BOLLARDS

1820 - REMOVE INFRASTRUCTURE FROM OLD BLOWER HOUSE, INCLUDES 2" PVC STICK UP, HEAT TRACE WIRE AND WIRING FROM BLOWER HOUSE.

1900 - CLEAN UP WORK AREA DONE FOR DAY.

6/29/13 MP#3

6/30/13 SUNDAY, MOSTLY SUNNY 65°F

0655 - CONDUCT H/S SAFETY MEETING
ATES - SSHO - TIM DOBSON, OPERATOR - ZACK RASMUSSEN
FAA - COTR ~~TIM FAA~~ CANCE RAYMONDE
0715 - ORGANIZE TOOLS FOR DAY
0730 - BEGIN PULLING MPS.
0740 - ATTEMPT TO LOCATE MP2 UNDER GRAVEL ON NORTH END OF YFHC
0800 - PULL MP1 AND MP2 FROM SUBSURFACE
0830 - DECOM MW1 AND VE1 - BOTH CASINGS WERE REMOVED FROM SUBSURFACE WITH BOREHOLES INTACT, 3/4 OF A BAG OF BENTONITE WERE USED TO FILL EACH BOREHOLE. THE BENTONITE WAS HYDRATED AT 2 1/2 FT DEPTH AND AT THE TOP OF THE BH.
0840 - BEGIN EXCAVATING TP1 AT THE YFHC TO TARGET DEPTH OF 8'-9' BGS
- DIESEL ODOR PRESENT AT 7'
0855 - COLLECT FYK13SSH001(7-8) - GRD/BRK, DRO/RRO/PAH SWING TIE - 8'5" FROM NE CORNER DENTAL CLINIC 9'3" FROM SW CORNER OF SHED
0900 - BACKFILL TP1 AT YFHC.
* WILL NOT BE ABLE TO COLLECT 3 SAMPLE LOCATIONS AT FYHC - TOO MUCH INFRASTRUCTURE LOCATED IN AREA OF SOUTH PORTION OF CONTAMINATED



6/30/13 SUNDAY MOSTLY SUNNY, 70°F

AREA WITH "HOT" AND SERVICE/VENT LINES IN THAT AREA. FAA COTR AGREES UNWISE TO EXCAVATE NEAR "HOT" AND SERVICE LINES. WILL COLLECT SAMPLE FROM WEST PORTION OF CONTAMINATED AREA.
1000: EXCAVATE TP2 AT YFHC TO ± 7'6" - GROUND PARTIALLY FROZEN AT DEPTH - SILTY SAND MATRIX, VERY COMPACT.
1010 - COLLECT FYK13SSH002(7.5-8) AND DUPLICATE FYK13SSH003(7.5-8) FROM TP2
- SWING TIE FROM SHED 7'6" SW CORNER
- SWING TIE FROM YFHC 5'6" NE CORNER
1015 - BACKFILL TP2 AT
1030 - GRADE AND RAKE YFHC AREA
1050 - TAILGATE BREAK
1110 - BEGIN EXCAVATING TP2 AT QUARTERS 100 BLDG
1220 - COLLECT ~~FYK13SS002~~ FYK13SSQ002(11.5-12) AT 11.5-12' BGS - DIESEL ODOR
SWING TIE 11'2" AT SW CORNER Q100 BLDG
1230 - BACKFILL TP2 AT Q100 BLDG
1310 - BEGIN TP3 AT Q100 BLDG
1340 - COLLECT FYK13SSQ003(8.5-9) - SILTY SAND MATERIAL - DRO ODOR AT 7' BGS

6/30/13 SUNDAY - SUNNY 85°F

1345 - COLLECT SWING TIE - 13'6" FROM SE CORNER BLDG 100
19'7" FROM SW CORNER OF BLDG 100

1400 - BACKFILL TP1

1430 - GRADE AND SEED QUARTERS AND YFAC AREA

1600 - REMOVE BOLLARDS FROM IN FRONT OF FORMER BLOWER UNIT AT QUARTERS 100 BLDG

1630 - MAKE DUMP RUN WITH MONITORING WELL PIPE, MONITORING PROBE POSTS, BOLLARDS AND OTHER PROJECT WASTE

1700 PUT AWAY TOOLS - DONE FOR DAY

7/1/13



7/1/13 MONDAY - SUNNY

0800 - PACK TOOLS AND CORE SAMPLES FOR SHIPMENT

1000 - PROCURE PLANE/PERSON TO MOVE/STORE LOADER/RHINO TO CATCH BARGE IN AUGUST

1130 - PACK GEAR AND MOVE TO AIRSTRIP

1245 - DEPART FT YUKON

1345 - ARRIVE FAIRBANKS
- TAKE CARGO TO ALASKA AIR CARGO

2000 - TAKE FLIGHT TO ANCHORAGE

2035 - ARRIVE ANCHORAGE
TAKE CAB TO RESIDENCE -
DONE FOR DAY

7/1/2013

**APPENDIX A**

SUPPLEMENTAL FIELD INFORMATION

A-3

GROUNDWATER SAMPLING FORMS

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# GROUNDWATER SAMPLING FORM

Ahtna Engineering

| PROJECT NUMBER: | WELL NUMBER: | SHEET: of |
|---|---|---|
| | | |

| | | | |
|---|---|---|---|
| PROJECT NAME | Fort Yukon Decom/SE | WELL CONDITION | GOOD |
| CLIENT | FAA | DAMAGE PRESENT | NONE NOTED |
| DATE | 6/29/13 | DEPTH TO WATER (FROM TOC) | 11.43 |
| SITE | YFHC-MW1 | DEPTH TO BASE (FROM TOC) | 16.52 |
| GEOLOGIST | TIM DOBSON | HEIGHT OF WATER COLUMN | 5.09 |
| WEATHER/ TEMPERATURE | M. CLOUDY, 65° | WELL VOLUME | 0.86 GAL |
| WIND | | | 13.98 |

| DIAMETER | O.D. | I.D. | VOLUME (GAL/LIN FT) |
|---|---|---|---|
| 2" | 2.375" | 2.067" | 0.17 |
| 3" | 3.5" | 3.068" | 0.38 |
| 4" | 4.5" | 4.026" | 0.66 |
| 6" | 6.625" | 6.065" | 1.5 |
| 8" | 8.625" | 7.981" | 2.6 |

## SAMPLING DATA

SAMPLE TYPE (GW, PRODUCT, OTHER):

SAMPLE COLLECTED WITH: ____ Bailer ____ Pump ____ Other, Specify:

MADE OF: X Stainless Steel ____ PVC

____ Teflon ____ Disposable LDPE ____ Other, Specify:

SAMPLING DECON PROCEDURE: SMIN LIQUI-SMIN R1, SMIN R2

SAMPLE DESCRIPTION: (color, free product thickness, odor, turbidity) - MOSTLY CLEAR PURGE WATER, NO ODOR

## FIELD WATER QUALITY PARAMETERS

| TIME | PURGED VOLUME (GAL) | Water Level | Draw Down | Temperature (°F or °C) | pH | Conductivity (µS/cm) | ORP | D.O. (%) | D.O. (mg/L) | Turbidity | Color | Odor |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0955 | 0.1 | 11.55 | 0.07 | 2.87 | 7.05 | 547 | 90.9 | 14.0 | 1.9 | L | M.CLEAR | NO |
| 0959 | 0.3 | 11.61 | 0.18 | 2.20 | 7.01 | 526 | 82.4 | 14.5 | 2.00 | L | MCCLEAR | |
| 1003 | 0.5 | 11.56 | 0.08 | 2.02 | 7.01 | 516 | 76.4 | 14.9 | 2.04 | L | M Clear | No |
| 1007 | 0.7 | 11.58 | 0.18 | 1.74 | 7.03 | 506 | 55.1 | 12.5 | 1.71 | L | mclear | No |
| 1011 | 1.0 | 11.58 | 0.15 | 1.72 | 7.04 | 503 | 48.5 | 10.4 | 1.43 | L | MCLEAR | NO |
| 1015 | 1.5 | 11.59 | 0.16 | 1.66 | 7.04 | 500 | 42.2 | 9.0 | 1.26 | L | MCLEAR | NO |
| 1020 | 2.0 | 11.59 | 0.16 | 1.64 | 7.06 | 505 | 31.4 | 8.6 | 1.21 | L | MCLEAR | NO |
| 1024 | 2.5 | 11.59 | 0.16 | 1.59 | 7.07 | 504 | 23.3 | 8.2 | 1.15 | L | MCLEAR | NO |
| 1028 | 3.0 | 11.59 | 0.16 | 1.60 | 7.06 | 503 | 18.9 | 8.4 | 1.18 | L | MCLEAR | NO |
| 1032 | 3.5 | 11.60 | 0.17 | 1.67 | 7.09 | 504 | 11.7 | 8.7 | 1.21 | L | MCLEAR | NO |
| 1036 | 4.00 | 11.60 | 0.17 | 1.49 | 7.09 | 501 | 8.0 | 8.5 | 1.20 | L | MCLEAR | NO |

## ANALYTICAL SAMPLE INFORMATION

| Analyte | Time | Identification | Additional Sample | Time | Identification |
|---|---|---|---|---|---|
| DRO/RRO | | | Duplicate | | |
| GRO/BTEX | | | | | |
| EPH/VPH | | | | | |
| PAH | | | | | |
| Other | | | | | |

Sampling Notes:

1040 4.5 11.60 0.17 1.59 7.08 505 4.8 8.8 1.22 L MCLEAR NO

14.83
14.38
5.35

5.35'

# GROUNDWATER SAMPLING FORM

Ahtna Engineering

| PROJECT NUMBER: | WELL NUMBER: | SHEET: of |
|---|---|---|
| | | |

PROJECT NAME: FORT YUKON DECOM/SE
CLIENT: FAA
DATE: 6/29/13
SITE: BLDG 100 - MW2
GEOLOGIST: TIM DORSEY
WEATHER/ TEMPERATURE: 60S / CLOUDY
WIND:

WELL CONDITION: GOOD
DAMAGE PRESENT: NOT OBSERVED
DEPTH TO WATER (FROM TOC): 14.38
DEPTH TO BASE (FROM TOC): 19.73
HEIGHT OF WATER COLUMN: 5.35'
WELL VOLUME: 0.9 GALLONS

| DIAMETER | O.D. | I.D. | VOLUME (GAL/LIN FT) |
|---|---|---|---|
| 2" | 2.375" | 2.067" | 0.17 |
| 3" | 3.5" | 3.068" | 0.38 |
| 4" | 4.5" | 4.026" | 0.66 |
| 6" | 6.625" | 6.065" | 1.5 |
| 8" | 8.625" | 7.981" | 2.6 |

## SAMPLING DATA

SAMPLE TYPE (GW, PRODUCT, OTHER):

SAMPLE COLLECTED WITH: ___ Bailer ___ Pump ___ Other, Specify:

MADE OF: ✓ Stainless Steel ___ PVC

___ Teflon ___ Disposable LDPE ___ Other, Specify:

SAMPLING DECON PROCEDURE: PURGE - SMALL H2O, SMALL ALCOHOL, SMALL RINSE

SAMPLE DESCRIPTION: (color, free product thickness, odor, turbidity): LIGHT TAN WATER IN 5-GAL BUCKET, PURGE 5.1 GALLONS - COLLECT SAMPLE

## FIELD WATER QUALITY PARAMETERS

| TIME | PURGED VOLUME (GAL) | Water Level | Draw Down | Temperature (°F or °C) | pH | Conductivity (µS/cm) | ORP | D.O. (%) | D.O. (mg/L) | Turbidity | Color | Odor |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 820 | 0.5 | 14.71 | .33 | 2.54 | 5.58 | 920 | 143.3 | 10.9 | 1.46 | — | TAN | NO |
| 829 | 1.25 | | | 2.96 | 5.76 | 925 | 128.8 | 9.3 | 1.26 | | TAN | NO |
| 833 | 2.50 | | | ~~2.66~~ | 5.98 | 922 | 113.4 | 7.2 | 0.95 | - | TAN | NO |
| 837 | 3.25 | | | 2.73 | 5.84 | 902 | 117.2 | 11.2 | 1.47 | - | LT TAN | |
| 841 | 4.00 | | | 2.73 | 5.92 | 896 | 109.9 | 7.9 | 1.07 | | LT TAN | NO |
| 845 | 4.5 | | | 2.62 | 5.97 | 890 | 104.5 | 6.6 | 0.89 | | M. CLOUDY | NO |
| 849 | 5.1 | | | 1.55 | 5.77 | 842 | 114.4 | 7.0 | 0.99 | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

## ANALYTICAL SAMPLE INFORMATION

| Analyte | Time | Identification |
|---|---|---|
| DRO/RRO | | |
| GRO/BTEX | | |
| EPH/VPH | | |
| PAH | | |
| Other | | |

| Additional Sample | Time | Identification |
|---|---|---|
| Duplicate | | |
| | | |
| | | |
| | | |
| | | |

Sampling Notes:

**APPENDIX B**

LABORATORY DATA

&

VALIDATION REPORTS

B-1

LABORATORY DATA

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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

# ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Anchorage
2000 West International Airport Road  Suite A10
Anchorage, AK 99502-1119
Tel: (907) 563-9200

TestAmerica Job ID: AWG0003
Client Project/Site: 20125.059
Client Project Description: Ft. Yukon Remediation

For:
Ahtna Engineering
3680 Industrial Blvd - 600H
West Sacramento, CA 95691

Attn: Tim Dobson

Johanna Dreher

*Authorized for release by:*
*7/17/2013 6:09:49 PM*

Johanna L Dreher, Client Services Manager
johanna.dreher@testamericainc.com

# Table of Contents

## Qualifiers

### Fuels

| Qualifier | Qualifier Description |
|---|---|
| R2 | The RPD exceeded the acceptance limit. |
| R4 | Due to the low levels of analyte in the sample, the duplicate RPD calculation does not provide useful information. |
| Q1 | Does not match typical pattern |
| Q11 | Detected hydrocarbons in the diesel range do not have a distinct diesel pattern and may be due to heavily weathered diesel. |
| Q2 | Typical pattern for diesel |
| RL7 | Sample required dilution due to high concentrations of target analyte. |

### GC Volatiles

| Qualifier | Qualifier Description |
|---|---|
| M7 | The MS and/or MSD were above the acceptance limits. See Blank Spike (LCS). |
| C8 | Calibration Verification recovery was above the method control limit for this analyte. |
| C | Calibration Verification recovery was above the method control limit for this analyte. Analyte not detected, data not impacted. |
| CF6 | Results confirmed by reanalysis. |
| ZX | Due to sample matrix effects, the surrogate recovery was outside the acceptance limits. |
| R1 | The RPD between the primary and confirmatory analysis exceeded 40%. Per method 8000B, the higher value was reported. |
| Z6 | Surrogate recovery was below acceptance limits. |

## Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| ¤ | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CNF | Contains no Free Liquid |
| DER | Duplicate error ratio (normalized absolute difference) |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision level concentration |
| MDA | Minimum detectable activity |
| EDL | Estimated Detection Limit |
| MDC | Minimum detectable concentration |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| NC | Not Calculated |
| ND | Not detected at the reporting limit (or MDL or EDL if shown) |
| PQL | Practical Quantitation Limit |
| QC | Quality Control |
| RER | Relative error ratio |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |

# Case Narrative

Client: Ahtna Engineering
Project/Site: 20125.059

TestAmerica Job ID: AWG0003

## Job ID: AWG0003

### Laboratory: TestAmerica Anchorage

**Narrative**

**Receipt**
Samples were received on 07/02/2013 at 08:50 AM; the samples arrived in good condition, properly preserved and, where required, on ice.

The temperature of the soil cooler at receipt was 2.2º C.
The temperature of the water cooler at receipt was 2.7º C.

**BTEX**
Due to instrument issues all samples were run by method 8021 and not 8260 as stated on the Chain of Custody.

**Subcontracted**
PAH SIM by 8270 samples were subcontracted to TestAmerica Seattle from TestAmerica Anchorage.

### Laboratory: TestAmerica Seattle

**Narrative**

**Receipt**
The samples were received on 7/3/2013 10:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice.
The temperature of the cooler at receipt was 0.5º C.

Limited volume received for samples 1,2, and 3. Received only one 1-L amber.

# Detection Summary

Client: Ahtna Engineering
Project/Site: 20125.059

TestAmerica Job ID: AWG0003

## Client Sample ID: FYU13WMW1 — Lab Sample ID: AWG0003-01

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| 1-Methylnaphthalene | 0.029 | | 0.019 | | ug/L | 1 | | 8270C SIM | Total/NA |

## Client Sample ID: FYU13WMW2 — Lab Sample ID: AWG0003-02

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 0.031 | | 0.025 | | ug/L | 1 | | 8270C SIM | Total/NA |
| 1-Methylnaphthalene | 0.097 | | 0.019 | | ug/L | 1 | | 8270C SIM | Total/NA |
| Pyrene | 0.18 | | 0.019 | | ug/L | 1 | | 8270C SIM | Total/NA |
| Benzo[a]anthracene | 0.034 | | 0.019 | | ug/L | 1 | | 8270C SIM | Total/NA |
| Chrysene | 0.065 | | 0.019 | | ug/L | 1 | | 8270C SIM | Total/NA |
| Benzo[b]fluoranthene | 0.16 | | 0.019 | | ug/L | 1 | | 8270C SIM | Total/NA |
| Benzo[k]fluoranthene | 0.091 | | 0.019 | | ug/L | 1 | | 8270C SIM | Total/NA |
| Benzo[a]pyrene | 0.14 | | 0.019 | | ug/L | 1 | | 8270C SIM | Total/NA |
| Indeno[1,2,3-cd]pyrene | 0.083 | | 0.019 | | ug/L | 1 | | 8270C SIM | Total/NA |
| Dibenz(a,h)anthracene | 0.023 | | 0.019 | | ug/L | 1 | | 8270C SIM | Total/NA |
| Benzo[g,h,i]perylene | 0.060 | | 0.019 | | ug/L | 1 | | 8270C SIM | Total/NA |
| Diesel Range Organics - RE1 | 3.53 | Q1 | 0.403 | | mg/l | 1.00 | | AK102/103 | Total |
| Residual Range Organics - RE1 | 0.453 | Q1 | 0.403 | | mg/l | 1.00 | | AK102/103 | Total |

## Client Sample ID: FYU13WMW3 — Lab Sample ID: AWG0003-03

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 0.020 | | 0.019 | | ug/L | 1 | | 8270C SIM | Total/NA |
| 2-Methylnaphthalene | 0.036 | | 0.025 | | ug/L | 1 | | 8270C SIM | Total/NA |
| 1-Methylnaphthalene | 0.13 | | 0.019 | | ug/L | 1 | | 8270C SIM | Total/NA |
| Fluoranthene | 0.023 | | 0.019 | | ug/L | 1 | | 8270C SIM | Total/NA |
| Pyrene | 0.17 | | 0.019 | | ug/L | 1 | | 8270C SIM | Total/NA |
| Benzo[a]anthracene | 0.026 | | 0.019 | | ug/L | 1 | | 8270C SIM | Total/NA |
| Chrysene | 0.039 | | 0.019 | | ug/L | 1 | | 8270C SIM | Total/NA |
| Benzo[b]fluoranthene | 0.10 | | 0.019 | | ug/L | 1 | | 8270C SIM | Total/NA |
| Benzo[k]fluoranthene | 0.043 | | 0.019 | | ug/L | 1 | | 8270C SIM | Total/NA |
| Benzo[a]pyrene | 0.092 | | 0.019 | | ug/L | 1 | | 8270C SIM | Total/NA |
| Indeno[1,2,3-cd]pyrene | 0.056 | | 0.019 | | ug/L | 1 | | 8270C SIM | Total/NA |
| Benzo[g,h,i]perylene | 0.040 | | 0.019 | | ug/L | 1 | | 8270C SIM | Total/NA |
| Diesel Range Organics - RE1 | 3.88 | Q1 | 0.400 | | mg/l | 1.00 | | AK102/103 | Total |
| Residual Range Organics - RE1 | 0.498 | Q1 | 0.400 | | mg/l | 1.00 | | AK102/103 | Total |

## Client Sample ID: FYU13TB001 — Lab Sample ID: AWG0003-04

No Detections.

## Client Sample ID: FYU13SSQ001(11-11.5) — Lab Sample ID: AWG0003-05

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 10 | | 5.5 | | ug/Kg | 1 | ☼ | 8270C SIM | Total/NA |
| 2-Methylnaphthalene | 17 | | 5.5 | | ug/Kg | 1 | ☼ | 8270C SIM | Total/NA |
| 1-Methylnaphthalene | 8.4 | | 5.5 | | ug/Kg | 1 | ☼ | 8270C SIM | Total/NA |
| Acenaphthylene | 6.7 | | 5.5 | | ug/Kg | 1 | ☼ | 8270C SIM | Total/NA |
| Pyrene | 61 | | 5.5 | | ug/Kg | 1 | ☼ | 8270C SIM | Total/NA |
| Benzo[a]anthracene | 11 | | 5.5 | | ug/Kg | 1 | ☼ | 8270C SIM | Total/NA |
| Chrysene | 25 | | 5.5 | | ug/Kg | 1 | ☼ | 8270C SIM | Total/NA |

This Detection Summary does not include radiochemical test results.

## Client Sample ID: FYU13SSQ001(11-11.5) (Continued) — Lab Sample ID: AWG0003-05

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Benzo[a]pyrene | 32 | | 5.5 | | ug/Kg | 1 | ☼ | 8270C SIM | Total/NA |
| Indeno[1,2,3-cd]pyrene | 22 | | 5.5 | | ug/Kg | 1 | ☼ | 8270C SIM | Total/NA |
| Benzo[g,h,i]perylene | 17 | | 5.5 | | ug/Kg | 1 | ☼ | 8270C SIM | Total/NA |
| Benzo[b]fluoranthene | 44 | | 5.5 | | ug/Kg | 1 | ☼ | 8270C SIM | Total/NA |
| Benzo[k]fluoranthene | 22 | | 5.5 | | ug/Kg | 1 | ☼ | 8270C SIM | Total/NA |
| Diesel Range Organics | 156 | Q11 | 23.1 | | mg/kg dry | 1.00 | ☼ | AK102/103 | Total |

## Client Sample ID: FYU13SSQ002 (11.5-12) — Lab Sample ID: AWG0003-06

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Pyrene | 6.8 | | 5.3 | | ug/Kg | 1 | ☼ | 8270C SIM | Total/NA |

## Client Sample ID: FYU13SSQ003 (8.5-9) — Lab Sample ID: AWG0003-07

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 89 | | 58 | | ug/Kg | 10 | ☼ | 8270C SIM | Total/NA |
| 2-Methylnaphthalene | 230 | | 58 | | ug/Kg | 10 | ☼ | 8270C SIM | Total/NA |
| Acenaphthylene | 75 | | 58 | | ug/Kg | 10 | ☼ | 8270C SIM | Total/NA |
| Fluoranthene | 380 | | 58 | | ug/Kg | 10 | ☼ | 8270C SIM | Total/NA |
| Pyrene | 610 | | 58 | | ug/Kg | 10 | ☼ | 8270C SIM | Total/NA |
| Benzo[a]anthracene | 200 | | 58 | | ug/Kg | 10 | ☼ | 8270C SIM | Total/NA |
| Chrysene | 260 | | 58 | | ug/Kg | 10 | ☼ | 8270C SIM | Total/NA |
| Benzo[a]pyrene | 120 | | 58 | | ug/Kg | 10 | ☼ | 8270C SIM | Total/NA |
| Indeno[1,2,3-cd]pyrene | 64 | | 58 | | ug/Kg | 10 | ☼ | 8270C SIM | Total/NA |
| Benzo[b]fluoranthene | 180 | | 58 | | ug/Kg | 10 | ☼ | 8270C SIM | Total/NA |
| Benzo[k]fluoranthene | 91 | | 58 | | ug/Kg | 10 | ☼ | 8270C SIM | Total/NA |
| Diesel Range Organics | 3450 | RL7 Q2 | 453 | | mg/kg dry | 20.0 | ☼ | AK102/103 | Total |
| Gasoline Range Organics | 17.7 | | 2.19 | | mg/kg dry | 33.3 | ☼ | AK101/EPA 8021B | Total |
| Xylenes (total) | 0.442 | R1 | 0.0789 | | mg/kg dry | 33.3 | ☼ | AK101/EPA 8021B | Total |

## Client Sample ID: FYU13SSH001 (7-8) — Lab Sample ID: AWG0003-08

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 11 | | 5.6 | | ug/Kg | 1 | ☼ | 8270C SIM | Total/NA |
| Acenaphthylene | 18 | | 5.6 | | ug/Kg | 1 | ☼ | 8270C SIM | Total/NA |
| Phenanthrene | 5.8 | | 5.6 | | ug/Kg | 1 | ☼ | 8270C SIM | Total/NA |
| Fluoranthene | 6.7 | | 5.6 | | ug/Kg | 1 | ☼ | 8270C SIM | Total/NA |
| Pyrene | 11 | | 5.6 | | ug/Kg | 1 | ☼ | 8270C SIM | Total/NA |
| Diesel Range Organics | 5440 | RL7 Q2 | 442 | | mg/kg dry | 20.0 | ☼ | AK102/103 | Total |
| Gasoline Range Organics | 46.9 | | 1.78 | | mg/kg dry | 33.3 | ☼ | AK101/EPA 8021B | Total |
| Xylenes (total) | 1.23 | R1 | 0.0642 | | mg/kg dry | 33.3 | ☼ | AK101/EPA 8021B | Total |

## Client Sample ID: FYU13SSH002 (7.5-8) — Lab Sample ID: AWG0003-09

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 15 | | 5.3 | | ug/Kg | 1 | ☼ | 8270C SIM | Total/NA |
| Acenaphthylene | 24 | | 5.3 | | ug/Kg | 1 | ☼ | 8270C SIM | Total/NA |

This Detection Summary does not include radiochemical test results.

## Client Sample ID: FYU13SSH002 (7.5-8) (Continued) — Lab Sample ID: AWG0003-09

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 30 | | 5.3 | | ug/Kg | 1 | ☼ | 8270C SIM | Total/NA |
| Fluorene | 37 | | 5.3 | | ug/Kg | 1 | ☼ | 8270C SIM | Total/NA |
| Diesel Range Organics | 850 | Q2 | 22.0 | | mg/kg dry | 1.00 | ☼ | AK102/103 | Total |

## Client Sample ID: FYU13SSH003 (7.5-8) — Lab Sample ID: AWG0003-10

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 13 | | 5.3 | | ug/Kg | 1 | ☼ | 8270C SIM | Total/NA |
| 2-Methylnaphthalene | 88 | | 5.3 | | ug/Kg | 1 | ☼ | 8270C SIM | Total/NA |
| Acenaphthylene | 23 | | 5.3 | | ug/Kg | 1 | ☼ | 8270C SIM | Total/NA |
| Acenaphthene | 29 | | 5.3 | | ug/Kg | 1 | ☼ | 8270C SIM | Total/NA |
| Fluorene | 22 | | 5.3 | | ug/Kg | 1 | ☼ | 8270C SIM | Total/NA |
| Phenanthrene | 6.8 | | 5.3 | | ug/Kg | 1 | ☼ | 8270C SIM | Total/NA |
| Diesel Range Organics | 1260 | Q2 | 21.7 | | mg/kg dry | 1.00 | ☼ | AK102/103 | Total |

## Client Sample ID: FYU13TB002 — Lab Sample ID: AWG0003-11

No Detections.

This Detection Summary does not include radiochemical test results.

Client: Ahtna Engineering
Project/Site: 20125.059

TestAmerica Job ID: AWG0003

**Client Sample ID: FYU13WMW1**
**Date Collected: 06/29/13 10:44**
**Date Received: 07/02/13 08:50**

**Lab Sample ID: AWG0003-01**
**Matrix: Water**

### Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:34 | 1 |
| 2-Methylnaphthalene | ND | | 0.025 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:34 | 1 |
| **1-Methylnaphthalene** | **0.029** | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:34 | 1 |
| Acenaphthylene | ND | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:34 | 1 |
| Acenaphthene | ND | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:34 | 1 |
| Fluorene | ND | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:34 | 1 |
| Phenanthrene | ND | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:34 | 1 |
| Anthracene | ND | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:34 | 1 |
| Fluoranthene | ND | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:34 | 1 |
| Pyrene | ND | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:34 | 1 |
| Benzo[a]anthracene | ND | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:34 | 1 |
| Chrysene | ND | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:34 | 1 |
| Benzo[b]fluoranthene | ND | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:34 | 1 |
| Benzo[k]fluoranthene | ND | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:34 | 1 |
| Benzo[a]pyrene | ND | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:34 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:34 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:34 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:34 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Terphenyl-d14* | *111* | | *20 - 150* | *07/05/13 15:31* | *07/13/13 15:34* | *1* |

### Method: AK102/103 - Diesel Range Organics (C10-C25) and Residual Range Organics (C25-C36) per AK102/RRO - RE1

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics | ND | | 0.388 | | mg/l | | 07/10/13 08:59 | 07/10/13 16:13 | 1.00 |
| Residual Range Organics | ND | | 0.388 | | mg/l | | 07/10/13 08:59 | 07/10/13 16:13 | 1.00 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane* | *116* | | *50 - 150* | *07/10/13 08:59* | *07/10/13 16:13* | *1.00* |
| *Triacontane* | *107* | | *50 - 150* | *07/10/13 08:59* | *07/10/13 16:13* | *1.00* |

### Method: AK101/EPA 8021B - Gasoline Range Organics (C6-C10) and BTEX per AK101

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | ND | | 50.0 | | ug/l | | 07/02/13 10:34 | 07/03/13 00:09 | 1.00 |
| Benzene | ND | | 0.500 | | ug/l | | 07/02/13 10:34 | 07/03/13 00:09 | 1.00 |
| Toluene | ND | | 0.500 | | ug/l | | 07/02/13 10:34 | 07/03/13 00:09 | 1.00 |
| Ethylbenzene | ND | | 0.500 | | ug/l | | 07/02/13 10:34 | 07/03/13 00:09 | 1.00 |
| Xylenes (total) | ND | | 1.50 | | ug/l | | 07/02/13 10:34 | 07/03/13 00:09 | 1.00 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *4-BFB (FID)* | *130* | | *50 - 150* | *07/02/13 10:34* | *07/03/13 00:09* | *1.00* |
| *4-BFB (PID)* | *124* | | *50 - 150* | *07/02/13 10:34* | *07/03/13 00:09* | *1.00* |
| *a,a,a-TFT (FID)* | *125* | | *50 - 150* | *07/02/13 10:34* | *07/03/13 00:09* | *1.00* |
| *a,a,a-TFT (PID)* | *120* | | *50 - 150* | *07/02/13 10:34* | *07/03/13 00:09* | *1.00* |

Client: Ahtna Engineering
Project/Site: 20125.059

TestAmerica Job ID: AWG0003

**Client Sample ID: FYU13WMW2**
**Date Collected: 06/29/13 08:50**
**Date Received: 07/02/13 08:50**

**Lab Sample ID: AWG0003-02**
**Matrix: Water**

### Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:56 | 1 |
| **2-Methylnaphthalene** | **0.031** | | 0.025 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:56 | 1 |
| **1-Methylnaphthalene** | **0.097** | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:56 | 1 |
| Acenaphthylene | ND | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:56 | 1 |
| Acenaphthene | ND | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:56 | 1 |
| Fluorene | ND | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:56 | 1 |
| Phenanthrene | ND | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:56 | 1 |
| Anthracene | ND | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:56 | 1 |
| Fluoranthene | ND | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:56 | 1 |
| **Pyrene** | **0.18** | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:56 | 1 |
| **Benzo[a]anthracene** | **0.034** | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:56 | 1 |
| **Chrysene** | **0.065** | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:56 | 1 |
| **Benzo[b]fluoranthene** | **0.16** | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:56 | 1 |
| **Benzo[k]fluoranthene** | **0.091** | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:56 | 1 |
| **Benzo[a]pyrene** | **0.14** | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:56 | 1 |
| **Indeno[1,2,3-cd]pyrene** | **0.083** | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:56 | 1 |
| **Dibenz(a,h)anthracene** | **0.023** | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:56 | 1 |
| **Benzo[g,h,i]perylene** | **0.060** | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 15:56 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Terphenyl-d14* | *67* | | *20 - 150* | *07/05/13 15:31* | *07/13/13 15:56* | *1* |

### Method: AK102/103 - Diesel Range Organics (C10-C25) and Residual Range Organics (C25-C36) per AK102/RRO - RE1

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Diesel Range Organics** | **3.53** | **Q1** | 0.403 | | mg/l | | 07/10/13 08:59 | 07/10/13 16:46 | 1.00 |
| **Residual Range Organics** | **0.453** | **Q1** | 0.403 | | mg/l | | 07/10/13 08:59 | 07/10/13 16:46 | 1.00 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane* | *109* | | *50 - 150* | *07/10/13 08:59* | *07/10/13 16:46* | *1.00* |
| *Triacontane* | *106* | | *50 - 150* | *07/10/13 08:59* | *07/10/13 16:46* | *1.00* |

### Method: AK101/EPA 8021B - Gasoline Range Organics (C6-C10) and BTEX per AK101

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | ND | | 50.0 | | ug/l | | 07/02/13 10:34 | 07/03/13 05:04 | 1.00 |
| Benzene | ND | | 0.500 | | ug/l | | 07/02/13 10:34 | 07/03/13 05:04 | 1.00 |
| Toluene | ND | | 0.500 | | ug/l | | 07/02/13 10:34 | 07/03/13 05:04 | 1.00 |
| Ethylbenzene | ND | | 0.500 | | ug/l | | 07/02/13 10:34 | 07/03/13 05:04 | 1.00 |
| Xylenes (total) | ND | | 1.50 | | ug/l | | 07/02/13 10:34 | 07/03/13 05:04 | 1.00 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *4-BFB (FID)* | *127* | | *50 - 150* | *07/02/13 10:34* | *07/03/13 05:04* | *1.00* |
| *4-BFB (PID)* | *122* | | *50 - 150* | *07/02/13 10:34* | *07/03/13 05:04* | *1.00* |
| *a,a,a-TFT (FID)* | *114* | | *50 - 150* | *07/02/13 10:34* | *07/03/13 05:04* | *1.00* |
| *a,a,a-TFT (PID)* | *110* | | *50 - 150* | *07/02/13 10:34* | *07/03/13 05:04* | *1.00* |

Client: Ahtna Engineering
Project/Site: 20125.059

TestAmerica Job ID: AWG0003

**Client Sample ID: FYU13WMW3**
**Date Collected: 06/29/13 09:30**
**Date Received: 07/02/13 08:50**

**Lab Sample ID: AWG0003-03**
**Matrix: Water**

### Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **0.020** | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 16:17 | 1 |
| **2-Methylnaphthalene** | **0.036** | | 0.025 | | ug/L | | 07/05/13 15:31 | 07/13/13 16:17 | 1 |
| **1-Methylnaphthalene** | **0.13** | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 16:17 | 1 |
| Acenaphthylene | ND | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 16:17 | 1 |
| Acenaphthene | ND | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 16:17 | 1 |
| Fluorene | ND | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 16:17 | 1 |
| Phenanthrene | ND | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 16:17 | 1 |
| Anthracene | ND | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 16:17 | 1 |
| **Fluoranthene** | **0.023** | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 16:17 | 1 |
| **Pyrene** | **0.17** | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 16:17 | 1 |
| **Benzo[a]anthracene** | **0.026** | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 16:17 | 1 |
| **Chrysene** | **0.039** | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 16:17 | 1 |
| **Benzo[b]fluoranthene** | **0.10** | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 16:17 | 1 |
| **Benzo[k]fluoranthene** | **0.043** | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 16:17 | 1 |
| **Benzo[a]pyrene** | **0.092** | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 16:17 | 1 |
| **Indeno[1,2,3-cd]pyrene** | **0.056** | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 16:17 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 16:17 | 1 |
| **Benzo[g,h,i]perylene** | **0.040** | | 0.019 | | ug/L | | 07/05/13 15:31 | 07/13/13 16:17 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Terphenyl-d14* | *79* | | *20 - 150* | *07/05/13 15:31* | *07/13/13 16:17* | *1* |

### Method: AK102/103 - Diesel Range Organics (C10-C25) and Residual Range Organics (C25-C36) per AK102/RRO - RE1

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Diesel Range Organics** | **3.88** | **Q1** | 0.400 | | mg/l | | 07/10/13 08:59 | 07/10/13 17:18 | 1.00 |
| **Residual Range Organics** | **0.498** | **Q1** | 0.400 | | mg/l | | 07/10/13 08:59 | 07/10/13 17:18 | 1.00 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane* | *103* | | *50 - 150* | *07/10/13 08:59* | *07/10/13 17:18* | *1.00* |
| *Triacontane* | *106* | | *50 - 150* | *07/10/13 08:59* | *07/10/13 17:18* | *1.00* |

### Method: AK101/EPA 8021B - Gasoline Range Organics (C6-C10) and BTEX per AK101

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | ND | | 50.0 | | ug/l | | 07/02/13 10:34 | 07/03/13 05:31 | 1.00 |
| Benzene | ND | | 0.500 | | ug/l | | 07/02/13 10:34 | 07/03/13 05:31 | 1.00 |
| Toluene | ND | | 0.500 | | ug/l | | 07/02/13 10:34 | 07/03/13 05:31 | 1.00 |
| Ethylbenzene | ND | | 0.500 | | ug/l | | 07/02/13 10:34 | 07/03/13 05:31 | 1.00 |
| Xylenes (total) | ND | | 1.50 | | ug/l | | 07/02/13 10:34 | 07/03/13 05:31 | 1.00 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *4-BFB (FID)* | *121* | | *50 - 150* | *07/02/13 10:34* | *07/03/13 05:31* | *1.00* |
| *4-BFB (PID)* | *117* | | *50 - 150* | *07/02/13 10:34* | *07/03/13 05:31* | *1.00* |
| *a,a,a-TFT (FID)* | *116* | | *50 - 150* | *07/02/13 10:34* | *07/03/13 05:31* | *1.00* |
| *a,a,a-TFT (PID)* | *112* | | *50 - 150* | *07/02/13 10:34* | *07/03/13 05:31* | *1.00* |

## Client Sample ID: FYU13TB001

**Lab Sample ID: AWG0003-04**

**Date Collected: 06/29/13 12:00**

**Matrix: Water**

**Date Received: 07/02/13 08:50**

### Method: AK101/EPA 8021B - Gasoline Range Organics (C6-C10) and BTEX per AK101

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | ND | | 50.0 | | ug/l | | 07/02/13 10:34 | 07/03/13 05:57 | 1.00 |
| Benzene | ND | | 0.500 | | ug/l | | 07/02/13 10:34 | 07/03/13 05:57 | 1.00 |
| Toluene | ND | | 0.500 | | ug/l | | 07/02/13 10:34 | 07/03/13 05:57 | 1.00 |
| Ethylbenzene | ND | | 0.500 | | ug/l | | 07/02/13 10:34 | 07/03/13 05:57 | 1.00 |
| Xylenes (total) | ND | | 1.50 | | ug/l | | 07/02/13 10:34 | 07/03/13 05:57 | 1.00 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *4-BFB (FID)* | *115* | | *50 - 150* | *07/02/13 10:34* | *07/03/13 05:57* | *1.00* |
| *4-BFB (PID)* | *111* | | *50 - 150* | *07/02/13 10:34* | *07/03/13 05:57* | *1.00* |
| *a,a,a-TFT (FID)* | *109* | | *50 - 150* | *07/02/13 10:34* | *07/03/13 05:57* | *1.00* |
| *a,a,a-TFT (PID)* | *106* | | *50 - 150* | *07/02/13 10:34* | *07/03/13 05:57* | *1.00* |

## Client Sample ID: FYU13SSQ001(11-11.5)

**Lab Sample ID: AWG0003-05**

**Date Collected: 06/29/13 16:45**

**Matrix: Soil**

**Date Received: 07/02/13 08:50**

**Percent Solids: 86.4**

### Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **10** | | 5.5 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:00 | 1 |
| **2-Methylnaphthalene** | **17** | | 5.5 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:00 | 1 |
| **1-Methylnaphthalene** | **8.4** | | 5.5 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:00 | 1 |
| **Acenaphthylene** | **6.7** | | 5.5 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:00 | 1 |
| Acenaphthene | ND | | 5.5 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:00 | 1 |
| Fluorene | ND | | 5.5 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:00 | 1 |
| Phenanthrene | ND | | 5.5 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:00 | 1 |
| Anthracene | ND | | 5.5 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:00 | 1 |
| Fluoranthene | ND | | 5.5 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:00 | 1 |
| **Pyrene** | **61** | | 5.5 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:00 | 1 |
| **Benzo[a]anthracene** | **11** | | 5.5 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:00 | 1 |
| **Chrysene** | **25** | | 5.5 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:00 | 1 |
| **Benzo[a]pyrene** | **32** | | 5.5 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:00 | 1 |
| **Indeno[1,2,3-cd]pyrene** | **22** | | 5.5 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:00 | 1 |
| Dibenz(a,h)anthracene | ND | | 5.5 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:00 | 1 |
| **Benzo[g,h,i]perylene** | **17** | | 5.5 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:00 | 1 |
| **Benzo[b]fluoranthene** | **44** | | 5.5 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:00 | 1 |
| **Benzo[k]fluoranthene** | **22** | | 5.5 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:00 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Terphenyl-d14* | *92* | | *42 - 151* | *07/09/13 10:52* | *07/14/13 16:00* | *1* |

### Method: AK102/103 - Diesel Range Organics (C10-C25) and Residual Range Organics (C25-C36) per AK102/RRO

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Diesel Range Organics** | **156** | **Q11** | 23.1 | | mg/kg dry | ☼ | 07/02/13 13:55 | 07/03/13 17:26 | 1.00 |
| Residual Range Organics | ND | | 57.8 | | mg/kg dry | ☼ | 07/02/13 13:55 | 07/03/13 17:26 | 1.00 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane* | *110* | | *50 - 150* | *07/02/13 13:55* | *07/03/13 17:26* | *1.00* |
| *Triacontane* | *104* | | *50 - 150* | *07/02/13 13:55* | *07/03/13 17:26* | *1.00* |

## Client Sample ID: FYU13SSQ001(11-11.5)

**Lab Sample ID: AWG0003-05**

**Date Collected: 06/29/13 16:45**
**Matrix: Soil**
**Date Received: 07/02/13 08:50**
**Percent Solids: 88.9**

### Method: AK101/EPA 8021B - Gasoline Range Organics (C6-C10) and BTEX per AK101

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | ND | | 1.78 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/09/13 23:31 | 33.3 |
| Benzene | ND | | 0.0107 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/09/13 23:31 | 33.3 |
| Toluene | ND | | 0.0213 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/09/13 23:31 | 33.3 |
| Ethylbenzene | ND | | 0.0213 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/09/13 23:31 | 33.3 |
| Xylenes (total) | ND | | 0.0640 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/09/13 23:31 | 33.3 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *4-BFB (FID)* | *106* | | *50 - 150* | *07/09/13 11:11* | *07/09/13 23:31* | *33.3* |
| *a,a,a-TFT (FID)* | *69.5* | | *50 - 150* | *07/09/13 11:11* | *07/09/13 23:31* | *33.3* |
| *4-BFB (PID)* | *105* | | *50 - 150* | *07/09/13 11:11* | *07/09/13 23:31* | *33.3* |
| *a,a,a-TFT (PID)* | *69.5* | | *50 - 150* | *07/09/13 11:11* | *07/09/13 23:31* | *33.3* |

## Client Sample ID: FYU13SSQ002 (11.5-12)

**Lab Sample ID: AWG0003-06**

**Date Collected: 06/30/13 12:20**
**Matrix: Soil**
**Date Received: 07/02/13 08:50**
**Percent Solids: 92.2**

### Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:23 | 1 |
| 2-Methylnaphthalene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:23 | 1 |
| 1-Methylnaphthalene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:23 | 1 |
| Acenaphthylene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:23 | 1 |
| Acenaphthene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:23 | 1 |
| Fluorene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:23 | 1 |
| Phenanthrene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:23 | 1 |
| Anthracene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:23 | 1 |
| Fluoranthene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:23 | 1 |
| **Pyrene** | **6.8** | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:23 | 1 |
| Benzo[a]anthracene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:23 | 1 |
| Chrysene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:23 | 1 |
| Benzo[a]pyrene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:23 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:23 | 1 |
| Dibenz(a,h)anthracene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:23 | 1 |
| Benzo[g,h,i]perylene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:23 | 1 |
| Benzo[b]fluoranthene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:23 | 1 |
| Benzo[k]fluoranthene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 16:23 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Terphenyl-d14* | *90* | | *42 - 151* | *07/09/13 10:52* | *07/14/13 16:23* | *1* |

### Method: AK102/103 - Diesel Range Organics (C10-C25) and Residual Range Organics (C25-C36) per AK102/RRO

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics | ND | | 23.3 | | mg/kg dry | ☼ | 07/02/13 13:55 | 07/03/13 14:13 | 1.00 |
| Residual Range Organics | ND | | 58.3 | | mg/kg dry | ☼ | 07/02/13 13:55 | 07/03/13 14:13 | 1.00 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane* | *112* | | *50 - 150* | *07/02/13 13:55* | *07/03/13 14:13* | *1.00* |
| *Triacontane* | *104* | | *50 - 150* | *07/02/13 13:55* | *07/03/13 14:13* | *1.00* |

## Client Sample ID: FYU13SSQ002 (11.5-12)

**Lab Sample ID: AWG0003-06**

**Date Collected: 06/30/13 12:20**

**Matrix: Soil**

**Date Received: 07/02/13 08:50**

**Percent Solids: 94**

### Method: AK101/EPA 8021B - Gasoline Range Organics (C6-C10) and BTEX per AK101

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | ND | | 1.28 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/09/13 23:58 | 33.3 |
| Benzene | ND | | 0.00768 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/09/13 23:58 | 33.3 |
| Toluene | ND | | 0.0154 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/09/13 23:58 | 33.3 |
| Ethylbenzene | ND | | 0.0154 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/09/13 23:58 | 33.3 |
| Xylenes (total) | ND | | 0.0461 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/09/13 23:58 | 33.3 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *4-BFB (FID)* | *103* | | *50 - 150* | *07/09/13 11:11* | *07/09/13 23:58* | *33.3* |
| *a,a,a-TFT (FID)* | *72.0* | | *50 - 150* | *07/09/13 11:11* | *07/09/13 23:58* | *33.3* |
| *4-BFB (PID)* | *101* | | *50 - 150* | *07/09/13 11:11* | *07/09/13 23:58* | *33.3* |
| *a,a,a-TFT (PID)* | *72.3* | | *50 - 150* | *07/09/13 11:11* | *07/09/13 23:58* | *33.3* |

## Client Sample ID: FYU13SSQ003 (8.5-9)

**Lab Sample ID: AWG0003-07**

**Date Collected: 06/30/13 13:40**

**Matrix: Soil**

**Date Received: 07/02/13 08:50**

**Percent Solids: 83.9**

### Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **89** | | 58 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/16/13 11:54 | 10 |
| **2-Methylnaphthalene** | **230** | | 58 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/16/13 11:54 | 10 |
| 1-Methylnaphthalene | ND | | 58 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/16/13 11:54 | 10 |
| **Acenaphthylene** | **75** | | 58 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/16/13 11:54 | 10 |
| Acenaphthene | ND | | 58 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/16/13 11:54 | 10 |
| Fluorene | ND | | 58 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/16/13 11:54 | 10 |
| Phenanthrene | ND | | 58 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/16/13 11:54 | 10 |
| Anthracene | ND | | 58 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/16/13 11:54 | 10 |
| **Fluoranthene** | **380** | | 58 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/16/13 11:54 | 10 |
| **Pyrene** | **610** | | 58 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/16/13 11:54 | 10 |
| **Benzo[a]anthracene** | **200** | | 58 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/16/13 11:54 | 10 |
| **Chrysene** | **260** | | 58 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/16/13 11:54 | 10 |
| **Benzo[a]pyrene** | **120** | | 58 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/16/13 11:54 | 10 |
| **Indeno[1,2,3-cd]pyrene** | **64** | | 58 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/16/13 11:54 | 10 |
| Dibenz(a,h)anthracene | ND | | 58 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/16/13 11:54 | 10 |
| Benzo[g,h,i]perylene | ND | | 58 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/16/13 11:54 | 10 |
| **Benzo[b]fluoranthene** | **180** | | 58 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/16/13 11:54 | 10 |
| **Benzo[k]fluoranthene** | **91** | | 58 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/16/13 11:54 | 10 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Terphenyl-d14* | *80* | | *42 - 151* | *07/09/13 10:52* | *07/16/13 11:54* | *10* |

### Method: AK102/103 - Diesel Range Organics (C10-C25) and Residual Range Organics (C25-C36) per AK102/RRO

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Diesel Range Organics** | **3450** | **RL7 Q2** | 453 | | mg/kg dry | ☼ | 07/02/13 13:55 | 07/05/13 19:12 | 20.0 |
| Residual Range Organics | ND | RL7 | 1130 | | mg/kg dry | ☼ | 07/02/13 13:55 | 07/05/13 19:12 | 20.0 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane* | *107* | | *50 - 150* | *07/02/13 13:55* | *07/05/13 19:12* | *20.0* |
| *Triacontane* | *98.7* | | *50 - 150* | *07/02/13 13:55* | *07/05/13 19:12* | *20.0* |

## Client Sample ID: FYU13SSQ003 (8.5-9)

**Lab Sample ID: AWG0003-07**

**Date Collected: 06/30/13 13:40**

**Matrix: Soil**

**Date Received: 07/02/13 08:50**

**Percent Solids: 87.4**

### Method: AK101/EPA 8021B - Gasoline Range Organics (C6-C10) and BTEX per AK101

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Gasoline Range Organics** | **17.7** | | 2.19 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/10/13 00:25 | 33.3 |
| Benzene | ND | | 0.0131 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/10/13 00:25 | 33.3 |
| Toluene | ND | | 0.0263 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/10/13 00:25 | 33.3 |
| Ethylbenzene | ND | | 0.0263 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/10/13 00:25 | 33.3 |
| **Xylenes (total)** | **0.442** | **R1** | 0.0789 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/10/13 00:25 | 33.3 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *4-BFB (FID)* | *109* | | *50 - 150* | *07/09/13 11:11* | *07/10/13 00:25* | *33.3* |
| *a,a,a-TFT (FID)* | *55.8* | | *50 - 150* | *07/09/13 11:11* | *07/10/13 00:25* | *33.3* |
| *4-BFB (PID)* | *98.3* | | *50 - 150* | *07/09/13 11:11* | *07/10/13 00:25* | *33.3* |
| *a,a,a-TFT (PID)* | *56.3* | | *50 - 150* | *07/09/13 11:11* | *07/10/13 00:25* | *33.3* |

## Client Sample ID: FYU13SSH001 (7-8)

**Lab Sample ID: AWG0003-08**

**Date Collected: 06/30/13 08:55**

**Matrix: Soil**

**Date Received: 07/02/13 08:50**

**Percent Solids: 88.8**

### Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **11** | | 5.6 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:09 | 1 |
| 2-Methylnaphthalene | ND | | 5.6 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:09 | 1 |
| 1-Methylnaphthalene | ND | | 5.6 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:09 | 1 |
| **Acenaphthylene** | **18** | | 5.6 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:09 | 1 |
| Acenaphthene | ND | | 5.6 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:09 | 1 |
| Fluorene | ND | | 5.6 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:09 | 1 |
| **Phenanthrene** | **5.8** | | 5.6 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:09 | 1 |
| Anthracene | ND | | 5.6 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:09 | 1 |
| **Fluoranthene** | **6.7** | | 5.6 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:09 | 1 |
| **Pyrene** | **11** | | 5.6 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:09 | 1 |
| Benzo[a]anthracene | ND | | 5.6 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:09 | 1 |
| Chrysene | ND | | 5.6 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:09 | 1 |
| Benzo[a]pyrene | ND | | 5.6 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:09 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 5.6 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:09 | 1 |
| Dibenz(a,h)anthracene | ND | | 5.6 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:09 | 1 |
| Benzo[g,h,i]perylene | ND | | 5.6 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:09 | 1 |
| Benzo[b]fluoranthene | ND | | 5.6 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:09 | 1 |
| Benzo[k]fluoranthene | ND | | 5.6 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:09 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Terphenyl-d14* | *93* | | *42 - 151* | *07/09/13 10:52* | *07/14/13 17:09* | *1* |

### Method: AK102/103 - Diesel Range Organics (C10-C25) and Residual Range Organics (C25-C36) per AK102/RRO

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Diesel Range Organics** | **5440** | **RL7 Q2** | 442 | | mg/kg dry | ☼ | 07/02/13 13:55 | 07/05/13 19:44 | 20.0 |
| Residual Range Organics | ND | RL7 | 1100 | | mg/kg dry | ☼ | 07/02/13 13:55 | 07/05/13 19:44 | 20.0 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane* | *122* | | *50 - 150* | *07/02/13 13:55* | *07/05/13 19:44* | *20.0* |
| *Triacontane* | *108* | | *50 - 150* | *07/02/13 13:55* | *07/05/13 19:44* | *20.0* |

## Client Sample ID: FYU13SSH001 (7-8)

**Lab Sample ID: AWG0003-08**

**Date Collected: 06/30/13 08:55**
**Matrix: Soil**
**Date Received: 07/02/13 08:50**
**Percent Solids: 90.4**

### Method: AK101/EPA 8021B - Gasoline Range Organics (C6-C10) and BTEX per AK101

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Gasoline Range Organics** | **46.9** | | 1.78 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/10/13 00:52 | 33.3 |
| Benzene | ND | | 0.0107 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/10/13 00:52 | 33.3 |
| Toluene | ND | | 0.0214 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/10/13 00:52 | 33.3 |
| Ethylbenzene | ND | | 0.0214 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/10/13 00:52 | 33.3 |
| **Xylenes (total)** | **1.23** | **R1** | 0.0642 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/10/13 00:52 | 33.3 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *4-BFB (FID)* | *132* | | *50 - 150* | *07/09/13 11:11* | *07/10/13 00:52* | *33.3* |
| *a,a,a-TFT (FID)* | *73.0* | | *50 - 150* | *07/09/13 11:11* | *07/10/13 00:52* | *33.3* |
| *4-BFB (PID)* | *79.0* | | *50 - 150* | *07/09/13 11:11* | *07/10/13 00:52* | *33.3* |
| *a,a,a-TFT (PID)* | *73.2* | | *50 - 150* | *07/09/13 11:11* | *07/10/13 00:52* | *33.3* |

## Client Sample ID: FYU13SSH002 (7.5-8)

**Lab Sample ID: AWG0003-09**

**Date Collected: 06/30/13 10:10**
**Matrix: Soil**
**Date Received: 07/02/13 08:50**
**Percent Solids: 90.5**

### Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **15** | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:32 | 1 |
| 2-Methylnaphthalene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:32 | 1 |
| 1-Methylnaphthalene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:32 | 1 |
| **Acenaphthylene** | **24** | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:32 | 1 |
| **Acenaphthene** | **30** | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:32 | 1 |
| **Fluorene** | **37** | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:32 | 1 |
| Phenanthrene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:32 | 1 |
| Anthracene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:32 | 1 |
| Fluoranthene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:32 | 1 |
| Pyrene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:32 | 1 |
| Benzo[a]anthracene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:32 | 1 |
| Chrysene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:32 | 1 |
| Benzo[a]pyrene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:32 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:32 | 1 |
| Dibenz(a,h)anthracene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:32 | 1 |
| Benzo[g,h,i]perylene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:32 | 1 |
| Benzo[b]fluoranthene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:32 | 1 |
| Benzo[k]fluoranthene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:32 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Terphenyl-d14* | *90* | | *42 - 151* | *07/09/13 10:52* | *07/14/13 17:32* | *1* |

### Method: AK102/103 - Diesel Range Organics (C10-C25) and Residual Range Organics (C25-C36) per AK102/RRO

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Diesel Range Organics** | **850** | **Q2** | 22.0 | | mg/kg dry | ☼ | 07/02/13 13:55 | 07/03/13 15:49 | 1.00 |
| Residual Range Organics | ND | | 55.1 | | mg/kg dry | ☼ | 07/02/13 13:55 | 07/03/13 15:49 | 1.00 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane* | *112* | | *50 - 150* | *07/02/13 13:55* | *07/03/13 15:49* | *1.00* |
| *Triacontane* | *105* | | *50 - 150* | *07/02/13 13:55* | *07/03/13 15:49* | *1.00* |

## Client Sample ID: FYU13SSH002 (7.5-8)

**Lab Sample ID: AWG0003-09**

**Date Collected: 06/30/13 10:10**

**Matrix: Soil**

**Date Received: 07/02/13 08:50**

**Percent Solids: 89.7**

### Method: AK101/EPA 8021B - Gasoline Range Organics (C6-C10) and BTEX per AK101

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | ND | | 1.98 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/10/13 01:19 | 33.3 |
| Benzene | ND | | 0.0119 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/10/13 01:19 | 33.3 |
| Toluene | ND | | 0.0238 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/10/13 01:19 | 33.3 |
| Ethylbenzene | ND | | 0.0238 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/10/13 01:19 | 33.3 |
| Xylenes (total) | ND | | 0.0713 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/10/13 01:19 | 33.3 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *4-BFB (FID)* | *118* | | *50 - 150* | *07/09/13 11:11* | *07/10/13 01:19* | *33.3* |
| *a,a,a-TFT (FID)* | *63.5* | | *50 - 150* | *07/09/13 11:11* | *07/10/13 01:19* | *33.3* |
| *4-BFB (PID)* | *115* | | *50 - 150* | *07/09/13 11:11* | *07/10/13 01:19* | *33.3* |
| *a,a,a-TFT (PID)* | *63.1* | | *50 - 150* | *07/09/13 11:11* | *07/10/13 01:19* | *33.3* |

## Client Sample ID: FYU13SSH003 (7.5-8)

**Lab Sample ID: AWG0003-10**

**Date Collected: 06/30/13 10:20**

**Matrix: Soil**

**Date Received: 07/02/13 08:50**

**Percent Solids: 91.4**

### Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Naphthalene** | **13** | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:55 | 1 |
| **2-Methylnaphthalene** | **88** | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:55 | 1 |
| 1-Methylnaphthalene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:55 | 1 |
| **Acenaphthylene** | **23** | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:55 | 1 |
| **Acenaphthene** | **29** | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:55 | 1 |
| **Fluorene** | **22** | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:55 | 1 |
| **Phenanthrene** | **6.8** | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:55 | 1 |
| Anthracene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:55 | 1 |
| Fluoranthene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:55 | 1 |
| Pyrene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:55 | 1 |
| Benzo[a]anthracene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:55 | 1 |
| Chrysene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:55 | 1 |
| Benzo[a]pyrene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:55 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:55 | 1 |
| Dibenz(a,h)anthracene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:55 | 1 |
| Benzo[g,h,i]perylene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:55 | 1 |
| Benzo[b]fluoranthene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:55 | 1 |
| Benzo[k]fluoranthene | ND | | 5.3 | | ug/Kg | ☼ | 07/09/13 10:52 | 07/14/13 17:55 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Terphenyl-d14* | *90* | | *42 - 151* | *07/09/13 10:52* | *07/14/13 17:55* | *1* |

### Method: AK102/103 - Diesel Range Organics (C10-C25) and Residual Range Organics (C25-C36) per AK102/RRO

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Diesel Range Organics** | **1260** | **Q2** | 21.7 | | mg/kg dry | ☼ | 07/02/13 13:55 | 07/03/13 15:17 | 1.00 |
| Residual Range Organics | ND | | 54.4 | | mg/kg dry | ☼ | 07/02/13 13:55 | 07/03/13 15:17 | 1.00 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane* | *116* | | *50 - 150* | *07/02/13 13:55* | *07/03/13 15:17* | *1.00* |
| *Triacontane* | *104* | | *50 - 150* | *07/02/13 13:55* | *07/03/13 15:17* | *1.00* |

Client: Ahtna Engineering
Project/Site: 20125.059

TestAmerica Job ID: AWG0003

## Client Sample ID: FYU13SSH003 (7.5-8)

**Lab Sample ID: AWG0003-10**

**Date Collected: 06/30/13 10:20**
**Matrix: Soil**
**Date Received: 07/02/13 08:50**
**Percent Solids: 90.9**

### Method: AK101/EPA 8021B - Gasoline Range Organics (C6-C10) and BTEX per AK101

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | ND | | 2.00 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/10/13 01:45 | 33.3 |
| Benzene | ND | | 0.0120 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/10/13 01:45 | 33.3 |
| Toluene | ND | | 0.0240 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/10/13 01:45 | 33.3 |
| Ethylbenzene | ND | | 0.0240 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/10/13 01:45 | 33.3 |
| Xylenes (total) | ND | | 0.0721 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/10/13 01:45 | 33.3 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *4-BFB (FID)* | *96.3* | | *50 - 150* | *07/09/13 11:11* | *07/10/13 01:45* | *33.3* |
| *a,a,a-TFT (FID)* | *10.0* | *Z6* | *50 - 150* | *07/09/13 11:11* | *07/10/13 01:45* | *33.3* |
| *4-BFB (PID)* | *94.5* | | *50 - 150* | *07/09/13 11:11* | *07/10/13 01:45* | *33.3* |
| *a,a,a-TFT (PID)* | *10.2* | *Z6* | *50 - 150* | *07/09/13 11:11* | *07/10/13 01:45* | *33.3* |

### Method: AK101/EPA 8021B - Gasoline Range Organics (C6-C10) and BTEX per AK101 - RE1

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | ND | | 2.00 | | mg/kg dry | ☼ | 07/11/13 10:38 | 07/11/13 14:31 | 33.3 |
| Benzene | ND | C | 0.0120 | | mg/kg dry | ☼ | 07/11/13 10:38 | 07/11/13 14:31 | 33.3 |
| Toluene | ND | C | 0.0240 | | mg/kg dry | ☼ | 07/11/13 10:38 | 07/11/13 14:31 | 33.3 |
| Ethylbenzene | ND | C | 0.0240 | | mg/kg dry | ☼ | 07/11/13 10:38 | 07/11/13 14:31 | 33.3 |
| Xylenes (total) | ND | C | 0.0721 | | mg/kg dry | ☼ | 07/11/13 10:38 | 07/11/13 14:31 | 33.3 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *4-BFB (FID)* | *102* | | *50 - 150* | *07/11/13 10:38* | *07/11/13 14:31* | *33.3* |
| *a,a,a-TFT (FID)* | *16.6* | *ZX CF6* | *50 - 150* | *07/11/13 10:38* | *07/11/13 14:31* | *33.3* |
| *4-BFB (PID)* | *97.8* | *C8* | *50 - 150* | *07/11/13 10:38* | *07/11/13 14:31* | *33.3* |
| *a,a,a-TFT (PID)* | *17.1* | *ZX CF6 C8* | *50 - 150* | *07/11/13 10:38* | *07/11/13 14:31* | *33.3* |

## Client Sample ID: FYU13TB002

**Lab Sample ID: AWG0003-11**

**Date Collected: 06/30/13 13:00**
**Matrix: Soil**
**Date Received: 07/02/13 08:50**
**Percent Solids: 100**

### Method: AK101/EPA 8021B - Gasoline Range Organics (C6-C10) and BTEX per AK101

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | ND | | 3.33 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/10/13 03:06 | 33.3 |
| Benzene | ND | | 0.0200 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/10/13 03:06 | 33.3 |
| Toluene | ND | | 0.0400 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/10/13 03:06 | 33.3 |
| Ethylbenzene | ND | | 0.0400 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/10/13 03:06 | 33.3 |
| Xylenes (total) | ND | | 0.120 | | mg/kg dry | ☼ | 07/09/13 11:11 | 07/10/13 03:06 | 33.3 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *4-BFB (FID)* | *103* | | *50 - 150* | *07/09/13 11:11* | *07/10/13 03:06* | *33.3* |
| *a,a,a-TFT (FID)* | *85.9* | | *50 - 150* | *07/09/13 11:11* | *07/10/13 03:06* | *33.3* |
| *4-BFB (PID)* | *101* | | *50 - 150* | *07/09/13 11:11* | *07/10/13 03:06* | *33.3* |
| *a,a,a-TFT (PID)* | *85.6* | | *50 - 150* | *07/09/13 11:11* | *07/10/13 03:06* | *33.3* |

# Surrogate Summary

Client: Ahtna Engineering
Project/Site: 20125.059

TestAmerica Job ID: AWG0003

## Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

**Matrix: Soil** **Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | TPH | | | | | | | |
| Lab Sample ID | Client Sample ID | (42-151) | | | | | | | |
| AWG0003-05 | FYU13SSQ001(11-11.5) | 92 | | | | | | | |
| AWG0003-06 | FYU13SSQ002 (11.5-12) | 90 | | | | | | | |
| AWG0003-07 | FYU13SSQ003 (8.5-9) | 80 | | | | | | | |
| AWG0003-08 | FYU13SSH001 (7-8) | 93 | | | | | | | |
| AWG0003-09 | FYU13SSH002 (7.5-8) | 90 | | | | | | | |
| AWG0003-10 | FYU13SSH003 (7.5-8) | 90 | | | | | | | |

**Surrogate Legend**

TPH = Terphenyl-d14

## Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

**Matrix: Solid** **Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | TPH | | | | | | | |
| Lab Sample ID | Client Sample ID | (42-151) | | | | | | | |
| LCS 580-139519/2-A | Lab Control Sample | 83 | | | | | | | |
| LCSD 580-139519/3-A | Lab Control Sample Dup | 87 | | | | | | | |
| MB 580-139519/1-A | Method Blank | 90 | | | | | | | |

**Surrogate Legend**

TPH = Terphenyl-d14

## Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

**Matrix: Water** **Prep Type: Total/NA**

| | | Percent Surrogate Recovery (Acceptance Limits) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | TPH | | | | | | | |
| Lab Sample ID | Client Sample ID | (20-150) | | | | | | | |
| AWG0003-01 | FYU13WMW1 | 111 | | | | | | | |
| AWG0003-02 | FYU13WMW2 | 67 | | | | | | | |
| AWG0003-03 | FYU13WMW3 | 79 | | | | | | | |
| LCS 580-139320/2-A | Lab Control Sample | 97 | | | | | | | |
| LCSD 580-139320/3-A | Lab Control Sample Dup | 99 | | | | | | | |
| MB 580-139320/1-A | Method Blank | 99 | | | | | | | |

**Surrogate Legend**

TPH = Terphenyl-d14

## Method: AK102/103 - Diesel Range Organics (C10-C25) and Residual Range Organics (C25-C36) per AK102/RRO

**Matrix: Soil** **Prep Type: Total**

| | | Percent Surrogate Recovery (Acceptance Limits) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1COD | TC | | | | | | |
| Lab Sample ID | Client Sample ID | (50-150) | (50-150) | | | | | | |
| 13G0008-BLK1 | Method Blank | 100 | 94.0 | | | | | | |
| 13G0008-DUP1 | FYU13SSH003 (7.5-8) | 114 | 106 | | | | | | |
| 13G0008-MS1 | FYU13SSQ002 (11.5-12) | 108 | 97.7 | | | | | | |
| 13G0008-MSD1 | FYU13SSQ002 (11.5-12) | 108 | 97.1 | | | | | | |

# Surrogate Summary

Client: Ahtna Engineering
Project/Site: 20125.059

TestAmerica Job ID: AWG0003

## Method: AK102/103 - Diesel Range Organics (C10-C25) and Residual Range Organics (C25-C36) per AK102/RRO (Continued)

**Matrix: Soil** **Prep Type: Total**

| | | Percent Surrogate Recovery (Acceptance Limits) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab Sample ID | Client Sample ID | 1COD (50-150) | TC (50-150) | | | | | | | | | | |
| AWG0003-05 | FYU13SSQ001(11-11.5) | 110 | 104 | | | | | | | | | | |
| AWG0003-06 | FYU13SSQ002 (11.5-12) | 112 | 104 | | | | | | | | | | |
| AWG0003-07 | FYU13SSQ003 (8.5-9) | 107 | 98.7 | | | | | | | | | | |
| AWG0003-08 | FYU13SSH001 (7-8) | 122 | 108 | | | | | | | | | | |
| AWG0003-09 | FYU13SSH002 (7.5-8) | 112 | 105 | | | | | | | | | | |
| AWG0003-10 | FYU13SSH003 (7.5-8) | 116 | 104 | | | | | | | | | | |

**Surrogate Legend**

1COD = 1-Chlorooctadecane

TC = Triacontane

## Method: AK102/103 - Diesel Range Organics (C10-C25) and Residual Range Organics (C25-C36) per AK102/RRO

**Matrix: Soil** **Prep Type: Total**

| | | Percent Surrogate Recovery (Acceptance Limits) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab Sample ID | Client Sample ID | 1COD (60-120) | TC (60-120) | | | | | | | | | | |
| 13G0008-BS1 | Lab Control Sample | 106 | 97.1 | | | | | | | | | | |
| 13G0008-BSD1 | Lab Control Sample Dup | 94.4 | 85.8 | | | | | | | | | | |

**Surrogate Legend**

1COD = 1-Chlorooctadecane

TC = Triacontane

## Method: AK102/103 - Diesel Range Organics (C10-C25) and Residual Range Organics (C25-C36) per AK102/RRO

**Matrix: Water** **Prep Type: Total**

| | | Percent Surrogate Recovery (Acceptance Limits) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lab Sample ID | Client Sample ID | 1COD (50-150) | TC (50-150) | | | | | | | | | | |
| 13G0019-BLK1 | Method Blank | 108 | 107 | | | | | | | | | | |
| 13G0019-DUP1 | Duplicate | 109 | 106 | | | | | | | | | | |
| AWG0003-01 - RE1 | FYU13WMW1 | 116 | 107 | | | | | | | | | | |
| AWG0003-02 - RE1 | FYU13WMW2 | 109 | 106 | | | | | | | | | | |
| AWG0003-03 - RE1 | FYU13WMW3 | 103 | 106 | | | | | | | | | | |

**Surrogate Legend**

1COD = 1-Chlorooctadecane

TC = Triacontane

# Surrogate Summary

Client: Ahtna Engineering
Project/Site: 20125.059

TestAmerica Job ID: AWG0003

## Method: AK102/103 - Diesel Range Organics (C10-C25) and Residual Range Organics (C25-C36) per AK102/RRO

**Matrix: Water** **Prep Type: Total**

| | | Percent Surrogate Recovery (Acceptance Limits) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1COD | TC | | | | | | | | |
| Lab Sample ID | Client Sample ID | (60-120) | (60-120) | | | | | | | | |
| 13G0019-BS1 | Lab Control Sample | 98.2 | 96.0 | | | | | | | | |
| 13G0019-BSD1 | Lab Control Sample Dup | 105 | 110 | | | | | | | | |

**Surrogate Legend**

1COD = 1-Chlorooctadecane

TC = Triacontane

## Method: AK101/EPA 8021B - Gasoline Range Organics (C6-C10) and BTEX per AK101

**Matrix: Soil** **Prep Type: Total**

| | | Percent Surrogate Recovery (Acceptance Limits) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 4-BFB (FID) | a,a,a-TFT (FI | 4-BFB (PID) | a,a,a-TFT (PI | 4-BFB (PID) | 4-BFB (PID) | a,a,a-TFT (PI | a,a,a-TFT (PI | | |
| Lab Sample ID | Client Sample ID | (50-150) | (50-150) | (50-150) | (50-150) | (50-150) | (60-120) | (50-150) | (60-120) | | |
| 13G0017-BLK1 | Method Blank | 92.8 | 87.6 | 92.4 | 87.7 | 92.4 | | 87.7 | | | |
| 13G0017-DUP1 | Duplicate | 65.6 | 75.0 | 65.3 | 75.2 | 65.3 | | 75.2 | | | |
| 13G0017-MS1 | Matrix Spike | | | 68.7 | 74.1 | 68.7 | | 74.1 | | | |
| 13G0017-MSD1 | Matrix Spike Duplicate | | | 66.9 | 74.5 | 66.9 | | 74.5 | | | |
| 13G0024-BLK1 | Method Blank | 94.3 | 88.6 | 93.8 C8 | 88.5 C8 | 93.8 C8 | | 88.5 C8 | | | |
| 13G0024-DUP1 | FYU13SSH003 (7.5-8) | 113 | 16.3 CF6 ZX | 107 C8 | 16.6 ZX CF6 C8 | 107 C8 | | 16.6 ZX CF6 C8 | | | |
| 13G0024-MS1 | FYU13SSH003 (7.5-8) | | | 98.3 C8 | 15.2 C8 ZX CF6 | 98.3 C8 | | 15.2 C8 ZX CF6 | | | |
| 13G0024-MSD1 | FYU13SSH003 (7.5-8) | | | 108 C8 | 14.9 C8 ZX CF6 | 108 C8 | | 14.9 C8 ZX CF6 | | | |
| AWG0003-05 | FYU13SSQ001(11-11.5) | 106 | 69.5 | 105 | 69.5 | 105 | | 69.5 | | | |
| AWG0003-06 | FYU13SSQ002 (11.5-12) | 103 | 72.0 | 101 | 72.3 | 101 | | 72.3 | | | |
| AWG0003-07 | FYU13SSQ003 (8.5-9) | 109 | 55.8 | 98.3 | 56.3 | 98.3 | | 56.3 | | | |
| AWG0003-08 | FYU13SSH001 (7-8) | 132 | 73.0 | 79.0 | 73.2 | 79.0 | | 73.2 | | | |
| AWG0003-09 | FYU13SSH002 (7.5-8) | 118 | 63.5 | 115 | 63.1 | 115 | | 63.1 | | | |
| AWG0003-10 | FYU13SSH003 (7.5-8) | 96.3 | 10.0 Z6 | 94.5 | 10.2 Z6 | 94.5 | | 10.2 Z6 | | | |
| AWG0003-10 - RE1 | FYU13SSH003 (7.5-8) | 102 | 16.6 ZX CF6 | 97.8 C8 | 17.1 ZX CF6 C8 | 97.8 C8 | | 17.1 ZX CF6 C8 | | | |
| AWG0003-11 | FYU13TB002 | 103 | 85.9 | 101 | 85.6 | 101 | | 85.6 | | | |

**Surrogate Legend**

4-BFB (FID) = 4-BFB (FID)

a,a,a-TFT (FID) = a,a,a-TFT (FID)

4-BFB (PID) = 4-BFB (PID)

a,a,a-TFT (PID) = a,a,a-TFT (PID)

## Method: AK101/EPA 8021B - Gasoline Range Organics (C6-C10) and BTEX per AK101

**Matrix: Soil** **Prep Type: Total**

| | | Percent Surrogate Recovery (Acceptance Limits) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 4-BFB (PID) | a,a,a-TFT (PI | | | | | | | | |
| Lab Sample ID | Client Sample ID | (60-120) | (60-120) | | | | | | | | |
| 13G0017-BS1 | Lab Control Sample | 98.1 | 85.4 | | | | | | | | |
| 13G0017-BSD1 | Lab Control Sample Dup | 93.8 | 86.3 | | | | | | | | |
| 13G0024-BS1 | Lab Control Sample | 93.8 C8 | 85.5 C8 | | | | | | | | |
| 13G0024-BSD1 | Lab Control Sample Dup | 101 C8 | 93.1 C8 | | | | | | | | |

**Surrogate Legend**

4-BFB (PID) = 4-BFB (PID)

a,a,a-TFT (PID) = a,a,a-TFT (PID)

## Method: AK101/EPA 8021B - Gasoline Range Organics (C6-C10) and BTEX per AK101

**Matrix: Soil** **Prep Type: Total**

| | | Percent Surrogate Recovery (Acceptance Limits) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 4-BFB (FID) | a,a-TFT (FI | | | | | | | | |
| Lab Sample ID | Client Sample ID | (60-120) | (60-120) | | | | | | | | |
| 13G0017-BS2 | Lab Control Sample | 109 | 102 | | | | | | | | |
| 13G0017-BSD2 | Lab Control Sample Dup | 101 | 102 | | | | | | | | |
| 13G0024-BS2 | Lab Control Sample | 85.6 | 97.9 | | | | | | | | |
| 13G0024-BSD2 | Lab Control Sample Dup | 97.9 | 96.1 | | | | | | | | |

**Surrogate Legend**

4-BFB (FID) = 4-BFB (FID)

a,a,a-TFT (FID) = a,a,a-TFT (FID)

## Method: AK101/EPA 8021B - Gasoline Range Organics (C6-C10) and BTEX per AK101

**Matrix: Water** **Prep Type: Total**

| | | Percent Surrogate Recovery (Acceptance Limits) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 4-BFB (FID) | 4-BFB (PID) | a,a-TFT (FI | a,a-TFT (PI | | | | | | |
| Lab Sample ID | Client Sample ID | (50-150) | (50-150) | (50-150) | (50-150) | | | | | | |
| 13G0006-BLK1 | Method Blank | 113 | 109 | 120 | 116 | | | | | | |
| 13G0006-DUP1 | FYU13WMW1 | 126 | 122 | 116 | 112 | | | | | | |
| AWG0003-01 | FYU13WMW1 | 130 | 124 | 125 | 120 | | | | | | |
| AWG0003-02 | FYU13WMW2 | 127 | 122 | 114 | 110 | | | | | | |
| AWG0003-03 | FYU13WMW3 | 121 | 117 | 116 | 112 | | | | | | |
| AWG0003-04 | FYU13TB001 | 115 | 111 | 109 | 106 | | | | | | |

**Surrogate Legend**

4-BFB (FID) = 4-BFB (FID)

4-BFB (PID) = 4-BFB (PID)

a,a,a-TFT (FID) = a,a,a-TFT (FID)

a,a,a-TFT (PID) = a,a,a-TFT (PID)

## Method: AK101/EPA 8021B - Gasoline Range Organics (C6-C10) and BTEX per AK101

**Matrix: Water** **Prep Type: Total**

| | | Percent Surrogate Recovery (Acceptance Limits) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | a,a-TFT (FI | a,a-TFT (PI | | | | | | | | |
| Lab Sample ID | Client Sample ID | (60-120) | (60-120) | | | | | | | | |
| 13G0006-BS1 | Lab Control Sample | 76.8 | 75.3 | | | | | | | | |

**Surrogate Legend**

a,a,a-TFT (FID) = a,a,a-TFT (FID)

a,a,a-TFT (PID) = a,a,a-TFT (PID)

# Surrogate Summary

Client: Ahtna Engineering
Project/Site: 20125.059

TestAmerica Job ID: AWG0003

## Method: AK101/EPA 8021B - Gasoline Range Organics (C6-C10) and BTEX per AK101

**Matrix: Water** **Prep Type: Total**

| | | Percent Surrogate Recovery (Acceptance Limits) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 4-BFB (FID) | a,a-TFT (FI | | | | | | | | |
| Lab Sample ID | Client Sample ID | (60-120) | (60-120) | | | | | | | | |
| 13G0006-BS2 | Lab Control Sample | 87.5 | 91.7 | | | | | | | | |
| 13G0006-BSD2 | Lab Control Sample Dup | 92.5 | 109 | | | | | | | | |

**Surrogate Legend**

4-BFB (FID) = 4-BFB (FID)

a,a,a-TFT (FID) = a,a,a-TFT (FID)

## Method: AK101/EPA 8021B - Gasoline Range Organics (C6-C10) and BTEX per AK101

**Matrix: Water** **Prep Type: Total**

| | | Percent Surrogate Recovery (Acceptance Limits) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 4-BFB (PID) | a,a-TFT (PI | | | | | | | | |
| Lab Sample ID | Client Sample ID | (60-120) | (60-120) | | | | | | | | |
| 13G0006-BSD1 | Lab Control Sample Dup | 85.4 | 86.2 | | | | | | | | |

**Surrogate Legend**

4-BFB (PID) = 4-BFB (PID)

a,a,a-TFT (PID) = a,a,a-TFT (PID)

## Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

**Lab Sample ID: MB 580-139320/1-A**
**Matrix: Water**
**Analysis Batch: 139868**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 139320**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 0.020 | | ug/L | | 07/05/13 15:30 | 07/13/13 14:30 | 1 |
| 2-Methylnaphthalene | ND | | 0.026 | | ug/L | | 07/05/13 15:30 | 07/13/13 14:30 | 1 |
| 1-Methylnaphthalene | ND | | 0.020 | | ug/L | | 07/05/13 15:30 | 07/13/13 14:30 | 1 |
| Acenaphthylene | ND | | 0.020 | | ug/L | | 07/05/13 15:30 | 07/13/13 14:30 | 1 |
| Acenaphthene | ND | | 0.020 | | ug/L | | 07/05/13 15:30 | 07/13/13 14:30 | 1 |
| Fluorene | ND | | 0.020 | | ug/L | | 07/05/13 15:30 | 07/13/13 14:30 | 1 |
| Phenanthrene | ND | | 0.020 | | ug/L | | 07/05/13 15:30 | 07/13/13 14:30 | 1 |
| Anthracene | ND | | 0.020 | | ug/L | | 07/05/13 15:30 | 07/13/13 14:30 | 1 |
| Fluoranthene | ND | | 0.020 | | ug/L | | 07/05/13 15:30 | 07/13/13 14:30 | 1 |
| Pyrene | ND | | 0.020 | | ug/L | | 07/05/13 15:30 | 07/13/13 14:30 | 1 |
| Benzo[a]anthracene | ND | | 0.020 | | ug/L | | 07/05/13 15:30 | 07/13/13 14:30 | 1 |
| Chrysene | ND | | 0.020 | | ug/L | | 07/05/13 15:30 | 07/13/13 14:30 | 1 |
| Benzo[b]fluoranthene | ND | | 0.020 | | ug/L | | 07/05/13 15:30 | 07/13/13 14:30 | 1 |
| Benzo[k]fluoranthene | ND | | 0.020 | | ug/L | | 07/05/13 15:30 | 07/13/13 14:30 | 1 |
| Benzo[a]pyrene | ND | | 0.020 | | ug/L | | 07/05/13 15:30 | 07/13/13 14:30 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 0.020 | | ug/L | | 07/05/13 15:30 | 07/13/13 14:30 | 1 |
| Dibenz(a,h)anthracene | ND | | 0.020 | | ug/L | | 07/05/13 15:30 | 07/13/13 14:30 | 1 |
| Benzo[g,h,i]perylene | ND | | 0.020 | | ug/L | | 07/05/13 15:30 | 07/13/13 14:30 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Terphenyl-d14* | *99* | | *20 - 150* | *07/05/13 15:30* | *07/13/13 14:30* | *1* |

**Lab Sample ID: LCS 580-139320/2-A**
**Matrix: Water**
**Analysis Batch: 139868**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 139320**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Naphthalene | 2.01 | 1.50 | | ug/L | | 74 | 60 - 125 |
| 2-Methylnaphthalene | 2.00 | 1.55 | | ug/L | | 77 | 60 - 125 |
| 1-Methylnaphthalene | 2.01 | 1.67 | | ug/L | | 83 | 60 - 125 |
| Acenaphthylene | 2.00 | 1.56 | | ug/L | | 78 | 65 - 125 |
| Acenaphthene | 2.00 | 1.54 | | ug/L | | 77 | 65 - 125 |
| Fluorene | 2.02 | 1.42 | | ug/L | | 71 | 70 - 125 |
| Phenanthrene | 2.01 | 1.74 | | ug/L | | 86 | 75 - 125 |
| Anthracene | 2.00 | 1.61 | | ug/L | | 81 | 50 - 125 |
| Fluoranthene | 2.00 | 1.95 | | ug/L | | 98 | 70 - 125 |
| Pyrene | 2.00 | 1.86 | | ug/L | | 93 | 70 - 125 |
| Benzo[a]anthracene | 2.00 | 1.78 | | ug/L | | 89 | 65 - 125 |
| Chrysene | 1.93 | 1.88 | | ug/L | | 98 | 70 - 125 |
| Benzo[b]fluoranthene | 2.00 | 1.84 | | ug/L | | 92 | 70 - 125 |
| Benzo[k]fluoranthene | 2.00 | 1.99 | | ug/L | | 100 | 70 - 125 |
| Benzo[a]pyrene | 2.00 | 1.40 | | ug/L | | 70 | 45 - 125 |
| Indeno[1,2,3-cd]pyrene | 2.01 | 2.18 | | ug/L | | 108 | 75 - 125 |
| Dibenz(a,h)anthracene | 2.00 | 1.93 | | ug/L | | 97 | 75 - 130 |
| Benzo[g,h,i]perylene | 2.00 | 1.79 | | ug/L | | 89 | 75 - 125 |

## Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

**Lab Sample ID: LCS 580-139320/2-A**
**Matrix: Water**
**Analysis Batch: 139868**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 139320**

| Surrogate | LCS %Recovery | LCS Qualifier | Limits |
|---|---|---|---|
| Terphenyl-d14 | 97 | | 20 - 150 |

**Lab Sample ID: LCSD 580-139320/3-A**
**Matrix: Water**
**Analysis Batch: 139868**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 139320**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | | | 2.01 | 1.49 | | ug/L | | 74 | 60 - 125 | 1 | 20 |
| 2-Methylnaphthalene | | | 2.00 | 1.48 | | ug/L | | 74 | 60 - 125 | 4 | 20 |
| 1-Methylnaphthalene | | | 2.01 | 1.60 | | ug/L | | 79 | 60 - 125 | 5 | 20 |
| Acenaphthylene | | | 2.00 | 1.49 | | ug/L | | 75 | 65 - 125 | 4 | 20 |
| Acenaphthene | | | 2.00 | 1.47 | | ug/L | | 74 | 65 - 125 | 4 | 20 |
| Fluorene | | | 2.02 | 1.40 | | ug/L | | 70 | 70 - 125 | 1 | 20 |
| Phenanthrene | | | 2.01 | 1.69 | | ug/L | | 84 | 75 - 125 | 3 | 20 |
| Anthracene | | | 2.00 | 1.57 | | ug/L | | 78 | 50 - 125 | 3 | 20 |
| Fluoranthene | | | 2.00 | 1.92 | | ug/L | | 96 | 70 - 125 | 2 | 20 |
| Pyrene | | | 2.00 | 1.83 | | ug/L | | 91 | 70 - 125 | 2 | 20 |
| Benzo[a]anthracene | | | 2.00 | 1.69 | | ug/L | | 84 | 65 - 125 | 5 | 20 |
| Chrysene | | | 1.93 | 1.86 | | ug/L | | 97 | 70 - 125 | 1 | 20 |
| Benzo[b]fluoranthene | | | 2.00 | 1.81 | | ug/L | | 90 | 70 - 125 | 2 | 20 |
| Benzo[k]fluoranthene | | | 2.00 | 1.93 | | ug/L | | 96 | 70 - 125 | 3 | 20 |
| Benzo[a]pyrene | | | 2.00 | 1.36 | | ug/L | | 68 | 45 - 125 | 3 | 20 |
| Indeno[1,2,3-cd]pyrene | | | 2.01 | 2.35 | | ug/L | | 117 | 75 - 125 | 7 | 20 |
| Dibenz(a,h)anthracene | | | 2.00 | 1.90 | | ug/L | | 95 | 75 - 130 | 2 | 20 |
| Benzo[g,h,i]perylene | | | 2.00 | 1.77 | | ug/L | | 89 | 75 - 125 | 1 | 20 |

| Surrogate | LCSD %Recovery | LCSD Qualifier | Limits |
|---|---|---|---|
| Terphenyl-d14 | 99 | | 20 - 150 |

**Lab Sample ID: MB 580-139519/1-A**
**Matrix: Solid**
**Analysis Batch: 139893**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 139519**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 5.0 | | ug/Kg | | 07/09/13 10:52 | 07/14/13 12:58 | 1 |
| 2-Methylnaphthalene | ND | | 5.0 | | ug/Kg | | 07/09/13 10:52 | 07/14/13 12:58 | 1 |
| 1-Methylnaphthalene | ND | | 5.0 | | ug/Kg | | 07/09/13 10:52 | 07/14/13 12:58 | 1 |
| Acenaphthylene | ND | | 5.0 | | ug/Kg | | 07/09/13 10:52 | 07/14/13 12:58 | 1 |
| Acenaphthene | ND | | 5.0 | | ug/Kg | | 07/09/13 10:52 | 07/14/13 12:58 | 1 |
| Fluorene | ND | | 5.0 | | ug/Kg | | 07/09/13 10:52 | 07/14/13 12:58 | 1 |
| Phenanthrene | ND | | 5.0 | | ug/Kg | | 07/09/13 10:52 | 07/14/13 12:58 | 1 |
| Anthracene | ND | | 5.0 | | ug/Kg | | 07/09/13 10:52 | 07/14/13 12:58 | 1 |
| Fluoranthene | ND | | 5.0 | | ug/Kg | | 07/09/13 10:52 | 07/14/13 12:58 | 1 |
| Pyrene | ND | | 5.0 | | ug/Kg | | 07/09/13 10:52 | 07/14/13 12:58 | 1 |
| Benzo[a]anthracene | ND | | 5.0 | | ug/Kg | | 07/09/13 10:52 | 07/14/13 12:58 | 1 |
| Chrysene | ND | | 5.0 | | ug/Kg | | 07/09/13 10:52 | 07/14/13 12:58 | 1 |
| Benzo[b]fluoranthene | ND | | 5.0 | | ug/Kg | | 07/09/13 10:52 | 07/14/13 12:58 | 1 |
| Benzo[k]fluoranthene | ND | | 5.0 | | ug/Kg | | 07/09/13 10:52 | 07/14/13 12:58 | 1 |

## Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

**Lab Sample ID: MB 580-139519/1-A**
**Matrix: Solid**
**Analysis Batch: 139893**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 139519**

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Benzo[a]pyrene | ND | | 5.0 | | ug/Kg | | 07/09/13 10:52 | 07/14/13 12:58 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 5.0 | | ug/Kg | | 07/09/13 10:52 | 07/14/13 12:58 | 1 |
| Dibenz(a,h)anthracene | ND | | 5.0 | | ug/Kg | | 07/09/13 10:52 | 07/14/13 12:58 | 1 |
| Benzo[g,h,i]perylene | ND | | 5.0 | | ug/Kg | | 07/09/13 10:52 | 07/14/13 12:58 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *Terphenyl-d14* | *90* | | *42 - 151* | *07/09/13 10:52* | *07/14/13 12:58* | *1* |

**Lab Sample ID: LCS 580-139519/2-A**
**Matrix: Solid**
**Analysis Batch: 139893**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 139519**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Naphthalene | 1010 | 808 | | ug/Kg | | 80 | 64 - 129 |
| 2-Methylnaphthalene | 1000 | 788 | | ug/Kg | | 79 | 65 - 125 |
| 1-Methylnaphthalene | 1010 | 822 | | ug/Kg | | 82 | 48 - 148 |
| Acenaphthylene | 999 | 789 | | ug/Kg | | 79 | 69 - 129 |
| Acenaphthene | 1000 | 808 | | ug/Kg | | 81 | 65 - 130 |
| Fluorene | 1010 | 804 | | ug/Kg | | 80 | 68 - 128 |
| Phenanthrene | 1010 | 784 | | ug/Kg | | 78 | 65 - 125 |
| Anthracene | 999 | 806 | | ug/Kg | | 81 | 73 - 123 |
| Fluoranthene | 1000 | 805 | | ug/Kg | | 80 | 61 - 121 |
| Pyrene | 999 | 771 | | ug/Kg | | 77 | 54 - 134 |
| Benzo[a]anthracene | 1000 | 835 | | ug/Kg | | 83 | 64 - 124 |
| Chrysene | 964 | 790 | | ug/Kg | | 82 | 71 - 126 |
| Benzo[b]fluoranthene | 1000 | 837 | | ug/Kg | | 84 | 66 - 136 |
| Benzo[k]fluoranthene | 999 | 765 | | ug/Kg | | 77 | 63 - 143 |
| Benzo[a]pyrene | 1000 | 808 | | ug/Kg | | 81 | 68 - 128 |
| Indeno[1,2,3-cd]pyrene | 1010 | 873 | | ug/Kg | | 87 | 59 - 139 |
| Dibenz(a,h)anthracene | 1000 | 835 | | ug/Kg | | 84 | 57 - 142 |
| Benzo[g,h,i]perylene | 1000 | 794 | | ug/Kg | | 79 | 57 - 142 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *Terphenyl-d14* | *83* | | *42 - 151* |

**Lab Sample ID: LCSD 580-139519/3-A**
**Matrix: Solid**
**Analysis Batch: 139893**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 139519**

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Naphthalene | 1010 | 859 | | ug/Kg | | 85 | 64 - 129 | 6 | 26 |
| 2-Methylnaphthalene | 1000 | 842 | | ug/Kg | | 84 | 65 - 125 | 7 | 27 |
| 1-Methylnaphthalene | 1010 | 878 | | ug/Kg | | 87 | 48 - 148 | 7 | 30 |
| Acenaphthylene | 999 | 858 | | ug/Kg | | 86 | 69 - 129 | 8 | 28 |
| Acenaphthene | 1000 | 877 | | ug/Kg | | 88 | 65 - 130 | 8 | 27 |
| Fluorene | 1010 | 871 | | ug/Kg | | 86 | 68 - 128 | 8 | 31 |
| Phenanthrene | 1010 | 861 | | ug/Kg | | 86 | 65 - 125 | 9 | 28 |
| Anthracene | 999 | 872 | | ug/Kg | | 87 | 73 - 123 | 8 | 27 |

## Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

**Lab Sample ID: LCSD 580-139519/3-A**
**Matrix: Solid**
**Analysis Batch: 139893**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 139519**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fluoranthene | | | 1000 | 879 | | ug/Kg | | 88 | 61 - 121 | 9 | 36 |
| Pyrene | | | 999 | 834 | | ug/Kg | | 83 | 54 - 134 | 8 | 31 |
| Benzo[a]anthracene | | | 1000 | 899 | | ug/Kg | | 90 | 64 - 124 | 7 | 27 |
| Chrysene | | | 964 | 859 | | ug/Kg | | 89 | 71 - 126 | 8 | 26 |
| Benzo[b]fluoranthene | | | 1000 | 914 | | ug/Kg | | 91 | 66 - 136 | 9 | 31 |
| Benzo[k]fluoranthene | | | 999 | 846 | | ug/Kg | | 85 | 63 - 143 | 10 | 31 |
| Benzo[a]pyrene | | | 1000 | 881 | | ug/Kg | | 88 | 68 - 128 | 9 | 30 |
| Indeno[1,2,3-cd]pyrene | | | 1010 | 939 | | ug/Kg | | 93 | 59 - 139 | 7 | 29 |
| Dibenz(a,h)anthracene | | | 1000 | 920 | | ug/Kg | | 92 | 57 - 142 | 10 | 30 |
| Benzo[g,h,i]perylene | | | 1000 | 870 | | ug/Kg | | 87 | 57 - 142 | 9 | 28 |

| *Surrogate* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *Terphenyl-d14* | *87* | | *42 - 151* |

## Method: AK102/103 - Diesel Range Organics (C10-C25) and Residual Range Organics (C25-C36) per AK102/RRO

**Lab Sample ID: 13G0008-BLK1**
**Matrix: Soil**
**Analysis Batch: W000336**

**Client Sample ID: Method Blank**
**Prep Type: Total**
**Prep Batch: 13G0008_P**

| Analyte | Blank Result | Blank Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics | ND | | 20.0 | | mg/kg wet | | 07/02/13 13:55 | 07/03/13 11:25 | 1.00 |
| Residual Range Organics | ND | | 50.0 | | mg/kg wet | | 07/02/13 13:55 | 07/03/13 11:25 | 1.00 |

| *Surrogate* | *Blank %Recovery* | *Blank Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane* | *100* | | *50 - 150* | *07/02/13 13:55* | *07/03/13 11:25* | *1.00* |
| *Triacontane* | *94.0* | | *50 - 150* | *07/02/13 13:55* | *07/03/13 11:25* | *1.00* |

**Lab Sample ID: 13G0008-BS1**
**Matrix: Soil**
**Analysis Batch: W000336**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total**
**Prep Batch: 13G0008_P**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics | | | 126 | 132 | | mg/kg wet | | 104 | 75 - 125 |
| Residual Range Organics | | | 128 | 121 | | mg/kg wet | | 95.1 | 60 - 120 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane* | *106* | | *60 - 120* |
| *Triacontane* | *97.1* | | *60 - 120* |

**Lab Sample ID: 13G0008-BSD1**
**Matrix: Soil**
**Analysis Batch: W000336**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total**
**Prep Batch: 13G0008_P**

| Analyte | | | Spike Added | LCS Dup Result | LCS Dup Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics | | | 126 | 114 | | mg/kg wet | | 90.0 | 75 - 125 | 14.8 | 20 |

## Method: AK102/103 - Diesel Range Organics (C10-C25) and Residual Range Organics (C25-C36) per AK102/RRO (Continued)

**Lab Sample ID: 13G0008-BSD1** — **Client Sample ID: Lab Control Sample Dup**
**Matrix: Soil** — **Prep Type: Total**
**Analysis Batch: W000336** — **Prep Batch: 13G0008_P**

| Analyte | | | Spike Added | LCS Dup Result | LCS Dup Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Residual Range Organics | | | 128 | 104 | | mg/kg wet | | 81.5 | 60 - 120 | 15.5 | 20 |

| *Surrogate* | *LCS Dup %Recovery* | *LCS Dup Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane* | *94.4* | | *60 - 120* |
| *Triacontane* | *85.8* | | *60 - 120* |

**Lab Sample ID: 13G0008-MS1** — **Client Sample ID: FYU13SSQ002 (11.5-12)**
**Matrix: Soil** — **Prep Type: Total**
**Analysis Batch: W000336** — **Prep Batch: 13G0008_P**

| Analyte | Sample Result | Sample Qualifier | Spike Added | Matrix Spike Result | Matrix Spike Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics | 7.15 | | 147 | 156 | | mg/kg dry | ☼ | 101 | 75 - 125 | | |
| Residual Range Organics | 5.34 | | 148 | 141 | | mg/kg dry | ☼ | 91.8 | 60 - 120 | | |

| *Surrogate* | *Matrix Spike %Recovery* | *Matrix Spike Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane* | *108* | | *50 - 150* |
| *Triacontane* | *97.7* | | *50 - 150* |

**Lab Sample ID: 13G0008-MSD1** — **Client Sample ID: FYU13SSQ002 (11.5-12)**
**Matrix: Soil** — **Prep Type: Total**
**Analysis Batch: W000336** — **Prep Batch: 13G0008_P**

| Analyte | Sample Result | Sample Qualifier | Spike Added | ıtrix Spike Dup Result | Matrix Spike Dup Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics | 7.15 | | 146 | 148 | | mg/kg dry | ☼ | 96.4 | 75 - 125 | 5.22 | 25 |
| Residual Range Organics | 5.34 | | 147 | 136 | | mg/kg dry | ☼ | 88.4 | 60 - 120 | 4.19 | 25 |

| *Surrogate* | *Matrix Spike Dup %Recovery* | *Matrix Spike Dup Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane* | *108* | | *50 - 150* |
| *Triacontane* | *97.1* | | *50 - 150* |

**Lab Sample ID: 13G0008-DUP1** — **Client Sample ID: FYU13SSH003 (7.5-8)**
**Matrix: Soil** — **Prep Type: Total**
**Analysis Batch: W000336** — **Prep Batch: 13G0008_P**

| Analyte | Sample Result | Sample Qualifier | | Duplicate Result | Duplicate Qualifier | Unit | D | | | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics | 1260 | Q2 | | 810 | R2 | mg/kg dry | ☼ | | | 43.7 | 20 |
| Residual Range Organics | 15.3 | | | 14.3 | | mg/kg dry | ☼ | | | 6.54 | 50 |

| *Surrogate* | *Duplicate %Recovery* | *Duplicate Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane* | *114* | | *50 - 150* |
| *Triacontane* | *106* | | *50 - 150* |

## Method: AK102/103 - Diesel Range Organics (C10-C25) and Residual Range Organics (C25-C36) per AK102/RRO (Continued)

**Lab Sample ID: 13G0019-BLK1**
**Matrix: Water**
**Analysis Batch: W000349**

**Client Sample ID: Method Blank**
**Prep Type: Total**
**Prep Batch: 13G0019_P**

| Analyte | Blank Result | Blank Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics | ND | | 0.500 | | mg/l | | 07/10/13 08:59 | 07/10/13 14:36 | 1.00 |
| Residual Range Organics | ND | | 0.500 | | mg/l | | 07/10/13 08:59 | 07/10/13 14:36 | 1.00 |

| *Surrogate* | *Blank %Recovery* | *Blank Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *1-Chlorooctadecane* | *108* | | *50 - 150* | *07/10/13 08:59* | *07/10/13 14:36* | *1.00* |
| *Triacontane* | *107* | | *50 - 150* | *07/10/13 08:59* | *07/10/13 14:36* | *1.00* |

**Lab Sample ID: 13G0019-BS1**
**Matrix: Water**
**Analysis Batch: W000349**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total**
**Prep Batch: 13G0019_P**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics | | | 10.1 | 10.6 | | mg/l | | 105 | 75 - 125 | | |
| Residual Range Organics | | | 10.2 | 9.56 | | mg/l | | 93.7 | 60 - 120 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane* | *98.2* | | *60 - 120* |
| *Triacontane* | *96.0* | | *60 - 120* |

**Lab Sample ID: 13G0019-BSD1**
**Matrix: Water**
**Analysis Batch: W000349**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total**
**Prep Batch: 13G0019_P**

| Analyte | | | Spike Added | LCS Dup Result | LCS Dup Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics | | | 10.1 | 10.8 | | mg/l | | 107 | 75 - 125 | 2.03 | 20 |
| Residual Range Organics | | | 10.2 | 9.72 | | mg/l | | 95.3 | 60 - 120 | 1.63 | 20 |

| *Surrogate* | *LCS Dup %Recovery* | *LCS Dup Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane* | *105* | | *60 - 120* |
| *Triacontane* | *110* | | *60 - 120* |

**Lab Sample ID: 13G0019-DUP1**
**Matrix: Water**
**Analysis Batch: W000349**

**Client Sample ID: Duplicate**
**Prep Type: Total**
**Prep Batch: 13G0019_P**

| Analyte | Sample Result | Sample Qualifier | | Duplicate Result | Duplicate Qualifier | Unit | D | | | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics | 0.205 | | | 0.157 | R4 | mg/l | | | | 26.5 | 20 |
| Residual Range Organics | 0.175 | | | 0.164 | | mg/l | | | | 6.57 | 20 |

| *Surrogate* | *Duplicate %Recovery* | *Duplicate Qualifier* | *Limits* |
|---|---|---|---|
| *1-Chlorooctadecane* | *109* | | *50 - 150* |
| *Triacontane* | *106* | | *50 - 150* |

## Method: AK101/EPA 8021B - Gasoline Range Organics (C6-C10) and BTEX per AK101

**Lab Sample ID: 13G0006-BLK1** — **Client Sample ID: Method Blank**
**Matrix: Water** — **Prep Type: Total**
**Analysis Batch: W000333** — **Prep Batch: 13G0006_P**

| Analyte | Blank Result | Blank Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | ND | | 50.0 | | ug/l | | 07/02/13 10:34 | 07/02/13 22:36 | 1.00 |
| Benzene | ND | | 0.500 | | ug/l | | 07/02/13 10:34 | 07/02/13 22:36 | 1.00 |
| Toluene | ND | | 0.500 | | ug/l | | 07/02/13 10:34 | 07/02/13 22:36 | 1.00 |
| Ethylbenzene | ND | | 0.500 | | ug/l | | 07/02/13 10:34 | 07/02/13 22:36 | 1.00 |
| Xylenes (total) | ND | | 1.50 | | ug/l | | 07/02/13 10:34 | 07/02/13 22:36 | 1.00 |

| *Surrogate* | *Blank %Recovery* | *Blank Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *4-BFB (FID)* | *113* | | *50 - 150* | *07/02/13 10:34* | *07/02/13 22:36* | *1.00* |
| *4-BFB (PID)* | *109* | | *50 - 150* | *07/02/13 10:34* | *07/02/13 22:36* | *1.00* |
| *a,a,a-TFT (FID)* | *120* | | *50 - 150* | *07/02/13 10:34* | *07/02/13 22:36* | *1.00* |
| *a,a,a-TFT (PID)* | *116* | | *50 - 150* | *07/02/13 10:34* | *07/02/13 22:36* | *1.00* |

**Lab Sample ID: 13G0006-BS1** — **Client Sample ID: Lab Control Sample**
**Matrix: Water** — **Prep Type: Total**
**Analysis Batch: W000333** — **Prep Batch: 13G0006_P**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | | | 20.0 | 17.7 | | ug/l | | 88.4 | 70 - 130 | | |
| Toluene | | | 20.0 | 17.1 | | ug/l | | 85.7 | 70 - 130 | | |
| Ethylbenzene | | | 20.0 | 17.1 | | ug/l | | 85.6 | 70 - 130 | | |
| Xylenes (total) | | | 60.0 | 50.9 | | ug/l | | 84.9 | 70 - 130 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *a,a,a-TFT (FID)* | *76.8* | | *60 - 120* |
| *a,a,a-TFT (PID)* | *75.3* | | *60 - 120* |

**Lab Sample ID: 13G0006-BS2** — **Client Sample ID: Lab Control Sample**
**Matrix: Water** — **Prep Type: Total**
**Analysis Batch: W000333** — **Prep Batch: 13G0006_P**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | | | 500 | 501 | | ug/l | | 100 | 60 - 120 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *4-BFB (FID)* | *87.5* | | *60 - 120* |
| *a,a,a-TFT (FID)* | *91.7* | | *60 - 120* |

**Lab Sample ID: 13G0006-BSD1** — **Client Sample ID: Lab Control Sample Dup**
**Matrix: Water** — **Prep Type: Total**
**Analysis Batch: W000333** — **Prep Batch: 13G0006_P**

| Analyte | | | Spike Added | LCS Dup Result | LCS Dup Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | | | 20.0 | 18.7 | | ug/l | | 93.4 | 70 - 130 | 5.45 | 20 |
| Toluene | | | 20.0 | 18.7 | | ug/l | | 93.7 | 70 - 130 | 8.94 | 20 |
| Ethylbenzene | | | 20.0 | 18.9 | | ug/l | | 94.7 | 70 - 130 | 10.1 | 20 |
| Xylenes (total) | | | 60.0 | 56.4 | | ug/l | | 94.0 | 70 - 130 | 10.2 | 20 |

## Method: AK101/EPA 8021B - Gasoline Range Organics (C6-C10) and BTEX per AK101 (Continued)

**Lab Sample ID: 13G0006-BSD1**
**Matrix: Water**
**Analysis Batch: W000333**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total**
**Prep Batch: 13G0006_P**

| *Surrogate* | *LCS Dup %Recovery* | *LCS Dup Qualifier* | *Limits* |
|---|---|---|---|
| *4-BFB (PID)* | *85.4* | | *60 - 120* |
| *a,a,a-TFT (PID)* | *86.2* | | *60 - 120* |

**Lab Sample ID: 13G0006-BSD2**
**Matrix: Water**
**Analysis Batch: W000333**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total**
**Prep Batch: 13G0006_P**

| Analyte | | | Spike Added | LCS Dup Result | LCS Dup Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | | | 500 | 470 | | ug/l | | 94.0 | 60 - 120 | 6.44 | 20 |

| *Surrogate* | *LCS Dup %Recovery* | *LCS Dup Qualifier* | *Limits* |
|---|---|---|---|
| *4-BFB (FID)* | *92.5* | | *60 - 120* |
| *a,a,a-TFT (FID)* | *109* | | *60 - 120* |

**Lab Sample ID: 13G0006-DUP1**
**Matrix: Water**
**Analysis Batch: W000333**

**Client Sample ID: FYU13WMW1**
**Prep Type: Total**
**Prep Batch: 13G0006_P**

| Analyte | Sample Result | Sample Qualifier | | Duplicate Result | Duplicate Qualifier | Unit | D | | | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | ND | | | ND | | ug/l | | | | | 20 |
| Benzene | ND | | | ND | | ug/l | | | | | 20 |
| Toluene | 0.103 | | | ND | | ug/l | | | | | 20 |
| Ethylbenzene | ND | | | ND | | ug/l | | | | | 20 |
| Xylenes (total) | ND | | | ND | | ug/l | | | | | 20 |

| *Surrogate* | *Duplicate %Recovery* | *Duplicate Qualifier* | *Limits* |
|---|---|---|---|
| *4-BFB (FID)* | *126* | | *50 - 150* |
| *4-BFB (PID)* | *122* | | *50 - 150* |
| *a,a,a-TFT (FID)* | *116* | | *50 - 150* |
| *a,a,a-TFT (PID)* | *112* | | *50 - 150* |

**Lab Sample ID: 13G0017-BLK1**
**Matrix: Soil**
**Analysis Batch: W000347**

**Client Sample ID: Method Blank**
**Prep Type: Total**
**Prep Batch: 13G0017_P**

| Analyte | Blank Result | Blank Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | ND | | 3.33 | | mg/kg wet | | 07/09/13 11:11 | 07/09/13 13:34 | 33.3 |
| Benzene | ND | | 0.0200 | | mg/kg wet | | 07/09/13 11:11 | 07/09/13 13:34 | 33.3 |
| Toluene | ND | | 0.0400 | | mg/kg wet | | 07/09/13 11:11 | 07/09/13 13:34 | 33.3 |
| Ethylbenzene | ND | | 0.0400 | | mg/kg wet | | 07/09/13 11:11 | 07/09/13 13:34 | 33.3 |
| Xylenes (total) | ND | | 0.120 | | mg/kg wet | | 07/09/13 11:11 | 07/09/13 13:34 | 33.3 |

| *Surrogate* | *Blank %Recovery* | *Blank Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *4-BFB (FID)* | *92.8* | | *50 - 150* | *07/09/13 11:11* | *07/09/13 13:34* | *33.3* |
| *a,a,a-TFT (FID)* | *87.6* | | *50 - 150* | *07/09/13 11:11* | *07/09/13 13:34* | *33.3* |
| *4-BFB (PID)* | *92.4* | | *50 - 150* | *07/09/13 11:11* | *07/09/13 13:34* | *33.3* |
| *a,a,a-TFT (PID)* | *87.7* | | *50 - 150* | *07/09/13 11:11* | *07/09/13 13:34* | *33.3* |

## Method: AK101/EPA 8021B - Gasoline Range Organics (C6-C10) and BTEX per AK101 (Continued)

**Lab Sample ID: 13G0017-BS1** — **Client Sample ID: Lab Control Sample**
**Matrix: Soil** — **Prep Type: Total**
**Analysis Batch: W000347** — **Prep Batch: 13G0017_P**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | | | 0.800 | 0.893 | | mg/kg wet | | 112 | 70 - 130 | | |
| Toluene | | | 0.800 | 0.942 | | mg/kg wet | | 118 | 70 - 130 | | |
| Ethylbenzene | | | 0.800 | 0.999 | | mg/kg wet | | 125 | 70 - 130 | | |
| Xylenes (total) | | | 2.40 | 2.95 | | mg/kg wet | | 123 | 70 - 130 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *4-BFB (PID)* | *98.1* | | *60 - 120* |
| *a,a,a-TFT (PID)* | *85.4* | | *60 - 120* |

**Lab Sample ID: 13G0017-BS2** — **Client Sample ID: Lab Control Sample**
**Matrix: Soil** — **Prep Type: Total**
**Analysis Batch: W000347** — **Prep Batch: 13G0017_P**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | | | 20.0 | 22.9 | | mg/kg wet | | 115 | 60 - 120 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *4-BFB (FID)* | *109* | | *60 - 120* |
| *a,a,a-TFT (FID)* | *102* | | *60 - 120* |

**Lab Sample ID: 13G0017-BSD1** — **Client Sample ID: Lab Control Sample Dup**
**Matrix: Soil** — **Prep Type: Total**
**Analysis Batch: W000347** — **Prep Batch: 13G0017_P**

| Analyte | | | Spike Added | LCS Dup Result | LCS Dup Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | | | 0.800 | 0.897 | | mg/kg wet | | 112 | 70 - 130 | 0.424 | 20 |
| Toluene | | | 0.800 | 0.945 | | mg/kg wet | | 118 | 70 - 130 | 0.258 | 20 |
| Ethylbenzene | | | 0.800 | 1.01 | | mg/kg wet | | 126 | 70 - 130 | 0.774 | 20 |
| Xylenes (total) | | | 2.40 | 2.97 | | mg/kg wet | | 124 | 70 - 130 | 0.906 | 20 |

| *Surrogate* | *LCS Dup %Recovery* | *LCS Dup Qualifier* | *Limits* |
|---|---|---|---|
| *4-BFB (PID)* | *93.8* | | *60 - 120* |
| *a,a,a-TFT (PID)* | *86.3* | | *60 - 120* |

**Lab Sample ID: 13G0017-BSD2** — **Client Sample ID: Lab Control Sample Dup**
**Matrix: Soil** — **Prep Type: Total**
**Analysis Batch: W000347** — **Prep Batch: 13G0017_P**

| Analyte | | | Spike Added | LCS Dup Result | LCS Dup Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | | | 20.0 | 22.6 | | mg/kg wet | | 113 | 60 - 120 | 1.31 | 20 |

| *Surrogate* | *LCS Dup %Recovery* | *LCS Dup Qualifier* | *Limits* |
|---|---|---|---|
| *4-BFB (FID)* | *101* | | *60 - 120* |
| *a,a,a-TFT (FID)* | *102* | | *60 - 120* |

## Method: AK101/EPA 8021B - Gasoline Range Organics (C6-C10) and BTEX per AK101 (Continued)

**Lab Sample ID: 13G0017-MS1** — **Client Sample ID: Matrix Spike**
**Matrix: Soil** — **Prep Type: Total**
**Analysis Batch: W000347** — **Prep Batch: 13G0017_P**

| Analyte | Sample Result | Sample Qualifier | Spike Added | Matrix Spike Result | Matrix Spike Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | 0.0124 | | 2.33 | 3.55 | M7 | mg/kg dry | ☼ | 152 | 60 - 140 |
| Toluene | 1.13 | | 2.33 | 4.86 | M7 | mg/kg dry | ☼ | 160 | 60 - 140 |
| Ethylbenzene | ND | | 2.33 | 4.10 | M7 | mg/kg dry | ☼ | 176 | 60 - 140 |
| Xylenes (total) | 0.134 | | 6.98 | 12.3 | M7 | mg/kg dry | ☼ | 174 | 60 - 140 |

| *Surrogate* | *Matrix Spike %Recovery* | *Matrix Spike Qualifier* | *Limits* |
|---|---|---|---|
| *4-BFB (PID)* | *68.7* | | *50 - 150* |
| *a,a,a-TFT (PID)* | *74.1* | | *50 - 150* |

**Lab Sample ID: 13G0017-MSD1** — **Client Sample ID: Matrix Spike Duplicate**
**Matrix: Soil** — **Prep Type: Total**
**Analysis Batch: W000347** — **Prep Batch: 13G0017_P**

| Analyte | Sample Result | Sample Qualifier | Spike Added | Matrix Spike Dup Result | Matrix Spike Dup Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 0.0124 | | 2.33 | 3.47 | M7 | mg/kg dry | ☼ | 149 | 60 - 140 | 2.18 | 25 |
| Toluene | 1.13 | | 2.33 | 4.70 | M7 | mg/kg dry | ☼ | 153 | 60 - 140 | 3.16 | 25 |
| Ethylbenzene | ND | | 2.33 | 3.84 | M7 | mg/kg dry | ☼ | 165 | 60 - 140 | 6.61 | 25 |
| Xylenes (total) | 0.134 | | 6.98 | 11.5 | M7 | mg/kg dry | ☼ | 162 | 60 - 140 | 7.02 | 25 |

| *Surrogate* | *Matrix Spike Dup %Recovery* | *Matrix Spike Dup Qualifier* | *Limits* |
|---|---|---|---|
| *4-BFB (PID)* | *66.9* | | *50 - 150* |
| *a,a,a-TFT (PID)* | *74.5* | | *50 - 150* |

**Lab Sample ID: 13G0017-DUP1** — **Client Sample ID: Duplicate**
**Matrix: Soil** — **Prep Type: Total**
**Analysis Batch: W000347** — **Prep Batch: 13G0017_P**

| Analyte | Sample Result | Sample Qualifier | Duplicate Result | Duplicate Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | ND | | ND | | mg/kg dry | ☼ | | 20 |
| Benzene | 0.0124 | | ND | | mg/kg dry | ☼ | | 20 |
| Toluene | 1.13 | | 1.11 | | mg/kg dry | ☼ | 2.15 | 20 |
| Ethylbenzene | ND | | ND | | mg/kg dry | ☼ | | 20 |
| Xylenes (total) | 0.134 | | 0.125 | | mg/kg dry | ☼ | 6.83 | 20 |

| *Surrogate* | *Duplicate %Recovery* | *Duplicate Qualifier* | *Limits* |
|---|---|---|---|
| *4-BFB (FID)* | *65.6* | | *50 - 150* |
| *a,a,a-TFT (FID)* | *75.0* | | *50 - 150* |
| *4-BFB (PID)* | *65.3* | | *50 - 150* |
| *a,a,a-TFT (PID)* | *75.2* | | *50 - 150* |

**Lab Sample ID: 13G0024-BLK1** — **Client Sample ID: Method Blank**
**Matrix: Soil** — **Prep Type: Total**
**Analysis Batch: W000351** — **Prep Batch: 13G0024_P**

| Analyte | Blank Result | Blank Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | ND | | 3.33 | | mg/kg wet | | 07/11/13 10:38 | 07/11/13 10:51 | 33.3 |
| Benzene | ND | C | 0.0200 | | mg/kg wet | | 07/11/13 10:38 | 07/11/13 10:51 | 33.3 |

## Method: AK101/EPA 8021B - Gasoline Range Organics (C6-C10) and BTEX per AK101 (Continued)

**Lab Sample ID: 13G0024-BLK1**
**Matrix: Soil**
**Analysis Batch: W000351**

**Client Sample ID: Method Blank**
**Prep Type: Total**
**Prep Batch: 13G0024_P**

| Analyte | Blank Result | Blank Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Toluene | ND | C | 0.0400 | | mg/kg wet | | 07/11/13 10:38 | 07/11/13 10:51 | 33.3 |
| Ethylbenzene | ND | C | 0.0400 | | mg/kg wet | | 07/11/13 10:38 | 07/11/13 10:51 | 33.3 |
| Xylenes (total) | ND | C | 0.120 | | mg/kg wet | | 07/11/13 10:38 | 07/11/13 10:51 | 33.3 |

| *Surrogate* | *Blank %Recovery* | *Blank Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *4-BFB (FID)* | *94.3* | | *50 - 150* | *07/11/13 10:38* | *07/11/13 10:51* | *33.3* |
| *a,a,a-TFT (FID)* | *88.6* | | *50 - 150* | *07/11/13 10:38* | *07/11/13 10:51* | *33.3* |
| *4-BFB (PID)* | *93.8* | *C8* | *50 - 150* | *07/11/13 10:38* | *07/11/13 10:51* | *33.3* |
| *a,a,a-TFT (PID)* | *88.5* | *C8* | *50 - 150* | *07/11/13 10:38* | *07/11/13 10:51* | *33.3* |

**Lab Sample ID: 13G0024-BS1**
**Matrix: Soil**
**Analysis Batch: W000351**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total**
**Prep Batch: 13G0024_P**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | | | 0.800 | 0.875 | C8 | mg/kg wet | | 109 | 70 - 130 | | |
| Toluene | | | 0.800 | 0.920 | C8 | mg/kg wet | | 115 | 70 - 130 | | |
| Ethylbenzene | | | 0.800 | 0.955 | C8 | mg/kg wet | | 119 | 70 - 130 | | |
| Xylenes (total) | | | 2.40 | 2.82 | C8 | mg/kg wet | | 117 | 70 - 130 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *4-BFB (PID)* | *93.8* | *C8* | *60 - 120* |
| *a,a,a-TFT (PID)* | *85.5* | *C8* | *60 - 120* |

**Lab Sample ID: 13G0024-BS2**
**Matrix: Soil**
**Analysis Batch: W000351**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total**
**Prep Batch: 13G0024_P**

| Analyte | | | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | | | 20.0 | 21.9 | | mg/kg wet | | 110 | 60 - 120 | | |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *4-BFB (FID)* | *85.6* | | *60 - 120* |
| *a,a,a-TFT (FID)* | *97.9* | | *60 - 120* |

**Lab Sample ID: 13G0024-BSD1**
**Matrix: Soil**
**Analysis Batch: W000351**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total**
**Prep Batch: 13G0024_P**

| Analyte | | | Spike Added | LCS Dup Result | LCS Dup Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | | | 0.800 | 0.969 | C8 | mg/kg wet | | 121 | 70 - 130 | 10.2 | 20 |
| Toluene | | | 0.800 | 1.01 | C8 | mg/kg wet | | 126 | 70 - 130 | 9.51 | 20 |
| Ethylbenzene | | | 0.800 | 1.03 | C8 | mg/kg wet | | 129 | 70 - 130 | 7.64 | 20 |
| Xylenes (total) | | | 2.40 | 3.05 | C8 | mg/kg wet | | 127 | 70 - 130 | 7.79 | 20 |

| *Surrogate* | *LCS Dup %Recovery* | *LCS Dup Qualifier* | *Limits* |
|---|---|---|---|
| *4-BFB (PID)* | *101* | *C8* | *60 - 120* |

## Method: AK101/EPA 8021B - Gasoline Range Organics (C6-C10) and BTEX per AK101 (Continued)

**Lab Sample ID: 13G0024-BSD1**
**Matrix: Soil**
**Analysis Batch: W000351**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total**
**Prep Batch: 13G0024_P**

| *Surrogate* | *LCS Dup %Recovery* | *LCS Dup Qualifier* | *Limits* |
|---|---|---|---|
| *a,a,a-TFT (PID)* | *93.1* | *C8* | *60 - 120* |

**Lab Sample ID: 13G0024-BSD2**
**Matrix: Soil**
**Analysis Batch: W000351**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total**
**Prep Batch: 13G0024_P**

| Analyte | | | Spike Added | LCS Dup Result | LCS Dup Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | | | 20.0 | 21.7 | | mg/kg wet | | 108 | 60 - 120 | 1.34 | 20 |

| *Surrogate* | *LCS Dup %Recovery* | *LCS Dup Qualifier* | *Limits* |
|---|---|---|---|
| *4-BFB (FID)* | *97.9* | | *60 - 120* |
| *a,a,a-TFT (FID)* | *96.1* | | *60 - 120* |

**Lab Sample ID: 13G0024-MS1**
**Matrix: Soil**
**Analysis Batch: W000351**

**Client Sample ID: FYU13SSH003 (7.5-8)**
**Prep Type: Total**
**Prep Batch: 13G0024_P**

| Analyte | Sample Result | Sample Qualifier | Spike Added | Matrix Spike Result | Matrix Spike Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | C | 0.332 | 0.530 | C8 M7 | mg/kg dry | ☼ | 160 | 60 - 140 |
| Toluene | 0.00752 | C | 0.332 | 0.562 | C8 M7 | mg/kg dry | ☼ | 167 | 60 - 140 |
| Ethylbenzene | 0.00440 | C | 0.332 | 0.591 | C8 M7 | mg/kg dry | ☼ | 177 | 60 - 140 |
| Xylenes (total) | 0.0411 | C | 0.996 | 1.80 | C8 M7 | mg/kg dry | ☼ | 177 | 60 - 140 |

| *Surrogate* | *Matrix Spike %Recovery* | *Matrix Spike Qualifier* | *Limits* |
|---|---|---|---|
| *4-BFB (PID)* | *98.3* | *C8* | *50 - 150* |
| *a,a,a-TFT (PID)* | *15.2* | *C8 ZX CF6* | *50 - 150* |

**Lab Sample ID: 13G0024-MSD1**
**Matrix: Soil**
**Analysis Batch: W000351**

**Client Sample ID: FYU13SSH003 (7.5-8)**
**Prep Type: Total**
**Prep Batch: 13G0024_P**

| Analyte | Sample Result | Sample Qualifier | Spike Added | ıtrix Spike Dup Result | Matrix Spike Dup Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | C | 0.332 | 0.545 | C8 M7 | mg/kg dry | ☼ | 164 | 60 - 140 | 2.67 | 25 |
| Toluene | 0.00752 | C | 0.332 | 0.574 | C8 M7 | mg/kg dry | ☼ | 171 | 60 - 140 | 2.13 | 25 |
| Ethylbenzene | 0.00440 | C | 0.332 | 0.604 | C8 M7 | mg/kg dry | ☼ | 180 | 60 - 140 | 2.19 | 25 |
| Xylenes (total) | 0.0411 | C | 0.996 | 1.83 | C8 M7 | mg/kg dry | ☼ | 180 | 60 - 140 | 1.78 | 25 |

| *Surrogate* | *Matrix Spike Dup %Recovery* | *Matrix Spike Dup Qualifier* | *Limits* |
|---|---|---|---|
| *4-BFB (PID)* | *108* | *C8* | *50 - 150* |
| *a,a,a-TFT (PID)* | *14.9* | *C8 ZX CF6* | *50 - 150* |

**Lab Sample ID: 13G0024-DUP1**
**Matrix: Soil**
**Analysis Batch: W000351**

**Client Sample ID: FYU13SSH003 (7.5-8)**
**Prep Type: Total**
**Prep Batch: 13G0024_P**

| Analyte | Sample Result | Sample Qualifier | | Duplicate Result | Duplicate Qualifier | Unit | D | | | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | 0.682 | | | 0.675 | | mg/kg dry | ☼ | | | 1.05 | 20 |

## Method: AK101/EPA 8021B - Gasoline Range Organics (C6-C10) and BTEX per AK101 (Continued)

**Lab Sample ID: 13G0024-DUP1**
**Matrix: Soil**
**Analysis Batch: W000351**

**Client Sample ID: FYU13SSH003 (7.5-8)**
**Prep Type: Total**
**Prep Batch: 13G0024_P**

| Analyte | Sample Result | Sample Qualifier | | Duplicate Result | Duplicate Qualifier | Unit | D | | | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | C | | ND | C | mg/kg dry | ☼ | | | | 20 |
| Toluene | 0.00752 | C | | 0.00758 | C | mg/kg dry | ☼ | | | 0.795 | 20 |
| Ethylbenzene | 0.00440 | C | | 0.00440 | C | mg/kg dry | ☼ | | | 0.00 | 20 |
| Xylenes (total) | 0.0411 | C | | 0.0396 | C | mg/kg dry | ☼ | | | 3.72 | 20 |

| *Surrogate* | *Duplicate %Recovery* | *Duplicate Qualifier* | *Limits* |
|---|---|---|---|
| *4-BFB (FID)* | *113* | | *50 - 150* |
| *a,a,a-TFT (FID)* | *16.3* | *CF6 ZX* | *50 - 150* |
| *4-BFB (PID)* | *107* | *C8* | *50 - 150* |
| *a,a,a-TFT (PID)* | *16.6* | *ZX CF6 C8* | *50 - 150* |

## GC/MS Semi VOA

### Prep Batch: 139320

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| AWG0003-01 | FYU13WMW1 | Total/NA | Water | 3520C | |
| AWG0003-02 | FYU13WMW2 | Total/NA | Water | 3520C | |
| AWG0003-03 | FYU13WMW3 | Total/NA | Water | 3520C | |
| LCS 580-139320/2-A | Lab Control Sample | Total/NA | Water | 3520C | |
| LCSD 580-139320/3-A | Lab Control Sample Dup | Total/NA | Water | 3520C | |
| MB 580-139320/1-A | Method Blank | Total/NA | Water | 3520C | |

### Prep Batch: 139519

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| AWG0003-05 | FYU13SSQ001(11-11.5) | Total/NA | Soil | 3550B | |
| AWG0003-06 | FYU13SSQ002 (11.5-12) | Total/NA | Soil | 3550B | |
| AWG0003-07 | FYU13SSQ003 (8.5-9) | Total/NA | Soil | 3550B | |
| AWG0003-08 | FYU13SSH001 (7-8) | Total/NA | Soil | 3550B | |
| AWG0003-09 | FYU13SSH002 (7.5-8) | Total/NA | Soil | 3550B | |
| AWG0003-10 | FYU13SSH003 (7.5-8) | Total/NA | Soil | 3550B | |
| LCS 580-139519/2-A | Lab Control Sample | Total/NA | Solid | 3550B | |
| LCSD 580-139519/3-A | Lab Control Sample Dup | Total/NA | Solid | 3550B | |
| MB 580-139519/1-A | Method Blank | Total/NA | Solid | 3550B | |

### Analysis Batch: 139868

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| AWG0003-01 | FYU13WMW1 | Total/NA | Water | 8270C SIM | 139320 |
| AWG0003-02 | FYU13WMW2 | Total/NA | Water | 8270C SIM | 139320 |
| AWG0003-03 | FYU13WMW3 | Total/NA | Water | 8270C SIM | 139320 |
| LCS 580-139320/2-A | Lab Control Sample | Total/NA | Water | 8270C SIM | 139320 |
| LCSD 580-139320/3-A | Lab Control Sample Dup | Total/NA | Water | 8270C SIM | 139320 |
| MB 580-139320/1-A | Method Blank | Total/NA | Water | 8270C SIM | 139320 |

### Analysis Batch: 139893

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| AWG0003-05 | FYU13SSQ001(11-11.5) | Total/NA | Soil | 8270C SIM | 139519 |
| AWG0003-06 | FYU13SSQ002 (11.5-12) | Total/NA | Soil | 8270C SIM | 139519 |
| AWG0003-08 | FYU13SSH001 (7-8) | Total/NA | Soil | 8270C SIM | 139519 |
| AWG0003-09 | FYU13SSH002 (7.5-8) | Total/NA | Soil | 8270C SIM | 139519 |
| AWG0003-10 | FYU13SSH003 (7.5-8) | Total/NA | Soil | 8270C SIM | 139519 |
| LCS 580-139519/2-A | Lab Control Sample | Total/NA | Solid | 8270C SIM | 139519 |
| LCSD 580-139519/3-A | Lab Control Sample Dup | Total/NA | Solid | 8270C SIM | 139519 |
| MB 580-139519/1-A | Method Blank | Total/NA | Solid | 8270C SIM | 139519 |

### Analysis Batch: 140042

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| AWG0003-07 | FYU13SSQ003 (8.5-9) | Total/NA | Soil | 8270C SIM | 139519 |

## Fuels

### Analysis Batch: 13G0009

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 13G0009-DUP1 | FYU13SSQ003 (8.5-9) | Total | Soil | TA-SOP | 13G0009_P |
| AWG0003-05 | FYU13SSQ001(11-11.5) | Total | Soil | TA-SOP | 13G0009_P |
| AWG0003-06 | FYU13SSQ002 (11.5-12) | Total | Soil | TA-SOP | 13G0009_P |

## Fuels (Continued)

### Analysis Batch: 13G0009 (Continued)

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| AWG0003-07 | FYU13SSQ003 (8.5-9) | Total | Soil | TA-SOP | 13G0009_P |
| AWG0003-08 | FYU13SSH001 (7-8) | Total | Soil | TA-SOP | 13G0009_P |
| AWG0003-09 | FYU13SSH002 (7.5-8) | Total | Soil | TA-SOP | 13G0009_P |
| AWG0003-10 | FYU13SSH003 (7.5-8) | Total | Soil | TA-SOP | 13G0009_P |
| AWG0003-11 | FYU13TB002 | Total | Soil | TA-SOP | 13G0009_P |

### Analysis Batch: W000336

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 13G0008-BLK1 | Method Blank | Total | Soil | AK102/103 | 13G0008_P |
| 13G0008-BS1 | Lab Control Sample | Total | Soil | AK102/103 | 13G0008_P |
| 13G0008-BSD1 | Lab Control Sample Dup | Total | Soil | AK102/103 | 13G0008_P |
| 13G0008-DUP1 | FYU13SSH003 (7.5-8) | Total | Soil | AK102/103 | 13G0008_P |
| 13G0008-MS1 | FYU13SSQ002 (11.5-12) | Total | Soil | AK102/103 | 13G0008_P |
| 13G0008-MSD1 | FYU13SSQ002 (11.5-12) | Total | Soil | AK102/103 | 13G0008_P |
| AWG0003-05 | FYU13SSQ001(11-11.5) | Total | Soil | AK102/103 | 13G0008_P |
| AWG0003-06 | FYU13SSQ002 (11.5-12) | Total | Soil | AK102/103 | 13G0008_P |
| AWG0003-09 | FYU13SSH002 (7.5-8) | Total | Soil | AK102/103 | 13G0008_P |
| AWG0003-10 | FYU13SSH003 (7.5-8) | Total | Soil | AK102/103 | 13G0008_P |

### Analysis Batch: W000339

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| AWG0003-07 | FYU13SSQ003 (8.5-9) | Total | Soil | AK102/103 | 13G0008_P |
| AWG0003-08 | FYU13SSH001 (7-8) | Total | Soil | AK102/103 | 13G0008_P |

### Analysis Batch: W000349

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 13G0019-BLK1 | Method Blank | Total | Water | AK102/103 | 13G0019_P |
| 13G0019-BS1 | Lab Control Sample | Total | Water | AK102/103 | 13G0019_P |
| 13G0019-BSD1 | Lab Control Sample Dup | Total | Water | AK102/103 | 13G0019_P |
| 13G0019-DUP1 | Duplicate | Total | Water | AK102/103 | 13G0019_P |
| AWG0003-01 - RE1 | FYU13WMW1 | Total | Water | AK102/103 | 13G0019_P |
| AWG0003-02 - RE1 | FYU13WMW2 | Total | Water | AK102/103 | 13G0019_P |
| AWG0003-03 - RE1 | FYU13WMW3 | Total | Water | AK102/103 | 13G0019_P |

### Prep Batch: 13G0008_P

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 13G0008-BLK1 | Method Blank | Total | Soil | EPA 3545 | |
| 13G0008-BS1 | Lab Control Sample | Total | Soil | EPA 3545 | |
| 13G0008-BSD1 | Lab Control Sample Dup | Total | Soil | EPA 3545 | |
| 13G0008-DUP1 | FYU13SSH003 (7.5-8) | Total | Soil | EPA 3545 | |
| 13G0008-MS1 | FYU13SSQ002 (11.5-12) | Total | Soil | EPA 3545 | |
| 13G0008-MSD1 | FYU13SSQ002 (11.5-12) | Total | Soil | EPA 3545 | |
| AWG0003-05 | FYU13SSQ001(11-11.5) | Total | Soil | EPA 3545 | |
| AWG0003-06 | FYU13SSQ002 (11.5-12) | Total | Soil | EPA 3545 | |
| AWG0003-07 | FYU13SSQ003 (8.5-9) | Total | Soil | EPA 3545 | |
| AWG0003-08 | FYU13SSH001 (7-8) | Total | Soil | EPA 3545 | |
| AWG0003-09 | FYU13SSH002 (7.5-8) | Total | Soil | EPA 3545 | |
| AWG0003-10 | FYU13SSH003 (7.5-8) | Total | Soil | EPA 3545 | |

## Fuels (Continued)

### Prep Batch: 13G0009_P

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 13G0009-DUP1 | FYU13SSQ003 (8.5-9) | Total | Soil | *** DEFAULT PREP *** | |
| AWG0003-05 | FYU13SSQ001(11-11.5) | Total | Soil | *** DEFAULT PREP *** | |
| AWG0003-06 | FYU13SSQ002 (11.5-12) | Total | Soil | *** DEFAULT PREP *** | |
| AWG0003-07 | FYU13SSQ003 (8.5-9) | Total | Soil | *** DEFAULT PREP *** | |
| AWG0003-08 | FYU13SSH001 (7-8) | Total | Soil | *** DEFAULT PREP *** | |
| AWG0003-09 | FYU13SSH002 (7.5-8) | Total | Soil | *** DEFAULT PREP *** | |
| AWG0003-10 | FYU13SSH003 (7.5-8) | Total | Soil | *** DEFAULT PREP *** | |
| AWG0003-11 | FYU13TB002 | Total | Soil | *** DEFAULT PREP *** | |

### Prep Batch: 13G0019_P

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 13G0019-BLK1 | Method Blank | Total | Water | EPA 3510 | |
| 13G0019-BS1 | Lab Control Sample | Total | Water | EPA 3510 | |
| 13G0019-BSD1 | Lab Control Sample Dup | Total | Water | EPA 3510 | |
| 13G0019-DUP1 | Duplicate | Total | Water | EPA 3510 | |
| AWG0003-01 - RE1 | FYU13WMW1 | Total | Water | EPA 3510 | |
| AWG0003-02 - RE1 | FYU13WMW2 | Total | Water | EPA 3510 | |
| AWG0003-03 - RE1 | FYU13WMW3 | Total | Water | EPA 3510 | |

## GC Volatiles

### Analysis Batch: W000333

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 13G0006-BLK1 | Method Blank | Total | Water | AK101/EPA 8021B | 13G0006_P |
| 13G0006-BS1 | Lab Control Sample | Total | Water | AK101/EPA 8021B | 13G0006_P |
| 13G0006-BS2 | Lab Control Sample | Total | Water | AK101/EPA 8021B | 13G0006_P |
| 13G0006-BSD1 | Lab Control Sample Dup | Total | Water | AK101/EPA 8021B | 13G0006_P |
| 13G0006-BSD2 | Lab Control Sample Dup | Total | Water | AK101/EPA 8021B | 13G0006_P |
| 13G0006-DUP1 | FYU13WMW1 | Total | Water | AK101/EPA 8021B | 13G0006_P |
| AWG0003-01 | FYU13WMW1 | Total | Water | AK101/EPA 8021B | 13G0006_P |
| AWG0003-02 | FYU13WMW2 | Total | Water | AK101/EPA 8021B | 13G0006_P |
| AWG0003-03 | FYU13WMW3 | Total | Water | AK101/EPA 8021B | 13G0006_P |
| AWG0003-04 | FYU13TB001 | Total | Water | AK101/EPA 8021B | 13G0006_P |

## GC Volatiles (Continued)

### Analysis Batch: W000347

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 13G0017-BLK1 | Method Blank | Total | Soil | AK101/EPA 8021B | 13G0017_P |
| 13G0017-BS1 | Lab Control Sample | Total | Soil | AK101/EPA 8021B | 13G0017_P |
| 13G0017-BS2 | Lab Control Sample | Total | Soil | AK101/EPA 8021B | 13G0017_P |
| 13G0017-BSD1 | Lab Control Sample Dup | Total | Soil | AK101/EPA 8021B | 13G0017_P |
| 13G0017-BSD2 | Lab Control Sample Dup | Total | Soil | AK101/EPA 8021B | 13G0017_P |
| 13G0017-DUP1 | Duplicate | Total | Soil | AK101/EPA 8021B | 13G0017_P |
| 13G0017-MS1 | Matrix Spike | Total | Soil | AK101/EPA 8021B | 13G0017_P |
| 13G0017-MSD1 | Matrix Spike Duplicate | Total | Soil | AK101/EPA 8021B | 13G0017_P |
| AWG0003-05 | FYU13SSQ001(11-11.5) | Total | Soil | AK101/EPA 8021B | 13G0017_P |
| AWG0003-06 | FYU13SSQ002 (11.5-12) | Total | Soil | AK101/EPA 8021B | 13G0017_P |
| AWG0003-07 | FYU13SSQ003 (8.5-9) | Total | Soil | AK101/EPA 8021B | 13G0017_P |
| AWG0003-08 | FYU13SSH001 (7-8) | Total | Soil | AK101/EPA 8021B | 13G0017_P |
| AWG0003-09 | FYU13SSH002 (7.5-8) | Total | Soil | AK101/EPA 8021B | 13G0017_P |
| AWG0003-10 | FYU13SSH003 (7.5-8) | Total | Soil | AK101/EPA 8021B | 13G0017_P |
| AWG0003-11 | FYU13TB002 | Total | Soil | AK101/EPA 8021B | 13G0017_P |

### Analysis Batch: W000351

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 13G0024-BLK1 | Method Blank | Total | Soil | AK101/EPA 8021B | 13G0024_P |
| 13G0024-BS1 | Lab Control Sample | Total | Soil | AK101/EPA 8021B | 13G0024_P |
| 13G0024-BS2 | Lab Control Sample | Total | Soil | AK101/EPA 8021B | 13G0024_P |
| 13G0024-BSD1 | Lab Control Sample Dup | Total | Soil | AK101/EPA 8021B | 13G0024_P |
| 13G0024-BSD2 | Lab Control Sample Dup | Total | Soil | AK101/EPA 8021B | 13G0024_P |
| 13G0024-DUP1 | FYU13SSH003 (7.5-8) | Total | Soil | AK101/EPA 8021B | 13G0024_P |
| 13G0024-MS1 | FYU13SSH003 (7.5-8) | Total | Soil | AK101/EPA 8021B | 13G0024_P |
| 13G0024-MSD1 | FYU13SSH003 (7.5-8) | Total | Soil | AK101/EPA 8021B | 13G0024_P |
| AWG0003-10 - RE1 | FYU13SSH003 (7.5-8) | Total | Soil | AK101/EPA 8021B | 13G0024_P |

### Prep Batch: 13G0006_P

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 13G0006-BLK1 | Method Blank | Total | Water | EPA 5030B | |
| 13G0006-BS1 | Lab Control Sample | Total | Water | EPA 5030B | |
| 13G0006-BS2 | Lab Control Sample | Total | Water | EPA 5030B | |

## GC Volatiles (Continued)

### Prep Batch: 13G0006_P (Continued)

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 13G0006-BSD1 | Lab Control Sample Dup | Total | Water | EPA 5030B | |
| 13G0006-BSD2 | Lab Control Sample Dup | Total | Water | EPA 5030B | |
| 13G0006-DUP1 | FYU13WMW1 | Total | Water | EPA 5030B | |
| AWG0003-01 | FYU13WMW1 | Total | Water | EPA 5030B | |
| AWG0003-02 | FYU13WMW2 | Total | Water | EPA 5030B | |
| AWG0003-03 | FYU13WMW3 | Total | Water | EPA 5030B | |
| AWG0003-04 | FYU13TB001 | Total | Water | EPA 5030B | |

### Prep Batch: 13G0017_P

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 13G0017-BLK1 | Method Blank | Total | Soil | AK101 Field Prep | |
| 13G0017-BS1 | Lab Control Sample | Total | Soil | AK101 Field Prep | |
| 13G0017-BS2 | Lab Control Sample | Total | Soil | AK101 Field Prep | |
| 13G0017-BSD1 | Lab Control Sample Dup | Total | Soil | AK101 Field Prep | |
| 13G0017-BSD2 | Lab Control Sample Dup | Total | Soil | AK101 Field Prep | |
| 13G0017-DUP1 | Duplicate | Total | Soil | AK101 Field Prep | |
| 13G0017-MS1 | Matrix Spike | Total | Soil | AK101 Field Prep | |
| 13G0017-MSD1 | Matrix Spike Duplicate | Total | Soil | AK101 Field Prep | |
| AWG0003-05 | FYU13SSQ001(11-11.5) | Total | Soil | AK101 Field Prep | |
| AWG0003-06 | FYU13SSQ002 (11.5-12) | Total | Soil | AK101 Field Prep | |
| AWG0003-07 | FYU13SSQ003 (8.5-9) | Total | Soil | AK101 Field Prep | |
| AWG0003-08 | FYU13SSH001 (7-8) | Total | Soil | AK101 Field Prep | |
| AWG0003-09 | FYU13SSH002 (7.5-8) | Total | Soil | AK101 Field Prep | |
| AWG0003-10 | FYU13SSH003 (7.5-8) | Total | Soil | AK101 Field Prep | |
| AWG0003-11 | FYU13TB002 | Total | Soil | AK101 Field Prep | |

### Prep Batch: 13G0024_P

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 13G0024-BLK1 | Method Blank | Total | Soil | AK101 Field Prep | |
| 13G0024-BS1 | Lab Control Sample | Total | Soil | AK101 Field Prep | |
| 13G0024-BS2 | Lab Control Sample | Total | Soil | AK101 Field Prep | |
| 13G0024-BSD1 | Lab Control Sample Dup | Total | Soil | AK101 Field Prep | |
| 13G0024-BSD2 | Lab Control Sample Dup | Total | Soil | AK101 Field Prep | |
| 13G0024-DUP1 | FYU13SSH003 (7.5-8) | Total | Soil | AK101 Field Prep | |

## GC Volatiles (Continued)

### Prep Batch: 13G0024_P (Continued)

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 13G0024-MS1 | FYU13SSH003 (7.5-8) | Total | Soil | AK101 Field Prep | |
| 13G0024-MSD1 | FYU13SSH003 (7.5-8) | Total | Soil | AK101 Field Prep | |
| AWG0003-10 - RE1 | FYU13SSH003 (7.5-8) | Total | Soil | AK101 Field Prep | |

## General Chemistry

### Analysis Batch: 139517

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| AWG0003-05 | FYU13SSQ001(11-11.5) | Total/NA | Soil | D 2216 | |
| AWG0003-06 | FYU13SSQ002 (11.5-12) | Total/NA | Soil | D 2216 | |
| AWG0003-07 | FYU13SSQ003 (8.5-9) | Total/NA | Soil | D 2216 | |
| AWG0003-08 | FYU13SSH001 (7-8) | Total/NA | Soil | D 2216 | |
| AWG0003-09 | FYU13SSH002 (7.5-8) | Total/NA | Soil | D 2216 | |
| AWG0003-10 | FYU13SSH003 (7.5-8) | Total/NA | Soil | D 2216 | |

## Client Sample ID: FYU13WMW1

**Lab Sample ID: AWG0003-01**

**Date Collected: 06/29/13 10:44**

**Matrix: Water**

**Date Received: 07/02/13 08:50**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3520C | | | 139320 | 07/05/13 15:31 | RBD | TAL SEA |
| Total/NA | Analysis | 8270C SIM | | 1 | 139868 | 07/13/13 15:34 | CGM | TAL SEA |
| Total | Prep | EPA 3510 | RE1 | 0.775 | 13G0019_P | 07/10/13 08:59 | KDC | TAL ANC |
| Total | Analysis | AK102/103 | RE1 | 1.00 | W000349 | 07/10/13 16:13 | KDC | TAL ANC |
| Total | Prep | EPA 5030B | | 1.00 | 13G0006_P | 07/02/13 10:34 | AD | TAL ANC |
| Total | Analysis | AK101/EPA 8021B | | 1.00 | W000333 | 07/03/13 00:09 | ASD | TAL ANC |

## Client Sample ID: FYU13WMW2

**Lab Sample ID: AWG0003-02**

**Date Collected: 06/29/13 08:50**

**Matrix: Water**

**Date Received: 07/02/13 08:50**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3520C | | | 139320 | 07/05/13 15:31 | RBD | TAL SEA |
| Total/NA | Analysis | 8270C SIM | | 1 | 139868 | 07/13/13 15:56 | CGM | TAL SEA |
| Total | Prep | EPA 3510 | RE1 | 0.806 | 13G0019_P | 07/10/13 08:59 | KDC | TAL ANC |
| Total | Analysis | AK102/103 | RE1 | 1.00 | W000349 | 07/10/13 16:46 | KDC | TAL ANC |
| Total | Prep | EPA 5030B | | 1.00 | 13G0006_P | 07/02/13 10:34 | AD | TAL ANC |
| Total | Analysis | AK101/EPA 8021B | | 1.00 | W000333 | 07/03/13 05:04 | ASD | TAL ANC |

## Client Sample ID: FYU13WMW3

**Lab Sample ID: AWG0003-03**

**Date Collected: 06/29/13 09:30**

**Matrix: Water**

**Date Received: 07/02/13 08:50**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3520C | | | 139320 | 07/05/13 15:31 | RBD | TAL SEA |
| Total/NA | Analysis | 8270C SIM | | 1 | 139868 | 07/13/13 16:17 | CGM | TAL SEA |
| Total | Prep | EPA 3510 | RE1 | 0.800 | 13G0019_P | 07/10/13 08:59 | KDC | TAL ANC |
| Total | Analysis | AK102/103 | RE1 | 1.00 | W000349 | 07/10/13 17:18 | KDC | TAL ANC |
| Total | Prep | EPA 5030B | | 1.00 | 13G0006_P | 07/02/13 10:34 | AD | TAL ANC |
| Total | Analysis | AK101/EPA 8021B | | 1.00 | W000333 | 07/03/13 05:31 | ASD | TAL ANC |

## Client Sample ID: FYU13TB001

**Lab Sample ID: AWG0003-04**

**Date Collected: 06/29/13 12:00**

**Matrix: Water**

**Date Received: 07/02/13 08:50**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total | Prep | EPA 5030B | | 1.00 | 13G0006_P | 07/02/13 10:34 | AD | TAL ANC |
| Total | Analysis | AK101/EPA 8021B | | 1.00 | W000333 | 07/03/13 05:57 | ASD | TAL ANC |

# Lab Chronicle

Client: Ahtna Engineering
Project/Site: 20125.059

TestAmerica Job ID: AWG0003

## Client Sample ID: FYU13SSQ001(11-11.5)

**Lab Sample ID: AWG0003-05**

**Date Collected: 06/29/13 16:45**
**Matrix: Soil**
**Date Received: 07/02/13 08:50**
**Percent Solids: 86.4**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3550B | | | 139519 | 07/09/13 10:52 | AMA | TAL SEA |
| Total/NA | Analysis | 8270C SIM | | 1 | 139893 | 07/14/13 16:00 | CGM | TAL SEA |
| Total | Prep | EPA 3545 | | 1.03 | 13G0008_P | 07/02/13 13:55 | LS | TAL ANC |
| Total | Analysis | AK102/103 | | 1.00 | W000336 | 07/03/13 17:26 | KDC | TAL ANC |
| Total | Prep | *** DEFAULT PREP *** | | 1.00 | 13G0009_P | 07/02/13 15:35 | LS | TAL ANC |
| Total | Analysis | TA-SOP | | 1.00 | 13G0009 | 07/03/13 08:35 | KDC | TAL ANC |
| Total | Prep | AK101 Field Prep | | 0.363 | 13G0017_P | 07/09/13 11:11 | AD | TAL ANC |
| Total | Analysis | AK101/EPA 8021B | | 33.3 | W000347 | 07/09/13 23:31 | ASD | TAL ANC |
| Total/NA | Analysis | D 2216 | | 1 | 139517 | 07/09/13 14:31 | WW | TAL SEA |

## Client Sample ID: FYU13SSQ002 (11.5-12)

**Lab Sample ID: AWG0003-06**

**Date Collected: 06/30/13 12:20**
**Matrix: Soil**
**Date Received: 07/02/13 08:50**
**Percent Solids: 92.2**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3550B | | | 139519 | 07/09/13 10:52 | AMA | TAL SEA |
| Total/NA | Analysis | 8270C SIM | | 1 | 139893 | 07/14/13 16:23 | CGM | TAL SEA |
| Total | Prep | EPA 3545 | | 1.10 | 13G0008_P | 07/02/13 13:55 | LS | TAL ANC |
| Total | Analysis | AK102/103 | | 1.00 | W000336 | 07/03/13 14:13 | KDC | TAL ANC |
| Total | Prep | *** DEFAULT PREP *** | | 1.00 | 13G0009_P | 07/02/13 15:35 | LS | TAL ANC |
| Total | Analysis | TA-SOP | | 1.00 | 13G0009 | 07/03/13 08:35 | KDC | TAL ANC |
| Total | Prep | AK101 Field Prep | | 0.302 | 13G0017_P | 07/09/13 11:11 | AD | TAL ANC |
| Total | Analysis | AK101/EPA 8021B | | 33.3 | W000347 | 07/09/13 23:58 | ASD | TAL ANC |
| Total/NA | Analysis | D 2216 | | 1 | 139517 | 07/09/13 14:31 | WW | TAL SEA |

## Client Sample ID: FYU13SSQ003 (8.5-9)

**Lab Sample ID: AWG0003-07**

**Date Collected: 06/30/13 13:40**
**Matrix: Soil**
**Date Received: 07/02/13 08:50**
**Percent Solids: 83.9**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3550B | | | 139519 | 07/09/13 10:52 | AMA | TAL SEA |
| Total/NA | Analysis | 8270C SIM | | 10 | 140042 | 07/16/13 11:54 | CGM | TAL SEA |
| Total | Prep | EPA 3545 | | 0.991 | 13G0008_P | 07/02/13 13:55 | LS | TAL ANC |
| Total | Analysis | AK102/103 | | 20.0 | W000339 | 07/05/13 19:12 | KDC | TAL ANC |
| Total | Prep | *** DEFAULT PREP *** | | 1.00 | 13G0009_P | 07/02/13 15:35 | LS | TAL ANC |
| Total | Analysis | TA-SOP | | 1.00 | 13G0009 | 07/03/13 08:35 | KDC | TAL ANC |
| Total | Prep | AK101 Field Prep | | 0.448 | 13G0017_P | 07/09/13 11:11 | AD | TAL ANC |
| Total | Analysis | AK101/EPA 8021B | | 33.3 | W000347 | 07/10/13 00:25 | ASD | TAL ANC |
| Total/NA | Analysis | D 2216 | | 1 | 139517 | 07/09/13 14:31 | WW | TAL SEA |

# Lab Chronicle

Client: Ahtna Engineering
Project/Site: 20125.059

TestAmerica Job ID: AWG0003

## Client Sample ID: FYU13SSH001 (7-8)

**Lab Sample ID: AWG0003-08**

**Date Collected: 06/30/13 08:55**
**Matrix: Soil**
**Date Received: 07/02/13 08:50**
**Percent Solids: 88.8**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3550B | | | 139519 | 07/09/13 10:52 | AMA | TAL SEA |
| Total/NA | Analysis | 8270C SIM | | 1 | 139893 | 07/14/13 17:09 | CGM | TAL SEA |
| Total | Prep | EPA 3545 | | 0.999 | 13G0008_P | 07/02/13 13:55 | LS | TAL ANC |
| Total | Analysis | AK102/103 | | 20.0 | W000339 | 07/05/13 19:44 | KDC | TAL ANC |
| Total | Prep | *** DEFAULT PREP *** | | 1.00 | 13G0009_P | 07/02/13 15:35 | LS | TAL ANC |
| Total | Analysis | TA-SOP | | 1.00 | 13G0009 | 07/03/13 08:35 | KDC | TAL ANC |
| Total | Prep | AK101 Field Prep | | 0.388 | 13G0017_P | 07/09/13 11:11 | AD | TAL ANC |
| Total | Analysis | AK101/EPA 8021B | | 33.3 | W000347 | 07/10/13 00:52 | ASD | TAL ANC |
| Total/NA | Analysis | D 2216 | | 1 | 139517 | 07/09/13 14:31 | WW | TAL SEA |

## Client Sample ID: FYU13SSH002 (7.5-8)

**Lab Sample ID: AWG0003-09**

**Date Collected: 06/30/13 10:10**
**Matrix: Soil**
**Date Received: 07/02/13 08:50**
**Percent Solids: 90.5**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3550B | | | 139519 | 07/09/13 10:52 | AMA | TAL SEA |
| Total/NA | Analysis | 8270C SIM | | 1 | 139893 | 07/14/13 17:32 | CGM | TAL SEA |
| Total | Prep | EPA 3545 | | 0.989 | 13G0008_P | 07/02/13 13:55 | LS | TAL ANC |
| Total | Analysis | AK102/103 | | 1.00 | W000336 | 07/03/13 15:49 | KDC | TAL ANC |
| Total | Prep | *** DEFAULT PREP *** | | 1.00 | 13G0009_P | 07/02/13 15:35 | LS | TAL ANC |
| Total | Analysis | TA-SOP | | 1.00 | 13G0009 | 07/03/13 08:35 | KDC | TAL ANC |
| Total | Prep | AK101 Field Prep | | 0.430 | 13G0017_P | 07/09/13 11:11 | AD | TAL ANC |
| Total | Analysis | AK101/EPA 8021B | | 33.3 | W000347 | 07/10/13 01:19 | ASD | TAL ANC |
| Total/NA | Analysis | D 2216 | | 1 | 139517 | 07/09/13 14:31 | WW | TAL SEA |

## Client Sample ID: FYU13SSH003 (7.5-8)

**Lab Sample ID: AWG0003-10**

**Date Collected: 06/30/13 10:20**
**Matrix: Soil**
**Date Received: 07/02/13 08:50**
**Percent Solids: 91.4**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 3550B | | | 139519 | 07/09/13 10:52 | AMA | TAL SEA |
| Total/NA | Analysis | 8270C SIM | | 1 | 139893 | 07/14/13 17:55 | CGM | TAL SEA |
| Total | Prep | EPA 3545 | | 0.988 | 13G0008_P | 07/02/13 13:55 | LS | TAL ANC |
| Total | Analysis | AK102/103 | | 1.00 | W000336 | 07/03/13 15:17 | KDC | TAL ANC |
| Total | Prep | *** DEFAULT PREP *** | | 1.00 | 13G0009_P | 07/02/13 15:35 | LS | TAL ANC |
| Total | Analysis | TA-SOP | | 1.00 | 13G0009 | 07/03/13 08:35 | KDC | TAL ANC |
| Total | Prep | AK101 Field Prep | | 0.454 | 13G0017_P | 07/09/13 11:11 | AD | TAL ANC |
| Total | Analysis | AK101/EPA 8021B | | 33.3 | W000347 | 07/10/13 01:45 | ASD | TAL ANC |
| Total | Prep | AK101 Field Prep | RE1 | 0.454 | 13G0024_P | 07/11/13 10:38 | AD | TAL ANC |
| Total | Analysis | AK101/EPA 8021B | RE1 | 33.3 | W000351 | 07/11/13 14:31 | ASD | TAL ANC |
| Total/NA | Analysis | D 2216 | | 1 | 139517 | 07/09/13 14:31 | WW | TAL SEA |

# Lab Chronicle

Client: Ahtna Engineering
Project/Site: 20125.059

TestAmerica Job ID: AWG0003

**Client Sample ID: FYU13TB002**
**Date Collected: 06/30/13 13:00**
**Date Received: 07/02/13 08:50**

**Lab Sample ID: AWG0003-11**
**Matrix: Soil**
**Percent Solids: 100**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total | Prep | *** DEFAULT PREP *** | | 1.00 | 13G0009_P | 07/02/13 15:35 | LS | TAL ANC |
| Total | Analysis | TA-SOP | | 1.00 | 13G0009 | 07/03/13 08:35 | KDC | TAL ANC |
| Total | Prep | AK101 Field Prep | | 1.00 | 13G0017_P | 07/09/13 11:11 | AD | TAL ANC |
| Total | Analysis | AK101/EPA 8021B | | 33.3 | W000347 | 07/10/13 03:06 | ASD | TAL ANC |

**Laboratory References:**

TAL ANC = TestAmerica Anchorage, 2000 West International Airport Road Suite A10, Anchorage, AK 99502-1119, TEL (907) 563-9200

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

# Certification Summary

Client: Ahtna Engineering
Project/Site: 20125.059

TestAmerica Job ID: AWG0003

## Laboratory: TestAmerica Anchorage

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

| Authority | Program | EPA Region | Certification ID | Expiration Date |
|---|---|---|---|---|
| Alaska | State Program | 10 | AK00975 | 06-30-14 |
| Alaska (UST) | State Program | 10 | UST-067 | 06-16-14 |

## Laboratory: TestAmerica Seattle

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

| Authority | Program | EPA Region | Certification ID | Expiration Date |
|---|---|---|---|---|
| Alaska (UST) | State Program | 10 | UST-022 | 03-04-14 |
| California | NELAP | 9 | 01115CA | 01-31-14 |
| L-A-B | DoD ELAP | | L2236 | 01-19-16 |
| Montana (UST) | State Program | 8 | N/A | 04-30-20 |
| Oregon | NELAP | 10 | WA100007 | 11-06-13 |
| USDA | Federal | | P330-11-00222 | 05-20-14 |
| Washington | State Program | 10 | C553 | 02-17-14 |

# Method Summary

Client: Ahtna Engineering
Project/Site: 20125.059

TestAmerica Job ID: AWG0003

| Method | Method Description | Protocol | Laboratory |
|---|---|---|---|
| 8270C SIM | Semivolatile Organic Compounds (GC/MS SIM) | SW846 | TAL SEA |
| AK102/103 | Diesel Range Organics (C10-C25) and Residual Range Organics (C25-C36) per AK102/RRO | | TAL ANC |
| TA-SOP | Physical Parameters by APHA/ASTM/EPA Methods | | TAL ANC |
| AK101/EPA 8021B | Gasoline Range Organics (C6-C10) and BTEX per AK101 | | TAL ANC |
| D 2216 | Percent Moisture | ASTM | TAL SEA |

**Protocol References:**

ASTM = ASTM International

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

TAL ANC = TestAmerica Anchorage, 2000 West International Airport Road  Suite A10, Anchorage, AK 99502-1119, TEL (907) 563-9200

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

# Sample Summary

Client: Ahtna Engineering
Project/Site: 20125.059

TestAmerica Job ID: AWG0003

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---|---|---|---|---|
| AWG0003-01 | FYU13WMW1 | Water | 06/29/13 10:44 | 07/02/13 08:50 |
| AWG0003-02 | FYU13WMW2 | Water | 06/29/13 08:50 | 07/02/13 08:50 |
| AWG0003-03 | FYU13WMW3 | Water | 06/29/13 09:30 | 07/02/13 08:50 |
| AWG0003-04 | FYU13TB001 | Water | 06/29/13 12:00 | 07/02/13 08:50 |
| AWG0003-05 | FYU13SSQ001(11-11.5) | Soil | 06/29/13 16:45 | 07/02/13 08:50 |
| AWG0003-06 | FYU13SSQ002 (11.5-12) | Soil | 06/30/13 12:20 | 07/02/13 08:50 |
| AWG0003-07 | FYU13SSQ003 (8.5-9) | Soil | 06/30/13 13:40 | 07/02/13 08:50 |
| AWG0003-08 | FYU13SSH001 (7-8) | Soil | 06/30/13 08:55 | 07/02/13 08:50 |
| AWG0003-09 | FYU13SSH002 (7.5-8) | Soil | 06/30/13 10:10 | 07/02/13 08:50 |
| AWG0003-10 | FYU13SSH003 (7.5-8) | Soil | 06/30/13 10:20 | 07/02/13 08:50 |
| AWG0003-11 | FYU13TB002 | Soil | 06/30/13 13:00 | 07/02/13 08:50 |

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING


11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244 425-420-9200 FAX 420-9210
11922 E. First Ave, Spokane, WA 99206-5302 509-924-9200 FAX 924-9290
9405 SW Nimbus Ave,Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210


# CHAIN OF CUSTODY REPORT

**Work Order #:** AVG0003

CLIENT: AES

REPORT TO: Tim Dobson tdobson@alaska.net
ADDRESS: 110 38th AVE Ste 200A Anchorage, AK 99503
PHONE: 907-646-2969 FAX: 907-561-5475

INVOICE TO: Alaska Engineering West Sacramento, CA

P.O. NUMBER:

PROJECT NAME: FAA Ft. Yukon
PROJECT NUMBER: 20125.059
SAMPLED BY: Tim Dobson

**TURNAROUND REQUEST** in Business Days *

Organic & Inorganic Analyses: 10 STD. | 7 | 5 | 4 | 3 | 2 | 1 | <1

Petroleum Hydrocarbon Analyses: 5 STD. | 4 | 3 | 2 | 1 | <1

OTHER Specify:

* Turnaround Requests less than standard may incur Rush Charges.

| | CLIENT SAMPLE IDENTIFICATION | SAMPLING DATE/TIME | PRESERVATIVE | | | | | REQUESTED ANALYSES | | | | | MATRIX (W, S, O) | # OF CONT. | LOCATION/ COMMENTS | TA WO ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | HCl | HCl | HCl | | | GRO AK101 | BTEX 8260 | DRO/RRO AK102/103 | PAH 8270C SIM | | | | | |
| 1 | FYU13WMW1 | 6/29/13 - 1044 | | | | | | X | X | X | X | | W | 6 | | 01 |
| 2 | FYU13WMW2 | 6/29/13 - 0850 | | | | | | X | X | X | X | | W | 6 | | 02 |
| 3 | FYU13WMW3 | 6/29/13 - 0930 | | | | | | X | X | X | X | | W | 6 | | 03 |
| 4 | FYW3TB001 | 6/29/13 - 1200 | | | | | | X | X | X | X | | W | 3 | Trip blank | 04 |
| 5 | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| RELEASED BY: | | DATE: 7/1/13 | RECEIVED BY: | | DATE: 7/2/13 |
| PRINT NAME: Tim Dobson | FIRM: AES | TIME: 1430 | PRINT NAME: Andrew Pilch | FIRM: TA-AK | TIME: 8:50 |
| RELEASED BY: | | DATE: | RECEIVED BY: | | DATE: |
| PRINT NAME: | FIRM: | TIME: | PRINT NAME: | FIRM: | TIME: |

ADDITIONAL REMARKS:

TEMP: 2.7

PAGE OF

TAL-1000(0408)

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9405 SW Nimbus Ave,Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210


# CHAIN OF CUSTODY REPORT

**Work Order #:** AW60003

CLIENT: AES

REPORT TO: Tim Dobson tdobson@altna.net
ADDRESS: 110 W 38th Ave, Ste 200A
Anchorage, AK 99503
PHONE: 907-646-7909 FAX: 907-561-5475

INVOICE TO:
Altna Engineering Services
West Sacramento, CA

P.O. NUMBER:

PROJECT NAME: FAA Ft Yukon
PROJECT NUMBER: 20125.059
SAMPLED BY: Tim Dobson

**TURNAROUND REQUEST** in Business Days *

Organic & Inorganic Analyses: 10 STD. | 7 | 5 | 4 | 3 | 2 | 1 | <1

Petroleum Hydrocarbon Analyses: ~~5~~ STD. | 4 | 3 | 2 | 1 | <1

OTHER Specify:

* Turnaround Requests less than standard may incur Rush Charges.

PRESERVATIVE: MeOH | None

REQUESTED ANALYSES: GRO AK101 | BTEX 8260 | DRO/RRO AK102/103 | DRO AK | 8270 SIM

| | CLIENT SAMPLE IDENTIFICATION | SAMPLING DATE/TIME | GRO AK101 | BTEX 8260 | DRO/RRO AK102/103 | DRO AK | 8270 SIM | MATRIX (W, S, O) | # OF CONT. | LOCATION/ COMMENTS | TA WO ID |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | FYU1355Q001(11-11.5) | 6/29/13 - 1645 | X | X | X | X | | S | 3 | | 05 |
| 2 | FYU1355Q002(11.5-12) | 6/30/13 - 1220 | X | X | X | X | | S | 3 | | 06 |
| 3 | ~~FYU1355Q004~~ TP | | | | | | | TP S | | | |
| 4 | FYU1355Q003(8.5-9) | 6/30/13 - 1340 | X | X | X | X | | S | 3 | | 07 |
| 5 | FYU1355H001(7-8) | 6/30/13 - 0855 | X | X | X | X | | S | 3 | | 08 |
| 6 | FYU1355H002(7.5-8) | 6/30/13 - 1010 | X | X | X | X | | S | 3 | | 09 |
| 7 | FYU1355H003(7.5-8) | 6/30/13 - 1020 | X | X | X | X | | S | 3 | | 10 |
| 8 | FYU13TB002 | 6/30/13 - 1400 | X | X | | | | S | 1 | | 11 |
| 9 | | | | | | | | | | | |
| 10 | | | | | | | | | | | |

RELEASED BY: [signature] DATE: PG 7/1/13
PRINT NAME: Tim Dobson FIRM: AES TIME: 1430

RECEIVED BY: [signature] DATE: 7/2/13
PRINT NAME: Andrew Pfeil FIRM: TA-AK TIME: 8:50

RELEASED BY: DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS:

TEMP: 2.2

PAGE OF

TAL-1000(0408)

# Test America Cooler Receipt Form

(Army Corps. Compliant)

WORK ORDER # AW60003 CLIENT: Ahtna PROJECT: ~~FAA~~ Ft. Yukon

Date /Time Cooler Arrived 07 / 02 / 13 8:50 Cooler signed for by: Andrew Pilch (Print name)

**Preliminary Examination Phase:**

Date cooler opened: ☒ same as date received or ___/___/___

Cooler opened by (print) Andrew Pilch (sign) [signature]

1. Delivered by ☒ ALASKA AIRLINES ☐ Fed-Ex ☐ UPS ☐ NAC ☐ LYNDEN ☐ CLIENT ☐ Other: ___

Shipment Tracking # if applicable 027-8645-2285 (include copy of shipping papers in file)

* cooler contained soil samples

2. Number of Custody Seals 2 Signed by see back Date ___/___/___

| | | |
|---|---|---|
| Were custody seals unbroken and intact on arrival? | ☒ Yes | ☐ No |
| 3. Were custody papers sealed in a plastic bag? | ☒ Yes | ☐ No |
| 4. Were custody papers filled out properly (ink, signed, etc.)? | ☒ Yes | ☐ No |
| 5. Did you sign the custody papers in the appropriate place? | ☒ Yes | ☐ No |

6. Was ice used? ☒ Yes ☐ No Type of ice: ☐ blue ice ☒ gel ice ☐ real ice ☐ dry ice Condition of Ice: Solid

Temperature 2.2 °C (corrected) Thermometer # Ref #5

7. Packing in Cooler: ☐ bubble wrap ☐ styrofoam ☒ cardboard ☐ Other: ___

| | | | |
|---|---|---|---|
| 8. Did samples arrive in plastic bags? | ☐ Yes | ☒ No | cardboard containers |
| 9. Did all bottles arrive unbroken, and with labels in good condition? | ☒ Yes | ☐ No | |
| 10. Are all bottle labels complete (ID, date, time, etc.) | ☒ Yes | ☐ No | container 8C (lab ID) did not have a label, but the lid had the sample ID #. |
| 11. Do bottle labels and Chain of Custody agree? | ☒ Yes | ☐ No | |
| 12. Are the containers and preservatives correct for the tests indicated? | ☒ Yes | ☐ No | ~~* enter all analyses for BTEX, DRO/RRO~~ |
| 13. Conoco Phillips, Alyeska, BP H2O samples only, pH <2? | ☐ Yes | ☐ No | ☒ N/A ~~PAL~~ NA 07/02/13 |
| 14. Is there adequate volume for the tests requested? | ☒ Yes | ☐ No | |
| 14. Is there dry weight volume provided? | ☒ Yes | ☐ No | |
| 15. Were VOA vials free of bubbles? ☒ N/A | ☐ Yes | ☐ No | |

If "NO" which containers contained "head space" or bubbles? ___

| | | | |
|---|---|---|---|
| 16. Are methanol soils immersed in methanol? | ☒ Yes | ☐ No | ☐ N/A |

**Log-in Phase:**

Date of sample log-in 07 / 02 / 13

Samples logged in by (print) Lara Sercar (sign) Lara Sercar

| | | |
|---|---|---|
| 1. Was project identifiable from custody papers? | ☐ Yes | ☐ No |
| 2. Do Turn Around Times and Due Dates agree? | ☐ Yes | ☐ No |
| 3. Was the Project Manager notified of status? | ☐ Yes | ☐ No |
| 4. Was the Lab notified of status? | ☐ Yes | ☐ No |
| 5. Was the COC scanned and copied? | ☐ Yes | ☐ No |

AK-FORM-SPL-005 5 October 2011

# Test America Cooler Receipt Form

(Army Corps. Compliant)

WORK ORDER # AW60003 CLIENT: Antea PROJECT: Sunset Cove

Date /Time Cooler Arrived 07 / 02 / 13 8 : 50 Cooler signed for by: Andrew Pilch (Print name)

**Preliminary Examination Phase:**

Date cooler opened: ☒ same as date received or ___/___/___

Cooler opened by (print) Andrew Pilch (sign) [signature]

*cooler with water samples

1. Delivered by ☒ ALASKA AIRLINES ☐ Fed-Ex ☐ UPS ☐ NAC ☐ LYNDEN ☐ CLIENT ☐ Other:

Shipment Tracking # if applicable 027-8645-2084 (include copy of shipping papers in file)

2. Number of Custody Seals 2 Signed by see back Date ___/___/___

| | | |
|---|---|---|
| Were custody seals unbroken and intact on arrival? | ☒ Yes | ☐ No |
| 3. Were custody papers sealed in a plastic bag? | ☒ Yes | ☐ No |
| 4. Were custody papers filled out properly (ink, signed, etc.)? | ☒ Yes | ☐ No |
| 5. Did you sign the custody papers in the appropriate place? | ☒ Yes | ☐ No |

6. Was ice used? ☒ Yes ☐ No Type of ice: ☐ blue ice ☒ gel ice ☐ real ice ☐ dry ice Condition of Ice: Solid

Temperature 2.7 °C (corrected) Thermometer # rec#5

7. Packing in Cooler: ☐ bubble wrap ☐ styrofoam ☒ cardboard ☐ Other:

| | | | |
|---|---|---|---|
| 8. Did samples arrive in plastic bags? | ☒ Yes | ☐ No | |
| 9. Did all bottles arrive unbroken, and with labels in good condition? | ☒ Yes | ☐ No | |
| 10. Are all bottle labels complete (ID, date, time, etc.) | ☒ Yes | ☐ No | Trip blank ~~was~~ had GRO, BTEX, |
| 11. Do bottle labels and Chain of Custody agree? | ☒ Yes | ☐ No | DRO/RRO & PAH marked off |
| 12. Are the containers and preservatives correct for the tests indicated? | ☒ Yes | ☐ No | as analyses. Logged trip blank in |
| 13. Conoco Phillips, Alyeska, BP H2O samples only, pH <2? | ☐ Yes | ☐ No | with GRO/BTEX. ☒ N/A |
| 14. Is there adequate volume for the tests requested? | ☒ Yes | ☐ No | |
| 14. Is there dry weight volume provided? | ☐ Yes | ☒ No | water sample |
| 15. Were VOA vials free of bubbles? ☐ N/A | ☒ Yes | ☐ No | |

If "NO" which containers contained "head space" or bubbles? ___

| | | | |
|---|---|---|---|
| 16. Are methanol soils immersed in methanol? | ☐ Yes | ☐ No | ☒ N/A |

**Log-in Phase:**

Date of sample log-in 07 / 02 / 13

Samples logged in by (print) Madina Ahmed Lana Sercar (sign) ~~Madina~~ Lana Šercar

Limited volume for PAH samples (one 1L amber)

| | | |
|---|---|---|
| 1. Was project identifiable from custody papers? | ☑ Yes | ☐ No |
| 2. Do Turn Around Times and Due Dates agree? | ☒ Yes | ☐ No |
| 3. Was the Project Manager notified of status? | ☒ Yes | ☐ No |
| 4. Was the Lab notified of status? | ☒ Yes | ☐ No |
| 5. Was the COC scanned and copied? | ☒ Yes | ☐ No |

AK-FORM-SPL-005 5 October 2011

Alaska Airlines

947453

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Custody Seal

DATE 7/1/13

SIGNATURE

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
947453

AWG0003

Alaska Airlines

947454

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Custody Seal

7/1/13

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
947454

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
947452

Custody Seal
DATE 7/17/13
SIGNATURE

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
947452

AWG0003

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
947451

Custody Seal
DATE 7/17/13
SIGNATURE

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
947451

**APPENDIX B**

LABORATORY DATA

&

VALIDATION REPORTS

B-2

ADEC LABORATORY DATA REVIEW CHECKLIST

&

VALIDATION REPORT

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# Laboratory Data Review Checklist

Completed by: Emily Freitas

Title: Chemist Date: 09/21/2013

CS Report Date: FAA Fort Yukon Quarters Facility Bldg 100 UST 9-C-7 Name:Report

Consultant Firm: Ahtna Engineering Services, Inc.

Laboratory Name: Test America, Anchorage Laboratory Report Number: AWG0003

ADEC FileNumber: 740.38.011 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:

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      ☒Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      ☒Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      ☒Yes ☐ No ☐NA (Please explain.) Comments:

      Cooler temperatures were 2.2°C, 2.7°C, and 0.5°C, and were all within limit of <6°C.

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

☒Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
☒Yes ☐ No ☐NA (Please explain.) Comments:

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
☒Yes ☐ No ☐NA (Please explain.) Comments:

For samples 1, 2, and 3, insufficient volume was sent.

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

No

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:

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

Data usability was not affected.

5. Samples Results
a. Correct analyses performed/reported as requested on COC?
☐Yes ☒ No ☐NA (Please explain.) Comments:

Samples were run by method 8021, not 8260 due to instrument errors.

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?
Comments:

No

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      ☒Yes ☐ No ☐NA (Please explain.) Comments:

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

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

      NA.

      iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
      ☐Yes ☐ No ☒NA (Please explain.) Comments:

      No affected samples

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

      No.

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:

% Recovery for 13G0008-DUP1, 13G0019-BS1, 13G0019-DUP, was above the laboratory acceptance criteria for DRO. %Recovery for 13G0024-MS1, 13G0024-MSD1, was above the laboratory acceptance criteria for BTEX.

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/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
☒Yes ☐ No ☐NA (Please explain.) Comments:

RPD for 13G0019-DUP1 was over the recommended laboratory limit for DRO. RPD for 13G0008-DUP1 was over the recommended laboratory limit for DRO.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

No samples are affected. All other QC criteria were met.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
☐Yes ☐ No ☒NA (Please explain.) Comments:

No affected samples.

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

No.

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:

AWG0003-10 was below the surrogate acceptance limits for various surrogates.

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:

No data flags were necessary because all other QC parameters were within limits.

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

Data usability is 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:

NA.

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

Comments:

No.

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)

RPD (%) = 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:

Data less than the recommended DQOs were flagged where appropriate.

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

Comments:

No.

f. Decontamination or Equipment Blank (If not used explain why).

☐Yes ☒No☐NA (Please explain.) Comments:

No equipment blank necessary. Disposable equipment was used.

i. All results less than PQL?

☐Yes ☐ No ☒NA (Please explain.) Comments:

ii. If above PQL, what samples are affected?

NA.

Comments:

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

Comments:

| |
|---|
| No. |

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      ☒Yes ☐ No ☐NA (Please explain.) Comments:

| |
|---|
| |

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# DATA QUALITY REVIEW

Date: 09/28/2013

Project : 20125.059
Site: FAA Ft. Yukon
Laboratory: Test America Anchorage, Test America Seattle
SDG#: AWI0013
Receipt Date : 07/02/2013
Analyses: DRO, RRO, GRO, BTEX, PAH

Reviewer Name: Emily Freitas
Reviewer Title: Chemist

## INTRODUCTION

Table 1 lists the field sample numbers, corresponding laboratory numbers, requested analyses, and identifies quality control (QC) samples.

**TABLE 1: FIELD SAMPLE PLAN OVERVIEW**

| Field Sample ID | Lab Sample ID | Analyses Requested | QC |
|---|---|---|---|
| FYU13WMW1 | AWG0003-01 | GRO, BTEX, DRO/RRO, PAH | |
| FYU13WMW2 | AWG0003-02 | GRO, BTEX, DRO/RRO, PAH | |
| FYU13WMW3 | AWG0003-03 | GRO, BTEX, DRO/RRO, PAH | Duplicate sample for FYU13WMW2 |
| FYU13TB001 | AWG0003-04 | GRO, BTEX, DRO/RRO, PAH | Trip Blank |
| FYU13SSQ001(11-11.5) | AWG0003-05 | GRO, BTEX, DRO/RRO, PAH | |
| FYU13SSQ002(11.5-12) | AWG0003-06 | GRO, BTEX, DRO/RRO, PAH | |
| FYU13SSQ003(8.5-9) | AWG0003-07 | GRO, BTEX, DRO/RRO, PAH | |
| FYU13SSH001(7-8) | AWG0003-08 | GRO, BTEX, DRO/RRO, PAH | |
| FYU13SSH002(7.5-8) | AWG0003-09 | GRO, BTEX, DRO/RRO, PAH | |
| FYU13SSH003(7.5-8) | AWG0003-10 | GRO, BTEX, DRO/RRO, PAH | Duplicate sample for FYU13SSH002(7.5-8) |
| FYU13TB002 | AWG0003-11 | GRO, BTEX | Trip Blank |

**Key:**
DRO Diesel-range Organics
RRO Residual-range Organics
GRO Gasoline-range Organics
BTEX Benzene, Toluene, Ethylene, Xylene
PAH Polycyclic Aromatic Hydrocarbons

# DATA QUALIFIER DEFINITIONS

For the purpose of Data Validation, the following code letters and associated definitions are provided for use by the data validator to summarize the data quality.

R Reported value is "rejected." Resampling or reanalysis may be necessary to verify the presence or absence of the compound.

J The associated numerical value is an estimated quantity because the Quality Control criteria were not met. "J+" is used when the quantity is biased high, and "J-" is used when the quantity is biased low.

UJ The reported quantitation limit is estimated because Quality Control criteria were not met. Element or compound was not detected.

U The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

NR Result was not used from a particular sample analysis. This typically occurs when more than one result for an element is reported due to dilutions and reanalysis.

# DATA REVIEW

Data quality review is a process for evaluating the completeness, correctness, consistency, compliance with method procedures and quality control requirements, and identification of anomalous data. This quality assurance (QA) summary includes a review, where appropriate, of the following parameters.

- Sample receipt conditions
  - Sample preservation
  - Cooler receipt forms
  - Chan of Custody condition
- Extraction and analytical procedures
  - Holding times
  - Analytical reporting limits
  - Method blanks
  - Laboratory control samples and duplicates
  - Matrix spike samples and duplicates
  - Laboratory duplicate samples
  - Surrogate recoveries (organics only)
- Sampling procedures
  - Field blanks
  - Trip blanks
  - Equipment blanks (where applicable)
  - Field duplicate samples
- Correspondence to method criteria and project data quality objectives

Each analysis that was performed is evaluated in the following subsections of this report, and only the criteria exceedances that impact data qualification or require assessment beyond laboratory documentation are discussed.

This project did not have a project-specific quality assurance plan with specified data quality objectives. Validation was conducted in accordance with the following documents.

- USEPA document "Test Methods for Evaluating Solid Wastes, SW-846, revision 6" (February, 2007 and updates),
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic (October, 1994) and Organic (October, 1999) Review,
- ADEC Environmental Laboratory Data and Quality Assurance Requirements Technical Memorandum (March 2009),
- Department of Defense Quality Systems Manual for Environmental Laboratories, Version 3 (DoD QSM) (January, 2006), where and when applicable.

This review document summarizes the precision, accuracy, representativeness, comparability, completeness, and sensitivity as required by ADEC guidelines. An ADEC Laboratory Data Review Checklist is included for the SDG.

## Sample Receipt Conditions

Samples were submitted to TestAmerica (TA) in Anchorage and TA Seattle. Four (4) water samples and seven (7) soil samples, including two trip blanks, were submitted in two coolers under intact custody seals in one laboratory batch on July 2, 2013. Volumes of the samples were forwarded to TA-Seattle (Tacoma, WA), and received under intact custody seals on July 3, 2013. The sample results are reported under TA-Anchorage job number AWG0003, and all samples were received, with proper preservation and temperatures (4±2°C), and in good condition with the following exceptions:

The cooler received in TA-Seattle was received at 0.5°C. While this is outside of the 4±2°C guidelines, it is within the 0-6°C recommended temperature range.

For water samples, FYU13WMW1, FYU13WMW2, and FYU13WMW3, only one amber liter was received in Seattle.

## Precision

Precision was assessed by calculating the relative percent difference (RPD) between the primary and duplicate of field samples, lab control samples (LCS), and matrix spike samples (MS).

Sample FYU13WMW3 (AWG0003-03) was collected as a duplicate of FYU13WMW2 (AWG0003-02). This represents a field duplicate rate of 1 per 2 water samples or 50%, which exceeds the data quality objective (DQO) of 10%. Sample FYU13SSH003(7.5-8) (AWG0003-10) was collected as a duplicate of FYU13SSH002(7.5-8) (AWG0003-09). This represents a field duplicate rate of 1 per 5 soil samples or 20%, which exceeds the DQO of 10%.

RPDs were calculated for all detected results for the primary and duplicate field sample using the equation shown below. RPDs of qualified results are shown in Table 2 below.

**EQUATION 1: RELATIVE PERCENT DIFFERENCE**

$$RPD\ (\%) = \text{Absolute Value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where $R_1$ = Sample Concentration
$R_2$ = Field Duplicate Concentration

**TABLE 2: RPD RESULTS FOR PRIMARY AND DUPLICATE SAMPLES**

| Analyte | Units | FYU13WMW2/ AWG0003-02 Primary | FYU13WMW3/ AWG0003-03 Duplicate | RPD (≤ 30%) | Flag |
|---|---|---|---|---|---|
| Chrysene | ug/L | .065 | .039 | 50 | J |
| Benzo[b]fluoranthene | ug/L | .16 | .10 | 46 | J |
| Benzo[k]fluoranthene | ug/L | .091 | .043 | 72 | J |
| Benzo[a]pyrene | ug/L | .14 | .092 | 41 | J |
| Indeno[1,2,3-cd]pyrene | ug/L | 0.083 | 0.056 | 39 | J |
| Benzo[g,h,i]perylene | ug/L | 0.060 | 0.040 | 40 | J |
| **Analyte** | **Units** | **FYU13SSH002(7.5-8) AWG0003-09 Primary** | **FYU13SSH003(7.5-8) AWG0003-10 Duplicate** | **RPD (≤ 50%)** | **Flag** |
| 2-Methylnaphthalene | ug/Kg | ND(5.3) | 88 | 177 | UJ, J |
| Fluorene | ug/Kg | 37 | 22 | 51 | J |

For samples that were ND and the associated duplicate detected, the RL was used in the calculation. The RPDs that are over the recommended 50% for soil and 30% for water were flagged as estimated quantities ("J", or "UJ"). No additional data were qualified based on field duplicate precision.

Where reported, laboratory duplicated RPDs were below the QC limit of 20%. The exception to this was the RPD for 13G0008-DUP1 for DRO, which was 47% and 13G0019-DUP1, which was 26.5%.

An MS/MSD site-specific sample was not designated. The laboratory MS/MSD RPD for batch 144604 was outside the control limits. The associated samples were not detected and therefore, no qualifications were made.

## Accuracy

Accuracy was assessed by calculating the percent recovery for LCS, MS and surrogates.

The percent recovery(%R), for 13G0008-DUP1, 13G0019-BS1, 13G0019-DUP, was above the laboratory acceptance criteria of 75-125% for DRO. An MS/MSD site-specific sample was not designated. The %R for 13G0024-MS1, 13G0024-MSD1, was above the laboratory acceptance criteria of 60-140% for BTEX. For sample AWG0003-10, the surrogate acceptance limits were

outside of the recommended ranges. No data were flagged for this because all other QC parameters were acceptable.

## Representativeness

Representativeness is a qualitative parameter used to assess whether sample results are representative of true site conditions. Representativeness relative to analytical measurements is primarily influenced by application of consistent sampling and analytical methodology. The sampling network was designed to assess current site conditions in the site-specific study unit. The following measures were taken to address the representativeness of any material collected for analysis:

1. Sample collection was performed by a qualified person as required by 18 AAC 75.355 using methods listed in the WP (AES, 2012).
2. To minimize the potential for cross-contamination, new disposable collection equipment and new, pre-cleaned containers were used as specified in the WP (AES, 2012) and the FAA Standard Operating Procedures (SOP) (CH2MHill, 2005).
3. Field instruments and measuring devices were calibrated daily and operated in accordance with manufacturer recommendations.
4. Samples were labeled and uniquely identified in accordance with the WP, and field records indicate the exact location from which each field sample was collected.
5. Laboratory protocol was performed in accordance with laboratory standard operating procedures.

Therefore, measurement representativeness is considered acceptable for this project.

## Comparability

No field screening was conducted at this site. Two laboratories were used and one sample delivery group (SDG) created.

## Completeness

All data necessary to complete a level II data validation on this SDG was provided. No data were rejected, so 100% of results are usable.

## Sensitivity

All results are evaluated to the MDL. These limits are comparable to the limits specified in Table C, Groundwater Cleanup Levels (18AAC75, Reg. 188, January 2009). No qualifications were made based on reporting limits.

Two trip blanks were submitted with this SDG and met the required frequency of one per cooler per media with volatile samples. No analytes were detected and no qualifications were made.

Seven method blanks (MB) were analyzed and met the ADEC required frequency of one per matrix, analysis, and 20 samples. No qualifications were made based on blank results.

No equipment blanks or field blanks were submitted for this SDG.

## OVERALL ASSESSMENT

Based on the review completed on the one laboratory SDG data, no data were rejected. Qualifications were necessary due to poor field sample duplicate precision of four analytes in the primary and duplicate samples. All other sample results are considered to be valid with no data qualifiers assigned.