

BASELINE SAMPLING INVESTIGATION REPORT SOLID WASTE MONOFILL REPOSITORY WRANGELL ISLAND, ALASKA

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1.0 EXECUTIVE SUMMARY

NORTECH has completed a Baseline Sampling Investigation at DNR Pit #2 and the surrounding vicinity on Wrangell Island, Alaska. This baseline sampling investigation was conducted at the request of the Alaska Department of Environmental Conservation (DEC). The investigation included the collection groundwater, surface water and sediment samples from the Repository Site (DNR Pit #2), from Pats Creek and selected tributary streams entering into Pats Creek and soil samples at several locations adjacent to Pats Lake along Pats Creek Road. The purpose of this investigation was to characterize conditions present in the drainages exiting from the repository Site and selected downgradient drainages to establish baseline conditions prior beginning the transportation of contaminated soil material from the Wrangell Junkyard Site to the solid waste monofill Repository Site.

A total of eight sediment samples, eight surface water samples, two groundwater samples and four soil samples were collected during the investigation. Each sample was analyzed for DRO, RRO, VOCs and Total lead.

Lead was detected in seven sediment and four soil samples, all in concentrations below cleanup limits. Lead was detected in only one water sample, MFD-01 at a concentration which exceeded the cleanup limit.

DRO was not detected in any surface water or groundwater samples. DRO was detected in one soil and four sediment samples. With one exception, all DRO detections were below the cleanup limits. Sample MFD-01 had a DRO concentration which exceeded the cleanup limit.

RRO was not detected in any surface water or groundwater samples. RRO was detected in for soil and seven sediment samples. With one exception, all RRO results were below the cleanup limits. Sample MFD-01 had an initial RRO concentration which exceeds the cleanup limit. The sample was re-analyzed using silica gel cleanup techniques due to the apparent interference of biogenic compound biasing the original sample results. The post silica gel analysis result was below the cleanup limit.

With few exceptions, VOC contaminants were not detected in any of the soil, sediment, groundwater or surface water samples collected during the investigation. Toluene and 4-isopropyltoluene were detected in one sediment sample (MFD-02) and Chloromethane was detected in one water sample (MW-13). All results were below respective cleanup limits.

Two lead-acid automotive batteries were found partially buried in the forested area immediately east of the vehicle and equipment parking pad at the repository site. The batteries were removed from the site and transported to Juneau for disposal at the CBJ HHW Disposal facility.



2.0 BACKGROUND

2.1 Site Location and Description

This investigation was completed within the Pats Creek watershed at, and topographically downgradient from, DNR Pit #2 to Pats Lake on Wrangell Island, Alaska. This baseline sampling investigation included samples collected from multiple locations within the area investigated. For the purposes of this report, the areas of investigation are identified as:

- The monofill repository site (DNR Pit #2)
- Pats Creek Road
- Pats Creek and
- The two fish bearing tributaries to Pats Creek

The repository site is located in the former borrow pit identified as DNR Rock Pit #2 located at 56°21'11.76"N, 132°18'42.57"W in Section 4, Township 64 South, Range 84 East of the Copper River Meridian (Figure 2). The Site is owned by the State of Alaska and is managed by the Alaska Department of Natural Resources (DNR). The Site is legally described as:

Beginning at milepost 1.6 on the Pats Creek Road (Forest Road 6259 Centerline); Hence 130 feet @162 degrees true azimuth along the existing quarry access road to the beginning of the quarry back wall; hence 83 feet @131 degrees true, 38 feet @156 degrees true, 45 feet @108 degrees true, 145 feet @130 degrees true, 45 feet @166 degrees true, 45 feet @197 degrees true, 45 feet @232 degrees true, around the top of the existing quarry back wall; hence 85 feet @128 degrees true, 225 feet @38 degrees true, 270 feet @309 degrees true, 115 feet @219 degrees true, encompassing the area of potential expansion of this existing quarry for an estimated 20,000 cubic yards of Pit Run rock.

Access to the repository Site is via Pats Creek road. The rock pit is located approximately 1.7 miles east of Zimovia Highway. No structures or utilities exist at the repository Site or on any of the adjacent areas subject to this investigation.

Pats Creek Road, also identified as Forest Road 6259, is a gravel road providing access to the forested highlands and timberlands of the Tongass National Forest in the northcentral portion of Wrangell Island. Pats Lake is located immediately south of Pats Creek Road approximately 0.3 miles northeast of Zimovia Highway (Figure 2).

2.2 Physical Description

The area(s) of investigation are located within the Pats Creek/Pats Lake watershed in a remote area of Wrangell Island. Terrain within the watershed include densely vegetated forested highlands bisected and drained by numerous creeks and tributaries. The topography of the watershed is characterized by moderate to steep sloping hillside which transition to flatter valley bottom floodplains along the creeks and tributaries that drain this watershed to the west into Zimovia Strait.

The valley bottoms, especially in the western portion of the watershed, contain numerous forested wetlands and muskeg meadows. The area surrounding Pats Lake in the western portion of the watershed is broad and relatively flat. Wet grass and muskeg meadows surround much of the lake.



2.2.1 Geology

Wrangell Island is characterized by relatively low, rugged mountains that were cut by steep-sided glacial valleys. Glaciation deepened pre-existing valleys to form U-shaped valleys and rounded mountain peaks and ridges. The bedrock on Wrangell Island consists primarily of sedimentary and intrusive rocks of Cretaceous and Jurassic age. The sedimentary rocks consist of marine mudstone and fine-grained, rhythmically bedded, graywacke turbidities of the Seymour Canal Formation. Minor amounts of limestone are also present in the sedimentary complex. Regional metamorphism has resulted in recrystallization of the sedimentary rocks to sericitic slate or subphyllite, with isoclinal folding and kink bands. Other rock types on the island include andesitic to basaltic volcanic rocks. Intrusive rocks in the vicinity of the site include small plutons and batholiths of granodiorite, tonalite, and subordinate quartz diorite that are part of the Coast Range. Bedrock is exposed at low tide on northern Wrangell Island. Further inland, where covered by surficial deposits, bedrock may be more than 30 feet below land surface.

2.2.2 Soils

Soils within the area of investigation vary in terms of soil types, depths, and physical properties such as drainage. A review of the United States Department of Agriculture (USDA), Natural Resource Conservation Service (NRCS) Soil Survey for the Stikine Area showed a unique soil complexes within the area investigated. A generalized summary of Soils within the portion of the watershed investigated is as follows.

Soils of the Kupreanof-Mitkof complex, 3 to 35 percent slopes, the Kupreanof-Mossman Complex, 35 to 75 percent Slopes, and the Mossman-Kupreano complex, 75-110 percent slopes are all soils derived primary from colluvium and glaciofluvial parent materials. The primary differences between these soils are in the thicknesses of soil layers which is related to the steepness of the slope on which these soils are found. A generalized soil profile for the first two complexes includes a thin organic humic layer overlying silty loam, gravelly silty loam, very gravelly coarse sandy loam to very gravelly sandy loam. Both complexes are classified as somewhat poorly drained. The Mossman-Kupreano complex is comprised of very gravelly loam overlying unweathered bedrock, is generally thinner and is classified as well drained.

The other three soil complexes are Kushneahin-mucky peat, 0-15 percent slopes, the Kushneahin-Kina Association, 3 to 35 percent slopes and the Kushneahin-Maybeso complex, 3 to 35 percent slopes. The first is derived primary from organic parent materials and includes mucky peat overlying muck (decomposed organic material) which is classified as very poorly drained. Soils of the second association and the third complex are similar, being composed primarily of mucky peat overlying muck, and differ from the first by being situated on steeper slopes and classified as very poorly drained.

2.2.3 Groundwater

Groundwater data for the repository site is based on a single sampling event completed during the geotechnical and hydrologic investigation of the Site in January 2017. Groundwater existed between 2.5 to 3.2 feet below the base floor of the repository site at the time of the January investigation, and flowed in a north-northeasterly direction at a measured gradient of 0.0077 feet per foot.



2.2.4 Surface Water

The nearest surface water body to the repository Site is Pats Creek which is located approximately 0.1 miles south. Pats Creek is identified by the Alaska Department of Fish & Game (ADF&G) Anadromous Waters Catalog ID number 108-10-100500.

The nearest topographically down-gradient surface water to the repository site is an un-named tributary to Pats Creek with the ADF&G ID 108-10-100500-2047. This tributary, herein referred to as the principal tributary, confluences with Pats Creek approximately 0.3 miles west of the repository site. Although no continuous surface drainage connects the repository site to this tributary, this tributary indirectly receives the surface water runoff originating from the repository site after filtering through a forested wetland and muskeg meadow complex located to the north and topographically below the repository site.

The watershed contains numerous tributary drainages into Pats Creek. In general, most of these drainages are short, un-named, have not been cataloged by ADF&G and are of no consequence to this investigation. One additional tributary creek in the watershed is of relevance to this investigation. This short anadromous fish bearing tributary to Pats Creek is cataloged as ADFG 108-10-100500-2031 and is located approximately 0.8 miles west of the repository site.

Pats Creek and its tributaries drain into Pats Lake approximately 0.9 miles west of the repository site. Pats Lake outlets to the southwest via a continuation of Pats Creek and drains to Zimovia Straits approximately 0.5 miles to the southwest.

Pats Lake contains several lobes that are permanently flooded and is surrounded by wet grass and muskeg meadows which are intermittently flooded during periods of heavy or persistent precipitation and/or seasonally during peak snowmelt and runoff within the watershed. Mr. Pratt observed lake elevation fluctuations of nearly two feet over a 24 four time period. Similar water level changes were observed in Pats Creek and the principal tributaries.

2.2.5 Climate

Wrangell Island lies in the maritime climate zone and has mild winters and cool summers. Local vegetation consists of coastal western hemlock-Sitka spruce forest. Wrangell has a maritime climate characterized by small temperature variations, high humidity, and abundant precipitation. It has wet, cool summers and relatively mild winters. The mean annual temperature is 43°F. Temperatures range from a July mean maximum of 65°F to a January mean minimum of 24°F. Mean annual precipitation is about 82 inches and about 62 inches of snow falls annually.

2.3 Site History

In February 2016, DEC and its contractors initiated an emergency response cleanup action at a former junkyard property known as the Wrangell (Byford) Junkyard located at mile 4 Zimovia Highway in Wrangell, Alaska. The junkyard property is on City and Borough of Wrangell property accessible by road. The cleanup was completed at the end of July 2016.

The cleanup action consisted of excavation, screening, EcoBond-stabilization, and stockpiling of approximately 18,500 cubic yards of soil heavily contaminated with lead. The stockpiled soil is temporarily stored on the Junkyard site in a securely lined and covered containment cell. Post



stabilization sampling of the stockpiled soil by Toxicity Characteristic Leaching Procedure (TCLP) and Synthetic Precipitation Leaching Procedure (SPLP) testing confirmed that lead remaining in the soil does not leach. However, lead is still present in the material, and if consumed by humans, plants, or animals, the lead may have some bioavailability that is potentially toxic.

The test results show that the stockpiled material is not a RCRA regulated hazardous waste, but rather polluted soil under State regulations. The test results also confirm that the material meets the criteria for disposal in an unlined, solid waste monofill meeting the requirements of the DEC solid waste regulations 18 AAC 60. Construction of a monofill at a site on the Wrangell road system was the State's selected preferred alternative for final disposition of the material.

Several potential monofill sites were investigated for suitability as a final repository of the material. DNR Pit #2 was selected as the repository site as it was adequately sized, has high walls on three sides, a bedrock floor which slopes and drains away from the pit and was fairly dry and clear of debris and vegetation. Furthermore, the topographic and hydrologic characteristics of the site are ideally suited for use as a repository as there are no drainages that flow into the pit.

2.4 Prior Site Activities

The chosen repository Site is DNR Pit #2 which was historically a borrow source for rock and aggregate. Quarrying activities have not been conducted at the Site for numerous years.

A Topographical Survey Plan was completed by R&M Engineering, Ketchikan, Alaska at the Site in November 2016.

In January 2017, Ahtna Engineering Services, LLC (Ahtna) completed a geotechnical and hydrologic assessment of the repository Site. The purpose of the investigation was to characterize the subsurface conditions at the site and to gather site-specific geotechnical and hydrological information, including rock characteristics, groundwater depth, and groundwater quality. This information was used, along with climatological data for the site and conceptual engineered cap designs, to model groundwater infiltration and evaluate the suitability of the site as a treated soil repository.

Three exploratory borings (P-01, MW-02 and MW-03) were advanced by Discovery Drilling, Anchorage, Alaska at the site to characterize subsurface conditions, determine groundwater impacts (if any) from metals for background information, and determine depth to groundwater. The locations are shown on the Topographic Survey Diagram in Appendix 6. Boring P-01 was completed to a depth of 34 feet bgs. Borings MW-02 and MW-03 were terminated at the top of bedrock (approximately 10 ft bgs and 6 ft bgs, respectively) due to an oily sheen observed in the encountered groundwater. All three borings were subsequently converted into groundwater monitoring wells.

Groundwater sampling was conducted only at well P-01. Oil impacts in this well were not observed until development of the well. Groundwater samples (a primary and duplicate) were collected from P-01 and submitted to SGS laboratory and analyzed for full suite metals. Petroleum contaminants were not assessed in the samples. Groundwater samples were not collected from MW-02 or MW-03.



The analysis results showed detectable concentrations of numerous metals (15 in the primary sample and 16 in the duplicate), only three of which (lead, barium and chromium) have specific DEC cleanup limits established for them. Lead and barium were detected in both the primary and duplicate samples in concentrations nearly two orders of magnitude below the respective DEC Cleanup Limits.

Total chromium (Cr) was also detected in both samples in low concentrations, but was not speciated to determine concentrations of Cr^{III} versus Cr^{IV}. However, due to the prevalence of naturally occurring Cr^{III} throughout the state of Alaska, DEC has made a determination that sample results for total chromium detected at a site will be considered background Cr^{III} unless anthropogenic contributions of Cr^{III} or Cr^{IV} from a source, activity or mobilization by means of another introduced contaminant is known or suspected. No contributing anthropogenic sources, activities or mobilizations are suspected at the site.

Analytical samples from this investigation indicated that baseline concentrations of metal contaminants are below drinking water maximum contamination levels.

In June 2017, Ecology & Environment (E&E), Environmental Protection Agency (EPA) Superfund Technical Assessment and Response Team (START) completed the Wrangell Junkyard Repository Basis of Design and Design Package. This document provides the engineering specifications for construction of the monofill at the Site.

Between July and October 2017, preparatory construction was completed at the repository Site. These activities included the removal of debris and unsuitable rock and soil material from the repository, the construction of an access road along the east perimeter of the rock pit proving access to the top of the pit, the placement of a two-foot base drain layer over the bedrock floor of the repository and the preliminary construction of a three-foot chimney drain along the rock walls surrounding the monofill. Additional activities included the construction of a French drain at the repository site and routine maintenance of Pats Creek Road.

A Base Course Topographical Survey was completed at the Site in September 2017 after completion of the construction of the two-foot drain rock base for the repository site. The survey was conducted by PDC Engineers, Juneau, Alaska. A Topographic Survey Diagram is included in Appendix 6.

Further information regarding the monofill site for long term storage of the treated material can be found following the following link:

<http://dec.alaska.gov/spar/csp/RFPWebsiteDocuments/WrangellJunkyardRepository-BasisofDesignandDesignPackage.pdf>

2.5 Known Nearby Related Concerns

No known or nearby sites of potential environmental concern have been identified in the vicinity of the Site.

3.0 SCOPE OF WORK

3.1 Approved Scope of work

The approved Scope of Work for this baseline sampling investigation included the following:

- Collect a sample of the existing groundwater monitoring well at the Repository Site



- Identify the surface water drainages from the Repository Site
- Collect a surface water sample and sediment sample from each drainage exiting from the Repository Site
- Complete a walking survey to identify potential receiving bodies of water downgradient from the Repository Site
- Collect surface water and sediment samples at up to six locations downgradient from the repository
- Collect three soil samples from locations between Pats Creek Road and Pats Lake
- Analyze all soil, sediment, groundwater and surface water samples for the following:
 - o DRO by method AK 102
 - o RRO by method AK 103
 - o Total Lead by method 6020 and
 - o VOCs by method SW8260
- Provide a report documenting the investigation findings

3.2 Lines of Authority

The Alaska Department of Environmental Conservation (DEC) Spills Prevention and Response (SPAR) is the administrator of the project to construct a solid waste monofill for the lead contaminated material from the Wrangell Junkyard Cleanup Site. This project is being completed under the State Emergency Cleanup Fund as ADEC AR Term Contract 18-7002-01. The DEC Contaminated Sites (CS) Project Manager for this effort is Sally Schlichting.

NRC Alaska LLC (NRC) was awarded the contract for construction of the solid waste monofill. **NORTECH** was sub-contracted by NRC to provide qualified environmental personnel (QEPs) and professional environmental engineering services in support of the solid waste monofill construction project. SGS Laboratory, Anchorage, Alaska was sub-contracted by **NORTECH** to provide analysis of project related samples.

4.0 METHODOLOGY

Soil and groundwater sampling for this project were completed in general accordance with the **NORTECHs** standardized field screening and laboratory sample collection methodologies. These methodologies have been developed based on industry standards, laboratory guidance, and in general accordance with the August 2017: DEC Field Sampling Guidance, 18 AAC 78 (FSG).

4.1 Contaminants of Potential Concern and Pertinent Cleanup Levels

Based on the known contaminants in the existing stockpiled material at the Wrangell Junkyard Site, the contaminants of potential concern (COC) to be assessed during this baseline sampling effort included petroleum, oils and lubricants (POL) and Lead (Pb). In addition, due to the unknown historic usage of the repository Site and the surrounding area being investigated, Volatile organic compounds (VOCs) may also be present and were included as potential COCs. For the purpose of this document, POL contaminants include diesel range organics (DRO) and residual range organics (RRO).

The DEC Method Two cleanup levels for soil and groundwater are typically used as cleanup goals for sites managed through the DEC contaminated sites program. DEC has developed the Method 2 cleanup levels to be protective of human health and the environment under the wide range of conditions found in Alaska. These cleanup levels are provided in 18 AAC 75. All



project soil samples results were compared to current DEC cleanup levels for POL and Pb in soil (Table B1) and groundwater (Table C) and are summarized in the following Table. Cleanup levels for VOC contaminants in soil and groundwater can be found in the complete DEC Method Two Cleanup Level Tables (Table B1 and Table C) which are included in Appendix 5.

Site Cleanup Levels for Soil and Sediment Samples

Contaminant of Concern	Exposure Pathway and Soil Cleanup Limits mg/L	
DRO	Migration to Groundwater	230
RRO	Ingestion; >40" zone	8,300
Pb (Total)	Ingestion-Direct Contact Residential	400

Notes:

GRO, DRO & RRO in soil were compared to ADEC Table B2-Method Two Cleanup Levels

Pb in soil were compared to ADEC Table B1-Method Two Cleanup Levels

Site Cleanup Levels for Surface Water and Groundwater

Contaminant of Concern	Groundwater Cleanup Limits mg/L	
DRO	Migration to Groundwater	1.5
RRO	Ingestion; >40" zone	1.1
Pb (Total)	Ingestion-Direct Contact Residential	0.015

4.2 Field Screening Equipment and Methods

Field screening was not completed for the soil or sediment samples collected during this baseline sampling investigation.

NORTECH personnel collected pH and Turbidity readings for each of the surface water samples collected from Pats Creek and its tributaries. Turbidity and pH measurements were made using Oakton electronic meters. These results are included in Table 3.

4.3 Laboratory Sample Collection

NORTECHs sample collection methodology for this project was in general accordance with the FSG. All surface water, groundwater, soil and sediment samples were collected using clean disposable sampling tools. Samples were collected in order of volatility directly into clean glassware provided by the laboratory. Each sample was assigned a unique sample identification, and immediately placed in a cooler with ice prior to transportation under chain-of-custody to the laboratory. A minimum of one duplicate sample was collected for each ten samples submitted and/or for each unique sampling event, for each target analyte, and was submitted blind to the laboratory.

Groundwater sampling was completed using a peristaltic pump and low-flow sampling methodologies. Prior to sampling, the well was opened and the total depth and static water level were measured using a Durham Geo-Slope water level indicator. A well volume was calculated based on these measurements. The well was then purged of a minimum of five well volumes prior to sampling.



5.0 FIELD ACTIVITIES

The baseline sampling activities documented in this report were completed between September 28 and October 30, 2017. For the purpose of the report, the investigation was comprised of the following activities discussed below:

- Reconnaissance Survey
- Groundwater, surface water and sediment sampling
- Stream Flow Monitoring
- Soil Sampling

Reconnaissance Survey

On September 28, Jason Ginter and Ron Pratt of **NORTECH** conducted a walking reconnaissance survey of the areas surrounding and topographically downgradient of the repository site. The purpose of the survey was to assess the surface water runoff from the repository site and to identify potential surface water and sediment sampling locations downgradient from the Site. A handheld GPS was used to track the path of the survey and to provide coordinates for potential sampling locations and features of interest identified during the survey. Moderate and persistent precipitation occurred throughout the day of the survey.

This survey started at the repository site. No surface water drainages enter into the repository site. The only water entering into the Site originates as precipitation falling directly into the repository and/or the rock walls surrounding the Site to the east, south and west.

Water that enters the repository site infiltrates into a two-foot layer of rock placed as an engineered drainage cover over the bedrock floor of the pit. The floor of the pit slopes gently to the north and water follows the contour of the bedrock to the north and into a drainage swale along the northern perimeter of the pit (Photos 1 through 3). Water runoff from the repository discharges from site at one of two locations (Refer to Topographic Survey Diagram in Appendix 6). Surface water runoff from the repository site is managed through a site specific Stormwater Pollution Prevention Plan which was prepared by **NORTECH** under the Alaska Pollutant Discharge Elimination System (APDES) permit number AKRI00000.

The primary discharge from the repository is via French drain system which was constructed at the site. The French drain captures the surface water runoff from the Site via the aforementioned perimeter drainage swale and diverts this water to the east through a coarse rock lined drainage ditch beneath the existing shot-rock equipment and vehicle parking pad (Appendix 6). Water exiting the French drain system discharges as surface flow into a forested area east of the parking pad (Photo 7), and disappears to the sub-surface environment within approximately 30 feet of the discharge endpoint. **NORTECH** personnel continued the reconnaissance survey through the forested area east of the parking pad down gradient to Pats Creek Road and no discernible surface water drainage course(s) were observed below the location where water exiting via the French Drain disappeared to the subsurface.

The second drainage at the repository site follows the north edge of the repository site to the access driveway (Photo 4), then follows the driveway to Pats Creek Road and enters a roadside ditch there. The water flows downslope to the west approximately seventy-five feet before entering a culvert which discharges to a forested slope north of Pats Creek Road (Photo 8). This drainage is intermittent and flows only during periods of heavy or persistent precipitation when the runoff volume exiting the repository site exceeds the carrying capacity of the French drain



system (Photos 3 and 4). Numerous gravel check dams and velocity dissipating control measure were constructed within this drainage channel in accordance with the SWPPP to prevent erosion and contain any sediment transport from the site prior to reaching the culvert at Pats Creek Road.

The survey was then continued from the location of the culvert outfall northwest of the repository site and followed the course of water flow from the culvert outfall down the forested hillside towards the tributary stream existing in the valley bottom to the north. Immediately below the culvert outfall, the drainage exists as a series of poorly defined pools and cascades deflecting slightly to the northwest. As the slope begins to lessen near the valley bottom, the drainage course became more ambiguous, often disappearing to the subsurface. The bottom of the valley is relatively flat and is comprised of mixed forested wetlands and muskeg meadows. Near the bottom of the valley, the drainage disappeared entirely to the subsurface.

Mr. Ginter and Mr. Pratt continued to survey the valley bottom down to a tributary creek to Pats Creek (herein identified as the principal tributary). Intermittent pools and areas of observable flowing water were observed at various locations across the valley bottom. Upon reaching the principal tributary, the survey continued following the south edge of this creek to the east to identify any potential drainages entering into the creek from the south. A small channelized drainage of flowing water was observed entering into the principal creek from the muskeg meadow to the south (Photo 12). This area was marked with the GPS unit and recorded in a field notebook as a potential downgradient sampling site.

The survey was continued by following the principal tributary down-stream (west) to the confluence with Pats Creek. From that point, the survey continued by following Pats Creek to the confluence with Pats Lake to the southwest. Several small tributary streams were observed entering into Pats Creek and their locations were marked with the GPS unit and recorded in a field notebook as potential sampling sites.

A total of eight locations were selected during the reconnaissance survey for the collection of surface water and sediment samples. Sampling locations are shown on Figures 3 through 5 and coordinates for each sampling location are provided in Table 4. All eight sediment sampling locations were chosen at obvious deposition zones within the creeks or drainages being assessed. A reciprocal surface water sample would be collected at each of the sediment sampling locations. The sampling locations were chosen to assess the apparent pathway of water migration originating from the repository site, down gradient to Pats Lake.

Groundwater, Surface Water and Sediment Sampling

On September 29, Mr. Ginter and Mr. Pratt collected the groundwater, surface water and sediment samples for this investigation. Overcast skies with no precipitation were encountered through the course of the sampling effort.

One groundwater sample and a sample duplicate were collected from the monitoring well remaining in the repository site (Photo 18). Samples MW3 and MW13 (duplicate) were collected from the monitoring well which is shown on Figure 5 and the Topographic Survey Diagram in Appendix 6).

A total of eight surface water samples and eight sediment samples were collected during this sampling event as well. Surface water and sediment samples MFD-01 and MFD-02 were collected from the two water discharge locations emanating from the repository site (Figure 5).



Water and sediment samples MFD-01 were collected immediately below the discharge end point of the French drain system near the northeastern edge of the repository Site (Photo 7). MFD-02 was collected immediately below the culvert outfall north of Pats Creek Road just outside of the repository site (Photo 8).

An automotive transmission was identified by Mr. Ginter several feet beyond the discharge end point and directly within the flow of water discharging from the French Drain system (Photo 5). The surface water and sediment samples were collected several feet down-gradient from the transmission case. An inspection of the immediate area surrounding the discharge end point was conducted and Mr. Ginter observed two lead-acid automotive batteries (Photo 6), several tires, a broken windshield and other miscellaneous metal, plastic, and wooden construction debris within a 20 foot radius of the MFD-01 sampling location. The batteries were removed from the ground by Mr. Ginter and subsequently transported by **NORTECH** personnel to an appropriate disposal facility in Juneau, Alaska.

The PDC-01 water and sediment samples were collected immediately downstream from a small drainage observed entering into the principal tributary to Pats Creek located to the north and topographically downgradient from the repository site (Figure 5, Photo 11). This drainage originates from the muskeg meadow and forested wetland complex to the south. The drainage was identified during the walking survey the previous day, at which time water was observed flowing from this drainage into the principal tributary. At the time of sampling, the flow from this drainage was diminished to a very low volume (Photo 12). **NORTECH** personnel also noted that the water level in the principal tributary at sampling location PDC-01 was more than two-feet lower at the time of sampling than had been observed the previous day during the survey.

Sample location FPC-01 was collected on the south side (downstream) of the fish passage culvert where the primary tributary crosses beneath Pats Creek Road. Subsequent to sampling, Mr. Ginter and Mr. Pratt completed stream flow measurements of the tributary as it flowed through the fish passage culvert.

Water and sediment samples MC-US-01 and MC-DS-01 were collected upstream and downstream from the confluence of the primary tributary and Pats Creek, respectively (Photos 9 and 10). Samples ST-PC-01 (water and sediment) were collected from the confluence of a short un-named tributary entering into Pats Creek to the west (Photo 13). This tributary was identified and marked by the Alaska Department of Fish and Game (ADFG) as a fish bearing stream. The final sampling location PCM-01 was located at the mouth of Pats Creek as it entered into Pats Lake (Photo 14).

Stream Flow Monitoring

September 29, Mr. Ginter and Mr. Pratt conducted stream flow discharge monitoring of the principal tributary to Pats Creek using the Float Method. Monitoring of the stream discharge were completed on the section of stream flow through the fish passage culvert beneath Pats Creek Road. Measurements of the culvert length, width and average depth (based on 27 depth measurements within the culvert) were made. A buoyant object was floated through the culvert and timed with a stopwatch on nine separate occasions to develop an average speed. Using these measurements, a stream flow discharge was calculated for the fish passage culvert using the formula Cubic Feet per Second = Area multiplied by Velocity, where Area = width x average depth and velocity = length divided by average time. The final number was then multiplied by a factor of 0.85 to account for the differential velocity of surface flow versus subsurface flow to produce a calculated discharge rate of 22.67 cfs at the time of assessment.



Soil Sampling

On October 30, 2017, Ron Pratt returned to Wrangell to collect soil samples from three locations along Pats Creek Road and the edge of Pats Lake (Figure 3 and Photos 15 through 17). Coordinates for each soil sampling location are provided in Table 4. A total of four samples (three primary samples and a duplicate) were collected during the effort.

All soil, sediment, groundwater and surface water samples collected during the investigation were submitted to SGS Laboratory in Anchorage Alaska for the following Analysis:

- Diesel Range Organics (DRO) by test method AK 102
- Residual Range Organics (RRO) by test method AK 103
- Volatile Organic Compounds (VOCs) by test method EPA 8260
- Total Lead by test method 6010 (ICP/MS)

Surface water samples were also collected for Pats Creek and its tributaries for subsequent turbidity and pH testing which was completed by **NORTECH** personnel. pH and Turbidity measurements are summarized in Table 3.

6.0 RESULTS WITH DISCUSSION

The sample set for this investigation included a total of four soil samples, eight surface water samples, eight sediment samples and two groundwater samples. DRO, RRO and Total Lead results for the sediment and soil samples are summarized in Table 1. DRO, RRO and Total Lead laboratory analysis results for the water samples (surface and groundwater) are summarized in Table 2. Table 3 provides a QC summary of the duplicate pairs collected during the investigation. All Sampling locations are show on Figures 3 through 5. The analysis results are discussed in further detail below.

Lead was detected in seven of the eight sediment samples, and in each of the four soil samples. All lead concentrations were below the ADEC Cleanup limit of 400 mg/Kg. Lead concentrations ranged between 1.65 and 135 mg/Kg. In general, the lead concentrations were below 10 mg/Kg with the exception of one sampling location (MFD-01 at 135 mg/Kg). Sample MFD-01 was collected from the discharge end-point of the French Drain system draining the repository Site. Various automotive parts including tires, a transmission case and two batteries were observed by **NORTECH** personnel within 20 feet of the sampling location. The transmission case was located less than five feet from the sampling location and was directly in the flow of water discharging from the French Drain.

DRO compounds were detected in four of the eight sediment samples and one of the four soil samples. Detected DRO concentrations ranged between 45.1 and 2,580 mg/Kg. With the exception of sample MFD-01, all DRO concentrations were below the cleanup limit of 230 mg/Kg. Sample MFD-01 had a DRO concentration of 2,580 mg/Kg which exceeded the cleanup limit.

RRO compounds were detected in seven of the eight sediment samples and each of the four soil samples. One sample (MFD-01) had a detected RRO concentration of 8,830 mg/Kg which exceed the ADEC Cleanup limit of 8,300 mg/Kg. The remaining samples were all below the cleanup limits and had RRO concentrations ranging between 30.9 and 566 mg/Kg.



The laboratory noted that the chromatographs for the DRO and RRO analysis run of sediment samples MFD-01 and MFD-02 showed a graphic signature that indicated potential biogenic interference with the analysis results. **NORTECH** requested that SGS re-run both samples using the silica gel process. Each sample was then re-analyzed for DRO and RRO, and then re-analyzed again for DRO and RRO using the silica gel process to provide comparative results. The re-runs (strait and using silica gel) were analyzed outside of the 14 day hold-time.

The comparative results for the re-run of sample MFD-01 did show biogenic interference with the DRO and RRO results. The strait RRO result was 11,700 mg/Kg (which exceeds the cleanup limit) and after silica gel cleanup the sample yielded an RRO concentration of 4,130 which was below the cleanup limit. The strait DRO and post silica gel cleanup results were 4,400 and 2,200 mg/Kg respectively, both exceeding the cleanup limit.

DRO and RRO compounds were not detected at or above the laboratory limits of quantification (LOQ) in any surface water or groundwater samples collected during the investigation.

Total lead was detected in one water sample above the LOQ. Lead was detected at a concentration of 0.709 mg/L in sample MFD-01 which exceeds the ADEC Cleanup limit of 0.015 mg/L.

With few exceptions discussed below, no VOC compounds were detected at or above the laboratory LOQs in any of the soil, sediment, surface water or groundwater samples collected during this investigation.

One VOC analyte (chloromethane) was detected in the groundwater sample duplicate MW-13 at a concentration of 0.00132 mg/L. This concentration was well below the cleanup limit of 0.190 mg/L. Chloromethane was not detected in the primary sample MW-03 collected from the monitoring well.

A total of two VOC analytes (toluene and 4-isopropyltoluene) were detected in sediment sample MFD-02. The toluene and 4-isopropyltoluene concentrations were 0.303 and 0.0268 mg/Kg, respectively. The toluene concentration was below the cleanup limit of 6.7 mg/Kg. A cleanup limit for 4-isopropyltoluene has not been established.

Complete copies of original laboratory reports are included in Appendix 4. ADEC Laboratory Data Review Checklists (LDRCs) for the lab reports are also included in Appendix 4. Data quality control is discussed for the entire data set in the following section. This discussion is based on the contaminants of concern and the associated analytical methods.

6.1 Quality Control Summary

The data quality objectives for the project were to produce data of adequate quality for comparison to 18 AAC 75 cleanup levels. The primary tool used to assess the quality of the data was the ADEC LDRC. A LDRC was completed for each individual laboratory work order and is included in Appendix 4.

The Case Narrative for the laboratory analysis reports includes numerous QC issues identified within the sample set. The sampling for this investigation was completed under two laboratory work orders. SGS work order 1177018 included the two groundwater samples, eight surface



water samples and eight sediment samples. SGS Work order 1179494 included the four soil samples. QC failures are discussed below for each work order.

For work order 1177018, five of the identified QC failures related to parent samples submitted for analysis. Most of these QC issues were related to surrogate recovery values which did not meet the QC criteria, the majority of which were attributed to matrix interference in the parent samples. As noted previously, the re-analysis of sediment samples MFD-01 and MFD-02 for DRO and RRO using silica gel cleanup were completed out of hold time.

Five QC failures were also noted related to the VOC analysis of laboratory QC samples. Four of the QC failures related to recovery values and/or RPDs for one or more analyte in the matrix spike/matrix spike duplicate (MS/MSD) samples which did not meet the QC criteria. One QC failure was identified with the Laboratory Control spike (LCS) sample where several analytes had RPDs exceeding the QC criteria. In each instance, the affected analytes were not detected above the LOQ in the associated parent sample.

As noted previously, the re-analysis of sediment samples MFD-01 and MFD-02 for DRO and RRO using silica gel cleanup were completed out of hold time.

For work order 1179494, all of the QC issues were related to VOC analysis and only one was related to a parent sample submitted for analysis. The surrogate recovery for parent sample PLR-S4 did not meet QC criteria due to matrix interference in the parent samples. Several analytes in the MS sample had recoveries that did not meet QC criteria and the RPD for several analytes did not meet QC criteria in the MSD sample. In both cases, none of these analytes were detected above the LOQ in the parent sample. Similarly, several analyte recoveries in the LCS sample did not meet QC criteria but these analytes were not detected in the associated samples above the LOQ.

None of the QC failures identified affect the data quality or usability of the data for the intended purpose of this investigation. QC issues are discussed in further detail in the LDRC for each laboratory report.

7.0 ANALYSIS AND DISCUSSION

The analysis results show that lead is present in the water and that DRO and RRO contaminants are present in the sediment sample collected at location MFD-01 in concentrations exceeding their respective cleanup limits. These results are discussed in further detail below. DRO and RRO contaminants were also detected in additional sediment and soil samples collected during the investigation, but in concentrations that were all below the cleanup limits and generally at levels that merit no further discussion.

At sampling location MFD-01, lead was detected in the surface water sample collected from the discharge location of the French Drain installed at the Site in September 2017. Lead was also detected in the sediment sample collected at this location. The sediment sample had a lead concentration of 135 mg/Kg which is below the cleanup limit of 400 mg/Kg. Lead was detected in the water sample at a concentration of 0.709 mg/L which exceeds the cleanup limit of 0.015 mg/L. A source of lead contamination in the water and sediment at this location was not identified and has not been further investigated.



DRO and RRO contamination above cleanup limits were also detected in the sediment sample collected at location MFD-01. The laboratory noted apparent biogenic hydrocarbon interference in the sample results and the sample was re-analyzed using silica gel cleanup methodology. While these results showed RRO concentrations below the cleanup limits, DRO concentrations remained above the cleanup limits. A source of these contaminants is not known and was not investigated.

Lead, DRO and RRO contaminants were also detected in the sediment sample collected at location MFD-02, just outside of the repository site along Pats Creek Road, all in concentrations below their respective cleanup limits. Toluene and 4-isopropyltoluene were also detected in very low concentrations in this sediment sample. No contaminants were detected above the laboratory LOQ in the water sample collected at this location.

A known source for contamination in the water and sediment samples at the repository site was not identified nor investigated. Visual petroleum impacts to the subsurface groundwater environment were observed by Ahtna personnel during the drilling and installation of the three monitoring wells (P-01, MW-2 and MW-3) at the repository Site. An apparent source for these observed impact(s) was not identified and no sampling or analytical testing was completed to assess the impact(s) and/or to characterize potential petroleum concentrations in the groundwater during this investigation.

Monitoring wells MW2 and P-01 were decommissioned by NRC and **NORTECH** personnel in August 2017 during preparatory construction activities at the repository Site. MW-03 remains at the Site and was sampled during the baseline sampling investigation in September 2017. The analysis results for the sample did not show any petroleum impacts to the groundwater at this location. In addition, the analytical results for the two groundwater samples (one primary and a duplicate) collected from MW-03 showed no detectable concentrations of DRO, RRO, lead or VOC compounds above the laboratory LOQ with the following exception. Chloromethane, was detected in the duplicate sample at a concentration of 1.32 ug/L which is well below the cleanup level of 190 ug/L. This analyte was not detected in the primary sample.

In August 2017, several automobiles were uncovered in the northern end of the repository site during the preparatory monofill construction activities. The automobiles were removed from the site at this time.

In September 2017, additional automotive parts including tires, a transmission case, and two lead-acid automotive batteries were observed in close proximity to the MFD-01 sampling location. Miscellaneous wood, plastic and glass debris was also noted in this area. The parts and debris were noted to be covered by rocks, moss or partially buried suggesting that these materials have been present at the site for some time.

With the exception of the two batteries, all other items and materials remain at the site. The batteries were removed from the Site by **NORTECH** personnel and transported to Juneau for disposal the City and Borough of Juneau (CBJ) Household Hazardous Waste (HHW) collection facility. Receipt documents for the disposal of the batteries are included in Appendix 7.



8.0 CONCLUSIONS

Based on the available Site data, the following conclusions have been developed for this Baseline Sampling Investigation:

- DRO was detected in four of eight sediment samples and one of four soil samples
- DRO was detected above the cleanup limit in one sample
 - DRO was detected at 2,580 mg/Kg in sample MFD-01
 - Sample MFD-01 was collected below the French Drain discharge endpoint at the repository site
 - DRO concentrations in the remaining samples were all below the cleanup limits and ranged between 23.0 and 157 mg/Kg
- RRO was detected in seven of eight sediment samples and each of the four soil samples
- RRO was detected above the cleanup limit in one sample
 - RRO was detected at 8,830 mg/Kg in sample MFD-01
 - Laboratory noted apparent biogenic interference in sample results
 - Sample was re-analyzed using silica gel cleanup and sample result was 4,130 mg/Kg which is below the cleanup limit
 - RRO concentrations in the remaining samples were all below the cleanup limits and ranged between 30.4 and 566 mg/Kg
- Lead was detected in four of eight sediment samples and each of the four soil samples
 - Lead concentrations were all below the cleanup limits and ranged between 1.65 and 135 mg/Kg
 - With exception of sample MFD-01 (135 mg/Kg) all other lead concentrations were below 10 mg/Kg.
- DRO and RRO were not detected in any of the surface water or groundwater samples above the laboratory limits of quantification
- Lead was detected in one surface water sample
 - MFD-01 had a lead concentration of 0.709 mg/L which exceeded the cleanup limit
- Two VOC compounds were detected in trace concentrations in one sediment sample
 - Toluene was detected in sample MFD-02 at concentration of 0.303 mg/Kg which is below the cleanup limit
 - 4-isopropyltoluene was detected in sample MFD-02 at concentration of 0.0268 mg/Kg and no cleanup limit has been established for this analyte
- One VOC compound (chloromethane) was detected in groundwater sample MW-13
 - Concentration of 1.32 ug/L is below cleanup limit
 - Chloromethane was not detected in the duplicate sample MW-3
- Two lead-acid automotive batteries were found partially buried in forested area immediately east of the parking pad at the repository site
 - Batteries were removed from the site and disposed of at the CBJ HHW facility

9.0 LIMITATIONS

NORTECH provides a level of service that is performed within the standard of care and competence of the environmental engineering profession. However, it must be recognized that limitations exist within any site investigation. This report provides results based on a restricted work scope, from the analysis and observation of a limited number of samples and for Site conditions which were present at the time of investigation. Therefore, while these limitations are



considered reasonable and adequate for the purposes of this report, actual site conditions may differ and change over time. Specifically, the unknown nature of exact subsurface physical conditions, sampling locations, the analytical procedures' inherent limitations, as well as financial and time constraints are limiting factors.

10.0 SIGNATURES OF ENVIRONMENTAL PROFESSIONALS

Ronald J. Pratt is a Senior Environmental Scientist for **NORTECH**. Mr. Pratt has a B.S. in Geography/Earth Science and a Masters in Environmental Studies and more than 20 year of professional environmental consulting experience in California, Washington, and Alaska. Ron has experience conducting all phases of environmental site investigations, underground storage tank decommissioning/closures, underground injection well assessment and closure projects, contaminated site remediation projects, spill prevention countermeasure and control inspections and radiologic soil screening and sampling. Mr. Pratt also has experience conducting stormwater pollution prevention inspections and is an Alaska Certified Erosion and Sediment Control Lead (AK-CESCL) DES-003.

Jason Ginter, PMP, was the Project Manager for this work and was the primary contact for this project. Jason has a Bachelor of Science in Chemistry from the University of Buffalo (1994). Jason has 24 years of experience in the environmental testing and cleanup field, with 20 years experience in Southeast Alaska. He has worked on projects including all phases of environmental sampling, cleanup and reporting from Prudhoe Bay to Ketchikan. His past projects include on-water oil spill response, Contaminated Site cleanups, Phase I ESAs, developing and implementing the PCB cleanup plan for a power generating plant, and Project Management of the Wrangell Junkyard Remediation in 2016.

Primary Author Signature

Ronald Pratt, MES, CESCL
Senior Environmental Scientist

Principal Reviewer

Jason Ginter, PMP
Principal



Appendix 1

Figures



Appendix 2

Tables



Appendix 3

Site Photographs



Appendix 4

Laboratory Reports and Laboratory Data Review Checklists



Appendix 5

ADEC Cleanup Level Tables



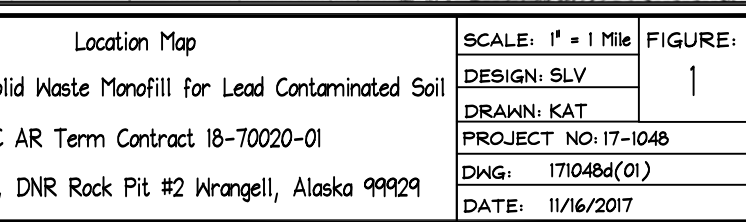
Appendix 6

Topographic Survey Diagram



Appendix 1

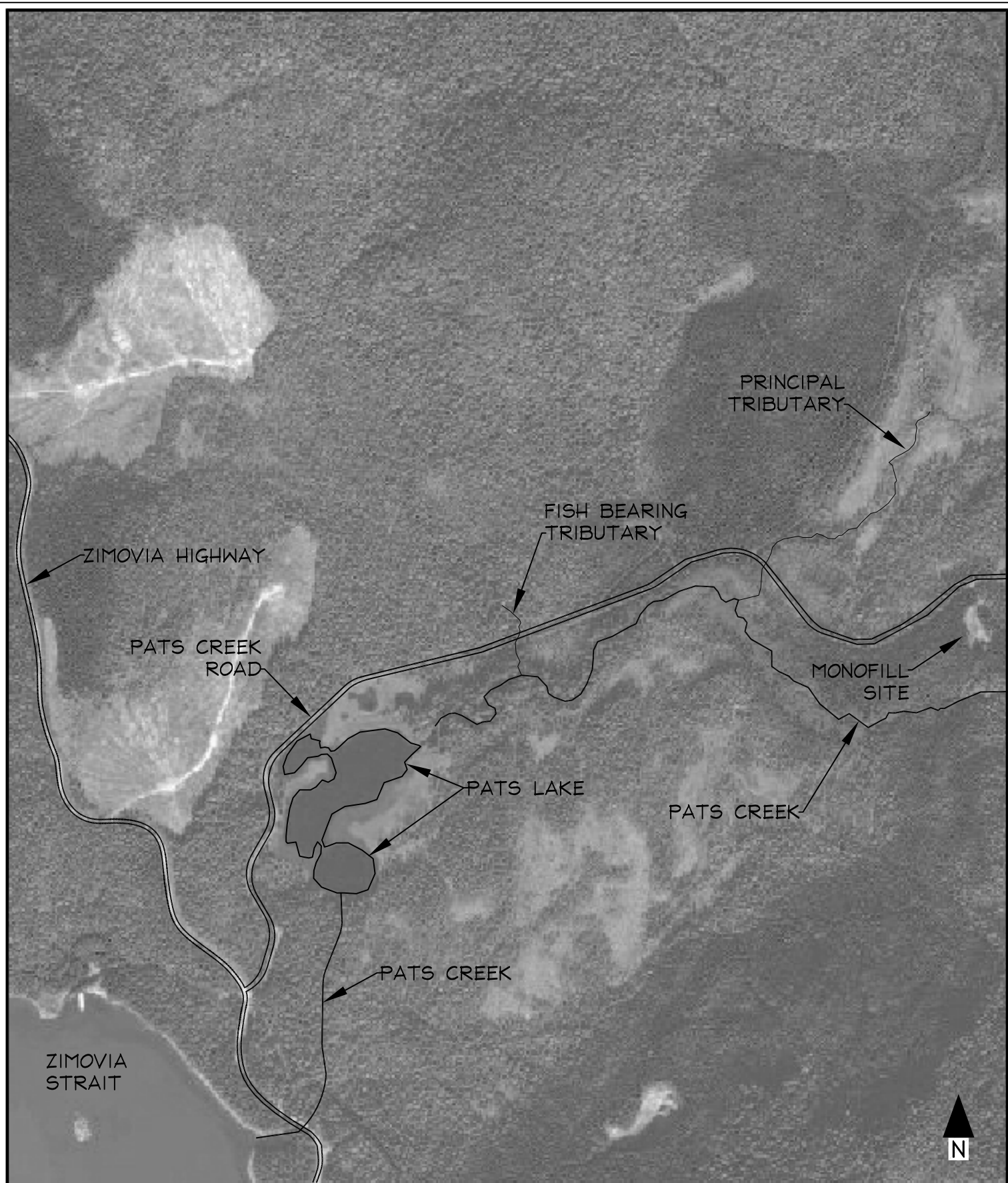
Figures



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3105 Lakeshore Dr., Anchorage, AK. 99517 907-222-2445
5438 Shaune Dr., Juneau, Alaska 99801 907-586-6813

Location Map
Construction of Solid Waste Monofill for Lead Contaminated Soil
ADEC AR Term Contract 18-70020-01
Pat's Creek Rd, DNR Rock Pit #2 Wrangell, Alaska 99929

SCALE: 1" = 1 Mile	FIGURE: 1
DESIGN: SLV	
DRAWN: KAT	
PROJECT NO: 17-1048	
DWG: 171048d(01)	
DATE: 11/16/2017	



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Site Vicinity Map

Construction of Solid Waste Monofill for Lead Contaminated Soil

ADEC AR Term Contract 18-70020-01

Pat's Creek Rd, DNR Rock Pit #2 Wrangell, Alaska 99929

SCALE: 1" = 1,000' FIGURE:

DESIGN: JJG

DRAWN: RJP

PROJECT NO: 17-1048

DWG: 171048d(02)

DATE: 11/02/2017

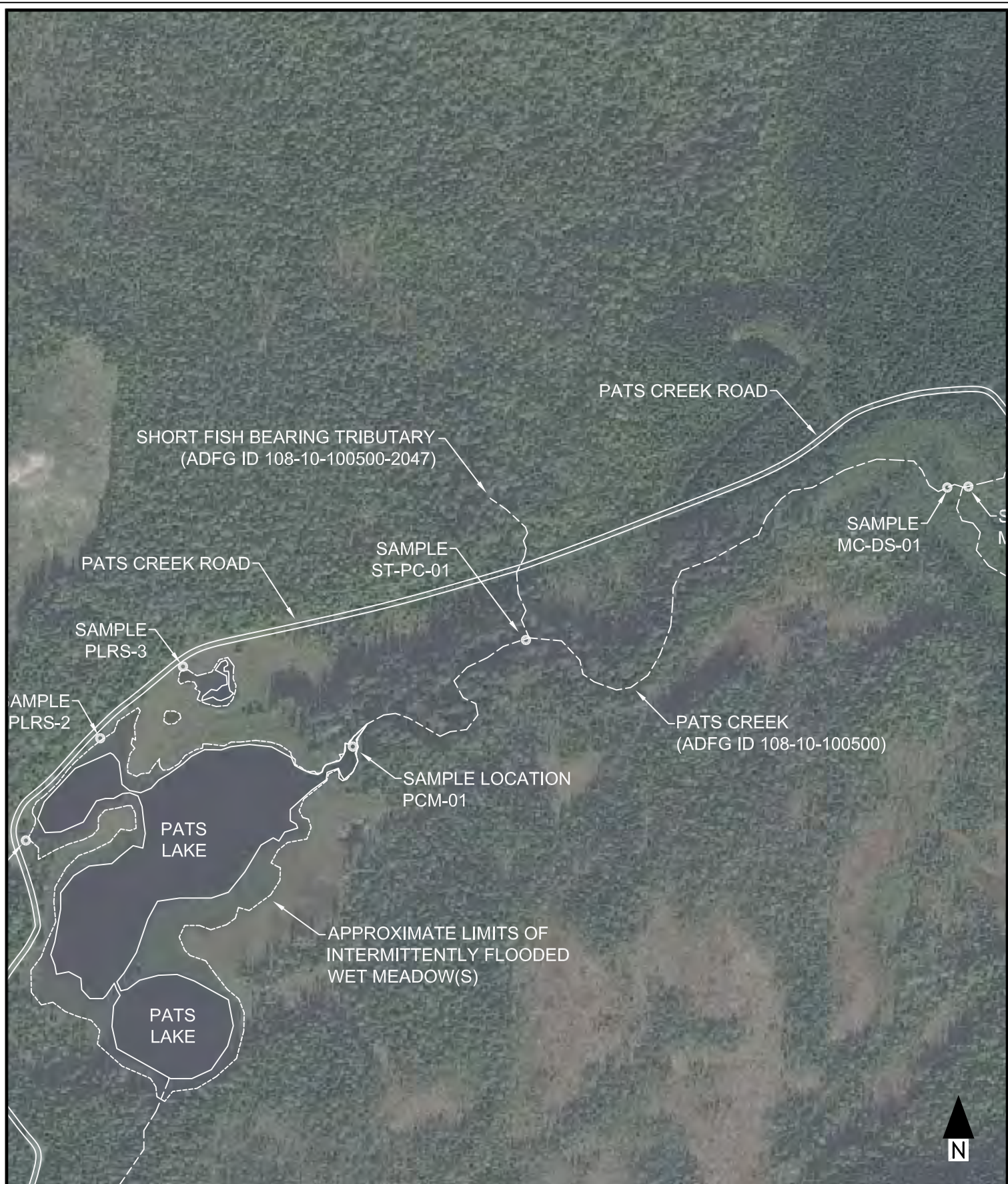
2



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Baseline Sampling Map (West)
 Construction of Solid Waste Monofill for Lead Contaminated Soil
 ADEC AR Term Contract 18-70020-01
 Pat's Creek Rd, DNR Rock Pit #2 Wrangell, Alaska 99929

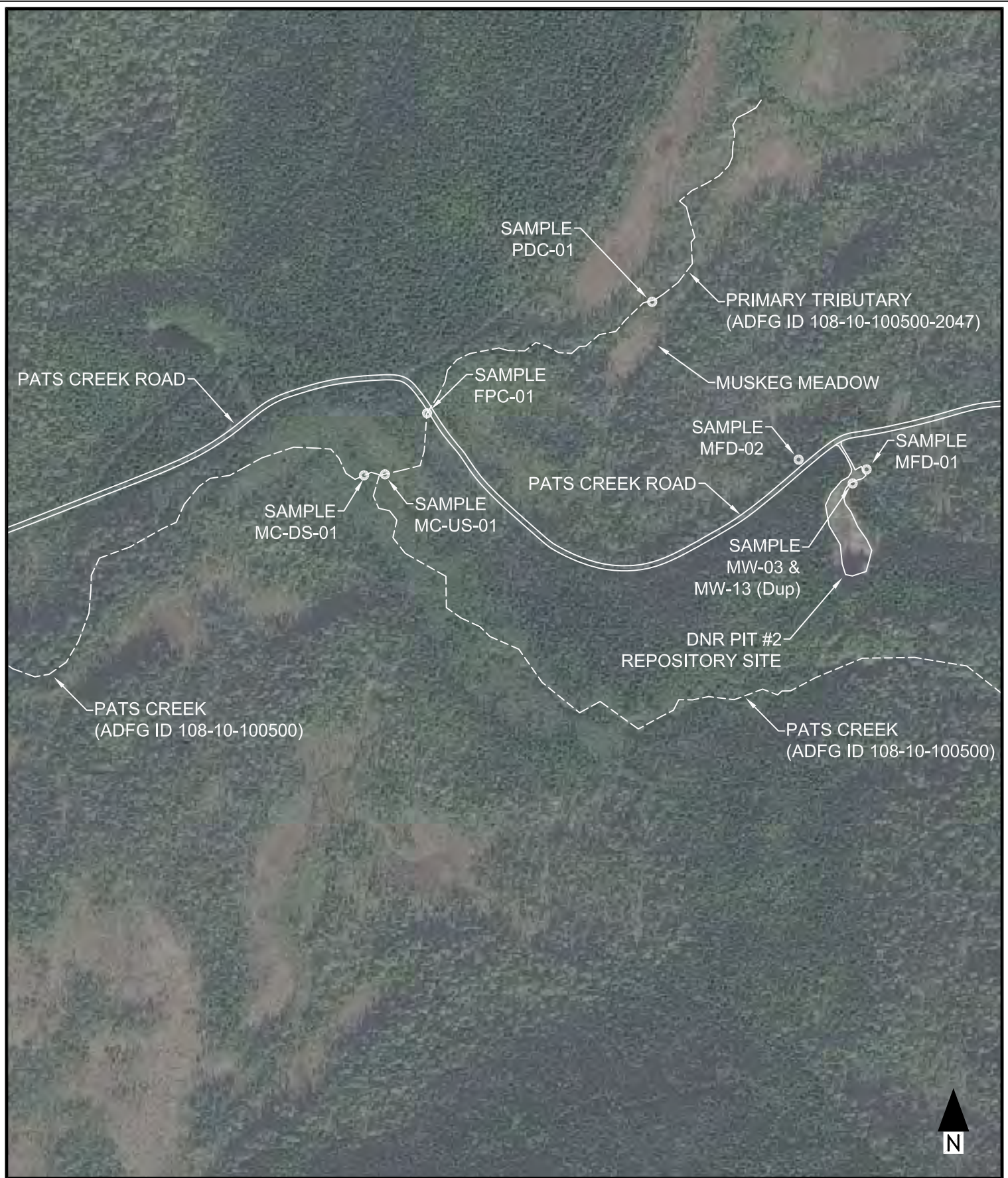
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DWG: 171048d(03)	
DATE: 11/02/2017	



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5438 Shaune Dr., Juneau, Alaska 99801 907-586-6813

Baseline Sampling Map (Central)
Construction of Solid Waste Monofill for Lead Contaminated Soil
ADEC AR Term Contract 18-70020-01
Pat's Creek Rd, DNR Rock Pit #2 Wrangell, Alaska 99929

SCALE: 1" = 500'	FIGURE:
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DATE: 11/02/2017	



ENVIRONMENT, ENERGY, HEALTH & SAFETY CONSULTANTS
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 3105 Lakeshore Dr., Anchorage, AK. 99517 907-222-2445
 5438 Shaune Dr., Juneau, Alaska 99801 907-586-6813

Baseline Sampling Map (East)
 Construction of Solid Waste Monofill for Lead Contaminated Soil
 ADEC AR Term Contract 18-70020-01
 Pat's Creek Rd, DNR Rock Pit #2 Wrangell, Alaska 99929

SCALE: 1" = 500'	FIGURE:
DESIGN: JJG	5
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PROJECT NO: 17-1048	
DWG: 171048d(05)	
DATE: 11/02/2017	



Appendix 2

Tables

Table 1
Laboratory Soil and Sediment Analysis Summary (Lead, DRO, RRO Results)

Analyte	Lead	DRO	RRO	LABORATORY NOTES AND OBSERVATIONS
ADEC Cleanup Limits	400	230	8300	
	mg/Kg	mg/Kg	mg/Kg	
Sample ID	September, 2016 Baseline Analysis Results			
MFD-01	135	2580	8830	Chromatographs indicate Biogenic interference
MFD-01 ^{w/o Silica Gel}	NA	4400	11,700	Sample re-run for DRO without Silica Gel
MFD-01 ^{w/ Silica Gel}	NA	2200	4130	Sample re-run for DRO with Silica Gel
MFD-02	6.64	157	566	Chromatographs indicate Biogenic interference
MFD-02 ^{w/o Silica Gel}	NA	23.0J	88.4	Sample re-run for RRO without Silica Gel
MFD-02 ^{w/ Silica Gel}	NA	31.6U	60.5J	Sample re-run for RRO with Silica Gel
MC-DS-01	5.25	25.5U	25.5U	
MC-US-01	8.57	45.1	418	
FPC-01	1.65	26.3U	30.4	
PDC-01	3.93	87.3	508	
PCM-01	1.31U	26.4U	42.4	
ST-PC-01	2.64	26.1U	33.9	
Trip Blank	NA	NA	NA	
PLR-S1 ^(Dup 2)	3.54	22.9U	77.2	
PLR-S4 ^(Dup 2)	5.17	23.7U	87	
PLR-S2	6.93	93.4	454	
PLR-S3	3.64	22.8U	47.5	
Trip Blank	NA	NA	NA	

Notes:

#/SHADE Analyte detected above the limits of quantification but below the cleanup limits

#/BOLD Analyte detected above the limits of quantification and above the cleanup limits

#/J Quantified concentration is an estimate

#/U Analyte was not detected at the listed limits of quantification

#/U Bold/Italics Laboratory detection limit for analyte is greater than ADEC Cleanup Limit

ID^{D#} Denotes duplicate sample pairings

NA Sample not analyzed for the specified analyte

Table 2
Laboratory Surface and Groundwater Analysis Summary (Lead, DRO, RRO Results)

Analyte	Lead	DRO	RRO	pH	Turbidity
ADEC Cleanup Limits	0.015	1.5	1.1	NE	NE
	mg/L	mg/L	mg/L		NTU
Sample ID	September, 2016 Baseline Analysis Results				
MFD-01	0.709	0.577U	0.481U	NA	NA
MFD-02	0.001U	0.536U	0.446U	NA	NA
MC-DS-01	0.001U	0.536U	0.446U	6.6	0.28
MC-US-01	0.001U	0.556U	0.463U	6.9	0.35
FPC-01	0.001U	0.556U	0.463U	6.7	0.95
PDC-01	0.001U	0.545U	0.455U	6.6	0.26
PCM-01	0.001U	0.545U	0.455U	6.8	0.21
ST-PC-01	0.001U	0.556U	0.463U	7	0.12
MW-03 ^{Dup-1}	0.001U	0.566U	0.463U	NA	NA
MW-13 ^{Dup-1}	0.001U	0.545U	0.455U	NA	NA
Trip Blank	NA	NA	NA	NA	NA

Notes:

#/SHADE	Analyte detected above the limits of quantification but below the cleanup limits
#/BOLD	Analyte detected above the limits of quantification and above the cleanup limits
#/J	Quantified concentration is an estimate
#/U	Analyte was not detected at the listed limits of quantification
#/U Bold/Italics	Laboratory detection limit for analyte is greater than ADEC Cleanup Limit
ID ^{D#}	Denotes duplicate sample pairings
NA	Sample not analyzed for the specified analyte
NE	No established limit for monitored parameters

Table 3
Quality Control Summary; Duplicate Pair Analysis

Duplicate Pair 1; Groundwater					
Sample ID	MW-3	MW-13	Difference	Average	RPD
Analyte	mg/L	mg/kg	mg/kg	mg/kg	%
DRO	ND	ND	na	na	na
RRO	ND	ND	na	na	na
Lead	ND	ND	na	na	na
Duplicate Pair 2, Soil					
Sample ID	cz190,20	cz-002-002	Difference	Average	RPD
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%
DRO	ND	ND	na	na	na
RRO	77.2	87	9.8	82.1	11.9%
Lead	3.54	5.17	1.63	4.355	37.4%

Notes:

ND	Analyte not detected at the laboratory detection limit
na	The calculation is not applicable.
RPD	Relative percent difference

Table 4
Baseline Sampling Locations

Sample ID	Sample Location		Description of Sampling Locations
	Latitude	Longitude	
MFD-01	56.35378	132.31133	Monofill site primary discharge via French Drain
MFD-02	56.35398	132.31233	Monofill site secondary discharge via Pats Creek Road culvert
PDC-01	56.35543	132.31666	South bank of Principal tributary downgradient of monofill at confluence of drainage from forested wetland/muskeg meadows
FPC-01	56.35429	132.32029	West bank of Principal tributary just downstream of fish passage culvert beneath Pats Creek Road
MC-US-01	56.35260	132.32097	South bank of Principal tributary just upstream of confluence with Pats Creek
MC-DS-01	56.35222	132.32177	North bank of Pats Creek just downstream of confluence with Principal tributary
ST-PC-01	56.35218	132.33005	North bank of Pats Creek just downstream of confluence with short fish-bearing tributary
PCM-01	56.35086	132.33337	Deposition zone just below the last log jam where Pats Creek enters into Pats Lake
MW-3	56.35354	132.31179	Monitoring well in the monofill repository site
PLR-S1	56.34970	132.33948	Pats Lake shoreline at boat launch south of camping/picnic area 1
PLR-S2	56.35084	132.33814	Pats Lake shoreline
PLR-S3	56.35164	132.33644	Pats Lake shoreline near culvert south of camping/picnic area 2



Appendix 3

Site Photographs



Photo 1: Looking north from above at the monofill repository site after completion of two-foot base course of drain rock. Site drainage is to the north into a drainage channel along the west and northern edges of the repository beginning in upper left of image, then to the east.



Photo 2: Looking west at the drainage channel along the northern edge of the repository site.



Photo 3: Looking northeast at the drainage channel along the northern edge of the repository site. Note surface water in portion of channel at left prior to entering the French Drain which diverts flow subsurface to the east beneath parking area rock pad (location of car in image).



Photo 4: Looking north at continuation of secondary site drainage channel along west side of access driveway to the site. Note absence of water in the drainage. This drainage provides overflow of water beyond carrying capacity of the French Drain system.



Photo 5: Looking north at sampling location MFD-01 immediately east of the French Drain discharge endpoint. Note buried automotive transmission case found at sampling location.



Photo 6: Looking east-southeast into forested area near sampling location MFD-01. Note two partially buried lead-acid batteries. Batteries are located within 20 feet of sample location MFD-01. Additional automotive and miscellaneous debris was also observe in this area.



Photo 7: Looking east at the discharge endpoint of the French Drain system and sampling location MFD-01.



Photo 8: Looking southwest at sampling location MFD-02. This culvert discharges water from the repository site via the secondary site drainage channel, beneath Pats Creek Road and into a forested slope north of the Road.

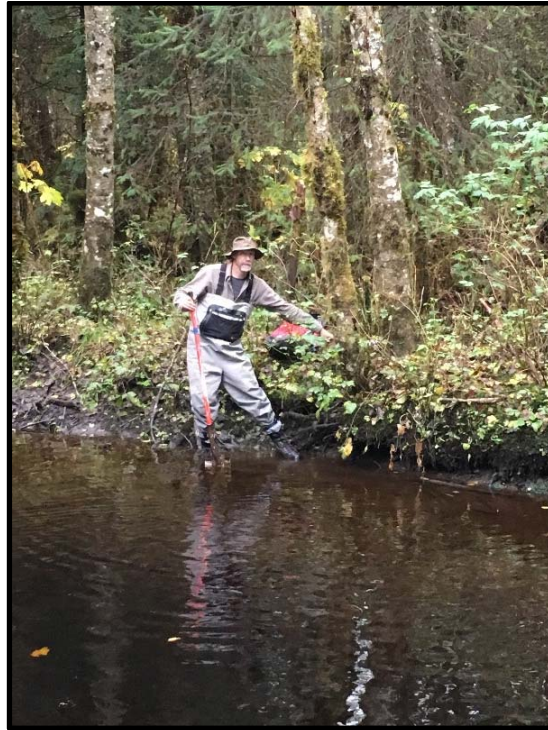


Photo 9: Looking south at sampling location MC-US-01. Sampling location in south bank of the principal tributary a short distance upstream from the confluence of this tributary and Pats Creek.



Photo 10: Looking north at sampling location MC-DS-01. Sampling location in deposition zone of Pats Creek a short distance downstream from the confluence of the principal tributary and Pats Creek.



Photo 11: Looking southeast at sampling location PDC-01 in the deposition zone behind log jam in the principal tributary downgradient from repository site. PDC-01 is just downstream from small channel draining forested wetland and muskeg meadows to the south.



Photo 12: Looking south at the small drainage channel draining the forested wetland and muskeg meadows to the south into the principal tributary topographically downgradient from the repository Site. Sampling location PDC-01 is just right (west) of this image.



Photo 13: Looking north at sampling ST-PC-01 along north bank of Pats Creek immediately downstream from the confluence with a short, un-named fish bearing tributary creek (at image right).



Photo 14: Looking southeast at sampling location PCM-01 in the deposition zone behind log where Pats Creek enters into Pats Lake.



Photo 15: Looking northeast at sampling location PLR-S1 between Pats Creek Road (at left) and Pats Lake.



Photo 16: Looking northeast at sampling location PLR-S2, (just behind/right of cluster of trees) between Pats Creek Road (at left) and Pats Lake (at right).

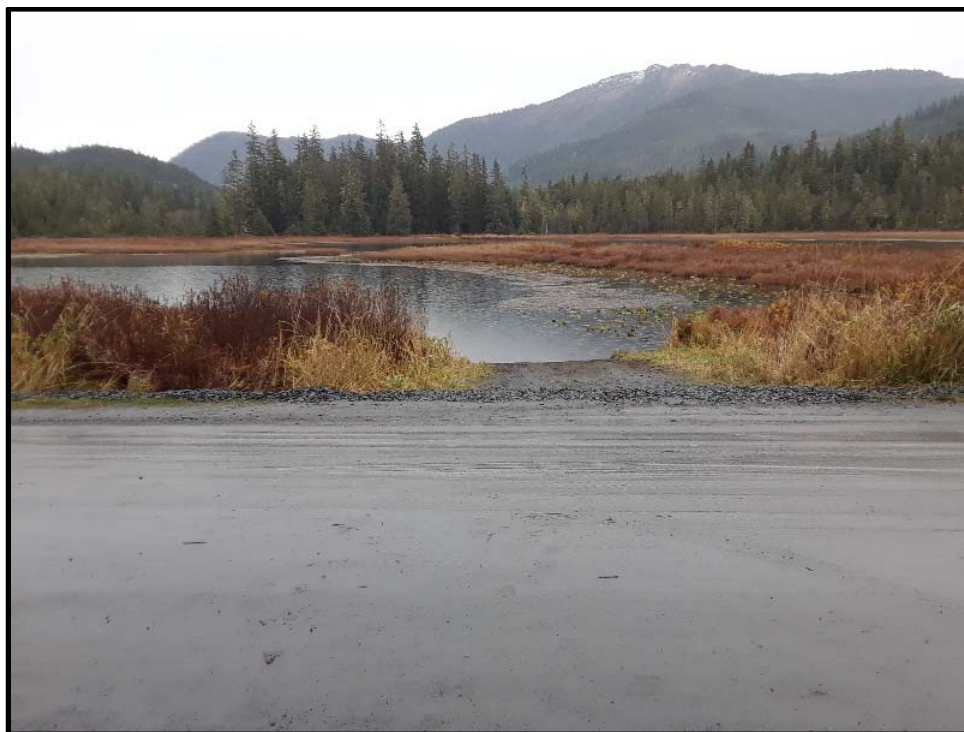


Photo 17: Looking southwest at sampling location PLR-S1 and PLR-S2 (duplicate) at base of the boat ramp along the edge of Pats Lake.



Photo 18: Looking northeast at monitoring well (yellow monument at image right) remaining in the northeastern portion of the repository site. Samples MW-3 and MW-13 (duplicate) were collected from this well.



Appendix 4

Laboratory Reports and Laboratory Data Review Checklists

Laboratory Report of Analysis

To: Nortech
5438 Shaune Drive, Suite B
Juneau, AK 99801
(360)359-8865

Report Number: **1177018**

Client Project: **Wrangell Soil Repository**

Dear Ron Pratt,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Victoria at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.



SGS North America Inc.
Environmental Services – Alaska Division
Project Manager

Victoria Pennick
2017.10.20
12:48:03 -08'00'

Victoria Pennick
Project Manager
Victoria.Pennick@sgs.com

Date

Print Date: 10/20/2017 8:37:12AM

Case Narrative

SGS Client: **Nortech**
 SGS Project: **1177018**
 Project Name/Site: **Wrangell Soil Repository**
 Project Contact: **Ron Pratt**

Refer to sample receipt form for information on sample condition.

MFD-01 (1177018011) PS

8260C - Surrogate recovery for 4-bromofluorobenzene (50.6%) does not meet QC criteria. Sample was analyzed twice and results confirmed.

AK102/103 + SiGel - Sample was extracted and analyzed past the 14 day hold time per client request.

MFD-02 (1177018012) PS

AK102 - Surrogate recovery for 5a-androstane (184%) does not meet QC criteria due to matrix interference.

8260C - Surrogate recovery for 4-bromofluorobenzene (185%) does not meet QC criteria due to matrix interference.

AK102/103 + SiGel - Sample was extracted and analyzed past the 14 day hold time per client request.

MC-US-01 (1177018014) PS

8260C - Surrogate recovery for 4-bromofluorobenzene (155%) does not meet QC criteria due to matrix interference.

FPC-01 (1177018015) PS

8260C - Surrogate recovery for 4-bromofluorobenzene (161%) does not meet QC criteria due to matrix interference.

PDC-01 (1177018016) PS

8260C - Surrogate recovery for 4-bromofluorobenzene (152%) does not meet QC criteria due to matrix interference.

LCSD for HBN 1770129 [VXX/3149 (1419845) LCSD

8260C - LCSD RPD for 1,2,4-trichlorobenzene (20.9), naphthalene (25.1), and 1,2,3-trichlorobenzene (28.1) does not meet QC criteria. These analytes were not detected in the associated samples.

1178436017MS (1418242) MS

8260C - MS recovery for trichlorofluoromethane (150%) does not meet QC criteria. This analyte was not detected above the LOQ in the parent sample.

1177089001(1418815MS) (1418246) MS

8260C - MS recovery for carbon disulfide (133%) does not meet QC criteria. Refer to LCS for accuracy.

1178436017MSD (1418243) MSD

8260C - MSD RPDs for naphthalene (24.3), and 1,2,3-trichlorobenzene (24.9) do not meet QC criteria. These analytes were not detected in the parent sample.

1177089001(1418815MSD) (1418247) MSD

8260C - MSD RPDs for naphthalene (21.8), and 1,2,3-trichlorobenzene (26.4) do not meet QC criteria. These analytes were not detected in the parent sample.

Note: chromatograms are included for samples MFD-01 and MFD-02, including the original analysis within holding time, and the reanalysis (straight and SiGel cleanup) outside of holding time. The chromatograms resemble biogenic materials, and they are not homogenous between the aliquots.

Also noted, samples 1177018-011,-012, -014 and -016 were very high in moisture content, and "J" flags have been enabled for these samples. Results are evaluated to the DL.

Case Narrative

SGS Client: **Nortech**
SGS Project: **1177018**
Project Name/Site: **Wrangell Soil Repository**
Project Contact: **Ron Pratt**

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

Print Date: 10/20/2017 8:37:13AM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are **AK00971 DW Chemistry (Provisionally Certified as of 10/12/2017) & Microbiology (Provisionally Certified as of 9/21/2017) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103).** Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

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

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
MW-03	1177018001	09/29/2017	10/03/2017	Water (Surface, Eff., Ground)
MW-13	1177018002	09/29/2017	10/03/2017	Water (Surface, Eff., Ground)
MFD-01	1177018003	09/29/2017	10/03/2017	Water (Surface, Eff., Ground)
MFD-02	1177018004	09/29/2017	10/03/2017	Water (Surface, Eff., Ground)
MC-DS-01	1177018005	09/29/2017	10/03/2017	Water (Surface, Eff., Ground)
MC-US-01	1177018006	09/29/2017	10/03/2017	Water (Surface, Eff., Ground)
EPC-01	1177018007	09/29/2017	10/03/2017	Water (Surface, Eff., Ground)
PDC-01	1177018008	09/29/2017	10/03/2017	Water (Surface, Eff., Ground)
PCM-01	1177018009	09/29/2017	10/03/2017	Water (Surface, Eff., Ground)
ST-PC-01	1177018010	09/29/2017	10/03/2017	Water (Surface, Eff., Ground)
MFD-01	1177018011	09/29/2017	10/03/2017	Soil/Solid (dry weight)
MFD-02	1177018012	09/29/2017	10/03/2017	Soil/Solid (dry weight)
MC-DS-01	1177018013	09/29/2017	10/03/2017	Soil/Solid (dry weight)
MC-US-01	1177018014	09/29/2017	10/03/2017	Soil/Solid (dry weight)
FPC-01	1177018015	09/29/2017	10/03/2017	Soil/Solid (dry weight)
PDC-01	1177018016	09/29/2017	10/03/2017	Soil/Solid (dry weight)
PCM-01	1177018017	09/29/2017	10/03/2017	Soil/Solid (dry weight)
ST-PC-01	1177018018	09/29/2017	10/03/2017	Soil/Solid (dry weight)
Trip Blank (W)	1177018019	09/29/2017	10/03/2017	Water (Surface, Eff., Ground)
Trip Blank (S)	1177018020	09/29/2017	10/03/2017	Soil/Solid (dry weight)

<u>Method</u>	<u>Method Description</u>
AK102	Diesel/Residual Range Organics
AK103	Diesel/Residual Range Organics
AK102	Diesel/Residual Range Organics w/ Silica
AK103	Diesel/Residual Range Organics w/ Silica
AK102	DRO/RRO Low Volume Water
AK103	DRO/RRO Low Volume Water
SW6020A	Metals by ICP-MS
SW6020A	Metals by ICP-MS (S)
SM21 2540G	Percent Solids SM2540G
SW8260C	VOC 8260 (S) Field Extracted
SW8260C	Volatile Organic Compounds (W) FULL

Print Date: 10/20/2017 8:37:15AM

Detectable Results Summary

Client Sample ID: **MW-13**

Lab Sample ID: 1177018002

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Chloromethane	1.32	ug/L

Client Sample ID: **MFD-01**

Lab Sample ID: 1177018003

Metals by ICP/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Lead	709	ug/L

Client Sample ID: **MFD-01**

Lab Sample ID: 1177018011

Metals by ICP/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Lead	135	mg/Kg
Diesel Range Organics	4400	mg/Kg
Diesel Range Organics	2580	mg/Kg
Residual Range Organics	8830	mg/Kg
Residual Range Organics	11700	mg/Kg

Semivolatile Organic Fuels

Semivolatile Organic Fuels Department, Silica

DRO Silica Gel	2200	mg/Kg
RRO Silica Gel	4130	mg/Kg

Client Sample ID: **MFD-02**

Lab Sample ID: 1177018012

Metals by ICP/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Lead	6.64	mg/Kg
Diesel Range Organics	157	mg/Kg
Diesel Range Organics	23.0J	mg/Kg
Residual Range Organics	88.4	mg/Kg
Residual Range Organics	566	mg/Kg

Semivolatile Organic Fuels

Semivolatile Organic Fuels Department, Silica

RRO Silica Gel	60.5J	mg/Kg
----------------	-------	-------

Volatile GC/MS

4-Isopropyltoluene	303	ug/Kg
Toluene	26.8J	ug/Kg

Client Sample ID: **MC-DS-01**

Lab Sample ID: 1177018013

Metals by ICP/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Lead	5.25	mg/Kg

Client Sample ID: **MC-US-01**

Lab Sample ID: 1177018014

Metals by ICP/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Lead	8.57	mg/Kg
Diesel Range Organics	45.1	mg/Kg
Residual Range Organics	418	mg/Kg

Semivolatile Organic Fuels

Client Sample ID: **FPC-01**

Lab Sample ID: 1177018015

Metals by ICP/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Lead	1.65	mg/Kg
Residual Range Organics	30.4	mg/Kg

Semivolatile Organic Fuels

Client Sample ID: **PDC-01**

Lab Sample ID: 1177018016

Metals by ICP/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Lead	3.93	mg/Kg
Diesel Range Organics	87.3	mg/Kg
Residual Range Organics	508	mg/Kg

Semivolatile Organic Fuels

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Detectable Results Summary

Client Sample ID: **PCM-01**

Lab Sample ID: 1177018017

Semivolatile Organic Fuels

Parameter

Residual Range Organics

Result

42.4

Units

mg/Kg

Client Sample ID: **ST-PC-01**

Lab Sample ID: 1177018018

Metals by ICP/MS

Semivolatile Organic Fuels

Parameter

Lead

Residual Range Organics

Result

2.64

33.9

Units

mg/Kg

mg/Kg

Print Date: 10/20/2017 8:37:16AM

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200 West Potter Drive, Anchorage, AK 99518

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Results of MW-03

Client Sample ID: **MW-03**
Client Project ID: **Wrangell Soil Repository**
Lab Sample ID: 1177018001
Lab Project ID: 1177018

Collection Date: 09/29/17 08:35
Received Date: 10/03/17 08:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Lead	1.00 U	1.00	0.310	ug/L	5		10/05/17 17:30

Batch Information

Analytical Batch: MMS9965
Analytical Method: SW6020A
Analyst: VDL
Analytical Date/Time: 10/05/17 17:30
Container ID: 1177018001-F

Prep Batch: MXX31120
Prep Method: SW3010A
Prep Date/Time: 10/05/17 11:17
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 25 mL

Print Date: 10/20/2017 8:37:17AM

SGS North America Inc.

200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

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Results of MW-03

Client Sample ID: **MW-03**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018001
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:35
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.556 U	0.556	0.167	mg/L	1		10/11/17 21:32
Surrogates							
5a Androstane (surr)	93.7	50-150		%	1		10/11/17 21:32

Batch Information

Analytical Batch: XFC13877
 Analytical Method: AK102
 Analyst: JMG
 Analytical Date/Time: 10/11/17 21:32
 Container ID: 1177018001-D

Prep Batch: XXX38613
 Prep Method: SW3520C
 Prep Date/Time: 10/09/17 08:08
 Prep Initial Wt./Vol.: 270 mL
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	0.463 U	0.463	0.139	mg/L	1		10/11/17 21:32
Surrogates							
n-Triacontane-d62 (surr)	101	50-150		%	1		10/11/17 21:32

Batch Information

Analytical Batch: XFC13877
 Analytical Method: AK103
 Analyst: JMG
 Analytical Date/Time: 10/11/17 21:32
 Container ID: 1177018001-D

Prep Batch: XXX38613
 Prep Method: SW3520C
 Prep Date/Time: 10/09/17 08:08
 Prep Initial Wt./Vol.: 270 mL
 Prep Extract Vol: 1 mL

Print Date: 10/20/2017 8:37:17AM

Results of MW-03

Client Sample ID: **MW-03**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018001
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:35
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.500 U	0.500	0.150	ug/L	1		10/13/17 02:31
1,1,1-Trichloroethane	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
1,1,2,2-Tetrachloroethane	0.500 U	0.500	0.150	ug/L	1		10/13/17 02:31
1,1,2-Trichloroethane	0.400 U	0.400	0.120	ug/L	1		10/13/17 02:31
1,1-Dichloroethane	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
1,1-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
1,1-Dichloropropene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
1,2,3-Trichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
1,2,3-Trichloropropane	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
1,2,4-Trichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
1,2,4-Trimethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
1,2-Dibromo-3-chloropropane	10.0 U	10.0	3.10	ug/L	1		10/13/17 02:31
1,2-Dibromoethane	0.0750 U	0.0750	0.0180	ug/L	1		10/13/17 02:31
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
1,2-Dichloroethane	0.500 U	0.500	0.150	ug/L	1		10/13/17 02:31
1,2-Dichloropropane	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
1,3,5-Trimethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
1,3-Dichloropropane	0.500 U	0.500	0.150	ug/L	1		10/13/17 02:31
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		10/13/17 02:31
2,2-Dichloropropane	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
2-Butanone (MEK)	10.0 U	10.0	3.10	ug/L	1		10/13/17 02:31
2-Chlorotoluene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
2-Hexanone	10.0 U	10.0	3.10	ug/L	1		10/13/17 02:31
4-Chlorotoluene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
4-Isopropyltoluene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
4-Methyl-2-pentanone (MIBK)	10.0 U	10.0	3.10	ug/L	1		10/13/17 02:31
Benzene	0.400 U	0.400	0.120	ug/L	1		10/13/17 02:31
Bromobenzene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
Bromochloromethane	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
Bromodichloromethane	0.500 U	0.500	0.150	ug/L	1		10/13/17 02:31
Bromoform	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
Bromomethane	5.00 U	5.00	1.50	ug/L	1		10/13/17 02:31
Carbon disulfide	10.0 U	10.0	3.10	ug/L	1		10/13/17 02:31
Carbon tetrachloride	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		10/13/17 02:31
Chloroethane	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31

Print Date: 10/20/2017 8:37:17AM

Results of MW-03

Client Sample ID: **MW-03**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018001
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:35
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
Chloromethane	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
cis-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
cis-1,3-Dichloropropene	0.500 U	0.500	0.150	ug/L	1		10/13/17 02:31
Dibromochloromethane	0.500 U	0.500	0.150	ug/L	1		10/13/17 02:31
Dibromomethane	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
Dichlorodifluoromethane	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
Freon-113	10.0 U	10.0	3.10	ug/L	1		10/13/17 02:31
Hexachlorobutadiene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
Isopropylbenzene (Cumene)	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
Methylene chloride	5.00 U	5.00	1.00	ug/L	1		10/13/17 02:31
Methyl-t-butyl ether	10.0 U	10.0	3.10	ug/L	1		10/13/17 02:31
Naphthalene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
n-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
n-Propylbenzene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
o-Xylene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		10/13/17 02:31
sec-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
Styrene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
tert-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
Tetrachloroethene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
Toluene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
trans-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
trans-1,3-Dichloropropene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
Trichloroethene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
Trichlorofluoromethane	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:31
Vinyl acetate	10.0 U	10.0	3.10	ug/L	1		10/13/17 02:31
Vinyl chloride	0.150 U	0.150	0.0500	ug/L	1		10/13/17 02:31
Xylenes (total)	3.00 U	3.00	1.00	ug/L	1		10/13/17 02:31
Surrogates							
1,2-Dichloroethane-D4 (surr)	106	81-118		%	1		10/13/17 02:31
4-Bromofluorobenzene (surr)	103	85-114		%	1		10/13/17 02:31
Toluene-d8 (surr)	98	89-112		%	1		10/13/17 02:31

Print Date: 10/20/2017 8:37:17AM

Results of **MW-03**

Client Sample ID: **MW-03**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018001
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:35
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS17306
 Analytical Method: SW8260C
 Analyst: FDR
 Analytical Date/Time: 10/13/17 02:31
 Container ID: 1177018001-A

Prep Batch: VXX31497
 Prep Method: SW5030B
 Prep Date/Time: 10/12/17 00:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 10/20/2017 8:37:17AM



Results of MW-13

Client Sample ID: **MW-13**
Client Project ID: **Wrangell Soil Repository**
Lab Sample ID: 1177018002
Lab Project ID: 1177018

Collection Date: 09/29/17 08:45
Received Date: 10/03/17 08:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Lead	1.00 U	1.00	0.310	ug/L	5		10/05/17 19:58

Batch Information

Analytical Batch: MMS9965
Analytical Method: SW6020A
Analyst: VDL
Analytical Date/Time: 10/05/17 19:58
Container ID: 1177018002-F

Prep Batch: MXX31120
Prep Method: SW3010A
Prep Date/Time: 10/05/17 11:17
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 25 mL

Print Date: 10/20/2017 8:37:17AM

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Results of MW-13

Client Sample ID: **MW-13**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018002
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:45
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.545 U	0.545	0.164	mg/L	1		10/11/17 21:52
Surrogates							
5a Androstane (surr)	94.5	50-150		%	1		10/11/17 21:52

Batch Information

Analytical Batch: XFC13877
 Analytical Method: AK102
 Analyst: JMG
 Analytical Date/Time: 10/11/17 21:52
 Container ID: 1177018002-D

Prep Batch: XXX38613
 Prep Method: SW3520C
 Prep Date/Time: 10/09/17 08:08
 Prep Initial Wt./Vol.: 275 mL
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	0.455 U	0.455	0.136	mg/L	1		10/11/17 21:52
Surrogates							
n-Triacontane-d62 (surr)	103	50-150		%	1		10/11/17 21:52

Batch Information

Analytical Batch: XFC13877
 Analytical Method: AK103
 Analyst: JMG
 Analytical Date/Time: 10/11/17 21:52
 Container ID: 1177018002-D

Prep Batch: XXX38613
 Prep Method: SW3520C
 Prep Date/Time: 10/09/17 08:08
 Prep Initial Wt./Vol.: 275 mL
 Prep Extract Vol: 1 mL

Print Date: 10/20/2017 8:37:17AM

Results of MW-13

Client Sample ID: **MW-13**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018002
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:45
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.500 U	0.500	0.150	ug/L	1		10/13/17 02:48
1,1,1-Trichloroethane	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
1,1,2,2-Tetrachloroethane	0.500 U	0.500	0.150	ug/L	1		10/13/17 02:48
1,1,2-Trichloroethane	0.400 U	0.400	0.120	ug/L	1		10/13/17 02:48
1,1-Dichloroethane	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
1,1-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
1,1-Dichloropropene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
1,2,3-Trichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
1,2,3-Trichloropropane	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
1,2,4-Trichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
1,2,4-Trimethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
1,2-Dibromo-3-chloropropane	10.0 U	10.0	3.10	ug/L	1		10/13/17 02:48
1,2-Dibromoethane	0.0750 U	0.0750	0.0180	ug/L	1		10/13/17 02:48
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
1,2-Dichloroethane	0.500 U	0.500	0.150	ug/L	1		10/13/17 02:48
1,2-Dichloropropane	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
1,3,5-Trimethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
1,3-Dichloropropane	0.500 U	0.500	0.150	ug/L	1		10/13/17 02:48
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		10/13/17 02:48
2,2-Dichloropropane	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
2-Butanone (MEK)	10.0 U	10.0	3.10	ug/L	1		10/13/17 02:48
2-Chlorotoluene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
2-Hexanone	10.0 U	10.0	3.10	ug/L	1		10/13/17 02:48
4-Chlorotoluene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
4-Isopropyltoluene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
4-Methyl-2-pentanone (MIBK)	10.0 U	10.0	3.10	ug/L	1		10/13/17 02:48
Benzene	0.400 U	0.400	0.120	ug/L	1		10/13/17 02:48
Bromobenzene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
Bromochloromethane	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
Bromodichloromethane	0.500 U	0.500	0.150	ug/L	1		10/13/17 02:48
Bromoform	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
Bromomethane	5.00 U	5.00	1.50	ug/L	1		10/13/17 02:48
Carbon disulfide	10.0 U	10.0	3.10	ug/L	1		10/13/17 02:48
Carbon tetrachloride	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		10/13/17 02:48
Chloroethane	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48

Print Date: 10/20/2017 8:37:17AM

Results of MW-13

Client Sample ID: **MW-13**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018002
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:45
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
Chloromethane	1.32	1.00	0.310	ug/L	1		10/13/17 02:48
cis-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
cis-1,3-Dichloropropene	0.500 U	0.500	0.150	ug/L	1		10/13/17 02:48
Dibromochloromethane	0.500 U	0.500	0.150	ug/L	1		10/13/17 02:48
Dibromomethane	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
Dichlorodifluoromethane	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
Freon-113	10.0 U	10.0	3.10	ug/L	1		10/13/17 02:48
Hexachlorobutadiene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
Isopropylbenzene (Cumene)	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
Methylene chloride	5.00 U	5.00	1.00	ug/L	1		10/13/17 02:48
Methyl-t-butyl ether	10.0 U	10.0	3.10	ug/L	1		10/13/17 02:48
Naphthalene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
n-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
n-Propylbenzene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
o-Xylene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		10/13/17 02:48
sec-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
Styrene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
tert-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
Tetrachloroethene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
Toluene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
trans-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
trans-1,3-Dichloropropene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
Trichloroethene	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
Trichlorofluoromethane	1.00 U	1.00	0.310	ug/L	1		10/13/17 02:48
Vinyl acetate	10.0 U	10.0	3.10	ug/L	1		10/13/17 02:48
Vinyl chloride	0.150 U	0.150	0.0500	ug/L	1		10/13/17 02:48
Xylenes (total)	3.00 U	3.00	1.00	ug/L	1		10/13/17 02:48
Surrogates							
1,2-Dichloroethane-D4 (surr)	109	81-118		%	1		10/13/17 02:48
4-Bromofluorobenzene (surr)	99.3	85-114		%	1		10/13/17 02:48
Toluene-d8 (surr)	98.4	89-112		%	1		10/13/17 02:48

Print Date: 10/20/2017 8:37:17AM

Results of MW-13

Client Sample ID: **MW-13**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018002
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:45
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS17306
 Analytical Method: SW8260C
 Analyst: FDR
 Analytical Date/Time: 10/13/17 02:48
 Container ID: 1177018002-A

Prep Batch: VXX31497
 Prep Method: SW5030B
 Prep Date/Time: 10/12/17 00:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 10/20/2017 8:37:17AM

Results of MFD-01

Client Sample ID: **MFD-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018003
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:25
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Lead	709	5.00	1.55	ug/L	5		10/05/17 20:12

Batch Information

Analytical Batch: MMS9965
 Analytical Method: SW6020A
 Analyst: VDL
 Analytical Date/Time: 10/05/17 20:12
 Container ID: 1177018003-F

Prep Batch: MXX31120
 Prep Method: SW3010A
 Prep Date/Time: 10/05/17 11:17
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 25 mL

Print Date: 10/20/2017 8:37:17AM

Results of MFD-01

Client Sample ID: **MFD-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018003
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:25
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.577 U	0.577	0.173	mg/L	1		10/11/17 22:13
Surrogates							
5a Androstane (surr)	95.5	50-150		%	1		10/11/17 22:13

Batch Information

Analytical Batch: XFC13877
 Analytical Method: AK102
 Analyst: JMG
 Analytical Date/Time: 10/11/17 22:13
 Container ID: 1177018003-D

Prep Batch: XXX38613
 Prep Method: SW3520C
 Prep Date/Time: 10/09/17 08:08
 Prep Initial Wt./Vol.: 260 mL
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	0.481 U	0.481	0.144	mg/L	1		10/11/17 22:13
Surrogates							
n-Triacontane-d62 (surr)	97.8	50-150		%	1		10/11/17 22:13

Batch Information

Analytical Batch: XFC13877
 Analytical Method: AK103
 Analyst: JMG
 Analytical Date/Time: 10/11/17 22:13
 Container ID: 1177018003-D

Prep Batch: XXX38613
 Prep Method: SW3520C
 Prep Date/Time: 10/09/17 08:08
 Prep Initial Wt./Vol.: 260 mL
 Prep Extract Vol: 1 mL

Print Date: 10/20/2017 8:37:17AM

Results of MFD-01

Client Sample ID: **MFD-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018003
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:25
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:04
1,1,1-Trichloroethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
1,1,2,2-Tetrachloroethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:04
1,1,2-Trichloroethane	0.400 U	0.400	0.120	ug/L	1		10/12/17 13:04
1,1-Dichloroethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
1,1-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
1,1-Dichloropropene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
1,2,3-Trichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
1,2,3-Trichloropropane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
1,2,4-Trichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
1,2,4-Trimethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
1,2-Dibromo-3-chloropropane	10.0 U	10.0	3.10	ug/L	1		10/12/17 13:04
1,2-Dibromoethane	0.0750 U	0.0750	0.0180	ug/L	1		10/12/17 13:04
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
1,2-Dichloroethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:04
1,2-Dichloropropane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
1,3,5-Trimethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
1,3-Dichloropropane	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:04
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:04
2,2-Dichloropropane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
2-Butanone (MEK)	10.0 U	10.0	3.10	ug/L	1		10/12/17 13:04
2-Chlorotoluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
2-Hexanone	10.0 U	10.0	3.10	ug/L	1		10/13/17 11:11
4-Chlorotoluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
4-Isopropyltoluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
4-Methyl-2-pentanone (MIBK)	10.0 U	10.0	3.10	ug/L	1		10/12/17 13:04
Benzene	0.400 U	0.400	0.120	ug/L	1		10/12/17 13:04
Bromobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
Bromochloromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
Bromodichloromethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:04
Bromoform	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
Bromomethane	5.00 U	5.00	1.50	ug/L	1		10/12/17 13:04
Carbon disulfide	10.0 U	10.0	3.10	ug/L	1		10/12/17 13:04
Carbon tetrachloride	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:04
Chloroethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04

Print Date: 10/20/2017 8:37:17AM

Results of MFD-01

Client Sample ID: **MFD-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018003
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:25
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
Chloromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
cis-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
cis-1,3-Dichloropropene	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:04
Dibromochloromethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:04
Dibromomethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
Dichlorodifluoromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
Freon-113	10.0 U	10.0	3.10	ug/L	1		10/12/17 13:04
Hexachlorobutadiene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
Isopropylbenzene (Cumene)	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
Methylene chloride	5.00 U	5.00	1.00	ug/L	1		10/12/17 13:04
Methyl-t-butyl ether	10.0 U	10.0	3.10	ug/L	1		10/12/17 13:04
Naphthalene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
n-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
n-Propylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
o-Xylene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		10/12/17 13:04
sec-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
Styrene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
tert-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
Tetrachloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
Toluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
trans-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
trans-1,3-Dichloropropene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
Trichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
Trichlorofluoromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:04
Vinyl acetate	10.0 U	10.0	3.10	ug/L	1		10/12/17 13:04
Vinyl chloride	0.150 U	0.150	0.0500	ug/L	1		10/12/17 13:04
Xylenes (total)	3.00 U	3.00	1.00	ug/L	1		10/12/17 13:04
Surrogates							
1,2-Dichloroethane-D4 (surr)	104	81-118		%	1		10/12/17 13:04
4-Bromofluorobenzene (surr)	96	85-114		%	1		10/12/17 13:04
Toluene-d8 (surr)	98.1	89-112		%	1		10/12/17 13:04

Print Date: 10/20/2017 8:37:17AM

Results of MFD-01

Client Sample ID: **MFD-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018003
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:25
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS17309
 Analytical Method: SW8260C
 Analyst: FDR
 Analytical Date/Time: 10/13/17 11:11
 Container ID: 1177018003-A

Prep Batch: VXX31501
 Prep Method: SW5030B
 Prep Date/Time: 10/12/17 00:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Analytical Batch: VMS17305
 Analytical Method: SW8260C
 Analyst: NRO
 Analytical Date/Time: 10/12/17 13:04
 Container ID: 1177018003-A

Prep Batch: VXX31498
 Prep Method: SW5030B
 Prep Date/Time: 10/12/17 01:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 10/20/2017 8:37:17AM



Results of MFD-02

Client Sample ID: **MFD-02**
Client Project ID: **Wrangell Soil Repository**
Lab Sample ID: 1177018004
Lab Project ID: 1177018

Collection Date: 09/29/17 08:58
Received Date: 10/03/17 08:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Lead	1.00 U	1.00	0.310	ug/L	5		10/05/17 20:16

Batch Information

Analytical Batch: MMS9965
Analytical Method: SW6020A
Analyst: VDL
Analytical Date/Time: 10/05/17 20:16
Container ID: 1177018004-F

Prep Batch: MXX31120
Prep Method: SW3010A
Prep Date/Time: 10/05/17 11:17
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 25 mL

Print Date: 10/20/2017 8:37:17AM

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Results of MFD-02

Client Sample ID: **MFD-02**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018004
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:58
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.536 U	0.536	0.161	mg/L	1		10/11/17 22:34
Surrogates							
5a Androstane (surr)	93	50-150		%	1		10/11/17 22:34

Batch Information

Analytical Batch: XFC13877
 Analytical Method: AK102
 Analyst: JMG
 Analytical Date/Time: 10/11/17 22:34
 Container ID: 1177018004-D

Prep Batch: XXX38613
 Prep Method: SW3520C
 Prep Date/Time: 10/09/17 08:08
 Prep Initial Wt./Vol.: 280 mL
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	0.446 U	0.446	0.134	mg/L	1		10/11/17 22:34
Surrogates							
n-Triacontane-d62 (surr)	101	50-150		%	1		10/11/17 22:34

Batch Information

Analytical Batch: XFC13877
 Analytical Method: AK103
 Analyst: JMG
 Analytical Date/Time: 10/11/17 22:34
 Container ID: 1177018004-D

Prep Batch: XXX38613
 Prep Method: SW3520C
 Prep Date/Time: 10/09/17 08:08
 Prep Initial Wt./Vol.: 280 mL
 Prep Extract Vol: 1 mL

Print Date: 10/20/2017 8:37:17AM

Results of MFD-02

Client Sample ID: **MFD-02**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018004
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:58
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:20
1,1,1-Trichloroethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
1,1,2,2-Tetrachloroethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:20
1,1,2-Trichloroethane	0.400 U	0.400	0.120	ug/L	1		10/12/17 13:20
1,1-Dichloroethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
1,1-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
1,1-Dichloropropene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
1,2,3-Trichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
1,2,3-Trichloropropane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
1,2,4-Trichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
1,2,4-Trimethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
1,2-Dibromo-3-chloropropane	10.0 U	10.0	3.10	ug/L	1		10/12/17 13:20
1,2-Dibromoethane	0.0750 U	0.0750	0.0180	ug/L	1		10/12/17 13:20
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
1,2-Dichloroethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:20
1,2-Dichloropropane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
1,3,5-Trimethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
1,3-Dichloropropane	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:20
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:20
2,2-Dichloropropane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
2-Butanone (MEK)	10.0 U	10.0	3.10	ug/L	1		10/12/17 13:20
2-Chlorotoluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
2-Hexanone	10.0 U	10.0	3.10	ug/L	1		10/13/17 11:28
4-Chlorotoluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
4-Isopropyltoluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
4-Methyl-2-pentanone (MIBK)	10.0 U	10.0	3.10	ug/L	1		10/12/17 13:20
Benzene	0.400 U	0.400	0.120	ug/L	1		10/12/17 13:20
Bromobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
Bromochloromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
Bromodichloromethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:20
Bromoform	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
Bromomethane	5.00 U	5.00	1.50	ug/L	1		10/12/17 13:20
Carbon disulfide	10.0 U	10.0	3.10	ug/L	1		10/12/17 13:20
Carbon tetrachloride	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:20
Chloroethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20

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Results of MFD-02

Client Sample ID: **MFD-02**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018004
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:58
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
Chloromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
cis-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
cis-1,3-Dichloropropene	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:20
Dibromochloromethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:20
Dibromomethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
Dichlorodifluoromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
Freon-113	10.0 U	10.0	3.10	ug/L	1		10/12/17 13:20
Hexachlorobutadiene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
Isopropylbenzene (Cumene)	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
Methylene chloride	5.00 U	5.00	1.00	ug/L	1		10/12/17 13:20
Methyl-t-butyl ether	10.0 U	10.0	3.10	ug/L	1		10/12/17 13:20
Naphthalene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
n-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
n-Propylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
o-Xylene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		10/12/17 13:20
sec-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
Styrene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
tert-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
Tetrachloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
Toluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
trans-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
trans-1,3-Dichloropropene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
Trichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
Trichlorofluoromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:20
Vinyl acetate	10.0 U	10.0	3.10	ug/L	1		10/12/17 13:20
Vinyl chloride	0.150 U	0.150	0.0500	ug/L	1		10/12/17 13:20
Xylenes (total)	3.00 U	3.00	1.00	ug/L	1		10/12/17 13:20
Surrogates							
1,2-Dichloroethane-D4 (surr)	105	81-118		%	1		10/12/17 13:20
4-Bromofluorobenzene (surr)	96.2	85-114		%	1		10/12/17 13:20
Toluene-d8 (surr)	98.2	89-112		%	1		10/12/17 13:20

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Results of MFD-02

Client Sample ID: **MFD-02**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018004
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:58
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS17309
 Analytical Method: SW8260C
 Analyst: FDR
 Analytical Date/Time: 10/13/17 11:28
 Container ID: 1177018004-A

Prep Batch: VXX31501
 Prep Method: SW5030B
 Prep Date/Time: 10/12/17 00:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Analytical Batch: VMS17305
 Analytical Method: SW8260C
 Analyst: NRO
 Analytical Date/Time: 10/12/17 13:20
 Container ID: 1177018004-A

Prep Batch: VXX31498
 Prep Method: SW5030B
 Prep Date/Time: 10/12/17 01:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 10/20/2017 8:37:17AM

Results of MC-DS-01

Client Sample ID: **MC-DS-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018005
 Lab Project ID: 1177018

Collection Date: 09/29/17 10:50
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Lead	1.00 U	1.00	0.310	ug/L	5		10/05/17 20:21

Batch Information

Analytical Batch: MMS9965
 Analytical Method: SW6020A
 Analyst: VDL
 Analytical Date/Time: 10/05/17 20:21
 Container ID: 1177018005-F

Prep Batch: MXX31120
 Prep Method: SW3010A
 Prep Date/Time: 10/05/17 11:17
 Prep Initial Wt./Vol.: 25 mL
 Prep Extract Vol: 25 mL

Print Date: 10/20/2017 8:37:17AM

Results of MC-DS-01

Client Sample ID: **MC-DS-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018005
 Lab Project ID: 1177018

Collection Date: 09/29/17 10:50
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.536 U	0.536	0.161	mg/L	1		10/11/17 22:55
Surrogates							
5a Androstane (surr)	80.3	50-150		%	1		10/11/17 22:55

Batch Information

Analytical Batch: XFC13877
 Analytical Method: AK102
 Analyst: JMG
 Analytical Date/Time: 10/11/17 22:55
 Container ID: 1177018005-D

Prep Batch: XXX38613
 Prep Method: SW3520C
 Prep Date/Time: 10/09/17 08:08
 Prep Initial Wt./Vol.: 280 mL
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	0.446 U	0.446	0.134	mg/L	1		10/11/17 22:55
Surrogates							
n-Triacontane-d62 (surr)	85.8	50-150		%	1		10/11/17 22:55

Batch Information

Analytical Batch: XFC13877
 Analytical Method: AK103
 Analyst: JMG
 Analytical Date/Time: 10/11/17 22:55
 Container ID: 1177018005-D

Prep Batch: XXX38613
 Prep Method: SW3520C
 Prep Date/Time: 10/09/17 08:08
 Prep Initial Wt./Vol.: 280 mL
 Prep Extract Vol: 1 mL

Print Date: 10/20/2017 8:37:17AM

Results of MC-DS-01

Client Sample ID: **MC-DS-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018005
 Lab Project ID: 1177018

Collection Date: 09/29/17 10:50
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:36
1,1,1-Trichloroethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
1,1,2,2-Tetrachloroethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:36
1,1,2-Trichloroethane	0.400 U	0.400	0.120	ug/L	1		10/12/17 13:36
1,1-Dichloroethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
1,1-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
1,1-Dichloropropene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
1,2,3-Trichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
1,2,3-Trichloropropane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
1,2,4-Trichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
1,2,4-Trimethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
1,2-Dibromo-3-chloropropane	10.0 U	10.0	3.10	ug/L	1		10/12/17 13:36
1,2-Dibromoethane	0.0750 U	0.0750	0.0180	ug/L	1		10/12/17 13:36
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
1,2-Dichloroethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:36
1,2-Dichloropropane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
1,3,5-Trimethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
1,3-Dichloropropane	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:36
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:36
2,2-Dichloropropane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
2-Butanone (MEK)	10.0 U	10.0	3.10	ug/L	1		10/12/17 13:36
2-Chlorotoluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
2-Hexanone	10.0 U	10.0	3.10	ug/L	1		10/13/17 11:45
4-Chlorotoluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
4-Isopropyltoluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
4-Methyl-2-pentanone (MIBK)	10.0 U	10.0	3.10	ug/L	1		10/12/17 13:36
Benzene	0.400 U	0.400	0.120	ug/L	1		10/12/17 13:36
Bromobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
Bromochloromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
Bromodichloromethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:36
Bromoform	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
Bromomethane	5.00 U	5.00	1.50	ug/L	1		10/12/17 13:36
Carbon disulfide	10.0 U	10.0	3.10	ug/L	1		10/12/17 13:36
Carbon tetrachloride	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:36
Chloroethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36

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Results of MC-DS-01

Client Sample ID: **MC-DS-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018005
 Lab Project ID: 1177018

Collection Date: 09/29/17 10:50
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
Chloromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
cis-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
cis-1,3-Dichloropropene	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:36
Dibromochloromethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:36
Dibromomethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
Dichlorodifluoromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
Freon-113	10.0 U	10.0	3.10	ug/L	1		10/12/17 13:36
Hexachlorobutadiene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
Isopropylbenzene (Cumene)	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
Methylene chloride	5.00 U	5.00	1.00	ug/L	1		10/12/17 13:36
Methyl-t-butyl ether	10.0 U	10.0	3.10	ug/L	1		10/12/17 13:36
Naphthalene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
n-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
n-Propylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
o-Xylene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		10/12/17 13:36
sec-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
Styrene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
tert-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
Tetrachloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
Toluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
trans-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
trans-1,3-Dichloropropene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
Trichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
Trichlorofluoromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:36
Vinyl acetate	10.0 U	10.0	3.10	ug/L	1		10/12/17 13:36
Vinyl chloride	0.150 U	0.150	0.0500	ug/L	1		10/12/17 13:36
Xylenes (total)	3.00 U	3.00	1.00	ug/L	1		10/12/17 13:36
Surrogates							
1,2-Dichloroethane-D4 (surr)	108	81-118		%	1		10/12/17 13:36
4-Bromofluorobenzene (surr)	97.6	85-114		%	1		10/12/17 13:36
Toluene-d8 (surr)	99.7	89-112		%	1		10/12/17 13:36

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Results of MC-DS-01

Client Sample ID: **MC-DS-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018005
 Lab Project ID: 1177018

Collection Date: 09/29/17 10:50
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS17309
 Analytical Method: SW8260C
 Analyst: FDR
 Analytical Date/Time: 10/13/17 11:45
 Container ID: 1177018005-A

Prep Batch: VXX31501
 Prep Method: SW5030B
 Prep Date/Time: 10/12/17 00:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Analytical Batch: VMS17305
 Analytical Method: SW8260C
 Analyst: NRO
 Analytical Date/Time: 10/12/17 13:36
 Container ID: 1177018005-A

Prep Batch: VXX31498
 Prep Method: SW5030B
 Prep Date/Time: 10/12/17 01:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 10/20/2017 8:37:17AM



Results of MC-US-01

Client Sample ID: **MC-US-01**
Client Project ID: **Wrangell Soil Repository**
Lab Sample ID: 1177018006
Lab Project ID: 1177018

Collection Date: 09/29/17 11:05
Received Date: 10/03/17 08:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Lead	1.00 U	1.00	0.310	ug/L	5		10/05/17 20:25

Batch Information

Analytical Batch: MMS9965
Analytical Method: SW6020A
Analyst: VDL
Analytical Date/Time: 10/05/17 20:25
Container ID: 1177018006-F

Prep Batch: MXX31120
Prep Method: SW3010A
Prep Date/Time: 10/05/17 11:17
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 25 mL

Print Date: 10/20/2017 8:37:17AM

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Results of MC-US-01

Client Sample ID: **MC-US-01**
Client Project ID: **Wrangell Soil Repository**
Lab Sample ID: 1177018006
Lab Project ID: 1177018

Collection Date: 09/29/17 11:05
Received Date: 10/03/17 08:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.556 U	0.556	0.167	mg/L	1		10/11/17 23:15
Surrogates							
5a Androstane (surr)	80.9	50-150		%	1		10/11/17 23:15

Batch Information

Analytical Batch: XFC13877
Analytical Method: AK102
Analyst: JMG
Analytical Date/Time: 10/11/17 23:15
Container ID: 1177018006-D

Prep Batch: XXX38613
Prep Method: SW3520C
Prep Date/Time: 10/09/17 08:08
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	0.463 U	0.463	0.139	mg/L	1		10/11/17 23:15
Surrogates							
n-Triacontane-d62 (surr)	87.6	50-150		%	1		10/11/17 23:15

Batch Information

Analytical Batch: XFC13877
Analytical Method: AK103
Analyst: JMG
Analytical Date/Time: 10/11/17 23:15
Container ID: 1177018006-D

Prep Batch: XXX38613
Prep Method: SW3520C
Prep Date/Time: 10/09/17 08:08
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL

Print Date: 10/20/2017 8:37:17AM

Results of MC-US-01

Client Sample ID: **MC-US-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018006
 Lab Project ID: 1177018

Collection Date: 09/29/17 11:05
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:52
1,1,1-Trichloroethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
1,1,2,2-Tetrachloroethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:52
1,1,2-Trichloroethane	0.400 U	0.400	0.120	ug/L	1		10/12/17 13:52
1,1-Dichloroethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
1,1-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
1,1-Dichloropropene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
1,2,3-Trichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
1,2,3-Trichloropropane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
1,2,4-Trichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
1,2,4-Trimethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
1,2-Dibromo-3-chloropropane	10.0 U	10.0	3.10	ug/L	1		10/12/17 13:52
1,2-Dibromoethane	0.0750 U	0.0750	0.0180	ug/L	1		10/12/17 13:52
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
1,2-Dichloroethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:52
1,2-Dichloropropane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
1,3,5-Trimethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
1,3-Dichloropropane	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:52
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:52
2,2-Dichloropropane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
2-Butanone (MEK)	10.0 U	10.0	3.10	ug/L	1		10/12/17 13:52
2-Chlorotoluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
2-Hexanone	10.0 U	10.0	3.10	ug/L	1		10/13/17 12:02
4-Chlorotoluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
4-Isopropyltoluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
4-Methyl-2-pentanone (MIBK)	10.0 U	10.0	3.10	ug/L	1		10/12/17 13:52
Benzene	0.400 U	0.400	0.120	ug/L	1		10/12/17 13:52
Bromobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
Bromochloromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
Bromodichloromethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:52
Bromoform	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
Bromomethane	5.00 U	5.00	1.50	ug/L	1		10/12/17 13:52
Carbon disulfide	10.0 U	10.0	3.10	ug/L	1		10/12/17 13:52
Carbon tetrachloride	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:52
Chloroethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52

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Results of MC-US-01

Client Sample ID: **MC-US-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018006
 Lab Project ID: 1177018

Collection Date: 09/29/17 11:05
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
Chloromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
cis-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
cis-1,3-Dichloropropene	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:52
Dibromochloromethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 13:52
Dibromomethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
Dichlorodifluoromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
Freon-113	10.0 U	10.0	3.10	ug/L	1		10/12/17 13:52
Hexachlorobutadiene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
Isopropylbenzene (Cumene)	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
Methylene chloride	5.00 U	5.00	1.00	ug/L	1		10/12/17 13:52
Methyl-t-butyl ether	10.0 U	10.0	3.10	ug/L	1		10/12/17 13:52
Naphthalene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
n-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
n-Propylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
o-Xylene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		10/12/17 13:52
sec-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
Styrene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
tert-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
Tetrachloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
Toluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
trans-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
trans-1,3-Dichloropropene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
Trichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
Trichlorofluoromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 13:52
Vinyl acetate	10.0 U	10.0	3.10	ug/L	1		10/12/17 13:52
Vinyl chloride	0.150 U	0.150	0.0500	ug/L	1		10/12/17 13:52
Xylenes (total)	3.00 U	3.00	1.00	ug/L	1		10/12/17 13:52
Surrogates							
1,2-Dichloroethane-D4 (surr)	104	81-118		%	1		10/12/17 13:52
4-Bromofluorobenzene (surr)	97.4	85-114		%	1		10/12/17 13:52
Toluene-d8 (surr)	99.8	89-112		%	1		10/12/17 13:52

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Results of MC-US-01

Client Sample ID: **MC-US-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018006
 Lab Project ID: 1177018

Collection Date: 09/29/17 11:05
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS17309
 Analytical Method: SW8260C
 Analyst: FDR
 Analytical Date/Time: 10/13/17 12:02
 Container ID: 1177018006-A

Prep Batch: VXX31501
 Prep Method: SW5030B
 Prep Date/Time: 10/12/17 00:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Analytical Batch: VMS17305
 Analytical Method: SW8260C
 Analyst: NRO
 Analytical Date/Time: 10/12/17 13:52
 Container ID: 1177018006-A

Prep Batch: VXX31498
 Prep Method: SW5030B
 Prep Date/Time: 10/12/17 01:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 10/20/2017 8:37:17AM



Results of EPC-01

Client Sample ID: **EPC-01**
Client Project ID: **Wrangell Soil Repository**
Lab Sample ID: 1177018007
Lab Project ID: 1177018

Collection Date: 09/29/17 11:30
Received Date: 10/03/17 08:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Lead	1.00 U	1.00	0.310	ug/L	5		10/05/17 20:30

Batch Information

Analytical Batch: MMS9965
Analytical Method: SW6020A
Analyst: VDL
Analytical Date/Time: 10/05/17 20:30
Container ID: 1177018007-F

Prep Batch: MXX31120
Prep Method: SW3010A
Prep Date/Time: 10/05/17 11:17
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 25 mL

Print Date: 10/20/2017 8:37:17AM

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Results of EPC-01

Client Sample ID: **EPC-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018007
 Lab Project ID: 1177018

Collection Date: 09/29/17 11:30
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.556 U	0.556	0.167	mg/L	1		10/11/17 23:36
Surrogates							
5a Androstane (surr)	76.5	50-150		%	1		10/11/17 23:36

Batch Information

Analytical Batch: XFC13877
 Analytical Method: AK102
 Analyst: JMG
 Analytical Date/Time: 10/11/17 23:36
 Container ID: 1177018007-D

Prep Batch: XXX38613
 Prep Method: SW3520C
 Prep Date/Time: 10/09/17 08:08
 Prep Initial Wt./Vol.: 270 mL
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	0.463 U	0.463	0.139	mg/L	1		10/11/17 23:36
Surrogates							
n-Triacontane-d62 (surr)	82.2	50-150		%	1		10/11/17 23:36

Batch Information

Analytical Batch: XFC13877
 Analytical Method: AK103
 Analyst: JMG
 Analytical Date/Time: 10/11/17 23:36
 Container ID: 1177018007-D

Prep Batch: XXX38613
 Prep Method: SW3520C
 Prep Date/Time: 10/09/17 08:08
 Prep Initial Wt./Vol.: 270 mL
 Prep Extract Vol: 1 mL

Print Date: 10/20/2017 8:37:17AM

Results of EPC-01

Client Sample ID: **EPC-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018007
 Lab Project ID: 1177018

Collection Date: 09/29/17 11:30
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:08
1,1,1-Trichloroethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
1,1,2,2-Tetrachloroethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:08
1,1,2-Trichloroethane	0.400 U	0.400	0.120	ug/L	1		10/12/17 14:08
1,1-Dichloroethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
1,1-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
1,1-Dichloropropene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
1,2,3-Trichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
1,2,3-Trichloropropane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
1,2,4-Trichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
1,2,4-Trimethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
1,2-Dibromo-3-chloropropane	10.0 U	10.0	3.10	ug/L	1		10/12/17 14:08
1,2-Dibromoethane	0.0750 U	0.0750	0.0180	ug/L	1		10/12/17 14:08
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
1,2-Dichloroethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:08
1,2-Dichloropropane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
1,3,5-Trimethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
1,3-Dichloropropane	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:08
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:08
2,2-Dichloropropane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
2-Butanone (MEK)	10.0 U	10.0	3.10	ug/L	1		10/12/17 14:08
2-Chlorotoluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
2-Hexanone	10.0 U	10.0	3.10	ug/L	1		10/13/17 12:19
4-Chlorotoluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
4-Isopropyltoluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
4-Methyl-2-pentanone (MIBK)	10.0 U	10.0	3.10	ug/L	1		10/12/17 14:08
Benzene	0.400 U	0.400	0.120	ug/L	1		10/12/17 14:08
Bromobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
Bromochloromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
Bromodichloromethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:08
Bromoform	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
Bromomethane	5.00 U	5.00	1.50	ug/L	1		10/12/17 14:08
Carbon disulfide	10.0 U	10.0	3.10	ug/L	1		10/12/17 14:08
Carbon tetrachloride	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:08
Chloroethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08

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Results of EPC-01

Client Sample ID: **EPC-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018007
 Lab Project ID: 1177018

Collection Date: 09/29/17 11:30
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
Chloromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
cis-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
cis-1,3-Dichloropropene	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:08
Dibromochloromethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:08
Dibromomethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
Dichlorodifluoromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
Freon-113	10.0 U	10.0	3.10	ug/L	1		10/12/17 14:08
Hexachlorobutadiene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
Isopropylbenzene (Cumene)	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
Methylene chloride	5.00 U	5.00	1.00	ug/L	1		10/12/17 14:08
Methyl-t-butyl ether	10.0 U	10.0	3.10	ug/L	1		10/12/17 14:08
Naphthalene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
n-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
n-Propylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
o-Xylene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		10/12/17 14:08
sec-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
Styrene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
tert-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
Tetrachloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
Toluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
trans-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
trans-1,3-Dichloropropene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
Trichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
Trichlorofluoromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:08
Vinyl acetate	10.0 U	10.0	3.10	ug/L	1		10/12/17 14:08
Vinyl chloride	0.150 U	0.150	0.0500	ug/L	1		10/12/17 14:08
Xylenes (total)	3.00 U	3.00	1.00	ug/L	1		10/12/17 14:08
Surrogates							
1,2-Dichloroethane-D4 (surr)	104	81-118		%	1		10/12/17 14:08
4-Bromofluorobenzene (surr)	94.3	85-114		%	1		10/12/17 14:08
Toluene-d8 (surr)	98.2	89-112		%	1		10/12/17 14:08

Print Date: 10/20/2017 8:37:17AM

Results of EPC-01

Client Sample ID: **EPC-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018007
 Lab Project ID: 1177018

Collection Date: 09/29/17 11:30
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS17309
 Analytical Method: SW8260C
 Analyst: FDR
 Analytical Date/Time: 10/13/17 12:19
 Container ID: 1177018007-A

Prep Batch: VXX31501
 Prep Method: SW5030B
 Prep Date/Time: 10/12/17 00:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Analytical Batch: VMS17305
 Analytical Method: SW8260C
 Analyst: NRO
 Analytical Date/Time: 10/12/17 14:08
 Container ID: 1177018007-A

Prep Batch: VXX31498
 Prep Method: SW5030B
 Prep Date/Time: 10/12/17 01:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 10/20/2017 8:37:17AM

Results of PDC-01

Client Sample ID: **PDC-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018008
 Lab Project ID: 1177018

Collection Date: 09/29/17 13:00
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Lead	1.00 U	1.00	0.310	ug/L	5		10/05/17 20:34

Batch Information

Analytical Batch: MMS9965
 Analytical Method: SW6020A
 Analyst: VDL
 Analytical Date/Time: 10/05/17 20:34
 Container ID: 1177018008-F

Prep Batch: MXX31120
 Prep Method: SW3010A
 Prep Date/Time: 10/05/17 11:17
 Prep Initial Wt./Vol.: 25 mL
 Prep Extract Vol: 25 mL

Print Date: 10/20/2017 8:37:17AM

Results of PDC-01

Client Sample ID: **PDC-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018008
 Lab Project ID: 1177018

Collection Date: 09/29/17 13:00
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.545 U	0.545	0.164	mg/L	1		10/11/17 23:57
Surrogates							
5a Androstane (surr)	78.6	50-150		%	1		10/11/17 23:57

Batch Information

Analytical Batch: XFC13877
 Analytical Method: AK102
 Analyst: JMG
 Analytical Date/Time: 10/11/17 23:57
 Container ID: 1177018008-D

Prep Batch: XXX38613
 Prep Method: SW3520C
 Prep Date/Time: 10/09/17 08:08
 Prep Initial Wt./Vol.: 275 mL
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	0.455 U	0.455	0.136	mg/L	1		10/11/17 23:57
Surrogates							
n-Triacontane-d62 (surr)	84.2	50-150		%	1		10/11/17 23:57

Batch Information

Analytical Batch: XFC13877
 Analytical Method: AK103
 Analyst: JMG
 Analytical Date/Time: 10/11/17 23:57
 Container ID: 1177018008-D

Prep Batch: XXX38613
 Prep Method: SW3520C
 Prep Date/Time: 10/09/17 08:08
 Prep Initial Wt./Vol.: 275 mL
 Prep Extract Vol: 1 mL

Print Date: 10/20/2017 8:37:17AM

Results of PDC-01

Client Sample ID: **PDC-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018008
 Lab Project ID: 1177018

Collection Date: 09/29/17 13:00
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:24
1,1,1-Trichloroethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
1,1,2,2-Tetrachloroethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:24
1,1,2-Trichloroethane	0.400 U	0.400	0.120	ug/L	1		10/12/17 14:24
1,1-Dichloroethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
1,1-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
1,1-Dichloropropene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
1,2,3-Trichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
1,2,3-Trichloropropane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
1,2,4-Trichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
1,2,4-Trimethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
1,2-Dibromo-3-chloropropane	10.0 U	10.0	3.10	ug/L	1		10/12/17 14:24
1,2-Dibromoethane	0.0750 U	0.0750	0.0180	ug/L	1		10/12/17 14:24
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
1,2-Dichloroethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:24
1,2-Dichloropropane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
1,3,5-Trimethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
1,3-Dichloropropane	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:24
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:24
2,2-Dichloropropane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
2-Butanone (MEK)	10.0 U	10.0	3.10	ug/L	1		10/12/17 14:24
2-Chlorotoluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
2-Hexanone	10.0 U	10.0	3.10	ug/L	1		10/13/17 12:36
4-Chlorotoluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
4-Isopropyltoluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
4-Methyl-2-pentanone (MIBK)	10.0 U	10.0	3.10	ug/L	1		10/12/17 14:24
Benzene	0.400 U	0.400	0.120	ug/L	1		10/12/17 14:24
Bromobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
Bromochloromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
Bromodichloromethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:24
Bromoform	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
Bromomethane	5.00 U	5.00	1.50	ug/L	1		10/12/17 14:24
Carbon disulfide	10.0 U	10.0	3.10	ug/L	1		10/12/17 14:24
Carbon tetrachloride	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:24
Chloroethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24

Print Date: 10/20/2017 8:37:17AM

Results of PDC-01

Client Sample ID: **PDC-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018008
 Lab Project ID: 1177018

Collection Date: 09/29/17 13:00
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
Chloromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
cis-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
cis-1,3-Dichloropropene	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:24
Dibromochloromethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:24
Dibromomethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
Dichlorodifluoromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
Freon-113	10.0 U	10.0	3.10	ug/L	1		10/12/17 14:24
Hexachlorobutadiene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
Isopropylbenzene (Cumene)	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
Methylene chloride	5.00 U	5.00	1.00	ug/L	1		10/12/17 14:24
Methyl-t-butyl ether	10.0 U	10.0	3.10	ug/L	1		10/12/17 14:24
Naphthalene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
n-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
n-Propylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
o-Xylene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		10/12/17 14:24
sec-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
Styrene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
tert-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
Tetrachloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
Toluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
trans-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
trans-1,3-Dichloropropene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
Trichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
Trichlorofluoromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:24
Vinyl acetate	10.0 U	10.0	3.10	ug/L	1		10/12/17 14:24
Vinyl chloride	0.150 U	0.150	0.0500	ug/L	1		10/12/17 14:24
Xylenes (total)	3.00 U	3.00	1.00	ug/L	1		10/12/17 14:24
Surrogates							
1,2-Dichloroethane-D4 (surr)	104	81-118		%	1		10/12/17 14:24
4-Bromofluorobenzene (surr)	96.3	85-114		%	1		10/12/17 14:24
Toluene-d8 (surr)	98.8	89-112		%	1		10/12/17 14:24

Print Date: 10/20/2017 8:37:17AM

Results of PDC-01

Client Sample ID: **PDC-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018008
 Lab Project ID: 1177018

Collection Date: 09/29/17 13:00
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS17309
 Analytical Method: SW8260C
 Analyst: FDR
 Analytical Date/Time: 10/13/17 12:36
 Container ID: 1177018008-A

Prep Batch: VXX31501
 Prep Method: SW5030B
 Prep Date/Time: 10/12/17 00:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Analytical Batch: VMS17305
 Analytical Method: SW8260C
 Analyst: NRO
 Analytical Date/Time: 10/12/17 14:24
 Container ID: 1177018008-A

Prep Batch: VXX31498
 Prep Method: SW5030B
 Prep Date/Time: 10/12/17 01:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 10/20/2017 8:37:17AM



Results of PCM-01

Client Sample ID: **PCM-01**
Client Project ID: **Wrangell Soil Repository**
Lab Sample ID: 1177018009
Lab Project ID: 1177018

Collection Date: 09/29/17 14:20
Received Date: 10/03/17 08:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Lead	1.00 U	1.00	0.310	ug/L	5		10/05/17 20:39

Batch Information

Analytical Batch: MMS9965
Analytical Method: SW6020A
Analyst: VDL
Analytical Date/Time: 10/05/17 20:39
Container ID: 1177018009-F

Prep Batch: MXX31120
Prep Method: SW3010A
Prep Date/Time: 10/05/17 11:17
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 25 mL

Print Date: 10/20/2017 8:37:17AM

SGS North America Inc.

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Member of SGS Group

Results of PCM-01

Client Sample ID: **PCM-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018009
 Lab Project ID: 1177018

Collection Date: 09/29/17 14:20
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.545 U	0.545	0.164	mg/L	1		10/12/17 00:17
Surrogates							
5a Androstane (surr)	80.7	50-150		%	1		10/12/17 00:17

Batch Information

Analytical Batch: XFC13877
 Analytical Method: AK102
 Analyst: JMG
 Analytical Date/Time: 10/12/17 00:17
 Container ID: 1177018009-D

Prep Batch: XXX38613
 Prep Method: SW3520C
 Prep Date/Time: 10/09/17 08:08
 Prep Initial Wt./Vol.: 275 mL
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	0.455 U	0.455	0.136	mg/L	1		10/12/17 00:17
Surrogates							
n-Triacontane-d62 (surr)	87.4	50-150		%	1		10/12/17 00:17

Batch Information

Analytical Batch: XFC13877
 Analytical Method: AK103
 Analyst: JMG
 Analytical Date/Time: 10/12/17 00:17
 Container ID: 1177018009-D

Prep Batch: XXX38613
 Prep Method: SW3520C
 Prep Date/Time: 10/09/17 08:08
 Prep Initial Wt./Vol.: 275 mL
 Prep Extract Vol: 1 mL

Print Date: 10/20/2017 8:37:17AM

Results of PCM-01

Client Sample ID: **PCM-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018009
 Lab Project ID: 1177018

Collection Date: 09/29/17 14:20
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:40
1,1,1-Trichloroethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
1,1,2,2-Tetrachloroethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:40
1,1,2-Trichloroethane	0.400 U	0.400	0.120	ug/L	1		10/12/17 14:40
1,1-Dichloroethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
1,1-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
1,1-Dichloropropene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
1,2,3-Trichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
1,2,3-Trichloropropane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
1,2,4-Trichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
1,2,4-Trimethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
1,2-Dibromo-3-chloropropane	10.0 U	10.0	3.10	ug/L	1		10/12/17 14:40
1,2-Dibromoethane	0.0750 U	0.0750	0.0180	ug/L	1		10/12/17 14:40
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
1,2-Dichloroethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:40
1,2-Dichloropropane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
1,3,5-Trimethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
1,3-Dichloropropane	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:40
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:40
2,2-Dichloropropane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
2-Butanone (MEK)	10.0 U	10.0	3.10	ug/L	1		10/12/17 14:40
2-Chlorotoluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
2-Hexanone	10.0 U	10.0	3.10	ug/L	1		10/13/17 12:53
4-Chlorotoluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
4-Isopropyltoluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
4-Methyl-2-pentanone (MIBK)	10.0 U	10.0	3.10	ug/L	1		10/12/17 14:40
Benzene	0.400 U	0.400	0.120	ug/L	1		10/12/17 14:40
Bromobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
Bromochloromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
Bromodichloromethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:40
Bromoform	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
Bromomethane	5.00 U	5.00	1.50	ug/L	1		10/12/17 14:40
Carbon disulfide	10.0 U	10.0	3.10	ug/L	1		10/12/17 14:40
Carbon tetrachloride	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:40
Chloroethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40

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Results of PCM-01

Client Sample ID: **PCM-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018009
 Lab Project ID: 1177018

Collection Date: 09/29/17 14:20
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
Chloromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
cis-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
cis-1,3-Dichloropropene	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:40
Dibromochloromethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:40
Dibromomethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
Dichlorodifluoromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
Freon-113	10.0 U	10.0	3.10	ug/L	1		10/12/17 14:40
Hexachlorobutadiene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
Isopropylbenzene (Cumene)	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
Methylene chloride	5.00 U	5.00	1.00	ug/L	1		10/12/17 14:40
Methyl-t-butyl ether	10.0 U	10.0	3.10	ug/L	1		10/12/17 14:40
Naphthalene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
n-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
n-Propylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
o-Xylene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		10/12/17 14:40
sec-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
Styrene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
tert-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
Tetrachloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
Toluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
trans-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
trans-1,3-Dichloropropene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
Trichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
Trichlorofluoromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:40
Vinyl acetate	10.0 U	10.0	3.10	ug/L	1		10/12/17 14:40
Vinyl chloride	0.150 U	0.150	0.0500	ug/L	1		10/12/17 14:40
Xylenes (total)	3.00 U	3.00	1.00	ug/L	1		10/12/17 14:40
Surrogates							
1,2-Dichloroethane-D4 (surr)	111	81-118		%	1		10/12/17 14:40
4-Bromofluorobenzene (surr)	95.8	85-114		%	1		10/12/17 14:40
Toluene-d8 (surr)	101	89-112		%	1		10/12/17 14:40

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Results of PCM-01

Client Sample ID: **PCM-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018009
 Lab Project ID: 1177018

Collection Date: 09/29/17 14:20
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS17309
 Analytical Method: SW8260C
 Analyst: FDR
 Analytical Date/Time: 10/13/17 12:53
 Container ID: 1177018009-A

Prep Batch: VXX31501
 Prep Method: SW5030B
 Prep Date/Time: 10/12/17 00:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Analytical Batch: VMS17305
 Analytical Method: SW8260C
 Analyst: NRO
 Analytical Date/Time: 10/12/17 14:40
 Container ID: 1177018009-A

Prep Batch: VXX31498
 Prep Method: SW5030B
 Prep Date/Time: 10/12/17 01:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

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Results of ST-PC-01

Client Sample ID: **ST-PC-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018010
 Lab Project ID: 1177018

Collection Date: 09/29/17 15:35
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Lead	1.00 U	1.00	0.310	ug/L	5		10/05/17 20:43

Batch Information

Analytical Batch: MMS9965
 Analytical Method: SW6020A
 Analyst: VDL
 Analytical Date/Time: 10/05/17 20:43
 Container ID: 1177018010-F

Prep Batch: MXX31120
 Prep Method: SW3010A
 Prep Date/Time: 10/05/17 11:17
 Prep Initial Wt./Vol.: 25 mL
 Prep Extract Vol: 25 mL

Print Date: 10/20/2017 8:37:17AM

Results of ST-PC-01

Client Sample ID: **ST-PC-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018010
 Lab Project ID: 1177018

Collection Date: 09/29/17 15:35
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.556 U	0.556	0.167	mg/L	1		10/12/17 00:38
Surrogates							
5a Androstane (surr)	85	50-150		%	1		10/12/17 00:38

Batch Information

Analytical Batch: XFC13877
 Analytical Method: AK102
 Analyst: JMG
 Analytical Date/Time: 10/12/17 00:38
 Container ID: 1177018010-D

Prep Batch: XXX38613
 Prep Method: SW3520C
 Prep Date/Time: 10/09/17 08:08
 Prep Initial Wt./Vol.: 270 mL
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	0.463 U	0.463	0.139	mg/L	1		10/12/17 00:38
Surrogates							
n-Triacontane-d62 (surr)	92.3	50-150		%	1		10/12/17 00:38

Batch Information

Analytical Batch: XFC13877
 Analytical Method: AK103
 Analyst: JMG
 Analytical Date/Time: 10/12/17 00:38
 Container ID: 1177018010-D

Prep Batch: XXX38613
 Prep Method: SW3520C
 Prep Date/Time: 10/09/17 08:08
 Prep Initial Wt./Vol.: 270 mL
 Prep Extract Vol: 1 mL

Print Date: 10/20/2017 8:37:17AM

Results of ST-PC-01

Client Sample ID: **ST-PC-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018010
 Lab Project ID: 1177018

Collection Date: 09/29/17 15:35
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:56
1,1,1-Trichloroethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
1,1,2,2-Tetrachloroethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:56
1,1,2-Trichloroethane	0.400 U	0.400	0.120	ug/L	1		10/12/17 14:56
1,1-Dichloroethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
1,1-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
1,1-Dichloropropene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
1,2,3-Trichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
1,2,3-Trichloropropane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
1,2,4-Trichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
1,2,4-Trimethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
1,2-Dibromo-3-chloropropane	10.0 U	10.0	3.10	ug/L	1		10/12/17 14:56
1,2-Dibromoethane	0.0750 U	0.0750	0.0180	ug/L	1		10/12/17 14:56
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
1,2-Dichloroethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:56
1,2-Dichloropropane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
1,3,5-Trimethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
1,3-Dichloropropane	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:56
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:56
2,2-Dichloropropane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
2-Butanone (MEK)	10.0 U	10.0	3.10	ug/L	1		10/12/17 14:56
2-Chlorotoluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
2-Hexanone	10.0 U	10.0	3.10	ug/L	1		10/13/17 13:10
4-Chlorotoluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
4-Isopropyltoluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
4-Methyl-2-pentanone (MIBK)	10.0 U	10.0	3.10	ug/L	1		10/12/17 14:56
Benzene	0.400 U	0.400	0.120	ug/L	1		10/12/17 14:56
Bromobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
Bromochloromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
Bromodichloromethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:56
Bromoform	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
Bromomethane	5.00 U	5.00	1.50	ug/L	1		10/12/17 14:56
Carbon disulfide	10.0 U	10.0	3.10	ug/L	1		10/12/17 14:56
Carbon tetrachloride	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:56
Chloroethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56

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Results of ST-PC-01

Client Sample ID: **ST-PC-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018010
 Lab Project ID: 1177018

Collection Date: 09/29/17 15:35
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
Chloromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
cis-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
cis-1,3-Dichloropropene	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:56
Dibromochloromethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 14:56
Dibromomethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
Dichlorodifluoromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
Freon-113	10.0 U	10.0	3.10	ug/L	1		10/12/17 14:56
Hexachlorobutadiene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
Isopropylbenzene (Cumene)	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
Methylene chloride	5.00 U	5.00	1.00	ug/L	1		10/12/17 14:56
Methyl-t-butyl ether	10.0 U	10.0	3.10	ug/L	1		10/12/17 14:56
Naphthalene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
n-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
n-Propylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
o-Xylene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		10/12/17 14:56
sec-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
Styrene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
tert-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
Tetrachloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
Toluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
trans-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
trans-1,3-Dichloropropene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
Trichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
Trichlorofluoromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 14:56
Vinyl acetate	10.0 U	10.0	3.10	ug/L	1		10/12/17 14:56
Vinyl chloride	0.150 U	0.150	0.0500	ug/L	1		10/12/17 14:56
Xylenes (total)	3.00 U	3.00	1.00	ug/L	1		10/12/17 14:56
Surrogates							
1,2-Dichloroethane-D4 (surr)	106	81-118		%	1		10/12/17 14:56
4-Bromofluorobenzene (surr)	94.9	85-114		%	1		10/12/17 14:56
Toluene-d8 (surr)	99.6	89-112		%	1		10/12/17 14:56

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Results of ST-PC-01

Client Sample ID: **ST-PC-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018010
 Lab Project ID: 1177018

Collection Date: 09/29/17 15:35
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS17309
 Analytical Method: SW8260C
 Analyst: FDR
 Analytical Date/Time: 10/13/17 13:10
 Container ID: 1177018010-A

Prep Batch: VXX31501
 Prep Method: SW5030B
 Prep Date/Time: 10/12/17 00:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Analytical Batch: VMS17305
 Analytical Method: SW8260C
 Analyst: NRO
 Analytical Date/Time: 10/12/17 14:56
 Container ID: 1177018010-A

Prep Batch: VXX31498
 Prep Method: SW5030B
 Prep Date/Time: 10/12/17 01:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 10/20/2017 8:37:17AM

Results of MFD-01

Client Sample ID: **MFD-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: **1177018011**
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:25
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):13.9
 Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Lead	135	6.68	2.07	mg/Kg	50		10/09/17 19:27

Batch Information

Analytical Batch: MMS9968
 Analytical Method: SW6020A
 Analyst: VDL
 Analytical Date/Time: 10/09/17 19:27
 Container ID: 1177018011-A

Prep Batch: MXX31122
 Prep Method: SW3050B
 Prep Date/Time: 10/05/17 10:50
 Prep Initial Wt./Vol.: 1.08 g
 Prep Extract Vol: 50 mL

Results of MFD-01

Client Sample ID: **MFD-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018011
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:25
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):13.9
 Location:

Results by Semivolatile Organic Fuels

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	2580	717	222	mg/Kg	1		10/07/17 22:28
Diesel Range Organics	4400	1150	358	mg/Kg	4		10/18/17 03:37

Surrogates

5a Androstane (surr)	108	50-150		%	4		10/18/17 03:37
5a Androstane (surr)	131	50-150		%	1		10/07/17 22:28

Batch Information

Analytical Batch: XFC13892
 Analytical Method: AK102
 Analyst: JMG
 Analytical Date/Time: 10/18/17 03:37
 Container ID: 1177018011-A

Prep Batch: XXX38666
 Prep Method: SW3550C
 Prep Date/Time: 10/15/17 11:58
 Prep Initial Wt./Vol.: 30.006 g
 Prep Extract Vol: 2 mL

Analytical Batch: XFC13870
 Analytical Method: AK102
 Analyst: JMG
 Analytical Date/Time: 10/07/17 22:28
 Container ID:

Prep Batch: XXX38599
 Prep Method: SW3550C
 Prep Date/Time: 10/06/17 16:19
 Prep Initial Wt./Vol.: 30.196 g
 Prep Extract Vol: 5 mL

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	8830	717	222	mg/Kg	1		10/07/17 22:28
Residual Range Organics	11700	1150	358	mg/Kg	4		10/18/17 03:37

Surrogates

n-Triacontane-d62 (surr)	82.6	50-150		%	4		10/18/17 03:37
n-Triacontane-d62 (surr)	102	50-150		%	1		10/07/17 22:28

Batch Information

Analytical Batch: XFC13892
 Analytical Method: AK103
 Analyst: JMG
 Analytical Date/Time: 10/18/17 03:37
 Container ID: 1177018011-A

Prep Batch: XXX38666
 Prep Method: SW3550C
 Prep Date/Time: 10/15/17 11:58
 Prep Initial Wt./Vol.: 30.006 g
 Prep Extract Vol: 2 mL

Analytical Batch: XFC13870
 Analytical Method: AK103
 Analyst: JMG
 Analytical Date/Time: 10/07/17 22:28
 Container ID:

Prep Batch: XXX38599
 Prep Method: SW3550C
 Prep Date/Time: 10/06/17 16:19
 Prep Initial Wt./Vol.: 30.196 g
 Prep Extract Vol: 5 mL

Results of MFD-01

Client Sample ID: **MFD-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018011
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:25
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):13.9
 Location:

Results by Semivolatile Organic Fuels Department, Silica G

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
DRO Silica Gel	2200	288	89.4	mg/Kg	1		10/18/17 02:27

Surrogates

5a Androstane (surr)	79.3	50-150		%	1		10/18/17 02:27
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Batch Information

Analytical Batch: XFC13894
 Analytical Method: AK102-
 Analyst: JMG
 Analytical Date/Time: 10/18/17 02:27
 Container ID: 1177018011-B

Prep Batch: XXX38667
 Prep Method: SW3550C w/SG Cleanup-SG
 Prep Date/Time: 10/15/17 12:00
 Prep Initial Wt./Vol.: 30.006 g
 Prep Extract Vol: 2 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
RRO Silica Gel	4130	288	89.4	mg/Kg	1		10/18/17 02:27

Surrogates

n-Triacontane-d62 (surr)	74.9	50-150		%	1		10/18/17 02:27
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Batch Information

Analytical Batch: XFC13894
 Analytical Method: AK103-
 Analyst: JMG
 Analytical Date/Time: 10/18/17 02:27
 Container ID: 1177018011-B

Prep Batch: XXX38667
 Prep Method: SW3550C w/SG Cleanup-SG
 Prep Date/Time: 10/15/17 12:00
 Prep Initial Wt./Vol.: 30.006 g
 Prep Extract Vol: 2 mL

Results of MFD-01

Client Sample ID: **MFD-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018011
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:25
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):13.9
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	187 U	374	116	ug/Kg	1		10/05/17 18:18
1,1,1-Trichloroethane	234 U	468	146	ug/Kg	1		10/05/17 18:18
1,1,2,2-Tetrachloroethane	117 U	234	73.0	ug/Kg	1		10/05/17 18:18
1,1,2-Trichloroethane	93.5 U	187	58.0	ug/Kg	1		10/05/17 18:18
1,1-Dichloroethane	234 U	468	146	ug/Kg	1		10/05/17 18:18
1,1-Dichloroethene	234 U	468	146	ug/Kg	1		10/05/17 18:18
1,1-Dichloropropene	234 U	468	146	ug/Kg	1		10/05/17 18:18
1,2,3-Trichlorobenzene	468 U	936	281	ug/Kg	1		10/05/17 18:18
1,2,3-Trichloropropane	234 U	468	146	ug/Kg	1		10/05/17 18:18
1,2,4-Trichlorobenzene	234 U	468	146	ug/Kg	1		10/05/17 18:18
1,2,4-Trimethylbenzene	468 U	936	281	ug/Kg	1		10/05/17 18:18
1,2-Dibromo-3-chloropropane	935 U	1870	580	ug/Kg	1		10/05/17 18:18
1,2-Dibromoethane	93.5 U	187	58.0	ug/Kg	1		10/05/17 18:18
1,2-Dichlorobenzene	234 U	468	146	ug/Kg	1		10/05/17 18:18
1,2-Dichloroethane	93.5 U	187	58.0	ug/Kg	1		10/05/17 18:18
1,2-Dichloropropane	93.5 U	187	58.0	ug/Kg	1		10/05/17 18:18
1,3,5-Trimethylbenzene	234 U	468	146	ug/Kg	1		10/05/17 18:18
1,3-Dichlorobenzene	234 U	468	146	ug/Kg	1		10/05/17 18:18
1,3-Dichloropropane	93.5 U	187	58.0	ug/Kg	1		10/05/17 18:18
1,4-Dichlorobenzene	234 U	468	146	ug/Kg	1		10/05/17 18:18
2,2-Dichloropropane	234 U	468	146	ug/Kg	1		10/05/17 18:18
2-Butanone (MEK)	2340 U	4680	1460	ug/Kg	1		10/05/17 18:18
2-Chlorotoluene	234 U	468	146	ug/Kg	1		10/05/17 18:18
2-Hexanone	935 U	1870	580	ug/Kg	1		10/05/17 18:18
4-Chlorotoluene	234 U	468	146	ug/Kg	1		10/05/17 18:18
4-Isopropyltoluene	234 U	468	146	ug/Kg	1		10/05/17 18:18
4-Methyl-2-pentanone (MIBK)	2340 U	4680	1460	ug/Kg	1		10/05/17 18:18
Benzene	117 U	234	73.0	ug/Kg	1		10/05/17 18:18
Bromobenzene	234 U	468	146	ug/Kg	1		10/05/17 18:18
Bromochloromethane	234 U	468	146	ug/Kg	1		10/05/17 18:18
Bromodichloromethane	234 U	468	146	ug/Kg	1		10/05/17 18:18
Bromoform	234 U	468	146	ug/Kg	1		10/05/17 18:18
Bromomethane	1870 U	3740	1160	ug/Kg	1		10/05/17 18:18
Carbon disulfide	935 U	1870	580	ug/Kg	1		10/05/17 18:18
Carbon tetrachloride	117 U	234	73.0	ug/Kg	1		10/05/17 18:18
Chlorobenzene	234 U	468	146	ug/Kg	1		10/05/17 18:18
Chloroethane	1870 U	3740	1160	ug/Kg	1		10/05/17 18:18

Print Date: 10/20/2017 8:37:17AM

J flagging is activated

Results of MFD-01

Client Sample ID: **MFD-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018011
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:25
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):13.9
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	234 U	468	146	ug/Kg	1		10/05/17 18:18
Chloromethane	234 U	468	146	ug/Kg	1		10/05/17 18:18
cis-1,2-Dichloroethene	234 U	468	146	ug/Kg	1		10/05/17 18:18
cis-1,3-Dichloropropene	117 U	234	73.0	ug/Kg	1		10/05/17 18:18
Dibromochloromethane	234 U	468	146	ug/Kg	1		10/05/17 18:18
Dibromomethane	234 U	468	146	ug/Kg	1		10/05/17 18:18
Dichlorodifluoromethane	468 U	936	281	ug/Kg	1		10/05/17 18:18
Ethylbenzene	234 U	468	146	ug/Kg	1		10/05/17 18:18
Freon-113	935 U	1870	580	ug/Kg	1		10/05/17 18:18
Hexachlorobutadiene	187 U	374	116	ug/Kg	1		10/05/17 18:18
Isopropylbenzene (Cumene)	234 U	468	146	ug/Kg	1		10/05/17 18:18
Methylene chloride	935 U	1870	580	ug/Kg	1		10/05/17 18:18
Methyl-t-butyl ether	935 U	1870	580	ug/Kg	1		10/05/17 18:18
Naphthalene	234 U	468	146	ug/Kg	1		10/05/17 18:18
n-Butylbenzene	234 U	468	146	ug/Kg	1		10/05/17 18:18
n-Propylbenzene	234 U	468	146	ug/Kg	1		10/05/17 18:18
o-Xylene	234 U	468	146	ug/Kg	1		10/05/17 18:18
P & M -Xylene	468 U	936	281	ug/Kg	1		10/05/17 18:18
sec-Butylbenzene	234 U	468	146	ug/Kg	1		10/05/17 18:18
Styrene	234 U	468	146	ug/Kg	1		10/05/17 18:18
tert-Butylbenzene	234 U	468	146	ug/Kg	1		10/05/17 18:18
Tetrachloroethene	117 U	234	73.0	ug/Kg	1		10/05/17 18:18
Toluene	234 U	468	146	ug/Kg	1		10/05/17 18:18
trans-1,2-Dichloroethene	234 U	468	146	ug/Kg	1		10/05/17 18:18
trans-1,3-Dichloropropene	117 U	234	73.0	ug/Kg	1		10/05/17 18:18
Trichloroethene	93.5 U	187	58.0	ug/Kg	1		10/05/17 18:18
Trichlorofluoromethane	468 U	936	281	ug/Kg	1		10/05/17 18:18
Vinyl acetate	935 U	1870	580	ug/Kg	1		10/05/17 18:18
Vinyl chloride	93.5 U	187	58.0	ug/Kg	1		10/05/17 18:18
Xylenes (total)	700 U	1400	427	ug/Kg	1		10/05/17 18:18
Surrogates							
1,2-Dichloroethane-D4 (surr)	108	71-136		%	1		10/05/17 18:18
4-Bromofluorobenzene (surr)	50.6 *	55-151		%	1		10/05/17 18:18
Toluene-d8 (surr)	96.8	85-116		%	1		10/05/17 18:18

Print Date: 10/20/2017 8:37:17AM

J flagging is activated

Results of MFD-01

Client Sample ID: **MFD-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018011
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:25
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):13.9
 Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS17275
 Analytical Method: SW8260C
 Analyst: NRO
 Analytical Date/Time: 10/05/17 18:18
 Container ID: 1177018011-D

Prep Batch: VXX31443
 Prep Method: SW5035A
 Prep Date/Time: 09/29/17 08:25
 Prep Initial Wt./Vol.: 57.296 g
 Prep Extract Vol: 74.3519 mL

Results of MFD-02

Client Sample ID: **MFD-02**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018012
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:58
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):62.2
 Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Lead	6.64	1.47	0.457	mg/Kg	50		10/09/17 19:31

Batch Information

Analytical Batch: MMS9968
 Analytical Method: SW6020A
 Analyst: VDL
 Analytical Date/Time: 10/09/17 19:31
 Container ID: 1177018012-A

Prep Batch: MXX31122
 Prep Method: SW3050B
 Prep Date/Time: 10/05/17 10:50
 Prep Initial Wt./Vol.: 1.09 g
 Prep Extract Vol: 50 mL

Results of MFD-02

Client Sample ID: **MFD-02**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018012
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:58
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):62.2
 Location:

Results by Semivolatile Organic Fuels

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	157	127	39.5	mg/Kg	4		10/05/17 20:00
Diesel Range Organics	23.0 J	63.3	19.6	mg/Kg	1		10/18/17 03:47

Surrogates

5a Androstane (surr)	89.4	50-150		%	1		10/18/17 03:47
5a Androstane (surr)	184 *	50-150		%	4		10/05/17 20:00

Batch Information

Analytical Batch: XFC13892
 Analytical Method: AK102
 Analyst: JMG
 Analytical Date/Time: 10/18/17 03:47
 Container ID: 1177018012-B

Prep Batch: XXX38666
 Prep Method: SW3550C
 Prep Date/Time: 10/15/17 11:58
 Prep Initial Wt./Vol.: 30.468 g
 Prep Extract Vol: 2 mL

Analytical Batch: XFC13861
 Analytical Method: AK102
 Analyst: JMG
 Analytical Date/Time: 10/05/17 20:00
 Container ID: 1177018012-A

Prep Batch: XXX38581
 Prep Method: SW3550C
 Prep Date/Time: 10/04/17 08:04
 Prep Initial Wt./Vol.: 30.309 g
 Prep Extract Vol: 1 mL

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	88.4	63.3	19.6	mg/Kg	1		10/18/17 03:47
Residual Range Organics	566	127	39.5	mg/Kg	4		10/05/17 20:00

Surrogates

n-Triacontane-d62 (surr)	88.6	50-150		%	4		10/05/17 20:00
n-Triacontane-d62 (surr)	86.7	50-150		%	1		10/18/17 03:47

Batch Information

Analytical Batch: XFC13892
 Analytical Method: AK103
 Analyst: JMG
 Analytical Date/Time: 10/18/17 03:47
 Container ID: 1177018012-B

Prep Batch: XXX38666
 Prep Method: SW3550C
 Prep Date/Time: 10/15/17 11:58
 Prep Initial Wt./Vol.: 30.468 g
 Prep Extract Vol: 2 mL

Analytical Batch: XFC13861
 Analytical Method: AK103
 Analyst: JMG
 Analytical Date/Time: 10/05/17 20:00
 Container ID: 1177018012-A

Prep Batch: XXX38581
 Prep Method: SW3550C
 Prep Date/Time: 10/04/17 08:04
 Prep Initial Wt./Vol.: 30.309 g
 Prep Extract Vol: 1 mL

Print Date: 10/20/2017 8:37:17AM

J flagging is activated

Results of MFD-02

Client Sample ID: **MFD-02**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018012
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:58
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):62.2
 Location:

Results by Semivolatile Organic Fuels Department, Silica G

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
DRO Silica Gel	31.6 U	63.3	19.6	mg/Kg	1		10/18/17 02:37

Surrogates

5a Androstane (surr)	84.4	50-150		%	1		10/18/17 02:37
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Batch Information

Analytical Batch: XFC13894
 Analytical Method: AK102-
 Analyst: JMG
 Analytical Date/Time: 10/18/17 02:37
 Container ID: 1177018012-B

Prep Batch: XXX38667
 Prep Method: SW3550C w/SG Cleanup-SG
 Prep Date/Time: 10/15/17 12:00
 Prep Initial Wt./Vol.: 30.468 g
 Prep Extract Vol: 2 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
RRO Silica Gel	60.5 J	63.3	19.6	mg/Kg	1		10/18/17 02:37

Surrogates

n-Triacontane-d62 (surr)	83.2	50-150		%	1		10/18/17 02:37
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Batch Information

Analytical Batch: XFC13894
 Analytical Method: AK103-
 Analyst: JMG
 Analytical Date/Time: 10/18/17 02:37
 Container ID: 1177018012-B

Prep Batch: XXX38667
 Prep Method: SW3550C w/SG Cleanup-SG
 Prep Date/Time: 10/15/17 12:00
 Prep Initial Wt./Vol.: 30.468 g
 Prep Extract Vol: 2 mL

Results of MFD-02

Client Sample ID: **MFD-02**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018012
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:58
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):62.2
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	21.4 U	42.9	13.3	ug/Kg	1		10/05/17 18:34
1,1,1-Trichloroethane	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
1,1,2,2-Tetrachloroethane	13.4 U	26.8	8.37	ug/Kg	1		10/05/17 18:34
1,1,2-Trichloroethane	10.8 U	21.5	6.65	ug/Kg	1		10/05/17 18:34
1,1-Dichloroethane	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
1,1-Dichloroethene	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
1,1-Dichloropropene	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
1,2,3-Trichlorobenzene	53.5 U	107	32.2	ug/Kg	1		10/05/17 18:34
1,2,3-Trichloropropane	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
1,2,4-Trichlorobenzene	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
1,2,4-Trimethylbenzene	53.5 U	107	32.2	ug/Kg	1		10/05/17 18:34
1,2-Dibromo-3-chloropropane	108 U	215	66.5	ug/Kg	1		10/05/17 18:34
1,2-Dibromoethane	10.8 U	21.5	6.65	ug/Kg	1		10/05/17 18:34
1,2-Dichlorobenzene	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
1,2-Dichloroethane	10.8 U	21.5	6.65	ug/Kg	1		10/05/17 18:34
1,2-Dichloropropane	10.8 U	21.5	6.65	ug/Kg	1		10/05/17 18:34
1,3,5-Trimethylbenzene	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
1,3-Dichlorobenzene	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
1,3-Dichloropropane	10.8 U	21.5	6.65	ug/Kg	1		10/05/17 18:34
1,4-Dichlorobenzene	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
2,2-Dichloropropane	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
2-Butanone (MEK)	269 U	537	167	ug/Kg	1		10/05/17 18:34
2-Chlorotoluene	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
2-Hexanone	108 U	215	66.5	ug/Kg	1		10/05/17 18:34
4-Chlorotoluene	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
4-Isopropyltoluene	303	53.7	16.7	ug/Kg	1		10/05/17 18:34
4-Methyl-2-pentanone (MIBK)	269 U	537	167	ug/Kg	1		10/05/17 18:34
Benzene	13.4 U	26.8	8.37	ug/Kg	1		10/05/17 18:34
Bromobenzene	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
Bromochloromethane	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
Bromodichloromethane	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
Bromoform	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
Bromomethane	215 U	429	133	ug/Kg	1		10/05/17 18:34
Carbon disulfide	108 U	215	66.5	ug/Kg	1		10/05/17 18:34
Carbon tetrachloride	13.4 U	26.8	8.37	ug/Kg	1		10/05/17 18:34
Chlorobenzene	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
Chloroethane	215 U	429	133	ug/Kg	1		10/05/17 18:34

Print Date: 10/20/2017 8:37:17AM

J flagging is activated

Results of MFD-02

Client Sample ID: **MFD-02**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018012
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:58
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):62.2
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
Chloromethane	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
cis-1,2-Dichloroethene	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
cis-1,3-Dichloropropene	13.4 U	26.8	8.37	ug/Kg	1		10/05/17 18:34
Dibromochloromethane	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
Dibromomethane	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
Dichlorodifluoromethane	53.5 U	107	32.2	ug/Kg	1		10/05/17 18:34
Ethylbenzene	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
Freon-113	108 U	215	66.5	ug/Kg	1		10/05/17 18:34
Hexachlorobutadiene	21.4 U	42.9	13.3	ug/Kg	1		10/05/17 18:34
Isopropylbenzene (Cumene)	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
Methylene chloride	108 U	215	66.5	ug/Kg	1		10/05/17 18:34
Methyl-t-butyl ether	108 U	215	66.5	ug/Kg	1		10/05/17 18:34
Naphthalene	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
n-Butylbenzene	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
n-Propylbenzene	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
o-Xylene	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
P & M -Xylene	53.5 U	107	32.2	ug/Kg	1		10/05/17 18:34
sec-Butylbenzene	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
Styrene	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
tert-Butylbenzene	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
Tetrachloroethene	13.4 U	26.8	8.37	ug/Kg	1		10/05/17 18:34
Toluene	26.8 J	53.7	16.7	ug/Kg	1		10/05/17 18:34
trans-1,2-Dichloroethene	26.9 U	53.7	16.7	ug/Kg	1		10/05/17 18:34
trans-1,3-Dichloropropene	13.4 U	26.8	8.37	ug/Kg	1		10/05/17 18:34
Trichloroethene	10.8 U	21.5	6.65	ug/Kg	1		10/05/17 18:34
Trichlorofluoromethane	53.5 U	107	32.2	ug/Kg	1		10/05/17 18:34
Vinyl acetate	108 U	215	66.5	ug/Kg	1		10/05/17 18:34
Vinyl chloride	10.8 U	21.5	6.65	ug/Kg	1		10/05/17 18:34
Xylenes (total)	80.5 U	161	48.9	ug/Kg	1		10/05/17 18:34
Surrogates							
1,2-Dichloroethane-D4 (surr)	106	71-136		%	1		10/05/17 18:34
4-Bromofluorobenzene (surr)	185 *	55-151		%	1		10/05/17 18:34
Toluene-d8 (surr)	96.6	85-116		%	1		10/05/17 18:34

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J flagging is activated

Results of MFD-02

Client Sample ID: **MFD-02**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018012
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:58
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):62.2
 Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS17275
 Analytical Method: SW8260C
 Analyst: NRO
 Analytical Date/Time: 10/05/17 18:34
 Container ID: 1177018012-D

Prep Batch: VXX31443
 Prep Method: SW5035A
 Prep Date/Time: 09/29/17 08:58
 Prep Initial Wt./Vol.: 86.211 g
 Prep Extract Vol: 57.57 mL

Results of MC-DS-01

Client Sample ID: **MC-DS-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018013
 Lab Project ID: 1177018

Collection Date: 09/29/17 10:50
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):77.9
 Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Lead	5.25	1.26	0.392	mg/Kg	50		10/09/17 19:36

Batch Information

Analytical Batch: MMS9968
 Analytical Method: SW6020A
 Analyst: VDL
 Analytical Date/Time: 10/09/17 19:36
 Container ID: 1177018013-A

Prep Batch: MXX31122
 Prep Method: SW3050B
 Prep Date/Time: 10/05/17 10:50
 Prep Initial Wt./Vol.: 1.015 g
 Prep Extract Vol: 50 mL

Print Date: 10/20/2017 8:37:17AM

Results of MC-DS-01

Client Sample ID: **MC-DS-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018013
 Lab Project ID: 1177018

Collection Date: 09/29/17 10:50
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):77.9
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	25.5 U	25.5	7.92	mg/Kg	1		10/05/17 18:01
Surrogates							
5a Androstane (surr)	88.9	50-150		%	1		10/05/17 18:01

Batch Information

Analytical Batch: XFC13861
 Analytical Method: AK102
 Analyst: JMG
 Analytical Date/Time: 10/05/17 18:01
 Container ID: 1177018013-A

Prep Batch: XXX38581
 Prep Method: SW3550C
 Prep Date/Time: 10/04/17 08:04
 Prep Initial Wt./Vol.: 30.16 g
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	25.5 U	25.5	7.92	mg/Kg	1		10/05/17 18:01
Surrogates							
n-Triacontane-d62 (surr)	89.4	50-150		%	1		10/05/17 18:01

Batch Information

Analytical Batch: XFC13861
 Analytical Method: AK103
 Analyst: JMG
 Analytical Date/Time: 10/05/17 18:01
 Container ID: 1177018013-A

Prep Batch: XXX38581
 Prep Method: SW3550C
 Prep Date/Time: 10/04/17 08:04
 Prep Initial Wt./Vol.: 30.16 g
 Prep Extract Vol: 1 mL

Print Date: 10/20/2017 8:37:17AM

Results of MC-DS-01

Client Sample ID: **MC-DS-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018013
 Lab Project ID: 1177018

Collection Date: 09/29/17 10:50
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):77.9
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	23.9 U	23.9	7.41	ug/Kg	1		10/05/17 18:50
1,1,1-Trichloroethane	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
1,1,2,2-Tetrachloroethane	14.9 U	14.9	4.66	ug/Kg	1		10/05/17 18:50
1,1,2-Trichloroethane	12.0 U	12.0	3.71	ug/Kg	1		10/05/17 18:50
1,1-Dichloroethane	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
1,1-Dichloroethene	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
1,1-Dichloropropene	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
1,2,3-Trichlorobenzene	59.8 U	59.8	17.9	ug/Kg	1		10/05/17 18:50
1,2,3-Trichloropropane	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
1,2,4-Trichlorobenzene	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
1,2,4-Trimethylbenzene	59.8 U	59.8	17.9	ug/Kg	1		10/05/17 18:50
1,2-Dibromo-3-chloropropane	120 U	120	37.1	ug/Kg	1		10/05/17 18:50
1,2-Dibromoethane	12.0 U	12.0	3.71	ug/Kg	1		10/05/17 18:50
1,2-Dichlorobenzene	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
1,2-Dichloroethane	12.0 U	12.0	3.71	ug/Kg	1		10/05/17 18:50
1,2-Dichloropropane	12.0 U	12.0	3.71	ug/Kg	1		10/05/17 18:50
1,3,5-Trimethylbenzene	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
1,3-Dichlorobenzene	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
1,3-Dichloropropane	12.0 U	12.0	3.71	ug/Kg	1		10/05/17 18:50
1,4-Dichlorobenzene	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
2,2-Dichloropropane	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
2-Butanone (MEK)	299 U	299	93.3	ug/Kg	1		10/05/17 18:50
2-Chlorotoluene	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
2-Hexanone	120 U	120	37.1	ug/Kg	1		10/05/17 18:50
4-Chlorotoluene	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
4-Isopropyltoluene	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
4-Methyl-2-pentanone (MIBK)	299 U	299	93.3	ug/Kg	1		10/05/17 18:50
Benzene	14.9 U	14.9	4.66	ug/Kg	1		10/05/17 18:50
Bromobenzene	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
Bromochloromethane	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
Bromodichloromethane	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
Bromoform	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
Bromomethane	239 U	239	74.1	ug/Kg	1		10/05/17 18:50
Carbon disulfide	120 U	120	37.1	ug/Kg	1		10/05/17 18:50
Carbon tetrachloride	14.9 U	14.9	4.66	ug/Kg	1		10/05/17 18:50
Chlorobenzene	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
Chloroethane	239 U	239	74.1	ug/Kg	1		10/05/17 18:50

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Results of MC-DS-01

Client Sample ID: **MC-DS-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018013
 Lab Project ID: 1177018

Collection Date: 09/29/17 10:50
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):77.9
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
Chloromethane	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
cis-1,2-Dichloroethene	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
cis-1,3-Dichloropropene	14.9 U	14.9	4.66	ug/Kg	1		10/05/17 18:50
Dibromochloromethane	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
Dibromomethane	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
Dichlorodifluoromethane	59.8 U	59.8	17.9	ug/Kg	1		10/05/17 18:50
Ethylbenzene	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
Freon-113	120 U	120	37.1	ug/Kg	1		10/05/17 18:50
Hexachlorobutadiene	23.9 U	23.9	7.41	ug/Kg	1		10/05/17 18:50
Isopropylbenzene (Cumene)	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
Methylene chloride	120 U	120	37.1	ug/Kg	1		10/05/17 18:50
Methyl-t-butyl ether	120 U	120	37.1	ug/Kg	1		10/05/17 18:50
Naphthalene	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
n-Butylbenzene	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
n-Propylbenzene	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
o-Xylene	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
P & M -Xylene	59.8 U	59.8	17.9	ug/Kg	1		10/05/17 18:50
sec-Butylbenzene	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
Styrene	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
tert-Butylbenzene	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
Tetrachloroethene	14.9 U	14.9	4.66	ug/Kg	1		10/05/17 18:50
Toluene	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
trans-1,2-Dichloroethene	29.9 U	29.9	9.33	ug/Kg	1		10/05/17 18:50
trans-1,3-Dichloropropene	14.9 U	14.9	4.66	ug/Kg	1		10/05/17 18:50
Trichloroethene	12.0 U	12.0	3.71	ug/Kg	1		10/05/17 18:50
Trichlorofluoromethane	59.8 U	59.8	17.9	ug/Kg	1		10/05/17 18:50
Vinyl acetate	120 U	120	37.1	ug/Kg	1		10/05/17 18:50
Vinyl chloride	12.0 U	12.0	3.71	ug/Kg	1		10/05/17 18:50
Xylenes (total)	89.7 U	89.7	27.3	ug/Kg	1		10/05/17 18:50
Surrogates							
1,2-Dichloroethane-D4 (surr)	109	71-136		%	1		10/05/17 18:50
4-Bromofluorobenzene (surr)	143	55-151		%	1		10/05/17 18:50
Toluene-d8 (surr)	96.8	85-116		%	1		10/05/17 18:50

Print Date: 10/20/2017 8:37:17AM

Results of MC-DS-01

Client Sample ID: **MC-DS-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018013
 Lab Project ID: 1177018

Collection Date: 09/29/17 10:50
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):77.9
 Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS17275
 Analytical Method: SW8260C
 Analyst: NRO
 Analytical Date/Time: 10/05/17 18:50
 Container ID: 1177018013-D

Prep Batch: VXX31443
 Prep Method: SW5035A
 Prep Date/Time: 09/29/17 10:50
 Prep Initial Wt./Vol.: 102.137 g
 Prep Extract Vol: 47.5718 mL

Print Date: 10/20/2017 8:37:17AM

Results of MC-US-01

Client Sample ID: **MC-US-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018014
 Lab Project ID: 1177018

Collection Date: 09/29/17 11:05
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):61.3
 Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Lead	8.57	1.60	0.495	mg/Kg	50		10/09/17 19:40

Batch Information

Analytical Batch: MMS9968
 Analytical Method: SW6020A
 Analyst: VDL
 Analytical Date/Time: 10/09/17 19:40
 Container ID: 1177018014-A

Prep Batch: MXX31122
 Prep Method: SW3050B
 Prep Date/Time: 10/05/17 10:50
 Prep Initial Wt./Vol.: 1.021 g
 Prep Extract Vol: 50 mL

Results of MC-US-01

Client Sample ID: **MC-US-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018014
 Lab Project ID: 1177018

Collection Date: 09/29/17 11:05
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):61.3
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	45.1	32.6	10.1	mg/Kg	1		10/05/17 18:31
Surrogates							
5a Androstane (surr)	94.4	50-150		%	1		10/05/17 18:31

Batch Information

Analytical Batch: XFC13861
 Analytical Method: AK102
 Analyst: JMG
 Analytical Date/Time: 10/05/17 18:31
 Container ID: 1177018014-A

Prep Batch: XXX38581
 Prep Method: SW3550C
 Prep Date/Time: 10/04/17 08:04
 Prep Initial Wt./Vol.: 30.029 g
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	418	32.6	10.1	mg/Kg	1		10/05/17 18:31
Surrogates							
n-Triacontane-d62 (surr)	85.1	50-150		%	1		10/05/17 18:31

Batch Information

Analytical Batch: XFC13861
 Analytical Method: AK103
 Analyst: JMG
 Analytical Date/Time: 10/05/17 18:31
 Container ID: 1177018014-A

Prep Batch: XXX38581
 Prep Method: SW3550C
 Prep Date/Time: 10/04/17 08:04
 Prep Initial Wt./Vol.: 30.029 g
 Prep Extract Vol: 1 mL

Results of MC-US-01

Client Sample ID: **MC-US-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018014
 Lab Project ID: 1177018

Collection Date: 09/29/17 11:05
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):61.3
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	19.9 U	39.8	12.3	ug/Kg	1		10/05/17 17:22
1,1,1-Trichloroethane	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
1,1,2,2-Tetrachloroethane	12.4 U	24.8	7.75	ug/Kg	1		10/05/17 17:22
1,1,2-Trichloroethane	9.95 U	19.9	6.16	ug/Kg	1		10/05/17 17:22
1,1-Dichloroethane	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
1,1-Dichloroethene	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
1,1-Dichloropropene	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
1,2,3-Trichlorobenzene	49.7 U	99.4	29.8	ug/Kg	1		10/05/17 17:22
1,2,3-Trichloropropane	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
1,2,4-Trichlorobenzene	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
1,2,4-Trimethylbenzene	49.7 U	99.4	29.8	ug/Kg	1		10/05/17 17:22
1,2-Dibromo-3-chloropropane	99.5 U	199	61.6	ug/Kg	1		10/05/17 17:22
1,2-Dibromoethane	9.95 U	19.9	6.16	ug/Kg	1		10/05/17 17:22
1,2-Dichlorobenzene	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
1,2-Dichloroethane	9.95 U	19.9	6.16	ug/Kg	1		10/05/17 17:22
1,2-Dichloropropane	9.95 U	19.9	6.16	ug/Kg	1		10/05/17 17:22
1,3,5-Trimethylbenzene	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
1,3-Dichlorobenzene	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
1,3-Dichloropropane	9.95 U	19.9	6.16	ug/Kg	1		10/05/17 17:22
1,4-Dichlorobenzene	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
2,2-Dichloropropane	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
2-Butanone (MEK)	249 U	497	155	ug/Kg	1		10/05/17 17:22
2-Chlorotoluene	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
2-Hexanone	99.5 U	199	61.6	ug/Kg	1		10/05/17 17:22
4-Chlorotoluene	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
4-Isopropyltoluene	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
4-Methyl-2-pentanone (MIBK)	249 U	497	155	ug/Kg	1		10/05/17 17:22
Benzene	12.4 U	24.8	7.75	ug/Kg	1		10/05/17 17:22
Bromobenzene	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
Bromochloromethane	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
Bromodichloromethane	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
Bromoform	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
Bromomethane	199 U	398	123	ug/Kg	1		10/05/17 17:22
Carbon disulfide	99.5 U	199	61.6	ug/Kg	1		10/05/17 17:22
Carbon tetrachloride	12.4 U	24.8	7.75	ug/Kg	1		10/05/17 17:22
Chlorobenzene	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
Chloroethane	199 U	398	123	ug/Kg	1		10/05/17 17:22

Print Date: 10/20/2017 8:37:17AM

J flagging is activated

Results of MC-US-01

Client Sample ID: **MC-US-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018014
 Lab Project ID: 1177018

Collection Date: 09/29/17 11:05
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):61.3
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
Chloromethane	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
cis-1,2-Dichloroethene	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
cis-1,3-Dichloropropene	12.4 U	24.8	7.75	ug/Kg	1		10/05/17 17:22
Dibromochloromethane	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
Dibromomethane	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
Dichlorodifluoromethane	49.7 U	99.4	29.8	ug/Kg	1		10/05/17 17:22
Ethylbenzene	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
Freon-113	99.5 U	199	61.6	ug/Kg	1		10/05/17 17:22
Hexachlorobutadiene	19.9 U	39.8	12.3	ug/Kg	1		10/05/17 17:22
Isopropylbenzene (Cumene)	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
Methylene chloride	99.5 U	199	61.6	ug/Kg	1		10/05/17 17:22
Methyl-t-butyl ether	99.5 U	199	61.6	ug/Kg	1		10/05/17 17:22
Naphthalene	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
n-Butylbenzene	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
n-Propylbenzene	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
o-Xylene	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
P & M -Xylene	49.7 U	99.4	29.8	ug/Kg	1		10/05/17 17:22
sec-Butylbenzene	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
Styrene	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
tert-Butylbenzene	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
Tetrachloroethene	12.4 U	24.8	7.75	ug/Kg	1		10/05/17 17:22
Toluene	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
trans-1,2-Dichloroethene	24.9 U	49.7	15.5	ug/Kg	1		10/05/17 17:22
trans-1,3-Dichloropropene	12.4 U	24.8	7.75	ug/Kg	1		10/05/17 17:22
Trichloroethene	9.95 U	19.9	6.16	ug/Kg	1		10/05/17 17:22
Trichlorofluoromethane	49.7 U	99.4	29.8	ug/Kg	1		10/05/17 17:22
Vinyl acetate	99.5 U	199	61.6	ug/Kg	1		10/05/17 17:22
Vinyl chloride	9.95 U	19.9	6.16	ug/Kg	1		10/05/17 17:22
Xylenes (total)	74.5 U	149	45.3	ug/Kg	1		10/05/17 17:22
Surrogates							
1,2-Dichloroethane-D4 (surr)	95.7	71-136		%	1		10/05/17 17:22
4-Bromofluorobenzene (surr)	155 *	55-151		%	1		10/05/17 17:22
Toluene-d8 (surr)	103	85-116		%	1		10/05/17 17:22

Print Date: 10/20/2017 8:37:17AM

J flagging is activated

Results of MC-US-01

Client Sample ID: **MC-US-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018014
 Lab Project ID: 1177018

Collection Date: 09/29/17 11:05
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):61.3
 Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS17274
 Analytical Method: SW8260C
 Analyst: NRO
 Analytical Date/Time: 10/05/17 17:22
 Container ID: 1177018014-D

Prep Batch: VXX31444
 Prep Method: SW5035A
 Prep Date/Time: 09/29/17 11:05
 Prep Initial Wt./Vol.: 112.564 g
 Prep Extract Vol: 68.5721 mL

Results of FPC-01

Client Sample ID: **FPC-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018015
 Lab Project ID: 1177018

Collection Date: 09/29/17 11:30
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):75.1
 Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Lead	1.65	1.29	0.401	mg/Kg	50		10/09/17 19:45

Batch Information

Analytical Batch: MMS9968
 Analytical Method: SW6020A
 Analyst: VDL
 Analytical Date/Time: 10/09/17 19:45
 Container ID: 1177018015-A

Prep Batch: MXX31122
 Prep Method: SW3050B
 Prep Date/Time: 10/05/17 10:50
 Prep Initial Wt./Vol.: 1.028 g
 Prep Extract Vol: 50 mL

Print Date: 10/20/2017 8:37:17AM

Results of FPC-01

Client Sample ID: **FPC-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018015
 Lab Project ID: 1177018

Collection Date: 09/29/17 11:30
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):75.1
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	26.3 U	26.3	8.14	mg/Kg	1		10/05/17 18:41
Surrogates							
5a Androstane (surr)	86.1	50-150		%	1		10/05/17 18:41

Batch Information

Analytical Batch: XFC13861
 Analytical Method: AK102
 Analyst: JMG
 Analytical Date/Time: 10/05/17 18:41
 Container ID: 1177018015-A

Prep Batch: XXX38581
 Prep Method: SW3550C
 Prep Date/Time: 10/04/17 08:04
 Prep Initial Wt./Vol.: 30.395 g
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	30.4	26.3	8.14	mg/Kg	1		10/05/17 18:41
Surrogates							
n-Triacontane-d62 (surr)	87.3	50-150		%	1		10/05/17 18:41

Batch Information

Analytical Batch: XFC13861
 Analytical Method: AK103
 Analyst: JMG
 Analytical Date/Time: 10/05/17 18:41
 Container ID: 1177018015-A

Prep Batch: XXX38581
 Prep Method: SW3550C
 Prep Date/Time: 10/04/17 08:04
 Prep Initial Wt./Vol.: 30.395 g
 Prep Extract Vol: 1 mL

Print Date: 10/20/2017 8:37:17AM

Results of FPC-01

Client Sample ID: **FPC-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018015
 Lab Project ID: 1177018

Collection Date: 09/29/17 11:30
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%): 75.1
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	23.4 U	23.4	7.25	ug/Kg	1		10/05/17 17:39
1,1,1-Trichloroethane	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
1,1,2,2-Tetrachloroethane	14.6 U	14.6	4.56	ug/Kg	1		10/05/17 17:39
1,1,2-Trichloroethane	11.7 U	11.7	3.63	ug/Kg	1		10/05/17 17:39
1,1-Dichloroethane	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
1,1-Dichloroethene	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
1,1-Dichloropropene	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
1,2,3-Trichlorobenzene	58.5 U	58.5	17.6	ug/Kg	1		10/05/17 17:39
1,2,3-Trichloropropane	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
1,2,4-Trichlorobenzene	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
1,2,4-Trimethylbenzene	58.5 U	58.5	17.6	ug/Kg	1		10/05/17 17:39
1,2-Dibromo-3-chloropropane	117 U	117	36.3	ug/Kg	1		10/05/17 17:39
1,2-Dibromoethane	11.7 U	11.7	3.63	ug/Kg	1		10/05/17 17:39
1,2-Dichlorobenzene	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
1,2-Dichloroethane	11.7 U	11.7	3.63	ug/Kg	1		10/05/17 17:39
1,2-Dichloropropane	11.7 U	11.7	3.63	ug/Kg	1		10/05/17 17:39
1,3,5-Trimethylbenzene	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
1,3-Dichlorobenzene	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
1,3-Dichloropropane	11.7 U	11.7	3.63	ug/Kg	1		10/05/17 17:39
1,4-Dichlorobenzene	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
2,2-Dichloropropane	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
2-Butanone (MEK)	293 U	293	91.3	ug/Kg	1		10/05/17 17:39
2-Chlorotoluene	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
2-Hexanone	117 U	117	36.3	ug/Kg	1		10/05/17 17:39
4-Chlorotoluene	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
4-Isopropyltoluene	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
4-Methyl-2-pentanone (MIBK)	293 U	293	91.3	ug/Kg	1		10/05/17 17:39
Benzene	14.6 U	14.6	4.56	ug/Kg	1		10/05/17 17:39
Bromobenzene	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
Bromochloromethane	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
Bromodichloromethane	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
Bromoform	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
Bromomethane	234 U	234	72.5	ug/Kg	1		10/05/17 17:39
Carbon disulfide	117 U	117	36.3	ug/Kg	1		10/05/17 17:39
Carbon tetrachloride	14.6 U	14.6	4.56	ug/Kg	1		10/05/17 17:39
Chlorobenzene	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
Chloroethane	234 U	234	72.5	ug/Kg	1		10/05/17 17:39

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Results of FPC-01

Client Sample ID: **FPC-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018015
 Lab Project ID: 1177018

Collection Date: 09/29/17 11:30
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):75.1
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
Chloromethane	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
cis-1,2-Dichloroethene	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
cis-1,3-Dichloropropene	14.6 U	14.6	4.56	ug/Kg	1		10/05/17 17:39
Dibromochloromethane	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
Dibromomethane	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
Dichlorodifluoromethane	58.5 U	58.5	17.6	ug/Kg	1		10/05/17 17:39
Ethylbenzene	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
Freon-113	117 U	117	36.3	ug/Kg	1		10/05/17 17:39
Hexachlorobutadiene	23.4 U	23.4	7.25	ug/Kg	1		10/05/17 17:39
Isopropylbenzene (Cumene)	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
Methylene chloride	117 U	117	36.3	ug/Kg	1		10/05/17 17:39
Methyl-t-butyl ether	117 U	117	36.3	ug/Kg	1		10/05/17 17:39
Naphthalene	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
n-Butylbenzene	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
n-Propylbenzene	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
o-Xylene	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
P & M -Xylene	58.5 U	58.5	17.6	ug/Kg	1		10/05/17 17:39
sec-Butylbenzene	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
Styrene	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
tert-Butylbenzene	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
Tetrachloroethene	14.6 U	14.6	4.56	ug/Kg	1		10/05/17 17:39
Toluene	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
trans-1,2-Dichloroethene	29.3 U	29.3	9.13	ug/Kg	1		10/05/17 17:39
trans-1,3-Dichloropropene	14.6 U	14.6	4.56	ug/Kg	1		10/05/17 17:39
Trichloroethene	11.7 U	11.7	3.63	ug/Kg	1		10/05/17 17:39
Trichlorofluoromethane	58.5 U	58.5	17.6	ug/Kg	1		10/05/17 17:39
Vinyl acetate	117 U	117	36.3	ug/Kg	1		10/05/17 17:39
Vinyl chloride	11.7 U	11.7	3.63	ug/Kg	1		10/05/17 17:39
Xylenes (total)	87.8 U	87.8	26.7	ug/Kg	1		10/05/17 17:39
Surrogates							
1,2-Dichloroethane-D4 (surr)	97.7	71-136		%	1		10/05/17 17:39
4-Bromofluorobenzene (surr)	161 *	55-151		%	1		10/05/17 17:39
Toluene-d8 (surr)	102	85-116		%	1		10/05/17 17:39

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Results of FPC-01

Client Sample ID: **FPC-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018015
 Lab Project ID: 1177018

Collection Date: 09/29/17 11:30
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):75.1
 Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS17274
 Analytical Method: SW8260C
 Analyst: NRO
 Analytical Date/Time: 10/05/17 17:39
 Container ID: 1177018015-D

Prep Batch: VXX31444
 Prep Method: SW5035A
 Prep Date/Time: 09/29/17 11:30
 Prep Initial Wt./Vol.: 130.872 g
 Prep Extract Vol: 57.5318 mL

Print Date: 10/20/2017 8:37:17AM

Results of PDC-01

Client Sample ID: **PDC-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018016
 Lab Project ID: 1177018

Collection Date: 09/29/17 13:00
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):42.0
 Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Lead	3.93	2.26	0.700	mg/Kg	50		10/09/17 19:49

Batch Information

Analytical Batch: MMS9968
 Analytical Method: SW6020A
 Analyst: VDL
 Analytical Date/Time: 10/09/17 19:49
 Container ID: 1177018016-A

Prep Batch: MXX31122
 Prep Method: SW3050B
 Prep Date/Time: 10/05/17 10:50
 Prep Initial Wt./Vol.: 1.053 g
 Prep Extract Vol: 50 mL

Results of PDC-01

Client Sample ID: **PDC-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018016
 Lab Project ID: 1177018

Collection Date: 09/29/17 13:00
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):42.0
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	87.3	47.2	14.6	mg/Kg	1		10/05/17 18:51
Surrogates							
5a Androstane (surr)	103	50-150		%	1		10/05/17 18:51

Batch Information

Analytical Batch: XFC13861
 Analytical Method: AK102
 Analyst: JMG
 Analytical Date/Time: 10/05/17 18:51
 Container ID: 1177018016-A

Prep Batch: XXX38581
 Prep Method: SW3550C
 Prep Date/Time: 10/04/17 08:04
 Prep Initial Wt./Vol.: 30.226 g
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	508	47.2	14.6	mg/Kg	1		10/05/17 18:51
Surrogates							
n-Triacontane-d62 (surr)	82.5	50-150		%	1		10/05/17 18:51

Batch Information

Analytical Batch: XFC13861
 Analytical Method: AK103
 Analyst: JMG
 Analytical Date/Time: 10/05/17 18:51
 Container ID: 1177018016-A

Prep Batch: XXX38581
 Prep Method: SW3550C
 Prep Date/Time: 10/04/17 08:04
 Prep Initial Wt./Vol.: 30.226 g
 Prep Extract Vol: 1 mL

Results of PDC-01

Client Sample ID: **PDC-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018016
 Lab Project ID: 1177018

Collection Date: 09/29/17 13:00
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):42.0
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	39.9 U	79.8	24.7	ug/Kg	1		10/05/17 17:57
1,1,1-Trichloroethane	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
1,1,2,2-Tetrachloroethane	24.9 U	49.9	15.6	ug/Kg	1		10/05/17 17:57
1,1,2-Trichloroethane	19.9 U	39.9	12.4	ug/Kg	1		10/05/17 17:57
1,1-Dichloroethane	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
1,1-Dichloroethene	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
1,1-Dichloropropene	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
1,2,3-Trichlorobenzene	100 U	200	59.9	ug/Kg	1		10/05/17 17:57
1,2,3-Trichloropropane	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
1,2,4-Trichlorobenzene	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
1,2,4-Trimethylbenzene	100 U	200	59.9	ug/Kg	1		10/05/17 17:57
1,2-Dibromo-3-chloropropane	200 U	399	124	ug/Kg	1		10/05/17 17:57
1,2-Dibromoethane	19.9 U	39.9	12.4	ug/Kg	1		10/05/17 17:57
1,2-Dichlorobenzene	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
1,2-Dichloroethane	19.9 U	39.9	12.4	ug/Kg	1		10/05/17 17:57
1,2-Dichloropropane	19.9 U	39.9	12.4	ug/Kg	1		10/05/17 17:57
1,3,5-Trimethylbenzene	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
1,3-Dichlorobenzene	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
1,3-Dichloropropane	19.9 U	39.9	12.4	ug/Kg	1		10/05/17 17:57
1,4-Dichlorobenzene	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
2,2-Dichloropropane	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
2-Butanone (MEK)	499 U	998	311	ug/Kg	1		10/05/17 17:57
2-Chlorotoluene	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
2-Hexanone	200 U	399	124	ug/Kg	1		10/05/17 17:57
4-Chlorotoluene	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
4-Isopropyltoluene	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
4-Methyl-2-pentanone (MIBK)	499 U	998	311	ug/Kg	1		10/05/17 17:57
Benzene	24.9 U	49.9	15.6	ug/Kg	1		10/05/17 17:57
Bromobenzene	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
Bromochloromethane	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
Bromodichloromethane	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
Bromoform	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
Bromomethane	399 U	798	247	ug/Kg	1		10/05/17 17:57
Carbon disulfide	200 U	399	124	ug/Kg	1		10/05/17 17:57
Carbon tetrachloride	24.9 U	49.9	15.6	ug/Kg	1		10/05/17 17:57
Chlorobenzene	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
Chloroethane	399 U	798	247	ug/Kg	1		10/05/17 17:57

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J flagging is activated

Results of PDC-01

Client Sample ID: **PDC-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018016
 Lab Project ID: 1177018

Collection Date: 09/29/17 13:00
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):42.0
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
Chloromethane	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
cis-1,2-Dichloroethene	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
cis-1,3-Dichloropropene	24.9 U	49.9	15.6	ug/Kg	1		10/05/17 17:57
Dibromochloromethane	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
Dibromomethane	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
Dichlorodifluoromethane	100 U	200	59.9	ug/Kg	1		10/05/17 17:57
Ethylbenzene	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
Freon-113	200 U	399	124	ug/Kg	1		10/05/17 17:57
Hexachlorobutadiene	39.9 U	79.8	24.7	ug/Kg	1		10/05/17 17:57
Isopropylbenzene (Cumene)	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
Methylene chloride	200 U	399	124	ug/Kg	1		10/05/17 17:57
Methyl-t-butyl ether	200 U	399	124	ug/Kg	1		10/05/17 17:57
Naphthalene	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
n-Butylbenzene	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
n-Propylbenzene	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
o-Xylene	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
P & M -Xylene	100 U	200	59.9	ug/Kg	1		10/05/17 17:57
sec-Butylbenzene	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
Styrene	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
tert-Butylbenzene	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
Tetrachloroethene	24.9 U	49.9	15.6	ug/Kg	1		10/05/17 17:57
Toluene	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
trans-1,2-Dichloroethene	49.9 U	99.8	31.1	ug/Kg	1		10/05/17 17:57
trans-1,3-Dichloropropene	24.9 U	49.9	15.6	ug/Kg	1		10/05/17 17:57
Trichloroethene	19.9 U	39.9	12.4	ug/Kg	1		10/05/17 17:57
Trichlorofluoromethane	100 U	200	59.9	ug/Kg	1		10/05/17 17:57
Vinyl acetate	200 U	399	124	ug/Kg	1		10/05/17 17:57
Vinyl chloride	19.9 U	39.9	12.4	ug/Kg	1		10/05/17 17:57
Xylenes (total)	150 U	299	91.0	ug/Kg	1		10/05/17 17:57
Surrogates							
1,2-Dichloroethane-D4 (surr)	96.8	71-136		%	1		10/05/17 17:57
4-Bromofluorobenzene (surr)	152 *	55-151		%	1		10/05/17 17:57
Toluene-d8 (surr)	101	85-116		%	1		10/05/17 17:57

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J flagging is activated

Results of **PDC-01**

Client Sample ID: **PDC-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018016
 Lab Project ID: 1177018

Collection Date: 09/29/17 13:00
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):42.0
 Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS17274
 Analytical Method: SW8260C
 Analyst: NRO
 Analytical Date/Time: 10/05/17 17:57
 Container ID: 1177018016-D

Prep Batch: VXX31444
 Prep Method: SW5035A
 Prep Date/Time: 09/29/17 13:00
 Prep Initial Wt./Vol.: 96.5 g
 Prep Extract Vol: 80.9435 mL

Results of PCM-01

Client Sample ID: **PCM-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018017
 Lab Project ID: 1177018

Collection Date: 09/29/17 14:20
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):74.9
 Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Lead	1.31 U	1.31	0.407	mg/Kg	50		10/09/17 18:28

Batch Information

Analytical Batch: MMS9968
 Analytical Method: SW6020A
 Analyst: VDL
 Analytical Date/Time: 10/09/17 18:28
 Container ID: 1177018017-A

Prep Batch: MXX31122
 Prep Method: SW3050B
 Prep Date/Time: 10/05/17 10:50
 Prep Initial Wt./Vol.: 1.016 g
 Prep Extract Vol: 50 mL

Print Date: 10/20/2017 8:37:17AM

Results of PCM-01

Client Sample ID: **PCM-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018017
 Lab Project ID: 1177018

Collection Date: 09/29/17 14:20
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):74.9
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	26.4 U	26.4	8.17	mg/Kg	1		10/05/17 19:01
Surrogates							
5a Androstane (surr)	89	50-150		%	1		10/05/17 19:01

Batch Information

Analytical Batch: XFC13861
 Analytical Method: AK102
 Analyst: JMG
 Analytical Date/Time: 10/05/17 19:01
 Container ID: 1177018017-A

Prep Batch: XXX38581
 Prep Method: SW3550C
 Prep Date/Time: 10/04/17 08:04
 Prep Initial Wt./Vol.: 30.377 g
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	42.4	26.4	8.17	mg/Kg	1		10/05/17 19:01
Surrogates							
n-Triacontane-d62 (surr)	87.2	50-150		%	1		10/05/17 19:01

Batch Information

Analytical Batch: XFC13861
 Analytical Method: AK103
 Analyst: JMG
 Analytical Date/Time: 10/05/17 19:01
 Container ID: 1177018017-A

Prep Batch: XXX38581
 Prep Method: SW3550C
 Prep Date/Time: 10/04/17 08:04
 Prep Initial Wt./Vol.: 30.377 g
 Prep Extract Vol: 1 mL

Print Date: 10/20/2017 8:37:17AM

Results of PCM-01

Client Sample ID: **PCM-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018017
 Lab Project ID: 1177018

Collection Date: 09/29/17 14:20
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):74.9
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	25.4 U	25.4	7.87	ug/Kg	1		10/05/17 18:14
1,1,1-Trichloroethane	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
1,1,2,2-Tetrachloroethane	15.9 U	15.9	4.95	ug/Kg	1		10/05/17 18:14
1,1,2-Trichloroethane	12.7 U	12.7	3.94	ug/Kg	1		10/05/17 18:14
1,1-Dichloroethane	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
1,1-Dichloroethene	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
1,1-Dichloropropene	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
1,2,3-Trichlorobenzene	63.5 U	63.5	19.0	ug/Kg	1		10/05/17 18:14
1,2,3-Trichloropropane	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
1,2,4-Trichlorobenzene	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
1,2,4-Trimethylbenzene	63.5 U	63.5	19.0	ug/Kg	1		10/05/17 18:14
1,2-Dibromo-3-chloropropane	127 U	127	39.4	ug/Kg	1		10/05/17 18:14
1,2-Dibromoethane	12.7 U	12.7	3.94	ug/Kg	1		10/05/17 18:14
1,2-Dichlorobenzene	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
1,2-Dichloroethane	12.7 U	12.7	3.94	ug/Kg	1		10/05/17 18:14
1,2-Dichloropropane	12.7 U	12.7	3.94	ug/Kg	1		10/05/17 18:14
1,3,5-Trimethylbenzene	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
1,3-Dichlorobenzene	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
1,3-Dichloropropane	12.7 U	12.7	3.94	ug/Kg	1		10/05/17 18:14
1,4-Dichlorobenzene	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
2,2-Dichloropropane	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
2-Butanone (MEK)	317 U	317	99.1	ug/Kg	1		10/05/17 18:14
2-Chlorotoluene	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
2-Hexanone	127 U	127	39.4	ug/Kg	1		10/05/17 18:14
4-Chlorotoluene	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
4-Isopropyltoluene	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
4-Methyl-2-pentanone (MIBK)	317 U	317	99.1	ug/Kg	1		10/05/17 18:14
Benzene	15.9 U	15.9	4.95	ug/Kg	1		10/05/17 18:14
Bromobenzene	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
Bromochloromethane	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
Bromodichloromethane	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
Bromoform	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
Bromomethane	254 U	254	78.7	ug/Kg	1		10/05/17 18:14
Carbon disulfide	127 U	127	39.4	ug/Kg	1		10/05/17 18:14
Carbon tetrachloride	15.9 U	15.9	4.95	ug/Kg	1		10/05/17 18:14
Chlorobenzene	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
Chloroethane	254 U	254	78.7	ug/Kg	1		10/05/17 18:14

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Results of PCM-01

Client Sample ID: **PCM-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018017
 Lab Project ID: 1177018

Collection Date: 09/29/17 14:20
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):74.9
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
Chloromethane	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
cis-1,2-Dichloroethene	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
cis-1,3-Dichloropropene	15.9 U	15.9	4.95	ug/Kg	1		10/05/17 18:14
Dibromochloromethane	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
Dibromomethane	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
Dichlorodifluoromethane	63.5 U	63.5	19.0	ug/Kg	1		10/05/17 18:14
Ethylbenzene	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
Freon-113	127 U	127	39.4	ug/Kg	1		10/05/17 18:14
Hexachlorobutadiene	25.4 U	25.4	7.87	ug/Kg	1		10/05/17 18:14
Isopropylbenzene (Cumene)	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
Methylene chloride	127 U	127	39.4	ug/Kg	1		10/05/17 18:14
Methyl-t-butyl ether	127 U	127	39.4	ug/Kg	1		10/05/17 18:14
Naphthalene	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
n-Butylbenzene	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
n-Propylbenzene	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
o-Xylene	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
P & M -Xylene	63.5 U	63.5	19.0	ug/Kg	1		10/05/17 18:14
sec-Butylbenzene	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
Styrene	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
tert-Butylbenzene	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
Tetrachloroethene	15.9 U	15.9	4.95	ug/Kg	1		10/05/17 18:14
Toluene	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
trans-1,2-Dichloroethene	31.7 U	31.7	9.91	ug/Kg	1		10/05/17 18:14
trans-1,3-Dichloropropene	15.9 U	15.9	4.95	ug/Kg	1		10/05/17 18:14
Trichloroethene	12.7 U	12.7	3.94	ug/Kg	1		10/05/17 18:14
Trichlorofluoromethane	63.5 U	63.5	19.0	ug/Kg	1		10/05/17 18:14
Vinyl acetate	127 U	127	39.4	ug/Kg	1		10/05/17 18:14
Vinyl chloride	12.7 U	12.7	3.94	ug/Kg	1		10/05/17 18:14
Xylenes (total)	95.2 U	95.2	29.0	ug/Kg	1		10/05/17 18:14
Surrogates							
1,2-Dichloroethane-D4 (surr)	97.2	71-136		%	1		10/05/17 18:14
4-Bromofluorobenzene (surr)	146	55-151		%	1		10/05/17 18:14
Toluene-d8 (surr)	101	85-116		%	1		10/05/17 18:14

Print Date: 10/20/2017 8:37:17AM

Results of **PCM-01**

Client Sample ID: **PCM-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018017
 Lab Project ID: 1177018

Collection Date: 09/29/17 14:20
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):74.9
 Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS17274
 Analytical Method: SW8260C
 Analyst: NRO
 Analytical Date/Time: 10/05/17 18:14
 Container ID: 1177018017-D

Prep Batch: VXX31444
 Prep Method: SW5035A
 Prep Date/Time: 09/29/17 14:20
 Prep Initial Wt./Vol.: 111.191 g
 Prep Extract Vol: 52.8913 mL

Print Date: 10/20/2017 8:37:17AM

Results of ST-PC-01

Client Sample ID: **ST-PC-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018018
 Lab Project ID: 1177018

Collection Date: 09/29/17 15:35
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):76.0
 Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Lead	2.64	1.25	0.387	mg/Kg	50		10/09/17 19:54

Batch Information

Analytical Batch: MMS9968
 Analytical Method: SW6020A
 Analyst: VDL
 Analytical Date/Time: 10/09/17 19:54
 Container ID: 1177018018-A

Prep Batch: MXX31122
 Prep Method: SW3050B
 Prep Date/Time: 10/05/17 10:50
 Prep Initial Wt./Vol.: 1.054 g
 Prep Extract Vol: 50 mL

Print Date: 10/20/2017 8:37:17AM

Results of ST-PC-01

Client Sample ID: **ST-PC-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018018
 Lab Project ID: 1177018

Collection Date: 09/29/17 15:35
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%): 76.0
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	26.1 U	26.1	8.09	mg/Kg	1		10/05/17 19:11
Surrogates							
5a Androstane (surr)	86.6	50-150		%	1		10/05/17 19:11

Batch Information

Analytical Batch: XFC13861
 Analytical Method: AK102
 Analyst: JMG
 Analytical Date/Time: 10/05/17 19:11
 Container ID: 1177018018-A

Prep Batch: XXX38581
 Prep Method: SW3550C
 Prep Date/Time: 10/04/17 08:04
 Prep Initial Wt./Vol.: 30.248 g
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	33.9	26.1	8.09	mg/Kg	1		10/05/17 19:11
Surrogates							
n-Triacontane-d62 (surr)	86.5	50-150		%	1		10/05/17 19:11

Batch Information

Analytical Batch: XFC13861
 Analytical Method: AK103
 Analyst: JMG
 Analytical Date/Time: 10/05/17 19:11
 Container ID: 1177018018-A

Prep Batch: XXX38581
 Prep Method: SW3550C
 Prep Date/Time: 10/04/17 08:04
 Prep Initial Wt./Vol.: 30.248 g
 Prep Extract Vol: 1 mL

Print Date: 10/20/2017 8:37:17AM

Results of ST-PC-01

Client Sample ID: **ST-PC-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018018
 Lab Project ID: 1177018

Collection Date: 09/29/17 15:35
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%): 76.0
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	30.2 U	30.2	9.36	ug/Kg	1		10/05/17 18:32
1,1,1-Trichloroethane	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
1,1,2,2-Tetrachloroethane	18.9 U	18.9	5.89	ug/Kg	1		10/05/17 18:32
1,1,2-Trichloroethane	15.1 U	15.1	4.68	ug/Kg	1		10/05/17 18:32
1,1-Dichloroethane	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
1,1-Dichloroethene	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
1,1-Dichloropropene	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
1,2,3-Trichlorobenzene	75.4 U	75.4	22.6	ug/Kg	1		10/05/17 18:32
1,2,3-Trichloropropane	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
1,2,4-Trichlorobenzene	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
1,2,4-Trimethylbenzene	75.4 U	75.4	22.6	ug/Kg	1		10/05/17 18:32
1,2-Dibromo-3-chloropropane	151 U	151	46.8	ug/Kg	1		10/05/17 18:32
1,2-Dibromoethane	15.1 U	15.1	4.68	ug/Kg	1		10/05/17 18:32
1,2-Dichlorobenzene	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
1,2-Dichloroethane	15.1 U	15.1	4.68	ug/Kg	1		10/05/17 18:32
1,2-Dichloropropane	15.1 U	15.1	4.68	ug/Kg	1		10/05/17 18:32
1,3,5-Trimethylbenzene	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
1,3-Dichlorobenzene	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
1,3-Dichloropropane	15.1 U	15.1	4.68	ug/Kg	1		10/05/17 18:32
1,4-Dichlorobenzene	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
2,2-Dichloropropane	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
2-Butanone (MEK)	377 U	377	118	ug/Kg	1		10/05/17 18:32
2-Chlorotoluene	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
2-Hexanone	151 U	151	46.8	ug/Kg	1		10/05/17 18:32
4-Chlorotoluene	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
4-Isopropyltoluene	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
4-Methyl-2-pentanone (MIBK)	377 U	377	118	ug/Kg	1		10/05/17 18:32
Benzene	18.9 U	18.9	5.89	ug/Kg	1		10/05/17 18:32
Bromobenzene	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
Bromochloromethane	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
Bromodichloromethane	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
Bromoform	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
Bromomethane	302 U	302	93.6	ug/Kg	1		10/05/17 18:32
Carbon disulfide	151 U	151	46.8	ug/Kg	1		10/05/17 18:32
Carbon tetrachloride	18.9 U	18.9	5.89	ug/Kg	1		10/05/17 18:32
Chlorobenzene	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
Chloroethane	302 U	302	93.6	ug/Kg	1		10/05/17 18:32

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Results of ST-PC-01

Client Sample ID: **ST-PC-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018018
 Lab Project ID: 1177018

Collection Date: 09/29/17 15:35
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%): 76.0
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
Chloromethane	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
cis-1,2-Dichloroethene	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
cis-1,3-Dichloropropene	18.9 U	18.9	5.89	ug/Kg	1		10/05/17 18:32
Dibromochloromethane	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
Dibromomethane	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
Dichlorodifluoromethane	75.4 U	75.4	22.6	ug/Kg	1		10/05/17 18:32
Ethylbenzene	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
Freon-113	151 U	151	46.8	ug/Kg	1		10/05/17 18:32
Hexachlorobutadiene	30.2 U	30.2	9.36	ug/Kg	1		10/05/17 18:32
Isopropylbenzene (Cumene)	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
Methylene chloride	151 U	151	46.8	ug/Kg	1		10/05/17 18:32
Methyl-t-butyl ether	151 U	151	46.8	ug/Kg	1		10/05/17 18:32
Naphthalene	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
n-Butylbenzene	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
n-Propylbenzene	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
o-Xylene	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
P & M -Xylene	75.4 U	75.4	22.6	ug/Kg	1		10/05/17 18:32
sec-Butylbenzene	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
Styrene	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
tert-Butylbenzene	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
Tetrachloroethene	18.9 U	18.9	5.89	ug/Kg	1		10/05/17 18:32
Toluene	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
trans-1,2-Dichloroethene	37.7 U	37.7	11.8	ug/Kg	1		10/05/17 18:32
trans-1,3-Dichloropropene	18.9 U	18.9	5.89	ug/Kg	1		10/05/17 18:32
Trichloroethene	15.1 U	15.1	4.68	ug/Kg	1		10/05/17 18:32
Trichlorofluoromethane	75.4 U	75.4	22.6	ug/Kg	1		10/05/17 18:32
Vinyl acetate	151 U	151	46.8	ug/Kg	1		10/05/17 18:32
Vinyl chloride	15.1 U	15.1	4.68	ug/Kg	1		10/05/17 18:32
Xylenes (total)	113 U	113	34.4	ug/Kg	1		10/05/17 18:32
Surrogates							
1,2-Dichloroethane-D4 (surr)	98.5	71-136		%	1		10/05/17 18:32
4-Bromofluorobenzene (surr)	112	55-151		%	1		10/05/17 18:32
Toluene-d8 (surr)	101	85-116		%	1		10/05/17 18:32

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Results of **ST-PC-01**

Client Sample ID: **ST-PC-01**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018018
 Lab Project ID: 1177018

Collection Date: 09/29/17 15:35
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):76.0
 Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS17274
 Analytical Method: SW8260C
 Analyst: NRO
 Analytical Date/Time: 10/05/17 18:32
 Container ID: 1177018018-D

Prep Batch: VXX31444
 Prep Method: SW5035A
 Prep Date/Time: 09/29/17 15:35
 Prep Initial Wt./Vol.: 74.883 g
 Prep Extract Vol: 42.9533 mL

Print Date: 10/20/2017 8:37:17AM

Results of Trip Blank (W)

Client Sample ID: **Trip Blank (W)**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018019
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:25
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 10:41
1,1,1-Trichloroethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
1,1,2,2-Tetrachloroethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 10:41
1,1,2-Trichloroethane	0.400 U	0.400	0.120	ug/L	1		10/12/17 10:41
1,1-Dichloroethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
1,1-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
1,1-Dichloropropene	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
1,2,3-Trichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
1,2,3-Trichloropropane	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
1,2,4-Trichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
1,2,4-Trimethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
1,2-Dibromo-3-chloropropane	10.0 U	10.0	3.10	ug/L	1		10/12/17 10:41
1,2-Dibromoethane	0.0750 U	0.0750	0.0180	ug/L	1		10/12/17 10:41
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
1,2-Dichloroethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 10:41
1,2-Dichloropropane	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
1,3,5-Trimethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
1,3-Dichloropropane	0.500 U	0.500	0.150	ug/L	1		10/12/17 10:41
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		10/12/17 10:41
2,2-Dichloropropane	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
2-Butanone (MEK)	10.0 U	10.0	3.10	ug/L	1		10/12/17 10:41
2-Chlorotoluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
2-Hexanone	10.0 U	10.0	3.10	ug/L	1		10/13/17 09:29
4-Chlorotoluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
4-Isopropyltoluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
4-Methyl-2-pentanone (MIBK)	10.0 U	10.0	3.10	ug/L	1		10/12/17 10:41
Benzene	0.400 U	0.400	0.120	ug/L	1		10/12/17 10:41
Bromobenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
Bromochloromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
Bromodichloromethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 10:41
Bromoform	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
Bromomethane	5.00 U	5.00	1.50	ug/L	1		10/12/17 10:41
Carbon disulfide	10.0 U	10.0	3.10	ug/L	1		10/12/17 10:41
Carbon tetrachloride	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		10/12/17 10:41
Chloroethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41

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Results of Trip Blank (W)

Client Sample ID: **Trip Blank (W)**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018019
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:25
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
Chloromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
cis-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
cis-1,3-Dichloropropene	0.500 U	0.500	0.150	ug/L	1		10/12/17 10:41
Dibromochloromethane	0.500 U	0.500	0.150	ug/L	1		10/12/17 10:41
Dibromomethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
Dichlorodifluoromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
Freon-113	10.0 U	10.0	3.10	ug/L	1		10/12/17 10:41
Hexachlorobutadiene	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
Isopropylbenzene (Cumene)	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
Methylene chloride	5.00 U	5.00	1.00	ug/L	1		10/12/17 10:41
Methyl-t-butyl ether	10.0 U	10.0	3.10	ug/L	1		10/12/17 10:41
Naphthalene	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
n-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
n-Propylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
o-Xylene	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		10/12/17 10:41
sec-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
Styrene	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
tert-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
Tetrachloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
Toluene	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
trans-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
trans-1,3-Dichloropropene	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
Trichloroethene	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
Trichlorofluoromethane	1.00 U	1.00	0.310	ug/L	1		10/12/17 10:41
Vinyl acetate	10.0 U	10.0	3.10	ug/L	1		10/12/17 10:41
Vinyl chloride	0.150 U	0.150	0.0500	ug/L	1		10/12/17 10:41
Xylenes (total)	3.00 U	3.00	1.00	ug/L	1		10/12/17 10:41
Surrogates							
1,2-Dichloroethane-D4 (surr)	104	81-118		%	1		10/12/17 10:41
4-Bromofluorobenzene (surr)	97	85-114		%	1		10/12/17 10:41
Toluene-d8 (surr)	100	89-112		%	1		10/12/17 10:41

Print Date: 10/20/2017 8:37:17AM

Results of Trip Blank (W)

Client Sample ID: **Trip Blank (W)**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018019
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:25
 Received Date: 10/03/17 08:13
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS17309
 Analytical Method: SW8260C
 Analyst: FDR
 Analytical Date/Time: 10/13/17 09:29
 Container ID: 1177018019-A

Prep Batch: VXX31501
 Prep Method: SW5030B
 Prep Date/Time: 10/12/17 00:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Analytical Batch: VMS17305
 Analytical Method: SW8260C
 Analyst: NRO
 Analytical Date/Time: 10/12/17 10:41
 Container ID: 1177018019-A

Prep Batch: VXX31498
 Prep Method: SW5030B
 Prep Date/Time: 10/12/17 01:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 10/20/2017 8:37:17AM

Results of Trip Blank (S)

Client Sample ID: **Trip Blank (S)**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018020
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:25
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	15.6 U	15.6	4.85	ug/Kg	1		10/05/17 14:43
1,1,1-Trichloroethane	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
1,1,2,2-Tetrachloroethane	9.77 U	9.77	3.05	ug/Kg	1		10/05/17 14:43
1,1,2-Trichloroethane	7.81 U	7.81	2.42	ug/Kg	1		10/05/17 14:43
1,1-Dichloroethane	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
1,1-Dichloroethene	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
1,1-Dichloropropene	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
1,2,3-Trichlorobenzene	39.1 U	39.1	11.7	ug/Kg	1		10/05/17 14:43
1,2,3-Trichloropropane	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
1,2,4-Trichlorobenzene	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
1,2,4-Trimethylbenzene	39.1 U	39.1	11.7	ug/Kg	1		10/05/17 14:43
1,2-Dibromo-3-chloropropane	78.1 U	78.1	24.2	ug/Kg	1		10/05/17 14:43
1,2-Dibromoethane	7.81 U	7.81	2.42	ug/Kg	1		10/05/17 14:43
1,2-Dichlorobenzene	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
1,2-Dichloroethane	7.81 U	7.81	2.42	ug/Kg	1		10/05/17 14:43
1,2-Dichloropropane	7.81 U	7.81	2.42	ug/Kg	1		10/05/17 14:43
1,3,5-Trimethylbenzene	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
1,3-Dichlorobenzene	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
1,3-Dichloropropane	7.81 U	7.81	2.42	ug/Kg	1		10/05/17 14:43
1,4-Dichlorobenzene	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
2,2-Dichloropropane	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
2-Butanone (MEK)	195 U	195	61.0	ug/Kg	1		10/05/17 14:43
2-Chlorotoluene	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
2-Hexanone	78.1 U	78.1	24.2	ug/Kg	1		10/05/17 14:43
4-Chlorotoluene	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
4-Isopropyltoluene	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
4-Methyl-2-pentanone (MIBK)	195 U	195	61.0	ug/Kg	1		10/05/17 14:43
Benzene	9.77 U	9.77	3.05	ug/Kg	1		10/05/17 14:43
Bromobenzene	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
Bromochloromethane	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
Bromodichloromethane	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
Bromoform	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
Bromomethane	156 U	156	48.5	ug/Kg	1		10/05/17 14:43
Carbon disulfide	78.1 U	78.1	24.2	ug/Kg	1		10/05/17 14:43
Carbon tetrachloride	9.77 U	9.77	3.05	ug/Kg	1		10/05/17 14:43
Chlorobenzene	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
Chloroethane	156 U	156	48.5	ug/Kg	1		10/05/17 14:43

Print Date: 10/20/2017 8:37:17AM

Results of Trip Blank (S)

Client Sample ID: **Trip Blank (S)**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018020
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:25
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
Chloromethane	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
cis-1,2-Dichloroethene	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
cis-1,3-Dichloropropene	9.77 U	9.77	3.05	ug/Kg	1		10/05/17 14:43
Dibromochloromethane	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
Dibromomethane	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
Dichlorodifluoromethane	39.1 U	39.1	11.7	ug/Kg	1		10/05/17 14:43
Ethylbenzene	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
Freon-113	78.1 U	78.1	24.2	ug/Kg	1		10/05/17 14:43
Hexachlorobutadiene	15.6 U	15.6	4.85	ug/Kg	1		10/05/17 14:43
Isopropylbenzene (Cumene)	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
Methylene chloride	78.1 U	78.1	24.2	ug/Kg	1		10/05/17 14:43
Methyl-t-butyl ether	78.1 U	78.1	24.2	ug/Kg	1		10/05/17 14:43
Naphthalene	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
n-Butylbenzene	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
n-Propylbenzene	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
o-Xylene	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
P & M -Xylene	39.1 U	39.1	11.7	ug/Kg	1		10/05/17 14:43
sec-Butylbenzene	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
Styrene	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
tert-Butylbenzene	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
Tetrachloroethene	9.77 U	9.77	3.05	ug/Kg	1		10/05/17 14:43
Toluene	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
trans-1,2-Dichloroethene	19.5 U	19.5	6.10	ug/Kg	1		10/05/17 14:43
trans-1,3-Dichloropropene	9.77 U	9.77	3.05	ug/Kg	1		10/05/17 14:43
Trichloroethene	7.81 U	7.81	2.42	ug/Kg	1		10/05/17 14:43
Trichlorofluoromethane	39.1 U	39.1	11.7	ug/Kg	1		10/05/17 14:43
Vinyl acetate	78.1 U	78.1	24.2	ug/Kg	1		10/05/17 14:43
Vinyl chloride	7.81 U	7.81	2.42	ug/Kg	1		10/05/17 14:43
Xylenes (total)	58.6 U	58.6	17.8	ug/Kg	1		10/05/17 14:43
Surrogates							
1,2-Dichloroethane-D4 (surr)	94.9	71-136		%	1		10/05/17 14:43
4-Bromofluorobenzene (surr)	102	55-151		%	1		10/05/17 14:43
Toluene-d8 (surr)	101	85-116		%	1		10/05/17 14:43

Print Date: 10/20/2017 8:37:17AM

Results of Trip Blank (S)

Client Sample ID: **Trip Blank (S)**
 Client Project ID: **Wrangell Soil Repository**
 Lab Sample ID: 1177018020
 Lab Project ID: 1177018

Collection Date: 09/29/17 08:25
 Received Date: 10/03/17 08:13
 Matrix: Soil/Solid (dry weight)
 Solids (%):
 Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS17274
 Analytical Method: SW8260C
 Analyst: NRO
 Analytical Date/Time: 10/05/17 14:43
 Container ID: 1177018020-A

Prep Batch: VXX31444
 Prep Method: SW5035A
 Prep Date/Time: 09/29/17 08:25
 Prep Initial Wt./Vol.: 63.983 g
 Prep Extract Vol: 25 mL

Print Date: 10/20/2017 8:37:17AM

Method Blank

Blank ID: MB for HBN 1769630 [MXX/31120]
Blank Lab ID: 1417956

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1177018001, 1177018002, 1177018003, 1177018004, 1177018005, 1177018006, 1177018007, 1177018008, 1177018009, 1177018010

Results by SW6020A

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Lead	0.500U	1.00	0.310	ug/L

Batch Information

Analytical Batch: MMS9965
Analytical Method: SW6020A
Instrument: Perkin Elmer Nexlon P5
Analyst: VDL
Analytical Date/Time: 10/5/2017 4:54:22PM

Prep Batch: MXX31120
Prep Method: SW3010A
Prep Date/Time: 10/5/2017 11:17:21AM
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 25 mL

Print Date: 10/20/2017 8:37:23AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1177018 [MXX31120]

Blank Spike Lab ID: 1417957

Date Analyzed: 10/05/2017 16:58

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1177018001, 1177018002, 1177018003, 1177018004, 1177018005, 1177018006, 1177018007, 1177018008, 1177018009, 1177018010

Results by SW6020A

Blank Spike (ug/L)				
Parameter	Spike	Result	Rec (%)	CL
Lead	1000	921	92	(88-115)

Batch Information

Analytical Batch: MMS9965

Analytical Method: SW6020A

Instrument: Perkin Elmer Nexlon P5

Analyst: VDL

Prep Batch: MXX31120

Prep Method: SW3010A

Prep Date/Time: 10/05/2017 11:17

Spike Init Wt./Vol.: 1000 ug/L Extract Vol: 25 mL

Dupe Init Wt./Vol.: Extract Vol:

Print Date: 10/20/2017 8:37:24AM

Matrix Spike Summary

Original Sample ID: 1417958
MS Sample ID: 1417960 MS
MSD Sample ID: 1417961 MSD

Analysis Date: 10/05/2017 17:30
Analysis Date: 10/05/2017 17:34
Analysis Date: 10/05/2017 17:39
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1177018001, 1177018002, 1177018003, 1177018004, 1177018005, 1177018006, 1177018007,
1177018008, 1177018009, 1177018010

Results by SW6020A

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Lead	0.500U	1000	1040	104	1000	1050	105	88-115	0.66	(< 20)

Batch Information

Analytical Batch: MMS9965
Analytical Method: SW6020A
Instrument: Perkin Elmer Nexlon P5
Analyst: VDL
Analytical Date/Time: 10/5/2017 5:34:37PM

Prep Batch: MXX31120
Prep Method: 3010 H2O Digest for Metals ICP-MS
Prep Date/Time: 10/5/2017 11:17:21AM
Prep Initial Wt./Vol.: 25.00mL
Prep Extract Vol: 25.00mL

Print Date: 10/20/2017 8:37:26AM

Method Blank

Blank ID: MB for HBN 1769630 [MXX/31122]
Blank Lab ID: 1417975

Matrix: Soil/SoliW(Wu c eiE. tG

QC for Samples:

1177815811, 1177815812, 1177815813, 1177815814, 1177815810, 1177815816, 1177815817, 1177815815

des) lts bu **SW6020A**

<u>Parameter</u>	<u>des) lts</u>	<u>Ly Q/CL</u>	<u>DL</u>	<u>Rnits</u>
LeaW	8088R	8088	80628	mE/PE

Batch Information

gналutiAal BatA : MMS9965
gналutiAal Met. oW Sh 6828g
Instr) ment: Uerkin Vlmer Nexlon U0
gналust: TDL
gналutiAal Date/vime: 18/9/2817 6:86:86UM

Urep BatA : MXX31122
Urep Met. oW Sh 3808B
Urep Date/vime: 18/0/2817 18:08:10gM
Urep Initial h tØTolØ 1 E
Urep VxtraAt Tol: 08 mL

Urint Date: 18/28/2817 5:37:27gM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1177018 [MXX31122]

Blank Spike Lab ID: 1417979

Date of Analysis: 10/09/2017 18:10

Matrix: Soil/Soliz uzrAx eiW 5

PC for Sample: 1177018011m 1177018012m 1177018013m 1177018014m 1177018015m 1177018016m 1177018017m
1177018018

/ e6R5 bA SW6020A

Blank Spike uE Vt

Area	Spike	/ e6R5	/ e. uGc	CL
Leaz	%0	%4-9	104	u84Q18 c

Batch Information

Initial Ba5 (: MMS9968

Initial Meq oz: SW6020A

In65RE en5 Perkin Elmer Nexlon P5

Initial A65 VDL

, rep Ba5 (: MXX31122

, rep Meq oz: SW3050B

, rep Date of Analysis: 10/05/2017 10:50

Spike Initial 5dVol: %0 E Vt W vs 5a. 5Vol: %0 E L

DRpe Initial 5dVol: vs 5a. 5Vol:

, rin5Date: 10/20/2017 8:37:29t M

Matrix Spike Summary

Original Sample ID: 1417993
MS Sample ID: 1417996 MS
MSD Sample ID: 1417997 MSD

Analysis Date: 10/09/2017 18:28
Analysis Date: 10/09/2017 18:33
Analysis Date: 10/09/2017 18:37
Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1177018011, 1177018012, 1177018013, 1177018014, 1177018015, 1177018016, 1177018017, 1177018018

Results by SW6020A

Parameter	Sample	Matrix Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Lead	0.887J	46.8	49.1	103	48.8	51.1	103	84-118	4.06	(< 20)

Batch Information

Analytical Batch: MMS9968
Analytical Method: SW6020A
Instrument: Perkin Elmer Nexlon P5
Analyst: VDL
Analytical Date/Time: 10/9/2017 6:33:07PM

Prep Batch: MXX31122
Prep Method: Soils/Solids Digest for Metals by ICP-MS
Prep Date/Time: 10/5/2017 10:50:15AM
Prep Initial Wt./Vol.: 1.07g
Prep Extract Vol: 50.00mL

Print Date: 10/20/2017 8:37:29AM

Method Blank

Blank ID: MB for HBN 1769555 [SPT/10330]
Blank Lab ID: 1417673

Matrix: Soil/Solid (dry weight)

QC for Samples:

1177018011, 1177018012, 1177018013, 1177018014, 1177018015, 1177018016, 1177018017, 1177018018

Results by SM21 2540G

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Solids	100			%

Batch Information

Analytical Batch: SPT10330
Analytical Method: SM21 2540G
Instrument:
Analyst: ARS
Analytical Date/Time: 10/3/2017 3:39:00PM

Print Date: 10/20/2017 8:37:31AM

Duplicate Sample Summary

Original Sample ID: 1177017001

Duplicate Sample ID: 1417674

QC for Samples:

1177018011, 1177018012, 1177018013, 1177018014, 1177018015

Analysis Date: 10/03/2017 15:39

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	40.2	40.9	%	1.90	(< 15)

Batch Information

Analytical Batch: SPT10330

Analytical Method: SM21 2540G

Instrument:

Analyst: ARS

Print Date: 10/20/2017 8:37:32AM

Duplicate Sample Summary

Original Sample ID: 1177018015

Duplicate Sample ID: 1417675

QC for Samples:

1177018011, 1177018012, 1177018013, 1177018014, 1177018015, 1177018016, 1177018017, 1177018018

Analysis Date: 10/03/2017 15:39

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	75.1	73.1	%	2.80	(< 15)

Batch Information

Analytical Batch: SPT10330

Analytical Method: SM21 2540G

Instrument:

Analyst: ARS

Print Date: 10/20/2017 8:37:32AM

Duplicate Sample Summary

Original Sample ID: 1178447006

Duplicate Sample ID: 1417676

QC for Samples:

1177018016, 1177018017, 1177018018

Analysis Date: 10/03/2017 15:39

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	81.9	80.4	%	1.90	(< 15)

Batch Information

Analytical Batch: SPT10330

Analytical Method: SM21 2540G

Instrument:

Analyst: ARS

Print Date: 10/20/2017 8:37:32AM

Method Blank

Blank ID: MB for HBN 1769703 [VXX/31443]

Blank Lab ID: 1418240

QC for Samples:

1177018011, 1177018012, 1177018013

Matrix: Soil/Solid (dry weight)

Results by SW8260C

Parameter	Results	LOQ/CL	DL	Units
1,1,1,2-Tetrachloroethane	10.0U	20.0	6.20	ug/Kg
1,1,1-Trichloroethane	12.5U	25.0	7.80	ug/Kg
1,1,2,2-Tetrachloroethane	6.25U	12.5	3.90	ug/Kg
1,1,2-Trichloroethane	5.00U	10.0	3.10	ug/Kg
1,1-Dichloroethane	12.5U	25.0	7.80	ug/Kg
1,1-Dichloroethene	12.5U	25.0	7.80	ug/Kg
1,1-Dichloropropene	12.5U	25.0	7.80	ug/Kg
1,2,3-Trichlorobenzene	25.0U	50.0	15.0	ug/Kg
1,2,3-Trichloropropane	12.5U	25.0	7.80	ug/Kg
1,2,4-Trichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,2,4-Trimethylbenzene	25.0U	50.0	15.0	ug/Kg
1,2-Dibromo-3-chloropropane	50.0U	100	31.0	ug/Kg
1,2-Dibromoethane	5.00U	10.0	3.10	ug/Kg
1,2-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,2-Dichloroethane	5.00U	10.0	3.10	ug/Kg
1,2-Dichloropropane	5.00U	10.0	3.10	ug/Kg
1,3,5-Trimethylbenzene	12.5U	25.0	7.80	ug/Kg
1,3-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,3-Dichloropropane	5.00U	10.0	3.10	ug/Kg
1,4-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
2,2-Dichloropropane	12.5U	25.0	7.80	ug/Kg
2-Butanone (MEK)	125U	250	78.0	ug/Kg
2-Chlorotoluene	12.5U	25.0	7.80	ug/Kg
2-Hexanone	50.0U	100	31.0	ug/Kg
4-Chlorotoluene	12.5U	25.0	7.80	ug/Kg
4-Isopropyltoluene	12.5U	25.0	7.80	ug/Kg
4-Methyl-2-pentanone (MIBK)	125U	250	78.0	ug/Kg
Benzene	6.25U	12.5	3.90	ug/Kg
Bromobenzene	12.5U	25.0	7.80	ug/Kg
Bromochloromethane	12.5U	25.0	7.80	ug/Kg
Bromodichloromethane	12.5U	25.0	7.80	ug/Kg
Bromoform	12.5U	25.0	7.80	ug/Kg
Bromomethane	100U	200	62.0	ug/Kg
Carbon disulfide	50.0U	100	31.0	ug/Kg
Carbon tetrachloride	6.25U	12.5	3.90	ug/Kg
Chlorobenzene	12.5U	25.0	7.80	ug/Kg
Chloroethane	100U	200	62.0	ug/Kg
Chloroform	12.5U	25.0	7.80	ug/Kg

Print Date: 10/20/2017 8:37:34AM

Method Blank

Blank ID: MB for HBN 1769703 [VXX/31443]

Blank Lab ID: 1418240

QC for Samples:

1177018011, 1177018012, 1177018013

Matrix: Soil/Solid (dry weight)

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Chloromethane	12.5U	25.0	7.80	ug/Kg
cis-1,2-Dichloroethene	12.5U	25.0	7.80	ug/Kg
cis-1,3-Dichloropropene	6.25U	12.5	3.90	ug/Kg
Dibromochloromethane	12.5U	25.0	7.80	ug/Kg
Dibromomethane	12.5U	25.0	7.80	ug/Kg
Dichlorodifluoromethane	25.0U	50.0	15.0	ug/Kg
Ethylbenzene	12.5U	25.0	7.80	ug/Kg
Freon-113	50.0U	100	31.0	ug/Kg
Hexachlorobutadiene	10.0U	20.0	6.20	ug/Kg
Isopropylbenzene (Cumene)	12.5U	25.0	7.80	ug/Kg
Methylene chloride	50.0U	100	31.0	ug/Kg
Methyl-t-butyl ether	50.0U	100	31.0	ug/Kg
Naphthalene	12.5U	25.0	7.80	ug/Kg
n-Butylbenzene	12.5U	25.0	7.80	ug/Kg
n-Propylbenzene	12.5U	25.0	7.80	ug/Kg
o-Xylene	12.5U	25.0	7.80	ug/Kg
P & M -Xylene	25.0U	50.0	15.0	ug/Kg
sec-Butylbenzene	12.5U	25.0	7.80	ug/Kg
Styrene	12.5U	25.0	7.80	ug/Kg
tert-Butylbenzene	12.5U	25.0	7.80	ug/Kg
Tetrachloroethene	6.25U	12.5	3.90	ug/Kg
Toluene	12.5U	25.0	7.80	ug/Kg
trans-1,2-Dichloroethene	12.5U	25.0	7.80	ug/Kg
trans-1,3-Dichloropropene	6.25U	12.5	3.90	ug/Kg
Trichloroethene	5.00U	10.0	3.10	ug/Kg
Trichlorofluoromethane	25.0U	50.0	15.0	ug/Kg
Vinyl acetate	50.0U	100	31.0	ug/Kg
Vinyl chloride	5.00U	10.0	3.10	ug/Kg
Xylenes (total)	37.5U	75.0	22.8	ug/Kg
Surrogates				
1,2-Dichloroethane-D4 (surr)	108	71-136		%
4-Bromofluorobenzene (surr)	99.2	55-151		%
Toluene-d8 (surr)	93.8	85-116		%

Print Date: 10/20/2017 8:37:34AM

Method Blank

Blank ID: MB for HBN 1769703 [VXX/31443]
Blank Lab ID: 1418240

Matrix: Soil/Solid (dry weight)

QC for Samples:
1177018011, 1177018012, 1177018013

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
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Batch Information

Analytical Batch: VMS17275
Analytical Method: SW8260C
Instrument: VQA 7890/5975 GC/MS
Analyst: NRO
Analytical Date/Time: 10/5/2017 10:46:00AM

Prep Batch: VXX31443
Prep Method: SW5035A
Prep Date/Time: 10/5/2017 6:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Print Date: 10/20/2017 8:37:34AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1177018 [VXX31443]

Blank Spike Lab ID: 1418241

Date Analyzed: 10/05/2017 11:02

Matrix: Soil/Solid (dry weight)

QC for Samples: 1177018011, 1177018012, 1177018013

Results by SW8260C

Blank Spike (ug/Kg)				
Parameter	Spike	Result	Rec (%)	CL
1,1,1,2-Tetrachloroethane	750	826	110	(78-125)
1,1,1-Trichloroethane	750	838	112	(73-130)
1,1,2,2-Tetrachloroethane	750	760	101	(70-124)
1,1,2-Trichloroethane	750	805	107	(78-121)
1,1-Dichloroethane	750	783	104	(76-125)
1,1-Dichloroethene	750	895	119	(70-131)
1,1-Dichloropropene	750	838	112	(76-125)
1,2,3-Trichlorobenzene	750	715	95	(66-130)
1,2,3-Trichloropropane	750	761	101	(73-125)
1,2,4-Trichlorobenzene	750	753	100	(67-129)
1,2,4-Trimethylbenzene	750	777	104	(75-123)
1,2-Dibromo-3-chloropropane	750	776	103	(61-132)
1,2-Dibromoethane	750	811	108	(78-122)
1,2-Dichlorobenzene	750	757	101	(78-121)
1,2-Dichloroethane	750	828	110	(73-128)
1,2-Dichloropropane	750	776	104	(76-123)
1,3,5-Trimethylbenzene	750	785	105	(73-124)
1,3-Dichlorobenzene	750	756	101	(77-121)
1,3-Dichloropropane	750	808	108	(77-121)
1,4-Dichlorobenzene	750	755	101	(75-120)
2,2-Dichloropropane	750	841	112	(67-133)
2-Butanone (MEK)	2250	2700	120	(51-148)
2-Chlorotoluene	750	768	102	(75-122)
2-Hexanone	2250	2870	128	(53-145)
4-Chlorotoluene	750	774	103	(72-124)
4-Isopropyltoluene	750	751	100	(73-127)
4-Methyl-2-pentanone (MIBK)	2250	2850	127	(65-135)
Benzene	750	802	107	(77-121)
Bromobenzene	750	784	105	(78-121)
Bromochloromethane	750	809	108	(78-125)
Bromodichloromethane	750	821	109	(75-127)
Bromoform	750	751	100	(67-132)
Bromomethane	750	829	111	(53-143)
Carbon disulfide	1130	1320	117	(63-132)

Print Date: 10/20/2017 8:37:35AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1177018 [VXX31443]

Blank Spike Lab ID: 1418241

Date Analyzed: 10/05/2017 11:02

Matrix: Soil/Solid (dry weight)

QC for Samples: 1177018011, 1177018012, 1177018013

Results by SW8260C

Blank Spike (ug/Kg)

Parameter	Spike	Result	Rec (%)	CL
Carbon tetrachloride	750	869	116	(70-135)
Chlorobenzene	750	768	102	(79-120)
Chloroethane	750	855	114	(59-139)
Chloroform	750	781	104	(78-123)
Chloromethane	750	730	97	(50-136)
cis-1,2-Dichloroethene	750	799	107	(77-123)
cis-1,3-Dichloropropene	750	900	120	(74-126)
Dibromochloromethane	750	843	112	(74-126)
Dibromomethane	750	810	108	(78-125)
Dichlorodifluoromethane	750	716	95	(29-149)
Ethylbenzene	750	766	102	(76-122)
Freon-113	1130	1390	124	(66-136)
Hexachlorobutadiene	750	785	105	(61-135)
Isopropylbenzene (Cumene)	750	785	105	(68-134)
Methylene chloride	750	815	109	(70-128)
Methyl-t-butyl ether	1130	1330	118	(73-125)
Naphthalene	750	727	97	(62-129)
n-Butylbenzene	750	764	102	(70-128)
n-Propylbenzene	750	776	103	(73-125)
o-Xylene	750	770	103	(77-123)
P & M -Xylene	1500	1560	104	(77-124)
sec-Butylbenzene	750	768	102	(73-126)
Styrene	750	822	110	(76-124)
tert-Butylbenzene	750	763	102	(73-125)
Tetrachloroethene	750	796	106	(73-128)
Toluene	750	790	105	(77-121)
trans-1,2-Dichloroethene	750	820	109	(74-125)
trans-1,3-Dichloropropene	750	855	114	(71-130)
Trichloroethene	750	839	112	(77-123)
Trichlorofluoromethane	750	939	125	(62-140)
Vinyl acetate	750	900	120	(50-151)
Vinyl chloride	750	785	105	(56-135)
Xylenes (total)	2250	2330	104	(78-124)

Print Date: 10/20/2017 8:37:35AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1177018 [VXX31443]

Blank Spike Lab ID: 1418241

Date Analyzed: 10/05/2017 11:02

Matrix: Soil/Solid (dry weight)

QC for Samples: 1177018011, 1177018012, 1177018013

Results by SW8260C

	Blank Spike (%)			
<u>Parameter</u>	<u>Spike</u>	<u>Result</u>	<u>Rec (%)</u>	<u>CL</u>
Surrogates				
1,2-Dichloroethane-D4 (surr)	750	97.8	98	(71-136)
4-Bromofluorobenzene (surr)	750	101	101	(55-151)
Toluene-d8 (surr)	750	97.3	97	(85-116)

Batch Information

Analytical Batch: VMS17275

Analytical Method: SW8260C

Instrument: VQA 7890/5975 GC/MS

Analyst: NRO

Prep Batch: VXX31443

Prep Method: SW5035A

Prep Date/Time: 10/05/2017 06:00

Spike Init Wt./Vol.: 750 ug/Kg Extract Vol: 25 mL

Dupe Init Wt./Vol.: Extract Vol:

Print Date: 10/20/2017 8:37:35AM

Matrix Spike Summary

Original Sample ID: 1178436017
MS Sample ID: 1418242 MS
MSD Sample ID: 1418243 MSD

Analysis Date: 10/05/2017 14:32
Analysis Date: 10/05/2017 12:24
Analysis Date: 10/05/2017 12:40
Matrix: Soil/Solid (dry weight)

QC for Samples: 1177018011, 1177018012, 1177018013

Results by SW8260C

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	13.3U	994	1082	109	994	1124	113	78-125	3.80	(< 20)
1,1,1-Trichloroethane	16.6U	994	1102	111	994	1093	110	73-130	0.88	(< 20)
1,1,2,2-Tetrachloroethane	8.30U	994	976	98	994	1031	104	70-124	5.40	(< 20)
1,1,2-Trichloroethane	6.65U	994	1059	107	994	1053	106	78-121	0.57	(< 20)
1,1-Dichloroethane	16.6U	994	1020	103	994	1016	102	76-125	0.49	(< 20)
1,1-Dichloroethene	16.6U	994	1186	119	994	1169	118	70-131	1.50	(< 20)
1,1-Dichloropropene	16.6U	994	1096	110	994	1095	110	76-125	0.12	(< 20)
1,2,3-Trichlorobenzene	33.3U	994	777	78	994	998	100	66-130	24.90	* (< 20)
1,2,3-Trichloropropane	16.6U	994	978	98	994	1022	103	73-125	4.40	(< 20)
1,2,4-Trichlorobenzene	16.6U	994	843	85	994	1016	102	67-129	18.50	(< 20)
1,2,4-Trimethylbenzene	33.3U	994	1027	103	994	1028	103	75-123	0.10	(< 20)
1,2-Dibromo-3-chloropropane	66.5U	994	975	98	994	1047	105	61-132	7.20	(< 20)
1,2-Dibromoethane	6.65U	994	1063	107	994	1071	108	78-122	0.75	(< 20)
1,2-Dichlorobenzene	16.6U	994	972	98	994	983	99	78-121	1.10	(< 20)
1,2-Dichloroethane	6.65U	994	1093	110	994	1075	108	73-128	1.70	(< 20)
1,2-Dichloropropane	6.65U	994	1024	103	994	1016	102	76-123	0.85	(< 20)
1,3,5-Trimethylbenzene	16.6U	994	1045	105	994	1029	104	73-124	1.50	(< 20)
1,3-Dichlorobenzene	16.6U	994	989	100	994	984	99	77-121	0.54	(< 20)
1,3-Dichloropropane	6.65U	994	1052	106	994	1054	106	77-121	0.22	(< 20)
1,4-Dichlorobenzene	16.6U	994	987	99	994	988	99	75-120	0.17	(< 20)
2,2-Dichloropropane	16.6U	994	1118	113	994	1102	111	67-133	1.40	(< 20)
2-Butanone (MEK)	167U	2976	3386	114	2976	3639	122	51-148	7.30	(< 20)
2-Chlorotoluene	16.6U	994	1019	103	994	995	100	75-122	2.50	(< 20)
2-Hexanone	66.5U	2976	3458	116	2976	3843	129	53-145	10.70	(< 20)
4-Chlorotoluene	16.6U	994	1025	103	994	1007	101	72-124	1.80	(< 20)
4-Isopropyltoluene	16.6U	994	988	99	994	989	100	73-127	0.10	(< 20)
4-Methyl-2-pentanone (MIBK)	167U	2976	3506	118	2976	3880	130	65-135	10.30	(< 20)
Benzene	8.30U	994	1048	106	994	1046	105	77-121	0.25	(< 20)
Bromobenzene	16.6U	994	1036	104	994	1004	101	78-121	3.20	(< 20)
Bromochloromethane	16.6U	994	1095	110	994	1041	105	78-125	5.00	(< 20)
Bromodichloromethane	16.6U	994	1090	110	994	1073	108	75-127	1.60	(< 20)
Bromoform	16.6U	994	1016	102	994	1031	104	67-132	1.50	(< 20)
Bromomethane	133U	994	1064	107	994	1057	106	53-143	0.69	(< 20)
Carbon disulfide	66.5U	1494	1783	120	1494	1735	116	63-132	2.80	(< 20)
Carbon tetrachloride	8.30U	994	1160	117	994	1142	115	70-135	1.60	(< 20)
Chlorobenzene	16.6U	994	996	100	994	1028	103	79-120	3.20	(< 20)
Chloroethane	133U	994	1108	112	994	1105	111	59-139	0.33	(< 20)

Print Date: 10/20/2017 8:37:36AM

Matrix Spike Summary

Original Sample ID: 1178436017
MS Sample ID: 1418242 MS
MSD Sample ID: 1418243 MSD

Analysis Date: 10/05/2017 14:32
Analysis Date: 10/05/2017 12:24
Analysis Date: 10/05/2017 12:40
Matrix: Soil/Solid (dry weight)

QC for Samples: 1177018011, 1177018012, 1177018013

Results by SW8260C

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Chloroform	16.6U	994	1025	103	994	1017	102	78-123	0.78	(< 20)
Chloromethane	16.6U	994	942	95	994	923	93	50-136	2.10	(< 20)
cis-1,2-Dichloroethene	16.6U	994	1059	107	994	1028	103	77-123	3.00	(< 20)
cis-1,3-Dichloropropene	8.30U	994	1205	122	994	1184	119	74-126	2.00	(< 20)
Dibromochloromethane	16.6U	994	1131	114	994	1106	111	74-126	2.20	(< 20)
Dibromomethane	16.6U	994	1077	108	994	1052	106	78-125	2.50	(< 20)
Dichlorodifluoromethane	33.3U	994	918	92	994	904	91	29-149	1.60	(< 20)
Ethylbenzene	16.6U	994	1034	104	994	1006	101	76-122	2.70	(< 20)
Freon-113	66.5U	1494	1855	124	1494	1819	122	66-136	1.60	(< 20)
Hexachlorobutadiene	13.3U	994	982	99	994	1064	107	61-135	8.10	(< 20)
Isopropylbenzene (Cumene)	16.6U	994	1053	106	994	1014	102	68-134	3.80	(< 20)
Methylene chloride	66.5U	994	1072	108	994	1061	107	70-128	1.10	(< 20)
Methyl-t-butyl ether	66.5U	1494	1759	118	1494	1759	118	73-125	0.25	(< 20)
Naphthalene	16.6U	994	794	80	994	1013	102	62-129	24.30	* (< 20)
n-Butylbenzene	16.6U	994	1043	105	994	1019	103	70-128	2.30	(< 20)
n-Propylbenzene	16.6U	994	1040	105	994	1013	102	73-125	2.70	(< 20)
o-Xylene	16.6U	994	1024	103	994	1007	101	77-123	1.60	(< 20)
P & M -Xylene	33.3U	1988	2084	105	1988	2012	101	77-124	3.60	(< 20)
sec-Butylbenzene	16.6U	994	1036	104	994	1000	101	73-126	3.60	(< 20)
Styrene	16.6U	994	1099	111	994	1077	108	76-124	2.00	(< 20)
tert-Butylbenzene	16.6U	994	1029	104	994	992	100	73-125	3.70	(< 20)
Tetrachloroethene	8.30U	994	1051	106	994	1105	111	73-128	5.10	(< 20)
Toluene	16.6U	994	1012	102	994	1054	106	77-121	4.10	(< 20)
trans-1,2-Dichloroethene	16.6U	994	1080	109	994	1071	108	74-125	0.74	(< 20)
trans-1,3-Dichloropropene	8.30U	994	1129	114	994	1124	113	71-130	0.47	(< 20)
Trichloroethene	6.65U	994	1094	110	994	1094	110	77-123	0.06	(< 20)
Trichlorofluoromethane	33.3U	994	1482	150 *	994	1277	129	62-140	15.20	(< 20)
Vinyl acetate	66.5U	994	1386	139	994	1265	127	50-151	8.90	(< 20)
Vinyl chloride	6.65U	994	1005	101	994	992	100	56-135	1.20	(< 20)
Xylenes (total)	49.9U	2976	3108	104	2976	3024	101	78-124	2.90	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		994	969	98	994	973	98	71-136	0.48	
4-Bromofluorobenzene (surr)		1151	1313	114	1151	1265	110	55-151	3.50	
Toluene-d8 (surr)		994	947	95	994	984	99	85-116	3.80	

Print Date: 10/20/2017 8:37:36AM

Matrix Spike Summary

Original Sample ID: 1178436017
MS Sample ID: 1418242 MS
MSD Sample ID: 1418243 MSD

Analysis Date:
Analysis Date: 10/05/2017 12:24
Analysis Date: 10/05/2017 12:40
Matrix: Soil/Solid (dry weight)

QC for Samples: 1177018011, 1177018012, 1177018013

Results by SW8260C

Parameter	Sample	Matrix Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			

Batch Information

Analytical Batch: VMS17275
Analytical Method: SW8260C
Instrument: VQA 7890/5975 GC/MS
Analyst: NRO
Analytical Date/Time: 10/5/2017 12:24:00PM

Prep Batch: VXX31443
Prep Method: Vol. Extraction SW8260 Field Extracted L
Prep Date/Time: 10/5/2017 6:00:00AM
Prep Initial Wt./Vol.: 65.47g
Prep Extract Vol: 36.15mL

Print Date: 10/20/2017 8:37:36AM

Method Blank

Blank ID: MB for HBN 1769703 [VXX/41333]
Blank Lab ID: 1318233

Mairxd: Sox/Solx y(rwg ex) iR

QC for Samples:

1177018013, 117701801t, 1177018016, 1177018017, 1177018018, 1177018020

uesUis bwSW8260C

<u>- arameier</u>	<u>uesUis</u>	<u>LPQ/CL</u>	<u>DL</u>	<u>Onxis</u>
1,1,1,2Tceira.) loroei) ane	10K O	20K	6K20	Uh/5h
1,1,1Tcrx) loroei) ane	12K O	2t K	7K80	Uh/5h
1,1,2,2Tceira.) loroei) ane	6K2t O	12K	4K00	Uh/5h
1,1,2Tcrx) loroei) ane	t K00	10K	4K0	Uh/5h
1,1TDx) loroei) ane	12K O	2t K	7K80	Uh/5h
1,1TDx) loroei) ene	12K O	2t K	7K80	Uh/5h
1,1TDx) loropropene	12K O	2t K	7K80	Uh/5h
1,2,4Tcrx) lorobenzene	2t K0	t 0K	1t K	Uh/5h
1,2,4Tcrx) loropropane	12K O	2t K	7K80	Uh/5h
1,2,3Tcrx) lorobenzene	12K O	2t K	7K80	Uh/5h
1,2,3Tcrxmei) wbenzene	2t K0	t 0K	1t K	Uh/5h
1,2TDx bromoT.) loropropane	t 0K0	100	41K	Uh/5h
1,2TDx bromoei) ane	t K00	10K	4K0	Uh/5h
1,2TDx) lorobenzene	12K O	2t K	7K80	Uh/5h
1,2TDx) loroei) ane	t K00	10K	4K0	Uh/5h
1,2TDx) loropropane	t K00	10K	4K0	Uh/5h
1,4,t Tcrxmei) wbenzene	12K O	2t K	7K80	Uh/5h
1,4TDx) lorobenzene	12K O	2t K	7K80	Uh/5h
1,4TDx) loropropane	t K00	10K	4K0	Uh/5h
1,3TDx) lorobenzene	12K O	2t K	7K80	Uh/5h
2,2TDx) loropropane	12K O	2t K	7K80	Uh/5h
2TBUanone yME5R	12t O	2t 0	78K	Uh/5h
2TC) loroiolUene	12K O	2t K	7K80	Uh/5h
2THedanone	t 0K0	100	41K	Uh/5h
3TC) loroiolUene	12K O	2t K	7K80	Uh/5h
3TIsopropwioUene	12K O	2t K	7K80	Uh/5h
3TMei) wT2penianone yMIB5R	12t O	2t 0	78K	Uh/5h
Benzene	6K2t O	12K	4K00	Uh/5h
Bromobenzene	12K O	2t K	7K80	Uh/5h
Bromo.) loromei) ane	12K O	2t K	7K80	Uh/5h
Bromo(x) loromei) ane	12K O	2t K	7K80	Uh/5h
Bromoform	12K O	2t K	7K80	Uh/5h
Bromoei) ane	100O	200	62K	Uh/5h
Carbon (xUfx e	t 0K0	100	41K	Uh/5h
Carbon ieira.) lorx e	6K2t O	12K	4K00	Uh/5h
C) lorobenzene	12K O	2t K	7K80	Uh/5h
C) loroei) ane	100O	200	62K	Uh/5h
C) loroform	12K O	2t K	7K80	Uh/5h

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Method Blank

Blank ID: MB for HBN 1769703 [VXX/41333]
Blank Lab ID: 1318233

Mairxd: Sox/Solx y(rwg ex) iR

QC for Samples:

1177018013, 117701801t , 1177018016, 1177018017, 1177018018, 1177018020

uesUis bwSW8260C

<u>- arameier</u>	<u>uesUis</u>	<u>LPQ/CL</u>	<u>DL</u>	<u>Onxis</u>
C) loromei) ane	12K O	2t K	7K0	Uh/5h
. xT1,2TDx) loroei) ene	12K O	2t K	7K0	Uh/5h
. xT1,4TDx) loropropene	6K2t O	12K	4K00	Uh/5h
Dxbromo.) loromei) ane	12K O	2t K	7K0	Uh/5h
Dxbromomei) ane	12K O	2t K	7K0	Uh/5h
Dx) loro(xUbro mei) ane	2t K0O	t 0K	1t K	Uh/5h
Ei) wbenzene	12K O	2t K	7K0	Uh/5h
FreonT114	t 0K0O	100	41K	Uh/5h
Heda.) lorobUa(xene	10K0O	20K	6K20	Uh/5h
Isopropwbenzene yCUmeneR	12K O	2t K	7K0	Uh/5h
Mei) wene .) lorx e	t 0K0O	100	41K	Uh/5h
Mei) wT1bUw ei) er	t 0K0O	100	41K	Uh/5h
Nap) i) alene	12K O	2t K	7K0	Uh/5h
nTBUwbenzene	12K O	2t K	7K0	Uh/5h
nT ropwbenzene	12K O	2t K	7K0	Uh/5h
oTXwene	12K O	2t K	7K0	Uh/5h
- & M TXwene	2t K0O	t 0K	1t K	Uh/5h
se. TBUwbenzene	12K O	2t K	7K0	Uh/5h
Siwene	12K O	2t K	7K0	Uh/5h
ieriTBUwbenzene	12K O	2t K	7K0	Uh/5h
ceira.) loroei) ene	6K2t O	12K	4K00	Uh/5h
colUene	12K O	2t K	7K0	Uh/5h
iransT1,2TDx) loroei) ene	12K O	2t K	7K0	Uh/5h
iransT1,4TDx) loropropene	6K2t O	12K	4K00	Uh/5h
crx) loroei) ene	t K0O	10K	4K0	Uh/5h
crx) loroflUromei) ane	2t K0O	t 0K	1t K	Uh/5h
Vxw a. eiaie	t 0K0O	100	41K	Uh/5h
Vxw .) lorx e	t K0O	10K	4K0	Uh/5h
Xwenes yioialR	47K O	7t K	22K	Uh/5h
Surrogates				
1,2TDx) loroei) aneTD3 ysUrrR	97K	71T146		%
3TBromoflUrobenzene ysUrrR	98K	t t T1t 1		%
colUeneT 8 ysUrrR	102	8t T116		%

- rni Daie: 10/20/2017 8:47:48AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1177018 [VXX31444]

Blank Spike Lab ID: 141824t

Date analyzed: 10/20/2017 11:02

Matrix: Soil/Solid (/ rz weigh)

QC for Samples: 1177018014, 117701801t, 117701801-, 1177018017, 1177018018, 1177018020

Results by SW8260C

Blank Spike (ug/Kg)				
Parameter	Spike	Result	Rec (%)	CL
1,1,1,2-Tetrachloroethane	7t 0	802	107	(78T12t)
1,1,1-Trichloroethane	7t 0	771	103	(73T130)
1,1,2,2-Tetrachloroethane	7t 0	7t -	101	(70T124)
1,1,2-Trichloroethane	7t 0	788	10t	(78T121)
1,1-Dichloroethane	7t 0	794	10-	(7- T12t)
1,1-Dichloroethene	7t 0	87-	117	(70T131)
1,1-Dichloropropene	7t 0	783	104	(7- T12t)
1,2,3-Trichlorobenzene	7t 0	70-	94	(- - T130)
1,2,3-Trichloropropane	7t 0	732	98	(73T12t)
1,2,4-Trichlorobenzene	7t 0	748	100	(- 7T129)
1,2,4-Trimethylbenzene	7t 0	808	108	(7t T123)
1,2-Dibromo-3-Chloropropane	7t 0	7t 3	100	(- 1T132)
1,2-Dibromoethane	7t 0	779	104	(78T122)
1,2-Dichlorobenzene	7t 0	7- -	102	(78T121)
1,2-Dichloroethane	7t 0	733	98	(73T128)
1,2-Dichloropropane	7t 0	778	104	(7- T123)
1,3,5-Trimethylbenzene	7t 0	818	109	(73T124)
1,3-Dichlorobenzene	7t 0	7- 7	102	(77T121)
1,3-Dichloropropane	7t 0	789	10t	(77T121)
1,4-Dichlorobenzene	7t 0	778	104	(7t T120)
2,2-Dichloropropane	7t 0	8t 9	11t	(- 7T133)
2-Butanone (MEK)	22t 0	2820	12t	(t 1T148)
2-Chlorobenzene	7t 0	783	104	(7t T122)
2-Hexanone	22t 0	30t 0	13-	(t 3T14t)
4-Chlorobenzene	7t 0	771	103	(72T124)
4-Isopropylbenzene	7t 0	811	108	(73T127)
4-Methyl-2-Pentanone (MIBK)	22t 0	2800	124	(- t T13t)
Benzene	7t 0	77t	103	(77T121)
Bromobenzene	7t 0	77-	103	(78T121)
Bromochloroethane	7t 0	770	103	(78T12t)
Bromo-1-chloroethane	7t 0	782	104	(7t T127)
Bromoform	7t 0	8t 0	113	(- 7T132)
Bromoethane	7t 0	8- 0	11t	(t 3T143)
Carbon disulfide	1130	1400	12t	(- 3T132)

Print Date: 10/20/2017 8:37:39yM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1177018 [VXX31444]

Blank Spike Lab ID: 141824t

Date analyzed: 10/20/2017 11:02

Matrix: Soil/Solid (/ rz weigh)

QC for Samples: 1177018014, 117701801t, 117701801-, 1177018017, 1177018018, 1177018020

Results by SW8260C

Blank Spike (ug/Kg)

Parameter	Spike	Result	Rec (%)	CL
Carbon tetrachloride	7t 0	781	104	(70T13t)
Chlorobenzene	7t 0	783	104	(79T120)
Chloroethane	7t 0	7t 8	101	(t 9T139)
Chloroform	7t 0	748	100	(78T123)
Chloromethane	7t 0	802	107	(t 0T13-)
cis-1,2-Dichloroethene	7t 0	790	10t	(77T123)
cis-1,3-Dichloropropene	7t 0	8- 0	11t	(74T12-)
Dibromochloromethane	7t 0	839	112	(74T12-)
Dibromomethane	7t 0	7- 7	102	(78T12t)
Dichlorodifluoromethane	7t 0	- 71	90	(29T149)
Endobenzene	7t 0	798	10-	(7- T122)
Freon T113	1130	1330	118	(- - T13-)
Hexachlorobenzene	7t 0	781	104	(- 1T13t)
Isopropylbenzene (Cumene)	7t 0	793	10-	(- 8T134)
Methylenedichloride	7t 0	770	103	(70T128)
Methyltrichloride	1130	1230	110	(73T12t)
Naphthalene	7t 0	733	98	(- 2T129)
n-Butylbenzene	7t 0	80t	107	(70T128)
n-Propylbenzene	7t 0	798	10-	(73T12t)
o-Xylene	7t 0	79-	10-	(77T123)
P & M Xylene	1t 00	1t 80	10t	(77T124)
sec-Butylbenzene	7t 0	814	108	(73T12-)
Styrene	7t 0	8t 4	114	(7- T124)
tert-Butylbenzene	7t 0	781	104	(73T12t)
1,1,1-Trichloroethene	7t 0	813	108	(73T128)
1,2-Dichlorobenzene	7t 0	787	10t	(77T121)
trans-1,2-Dichloroethene	7t 0	832	111	(74T12t)
trans-1,3-Dichloropropene	7t 0	828	110	(71T130)
1,1-Dichloroethene	7t 0	791	10-	(77T123)
1,1-Dichlorodifluoroethane	7t 0	8t 1	113	(- 2T140)
Vinyl acetate	7t 0	8- 7	11-	(t 0T1t 1)
Vinyl chloride	7t 0	830	111	(t - T13t)
Xylenes (Total)	22t 0	2380	10-	(78T124)

Print Date: 10/20/2017 8:37:39yM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1177018 [VXX31444]

Blank Spike Lab ID: 141824t

Date Analyzed: 10/05/2017 11:02

Matrix: Soil/Solid (/ rz weighA

QC for Samples: 1177018014, 117701801t, 117701801-, 1177018017, 1177018018, 1177018020

Results by SW8260C

Parameter	Blank Spike (%)			CL
	Spike	Result	Rec (%)	
Surrogates				
1,2-Dichloroethane-D4 (surr)	7t 0	9- .4	9-	(71T13-)
4-Bromofluorobenzene (surr)	7t 0	9t .1	9t	(t t T1t 1)
6oluene-1,8 (surr)	7t 0	103	103	(8t T11-)

Batch Information

Analyst: VMS17274

Analyst Method: SW8260C

Instrument: VRA Agilent GC/MS 7890B/5977A

Analyst: NRO

Prep Batch: VXX31444

Prep Method: SW5035A

Prep Date/Time: 10/05/2017 06:00

Spike Inj Volume: 7t 0 ug/Kg ExAcAVol: 2t mL

Dupe Inj Volume: ExAcAVol:

Print Date: 10/20/2017 8:37:39yM

Matrix Spike Summary

Original Sample ID: 1718814
3 S Sample ID: 1718670 3 S
3 SD Sample ID: 171867M3 SD

2nalAiy Dase: 1t /t 4/6t 1M 14:18
2nalAiy Dase: 1t /t 4/6t 1M 16:61
2nalAiy Dase: 1t /t 4/6t 1M 16:5x
3 asio: Sdil/Sdli(w rAheig) sR

Cf Rlr Sampley: 11MM 18t 17- 11MM 18t 14- 11MM 18t 10- 11MM 18t 1M 11MM 18t 18- 11MM 18t 6t

u eybls KA SW8260C

		3 asio Spike wlg/cgR			Spike Dbpliase wlg/cgR					
%arameser	Sample	Spike	u eybls	ueQw R	Spike	u eybls	ueQw R	f	u %D w R	u %D f
1-1-1-6TesaQ ldrdes) ane	1t .7U	M8	M4	x8	M8	M7	1t 1	M8T164	6.7t	w 6t R
1-1-1-6TesaQ ldrdes) ane	16.xU	M8	M4	1t 1	M8	M4x	x8	M5T15t	5.7t	w 6t R
1-1-6-6TesaQ ldrdes) ane	0.74U	M8	M18	x6	M8	M1	xx	M T167	0.xt	w 6t R
1-1-6-6TesaQ ldrdes) ane	4.6t U	M8	M7M	x0	M8	M8x	1t 1	M8T161	4.4t	w 6t R
1-1-6-6TesaQ ldrdes) ane	16.xU	M8	M81	1t t	M8	M0	1t t	M0T164	t .05	w 6t R
1-1-6-6TesaQ ldrdes) ane	16.xU	M8	x61	118	M8	807	111	M T151	0.7t	w 6t R
1-1-6-6TesaQ ldrdes) ane	16.xU	M8	8t 6	1t 5	M8	MM	1t t	M0T164	5.1t	w 6t R
1-6-5-6TesaQ ldrdes) ane	64.xU	M8	465	0M	M8	081	88	00T15t	60.7t	* w 6t R
1-6-5-6TesaQ ldrdes) ane	16.xU	M8	M 4	x1	M8	M5x	x4	M5T164	7.8t	w 6t R
1-6-7-6TesaQ ldrdes) ane	16.xU	M8	01t	M8	M8	M61	x5	0M16x	10.8t	w 6t R
1-6-7-6TesaQ ldrdes) ane	64.xU	M8	M80	1t 1	M8	MM	1t t	M4T165	1.1t	w 6t R
1-6-7-6TesaQ ldrdes) ane	46.t U	M8	047	87	M8	M77	x0	01T156	15.t t	w 6t R
1-6-7-6TesaQ ldrdes) ane	4.6t U	M8	M51	x7	M8	M85	1t 1	M8T166	0.xt	w 6t R
1-6-7-6TesaQ ldrdes) ane	16.xU	M8	M75	x0	M8	M50	x4	M8T161	t .x8	w 6t R
1-6-7-6TesaQ ldrdes) ane	4.6t U	M8	0x8	xt	M8	M68	x7	M5T168	7.6t	w 6t R
1-6-7-6TesaQ ldrdes) ane	4.6t U	M8	M7M	x0	M8	M06	x8	M0T165	6.t t	w 6t R
1-5-4-6TesaQ ldrdes) ane	16.xU	M8	Mk	1t t	M8	M84	1t 1	M5T167	t .85	w 6t R
1-5-4-6TesaQ ldrdes) ane	16.xU	M8	M44	xM	M8	M4t	x0	MM161	t .0x	w 6t R
1-5-4-6TesaQ ldrdes) ane	4.6t U	M8	M76	x4	M8	M88	1t 1	MM161	0.t t	w 6t R
1-7-4-6TesaQ ldrdes) ane	16.xU	M8	M40	xM	M8	M0t	x8	M4T16t	t .44	w 6t R
6-6-4-6TesaQ ldrdes) ane	16.xU	M8	8M5	116	M8	85x	1t 8	0M155	7.t t	w 6t R
6TesaQ ldrdes) ane	15t U	655t	676t	1t 5	655t	68M	165	41T178	1M5t	w 6t R
6TesaQ ldrdes) ane	16.xU	M8	M48	xM	M8	M78	x0	M4T166	1.7t	w 6t R
6TesaQ ldrdes) ane	46.t U	655t	600t	117	655t	5t xt	156	45T174	14.1t	w 6t R
7TesaQ ldrdes) ane	16.xU	M8	M4M	xM	M8	M5x	x4	M6T167	6.7t	w 6t R
7TesaQ ldrdes) ane	16.xU	M8	M5x	x4	M8	M01	x8	M5T16M	6.8t	w 6t R
7TesaQ ldrdes) ane	15t U	655t	670t	1t 4	655t	68t t	16t	04T154	15.t t	w 6t R
Benzene	0.74U	M8	M47	xM	M8	M46	xM	MM161	t .6M	w 6t R
Brdmdkenzene	16.xU	M8	M1	xx	M8	M07	x8	M8T161	t .87	w 6t R
BrdmdQ ldrdes) ane	16.xU	M8	M85	1t 1	M8	M0M	xx	M8T164	6.t t	w 6t R
Brdmd(iQ ldrdes) ane	16.xU	M8	M47	xM	M8	M7	1t t	M4T16M	6.4t	w 6t R
BrdmdRlr	16.xU	M8	M7	1t t	M8	85x	1t 8	0M156	8.t t	w 6t R
Brdmdmes) ane	1t 7U	M8	x1x	118	M8	806	111	45T175	0.5t	w 6t R
f arkdn (iylR(e	46.t U	11M	144t	155 *	11M	171t	16t	05T156	x.xt	w 6t R
f arkdn ssaQ ldrdes) ane	0.74U	M8	8t 0	1t 7	M8	M4	1t t	M T154	7.t t	w 6t R
f) ldrdes) ane	16.xU	M8	M4t	x0	M8	M08	xx	MkT16t	6.4t	w 6t R
f) ldrdes) ane	1t 7U	M8	Mkt	1t 6	M8	M5x	x4	4xT15x	0.M	w 6t R

%rinsDase: 1t /6t /6t 1M 8:5M7t 23

Matrix Spike Summary

Original Sample ID: 1718814
3 S Sample ID: 1718670 3 S
3 SD Sample ID: 171867M3 SD

2nalAiy Dase: 1t /t 4/6t 1M 14:18
2nalAiy Dase: 1t /t 4/6t 1M 16:61
2nalAiy Dase: 1t /t 4/6t 1M 16:5x
3 asio: Sdil/Sdli(w rAheig) sR

Cf Rlr Sampley: 11MM 18t 17- 11MM 18t 14- 11MM 18t 10- 11MM 18t 1M 11MM 18t 18- 11MM 18t 6t

u eybls KA SW8260C

		3 asio Spike w/g/cgR			Spike Dbpliase w/g/cgR					
%arameer	Sample	Spike	u eybls	ueQw R	Spike	u eybls	ueQw R	f	u%D w R	u%D f
f) ldrdRrm	16.xU	M8	M5t	x7	M8	M56	x7	M8T165	t .56	w 6t R
f) ldrdmes) ane	16.xU	M8	M0x	xx	M8	M0x	xx	4t T150	t .t t	w 6t R
QyT1-6TDiQ ldrdes) ene	16.xU	M8	M85	1t 1	M8	M0	1t t	M8T165	t .xt	w 6t R
QyT1-5TDiQ ldrdprdpene	0.74U	M8	85t	1t M	M8	844	11t	M7T160	5.t t	w 6t R
DikrdmdQ ldrdmes) ane	16.xU	M8	M80	1t 1	M8	860	1t 0	M7T160	7.xt	w 6t R
Dikrdmdmes) ane	16.xU	M8	M6M	x7	M8	M00	xx	M8T164	4.6t	w 6t R
DiQ ldrd(iRbdrdmes) ane	64.xU	M8	M10	x6	M8	048	84	6xT17x	8.4t	w 6t R
Es) Alkenzene	16.xU	M8	M07	x8	M8	M0x	xx	M0T166	t .01	w 6t R
FrednT115	46.t U	11M	158t	118	11M	15t t	116	00T150	4.7t	w 6t R
HeoaQ ldrdkbsa(iene	1t .7U	M8	M65	x5	M8	M55	x7	01T154	1.7t	w 6t R
lydrdpAlkenzene w bmenR	16.xU	M8	M56	x7	M8	M45	xM	08T157	6.M	w 6t R
3 es) Alene Q ldr(e	46.t U	M8	M44	xM	M8	M46	xM	M T168	t .71	w 6t R
3 es) ATSkbsA es) er	46.t U	11M	11M	1t t	11M	165t	1t 0	M5T164	4.1t	w 6t R
Nap) s) alene	16.xU	M8	480	M4	M8	M5t	x7	06T16x	61.8t	* w 6t R
nTBbsAlkenzene	16.xU	M8	M51	x7	M8	M71	x4	M T168	1.7t	w 6t R
nT/rdpAlkenzene	16.xU	M8	M81	1t t	M8	M48	xM	M5T164	5.1t	w 6t R
dTXAlene	16.xU	M8	M7x	x0	M8	M4M	xM	M8T165	1.1t	w 6t R
% & 3 TXAlene	64.xU	140t	141t	xM	140t	147t	xx	M8T167	1.7t	w 6t R
yeQBbsAlkenzene	16.xU	M8	M07	x8	M8	M0	1t t	M5T160	1.0t	w 6t R
SsArene	16.xU	M8	Mk7	1t 6	M8	851	1t M	M0T167	7.0t	w 6t R
æstBbsAlkenzene	16.xU	M8	M70	x0	M8	M46	xM	M5T164	t .85	w 6t R
9esraQ ldrdes) ene	0.74U	M8	M80	1t 1	M8	M8M	1t 1	M5T168	t .1t	w 6t R
9dlbene	16.xU	M8	M44	xM	M8	M40	xM	M8T161	t .61	w 6t R
sanyT1-6TDiQ ldrdes) ene	16.xU	M8	878	1t x	M8	81x	1t 4	M7T164	5.4t	w 6t R
sanyT1-5TDiQ ldrdprdpene	0.74U	M8	Mk4	1t 6	M8	818	1t 4	M1 T15t	6.xt	w 6t R
9riQ ldrdes) ene	4.6t U	M8	M85	1t 1	M8	M5	xx	M8T165	1.5t	w 6t R
9riQ ldrdRbdrdmes) ane	64.xU	M8	x65	11x	M8	845	11t	06T17t	M8t	w 6t R
VinAl aQesæ	46.t U	M8	Mk1	1t 6	M8	84t	1t x	4t T141	M6t	w 6t R
VinAl Q ldr(e	4.6t U	M8	8M1	116	M8	Mk0	1t 6	40T154	x.t t	w 6t R
XAleney wdsalR	58.8U	655t	660t	xM	655t	66xt	x8	M8T167	1.5t	w 6t R
Surrogates										
1-6TDiQ ldrdes) aneTD7 wbyrrR		M8	M17	x6	M8	M77	x0	M1 T150	7.1t	
7TBrdmdRbdrdkenene wbyrrR		1t M	111t	1t 5	1t M	11t t	1t 5	44T141	t .10	
9dlbeneT 8 wbyrrR		M8	MkM	1t 5	M8	8t 7	1t 5	84T110	t .M8	

%rinsDase: 1t /6t /6t 1M 8:5M7t 23



Matrix Spike Summary

Original Sample ID: 1718814
3 S Sample ID: 1718670 3 S
3 SD Sample ID: 171867M3 SD

2nalAiy Dæ:
2nalAiy Dæ: 1t /t 4/6t 1M 16:61
2nalAiy Dæ: 1t /t 4/6t 1M 16:5x
3 asio: Sdil/Sdli(v rA heig) sR

Cf Rlr Sampley: 11MM 18t 17- 11MM 18t 14- 11MM 18t 10- 11MM 18t 1M 11MM 18t 18- 11MM 18t 6t

ueybly kA SW8260C

3 asio Spike vL R					Spike DbpliQæ vL R					
%arameæ	Sample	Spike	ueybly	ueQvL R	Spike	ueybly	ueQvL R	f	u%D vL R	u%D f

Batch Information

2nalAiQal BasQ: V3 S1M6M
2nalAiQal 3 es) d(: SW860t f
Inysbmens Vu2 2gilensGf /3 S M8xt B/4xMM2
2nalAys Nu O
2nalAiQal Dæ/9ime: 1t /4/6t 1M 16:61:t t %3

%rep BasQ: VXX51777
%rep 3 es) d(: Vdl. EosaQidn SW860t Fiel(EosaQæ(,
%rep Dæ/9ime: 1t /4/6t 1M 0:t t:t t 23
%rep Inisial Ws/Vdl.: 48.7xg
%rep EosaQsVdl: 5t .6Mm,

%rinsDæ: 1t /6t /6t 1M 8:5M7t 23

Method Blank

Blank ID: MB for HBN 1776190 3 VVX 14] 7L
Blank ba8 ID: 141] 046

Ma,rti : x a,pr dC(rfaypswffgh ro(n) R

2 Q for CaS ntpe:
1177610661s1177610669

upe(l,e 8U SW8260C

<u>- araSp,pr</u>	<u>upe(l,e</u>	<u>bP 2 XOb</u>	<u>Db</u>	<u>Ont.e</u>
1st1st9Tc p,ray. lorop,. anp	6gK6O	6gK66	6gl K6	(5X
1st1stTc rty. lorop,. anp	6gK66O	1g6	6g 16	(5X
1st9st9Tc p,ray. lorop,. anp	6gK6O	6gK66	6gl K6	(5X
1st9Tc rty. lorop,. anp	6g66O	6g66	6gl 96	(5X
1stTdy. lorop,. anp	6gK66O	1g6	6g 16	(5X
1stTdy. lorop,. pnp	6gK66O	1g6	6g 16	(5X
1stTdy. loromrompnp	6gK66O	1g6	6g 16	(5X
1stTc rty. lora8pnzpnnp	6gK66O	1g6	6g 16	(5X
1stTc rty. loromromanp	6gK66O	1g6	6g 16	(5X
1stTc rty. lora8pnzpnnp	6gK66O	1g6	6g 16	(5X
1stTc rtSp,. U8pnzpnnp	6gK66O	1g6	6g 16	(5X
1stT8roS oT Ty. loromromanp	K66O	16g	/ gl6	(5X
1stT8roS op,. anp	6g/ 7KO	6g7K6	6gl106	(5X
1stTdy. lora8pnzpnnp	6gK66O	1g6	6g 16	(5X
1stTdy. lorop,. anp	6gK6O	6gK66	6gl K6	(5X
1stTdy. loromromanp	6gK66O	1g6	6g 16	(5X
1stTc rtSp,. U8pnzpnnp	6gK66O	1g6	6g 16	(5X
1stTdy. lora8pnzpnnp	6gK66O	1g6	6g 16	(5X
1stTdy. loromromanp	6gK6O	6gK66	6gl K6	(5X
1stTdy. lora8pnzpnnp	6gK6O	6gK66	6gl K6	(5X
9stTdy. loromromanp	6gK66O	1g6	6g 16	(5X
9TB(,anonp dMwER	K66O	16g	/ gl6	(5X
9TQ. lora,ol(pnp	6gK66O	1g6	6g 16	(5X
9THpi anonp	K66O	16g	/ gl6	(5X
4TQ. lora,ol(pnp	6gK66O	1g6	6g 16	(5X
4TleomromU,ol(pnp	6gK66O	1g6	6g 16	(5X
4Tlp,. U7Tpn,anonp dMIBER	K66O	16g	/ gl6	(5X
Bpnzpnnp	6g66O	6g66	6gl 96	(5X
BroS o8pnzpnnp	6gK66O	1g6	6g 16	(5X
BroS oy. loraSp,. anp	6gK66O	1g6	6g 16	(5X
BroS o) ty. loraSp,. anp	6gK6O	6gK66	6gl K6	(5X
BroS oforS	6gK66O	1g6	6g 16	(5X
BroS oSp,. anp	9gK6O	K66	1gK6	(5X
Qar8on) te(lft) p	K66O	16g	/ gl6	(5X
Qar8on ,p,ray. lort) p	6gK66O	1g6	6g 16	(5X
Q. lora8pnzpnnp	6gK6O	6gK66	6gl K6	(5X
Q. lorop,. anp	6gK66O	1g6	6g 16	(5X
Q. loraforS	6gK66O	1g6	6g 16	(5X

- rtn, Da,p: 16X6X617 0:/ 7:41AM

Ch C Nor,. AS prtya Inyg

966 x pe, - o.,pr DrtQ Any. ora5psAE] KK10
t] 67gV0g/ 4/ f] 67gV0g/ 61 v v v g eg5egoS

MpS8pr of Ch C h ro(m

Method Blank

Blank ID: MB for HBN 1776190 & VVX 14] 7L
Blank ba8 ID: 141] 046

Ma,rti : x a,pr dC(rfaypswffgh ro(n) R

2 Q for CaS ntpe:
1177610661s1177610669

upe(l,e 8U SW8260C

- araSp,pr	upe(l,e	bP 2 XOb	Db	Ont.e
Q. loroSp,. anp	6gK6O	1g6	6g 16	(5X
yteT1sTDty. lorop,. pnp	6gK6O	1g6	6g 16	(5X
yteT1s' TDty. loromrompnp	6gK6O	6gK66	6gK6	(5X
Dt8roS oy. loroSp,. anp	6gK6O	6gK66	6gK6	(5X
Dt8roS oSp,. anp	6gK6O	1g6	6g 16	(5X
Dty. loro) tfl(oroSp,. anp	6gK6O	1g6	6g 16	(5X
w,. U8pnznp	6gK6O	1g6	6g 16	(5X
FrponT1/	Kg6O	1g6	/ gl6	(5X
Hpi ay. loro8(,a) tpnp	6gK6O	1g6	6g 16	(5X
leomromU8pnznp dQ(S pnpR	6gK6O	1g6	6g 16	(5X
Mp,. Upnp y. lort) p	9gK6O	Kg6	1g6	(5X
Mp,. UT, B(,U p,. pr	Kg6O	1g6	/ gl6	(5X
Nam ,. alpnp	6gK6O	1g6	6g 16	(5X
nTB(,U8pnznp	6gK6O	1g6	6g 16	(5X
nT romU8pnznp	6gK6O	1g6	6g 16	(5X
oTVUpnp	6gK6O	1g6	6g 16	(5X
- & M TVUpnp	1g6O	9g6	6g106	(5X
epyTB(,U8pnznp	6gK6O	1g6	6g 16	(5X
C,Upnp	6gK6O	1g6	6g 16	(5X
,pr, TB(,U8pnznp	6gK6O	1g6	6g 16	(5X
cp,ray. lorop,. pnp	6gK6O	1g6	6g 16	(5X
col(pnp	6gK6O	1g6	6g 16	(5X
,raneT1sTDty. lorop,. pnp	6gK6O	1g6	6g 16	(5X
,raneT1s' TDty. loromrompnp	6gK6O	1g6	6g 16	(5X
crtly. lorop,. pnp	6gK6O	1g6	6g 16	(5X
crtly. loro fl(oroSp,. anp	6gK6O	1g6	6g 16	(5X
[tnU ayp,a,p	Kg6O	1g6	/ gl6	(5X
[tnU y. lort) p	6g7K6O	6gK6	6gK66	(5X
VUpnpe qo,alR	1g6O	/ g6	1g6	(5X

Surrogates

1sTDty. lorop,. anpTD4 d(rrR	16W	01T110	%
4TBroS ofl(oro8pnznp d(rrR	16]	0KT114	%
col(pnpT) 0 d(rrR	] 7g	0] T119	%

Method Blank

Blank ID: MB for HBN 1776190 3 VVX 14] 7L
Blank ba8 ID: 141] 046

2 Q for CaS ntp:
1177610661s1177610669

Ma,rti : x a,pr dC(rfaypswffgh ro(n) R

upe(l,e 8U**SW8260C**

- araSp,pr

upe(l,e

bP2 XQb

Db

Ont,e

Batch Information

AnalUtyal Ba,y. : [MC17/ 6W
AnalUtyal Mp,. o) : Cx 09V6Q
Ine,r(S pn,: [CA A5tlpn, h QMC 70] 6B%] 77A
AnalUe,: FDu
AnalUtyal Da,p%tSp: 16X9X0617 7:1] :66- M

- rpmBa,y. : [VV/ 14] 7
- rpmMp,. o) : Cx K6/ 6B
- rpmDa,p%tSp: 16X9X0617 19:66:66AM
- rpmInt,tal x ,g% olg K S b
- rpmwi ,ray, [ol: K S b

- rtn, Da,p: 16X06X0617 0:/ 7:41AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1177018 [VXX31497]

Blank Spike Lab ID: 1419841

Date Analyzed: 10/12/2017 19:36

Spike Duplicate ID: LCSD for HBN 1177018 [VXX31497]

Spike Duplicate Lab ID: 1419842

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1177018001, 1177018002

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	30	34.5	115	30	33.4	111	(78-124)	3.20	(< 20)
1,1,1-Trichloroethane	30	34.7	116	30	33.7	112	(74-131)	2.90	(< 20)
1,1,2,2-Tetrachloroethane	30	30.8	103	30	30.7	102	(71-121)	0.52	(< 20)
1,1,2-Trichloroethane	30	33.9	113	30	32.6	109	(80-119)	3.80	(< 20)
1,1-Dichloroethane	30	31.0	103	30	30.8	103	(77-125)	0.81	(< 20)
1,1-Dichloroethene	30	29.7	99	30	31.3	104	(71-131)	5.30	(< 20)
1,1-Dichloropropene	30	33.2	111	30	31.5	105	(79-125)	5.20	(< 20)
1,2,3-Trichlorobenzene	30	33.7	112	30	30.9	103	(69-129)	8.60	(< 20)
1,2,3-Trichloropropane	30	31.3	104	30	30.9	103	(73-122)	1.00	(< 20)
1,2,4-Trichlorobenzene	30	33.4	111	30	32.0	107	(69-130)	4.20	(< 20)
1,2,4-Trimethylbenzene	30	31.4	105	30	32.3	108	(79-124)	2.70	(< 20)
1,2-Dibromo-3-chloropropane	30	30.5	102	30	29.6	99	(62-128)	3.20	(< 20)
1,2-Dibromoethane	30	31.6	105	30	30.3	101	(77-121)	4.10	(< 20)
1,2-Dichlorobenzene	30	31.4	105	30	31.3	104	(80-119)	0.45	(< 20)
1,2-Dichloroethane	30	31.9	106	30	28.2	94	(73-128)	12.60	(< 20)
1,2-Dichloropropane	30	35.4	118	30	31.8	106	(78-122)	10.50	(< 20)
1,3,5-Trimethylbenzene	30	31.3	104	30	32.2	107	(75-124)	2.80	(< 20)
1,3-Dichlorobenzene	30	32.0	107	30	32.0	107	(80-119)	0.03	(< 20)
1,3-Dichloropropane	30	34.3	114	30	32.6	109	(80-119)	4.90	(< 20)
1,4-Dichlorobenzene	30	31.8	106	30	31.8	106	(79-118)	0.00	(< 20)
2,2-Dichloropropane	30	32.5	108	30	31.2	104	(60-139)	4.10	(< 20)
2-Butanone (MEK)	90	88.0	98	90	80.1	89	(56-143)	9.50	(< 20)
2-Chlorotoluene	30	31.9	106	30	32.7	109	(79-122)	2.50	(< 20)
2-Hexanone	90	92.7	103	90	89.1	99	(57-139)	3.90	(< 20)
4-Chlorotoluene	30	31.8	106	30	32.4	108	(78-122)	1.70	(< 20)
4-Isopropyltoluene	30	33.5	112	30	34.0	113	(77-127)	1.50	(< 20)
4-Methyl-2-pentanone (MIBK)	90	97.0	108	90	86.5	96	(67-130)	11.40	(< 20)
Benzene	30	34.7	116	30	33.2	111	(79-120)	4.40	(< 20)
Bromobenzene	30	31.5	105	30	31.2	104	(80-120)	0.83	(< 20)
Bromochloromethane	30	31.9	106	30	30.5	102	(78-123)	4.60	(< 20)
Bromodichloromethane	30	35.2	117	30	31.5	105	(79-125)	11.10	(< 20)
Bromoform	30	32.9	110	30	30.6	102	(66-130)	7.30	(< 20)
Bromomethane	30	28.6	95	30	31.7	106	(53-141)	10.10	(< 20)
Carbon disulfide	45	44.4	99	45	47.2	105	(64-133)	6.00	(< 20)

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1177018 [VXX31497]
 Blank Spike Lab ID: 1419841
 Date Analyzed: 10/12/2017 19:36

Spike Duplicate ID: LCSD for HBN 1177018 [VXX31497]
 Spike Duplicate Lab ID: 1419842
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1177018001, 1177018002

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Carbon tetrachloride	30	32.6	109	30	31.2	104	(72-136)	4.30	(< 20)
Chlorobenzene	30	33.0	110	30	31.9	106	(82-118)	3.50	(< 20)
Chloroethane	30	24.7	82	30	28.5	95	(60-138)	14.40	(< 20)
Chloroform	30	31.3	104	30	30.4	101	(79-124)	3.10	(< 20)
Chloromethane	30	25.5	85	30	27.7	92	(50-139)	8.30	(< 20)
cis-1,2-Dichloroethene	30	31.4	105	30	30.4	101	(78-123)	3.20	(< 20)
cis-1,3-Dichloropropene	30	34.0	113	30	30.5	102	(75-124)	10.90	(< 20)
Dibromochloromethane	30	34.3	114	30	32.8	109	(74-126)	4.40	(< 20)
Dibromomethane	30	32.3	108	30	29.2	97	(79-123)	10.30	(< 20)
Dichlorodifluoromethane	30	24.9	83	30	26.9	90	(32-152)	7.40	(< 20)
Ethylbenzene	30	34.2	114	30	33.5	112	(79-121)	2.20	(< 20)
Freon-113	45	46.2	103	45	47.8	106	(70-136)	3.50	(< 20)
Hexachlorobutadiene	30	36.4	121	30	34.0	113	(66-134)	6.90	(< 20)
Isopropylbenzene (Cumene)	30	34.4	115	30	33.5	112	(72-131)	2.90	(< 20)
Methylene chloride	30	31.5	105	30	31.2	104	(74-124)	0.96	(< 20)
Methyl-t-butyl ether	45	49.4	110	45	47.4	105	(71-124)	4.20	(< 20)
Naphthalene	30	31.7	106	30	30.6	102	(61-128)	3.30	(< 20)
n-Butylbenzene	30	32.8	109	30	33.7	112	(75-128)	2.60	(< 20)
n-Propylbenzene	30	32.5	108	30	33.4	111	(76-126)	2.70	(< 20)
o-Xylene	30	33.9	113	30	32.6	109	(78-122)	3.80	(< 20)
P & M -Xylene	60	67.8	113	60	65.6	109	(80-121)	3.20	(< 20)
sec-Butylbenzene	30	33.6	112	30	34.9	116	(77-126)	3.80	(< 20)
Styrene	30	33.6	112	30	32.5	108	(78-123)	3.30	(< 20)
tert-Butylbenzene	30	33.5	112	30	34.1	114	(78-124)	1.70	(< 20)
Tetrachloroethene	30	33.6	112	30	31.3	104	(74-129)	7.10	(< 20)
Toluene	30	33.5	112	30	32.9	110	(80-121)	1.80	(< 20)
trans-1,2-Dichloroethene	30	31.8	106	30	31.4	105	(75-124)	1.20	(< 20)
trans-1,3-Dichloropropene	30	31.0	103	30	29.7	99	(73-127)	4.40	(< 20)
Trichloroethene	30	36.5	122	30	33.4	111	(79-123)	8.80	(< 20)
Trichlorofluoromethane	30	27.9	93	30	30.1	100	(65-141)	7.60	(< 20)
Vinyl acetate	30	34.0	113	30	30.9	103	(54-146)	9.80	(< 20)
Vinyl chloride	30	27.0	90	30	29.1	97	(58-137)	7.80	(< 20)
Xylenes (total)	90	102	113	90	98.2	109	(79-121)	3.40	(< 20)

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1177018 [VXX31497]
 Blank Spike Lab ID: 1419841
 Date Analyzed: 10/12/2017 19:36

Spike Duplicate ID: LCSD for HBN 1177018 [VXX31497]
 Spike Duplicate Lab ID: 1419842
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1177018001, 1177018002

Results by SW8260C

Parameter	Blank Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	102	102	30	93.3	93	(81-118)	8.90	
4-Bromofluorobenzene (surr)	30	94.3	94	30	96.1	96	(85-114)	1.80	
Toluene-d8 (surr)	30	105	105	30	104	104	(89-112)	1.10	

Batch Information

Analytical Batch: VMS17306
 Analytical Method: SW8260C
 Instrument: VSA Agilent GC/MS 7890B/5977A
 Analyst: FDR

Prep Batch: VXX31497
 Prep Method: SW5030B
 Prep Date/Time: 10/12/2017 00:00
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 10/20/2017 8:37:43AM

Method Blank

Blank ID: MB for HBN 1776190 3 VVX 140] L
Blank ba8 ID: 1410] 4/

Mairxd: (aipr yCwrfagpshff)sRrownuU

2 Q for CaS ntpc:

117761] 66/ s117761] 664s117761] 66, s117761] 66t s117761] 667s117761] 66] s117761] 660s117761] 616s117761] 610

Opewlie 8P SW8260C

<u>caraS pipr</u>	<u>Opewlie</u>	<u>bT 2 XQb</u>	<u>Db</u>	<u>- nxe</u>
1st1s9. Kpirag5loropi5anp	6)9, 6-	6), 66	6)1, 6	vzXb
1st1s1. Krg5loropi5anp	6), 66-	1)66	6) 16	vzXb
1st9s9. Kpirag5loropi5anp	6)9, 6-	6), 66	6)1, 6	vzXb
1st9. Krg5loropi5anp	6)966-	6)466	6)196	vzXb
1st. Dxg5loropi5anp	6), 66-	1)66	6) 16	vzXb
1st. Dxg5loropi5pnp	6), 66-	1)66	6) 16	vzXb
1st. Dxg5loromrompnp	6), 66-	1)66	6) 16	vzXb
19s. Krg5loro8pnEpn	6), 66-	1)66	6) 16	vzXb
19s. Krg5loromromanp	6), 66-	1)66	6) 16	vzXb
19s4. Krg5loro8pnEpn	6), 66-	1)66	6) 16	vzXb
19s4. Krg5pi5H8pnEpn	6), 66-	1)66	6) 16	vzXb
19. Dx8roS o./ .g5loromromanp	,)66-	16)6	/)16	vzXb
19. Dx8roS opi5anp	6)6/ 7, -	6)67, 6	6)61] 6	vzXb
19. Dxg5loro8pnEpn	6), 66-	1)66	6) 16	vzXb
19. Dxg5loropi5anp	6)9, 6-	6), 66	6)1, 6	vzXb
19. Dxg5loromromanp	6), 66-	1)66	6) 16	vzXb
1s s. Krg5pi5H8pnEpn	6), 66-	1)66	6) 16	vzXb
1s. Dxg5loro8pnEpn	6), 66-	1)66	6) 16	vzXb
1s. Dxg5loromromanp	6)9, 6-	6), 66	6)1, 6	vzXb
1s4. Dxg5loro8pnEpn	6)9, 6-	6), 66	6)1, 6	vzXb
9s. Dxg5loromromanp	6), 66-	1)66	6) 16	vzXb
9. Bwianonp yMhAU	,)66-	16)6	/)16	vzXb
9. Q5loroiolwvnp	6), 66-	1)66	6) 16	vzXb
4. Q5loroiolwvnp	6), 66-	1)66	6) 16	vzXb
4. leonromPiolwvnp	6), 66-	1)66	6) 16	vzXb
4. Mpi5H.9. npianonp yMIBAU	,)66-	16)6	/)16	vzXb
BpnEpn	6)966-	6)466	6)196	vzXb
BroS o8pnEpn	6), 66-	1)66	6) 16	vzXb
BroS og5loroS pi5anp	6), 66-	1)66	6) 16	vzXb
BroS ouxg5loroS pi5anp	6)9, 6-	6), 66	6)1, 6	vzXb
BroS oforS	6), 66-	1)66	6) 16	vzXb
BroS oS pi5anp	9), 6-	,)66	1), 6	vzXb
Qar8on uxwlfup	,)66-	16)6	/)16	vzXb
Qar8on ipirag5lorxup	6), 66-	1)66	6) 16	vzXb
Q5loro8pnEpn	6)9, 6-	6), 66	6)1, 6	vzXb
Q5loropi5anp	6), 66-	1)66	6) 16	vzXb
Q5loroforS	6), 66-	1)66	6) 16	vzXb
Q5loroS pi5anp	6), 66-	1)66	6) 16	vzXb

crni Daip: 16)6)617]:/ 7:44GM

Method Blank

Blank ID: MB for HBN 1776190 & VVX 140] L
Blank ba8 ID: 1410] 4/

Mairxd: (aipr yCwrfagpshff)sRrownuU

2 Q for CaS ntpc:

117761] 66/ s117761] 664s117761] 66, s117761] 66t s117761] 667s117761] 66] s117761] 660s117761] 616s117761] 610

Opewlie 8P SW8260C

<u>c araS pipr</u>	<u>Opewlie</u>	<u>bT 2 XQb</u>	<u>Db</u>	<u>- nxe</u>
ge. 1s. Dx5loropi5pnp	6), 66-	1)66	6) 16	vzXb
ge. 1s' . Dx5loromrompnp	6)9, 6-	6), 66	6)1, 6	vzXb
Dx8roS og5loroS pi5anp	6)9, 6-	6), 66	6)1, 6	vzXb
Dx8roS oS pi5anp	6), 66-	1)66	6) 16	vzXb
Dx5loroufIworoS pi5anp	6), 66-	1)66	6) 16	vzXb
hi5P8pnEpn	6), 66-	1)66	6) 16	vzXb
Frpon. 11/	,)66-	16)6	/)16	vzXb
Hpdag5loro8wiaupnp	6), 66-	1)66	6) 16	vzXb
leomromP8pnEpn yQwS pnpU	6), 66-	1)66	6) 16	vzXb
Mpi5Ppnp g5lorxup	9), 6-	,)66	1)66	vzXb
Mpi5P. i. 8wiP pi5pr	,)66-	16)6	/)16	vzXb
Nan5i5alpnp	6), 66-	1)66	6) 16	vzXb
n. BwiP8pnEpn	6), 66-	1)66	6) 16	vzXb
n. c romP8pnEpn	6), 66-	1)66	6) 16	vzXb
o. VPlpnp	6), 66-	1)66	6) 16	vzXb
c & M . VPlpnp	1)66-	9)66	6)t 96	vzXb
epg. BwiP8pnEpn	6), 66-	1)66	6) 16	vzXb
CiPrpnp	6), 66-	1)66	6) 16	vzXb
ipri. BwiP8pnEpn	6), 66-	1)66	6) 16	vzXb
Kpirag5loropi5pnp	6), 66-	1)66	6) 16	vzXb
Kolwppnp	6), 66-	1)66	6) 16	vzXb
irane. 1s. Dx5loropi5pnp	6), 66-	1)66	6) 16	vzXb
irane. 1s' . Dx5loromrompnp	6), 66-	1)66	6) 16	vzXb
Krx5loropi5pnp	6), 66-	1)66	6) 16	vzXb
Krx5lorofIworoS pi5anp	6), 66-	1)66	6) 16	vzXb
[xnP agpiaip	,)66-	16)6	/)16	vzXb
[xnP g5lorxup	6)67, 6-	6)1, 6	6)6, 66	vzXb
VPlpnpe yioialU	1), 6-	/)66	1)66	vzXb

Surrogates

1s. Dx5loropi5anp. D4 yewrrU	16/	] 1. 11]	%
4. BroS ofIworo8pnEpn yewrrU	0t)9	] , . 114	%
Kolwppnp. u] yewrrU	07)t	] 0. 119	%

Method Blank

Blank ID: MB for HBN 1776190 3 VVX 140] L
Blank ba8 ID: 1410] 4/

Mairxd: (aipr yCwfagpshff)sRrownuU

2 Q for CaS ntp:

117761] 66/ s117761] 664s117761] 66, s117761] 66t s117761] 667s117761] 66] s117761] 660s117761] 616s117761] 610

Opewlie 8P SW8260C

caraS pipr

Opewlie

bT 2 XQb

Db

- nxe

Batch Information

GnalPtxgal Baig5: [MC17/ 6,
GnalPtxgal Mpi5ou: C(] 9t 6Q
IneirwS pni: Gzxpni 7] 06.7, MC
GnalPei: NOT
GnalPtxgal DaipXs p: 16X19X0617 7:14:66GM

crpmBaig5: [VV/ 140]
crpmMpi5ou: C(, 6/ 6B
crpmDaipXs p: 16X19X0617 1:66:66GM
crpmInxal (i)X ol): , S b
crpmhdiragi [ol: , S b

crni Daip: 16X06X0617]:/ 7:44GM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1177018 [VXX31498]

Blank Spike Lab ID: 1419844

Date Analyzed: 10/12/2017 08:18

Spike Duplicate ID: LCSD for HBN 1177018 [VXX31498]

Spike Duplicate Lab ID: 1419845

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1177018003, 1177018004, 1177018005, 1177018006, 1177018007, 1177018008, 1177018009, 1177018010, 1177018019

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	30	30.0	100	30	31.6	105	(78-124)	5.20	(< 20)
1,1,1-Trichloroethane	30	29.5	98	30	30.1	100	(74-131)	2.20	(< 20)
1,1,2,2-Tetrachloroethane	30	30.2	101	30	31.4	105	(71-121)	4.00	(< 20)
1,1,2-Trichloroethane	30	31.4	105	30	32.9	110	(80-119)	4.50	(< 20)
1,1-Dichloroethane	30	29.1	97	30	29.5	98	(77-125)	1.30	(< 20)
1,1-Dichloroethene	30	32.2	107	30	34.3	114	(71-131)	6.40	(< 20)
1,1-Dichloropropene	30	30.9	103	30	31.3	104	(79-125)	1.10	(< 20)
1,2,3-Trichlorobenzene	30	27.9	93	30	37.0	123	(69-129)	28.10	* (< 20)
1,2,3-Trichloropropane	30	29.5	99	30	30.9	103	(73-122)	4.50	(< 20)
1,2,4-Trichlorobenzene	30	28.4	95	30	35.1	117	(69-130)	20.90	* (< 20)
1,2,4-Trimethylbenzene	30	29.4	98	30	30.4	101	(79-124)	3.30	(< 20)
1,2-Dibromo-3-chloropropane	30	27.7	92	30	32.5	108	(62-128)	16.00	(< 20)
1,2-Dibromoethane	30	31.1	104	30	32.4	108	(77-121)	4.30	(< 20)
1,2-Dichlorobenzene	30	29.5	99	30	31.4	105	(80-119)	6.10	(< 20)
1,2-Dichloroethane	30	28.4	95	30	28.9	96	(73-128)	1.40	(< 20)
1,2-Dichloropropane	30	30.7	102	30	31.4	105	(78-122)	2.40	(< 20)
1,3,5-Trimethylbenzene	30	29.1	97	30	30.3	101	(75-124)	4.10	(< 20)
1,3-Dichlorobenzene	30	29.2	97	30	30.6	102	(80-119)	4.60	(< 20)
1,3-Dichloropropane	30	31.1	104	30	32.8	109	(80-119)	5.20	(< 20)
1,4-Dichlorobenzene	30	29.8	99	30	31.2	104	(79-118)	4.60	(< 20)
2,2-Dichloropropane	30	29.5	98	30	29.8	99	(60-139)	0.84	(< 20)
2-Butanone (MEK)	90	88.8	99	90	95.8	106	(56-143)	7.50	(< 20)
2-Chlorotoluene	30	29.3	98	30	31.0	103	(79-122)	5.70	(< 20)
4-Chlorotoluene	30	29.6	99	30	30.8	103	(78-122)	3.80	(< 20)
4-Isopropyltoluene	30	29.3	98	30	30.3	101	(77-127)	3.50	(< 20)
4-Methyl-2-pentanone (MIBK)	90	91.4	102	90	93.9	104	(67-130)	2.70	(< 20)
Benzene	30	30.1	100	30	31.2	104	(79-120)	3.40	(< 20)
Bromobenzene	30	30.0	100	30	31.4	105	(80-120)	4.50	(< 20)
Bromochloromethane	30	30.5	102	30	30.9	103	(78-123)	1.30	(< 20)
Bromodichloromethane	30	30.1	100	30	30.6	102	(79-125)	1.70	(< 20)
Bromoform	30	30.1	100	30	31.6	105	(66-130)	4.90	(< 20)
Bromomethane	30	31.3	104	30	30.1	100	(53-141)	3.90	(< 20)
Carbon disulfide	45	44.3	99	45	45.9	102	(64-133)	3.60	(< 20)
Carbon tetrachloride	30	30.1	100	30	30.6	102	(72-136)	1.60	(< 20)

Print Date: 10/20/2017 8:37:45AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1177018 [VXX31498]

Blank Spike Lab ID: 1419844

Date Analyzed: 10/12/2017 08:18

Spike Duplicate ID: LCSD for HBN 1177018 [VXX31498]

Spike Duplicate Lab ID: 1419845

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1177018003, 1177018004, 1177018005, 1177018006, 1177018007, 1177018008, 1177018009, 1177018010, 1177018019

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Chlorobenzene	30	29.8	99	30	31.4	105	(82-118)	5.10	(< 20)
Chloroethane	30	30.5	102	30	28.9	96	(60-138)	5.40	(< 20)
Chloroform	30	28.9	96	30	29.4	98	(79-124)	1.70	(< 20)
Chloromethane	30	31.0	103	30	29.3	98	(50-139)	5.90	(< 20)
cis-1,2-Dichloroethene	30	29.7	99	30	30.2	101	(78-123)	1.70	(< 20)
cis-1,3-Dichloropropene	30	30.4	101	30	30.9	103	(75-124)	1.40	(< 20)
Dibromochloromethane	30	30.8	103	30	32.3	108	(74-126)	4.90	(< 20)
Dibromomethane	30	30.3	101	30	30.6	102	(79-123)	1.20	(< 20)
Dichlorodifluoromethane	30	28.3	94	30	28.0	93	(32-152)	0.85	(< 20)
Ethylbenzene	30	29.4	98	30	31.2	104	(79-121)	5.90	(< 20)
Freon-113	45	45.1	100	45	45.7	102	(70-136)	1.50	(< 20)
Hexachlorobutadiene	30	29.7	99	30	32.8	109	(66-134)	9.90	(< 20)
Isopropylbenzene (Cumene)	30	28.9	96	30	30.7	102	(72-131)	6.00	(< 20)
Methylene chloride	30	32.3	108	30	32.1	107	(74-124)	0.56	(< 20)
Methyl-t-butyl ether	45	44.6	99	45	45.2	100	(71-124)	1.40	(< 20)
Naphthalene	30	27.7	92	30	35.6	119	(61-128)	25.10	* (< 20)
n-Butylbenzene	30	29.8	99	30	31.2	104	(75-128)	4.80	(< 20)
n-Propylbenzene	30	29.1	97	30	30.4	101	(76-126)	4.30	(< 20)
o-Xylene	30	29.2	97	30	30.7	102	(78-122)	5.10	(< 20)
P & M -Xylene	60	58.5	98	60	61.4	102	(80-121)	4.80	(< 20)
sec-Butylbenzene	30	29.0	97	30	30.4	101	(77-126)	4.80	(< 20)
Styrene	30	29.9	100	30	31.7	106	(78-123)	5.90	(< 20)
tert-Butylbenzene	30	29.0	97	30	30.1	100	(78-124)	3.70	(< 20)
Tetrachloroethene	30	30.6	102	30	32.4	108	(74-129)	5.90	(< 20)
Toluene	30	28.5	95	30	30.6	102	(80-121)	7.00	(< 20)
trans-1,2-Dichloroethene	30	33.7	112	30	34.0	113	(75-124)	0.83	(< 20)
trans-1,3-Dichloropropene	30	30.2	101	30	31.6	105	(73-127)	4.50	(< 20)
Trichloroethene	30	30.8	103	30	31.8	106	(79-123)	3.10	(< 20)
Trichlorofluoromethane	30	29.2	97	30	29.0	97	(65-141)	0.96	(< 20)
Vinyl acetate	30	31.6	105	30	32.9	110	(54-146)	4.00	(< 20)
Vinyl chloride	30	40.2	134	30	37.1	124	(58-137)	8.00	(< 20)
Xylenes (total)	90	87.7	98	90	92.2	102	(79-121)	4.90	(< 20)

Surrogates

Print Date: 10/20/2017 8:37:45AM

SGS North America Inc.

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Member of SGS Group

Blank Spike Summary

Blank Spike ID: LCS for HBN 1177018 [VXX31498]
 Blank Spike Lab ID: 1419844
 Date Analyzed: 10/12/2017 08:18

Spike Duplicate ID: LCSD for HBN 1177018 [VXX31498]
 Spike Duplicate Lab ID: 1419845
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1177018003, 1177018004, 1177018005, 1177018006, 1177018007, 1177018008, 1177018009, 1177018010, 1177018019

Results by SW8260C

Parameter	Blank Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2-Dichloroethane-D4 (surr)	30	96.9	97	30	95.7	96	(81-118)	1.20	
4-Bromofluorobenzene (surr)	30	99.2	99	30	98.5	99	(85-114)	0.78	
Toluene-d8 (surr)	30	101	101	30	102	102	(89-112)	0.89	

Batch Information

Analytical Batch: VMS17305
 Analytical Method: SW8260C
 Instrument: Agilent 7890-75MS
 Analyst: NRO

Prep Batch: VXX31498
 Prep Method: SW5030B
 Prep Date/Time: 10/12/2017 01:00
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 10/20/2017 8:37:45AM

Method Blank

Blank ID: MB for HBN 1770138 [VXX/31501]
Blank Lab ID: 1419917

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1177018003, 1177018004, 1177018005, 1177018006, 1177018007, 1177018008, 1177018009, 1177018010, 1177018019

Results by SW8260C

Parameter	Results	LOQ/CL	DL	Units
2-Hexanone	5.00U	10.0	3.10	ug/L
Sf uor ateg				
1,2-Dichloroethane-D4 (surr)	106	81-118		%
4-Bromofluorobenzene (surr)	106	85-114		%
Toluene-d8 (surr)	93.6	89-112		%

Batch Information

Analytical Batch: VMS17309
Analytical Method: SW8260C
Instrument: VSA Agilent GC/MS 7890B/5977A
Analyst: FDR
Analytical Date/Time: 10/13/2017 7:30:00AM

Prep Batch: VXX31501
Prep Method: SW5030B
Prep Date/Time: 10/12/2017 12:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/20/2017 8:37:47AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1177018 [VXX31501]
 Blank Spike Lab ID: 1419918
 Date Analyzed: 10/13/2017 07:47

Spike Duplicate ID: LCSD for HBN 1177018 [VXX31501]
 Spike Duplicate Lab ID: 1419919
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1177018003, 1177018004, 1177018005, 1177018006, 1177018007, 1177018008, 1177018009, 1177018010, 1177018019

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
2-Hexanone	90	99.9	111	90	82.1	91	(57-139)	19.60	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	95.3	95	30	95.4	95	(81-118)	0.14	
4-Bromofluorobenzene (surr)	30	94	94	30	99	99	(85-114)	5.10	
Toluene-d8 (surr)	30	100	100	30	103	103	(89-112)	2.40	

Batch Information

Analytical Batch: VMS17309
 Analytical Method: SW8260C
 Instrument: VSA Agilent GC/MS 7890B/5977A
 Analyst: FDR

Prep Batch: VXX31501
 Prep Method: SW5030B
 Prep Date/Time: 10/12/2017 00:00
 Spike Init Wt./Vol.: 90 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 90 ug/L Extract Vol: 5 mL

Print Date: 10/20/2017 8:37:48AM

Method Blank

Blank ID: MB for HBN 1769558 [XXX/38581]
Blank Lab ID: 1417685

Matrix: Soil/Solid (dry weight)

QC for Samples:

1177018012, 1177018013, 1177018014, 1177018015, 1177018016, 1177018017, 1177018018

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	10.0U	20.0	6.20	mg/Kg
Surrogates				
5a Androstane (surr)	85.8	60-120		%

Batch Information

Analytical Batch: XFC13861
Analytical Method: AK102
Instrument: Agilent 7890B F
Analyst: JMG
Analytical Date/Time: 10/5/2017 4:10:00PM

Prep Batch: XXX38581
Prep Method: SW3550C
Prep Date/Time: 10/4/2017 8:04:40AM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 1 mL

Print Date: 10/20/2017 8:37:49AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1177018 [XXX38581]
 Blank Spike Lab ID: 1417686
 Date Analyzed: 10/05/2017 16:20

Spike Duplicate ID: LCSD for HBN 1177018 [XXX38581]
 Spike Duplicate Lab ID: 1417687
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1177018012, 1177018013, 1177018014, 1177018015, 1177018016, 1177018017, 1177018018

Results by AK102

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	167	160	96	167	171	102	(75-125)	6.70	(< 20)
Surrogates									
5a Androstane (surr)	3.33	94.1	94	3.33	107	107	(60-120)	13.10	

Batch Information

Analytical Batch: **XFC13861**
 Analytical Method: **AK102**
 Instrument: **Agilent 7890B F**
 Analyst: **JMG**

Prep Batch: **XXX38581**
 Prep Method: **SW3550C**
 Prep Date/Time: **10/04/2017 08:04**
 Spike Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL

Print Date: 10/20/2017 8:37:50AM

Method Blank

Blank ID: MB for HBN 1769558 [XXX/38581]
Blank Lab ID: 1417685

Matrix: Soil/Solid (dry weight)

QC for Samples:

1177018012, 1177018013, 1177018014, 1177018015, 1177018016, 1177018017, 1177018018

Results by AK103

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Residual Range Organics	10.0U	20.0	6.20	mg/Kg
Surrogates				
nA riacontaneAt62 (surr)	87.3	60A20		%

Batch Information

Fanalytical Batch: XJC13861
Fanalytical Method: FK103
Instrument: Fgilent 7890B J
Fnalyst: GMT
Fanalytical Date/- ime: 10/5/2017 4:10:00PM

Prep Batch: XXX38581
Prep Method: SW3550C
Prep Date/- ime: 10/4/2017 8:04:40FM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 1 mL

Print Date: 10/20/2017 8:37:52FM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1177018 [XXX38581]
 Blank Spike Lab ID: 1417686
 Date Analyzed: 10/05/2017 16:20

Spike Duplicate ID: LCSD for HBN 1177018 [XXX38581]
 Spike Duplicate Lab ID: 1417687
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1177018012, 1177018013, 1177018014, 1177018015, 1177018016, 1177018017, 1177018018

Results by AK102

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Residual Range Organics	167	162	97	167	172	103	(60-120)	6.40	(< 20)
Surrogates									
n-Triacontane-d62 (surr)	3.33	95.2	95	3.33	101	101	(60-120)	5.50	

Batch Information

Analytical Batch: **XFC12381**
 Analytical Method: **AK102**
 Instrument: **Agilent 6370B F**
 Analyst: **9J M**

Prep Batch: **XXX23G31**
 Prep Method: **S5 2G3C**
 Prep Date/Time: **10/05/2017 03:07**
 Spike Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL

Print Date: 10/20/2017 8:37:54AM

Method Blank

Blank ID: MB for HBN 1769751 & [[5/ 399]

Blank Lab ID: 141/ 4QQ

CS for map els0:

1177Q1/ Q11

Mat:t: mo,lXmol,i xi rd (s,yw2g

hs0) l20 bd AK102

Uarap s2r

D,s0sl h anys u ryan,00

hs0) l20

1QQR

Lu CXL

PQR

DL

6dPQ

Rn,20

p yX y

Surrogates

3a Kni ro02ans x0) rrg

/ 6c5

6QAPQ

-

Batch Information

Knald2Qal Ba20w. [%S15/ 7Q

Knald2Qal Ms2woi : K. 1QP

In02) p sn2 Ky,lsn27/ 9QB %

Knald02 FMJ

Knald2Qal Da2XGp s: 1QXPQ17 6:5QQUUM

Urse Ba20w. [[[5/ 399

Urse Ms2woi : mT 533QS

Urse Da2XGp s: 1QXPQ17 4:19:Q9UM

Urse In,2al T 2XW6lc 5Qy

Urse Vt 2aQ2W6l: 1 p L

Ur,n2Da2: 1QXPQ17 / :57:36KM

mJ mNor2vKp sr,Qa InQc

PQQT s02Uo2sr Dr,Es KnOwraysvK. 9331/
t9Q736PdP545 f9Q736135Q1 (((c 00y00p

Msp bsr of mJ mJ ro) e

Blank Spike Summary

Blank Spike ID: LCS for HBN 1177018 [XXX385]] b
 Blank Spike La4 ID: 1618601
 Date Analyzed: 10/07/2017 18:60

Spike Duplicate ID: LCSD for HBN 1177018
 [XXX385]] b
 Spike Duplicate La4 ID: 1618602
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1177018011

Results 4y AK102

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range , rganics	107	101	100	107	180	108	(759125)	1130	(- 20)
Surrogates									
5a Androstane (surr)	333	165	15	333	103	103	(009120)	820	

Batch Information

Analytical Batch: **XFC13870**
 Analytical Method: **AK102**
 Instrument: **Agilent 7890B F**
 Analyst: **JMG**

Prep Batch: **XXX38599**
 Prep Method: **SW3550C**
 Prep Date/Time: **10/06/2017 16:19**
 Spike Init T t Vbl: 107 mg/Kg Vxtract Vbl: 1 mL
 Dupe Init T t Vbl: 107 mg/Kg Vxtract Vbl: 1 mL

Print Date: 10/20/2017 8:37:58AM

Method Blank

Blank ID: MB for HBN 1769751 & [[5/ 399]

Blank Lab ID: 141/ 4QQ

CS for map els0:

1177Q1/ Q11

Mat:t: mo,lXmol,i xi rd (s,yw2g

hs0) l20 bd AK103

Uarap s2r

hs0,i) al h anys u ryan,00

hs0) l20

1QQR

Lu CXL

PQR

DL

6dPQ

Rn,20

p yX y

Surrogates

nkAr,aQbn2ansK 6P x0) rrg

/ 7d

6Q1PQ

-

Batch Information

%nald2Qal Ba20w. [FS15/ 7Q

%nald2Qal Ms2wi : % 1Q5

In02) p sn2 %y,lsn27/ 9QB F

%nald02 JMG

%nald2Qal Da2XAp s: 1Q7XQ17 6:5QQQUM

Urse Ba20w. [[5/ 399

Urse Ms2wi : mT 533Q5

Urse Da2XAp s: 1Q6XQ17 4:19:Q9UM

Urse In,2al T 2XW6lc 5Qy

Urse Vt 2aQ2W6l: 1 p L

Ur,n2Da2: 1Q6XQ17 / :57:39%M

mGmNor2w%p sr,Qa InQ:

PQQT s02Uo2sr Dr,Es %nOvoraysv% 9331/
t 9Q736PdP545 f 9Q736135Q1 (((c 0dy0cOp

Msp bsr of mGmGro) e

Blank Spike Summary

Blank Spike ID: LCS for HBN 1177018 [XXX385]] b
 Blank Spike La4 ID: 1618601
 Date Analyzed: 10/07/2017 18:60

Spike Duplicate ID: LCSD for HBN 1177018
 [XXX385]] b
 Spike Duplicate La4 ID: 1618602
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1177018011

Results 4y AK102

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Residual Range , rganics	107	155	13	107	107	100	(009120)	730	(- 20)
Surrogates									
n9 riacontane9102 (surr)	333	113	12	333	150	10	(009120)	600	

Batch Information

Analytical Batch: XFC12380
 Analytical Method: AK102
 Instrument: Agilent 8370B F
 Analyst: 9J M

Prep Batch: XXX23G77
 Prep Method: S5 2G30C
 Prep Date/ Time: 10/07/2018 17:17
 Spike Init T t4Wbl< 107 mg/Kg Vxtract Wbl: 1 mL
 Dupe Init T t4Wbl< 107 mg/Kg Vxtract Wbl: 1 mL

Print Date: 10/20/2017 8:38:00AM

Method Blank

Blank ID: MB for HBN 1769775 & [[X 361/]
Blank Lab ID: 1513435

Matrix: d ater (Syrfawe2g fff2) roynRu

QC for Samples:

11770130012117701300, 2117701300/ 2117701300521177013004211770130062117701300721177013003211770130092
1177013010

Uesylts bOAK102

<u>arameter</u>	<u>Uesylts</u>	<u>Lc QXCL</u>	<u>DL</u>	<u>Pnits</u>
Diesel UanKe c rKaniws	0h 00P	0h600	0h130	mKX
Surrogates				
4a AnRostane (syrru	93h1	60-1, 0		%

Batch Information

AnalQival BatwF: [JC1/ 377
AnalQival MetFoR AG10,
Instryment: H. 7390A JID ST g J
AnalQst: VM)
AnalQival DateXime: 10X1X017 3:/ 0:00. M

. rep BatwF: [[[/ 361/
. rep MetFoR Sd / 4, 0C
. rep DateXime: 10X0X017 3:03:0/ AM
. rep Initial d thXolh , 40 mL
. rep gxtrawl Tol: 1 mL

. rint Date: 10X0X017 3:/ 3:0, AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1177018 [XXX38513]
 Blank Spike Lab ID: 1418686
 Date Analyzed: 10/11/2017 20:60

Spike Duplicate ID: LCSD for HBN 1177018 [XXX38513]
 Spike Duplicate Lab ID: 1418685
 Matrix: (ater wSurfaceghff)gProundm

OC for SaK ples: 1177018001g1177018002g1177018003g1177018004g1177018006g1177018005g1177018007g
 1177018008g1177018009g1177018010

Results by AK102

Parameter	Blank Spike vK, /Lm			Spike Duplicate vK, /Lm			CL	R%D vQm	R%D CL
	Spike	Result	Rec vQm	Spike	Result	Rec vQm			
Diesel Ran, e - r, anics	20	21)4	107	20	21)3	105	w76<126 m	0)28	w 20 m
Surrogates									
6a Androstane v surrm	0)4	101	101	0)4	102	102	w50<120 m	1)10	

Batch Information

Analytical BatcT: **XFC13877**
 Analytical MetTod: **AK102**
 InstruKent: **HP 7890A** **FID SV E F**
 Analyst: **JMG**

%rep BatcT: **XXX38613**
 %rep MetTod: **SW3520C**
 %rep Date/WK e: **10/09/2017 08:08**
 Spike Init (t)/Vol): 20 K, /L h xtract Vol: 1 K L
 Dupe Init (t)/Vol): 20 K, /L h xtract Vol: 1 K L

%rint Date: 10/20/2017 8:38:04AM

Method Blank

Blank ID: MB for HBN 1769775 & [[X 361/]
Blank Lab ID: 1513435

Matrix: d ater (Syrfawe2gfft2) roynRu

QC for Samples:

11770130012117701300, 2117701300/ 2117701300521177013004211770130062117701300721177013003211770130092
1177013010

Uesylts bOAK103

<u>arameter</u>	<u>Uesylts</u>	<u>Lc QXCL</u>	<u>DL</u>	<u>Pnits</u>
UesiRyal UanKe c rKaniws	0h 40P	0h400	0h40	mKX
Surrogates				
nA riawontaneA6, (syrru	105	60A, 0		%

Batch Information

FnalQival BatwJ: [GC1/ 377
FnalQival MetJoR: FT10/
Instryment: H. 7390F GD SWg G
FnalQst: VM)
FnalQival DateX ime: 10X1X017 3:/ 0:00. M

. rep BatwJ: [[[/ 361/
. rep MetJoR: Sd / 4, 0C
. rep DateX ime: 10X0X017 3:03:0/ FM
. rep Initial d thWbLh , 40 mL
. rep gxtrawt Wbl: 1 mL

. rint Date: 10X0X017 3:/ 3:04FM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1177018 [XXX38513]
 Blank Spike Lab ID: 1418686
 Date Analyzed: 10/11/2017 20:60

Spike Duplicate ID: LCSD for HBN 1177018 [XXX38513]
 Spike Duplicate Lab ID: 1418685
 Matrix: (ater wSurfaceghff)gProundm

OC for SaK ples: 1177018001g1177018002g1177018003g1177018004g1177018006g1177018005g1177018007g
 1177018008g1177018009g1177018010

Results by AK102

Parameter	Blank Spike vK, /Lm			Spike Duplicate vK, /Lm			CL	R%D vQm	R%D CL
	Spike	Result	Rec vQm	Spike	Result	Rec vQm			
Residual Ran, e - r, anics	20	21)3	105	20	21)2	105	w50<120 m	0)24	w 20 m
Surrogates									
n-Triacontane-d52 wSurrm	0)4	98)2	98	0)4	98)2	98	w50<120 m	0)01	

Batch Information

Analytical BatcW **XFC12388**
 Analytical MetVod: **AK102**
 InstruKent: **7 H 83P0A** **FI9 SD V F**
 Analyst: **EJ M**

%rep BatcW **XXX23G12**
 %rep MetVod: **S6 2W50C**
 %rep Date/TiK e: **10/0P/5018 03:03**
 Spike Init (t)/Vol): 20 K, /L htract Vol: 1 KL
 Dupe Init (t)/Vol): 20 K, /L htract Vol: 1 KL

%rint Date: 10/20/2017 8:38:07AM

Method Blank

Blank ID: MB for HBN 1776999 888[X/ 333]

Blank Lab ID: 14961/ X

QC for Samples:

117761/ 6110117761/ 619

Mat: Sol, Sol, i rd (e, yw)

hes) l2 bd AK102

Uarame2r

D,esel hanye u ryan, Qs

hes) l2

96R

Lu QICL

46R

DL

19R

Rn,2s

my[cy

Surrogates

. a Kni ros2ane xs) rrg

%R

36A96

-

Batch Information

Knald2Qal Ba2Dw: 8FC1X/ %9

Knald2Qal Me2woi : Kc 169

Ins2) men2 Ky, len27/ %B F

Knalds2 JMG

Knald2Qal Da2[T, me: 16[1/ [9617 X:67:66KM

Urep Ba2Dw: 888X/ 333

Urep Me2woi : SWX . 6C

Urep Da2[T, me: 16[1. [9617 11: / :66KM

Urep In,2al W2PVolP X6 y

Urep Et 2a2Vol: 9 mL

Ur,n2Da2: 16[96[9617 / :X/ :6/ KM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1177018 [XXX38555]
 Blank Spike Lab ID: 1460184
 Date Analyzed: 10/18/6017 03:17

Spike D2pluate ID: LCSD for HBN 1177018
 [XXX38555]
 Spike D2pluate Lab ID: 146018c
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1177018011, 1177018016

Res2lts by AK102

Parameter	Blank Spike (mg/Kg)			Spike D2pluate (mg/Kg)			CL	RPD (%)	RPD CL
	Spike	Res2lt	Reu (%)	Spike	Res2lt	Reu (%)			
Diesel Range Organius	333	3c7	107	333	3c6	105	(7c916c)	1c0	(- 60)
Surrogates									
ca Androstane (s2rr)	5c7	. 8c8	..	5c7	. 8c5	..	(509160)	0c4	

Batch Information

Analytiual Batuh: **XFC13872**
 Analytiual Method: **AK102**
 Instr2ment: **Agilent 9870B F**
 Analyst: **JMG**

Prep Batuh: **XXX38555**
 Prep Method: **SW3/ / 0C**
 Prep Date/Time: **1061/ 2019 11:/ 8**
 Spike Init Wt4Vol< 333 mg/Kg Extraut Vol: 6 mL
 D2pe Init Wt4Vol< 333 mg/Kg Extraut Vol: 6 mL

Print Date: 10/60/6017 8:38:10AM

Method Blank

Blank ID: MB for HBN 1776999 888[X/ 333]

Blank Lab ID: 14961/ X

QC for Samples:

117761/ 6110117761/ 619

Mat: Sol, Sol, i rd (e, yw)

hes) l2 bd AK103

Urame2r

hes, i) al hanye u ryan, Qs

hes) l2

96R

Lu QICL

46R

DL

19R

Rn,2

my[cy

Surrogates

n. Kr, aOn2ne. i 39 s) rrg

- 9R

36.196

A

Batch Information

%nald2Qal Ba2Dw. 8FC1X/ - 9

%nald2Qal Me2woi : %c 16X

Ins2) men2 %y, len27/ - 6B F

%nalds2 JMG

%nald2Qal Da2[K, me: 16[1/ [9617 X:67:66%M

Urep Ba2Dw. 888X/ 333

Urep Me2woi : ST XW6C

Urep Da2[K, me: 16[1W[9617 11:W:66%M

Urep In,2al T 2VolIP X6 y

Urep Et 2a2Vol: 9 mL

Ur,n2Da2: 16[96[9617 / :X/:19%M

Blank Spike Summary

Blank Spike ID: LCS for HBN 1177018 [XXX38555]
 Blank Spike Lab ID: 1460184
 Date Analyzed: 10/18/6017 03:17

Spike D2pluate ID: LCSD for HBN 1177018
 [XXX38555]
 Spike D2pluate Lab ID: 146018c
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1177018011, 1177018016

Res2lts by AK102

Parameter	Blank Spike (mg/Kg)			Spike D2pluate (mg/Kg)			CL	RPD (%)	RPD CL
	Spike	Res2lt	Reu (%)	Spike	Res2lt	Reu (%)			
Resid2al Range Organus	333	33c	100	333	338	106	(509160)	140	(- 60)
Surrogates									
n9 riauontane9d56 (s2rr)	557	T34	T4	557	T13	T1	(509160)	670	

Batch Information

Analytiual Batuh: **XFC12387**
 Analytiual Method: **AK102**
 Instr2ment: **Agilent 9380B F**
 Analyst: **JMG**

Prep Batuh: **XXX23555**
 Prep Method: **SW2/ / 0C**
 Prep Date/. ime: **1061/ 6019 11:/ 3**
 Spike Init Wt4Vol< 333 mg/Kg Extraut Vol: 6 mL
 D2pe Init Wt4Vol< 333 mg/Kg Extraut Vol: 6 mL

Print Date: 10/60/6017 8:38:13AM

Method Blank

Blank ID: MB for HBN 1776995 & [[5/ 337]

Blank Lab ID: 14961/ 3

QC for Samples:

117761/ 6110117761/ 619

Mat: Sol, Sol, i rd (e, yw)

hes) l& bd AK102

Urame2r

Dh u S, l, Qa Pel

hes) l&

966R

Lu QXCL

466

DL

196

Rn, &

myX y

Surrogates

Ka Ani rosane x) rrg

/ 46

76-19K

%

Batch Information

Anald2Qal Ba2Dw. [FC15/ J4

Anald2Qal Me2woi : A. 169

Ins2) men2 Ay, len27/ J6B F

Analds2 GMP

Anald2Qal Da2&T, me: 16X/ 0617 1:K3:66AM

Urep Ba2Dw. [[5/ 337

Urep Me2woi : SW5KK6C (XSP Clean) p

Urep Da2&T, me: 16X/ 0617 19:66:K4UM

Urep In, 2al W2&Volc 56 y

Urep Et 2a2Vol: 9 mL

Ur, n2Da2: 16X/ 0617 / :5/ :1KAM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1177018 [XXX38557]
 Blank Spike Lab ID: 1460187
 Date Analyzed: 10/18/6017 06:05

Spike D2pluate ID: LCSD for HBN 1177018
 [XXX38557]
 Spike D2pluate Lab ID: 1460188
 s atriM Soil/Solid xdry (eiwgth

KC for SaP pleR 1177018011Q1177018016

c eR2ltRby AK102

	Blank Spike xP w%wh			Spike D2pluate xP w%wh					
<u>) araPeter</u>	<u>Spike</u>	<u>c eR2lt</u>	<u>c eu xmh</u>	<u>Spike</u>	<u>c eR2lt</u>	<u>c eu xmh</u>	<u>CL</u>	<u>c) D xmh</u>	<u>c) D CL</u>
Dc , Siliua Oel	333	334	100	333	364	97	x70-16< h	3110	x 60 h
Surrogates									
<a AndroRane xR2rrh	5157	9616	96	5157	9013	90	x70-16< h	6110	

Batch Information

Analytial Batug: **XFC13894**
 Analytial s etgod: **AK102**
 InRr2P ent: **Agilent 7890B F**
 AnalyR: **JMG**

) rep Batug: **XXX38667**
) rep s etgod: **SW3550C w/SG Cleanup**
) rep Date/WP e: **10/15/2017 12:00**
 Spike Init V tTEoIT 333 P w%w GMraut Eol: 6 P L
 D2pe Init V tTEoIT 333 P w%w GMraut Eol: 6 P L

) rint Date: 10/60/6017 8:38:15As

Method Blank

Blank ID: MB for HBN 1776995 & [[5/ 337]

Blank Lab ID: 14961/ 3

QC for Samples:

117761/ 6110117761/ 619

Mat: Sol, Sol, i rd (e, yw)

hes) l& bd AK103

Urame2r

h hu S, l, Qa Pel

hes) l&

966R

Lu QCL

466

DL

194

Rn, &

myX y

Surrogates

nkAr, aOn&neK 39 xs) rrg

/ 36

76K19-

%

Batch Information

Fnald2Qal Ba2Dw. [JC15/ G4

Fnald2Qal Me2woi : F. 165

Ins2) men2 Fy, len27/ G6B J

Fnalds2 TMP

Fnald2Qal Da2&A, me: 16X/ 0617 1:- 3:66FM

Urep Ba2Dw. [[5/ 337

Urep Me2woi : SW5- - 6C (XSP Clean) p

Urep Da2&A, me: 16X- 0617 19:66:- 4UM

Urep In, 2al W2&Volc 56 y

Urep Et 2a2Vol: 9 mL

Ur, n2Da2: 16X0617 / :5/ :17FM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1177018 [XXX38557]
 Blank Spike Lab ID: 1460187
 Date Analyzed: 10/18/6017 06:05

Spike D2pluate ID: LCSD for HBN 1177018
 [XXX38557]
 Spike D2pluate Lab ID: 1460188
 s atriM Soil/Solid xdry (eiwgth

KC for SaP pleR 1177018011Q1177018016

c eR2ltRby AK102

	Blank Spike xP w%wh			Spike D2pluate xP w%wh					
<u>) araPeter</u>	<u>Spike</u>	<u>c eR2lt</u>	<u>c eu xmh</u>	<u>Spike</u>	<u>c eR2lt</u>	<u>c eu xmh</u>	<u>CL</u>	<u>c) D xmh</u>	<u>c) D CL</u>
c c , Siliua Oel	333	366	97	333	313	94	x70-16< h	670	x 60 h
Surrogates									
n-Wiauontane-d56 xR2rrh	557	87B	87	557	85B	85	x70-16< h	130	

Batch Information

Analytiual Batug: **XFC12389**
 Analytiual s etgod: **AK102**
 InRr2P ent: **Agilent 4380B F**
 AnalyR: **7J M**

) rep Batug: **XXX23GG4**
) rep s etgod: **S6 2W0C 5 vSM Cleanup**
) rep Date/WP e: **10/18/2014 1/:00**
 Spike Init V tTEoIT 333 P w%w GMraut Eol: 6 P L
 D2pe Init V tTEoIT 333 P w%w GMraut Eol: 6 P L

) rint Date: 10/60/6017 8:38:19As



SGS North America Inc.
CHAIN OF CUSTODY RECORD

1177018

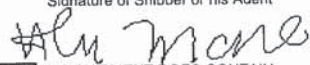


ations Nationwide
Maryland
New York
Indiana
Kentucky
www.us.sgs.com

Section 1					Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.										Page <u>1</u> of <u>2</u>											
CLIENT: NORTECH					Section 3					Preservative																
CONTACT: Ron Pratt					PHONE NO: 207-586-6813					HCl					HNO ₃					REMARKS/ LOC ID						
PROJECT NAME: Soil Repository					PROJECT PWSID/ PERMIT#:					DR0 AK102					RR0 AK103											
REPORTS TO: NORTECH					E-MAIL: rpratt@nortechengr.com					VOC 8260					Total Lead 6010											
INVOICE TO: NORTECH					QUOTE #: P.O. #: 17-1048																					
RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	#	Type C = COMP G = GRAB MI = Multi Incremental Soils	DR0 AK102	RR0 AK103	VOC 8260	Total Lead 6010																
1A-F	MW-03	9/29/17	0835	Water	6	G	X	X	X	X																
2A-F	MW-13	9/29/17	0845	Water	6	G	X	X	X	X																
3A-F	MFD-01	9/29/17	0825	Water	6	G	X	X	X	X																
4A-F	MFD-02	9/29/17	0858	Water	6	G	X	X	X	X																
5A-F	MC-DS-01	9/29/17	1050	Water	6	G	X	X	X	X																
6A-F	MC-US-01	9/29/17	1105	Water	6	G	X	X	X	X																
7A-F	FPC-01	9/29/17	1130	Water	6	G	X	X	X	X																
8A-F	PDC-01	9/29/17	1300	Water	6	G	X	X	X	X																
9A-F	PCM-01	9/29/17	1420	Water	6	G	X	X	X	X																
10A-F	ST-PC-01	9/29/17	1535	Water	6	G	X	X	X	X																
Relinquished By: (1)					Date	Time	Received By:					Section 4					DOD Project? Yes (No)					Data Deliverable Requirements:				
Relinquished By: (2)					Date	Time	Received By:					Cooler ID:					Requested Turnaround Time and/or Special Instructions:									
Relinquished By: (3)					Date	Time	Received By:					Temp Blank °C: 1.1 #042					Chain of Custody Seal: (Circle)									
Relinquished By: (4)					Date	Time	Received For Laboratory By:					or Ambient []					INTACT 15/18 BROKEN ABSENT									
										(See attached Sample Receipt Form)					(See attached Sample Receipt Form)											

027 JNU 1799 6064

027-1799 6064

Shipper's Name and Address Nortech 2400 College Rd Fairbanks, AK 99709 USA Tel: 9074525688		Shipper's Account Number 27442126076 Customer's ID Number 10588		Not Negotiable Air Waybill Issued By Alaska. AIR CARGO P.O. BOX 68900 SEATTLE, WA 98168 800-225-2752 ALASKACARGO.COM	
Consignee's Name and Address SGS North America Inc 200 W Potter Drive Anchorage, AK 99518 USA Tel: 9075622343		Consignee's Account Number 27400215947		Also notify Tel:	
Issuing Carrier's Agent and City Juneau		Accounting Information Nortech 2400 College Rd Fairbanks, AK 99709 USA SRN/17-1048 GoldStreak		10588 1177018 	
Agent's IATA Code		Account No.		Declared Value For Carriage NVD	
Airport of Departure (Addr. of First Carrier) and Requested Routing Juneau		To / By		Declared Value For Customs NCV	
To By First Carrier ANC Alaska Airlines		To / By		Currency USD PX X	
Airport of Destination Anchorage		Flight/Date AS 067/02		Amount of Insurance XXX	
Handling Information DANGEROUS GOODS IN EXCEPTED QUANTITIES DGD AND NOTOC NOT REQUIRED PERISHABLE CARGO (NON - FOOD)					
SCI					
No of Pieces	Gross Weight	kg lb	Commodity Item No.	Chargeable Weight	Rate / Charge
2	83.0	L Q		100.0	AS AGREED
2	83.0				AS AGREED
Nature and Quantity of Goods (Incl. Dimensions or Volume) WATER AND SOIL Dims: 24 x 13 x14 x 2 GSX REQ PER Volume: 5.056					
Prepaid		Weight Charge		Collect	
AS AGREED				XBC 0.00	
Valuation Charge					
Tax					
Total Other Charges Due Agent					
Total Other Charges Due Carrier					
Total Prepaid		Total Collect			
AS AGREED					
Shipper certifies that the particulars on the face hereof are correct and that insofar as any part of the consignment contains dangerous goods, such part is properly described by name and is in proper condition for carriage by air according to the applicable Dangerous Goods Regulations. I consent to the inspection of this cargo.					
For: Nortech Signature of Shipper or his Agent 					
☐ THIS SHIPMENT DOES NOT CONTAIN DANGEROUS GOODS ☒ THIS SHIPMENT DOES CONTAIN DANGEROUS GOODS					
02 Oct 2017 13:27 Juneau Alaska Airlines Executed On (Date) at (Place) Signature of Issuing Carrier or its Agent					
027-1799 6064					

Alert Expeditors Inc.

#379566

Citywide Delivery • 440-3351
8421 Flamingo Drive • Anchorage, Alaska 99502

Date 10 3 17
From Nortech
To 565

Collect ☐	Prepay ☐ Account ☐	Advance Charges ☐
Job #	PO#	

<u>2@83</u>	
<u>1799 6064</u>	<u>65X</u>
1177018	
	

Shipped Signature _____

Received By: URP 813 Total Charge 184



Review Criteria		Condition (Yes, No, N/A)	Exceptions Noted below	
Chain of Custody / Temperature Requirements		N/A	Exemption permitted if sampler hand carries/delivers.	
Were Custody Seals intact? Note # & location		Yes	1-F, 1-B	
COC accompanied samples?		Yes		
N/A		**Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID:	1	@ 1.1 °C Therm. ID: D42
	Yes	Cooler ID:	2	@ 1.2 °C Therm. ID: D10
		Cooler ID:		@ °C Therm. ID:
		Cooler ID:		@ °C Therm. ID:
		Cooler ID:		@ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?		N/A		
If <0°C, were sample containers ice free?		N/A		
If samples received <u>without</u> a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled".				
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.				
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.		
Were samples received within holding time?		Yes		
Do samples match COC ** (i.e., sample IDs, dates/times collected)?		Yes		
**Note: If times differ <1hr, record details & login per COC.				
Were analyses requested unambiguous? (i.e., method is specified for analyses with >1 option for analysis)		No	Running lead by 6020 per VLP.	
Were proper containers (type/mass/volume/preservative***) used?		Yes	Yes ***Exemption permitted for metals (e.g. 200.8/6020A).	
Volatile / LL-Hg Requirements				
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?		Yes	Water trip blank in cooler 1 and Soil trip blank in cooler 2.	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?		Yes		
Were all soil VOAs field extracted with MeOH+BFB?		Yes		
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.				
Additional notes (if applicable):				

Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1177018001-A	HCL to pH < 2	OK	1177018008-A	HCL to pH < 2	OK
1177018001-B	HCL to pH < 2	OK	1177018008-B	HCL to pH < 2	OK
1177018001-C	HCL to pH < 2	OK	1177018008-C	HCL to pH < 2	OK
1177018001-D	HCL to pH < 2	OK	1177018008-D	HCL to pH < 2	OK
1177018001-E	HCL to pH < 2	OK	1177018008-E	HCL to pH < 2	OK
1177018001-F	HNO3 to pH < 2	OK	1177018008-F	HNO3 to pH < 2	OK
1177018002-A	HCL to pH < 2	OK	1177018009-A	HCL to pH < 2	OK
1177018002-B	HCL to pH < 2	OK	1177018009-B	HCL to pH < 2	OK
1177018002-C	HCL to pH < 2	OK	1177018009-C	HCL to pH < 2	OK
1177018002-D	HCL to pH < 2	OK	1177018009-D	HCL to pH < 2	OK
1177018002-E	HCL to pH < 2	OK	1177018009-E	HCL to pH < 2	OK
1177018002-F	HNO3 to pH < 2	OK	1177018009-F	HNO3 to pH < 2	OK
1177018003-A	HCL to pH < 2	OK	1177018010-A	HCL to pH < 2	OK
1177018003-B	HCL to pH < 2	OK	1177018010-B	HCL to pH < 2	OK
1177018003-C	HCL to pH < 2	OK	1177018010-C	HCL to pH < 2	OK
1177018003-D	HCL to pH < 2	OK	1177018010-D	HCL to pH < 2	OK
1177018003-E	HCL to pH < 2	OK	1177018010-E	HCL to pH < 2	OK
1177018003-F	HNO3 to pH < 2	OK	1177018010-F	HNO3 to pH < 2	OK
1177018004-A	HCL to pH < 2	OK	1177018011-A	No Preservative Required	OK
1177018004-B	HCL to pH < 2	OK	1177018011-B	No Preservative Required	OK
1177018004-C	HCL to pH < 2	OK	1177018011-C	No Preservative Required	OK
1177018004-D	HCL to pH < 2	OK	1177018011-D	Methanol field pres. 4 C	OK
1177018004-E	HCL to pH < 2	OK	1177018012-A	No Preservative Required	OK
1177018004-F	HNO3 to pH < 2	OK	1177018012-B	No Preservative Required	OK
1177018005-A	HCL to pH < 2	OK	1177018012-C	No Preservative Required	OK
1177018005-B	HCL to pH < 2	OK	1177018012-D	Methanol field pres. 4 C	OK
1177018005-C	HCL to pH < 2	OK	1177018013-A	No Preservative Required	OK
1177018005-D	HCL to pH < 2	OK	1177018013-B	No Preservative Required	OK
1177018005-E	HCL to pH < 2	OK	1177018013-C	No Preservative Required	OK
1177018005-F	HNO3 to pH < 2	OK	1177018013-D	Methanol field pres. 4 C	OK
1177018006-A	HCL to pH < 2	OK	1177018014-A	No Preservative Required	OK
1177018006-B	HCL to pH < 2	OK	1177018014-B	No Preservative Required	OK
1177018006-C	HCL to pH < 2	OK	1177018014-C	No Preservative Required	OK
1177018006-D	HCL to pH < 2	OK	1177018014-D	Methanol field pres. 4 C	OK
1177018006-E	HCL to pH < 2	OK	1177018015-A	No Preservative Required	OK
1177018006-F	HNO3 to pH < 2	OK	1177018015-B	No Preservative Required	OK
1177018007-A	HCL to pH < 2	OK	1177018015-C	No Preservative Required	OK
1177018007-B	HCL to pH < 2	OK	1177018015-D	Methanol field pres. 4 C	OK
1177018007-C	HCL to pH < 2	OK	1177018016-A	No Preservative Required	OK
1177018007-D	HCL to pH < 2	OK	1177018016-B	No Preservative Required	OK
1177018007-E	HCL to pH < 2	OK	1177018016-C	No Preservative Required	OK
1177018007-F	HNO3 to pH < 2	OK	1177018016-D	Methanol field pres. 4 C	OK

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1177018017-A	No Preservative Required	OK			
1177018017-B	No Preservative Required	OK			
1177018017-C	No Preservative Required	OK			
1177018017-D	Methanol field pres. 4 C	OK			
1177018018-A	No Preservative Required	OK			
1177018018-B	No Preservative Required	OK			
1177018018-C	No Preservative Required	OK			
1177018018-D	Methanol field pres. 4 C	OK			
1177018019-A	HCL to pH < 2	OK			
1177018019-B	HCL to pH < 2	OK			
1177018019-C	HCL to pH < 2	OK			
1177018020-A	Methanol field pres. 4 C	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM- The container was received damaged.

FR- The container was received frozen and not usable for Bacteria or BOD analyses.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

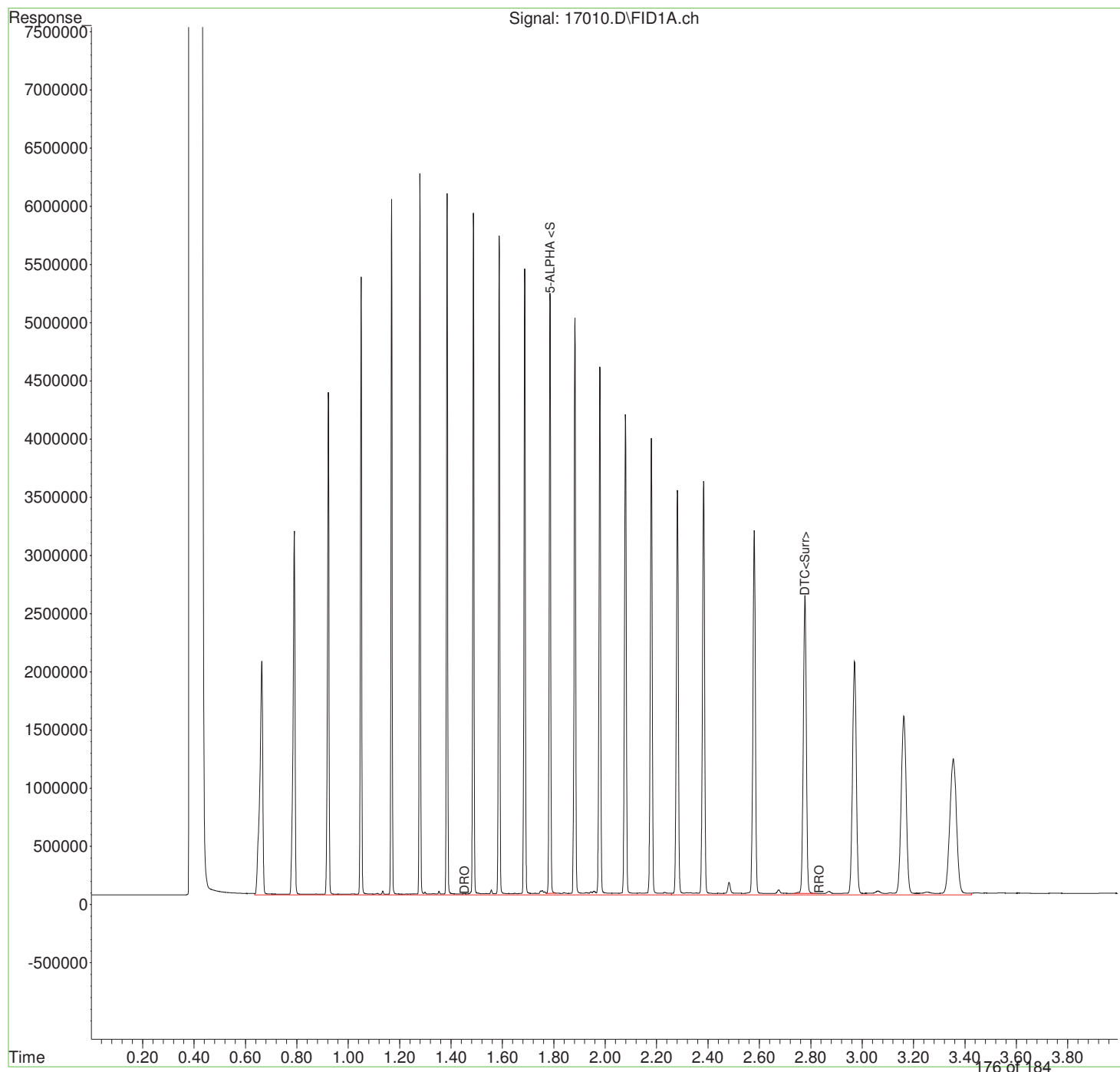
PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

CHROMATOGRAMS

Data Path : Z:\10\SF\DATA\101717A\
Data File : 17010.D
Signal(s) : FID1A.ch
Acq On : 17 Oct 2017 5:42 pm
Operator : JMG
Sample : NAS
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 18 09:52:16 2017
Quant Method : Z:\10\SF\METHOD\SFF2017-1011G.M
Quant Title : DRO/RRO by Method AK 102/103
QLast Update : Thu Oct 12 15:34:24 2017
Response via : Initial Calibration
Integrator: ChemStation

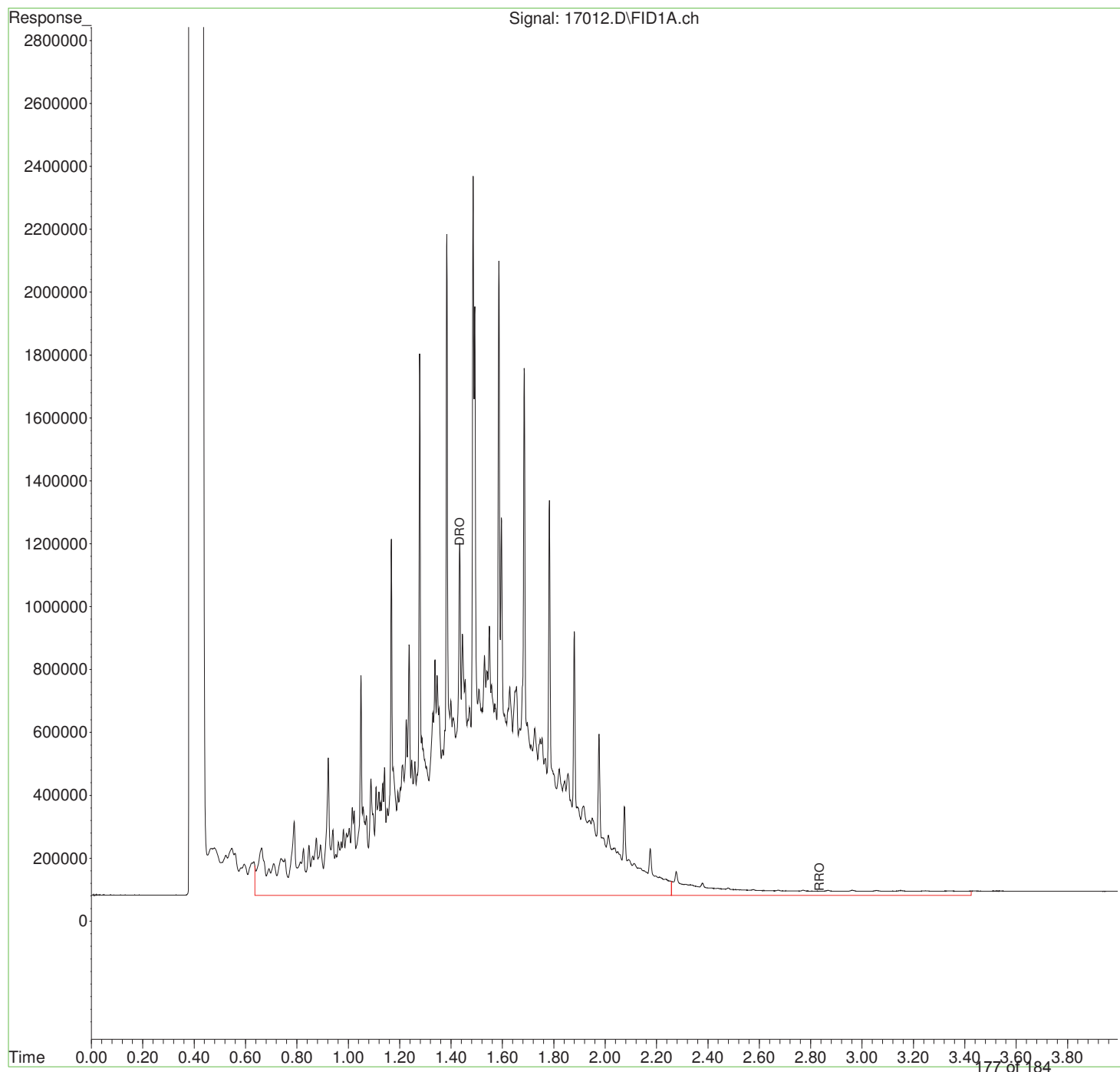
Volume Inj. :
Signal Phase :
Signal Info :



Data Path : Z:\10\SF\DATA\101717A\
Data File : 17012.D
Signal(s) : FID1A.ch
Acq On : 17 Oct 2017 5:52 pm
Operator : JMG
Sample : CCVB
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 18 09:54:04 2017
Quant Method : Z:\10\SF\METHOD\SFF2017-1011G.M
Quant Title : DRO/RRO by Method AK 102/103
QLast Update : Thu Oct 12 15:34:24 2017
Response via : Initial Calibration
Integrator: ChemStation

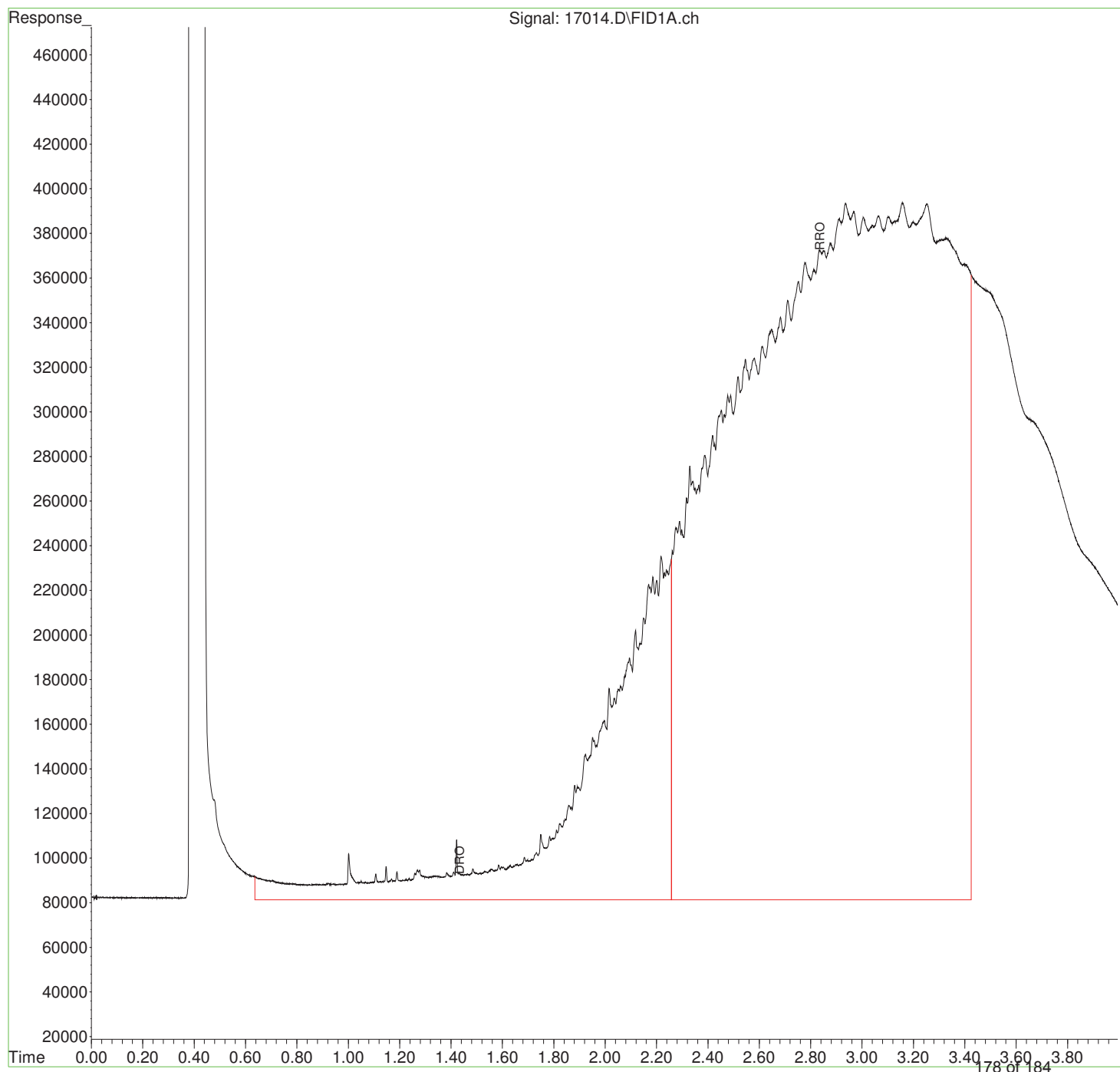
Volume Inj. :
Signal Phase :
Signal Info :



Data Path : Z:\10\SF\DATA\101717A\
Data File : 17014.D
Signal(s) : FID1A.ch
Acq On : 17 Oct 2017 6:03 pm
Operator : JMG
Sample : CCVR
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 18 09:54:27 2017
Quant Method : Z:\10\SF\METHOD\SFF2017-1011G.M
Quant Title : DRO/RRO by Method AK 102/103
QLast Update : Thu Oct 12 15:34:24 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

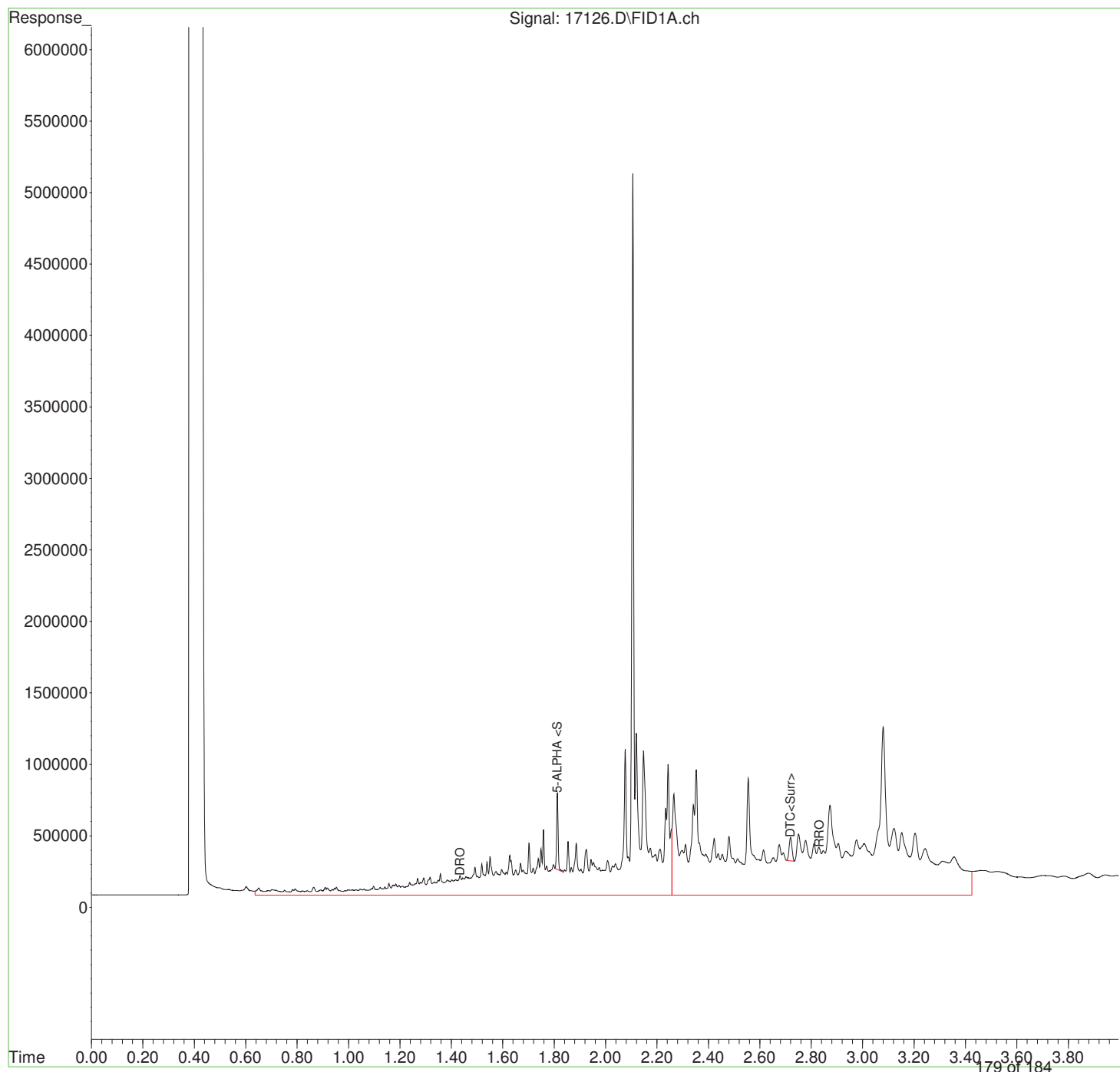


Data Path : Z:\10\SF\DATA\101717A\
Data File : 17126.D
Signal(s) : FID1A.ch
Acq On : 18 Oct 2017 3:37 am
Operator : JMG
Sample : 1177018011 4X
Misc :
ALS Vial : 109 Sample Multiplier: 4

Reanalysis

Integration File: autoint1.e
Quant Time: Oct 18 11:09:42 2017
Quant Method : Z:\10\SF\METHOD\SFF2017-1011G.M
Quant Title : DRO/RRO by Method AK 102/103
QLast Update : Thu Oct 12 15:34:24 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

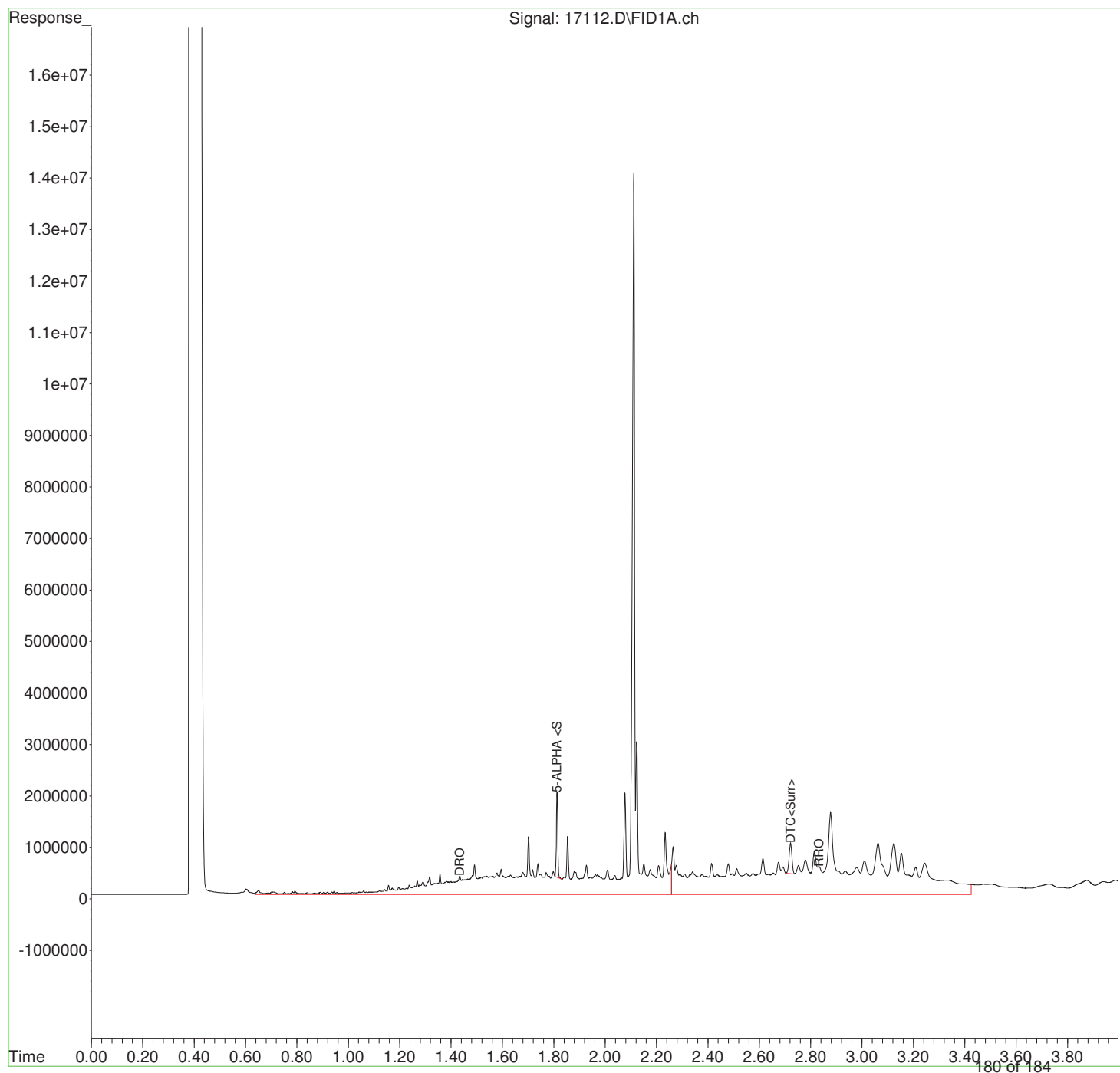


Data Path : Z:\10\SF\DATA\101717A\
Data File : 17112.D
Signal(s) : FID1A.ch
Acq On : 18 Oct 2017 2:27 am
Operator : JMG
Sample : 1177018011 SG
Misc :
ALS Vial : 104 Sample Multiplier: 1

Reanalysis/SiGel

Integration File: autoint1.e
Quant Time: Oct 18 11:04:37 2017
Quant Method : Z:\10\SF\METHOD\SFF2017-1011G.M
Quant Title : DRO/RRO by Method AK 102/103
QLast Update : Thu Oct 12 15:34:24 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

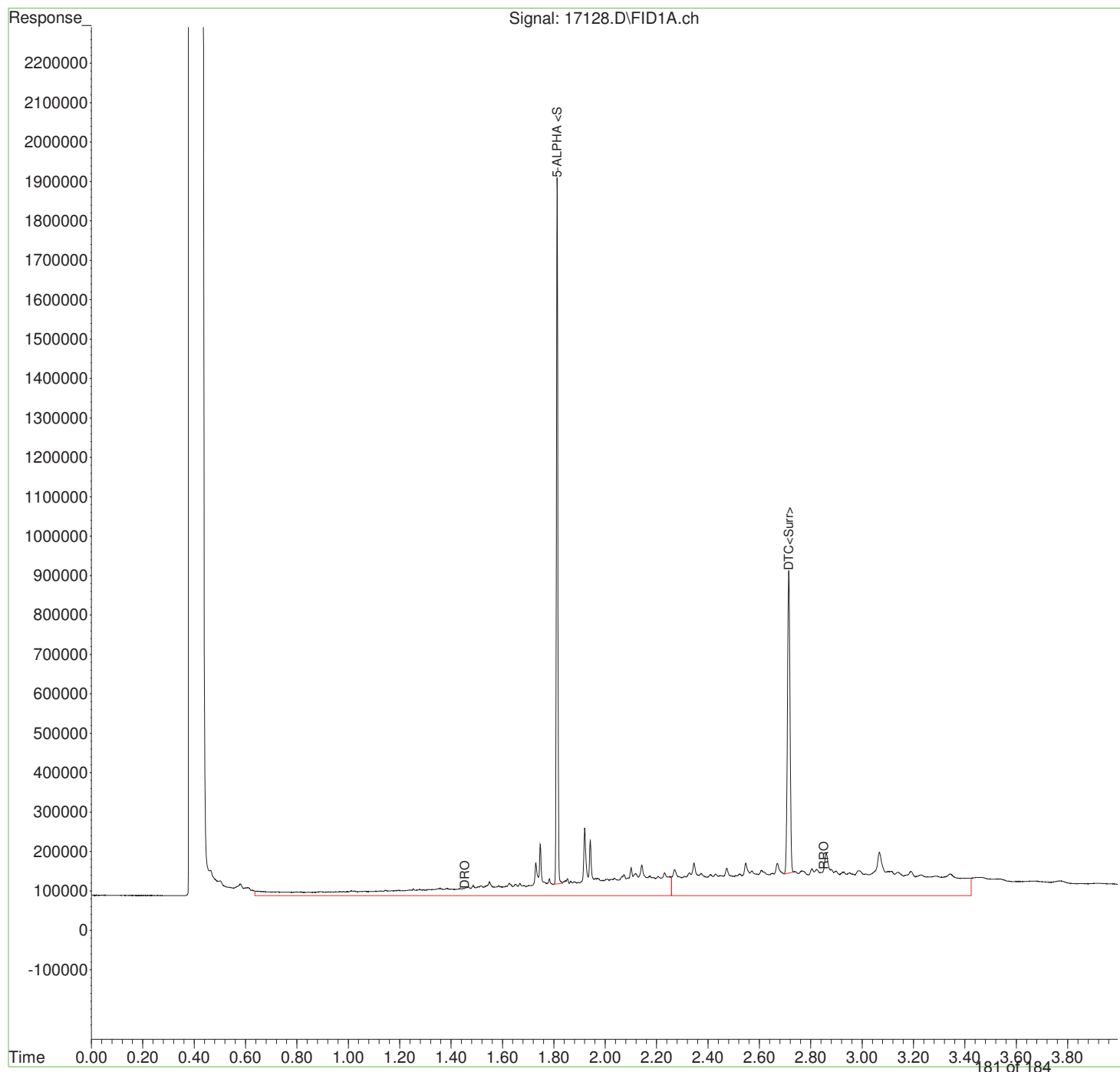


Data Path : Z:\10\SF\DATA\101717A\
Data File : 17128.D
Signal(s) : FID1A.ch
Acq On : 18 Oct 2017 3:47 am
Operator : JMG
Sample : 1177018012
Misc :
ALS Vial : 110 Sample Multiplier: 1

Reanalysis

Integration File: autoint1.e
Quant Time: Oct 18 11:10:03 2017
Quant Method : Z:\10\SF\METHOD\SFF2017-1011G.M
Quant Title : DRO/RRO by Method AK 102/103
QLast Update : Thu Oct 12 15:34:24 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

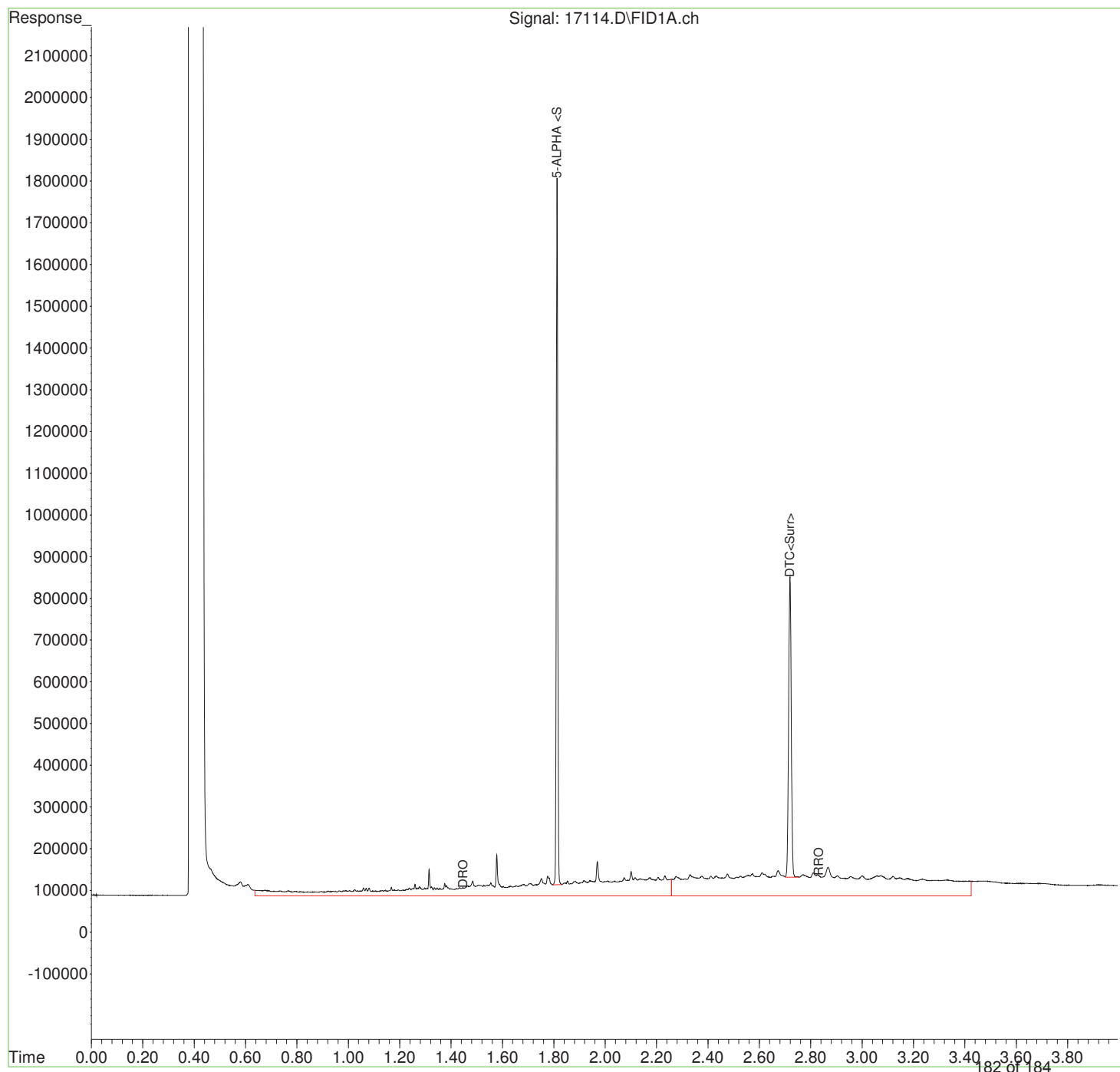


Data Path : Z:\10\SF\DATA\101717A\
Data File : 17114.D
Signal(s) : FID1A.ch
Acq On : 18 Oct 2017 2:37 am
Operator : JMG
Sample : 1177018012 SG
Misc :
ALS Vial : 105 Sample Multiplier: 1

Reanalysis/SiGel

Integration File: autoint1.e
Quant Time: Oct 18 11:05:09 2017
Quant Method : Z:\10\SF\METHOD\SFF2017-1011G.M
Quant Title : DRO/RRO by Method AK 102/103
QLast Update : Thu Oct 12 15:34:24 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

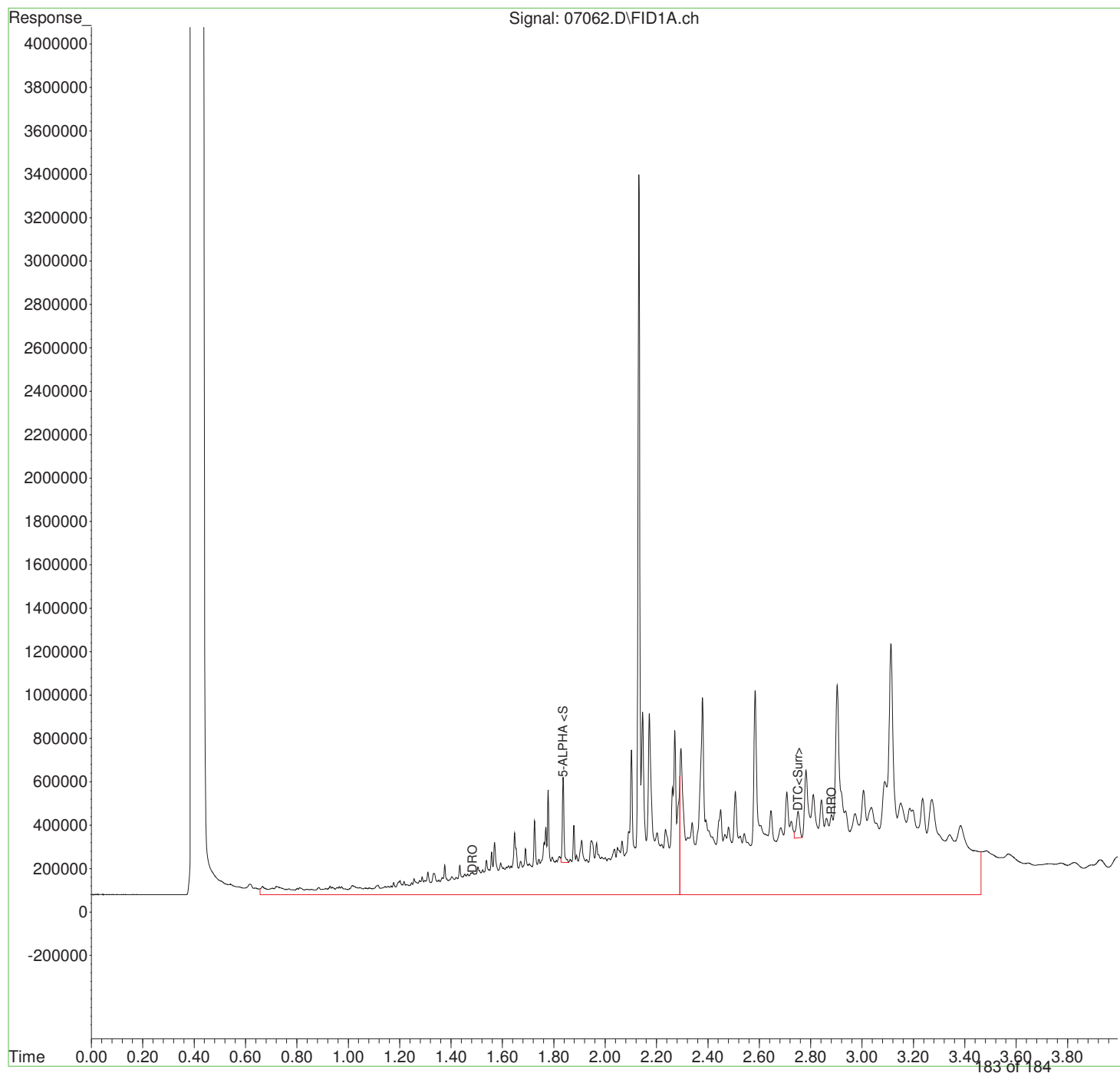


Data Path : Z:\10\SF\DATA\100717\
Data File : 07062.D
Signal(s) : FID1A.ch
Acq On : 7 Oct 2017 10:28 pm
Operator : JMG
Sample : 1177018011
Misc :
ALS Vial : 26 Sample Multiplier: 1

Original analysis

Integration File: autoint1.e
Quant Time: Oct 10 12:46:08 2017
Quant Method : Z:\10\SF\METHOD\SFF2017-0921P.M
Quant Title : DRO/RRO by Method AK 102/103
QLast Update : Fri Sep 22 10:27:48 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

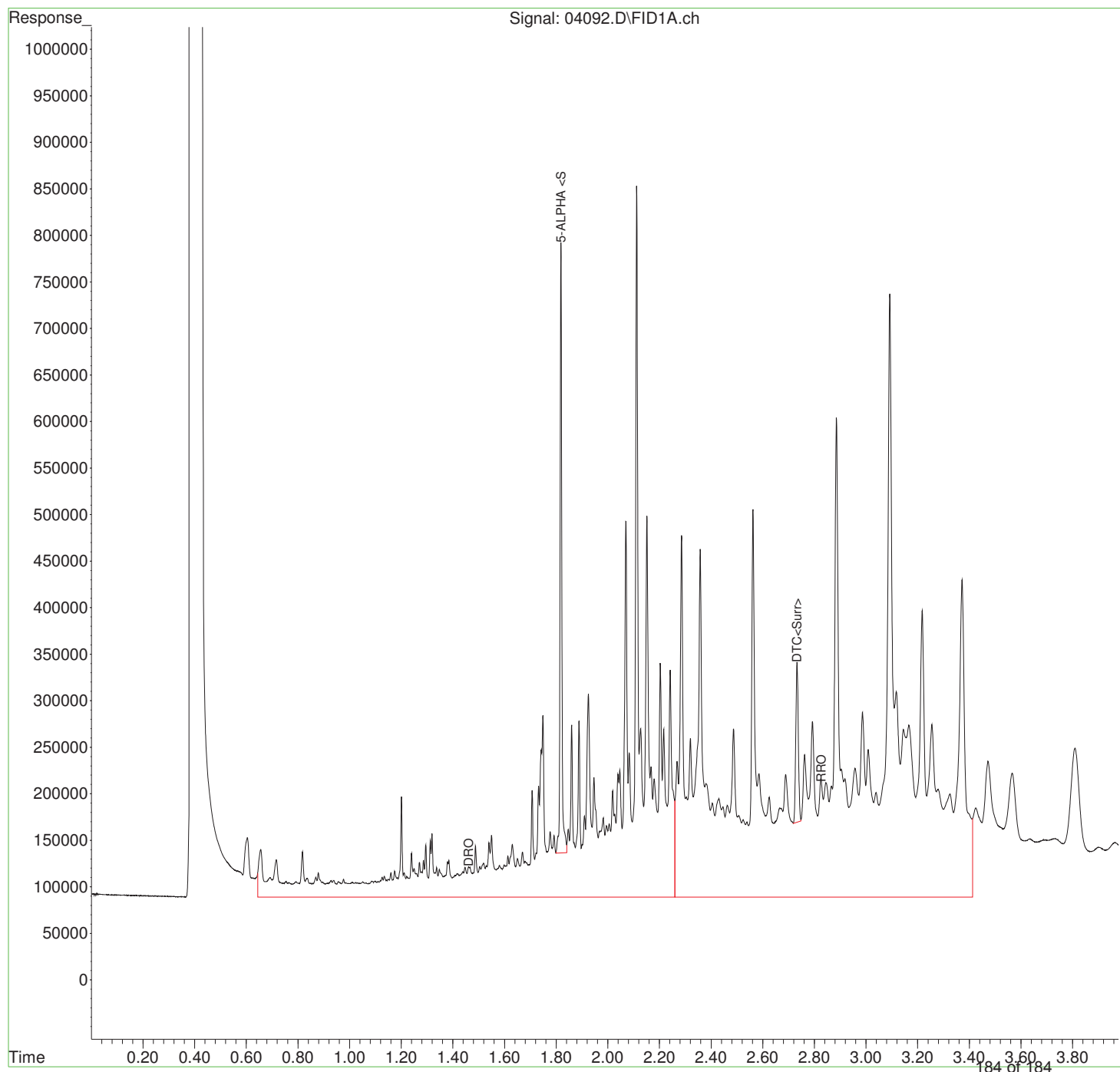


Data Path : Z:\10\SF\DATA\100517\
Data File : 04092.D
Signal(s) : FID1A.ch
Acq On : 5 Oct 2017 8:00 pm
Operator : JMG
Sample : 1177018012_4X
Misc :
ALS Vial : 39 Sample Multiplier: 4

Original analysis

Integration File: autoint1.e
Quant Time: Oct 06 13:58:49 2017
Quant Method : Z:\10\SF\METHOD\SFF2017-0921L.M
Quant Title : DRO/RRO by Method AK 102/103
QLast Update : Fri Sep 22 10:27:48 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Laboratory Report of Analysis

To: Nortech
5438 Shaune Drive, Suite B
Juneau, AK 99801
(360)359-8865

Report Number: **1179494**

Client Project: **Wrangell Repository**

Dear Ron Pratt,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Victoria at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.



Alaska Division Technical Director

Stephen Ede

2017.11.16

08:34:36 -09'00'

Victoria Pennick
Project Manager
Victoria.Pennick@sgs.com

Date

Print Date: 11/15/2017 4:24:15PM



Case Narrative

SGS Client: Nortech

SGS Project: 1179494

Project Name/Site: Wrangell Repository

Refer to sample receipt form for information on sample condition.

PLR-S4

1179494004 PS

8260C - Surrogate recovery for 4-bromofluorobenzene (158%) does not meet QC criteria due to matrix interference.

VXX/31676

1424398 LCS

8260C - LCS recoveries for several analytes do not meet QC criteria. These analytes were not detected above the LOQ in the associated samples.

1179494001MS

1424399 MS

8260C - MS recoveries for several analytes do not meet QC criteria. These analytes were not detected above the LOQ in the parent sample.

1179494001MSD

1424400 MSD

8260C - MSD RPD for several analytes do not meet QC criteria. These analytes were not detected above the LOQ in the parent sample.

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

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are **AK00971 DW Chemistry (Provisionally Certified as of 10/12/2017) & Microbiology (Provisionally Certified as of 9/21/2017) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103).** Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

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

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
PLR-S1	1179494001	10/30/2017	11/01/2017	Soil/Solid (dry weight)
PLR-S2	1179494002	10/30/2017	11/01/2017	Soil/Solid (dry weight)
PLR-S3	1179494003	10/30/2017	11/01/2017	Soil/Solid (dry weight)
PLR-S4	1179494004	10/30/2017	11/01/2017	Soil/Solid (dry weight)
Trip Blank	1179494005	10/30/2017	11/01/2017	Soil/Solid (dry weight)

<u>Method</u>	<u>Method Description</u>
AK102	Diesel/Residual Range Organics
AK103	Diesel/Residual Range Organics
SW6020A	Metals by ICP-MS (S)
SM21 2540G	Percent Solids SM2540G
SW8260C	VOC 8260 (S) Field Extracted

Print Date: 11/15/2017 4:24:20PM

Detectable Results Summary

Client Sample ID: **PLR-S1**
Lab Sample ID: 1179494001

Metals by ICP/MS
Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Lead	3.54	mg/Kg
Residual Range Organics	77.2	mg/Kg

Client Sample ID: **PLR-S2**
Lab Sample ID: 1179494002

Metals by ICP/MS
Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Lead	6.93	mg/Kg
Diesel Range Organics	93.4	mg/Kg
Residual Range Organics	454	mg/Kg

Client Sample ID: **PLR-S3**
Lab Sample ID: 1179494003

Metals by ICP/MS
Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Lead	3.64	mg/Kg
Residual Range Organics	47.5	mg/Kg

Client Sample ID: **PLR-S4**
Lab Sample ID: 1179494004

Metals by ICP/MS
Semivolatile Organic Fuels
Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Lead	5.17	mg/Kg
Residual Range Organics	87.0	mg/Kg
4-Isopropyltoluene	30.7	ug/Kg

Results of **PLR-S1**

Client Sample ID: **PLR-S1**
 Client Project ID: **Wrangell Repository**
 Lab Sample ID: 1179494001
 Lab Project ID: 1179494

Collection Date: 10/30/17 15:45
 Received Date: 11/01/17 15:53
 Matrix: Soil/Solid (dry weight)
 Solids (%):87.4
 Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Lead	3.54	1.09	0.338	mg/Kg	50		11/02/17 14:53

Batch Information

Analytical Batch: MMS9992
 Analytical Method: SW6020A
 Analyst: ACF
 Analytical Date/Time: 11/02/17 14:53
 Container ID: 1179494001-A

Prep Batch: MXX31198
 Prep Method: SW3050B
 Prep Date/Time: 11/02/17 07:33
 Prep Initial Wt./Vol.: 1.05 g
 Prep Extract Vol: 50 mL

Print Date: 11/15/2017 4:24:22PM

Results of PLR-S1

Client Sample ID: **PLR-S1**
 Client Project ID: **Wrangell Repository**
 Lab Sample ID: 1179494001
 Lab Project ID: 1179494

Collection Date: 10/30/17 15:45
 Received Date: 11/01/17 15:53
 Matrix: Soil/Solid (dry weight)
 Solids (%):87.4
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	22.9 U	22.9	7.09	mg/Kg	1		11/08/17 02:42
Surrogates							
5a Androstane (surr)	84.6	50-150		%	1		11/08/17 02:42

Batch Information

Analytical Batch: XFC13959
 Analytical Method: AK102
 Analyst: JMG
 Analytical Date/Time: 11/08/17 02:42
 Container ID: 1179494001-A

Prep Batch: XXX38796
 Prep Method: SW3550C
 Prep Date/Time: 11/02/17 13:10
 Prep Initial Wt./Vol.: 30.017 g
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	77.2	22.9	7.09	mg/Kg	1		11/08/17 02:42
Surrogates							
n-Triacontane-d62 (surr)	87	50-150		%	1		11/08/17 02:42

Batch Information

Analytical Batch: XFC13959
 Analytical Method: AK103
 Analyst: JMG
 Analytical Date/Time: 11/08/17 02:42
 Container ID: 1179494001-A

Prep Batch: XXX38796
 Prep Method: SW3550C
 Prep Date/Time: 11/02/17 13:10
 Prep Initial Wt./Vol.: 30.017 g
 Prep Extract Vol: 1 mL

Print Date: 11/15/2017 4:24:22PM

Results of PLR-S1

Client Sample ID: **PLR-S1**
 Client Project ID: **Wrangell Repository**
 Lab Sample ID: 1179494001
 Lab Project ID: 1179494

Collection Date: 10/30/17 15:45
 Received Date: 11/01/17 15:53
 Matrix: Soil/Solid (dry weight)
 Solids (%):87.4
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	18.2 U	18.2	5.64	ug/Kg	1		11/04/17 14:03
1,1,1-Trichloroethane	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
1,1,2,2-Tetrachloroethane	11.4 U	11.4	3.55	ug/Kg	1		11/04/17 14:03
1,1,2-Trichloroethane	9.10 U	9.10	2.82	ug/Kg	1		11/04/17 14:03
1,1-Dichloroethane	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
1,1-Dichloroethene	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
1,1-Dichloropropene	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
1,2,3-Trichlorobenzene	45.5 U	45.5	13.7	ug/Kg	1		11/04/17 14:03
1,2,3-Trichloropropane	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
1,2,4-Trichlorobenzene	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
1,2,4-Trimethylbenzene	45.5 U	45.5	13.7	ug/Kg	1		11/04/17 14:03
1,2-Dibromo-3-chloropropane	91.0 U	91.0	28.2	ug/Kg	1		11/04/17 14:03
1,2-Dibromoethane	9.10 U	9.10	2.82	ug/Kg	1		11/04/17 14:03
1,2-Dichlorobenzene	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
1,2-Dichloroethane	9.10 U	9.10	2.82	ug/Kg	1		11/04/17 14:03
1,2-Dichloropropane	9.10 U	9.10	2.82	ug/Kg	1		11/04/17 14:03
1,3,5-Trimethylbenzene	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
1,3-Dichlorobenzene	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
1,3-Dichloropropane	9.10 U	9.10	2.82	ug/Kg	1		11/04/17 14:03
1,4-Dichlorobenzene	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
2,2-Dichloropropane	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
2-Butanone (MEK)	228 U	228	71.0	ug/Kg	1		11/04/17 14:03
2-Chlorotoluene	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
2-Hexanone	91.0 U	91.0	28.2	ug/Kg	1		11/04/17 14:03
4-Chlorotoluene	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
4-Isopropyltoluene	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
4-Methyl-2-pentanone (MIBK)	228 U	228	71.0	ug/Kg	1		11/04/17 14:03
Benzene	11.4 U	11.4	3.55	ug/Kg	1		11/04/17 14:03
Bromobenzene	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
Bromochloromethane	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
Bromodichloromethane	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
Bromoform	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
Bromomethane	182 U	182	56.4	ug/Kg	1		11/04/17 14:03
Carbon disulfide	91.0 U	91.0	28.2	ug/Kg	1		11/04/17 14:03
Carbon tetrachloride	11.4 U	11.4	3.55	ug/Kg	1		11/04/17 14:03
Chlorobenzene	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
Chloroethane	182 U	182	56.4	ug/Kg	1		11/04/17 14:03

Print Date: 11/15/2017 4:24:22PM

Results of PLR-S1

Client Sample ID: **PLR-S1**
 Client Project ID: **Wrangell Repository**
 Lab Sample ID: 1179494001
 Lab Project ID: 1179494

Collection Date: 10/30/17 15:45
 Received Date: 11/01/17 15:53
 Matrix: Soil/Solid (dry weight)
 Solids (%):87.4
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
Chloromethane	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
cis-1,2-Dichloroethene	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
cis-1,3-Dichloropropene	11.4 U	11.4	3.55	ug/Kg	1		11/04/17 14:03
Dibromochloromethane	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
Dibromomethane	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
Dichlorodifluoromethane	45.5 U	45.5	13.7	ug/Kg	1		11/04/17 14:03
Ethylbenzene	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
Freon-113	91.0 U	91.0	28.2	ug/Kg	1		11/04/17 14:03
Hexachlorobutadiene	18.2 U	18.2	5.64	ug/Kg	1		11/04/17 14:03
Isopropylbenzene (Cumene)	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
Methylene chloride	91.0 U	91.0	28.2	ug/Kg	1		11/04/17 14:03
Methyl-t-butyl ether	91.0 U	91.0	28.2	ug/Kg	1		11/04/17 14:03
Naphthalene	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
n-Butylbenzene	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
n-Propylbenzene	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
o-Xylene	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
P & M -Xylene	45.5 U	45.5	13.7	ug/Kg	1		11/04/17 14:03
sec-Butylbenzene	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
Styrene	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
tert-Butylbenzene	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
Tetrachloroethene	11.4 U	11.4	3.55	ug/Kg	1		11/04/17 14:03
Toluene	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
trans-1,2-Dichloroethene	22.8 U	22.8	7.10	ug/Kg	1		11/04/17 14:03
trans-1,3-Dichloropropene	11.4 U	11.4	3.55	ug/Kg	1		11/04/17 14:03
Trichloroethene	9.10 U	9.10	2.82	ug/Kg	1		11/04/17 14:03
Trichlorofluoromethane	45.5 U	45.5	13.7	ug/Kg	1		11/04/17 14:03
Vinyl acetate	91.0 U	91.0	28.2	ug/Kg	1		11/04/17 14:03
Vinyl chloride	9.10 U	9.10	2.82	ug/Kg	1		11/04/17 14:03
Xylenes (total)	68.3 U	68.3	20.8	ug/Kg	1		11/04/17 14:03
Surrogates							
1,2-Dichloroethane-D4 (surr)	103	71-136		%	1		11/04/17 14:03
4-Bromofluorobenzene (surr)	107	55-151		%	1		11/04/17 14:03
Toluene-d8 (surr)	96.4	85-116		%	1		11/04/17 14:03

Print Date: 11/15/2017 4:24:22PM

Results of **PLR-S1**

Client Sample ID: **PLR-S1**
 Client Project ID: **Wrangell Repository**
 Lab Sample ID: 1179494001
 Lab Project ID: 1179494

Collection Date: 10/30/17 15:45
 Received Date: 11/01/17 15:53
 Matrix: Soil/Solid (dry weight)
 Solids (%):87.4
 Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS17421
 Analytical Method: SW8260C
 Analyst: NRO
 Analytical Date/Time: 11/04/17 14:03
 Container ID: 1179494001-D

Prep Batch: VXX31676
 Prep Method: SW5035A
 Prep Date/Time: 10/30/17 15:45
 Prep Initial Wt./Vol.: 91.754 g
 Prep Extract Vol: 36.5216 mL

Print Date: 11/15/2017 4:24:22PM

Results of **PLR-S2**

Client Sample ID: **PLR-S2**
 Client Project ID: **Wrangell Repository**
 Lab Sample ID: 1179494002
 Lab Project ID: 1179494

Collection Date: 10/30/17 15:25
 Received Date: 11/01/17 15:53
 Matrix: Soil/Solid (dry weight)
 Solids (%):53.5
 Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Lead	6.93	1.87	0.579	mg/Kg	50		11/02/17 14:57

Batch Information

Analytical Batch: MMS9992
 Analytical Method: SW6020A
 Analyst: ACF
 Analytical Date/Time: 11/02/17 14:57
 Container ID: 1179494002-A

Prep Batch: MXX31198
 Prep Method: SW3050B
 Prep Date/Time: 11/02/17 07:33
 Prep Initial Wt./Vol.: 1.001 g
 Prep Extract Vol: 50 mL

Print Date: 11/15/2017 4:24:22PM

Results of PLR-S2

Client Sample ID: **PLR-S2**
 Client Project ID: **Wrangell Repository**
 Lab Sample ID: 1179494002
 Lab Project ID: 1179494

Collection Date: 10/30/17 15:25
 Received Date: 11/01/17 15:53
 Matrix: Soil/Solid (dry weight)
 Solids (%):53.5
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	93.4	37.1	11.5	mg/Kg	1		11/08/17 02:52
Surrogates							
5a Androstane (surr)	86.5	50-150		%	1		11/08/17 02:52

Batch Information

Analytical Batch: XFC13959
 Analytical Method: AK102
 Analyst: JMG
 Analytical Date/Time: 11/08/17 02:52
 Container ID: 1179494002-A

Prep Batch: XXX38796
 Prep Method: SW3550C
 Prep Date/Time: 11/02/17 13:10
 Prep Initial Wt./Vol.: 30.21 g
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	454	37.1	11.5	mg/Kg	1		11/08/17 02:52
Surrogates							
n-Triacontane-d62 (surr)	75.6	50-150		%	1		11/08/17 02:52

Batch Information

Analytical Batch: XFC13959
 Analytical Method: AK103
 Analyst: JMG
 Analytical Date/Time: 11/08/17 02:52
 Container ID: 1179494002-A

Prep Batch: XXX38796
 Prep Method: SW3550C
 Prep Date/Time: 11/02/17 13:10
 Prep Initial Wt./Vol.: 30.21 g
 Prep Extract Vol: 1 mL

Print Date: 11/15/2017 4:24:22PM

Results of PLR-S2

Client Sample ID: **PLR-S2**
 Client Project ID: **Wrangell Repository**
 Lab Sample ID: 1179494002
 Lab Project ID: 1179494

Collection Date: 10/30/17 15:25
 Received Date: 11/01/17 15:53
 Matrix: Soil/Solid (dry weight)
 Solids (%):53.5
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	116 U	116	35.9	ug/Kg	1		11/04/17 14:19
1,1,1-Trichloroethane	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
1,1,2,2-Tetrachloroethane	72.3 U	72.3	22.6	ug/Kg	1		11/04/17 14:19
1,1,2-Trichloroethane	57.8 U	57.8	17.9	ug/Kg	1		11/04/17 14:19
1,1-Dichloroethane	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
1,1-Dichloroethene	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
1,1-Dichloropropene	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
1,2,3-Trichlorobenzene	289 U	289	89.6	ug/Kg	1		11/04/17 14:19
1,2,3-Trichloropropane	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
1,2,4-Trichlorobenzene	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
1,2,4-Trimethylbenzene	289 U	289	89.6	ug/Kg	1		11/04/17 14:19
1,2-Dibromo-3-chloropropane	578 U	578	179	ug/Kg	1		11/04/17 14:19
1,2-Dibromoethane	57.8 U	57.8	17.9	ug/Kg	1		11/04/17 14:19
1,2-Dichlorobenzene	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
1,2-Dichloroethane	57.8 U	57.8	17.9	ug/Kg	1		11/04/17 14:19
1,2-Dichloropropane	57.8 U	57.8	17.9	ug/Kg	1		11/04/17 14:19
1,3,5-Trimethylbenzene	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
1,3-Dichlorobenzene	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
1,3-Dichloropropane	57.8 U	57.8	17.9	ug/Kg	1		11/04/17 14:19
1,4-Dichlorobenzene	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
2,2-Dichloropropane	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
2-Butanone (MEK)	1450 U	1450	451	ug/Kg	1		11/04/17 14:19
2-Chlorotoluene	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
2-Hexanone	578 U	578	179	ug/Kg	1		11/04/17 14:19
4-Chlorotoluene	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
4-Isopropyltoluene	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
4-Methyl-2-pentanone (MIBK)	1450 U	1450	451	ug/Kg	1		11/04/17 14:19
Benzene	72.3 U	72.3	22.6	ug/Kg	1		11/04/17 14:19
Bromobenzene	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
Bromochloromethane	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
Bromodichloromethane	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
Bromoform	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
Bromomethane	1160 U	1160	359	ug/Kg	1		11/04/17 14:19
Carbon disulfide	578 U	578	179	ug/Kg	1		11/04/17 14:19
Carbon tetrachloride	72.3 U	72.3	22.6	ug/Kg	1		11/04/17 14:19
Chlorobenzene	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
Chloroethane	1160 U	1160	359	ug/Kg	1		11/04/17 14:19

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Results of PLR-S2

Client Sample ID: **PLR-S2**
 Client Project ID: **Wrangell Repository**
 Lab Sample ID: 1179494002
 Lab Project ID: 1179494

Collection Date: 10/30/17 15:25
 Received Date: 11/01/17 15:53
 Matrix: Soil/Solid (dry weight)
 Solids (%):53.5
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
Chloromethane	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
cis-1,2-Dichloroethene	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
cis-1,3-Dichloropropene	72.3 U	72.3	22.6	ug/Kg	1		11/04/17 14:19
Dibromochloromethane	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
Dibromomethane	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
Dichlorodifluoromethane	289 U	289	89.6	ug/Kg	1		11/04/17 14:19
Ethylbenzene	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
Freon-113	578 U	578	179	ug/Kg	1		11/04/17 14:19
Hexachlorobutadiene	116 U	116	35.9	ug/Kg	1		11/04/17 14:19
Isopropylbenzene (Cumene)	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
Methylene chloride	578 U	578	179	ug/Kg	1		11/04/17 14:19
Methyl-t-butyl ether	578 U	578	179	ug/Kg	1		11/04/17 14:19
Naphthalene	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
n-Butylbenzene	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
n-Propylbenzene	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
o-Xylene	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
P & M -Xylene	289 U	289	86.7	ug/Kg	1		11/04/17 14:19
sec-Butylbenzene	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
Styrene	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
tert-Butylbenzene	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
Tetrachloroethene	72.3 U	72.3	22.6	ug/Kg	1		11/04/17 14:19
Toluene	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
trans-1,2-Dichloroethene	145 U	145	45.1	ug/Kg	1		11/04/17 14:19
trans-1,3-Dichloropropene	72.3 U	72.3	22.6	ug/Kg	1		11/04/17 14:19
Trichloroethene	57.8 U	57.8	17.9	ug/Kg	1		11/04/17 14:19
Trichlorofluoromethane	289 U	289	89.6	ug/Kg	1		11/04/17 14:19
Vinyl acetate	578 U	578	179	ug/Kg	1		11/04/17 14:19
Vinyl chloride	57.8 U	57.8	17.9	ug/Kg	1		11/04/17 14:19
Xylenes (total)	434 U	434	132	ug/Kg	1		11/04/17 14:19
Surrogates							
1,2-Dichloroethane-D4 (surr)	106	71-136		%	1		11/04/17 14:19
4-Bromofluorobenzene (surr)	121	55-151		%	1		11/04/17 14:19
Toluene-d8 (surr)	101	85-116		%	1		11/04/17 14:19

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Results of **PLR-S2**

Client Sample ID: **PLR-S2**
Client Project ID: **Wrangell Repository**
Lab Sample ID: 1179494002
Lab Project ID: 1179494

Collection Date: 10/30/17 15:25
Received Date: 11/01/17 15:53
Matrix: Soil/Solid (dry weight)
Solids (%):53.5
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS17421
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 11/04/17 14:19
Container ID: 1179494002-D

Prep Batch: VXX31676
Prep Method: SW5035A 2X MeOH
Prep Date/Time: 10/30/17 15:25
Prep Initial Wt./Vol.: 46.166 g
Prep Extract Vol: 71.4534 mL

Print Date: 11/15/2017 4:24:22PM

Results of **PLR-S3**

Client Sample ID: **PLR-S3**
 Client Project ID: **Wrangell Repository**
 Lab Sample ID: 1179494003
 Lab Project ID: 1179494

Collection Date: 10/30/17 14:50
 Received Date: 11/01/17 15:53
 Matrix: Soil/Solid (dry weight)
 Solids (%):86.7
 Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Lead	3.64	1.05	0.326	mg/Kg	50		11/02/17 15:02

Batch Information

Analytical Batch: MMS9992
 Analytical Method: SW6020A
 Analyst: ACF
 Analytical Date/Time: 11/02/17 15:02
 Container ID: 1179494003-A

Prep Batch: MXX31198
 Prep Method: SW3050B
 Prep Date/Time: 11/02/17 07:33
 Prep Initial Wt./Vol.: 1.098 g
 Prep Extract Vol: 50 mL

Print Date: 11/15/2017 4:24:22PM

Results of PLR-S3

Client Sample ID: **PLR-S3**
 Client Project ID: **Wrangell Repository**
 Lab Sample ID: 1179494003
 Lab Project ID: 1179494

Collection Date: 10/30/17 14:50
 Received Date: 11/01/17 15:53
 Matrix: Soil/Solid (dry weight)
 Solids (%):86.7
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	22.8 U	22.8	7.08	mg/Kg	1		11/08/17 03:01
Surrogates							
5a Androstane (surr)	79.8	50-150		%	1		11/08/17 03:01

Batch Information

Analytical Batch: XFC13959
 Analytical Method: AK102
 Analyst: JMG
 Analytical Date/Time: 11/08/17 03:01
 Container ID: 1179494003-A

Prep Batch: XXX38796
 Prep Method: SW3550C
 Prep Date/Time: 11/02/17 13:10
 Prep Initial Wt./Vol.: 30.317 g
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	47.5	22.8	7.08	mg/Kg	1		11/08/17 03:01
Surrogates							
n-Triacontane-d62 (surr)	84.1	50-150		%	1		11/08/17 03:01

Batch Information

Analytical Batch: XFC13959
 Analytical Method: AK103
 Analyst: JMG
 Analytical Date/Time: 11/08/17 03:01
 Container ID: 1179494003-A

Prep Batch: XXX38796
 Prep Method: SW3550C
 Prep Date/Time: 11/02/17 13:10
 Prep Initial Wt./Vol.: 30.317 g
 Prep Extract Vol: 1 mL

Print Date: 11/15/2017 4:24:22PM

Results of PLR-S3

Client Sample ID: **PLR-S3**
 Client Project ID: **Wrangell Repository**
 Lab Sample ID: 1179494003
 Lab Project ID: 1179494

Collection Date: 10/30/17 14:50
 Received Date: 11/01/17 15:53
 Matrix: Soil/Solid (dry weight)
 Solids (%):86.7
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	22.0 U	22.0	6.82	ug/Kg	1		11/04/17 14:36
1,1,1-Trichloroethane	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
1,1,2,2-Tetrachloroethane	13.7 U	13.7	4.29	ug/Kg	1		11/04/17 14:36
1,1,2-Trichloroethane	11.0 U	11.0	3.41	ug/Kg	1		11/04/17 14:36
1,1-Dichloroethane	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
1,1-Dichloroethene	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
1,1-Dichloropropene	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
1,2,3-Trichlorobenzene	55.0 U	55.0	16.5	ug/Kg	1		11/04/17 14:36
1,2,3-Trichloropropane	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
1,2,4-Trichlorobenzene	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
1,2,4-Trimethylbenzene	55.0 U	55.0	16.5	ug/Kg	1		11/04/17 14:36
1,2-Dibromo-3-chloropropane	110 U	110	34.1	ug/Kg	1		11/04/17 14:36
1,2-Dibromoethane	11.0 U	11.0	3.41	ug/Kg	1		11/04/17 14:36
1,2-Dichlorobenzene	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
1,2-Dichloroethane	11.0 U	11.0	3.41	ug/Kg	1		11/04/17 14:36
1,2-Dichloropropane	11.0 U	11.0	3.41	ug/Kg	1		11/04/17 14:36
1,3,5-Trimethylbenzene	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
1,3-Dichlorobenzene	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
1,3-Dichloropropane	11.0 U	11.0	3.41	ug/Kg	1		11/04/17 14:36
1,4-Dichlorobenzene	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
2,2-Dichloropropane	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
2-Butanone (MEK)	275 U	275	85.8	ug/Kg	1		11/04/17 14:36
2-Chlorotoluene	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
2-Hexanone	110 U	110	34.1	ug/Kg	1		11/04/17 14:36
4-Chlorotoluene	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
4-Isopropyltoluene	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
4-Methyl-2-pentanone (MIBK)	275 U	275	85.8	ug/Kg	1		11/04/17 14:36
Benzene	13.7 U	13.7	4.29	ug/Kg	1		11/04/17 14:36
Bromobenzene	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
Bromochloromethane	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
Bromodichloromethane	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
Bromoform	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
Bromomethane	220 U	220	68.2	ug/Kg	1		11/04/17 14:36
Carbon disulfide	110 U	110	34.1	ug/Kg	1		11/04/17 14:36
Carbon tetrachloride	13.7 U	13.7	4.29	ug/Kg	1		11/04/17 14:36
Chlorobenzene	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
Chloroethane	220 U	220	68.2	ug/Kg	1		11/04/17 14:36

Print Date: 11/15/2017 4:24:22PM

Results of PLR-S3

Client Sample ID: **PLR-S3**
 Client Project ID: **Wrangell Repository**
 Lab Sample ID: 1179494003
 Lab Project ID: 1179494

Collection Date: 10/30/17 14:50
 Received Date: 11/01/17 15:53
 Matrix: Soil/Solid (dry weight)
 Solids (%):86.7
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
Chloromethane	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
cis-1,2-Dichloroethene	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
cis-1,3-Dichloropropene	13.7 U	13.7	4.29	ug/Kg	1		11/04/17 14:36
Dibromochloromethane	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
Dibromomethane	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
Dichlorodifluoromethane	55.0 U	55.0	16.5	ug/Kg	1		11/04/17 14:36
Ethylbenzene	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
Freon-113	110 U	110	34.1	ug/Kg	1		11/04/17 14:36
Hexachlorobutadiene	22.0 U	22.0	6.82	ug/Kg	1		11/04/17 14:36
Isopropylbenzene (Cumene)	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
Methylene chloride	110 U	110	34.1	ug/Kg	1		11/04/17 14:36
Methyl-t-butyl ether	110 U	110	34.1	ug/Kg	1		11/04/17 14:36
Naphthalene	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
n-Butylbenzene	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
n-Propylbenzene	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
o-Xylene	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
P & M -Xylene	55.0 U	55.0	16.5	ug/Kg	1		11/04/17 14:36
sec-Butylbenzene	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
Styrene	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
tert-Butylbenzene	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
Tetrachloroethene	13.7 U	13.7	4.29	ug/Kg	1		11/04/17 14:36
Toluene	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
trans-1,2-Dichloroethene	27.5 U	27.5	8.58	ug/Kg	1		11/04/17 14:36
trans-1,3-Dichloropropene	13.7 U	13.7	4.29	ug/Kg	1		11/04/17 14:36
Trichloroethene	11.0 U	11.0	3.41	ug/Kg	1		11/04/17 14:36
Trichlorofluoromethane	55.0 U	55.0	16.5	ug/Kg	1		11/04/17 14:36
Vinyl acetate	110 U	110	34.1	ug/Kg	1		11/04/17 14:36
Vinyl chloride	11.0 U	11.0	3.41	ug/Kg	1		11/04/17 14:36
Xylenes (total)	82.5 U	82.5	25.1	ug/Kg	1		11/04/17 14:36
Surrogates							
1,2-Dichloroethane-D4 (surr)	103	71-136		%	1		11/04/17 14:36
4-Bromofluorobenzene (surr)	120	55-151		%	1		11/04/17 14:36
Toluene-d8 (surr)	101	85-116		%	1		11/04/17 14:36

Print Date: 11/15/2017 4:24:22PM

Results of **PLR-S3**

Client Sample ID: **PLR-S3**
 Client Project ID: **Wrangell Repository**
 Lab Sample ID: 1179494003
 Lab Project ID: 1179494

Collection Date: 10/30/17 14:50
 Received Date: 11/01/17 15:53
 Matrix: Soil/Solid (dry weight)
 Solids (%):86.7
 Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS17421
 Analytical Method: SW8260C
 Analyst: NRO
 Analytical Date/Time: 11/04/17 14:36
 Container ID: 1179494003-D

Prep Batch: VXX31676
 Prep Method: SW5035A
 Prep Date/Time: 10/30/17 14:50
 Prep Initial Wt./Vol.: 72.667 g
 Prep Extract Vol: 34.6552 mL

Print Date: 11/15/2017 4:24:22PM

Results of **PLR-S4**

Client Sample ID: **PLR-S4**
 Client Project ID: **Wrangell Repository**
 Lab Sample ID: 1179494004
 Lab Project ID: 1179494

Collection Date: 10/30/17 16:20
 Received Date: 11/01/17 15:53
 Matrix: Soil/Solid (dry weight)
 Solids (%):84.1
 Location:

Results by **Metals by ICP/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Lead	5.17	1.17	0.364	mg/Kg	50		11/02/17 15:06

Batch Information

Analytical Batch: MMS9992
 Analytical Method: SW6020A
 Analyst: ACF
 Analytical Date/Time: 11/02/17 15:06
 Container ID: 1179494004-A

Prep Batch: MXX31198
 Prep Method: SW3050B
 Prep Date/Time: 11/02/17 07:33
 Prep Initial Wt./Vol.: 1.012 g
 Prep Extract Vol: 50 mL

Print Date: 11/15/2017 4:24:22PM

Results of PLR-S4

Client Sample ID: **PLR-S4**
 Client Project ID: **Wrangell Repository**
 Lab Sample ID: 1179494004
 Lab Project ID: 1179494

Collection Date: 10/30/17 16:20
 Received Date: 11/01/17 15:53
 Matrix: Soil/Solid (dry weight)
 Solids (%):84.1
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	23.7 U	23.7	7.34	mg/Kg	1		11/08/17 03:11
Surrogates							
5a Androstane (surr)	82.4	50-150		%	1		11/08/17 03:11

Batch Information

Analytical Batch: XFC13959
 Analytical Method: AK102
 Analyst: JMG
 Analytical Date/Time: 11/08/17 03:11
 Container ID: 1179494004-A

Prep Batch: XXX38796
 Prep Method: SW3550C
 Prep Date/Time: 11/02/17 13:10
 Prep Initial Wt./Vol.: 30.118 g
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	87.0	23.7	7.34	mg/Kg	1		11/08/17 03:11
Surrogates							
n-Triacontane-d62 (surr)	85.6	50-150		%	1		11/08/17 03:11

Batch Information

Analytical Batch: XFC13959
 Analytical Method: AK103
 Analyst: JMG
 Analytical Date/Time: 11/08/17 03:11
 Container ID: 1179494004-A

Prep Batch: XXX38796
 Prep Method: SW3550C
 Prep Date/Time: 11/02/17 13:10
 Prep Initial Wt./Vol.: 30.118 g
 Prep Extract Vol: 1 mL

Print Date: 11/15/2017 4:24:22PM

Results of PLR-S4

Client Sample ID: **PLR-S4**
 Client Project ID: **Wrangell Repository**
 Lab Sample ID: 1179494004
 Lab Project ID: 1179494

Collection Date: 10/30/17 16:20
 Received Date: 11/01/17 15:53
 Matrix: Soil/Solid (dry weight)
 Solids (%):84.1
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	20.3 U	20.3	6.29	ug/Kg	1		11/04/17 14:53
1,1,1-Trichloroethane	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
1,1,2,2-Tetrachloroethane	12.7 U	12.7	3.95	ug/Kg	1		11/04/17 14:53
1,1,2-Trichloroethane	10.1 U	10.1	3.14	ug/Kg	1		11/04/17 14:53
1,1-Dichloroethane	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
1,1-Dichloroethene	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
1,1-Dichloropropene	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
1,2,3-Trichlorobenzene	50.7 U	50.7	15.2	ug/Kg	1		11/04/17 14:53
1,2,3-Trichloropropane	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
1,2,4-Trichlorobenzene	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
1,2,4-Trimethylbenzene	50.7 U	50.7	15.2	ug/Kg	1		11/04/17 14:53
1,2-Dibromo-3-chloropropane	101 U	101	31.4	ug/Kg	1		11/04/17 14:53
1,2-Dibromoethane	10.1 U	10.1	3.14	ug/Kg	1		11/04/17 14:53
1,2-Dichlorobenzene	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
1,2-Dichloroethane	10.1 U	10.1	3.14	ug/Kg	1		11/04/17 14:53
1,2-Dichloropropane	10.1 U	10.1	3.14	ug/Kg	1		11/04/17 14:53
1,3,5-Trimethylbenzene	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
1,3-Dichlorobenzene	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
1,3-Dichloropropane	10.1 U	10.1	3.14	ug/Kg	1		11/04/17 14:53
1,4-Dichlorobenzene	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
2,2-Dichloropropane	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
2-Butanone (MEK)	254 U	254	79.1	ug/Kg	1		11/04/17 14:53
2-Chlorotoluene	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
2-Hexanone	101 U	101	31.4	ug/Kg	1		11/04/17 14:53
4-Chlorotoluene	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
4-Isopropyltoluene	30.7	25.4	7.91	ug/Kg	1		11/04/17 14:53
4-Methyl-2-pentanone (MIBK)	254 U	254	79.1	ug/Kg	1		11/04/17 14:53
Benzene	12.7 U	12.7	3.95	ug/Kg	1		11/04/17 14:53
Bromobenzene	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
Bromochloromethane	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
Bromodichloromethane	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
Bromoform	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
Bromomethane	203 U	203	62.9	ug/Kg	1		11/04/17 14:53
Carbon disulfide	101 U	101	31.4	ug/Kg	1		11/04/17 14:53
Carbon tetrachloride	12.7 U	12.7	3.95	ug/Kg	1		11/04/17 14:53
Chlorobenzene	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
Chloroethane	203 U	203	62.9	ug/Kg	1		11/04/17 14:53

Print Date: 11/15/2017 4:24:22PM

Results of PLR-S4

Client Sample ID: **PLR-S4**
 Client Project ID: **Wrangell Repository**
 Lab Sample ID: 1179494004
 Lab Project ID: 1179494

Collection Date: 10/30/17 16:20
 Received Date: 11/01/17 15:53
 Matrix: Soil/Solid (dry weight)
 Solids (%):84.1
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
Chloromethane	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
cis-1,2-Dichloroethene	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
cis-1,3-Dichloropropene	12.7 U	12.7	3.95	ug/Kg	1		11/04/17 14:53
Dibromochloromethane	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
Dibromomethane	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
Dichlorodifluoromethane	50.7 U	50.7	15.2	ug/Kg	1		11/04/17 14:53
Ethylbenzene	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
Freon-113	101 U	101	31.4	ug/Kg	1		11/04/17 14:53
Hexachlorobutadiene	20.3 U	20.3	6.29	ug/Kg	1		11/04/17 14:53
Isopropylbenzene (Cumene)	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
Methylene chloride	101 U	101	31.4	ug/Kg	1		11/04/17 14:53
Methyl-t-butyl ether	101 U	101	31.4	ug/Kg	1		11/04/17 14:53
Naphthalene	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
n-Butylbenzene	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
n-Propylbenzene	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
o-Xylene	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
P & M -Xylene	50.7 U	50.7	15.2	ug/Kg	1		11/04/17 14:53
sec-Butylbenzene	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
Styrene	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
tert-Butylbenzene	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
Tetrachloroethene	12.7 U	12.7	3.95	ug/Kg	1		11/04/17 14:53
Toluene	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
trans-1,2-Dichloroethene	25.4 U	25.4	7.91	ug/Kg	1		11/04/17 14:53
trans-1,3-Dichloropropene	12.7 U	12.7	3.95	ug/Kg	1		11/04/17 14:53
Trichloroethene	10.1 U	10.1	3.14	ug/Kg	1		11/04/17 14:53
Trichlorofluoromethane	50.7 U	50.7	15.2	ug/Kg	1		11/04/17 14:53
Vinyl acetate	101 U	101	31.4	ug/Kg	1		11/04/17 14:53
Vinyl chloride	10.1 U	10.1	3.14	ug/Kg	1		11/04/17 14:53
Xylenes (total)	76.1 U	76.1	23.1	ug/Kg	1		11/04/17 14:53
Surrogates							
1,2-Dichloroethane-D4 (surr)	94.2	71-136		%	1		11/04/17 14:53
4-Bromofluorobenzene (surr)	158 *	55-151		%	1		11/04/17 14:53
Toluene-d8 (surr)	101	85-116		%	1		11/04/17 14:53

Print Date: 11/15/2017 4:24:22PM

Results of **PLR-S4**

Client Sample ID: **PLR-S4**
 Client Project ID: **Wrangell Repository**
 Lab Sample ID: 1179494004
 Lab Project ID: 1179494

Collection Date: 10/30/17 16:20
 Received Date: 11/01/17 15:53
 Matrix: Soil/Solid (dry weight)
 Solids (%):84.1
 Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS17421
 Analytical Method: SW8260C
 Analyst: NRO
 Analytical Date/Time: 11/04/17 14:53
 Container ID: 1179494004-D

Prep Batch: VXX31676
 Prep Method: SW5035A
 Prep Date/Time: 10/30/17 16:20
 Prep Initial Wt./Vol.: 93.378 g
 Prep Extract Vol: 39.8284 mL

Print Date: 11/15/2017 4:24:22PM

Results of Trip Blank

Client Sample ID: **Trip Blank**
 Client Project ID: **Wrangell Repository**
 Lab Sample ID: 1179494005
 Lab Project ID: 1179494

Collection Date: 10/30/17 16:20
 Received Date: 11/01/17 15:53
 Matrix: Soil/Solid (dry weight)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	20.5 U	20.5	6.34	ug/Kg	1		11/04/17 13:31
1,1,1-Trichloroethane	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
1,1,2,2-Tetrachloroethane	12.8 U	12.8	3.99	ug/Kg	1		11/04/17 13:31
1,1,2-Trichloroethane	10.2 U	10.2	3.17	ug/Kg	1		11/04/17 13:31
1,1-Dichloroethane	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
1,1-Dichloroethene	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
1,1-Dichloropropene	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
1,2,3-Trichlorobenzene	51.1 U	51.1	15.3	ug/Kg	1		11/04/17 13:31
1,2,3-Trichloropropane	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
1,2,4-Trichlorobenzene	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
1,2,4-Trimethylbenzene	51.1 U	51.1	15.3	ug/Kg	1		11/04/17 13:31
1,2-Dibromo-3-chloropropane	102 U	102	31.7	ug/Kg	1		11/04/17 13:31
1,2-Dibromoethane	10.2 U	10.2	3.17	ug/Kg	1		11/04/17 13:31
1,2-Dichlorobenzene	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
1,2-Dichloroethane	10.2 U	10.2	3.17	ug/Kg	1		11/04/17 13:31
1,2-Dichloropropane	10.2 U	10.2	3.17	ug/Kg	1		11/04/17 13:31
1,3,5-Trimethylbenzene	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
1,3-Dichlorobenzene	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
1,3-Dichloropropane	10.2 U	10.2	3.17	ug/Kg	1		11/04/17 13:31
1,4-Dichlorobenzene	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
2,2-Dichloropropane	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
2-Butanone (MEK)	256 U	256	79.8	ug/Kg	1		11/04/17 13:31
2-Chlorotoluene	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
2-Hexanone	102 U	102	31.7	ug/Kg	1		11/04/17 13:31
4-Chlorotoluene	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
4-Isopropyltoluene	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
4-Methyl-2-pentanone (MIBK)	256 U	256	79.8	ug/Kg	1		11/04/17 13:31
Benzene	12.8 U	12.8	3.99	ug/Kg	1		11/04/17 13:31
Bromobenzene	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
Bromochloromethane	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
Bromodichloromethane	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
Bromoform	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
Bromomethane	205 U	205	63.4	ug/Kg	1		11/04/17 13:31
Carbon disulfide	102 U	102	31.7	ug/Kg	1		11/04/17 13:31
Carbon tetrachloride	12.8 U	12.8	3.99	ug/Kg	1		11/04/17 13:31
Chlorobenzene	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
Chloroethane	205 U	205	63.4	ug/Kg	1		11/04/17 13:31

Print Date: 11/15/2017 4:24:22PM

Results of Trip Blank

Client Sample ID: **Trip Blank**
 Client Project ID: **Wrangell Repository**
 Lab Sample ID: 1179494005
 Lab Project ID: 1179494

Collection Date: 10/30/17 16:20
 Received Date: 11/01/17 15:53
 Matrix: Soil/Solid (dry weight)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
Chloromethane	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
cis-1,2-Dichloroethene	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
cis-1,3-Dichloropropene	12.8 U	12.8	3.99	ug/Kg	1		11/04/17 13:31
Dibromochloromethane	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
Dibromomethane	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
Dichlorodifluoromethane	51.1 U	51.1	15.3	ug/Kg	1		11/04/17 13:31
Ethylbenzene	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
Freon-113	102 U	102	31.7	ug/Kg	1		11/04/17 13:31
Hexachlorobutadiene	20.5 U	20.5	6.34	ug/Kg	1		11/04/17 13:31
Isopropylbenzene (Cumene)	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
Methylene chloride	102 U	102	31.7	ug/Kg	1		11/04/17 13:31
Methyl-t-butyl ether	102 U	102	31.7	ug/Kg	1		11/04/17 13:31
Naphthalene	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
n-Butylbenzene	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
n-Propylbenzene	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
o-Xylene	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
P & M -Xylene	51.1 U	51.1	15.3	ug/Kg	1		11/04/17 13:31
sec-Butylbenzene	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
Styrene	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
tert-Butylbenzene	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
Tetrachloroethene	12.8 U	12.8	3.99	ug/Kg	1		11/04/17 13:31
Toluene	25.6 U	25.6	7.98	ug/Kg	1		11/10/17 14:23
trans-1,2-Dichloroethene	25.6 U	25.6	7.98	ug/Kg	1		11/04/17 13:31
trans-1,3-Dichloropropene	12.8 U	12.8	3.99	ug/Kg	1		11/04/17 13:31
Trichloroethene	10.2 U	10.2	3.17	ug/Kg	1		11/04/17 13:31
Trichlorofluoromethane	51.1 U	51.1	15.3	ug/Kg	1		11/04/17 13:31
Vinyl acetate	102 U	102	31.7	ug/Kg	1		11/04/17 13:31
Vinyl chloride	10.2 U	10.2	3.17	ug/Kg	1		11/04/17 13:31
Xylenes (total)	76.7 U	76.7	23.3	ug/Kg	1		11/04/17 13:31
Surrogates							
1,2-Dichloroethane-D4 (surr)	108	71-136		%	1		11/04/17 13:31
4-Bromofluorobenzene (surr)	114	55-151		%	1		11/04/17 13:31
Toluene-d8 (surr)	98.7	85-116		%	1		11/04/17 13:31

Print Date: 11/15/2017 4:24:22PM

Results of Trip Blank

Client Sample ID: **Trip Blank**
 Client Project ID: **Wrangell Repository**
 Lab Sample ID: 1179494005
 Lab Project ID: 1179494

Collection Date: 10/30/17 16:20
 Received Date: 11/01/17 15:53
 Matrix: Soil/Solid (dry weight)
 Solids (%):
 Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS17421
 Analytical Method: SW8260C
 Analyst: NRO
 Analytical Date/Time: 11/04/17 13:31
 Container ID: 1179494005-A

Prep Batch: VXX31676
 Prep Method: SW5035A
 Prep Date/Time: 10/30/17 16:20
 Prep Initial Wt./Vol.: 48.897 g
 Prep Extract Vol: 25 mL

Analytical Batch: VMS17443
 Analytical Method: SW8260C
 Analyst: NRO
 Analytical Date/Time: 11/10/17 14:23
 Container ID: 1179494005-A

Prep Batch: VXX31714
 Prep Method: SW5035A
 Prep Date/Time: 10/30/17 16:20
 Prep Initial Wt./Vol.: 48.897 g
 Prep Extract Vol: 25 mL

Print Date: 11/15/2017 4:24:22PM

Method Blank

Blank ID: MB for HBN 1771407 [MXX/31198]
Blank Lab ID: 1423760

Matrix: Soil/Solid (dry weight)

QC for Samples:
1179494001, 1179494002, 1179494003, 1179494004

Results by SW6020A

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Lead	0.100U	0.200	0.0620	mg/Kg

Batch Information

Analytical Batch: MMS9992
Analytical Method: SW6020A
Instrument: Perkin Elmer Nexlon P5
Analyst: ACF
Analytical Date/Time: 11/2/2017 12:44:17PM

Prep Batch: MXX31198
Prep Method: SW3050B
Prep Date/Time: 11/2/2017 7:33:34AM
Prep Initial Wt./Vol.: 1 g
Prep Extract Vol: 50 mL

Print Date: 11/15/2017 4:24:25PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1179494 [MXX31198]

Blank Spike Lab ID: 1423761

Date Analyzed: 11/02/2017 12:48

Matrix: Soil/Solid (dry weight)

QC for Samples: 1179494001, 1179494002, 1179494003, 1179494004

Results by SW6020A

Blank Spike (mg/Kg)				
Parameter	Spike	Result	Rec (%)	CL
Lead	50	49.9	100	(84-118)

Batch Information

Analytical Batch: MMS9992

Analytical Method: SW6020A

Instrument: Perkin Elmer Nexlon P5

Analyst: ACF

Prep Batch: MXX31198

Prep Method: SW3050B

Prep Date/Time: 11/02/2017 07:33

Spike Init Wt./Vol.: 50 mg/Kg Extract Vol: 50 mL

Dupe Init Wt./Vol.: Extract Vol:

Matrix Spike Summary

Original Sample ID: 1423762
MS Sample ID: 1423765 MS
MSD Sample ID: 1423766 MSD

Analysis Date: 11/02/2017 12:53
Analysis Date: 11/02/2017 12:57
Analysis Date: 11/02/2017 13:02
Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1179494001, 1179494002, 1179494003, 1179494004

Results by SW6020A

Parameter	Sample	Matrix Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Lead	5.97	48.1	50.6	93	46.9	51.0	96	84-118	0.67	(< 20)

Batch Information

Analytical Batch: MMS9992
Analytical Method: SW6020A
Instrument: Perkin Elmer Nexlon P5
Analyst: ACF
Analytical Date/Time: 11/2/2017 12:57:47PM

Prep Batch: MXX31198
Prep Method: Soils/Solids Digest for Metals by ICP-MS
Prep Date/Time: 11/2/2017 7:33:34AM
Prep Initial Wt./Vol.: 1.04g
Prep Extract Vol: 50.00mL

Print Date: 11/15/2017 4:24:28PM

Method Blank

Blank ID: MB for HBN 1771408 [SPT/10360]
Blank Lab ID: 1423767

Matrix: Soil/Solid (dry weight)

QC for Samples:
1179494001, 1179494002, 1179494003, 1179494004

Results by SM21 2540G

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Solids	100			%

Batch Information

Analytical Batch: SPT10360
Analytical Method: SM21 2540G
Instrument:
Analyst: CMC
Analytical Date/Time: 11/1/2017 5:15:00PM

Print Date: 11/15/2017 4:24:29PM

Duplicate Sample Summary

Original Sample ID: 1179489008

Duplicate Sample ID: 1423770

QC for Samples:

Analysis Date: 11/01/2017 17:15

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	76.5	77.0	%	0.52	(< 15)

Batch Information

Analytical Batch: SPT10360

Analytical Method: SM21 2540G

Instrument:

Analyst: CMC

Print Date: 11/15/2017 4:24:30PM

Duplicate Sample Summary

Original Sample ID: 1179489036

Duplicate Sample ID: 1423771

QC for Samples:

1179494001, 1179494002, 1179494003, 1179494004

Analysis Date: 11/01/2017 17:15

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	78.0	76.8	%	1.60	(< 15)

Batch Information

Analytical Batch: SPT10360

Analytical Method: SM21 2540G

Instrument:

Analyst: CMC

Print Date: 11/15/2017 4:24:30PM

Method Blank

Blank ID: MB for HBN 1771606 [VXX/31676]
Blank Lab ID: 1424397

Matrix: Soil/Solid (dry weight)

QC for Samples:
1179494001, 1179494002, 1179494003, 1179494004, 1179494005

Results by SW8260C

Parameter	Results	LOQ/CL	DL	Units
1,1,1,2-Tetrachloroethane	10.0U	20.0	6.20	ug/Kg
1,1,1-Trichloroethane	12.5U	25.0	7.80	ug/Kg
1,1,2,2-Tetrachloroethane	6.25U	12.5	3.90	ug/Kg
1,1,2-Trichloroethane	5.00U	10.0	3.10	ug/Kg
1,1-Dichloroethane	12.5U	25.0	7.80	ug/Kg
1,1-Dichloroethene	12.5U	25.0	7.80	ug/Kg
1,1-Dichloropropene	12.5U	25.0	7.80	ug/Kg
1,2,3-Trichlorobenzene	25.0U	50.0	15.0	ug/Kg
1,2,3-Trichloropropane	12.5U	25.0	7.80	ug/Kg
1,2,4-Trichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,2,4-Trimethylbenzene	25.0U	50.0	15.0	ug/Kg
1,2-Dibromo-3-chloropropane	50.0U	100	31.0	ug/Kg
1,2-Dibromoethane	5.00U	10.0	3.10	ug/Kg
1,2-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,2-Dichloroethane	5.00U	10.0	3.10	ug/Kg
1,2-Dichloropropane	5.00U	10.0	3.10	ug/Kg
1,3,5-Trimethylbenzene	12.5U	25.0	7.80	ug/Kg
1,3-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,3-Dichloropropane	5.00U	10.0	3.10	ug/Kg
1,4-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
2,2-Dichloropropane	12.5U	25.0	7.80	ug/Kg
2-Butanone (MEK)	125U	250	78.0	ug/Kg
2-Chlorotoluene	12.5U	25.0	7.80	ug/Kg
2-Hexanone	50.0U	100	31.0	ug/Kg
4-Chlorotoluene	12.5U	25.0	7.80	ug/Kg
4-Isopropyltoluene	12.5U	25.0	7.80	ug/Kg
4-Methyl-2-pentanone (MIBK)	125U	250	78.0	ug/Kg
Benzene	6.25U	12.5	3.90	ug/Kg
Bromobenzene	12.5U	25.0	7.80	ug/Kg
Bromochloromethane	12.5U	25.0	7.80	ug/Kg
Bromodichloromethane	12.5U	25.0	7.80	ug/Kg
Bromoform	12.5U	25.0	7.80	ug/Kg
Bromomethane	100U	200	62.0	ug/Kg
Carbon disulfide	50.0U	100	31.0	ug/Kg
Carbon tetrachloride	6.25U	12.5	3.90	ug/Kg
Chlorobenzene	12.5U	25.0	7.80	ug/Kg
Chloroethane	100U	200	62.0	ug/Kg
Chloroform	12.5U	25.0	7.80	ug/Kg

Print Date: 11/15/2017 4:24:33PM

Method Blank

Blank ID: MB for HBN 1771606 [VXX/31676]
Blank Lab ID: 1424397

Matrix: Soil/Solid (dry weight)

QC for Samples:
1179494001, 1179494002, 1179494003, 1179494004, 1179494005

Results by SW8260C

Parameter	Results	LOQ/CL	DL	Units
Chloromethane	12.5U	25.0	7.80	ug/Kg
cis-1,2-Dichloroethene	12.5U	25.0	7.80	ug/Kg
cis-1,3-Dichloropropene	6.25U	12.5	3.90	ug/Kg
Dibromochloromethane	12.5U	25.0	7.80	ug/Kg
Dibromomethane	12.5U	25.0	7.80	ug/Kg
Dichlorodifluoromethane	25.0U	50.0	15.0	ug/Kg
Ethylbenzene	12.5U	25.0	7.80	ug/Kg
Freon-113	50.0U	100	31.0	ug/Kg
Hexachlorobutadiene	10.0U	20.0	6.20	ug/Kg
Isopropylbenzene (Cumene)	12.5U	25.0	7.80	ug/Kg
Methylene chloride	50.0U	100	31.0	ug/Kg
Methyl-t-butyl ether	50.0U	100	31.0	ug/Kg
Naphthalene	12.5U	25.0	7.80	ug/Kg
n-Butylbenzene	12.5U	25.0	7.80	ug/Kg
n-Propylbenzene	12.5U	25.0	7.80	ug/Kg
o-Xylene	12.5U	25.0	7.80	ug/Kg
P & M -Xylene	25.0U	50.0	15.0	ug/Kg
sec-Butylbenzene	12.5U	25.0	7.80	ug/Kg
Styrene	12.5U	25.0	7.80	ug/Kg
tert-Butylbenzene	12.5U	25.0	7.80	ug/Kg
Tetrachloroethene	6.25U	12.5	3.90	ug/Kg
Toluene	12.5U	25.0	7.80	ug/Kg
trans-1,2-Dichloroethene	12.5U	25.0	7.80	ug/Kg
trans-1,3-Dichloropropene	6.25U	12.5	3.90	ug/Kg
Trichloroethene	5.00U	10.0	3.10	ug/Kg
Trichlorofluoromethane	25.0U	50.0	15.0	ug/Kg
Vinyl acetate	50.0U	100	31.0	ug/Kg
Vinyl chloride	5.00U	10.0	3.10	ug/Kg
Xylenes (total)	37.5U	75.0	22.8	ug/Kg
Surrogates				
1,2-Dichloroethane-D4 (surr)	98.6	71-136		%
4-Bromofluorobenzene (surr)	91.5	55-151		%
Toluene-d8 (surr)	114	85-116		%

Method Blank

Blank ID: MB for HBN 1771606 [VXX/31676]
Blank Lab ID: 1424397

Matrix: Soil/Solid (dry weight)

QC for Samples:
1179494001, 1179494002, 1179494003, 1179494004, 1179494005

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
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Batch Information

Analytical Batch: VMS17421
Analytical Method: SW8260C
Instrument: VQA 7890/5975 GC/MS
Analyst: NRO
Analytical Date/Time: 11/4/2017 10:26:00AM

Prep Batch: VXX31676
Prep Method: SW5035A
Prep Date/Time: 11/4/2017 6:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Print Date: 11/15/2017 4:24:33PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1179494 [VXX31676]

Blank Spike Lab ID: 1424398

Date Analyzed: 11/04/2017 10:43

Matrix: Soil/Solid (dry weight)

QC for Samples: 1179494001, 1179494002, 1179494003, 1179494004, 1179494005

Results by SW8260C

Blank Spike (ug/Kg)				
Parameter	Spike	Result	Rec (%)	CL
1,1,1,2-Tetrachloroethane	750	720	96	(78-125)
1,1,1-Trichloroethane	750	720	96	(73-130)
1,1,2,2-Tetrachloroethane	750	834	111	(70-124)
1,1,2-Trichloroethane	750	883	118	(78-121)
1,1-Dichloroethane	750	1070	143	(76-125)
1,1-Dichloroethene	750	909	121	(70-131)
1,1-Dichloropropene	750	751	100	(76-125)
1,2,3-Trichlorobenzene	750	692	92	(66-130)
1,2,3-Trichloropropane	750	859	115	(73-125)
1,2,4-Trichlorobenzene	750	783	104	(67-129)
1,2,4-Trimethylbenzene	750	874	117	(75-123)
1,2-Dibromo-3-chloropropane	750	793	106	(61-132)
1,2-Dibromoethane	750	787	105	(78-122)
1,2-Dichlorobenzene	750	773	103	(78-121)
1,2-Dichloroethane	750	739	99	(73-128)
1,2-Dichloropropane	750	761	101	(76-123)
1,3,5-Trimethylbenzene	750	913	122	(73-124)
1,3-Dichlorobenzene	750	757	101	(77-121)
1,3-Dichloropropane	750	780	104	(77-121)
1,4-Dichlorobenzene	750	810	108	(75-120)
2,2-Dichloropropane	750	879	117	(67-133)
2-Butanone (MEK)	2250	2000	89	(51-148)
2-Chlorotoluene	750	886	118	(75-122)
2-Hexanone	2250	2230	99	(53-145)
4-Chlorotoluene	750	818	109	(72-124)
4-Isopropyltoluene	750	892	119	(73-127)
4-Methyl-2-pentanone (MIBK)	2250	2170	96	(65-135)
Benzene	750	733	98	(77-121)
Bromobenzene	750	804	107	(78-121)
Bromochloromethane	750	881	118	(78-125)
Bromodichloromethane	750	767	102	(75-127)
Bromoform	750	763	102	(67-132)
Bromomethane	750	745	99	(53-143)
Carbon disulfide	1130	1380	123	(63-132)

Print Date: 11/15/2017 4:24:36PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1179494 [VXX31676]

Blank Spike Lab ID: 1424398

Date Analyzed: 11/04/2017 10:43

Matrix: Soil/Solid (dry weight)

QC for Samples: 1179494001, 1179494002, 1179494003, 1179494004, 1179494005

Results by SW8260C

Blank Spike (ug/Kg)				
Parameter	Spike	Result	Rec (%)	CL
Carbon tetrachloride	750	705	94	(70-135)
Chlorobenzene	750	738	98	(79-120)
Chloroethane	750	786	105	(59-139)
Chloroform	750	716	95	(78-123)
Chloromethane	750	727	97	(50-136)
cis-1,2-Dichloroethene	750	915	122	(77-123)
cis-1,3-Dichloropropene	750	964	129	(74-126)
Dibromochloromethane	750	818	109	(74-126)
Dibromomethane	750	795	106	(78-125)
Dichlorodifluoromethane	750	688	92	(29-149)
Ethylbenzene	750	758	101	(76-122)
Freon-113	1130	1350	120	(66-136)
Hexachlorobutadiene	750	789	105	(61-135)
Isopropylbenzene (Cumene)	750	828	110	(68-134)
Methylene chloride	750	1110	148	(70-128)
Methyl-t-butyl ether	1130	1590	142	(73-125)
Naphthalene	750	748	100	(62-129)
n-Butylbenzene	750	827	110	(70-128)
n-Propylbenzene	750	824	110	(73-125)
o-Xylene	750	773	103	(77-123)
P & M -Xylene	1500	1510	101	(77-124)
sec-Butylbenzene	750	884	118	(73-126)
Styrene	750	755	101	(76-124)
tert-Butylbenzene	750	805	107	(73-125)
Tetrachloroethene	750	809	108	(73-128)
Toluene	750	782	104	(77-121)
trans-1,2-Dichloroethene	750	1220	162	(74-125)
trans-1,3-Dichloropropene	750	772	103	(71-130)
Trichloroethene	750	833	111	(77-123)
Trichlorofluoromethane	750	756	101	(62-140)
Vinyl acetate	750	988	132	(50-151)
Vinyl chloride	750	748	100	(56-135)
Xylenes (total)	2250	2280	101	(78-124)

Print Date: 11/15/2017 4:24:36PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1179494 [VXX31676]

Blank Spike Lab ID: 1424398

Date Analyzed: 11/04/2017 10:43

Matrix: Soil/Solid (dry weight)

QC for Samples: 1179494001, 1179494002, 1179494003, 1179494004, 1179494005

Results by SW8260C

	Blank Spike (%)			
<u>Parameter</u>	<u>Spike</u>	<u>Result</u>	<u>Rec (%)</u>	<u>CL</u>
Surrogates				
1,2-Dichloroethane-D4 (surr)	750	86.1	86	(71-136)
4-Bromofluorobenzene (surr)	750	101	101	(55-151)
Toluene-d8 (surr)	750	102	102	(85-116)

Batch Information

Analytical Batch: VMS17421

Analytical Method: SW8260C

Instrument: VQA 7890/5975 GC/MS

Analyst: NRO

Prep Batch: VXX31676

Prep Method: SW5035A

Prep Date/Time: 11/04/2017 06:00

Spike Init Wt./Vol.: 750 ug/Kg Extract Vol: 25 mL

Dupe Init Wt./Vol.: Extract Vol:

Matrix Spike Summary

Original Sample ID: 1179494001
MS Sample ID: 1424399 MS
MSD Sample ID: 1424400 MSD

Analysis Date: 11/04/2017 14:03
Analysis Date: 11/04/2017 12:27
Analysis Date: 11/04/2017 12:43
Matrix: Soil/Solid (dry weight)

QC for Samples: 1179494001, 1179494002, 1179494003, 1179494004, 1179494005

Results by SW8260C

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	18.2U	685	717	105	685	656	96	78-125	8.90	(< 20)
1,1,1-Trichloroethane	22.8U	685	771	112	685	673	98	73-130	13.70	(< 20)
1,1,2,2-Tetrachloroethane	11.4U	685	667	97	685	759	111	70-124	12.80	(< 20)
1,1,2-Trichloroethane	9.10U	685	736	107	685	727	106	78-121	1.20	(< 20)
1,1-Dichloroethane	22.8U	685	1070	156 *	685	740	108	76-125	36.30	* (< 20)
1,1-Dichloroethene	22.8U	685	896	131	685	545	79	70-131	48.80	* (< 20)
1,1-Dichloropropene	22.8U	685	781	114	685	747	109	76-125	4.50	(< 20)
1,2,3-Trichlorobenzene	45.5U	685	500	73	685	654	95	66-130	26.80	* (< 20)
1,2,3-Trichloropropane	22.8U	685	603	88	685	683	100	73-125	12.40	(< 20)
1,2,4-Trichlorobenzene	22.8U	685	566	83	685	685	100	67-129	19.10	(< 20)
1,2,4-Trimethylbenzene	45.5U	685	595	87	685	690	101	75-123	14.70	(< 20)
1,2-Dibromo-3-chloropropane	91.0U	685	793	116	685	728	106	61-132	8.50	(< 20)
1,2-Dibromoethane	9.10U	685	797	116	685	715	104	78-122	10.90	(< 20)
1,2-Dichlorobenzene	22.8U	685	678	99	685	669	98	78-121	1.40	(< 20)
1,2-Dichloroethane	9.10U	685	617	90	685	568	83	73-128	8.30	(< 20)
1,2-Dichloropropane	9.10U	685	763	111	685	767	112	76-123	0.45	(< 20)
1,3,5-Trimethylbenzene	22.8U	685	616	90	685	693	101	73-124	11.80	(< 20)
1,3-Dichlorobenzene	22.8U	685	618	90	685	686	100	77-121	10.50	(< 20)
1,3-Dichloropropane	9.10U	685	871	127 *	685	709	103	77-121	20.50	* (< 20)
1,4-Dichlorobenzene	22.8U	685	619	90	685	685	100	75-120	10.20	(< 20)
2,2-Dichloropropane	22.8U	685	789	115	685	703	102	67-133	11.80	(< 20)
2-Butanone (MEK)	228U	2059	1968	95	2059	2391	116	51-148	19.50	(< 20)
2-Chlorotoluene	22.8U	685	712	104	685	723	105	75-122	1.60	(< 20)
2-Hexanone	91.0U	2059	1968	96	2059	2460	119	53-145	22.20	* (< 20)
4-Chlorotoluene	22.8U	685	629	92	685	717	105	72-124	13.10	(< 20)
4-Isopropyltoluene	22.8U	685	635	93	685	712	104	73-127	11.30	(< 20)
4-Methyl-2-pentanone (MIBK)	228U	2059	2140	104	2059	2300	112	65-135	7.30	(< 20)
Benzene	11.4U	685	732	107	685	736	107	77-121	0.59	(< 20)
Bromobenzene	22.8U	685	738	108	685	690	101	78-121	6.80	(< 20)
Bromochloromethane	22.8U	685	791	115	685	707	103	78-125	11.20	(< 20)
Bromodichloromethane	22.8U	685	749	109	685	673	98	75-127	10.80	(< 20)
Bromoform	22.8U	685	725	106	685	680	99	67-132	6.50	(< 20)
Bromomethane	182U	685	744	108	685	467	68	53-143	45.80	* (< 20)
Carbon disulfide	91.0U	1029	1384	135 *	1029	849	83	63-132	48.20	* (< 20)
Carbon tetrachloride	11.4U	685	794	116	685	653	95	70-135	19.50	(< 20)
Chlorobenzene	22.8U	685	684	100	685	682	99	79-120	0.33	(< 20)
Chloroethane	182U	685	772	113	685	487	71	59-139	45.20	* (< 20)

Print Date: 11/15/2017 4:24:38PM

Matrix Spike Summary

Original Sample ID: 1179494001
MS Sample ID: 1424399 MS
MSD Sample ID: 1424400 MSD

Analysis Date: 11/04/2017 14:03
Analysis Date: 11/04/2017 12:27
Analysis Date: 11/04/2017 12:43
Matrix: Soil/Solid (dry weight)

QC for Samples: 1179494001, 1179494002, 1179494003, 1179494004, 1179494005

Results by SW8260C

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Chloroform	22.8U	685	747	109	685	677	99	78-123	9.70	(< 20)
Chloromethane	22.8U	685	770	112	685	507	74	50-136	41.10	* (< 20)
cis-1,2-Dichloroethene	22.8U	685	795	116	685	732	107	77-123	8.30	(< 20)
cis-1,3-Dichloropropene	11.4U	685	846	123	685	769	112	74-126	9.40	(< 20)
Dibromochloromethane	22.8U	685	756	110	685	692	101	74-126	8.90	(< 20)
Dibromomethane	22.8U	685	747	109	685	638	93	78-125	15.70	(< 20)
Dichlorodifluoromethane	45.5U	685	741	108	685	454	66	29-149	48.10	* (< 20)
Ethylbenzene	22.8U	685	715	104	685	721	105	76-122	0.79	(< 20)
Freon-113	91.0U	1029	1339	130	1029	810	79	66-136	49.00	* (< 20)
Hexachlorobutadiene	18.2U	685	656	96	685	703	102	61-135	7.00	(< 20)
Isopropylbenzene (Cumene)	22.8U	685	722	105	685	713	104	68-134	1.30	(< 20)
Methylene chloride	91.0U	685	1088	159 *	685	676	99	70-128	46.70	* (< 20)
Methyl-t-butyl ether	91.0U	1029	1590	155 *	1029	1014	99	73-125	44.40	* (< 20)
Naphthalene	22.8U	685	533	78	685	680	99	62-129	24.20	* (< 20)
n-Butylbenzene	22.8U	685	580	85	685	670	98	70-128	14.40	(< 20)
n-Propylbenzene	22.8U	685	703	102	685	752	110	73-125	6.80	(< 20)
o-Xylene	22.8U	685	717	105	685	703	102	77-123	2.10	(< 20)
P & M -Xylene	45.5U	1373	1453	106	1373	1407	103	77-124	2.80	(< 20)
sec-Butylbenzene	22.8U	685	650	95	685	748	109	73-126	14.20	(< 20)
Styrene	22.8U	685	700	102	685	691	101	76-124	1.40	(< 20)
tert-Butylbenzene	22.8U	685	644	94	685	728	106	73-125	12.20	(< 20)
Tetrachloroethene	11.4U	685	736	107	685	669	98	73-128	9.40	(< 20)
Toluene	22.8U	685	721	105	685	721	105	77-121	0.06	(< 20)
trans-1,2-Dichloroethene	22.8U	685	1224	178 *	685	761	111	74-125	46.30	* (< 20)
trans-1,3-Dichloropropene	11.4U	685	722	105	685	683	100	71-130	5.50	(< 20)
Trichloroethene	9.10U	685	796	116	685	712	104	77-123	11.30	(< 20)
Trichlorofluoromethane	45.5U	685	931	136	685	451	66	62-140	69.50	* (< 20)
Vinyl acetate	91.0U	685	1007	147	685	757	110	50-151	28.30	* (< 20)
Vinyl chloride	9.10U	685	729	106	685	476	69	56-135	42.00	* (< 20)
Xylenes (total)	68.3U	2059	2174	105	2059	2117	103	78-124	2.60	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		685	641	93	685	598	87	71-136	6.90	
4-Bromofluorobenzene (surr)		779	975	125	779	941	121	55-151	3.70	
Toluene-d8 (surr)		685	731	107	685	693	101	85-116	5.30	

Print Date: 11/15/2017 4:24:38PM

Matrix Spike Summary

Original Sample ID: 1179494001
MS Sample ID: 1424399 MS
MSD Sample ID: 1424400 MSD

Analysis Date:
Analysis Date: 11/04/2017 12:27
Analysis Date: 11/04/2017 12:43
Matrix: Soil/Solid (dry weight)

QC for Samples: 1179494001, 1179494002, 1179494003, 1179494004, 1179494005

Results by SW8260C

Parameter	Sample	Matrix Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			

Batch Information

Analytical Batch: VMS17421
Analytical Method: SW8260C
Instrument: VQA 7890/5975 GC/MS
Analyst: NRO
Analytical Date/Time: 11/4/2017 12:27:00PM

Prep Batch: VXX31676
Prep Method: Vol. Extraction SW8260 Field Extracted L
Prep Date/Time: 11/4/2017 6:00:00AM
Prep Initial Wt./Vol.: 91.75g
Prep Extract Vol: 36.52mL

Print Date: 11/15/2017 4:24:38PM

Method Blank

Blank ID: MB for HBN 1772141 [VXX/31714]
Blank Lab ID: 1425632

Matrix: Soil/Solid (dry weight)

QC for Samples:
1179494005

Results by SW8260C

Parameter	Results	LOQ/CL	DL	Units
Toluene	12.5U	25.0	7.80	ug/Kg
Sf uor ateg				
1,2-Dichloroethane-D4 (surr)	104	71-136		%
4-Bromofluorobenzene (surr)	95.9	55-151		%
Toluene-d8 (surr)	97.1	85-116		%

Batch Information

Analytical Batch: VMS17443
Analytical Method: SW8260C
Instrument: VQA 7890/5975 GC/MS
Analyst: NRO
Analytical Date/Time: 11/10/2017 10:58:00AM

Prep Batch: VXX31714
Prep Method: SW5035A
Prep Date/Time: 11/10/2017 6:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Print Date: 11/15/2017 4:24:42PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1179494 [MX317148
Blank Spike La] ID: 14b2633
Date Analyzed: 11/10/b017 11:12

x atri(: Soil/Solid wdry g eih) tP

, C for Sac ples: 1179494002

Results] y SW8260C

Blank Spike wh/QhP

marac eter	Spike	Result	Re%W P	CL
5oluene	720	6. 7	9b	w77-1b1 P

Surrt f aæg

15-Di% loroet) ane-D4 v&surP	720	96W	96	w71-136 P
4-Broc ofluoro] enzene v&surP	720	94W	94	w22-121 P
5oluene-d. v&surP	720	10b	10b	w. 2-116 P

Basic Int rmaät n

Analyti%al Bat%: VMS1744Q
Analyti%al x et) od: SW8260C
Instruc ent: VA9 78/ 053 7GNC5MS
Analyst: ROX

mrep Bat%: V33Q1714
mrep x et) od: SW8260C
mrep Date/5ic e: 11/10/2017 06:00
Spike Init V tWbIW 720 uh/Qh E(tra% Mol: b2 c L
Dupe Init V tWbIW E(tra% Mol:

Print Date: 11/12/b017 4:b4:44mx

Matrix Spike Summary

Original Sample ID: 1425685
MS Sample ID: 1425634 MS
MSD Sample ID: 1425635 MSD

QC for Samples: 1179494005

Analysis Date: 11/10/2017 14:57
Analysis Date: 11/10/2017 12:57
Analysis Date: 11/10/2017 13:14
Matrix: Soil/Solid (dry weight)

Results by SW8260C

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Toluene	22.4J	727	685	91	727	699	93	77-121	2.00	(< 20)
Surrf oateg										
1,2-Dichloroethane-D4 (surr)		727	707	97	727	710	98	71-136	0.34	
4-Bromofluorobenzene (surr)		849	778	92	849	797	94	55-151	2.40	
Toluene-d8 (surr)		727	727	100	727	724	100	85-116	0.47	

satBc H rf rmatif I

Analytical Batch: VMS17443
Analytical Method: SW8260C
Instrument: VQA 7890/5975 GC/MS
Analyst: NRO
Analytical Date/Time: 11/10/2017 12:57:00PM

Prep Batch: VXX31714
Prep Method: Vol. Extraction SW8260 Field Extracted L
Prep Date/Time: 11/10/2017 6:00:00AM
Prep Initial Wt./Vol.: 73.58g
Prep Extract Vol: 35.51mL

Print Date: 11/15/2017 4:24:47PM

Method Blank

Blank ID: MB for HBN 1771435 [XXX/38796]
Blank Lab ID: 1423908

Matrix: Soil/Solid (dry weight)

QC for Samples:
1179494001, 1179494002, 1179494003, 1179494004

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	10.0U	20.0	6.20	mg/Kg
Surrogates				
5a Androstane (surr)	78.1	60-120		%

Batch Information

Analytical Batch: XFC13959
Analytical Method: AK102
Instrument: Agilent 7890B R
Analyst: JMG
Analytical Date/Time: 11/8/2017 1:22:00AM

Prep Batch: XXX38796
Prep Method: SW3550C
Prep Date/Time: 11/2/2017 1:10:20PM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 1 mL

Print Date: 11/15/2017 4:24:48PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1179494 [XXX38796]
 Blank Spike Lab ID: 1423909
 Date Analyzed: 11/08/2017 01:32

Spike Duplicate ID: LCSD for HBN 1179494
 [XXX38796]
 Spike Duplicate Lab ID: 1423910
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1179494001, 1179494002, 1179494003, 1179494004

Results by AK102

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	167	164	99	167	139	84	(75-125)	16.30	(< 20)
Surrogates									
5a Androstane (surr)	3.33	95.8	96	3.33	83	83	(60-120)	14.30	

Batch Information

Analytical Batch: **XFC13959**
 Analytical Method: **AK102**
 Instrument: **Agilent 7890B R**
 Analyst: **JMG**

Prep Batch: **XXX38796**
 Prep Method: **SW3550C**
 Prep Date/Time: **11/02/2017 13:10**
 Spike Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL

Print Date: 11/15/2017 4:24:50PM

Method Blank

Blank ID: MB for HBN 1771435 [XXX/38796]
Blank Lab ID: 1423908

Matrix: Soil/Solid (dry weight)

QC for Samples:
1179494001, 1179494002, 1179494003, 1179494004

Results by AK103

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Residual Range Organics	10.0U	20.0	6.20	mg/Kg
Surrogates				
nA riacontaneAt62 (surr)	84	60A20		%

Batch Information

Fanalytical Batch: XJC13959
Fanalytical Method: FK103
Instrument: Fgilent 7890B R
Fnalyst: GMT
Fanalytical Date/- ime: 11/8/2017 1:22:00FM

Prep Batch: XXX38796
Prep Method: SW3550C
Prep Date/- ime: 11/2/2017 1:10:20PM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 1 mL

Print Date: 11/15/2017 4:24:52PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1179494 [XXX38796]
 Blank Spike Lab ID: 1423909
 Date Analyzed: 11/08/2017 01:32

Spike Duplicate ID: LCSD for HBN 1179494
 [XXX38796]
 Spike Duplicate Lab ID: 1423910
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1179494001, 1179494002, 1179494003, 1179494004

Results by AK102

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Residual Range Organics	167	167	100	167	139	83	(605120)	18-30	(- 20)
Surrogates									
n5 riacontane5d62 (surr)	3-33	96-9	97	3-33	86-4	87	(605120)	11-40	

Batch Information

Analytical Batch: **XFC12393**
 Analytical Method: **AK102**
 Instrument: **Agilent 5730B 8**
 Analyst: **RJ M**

Prep Batch: **XXX2753G**
 Prep Method: **S6 2990C**
 Prep Date/. ime: **11/11/2017 12:10**
 Spike Init Wt/Vol: 167 mg/Kg Extract Vol: 1 mL
 Dupe Init Wt/Vol: 167 mg/Kg Extract Vol: 1 mL

Print Date: 11/11/2017 4:24:14PM



SGS North America Inc.
CHAIN OF CUSTODY RECORD

1179494



Locations Nationwide
Alaska
Maryland
New Jersey
New York
North Carolina
Indiana
West Virginia
Kentucky
www.us.sgs.com

Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.										Page 1 of 1	
Section 1				Section 3				Preservative			
CLIENT: NORTECH				PHONE NO: 907 586 6813							
CONTACT: Ron Pratt				PROJECT/ PWSID/ PERMIT#:							
PROJECT NAME: Repository				E-MAIL:							
REPORTS TO:				NORTECH rpratt@nortechengr.com							
INVOICE TO:				QUOTE#:							
NORTECH				P.O. #: 17-1048							
RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	#	Type C = COMP G = GRAB MI = Multi-Incre-mental Soils	DR0 AK 102	R00 AK 103	VOCs 8260	Total Lead	REMARKS/ LOC ID
①A-D	PLR-S1	10/30/17	1545	Soil	4	G	X	X	X	X	note: PLR-S2 sample for VOC has 2x MeOH added to sample jar
②A-D	PLR-S2	10/30/17	1525	Soil	4	G	X	X	X	X	
③A-D	PLR-S3	10/30/17	1450	Soil	4	G	X	X	X	X	
④A-D	PLR-S4	10/30/17	1620	Soil	4	G	X	X	X	X	
⑤A	Trip Blank				1				X		
Section 2											
Section 4											
Section 5											

Relinquished By: (1)		Date	Time	Received By:
		11/1/17	0800	
Relinquished By: (2)		Date	Time	Received By:
Relinquished By: (3)		Date	Time	Received By:
Relinquished By: (4)		Date	Time	Received For Laboratory By:
		11/1/17	1553	

Temp Blank °C: 1.4 D20		Chain of Custody Seal: (Circle)	
or Ambient []		INTACT	BROKEN
(See attached Sample Receipt Form)		(See attached Sample Receipt Form)	

Requested Turnaround Time and/or Special Instructions:

Section 4 DOD Project? Yes (No) Data Deliverable Requirements:

Cooler ID:

Shipper's Name and Address Nortech 2400 College Rd Fairbanks, AK 99709 USA Tel: 907-452-5688		Shipper's Account Number 27442126076 Customer's ID Number 10588		Not Negotiable Air Waybill Issued By <i>Alaska.</i> AIR CARGO P.O. BOX 68900 SEATTLE, WA 98168 800-225-2752 ALASKACARGO.COM				
Consignee's Name and Address SGS North America Inc 200 W Potter Drive Anchorage, AK 99518 USA Tel: 9075622343		Consignee's Account Number 27400215947		Also notify N				
Issuing Carrier's Agent and City		Accounting Information Nortech 2400 College Rd Fairbanks, AK 99709 USA SRN/17-1068 GoldStreak		1179494 				
Agent's IATA Code		Account No.						
Airport of Departure (Addr. of First Carrier) and Requested Routing Juneau								
To	By First Carrier	To / By	To / By	Currency	WT/VAL	Other	Declared Value For Carriage	Declared Value For Customs
ANC	Alaska Airlines			USD PX	X	X	NVD	NCV
Airport of Destination Anchorage		Flight/Date AS 061/01		Amount of Insurance XXX				
Handling Information								
SCI								
No of Pieces	Gross Weight	kg	lb	Commodity Item No.	Chargeable Weight	Rate / Charge	Total	Nature and Quantity of Goods (Incl. Dimensions or Volume)
1	27.0	L			27.0		AS AGREED	SOIL SAMPLES Dims: 24 x 13 x14 x 1 GSX PER
1	27.0						AS AGREED	Volume: 2.528
Prepaid		Weight Charge		Collect		Other Charges		
AS AGREED						XBC 0.00		
Valuation Charge								
Tax								
Total Other Charges Due Agent						Shipper certifies that the particulars on the face hereof are correct and that insofar as any part of the consignment contains dangerous goods, such part is properly described by name and is in proper condition for carriage by air according to the applicable Dangerous Goods Regulations. I consent to the inspection of this cargo.		
Total Other Charges Due Carrier						For: Nortech Signature of Shipper or his Agent <i>Alison M. Chel</i>		
						☒ THIS SHIPMENT DOES NOT CONTAIN DANGEROUS GOODS ☐ THIS SHIPMENT DOES CONTAIN DANGEROUS GOODS		
Total Prepaid		Total Collect				01 Nov 2017 08:54 Juneau Alaska Airlines		
AS AGREED						Executed On (Date) at (Place) Signature of Issuing Carrier or its Agent		
						027-1800 7463		

Alert Expeditors Inc.

#379100

Citywide Delivery • 440-3351
8421 Flamingo Drive • Anchorage, Alaska 99502

Date 11/1/17

From Nortech

To SES

Collect ☐	Prepay ☐ Account ☐	Advance Charges ☐
----------------------------------	---	--

Job #	PO#
-------	-----

18007463

1179494



Shipped Signature _____

Received By: _____

Total Charge

Page 53 of 55

1553



e-Sample Receipt Form

SGS Workorder #:

1179494



1 1 7 9 4 9 4

Review Criteria		Condition (Yes, No, N/A)	Exceptions Noted below	
Chain of Custody / Temperature Requirements			N/A	Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location		Yes	1 Front	
COC accompanied samples?		Yes		
N/A		**Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID:	1	@ 1.4 °C Therm. ID: D20
		Cooler ID:		@ °C Therm. ID:
		Cooler ID:		@ °C Therm. ID:
		Cooler ID:		@ °C Therm. ID:
		Cooler ID:		@ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?		N/A		
If <0°C, were sample containers ice free?		N/A		
If samples received <u>without</u> a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled".				
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.				
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.		
Were samples received within holding time?		Yes		
Do samples match COC ** (i.e., sample IDs, dates/times collected)?		Yes		
**Note: If times differ <1hr, record details & login per COC.				
Were analyses requested unambiguous? (i.e., method is specified for analyses with >1 option for analysis)		Yes		
N/A		***Exemption permitted for metals (e.g. 200.8/6020A).		
Were proper containers (type/mass/volume/preservative***) used?		Yes		
Volatile / LL-Hg Requirements				
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?		Yes	"PLR-S2" has 2x MeOH for VOC analysis.	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?		N/A		
Were all soil VOAs field extracted with MeOH+BFB?		Yes		
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.				
Additional notes (if applicable):				

Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1179494001-A	No Preservative Required	OK			
1179494001-B	No Preservative Required	OK			
1179494001-C	No Preservative Required	OK			
1179494001-D	Methanol field pres. 4 C	OK			
1179494002-A	No Preservative Required	OK			
1179494002-B	No Preservative Required	OK			
1179494002-C	No Preservative Required	OK			
1179494002-D	2x Methanol field pres. 4 C	OK			
1179494003-A	No Preservative Required	OK			
1179494003-B	No Preservative Required	OK			
1179494003-C	No Preservative Required	OK			
1179494003-D	Methanol field pres. 4 C	OK			
1179494004-A	No Preservative Required	OK			
1179494004-B	No Preservative Required	OK			
1179494004-C	No Preservative Required	OK			
1179494004-D	Methanol field pres. 4 C	OK			
1179494005-A	Methanol field pres. 4 C	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

Laboratory Data Review Checklist

Completed by:	Ronald Pratt		
Title:	Senior Environmental Scientist	Date:	Nov 2, 2017
CS Report Name:	Wrangell Monofill Repository	Report Date:	Oct 20, 2017
Consultant Firm:	NORTECH		
Laboratory Name:	SGS	Laboratory Report Number:	1177018
ADEC File Number:		ADEC RecKey Number:	

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

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

--

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

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

all samples analyzed at SGS

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:

COC error requested lead analysis by 6020, not 6010. Lab analyzed using 6010
--

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt ($4^{\circ} \pm 2^{\circ} \text{C}$)?

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

2 coolers submitted, temperatures were 1.1 and 1.2 degrees upon arrival at lab
--

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 acceptance range, insufficient or missing samples, etc.?

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

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

Comments:

Data quality/usability not affected

4. Case Narrative

a. Present and understandable?

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

b. Discrepancies, errors or QC failures identified by the lab?

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

a total of 10 QC failures identified related to VOC analysis, 5 related to parent samples and surrogate recoverys that did not meet QC criteria. \$ related to MS/MSD with recoveries for one or more analyte outside of QC criteria. One surrogate recovery for DRO analysis failed QC criteria. DRO and RRO re-analysis of two samples using silica gel cleanup was run outside of hold time.

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

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

Comments:

Data quality/usability not affected

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

b. All applicable holding times met?

☐ Yes ☒ No ☐ NA (Please explain)

Comments:

2 samples were re-analyzed for DRO/RRO using silica-gel cleanup method outside of hold time

c. All soils reported on a dry weight basis?

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

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

Comments:

Data quality/usability not affected

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

ii. All method blank results less than PQL?

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

iii. If above PQL, what samples are affected?

Comments:

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

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

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

Comments:

Data quality/usability not affected

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

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

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

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

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

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

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

LCSD for HBN: LCS recoveries for several analytes during VOC analysis did not meet QC criteria. The analytes were not detected above LOQ in any associated samples.

iv. Precision - All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/DMSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

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

MS recovery for two VOC analytes did not meet QC criteria. The analytes were not detected in parent sample. MSD RPDs for several analytes were outside QC criteria. Analytes were not detected in parent samples.
v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

MS/MSD % recovery and/or RPDs outside QC criteria apply to all soil matrix samples on the work order.

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

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

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

Comments:

Data quality/usability not affected

c. Surrogates - Organics Only

i. Are surrogate recoveries reported for organic analyses - field, QC and laboratory samples?

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

ii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

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

surrogate recovery for one primary DRO sample and for five VOC samples exceeded QC criteria.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

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

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

Comments:

Data quality/usability 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:

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

Comments:

Data quality/usability not affected

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

ii. Submitted blind to lab?

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

iii. Precision - All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

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

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

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

☐ Yes ☐ No ☐ NA (Please explain)

Comments:

Data quality/usability not affected

f. Decontamination or Equipment Blank (if applicable)

☐ Yes ☒ No ☐ NA (Please explain)

Comments:

i. All results less than PQL?

☐ Yes ☐ No ☒ NA (Please explain)

Comments:

none submitted

ii. If above PQL, what samples are affected?

Comments:

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

Comments:

Data quality/usability not affected

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

a. Defined and appropriate?

☐ Yes ☐ No ☐ NA (Please explain)

Comments:

Reset Form

Laboratory Data Review Checklist

Completed by:	Ronald Pratt		
Title:	Senior Environmental Scientist	Date:	Nov 16, 2017
CS Report Name:	Wrangell Monofill Repository	Report Date:	Nov 16, 2017
Consultant Firm:	NORTECH		
Laboratory Name:	SGS	Laboratory Report Number:	1179494
ADEC File Number:		ADEC RecKey Number:	

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

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

--

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

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

all samples analyzed at SGS

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 ($4^{\circ} \pm 2^{\circ} \text{C}$)?

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

--

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

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

c. Sample condition documented - broken, leaking (Methanol), zero headspace (VOC vials)?

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

d. If there were any discrepancies, were they documented? - For example, incorrect sample containers/preservation, sample temperature outside of acceptance range, insufficient or missing samples, etc.?

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

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

Comments:

Data quality/usability not affected

4. Case Narrative

a. Present and understandable?

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

b. Discrepancies, errors or QC failures identified by the lab?

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

c. Were all corrective actions documented?

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

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

Comments:

Data quality/usability not affected

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

b. All applicable holding times met?

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

c. All soils reported on a dry weight basis?

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

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

Comments:

Data quality/usability not affected

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

ii. All method blank results less than PQL?

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

iii. If above PQL, what samples are affected?

Comments:

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

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

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

Comments:

Data quality/usability not affected

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

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

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

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

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

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

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

LCS for HBN: LCS recoveries for several analytes during VOC analysis did not meet QC criteria. The analytes were not detected above LOQ in any associated samples.

iv. Precision - All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/DMSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

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

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

Comments:

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

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

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

Comments:

Data quality/usability not affected

c. Surrogates - Organics Only

i. Are surrogate recoveries reported for organic analyses - field, QC and laboratory samples?

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

ii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

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

surrogate recovery for one primary sample exceeded QC criteria due to matrix interference with the VOC analysis.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

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

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

Comments:

Data quality/usability 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:

all samples and trip blank submitted in one cooler

iii. All results less than PQL?

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

iv. If above PQL, what samples are affected?

Comments:

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

Comments:

Data quality/usability not affected

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

ii. Submitted blind to lab?

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

iii. Precision - All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

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

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

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

☐ Yes ☐ No ☐ NA (Please explain)

Comments:

Data quality/usability not affected

f. Decontamination or Equipment Blank (if applicable)

☐ Yes ☒ No ☐ NA (Please explain)

Comments:

i. All results less than PQL?

☐ Yes ☐ No ☒ NA (Please explain)

Comments:

none submitted

ii. If above PQL, what samples are affected?

Comments:

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

Comments:

Data quality/usability not affected

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

a. Defined and appropriate?

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

MS and MSD RPDs for several VOC analytes did not meet QC criteria. The analytes were not detected in the parent sample.

Reset Form



Appendix 5

ADEC Cleanup Level Tables

TABLE B1. METHOD TWO – SOIL CLEANUP LEVELS TABLE (See notes for additional requirements)						
Hazardous Substance	CAS Number ¹	health effect that drives risk: carcinogen (ca); noncarcinogen (nc); mutagen (m)	Arctic Zone ²	Under 40 Inch Zone ³	Over 40 Inch Zone ⁴	Migration to Groundwater ⁶ (mg/kg)
			Human Health ⁵ (mg/kg)	Human Health ⁵ (mg/kg)	Human Health ⁵ (mg/kg)	
Acenaphthene ⁷	83-32-9	nc	6300	4600	3800	37
Acenaphthylene ^{7,8}	208-96-8	nc	3100	2300	1900	18
Acetone	67-64-1	nc	1.0 x 10 ⁵ ; ⁹	81000	65000	38
Aldrin	309-00-2	ca	0.67	0.49	0.40	0.0099
Ammonium Perchlorate	7790-98-9	nc	96	71	58	0.037
Anthracene ⁷	120-12-7	nc	31000	23000	19000	390
Antimony (metallic)	7440-36-0	nc	55	41	33	4.6
Arsenic, Inorganic ¹¹	7440-38-2	ca	12	8.8	7.2	0.20
Barium	7440-39-3	nc	25000	20000	17000	2100
Benz[a]anthracene ⁷	56-55-3	m	2.7	2.0	1.7	0.28
Benzaldehyde	100-52-7	nc	770 ¹⁰	770 ¹⁰	770 ¹⁰	0.52
Benzene ⁷	71-43-2	ca	16	11	8.1	0.022
Benzo[a]pyrene ⁷	50-32-8	m	0.28	0.20	0.17	0.27
Benzo[b]fluoranthene ⁷	205-99-2	m	2.8	2.0	1.7	2.7
Benzo[g,h,i]perylene ^{7,8}	191-24-2	nc	3100	2300	1900	15000
Benzo[k]fluoranthene ⁷	207-08-9	m	28	20	17	27
Benzoic Acid	65-85-0	nc	1.0 x 10 ⁵ ; ⁹	1.0 x 10 ⁵ ; ⁹	1.0 x 10 ⁵ ; ⁹	200
Benzyl Alcohol	100-51-6	nc	11000	8200	6700	5.7
Beryllium and compounds	7440-41-7	nc	270	200	170	260
Bis(2-chloroethyl)ether	111-44-4	ca	4.0	2.8	2.1	0.00042
Bis(2-ethylhexyl)phthalate	117-81-7	ca	680	500	410	88
Bromobenzene	108-86-1	nc	160 ¹⁰	160 ¹⁰	160 ¹⁰	0.36
Bromodichloromethane	75-27-4	ca	5.3	3.6	2.6	0.0043
Bromoform	75-25-2	ca	340	240	170	0.10
Bromomethane	74-83-9	nc	15	10	7.4	0.024
Butadiene, 1,3-	106-99-0	ca	1.2	0.86	0.64	0.0012

TABLE B1. METHOD TWO – SOIL CLEANUP LEVELS TABLE (See notes for additional requirements)						
Hazardous Substance	CAS Number ¹	health effect that drives risk: carcinogen (ca); noncarcinogen (nc); mutagen (m)	Arctic Zone ²	Under 40 Inch Zone ³	Over 40 Inch Zone ⁴	Migration to Groundwater ⁶ (mg/kg)
			Human Health ⁵ (mg/kg)	Human Health ⁵ (mg/kg)	Human Health ⁵ (mg/kg)	
Butanol, N-	71-36-3	nc	6500 ¹⁰	6500 ¹⁰	6500 ¹⁰	5.3
Butyl Benzyl Phthalate	85-68-7	ca	5000	3700	3000	16
Butylbenzene, n-	104-51-8	nc	20 ¹⁰	20 ¹⁰	20 ¹⁰	23
Butylbenzene, sec-	135-98-8	nc	28 ¹⁰	28 ¹⁰	28 ¹⁰	42
Butylbenzene, tert-	98-06-6	nc	35 ¹⁰	35 ¹⁰	35 ¹⁰	11
Cadmium (Diet)	7440-43-9	nc	120	92	76	9.1
Carbon Disulfide	75-15-0	nc	500 ¹⁰	500 ¹⁰	500 ¹⁰	2.9
Carbon Tetrachloride	56-23-5	ca	13	9.1	6.6	0.021
Chlordane	12789-03-6	ca	29	22	17	0.18
Chlordecone (Kepone)	143-50-0	ca	0.95	0.70	0.58	0.0083
Chloroaniline, p-	106-47-8	ca	47	35	29	0.015
Chlorobenzene	108-90-7	nc	180 ¹⁰	180 ¹⁰	180 ¹⁰	0.46
Chloroform	67-66-3	ca	5.8	4.0	2.9	0.0071
Chloromethane	74-87-3	nc	250	170	120	0.61
Chloronaphthalene, Beta-	91-58-7	nc	8400	6200	5100	26
Chlorophenol, 2-	95-57-8	nc	680	510	410	0.71
Chromium(III), Insoluble Salts ¹²	16065-83-1	nc	1.0 x 10 ⁵ ; ⁹	1.0 x 10 ⁵ ; ⁹	1.0 x 10 ⁵ ; ⁹	1.0 x 10 ⁵ ; ⁹
Chromium(VI) ¹²	18540-29-9	m	4.9	3.9	3.2	0.089
Chrysene ⁷	218-01-9	m	280	200	170	82
Copper	7440-50-8	nc	5500	4100	3300	370
Cresol, m-	108-39-4	nc	5500	4100	3400	6.1
Cresol, o-	95-48-7	nc	5500	4100	3400	6.2
Cresol, p-	106-44-5	nc	11000	8200	6700	12
Cumene	98-82-8	nc	54 ¹⁰	54 ¹⁰	54 ¹⁰	5.6
Cyanide (CN-) ¹³	57-12-5	nc	48	34	26	0.20
Cyclohexane	110-82-7	nc	77 ¹⁰	77 ¹⁰	77 ¹⁰	150
DDD	72-54-8	ca	40	29	24	0.49
DDE, p,p'-	72-55-9	ca	34	25	20	0.72

TABLE B1. METHOD TWO – SOIL CLEANUP LEVELS TABLE (See notes for additional requirements)

Hazardous Substance	CAS Number ¹	health effect that drives risk: carcinogen (ca); noncarcinogen (nc); mutagen (m)	Arctic Zone ²	Under 40 Inch Zone ³	Over 40 Inch Zone ⁴	Migration to Groundwater ⁶ (mg/kg)
			Human Health ⁵ (mg/kg)	Human Health ⁵ (mg/kg)	Human Health ⁵ (mg/kg)	
DDT	50-29-3	ca	33	24	20	5.1
Dibenz[a,h]anthracene ⁷	53-70-3	m	0.28	0.20	0.17	0.87
Dibenzofuran	132-64-9	nc	130	95	77	0.97
Dibromochloromethane	124-48-1	ca	140	110	88	0.0027
Dibromoethane, 1,2- (Ethylene Dibromide)	106-93-4	ca	0.62	0.42	0.31	0.00024
Dibromomethane (Methylene Bromide)	74-95-3	nc	45	31	22	0.025
Dibutyl Phthalate	84-74-2	nc	11000	8200	6700	16
Dichlorobenzene, 1,2-	95-50-1	nc	78 ¹⁰	78 ¹⁰	78 ¹⁰	2.4
Dichlorobenzene, 1,3- ⁸	541-73-1	nc	62 ¹⁰	62 ¹⁰	62 ¹⁰	2.3
Dichlorobenzene, 1,4-	106-46-7	ca	31	21	15	0.037
Dichlorobenzidine, 3,3'-	91-94-1	ca	21	16	13	0.056
Dichlorodifluoromethane	75-71-8	nc	220	150	110	3.9
Dichloroethane, 1,1-	75-34-3	ca	67	46	33	0.092
Dichloroethane, 1,2-	107-06-2	ca	7.9	5.5	3.9	0.0055
Dichloroethylene, 1,1-	75-35-4	nc	480	330	240	1.2
Dichloroethylene, 1,2-cis-	156-59-2	nc	270	200	170	0.12
Dichloroethylene, 1,2-trans-	156-60-5	nc	960 ¹⁰	960 ¹⁰	960 ¹⁰	1.3
Dichlorophenol, 2,4-	120-83-2	nc	330	250	200	0.21
Dichlorophenoxy Acetic Acid, 2,4-	94-75-7	nc	1200	910	740	0.53
Dichloropropane, 1,2-	78-87-5	ca	16	11	8.0	0.016
Dichloropropene, 1,3-	542-75-6	ca	29	21	15	0.018
Dieldrin	60-57-1	ca	0.59	0.44	0.36	0.0047
Diethyl Phthalate	84-66-2	nc	88000	66000	54000	60
Dimethylphenol, 2,4-	105-67-9	nc	2200	1600	1300	3.2
Dimethylphthalate ⁸	131-11-3	nc	88000	66000	54000	48
Dinitrobenzene, 1,2-	528-29-0	nc	11	8.2	6.7	0.014
Dinitrobenzene, 1,3-	99-65-0	nc	11	8.2	6.7	0.014
Dinitrobenzene, 1,4-	100-25-4	nc	11	8.2	6.7	0.014

TABLE B1. METHOD TWO – SOIL CLEANUP LEVELS TABLE (See notes for additional requirements)						
Hazardous Substance	CAS Number ¹	health effect that drives risk: carcinogen (ca); noncarcinogen (nc); mutagen (m)	Arctic Zone ²	Under 40 Inch Zone ³	Over 40 Inch Zone ⁴	Migration to Groundwater ⁶ (mg/kg)
			Human Health ⁵ (mg/kg)	Human Health ⁵ (mg/kg)	Human Health ⁵ (mg/kg)	
Dinitrophenol, 2,4-	51-28-5	nc	220	160	130	0.34
Dinitrotoluene, 2,4-	121-14-2	ca	30	23	18	0.024
Dinitrotoluene, 2,6-	606-20-2	ca	6.3	4.7	3.8	0.0050
Dinitrotoluene, 2-Amino-4,6-	35572-78-2	nc	270	200	160	0.25
Dinitrotoluene, 4-Amino-2,6-	19406-51-0	nc	270	200	160	0.25
Dioxane, 1,4-	123-91-1	ca	100	73	58	0.012
Diphenylamine	122-39-4	nc	2800	2000	1700	4.3
Endosulfan	115-29-7	nc	820	610	500	9.3
Endrin	72-20-8	nc	33	25	20	0.61
Ethyl Chloride	75-00-3	nc	1400 ¹⁰	1400 ¹⁰	1400 ¹⁰	72
Ethylbenzene ⁷	100-41-4	ca	72	49	35	0.13
Ethylene Glycol	107-21-1	nc	1.0 x 10 ⁵ ; ⁹	1.0 x 10 ⁵ ; ⁹	1.0 x 10 ⁵ ; ⁹	110
Fluoranthene ⁷	206-44-0	nc	4200	3100	2500	590
Fluorene ⁷	86-73-7	nc	4200	3100	2500	36
Formaldehyde	50-00-0	ca	430	290	210	0.011
Heptachlor	76-44-8	ca	2.2	1.6	1.3	0.0076
Heptachlor Epoxide	1024-57-3	ca	1.2	0.86	0.69	0.0019
Hexachlorobenzene	118-74-1	ca	2.8	2.0	1.5	0.0082
Hexachlorobutadiene	87-68-3	nc	3.3 ¹⁰	3.3 ¹⁰	3.3 ¹⁰	0.020
Hexachlorocyclohexane, Alpha-	319-84-6	ca	1.5	1.1	0.91	0.0029
Hexachlorocyclohexane, Beta-	319-85-7	ca	5.3	3.9	3.2	0.010
Hexachlorocyclohexane, Gamma- (Lindane)	58-89-9	ca	9.9	7.4	6.0	0.016
Hexachlorocyclopentadiene	77-47-4	nc	2.0	1.4	1.0	0.0093
Hexachloroethane	67-72-1	ca	24	17	12	0.018
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	ca	110	79	64	0.027
Hexane, N-	110-54-3	nc	130 ¹⁰	130 ¹⁰	130 ¹⁰	130 ¹⁰
Hexanone, 2-	591-78-6	nc	380	270	210	0.11
Hydrazine	302-01-2	ca	0.79	0.55	0.40	2.9 x 10 ⁻⁵

TABLE B1. METHOD TWO – SOIL CLEANUP LEVELS TABLE (See notes for additional requirements)

Hazardous Substance	CAS Number ¹	health effect that drives risk: carcinogen (ca); noncarcinogen (nc); mutagen (m)	Arctic Zone ²	Under 40 Inch Zone ³	Over 40 Inch Zone ⁴	Migration to Groundwater ⁶ (mg/kg)
			Human Health ⁵ (mg/kg)	Human Health ⁵ (mg/kg)	Human Health ⁵ (mg/kg)	
Indeno[1,2,3-cd]pyrene ⁷	193-39-5	m	2.8	2.0	1.7	8.8
Isophorone	78-59-1	ca	10000	7400	6100	2.7
Isopropanol	67-63-0	nc	14000	9500	6800	1.1
Lead and Compounds ¹⁴	7439-92-1	nc	400	400	400	n/a
Mercuric Chloride ⁸	7487-94-7	nc	41	30	25	3.9
Mercury (elemental)	7439-97-6	nc	3.1 ¹⁰	3.1 ¹⁰	3.1 ¹⁰	0.36
Methanol	67-56-1	nc	1.0 x 10 ⁵ ; ⁹	1.0 x 10 ⁵ ; ⁹	1.0 x 10 ⁵ ; ⁹	54
Methoxychlor	72-43-5	nc	550	410	340	13
Methyl Ethyl Ketone (2-Butanone)	78-93-3	nc	23000 ¹⁰	23000 ¹⁰	23000 ¹⁰	15
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	108-10-1	nc	2200 ¹⁰	2200 ¹⁰	2200 ¹⁰	18
Methyl Mercury	22967-92-6	nc	14	10	8.3	180
Methyl tert-Butyl Ether (MTBE)	1634-04-4	ca	970	670	480	0.40
Methylene Chloride	75-09-2	nc	630	460	360	0.33
Methylnaphthalene, 1-	90-12-0	ca	68 ¹⁰	68 ¹⁰	68 ¹⁰	0.41
Methylnaphthalene, 2-	91-57-6	nc	420	310	250	1.3
Naphthalene ⁷	91-20-3	ca	42	29	20	0.038
Nickel Soluble Salts	7440-02-0	nc	2600	2000	1700	340
Nitrobenzene	98-95-3	ca	63	43	31	0.0079
Nitroglycerin	55-63-0	nc	11	8.2	6.7	0.0082
Nitroguanidine	556-88-7	nc	11000	8200	6700	5.8
Nitrosodimethylamine, N-	62-75-9	m	0.036	0.026	0.020	3.3 x 10 ⁻⁶
Nitroso-di-N-propylamine, N-	621-64-7	ca	1.4	1.00	0.82	0.00068
Nitrosodiphenylamine, N-	86-30-6	ca	1900	1400	1200	4.6
Nitrotoluene, m-	99-08-1	nc	11	8.2	6.7	0.013
Nitrotoluene, o-	88-72-2	ca	55	41	34	0.024
Nitrotoluene, p-	99-99-0	nc	440	330	270	0.32
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	2691-41-0	nc	6700	5000	4100	9.7
Octyl Phthalate, di-N-	117-84-0	nc	1100	820	670	370

TABLE B1. METHOD TWO – SOIL CLEANUP LEVELS TABLE (See notes for additional requirements)

Hazardous Substance	CAS Number ¹	health effect that drives risk: carcinogen (ca); noncarcinogen (nc); mutagen (m)	Arctic Zone ²	Under 40 Inch Zone ³	Over 40 Inch Zone ⁴	Migration to Groundwater ⁶ (mg/kg)
			Human Health ⁵ (mg/kg)	Human Health ⁵ (mg/kg)	Human Health ⁵ (mg/kg)	
Pentachlorophenol	87-86-5	ca	18	13	11	0.0043
Pentaerythritol tetranitrate (PETN)	78-11-5	nc	220	160	130	0.43
Perfluorooctane Sulfonate (PFOS) ²⁰	1763-23-1	nc	2.2	1.6	1.3	0.0030
Perfluorooctanoic Acid (PFOA) ²⁰	335-67-1	nc	2.2	1.6	1.3	0.0017
Phenanthrene ^{7,8}	85-01-8	nc	3100	2300	1900	39
Phenol	108-95-2	nc	33000	25000	20000	29
Phosphorus, White	7723-14-0	nc	2.7	2.0	1.7	0.020
Polychlorinated Biphenyls (total) ¹⁵	1336-36-3	ca	1.0	1.0	1.0	n/a
Propyl benzene	103-65-1	nc	52 ¹⁰	52 ¹⁰	52 ¹⁰	9.1
Pyrene ⁷	129-00-0	nc	3100	2300	1900	87
Selenium	7782-49-2	nc	680	510	410	6.9
Silver	7440-22-4	nc	680	510	410	11
Styrene	100-42-5	nc	180 ¹⁰	180 ¹⁰	180 ¹⁰	10
TCDD, 2,3,7,8- ¹⁶	1746-01-6	ca	8.2 x 10 ⁻⁵	6.0 x 10 ⁻⁵	4.9 x 10 ⁻⁵	3.9 x 10 ⁻⁶
Tetrachloroethane, 1,1,1,2-	630-20-6	ca	30	21	15	0.022
Tetrachloroethane, 1,1,2,2-	79-34-5	ca	8.8	6.1	4.4	0.0030
Tetrachloroethylene	127-18-4	nc	68 ¹⁰	68 ¹⁰	68 ¹⁰	0.19
Tetryl (Trinitrophenylmethylnitramine)	479-45-8	nc	270	200	170	2.5
Thallium (Soluble Salts)	7440-28-0	nc	1.4	1.00	0.83	0.19
Toluene ⁷	108-88-3	nc	200 ¹⁰	200 ¹⁰	200 ¹⁰	6.7
Toxaphene	8001-35-2	ca	8.6	6.4	5.2	0.72
Trichloro-1,2,2-trifluoroethane, 1,1,2-	76-13-1	nc	740 ¹⁰	740 ¹⁰	740 ¹⁰	1700
Trichlorobenzene, 1,2,3-	87-61-6	nc	110	81	66	0.15
Trichlorobenzene, 1,2,4-	120-82-1	nc	65	45	32	0.082
Trichloroethane, 1,1,1-	71-55-6	nc	360 ¹⁰	360 ¹⁰	360 ¹⁰	32
Trichloroethane, 1,1,2-	79-00-5	nc	2.3	1.6	1.1	0.0014
Trichloroethylene	79-01-6	nc	7.1	4.9	3.5	0.011
Trichlorofluoromethane	75-69-4	nc	980 ¹⁰	980 ¹⁰	980 ¹⁰	41

TABLE B1. METHOD TWO – SOIL CLEANUP LEVELS TABLE (See notes for additional requirements)						
Hazardous Substance	CAS Number ¹	health effect that drives risk: carcinogen (ca); noncarcinogen (nc); mutagen (m)	Arctic Zone ²	Under 40 Inch Zone ³	Over 40 Inch Zone ⁴	Migration to Groundwater ⁶ (mg/kg)
			Human Health ⁵ (mg/kg)	Human Health ⁵ (mg/kg)	Human Health ⁵ (mg/kg)	
Trichlorophenol, 2,4,5-	95-95-4	nc	11000	8200	6700	28
Trichlorophenol, 2,4,6-	88-06-2	nc	110	82	67	0.092
Trichlorophenoxyacetic Acid, 2,4,5-	93-76-5	nc	1100	820	670	0.66
Trichlorophenoxypropionic acid, -2,4,5	93-72-1	nc	880	660	540	0.55
Trichloropropane, 1,2,3-	96-18-4	m	0.089	0.066	0.054	3.1 x 10 ⁻⁵
Trimethylbenzene, 1,2,4-	95-63-6	nc	43 ¹⁰	43 ¹⁰	33	0.16
Trimethylbenzene, 1,3,5-	108-67-8	nc	37 ¹⁰	37 ¹⁰	37 ¹⁰	1.3
Tri-n-butyltin	688-73-3	nc	41	30	25	0.68
Trinitrobenzene, 1,3,5-	99-35-4	nc	3900	2900	2400	15
Trinitrotoluene, 2,4,6-	118-96-7	nc	64	47	39	0.39
Vanadium and Compounds	7440-62-2	nc	680	510	420	1100
Vinyl Acetate	108-05-4	nc	2100	1400	1000	1.1
Vinyl Chloride	75-01-4	ca	0.69	0.65	0.61	0.00080
Xylenes ⁷	1330-20-7	nc	57 ¹⁰	57 ¹⁰	57 ¹⁰	1.5
Zinc and Compounds	7440-66-6	nc	41000	30000	25000	4900
See notes to table for further requirements. “n/a” means not applicable.						

TABLE B2. METHOD TWO - PETROLEUM HYDROCARBON SOIL CLEANUP LEVELS

TABLE B2. METHOD TWO - PETROLEUM HYDROCARBON SOIL CLEANUP LEVELS										
Petroleum Hydrocarbon Range	Arctic Zone ² mg/kg			Under 40 Inch Zone ³			Over 40 Inch Zone ⁴			Maximum Allowable Concentrations ¹⁷ mg/kg
	Ingestion (mg/kg) ¹⁸	Inhalation (mg/kg) ¹⁹	Migration to Groundwater (mg/kg) ⁶	Ingestion (mg/kg) ¹⁸	Inhalation (mg/kg) ¹⁹	Migration to groundwater (mg/kg) ⁶	Ingestion (mg/kg) ¹⁸	Inhalation (mg/kg) ¹⁹	Migration to Groundwater (mg/kg) ⁶	
For Laboratory Analysis using AK Methods 101, 102, and 103										
C ₆ -C ₁₀ GRO using AK 101	1400	1400	n/a	1400	1400	300	1400	1400	260	1400
C ₁₀ -C ₂₅ DRO using AK 102	12500	12500	n/a	10250	12500	250	8250	12500	230	12500
C ₂₅ -C ₃₆ RRO using AK 103	13700	22000	n/a	10000	22000	11000	8300	22000	9700	22000
For Laboratory Analysis using AK Aliphatic and Aromatic Fraction Methods 101AA, 102AA, and 103AA										
C ₆ -C ₁₀ Aliphatics	1000	1000	n/a	1000	1000	270	1000	1000	240	1000
C ₆ -C ₁₀ Aromatics	1000	1000	n/a	1000	1000	150	1000	1000	130	1000
C ₁₀ -C ₂₅ Aliphatics	10000	10000	n/a	10000	10000	7200	8300	10000	6400	10000
C ₁₀ -C ₂₅ Aromatics	5000	5000	n/a	4100	5000	100	3300	5000	90	5000
C ₂₅ -C ₃₆ Aliphatics	20000	20000	n/a	20000	20000	20000	20000	20000	20000	20000
C ₂₅ -C ₃₆ Aromatics	4100	10000	n/a	3000	10000	3300	2500	10000	2900	10000
See notes to table for further requirements. “n/a” means not applicable.										

TABLE C. GROUNDWATER CLEANUP LEVELS

Hazardous Substance	CAS Number ¹	Health effect that drives risk: carcinogen (ca); noncarcinogen (nc); mutagen (m)	Groundwater Human Health Cleanup Level ² (micrograms /liter)
Acenaphthene	83-32-9	nc	530
Acenaphthylene ³	208-96-8	nc	260
Acetone	67-64-1	nc	14000
Aldrin	309-00-2	ca	0.0092
Ammonium Perchlorate	7790-98-9	nc	14
Anthracene	120-12-7	nc	43 ⁴
Antimony (metallic)	7440-36-0	nc	7.8
Arsenic, Inorganic ⁵	7440-38-2	ca	0.52
Barium	7440-39-3	nc	3800
Benz[a]anthracene	56-55-3	m	0.12
Benzaldehyde	100-52-7	nc	1900
Benzene	71-43-2	ca	4.6
Benzo[a]pyrene	50-32-8	m	0.034
Benzo[b]fluoranthene	205-99-2	m	0.34
Benzo[g,h,i]perylene ³	191-24-2	nc	0.26 ⁴
Benzo[k]fluoranthene	207-08-9	m	0.80 ⁴
Benzoic Acid	65-85-0	nc	75000
Benzyl Alcohol	100-51-6	nc	2000
Beryllium and compounds	7440-41-7	nc	25
Bis(2-chloroethyl)ether	111-44-4	ca	0.14
Bis(2-ethylhexyl)phthalate	117-81-7	ca	56
Bromobenzene	108-86-1	nc	62
Bromodichloromethane	75-27-4	ca	1.3
Bromoform	75-25-2	ca	33
Bromomethane	74-83-9	nc	7.5
Butadiene, 1,3-	106-99-0	ca	0.18
Butanol, N-	71-36-3	nc	2000
Butyl Benzyl Phthalate	85-68-7	ca	160
Butylbenzene, n-	104-51-8	nc	1000
Butylbenzene, sec-	135-98-8	nc	2000
Butylbenzene, tert-	98-06-6	nc	690
Cadmium (Diet)	7440-43-9	nc	9.2
Carbon Disulfide	75-15-0	nc	810
Carbon Tetrachloride	56-23-5	ca	4.6
Chlordane	12789-03-6	ca	0.20

TABLE C. GROUNDWATER CLEANUP LEVELS

Hazardous Substance	CAS Number ¹	Health effect that drives risk: carcinogen (ca); noncarcinogen (nc); mutagen (m)	Groundwater Human Health Cleanup Level ² (micrograms /liter)
Chlordecone (Kepone)	143-50-0	ca	0.035
Chloroaniline, p-	106-47-8	ca	3.7
Chlorobenzene	108-90-7	nc	78
Chloroform	67-66-3	ca	2.2
Chloromethane	74-87-3	nc	190
Chloronaphthalene, Beta-	91-58-7	nc	750
Chlorophenol, 2-	95-57-8	nc	91
Chromium(III), Insoluble Salts ⁶	16065-83-1	nc	22000
Chromium(VI) ⁶	18540-29-9	m	0.35
Chrysene	218-01-9	m	2.0 ⁴
Copper	7440-50-8	nc	800
Cresol, m-	108-39-4	nc	930
Cresol, o-	95-48-7	nc	930
Cresol, p-	106-44-5	nc	1900
Cumene	98-82-8	nc	450
Cyanide (CN-)	57-12-5	nc	1.5
Cyclohexane	110-82-7	nc	13000
DDD	72-54-8	ca	0.32
DDE, p,p'-	72-55-9	ca	0.46
DDT	50-29-3	ca	2.3
Dibenz[a,h]anthracene	53-70-3	m	0.034
Dibenzofuran	132-64-9	nc	7.9
Dibromochloromethane	124-48-1	ca	8.7
Dibromoethane, 1,2- (Ethylene Dibromide)	106-93-4	ca	0.075
Dibromomethane (Methylene Bromide)	74-95-3	nc	8.3
Dibutyl Phthalate	84-74-2	nc	900
Dichlorobenzene, 1,2-	95-50-1	nc	300
Dichlorobenzene, 1,3- ³	541-73-1	nc	300
Dichlorobenzene, 1,4-	106-46-7	ca	4.8
Dichlorobenzidine, 3,3'-	91-94-1	ca	1.3
Dichlorodifluoromethane	75-71-8	nc	200
Dichloroethane, 1,1-	75-34-3	ca	28
Dichloroethane, 1,2-	107-06-2	ca	1.7
Dichloroethylene, 1,1-	75-35-4	nc	280
Dichloroethylene, 1,2-cis-	156-59-2	nc	36

TABLE C. GROUNDWATER CLEANUP LEVELS

Hazardous Substance	CAS Number ¹	Health effect that drives risk: carcinogen (ca); noncarcinogen (nc); mutagen (m)	Groundwater Human Health Cleanup Level ² (micrograms /liter)
Dichloroethylene, 1,2-trans-	156-60-5	nc	360
Dichlorophenol, 2,4-	120-83-2	nc	46
Dichlorophenoxy Acetic Acid, 2,4-	94-75-7	nc	170
Dichloropropane, 1,2-	78-87-5	ca	4.4
Dichloropropene, 1,3-	542-75-6	ca	4.7
Dieldrin	60-57-1	ca	0.018
Diethyl Phthalate	84-66-2	nc	15000
Dimethylphenol, 2,4-	105-67-9	nc	360
Dimethylphthalate ³	131-11-3	nc	16000
Dinitrobenzene, 1,2-	528-29-0	nc	1.9
Dinitrobenzene, 1,3-	99-65-0	nc	2.0
Dinitrobenzene, 1,4-	100-25-4	nc	2.0
Dinitrophenol, 2,4-	51-28-5	nc	39
Dinitrotoluene, 2,4-	121-14-2	ca	2.4
Dinitrotoluene, 2,6-	606-20-2	ca	0.49
Dinitrotoluene, 2-Amino-4,6-	35572-78-2	nc	39
Dinitrotoluene, 4-Amino-2,6-	19406-51-0	nc	39
Dioxane, 1,4-	123-91-1	ca	4.6
Diphenylamine	122-39-4	nc	310
Endosulfan	115-29-7	nc	100
Endrin	72-20-8	nc	2.3
Ethyl Chloride	75-00-3	nc	21000
Ethylbenzene	100-41-4	ca	15
Ethylene Glycol	107-21-1	nc	40000
Fluoranthene	206-44-0	nc	260 ⁴
Fluorene	86-73-7	nc	290
Formaldehyde	50-00-0	ca	4.3
Heptachlor	76-44-8	ca	0.014
Heptachlor Epoxide	1024-57-3	ca	0.014
Hexachlorobenzene	118-74-1	ca	0.098
Hexachlorobutadiene	87-68-3	nc	1.4
Hexachlorocyclohexane, Alpha-	319-84-6	ca	0.072
Hexachlorocyclohexane, Beta-	319-85-7	ca	0.25
Hexachlorocyclohexane, Gamma- (Lindane)	58-89-9	ca	0.42
Hexachlorocyclopentadiene	77-47-4	nc	0.41

TABLE C. GROUNDWATER CLEANUP LEVELS

Hazardous Substance	CAS Number ¹	Health effect that drives risk: carcinogen (ca); noncarcinogen (nc); mutagen (m)	Groundwater Human Health Cleanup Level ² (micrograms /liter)
Hexachloroethane	67-72-1	ca	3.3
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	ca	7.0
Hexane, N-	110-54-3	nc	1500
Hexanone, 2-	591-78-6	nc	38
Hydrazine	302-01-2	ca	0.011
Indeno[1,2,3-cd]pyrene	193-39-5	m	0.19 ⁴
Isophorone	78-59-1	ca	780
Isopropanol	67-63-0	nc	410
Lead and Compounds ⁷	7439-92-1	nc	15
Mercuric Chloride ³	7487-94-7	nc	5.7
Mercury (elemental)	7439-97-6	nc	0.52
Methanol	67-56-1	nc	20000
Methoxychlor	72-43-5	nc	37
Methyl Ethyl Ketone (2-Butanone)	78-93-3	nc	5600
Methyl Isobutyl Ketone (4-methyl-2-pentanone)	108-10-1	nc	6300
Methyl Mercury	22967-92-6	nc	2.0
Methyl tert-Butyl Ether (MTBE)	1634-04-4	ca	140
Methylene Chloride	75-09-2	nc	110
Methylnaphthalene, 1-	90-12-0	ca	11
Methylnaphthalene, 2-	91-57-6	nc	36
Naphthalene	91-20-3	ca	1.7
Nickel Soluble Salts	7440-02-0	nc	390
Nitrobenzene	98-95-3	ca	1.4
Nitroglycerin	55-63-0	nc	2.0
Nitroguanidine	556-88-7	nc	2000
Nitrosodimethylamine, N-	62-75-9	m	0.0011
Nitroso-di-N-propylamine, N-	621-64-7	ca	0.11
Nitrosodiphenylamine, N-	86-30-6	ca	120
Nitrotoluene, m-	99-08-1	nc	1.7
Nitrotoluene, o-	88-72-2	ca	3.1
Nitrotoluene, p-	99-99-0	nc	43
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	2691-41-0	nc	1000
Octyl Phthalate, di-N-	117-84-0	nc	22 ⁴
Pentachlorophenol	87-86-5	ca	0.41
Pentaerythritol tetranitrate (PETN)	78-11-5	nc	39

TABLE C. GROUNDWATER CLEANUP LEVELS

Hazardous Substance	CAS Number ¹	Health effect that drives risk: carcinogen (ca); noncarcinogen (nc); mutagen (m)	Groundwater Human Health Cleanup Level ² (micrograms /liter)
Perfluorooctane Sulfonate (PFOS) ⁹	1763-23-1	nc	0.40
Perfluorooctanoic Acid (PFOA) ⁹	335-67-1	nc	0.40
Phenanthrene ³	85-01-8	nc	170
Phenol	108-95-2	nc	5800
Phosphorus, White	7723-14-0	nc	0.40
Polychlorinated Biphenyls (PCBs)	1336-36-3	ca	0.50
Propyl benzene	103-65-1	nc	660
Pyrene	129-00-0	nc	120
Selenium	7782-49-2	nc	100
Silver	7440-22-4	nc	94
Styrene	100-42-5	nc	1200
TCDD, 2,3,7,8- ⁸	1746-01-6	ca	1.2 x 10 ⁻⁶
Tetrachloroethane, 1,1,1,2-	630-20-6	ca	5.7
Tetrachloroethane, 1,1,2,2-	79-34-5	ca	0.76
Tetrachloroethylene	127-18-4	nc	41
Tetryl (Trinitrophenylmethylnitramine)	479-45-8	nc	39
Thallium (Soluble Salts)	7440-28-0	nc	0.20
Toluene	108-88-3	nc	1100
Toxaphene	8001-35-2	ca	0.71
Trichloro-1,2,2-trifluoroethane, 1,1,2-	76-13-1	nc	55000
Trichlorobenzene, 1,2,3-	87-61-6	nc	7.0
Trichlorobenzene, 1,2,4-	120-82-1	nc	4.0
Trichloroethane, 1,1,1-	71-55-6	nc	8000
Trichloroethane, 1,1,2-	79-00-5	nc	0.41
Trichloroethylene	79-01-6	nc	2.8
Trichlorofluoromethane	75-69-4	nc	5200
Trichlorophenol, 2,4,5-	95-95-4	nc	1200
Trichlorophenol, 2,4,6-	88-06-2	nc	12
Trichlorophenoxyacetic Acid, 2,4,5-	93-76-5	nc	160
Trichlorophenoxypropionic acid, -2,4,5	93-72-1	nc	110
Trichloropropane, 1,2,3-	96-18-4	m	0.0075
Trimethylbenzene, 1,2,4-	95-63-6	nc	15
Trimethylbenzene, 1,3,5-	108-67-8	nc	120
Tri-n-butyltin	688-73-3	nc	3.7
Trinitrobenzene, 1,3,5-	99-35-4	nc	590

TABLE C. GROUNDWATER CLEANUP LEVELS

Hazardous Substance	CAS Number ¹	Health effect that drives risk: carcinogen (ca); noncarcinogen (nc); mutagen (m)	Groundwater Human Health Cleanup Level ² (micrograms /liter)
Trinitrotoluene, 2,4,6-	118-96-7	nc	9.8
Vanadium and Compounds	7440-62-2	nc	86
Vinyl Acetate	108-05-4	nc	410
Vinyl Chloride	75-01-4	ca	0.19
Xylenes	1330-20-7	nc	190
Zinc and Compounds	7440-66-6	nc	6000
PETROLEUM HYDROCARBONS			
C ₆ -C ₁₀ GRO		nc	2200
C ₁₀ -C ₂₅ DRO		nc	1500
C ₂₅ -C ₃₆ RRO		nc	1100

Notes to Table C:**Notes to Table C:**

1. "CAS Number" means the Chemical Abstract Service (CAS) registry number uniquely assigned to chemicals by the American Chemical Society and recorded in the CAS Registry System.

2. The "Human Health" exposure pathway is the cumulative exposure pathway through dermal contact, ingestion, and inhalation of volatile compounds from hazardous substances in the water.

3. Where one or more toxicological values were unavailable, toxicity values from surrogate compounds or other sources were used as follows:

(A) pyrene is a toxicity surrogate for acenaphthylene, benzo(g,h,i) perylene, and phenanthrene;

(B) 1,2-dichlorobenzene is a toxicity surrogate for 1,3-dichlorobenzene;

(C) diethylphthalate is a toxicity surrogate for dimethylphthalate;

(D) elemental mercury is a toxicity surrogate for mercuric chloride.

4. These levels are based on water solubility using the data set out in *Procedures for Calculating Cleanup Levels*, adopted by reference in 18 AAC 75.340.

5. Due to the prevalence of naturally occurring arsenic throughout the state, arsenic at a site will be considered background arsenic unless anthropogenic contribution from a source, activity, or mobilization by means of another introduced contaminant is known or suspected.

6. Due to the prevalence of naturally occurring chromium III throughout the state, sample results reported for total chromium detected at a site will be considered background chromium III unless anthropogenic contribution of chromium III or VI from a source, activity, or mobilization by means of another introduced contaminant is known or suspected.

7. The lead cleanup level is taken from EPA's action level for lead in water.

8. This cleanup level is for 2,3,7,8-Tetrachlorodibenzo-*p*-Dioxin (TCDD) only; all cleanup levels for polychlorinated dibenzo-*p*-dioxin (PCDD) and polychlorinated dibenzofuran (PCDF) congeners must be determined on a site-specific basis.



Appendix 6

Topographic Survey Diagram

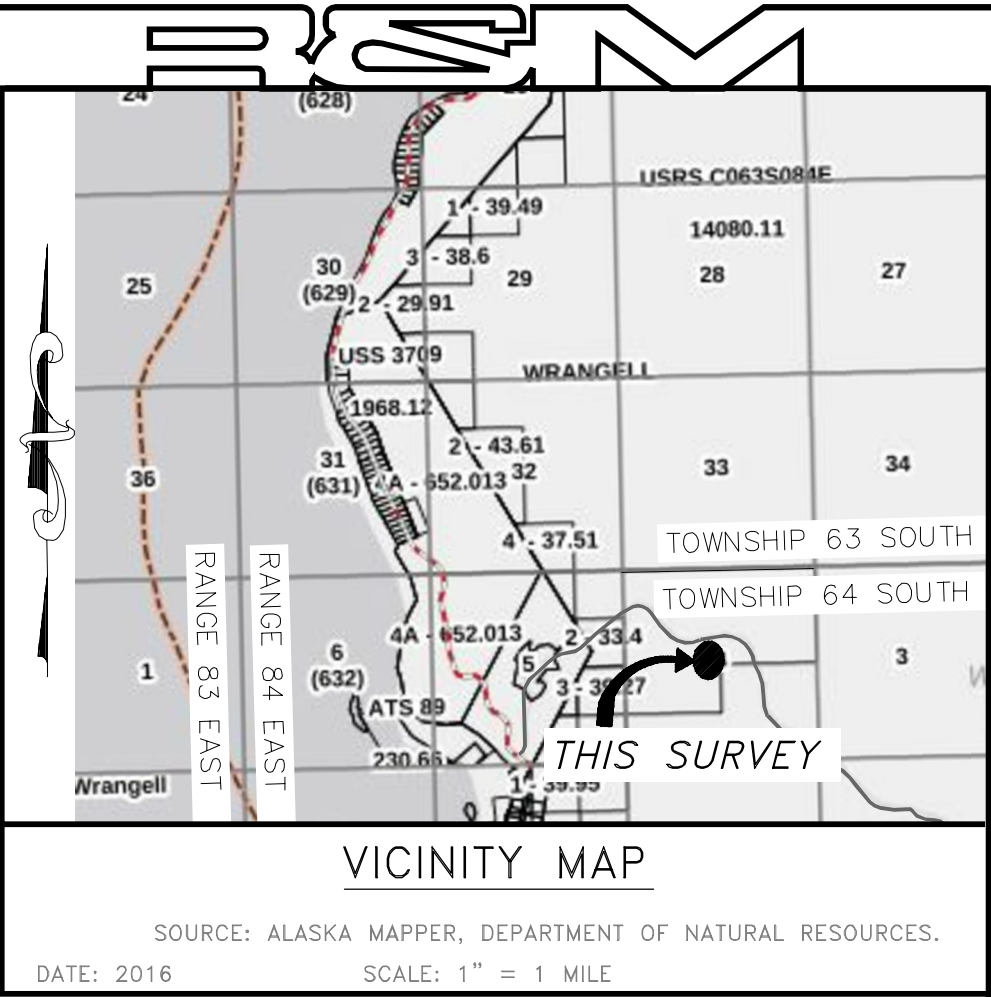
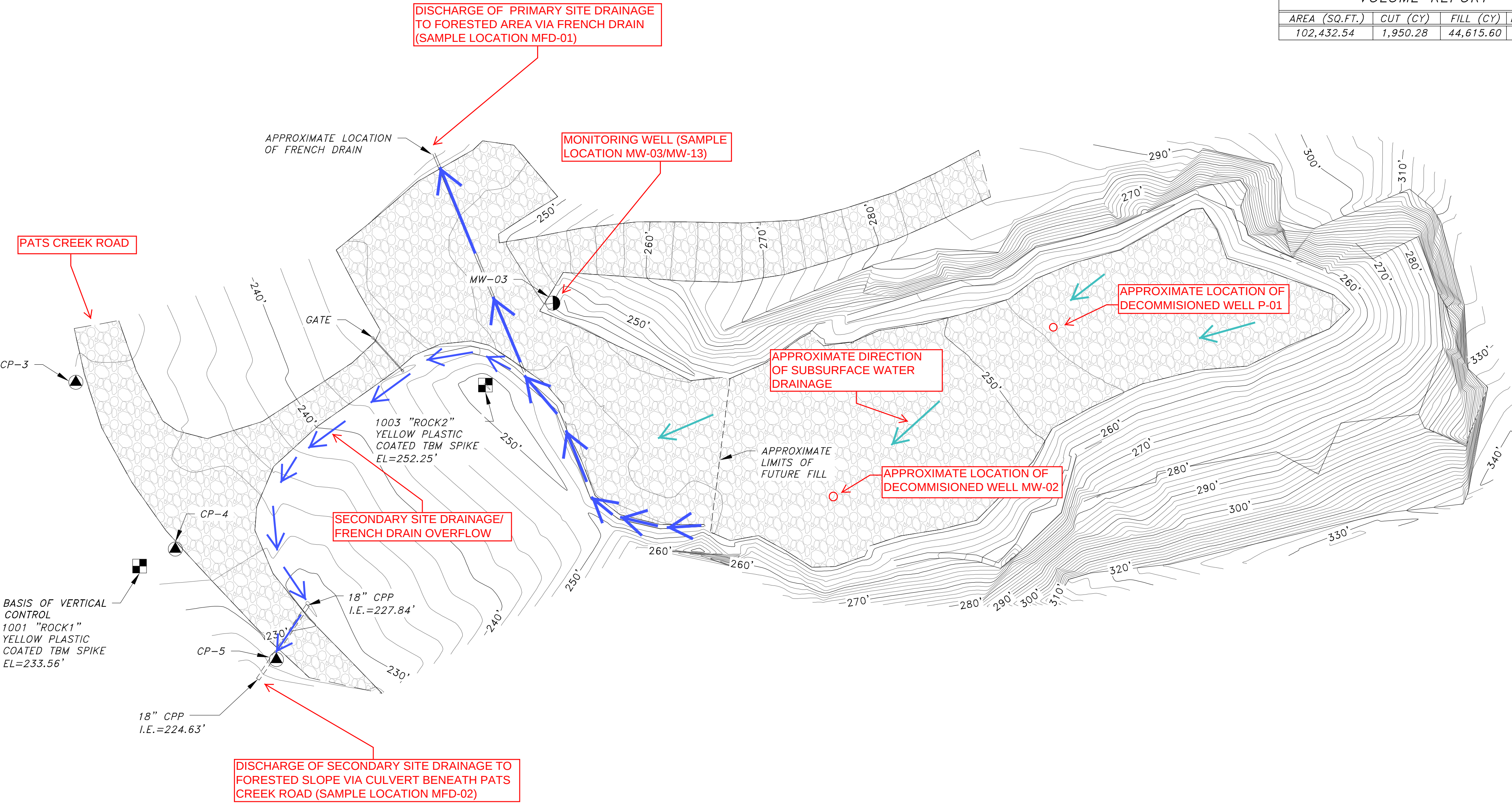
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TABLE OF VERTICAL CONTROL				
POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
1001	1,653,599	2,960,589	233.56'	YELLOW PLASTIC COATED TBM SPIKE IN 8" CEDAR
1003	1,653,449	2,960,667	252.25'	YELLOW PLASTIC COATED TBM SPIKE

GENERAL NOTES

- 1.THE HORIZONTAL DATUM FOR THIS SURVEY IS NORTH AMERICAN DATUM 1983, ALASKA STATE COORDINATE SYSTEM ZONE1 (NAD83 AK SPC Z1)[5001].
- 2.THE VERTICAL DATUM FOR THIS SURVEY IS NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88).
- 3.THE PROJECT CONTROL WAS PROCESSED THROUGH NGS OPUS AND TRIMBLE BUSINESS CENTER, VER. 3.7.1.
- 4.THIS SURVEY WAS PERFORMED WITH A TRIMBLE S7 ROBOTICS INSTRUMENT USING STANDARD LASER RANGING TECHNIQUES, AND TRIMBLE R8-2 GNSS RECEIVERS.
- 5.TRIMBLE GNSS R8-2 RECEIVERS WERE USED TO PERFORM GPS STATIC SESSIONS TO OBTAIN DATUM CORRECTIONS.
- 6.THIS SURVEY AND ALL COORDINATES, SHOWN HEREON, ARE IN NAD 83 AK SPC Z1 GRID COORDINATES.
- 7.DIFFERENTIAL LEVELING WAS PERFORMED THOUGH ALL BENCHMARKS, SHOWN HEREON. ALL ELEVATIONS WERE ADJUSTED TO THE BASIS OF VERTICAL CONTROL. THIS WORK WAS PERFORMED WITH A SOKKIA B2-1 DIFFERENTIAL LEVEL. THE COLLIMATION OF THIS INSTRUMENT WAS CHECKED PRIOR TO DIFFERENTIAL LEVELING.
- 8.ALL CONVENTIONAL TRAVERSES WERE ADJUSTED USING THE COMPASS-BOWDITCH METHOD.
- 9.THE FEILD WORK WAS PERFORMED ON SEPTEMBER 26, 2017.
- 10.NO TIES TO THE PUBLIC LAND SURVEY SYSTEM WERE MADE DURING THE COURSE OF THIS SURVEY.
- 11.THIS SURVEY DOES NOT CONSTITUTE A SUBDIVISION, AS PER AS 40.15.900(5)(A).
- 12.THIS SURVEY DOES NOT EXCEED THE UNADJUSTED HORIZONTAL CLOSURE REQUIREMENTS FOR FGCS THIRD ORDER, CLASS ONE STANDARDS OF 1:10,000.
- 13.THIS SURVEY DOES NOT EXCEED THE VERTICAL FGCS THIRD ORDER, CLASS ii REQUIREMENTS.
- 14.THE VOLUMES SHOW, HEREON, WERE COMPUTED FROM THE FIELD SURVEY PERFORMED ON SEPTEMBER 26, 2017 AND FROM THE SURVEY PERFORMED BY PDC ON OCTOBER 2016.
- 15.THE VOLUMES WERE COMPUTED USING PRISMOIDAL VOLUME COMPUTATIONS, WITH AUTOCAD CIVIL 3D (VER. 2016).

VOLUME REPORT			
AREA (SQ.FT.)	CUT (CY)	FILL (CY)	NET FILL (CY)
102,432.54	1,950.28	44,615.60	42,665.32



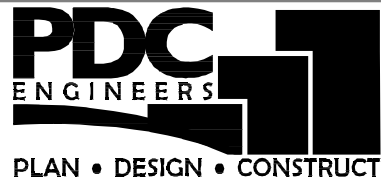
LEGEND

- HORIZONTAL CONTROL POINT (RECOVERED)
- TEMPORARY BENCH MARK (RECOVERED)
- MONITORING WELL
- 18" CORRUGATED PLASTIC PIPE CULVERT
- MAJOR CONTOUR LINE
- MINOR CONTOUR LINE
- GRAVEL SURFACE

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT I AM PROPERLY REGISTERED AND LICENSED TO PRACTICE LAND SURVEYING IN THE STATE OF ALASKA, AND THAT THIS AS-BUILT SURVEY REPRESENTS A SURVEY MADE BY ME OR UNDER MY DIRECT SUPERVISION, AND THE MONUMENTS SHOWN THEREON ACTUALLY EXIST AS DESCRIBED, AND THAT ALL DIMENSIONS AND OTHER DETAILS ARE CORRECT.

DATE: 10/26/17



PDC ENGINEERS
6205 Glacier Highway,
Juneau, Alaska 99801
907.780.6060

A TOPOGRAPHIC SURVEY PLAN
OF
"BASE COURSE"
ADEC WRANGELL MONOFILL SITE

WITHIN THE
CITY AND BOROUGH OF WRANGELL, ALASKA
SITKA RECORDING DISTRICT

STATE RECORDER'S OFFICE AT JUNEAU

CLIENT:
NORTECH, INC.
2400 COLLEGE ROAD
FAIRBANKS, AK 99709
DATE: October 26, 2017

SURVEYOR:
PDC ENGINEERS
6205 GLACIER HIGHWAY
JUNEAU, ALASKA 99801
(907) 780-6060
SCALE: 1"=30'
SHEET 1 OF 1
PDC PROJ. No. 17314JN



Appendix 7

Disposal Documents



Waste Inventory Sheet for Collection Event
(Copy and use additional sheets if needed)

17-1048

Item Number	Waste Description	Quantity (lbs. or gals.)	Cost (per lb. or gal.)	Disposal Charge
1	lead acid batteries	66	1.23	81.18
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
			Total Charge This Sheet	\$ 81.18