NORTECH

SUSTAINABLE ENVIRONMENT, ENERGY,
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April 7, 2016

Sent via email to: kseekatz@irha.org

Interior Regional Housing Authority
828 27th Avenue
Fairbanks, Alaska 99701

ATTN: Kelly Seekatz

RE: 27th Avenue Heating Oil Leak Assessment Results
1603 27th Avenue, Fairbanks, Alaska
ADEC File # 102.38.181

Ms. Seekatz:

NORTECH has completed site characterization efforts on lot 151C, US SURVEY 3148 with a physical address at 1603 27th Avenue in Fairbanks, Alaska (the Site) and is pleased to submit this report concerning soil and groundwater contamination and indoor air quality (IAQ). The contamination is a result of a heating oil release from a leaking heating oil underground storage tank (UST). This property is owned through an arrangement in which Interior Regional Housing Authority (IRHA) is responsible for the characterization and cleanup. This report is in response to ADEC requests for delineation and cleanup from late 2014 and in accordance with our approved June 2015 work plan

Figure 1 shows the location of the site on 27th Avenue in Fairbanks, Alaska. Figure 2 shows the Site in relationship to the neighborhood. Figure 3 shows contaminant concentrations in the seven monitoring wells samples and well locations.

Table 1 and Table 2 summarize the 2015 groundwater and soil laboratory results and field duplicate quality control analysis. A copy of the laboratory report for the sampling event and an ADEC Laboratory Data Review Checklist (LDRC) for the current sample results are also attached.

Background

In August 2014, the occupants of the residence began to notice a heating oil odor that became stronger with time and was more prevalent in the crawlspace. IRHA personnel traced the odor to heating oil that appeared to be floating on water that had entered into the crawlspace below the existing vapor barrier.

A vapor extraction system was installed by Ventilation Solutions in the crawlspace, which minimized heating oil vapors from accumulating in the structure. The system employs a typical radon fan to draw soil vapors under a membrane (6-mil polyethylene sheeting) which provides a seal between the soil and crawlspace air. This results in the in a positive differential pressure between the crawlspace air and soil vapor. Vapors enter perforated 4” PVC pipes placed under the membrane and are exhausted outside the west wall of the home.

After addressing the initial vapor intrusion problems in the structure, IRHA personnel began to investigate the heating oil tank located on the west side of the home. The

tank was suspected to be leaking and was causing the petroleum and fuel odors observed in the home. IRHA excavated along the west side of the tank and observed heating oil pooling in the soil near the bottom of the tank. Approximately 30 gallons of heating oil were collected from the excavation over two days. IRHA personnel indicated the tank was leaking and replaced the heating oil tank and feed/return lines. Two eight-inch free product collection galleries/pipes were installed adjacent to the new tank. Additional free product was reportedly recovered by IRHA, but the volume was not quantified.

In February 2015, IRHA retained ***NORTECH*** to develop and implement the work plan guiding this assessment to delineate the soil and groundwater contamination, collect free product, and evaluate vapor intrusion at the Site and the adjacent property as appropriate.

Objectives/Scope of Work
The work plan guiding the current activities was intended to identify current groundwater conditions at the Site and evaluate alternatives for long term management of human health risks at the site.

The scope of work for this site characterization was designed to:

- Evaluate free product remaining near the source area
- Evaluate the indoor air quality in structures adjacent to the tank
- Characterize local soil conditions and delineate the extent of soil impacted by the heating oil release
- Delineate dissolved contaminant impacts to the aquifer through groundwater sampling of temporary sampling points and groundwater monitoring wells
- Define the conceptual site model based on the data, to evaluate the exposure pathways associated with contamination remaining at the site
- Report and summarize field activities and laboratory results to document the soil and groundwater conditions on the site

Methodology
Field sampling was completed in general accordance with the 2002 ADEC UST Procedures Manual Standard Sampling Procedures (SSP), 2010 Draft Field Sampling Guidance (FSG) and the attached standalone groundwater sampling methodology and soil boring methods as detailed in the methodology attachments.

Field Activities
Soil and Groundwater Characterization.
NORTECH mobilized to the site on August 2, 2015 to advance soil and groundwater sampling points as outlined in Task 3 of the ADEC approved workplan. Soil borings and groundwater sampling points were installed on Site (and on 1603 27th Avenue, Lot 151C) the adjacent property to the west 1607 27th Avenue, Lot 151B).

The initial soil boring (SB-01) was advanced near the northwest garage corner. Headspace samples were collected every two feet and documented on the dedicated boring log data sheet. The analytical soil sample was collected from soil eight feet below the ground surface (bgs). Once documentation of the soil boring data was completed, the drill rig was moved to the northeast corner of the garage where SB-02 was advanced. Once the soil headspace samples and laboratory samples were collected, a temporary sampling point (TSP-02) was installed within a foot of the soil boring.

An additional seven wells and soil borings were installed around the perimeter of Lots 151C and 151B. The monitoring well and soil boring locations were selected to characterize soil and groundwater conditions on and off site. Figure 3 shows the placement of each soil boring and groundwater sampling point.

Vapor Mitigation System Inspection and Free Product Collection
As outlined in Task 2 of the workplan, free product and indoor air quality inspections have been performed. Ten inspections have been performed since July 2015. During the inspections, vapor intrusion levels in the home have been evaluated using a RAE ppb meter, which measures total volatile organic compounds (tVOCs) using PID technology sensitive down to the parts per billion range. During each event, VOCs were evaluated upstairs, downstairs, in the crawlspace, and in the garage. Additionally, the RAE ppb meter was utilized to measure VOC removal rates by measuring VOCs in the vapor extraction system's exhaust vent.

On the September 2, 2015 inspection event, heating oil was observed between the two overlapping polyethylene sheets covering the surface soils in the crawlspace and used as the impermeable membrane for the SVE system. No odors or IAQ impacts as measured by the Rae ppb meter were observed in the crawlspace or living spaces. On September 21, 2015, ***NORTECH*** personnel returned to the site to inspect the crawlspace and evaluate soil conditions below the liner. During the crawlspace inspection, three heating oil impacted areas were observed in the sheeting. A hand auger was used to advance an eighteen inch boring in the fuel impacted area nearest the SVE fan. Neither groundwater nor free product were encountered in the soil boring. This indicates the heating oil was most likely related to groundwater fluctuations and not a new release.

An interface probe capable of distinguishing between oil and water was used to determine the free product and groundwater depth measurements. Since July 2015, no free product has been identified in the north and south free product collection galleries that were installed by IRHA in September 2014. Groundwater monitoring well MW-1 was installed on August 2, 2015 and has been evaluated for free product five times since installation. No free product was observed in the well until September 2, 2015 when 0.6 inches of fuel was measured. Absorbent socks designed to passively collect free product in a two inch well were ordered and placed in the well on October 5, 2017. Approximately 2" of the sock were saturated with fuel oil and on October 27, 2015, 4" of the sock was saturated.

Results
Free product: The free product collection galleries that were installed by IRHA during the original emergency response actions have proved to be ineffective since the original collection effort. This is because the groundwater was very high when the collection galleries were installed and the bottom of the collection gallery is above groundwater most of the year. The free product collection galleries will be effective only during periods of very high water.

MW-1 installed in the source area has a screened interval is within the groundwater smear zone under most conditions. The maximum amount of heating oil observed has been 0.6 inches. This limited volume of fuel in the well is not conducive to using active free product collection devices such as pneumatic skimmers or pumps. ***NORTECH*** recommends using absorbent socks that can be left in the well and collect free product passively. Free product and monitoring should continue once a month until free product is no longer recoverable or until the contaminant plume has been determined stable or attenuating.

Indoor Air Quality: During each site visit, the RAE ppb meter was used to evaluate the effectiveness of the vapor mitigation system and indoor air quality in the crawlspace and

occupied spaces. The results for each monitoring event show that the indoor air quality is consistent with exterior conditions. The original screening results on March 11, 2015 showed some elevated results, but there appeared to be calibration problems with the RAE ppb meter. Each IAQ event occurring since July 17, 2015 showed results in the occupied areas of the home to be low (<25 ppb) and similar to outside readings (<36 ppb). An exception to this occurred in the garage near an open can of heating oil, which was removed and the RAE ppb readings have decreased to exterior levels. The SVE system's exhaust stream has been measured during each event. The original July 2015 exhaust concentration was about 2000 ppb, and has shown a general decline through time. The latest reading on October 7, 2015 was 1500 ppb. Table 3 shows the results in tabular form.

Based on indoor air and exhaust stream vapor concentrations, the SVE system is successfully mitigating vapor intrusion. With the SVE system running, the IAQ quality is at background conditions and is considered appropriate for occupancy. No further evaluation or air quality assessment activities are required. However, if the SVE system fails, immediate steps should be taken to repair the system. Additionally, the fan should be checked by IRHA or the occupant monthly for proper operation.

Data from 1603 27th Avenues shows that a SVE depressurization system effectively mitigates vapor intrusion in a crawlspace however, the home at 1607 27th Avenues has a slab below grade in the living room area.

Because of the close proximity of the petroleum impacted soils and groundwater to the adjacent home at 1607 27th Avenue, the IAQ should be evaluated for potential impacts. In order to distinguish heating oil vapors from household VOCs, analytical samples should be collected and analyzed using EPA method TO-17. As an example, cooking, air fresheners and cleaning products can cause elevated readings on the RAE ppb meter, however, EPA method TO-17 can quantify if petroleum oil compounds are impacting the indoor air.

Benzene impacted groundwater on the west edge of lot 151 B is within 50 feet of the residence on lot 151 A suggesting that the inhalation indoor air exposure pathway is a concern for occupants at 1611 27 Avenue as well. It is recommended additional IAQ samples should be collected from the structure on Lot 151A if indoor air is found to be impacted at 151B or the home has a significantly deeper crawlspace or basement.

Soil Results: Soil boring locations can be found in Figure 3 and the summary of soil results are presented in Table 1 in the Appendix. The source area soil boring was placed between Lot 151C and Lot 151B near Lot 151C's heating oil tank. The sample was collected at 6 feet bgs. Gasoline Range Organics (GRO), Diesel Range Organics (DRO) and VOC compounds Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) exceed ADEC's cleanup levels. Additionally, polycyclic aromatic compounds (PAHs) 1-Methylnapthalene and 2-Methylnapthalene also exceed cleanup levels. Five other PAHs were detected below cleanup levels.

No soil boring outside the source area had detectable concentrations of any tested compound above the LOQ in the vadose or smear zone. The contamination is restricted to dissolved constituents in the groundwater. Based on field screening and laboratory results, soil impacts are confined to the source area. Soil excavation or remediation may potentially impact the foundation elements of the structures on Lots 151C and 151B due to the close proximity of the two homes to each other, therefore excavation is not recommended.

Groundwater Results: Table 2 shows a summary of laboratory results and Figure 3 indicates the location of each temporary sampling point and monitoring well. Results from TSP-02, TSP-03, TSP-04 and TSP-5, which are generally located south and/or east of the source area, are below the LOQ for each compound tested. TSPs located east and northwest (TSP -06 and TSP-07) of the source area had concentrations of benzene exceeding ADEC cleanup levels. Ethylbenzene and GRO were also detected in TSP-06 below cleanup levels. TSP-07 had detectable levels of GRO, DRO, ethylbenzene and xylenes below cleanup levels. MW-1 located just west of the heating oil tank in the source area had benzene and GRO concentrations above the cleanup criteria. DRO, ethylbenzene, toluene and xylenes were detected below cleanup limits.

Discussion

Based on several published studies from the United States Geological Survey (USGS) and data from other contaminated sites in this area of Fairbanks, the groundwater flow direction is generally west northwest. This is consistent with the elevated results seen at TSP-06 and 07, indicating the elevated benzene concentrations at these locations likely originate from the heating oil tank leak on Lot 151C. This also suggests the potential that dissolved contamination extends beneath Lot 151A and under 27th Avenue. However, TSP-06 and 07 are near and downgradient of the buried heating oil tank servicing the structure on Lot 151B, which may also be a source of petroleum contamination.

Based on these observations, the dissolved contamination and existing gradient confirm that the impacted area is west-northwest of the existing known source. As seen in Figure 2, this area is densely developed with single family houses and duplexes, and most have buried heating oil tanks. These residential units are also on public water and wastewater services and groundwater is not used in this area. Detailed delineation of the groundwater plume would require coordination with many adjacent landowners and may identify additional sources of dissolved contamination. These factors will drive up the overall expense for the responsible party while not significantly changing the overall understanding of the long-term conditions in the area.

In order to evaluate the long-term stability and natural attenuation of the plume, installation of one additional permanent well is recommended. This well should be installed at the location of TSP-06 to evaluate the edge of the plume. This well and MW-01 should be sampled annually in the late fall or early winter to evaluate the stability of the plume. The first two sampling events should include geochemical testing for natural attenuation indicators (iron, sulfate/sulfide, methane, etc.) to verify that biological degradation will decrease contaminant mass over time. In the event that biological mass reduction is not occurring or the plume is not shrinking after three sampling events, a contingency plan that includes additional delineation may need to be developed and implemented.

Laboratory QA/QC: The field methods were consistent with ADEC guidelines and the sample integrity is of adequate quality. A field duplicate was collected and each analyses' RPD was within 30% for the groundwater primary and duplicate samples and 50 percent for soil of calculable results confirming that the data is of adequate quality. An ADEC Laboratory Quality Review Checklist that reviews data for each laboratory report related to this effort is included in Appendix 5.

Conceptual Site Model: A conceptual site model (CSM) has been developed for this site. The CSM consists of a scoping form and flow chart graphic, each of which is attached. These indicate the mechanism of the release, the impacted and potentially impacted media, and the pathways that contamination may be able to reach receptors at the site (now or in the future).

The CSM is intended to outline the potential pathways without regard to corrective action and/or engineering controls.

The CSM reflects heating oil impacts to the surface soil (0 to 2 feet below grade), subsurface (>2 feet below the surface) and has impacted the groundwater based on laboratory results. The exposure pathways that are complete are the incidental ingestion of soil, dermal absorption of contaminants from soil, and inhalation of indoor and outdoor air. The site is in a residential neighborhood and can reasonably be expected to remain a residential property in the future. Current and future potential receptors include residents, visitors, and construction workers, including personnel completing the activities outlined in this work plan.

Smear zone soil contamination at the site includes GRO, DRO, and benzene. The primary exposure pathway from the remaining contamination is to workers doing this assessment and corrective action related to this contamination. The potential for migration of these contaminants to outdoor air is also possible. Migration to indoor air is a major factor as eleven occupied structures are within a 200-foot radius of the contaminant source area. The air in the home at 1603 27 Avenue was unacceptable for habitation until the ventilation system was installed.

Because of the close proximity of the structures on Lot 151C and B excavation of contaminated would compromise foundation elements in both homes. Excavation of contaminated soils is not feasible unless one or both homes were demolished.

Residential properties in this area utilize the public water system and no water supply wells were observed on the subject properties. The existing groundwater monitoring well and free product collection galleries provide the only direct conduit to subsurface contaminants. Contact with or ingestion of contaminated groundwater is unlikely. However, groundwater contamination remains above ADEC cleanup standards, resulting in the ingestion of groundwater pathway being complete.

The presence of residual subsurface contamination in excess of applicable cleanup levels in both soil and groundwater render the indoor and outdoor inhalation exposure routes complete. The vapor intrusion into the home on Lot 151C has been addressed with the existing SVE and depressurization systems and crawlspace vent system installed in the crawlspace. They reduce the potential exposure hazard by reducing the soil gas pressure relative to interior air pressure. Depressurization provides a preferential pathway for volatile compounds that discharge directly to the exterior of the structure. Volatile compound (benzene) vapors are extracted and exhausted outside the house. The SVE exhaust has not resulted in any complaints from the Site residents or neighbors, confirming that the SVE exhaust and ambient air combine and disperse vented vapors.

The likelihood of residents or site visitors being exposed to contaminant vapors outside the house, under current site conditions, is low.

Based on observation during the IAQ assessment screening events, no petroleum odor in the occupied structure has been observed. At least one of these systems will probably be operating until vapor intrusion can be evaluated and shown to no longer be a significant concern. This will require analytical air testing of the existing vapor systems and the plan for this should be developed after MNA has been demonstrated as an effective remediation strategy.

Near term, considerations include notification of adjoining property owners of the presence of subsurface contamination to prevent exposure through ingestion of groundwater. The property

owners adjacent to the Site are aware of the contamination, but a formal notification may be necessary if neighboring properties change ownership and should include other surrounding property owners. Because of the close proximity of the structure on Lot 151B to the source area contamination and benzene impacted groundwater on the west edge of lot 151B being within 50 feet, the inhalation indoor air exposure pathway is a concern and considered complete for occupants at 1607 and 1611 27 Avenue as well. It is recommended additional IAQ samples should be collected from the structures on these properties to determine the status of the inhalation of indoor pathways and take appropriate action.

Conclusions and Recommendations

NORTECH has conducted an initial site characterization and plume delineation at 1603 27 Avenue, Fairbanks, Alaska. A soil vapor extraction system was installed in home's crawlspace to reduce the risk of vapor intrusion and provide a limited amount of soil remediation.

A series of soil borings, temporary sampling points and a monitoring well have been installed on Site and on the adjacent property. Based on the available data for this Site, ***NORTECH*** has developed the following conclusions and recommendations:

Free Product Monitoring

- Periodic free phase petroleum monitoring indicates that product thickness and has been less than 0.05 feet during the free product collection events
    - Free product should continue to be recovered if passive adsorbents continue to recover fuel
    - Free product collection events should occur monthly

Dissolved Contaminant Concentrations

USGS published studies report groundwater flow is generally west northwest at the site and is controlled by the Chena and Tanana River elevations

- Based on groundwater results observed in TSP-02, 03, 04 and 05 no groundwater impacts have occurred south and east of the source area (up and cross gradient)
- Benzene impacted groundwater has been verified west northwest of the source area, impacting the home at 1607 27 Avenue and potentially 1611 27 Avenue in Fairbanks
- The contaminant plume's age and data suggests that the plume may be expanding west northwest
- A leak detection test should be performed on the UST servicing Lot 151B

Soil Vapor Extraction/Depressurization Systems

- The SVE/crawlspace venting system is controlling vapor from migrating into the occupied space of the structure.
- Periodic monitoring indicates both systems are functioning well
- The systems should be inspected and monitored quarterly

Exposure Pathways and Risk Mitigation

Four potential complete exposure pathways have been identified and evaluated

- Ingestion of surface/subsurface soil
    - Contaminated soil remains beneath the structure and is accessible
    - Existing soil vapor extraction systems may reduce the contaminant levels in this soil

  - No additional investigation or control of this exposure pathway is recommended at this time
  - Additional soil remediation may be necessary when the structure is removed
- Ingestion of groundwater
  - The residences at the site and the surrounding area utilize a public water system
  - No groundwater use in the area is documented
  - Adjacent property owners with impacted groundwater have been informally notified of the impacts
  - No additional investigation or control of this exposure pathway is recommended at this time
- Inhalation of outdoor air and indoor air (vapor intrusion)
  - The active vapor extraction/depressurization system controls the migration of vapors around and within the building
  - The successful dispersion of vapors discharged by the extraction system indicates that accumulation of vapors in outdoor air at this site is minimal
  - Quarterly monitoring is recommended to verify that these systems remain functional and effective
  - Long-term trends indicate that one or both of these may be switched from an active to a passive system as the mass of volatile contaminants in the subsurface is reduced
  - Conduct indoor air quality testing as part of long term maintenance
- Additional IAQ assessments should be performed at the 1607 and 1611 27 Avenue, Fairbanks, AK residences; exposure pathways should be updated based on results

Project Management Recommendations

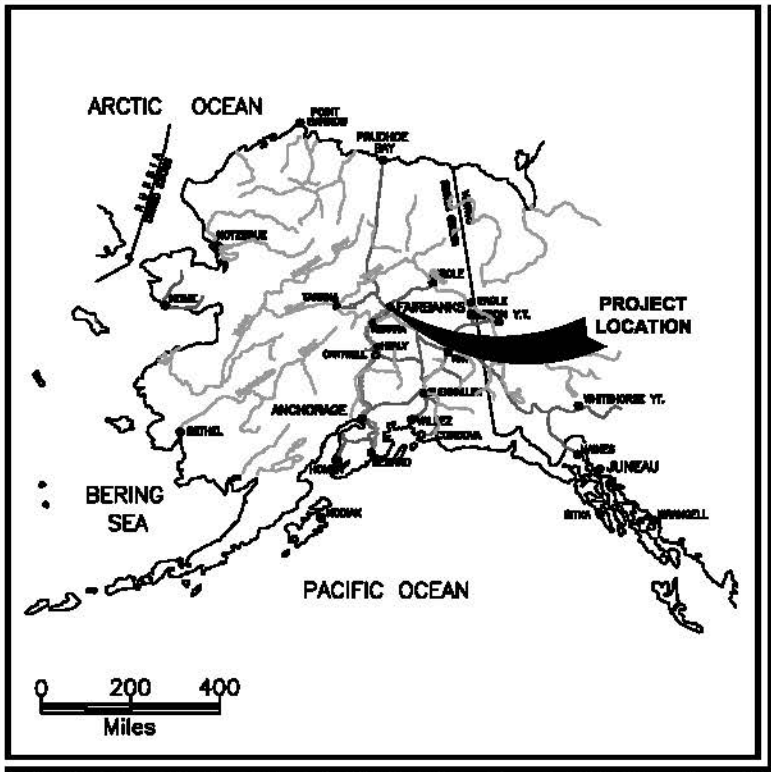
- Submit this report to ADEC documenting the activities completed to date
- Submit formal notifications to adjoining properties
- Work with ADEC to develop a long-term monitoring plan that includes:
  - Groundwater Sampling
    - One sampling event that includes geochemical parameters for MNA evaluation
    - One additional confirmation sampling event to confirm the continued decrease of contaminant concentrations
    - A frequency for additional sampling events after that time
    - Criteria for terminating the groundwater sampling program
  - Vapor Intrusion and Indoor Air Quality
    - Quarterly inspection and monitoring program of the existing system
    - Criteria for evaluating the potential to switch one or both systems to passive systems or completely off

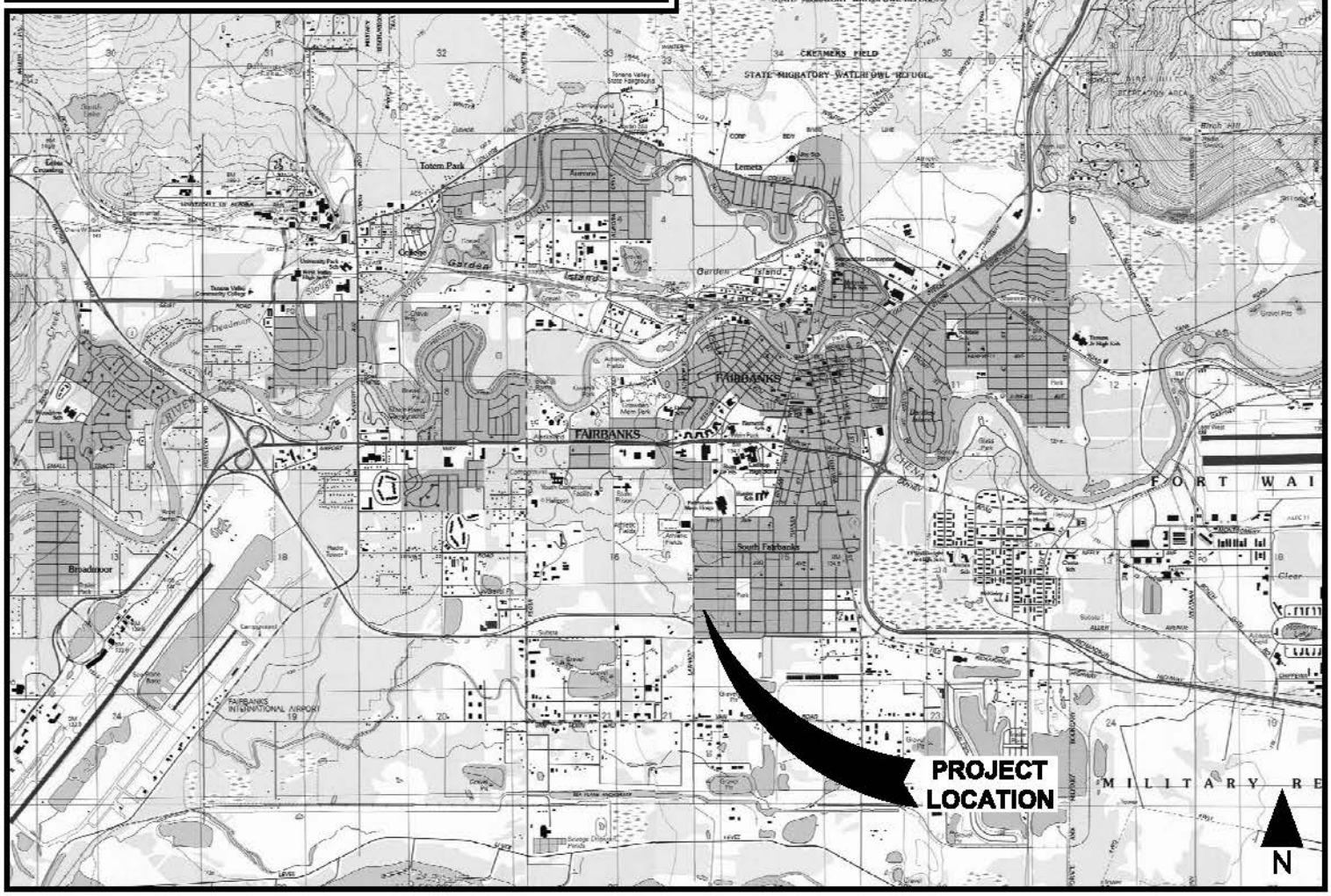
Please contact me, at your earliest convenience if you have any questions about the data presented in the report or the site in general.

Sincerely,
NORTECH

Doug Dusek
Environmental Specialist

Attachment 1: Figures
Attachment 2: Tables
Attachment 3: Standard Methodologies
Attachment 4: Conceptual Site Model (CSM)
Attachment 5: Laboratory Report and Check List





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Location Map
1603 27th Avenue
Fairbanks, Alaska

SCALE: 1"=1 mile	FIGURE: 1
DESIGN: TJB	
DRAWN: CMR	
PROJECT NO: 14-1173	
DWG: 141173a(01)	
DATE: 3/10/2015	

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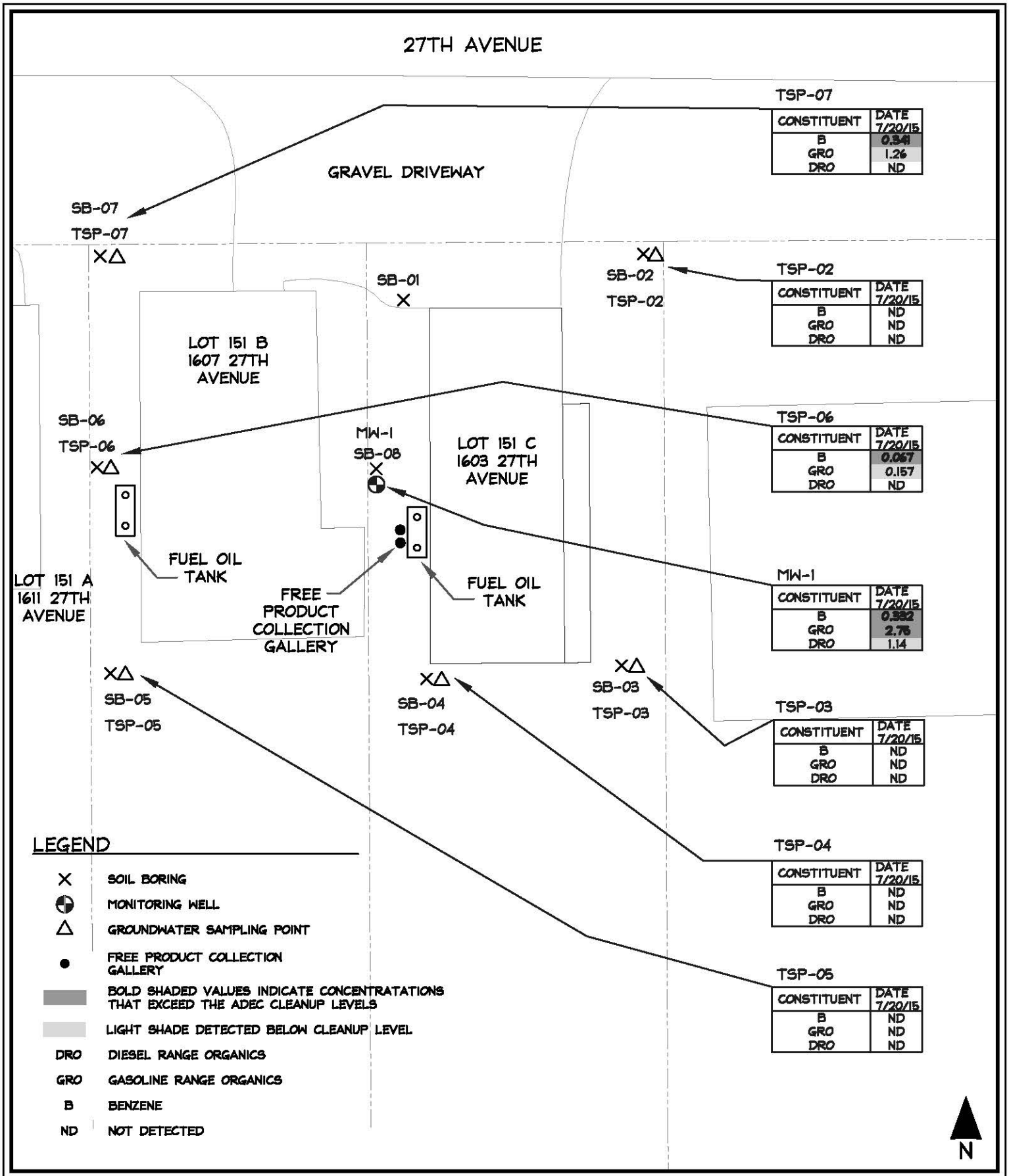
Vicinity Map
1603 27th Avenue
Fairbanks, Alaska

SCALE: 1" = 200'	FIGURE: 2
DESIGN: TJB	
DRAWN: CTB	
PROJECT NO: 15-1175	
DWG: 1411758a(02)	
DATE: 10/29/2015	



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Benzene & GRO, DRO Groundwater Results
1603 27th Avenue
Fairbanks, Alaska

SCALE: 1" = 20'	FIGURE: 3
DESIGN: TJB	
DRAWN: CMR	
PROJECT NO: 14-1173	
DWG: 141173b	
DATE: 10/14/2015	

Table 1
1603 27th Ave Soil Sample Results Summary
August 2, 2015

Sample ID	ADEC	SB01-8	SB02-6	SB03-6	SB04-6	SB05-6	SB06-6	SB07-6	SB08-6	SB10-6	RPD
	Cleanup Level	8 feet BGS	6 feet bgs	6 feet bgs	6 feet bgs	6 feet bgs	6 feet bgs	6 feet bgs	6 feet bgs	Dup of SB-07-6	
Analyte	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	%
PID Results		3	1.2	0.6	0.5	0.4	0.8	0.5	700		
GRO	300	1.64U	3.51U	3.61U	3.63U	4.81U	4.08U	3.87U	**521**	4.73U	NC
Petroleum Fractions by AK 102											
DRO	250	25.4U	26.8U	26.3U	27.3U	26.6U	27.4U	25.6U	**6090**	25.8U	NC
VOCs by EPA Method 8021b											
Benzene	0.025	0.0164U	0.0176U	0.0180U	0.0182U	0.0120U	0.0204U	0.0193U	**5.52**	0.0237U	NC
Ethylbenzene	6.900	0.0328U	0.0351U	0.0361U	0.0363U	0.0481U	0.0408U	0.0387U	**12.20**	0.0437U	NC
Toluene	6.50	0.0328U	0.0351U	0.0361U	0.0363U	0.0005U	0.0408U	0.0387U	**15.8**	0.0554	NC
Xylenes (total)	63.0	0.0328U	0.0351U	0.0361U	0.0363U	0.0005U	0.0408U	0.0387U	**77.0**	0.2	NC
Polycyclic Aromatics by EPA Method 8270D (Detected Results Only)											
1-Methylnaphthalene	6.2	NT	0.00672U	NT	NT	NT	NT	NT	**31.1**	NT	
2-Methylnaphthalene	6.1	NT	0.00672U	NT	NT	NT	NT	NT	**41.0**	NT	
Acenaphthene	180	NT	0.00672U	NT	NT	NT	NT	NT	2.99	NT	
Anthracene	3000	NT	0.00672U	NT	NT	NT	NT	NT	0.652	NT	
Fluorene	220	NT	0.00672U	NT	NT	NT	NT	NT	3.53	NT	
Naphthalene	20	NT	0.00672U	NT	NT	NT	NT	NT	19.2	NT	
Phenanthrene	3000	NT	0.00672U	NT	NT	NT	NT	NT	6.30	NT	

Notes:

# U	Analyte not detected at the listed limit of quantitation (LOQ)
NA	Analyte not analyzed
Shade	Analyte detected in concentration below the ADEC Cleanup level
Bold	Analyte detected in concentration exceeding the ADEC Cleanup level
RPD	Relative Percent Difference
mg/L	Milligrams per liter
NT	Not Taken
NC	Not Calculable

Table 2
1603 27th Ave Groundwater Sample Results Summary
July 20, 2015

Sample ID	ADEC Cleanup Level	TSP-02	TSP-03	TSP-04	TSP-05	TSP-06	TSP-07	MW-1	MW-2, Duplicate of MW-1	RPD
Analyte	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	%
Petroleum Fractions by AK 101										
GRO	2.2	0.100U	0.100U	0.100U	0.100U	0.157	1.26	**2.75**	**2.7**	1.8%
Petroleum Fractions by AK 102										
DRO	1.5	0.630U	0.615U	0.600U	0.600U	0.600U	0.600U	1.14	0.941	19.1%
VOCs by EPA Method 8021b										
Benzene	0.005	0.0005U	0.0005U	0.0005U	0.0005U	**0.0666**	**0.341**	**0.332**	**0.333**	0.3%
Ethylbenzene	0.700	0.00100U	0.00100U	0.00100U	0.00100U	0.00100U	0.0755	0.166	0.162	2.4%
Toluene	1.00	0.00100U	0.00100U	0.00100U	0.00100U	0.00100U	0.0100U	0.129	0.126	2.4%
Xylenes (total)	10.0	0.00100U	0.00100U	0.00100U	0.00100U	0.00100U	0.047	0.655	0.643	1.8%
Polycyclic Aromatics by EPA Method 8270D (Detected Results Only)										
1-Methylnaphthalene	0.15	NT	NT	NT	NT	NT	NT	0.021	0.022	4.3%
2-Methylnaphthalene	0.15	NT	NT	NT	NT	NT	NT	0.023	0.024	3.8%
Acenaphthene	2.2	NT	NT	NT	NT	NT	NT	0.0002	0.0002	8.3%
Anthracene	11	NT	NT	NT	NT	NT	NT	0.0000	0.0001	14.9%
Fluorene	1.5	NT	NT	NT	NT	NT	NT	0.001	0.001	1.9%
Naphthalene	0.73	NT	NT	NT	NT	NT	NT	0.050	0.050	0.8%
Phenanthrene	11	NT	NT	NT	NT	NT	NT	0.001	0.001	2.9%

Notes:

# U	Analyte not detected at the listed limit of quantitation (LOQ)
NA	Analyte not analyzed
Shade	Analyte detected in concentration below the ADEC Cleanup level
Bold	Analyte detected in concentration exceeding the ADEC Cleanup level
RPD	Relative Percent Difference
mg/L	Milligrams per liter
NT	Not Taken

Table 3

PPB RAE Results from Soil Vapor Extraction System

Total Organic Vapors in parts per billion (ppb)

Date	Garage	Crawlspace	Downstairs	Upstairs	SVE Exhaust
3/11/2015	333	314	60	55	
7/7/2015	20	11	11	17	2200
7/20/2015	13	20			2000
7/21/2015	20	20	11		2800
8/17/2015	125	13	21	22	1800
9/2/2015	110	3	4	4	1500
9/18/2015	93	0	0	0	1200
10/7/2015	13	0	0	0	1500

Direct Push Drilling and Monitoring Well Installation

Direct Push Drilling and Monitoring Well Installation

NORTECH utilized direct-push methodologies to install soil borings and groundwater monitoring wells during the site assessment activities. Use of the Geoprobe MacroCore system direct push method was used to minimize the development of investigation derived wastes (IDW) as well as provide the most reliable recovery rates in this type of soils.

Soil Borings

Soil borings were advanced at locations determined based suspected contamination and groundwater flow. Continuous soil cores were collected in four/ five-foot intervals to the top of the saturated soil horizon. Visual and olfactory inspections were conducted of each soil core and the soil lithology was recorded on boring logs. Field screening of the soil was conducted using a PID to evaluate potential contamination impacts. Field screening was completed following the methodology outlined in the field methodology section below. Field screening samples were collected at each two-foot interval. Soil samples were collected for laboratory analysis from selected depth intervals based on field screening results.

Permanent Monitoring Wells

One permanent monitoring well was installed near the fuel oil tank to assess free product and to provide a long-term monitoring point if long-term monitoring becomes necessary. The data collected during this characterization effort was used to evaluate the risks associated with any contamination in the saturated zones and help identify remediation strategies

The permanent monitoring well was installed using direct-push techniques as per ADEC guidelines. The well structure was a 2” diameter pre-packed pvc well assembled at the site. The well has a 10 foot well screen interval (two five-foot sections) set at a depth to intersect the water table throughout the seasonal fluctuation(s) in groundwater depth. The well casing annulus above the pre-packed screens was backfilled with native material and a bentonite seal was placed near the surface to prevent surface contamination from reaching the groundwater.

Field Screening Equipment, Methodology and Sampling Plan

Field Screening Equipment Description

A Mini Rae 3000 Hand Held Air Monitor/Photoionization Detector (PID) was the instrument used to field screen the soils for total volatile organic contaminants. The PID is the field-screening instrument of choice as field screening with a PID allows for semi-quantitative real time (< 10 minutes) analysis as compared to some of the other field screening methods that either use qualitative analysis or are more sensitive to temperature, humidity and hydrocarbon concentration variations.

Additionally, the Mini Rae is intrinsically safe and approved for use in Class 1, Division 2, Groups A, B, C, & D Hazardous Locations and is rugged in construction. Headspace field screening by a PID involves measuring the concentration of vapors generated by the POL contaminants in soil. The PID yields semi-quantitative concentrations for soil gas in reference to a certified isobutylene gas standard. Important specifications of the PhotoVac PID are as follows:

Instrument:	Mini Rae 3000
Detection Limit:	0.1 ppm
Response Time:	Less than 5 seconds
Calibration:	Certified Isobutylene Standard (nominal 100 ppm)
Operating Temperature Range:	32 to 105ºF (0 to 40ºC)

Field Screening Methodology

NORTECH used the PID for all soil field screening to be conducted during the characterization in the following manner:

The headspace method of field screening was used in general accordance with the ADEC field Sampling Guidance, 2010. Headspace screening consists of partially (33%-50%) filling a clean re-sealable bag with freshly uncovered soils to be field screened. The total capacity of the bag will not be less than 8 ounces (app. 350 ml).

The bag is closed, sealed and headspace vapors are allowed to develop for at least 10 minutes and not more than one hour. The bag was agitated at the beginning and the end of the headspace development period. The soil and headspace was tested at a temperature of at least 40° F (5° C). A small opening was made in the top of the bag and the PID probe was inserted into the bag. Headspace vapors were drawn from the center of the space above the soils and analyzed by the PID for total volatile organic compounds. The highest PID reading from each sample was recorded in the project field notes for inclusion in the final report.

Calibration was performed in accordance with the manufacturer's specifications.

Site Specific Contamination Level Classification

Headspace field screening is a method of quickly assessing total volatile organic contaminant concentrations in the field without the need for laboratory results. However, a correlation between PID field screening results and laboratory results is generally site specific. ***NORTECH***'s experience with recent heating oil releases is that the results generally show a good relationship between PID and laboratory results. It should be noted that a PID may yield different responses based on various factors, including: the soil matrix being tested, soil moisture content, and the volatility of contaminants that may be present. Based on the available data and past experience, for the purpose of this investigation the following contamination level classifications were used:

- PID screening results between 0-20 ppm was considered as clean.
- PID screening results >20 was considered above background concentrations

Laboratory Sampling Plan

Laboratory Sampling Plan

The site-specific laboratory sampling plan for this project involves one sampling in the source area and the surrounding area. In general, laboratory sampling was conducted for the following four primary purposes:

1. to provide confirmation of contaminant removal from the surface and subsurface soil environment in areas that had been impacted by heating oil
2. to assess the sub-surface soil environment around the near the source area and adjacent property
3. to assess the groundwater environment at the Site for potential impacts resulting from contaminant migration from the source area(s)

For the purposes of this document, the laboratory sampling approach is described below by the following areas:

- Sub surface soil sampling near the source area in the vicinity of the heating oil tank and adjacent areas area
- Groundwater sampling of the source area, an upgradient location, cross gradient and downgradient locations.

NORTECH collected all laboratory soil and groundwater samples in general accordance with the ADEC 2010 Field Sampling Guidance document (adopted by reference for sampling guidance, 18 AAC 78 regulations). All project soil and groundwater samples were collected directly into clean glassware provided by the laboratory 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 to the laboratory. A minimum of one trip blank will accompany each set of volatile samples submitted to the lab.

The contaminants of concern (COC) for the characterization and corrective action effort are limited to heating oil contaminants, including diesel range organics (DRO), and benzene, toluene, ethylbenzene, and xylenes (BTEX). Two samples were collected to analyze for Polynuclear Aromatics (PAHs) at the most contaminated locations.

Specific laboratory analyses was as follows:

- DRO by method AK102
- GRO by method AK 101
- BTEX by Method 8021
- PAH 8270D SIMS

NORTECH used SGS Environmental Services in Anchorage, Alaska as the analytical laboratory for all laboratory samples for this project.

Soil Sampling

Soil samples were collected from smear zone during the project effort. All soil samples were collected of freshly exposed soils using clean or disposable sampling tools.

Subsurface soil sampling (>2 feet) was conducted to assess the potential presence of contaminants and to characterize contaminant concentration which may remain in the sub-surface soil environment. Sub-surface soil samples were collected from cores recovered from direct-push borings advanced through the subsurface environment.

Groundwater sampling

The temporary sampling points were purged and sampled using low-flow techniques. Purging will consists of three to five well volumes and/or until the suspended silt was minimized and field parameters, including dissolved oxygen, pH, ORP, and conductivity, have stabilized. One sample was collected from each groundwater sampling well/point. At least one field duplicate was collected for every ten samples submitted.

Soil and Groundwater Cleanup Limits

Laboratory analyses of groundwater samples collected during this investigation will include GRO, DRO, VOCs and PAHcontaminants using the methodologies described above. All project soil and groundwater laboratory sample results wascompared to the site specific soil and groundwater cleanup limits provided in the following tables:

ADEC Method 2 Limits

Contaminant of Concern	Soil	Groundwater
GRO	300 mg/Kg	2.2 mg/L
DRO	250 mg/kg	1.5 mg/L
Benzene	0.025 mg/kg	0.005 mg/L

Toluene	6.9 mg/kg	1.0 mg/L
Ethylbenzene	6.5 mg/kg	0.7 mg/L
Total Xylenes	63 mg/kg	10 mg/L

Laboratory Report of Analysis

To: Nortech
2400 College Rd.
Fairbanks, AK 99709
(907)385-7587

Report Number: **1158401**

Client Project: **1603 27TH Ave**

Dear Doug Dusek,

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 Jennifer 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
2015.10.13
13:17:59 -08'00'

Jennifer Dawkins
Project Manager

Date

Print Date: 10/13/2015 8:49:12AM

Case Narrative

SGS Client: **Nortech**
SGS Project: **1158401**
Project Name/Site: **1603 27TH Ave**
Project Contact: **Doug Dusek**

Refer to sample receipt form for information on sample condition.

SB02-6 (1158401002) PS

8270D SIM - PAH surrogate recovery for terphenyl-d14 (114%) does not meet QC criteria. The analytes associated with this surrogate were not detected above the LOQ in the associated samples.

SB08-6 (1158401008) PS

AK101 - Surrogate recovery for 4-bromofluorobenzene (2390%) does not meet QC criteria due to matrix interference.
8270D SIM - PAH surrogate recovery for terphenyl-d14 (120%) and 2-fluorobiphenyl (597%) do not meet QC criteria due to sample dilution (10X).
8270D SIM - The PAH LOQs are elevated due to sample dilution. The sample was analyzed at a dilution due to matrix interference with internal standards.

LCS for HBN 1715919 [XXX/33747 (1281344) LCS

AK102/103 - LCSD surrogate recoveries for 5a-androstane (121%) and n-triacontane (132%) do not meet QC criteria; however the sample surrogates are within criteria.

LCSD for HBN 1715919 [XXX/3374 (1281345) LCSD

AK102/103 LCSD - Surrogate recoveries for 5a-androstane (121%) and n-triacontane (132%) do not meet QC criteria; however the sample surrogates are within criteria.

MB for HBN 1715962 [XXX/33754] (1281391) MB

8270D SIM - PAH MB has naphthalene(0.0512 ug/Kg) and 1-methylnaphthalene (0.02688 ug/Kg) detected above 1/2 the LOQ for DOD samples.

1158400001MS (1281429) MS

8270D SIM - PAH MS recovery for several compounds do not meet QC criteria. Refer to the LCS for accuracy requirements.

1158400001MSD (1281430) MSD

8270D SIM - PAH surrogate recovery for terphenyl-d14 (117%) does not meet QC criteria due to matrix interference.
8270D SIM - PAH MSD recovery for several compounds do not meet QC criteria. Refer to the LCS for accuracy requirements.
8270D SIM - PAH MS/MSD RPD for benzo[k]fluoranthene does not meet QC criteria (25). Results for this analyte are considered estimated in the parent sample.

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

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Report of Manual Integrations

Laboratory ID	Client Sample ID	Analytical Batch	Analyte	Reason
8270D SIMS (PAH)				
1281429	1158400001MS	XMS8851	Benzo[k]fluoranthene	RP
1281430	1158400001MSD	XMS8851	Benzo[k]fluoranthene	RP
8270D SIMS LV (PAH)				
1158401017	MW2	XMS8855	Acenaphthene	RP
1281391	MB for HBN 1715962 [XXX/33754]	XMS8855	Naphthalene	SP

Manual Integration Reason Code Descriptions

Code	Description
O	Original Chromatogram
M	Modified Chromatogram
SS	Skimmed surrogate
BLG	Closed baseline gap
RP	Reassign peak name
PIR	Pattern integration required
IT	Included tail
SP	Split peak
RSP	Removed split peak
FPS	Forced peak start/stop
BLC	Baseline correction
PNF	Peak not found by software

All DRO/RRO analysis are integrated per SOP.

Print Date: 10/13/2015 8:49:13AM

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, indenmification 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 & Microbiology) & 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, 8021B, 8082A, 8260B, 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
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
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.

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Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
SB01-8	1158401001	08/03/2015	08/04/2015	Soil/Solid (dry weight)
SB02-6	1158401002	08/03/2015	08/04/2015	Soil/Solid (dry weight)
SB03-6	1158401003	08/03/2015	08/04/2015	Soil/Solid (dry weight)
SB04-6	1158401004	08/03/2015	08/04/2015	Soil/Solid (dry weight)
SB05-6	1158401005	08/03/2015	08/04/2015	Soil/Solid (dry weight)
SB06-6	1158401006	08/03/2015	08/04/2015	Soil/Solid (dry weight)
SB07-6	1158401007	08/03/2015	08/04/2015	Soil/Solid (dry weight)
SB08-6	1158401008	08/03/2015	08/04/2015	Soil/Solid (dry weight)
SB10-6	1158401009	08/03/2015	08/04/2015	Soil/Solid (dry weight)
TSP02	1158401010	08/03/2015	08/04/2015	Water (Surface, Eff., Ground)
TSP03	1158401011	08/03/2015	08/04/2015	Water (Surface, Eff., Ground)
TSP04	1158401012	08/03/2015	08/04/2015	Water (Surface, Eff., Ground)
TSP05	1158401013	08/03/2015	08/04/2015	Water (Surface, Eff., Ground)
TSP06	1158401014	08/03/2015	08/04/2015	Water (Surface, Eff., Ground)
TSP07	1158401015	08/03/2015	08/04/2015	Water (Surface, Eff., Ground)
MW1	1158401016	08/03/2015	08/04/2015	Water (Surface, Eff., Ground)
MW2	1158401017	08/03/2015	08/04/2015	Water (Surface, Eff., Ground)
Trip Blank	1158401018	08/03/2015	08/04/2015	Water (Surface, Eff., Ground)
Trip Blank	1158401019	08/03/2015	08/04/2015	Soil/Solid (dry weight)

Method	Method Description
8270D SIMS LV (PAH)	8270 PAH SIM GC/MS Liq/Liq ext. LV
8270D SIMS (PAH)	8270 PAH SIM Semi-Volatiles GC/MS
AK101	AK101/8021 Combo.
SW8021B	AK101/8021 Combo.
AK101	AK101/8021 Combo. (S)
SW8021B	AK101/8021 Combo. (S)
AK102	Diesel Range Organics (S)
AK102	DRO Low Volume (W)
SM21 2540G	Percent Solids SM2540G

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Detectable Results Summary

Client Sample ID: **SB08-6**
Lab Sample ID: 1158401008

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	31100	ug/Kg
	2-Methylnaphthalene	41000	ug/Kg
	Acenaphthene	2990	ug/Kg
	Anthracene	652	ug/Kg
	Fluorene	3530	ug/Kg
	Naphthalene	19200	ug/Kg
	Phenanthrene	6300	ug/Kg
Semivolatile Organic Fuels	Diesel Range Organics	6090	mg/Kg
Volatile Fuels	Benzene	5520	ug/Kg
	Ethylbenzene	12200	ug/Kg
	Gasoline Range Organics	521	mg/Kg
	o-Xylene	30500	ug/Kg
	P & M -Xylene	46500	ug/Kg
	Toluene	15800	ug/Kg

Client Sample ID: **SB10-6**
Lab Sample ID: 1158401009

	Parameter	Result	Units
Volatile Fuels	o-Xylene	57.8	ug/Kg
	P & M -Xylene	148	ug/Kg
	Toluene	55.4	ug/Kg

Client Sample ID: **TSP06**
Lab Sample ID: 1158401014

	Parameter	Result	Units
Volatile Fuels	Benzene	66.6	ug/L
	Gasoline Range Organics	0.157	mg/L

Client Sample ID: **TSP07**
Lab Sample ID: 1158401015

	Parameter	Result	Units
Volatile Fuels	Benzene	341	ug/L
	Ethylbenzene	75.5	ug/L
	Gasoline Range Organics	1.26	mg/L
	o-Xylene	12.8	ug/L
	P & M -Xylene	34.7	ug/L

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Detectable Results Summary

Client Sample ID: **MW1**
Lab Sample ID: 1158401016

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	20.7	ug/L
	2-Methylnaphthalene	23.4	ug/L
	Acenaphthene	0.226	ug/L
	Fluorene	1.02	ug/L
	Naphthalene	49.5	ug/L
	Phenanthrene	1.01	ug/L
Semivolatile Organic Fuels	Diesel Range Organics	1.14	mg/L
Volatile Fuels	Benzene	332	ug/L
	Ethylbenzene	166	ug/L
	Gasoline Range Organics	2.75	mg/L
	o-Xylene	220	ug/L
	P & M -Xylene	435	ug/L
	Toluene	129	ug/L

Client Sample ID: **MW2**
Lab Sample ID: 1158401017

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	21.6	ug/L
	2-Methylnaphthalene	24.3	ug/L
	Acenaphthene	0.208	ug/L
	Anthracene	0.0512	ug/L
	Fluorene	1.01	ug/L
	Naphthalene	49.9	ug/L
	Phenanthrene	1.04	ug/L
Semivolatile Organic Fuels	Diesel Range Organics	0.941	mg/L
Volatile Fuels	Benzene	333	ug/L
	Ethylbenzene	162	ug/L
	Gasoline Range Organics	2.70	mg/L
	o-Xylene	217	ug/L
	P & M -Xylene	426	ug/L
	Toluene	126	ug/L

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Results of **SB01-8**

Client Sample ID: **SB01-8**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401001
Lab Project ID: 1158401

Collection Date: 08/03/15 08:30
Received Date: 08/04/15 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):78.7
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	25.4	U	25.4	7.87	mg/Kg	1		08/09/15 22:40
Surrogates								
5a Androstane (surr)	103		50-150		%	1		08/09/15 22:40

Batch Information

Analytical Batch: XFC12001
Analytical Method: AK102
Analyst: KJO
Analytical Date/Time: 08/09/15 22:40
Container ID: 1158401001-A

Prep Batch: XXX33747
Prep Method: SW3550C
Prep Date/Time: 08/04/15 19:34
Prep Initial Wt./Vol.: 30.028 g
Prep Extract Vol: 1 mL

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Results of **SB01-8**

Client Sample ID: **SB01-8**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401001
Lab Project ID: 1158401

Collection Date: 08/03/15 08:30
Received Date: 08/04/15 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):78.7
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	3.28	U	3.28	0.983	mg/Kg	1		08/07/15 15:10
Surrogates								
4-Bromofluorobenzene (surr)	116		50-150		%	1		08/07/15 15:10

Batch Information

Analytical Batch: VFC12568
Analytical Method: AK101
Analyst: CRD
Analytical Date/Time: 08/07/15 15:10
Container ID: 1158401001-B

Prep Batch: VXX27684
Prep Method: SW5035A
Prep Date/Time: 08/03/15 08:30
Prep Initial Wt./Vol.: 82.478 g
Prep Extract Vol: 42.5415 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	16.4	U	16.4	5.24	ug/Kg	1		08/07/15 15:10
Ethylbenzene	32.8	U	32.8	10.2	ug/Kg	1		08/07/15 15:10
o-Xylene	32.8	U	32.8	10.2	ug/Kg	1		08/07/15 15:10
P & M -Xylene	65.5	U	65.5	19.7	ug/Kg	1		08/07/15 15:10
Toluene	32.8	U	32.8	10.2	ug/Kg	1		08/07/15 15:10
Surrogates								
1,4-Difluorobenzene (surr)	85.8		72-119		%	1		08/07/15 15:10

Batch Information

Analytical Batch: VFC12568
Analytical Method: SW8021B
Analyst: CRD
Analytical Date/Time: 08/07/15 15:10
Container ID: 1158401001-B

Prep Batch: VXX27684
Prep Method: SW5035A
Prep Date/Time: 08/03/15 08:30
Prep Initial Wt./Vol.: 82.478 g
Prep Extract Vol: 42.5415 mL

Results of **SB02-6**

Client Sample ID: **SB02-6**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401002
Lab Project ID: 1158401

Collection Date: 08/03/15 09:20
Received Date: 08/04/15 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):74.0
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	6.72	U	6.72	2.02	ug/Kg	1		08/12/15 20:54
2-Methylnaphthalene	6.72	U	6.72	2.02	ug/Kg	1		08/12/15 20:54
Acenaphthene	6.72	U	6.72	2.02	ug/Kg	1		08/12/15 20:54
Acenaphthylene	6.72	U	6.72	2.02	ug/Kg	1		08/12/15 20:54
Anthracene	6.72	U	6.72	2.02	ug/Kg	1		08/12/15 20:54
Benzo(a)Anthracene	6.72	U	6.72	2.02	ug/Kg	1		08/12/15 20:54
Benzo[a]pyrene	6.72	U	6.72	2.02	ug/Kg	1		08/12/15 20:54
Benzo[b]Fluoranthene	6.72	U	6.72	2.02	ug/Kg	1		08/12/15 20:54
Benzo[g,h,i]perylene	6.72	U	6.72	2.02	ug/Kg	1		08/12/15 20:54
Benzo[k]fluoranthene	6.72	U	6.72	2.02	ug/Kg	1		08/12/15 20:54
Chrysene	6.72	U	6.72	2.02	ug/Kg	1		08/12/15 20:54
Dibenzo[a,h]anthracene	6.72	U	6.72	2.02	ug/Kg	1		08/12/15 20:54
Fluoranthene	6.72	U	6.72	2.02	ug/Kg	1		08/12/15 20:54
Fluorene	6.72	U	6.72	2.02	ug/Kg	1		08/12/15 20:54
Indeno[1,2,3-c,d] pyrene	6.72	U	6.72	2.02	ug/Kg	1		08/12/15 20:54
Naphthalene	6.72	U	6.72	2.02	ug/Kg	1		08/12/15 20:54
Phenanthrene	6.72	U	6.72	2.02	ug/Kg	1		08/12/15 20:54
Pyrene	6.72	U	6.72	2.02	ug/Kg	1		08/12/15 20:54
Surrogates								
2-Fluorobiphenyl (surr)	77.5		46-115		%	1		08/12/15 20:54
Terphenyl-d14 (surr)	114	*	58-113		%	1		08/12/15 20:54

Batch Information

Analytical Batch: XMS8851
Analytical Method: 8270D SIMS (PAH)
Analyst: SP
Analytical Date/Time: 08/12/15 20:54
Container ID: 1158401002-A

Prep Batch: XXX33757
Prep Method: SW3550C
Prep Date/Time: 08/05/15 11:00
Prep Initial Wt./Vol.: 22.631 g
Prep Extract Vol: 1 mL

Print Date: 10/13/2015 8:49:17AM

Results of **SB02-6**

Client Sample ID: **SB02-6**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401002
Lab Project ID: 1158401

Collection Date: 08/03/15 09:20
Received Date: 08/04/15 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):74.0
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	26.8	U	26.8	8.32	mg/Kg	1		08/09/15 23:02
Surrogates								
5a Androstane (surr)	97.4		50-150		%	1		08/09/15 23:02

Batch Information

Analytical Batch: XFC12001
Analytical Method: AK102
Analyst: KJO
Analytical Date/Time: 08/09/15 23:02
Container ID: 1158401002-A

Prep Batch: XXX33747
Prep Method: SW3550C
Prep Date/Time: 08/04/15 19:34
Prep Initial Wt./Vol.: 30.225 g
Prep Extract Vol: 1 mL

Print Date: 10/13/2015 8:49:17AM

Results of **SB02-6**

Client Sample ID: **SB02-6**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401002
Lab Project ID: 1158401

Collection Date: 08/03/15 09:20
Received Date: 08/04/15 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):74.0
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	3.51	U	3.51	1.05	mg/Kg	1		08/07/15 15:29
Surrogates								
4-Bromofluorobenzene (surr)	130		50-150		%	1		08/07/15 15:29

Batch Information

Analytical Batch: VFC12568
Analytical Method: AK101
Analyst: CRD
Analytical Date/Time: 08/07/15 15:29
Container ID: 1158401002-B

Prep Batch: VXX27684
Prep Method: SW5035A
Prep Date/Time: 08/03/15 09:20
Prep Initial Wt./Vol.: 96.374 g
Prep Extract Vol: 50.086 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	17.6	U	17.6	5.62	ug/Kg	1		08/07/15 15:29
Ethylbenzene	35.1	U	35.1	11.0	ug/Kg	1		08/07/15 15:29
o-Xylene	35.1	U	35.1	11.0	ug/Kg	1		08/07/15 15:29
P & M -Xylene	70.3	U	70.3	21.1	ug/Kg	1		08/07/15 15:29
Toluene	35.1	U	35.1	11.0	ug/Kg	1		08/07/15 15:29
Surrogates								
1,4-Difluorobenzene (surr)	85.6		72-119		%	1		08/07/15 15:29

Batch Information

Analytical Batch: VFC12568
Analytical Method: SW8021B
Analyst: CRD
Analytical Date/Time: 08/07/15 15:29
Container ID: 1158401002-B

Prep Batch: VXX27684
Prep Method: SW5035A
Prep Date/Time: 08/03/15 09:20
Prep Initial Wt./Vol.: 96.374 g
Prep Extract Vol: 50.086 mL

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Results of **SB03-6**

Client Sample ID: **SB03-6**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401003
Lab Project ID: 1158401

Collection Date: 08/03/15 09:40
Received Date: 08/04/15 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):75.0
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	26.3	U	26.3	8.16	mg/Kg	1		08/09/15 23:22
Surrogates								
5a Androstane (surr)	76.3		50-150		%	1		08/09/15 23:22

Batch Information

Analytical Batch: XFC12001
Analytical Method: AK102
Analyst: KJO
Analytical Date/Time: 08/09/15 23:22
Container ID: 1158401003-A

Prep Batch: XXX33747
Prep Method: SW3550C
Prep Date/Time: 08/04/15 19:34
Prep Initial Wt./Vol.: 30.397 g
Prep Extract Vol: 1 mL

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Results of **SB03-6**

Client Sample ID: **SB03-6**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401003
Lab Project ID: 1158401

Collection Date: 08/03/15 09:40
Received Date: 08/04/15 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):75.0
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	3.61	U	3.61	1.08	mg/Kg	1		08/07/15 15:48
Surrogates								
4-Bromofluorobenzene (surr)	115		50-150		%	1		08/07/15 15:48

Batch Information

Analytical Batch: VFC12568
Analytical Method: AK101
Analyst: CRD
Analytical Date/Time: 08/07/15 15:48
Container ID: 1158401003-B

Prep Batch: VXX27684
Prep Method: SW5035A
Prep Date/Time: 08/03/15 09:40
Prep Initial Wt./Vol.: 85.923 g
Prep Extract Vol: 46.4808 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	18.0	U	18.0	5.77	ug/Kg	1		08/07/15 15:48
Ethylbenzene	36.1	U	36.1	11.3	ug/Kg	1		08/07/15 15:48
o-Xylene	36.1	U	36.1	11.3	ug/Kg	1		08/07/15 15:48
P & M -Xylene	72.1	U	72.1	21.6	ug/Kg	1		08/07/15 15:48
Toluene	36.1	U	36.1	11.3	ug/Kg	1		08/07/15 15:48
Surrogates								
1,4-Difluorobenzene (surr)	85.8		72-119		%	1		08/07/15 15:48

Batch Information

Analytical Batch: VFC12568
Analytical Method: SW8021B
Analyst: CRD
Analytical Date/Time: 08/07/15 15:48
Container ID: 1158401003-B

Prep Batch: VXX27684
Prep Method: SW5035A
Prep Date/Time: 08/03/15 09:40
Prep Initial Wt./Vol.: 85.923 g
Prep Extract Vol: 46.4808 mL

Results of **SB04-6**

Client Sample ID: **SB04-6**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401004
Lab Project ID: 1158401

Collection Date: 08/03/15 10:00
Received Date: 08/04/15 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):72.6
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	27.3	U	27.3	8.46	mg/Kg	1		08/09/15 23:43
Surrogates								
5a Androstane (surr)	84.8		50-150		%	1		08/09/15 23:43

Batch Information

Analytical Batch: XFC12001
Analytical Method: AK102
Analyst: KJO
Analytical Date/Time: 08/09/15 23:43
Container ID: 1158401004-A

Prep Batch: XXX33747
Prep Method: SW3550C
Prep Date/Time: 08/04/15 19:34
Prep Initial Wt./Vol.: 30.263 g
Prep Extract Vol: 1 mL

Results of **SB04-6**

Client Sample ID: **SB04-6**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401004
Lab Project ID: 1158401

Collection Date: 08/03/15 10:00
Received Date: 08/04/15 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):72.6
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	3.63	U	3.63	1.09	mg/Kg	1		08/07/15 16:07
Surrogates								
4-Bromofluorobenzene (surr)	93.6		50-150		%	1		08/07/15 16:07

Batch Information

Analytical Batch: VFC12568
Analytical Method: AK101
Analyst: CRD
Analytical Date/Time: 08/07/15 16:07
Container ID: 1158401004-B

Prep Batch: VXX27684
Prep Method: SW5035A
Prep Date/Time: 08/03/15 10:00
Prep Initial Wt./Vol.: 98.661 g
Prep Extract Vol: 52.0183 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	18.2	U	18.2	5.81	ug/Kg	1		08/07/15 16:07
Ethylbenzene	36.3	U	36.3	11.3	ug/Kg	1		08/07/15 16:07
o-Xylene	36.3	U	36.3	11.3	ug/Kg	1		08/07/15 16:07
P & M -Xylene	72.6	U	72.6	21.8	ug/Kg	1		08/07/15 16:07
Toluene	36.3	U	36.3	11.3	ug/Kg	1		08/07/15 16:07
Surrogates								
1,4-Difluorobenzene (surr)	86.3		72-119		%	1		08/07/15 16:07

Batch Information

Analytical Batch: VFC12568
Analytical Method: SW8021B
Analyst: CRD
Analytical Date/Time: 08/07/15 16:07
Container ID: 1158401004-B

Prep Batch: VXX27684
Prep Method: SW5035A
Prep Date/Time: 08/03/15 10:00
Prep Initial Wt./Vol.: 98.661 g
Prep Extract Vol: 52.0183 mL

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Results of **SB05-6**

Client Sample ID: **SB05-6**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401005
Lab Project ID: 1158401

Collection Date: 08/03/15 11:00
Received Date: 08/04/15 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):74.3
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	26.6	U	26.6	8.26	mg/Kg	1		08/10/15 00:03
Surrogates								
5a Androstane (surr)	114		50-150		%	1		08/10/15 00:03

Batch Information

Analytical Batch: XFC12001
Analytical Method: AK102
Analyst: KJO
Analytical Date/Time: 08/10/15 00:03
Container ID: 1158401005-A

Prep Batch: XXX33747
Prep Method: SW3550C
Prep Date/Time: 08/04/15 19:34
Prep Initial Wt./Vol.: 30.319 g
Prep Extract Vol: 1 mL

Print Date: 10/13/2015 8:49:17AM

Results of **SB05-6**

Client Sample ID: **SB05-6**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401005
Lab Project ID: 1158401

Collection Date: 08/03/15 11:00
Received Date: 08/04/15 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):74.3
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	4.81	U	4.81	1.44	mg/Kg	1		08/07/15 16:26
Surrogates								
4-Bromofluorobenzene (surr)	109		50-150		%	1		08/07/15 16:26

Batch Information

Analytical Batch: VFC12568
Analytical Method: AK101
Analyst: CRD
Analytical Date/Time: 08/07/15 16:26
Container ID: 1158401005-B

Prep Batch: VXX27684
Prep Method: SW5035A
Prep Date/Time: 08/03/15 11:00
Prep Initial Wt./Vol.: 54.72 g
Prep Extract Vol: 39.0829 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	24.0	U	24.0	7.69	ug/Kg	1		08/07/15 16:26
Ethylbenzene	48.1	U	48.1	15.0	ug/Kg	1		08/07/15 16:26
o-Xylene	48.1	U	48.1	15.0	ug/Kg	1		08/07/15 16:26
P & M -Xylene	96.2	U	96.2	28.9	ug/Kg	1		08/07/15 16:26
Toluene	48.1	U	48.1	15.0	ug/Kg	1		08/07/15 16:26
Surrogates								
1,4-Difluorobenzene (surr)	86.6		72-119		%	1		08/07/15 16:26

Batch Information

Analytical Batch: VFC12568
Analytical Method: SW8021B
Analyst: CRD
Analytical Date/Time: 08/07/15 16:26
Container ID: 1158401005-B

Prep Batch: VXX27684
Prep Method: SW5035A
Prep Date/Time: 08/03/15 11:00
Prep Initial Wt./Vol.: 54.72 g
Prep Extract Vol: 39.0829 mL

Results of **SB06-6**

Client Sample ID: **SB06-6**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401006
Lab Project ID: 1158401

Collection Date: 08/03/15 11:35
Received Date: 08/04/15 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):72.6
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	27.4	U	27.4	8.51	mg/Kg	1		08/10/15 00:24
Surrogates								
5a Androstane (surr)	107		50-150		%	1		08/10/15 00:24

Batch Information

Analytical Batch: XFC12001
Analytical Method: AK102
Analyst: KJO
Analytical Date/Time: 08/10/15 00:24
Container ID: 1158401006-A

Prep Batch: XXX33747
Prep Method: SW3550C
Prep Date/Time: 08/04/15 19:34
Prep Initial Wt./Vol.: 30.1 g
Prep Extract Vol: 1 mL

Print Date: 10/13/2015 8:49:17AM

Results of **SB06-6**

Client Sample ID: **SB06-6**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401006
Lab Project ID: 1158401

Collection Date: 08/03/15 11:35
Received Date: 08/04/15 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):72.6
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	4.08	U	4.08	1.22	mg/Kg	1		08/07/15 16:45
Surrogates								
4-Bromofluorobenzene (surr)	124		50-150		%	1		08/07/15 16:45

Batch Information

Analytical Batch: VFC12568
Analytical Method: AK101
Analyst: CRD
Analytical Date/Time: 08/07/15 16:45
Container ID: 1158401006-B

Prep Batch: VXX27684
Prep Method: SW5035A
Prep Date/Time: 08/03/15 11:35
Prep Initial Wt./Vol.: 78.372 g
Prep Extract Vol: 46.4469 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	20.4	U	20.4	6.53	ug/Kg	1		08/07/15 16:45
Ethylbenzene	40.8	U	40.8	12.7	ug/Kg	1		08/07/15 16:45
o-Xylene	40.8	U	40.8	12.7	ug/Kg	1		08/07/15 16:45
P & M -Xylene	81.6	U	81.6	24.5	ug/Kg	1		08/07/15 16:45
Toluene	40.8	U	40.8	12.7	ug/Kg	1		08/07/15 16:45
Surrogates								
1,4-Difluorobenzene (surr)	86.4		72-119		%	1		08/07/15 16:45

Batch Information

Analytical Batch: VFC12568
Analytical Method: SW8021B
Analyst: CRD
Analytical Date/Time: 08/07/15 16:45
Container ID: 1158401006-B

Prep Batch: VXX27684
Prep Method: SW5035A
Prep Date/Time: 08/03/15 11:35
Prep Initial Wt./Vol.: 78.372 g
Prep Extract Vol: 46.4469 mL

Results of **SB07-6**

Client Sample ID: **SB07-6**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401007
Lab Project ID: 1158401

Collection Date: 08/03/15 12:20
Received Date: 08/04/15 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):76.7
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	25.6	U	25.6	7.95	mg/Kg	1		08/10/15 00:45
Surrogates								
5a Androstane (surr)	95.6		50-150		%	1		08/10/15 00:45

Batch Information

Analytical Batch: XFC12001
Analytical Method: AK102
Analyst: KJO
Analytical Date/Time: 08/10/15 00:45
Container ID: 1158401007-A

Prep Batch: XXX33747
Prep Method: SW3550C
Prep Date/Time: 08/04/15 19:34
Prep Initial Wt./Vol.: 30.499 g
Prep Extract Vol: 1 mL

Print Date: 10/13/2015 8:49:17AM

Results of **SB07-6**

Client Sample ID: **SB07-6**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401007
Lab Project ID: 1158401

Collection Date: 08/03/15 12:20
Received Date: 08/04/15 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):76.7
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	3.87	U	3.87	1.16	mg/Kg	1		08/07/15 17:04
Surrogates								
4-Bromofluorobenzene (surr)	89.3		50-150		%	1		08/07/15 17:04

Batch Information

Analytical Batch: VFC12568
Analytical Method: AK101
Analyst: CRD
Analytical Date/Time: 08/07/15 17:04
Container ID: 1158401007-B

Prep Batch: VXX27684
Prep Method: SW5035A
Prep Date/Time: 08/03/15 12:20
Prep Initial Wt./Vol.: 69.259 g
Prep Extract Vol: 41.116 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	19.3	U	19.3	6.19	ug/Kg	1		08/07/15 17:04
Ethylbenzene	38.7	U	38.7	12.1	ug/Kg	1		08/07/15 17:04
o-Xylene	38.7	U	38.7	12.1	ug/Kg	1		08/07/15 17:04
P & M -Xylene	77.4	U	77.4	23.2	ug/Kg	1		08/07/15 17:04
Toluene	38.7	U	38.7	12.1	ug/Kg	1		08/07/15 17:04
Surrogates								
1,4-Difluorobenzene (surr)	85.8		72-119		%	1		08/07/15 17:04

Batch Information

Analytical Batch: VFC12568
Analytical Method: SW8021B
Analyst: CRD
Analytical Date/Time: 08/07/15 17:04
Container ID: 1158401007-B

Prep Batch: VXX27684
Prep Method: SW5035A
Prep Date/Time: 08/03/15 12:20
Prep Initial Wt./Vol.: 69.259 g
Prep Extract Vol: 41.116 mL

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Results of **SB08-6**

Client Sample ID: **SB08-6**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401008
Lab Project ID: 1158401

Collection Date: 08/03/15 13:38
Received Date: 08/04/15 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):71.9
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	31100		3410	1020	ug/Kg	500		08/17/15 14:49
2-Methylnaphthalene	41000		3410	1020	ug/Kg	500		08/17/15 14:49
Acenaphthene	2990		341	102	ug/Kg	50		08/17/15 14:32
Acenaphthylene	68.3	U	68.3	20.5	ug/Kg	10		08/14/15 07:12
Anthracene	652		68.3	20.5	ug/Kg	10		08/14/15 07:12
Benzo(a)Anthracene	68.3	U	68.3	20.5	ug/Kg	10		08/14/15 07:12
Benzo[a]pyrene	68.3	U	68.3	20.5	ug/Kg	10		08/14/15 07:12
Benzo[b]Fluoranthene	68.3	U	68.3	20.5	ug/Kg	10		08/14/15 07:12
Benzo[g,h,i]perylene	68.3	U	68.3	20.5	ug/Kg	10		08/14/15 07:12
Benzo[k]fluoranthene	68.3	U	68.3	20.5	ug/Kg	10		08/14/15 07:12
Chrysene	68.3	U	68.3	20.5	ug/Kg	10		08/14/15 07:12
Dibenzo[a,h]anthracene	68.3	U	68.3	20.5	ug/Kg	10		08/14/15 07:12
Fluoranthene	68.3	U	68.3	20.5	ug/Kg	10		08/14/15 07:12
Fluorene	3530		341	102	ug/Kg	50		08/17/15 14:32
Indeno[1,2,3-c,d] pyrene	68.3	U	68.3	20.5	ug/Kg	10		08/14/15 07:12
Naphthalene	19200		3410	1020	ug/Kg	500		08/17/15 14:49
Phenanthrene	6300		341	102	ug/Kg	50		08/17/15 14:32
Pyrene	68.3	U	68.3	20.5	ug/Kg	10		08/14/15 07:12
Surrogates								
2-Fluorobiphenyl (surr)	597	*	46-115		%	10		08/14/15 07:12
Terphenyl-d14 (surr)	120	*	58-113		%	10		08/14/15 07:12

Batch Information

Analytical Batch: XMS8857
Analytical Method: 8270D SIMS (PAH)
Analyst: SP
Analytical Date/Time: 08/14/15 07:12
Container ID: 1158401008-A

Prep Batch: XXX33757
Prep Method: SW3550C
Prep Date/Time: 08/05/15 11:00
Prep Initial Wt./Vol.: 22.911 g
Prep Extract Vol: 1 mL

Analytical Batch: XMS8863
Analytical Method: 8270D SIMS (PAH)
Analyst: SP
Analytical Date/Time: 08/17/15 14:49
Container ID: 1158401008-A

Prep Batch: XXX33757
Prep Method: SW3550C
Prep Date/Time: 08/05/15 11:00
Prep Initial Wt./Vol.: 22.911 g
Prep Extract Vol: 1 mL

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Results of **SB08-6**

Client Sample ID: **SB08-6**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401008
Lab Project ID: 1158401

Collection Date: 08/03/15 13:38
Received Date: 08/04/15 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):71.9
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	6090		275	85.2	mg/Kg	10		08/10/15 01:05
Surrogates								
5a Androstane (surr)	134		50-150		%	10		08/10/15 01:05

Batch Information

Analytical Batch: XFC12001
Analytical Method: AK102
Analyst: KJO
Analytical Date/Time: 08/10/15 01:05
Container ID: 1158401008-A

Prep Batch: XXX33747
Prep Method: SW3550C
Prep Date/Time: 08/04/15 19:34
Prep Initial Wt./Vol.: 30.353 g
Prep Extract Vol: 1 mL

Print Date: 10/13/2015 8:49:17AM

Results of **SB08-6**

Client Sample ID: **SB08-6**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401008
Lab Project ID: 1158401

Collection Date: 08/03/15 13:38
Received Date: 08/04/15 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):71.9
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	521		48.1	14.4	mg/Kg	10		08/07/15 17:23
Surrogates								
4-Bromofluorobenzene (surr)	2390	*	50-150		%	10		08/07/15 17:23

Batch Information

Analytical Batch: VFC12568
Analytical Method: AK101
Analyst: CRD
Analytical Date/Time: 08/07/15 17:23
Container ID: 1158401008-B

Prep Batch: VXX27684
Prep Method: SW5035A
Prep Date/Time: 08/03/15 13:38
Prep Initial Wt./Vol.: 60.718 g
Prep Extract Vol: 42.0495 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	5520		241	77.0	ug/Kg	10		08/07/15 17:23
Ethylbenzene	12200		481	150	ug/Kg	10		08/07/15 17:23
o-Xylene	30500		481	150	ug/Kg	10		08/07/15 17:23
P & M -Xylene	46500		963	289	ug/Kg	10		08/07/15 17:23
Toluene	15800		481	150	ug/Kg	10		08/07/15 17:23
Surrogates								
1,4-Difluorobenzene (surr)	91.9		72-119		%	10		08/07/15 17:23

Batch Information

Analytical Batch: VFC12568
Analytical Method: SW8021B
Analyst: CRD
Analytical Date/Time: 08/07/15 17:23
Container ID: 1158401008-B

Prep Batch: VXX27684
Prep Method: SW5035A
Prep Date/Time: 08/03/15 13:38
Prep Initial Wt./Vol.: 60.718 g
Prep Extract Vol: 42.0495 mL

Print Date: 10/13/2015 8:49:17AM

Results of **SB10-6**

Client Sample ID: **SB10-6**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401009
Lab Project ID: 1158401

Collection Date: 08/03/15 12:35
Received Date: 08/04/15 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):76.4
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	25.8	U	25.8	8.00	mg/Kg	1		08/10/15 01:26
Surrogates								
5a Androstane (surr)	97.4		50-150		%	1		08/10/15 01:26

Batch Information

Analytical Batch: XFC12001
Analytical Method: AK102
Analyst: KJO
Analytical Date/Time: 08/10/15 01:26
Container ID: 1158401009-A

Prep Batch: XXX33747
Prep Method: SW3550C
Prep Date/Time: 08/04/15 19:34
Prep Initial Wt./Vol.: 30.438 g
Prep Extract Vol: 1 mL

Print Date: 10/13/2015 8:49:17AM

Results of **SB10-6**

Client Sample ID: **SB10-6**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401009
Lab Project ID: 1158401

Collection Date: 08/03/15 12:35
Received Date: 08/04/15 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):76.4
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	4.73	U	4.73	1.42	mg/Kg	1		08/07/15 19:19
Surrogates								
4-Bromofluorobenzene (surr)	106		50-150		%	1		08/07/15 19:19

Batch Information

Analytical Batch: VFC12568
Analytical Method: AK101
Analyst: CRD
Analytical Date/Time: 08/07/15 19:19
Container ID: 1158401009-B

Prep Batch: VXX27684
Prep Method: SW5035A
Prep Date/Time: 08/03/15 12:35
Prep Initial Wt./Vol.: 51.321 g
Prep Extract Vol: 37.1202 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	23.7	U	23.7	7.58	ug/Kg	1		08/07/15 19:19
Ethylbenzene	47.3	U	47.3	14.8	ug/Kg	1		08/07/15 19:19
o-Xylene	57.8		47.3	14.8	ug/Kg	1		08/07/15 19:19
P & M -Xylene	148		94.7	28.4	ug/Kg	1		08/07/15 19:19
Toluene	55.4		47.3	14.8	ug/Kg	1		08/07/15 19:19
Surrogates								
1,4-Difluorobenzene (surr)	85.8		72-119		%	1		08/07/15 19:19

Batch Information

Analytical Batch: VFC12568
Analytical Method: SW8021B
Analyst: CRD
Analytical Date/Time: 08/07/15 19:19
Container ID: 1158401009-B

Prep Batch: VXX27684
Prep Method: SW5035A
Prep Date/Time: 08/03/15 12:35
Prep Initial Wt./Vol.: 51.321 g
Prep Extract Vol: 37.1202 mL

Print Date: 10/13/2015 8:49:17AM

Results of **TSP02**

Client Sample ID: **TSP02**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401010
Lab Project ID: 1158401

Collection Date: 08/03/15 09:30
Received Date: 08/04/15 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.630	U	0.630	0.189	mg/L	1		08/14/15 00:22
Surrogates								
5a Androstane (surr)	81.7		50-150		%	1		08/14/15 00:22

Batch Information

Analytical Batch: XFC12010
Analytical Method: AK102
Analyst: KJO
Analytical Date/Time: 08/14/15 00:22
Container ID: 1158401010-A

Prep Batch: XXX33834
Prep Method: SW3520C
Prep Date/Time: 08/13/15 09:35
Prep Initial Wt./Vol.: 238 mL
Prep Extract Vol: 1 mL

Print Date: 10/13/2015 8:49:17AM

Results of **TSP02**

Client Sample ID: **TSP02**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401010
Lab Project ID: 1158401

Collection Date: 08/03/15 09:30
Received Date: 08/04/15 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.100	U	0.100	0.0310	mg/L	1		08/08/15 01:41
Surrogates								
4-Bromofluorobenzene (surr)	87.9		50-150		%	1		08/08/15 01:41

Batch Information

Analytical Batch: VFC12569
Analytical Method: AK101
Analyst: CRD
Analytical Date/Time: 08/08/15 01:41
Container ID: 1158401010-C

Prep Batch: VXX27685
Prep Method: SW5030B
Prep Date/Time: 08/07/15 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.500	U	0.500	0.150	ug/L	1		08/08/15 01:41
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1		08/08/15 01:41
o-Xylene	1.00	U	1.00	0.310	ug/L	1		08/08/15 01:41
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1		08/08/15 01:41
Toluene	1.00	U	1.00	0.310	ug/L	1		08/08/15 01:41
Surrogates								
1,4-Difluorobenzene (surr)	85.5		77-115		%	1		08/08/15 01:41

Batch Information

Analytical Batch: VFC12569
Analytical Method: SW8021B
Analyst: CRD
Analytical Date/Time: 08/08/15 01:41
Container ID: 1158401010-C

Prep Batch: VXX27685
Prep Method: SW5030B
Prep Date/Time: 08/07/15 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **TSP03**

Client Sample ID: **TSP03**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401011
Lab Project ID: 1158401

Collection Date: 08/03/15 09:56
Received Date: 08/04/15 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.615	U	0.615	0.184	mg/L	1		08/14/15 00:42
Surrogates								
5a Androstane (surr)	83.3		50-150		%	1		08/14/15 00:42

Batch Information

Analytical Batch: XFC12010
Analytical Method: AK102
Analyst: KJO
Analytical Date/Time: 08/14/15 00:42
Container ID: 1158401011-A

Prep Batch: XXX33834
Prep Method: SW3520C
Prep Date/Time: 08/13/15 09:35
Prep Initial Wt./Vol.: 244 mL
Prep Extract Vol: 1 mL

Print Date: 10/13/2015 8:49:17AM

Results of **TSP03**

Client Sample ID: **TSP03**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401011
Lab Project ID: 1158401

Collection Date: 08/03/15 09:56
Received Date: 08/04/15 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.100	U	0.100	0.0310	mg/L	1		08/08/15 01:59
Surrogates								
4-Bromofluorobenzene (surr)	87.5		50-150		%	1		08/08/15 01:59

Batch Information

Analytical Batch: VFC12569
Analytical Method: AK101
Analyst: CRD
Analytical Date/Time: 08/08/15 01:59
Container ID: 1158401011-C

Prep Batch: VXX27685
Prep Method: SW5030B
Prep Date/Time: 08/07/15 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.500	U	0.500	0.150	ug/L	1		08/08/15 01:59
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1		08/08/15 01:59
o-Xylene	1.00	U	1.00	0.310	ug/L	1		08/08/15 01:59
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1		08/08/15 01:59
Toluene	1.00	U	1.00	0.310	ug/L	1		08/08/15 01:59
Surrogates								
1,4-Difluorobenzene (surr)	85		77-115		%	1		08/08/15 01:59

Batch Information

Analytical Batch: VFC12569
Analytical Method: SW8021B
Analyst: CRD
Analytical Date/Time: 08/08/15 01:59
Container ID: 1158401011-C

Prep Batch: VXX27685
Prep Method: SW5030B
Prep Date/Time: 08/07/15 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/13/2015 8:49:17AM

Results of **TSP04**

Client Sample ID: **TSP04**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401012
Lab Project ID: 1158401

Collection Date: 08/03/15 10:30
Received Date: 08/04/15 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.600	U	0.600	0.180	mg/L	1		08/14/15 01:03
Surrogates								
5a Androstane (surr)	89.9		50-150		%	1		08/14/15 01:03

Batch Information

Analytical Batch: XFC12010
Analytical Method: AK102
Analyst: KJO
Analytical Date/Time: 08/14/15 01:03
Container ID: 1158401012-A

Prep Batch: XXX33834
Prep Method: SW3520C
Prep Date/Time: 08/13/15 09:35
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 10/13/2015 8:49:17AM

Results of **TSP04**

Client Sample ID: **TSP04**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401012
Lab Project ID: 1158401

Collection Date: 08/03/15 10:30
Received Date: 08/04/15 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.100	U	0.100	0.0310	mg/L	1		08/08/15 02:19
Surrogates								
4-Bromofluorobenzene (surr)	87.6		50-150		%	1		08/08/15 02:19

Batch Information

Analytical Batch: VFC12569
Analytical Method: AK101
Analyst: CRD
Analytical Date/Time: 08/08/15 02:19
Container ID: 1158401012-C

Prep Batch: VXX27685
Prep Method: SW5030B
Prep Date/Time: 08/07/15 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.500	U	0.500	0.150	ug/L	1		08/08/15 02:19
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1		08/08/15 02:19
o-Xylene	1.00	U	1.00	0.310	ug/L	1		08/08/15 02:19
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1		08/08/15 02:19
Toluene	1.00	U	1.00	0.310	ug/L	1		08/08/15 02:19
Surrogates								
1,4-Difluorobenzene (surr)	86.5		77-115		%	1		08/08/15 02:19

Batch Information

Analytical Batch: VFC12569
Analytical Method: SW8021B
Analyst: CRD
Analytical Date/Time: 08/08/15 02:19
Container ID: 1158401012-C

Prep Batch: VXX27685
Prep Method: SW5030B
Prep Date/Time: 08/07/15 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/13/2015 8:49:17AM

Results of **TSP05**

Client Sample ID: **TSP05**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401013
Lab Project ID: 1158401

Collection Date: 08/03/15 11:12
Received Date: 08/04/15 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.600	U	0.600	0.180	mg/L	1		08/14/15 01:24
Surrogates								
5a Androstane (surr)	73.1		50-150		%	1		08/14/15 01:24

Batch Information

Analytical Batch: XFC12010
Analytical Method: AK102
Analyst: KJO
Analytical Date/Time: 08/14/15 01:24
Container ID: 1158401013-A

Prep Batch: XXX33834
Prep Method: SW3520C
Prep Date/Time: 08/13/15 09:35
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 10/13/2015 8:49:17AM

Results of **TSP05**

Client Sample ID: **TSP05**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401013
Lab Project ID: 1158401

Collection Date: 08/03/15 11:12
Received Date: 08/04/15 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.100	U	0.100	0.0310	mg/L	1		08/08/15 02:38
Surrogates								
4-Bromofluorobenzene (surr)	88.8		50-150		%	1		08/08/15 02:38

Batch Information

Analytical Batch: VFC12569
Analytical Method: AK101
Analyst: CRD
Analytical Date/Time: 08/08/15 02:38
Container ID: 1158401013-C

Prep Batch: VXX27685
Prep Method: SW5030B
Prep Date/Time: 08/07/15 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.500	U	0.500	0.150	ug/L	1		08/08/15 02:38
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1		08/08/15 02:38
o-Xylene	1.00	U	1.00	0.310	ug/L	1		08/08/15 02:38
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1		08/08/15 02:38
Toluene	1.00	U	1.00	0.310	ug/L	1		08/08/15 02:38
Surrogates								
1,4-Difluorobenzene (surr)	84.6		77-115		%	1		08/08/15 02:38

Batch Information

Analytical Batch: VFC12569
Analytical Method: SW8021B
Analyst: CRD
Analytical Date/Time: 08/08/15 02:38
Container ID: 1158401013-C

Prep Batch: VXX27685
Prep Method: SW5030B
Prep Date/Time: 08/07/15 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/13/2015 8:49:17AM

Results of **TSP06**

Client Sample ID: **TSP06**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401014
Lab Project ID: 1158401

Collection Date: 08/03/15 11:45
Received Date: 08/04/15 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.600	U	0.600	0.180	mg/L	1		08/14/15 01:44
Surrogates								
5a Androstane (surr)	73.4		50-150		%	1		08/14/15 01:44

Batch Information

Analytical Batch: XFC12010
Analytical Method: AK102
Analyst: KJO
Analytical Date/Time: 08/14/15 01:44
Container ID: 1158401014-A

Prep Batch: XXX33834
Prep Method: SW3520C
Prep Date/Time: 08/13/15 09:35
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 10/13/2015 8:49:17AM

Results of **TSP06**

Client Sample ID: **TSP06**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401014
Lab Project ID: 1158401

Collection Date: 08/03/15 11:45
Received Date: 08/04/15 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.157		0.100	0.0310	mg/L	1		08/08/15 02:56
Surrogates								
4-Bromofluorobenzene (surr)	91.5		50-150		%	1		08/08/15 02:56

Batch Information

Analytical Batch: VFC12569
Analytical Method: AK101
Analyst: CRD
Analytical Date/Time: 08/08/15 02:56
Container ID: 1158401014-C

Prep Batch: VXX27685
Prep Method: SW5030B
Prep Date/Time: 08/07/15 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	66.6		0.500	0.150	ug/L	1		08/08/15 02:56
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1		08/08/15 02:56
o-Xylene	1.00	U	1.00	0.310	ug/L	1		08/08/15 02:56
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1		08/08/15 02:56
Toluene	1.00	U	1.00	0.310	ug/L	1		08/08/15 02:56
Surrogates								
1,4-Difluorobenzene (surr)	87.8		77-115		%	1		08/08/15 02:56

Batch Information

Analytical Batch: VFC12569
Analytical Method: SW8021B
Analyst: CRD
Analytical Date/Time: 08/08/15 02:56
Container ID: 1158401014-C

Prep Batch: VXX27685
Prep Method: SW5030B
Prep Date/Time: 08/07/15 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/13/2015 8:49:17AM

Results of **TSP07**

Client Sample ID: **TSP07**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401015
Lab Project ID: 1158401

Collection Date: 08/03/15 12:30
Received Date: 08/04/15 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.600	U	0.600	0.180	mg/L	1		08/14/15 02:05
Surrogates								
5a Androstane (surr)	74.8		50-150		%	1		08/14/15 02:05

Batch Information

Analytical Batch: XFC12010
Analytical Method: AK102
Analyst: KJO
Analytical Date/Time: 08/14/15 02:05
Container ID: 1158401015-A

Prep Batch: XXX33834
Prep Method: SW3520C
Prep Date/Time: 08/13/15 09:35
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 10/13/2015 8:49:17AM

Results of **TSP07**

Client Sample ID: **TSP07**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401015
Lab Project ID: 1158401

Collection Date: 08/03/15 12:30
Received Date: 08/04/15 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.26		1.00	0.310	mg/L	10		08/11/15 01:28
Surrogates								
4-Bromofluorobenzene (surr)	87		50-150		%	10		08/11/15 01:28

Batch Information

Analytical Batch: VFC12572
Analytical Method: AK101
Analyst: CRD
Analytical Date/Time: 08/11/15 01:28
Container ID: 1158401015-D

Prep Batch: VXX27695
Prep Method: SW5030B
Prep Date/Time: 08/10/15 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	341		5.00	1.50	ug/L	10		08/12/15 01:51
Ethylbenzene	75.5		10.0	3.10	ug/L	10		08/12/15 01:51
o-Xylene	12.8		10.0	3.10	ug/L	10		08/12/15 01:51
P & M -Xylene	34.7		20.0	6.20	ug/L	10		08/12/15 01:51
Toluene	10.0	U	10.0	3.10	ug/L	10		08/12/15 01:51
Surrogates								
1,4-Difluorobenzene (surr)	87.4		77-115		%	10		08/12/15 01:51

Batch Information

Analytical Batch: VFC12576
Analytical Method: SW8021B
Analyst: CRD
Analytical Date/Time: 08/12/15 01:51
Container ID: 1158401015-E

Prep Batch: VXX27701
Prep Method: SW5030B
Prep Date/Time: 08/11/15 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **MW1**

Client Sample ID: **MW1**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401016
Lab Project ID: 1158401

Collection Date: 08/03/15 14:30
Received Date: 08/04/15 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	20.7		0.500	0.150	ug/L	10		08/13/15 19:06
2-Methylnaphthalene	23.4		0.500	0.150	ug/L	10		08/13/15 19:06
Acenaphthene	0.226		0.0500	0.0150	ug/L	1		08/13/15 18:14
Acenaphthylene	0.0500	U	0.0500	0.0150	ug/L	1		08/13/15 18:14
Anthracene	0.0500	U	0.0500	0.0150	ug/L	1		08/13/15 18:14
Benzo(a)Anthracene	0.0500	U	0.0500	0.0150	ug/L	1		08/13/15 18:14
Benzo[a]pyrene	0.0500	U	0.0500	0.0150	ug/L	1		08/13/15 18:14
Benzo[b]Fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1		08/13/15 18:14
Benzo[g,h,i]perylene	0.0500	U	0.0500	0.0150	ug/L	1		08/13/15 18:14
Benzo[k]fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1		08/13/15 18:14
Chrysene	0.0500	U	0.0500	0.0150	ug/L	1		08/13/15 18:14
Dibenzo[a,h]anthracene	0.0500	U	0.0500	0.0150	ug/L	1		08/13/15 18:14
Fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1		08/13/15 18:14
Fluorene	1.02		0.0500	0.0150	ug/L	1		08/13/15 18:14
Indeno[1,2,3-c,d] pyrene	0.0500	U	0.0500	0.0150	ug/L	1		08/13/15 18:14
Naphthalene	49.5		1.00	0.310	ug/L	10		08/13/15 19:06
Phenanthrene	1.01		0.0500	0.0150	ug/L	1		08/13/15 18:14
Pyrene	0.0500	U	0.0500	0.0150	ug/L	1		08/13/15 18:14
Surrogates								
2-Fluorobiphenyl (surr)	77.4		53-106		%	1		08/13/15 18:14
Terphenyl-d14 (surr)	110		58-132		%	1		08/13/15 18:14

Batch Information

Analytical Batch: XMS8855
Analytical Method: 8270D SIMS LV (PAH)
Analyst: SP
Analytical Date/Time: 08/13/15 19:06
Container ID: 1158401016-C

Prep Batch: XXX33754
Prep Method: SW3520C
Prep Date/Time: 08/05/15 11:05
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

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Results of **MW1**

Client Sample ID: **MW1**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401016
Lab Project ID: 1158401

Collection Date: 08/03/15 14:30
Received Date: 08/04/15 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	1.14		0.600	0.180	mg/L	1		08/14/15 02:25
Surrogates								
5a Androstane (surr)	93.8		50-150		%	1		08/14/15 02:25

Batch Information

Analytical Batch: XFC12010
Analytical Method: AK102
Analyst: KJO
Analytical Date/Time: 08/14/15 02:25
Container ID: 1158401016-A

Prep Batch: XXX33834
Prep Method: SW3520C
Prep Date/Time: 08/13/15 09:35
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 10/13/2015 8:49:17AM

Results of **MW1**

Client Sample ID: **MW1**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401016
Lab Project ID: 1158401

Collection Date: 08/03/15 14:30
Received Date: 08/04/15 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	2.75		1.00	0.310	mg/L	10		08/11/15 01:48
Surrogates								
4-Bromofluorobenzene (surr)	97.3		50-150		%	10		08/11/15 01:48

Batch Information

Analytical Batch: VFC12572
Analytical Method: AK101
Analyst: CRD
Analytical Date/Time: 08/11/15 01:48
Container ID: 1158401016-F

Prep Batch: VXX27695
Prep Method: SW5030B
Prep Date/Time: 08/10/15 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	332		5.00	1.50	ug/L	10		08/12/15 02:10
Ethylbenzene	166		10.0	3.10	ug/L	10		08/12/15 02:10
o-Xylene	220		10.0	3.10	ug/L	10		08/12/15 02:10
P & M -Xylene	435		20.0	6.20	ug/L	10		08/12/15 02:10
Toluene	129		10.0	3.10	ug/L	10		08/12/15 02:10
Surrogates								
1,4-Difluorobenzene (surr)	88.7		77-115		%	10		08/12/15 02:10

Batch Information

Analytical Batch: VFC12576
Analytical Method: SW8021B
Analyst: CRD
Analytical Date/Time: 08/12/15 02:10
Container ID: 1158401016-G

Prep Batch: VXX27701
Prep Method: SW5030B
Prep Date/Time: 08/11/15 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW2**

Client Sample ID: **MW2**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401017
Lab Project ID: 1158401

Collection Date: 08/03/15 14:45
Received Date: 08/04/15 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	21.6		0.500	0.150	ug/L	10		08/13/15 18:49
2-Methylnaphthalene	24.3		0.500	0.150	ug/L	10		08/13/15 18:49
Acenaphthene	0.208		0.0500	0.0150	ug/L	1		08/13/15 18:31
Acenaphthylene	0.0500	U	0.0500	0.0150	ug/L	1		08/13/15 18:31
Anthracene	0.0512		0.0500	0.0150	ug/L	1		08/13/15 18:31
Benzo(a)Anthracene	0.0500	U	0.0500	0.0150	ug/L	1		08/13/15 18:31
Benzo[a]pyrene	0.0500	U	0.0500	0.0150	ug/L	1		08/13/15 18:31
Benzo[b]Fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1		08/13/15 18:31
Benzo[g,h,i]perylene	0.0500	U	0.0500	0.0150	ug/L	1		08/13/15 18:31
Benzo[k]fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1		08/13/15 18:31
Chrysene	0.0500	U	0.0500	0.0150	ug/L	1		08/13/15 18:31
Dibenzo[a,h]anthracene	0.0500	U	0.0500	0.0150	ug/L	1		08/13/15 18:31
Fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1		08/13/15 18:31
Fluorene	1.01		0.0500	0.0150	ug/L	1		08/13/15 18:31
Indeno[1,2,3-c,d] pyrene	0.0500	U	0.0500	0.0150	ug/L	1		08/13/15 18:31
Naphthalene	49.9		1.00	0.310	ug/L	10		08/13/15 18:49
Phenanthrene	1.04		0.0500	0.0150	ug/L	1		08/13/15 18:31
Pyrene	0.0500	U	0.0500	0.0150	ug/L	1		08/13/15 18:31
Surrogates								
2-Fluorobiphenyl (surr)	69.4		53-106		%	1		08/13/15 18:31
Terphenyl-d14 (surr)	107		58-132		%	1		08/13/15 18:31

Batch Information

Analytical Batch: XMS8855
Analytical Method: 8270D SIMS LV (PAH)
Analyst: SP
Analytical Date/Time: 08/13/15 18:49
Container ID: 1158401017-C

Prep Batch: XXX33754
Prep Method: SW3520C
Prep Date/Time: 08/05/15 11:05
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 10/13/2015 8:49:17AM

Results of **MW2**

Client Sample ID: **MW2**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401017
Lab Project ID: 1158401

Collection Date: 08/03/15 14:45
Received Date: 08/04/15 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.941		0.600	0.180	mg/L	1		08/14/15 02:46
Surrogates								
5a Androstane (surr)	88.4		50-150		%	1		08/14/15 02:46

Batch Information

Analytical Batch: XFC12010
Analytical Method: AK102
Analyst: KJO
Analytical Date/Time: 08/14/15 02:46
Container ID: 1158401017-A

Prep Batch: XXX33834
Prep Method: SW3520C
Prep Date/Time: 08/13/15 09:35
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 10/13/2015 8:49:17AM

Results of **MW2**

Client Sample ID: **MW2**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401017
Lab Project ID: 1158401

Collection Date: 08/03/15 14:45
Received Date: 08/04/15 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	2.70		1.00	0.310	mg/L	10		08/11/15 02:07
Surrogates								
4-Bromofluorobenzene (surr)	101		50-150		%	10		08/11/15 02:07

Batch Information

Analytical Batch: VFC12572
Analytical Method: AK101
Analyst: CRD
Analytical Date/Time: 08/11/15 02:07
Container ID: 1158401017-F

Prep Batch: VXX27695
Prep Method: SW5030B
Prep Date/Time: 08/10/15 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	333		5.00	1.50	ug/L	10		08/12/15 02:29
Ethylbenzene	162		10.0	3.10	ug/L	10		08/12/15 02:29
o-Xylene	217		10.0	3.10	ug/L	10		08/12/15 02:29
P & M -Xylene	426		20.0	6.20	ug/L	10		08/12/15 02:29
Toluene	126		10.0	3.10	ug/L	10		08/12/15 02:29
Surrogates								
1,4-Difluorobenzene (surr)	90.8		77-115		%	10		08/12/15 02:29

Batch Information

Analytical Batch: VFC12576
Analytical Method: SW8021B
Analyst: CRD
Analytical Date/Time: 08/12/15 02:29
Container ID: 1158401017-G

Prep Batch: VXX27701
Prep Method: SW5030B
Prep Date/Time: 08/11/15 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401018
Lab Project ID: 1158401

Collection Date: 08/03/15 08:30
Received Date: 08/04/15 09:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.100	U	0.100	0.0310	mg/L	1		08/07/15 23:46
Surrogates								
4-Bromofluorobenzene (surr)	87.5		50-150		%	1		08/07/15 23:46

Batch Information

Analytical Batch: VFC12569
Analytical Method: AK101
Analyst: CRD
Analytical Date/Time: 08/07/15 23:46
Container ID: 1158401018-A

Prep Batch: VXX27685
Prep Method: SW5030B
Prep Date/Time: 08/07/15 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	0.500	U	0.500	0.150	ug/L	1		08/07/15 23:46
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1		08/07/15 23:46
o-Xylene	1.00	U	1.00	0.310	ug/L	1		08/07/15 23:46
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1		08/07/15 23:46
Toluene	1.00	U	1.00	0.310	ug/L	1		08/07/15 23:46
Surrogates								
1,4-Difluorobenzene (surr)	86.9		77-115		%	1		08/07/15 23:46

Batch Information

Analytical Batch: VFC12569
Analytical Method: SW8021B
Analyst: CRD
Analytical Date/Time: 08/07/15 23:46
Container ID: 1158401018-A

Prep Batch: VXX27685
Prep Method: SW5030B
Prep Date/Time: 08/07/15 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/13/2015 8:49:17AM

Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **1603 27TH Ave**
Lab Sample ID: 1158401019
Lab Project ID: 1158401

Collection Date: 08/03/15 08:30
Received Date: 08/04/15 09:30
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	2.52	U	2.52	0.756	mg/Kg	1		08/07/15 14:51
Surrogates								
4-Bromofluorobenzene (surr)	99.6		50-150		%	1		08/07/15 14:51

Batch Information

Analytical Batch: VFC12568
Analytical Method: AK101
Analyst: CRD
Analytical Date/Time: 08/07/15 14:51
Container ID: 1158401019-A

Prep Batch: VXX27684
Prep Method: SW5035A
Prep Date/Time: 08/03/15 08:30
Prep Initial Wt./Vol.: 49.6 g
Prep Extract Vol: 25 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	12.6	U	12.6	4.03	ug/Kg	1		08/07/15 14:51
Ethylbenzene	25.2	U	25.2	7.86	ug/Kg	1		08/07/15 14:51
o-Xylene	25.2	U	25.2	7.86	ug/Kg	1		08/07/15 14:51
P & M -Xylene	50.4	U	50.4	15.1	ug/Kg	1		08/07/15 14:51
Toluene	25.2	U	25.2	7.86	ug/Kg	1		08/07/15 14:51
Surrogates								
1,4-Difluorobenzene (surr)	85.9		72-119		%	1		08/07/15 14:51

Batch Information

Analytical Batch: VFC12568
Analytical Method: SW8021B
Analyst: CRD
Analytical Date/Time: 08/07/15 14:51
Container ID: 1158401019-A

Prep Batch: VXX27684
Prep Method: SW5035A
Prep Date/Time: 08/03/15 08:30
Prep Initial Wt./Vol.: 49.6 g
Prep Extract Vol: 25 mL

Method Blank

Blank ID: MB for HBN 1715953 [SPT/9682]
Blank Lab ID: 1281353

Matrix: Soil/Solid (dry weight)

QC for Samples:
1158401001, 1158401002, 1158401003, 1158401004, 1158401005, 1158401006, 1158401007, 1158401008, 1158401009

Results by **SM21 2540G**

Parameter	Results	LOQ/CL	DL	Units
Total Solids	100			%

Batch Information

Analytical Batch: SPT9682
Analytical Method: SM21 2540G
Instrument:
Analyst: A.R
Analytical Date/Time: 8/4/2015 5:20:00PM

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Duplicate Sample Summary

Original Sample ID: 1154128001
Duplicate Sample ID: 1281355
QC for Samples:

Analysis Date: 08/04/2015 17:20
Matrix: Soil/Solid (dry weight)

Results by **SM21 2540G**

NAME	Original	Duplicate	Units	RPD (%)	RPD CL
Total Solids	81.1	80.9	%	0.18	(< 15)

Batch Information

Analytical Batch: SPT9682
Analytical Method: SM21 2540G
Instrument:
Analyst: A.R

Print Date: 10/13/2015 8:49:23AM

Duplicate Sample Summary

Original Sample ID: 1154141001
Duplicate Sample ID: 1281356
QC for Samples:
1158401001, 1158401002, 1158401003

Analysis Date: 08/04/2015 17:20
Matrix: Soil/Solid (dry weight)

Results by **SM21 2540G**

NAME	Original	Duplicate	Units	RPD (%)	RPD CL
Total Solids	96.1	96.0	%	0.18	(< 15)

Batch Information

Analytical Batch: SPT9682
Analytical Method: SM21 2540G
Instrument:
Analyst: A.R

Print Date: 10/13/2015 8:49:23AM

Duplicate Sample Summary

Original Sample ID: 1158401003
Duplicate Sample ID: 1281357

Analysis Date: 08/04/2015 17:20
Matrix: Soil/Solid (dry weight)

QC for Samples:

1158401001, 1158401002, 1158401003, 1158401004, 1158401005, 1158401006, 1158401007, 1158401008, 1158401009

Results by **SM21 2540G**

NAME	Original	Duplicate	Units	RPD (%)	RPD CL
Total Solids	75.0	75.0	%	0.03	(< 15)

Batch Information

Analytical Batch: SPT9682
Analytical Method: SM21 2540G
Instrument:
Analyst: A.R

Print Date: 10/13/2015 8:49:23AM

Method Blank

Blank ID: MB for HBN 1716660 [VXX/27684]
Blank Lab ID: 1282329

Matrix: Soil/Solid (dry weight)

QC for Samples:
1158401001, 1158401002, 1158401003, 1158401004, 1158401005, 1158401006, 1158401007, 1158401008, 1158401009, 1158401019

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	1.25U	2.50	0.750	mg/Kg
Surrogates				
4-Bromofluorobenzene (surr)	88.8	50-150		%

Batch Information

Analytical Batch: VFC12568
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: CRD
Analytical Date/Time: 8/7/2015 12:18:00PM

Prep Batch: VXX27684
Prep Method: SW5035A
Prep Date/Time: 8/7/2015 8:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1158401 [VXX27684]
Blank Spike Lab ID: 1282332
Date Analyzed: 08/07/2015 13:15

Spike Duplicate ID: LCSD for HBN 1158401 [VXX27684]
Spike Duplicate Lab ID: 1282333
Matrix: Soil/Solid (dry weight)

QC for Samples: 1158401001, 1158401002, 1158401003, 1158401004, 1158401005, 1158401006, 1158401007, 1158401008, 1158401009, 1158401019

Results by **AK101**

	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Gasoline Range Organics	10.0	9.92	99	10.0	9.99	100	(60-120)	0.79	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	1.25	89.4	89	1.25	89.2	89	(50-150)	0.18	

Batch Information

Analytical Batch: **VFC12568**
Analytical Method: **AK101**
Instrument: **Agilent 7890 PID/FID**
Analyst: **CRD**

Prep Batch: **VXX27684**
Prep Method: **SW5035A**
Prep Date/Time: **08/07/2015 08:00**
Spike Init Wt./Vol.: 10.0 mg/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: 10.0 mg/Kg Extract Vol: 25 mL

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Method Blank

Blank ID: MB for HBN 1716660 [VXX/27684]
Blank Lab ID: 1282329

Matrix: Soil/Solid (dry weight)

QC for Samples:
1158401001, 1158401002, 1158401003, 1158401004, 1158401005, 1158401006, 1158401007, 1158401008, 1158401009, 1158401019

Results by **SW8021B**

Parameter	Results	LOQ/CL	DL	Units
Benzene	6.25U	12.5	4.00	ug/Kg
Ethylbenzene	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
Toluene	12.5U	25.0	7.80	ug/Kg
Surrogates				
1,4-Difluorobenzene (surr)	83.2	72-119		%

Batch Information

Analytical Batch: VFC12568
Analytical Method: SW8021B
Instrument: Agilent 7890 PID/FID
Analyst: CRD
Analytical Date/Time: 8/7/2015 12:18:00PM

Prep Batch: VXX27684
Prep Method: SW5035A
Prep Date/Time: 8/7/2015 8:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1158401 [VXX27684]
Blank Spike Lab ID: 1282330
Date Analyzed: 08/07/2015 12:37

Spike Duplicate ID: LCSD for HBN 1158401 [VXX27684]
Spike Duplicate Lab ID: 1282331
Matrix: Soil/Solid (dry weight)

QC for Samples: 1158401001, 1158401002, 1158401003, 1158401004, 1158401005, 1158401006, 1158401007, 1158401008, 1158401009, 1158401019

Results by **SW8021B**

	Blank Spike (ug/Kg)			Spike Duplicate (ug/Kg)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Benzene	1250	1390	111	1250	1420	113	(75-125)	2.00	(< 20)
Ethylbenzene	1250	1240	99	1250	1270	102	(75-125)	2.70	(< 20)
o-Xylene	1250	1210	97	1250	1230	98	(75-125)	1.70	(< 20)
P & M -Xylene	2500	2430	97	2500	2490	100	(80-125)	2.30	(< 20)
Toluene	1250	1310	105	1250	1350	108	(70-125)	2.90	(< 20)
Surrogates									
1,4-Difluorobenzene (surr)	1250	91.9	92	1250	91.3	91	(72-119)	0.63	

Batch Information

Analytical Batch: **VFC12568**
Analytical Method: **SW8021B**
Instrument: **Agilent 7890 PID/FID**
Analyst: **CRD**

Prep Batch: **VXX27684**
Prep Method: **SW5035A**
Prep Date/Time: **08/07/2015 08:00**
Spike Init Wt./Vol.: 1250 ug/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: 1250 ug/Kg Extract Vol: 25 mL

Matrix Spike Summary

Original Sample ID: 1158402001
MS Sample ID: 1282334 MS
MSD Sample ID: 1282335 MSD

Analysis Date: 08/07/2015 13:54
Analysis Date: 08/07/2015 14:13
Analysis Date: 08/07/2015 14:32
Matrix: Soil/Solid (dry weight)

QC for Samples: 1158401001, 1158401002, 1158401003, 1158401004, 1158401005, 1158401006, 1158401007, 1158401008, 1158401009, 1158401019

Results by **SW8021B**

		Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Benzene	6.10U	843	953	113	843	928	110	75-125	2.70	(< 20)
Ethylbenzene	12.3U	843	858	102	843	839	100	75-125	2.30	(< 20)
o-Xylene	12.3U	843	834	99	843	816	97	75-125	2.30	(< 20)
P & M -Xylene	24.4U	1692	1692	100	1692	1646	98	80-125	2.60	(< 20)
Toluene	17.9J	843	917	107	843	896	104	70-125	2.40	(< 20)
Surrogates										
1,4-Difluorobenzene (surr)		843	778	92	843	778	92	72-119	0.11	

Batch Information

Analytical Batch: VFC12568
Analytical Method: SW8021B
Instrument: Agilent 7890 PID/FID
Analyst: CRD
Analytical Date/Time: 8/7/2015 2:13:00PM

Prep Batch: VXX27684
Prep Method: AK101 Extraction (S)
Prep Date/Time: 8/7/2015 8:00:00AM
Prep Initial Wt./Vol.: 85.25g
Prep Extract Vol: 25.00mL

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Method Blank

Blank ID: MB for HBN 1716661 (] VVX 76284 Ma,rti : x a,mr dQ(rfaym5wffg5h ro(n) R
Blank] aL ID: 1/ 2/ bb6

3 9 for QaC Slmp:
1182es1s1s51182es1s1151182es1s1/ 51182es1s1b51182es1s1e51182es1s12

u mp(l,p LU **AK101**

GaraC mmr	u mp(l,p	] P 3 X9]	D]	Ont,p
h apoltnmu ancmP rcantyp	sgs8ssO	sg1ss	sgsb1s	CcX
Surrogates				
e.BroC ofl(oroLmnKmnmcb(rrR	2zg1	8s.18s		-

Batch Information

%nalU,tyal Ba,yA: [F9 1/ 86z
%nalU,tyal Mm,Ao) : %T 1s1
Inp,r(C mn,: %ctlmn, 72zs GIDXFID
%nalUp,: 9 u D
%nalU,tyal Da,mXWtC m 2X7X s18 11:s2:ssGM

GrmS Ba,yA: [VV/ 7628
GrmS Mm,Ao) : Qx 8sbsB
GrmS Da,mXWtC m 2X7X s18 2:ss:ss%M
GrmS Int,tal x ,gX olg 8 C]
GrmS wi ,ray, [ol: 8 C]

Grtn, Da,m 1sXtbX s18 2:ez:b/ %M

Blank Spike Summary

Blank Spike ID: LCS for HBN 1158401 [VXX27685]
Blank Spike Lab ID: 1282443
Date Analyzed: 08/07/2015 22:u0

Spike DcpliRate ID: LCSD for HBN 1158401 [VXX27685]
Spike DcpliRate Lab ID: 1282450
x atri(: w ater gScrfaReh) ffPhmrocnd%

GC for SaQpleM 1158401010h1158401011h1158401012h115840101uh1158401014h1158401018

s eMctItMby **AK101**

KaraQeter	Blank Spike gQ9/L% Spike	s eMctIt	s eRg %	Spike DcpliRate gQ9/L% Spike	s eMctIt	s eRg %	CL	s KD g %	s KD CL
maMbline s an9e Or9aniRM	1P00	1P01	101	1P00	0P335	100	g60.120 %	1P60	g 20 %
Surrogates									
4.BroQoflcorobenzene gMcrr%	0P0500	3uP5	34	0P0500	30P6	31	g50.150 %	uP10	

Batch Information

AnalytiRal BatR<: **VFC12569**
AnalytiRal x et<od: **AK101**
InMrcQent: **Agilent 7890 PID/FID**
AnalyM: **CRD**

Krep BatR<: **VXX27685**
Krep x et<od: **SW5030B**
Krep Date/TiQe: **08/07/2015 08:00**
Spike Init w tP VolP: 1P00 Q9/L) (traRt Vol: 5 QL
Dcpe Init w tP VolP: 1P00 Q9/L) (traRt Vol: 5 QL

Krint Date: 10/1u/2015 8:43:uuAx

Method Blank

Blank ID: MB for HBN 1716661 (] VVX 76284 Ma,rti : x a,mr dQ(rfaym5wffg5h ro(n) R
Blank] aL ID: 1/ 2/ bb6

3 9 for QaC Slmp:
1182es1s1s51182es1s1151182es1s1/ 51182es1s1b51182es1s1e51182es1s12

u mp(l,p LU **SW8021B**

z araC mmr	u mp(l,p	] P 3 X9]	D]	Ont,p
Bmn. mnm	sg 8sO	sg8ss	sg18s	(KX
w,EULmn. mnm	sg8ssO	1gss	sgp1s	(KX
o-VUmnm	sg8ssO	1gss	sgp1s	(KX
z & M -VUmnm	1gssO	/ gss	sg6/ s	(KX
Tol(mnm	sg8ssO	1gss	sgp1s	(KX
Surrogates				
15e-Dtfl(oroLmn. mnmcp(rrR	26g6	77-118		%

Batch Information

AnalUtyal Ba,yE: [c9 1/ 86F
AnalUtyal MmEo) : Qx 2s/ 1B
Inp,r(C mn,: AKtlmn, 72Fs z IDXcID
AnalUp,: 9 u D
AnalUtyal Da,mXTtC m 2X7X s18 11:s2:ssz M

z rmS Ba,yE: [VV/ 7628
z rmS MmEo) : Qx 8sbsB
z rmS Da,mXTtC m 2X7X s18 2:ss:ssAM
z rmS Int,tal x ,g[olg 8 C]
z rmS wi ,ray, [ol: 8 C]

z rtn, Da,m 1sXtbX s18 2:eF:b8AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1158401 [VXX27685]
Blank Spike Lab ID: 1282337
Date Analyzed: 08/07/2015 22:11

Spike Duplicate ID: LCSD for HBN 1158401 [VXX27685]
Spike Duplicate Lab ID: 1282448
Matrix: (ater wSurfaceghff)gProundm

9 C for SaKples: 1158401010g1158401011g1158401012g1158401013g1158401014g1158401018

Results by **SW8021B**

	Blank Spike wu, /Lm			Spike Duplicate wu, /Lm					
%araKeter	Spike	Result	Rec wQm	Spike	Result	Rec wQm	CL	R%D wQm	R%D CL
Benzene	100		117	100		115	w80-120 m	1). 0	w< 20 m
htEylbenzene	100		107	100		105	w75-125 m	1). 0	w< 20 m
o-Xylene	100		104	100		102	w80-120 m	2)80	w< 20 m
%& M -Xylene	200		106	200		103	w75-130 m	2)80	w< 20 m
Toluene	100		112	100		111	w75-120 m	1)20	w< 20 m
Surrogates									
1g4-Difluorobenzene wsurrm	50	. 5)5	. 6	50	. 4)8	. 5	w77-115 m	0)74	

Batch Information

Analytical BatcE: **VFC12569**
Analytical MetEod: **SW8021B**
InstruKent: **Agilent 7890 PID/FID**
Analyst: **CRD**

%rep BatcE: **VXX27685**
%rep MetEod: **SW5030B**
%rep Date/TiKe: **08/07/2015 08:00**
Spike Init (t)/Vol): 100 u, /L hxtract Vol: 5 KL
Dupe Init (t)/Vol): 100 u, /L hxtract Vol: 5 KL

SPS NortE AKerica Inc) 200 (est %otter DriWe AncEora, egAG . 5518
t . 07)562)2343 f . 07)561)5301 v v v)us)s, s)coK

Method Blank

Blank ID: MB for HBN 171670[VX/ / 2[7684]
Blank Lab ID: 1[0[778

Ma,rti : x a,mr dQ(rfaym5wffg5h ro(n) R

3 9 for QaC Slmp:
1140es1s1451140es1s1651140es1s17

u mp(l,p bU **AK101**

GaraC mmr	u mp(l,p	LP3 29 L	DL	Ont,p
h apoltnmu ancmP rcantyp	sgs4ssO	sg1ss	sgs. 1s	Cc2L
Surrogates				
ekBroC ofl(orobmn- mnmcb(rrR	70g8	4sK14s		z

Batch Information

%nalU,tyal Ba,yA: XF9 1[47[
%nalU,tyal Mm,Ao) : %T 1s1
Inp,r(C mn,: %ctlmn, 708s GID2FID
%nalUp,: 9 u D
%nalU,tyal Da,m2/WC m 02l12[s14 1[:1. :ss%M

GrmS Ba,yA: X/ / [7684
GrmS Mm,Ao) : Qx 4s. sB
GrmS Da,m2/WC m 02ls2[s14 0:ss:ss%M
GrmS Int,tal x ,g2Xolg 4 CL
GrmS wi ,ray, Xol: 4 CL

Grtn, Da,m 1s2l. 2[s14 0:e8:e1%M

Blank Spike Summary

Blank Spike ID: LCS for HBN 1158401 [VXX276] 5b
Blank Spike La3 ID: 1282782
Date Analyzed: 08/10/2015 2u:u5

Spike DcpliRate ID: LCSD for HBN 1158401 [VXX276] 5b
Spike DcpliRate La3 ID: 128278u
x atri(: w ater gScrfaReh) ffPmrocnd%

GC for SaQpleM 1158401015h1158401016h1158401017

s eMcltM3y **AK101**

KaraQeter	Blank Spike gQ9/L% Spike	s eMclt	s eRg %	Spike DcpliRate gQ9/L% Spike	s eMclt	s eRg %	CL	s KD g %	s KD CL
maMoline s an9e Or9aniRM	1P00	0P uu	] u	1P00	0P 22	] 2	g60.120 %	1P20	g 20 %
Surrogates									
4.BroQoflcoro3enzene gMcrr%	0P0500	85P2	85	0P0500	84P2	84	g50.150 %	1P20	

Batch Information

AnalytiRal BatR<: **VFC12562**
AnalytiRal x et<od: **AK101**
InMrcQent: **Agilent 6970 8 IPDFIP**
AnalyM: **C/ P**

Krep BatR<: **VRR26X75**
Krep x et<od: **SW5030B**
Krep Date/TiQe: **09D10D2015 09:00**
Spike Init w tP VolP: 1P00 Q9/L) (traRt Vol: 5 QL
Dcpe Init w tP VolP: 1P00 Q9/L) (traRt Vol: 5 QL

Krint Date: 10/1u/2015 8:4] :4uAx

Method Blank

Blank ID: MB for HBN 171606[VX/ / 287741]
Blank Lab ID: 1803417

Ma,rti : x a,pr dC(rfayp5wffg5h ro(n) R

9 Q for CaS mpe:
11s0[4141s511s0[41416511s0[41417

u pe(l,e bU **SW8021B**

z araS p,pr	u pe(l,e	LP9 2QL	DL	Ont,e
Bpn. pnp	4g8s4O	4gs44	4g1s4	(K2L
w,EUbpn. pnp	4gs44O	1g44	4g814	(K2L
o-/ Upnp	4gs44O	1g44	4g814	(K2L
z & M -/ Upnp	1g44O	8g44	4g684	(K2L
Tol(pnp	4gs44O	1g44	4g814	(K2L
Surrogates				
15[-Dtfl(orobpn. pnp de(rrR	0[g7	77-11s		%

Batch Information

AnalU,tyal Ba,yE: XcQ18s76
AnalU,tyal Mp,Eo) : Cx 0481B
Ine,r(S pn,: AKtlpn, 70F4A z ID2c ID
AnalUe,: Qu D
AnalU,tyal Da,p2TtS p: 02182841s 18:3s:44AM

z rpmBa,yE: X/ / 87741
z rpmMp,Eo) : Cx s434B
z rpmDa,p2TtS p: 02112841s 0:44:44AM
z rpmInt,tal x ,g2Xolg s S L
z rpmwi ,ray, Xol: s S L

z rtn, Da,p: 142132841s 0:[F:[[AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1158401 [VXX277016
Blank Spike La] ID: 128b018
Da3e t nalAyez: 08dl1c2015 2b:1/

Spike Duplica3e ID: LCSD for HBN 1158401 [VXX277016
Spike Duplica3e La] ID: 128b01/
Ma3rix: (a3er wSurfaceghff)gProunzm

9 C for SaKples: 1158401015g115840101- g1158401017

Resul3s] A **SW8021B**

	Blank Spike wu, dLm			Spike Duplica3e wu, dLm					
%araKe3er	Spike	Resul3	Rec wQm	Spike	Resul3	Rec wQm	CL	R%D wQm	R%D CL
Benyene	100	/ 7)-	/ 8	100	101	101	w80<120 m	b)10	w 20 m
h3EAl] enyene	100	101	101	100	104	104	w75<125 m	b)b0	w 20 m
o<XAlene	100	101	101	100	104	104	w80<120 m	2)- 0	w 20 m
%& M <XAlene	200	20b	101	200	20/	104	w75<1b0 m	b)00	w 20 m
Toluene	100	/ /)7	100	100	10b	10b	w75<120 m	b)40	w 20 m
Surrogates									
1g4<Difluoro] enyene wsurrm	50	/ /)2	/ /	50	100	100	w77<115 m	1)10	

Batch Information

t nalA3cal Ba3cE: **VFC12569**
t nalA3cal Me3Eoz: **SW8021B**
Ins3uKen3 **Agilent 6870A PID/FID**
t nalAs3 **CRD**

%rep Ba3cE: **VXX26601**
%rep Me3Eoz: **SW5030B**
%rep Da3edTiKe: **08/11/2015 08:00**
Spike Ini3(3dVol): 100 u, dL hx3ac3Vol: 5 KL
Dupe Ini3(3dVol): 100 u, dL hx3ac3Vol: 5 KL

%rin3Da3e: 10dlbc2015 8:4/ :45t M

Method Blank

Blank ID: MB for HBN 1715919 [XXX/33747]
Blank Lab ID: 1281343

Matrix: Soil/Solid (dry weight)

QC for Samples:
1158401001, 1158401002, 1158401003, 1158401004, 1158401005, 1158401006, 1158401007, 1158401008, 1158401009

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	10.0U	20.0	6.20	mg/Kg
Surrogates				
5a Androstane (surr)	90.2	60-120		%

Batch Information

Analytical Batch: XFC12001
Analytical Method: AK102
Instrument: HP 7890A FID SV E R
Analyst: KJO
Analytical Date/Time: 8/9/2015 7:35:00PM

Prep Batch: XXX33747
Prep Method: SW3550C
Prep Date/Time: 8/4/2015 7:34:41PM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1158401 [XXX33747]
Blank Spike Lab ID: 1281344
Date Analyzed: 08/09/2015 19:55

Spike Duplicate ID: LCSD for HBN 1158401 [XXX33747]
Spike Duplicate Lab ID: 1281345
Matrix: Soil/Solid (dry weight)

QC for Samples: 1158401001, 1158401002, 1158401003, 1158401004, 1158401005, 1158401006, 1158401007, 1158401008, 1158401009

Results by **AK102**

	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Diesel Range Organics	167	174	105	167	202	121	(75-125)	14.70	(< 20)
Surrogates									
5a Androstane (surr)	3.33	103	103	3.33	121	121	* (60-120)	16.50	

Batch Information

Analytical Batch: **XFC12001**
Analytical Method: **AK102**
Instrument: **HP 7890A FID SV E R**
Analyst: **KJO**

Prep Batch: **XXX33747**
Prep Method: **SW3550C**
Prep Date/Time: **08/04/2015 19:34**
Spike Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL
Dupe Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL

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Method Blank

Blank ID: MB for HBN 1715962 [XXX/33754]
Blank Lab ID: 1281391

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1158401016, 1158401017

Results by **8270D SIMS LV (PAH)**

Parameter	Results	LOQ/CL	DL	Units
1-Methylnaphthalene	0.0269J	0.0500	0.0150	ug/L
2-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
Acenaphthene	0.0250U	0.0500	0.0150	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	ug/L
Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0250U	0.0500	0.0150	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	ug/L
Chrysene	0.0250U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0250U	0.0500	0.0150	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Fluorene	0.0250U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	ug/L
Naphthalene	0.0512J	0.100	0.0310	ug/L
Phenanthrene	0.0250U	0.0500	0.0150	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
Surrogates				
2-Fluorobiphenyl (surr)	94.7	53-106		%
Terphenyl-d14 (surr)	113	58-132		%

Batch Information

Analytical Batch: XMS8855
Analytical Method: 8270D SIMS LV (PAH)
Instrument: HP 6890/5973 MS SVQA
Analyst: SP
Analytical Date/Time: 8/13/2015 3:55:00PM

Prep Batch: XXX33754
Prep Method: SW3520C
Prep Date/Time: 8/5/2015 11:05:30AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1158401 [XXX33754]
Blank Spike Lab ID: 1281392
Date Analyzed: 08/13/2015 16:12

Spike Duplicate ID: LCSD for HBN 1158401 [XXX33754]
Spike Duplicate Lab ID: 1281393
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1158401016, 1158401017

Results by **8270D SIMS LV (PAH)**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1-Methylnaphthalene	2	1.46	73	2	1.64	82	(41-115)	11.30	(< 20)
2-Methylnaphthalene	2	1.49	75	2	1.62	81	(39-114)	8.40	(< 20)
Acenaphthene	2	1.51	76	2	1.72	86	(48-114)	12.70	(< 20)
Acenaphthylene	2	1.59	79	2	1.82	91	(35-121)	13.60	(< 20)
Anthracene	2	1.67	83	2	1.89	95	(53-119)	12.50	(< 20)
Benzo(a)Anthracene	2	1.95	98	2	1.92	96	(59-120)	1.80	(< 20)
Benzo[a]pyrene	2	1.77	88	2	1.76	88	(53-120)	0.09	(< 20)
Benzo[b]Fluoranthene	2	1.82	91	2	1.89	94	(53-126)	3.70	(< 20)
Benzo[g,h,i]perylene	2	1.81	90	2	1.85	92	(44-128)	2.30	(< 20)
Benzo[k]fluoranthene	2	1.97	98	2	1.91	95	(54-125)	3.00	(< 20)
Chrysene	2	1.93	96	2	1.87	93	(57-120)	3.00	(< 20)
Dibenzo[a,h]anthracene	2	1.90	95	2	1.88	94	(44-131)	1.20	(< 20)
Fluoranthene	2	1.87	94	2	1.88	94	(58-120)	0.35	(< 20)
Fluorene	2	1.66	83	2	1.83	92	(50-118)	9.70	(< 20)
Indeno[1,2,3-c,d] pyrene	2	1.79	89	2	1.78	89	(48-130)	0.65	(< 20)
Naphthalene	2	1.51	75	2	1.67	84	(43-114)	10.30	(< 20)
Phenanthrene	2	1.64	82	2	1.90	95	(53-115)	14.70	(< 20)
Pyrene	2	1.98	99	2	1.96	98	(53-121)	0.98	(< 20)
Surrogates									
2-Fluorobiphenyl (surr)	2	94	94	2	98.7	99	(53-106)	4.90	
Terphenyl-d14 (surr)	2	113	113	2	112	112	(58-132)	1.20	

Batch Information

Analytical Batch: **XMS8855**
Analytical Method: **8270D SIMS LV (PAH)**
Instrument: **HP 6890/5973 MS SVQA**
Analyst: **SP**

Prep Batch: **XXX33754**
Prep Method: **SW3520C**
Prep Date/Time: **08/05/2015 11:05**
Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

Print Date: 10/13/2015 8:49:51AM

Method Blank

Blank ID: MB for HBN 171607[VXXX/227678
Blank 4a] ID: 1Lb13LL

Ma5,t : Co,l/Col,i xi rd (p,yw5g

9 Q for CaS mpe:
116b3[1[[Ls116b3[1[[b

h pe) l5e] d 8270D SIMS (PAH)

UaraS p5pr	h pe) l5e	4u 9 /Q4	D4	Rn,5e
10Mp5wdlnamw5walpnp	LP6[R	6P[[	1P6[	) y/Gy
L0Mp5wdlnamw5walpnp	LP6[R	6P[[	1P6[	) y/Gy
c . pnamw5wpnp	LP6[R	6P[[	1P6[	) y/Gy
c . pnamw5wdlpnp	LP6[R	6P[[	1P6[	) y/Gy
c n5wra. pnp	LP6[R	6P[[	1P6[	) y/Gy
BpnKoxagc n5wra. pnp	LP6[R	6P[[	1P6[	) y/Gy
BpnKo\a8mdrpnp	LP6[R	6P[[	1P6[	) y/Gy
BpnKo\Y8 l) oran5wpnp	LP6[R	6P[[	1P6[	) y/Gy
BpnKo\ysws,8mprdlpnp	LP6[R	6P[[	1P6[	) y/Gy
BpnKo\k8l) oran5wpnp	LP6[R	6P[[	1P6[	) y/Gy
Qwrdepnp	LP6[R	6P[[	1P6[	) y/Gy
D,] pnKo\aswa8an5wra. pnp	LP6[R	6P[[	1P6[	) y/Gy
- l) oran5wpnp	LP6[R	6P[[	1P6[	) y/Gy
- l) orpnp	LP6[R	6P[[	1P6[	) y/Gy
Ini pno\lsLs2Osi 8mdrpnp	LP6[R	6P[[	1P6[	) y/Gy
Namw5walpnp	LP6[R	6P[[	1P6[	) y/Gy
Uwpnan5wrpnp	LP6[R	6P[[	1P6[	) y/Gy
Udrpnp	LP6[R	6P[[	1P6[	) y/Gy
Surrogates				
LO l) oro] ,mwpndl xe) rrg	6bP2	3zC116		%
Aprmwpndl01 3 xe) rrg	0[Pb	6bC112		%

Batch Information

c nald5. al Ba5 w: XMCbb3z
c nald5. al Mp5woi : bL7[D CIMC xUc Hg
Ine5) S pn5 HU zb0[/6072 MC CF9 c
c nalde5 CU
c nald5. al Da5p/A,S p: b/1[/L[16 3:12:[[UM

UrpmBa5 w: XXX22767
UrpmMp5woi : CT 266[Q
UrpmDa5p/A,S p: b/6/L[16 11:[[:66c M
UrpmIn,5al T 5P7FolP LLP6 y
UrpmWt5a. 5Fol: 1 S 4

Ur,n5Da5p: 1[/12/L[16 b:30:62c M

Blank Spike Summary

Blank Spike ID: LCS for HBN 1158401 [XXX33757]
Blank Spike Lab ID: 1281423
Date Analyzed: 08/10/2015 16:31

Matrix: Soil/Solid (dry weight)

QC for Samples: 1158401002, 1158401008

Results by **8270D SIMS (PAH)**

Blank Spike (ug/Kg)

Parameter	Spike	Result	Rec (%)	CL
1-Methylnaphthalene	22.2	10.1	45	(43-111)
2-Methylnaphthalene	22.2	9.53	43	(39-114)
Acenaphthene	22.2	10.8	48	(44-111)
Acenaphthylene	22.2	11.7	53	(39-116)
Anthracene	22.2	14.8	67	(50-114)
Benzo(a)Anthracene	22.2	18.4	83	(54-122)
Benzo[a]pyrene	22.2	17.2	78	(50-125)
Benzo[b]Fluoranthene	22.2	19.5	88	(53-128)
Benzo[g,h,i]perylene	22.2	18.6	84	(49-127)
Benzo[k]fluoranthene	22.2	19.7	89	(56-123)
Chrysene	22.2	19.1	86	(57-118)
Dibenzo[a,h]anthracene	22.2	20.4	92	(50-129)
Fluoranthene	22.2	17.1	77	(55-119)
Fluorene	22.2	12.0	54	(47-114)
Indeno[1,2,3-c,d] pyrene	22.2	20.1	90	(49-130)
Naphthalene	22.2	10.1	45	(38-111)
Phenanthrene	22.2	15.6	70	(49-113)
Pyrene	22.2	17.1	77	(55-117)
Surrogates				
2-Fluorobiphenyl (surr)	22.2	50.1	50	(46-115)
Terphenyl-d14 (surr)	22.2	90.2	90	(58-113)

Batch Information

Analytical Batch: **XMS8846**
Analytical Method: **8270D SIMS (PAH)**
Instrument: **HP 6890/5973 MS SVQA**
Analyst: **SP**

Prep Batch: **XXX33757**
Prep Method: **SW3550C**
Prep Date/Time: **08/05/2015 11:00**
Spike Init Wt./Vol.: 22.2 ug/Kg Extract Vol: 1 mL
Dupe Init Wt./Vol.: Extract Vol:

Print Date: 10/13/2015 8:49:54AM

Matrix Spike Summary

Original Sample ID: 1158400001
MS Sample ID: 1281429 MS
MSD Sample ID: 1281430 MSD

Analysis Date: 08/12/2015 19:10
Analysis Date: 08/12/2015 19:28
Analysis Date: 08/12/2015 19:45
Matrix: Soil/Solid (dry weight)

QC for Samples: 1158401002, 1158401008

Results by **8270D SIMS (PAH)**

		Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1-Methylnaphthalene	3.12U	27.5	19.2	70	27.5	20.0	73	43-111	4.00	(< 20)
2-Methylnaphthalene	3.12U	27.5	18.9	68	27.5	17.5	63	39-114	7.80	(< 20)
Acenaphthene	4.62J	27.5	28.4	86	27.5	30.4	94	44-111	6.70	(< 20)
Acenaphthylene	2.67J	27.5	24.7	80	27.5	20.9	66	39-116	16.40	(< 20)
Anthracene	18.0	27.5	54.8	134 *	27.5	55.3	136 *	50-114	0.98	(< 20)
Benzo[a]pyrene	54.5	27.5	117	228 *	27.5	96.1	152 *	50-125	20.00	(< 20)
Benzo[g,h,i]perylene	31.2	27.5	70.2	141 *	27.5	57.5	95	49-127	20.00	(< 20)
Benzo[k]fluoranthene	3.12U	27.5	70.1	254 *	27.5	54.5	198 *	56-123	25.00 *	(< 20)
Dibenzo[a,h]anthracene	8.01	27.5	32.8	90	27.5	29.6	78	50-129	10.70	(< 20)
Fluorene	7.38	27.5	37.6	110	27.5	41.0	122 *	47-114	8.60	(< 20)
Indeno[1,2,3-c,d] pyrene	29.3	27.5	72.1	155 *	27.5	60.6	114	49-130	17.30	(< 20)
Naphthalene	3.12U	27.5	17.2	63	27.5	15.3	56	38-111	11.50	(< 20)
Benzo(a)Anthracene	71.8	27.5	153	296 *	27.5	138	243 *	54-122	10.20	(< 20)
Benzo[b]Fluoranthene	117	27.5	264	535 *	27.5	224	392 *	53-128	16.30	(< 20)
Chrysene	70.2	27.5	162	332 *	27.5	140	253 *	57-118	14.70	(< 20)
Fluoranthene	300	27.5	488	680 *	27.5	454	558 *	55-119	7.20	(< 20)
Phenanthrene	109	27.5	233	447 *	27.5	231	444 *	49-113	0.49	(< 20)
Pyrene	196	27.5	343	535 *	27.5	319	448 *	55-117	7.30	(< 20)
Surrogates										
2-Fluorobiphenyl (surr)		27.5	20.0	72	27.5	18.9	68	46-115	5.90	
Terphenyl-d14 (surr)		27.5	29.7	108	27.5	32.3	117 *	58-113	8.20	

Batch Information

Analytical Batch: XMS8851
Analytical Method: 8270D SIMS (PAH)
Instrument: HP 6890/5973 MS SVQA
Analyst: SP
Analytical Date/Time: 8/12/2015 7:28:00PM

Prep Batch: XXX33757
Prep Method: Sonication Extraction Soil 8270 PAH SIM
Prep Date/Time: 8/5/2015 11:00:55AM
Prep Initial Wt./Vol.: 22.80g
Prep Extract Vol: 1.00mL

Print Date: 10/13/2015 8:49:55AM

Method Blank

Blank ID: MB for HBN 171597[X / / 344] 4Lb
Blank 2a8 ID: 1Q] 44CC

Matrix: d at0r (pyrfaw06gffh6) roynRu

Sm for pae sl0, :
11C] L[1[1[611C] L[1[11611C] L[1[1Q611C] L[1[14611C] L[1[1L611C] L[1[1C611C] L[1[15611C] L[1[17

U0, ylt, 8O**AK102**

. arae 0t0r	U0, ylt,	2c S3m2	D2	Pnit,
Di0, 0l UanK0 c rKaniw,	[h4[[P	[h5[[	[h1] [	e K32
Surrogates				
Ca AnRro, tan0 (, yrru	75h7	5[-1Q[		%

Batch Information

AnalQiwal BatwF: / Vm1Q[1[
AnalQiwal M0tFoR: AE1[Q
In, trye 0nt: H. 7] 9[A VID pJ g V
AnalQ,t: ETc
AnalQiwal Dat03We 0:] 3143Q[1C 11:Q[:[[. M

. r0s BatwF: / / / 44] 4L
. r0s M0tFoR: pd 4CQ[m
. r0s Dat03We 0:] 3143Q[1C 9:4C:Q7AM
. r0s Initial d th8J olh QQ[e 2
. r0s gxtrawt J ol: 1 e 2

. rint Dat0: 1[3143Q[1C] :L9:C5AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1158401 [VVVXX8X42
Blank Spike La7 ID: 168XX5]
Dabe 3nalt Aey: 08z1Xz6015 6X:40

Spike Ddpli/ abe ID: LCSD for HBN 1158401 [VVVXX8X42
Spike Ddpli/ abe La7 ID: 168XX5u
s abriM x aber (Sdrfa/ ewgffhw) rodnyP

, C for Sa%pleR 1158401010w1158401011w1158401016w115840101Xw1158401014w1158401015w115840101] w 115840101u

c eRdlbR7t **AK102**

	Blank Spike (%QdLP			Spike Ddpli/ abe (%QdLP					
marra%eber	Spike	c eRdlb	c e/ (K P	Spike	c eRdlb	c e/ (K P	CL	c mD (K P	c mD CL
DieRel c anQe 9 rQani/ R	60	1uh5	88	60	1uh6	8]	(u5G365 P	6h00	(O60 P
Surrogates									
5a 3nyroRane (RdrrP	0h4	. 4h	. 5	0h4	. 0h5	. 1	( ] 0G360 P	4h80	

Batch Information

3nalt bi/ al Bab/ - : **XFC12010**
3nalt bi/ al s eb> oy: **AK102**
InRord%enb **HP 7890A** **FID SV E F**
3nalt Rb **KJO**

mrep Bab/ - : **XXX33834**
mrep s eb> oy: **SW3520C**
mrep Dabez<i%e: **08/13/2015 09:35**
Spike Inibx bzTolh 60 %QdL gMra/ bTol: 1 %L
Ddpe Inibx bzTolh 60 %QdL gMra/ bTol: 1 %L

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1158401

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Omissions may delay the onset of analysis.

Page 1 of 2

Section 1

CLIENT: NORTECH

CONTACT: DOUG DUSEK   PHONE NO: 452-5688

PROJECT NAME: 1603 27TH AVE   PROJECT/ PWSID/ PERMIT#:

REPORTS TO: DOUG   E-MAIL: DDUSEK@nortechengr.com

INVOICE TO: DOUG   QUOTE #:

P.O. #:

Section 3 — Preservative: NONE / MeOH / MeOH / None

Section 2

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	# CONTAINERS	Type C = COMP G = GRAB MI = Multi Incremental Soils	DRO (AK102)	GRO (AK 101)	BTEX (8021)	PAH (8270) SIMS						REMARKS/ LOC ID
1 AB	SB01-8	08/02/2015	0930	Soil	2	G	X	X	X							
2 AB	SB02-6	08/02/2015	0920	Soil	2	G	X	X	X	X						
3 AB	SB03-6	08/02/2015	0940	Soil	2	G	X	X	X							
4 AB	SB04-6	08/02/2015	1000	Soil	2	G	X	X	X							
5 AB	SB05-6	08/02/2015	1100	Soil	2	G	X	X	X							
6 AB	SB06-6	08/02/2015	1135	Soil	2	G	X	X	X							
7 AB	SB07-6	08/02/2015	1220	Soil	2	G	X	X	X							
8 AB	SB08-6	08/02/2015	1338	Soil	2	G	X	X	X	X						
9 AB	SB10-6	08/02/2015	1235	Soil	2	G	X	X	X							
10 A-E	TSP02	08/02/2015	0930	Water	5	G	X	X	X							

Section 5

Relinquished By	Date	Time	Received By
Relinquished By: (1) [signature]	08/02/2015	1515	Received By: [signature] 8.2.15 1515
Relinquished By: (2) [signature]	8.2.15	1600	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	8/4/15	0930	Received For Laboratory By: [signature]

Section 4 DOD Project? Yes No

Data Deliverable Requirements:

Cooler ID:

Requested Turnaround Time and/or Special Instructions:

Temp Blank °C: chilled

or Ambient [ ]

(See attached Sample Receipt Form)

Chain of Custody Seal: (Circle) HD

INTACT BROKEN ABSENT

(See attached Sample Receipt Form)

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

ANC: IF IB
(R1) 3.1 / 02
(R2) 28/71

http://www.sgs.com/terms-and-conditions

F083-Kit_Request_and_COC_Templates-Blank
Revised 2013-03-24

SGS

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Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.

Page 2 of 2

Section 1

CLIENT: NORTECH

CONTACT: DOUG DUSEK PHONE NO: 452-5688

PROJECT NAME: 1603 27 AVE PROJECT/ PWSID/ PERMIT#:

REPORTS TO: DOUG E-MAIL: DDUSEK@nortechengr.com

INVOICE TO: DOUG QUOTE #: P.O. #:

Section 2

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	Section 3 # CONTAINERS	Type C = COMP G = GRAB MI = Multi Incremental Soils	Preservative HCl	HCl	HCl	NONE						REMARKS/ LOC ID
							DRO (AK102)	GRO (AK101)	BTEX (8021)	PAH (8270) SIMS						
(11) A-E	TSP03	08/02/2015	0956	water	5	G	X	X	X							
(12) A-E	TSP04	08/02/2015	1030	water	5	G	X	X	X							
(13) A-E	TSP05	08/02/2015	1112	water	5	G	X	X	X							
(14) A-E	TSP06	08/02/2015	1145	water	5	G	X	X	X							
(15) A-E	TSP07	08/02/2015	1230	water	5	G	X	X	X							
(16) A-G	MW1	08/02/2015	1430	water	7	G	X	X	X	X						
(17) A-G	MW2	08/02/2015	1445	water	7	G	X	X	X	X						
(18) A-C	trip blank				3				X							
(19) A	trip blank				1				X							
	temp blank				1											

Section 5

	Date	Time		
Relinquished By: (1) Hilary Potter	08/02/2015	1515	Received By:	8.2.15 1515
Relinquished By: (2)	8.2.15	1606	Received By:	
Relinquished By: (3)			Received By:	
Relinquished By: (4)			Received For Laboratory By:	

Section 4

DOD Project? Yes No

Data Deliverable Requirements:

Cooler ID:

Requested Turnaround Time and/or Special Instructions:

Temp Blank °C: chilled
or Ambient [ ]
(See attached Sample Receipt Form)

Chain of Custody Seal: (Circle) N/D
INTACT BROKEN ~~ABSENT~~
(See attached Sample Receipt Form)

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

SGS

1158401

FAIRBANKS SAMPLE RECEIPT FORM

Note: This form is to be completed by Fairbanks Receiving Staff for all samples

Review Criteria:	Condition:	Comments/Actions Taken
Were **custody seals** intact? Note # & location, if applicable. COC accompanied samples?	Yes No ~~N/A~~ ~~Yes~~ No N/A	□*Exemption permitted if sampler hand carries/delivers.*
Temperature blank compliant* (i.e., 0-6°C) *If >6°C, were samples collected <8 hours ago?* *If <0°C, were all sample containers ice free?* Cooler ID: 1 @ ____ w/Therm. ID: ____ Cooler ID: 2 @ ____ w/Therm. ID: ____ Cooler ID: ____ @ ____ w/Therm. ID: ____ Cooler ID: ____ @ ____ w/Therm. ID: ____ Cooler ID: ____ @ ____ w/Therm. ID: ____ If samples are received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank and "**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"	~~Yes~~ No Yes No ~~N/A~~ Yes No ~~N/A~~ chilled	□*Exemption permitted if chilled & collected <8hrs ago* ***Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.***
Delivery Method: ~~Client (hand carried)~~ Other: ____	Tracking/AB# : Or see attached ~~Or N/A~~	
→For samples received with payment, note amount ($) and whether cash / check / CC (**circle one**) was received.		
Were samples in **good condition** (no leaks/cracks/breakage)? Packing material used (specify all that apply): ~~Bubble Wrap~~ Separate plastic bags Vermiculite Other: ____	~~Yes~~ No N/A	***Note: some samples are sent to Anchorage without inspection by SGS Fairbanks personnel.***
Were **Trip Blanks** (i.e., VOAs, LL-Hg) in cooler with samples?	~~Yes~~ No N/A	
For **RUSH/SHORT Hold Time**, were COC/Bottles flagged accordingly? Was Rush/Short HT email sent, if applicable?	Yes No ~~N/A~~ Yes No ~~N/A~~	
Additional notes (if applicable):		

Note to Client: any "no" circled above indicates non-compliance with standard procedures and may impact data quality.

1158401

SAMPLE RECEIPT FORM

Review Criteria:	Yes	N/A	No	Comments/Action Taken:
Were **custody seals** intact? Note # & location, if applicable. COC accompanied samples?	☑ ☑	☐ ☐	☐ ☐	***Exemption permitted if sampler hand carries/delivers.*** 1F, 1B
Temperature blank compliant* (i.e., 0-6°C after CF)? *If >6°C, were samples collected <8 hours ago?* *If <0°C, were all sample containers ice free?* Cooler ID: 1 _____ @ 3.1 w/ Therm.ID: D2 Cooler ID: 2 _____ @ 2.8 w/ Therm.ID: 71 Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ If samples are received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "**COOLER TEMP**" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled."	☑ ☐ ☐	☐ ☑ ☑	☐ ☐ ☐	***Exemption permitted if chilled & collected <8 hrs ago.*** ***Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.***
Delivery method (specify all that apply): ☐Client (hand carried) ☐USPS ☑Lynden ☐AK Air ☐Alert Courier ☐UPS ☐FedEx ☐RAVN ☐C&D Delivery ☐Carlile ☐Pen Air ☐Warp Speed ☐Other: _____ → *For WO# with airbills, was the WO# & airbill info recorded in the Front Counter eLog?*	☐	☑	☐	
	Yes	N/A	No	
Were samples received within hold time? Do samples **match COC*** (i.e., sample IDs, dates/times collected)? Were analyses requested unambiguous?	☑ ☑ ☑	☐ ☐ ☐	☐ ☐ ☑	***Note: Refer to form F-083 "Sample Guide" for hold times.*** ***Note: If times differ <1hr, record details and login per COC.*** *
Were samples in **good condition** (no leaks/cracks/breakage)? Packing material used (specify all that apply): ☑Bubble Wrap ☐Separate plastic bags ☐Vermiculite ☐Other:	☑	☐	☐	
Were **proper containers** (type/mass/volume/preservative*) used? Were **Trip Blanks** (i.e., VOAs, LL-Hg) in cooler with samples? Were all VOA vials **free of headspace** (i.e., bubbles ≤6 mm)? Were all soil VOAs **field extracted** with MeOH+BFB?	☑ ☑ ☑ ☑	☐ ☐ ☐ ☐	☐ ☐ ☐ ☐	☐ ***Exemption permitted for metals (e.g., 200.8/6020A).***
For preserved waters (other than VOA vials, LL-Mercury or microbiological analyses), was **pH verified and compliant**? If pH was adjusted, were bottles flagged (i.e., stickers)?	☐ ☐	☐ ☑	☑ ☐	*
For **special handling** (e.g., "MI" soils, foreign soils, lab filter for dissolved…, lab extract for volatiles, Ref Lab, limited volume), were bottles/paperwork flagged (e.g., sticker)?	☑	☐	☐	Limited volume sample 10
For **RUSH/SHORT Hold Time**, were COC/Bottles flagged accordingly? Was Rush/Short HT email sent, if applicable?	☐	☑	☐	
For **SITE-SPECIFIC QC, e.g. BMS/BMSD/BDUP**, were containers / paperwork flagged accordingly?	☐	☑	☐	
For any question answered "No," has the PM been notified and the problem resolved (or paperwork put in their bin)?	☑	☐	☐	SRF Completed by: VDL 8/4/15 PM notified: JAD
Was **PEER REVIEW** of ***sample numbering/labeling completed?***	☑	☐	☐	Peer Reviewed by: D.C

Additional notes (if applicable):

*Sample 1158401010-B container label has analysis "PAH" written. Sample came in with an HCL preserved label but sample was unpreserved and 2/3 full. COC lists DRO for this sample but does not list PAH as a requested analysis for this sample. Logged sample as DRO per client (limited volume).

**Samples listed as taken on 8/2; client has clarified that the samples were taken on 8/3. Logged in samples as taken on 8/3.

Note to Client: *Any "no" answer above indicates non-compliance with standard procedures and may impact data quality.*

Sample Containers and Preservatives

Container Id	Preservative	Container Condition
1158401001-A	No Preservative Required	OK
1158401001-B	Methanol field pres. 4 C	OK
1158401002-A	No Preservative Required	OK
1158401002-B	Methanol field pres. 4 C	OK
1158401003-A	No Preservative Required	OK
1158401003-B	Methanol field pres. 4 C	OK
1158401004-A	No Preservative Required	OK
1158401004-B	Methanol field pres. 4 C	OK
1158401005-A	No Preservative Required	OK
1158401005-B	Methanol field pres. 4 C	OK
1158401006-A	No Preservative Required	OK
1158401006-B	Methanol field pres. 4 C	OK
1158401007-A	No Preservative Required	OK
1158401007-B	Methanol field pres. 4 C	OK
1158401008-A	No Preservative Required	OK
1158401008-B	Methanol field pres. 4 C	OK
1158401009-A	No Preservative Required	OK
1158401009-B	Methanol field pres. 4 C	OK
1158401010-A	HCL to pH < 2	OK
1158401010-B	No Preservative Required	OK
1158401010-C	No Preservative Required	OK
1158401010-D	No Preservative Required	OK
1158401010-E	No Preservative Required	OK
1158401011-A	HCL to pH < 2	OK
1158401011-B	HCL to pH < 2	OK
1158401011-C	No Preservative Required	OK
1158401011-D	No Preservative Required	OK
1158401011-E	No Preservative Required	OK
1158401012-A	HCL to pH < 2	OK
1158401012-B	HCL to pH < 2	OK
1158401012-C	No Preservative Required	OK
1158401012-D	No Preservative Required	OK
1158401012-E	No Preservative Required	OK
1158401013-A	HCL to pH < 2	OK
1158401013-B	HCL to pH < 2	OK
1158401013-C	No Preservative Required	OK
1158401013-D	No Preservative Required	OK
1158401013-E	No Preservative Required	OK
1158401014-A	HCL to pH < 2	OK
1158401014-B	HCL to pH < 2	OK
1158401014-C	No Preservative Required	OK
1158401014-D	No Preservative Required	OK
1158401014-E	No Preservative Required	OK
1158401015-A	HCL to pH < 2	OK
1158401015-B	HCL to pH < 2	OK
1158401015-C	No Preservative Required	OK
1158401015-D	No Preservative Required	OK
1158401015-E	No Preservative Required	OK
1158401016-A	HCL to pH < 2	OK
1158401016-B	HCL to pH < 2	OK
1158401016-C	No Preservative Required	OK
1158401016-D	No Preservative Required	OK
1158401016-E	HCL to pH < 2	OK
1158401016-F	HCL to pH < 2	OK
1158401016-G	HCL to pH < 2	OK
1158401017-A	HCL to pH < 2	OK
1158401017-B	HCL to pH < 2	OK
1158401017-C	No Preservative Required	OK
1158401017-D	No Preservative Required	OK
1158401017-E	HCL to pH < 2	OK
1158401017-F	HCL to pH < 2	OK
1158401017-G	HCL to pH < 2	OK
1158401018-A	HCL to pH < 2	OK
1158401018-B	HCL to pH < 2	OK
1158401018-C	HCL to pH < 2	OK
1158401019-A	HCL to pH < 2	OK

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition

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.
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.
BU - The container was received with headspace greater than 6mm.

Laboratory Data Review Checklist

Completed by:	Hilary Pletta		
Title:	Staff Scientist	Date:	October 14,2015
CS Report Name:	1603 27th Avenue	Report Date:	August 19,2015
Consultant Firm:	Nortech Inc.		
Laboratory Name:	SGS	Laboratory Report Number:	1158401
ADEC File Number:	102.38.181	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 were processed 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° ± 2° C)?

(●) Yes ( ) No ( ) NA (Please explain) Comments:

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

(•) Yes ( ) No ( ) NA (Please explain) Comments:

c. Sample condition documented - broken, leaking (Methanol), zero headspace (VOC vials)?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

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:

Sample 1158401010-B was mis-labeled as PAH and was logged as DRO per client instruction

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

Comments:

Data quality and usability was 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:

Several surrogate recoveries were outside of QC criteria, however analytes associated with surrogate were below the LOQ or the sample surrogates were within the criteria

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 and usability were 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:

LOQ for Benzene in Sample SB08-6 is higher than the Cleanup Level

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

Comments:

Data quality and usability not affect due to sample being grossly contaminated

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:

No affected samples

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

Data quality and 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:

Metals and inorganics were not a requested analysis for this project.

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

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

iv. Precision - All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/DMSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

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

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

Comments:

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:

c. Surrogates - Organics Only

i. Are surrogate recoveries reported for organic analyses - field, QC and laboratory samples?

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

ii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

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

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

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

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

Comments:

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:

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

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

ii. Submitted blind to lab?

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

iii. Precision - All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

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

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

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

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

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

RPDs within acceptable range

f. Decontamination or Equipment Blank (if applicable)

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

Decon/equipment blank not required for this project

i. All results less than PQL?

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

ii. If above PQL, what samples are affected?

Comments:

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

Comments:

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

a. Defined and appropriate?

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

Reset Form

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: 1603 27 Avenue, Fairbanks, AK

Completed By: Doug Dusek

Date Completed: 10/9/2015

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

(1)

Check the media that could be directly affected by the release.

(2)

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

(3)

Check all exposure media identified in (2).

(4)

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

(5)

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

Current & Future Receptors

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

Revised, 10/01/2010

Print Form

Human Health Conceptual Site Model
Scoping Form

Site Name: 1603 27th Avenue

File Number:

Completed by: Doug Dusek

Introduction

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

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

1. General Information:

Sources *(check potential sources at the site)*

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

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

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

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

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

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

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

* bgs - below ground surface

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

a) Direct Contact -

1. Incidental Soil Ingestion

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

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

Comments:

2. Dermal Absorption of Contaminants from Soil

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

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

If both boxes are checked, label this pathway complete:

Comments:

b) Ingestion -

1. Ingestion of Groundwater

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

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

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

Comments:

2. Ingestion of Surface Water

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

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

If both boxes are checked, label this pathway complete:

Comments:

3. Ingestion of Wild and Farmed Foods

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

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

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

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

Comments:

c) Inhalation-

1. Inhalation of Outdoor Air

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

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

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

Comments:

2. Inhalation of Indoor Air

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

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

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

Comments:

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

Dermal Exposure to Contaminants in Groundwater and Surface Water

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

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

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

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

Comments:

Inhalation of Volatile Compounds in Tap Water

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

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

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

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

Comments:

Inhalation of Fugitive Dust

Inhalation of fugitive dust may be a complete pathway if:

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

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

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

Comments:

Direct Contact with Sediment

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

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

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

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

Comments:

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