

November 20, 2018

Sarah McClellan, City Administrator
City of McGrath
P.O. Box 30
McGrath, AK 99627

**Subject: Site Characterization Report; City of McGrath Water Treatment Plant; McGrath, Alaska;
ADEC File Number 2612.38.003**

Dear Ms. McClellan:

DNA Environmental Consultants, LLC (DNA) herein reports the finding of soil and groundwater sampling conducted for the City of McGrath (City) at the City's Water Treatment Plant site located in McGrath, Alaska (see Attachment 1, Figures 1 and 2). This work is being conducted under a McGrath Contract for Professional Services, City Code 3.16.020.

DNA mobilized a two-person team to McGrath on August 1, 2018 to implement the ADEC-approved work plan for this site (DNA 2018). Site maps and figures are provided as Attachment 1. A photographic log is provided as Attachment 2. Field notes and field-generated forms are provided as Attachment 3. Tabulated data is provided as Attachment 4. The laboratory report is provided as Attachment 5 with ADEC checklists and a data quality review provided as Attachment 6.

SITE BACKGROUND

McGrath is located approximately 221 air miles northwest of Anchorage and air 269 miles southwest of Fairbanks in Interior Alaska. The City's public works and city office complex is located at the southwest corner of Takotna Avenue and F Street on Track B, Block 4, Lots 2 and 3 and within Public Land Survey Section 18, Township 33 North, Range 33 West, Seward Meridian. The address is 30 Takotna Avenue, McGrath, Alaska.

The city office complex includes a washeteria, fire station/ambulance bay, holding cell, and a Water Treatment Plant (WTP) with an associated water storage tank. The remaining multipurpose area includes above ground diesel fuel storage tanks, public works' shop and enclosed storage area, and outdoor heavy equipment and vehicle storage.

On November 12, 1992, a spill of approximately 5,000 gallons of diesel fuel from a 20,000-gallon tank occurred at the City's diesel tank farm. Approximately 900 gallons of fuel were recovered at the time of the spill. The 20,000-gallon tank was located within a lined secondary containment, which was believed to have contained the spill.

To evaluate whether the spill was contained or not, the City hired a contractor, Phukan Consulting Engineers and Associates, Inc. (Phukan), to conduct site characterization work in 1995. The 1995 site characterization included the advancing of nine test pits. Samples collected for off-site laboratory analysis indicated diesel-range organics (DRO) impact at two of the nine test pits located outside of the bermed and lined secondary containment. Phukan then established a bermed and lined area to receive impacted soil, estimated at 2,500 cubic yards, at the City's Landfill site (Phukan 1995).

The City conducted the removal and remediation of approximately 2,500 cubic yards of soil at the landfill site by the landfarming technique. The remediated soil was then re-used by the City to construct a new tank farm adjacent to the old tank farm where the spill occurred. The old tank farm is now a parking area. No documentation exists regarding landfarm progress samples, or the final concentrations of the treated soil prior to beneficial use at the new tank farm. Initial soil samples collected of stockpiled soil by Phukan contained diesel-range organics (DRO) concentrations of 9,900 and 13,500 milligrams per kilogram (mg/kg).

SITE GEOLOGY AND HYDROLOGY

McGrath is located on the flood plain of the Kuskokwim River between the Tanana-Kuskokwim Lowlands to the south and east and the Kuskokwim Mountains to the north and west.

The soils in this area are generally associated with the fluvial environment. The primary soil type is the Takotna silt loam which is developed on flood plain deposits in well-drained areas that are frequently flooded on the south and east sides of the Kuskokwim River. The Takotna silt loam consists of a thin surface mat of partially decomposed organic matter overlying gray or olive gray stratified very fine sand and silt. Surficial deposits that underlie McGrath are described in well drillers' logs as stratified sandy to silty sediments that overlie sand and fine gravels at depths of 0 to 24 feet. Fine sand, silt, and clay are present at depths to about 210 feet. The direction of groundwater flow in the McGrath area is dominated by interactions with the Kuskokwim River. For the alluvial aquifer underlying McGrath, the aquifer boundary is the Kuskokwim River (Dorava 1994).

The depth to groundwater at the site, found during the August site characterization work was approximately 13 feet below the ground surface.

REGULATORY STANDARDS

Analytical results for the work reported herein will be compared to relevant State of Alaska cleanup criteria. Cleanup standards are defined in Alaska Administrative Code Title 18, Chapter 75 (18 ACC 75) entitled *Oil and Hazardous Substance Pollution Control* (ADEC 2017a). The laboratory results for groundwater samples are compared to 18 AAC 75.345, Table C Groundwater Cleanup Levels. Soil sample analytical results are compared to ADEC Method Two soil cleanup levels found in 18 AAC 75.341, Tables B1 and B2.

FIELD ACTIVITIES

Field activities were conducted between August 1 and August 3, 2018.

All field work was conducted by Daniel Frank; Mr. Frank meets the ADEC's requirements of a qualified environmental professional per 18 AAC 75.333 and 18 AAC 78.088. There were no deviations from the

work plan. DNA collected one primary soil and one primary groundwater sample. For quality assurance and control, DNA collected one duplicate soil sample and one duplicate water sample.

The groundwater and soil samples were submitted to SGS North America, Inc. (SGS) in Anchorage for gasoline-range organics (GRO), DRO, residual-range organics (RRO), volatile organic compounds (VOCs), and polycyclic aromatic hydrocarbons (PAHs) analysis. Field notes are provided as Attachment 3.

Soil Sampling

DNA directed the advancement of one test pit to groundwater using a tracked hydraulic excavator (John Deere 690B). Excavated soil was temporarily stockpiled adjacent to the test pit. Soil appeared clean and unimpacted from the ground surface to approximately 10 feet bgs. Soil deeper than 10 feet bgs appeared impacted, based on olfactory senses, by petroleum hydrocarbons. DNA collected one soil sample, sample No. 18-MCG-01-SO, and one quality control duplicate sample No. 18-MCG-02-SO, from soils excavated from the groundwater interface, found at approximately 13 feet bgs.

Volatile sample fractions were not homogenized; a minimum of 25 grams of soil was placed directly into one 4-ounce pre-tared laboratory-provided jar and immediately preserved in the field with 25 milliliters (ml) of methanol provided by the laboratory. The remaining sample fraction for non-volatile analysis was homogenized and then placed into laboratory-provide glass jars. All samples were then immediately placed on ice and chilled to 4° Celsius (°C) ± 2°C. Chain-of-custody (CoC) procedures were followed.

Table 1 summarizes all soil samples collected along with the estimated actual depth of collection, location, and requested analyses.

Monitoring Well Installation

Once the test pit was advanced, DNA inserted a 2-inch-diameter, Schedule 40 poly-vinyl chloride (PVC) casing with a 5-foot-long, 0.010-inch slotted interval surrounded by a pre-pack filter of Colorado 10-20 sand. The 5-foot pre-packed slotted screen was centered on the groundwater table. The test pit excavation was then backfilled with the excavated soil. A bentonite seal was placed within 2 feet of the ground surface around the well casing and the well was finished with a flush-mount. The well was designated as MW-01.

Monitoring Well Development

DNA developed the well approximately 8 hours after installation using a peristaltic pump to purge the well. Well development was continued until five well casing volumes were removed.

Groundwater Sampling

Groundwater sample No. 18-MCG-101-GW and quality control duplicate sample 18-MCG-102-GW were collected 24 hours after well development using a low-flow (minimal drawdown) purge and sample collection technique. Care was taken to minimize drawdown by routinely monitoring the depth to water with a water level indicator. The low-flow purge and sample collection technique involves purging the well at a low rate to ensure that minimal drawdown (less than 0.3 feet) is occurring in the well. If drawdown occurred at more than 0.3 feet while purging, the flow rate was decreased until the recharge was

equivalent to the discharge. Once three casing volumes were purged, a water quality meter with a flow-through cell was connected to the pump water sample line and water quality measurements were recorded. Turbidity was also measured and recorded. Water quality data are presented in Table 2 (Attachment 4).

Once purging was complete, and the water quality meter was disconnected, groundwater samples were collected.

LABORATORY ANALYTICAL RESULTS

Soil and groundwater sample analytical results are summarized in Table 3 and on Figure 2. The laboratory analytical results report is provided as Attachment 5. A data quality assessment of the reported data and associated completed ADEC checklist are provided as Attachment 6.

Analytical Methods

The groundwater and soil samples will be submitted for the following analysis:

- VOCs by United States Environmental Protection Agency (USEPA) Solid Waste (SW) Method 8260C;
- GRO; 6-carbon chain length (C6 to C10) by Alaska Method (AK)101;
- DRO; (C10 to C25) by AK 102;
- RRO; (C25 to C36) by AK 103; and
- PAHs by EPA SW8270D.

Soil Sample Analytical Results

The following petroleum hydrocarbon constituents were detected in soil at a concentration greater than a respective ADEC cleanup level:

- DRO was detected at 337 mg/kg (cleanup level is 250 mg/kg);
- 1,2,4-Trimethylbenzene was detected at 933 mg/kg (cleanup level is 160 mg/kg);
- Ethylbenzene was detected at 169 mg/kg (cleanup level is 130mg/kg); and
- Naphthalene by EPA SW8270D was detected at 138 mg/kg and at 389 mg/kg by EPA SW8260C (cleanup level is 38 mg/kg).

Groundwater Analytical Results

The following petroleum hydrocarbon constituents were detected in water at a concentration greater than a respective ADEC cleanup level:

- Benzene was detected at 6.87 microgram per liter ($\mu\text{g/l}$; cleanup level is 4.6 $\mu\text{g/l}$)
- 1,2,4-Trimethylbenzene was detected at 83.5 $\mu\text{g/l}$ (cleanup level is 15 $\mu\text{g/l}$);
- Ethylbenzene was detected at 38.2 $\mu\text{g/l}$ (cleanup level is 15 $\mu\text{g/l}$);
- Naphthalene by EPA SW8270D was detected at 50.6 $\mu\text{g/l}$ and at 65.5 $\mu\text{g/l}$ by EPA SW8260C (cleanup level is 1.7 $\mu\text{g/l}$); and
- 1-Methylnaphthalene was detected at 27.3 $\mu\text{g/l}$ (cleanup level is 11 $\mu\text{g/l}$).

CONCEPTUAL SITE MODEL

This Conceptual Site Model (CSM) has been revised for the Lola Ct. site based on site history and current soil and groundwater analytical data presented in this report. The CSM was developed in accordance with ADEC *Policy Guidance on Developing Conceptual Site Models* (ADEC 2017b).

Source

The source of impact to soil at the site is likely petroleum hydrocarbons in the diesel range that were released when a 20,000-gallon diesel fuel storage tank failed in November 1992.

Impacted Media

The media directly impacted at the site is soil located between approximately 10 and 13 feet bgs. Groundwater is secondarily impacted. Contaminants detected in soil at a concentration greater than a ADEC Method Two cleanup level include: DRO, ethylbenzene, naphthalene, and 1,2,4-trimethylbenzene. Contaminants detected in groundwater at a concentration greater than a ADEC Table C groundwater cleanup level include: 1,2,4-Trimethylbenzene, Benzene, Ethylbenzene, Naphthalene, and 1-Methylnaphthalene.

Transport Mechanisms

The most likely transport mechanisms include direct release to subsurface soils and migration through the vadose zone to groundwater. Impacted groundwater may migrate/leaching to surface water. Contaminants may move by volatilization to indoor and outdoor air. Volatile compounds detected at the site include naphthalene, benzene, ethylbenzene, 1,2,4-trimethylbenzene, and 1-methylnaphthalene.

Exposure Media

Potential exposure media at the site include ingestion or dermal contact with soil, groundwater water, and surface water as well as inhalation of indoor and outdoor air. Naphthalene, found in soil, is a dermally penetrative contaminant. No bioaccumulative compounds were detected in soil or groundwater.

Human Health Exposure Routes and Receptors

Possible receptors include current and future commercial or industrial workers, site visitors, trespassers, and construction workers.

See Attachment 2 for completed ADEC Human Health Conceptual Site Model Scoping Form and Standardized Graphic.

CONCLUSIONS AND RECOMMENDATIONS

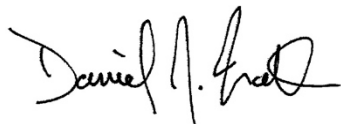
Residual petroleum hydrocarbon impact remains at the site. Impacted soil is located deep, at a depth greater than 10 feet bgs. The concentration of DRO in soil is 337 mg/kg, which is slightly higher than the soil cleanup level, and very low in comparison to the values reported by Phukan in 1995. Groundwater analytical results indicate groundwater is impacted by petroleum hydrocarbon constituents related to the 1992 release.

DNA recommends additional sampling of groundwater at MW-01 to confirm the constituents in groundwater and to establish contaminant concentration trend over time.

Please do not hesitate to contact me at 907-350-4897 if you have any questions regarding this work plan.

Sincerely,

DNA Environmental Consultants, LLC



Daniel Frank
Principal

Attachments

1. Figures
2. Photographic Log
3. Field Notes
4. Tables
5. Laboratory Report
6. ADEC Checklist and Data Quality Report
7. Conceptual Site Model

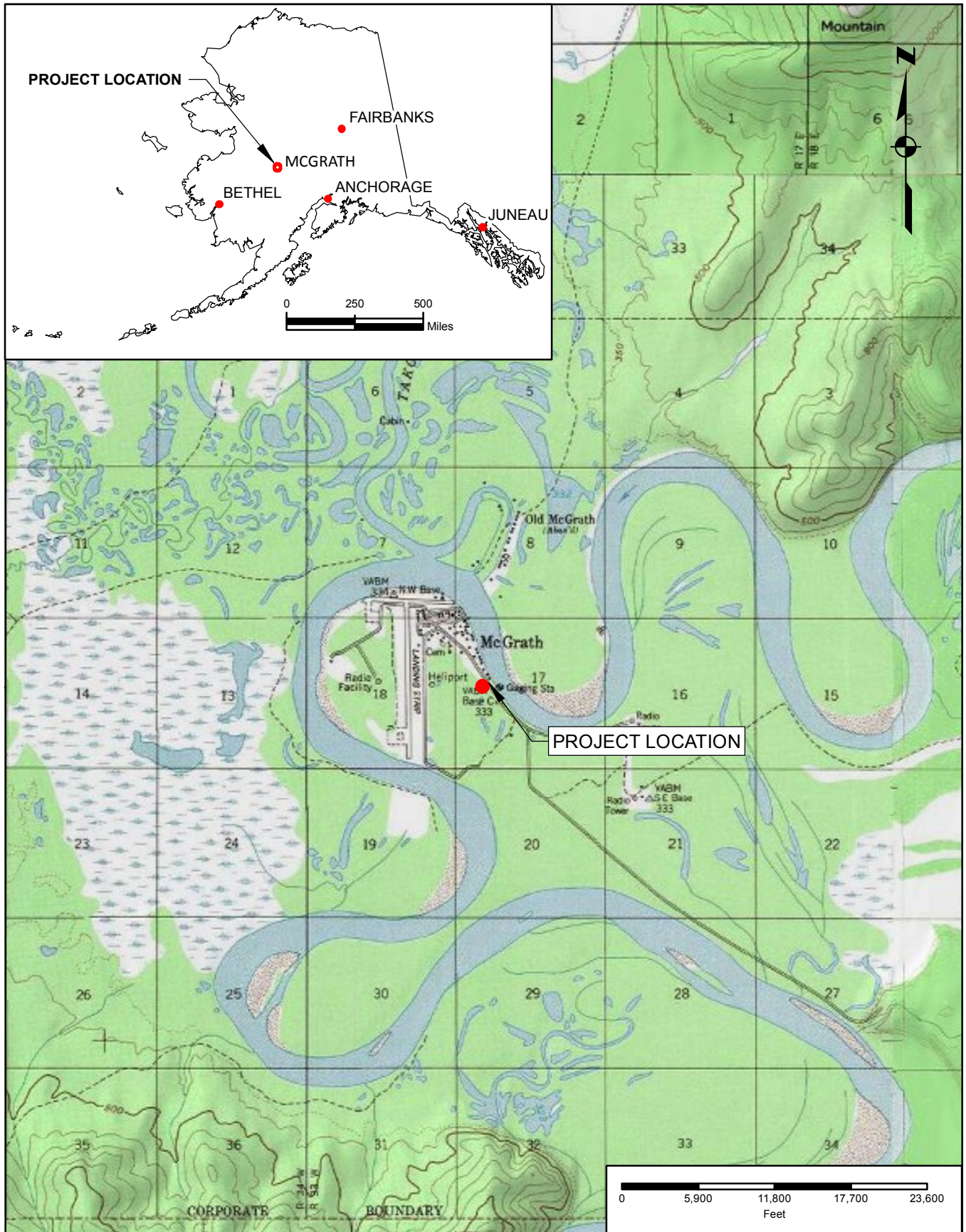
REFERENCES


- Alaska Department of Environmental Conservation (ADEC) 2017a. 18 AAC 75; *Oil and Other Hazardous Substances Pollution Control*, as amended through November 7.
- _____, 2017b. *Guidance on Developing Conceptual Site Models*. January.
- DNA Environmental Consultants, LLC (DNA), 2018. *Site Characterization Work Plan; City of McGrath Water Treatment Plant Site; McGrath, Alaska*; ADEC File Number 2612.38.003. July 2.
- Dorava, Joseph M. 1994. Overview of Environmental and Hydrogeological Conditions at McGrath, Alaska. United States Geological Survey, Open File Report 94-119.
- Phukan Consulting Engineers and Associates, Inc. (Phukan). 1995. *Remedial Investigation for the Fuel Spill of November 1992, City of McGrath, Alaska*. December.

ATTACHMENT 1

Figures





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	Water Treatment Plant Site City of McGrath McGrath, Alaska		Site Location Map		Figure 1
	1 inch = 2 miles WGS 1984 Web Mercator Auxiliary Sphere		November 19, 2018	18.COM.01	
		DRAWN: rrye	CHKD: DJF		



Test Pit # 1/ MW-01 (mg/kg)	Soil (mg/kg)	WATER (mg/l)
Date	8/1/18	8/2/2018
GRO	16.1	1.02
DRO	337	1.27
RRO	31.4	ND (0.491)
Benzene	0.0165 J	0.00687
Toluene	ND(0.0282)	0.00295
Ethylbenzene	0.169	0.0382
Xylenes	0.42	0.1
Naphthalene	0.389	0.0656 J
1-Methylnaphthalene	0.333	0.0273 J
1,2,4-Trimethylbenzene	0.933	0.0835

	Water Treatment Plant Site City of McGrath McGrath, Alaska		Legend  Monitoring Well Location  Estimated Area of Impact (1995)	Site Detail Map and Analytical Summary		Figure 2
				November 19, 2018 18.COM.01		
	1 inch = 50 feet NAD 1983 2011 StatePlane Alaska 5 FIPS 5005 Feet			DRAWN: rfrye CHKD: DJF		

ATTACHMENT 2

Photographic Log

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Photographic Log

Water Treatment Plant Site Characterization – McGrath, Alaska



Photo: 2 Date: 8/1/2018 Direction: South/Down
Subject: Test Pit #1.



Photo: 1 Date: 8/1/2018 Direction: North
Subject: Test Pit #1 and MW-01 location, tank farm in background.

Photographic Log

TRACT 12 – DEADHORSE, ALASKA



Photo: 3 Date: 8/1/2018 Direction: South
Subject: McGrath City Offices in relation to Test Pit #1.



Photo: 4 Date: 8/1/2018 Direction: Northwest
Subject: McGrath City Shop in relation to Test Pit #1.

Photographic Log

TRACT 12 – DEADHORSE, ALASKA



Photo: 5 Date: 8/1/2018 Direction: South
Subject: Test Pit #1.



Photo: 6 Date: 8/1/2018 Direction: South
Subject: Setting well at Test Pit #1.

Photographic Log

TRACT 12 – DEADHORSE, ALASKA



Photo: 7 Date: 8/2/2018 Direction: North
Subject: Completed flush mount well.



Photo: 8 Date: 8/1/2018 Direction: East
Subject: Test Pit #1 in relation to city shop/garage.

ATTACHMENT 3

Field Notes

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Mc Grath



Rite in the Rain

ALL-WEATHER
JOURNAL

№ 391FX

2018

WTD

2 McGrath 8/11/18 WTP DNA

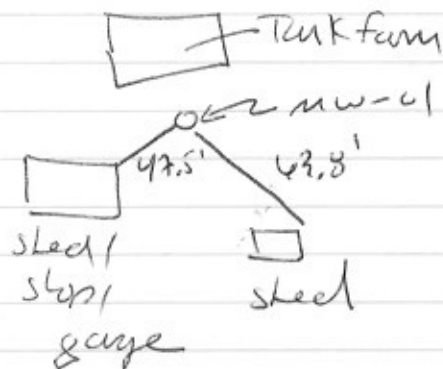
- 1005 DNA arrives in McGrath, meet
Tom with city, check-in at
Inoko Lodge.
1100 Begin excavation at new
location, collect soil sample at bottom.
1145 Excavated to groundwater ~14'
1220 Broke riser to well, break for
lunch.
1315 Add elbow to well riser & add
new riser.
1400 Complete backfill of new well.
1500 Complete adding bentonite
surface plug.
1600 Begin purge, could not fit surge
block due to elbow in riser.
1735 complete purge of 10' well casing
volume TD = 14.5 feet, DTW
= 11 feet. No skew or odor was
noted on/in purge water, water
appeared OK. Depart site.

~~8/11/18~~

McGrath WTP 8/21/18 DNA 3

- ~~1530~~ Begin well sampling at MW-01
1330^{DF} See well sampling form.
1500 collect sample 18-MCG-701-GW.
1510 establish swing-ties for well:

← River



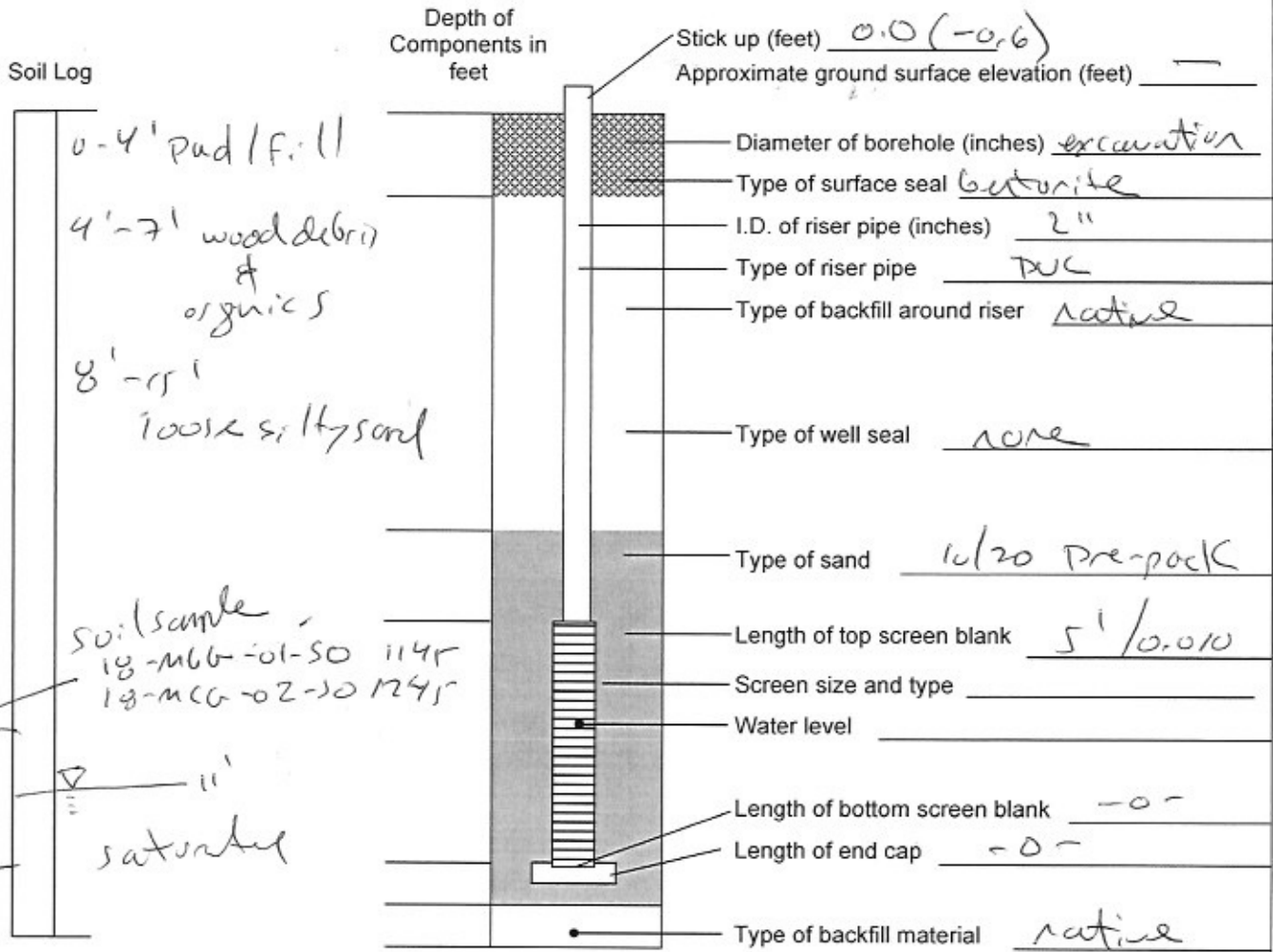
- 1530 well purged dry, waited for re-
charge & collected water samples
include duplicate with MC carried
time of 1530. Depart site.

~~8/21/18~~



MONITORING WELL INSTALLATION REPORT

Project Name: McCrater WTP Well No.: nw-01
 Project No.: _____ Observer: J. Frank
 Date/Time: 8/1/18 1145-1400 Drilling Method: excavation



Remarks: PVC riser broke, added new riser at an angle with elbow at ~6' bgs.

Amount of Sand	_____	Monument	<u>steel flush-mount</u>
Materials: Cement	_____	Riser	<u>PVC 10' 2"</u>
Bentonite pellets	<u>50 lbs</u>	Screen	<u>5' PVC slotted 0.010 (2")</u>
Bentonite/Volclay	_____	Other	_____



Groundwater Sampling Worksheet

Project Name: McGrath WTD Sample Location (ie. MW1): MW-01
 Client: City of McGrath Date: 8/2/18
 Sampler: D. Frank / DNA Purge Start Time: 1530 1330 DF
 Weather Conditions: slight rain ~65°F

Sample ID: 18-MCG-101-GW Time: 1500 primary dup split ms/msd
 Sample ID: 18-MCG-102-GW Time: 1530 primary dup split ms/msd
 Sample ID: _____ Time: _____ primary dup split ms/msd

Analyses	Number/type of Bottles	Comments/preservation:	Analyses	Number/type of Bottles	Comments/preservation:
GRO/BTEX			Nitrate/Nitrite		
DRO			Sulfate		
RRO			Total Metals (Fe & Mg)		
DRO w/silica			Dissolved Metals (Fe & Mg)		
RRO w/silica			Alkalinity		
PAHs			Methane		

Well Information / Purge Volume Calculation

Well Casing Diameter (in): 2 1/2 Total Well Depth (ft BTOC): 14.6 (depth to bottom)
 Product Present? (y/n/sheen) no Depth to Water (ft BTOC): 11.6
 Depth to Top of Product (ft BTOC): - Water Column (ft) 3.0
 Depth to Oil/Water Interface (ft BTOC): - One Purge Volume (gal): 0.48
(BTOC = below top of casing) purge calculation formula on back

Sensory Observations

Color: Clear, Amber, Tan, Brown, Grey, Milky White, Other:
Odor: None, Low, Medium, High, Very Strong, H2S, Fuel Like, Chemical ?, Unknown
Turbidity: None, Low, Medium, High, Very Turbid, Heavy Silts

Instrument Observations

Round	Time	Volume (gal)	Temp °C	pH	Conductivity (µS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)	Color	Odor	Water Level (ft BTOC)	Draw-down (ft)
1	8:30	0.5	4.84	5.92	497	127	9.81					12.2
2	1348	~4	5.74	6.16	476	129	3.86					12.9
3	1352	0.3	4.63	6.21	466	110						14.5
4	1500	-	4.94	6.22	472	91.3						11.6
5												
6												
7												
8												
9												
10												
11												
12												

Purge Rate (low flow): 0.300 mL/min see back for additional entry lines if needed Total Volume Purged: 1.4 Measured Drawdown (ft): 3.0

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

Purge Method (disposable bailer, teflon bailer, submersible pump, etc.): Peri-pump
 Sample Method (disposable bailer, teflon bailer, submersible pump, etc.): Peri-pump

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

Remarks (well recovery, unusual conditions/observations): purged dry - took sample after 1-hour re-charge

Signed: _____ Date: 8/2/18
 Signed/Reviewer: _____ Date: _____

ATTACHMENT 4

Tables

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TABLE 1: SAMPLE COLLECTION SUMMARY

2018 Site Characterization Report
 City of McGrath Water Treatment Plant
 McGrath, Alaska

Location	Sample No.	Sample Depth (Feet bgs)	Duplicate	Sample Date	Sample Time	Laboratory Analyses				
						GRO (AK101)	DRO (AK102)	RRO (AK103)	VOCs (EPA 8260C)	PAHs (EPA 8270D/SIM)
Soil										
TP-01 (MW-01)	18-MCG-01-SO	11 to 13		08/02/18	1500	✓	✓	✓	✓	✓
	18-MCG-02-SO	11 to 13	✓	08/02/18	1530	✓	✓	✓	✓	✓
Ground Water										
MW-01 (TP-01)	18-MCG-101-GW	6.91		05/15/15	1405	✓	✓	✓	✓	✓
	18-MCG-102-GW	17.25	✓	05/15/15	1420	✓	✓	✓	✓	✓
Quality Assurance Samples										
Lab Provided	Water Trip Blank	--		Laboratory Assigned		✓			✓	
	Soil Trip Blank	--		Laboratory Assigned		✓			✓	

Key:

-- = not applicable

AK = Alaska

bgs = below ground surface

DRO = Diesel-range organics

EPA = United States Environmental Protection Agency

EPA = United States Environmental Protection Agency

GRO = Gasoline-range organics

GW = Groundwater

MW = Monitoring Well

PAHs = Polycyclic aromatic hydrocarbons

RRO = Residual-range organics

SIM = Selective ion monitoring

SO = Soil

TP = Test Pit

VOCs = Volatile organic compounds

TABLE 2: FIELD-COLLECTED GROUNDWATER QUALITY PARAMETERS

2018 Site Characterization Report
City of McGrath Water Treatment Plant
McGrath, Alaska

Well ID	Purge/ Sample Date	Sample Method	Color	Odor	Temperature (°C)	pH	Conductivity (µS/cm)	Turbidity (NTU)	DO (mg/L)	ORP (mV)
MW-01	8/3/18	Peristaltic pump / low flow	clear	none	4.94	6.22	472	110.00	2.8	255.8

Key:

°C = Degrees Celsius

DO = Dissolved oxygen

mg/L = Milligrams per liter

µS/cm = micro-siemens per centimeter

mV = Millivolts

MW = Monitoring well

NTU = Nephelometric Turbidity Units

ORP = Oxidation-reduction potential

SS = Stainless Steel

TABLE 3: Sample Analytical Results Summary
 2018 Site Characterization Report
 City of McGrath Water Treatment Plant
 McGrath, Alaska

Laboratory ID: Location: Sample ID: Collect Date/Time: Dry Weight (% by Weight):	Soil Cleanup Level ⁽¹⁾	1184206003	1184206004	Water Cleanup Level ⁽²⁾	1184206001	1184206002
		SOIL			WATER	
		18-MCG-01-SO	18-MCG-02-SO		18-MCG-101-GW	18-MCG-102-GW
		8/1/18 11:45	8/1/18 12:45		8/2/18 15:00	8/2/18 15:30
AK101	mg/kg	mg/kg		mg/l	mg/l	
Gasoline Range Organics	300	11.8	16.1	2.2	1.02	0.920
AK102	mg/kg	mg/kg		mg/l	mg/l	
Diesel Range Organics	250	203	337	1.5	1.27	1.29
AK103	mg/kg	mg/kg		mg/l	mg/l	
Residual Range Organics	10,000	31.4	23.4J	1.1	0.451 UB	0.491 UB
SW8260C (VOCs)	µg/kg	µg/kg		µg/l	µg/l	
1,1-Dichloroethane	92	ND(28.2)	ND(27.9)	28	ND(0.500)	ND(0.500)
1,1-Dichloroethene	-	ND(28.2)	ND(27.9)	-	ND(0.500)	ND(0.500)
1,1-Dichloropropene	-	ND(28.2)	ND(27.9)	-	ND(0.500)	ND(0.500)
1,1,1-Trichloroethane	32000	ND(28.2)	ND(27.9)	8000	ND(0.500)	ND(0.500)
1,1,1,2-Tetrachloroethane	22	ND(22.6)	ND(22.3)	5.7	ND(0.250)	ND(0.250)
1,1,2-Trichloroethane	1.4	ND(11.3)	ND(11.2)	0.41	ND(0.200)	ND(0.200)
1,1,2,2-Tetrachloroethane	3	ND(14.1)	ND(13.9)	0.76	ND(0.250)	ND(0.250)
1,2-Dibromo-3-chloropropane	-	ND(113)	ND(112)	-	ND(5.00)	ND(5.00)
1,2-Dibromoethane	0.24	ND(11.3)	ND(11.2)	0.075	ND(0.0375)	ND(0.0375)
1,2-Dichlorobenzene	2400	ND(28.2)	ND(27.9)	300	ND(0.500)	ND(0.500)
1,2-Dichloroethane	5.5	ND(11.3)	ND(11.2)	1.7	ND(0.250)	ND(0.250)
1,2-Dichloropropane	16	ND(11.3)	ND(11.2)	4.4	ND(0.500)	ND(0.500)
1,2,3-Trichlorobenzene	150	ND(56.5)	ND(56.0)	7	ND(0.500)	ND(0.500)
1,2,3-Trichloropropane	0.031	ND(28.2)	ND(27.9)	0.0075	ND(0.500)	ND(0.500)
1,2,4-Trichlorobenzene	82	ND(28.2)	ND(27.9)	4	ND(0.500)	ND(0.500)
1,2,4-Trimethylbenzene	160	933	675	15	77.2	83.5
1,3-Dichlorobenzene	2300	ND(28.2)	ND(27.9)	300	ND(0.500)	ND(0.500)
1,3-Dichloropropane	-	ND(11.3)	ND(11.2)	-	ND(0.250)	ND(0.250)
1,3,5-Trimethylbenzene	1300	485	388	-	43.6	39.3
1,4-Dichlorobenzene	37	ND(28.2)	ND(27.9)	4.8	ND(0.250)	ND(0.250)
2-Butanone (MEK)	15000	ND(282)	ND(279)	5600	299	244
2-Chlorotoluene	-	ND(28.2)	ND(27.9)	-	ND(0.500)	ND(0.500)
2-Hexanone	110	ND(113)	ND(112)	38	ND(5.00)	ND(5.00)
2,2-Dichloropropane	-	ND(28.2)	ND(27.9)	-	ND(0.500)	ND(0.500)
4-Chlorotoluene	-	ND(28.2)	ND(27.9)	-	ND(0.500)	ND(0.500)
4-Isopropyltoluene	-	167J	154J	-	6.05	4.96
4-Methyl-2-pentanone (MIBK)	18000	ND(282)	ND(279)	6300	ND(5.00)	ND(5.00)
Benzene	22	16.5J	15.3J	4.6	5.75	6.87
Bromobenzene	360	ND(28.2)	ND(27.9)	62	ND(0.500)	ND(0.500)
Bromochloromethane	-	ND(28.2)	ND(27.9)	-	ND(0.500)	ND(0.500)
Bromodichloromethane	4.3	ND(28.2)	ND(27.9)	1.3	ND(0.250)	ND(0.250)
Bromoform	100	ND(28.2)	ND(27.9)	33	ND(0.500)	ND(0.500)
Bromomethane	24	ND(226)	ND(223)	7.5	ND(2.50)	ND(2.50)
Carbon disulfide	2900	ND(113)	ND(112)	810	ND(5.00)	ND(5.00)
Carbon tetrachloride	21	ND(14.1)	ND(13.9)	4.6	ND(0.500)	ND(0.500)
Chlorobenzene	460	ND(28.2)	ND(27.9)	78	ND(0.250)	ND(0.250)
Chloroethane	-	ND(226)	ND(223)	-	ND(0.500)	ND(0.500)
Chloroform	7.1	ND(28.2)	ND(27.9)	2.2	ND(0.500)	ND(0.500)
Chloromethane	610	ND(28.2)	ND(27.9)	190	ND(0.500)	ND(0.500)
cis-1,2-Dichloroethene	-	ND(28.2)	ND(27.9)	-	ND(0.500)	ND(0.500)
cis-1,3-Dichloropropene	18	ND(14.1)	ND(13.9)	4.7	ND(0.250)	ND(0.250)
Dibromochloromethane	2.7	ND(28.2)	ND(27.9)	8.7	ND(0.250)	ND(0.250)
Dibromomethane	25	ND(28.2)	ND(27.9)	8.3	ND(0.500)	ND(0.500)
Dichlorodifluoromethane	3900	ND(56.5)	ND(56.0)	200	ND(0.500)	ND(0.500)
Ethylbenzene	130	169	132	15	36.4	38.2
Freon-113	-	ND(113)	ND(112)	-	ND(5.00)	ND(5.00)
Hexachlorobutadiene	20	ND(22.6)	ND(22.3)	1.4	ND(0.500)	ND(0.500)
Isopropylbenzene (Cumene)	5600	137	114	450	17.2	15.4
Methyl-t-butyl ether	400	ND(113)	ND(112)	140	ND(5.00)	ND(5.00)

TABLE 3: Sample Analytical Results Summary
 2018 Site Characterization Report
 City of McGrath Water Treatment Plant
 McGrath, Alaska

Laboratory ID:	Soil Cleanup Level ⁽¹⁾	1184206003	1184206004	Water Cleanup Level ⁽²⁾	1184206001	1184206002
		SOIL			WATER	
Location:		18-MCG-01-SO	18-MCG-02-SO		18-MCG-101-GW	18-MCG-102-GW
Sample ID:		8/1/18 11:45	8/1/18 12:45		8/2/18 15:00	8/2/18 15:30
Collect Date/Time:						
Dry Weight (% by Weight):		81.1	82.2		N/A	N/A
Methylene chloride	330	ND(113)	ND(112)	110	ND(2.50)	ND(2.50)
n-Butylbenzene	23000	ND(28.2)	ND(27.9)	1,000	ND(0.500)	ND(0.500)
n-Propylbenzene	9100	375	337	660	29.8	25.3
Naphthalene	38	389	349	1.7	65.1 J	65.6 J
o-Xylene	-	171	106	-	40.9	48.1
P & M -Xylene	-	249	172	-	47.6	52.3
sec-Butylbenzene	42000	225	220	2,000	10.5	7.81
Styrene	10000	ND(28.2)	ND(27.9)	1,200	ND(0.500)	ND(0.500)
tert-Butylbenzene	11000	ND(28.2)	ND(27.9)	690	0.840J	0.700J
Tetrachloroethene	-	ND(14.1)	ND(13.9)	-	ND(0.500)	ND(0.500)
Toluene	6700	ND(28.2)	ND(27.9)	1,100	2.36	2.95
trans-1,2-Dichloroethene	-	ND(28.2)	ND(27.9)	-	ND(0.500)	ND(0.500)
trans-1,3-Dichloropropene	-	ND(14.1)	ND(13.9)	-	ND(0.500)	ND(0.500)
Trichloroethene	-	ND(11.3)	ND(11.2)	-	ND(0.500)	ND(0.500)
Trichlorofluoromethane	41000	ND(56.5)	ND(56.0)	5,200	ND(0.500)	ND(0.500)
Vinyl acetate	-	ND(113)	ND(112)	410	ND(5.00)	ND(5.00)
Vinyl chloride	0.8	ND(11.3)	ND(11.2)	0.19	ND(0.0750)	ND(0.0750)
Xylenes (total)	1500	420	278	190	88.5	100
8270D SIM (PAH)	µg/kg	µg/kg		µg/l	µg/l	
1-Methylnaphthalene	410	207	333	11	18.9 J	27.3 J
2-Methylnaphthalene	1300	227	342	36	21.4 J	29.6 J
Acenaphthene	37000	ND(15.3)	ND(15.1)	530	0.180 J	0.247 J
Acenaphthylene	18000	ND(15.3)	ND(15.1)	260	ND(0.0254)	ND(0.0274)
Anthracene	390000	ND(15.3)	ND(15.1)	43	ND(0.0254)	ND(0.0274)
Benzo(a)Anthracene	280	ND(15.3)	ND(15.1)	0.12	ND(0.0254)	ND(0.0274)
Benzo[a]pyrene	270	ND(15.3)	ND(15.1)	0.034	ND(0.0101)	ND(0.0110)
Benzo[b]Fluoranthene	2700	ND(15.3)	ND(15.1)	0.34	ND(0.0254)	ND(0.0274)
Benzo[g,h,i]perylene	15000000	ND(15.3)	ND(15.1)	0.26	ND(0.0254)	ND(0.0274)
Benzo[k]fluoranthene	27000	ND(15.3)	ND(15.1)	0.8	ND(0.0254)	ND(0.0274)
Chrysene	82000	ND(15.3)	ND(15.1)	2	ND(0.0254)	ND(0.0274)
Dibenzo[a,h]anthracene	870	ND(15.3)	ND(15.1)	0.034	ND(0.0101)	ND(0.0110)
Fluoranthene	590000	ND(15.3)	ND(15.1)	260	ND(0.0254)	ND(0.0274)
Fluorene	36000	16.4J	32.7	290	0.293	0.389
Indeno[1,2,3-c,d] pyrene	8800	ND(15.3)	ND(15.1)	0.19	ND(0.0254)	ND(0.0274)
Naphthalene	38	95.2	138	1.7	33.2 J	50.6 J
Phenanthrene	39000	ND(15.3)	ND(15.1)	170	0.0697 J	0.107
Pyrene	87000	ND(15.3)	ND(15.1)	120	ND(0.0254)	ND(0.0274)

Notes: Results above ADEC cleanup values are **bolded red**.

⁽¹⁾ 18 AAC 75.345, Table B1 and B2 Method Two; Under 40 Inch Zone

⁽²⁾ 18 AAC 75.345, Table C

Key:

-- = not applicable

AK = Alaska

bgs = below ground surface

DRO = Diesel-range organics

EPA = United States Environmental Protection Agency

GRO = Gasoline-range organics

GW = Groundwater

mg/kg = milligrams per kilogram

µg/l - micrograms per liter

MW = Monitoring Well

PAHs = Polycyclic aromatic hydrocarbons

RRO = Residual-range organics

SIM = Selective ion monitoring

SO = Soil

TP = Test Pit

VOCs = Volatile organic compounds

ATTACHMENT 5

Laboratory Report

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Laboratory Report of Analysis

To: DNA Environmental Consultants, LLC
111 W. 9th Ave
Anchorage, AK 99501
(907)350-4897

Report Number: **1184206**

Client Project: **City of McGrath**

Dear Daniel Frank,

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 Justin 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.

Justin Nelson
Project Manager
Justin.Nelson@sgs.com

Date

Case Narrative

SGS Client: **DNA Environmental Consultants, LLC**

SGS Project: **1184206**

Project Name/Site: **City of McGrath**

Project Contact: **Daniel Frank**

Refer to sample receipt form for information on sample condition.

1184206003MSD (1464760) MSD

8270D SIM - PAH MS recovery for 1-Methylnaphthalene does not meet QC criteria. Refer to the LCS for accuracy requirements.

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

Print Date: 08/16/2018 3:16:38PM

Report of Manual Integrations

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Analytical Batch</u>	<u>Analyte</u>	<u>Reason</u>
SW8260C				
1184206001	18-MCG-101-GW	VMS18138	4-Isopropyltoluene	SP
1184206002	18-MCG-102-GW	VMS18138	4-Isopropyltoluene	SP
1184206003	18-MCG-01-SO	VMS18144	4-Isopropyltoluene	SP
1184206004	18-MCG-02-SO	VMS18144	4-Isopropyltoluene	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.

Laboratory Qualifiers

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

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

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 DW Chemistry (Provisionally Certified as of 06/11/2018 for Mercury by EPA245.1, Beryllium and Copper by EPA200.8) & Microbiology & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

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

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

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

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
18-MCG-101-GW	1184206001	08/02/2018	08/03/2018	Water (Surface, Eff., Ground)
18-MCG-102-GW	1184206002	08/02/2018	08/03/2018	Water (Surface, Eff., Ground)
18-MCG-01-SO	1184206003	08/01/2018	08/03/2018	Soil/Solid (dry weight)
18-MCG-02-SO	1184206004	08/01/2018	08/03/2018	Soil/Solid (dry weight)
Water Trip Blank	1184206005	08/01/2018	08/03/2018	Water (Surface, Eff., Ground)
Soil Trip Blank	1184206006	08/01/2018	08/03/2018	Soil/Solid (dry weight)

<u>Method</u>	<u>Method Description</u>
8270D SIM LV (PAH)	8270 PAH SIM GC/MS Liq/Liq ext. LV
8270D SIM (PAH)	8270 PAH SIM Semi-Volatiles GC/MS
AK102	Diesel/Residual Range Organics
AK103	Diesel/Residual Range Organics
AK102	DRO/RRO Low Volume Water
AK103	DRO/RRO Low Volume Water
AK101	Gasoline Range Organics (S)
AK101	Gasoline Range Organics (W)
SM21 2540G	Percent Solids SM2540G
SW8260C	VOC 8260 (S) Field Extracted
SW8260C	Volatile Organic Compounds (W) FULL

Print Date: 08/16/2018 3:16:42PM

Detectable Results Summary

Client Sample ID: **18-MCG-101-GW**

Lab Sample ID: 1184206001

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	18.9	ug/L
2-Methylnaphthalene	21.4	ug/L
Acenaphthene	0.180	ug/L
Fluorene	0.293	ug/L
Naphthalene	33.2	ug/L
Phenanthrene	0.0697	ug/L

Semivolatile Organic Fuels

Diesel Range Organics	1.27	mg/L
Residual Range Organics	0.451J	mg/L

Volatile Fuels

Volatile GC/MS

Gasoline Range Organics	1.02	mg/L
1,2,4-Trimethylbenzene	77.2	ug/L
1,3,5-Trimethylbenzene	43.6	ug/L
2-Butanone (MEK)	299	ug/L
4-Isopropyltoluene	6.05	ug/L
Benzene	5.75	ug/L
Ethylbenzene	36.4	ug/L
Isopropylbenzene (Cumene)	17.2	ug/L
Naphthalene	65.1	ug/L
n-Propylbenzene	29.8	ug/L
o-Xylene	40.9	ug/L
P & M -Xylene	47.6	ug/L
sec-Butylbenzene	10.5	ug/L
tert-Butylbenzene	0.840J	ug/L
Toluene	2.36	ug/L
Xylenes (total)	88.5	ug/L

Print Date: 08/16/2018 3:16:44PM

Detectable Results Summary

Client Sample ID: **18-MCG-102-GW**

Lab Sample ID: 1184206002

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	27.3	ug/L
2-Methylnaphthalene	29.6	ug/L
Acenaphthene	0.247	ug/L
Fluorene	0.389	ug/L
Naphthalene	50.6	ug/L
Phenanthrene	0.107	ug/L

Semivolatile Organic Fuels

Diesel Range Organics	1.29	mg/L
Residual Range Organics	0.491J	mg/L

Volatile Fuels

Volatile GC/MS

Gasoline Range Organics	0.920	mg/L
1,2,4-Trimethylbenzene	83.5	ug/L
1,3,5-Trimethylbenzene	39.3	ug/L
2-Butanone (MEK)	244	ug/L
4-Isopropyltoluene	4.96	ug/L
Benzene	6.87	ug/L
Ethylbenzene	38.2	ug/L
Isopropylbenzene (Cumene)	15.4	ug/L
Naphthalene	65.6	ug/L
n-Propylbenzene	25.3	ug/L
o-Xylene	48.1	ug/L
P & M -Xylene	52.3	ug/L
sec-Butylbenzene	7.81	ug/L
tert-Butylbenzene	0.700J	ug/L
Toluene	2.95	ug/L
Xylenes (total)	100	ug/L

Print Date: 08/16/2018 3:16:44PM

Detectable Results Summary

Client Sample ID: **18-MCG-01-SO**

Lab Sample ID: 1184206003

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	207	ug/Kg
2-Methylnaphthalene	227	ug/Kg
Fluorene	16.4J	ug/Kg
Naphthalene	95.2	ug/Kg

Semivolatile Organic Fuels

Diesel Range Organics	203	mg/Kg
Residual Range Organics	31.4	mg/Kg

Volatile Fuels

Volatile GC/MS

Gasoline Range Organics	11.8	mg/Kg
1,2,4-Trimethylbenzene	933	ug/Kg
1,3,5-Trimethylbenzene	485	ug/Kg
4-Isopropyltoluene	167J	ug/Kg
Benzene	16.5J	ug/Kg
Ethylbenzene	169	ug/Kg
Isopropylbenzene (Cumene)	137	ug/Kg
Naphthalene	389	ug/Kg
n-Propylbenzene	375	ug/Kg
o-Xylene	171	ug/Kg
P & M -Xylene	249	ug/Kg
sec-Butylbenzene	225	ug/Kg
Xylenes (total)	420	ug/Kg

Client Sample ID: **18-MCG-02-SO**

Lab Sample ID: 1184206004

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	333	ug/Kg
2-Methylnaphthalene	342	ug/Kg
Fluorene	32.7	ug/Kg
Naphthalene	138	ug/Kg

Semivolatile Organic Fuels

Diesel Range Organics	337	mg/Kg
Residual Range Organics	23.4J	mg/Kg

Volatile Fuels

Volatile GC/MS

Gasoline Range Organics	16.1	mg/Kg
1,2,4-Trimethylbenzene	675	ug/Kg
1,3,5-Trimethylbenzene	388	ug/Kg
4-Isopropyltoluene	154J	ug/Kg
Benzene	15.3J	ug/Kg
Ethylbenzene	132	ug/Kg
Isopropylbenzene (Cumene)	114	ug/Kg
Naphthalene	349	ug/Kg
n-Propylbenzene	337	ug/Kg
o-Xylene	106	ug/Kg
P & M -Xylene	172	ug/Kg
sec-Butylbenzene	220	ug/Kg
Xylenes (total)	278	ug/Kg

Client Sample ID: **Water Trip Blank**

Lab Sample ID: 1184206005

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Chloromethane	0.320J	ug/L

Print Date: 08/16/2018 3:16:44PM



Results of 18-MCG-101-GW

Client Sample ID: **18-MCG-101-GW**
 Client Project ID: **City of McGrath**
 Lab Sample ID: 1184206001
 Lab Project ID: 1184206

Collection Date: 08/02/18 15:00
 Received Date: 08/03/18 13:15
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1-Methylnaphthalene	18.9	0.254	0.0762	ug/L	5		08/13/18 03:14
2-Methylnaphthalene	21.4	0.254	0.0762	ug/L	5		08/13/18 03:14
Acenaphthene	0.180	0.0508	0.0152	ug/L	1		08/10/18 16:25
Acenaphthylene	0.0254 U	0.0508	0.0152	ug/L	1		08/10/18 16:25
Anthracene	0.0254 U	0.0508	0.0152	ug/L	1		08/10/18 16:25
Benzo(a)Anthracene	0.0254 U	0.0508	0.0152	ug/L	1		08/10/18 16:25
Benzo[a]pyrene	0.0101 U	0.0203	0.00630	ug/L	1		08/10/18 16:25
Benzo[b]Fluoranthene	0.0254 U	0.0508	0.0152	ug/L	1		08/10/18 16:25
Benzo[g,h,i]perylene	0.0254 U	0.0508	0.0152	ug/L	1		08/10/18 16:25
Benzo[k]fluoranthene	0.0254 U	0.0508	0.0152	ug/L	1		08/10/18 16:25
Chrysene	0.0254 U	0.0508	0.0152	ug/L	1		08/10/18 16:25
Dibenzo[a,h]anthracene	0.0101 U	0.0203	0.00630	ug/L	1		08/10/18 16:25
Fluoranthene	0.0254 U	0.0508	0.0152	ug/L	1		08/10/18 16:25
Fluorene	0.293	0.0508	0.0152	ug/L	1		08/10/18 16:25
Indeno[1,2,3-c,d] pyrene	0.0254 U	0.0508	0.0152	ug/L	1		08/10/18 16:25
Naphthalene	33.2	0.508	0.158	ug/L	5		08/13/18 03:14
Phenanthrene	0.0697	0.0508	0.0152	ug/L	1		08/10/18 16:25
Pyrene	0.0254 U	0.0508	0.0152	ug/L	1		08/10/18 16:25
Surrogates							
2-Methylnaphthalene-d10 (surr)	48.8	47-106		%	1		08/10/18 16:25
Fluoranthene-d10 (surr)	50.6	24-116		%	1		08/10/18 16:25

Batch Information

Analytical Batch: XMS10965
 Analytical Method: 8270D SIM LV (PAH)
 Analyst: DSD
 Analytical Date/Time: 08/13/18 03:14
 Container ID: 1184206001-I

Prep Batch: XXX40096
 Prep Method: SW3520C
 Prep Date/Time: 08/05/18 08:05
 Prep Initial Wt./Vol.: 246 mL
 Prep Extract Vol: 1 mL

Analytical Batch: XMS10961
 Analytical Method: 8270D SIM LV (PAH)
 Analyst: BMZ
 Analytical Date/Time: 08/10/18 16:25
 Container ID: 1184206001-I

Prep Batch: XXX40096
 Prep Method: SW3520C
 Prep Date/Time: 08/05/18 08:05
 Prep Initial Wt./Vol.: 246 mL
 Prep Extract Vol: 1 mL



Results of 18-MCG-101-GW

Client Sample ID: 18-MCG-101-GW
Client Project ID: City of McGrath
Lab Sample ID: 1184206001
Lab Project ID: 1184206

Collection Date: 08/02/18 15:00
Received Date: 08/03/18 13:15
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC14453
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 08/06/18 12:25
Container ID: 1184206001-G

Prep Batch: XXX40094
Prep Method: SW3520C
Prep Date/Time: 08/04/18 08:08
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC14453
Analytical Method: AK103
Analyst: CMS
Analytical Date/Time: 08/06/18 12:25
Container ID: 1184206001-G

Prep Batch: XXX40094
Prep Method: SW3520C
Prep Date/Time: 08/04/18 08:08
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Results of 18-MCG-101-GW

Client Sample ID: **18-MCG-101-GW**
 Client Project ID: **City of McGrath**
 Lab Sample ID: 1184206001
 Lab Project ID: 1184206

Collection Date: 08/02/18 15:00
 Received Date: 08/03/18 13:15
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	1.02	0.100	0.0310	mg/L	1		08/09/18 04:44
Surrogates							
4-Bromofluorobenzene (surr)	124	50-150		%	1		08/09/18 04:44

Batch Information

Analytical Batch: VFC14334
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 08/09/18 04:44
 Container ID: 1184206001-A

Prep Batch: VXX32834
 Prep Method: SW5030B
 Prep Date/Time: 08/08/18 08:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of 18-MCG-101-GW

Client Sample ID: 18-MCG-101-GW
Client Project ID: City of McGrath
Lab Sample ID: 1184206001
Lab Project ID: 1184206

Collection Date: 08/02/18 15:00
Received Date: 08/03/18 13:15
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of 18-MCG-101-GW

Client Sample ID: 18-MCG-101-GW
Client Project ID: City of McGrath
Lab Sample ID: 1184206001
Lab Project ID: 1184206

Collection Date: 08/02/18 15:00
Received Date: 08/03/18 13:15
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Results of 18-MCG-101-GW

Client Sample ID: **18-MCG-101-GW**
Client Project ID: **City of McGrath**
Lab Sample ID: 1184206001
Lab Project ID: 1184206

Collection Date: 08/02/18 15:00
Received Date: 08/03/18 13:15
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS18138
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 08/07/18 20:18
Container ID: 1184206001-D

Prep Batch: VXX32821
Prep Method: SW5030B
Prep Date/Time: 08/07/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of 18-MCG-102-GW

Client Sample ID: 18-MCG-102-GW
Client Project ID: City of McGrath
Lab Sample ID: 1184206002
Lab Project ID: 1184206

Collection Date: 08/02/18 15:30
Received Date: 08/03/18 13:15
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated quality and detection data.

Batch Information

Analytical Batch: XMS10965
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 08/13/18 03:35
Container ID: 1184206002-I

Prep Batch: XXX40096
Prep Method: SW3520C
Prep Date/Time: 08/05/18 08:05
Prep Initial Wt./Vol.: 228 mL
Prep Extract Vol: 1 mL

Analytical Batch: XMS10961
Analytical Method: 8270D SIM LV (PAH)
Analyst: BMZ
Analytical Date/Time: 08/10/18 16:45
Container ID: 1184206002-I

Prep Batch: XXX40096
Prep Method: SW3520C
Prep Date/Time: 08/05/18 08:05
Prep Initial Wt./Vol.: 228 mL
Prep Extract Vol: 1 mL



Results of 18-MCG-102-GW

Client Sample ID: 18-MCG-102-GW
Client Project ID: City of McGrath
Lab Sample ID: 1184206002
Lab Project ID: 1184206

Collection Date: 08/02/18 15:30
Received Date: 08/03/18 13:15
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC14453
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 08/06/18 12:35
Container ID: 1184206002-G
Prep Batch: XXX40094
Prep Method: SW3520C
Prep Date/Time: 08/04/18 08:08
Prep Initial Wt./Vol.: 230 mL
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC14453
Analytical Method: AK103
Analyst: CMS
Analytical Date/Time: 08/06/18 12:35
Container ID: 1184206002-G
Prep Batch: XXX40094
Prep Method: SW3520C
Prep Date/Time: 08/04/18 08:08
Prep Initial Wt./Vol.: 230 mL
Prep Extract Vol: 1 mL

Results of 18-MCG-102-GW

Client Sample ID: **18-MCG-102-GW**
 Client Project ID: **City of McGrath**
 Lab Sample ID: 1184206002
 Lab Project ID: 1184206

Collection Date: 08/02/18 15:30
 Received Date: 08/03/18 13:15
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.920	0.100	0.0310	mg/L	1		08/09/18 05:02
Surrogates							
4-Bromofluorobenzene (surr)	116	50-150		%	1		08/09/18 05:02

Batch Information

Analytical Batch: VFC14334
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 08/09/18 05:02
 Container ID: 1184206002-A

Prep Batch: VXX32834
 Prep Method: SW5030B
 Prep Date/Time: 08/08/18 08:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of 18-MCG-102-GW

Client Sample ID: 18-MCG-102-GW
Client Project ID: City of McGrath
Lab Sample ID: 1184206002
Lab Project ID: 1184206

Collection Date: 08/02/18 15:30
Received Date: 08/03/18 13:15
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of 18-MCG-102-GW

Client Sample ID: **18-MCG-102-GW**
 Client Project ID: **City of McGrath**
 Lab Sample ID: 1184206002
 Lab Project ID: 1184206

Collection Date: 08/02/18 15:30
 Received Date: 08/03/18 13:15
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	0.500 U	1.00	0.310	ug/L	1		08/07/18 20:36
Chloromethane	0.500 U	1.00	0.310	ug/L	1		08/07/18 20:36
cis-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		08/07/18 20:36
cis-1,3-Dichloropropene	0.250 U	0.500	0.150	ug/L	1		08/07/18 20:36
Dibromochloromethane	0.250 U	0.500	0.150	ug/L	1		08/07/18 20:36
Dibromomethane	0.500 U	1.00	0.310	ug/L	1		08/07/18 20:36
Dichlorodifluoromethane	0.500 U	1.00	0.310	ug/L	1		08/07/18 20:36
Ethylbenzene	38.2	1.00	0.310	ug/L	1		08/07/18 20:36
Freon-113	5.00 U	10.0	3.10	ug/L	1		08/07/18 20:36
Hexachlorobutadiene	0.500 U	1.00	0.310	ug/L	1		08/07/18 20:36
Isopropylbenzene (Cumene)	15.4	1.00	0.310	ug/L	1		08/07/18 20:36
Methylene chloride	2.50 U	5.00	1.00	ug/L	1		08/07/18 20:36
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		08/07/18 20:36
Naphthalene	65.6	1.00	0.310	ug/L	1		08/07/18 20:36
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		08/07/18 20:36
n-Propylbenzene	25.3	1.00	0.310	ug/L	1		08/07/18 20:36
o-Xylene	48.1	1.00	0.310	ug/L	1		08/07/18 20:36
P & M -Xylene	52.3	2.00	0.620	ug/L	1		08/07/18 20:36
sec-Butylbenzene	7.81	1.00	0.310	ug/L	1		08/07/18 20:36
Styrene	0.500 U	1.00	0.310	ug/L	1		08/07/18 20:36
tert-Butylbenzene	0.700 J	1.00	0.310	ug/L	1		08/07/18 20:36
Tetrachloroethene	0.500 U	1.00	0.310	ug/L	1		08/07/18 20:36
Toluene	2.95	1.00	0.310	ug/L	1		08/07/18 20:36
trans-1,2-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		08/07/18 20:36
trans-1,3-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		08/07/18 20:36
Trichloroethene	0.500 U	1.00	0.310	ug/L	1		08/07/18 20:36
Trichlorofluoromethane	0.500 U	1.00	0.310	ug/L	1		08/07/18 20:36
Vinyl acetate	5.00 U	10.0	3.10	ug/L	1		08/07/18 20:36
Vinyl chloride	0.0750 U	0.150	0.0500	ug/L	1		08/07/18 20:36
Xylenes (total)	100	3.00	1.00	ug/L	1		08/07/18 20:36
Surrogates							
1,2-Dichloroethane-D4 (surr)	100	81-118		%	1		08/07/18 20:36
4-Bromofluorobenzene (surr)	96.2	85-114		%	1		08/07/18 20:36
Toluene-d8 (surr)	99.9	89-112		%	1		08/07/18 20:36

Results of 18-MCG-102-GW

Client Sample ID: **18-MCG-102-GW**
Client Project ID: **City of McGrath**
Lab Sample ID: 1184206002
Lab Project ID: 1184206

Collection Date: 08/02/18 15:30
Received Date: 08/03/18 13:15
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS18138
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 08/07/18 20:36
Container ID: 1184206002-D

Prep Batch: VXX32821
Prep Method: SW5030B
Prep Date/Time: 08/07/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of 18-MCG-01-SO

Client Sample ID: **18-MCG-01-SO**
 Client Project ID: **City of McGrath**
 Lab Sample ID: 1184206003
 Lab Project ID: 1184206

Collection Date: 08/01/18 11:45
 Received Date: 08/03/18 13:15
 Matrix: Soil/Solid (dry weight)
 Solids (%):81.1
 Location:

Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1-Methylnaphthalene	207	30.6	7.66	ug/Kg	1		08/16/18 03:09
2-Methylnaphthalene	227	30.6	7.66	ug/Kg	1		08/16/18 03:09
Acenaphthene	15.3 U	30.6	7.66	ug/Kg	1		08/16/18 03:09
Acenaphthylene	15.3 U	30.6	7.66	ug/Kg	1		08/16/18 03:09
Anthracene	15.3 U	30.6	7.66	ug/Kg	1		08/16/18 03:09
Benzo(a)Anthracene	15.3 U	30.6	7.66	ug/Kg	1		08/16/18 03:09
Benzo[a]pyrene	15.3 U	30.6	7.66	ug/Kg	1		08/16/18 03:09
Benzo[b]Fluoranthene	15.3 U	30.6	7.66	ug/Kg	1		08/16/18 03:09
Benzo[g,h,i]perylene	15.3 U	30.6	7.66	ug/Kg	1		08/16/18 03:09
Benzo[k]fluoranthene	15.3 U	30.6	7.66	ug/Kg	1		08/16/18 03:09
Chrysene	15.3 U	30.6	7.66	ug/Kg	1		08/16/18 03:09
Dibenzo[a,h]anthracene	15.3 U	30.6	7.66	ug/Kg	1		08/16/18 03:09
Fluoranthene	15.3 U	30.6	7.66	ug/Kg	1		08/16/18 03:09
Fluorene	16.4 J	30.6	7.66	ug/Kg	1		08/16/18 03:09
Indeno[1,2,3-c,d] pyrene	15.3 U	30.6	7.66	ug/Kg	1		08/16/18 03:09
Naphthalene	95.2	24.5	6.13	ug/Kg	1		08/16/18 03:09
Phenanthrene	15.3 U	30.6	7.66	ug/Kg	1		08/16/18 03:09
Pyrene	15.3 U	30.6	7.66	ug/Kg	1		08/16/18 03:09
Surrogates							
2-Methylnaphthalene-d10 (surr)	79.2	58-103		%	1		08/16/18 03:09
Fluoranthene-d10 (surr)	87.9	54-113		%	1		08/16/18 03:09

Batch Information

Analytical Batch: XMS10978
 Analytical Method: 8270D SIM (PAH)
 Analyst: DSD
 Analytical Date/Time: 08/16/18 03:09
 Container ID: 1184206003-A

Prep Batch: XXX40104
 Prep Method: SW3550C
 Prep Date/Time: 08/06/18 11:36
 Prep Initial Wt./Vol.: 22.629 g
 Prep Extract Vol: 5 mL

Results of 18-MCG-01-SO

Client Sample ID: **18-MCG-01-SO**
 Client Project ID: **City of McGrath**
 Lab Sample ID: 1184206003
 Lab Project ID: 1184206

Collection Date: 08/01/18 11:45
 Received Date: 08/03/18 13:15
 Matrix: Soil/Solid (dry weight)
 Solids (%):81.1
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	203	24.5	7.60	mg/Kg	1		08/07/18 14:47

Surrogates

5a Androstane (surr)	99.8	50-150		%	1		08/07/18 14:47
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Batch Information

Analytical Batch: XFC14454
 Analytical Method: AK102
 Analyst: VDL
 Analytical Date/Time: 08/07/18 14:47
 Container ID: 1184206003-A

Prep Batch: XXX40092
 Prep Method: SW3550C
 Prep Date/Time: 08/03/18 20:11
 Prep Initial Wt./Vol.: 30.185 g
 Prep Extract Vol: 5 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	31.4	24.5	7.60	mg/Kg	1		08/07/18 14:47

Surrogates

n-Triacontane-d62 (surr)	88.1	50-150		%	1		08/07/18 14:47
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Batch Information

Analytical Batch: XFC14454
 Analytical Method: AK103
 Analyst: VDL
 Analytical Date/Time: 08/07/18 14:47
 Container ID: 1184206003-A

Prep Batch: XXX40092
 Prep Method: SW3550C
 Prep Date/Time: 08/03/18 20:11
 Prep Initial Wt./Vol.: 30.185 g
 Prep Extract Vol: 5 mL

Results of 18-MCG-01-SO

Client Sample ID: **18-MCG-01-SO**
 Client Project ID: **City of McGrath**
 Lab Sample ID: 1184206003
 Lab Project ID: 1184206

Collection Date: 08/01/18 11:45
 Received Date: 08/03/18 13:15
 Matrix: Soil/Solid (dry weight)
 Solids (%):81.1
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	11.8	5.64	1.69	mg/Kg	1		08/08/18 17:24
Surrogates							
4-Bromofluorobenzene (surr)	128	50-150		%	1		08/08/18 17:24

Batch Information

Analytical Batch: VFC14332
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 08/08/18 17:24
 Container ID: 1184206003-B

Prep Batch: VXX32836
 Prep Method: SW5035A
 Prep Date/Time: 08/01/18 11:45
 Prep Initial Wt./Vol.: 34.409 g
 Prep Extract Vol: 31.5005 mL



Results of 18-MCG-01-SO

Client Sample ID: 18-MCG-01-SO
Client Project ID: City of McGrath
Lab Sample ID: 1184206003
Lab Project ID: 1184206

Collection Date: 08/01/18 11:45
Received Date: 08/03/18 13:15
Matrix: Soil/Solid (dry weight)
Solids (%):81.1
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of 18-MCG-01-SO

Client Sample ID: 18-MCG-01-SO
Client Project ID: City of McGrath
Lab Sample ID: 1184206003
Lab Project ID: 1184206

Collection Date: 08/01/18 11:45
Received Date: 08/03/18 13:15
Matrix: Soil/Solid (dry weight)
Solids (%):81.1
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Results of 18-MCG-01-SO

Client Sample ID: **18-MCG-01-SO**
Client Project ID: **City of McGrath**
Lab Sample ID: 1184206003
Lab Project ID: 1184206

Collection Date: 08/01/18 11:45
Received Date: 08/03/18 13:15
Matrix: Soil/Solid (dry weight)
Solids (%):81.1
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS18144
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 08/07/18 19:38
Container ID: 1184206003-B

Prep Batch: VXX32830
Prep Method: SW5035A
Prep Date/Time: 08/01/18 11:45
Prep Initial Wt./Vol.: 34.409 g
Prep Extract Vol: 31.5005 mL



Results of 18-MCG-02-SO

Client Sample ID: **18-MCG-02-SO**
 Client Project ID: **City of McGrath**
 Lab Sample ID: 1184206004
 Lab Project ID: 1184206

Collection Date: 08/01/18 12:45
 Received Date: 08/03/18 13:15
 Matrix: Soil/Solid (dry weight)
 Solids (%):82.2
 Location:

Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1-Methylnaphthalene	333	30.2	7.56	ug/Kg	1		08/16/18 04:10
2-Methylnaphthalene	342	30.2	7.56	ug/Kg	1		08/16/18 04:10
Acenaphthene	15.1 U	30.2	7.56	ug/Kg	1		08/16/18 04:10
Acenaphthylene	15.1 U	30.2	7.56	ug/Kg	1		08/16/18 04:10
Anthracene	15.1 U	30.2	7.56	ug/Kg	1		08/16/18 04:10
Benzo(a)Anthracene	15.1 U	30.2	7.56	ug/Kg	1		08/16/18 04:10
Benzo[a]pyrene	15.1 U	30.2	7.56	ug/Kg	1		08/16/18 04:10
Benzo[b]Fluoranthene	15.1 U	30.2	7.56	ug/Kg	1		08/16/18 04:10
Benzo[g,h,i]perylene	15.1 U	30.2	7.56	ug/Kg	1		08/16/18 04:10
Benzo[k]fluoranthene	15.1 U	30.2	7.56	ug/Kg	1		08/16/18 04:10
Chrysene	15.1 U	30.2	7.56	ug/Kg	1		08/16/18 04:10
Dibenzo[a,h]anthracene	15.1 U	30.2	7.56	ug/Kg	1		08/16/18 04:10
Fluoranthene	15.1 U	30.2	7.56	ug/Kg	1		08/16/18 04:10
Fluorene	32.7	30.2	7.56	ug/Kg	1		08/16/18 04:10
Indeno[1,2,3-c,d] pyrene	15.1 U	30.2	7.56	ug/Kg	1		08/16/18 04:10
Naphthalene	138	24.2	6.04	ug/Kg	1		08/16/18 04:10
Phenanthrene	15.1 U	30.2	7.56	ug/Kg	1		08/16/18 04:10
Pyrene	15.1 U	30.2	7.56	ug/Kg	1		08/16/18 04:10
Surrogates							
2-Methylnaphthalene-d10 (surr)	88.7	58-103		%	1		08/16/18 04:10
Fluoranthene-d10 (surr)	83	54-113		%	1		08/16/18 04:10

Batch Information

Analytical Batch: XMS10978
 Analytical Method: 8270D SIM (PAH)
 Analyst: DSD
 Analytical Date/Time: 08/16/18 04:10
 Container ID: 1184206004-A

Prep Batch: XXX40104
 Prep Method: SW3550C
 Prep Date/Time: 08/06/18 11:36
 Prep Initial Wt./Vol.: 22.636 g
 Prep Extract Vol: 5 mL

Results of 18-MCG-02-SO

Client Sample ID: **18-MCG-02-SO**
 Client Project ID: **City of McGrath**
 Lab Sample ID: 1184206004
 Lab Project ID: 1184206

Collection Date: 08/01/18 12:45
 Received Date: 08/03/18 13:15
 Matrix: Soil/Solid (dry weight)
 Solids (%):82.2
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	337	24.2	7.50	mg/Kg	1		08/07/18 14:57

Surrogates

5a Androstane (surr)	104	50-150		%	1		08/07/18 14:57
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Batch Information

Analytical Batch: XFC14454
 Analytical Method: AK102
 Analyst: VDL
 Analytical Date/Time: 08/07/18 14:57
 Container ID: 1184206004-A

Prep Batch: XXX40092
 Prep Method: SW3550C
 Prep Date/Time: 08/03/18 20:11
 Prep Initial Wt./Vol.: 30.156 g
 Prep Extract Vol: 5 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	23.4 J	24.2	7.50	mg/Kg	1		08/07/18 14:57

Surrogates

n-Triacontane-d62 (surr)	93.3	50-150		%	1		08/07/18 14:57
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Batch Information

Analytical Batch: XFC14454
 Analytical Method: AK103
 Analyst: VDL
 Analytical Date/Time: 08/07/18 14:57
 Container ID: 1184206004-A

Prep Batch: XXX40092
 Prep Method: SW3550C
 Prep Date/Time: 08/03/18 20:11
 Prep Initial Wt./Vol.: 30.156 g
 Prep Extract Vol: 5 mL

Results of 18-MCG-02-SO

Client Sample ID: **18-MCG-02-SO**
 Client Project ID: **City of McGrath**
 Lab Sample ID: 1184206004
 Lab Project ID: 1184206

Collection Date: 08/01/18 12:45
 Received Date: 08/03/18 13:15
 Matrix: Soil/Solid (dry weight)
 Solids (%):82.2
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	16.1	5.58	1.67	mg/Kg	1		08/08/18 17:42
Surrogates							
4-Bromofluorobenzene (surr)	141	50-150		%	1		08/08/18 17:42

Batch Information

Analytical Batch: VFC14332
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 08/08/18 17:42
 Container ID: 1184206004-B

Prep Batch: VXX32836
 Prep Method: SW5035A
 Prep Date/Time: 08/01/18 12:45
 Prep Initial Wt./Vol.: 33.806 g
 Prep Extract Vol: 31.0085 mL



Results of 18-MCG-02-SO

Client Sample ID: **18-MCG-02-SO**
 Client Project ID: **City of McGrath**
 Lab Sample ID: 1184206004
 Lab Project ID: 1184206

Collection Date: 08/01/18 12:45
 Received Date: 08/03/18 13:15
 Matrix: Soil/Solid (dry weight)
 Solids (%):82.2
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	22.3 U	44.6	13.8	ug/Kg	1		08/07/18 19:56
1,1,1-Trichloroethane	27.9 U	55.8	17.4	ug/Kg	1		08/07/18 19:56
1,1,2,2-Tetrachloroethane	13.9 U	27.9	8.70	ug/Kg	1		08/07/18 19:56
1,1,2-Trichloroethane	11.2 U	22.3	6.92	ug/Kg	1		08/07/18 19:56
1,1-Dichloroethane	27.9 U	55.8	17.4	ug/Kg	1		08/07/18 19:56
1,1-Dichloroethene	27.9 U	55.8	17.4	ug/Kg	1		08/07/18 19:56
1,1-Dichloropropene	27.9 U	55.8	17.4	ug/Kg	1		08/07/18 19:56
1,2,3-Trichlorobenzene	56.0 U	112	33.5	ug/Kg	1		08/07/18 19:56
1,2,3-Trichloropropane	27.9 U	55.8	17.4	ug/Kg	1		08/07/18 19:56
1,2,4-Trichlorobenzene	27.9 U	55.8	17.4	ug/Kg	1		08/07/18 19:56
1,2,4-Trimethylbenzene	675	112	33.5	ug/Kg	1		08/07/18 19:56
1,2-Dibromo-3-chloropropane	112 U	223	69.2	ug/Kg	1		08/07/18 19:56
1,2-Dibromoethane	11.2 U	22.3	6.92	ug/Kg	1		08/07/18 19:56
1,2-Dichlorobenzene	27.9 U	55.8	17.4	ug/Kg	1		08/07/18 19:56
1,2-Dichloroethane	11.2 U	22.3	6.92	ug/Kg	1		08/07/18 19:56
1,2-Dichloropropane	11.2 U	22.3	6.92	ug/Kg	1		08/07/18 19:56
1,3,5-Trimethylbenzene	388	55.8	17.4	ug/Kg	1		08/07/18 19:56
1,3-Dichlorobenzene	27.9 U	55.8	17.4	ug/Kg	1		08/07/18 19:56
1,3-Dichloropropane	11.2 U	22.3	6.92	ug/Kg	1		08/07/18 19:56
1,4-Dichlorobenzene	27.9 U	55.8	17.4	ug/Kg	1		08/07/18 19:56
2,2-Dichloropropane	27.9 U	55.8	17.4	ug/Kg	1		08/07/18 19:56
2-Butanone (MEK)	279 U	558	174	ug/Kg	1		08/07/18 19:56
2-Chlorotoluene	27.9 U	55.8	17.4	ug/Kg	1		08/07/18 19:56
2-Hexanone	112 U	223	69.2	ug/Kg	1		08/07/18 19:56
4-Chlorotoluene	27.9 U	55.8	17.4	ug/Kg	1		08/07/18 19:56
4-Isopropyltoluene	154 J	223	55.8	ug/Kg	1		08/07/18 19:56
4-Methyl-2-pentanone (MIBK)	279 U	558	174	ug/Kg	1		08/07/18 19:56
Acetone	279 U	558	174	ug/Kg	1		08/07/18 19:56
Benzene	15.3 J	27.9	8.70	ug/Kg	1		08/07/18 19:56
Bromobenzene	27.9 U	55.8	17.4	ug/Kg	1		08/07/18 19:56
Bromochloromethane	27.9 U	55.8	17.4	ug/Kg	1		08/07/18 19:56
Bromodichloromethane	27.9 U	55.8	17.4	ug/Kg	1		08/07/18 19:56
Bromoform	27.9 U	55.8	17.4	ug/Kg	1		08/07/18 19:56
Bromomethane	223 U	446	138	ug/Kg	1		08/07/18 19:56
Carbon disulfide	112 U	223	69.2	ug/Kg	1		08/07/18 19:56
Carbon tetrachloride	13.9 U	27.9	8.70	ug/Kg	1		08/07/18 19:56
Chlorobenzene	27.9 U	55.8	17.4	ug/Kg	1		08/07/18 19:56

Print Date: 08/16/2018 3:16:45PM

J flagging is activated



Results of 18-MCG-02-SO

Client Sample ID: **18-MCG-02-SO**
 Client Project ID: **City of McGrath**
 Lab Sample ID: 1184206004
 Lab Project ID: 1184206

Collection Date: 08/01/18 12:45
 Received Date: 08/03/18 13:15
 Matrix: Soil/Solid (dry weight)
 Solids (%):82.2
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroethane	223 U	446	138	ug/Kg	1		08/07/18 19:56
Chloroform	27.9 U	55.8	17.4	ug/Kg	1		08/07/18 19:56
Chloromethane	27.9 U	55.8	17.4	ug/Kg	1		08/07/18 19:56
cis-1,2-Dichloroethene	27.9 U	55.8	17.4	ug/Kg	1		08/07/18 19:56
cis-1,3-Dichloropropene	13.9 U	27.9	8.70	ug/Kg	1		08/07/18 19:56
Dibromochloromethane	27.9 U	55.8	17.4	ug/Kg	1		08/07/18 19:56
Dibromomethane	27.9 U	55.8	17.4	ug/Kg	1		08/07/18 19:56
Dichlorodifluoromethane	56.0 U	112	33.5	ug/Kg	1		08/07/18 19:56
Ethylbenzene	132	55.8	17.4	ug/Kg	1		08/07/18 19:56
Freon-113	112 U	223	69.2	ug/Kg	1		08/07/18 19:56
Hexachlorobutadiene	22.3 U	44.6	13.8	ug/Kg	1		08/07/18 19:56
Isopropylbenzene (Cumene)	114	55.8	17.4	ug/Kg	1		08/07/18 19:56
Methylene chloride	112 U	223	69.2	ug/Kg	1		08/07/18 19:56
Methyl-t-butyl ether	112 U	223	69.2	ug/Kg	1		08/07/18 19:56
Naphthalene	349	55.8	17.4	ug/Kg	1		08/07/18 19:56
n-Butylbenzene	27.9 U	55.8	17.4	ug/Kg	1		08/07/18 19:56
n-Propylbenzene	337	55.8	17.4	ug/Kg	1		08/07/18 19:56
o-Xylene	106	55.8	17.4	ug/Kg	1		08/07/18 19:56
P & M -Xylene	172	112	33.5	ug/Kg	1		08/07/18 19:56
sec-Butylbenzene	220	55.8	17.4	ug/Kg	1		08/07/18 19:56
Styrene	27.9 U	55.8	17.4	ug/Kg	1		08/07/18 19:56
tert-Butylbenzene	27.9 U	55.8	17.4	ug/Kg	1		08/07/18 19:56
Tetrachloroethene	13.9 U	27.9	8.70	ug/Kg	1		08/07/18 19:56
Toluene	27.9 U	55.8	17.4	ug/Kg	1		08/07/18 19:56
trans-1,2-Dichloroethene	27.9 U	55.8	17.4	ug/Kg	1		08/07/18 19:56
trans-1,3-Dichloropropene	13.9 U	27.9	8.70	ug/Kg	1		08/07/18 19:56
Trichloroethene	11.2 U	22.3	6.92	ug/Kg	1		08/07/18 19:56
Trichlorofluoromethane	56.0 U	112	33.5	ug/Kg	1		08/07/18 19:56
Vinyl acetate	112 U	223	69.2	ug/Kg	1		08/07/18 19:56
Vinyl chloride	11.2 U	22.3	6.92	ug/Kg	1		08/07/18 19:56
Xylenes (total)	278	167	50.9	ug/Kg	1		08/07/18 19:56
Surrogates							
1,2-Dichloroethane-D4 (surr)	110	71-136		%	1		08/07/18 19:56
4-Bromofluorobenzene (surr)	107	55-151		%	1		08/07/18 19:56
Toluene-d8 (surr)	99.3	85-116		%	1		08/07/18 19:56

Print Date: 08/16/2018 3:16:45PM

J flagging is activated

Results of 18-MCG-02-SO

Client Sample ID: **18-MCG-02-SO**
Client Project ID: **City of McGrath**
Lab Sample ID: 1184206004
Lab Project ID: 1184206

Collection Date: 08/01/18 12:45
Received Date: 08/03/18 13:15
Matrix: Soil/Solid (dry weight)
Solids (%):82.2
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS18144
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 08/07/18 19:56
Container ID: 1184206004-B

Prep Batch: VXX32830
Prep Method: SW5035A
Prep Date/Time: 08/01/18 12:45
Prep Initial Wt./Vol.: 33.806 g
Prep Extract Vol: 31.0085 mL

Results of Water Trip Blank

Client Sample ID: **Water Trip Blank**
 Client Project ID: **City of McGrath**
 Lab Sample ID: 1184206005
 Lab Project ID: 1184206

Collection Date: 08/01/18 11:45
 Received Date: 08/03/18 13:15
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0310	mg/L	1		08/09/18 04:08
Surrogates							
4-Bromofluorobenzene (surr)	78.2	50-150		%	1		08/09/18 04:08

Batch Information

Analytical Batch: VFC14334
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 08/09/18 04:08
 Container ID: 1184206005-B

Prep Batch: VXX32834
 Prep Method: SW5030B
 Prep Date/Time: 08/08/18 08:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of Water Trip Blank

Client Sample ID: **Water Trip Blank**
 Client Project ID: **City of McGrath**
 Lab Sample ID: 1184206005
 Lab Project ID: 1184206

Collection Date: 08/01/18 11:45
 Received Date: 08/03/18 13:15
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	0.250 U	0.500	0.150	ug/L	1		08/07/18 16:18
1,1,1-Trichloroethane	0.500 U	1.00	0.310	ug/L	1		08/07/18 16:18
1,1,2,2-Tetrachloroethane	0.250 U	0.500	0.150	ug/L	1		08/07/18 16:18
1,1,2-Trichloroethane	0.200 U	0.400	0.120	ug/L	1		08/07/18 16:18
1,1-Dichloroethane	0.500 U	1.00	0.310	ug/L	1		08/07/18 16:18
1,1-Dichloroethene	0.500 U	1.00	0.310	ug/L	1		08/07/18 16:18
1,1-Dichloropropene	0.500 U	1.00	0.310	ug/L	1		08/07/18 16:18
1,2,3-Trichlorobenzene	0.500 U	1.00	0.310	ug/L	1		08/07/18 16:18
1,2,3-Trichloropropane	0.500 U	1.00	0.310	ug/L	1		08/07/18 16:18
1,2,4-Trichlorobenzene	0.500 U	1.00	0.310	ug/L	1		08/07/18 16:18
1,2,4-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/07/18 16:18
1,2-Dibromo-3-chloropropane	5.00 U	10.0	3.10	ug/L	1		08/07/18 16:18
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		08/07/18 16:18
1,2-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		08/07/18 16:18
1,2-Dichloroethane	0.250 U	0.500	0.150	ug/L	1		08/07/18 16:18
1,2-Dichloropropane	0.500 U	1.00	0.310	ug/L	1		08/07/18 16:18
1,3,5-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/07/18 16:18
1,3-Dichlorobenzene	0.500 U	1.00	0.310	ug/L	1		08/07/18 16:18
1,3-Dichloropropane	0.250 U	0.500	0.150	ug/L	1		08/07/18 16:18
1,4-Dichlorobenzene	0.250 U	0.500	0.150	ug/L	1		08/07/18 16:18
2,2-Dichloropropane	0.500 U	1.00	0.310	ug/L	1		08/07/18 16:18
2-Butanone (MEK)	5.00 U	10.0	3.10	ug/L	1		08/07/18 16:18
2-Chlorotoluene	0.500 U	1.00	0.310	ug/L	1		08/07/18 16:18
2-Hexanone	5.00 U	10.0	3.10	ug/L	1		08/07/18 16:18
4-Chlorotoluene	0.500 U	1.00	0.310	ug/L	1		08/07/18 16:18
4-Isopropyltoluene	0.500 U	1.00	0.310	ug/L	1		08/07/18 16:18
4-Methyl-2-pentanone (MIBK)	5.00 U	10.0	3.10	ug/L	1		08/07/18 16:18
Benzene	0.200 U	0.400	0.120	ug/L	1		08/07/18 16:18
Bromobenzene	0.500 U	1.00	0.310	ug/L	1		08/07/18 16:18
Bromochloromethane	0.500 U	1.00	0.310	ug/L	1		08/07/18 16:18
Bromodichloromethane	0.250 U	0.500	0.150	ug/L	1		08/07/18 16:18
Bromoform	0.500 U	1.00	0.310	ug/L	1		08/07/18 16:18
Bromomethane	2.50 U	5.00	1.50	ug/L	1		08/07/18 16:18
Carbon disulfide	5.00 U	10.0	3.10	ug/L	1		08/07/18 16:18
Carbon tetrachloride	0.500 U	1.00	0.310	ug/L	1		08/07/18 16:18
Chlorobenzene	0.250 U	0.500	0.150	ug/L	1		08/07/18 16:18
Chloroethane	0.500 U	1.00	0.310	ug/L	1		08/07/18 16:18

Print Date: 08/16/2018 3:16:45PM

J flagging is activated



Results of Water Trip Blank

Client Sample ID: Water Trip Blank
Client Project ID: City of McGrath
Lab Sample ID: 1184206005
Lab Project ID: 1184206

Collection Date: 08/01/18 11:45
Received Date: 08/03/18 13:15
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical parameters like Chloroform, Chloromethane, etc., with their respective results and limits.

Results of Water Trip Blank

Client Sample ID: **Water Trip Blank**
Client Project ID: **City of McGrath**
Lab Sample ID: 1184206005
Lab Project ID: 1184206

Collection Date: 08/01/18 11:45
Received Date: 08/03/18 13:15
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS18138
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 08/07/18 16:18
Container ID: 1184206005-A

Prep Batch: VXX32821
Prep Method: SW5030B
Prep Date/Time: 08/07/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of Soil Trip Blank

Client Sample ID: **Soil Trip Blank**
 Client Project ID: **City of McGrath**
 Lab Sample ID: 1184206006
 Lab Project ID: 1184206

Collection Date: 08/01/18 11:45
 Received Date: 08/03/18 13:15
 Matrix: Soil/Solid (dry weight)
 Solids (%):
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	1.26 U	2.53	0.759	mg/Kg	1		08/08/18 00:04
Surrogates							
4-Bromofluorobenzene (surr)	65.4	50-150		%	1		08/08/18 00:04

Batch Information

Analytical Batch: VFC14330
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 08/08/18 00:04
 Container ID: 1184206006-A

Prep Batch: VXX32824
 Prep Method: SW5035A
 Prep Date/Time: 08/01/18 11:45
 Prep Initial Wt./Vol.: 49.384 g
 Prep Extract Vol: 25 mL



Results of Soil Trip Blank

Client Sample ID: **Soil Trip Blank**
 Client Project ID: **City of McGrath**
 Lab Sample ID: 1184206006
 Lab Project ID: 1184206

Collection Date: 08/01/18 11:45
 Received Date: 08/03/18 13:15
 Matrix: Soil/Solid (dry weight)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	10.1 U	20.2	6.28	ug/Kg	1		08/07/18 15:14
1,1,1-Trichloroethane	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
1,1,2,2-Tetrachloroethane	6.35 U	12.7	3.95	ug/Kg	1		08/07/18 15:14
1,1,2-Trichloroethane	5.05 U	10.1	3.14	ug/Kg	1		08/07/18 15:14
1,1-Dichloroethane	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
1,1-Dichloroethene	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
1,1-Dichloropropene	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
1,2,3-Trichlorobenzene	25.3 U	50.6	15.2	ug/Kg	1		08/07/18 15:14
1,2,3-Trichloropropane	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
1,2,4-Trichlorobenzene	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
1,2,4-Trimethylbenzene	25.3 U	50.6	15.2	ug/Kg	1		08/07/18 15:14
1,2-Dibromo-3-chloropropane	50.5 U	101	31.4	ug/Kg	1		08/07/18 15:14
1,2-Dibromoethane	5.05 U	10.1	3.14	ug/Kg	1		08/07/18 15:14
1,2-Dichlorobenzene	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
1,2-Dichloroethane	5.05 U	10.1	3.14	ug/Kg	1		08/07/18 15:14
1,2-Dichloropropane	5.05 U	10.1	3.14	ug/Kg	1		08/07/18 15:14
1,3,5-Trimethylbenzene	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
1,3-Dichlorobenzene	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
1,3-Dichloropropane	5.05 U	10.1	3.14	ug/Kg	1		08/07/18 15:14
1,4-Dichlorobenzene	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
2,2-Dichloropropane	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
2-Butanone (MEK)	127 U	253	79.0	ug/Kg	1		08/07/18 15:14
2-Chlorotoluene	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
2-Hexanone	50.5 U	101	31.4	ug/Kg	1		08/07/18 15:14
4-Chlorotoluene	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
4-Isopropyltoluene	50.5 U	101	25.3	ug/Kg	1		08/07/18 15:14
4-Methyl-2-pentanone (MIBK)	127 U	253	79.0	ug/Kg	1		08/07/18 15:14
Acetone	127 U	253	79.0	ug/Kg	1		08/07/18 15:14
Benzene	6.35 U	12.7	3.95	ug/Kg	1		08/07/18 15:14
Bromobenzene	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
Bromochloromethane	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
Bromodichloromethane	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
Bromoform	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
Bromomethane	101 U	202	62.8	ug/Kg	1		08/07/18 15:14
Carbon disulfide	50.5 U	101	31.4	ug/Kg	1		08/07/18 15:14
Carbon tetrachloride	6.35 U	12.7	3.95	ug/Kg	1		08/07/18 15:14
Chlorobenzene	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14

Print Date: 08/16/2018 3:16:45PM

J flagging is activated



Results of Soil Trip Blank

Client Sample ID: **Soil Trip Blank**
 Client Project ID: **City of McGrath**
 Lab Sample ID: 1184206006
 Lab Project ID: 1184206

Collection Date: 08/01/18 11:45
 Received Date: 08/03/18 13:15
 Matrix: Soil/Solid (dry weight)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroethane	101 U	202	62.8	ug/Kg	1		08/07/18 15:14
Chloroform	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
Chloromethane	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
cis-1,2-Dichloroethene	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
cis-1,3-Dichloropropene	6.35 U	12.7	3.95	ug/Kg	1		08/07/18 15:14
Dibromochloromethane	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
Dibromomethane	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
Dichlorodifluoromethane	25.3 U	50.6	15.2	ug/Kg	1		08/07/18 15:14
Ethylbenzene	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
Freon-113	50.5 U	101	31.4	ug/Kg	1		08/07/18 15:14
Hexachlorobutadiene	10.1 U	20.2	6.28	ug/Kg	1		08/07/18 15:14
Isopropylbenzene (Cumene)	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
Methylene chloride	50.5 U	101	31.4	ug/Kg	1		08/07/18 15:14
Methyl-t-butyl ether	50.5 U	101	31.4	ug/Kg	1		08/07/18 15:14
Naphthalene	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
n-Butylbenzene	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
n-Propylbenzene	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
o-Xylene	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
P & M -Xylene	25.3 U	50.6	15.2	ug/Kg	1		08/07/18 15:14
sec-Butylbenzene	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
Styrene	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
tert-Butylbenzene	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
Tetrachloroethene	6.35 U	12.7	3.95	ug/Kg	1		08/07/18 15:14
Toluene	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
trans-1,2-Dichloroethene	12.7 U	25.3	7.90	ug/Kg	1		08/07/18 15:14
trans-1,3-Dichloropropene	6.35 U	12.7	3.95	ug/Kg	1		08/07/18 15:14
Trichloroethene	5.05 U	10.1	3.14	ug/Kg	1		08/07/18 15:14
Trichlorofluoromethane	25.3 U	50.6	15.2	ug/Kg	1		08/07/18 15:14
Vinyl acetate	50.5 U	101	31.4	ug/Kg	1		08/07/18 15:14
Vinyl chloride	5.05 U	10.1	3.14	ug/Kg	1		08/07/18 15:14
Xylenes (total)	38.0 U	75.9	23.1	ug/Kg	1		08/07/18 15:14
Surrogates							
1,2-Dichloroethane-D4 (surr)	111	71-136		%	1		08/07/18 15:14
4-Bromofluorobenzene (surr)	110	55-151		%	1		08/07/18 15:14
Toluene-d8 (surr)	97.1	85-116		%	1		08/07/18 15:14

Print Date: 08/16/2018 3:16:45PM

J flagging is activated

Results of Soil Trip Blank

Client Sample ID: **Soil Trip Blank**
Client Project ID: **City of McGrath**
Lab Sample ID: 1184206006
Lab Project ID: 1184206

Collection Date: 08/01/18 11:45
Received Date: 08/03/18 13:15
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS18144
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 08/07/18 15:14
Container ID: 1184206006-A

Prep Batch: VXX32830
Prep Method: SW5035A
Prep Date/Time: 08/01/18 11:45
Prep Initial Wt./Vol.: 49.384 g
Prep Extract Vol: 25 mL

Method Blank

Blank ID: MB for HBN 1783657 [SPT/10566]

Blank Lab ID: 1464556

QC for Samples:

1184206003, 1184206004

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Solids	100			%

Batch Information

Analytical Batch: SPT10566

Analytical Method: SM21 2540G

Instrument:

Analyst: ARB

Analytical Date/Time: 8/3/2018 11:25:00PM

Print Date: 08/16/2018 3:16:48PM

Duplicate Sample Summary

Original Sample ID: 1184184003

Duplicate Sample ID: 1464557

QC for Samples:

Analysis Date: 08/03/2018 23:25

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	85.2	84.4	%	0.94	(< 15)

Batch Information

Analytical Batch: SPT10566

Analytical Method: SM21 2540G

Instrument:

Analyst: ARB

Print Date: 08/16/2018 3:16:49PM

Duplicate Sample Summary

Original Sample ID: 1184184006

Duplicate Sample ID: 1464558

QC for Samples:

1184206003, 1184206004

Analysis Date: 08/03/2018 23:25

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	86.0	86.4	%	0.39	(< 15)

Batch Information

Analytical Batch: SPT10566

Analytical Method: SM21 2540G

Instrument:

Analyst: ARB

Print Date: 08/16/2018 3:16:49PM

Duplicate Sample Summary

Original Sample ID: 1184206004

Duplicate Sample ID: 1464559

QC for Samples:

1184206003, 1184206004

Analysis Date: 08/03/2018 23:25

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	82.2	81.5	%	0.83	(< 15)

Batch Information

Analytical Batch: SPT10566

Analytical Method: SM21 2540G

Instrument:

Analyst: ARB

Print Date: 08/16/2018 3:16:49PM

Method Blank

Blank ID: MB for HBN 1783841 [VXX/32821]

Blank Lab ID: 1465355

QC for Samples:

1184206001, 1184206002, 1184206005

Matrix: Water (Surface, Eff., Ground)

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1,1,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,1-Trichloroethane	0.500U	1.00	0.310	ug/L
1,1,2,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,2-Trichloroethane	0.200U	0.400	0.120	ug/L
1,1-Dichloroethane	0.500U	1.00	0.310	ug/L
1,1-Dichloroethene	0.500U	1.00	0.310	ug/L
1,1-Dichloropropene	0.500U	1.00	0.310	ug/L
1,2,3-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,3-Trichloropropane	0.500U	1.00	0.310	ug/L
1,2,4-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,2-Dibromo-3-chloropropane	5.00U	10.0	3.10	ug/L
1,2-Dibromoethane	0.0375U	0.0750	0.0180	ug/L
1,2-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,2-Dichloroethane	0.250U	0.500	0.150	ug/L
1,2-Dichloropropane	0.500U	1.00	0.310	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,3-Dichloropropane	0.250U	0.500	0.150	ug/L
1,4-Dichlorobenzene	0.250U	0.500	0.150	ug/L
2,2-Dichloropropane	0.500U	1.00	0.310	ug/L
2-Butanone (MEK)	5.00U	10.0	3.10	ug/L
2-Chlorotoluene	0.500U	1.00	0.310	ug/L
2-Hexanone	5.00U	10.0	3.10	ug/L
4-Chlorotoluene	0.500U	1.00	0.310	ug/L
4-Isopropyltoluene	0.500U	1.00	0.310	ug/L
4-Methyl-2-pentanone (MIBK)	5.00U	10.0	3.10	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Bromobenzene	0.500U	1.00	0.310	ug/L
Bromochloromethane	0.500U	1.00	0.310	ug/L
Bromodichloromethane	0.250U	0.500	0.150	ug/L
Bromoform	0.500U	1.00	0.310	ug/L
Bromomethane	2.50U	5.00	1.50	ug/L
Carbon disulfide	5.00U	10.0	3.10	ug/L
Carbon tetrachloride	0.500U	1.00	0.310	ug/L
Chlorobenzene	0.250U	0.500	0.150	ug/L
Chloroethane	0.500U	1.00	0.310	ug/L
Chloroform	0.500U	1.00	0.310	ug/L

Print Date: 08/16/2018 3:16:51PM

Method Blank

Blank ID: MB for HBN 1783841 [VXX/32821]

Blank Lab ID: 1465355

QC for Samples:

1184206001, 1184206002, 1184206005

Matrix: Water (Surface, Eff., Ground)

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Chloromethane	0.500U	1.00	0.310	ug/L
cis-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
cis-1,3-Dichloropropene	0.250U	0.500	0.150	ug/L
Dibromochloromethane	0.250U	0.500	0.150	ug/L
Dibromomethane	0.500U	1.00	0.310	ug/L
Dichlorodifluoromethane	0.500U	1.00	0.310	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
Freon-113	5.00U	10.0	3.10	ug/L
Hexachlorobutadiene	0.500U	1.00	0.310	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	ug/L
Methylene chloride	2.50U	5.00	1.00	ug/L
Methyl-t-butyl ether	5.00U	10.0	3.10	ug/L
Naphthalene	0.500U	1.00	0.310	ug/L
n-Butylbenzene	0.500U	1.00	0.310	ug/L
n-Propylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	ug/L
Styrene	0.500U	1.00	0.310	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	ug/L
Tetrachloroethene	0.500U	1.00	0.310	ug/L
Toluene	0.500U	1.00	0.310	ug/L
trans-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
trans-1,3-Dichloropropene	0.500U	1.00	0.310	ug/L
Trichloroethene	0.500U	1.00	0.310	ug/L
Trichlorofluoromethane	0.500U	1.00	0.310	ug/L
Vinyl acetate	5.00U	10.0	3.10	ug/L
Vinyl chloride	0.0750U	0.150	0.0500	ug/L
Xylenes (total)	1.50U	3.00	1.00	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	102	81-118		%
4-Bromofluorobenzene (surr)	99.3	85-114		%
Toluene-d8 (surr)	100	89-112		%

Print Date: 08/16/2018 3:16:51PM



Method Blank

Blank ID: MB for HBN 1783841 [VXX/32821]
Blank Lab ID: 1465355

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1184206001, 1184206002, 1184206005

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
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Batch Information

Analytical Batch: VMS18138
Analytical Method: SW8260C
Instrument: VPA 780/5975 GC/MS
Analyst: FDR
Analytical Date/Time: 8/7/2018 12:48:00PM

Prep Batch: VXX32821
Prep Method: SW5030B
Prep Date/Time: 8/7/2018 12:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 08/16/2018 3:16:51PM

Leaching Blank

Blank ID: LB for HBN 1783737 [TCLP/9570]
 Blank Lab ID: 1464926

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1184206001, 1184206002, 1184206005

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1-Dichloroethene	25.0U	50.0	15.5	ug/L
1,2-Dichloroethane	12.5U	25.0	7.50	ug/L
1,4-Dichlorobenzene	12.5U	25.0	7.50	ug/L
2-Butanone (MEK)	250U	500	155	ug/L
Benzene	10.0U	20.0	6.00	ug/L
Carbon tetrachloride	25.0U	50.0	15.5	ug/L
Chlorobenzene	12.5U	25.0	7.50	ug/L
Chloroform	25.0U	50.0	15.5	ug/L
Hexachlorobutadiene	25.0U	50.0	15.5	ug/L
Tetrachloroethene	25.0U	50.0	15.5	ug/L
Trichloroethene	25.0U	50.0	15.5	ug/L
Vinyl chloride	3.75U	7.50	2.50	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	103	81-118		%
4-Bromofluorobenzene (surr)	102	85-114		%
Toluene-d8 (surr)	99.7	89-112		%

Batch Information

Analytical Batch: VMS18138
 Analytical Method: SW8260C
 Instrument: VPA 780/5975 GC/MS
 Analyst: FDR
 Analytical Date/Time: 8/7/2018 4:35:00PM

Prep Batch: VXX32821
 Prep Method: SW5030B
 Prep Date/Time: 8/7/2018 12:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1184206 [VXX32821]
 Blank Spike Lab ID: 1465356
 Date Analyzed: 08/07/2018 13:06

Spike Duplicate ID: LCSD for HBN 1184206 [VXX32821]
 Spike Duplicate Lab ID: 1465357
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1184206001, 1184206002, 1184206005

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	30	31.9	106	30	32.3	108	(78-124)	1.10	(< 20)
1,1,1-Trichloroethane	30	31.5	105	30	31.5	105	(74-131)	0.19	(< 20)
1,1,2,2-Tetrachloroethane	30	30.5	102	30	30.0	100	(71-121)	1.70	(< 20)
1,1,2-Trichloroethane	30	30.2	101	30	30.3	101	(80-119)	0.36	(< 20)
1,1-Dichloroethane	30	30.5	102	30	30.7	102	(77-125)	0.85	(< 20)
1,1-Dichloroethene	30	30.6	102	30	31.0	103	(71-131)	1.30	(< 20)
1,1-Dichloropropene	30	31.2	104	30	31.1	104	(79-125)	0.39	(< 20)
1,2,3-Trichlorobenzene	30	30.0	100	30	26.7	89	(69-129)	11.70	(< 20)
1,2,3-Trichloropropane	30	29.9	100	30	29.6	99	(73-122)	1.00	(< 20)
1,2,4-Trichlorobenzene	30	30.4	101	30	28.7	96	(69-130)	5.80	(< 20)
1,2,4-Trimethylbenzene	30	31.8	106	30	31.3	104	(79-124)	1.60	(< 20)
1,2-Dibromo-3-chloropropane	30	30.0	100	30	28.5	95	(62-128)	5.30	(< 20)
1,2-Dibromoethane	30	30.7	102	30	31.0	103	(77-121)	0.75	(< 20)
1,2-Dichlorobenzene	30	30.5	102	30	30.2	101	(80-119)	0.96	(< 20)
1,2-Dichloroethane	30	28.7	96	30	28.7	96	(73-128)	0.04	(< 20)
1,2-Dichloropropane	30	30.7	102	30	31.0	103	(78-122)	1.00	(< 20)
1,3,5-Trimethylbenzene	30	31.1	104	30	31.4	105	(75-124)	0.93	(< 20)
1,3-Dichlorobenzene	30	31.0	103	30	31.0	103	(80-119)	0.03	(< 20)
1,3-Dichloropropane	30	30.4	101	30	30.7	102	(80-119)	1.20	(< 20)
1,4-Dichlorobenzene	30	30.7	102	30	30.6	102	(79-118)	0.20	(< 20)
2,2-Dichloropropane	30	32.4	108	30	32.7	109	(60-139)	0.83	(< 20)
2-Butanone (MEK)	90	88.3	98	90	85.7	95	(56-143)	3.10	(< 20)
2-Chlorotoluene	30	31.3	104	30	30.8	103	(79-122)	1.60	(< 20)
2-Hexanone	90	95.4	106	90	93.4	104	(57-139)	2.10	(< 20)
4-Chlorotoluene	30	31.7	106	30	31.1	104	(78-122)	1.80	(< 20)
4-Isopropyltoluene	30	32.1	107	30	31.9	106	(77-127)	0.63	(< 20)
4-Methyl-2-pentanone (MIBK)	90	96.2	107	90	95.3	106	(67-130)	0.89	(< 20)
Benzene	30	30.7	102	30	30.7	102	(79-120)	0.10	(< 20)
Bromobenzene	30	30.3	101	30	30.1	100	(80-120)	0.63	(< 20)
Bromochloromethane	30	31.7	106	30	31.9	106	(78-123)	0.44	(< 20)
Bromodichloromethane	30	31.6	105	30	31.8	106	(79-125)	0.69	(< 20)
Bromoform	30	32.6	109	30	32.9	110	(66-130)	0.73	(< 20)
Bromomethane	30	30.3	101	30	27.9	93	(53-141)	8.30	(< 20)
Carbon disulfide	45	46.0	102	45	46.4	103	(64-133)	0.91	(< 20)

Print Date: 08/16/2018 3:16:53PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1184206 [VXX32821]
 Blank Spike Lab ID: 1465356
 Date Analyzed: 08/07/2018 13:06

Spike Duplicate ID: LCSD for HBN 1184206 [VXX32821]
 Spike Duplicate Lab ID: 1465357
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1184206001, 1184206002, 1184206005

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Carbon tetrachloride	30	31.9	106	30	32.3	108	(72-136)	1.00	(< 20)
Chlorobenzene	30	29.7	99	30	29.8	99	(82-118)	0.44	(< 20)
Chloroethane	30	30.9	103	30	29.6	99	(60-138)	4.50	(< 20)
Chloroform	30	30.2	101	30	30.3	101	(79-124)	0.13	(< 20)
Chloromethane	30	29.4	98	30	27.9	93	(50-139)	5.40	(< 20)
cis-1,2-Dichloroethene	30	30.4	101	30	31.0	103	(78-123)	1.90	(< 20)
cis-1,3-Dichloropropene	30	32.6	109	30	32.7	109	(75-124)	0.15	(< 20)
Dibromochloromethane	30	31.8	106	30	32.2	107	(74-126)	1.40	(< 20)
Dibromomethane	30	30.7	102	30	30.5	102	(79-123)	0.62	(< 20)
Dichlorodifluoromethane	30	33.8	113	30	34.3	114	(32-152)	1.50	(< 20)
Ethylbenzene	30	31.5	105	30	31.1	104	(79-121)	1.20	(< 20)
Freon-113	45	47.5	106	45	47.7	106	(70-136)	0.44	(< 20)
Hexachlorobutadiene	30	30.3	101	30	29.9	100	(66-134)	1.40	(< 20)
Isopropylbenzene (Cumene)	30	31.8	106	30	32.1	107	(72-131)	1.00	(< 20)
Methylene chloride	30	29.4	98	30	29.9	100	(74-124)	1.50	(< 20)
Methyl-t-butyl ether	45	45.7	101	45	46.1	102	(71-124)	0.92	(< 20)
Naphthalene	30	29.5	98	30	26.4	88	(61-128)	11.20	(< 20)
n-Butylbenzene	30	31.4	105	30	31.3	104	(75-128)	0.22	(< 20)
n-Propylbenzene	30	31.7	106	30	31.8	106	(76-126)	0.32	(< 20)
o-Xylene	30	31.2	104	30	31.3	104	(78-122)	0.35	(< 20)
P & M -Xylene	60	63.2	105	60	62.9	105	(80-121)	0.51	(< 20)
sec-Butylbenzene	30	31.7	106	30	31.8	106	(77-126)	0.25	(< 20)
Styrene	30	31.9	106	30	32.4	108	(78-123)	1.50	(< 20)
tert-Butylbenzene	30	31.4	105	30	31.5	105	(78-124)	0.19	(< 20)
Tetrachloroethene	30	31.1	104	30	31.2	104	(74-129)	0.51	(< 20)
Toluene	30	29.5	98	30	29.6	99	(80-121)	0.34	(< 20)
trans-1,2-Dichloroethene	30	30.2	101	30	30.5	102	(75-124)	0.99	(< 20)
trans-1,3-Dichloropropene	30	32.6	109	30	33.3	111	(73-127)	2.00	(< 20)
Trichloroethene	30	30.9	103	30	30.8	103	(79-123)	0.39	(< 20)
Trichlorofluoromethane	30	31.1	104	30	31.2	104	(65-141)	0.55	(< 20)
Vinyl acetate	30	32.0	107	30	32.5	108	(54-146)	1.50	(< 20)
Vinyl chloride	30	30.6	102	30	31.3	104	(58-137)	2.20	(< 20)
Xylenes (total)	90	94.4	105	90	94.2	105	(79-121)	0.22	(< 20)

Print Date: 08/16/2018 3:16:53PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1184206 [VXX32821]
 Blank Spike Lab ID: 1465356
 Date Analyzed: 08/07/2018 13:06

Spike Duplicate ID: LCSD for HBN 1184206 [VXX32821]
 Spike Duplicate Lab ID: 1465357
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1184206001, 1184206002, 1184206005

Results by SW8260C

Parameter	Blank Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	97.7	98	30	97.1	97	(81-118)	0.62	
4-Bromofluorobenzene (surr)	30	97.7	98	30	98.9	99	(85-114)	1.30	
Toluene-d8 (surr)	30	98.4	98	30	99.3	99	(89-112)	0.94	

Batch Information

Analytical Batch: **VMS18138**
 Analytical Method: **SW8260C**
 Instrument: **VPA 780/5975 GC/MS**
 Analyst: **FDR**

Prep Batch: **VXX32821**
 Prep Method: **SW5030B**
 Prep Date/Time: **08/07/2018 00:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL



Matrix Spike Summary

Original Sample ID: 1465361
 MS Sample ID: 1465362 MS
 MSD Sample ID: 1465363 MSD

Analysis Date: 08/07/2018 16:53
 Analysis Date: 08/07/2018 14:18
 Analysis Date: 08/07/2018 14:35
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1184206001, 1184206002, 1184206005

Results by SW8260C

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	12.5U	1500	1600	107	1500	1620	108	78-124	1.20	(< 20)
1,1,1-Trichloroethane	25.0U	1500	1590	106	1500	1570	105	74-131	0.95	(< 20)
1,1,2,2-Tetrachloroethane	12.5U	1500	1490	100	1500	1570	105	71-121	5.20	(< 20)
1,1,2-Trichloroethane	10.0U	1500	1520	102	1500	1550	103	80-119	1.50	(< 20)
1,1-Dichloroethane	25.0U	1500	1530	102	1500	1520	101	77-125	0.88	(< 20)
1,1-Dichloroethene	25.0U	1500	1550	103	1500	1530	102	71-131	1.10	(< 20)
1,1-Dichloropropene	25.0U	1500	1580	105	1500	1550	104	79-125	1.50	(< 20)
1,2,3-Trichlorobenzene	25.0U	1500	1500	100	1500	1580	105	69-129	5.60	(< 20)
1,2,3-Trichloropropane	25.0U	1500	1480	98	1500	1540	103	73-122	4.20	(< 20)
1,2,4-Trichlorobenzene	25.0U	1500	1480	99	1500	1560	104	69-130	5.30	(< 20)
1,2,4-Trimethylbenzene	25.0U	1500	1540	102	1500	1600	106	79-124	3.80	(< 20)
1,2-Dibromo-3-chloropropane	250U	1500	1510	101	1500	1610	108	62-128	6.70	(< 20)
1,2-Dibromoethane	1.88U	1500	1540	103	1500	1580	106	77-121	2.60	(< 20)
1,2-Dichlorobenzene	25.0U	1500	1470	98	1500	1540	103	80-119	4.70	(< 20)
1,2-Dichloroethane	12.5U	1500	1440	96	1500	1440	96	73-128	0.10	(< 20)
1,2-Dichloropropane	25.0U	1500	1530	102	1500	1520	101	78-122	0.59	(< 20)
1,3,5-Trimethylbenzene	25.0U	1500	1520	101	1500	1570	104	75-124	3.30	(< 20)
1,3-Dichlorobenzene	25.0U	1500	1490	100	1500	1570	104	80-119	4.90	(< 20)
1,3-Dichloropropane	12.5U	1500	1530	102	1500	1550	104	80-119	1.60	(< 20)
1,4-Dichlorobenzene	12.5U	1500	1470	98	1500	1560	104	79-118	6.00	(< 20)
2,2-Dichloropropane	25.0U	1500	1690	113	1500	1660	111	60-139	1.50	(< 20)
2-Butanone (MEK)	250U	4500	4600	102	4500	4660	104	56-143	1.50	(< 20)
2-Chlorotoluene	25.0U	1500	1490	100	1500	1550	103	79-122	3.70	(< 20)
2-Hexanone	250U	4500	4940	110	4500	5110	114	57-139	3.50	(< 20)
4-Chlorotoluene	25.0U	1500	1510	100	1500	1570	105	78-122	4.40	(< 20)
4-Isopropyltoluene	25.0U	1500	1540	103	1500	1620	108	77-127	4.60	(< 20)
4-Methyl-2-pentanone (MIBK)	250U	4500	4960	110	4500	5030	112	67-130	1.40	(< 20)
Benzene	10.0U	1500	1540	103	1500	1540	102	79-120	0.55	(< 20)
Bromobenzene	25.0U	1500	1470	98	1500	1540	103	80-120	5.10	(< 20)
Bromochloromethane	25.0U	1500	1580	105	1500	1570	105	78-123	0.45	(< 20)
Bromodichloromethane	12.5U	1500	1590	106	1500	1580	105	79-125	0.63	(< 20)
Bromoform	25.0U	1500	1660	111	1500	1690	112	66-130	1.20	(< 20)
Bromomethane	125U	1500	1360	91	1500	1340	90	53-141	1.10	(< 20)
Carbon disulfide	250U	2250	2330	104	2250	2290	102	64-133	1.80	(< 20)
Carbon tetrachloride	25.0U	1500	1620	108	1500	1610	107	72-136	1.10	(< 20)
Chlorobenzene	12.5U	1500	1490	100	1500	1510	101	82-118	1.00	(< 20)
Chloroethane	25.0U	1500	1490	99	1500	1480	99	60-138	0.40	(< 20)

Print Date: 08/16/2018 3:16:55PM

Matrix Spike Summary

Original Sample ID: 1465361
 MS Sample ID: 1465362 MS
 MSD Sample ID: 1465363 MSD

Analysis Date: 08/07/2018 16:53
 Analysis Date: 08/07/2018 14:18
 Analysis Date: 08/07/2018 14:35
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1184206001, 1184206002, 1184206005

Results by SW8260C

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Chloroform	25.0U	1500	1530	102	1500	1510	101	79-124	1.10	(< 20)
Chloromethane	16.0J	1500	1530	101	1500	1630	108	50-139	6.80	(< 20)
cis-1,2-Dichloroethene	25.0U	1500	1530	102	1500	1510	101	78-123	1.70	(< 20)
cis-1,3-Dichloropropene	12.5U	1500	1640	109	1500	1640	109	75-124	0.31	(< 20)
Dibromochloromethane	12.5U	1500	1600	107	1500	1630	109	74-126	2.10	(< 20)
Dibromomethane	25.0U	1500	1550	103	1500	1520	102	79-123	1.80	(< 20)
Dichlorodifluoromethane	25.0U	1500	1680	112	1500	1670	111	32-152	0.96	(< 20)
Ethylbenzene	25.0U	1500	1550	103	1500	1570	104	79-121	0.93	(< 20)
Freon-113	250U	2250	2410	107	2250	2370	106	70-136	1.30	(< 20)
Hexachlorobutadiene	25.0U	1500	1530	102	1500	1600	106	66-134	3.90	(< 20)
Isopropylbenzene (Cumene)	25.0U	1500	1590	106	1500	1620	108	72-131	1.60	(< 20)
Methylene chloride	125U	1500	1450	97	1500	1450	97	74-124	0.31	(< 20)
Methyl-t-butyl ether	250U	2250	2310	103	2250	2310	103	71-124	0.00	(< 20)
Naphthalene	25.0U	1500	1500	100	1500	1600	107	61-128	6.40	(< 20)
n-Butylbenzene	25.0U	1500	1540	103	1500	1580	106	75-128	2.80	(< 20)
n-Propylbenzene	25.0U	1500	1530	102	1500	1590	106	76-126	3.40	(< 20)
o-Xylene	25.0U	1500	1580	105	1500	1590	106	78-122	0.63	(< 20)
P & M -Xylene	50.0U	3000	3130	104	3000	3160	105	80-121	0.88	(< 20)
sec-Butylbenzene	25.0U	1500	1530	102	1500	1570	105	77-126	2.80	(< 20)
Styrene	25.0U	1500	1600	107	1500	1610	107	78-123	0.19	(< 20)
tert-Butylbenzene	25.0U	1500	1510	101	1500	1570	105	78-124	4.00	(< 20)
Tetrachloroethene	25.0U	1500	1570	104	1500	1570	105	74-129	0.19	(< 20)
Toluene	25.0U	1500	1490	99	1500	1500	100	80-121	0.74	(< 20)
trans-1,2-Dichloroethene	25.0U	1500	1530	102	1500	1510	101	75-124	0.95	(< 20)
trans-1,3-Dichloropropene	25.0U	1500	1650	110	1500	1680	112	73-127	1.60	(< 20)
Trichloroethene	25.0U	1500	1560	104	1500	1540	103	79-123	1.10	(< 20)
Trichlorofluoromethane	25.0U	1500	1560	104	1500	1540	103	65-141	1.20	(< 20)
Vinyl acetate	250U	1500	1650	110	1500	1650	110	54-146	0.24	(< 20)
Vinyl chloride	3.75U	1500	1570	104	1500	1550	103	58-137	0.87	(< 20)
Xylenes (total)	75.0U	4500	4700	105	4500	4740	105	79-121	0.79	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		1500	1480	99	1500	1470	98	81-118	0.41	
4-Bromofluorobenzene (surr)		1500	1450	97	1500	1490	99	85-114	2.30	
Toluene-d8 (surr)		1500	1490	99	1500	1510	101	89-112	1.40	

Print Date: 08/16/2018 3:16:55PM

Matrix Spike Summary

Original Sample ID: 1465361
 MS Sample ID: 1465362 MS
 MSD Sample ID: 1465363 MSD

Analysis Date:
 Analysis Date: 08/07/2018 14:18
 Analysis Date: 08/07/2018 14:35
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1184206001, 1184206002, 1184206005

Results by SW8260C

Parameter	Sample	Matrix Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			

Batch Information

Analytical Batch: VMS18138
 Analytical Method: SW8260C
 Instrument: VPA 780/5975 GC/MS
 Analyst: FDR
 Analytical Date/Time: 8/7/2018 2:18:00PM

Prep Batch: VXX32821
 Prep Method: Volatiles Extraction 8240/8260 FULL
 Prep Date/Time: 8/7/2018 12:00:00AM
 Prep Initial Wt./Vol.: 5.00mL
 Prep Extract Vol: 5.00mL

Print Date: 08/16/2018 3:16:55PM

Method Blank

Blank ID: MB for HBN 1783856 [VXX/32824]

Blank Lab ID: 1465410

QC for Samples:

1184206006

Matrix: Soil/Solid (dry weight)

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	1.25U	2.50	0.750	mg/Kg
Surrogates				
4-Bromofluorobenzene (surr)	77.8	50-150		%

Batch Information

Analytical Batch: VFC14330

Analytical Method: AK101

Instrument: Agilent 7890A PID/FID

Analyst: ST

Analytical Date/Time: 8/7/2018 6:58:00PM

Prep Batch: VXX32824

Prep Method: SW5035A

Prep Date/Time: 8/7/2018 8:00:00AM

Prep Initial Wt./Vol.: 50 g

Prep Extract Vol: 25 mL

Print Date: 08/16/2018 3:16:56PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1184206 [VXX32824]
 Blank Spike Lab ID: 1465411
 Date Analyzed: 08/07/2018 17:46

Spike Duplicate ID: LCSD for HBN 1184206 [VXX32824]
 Spike Duplicate Lab ID: 1465412
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1184206006

Results by AK101

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	12.5	11.9	95	12.5	12.1	97	(60-120)	1.80	(< 20)

Surrogates

4-Bromofluorobenzene (surr)	1.25	82.5	83	1.25	80.6	81	(50-150)	2.30	
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Batch Information

Analytical Batch: **VFC14330**
 Analytical Method: **AK101**
 Instrument: **Agilent 7890A PID/FID**
 Analyst: **ST**

Prep Batch: **VXX32824**
 Prep Method: **SW5035A**
 Prep Date/Time: **08/07/2018 08:00**
 Spike Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL
 Dupe Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL

Print Date: 08/16/2018 3:16:58PM

Method Blank

Blank ID: MB for HBN 1783886 [VXX/32830]

Blank Lab ID: 1465529

QC for Samples:

1184206003, 1184206004, 1184206006

Matrix: Soil/Solid (dry weight)

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1,1,2-Tetrachloroethane	10.0U	20.0	6.20	ug/Kg
1,1,1-Trichloroethane	12.5U	25.0	7.80	ug/Kg
1,1,2,2-Tetrachloroethane	6.25U	12.5	3.90	ug/Kg
1,1,2-Trichloroethane	5.00U	10.0	3.10	ug/Kg
1,1-Dichloroethane	12.5U	25.0	7.80	ug/Kg
1,1-Dichloroethene	12.5U	25.0	7.80	ug/Kg
1,1-Dichloropropene	12.5U	25.0	7.80	ug/Kg
1,2,3-Trichlorobenzene	25.0U	50.0	15.0	ug/Kg
1,2,3-Trichloropropane	12.5U	25.0	7.80	ug/Kg
1,2,4-Trichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,2,4-Trimethylbenzene	25.0U	50.0	15.0	ug/Kg
1,2-Dibromo-3-chloropropane	50.0U	100	31.0	ug/Kg
1,2-Dibromoethane	5.00U	10.0	3.10	ug/Kg
1,2-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,2-Dichloroethane	5.00U	10.0	3.10	ug/Kg
1,2-Dichloropropane	5.00U	10.0	3.10	ug/Kg
1,3,5-Trimethylbenzene	12.5U	25.0	7.80	ug/Kg
1,3-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,3-Dichloropropane	5.00U	10.0	3.10	ug/Kg
1,4-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
2,2-Dichloropropane	12.5U	25.0	7.80	ug/Kg
2-Butanone (MEK)	125U	250	78.0	ug/Kg
2-Chlorotoluene	12.5U	25.0	7.80	ug/Kg
2-Hexanone	50.0U	100	31.0	ug/Kg
4-Chlorotoluene	12.5U	25.0	7.80	ug/Kg
4-Isopropyltoluene	50.0U	100	25.0	ug/Kg
4-Methyl-2-pentanone (MIBK)	125U	250	78.0	ug/Kg
Acetone	125U	250	78.0	ug/Kg
Benzene	6.25U	12.5	3.90	ug/Kg
Bromobenzene	12.5U	25.0	7.80	ug/Kg
Bromochloromethane	12.5U	25.0	7.80	ug/Kg
Bromodichloromethane	12.5U	25.0	7.80	ug/Kg
Bromoform	12.5U	25.0	7.80	ug/Kg
Bromomethane	100U	200	62.0	ug/Kg
Carbon disulfide	50.0U	100	31.0	ug/Kg
Carbon tetrachloride	7.18J	12.5	3.90	ug/Kg
Chlorobenzene	12.5U	25.0	7.80	ug/Kg
Chloroethane	100U	200	62.0	ug/Kg

Print Date: 08/16/2018 3:16:59PM



Method Blank

Blank ID: MB for HBN 1783886 [VXX/32830]

Blank Lab ID: 1465529

QC for Samples:

1184206003, 1184206004, 1184206006

Matrix: Soil/Solid (dry weight)

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Chloroform	12.5U	25.0	7.80	ug/Kg
Chloromethane	12.5U	25.0	7.80	ug/Kg
cis-1,2-Dichloroethene	12.5U	25.0	7.80	ug/Kg
cis-1,3-Dichloropropene	6.25U	12.5	3.90	ug/Kg
Dibromochloromethane	12.5U	25.0	7.80	ug/Kg
Dibromomethane	12.5U	25.0	7.80	ug/Kg
Dichlorodifluoromethane	25.0U	50.0	15.0	ug/Kg
Ethylbenzene	12.5U	25.0	7.80	ug/Kg
Freon-113	50.0U	100	31.0	ug/Kg
Hexachlorobutadiene	10.0U	20.0	6.20	ug/Kg
Isopropylbenzene (Cumene)	12.5U	25.0	7.80	ug/Kg
Methylene chloride	50.0U	100	31.0	ug/Kg
Methyl-t-butyl ether	50.0U	100	31.0	ug/Kg
Naphthalene	12.5U	25.0	7.80	ug/Kg
n-Butylbenzene	12.5U	25.0	7.80	ug/Kg
n-Propylbenzene	12.5U	25.0	7.80	ug/Kg
o-Xylene	12.5U	25.0	7.80	ug/Kg
P & M -Xylene	25.0U	50.0	15.0	ug/Kg
sec-Butylbenzene	12.5U	25.0	7.80	ug/Kg
Styrene	12.5U	25.0	7.80	ug/Kg
tert-Butylbenzene	12.5U	25.0	7.80	ug/Kg
Tetrachloroethene	4.40J	12.5	3.90	ug/Kg
Toluene	12.5U	25.0	7.80	ug/Kg
trans-1,2-Dichloroethene	12.5U	25.0	7.80	ug/Kg
trans-1,3-Dichloropropene	6.25U	12.5	3.90	ug/Kg
Trichloroethene	5.44J	10.0	3.10	ug/Kg
Trichlorofluoromethane	25.0U	50.0	15.0	ug/Kg
Vinyl acetate	50.0U	100	31.0	ug/Kg
Vinyl chloride	5.00U	10.0	3.10	ug/Kg
Xylenes (total)	37.5U	75.0	22.8	ug/Kg
Surrogates				
1,2-Dichloroethane-D4 (surr)	111	71-136		%
4-Bromofluorobenzene (surr)	110	55-151		%
Toluene-d8 (surr)	96.6	85-116		%

Print Date: 08/16/2018 3:16:59PM

Method Blank

Blank ID: MB for HBN 1783886 [VXX/32830]
Blank Lab ID: 1465529

Matrix: Soil/Solid (dry weight)

QC for Samples:
1184206003, 1184206004, 1184206006

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
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Batch Information

Analytical Batch: VMS18144
Analytical Method: SW8260C
Instrument: VQA 7890/5975 GC/MS
Analyst: NRO
Analytical Date/Time: 8/7/2018 10:57:00AM

Prep Batch: VXX32830
Prep Method: SW5035A
Prep Date/Time: 8/7/2018 6:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Print Date: 08/16/2018 3:16:59PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1184206 [VXX32830]

Blank Spike Lab ID: 1465530

Date Analyzed: 08/07/2018 12:41

Matrix: Soil/Solid (dry weight)

QC for Samples: 1184206003, 1184206004, 1184206006

Results by SW8260C

Parameter	Blank Spike (ug/Kg)			CL
	Spike	Result	Rec (%)	
1,1,1,2-Tetrachloroethane	750	756	101	(78-125)
1,1,1-Trichloroethane	750	817	109	(73-130)
1,1,2,2-Tetrachloroethane	750	844	113	(70-124)
1,1,2-Trichloroethane	750	836	111	(78-121)
1,1-Dichloroethane	750	757	101	(76-125)
1,1-Dichloroethene	750	809	108	(70-131)
1,1-Dichloropropene	750	817	109	(76-125)
1,2,3-Trichlorobenzene	750	612	82	(66-130)
1,2,3-Trichloropropane	750	804	107	(73-125)
1,2,4-Trichlorobenzene	750	614	82	(67-129)
1,2,4-Trimethylbenzene	750	767	102	(75-123)
1,2-Dibromo-3-chloropropane	750	829	111	(61-132)
1,2-Dibromoethane	750	837	112	(78-122)
1,2-Dichlorobenzene	750	743	99	(78-121)
1,2-Dichloroethane	750	773	103	(73-128)
1,2-Dichloropropane	750	792	106	(76-123)
1,3,5-Trimethylbenzene	750	767	102	(73-124)
1,3-Dichlorobenzene	750	750	100	(77-121)
1,3-Dichloropropane	750	821	109	(77-121)
1,4-Dichlorobenzene	750	759	101	(75-120)
2,2-Dichloropropane	750	817	109	(67-133)
2-Butanone (MEK)	2250	2430	108	(51-148)
2-Chlorotoluene	750	795	106	(75-122)
2-Hexanone	2250	2520	112	(53-145)
4-Chlorotoluene	750	798	106	(72-124)
4-Isopropyltoluene	750	734	98	(73-127)
4-Methyl-2-pentanone (MIBK)	2250	2260	100	(65-135)
Acetone	2250	2570	114	(36-164)
Benzene	750	768	102	(77-121)
Bromobenzene	750	802	107	(78-121)
Bromochloromethane	750	741	99	(78-125)
Bromodichloromethane	750	846	113	(75-127)
Bromoform	750	769	103	(67-132)
Bromomethane	750	748	100	(53-143)

Print Date: 08/16/2018 3:17:00PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1184206 [VXX32830]

Blank Spike Lab ID: 1465530

Date Analyzed: 08/07/2018 12:41

Matrix: Soil/Solid (dry weight)

QC for Samples: 1184206003, 1184206004, 1184206006

Results by SW8260C

Parameter	Blank Spike (ug/Kg)			CL
	Spike	Result	Rec (%)	
Carbon disulfide	1130	1300	115	(63-132)
Carbon tetrachloride	750	783	104	(70-135)
Chlorobenzene	750	775	103	(79-120)
Chloroethane	750	795	106	(59-139)
Chloroform	750	752	100	(78-123)
Chloromethane	750	788	105	(50-136)
cis-1,2-Dichloroethene	750	754	101	(77-123)
cis-1,3-Dichloropropene	750	867	116	(74-126)
Dibromochloromethane	750	795	106	(74-126)
Dibromomethane	750	751	100	(78-125)
Dichlorodifluoromethane	750	739	99	(29-149)
Ethylbenzene	750	757	101	(76-122)
Freon-113	1130	1220	108	(66-136)
Hexachlorobutadiene	750	735	98	(61-135)
Isopropylbenzene (Cumene)	750	732	98	(68-134)
Methylene chloride	750	751	100	(70-128)
Methyl-t-butyl ether	1130	1150	102	(73-125)
Naphthalene	750	730	97	(62-129)
n-Butylbenzene	750	729	97	(70-128)
n-Propylbenzene	750	790	105	(73-125)
o-Xylene	750	739	99	(77-123)
P & M -Xylene	1500	1500	100	(77-124)
sec-Butylbenzene	750	724	97	(73-126)
Styrene	750	778	104	(76-124)
tert-Butylbenzene	750	747	100	(73-125)
Tetrachloroethene	750	794	106	(73-128)
Toluene	750	747	100	(77-121)
trans-1,2-Dichloroethene	750	775	103	(74-125)
trans-1,3-Dichloropropene	750	780	104	(71-130)
Trichloroethene	750	815	109	(77-123)
Trichlorofluoromethane	750	786	105	(62-140)
Vinyl acetate	750	833	111	(50-151)
Vinyl chloride	750	831	111	(56-135)
Xylenes (total)	2250	2240	99	(78-124)

Print Date: 08/16/2018 3:17:00PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1184206 [VXX32830]
 Blank Spike Lab ID: 1465530
 Date Analyzed: 08/07/2018 12:41

Matrix: Soil/Solid (dry weight)

QC for Samples: 1184206003, 1184206004, 1184206006

Results by SW8260C

Parameter	Blank Spike (ug/Kg)			CL
	Spike	Result	Rec (%)	
Surrogates				
1,2-Dichloroethane-D4 (surr)	750	95.3	95	(71-136)
4-Bromofluorobenzene (surr)	750	109	109	(55-151)
Toluene-d8 (surr)	750	101	101	(85-116)

Batch Information

Analytical Batch: **VMS18144**
 Analytical Method: **SW8260C**
 Instrument: **VQA 7890/5975 GC/MS**
 Analyst: **NRO**

Prep Batch: **VXX32830**
 Prep Method: **SW5035A**
 Prep Date/Time: **08/07/2018 06:00**
 Spike Init Wt./Vol.: 750 ug/Kg Extract Vol: 25 mL
 Dupe Init Wt./Vol.: Extract Vol:

Print Date: 08/16/2018 3:17:00PM

Matrix Spike Summary

Original Sample ID: 1189585007
 MS Sample ID: 1465531 MS
 MSD Sample ID: 1465532 MSD

Analysis Date: 08/07/2018 15:49
 Analysis Date: 08/07/2018 13:46
 Analysis Date: 08/07/2018 14:04
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1184206003, 1184206004, 1184206006

Results by SW8260C

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	13.6U	1019	1014	99	1019	1064	105	78-125	5.10	(< 20)
1,1,1-Trichloroethane	16.9U	1019	1038	102	1019	1047	103	73-130	0.82	(< 20)
1,1,2,2-Tetrachloroethane	8.50U	1019	1128	110	1019	1149	113	70-124	2.00	(< 20)
1,1,2-Trichloroethane	6.80U	1019	1074	106	1019	1138	112	78-121	5.50	(< 20)
1,1-Dichloroethane	16.9U	1019	976	96	1019	986	97	76-125	1.00	(< 20)
1,1-Dichloroethene	16.9U	1019	1023	100	1019	1012	99	70-131	1.20	(< 20)
1,1-Dichloropropene	16.9U	1019	1040	102	1019	1045	102	76-125	0.39	(< 20)
1,2,3-Trichlorobenzene	34.0U	1019	804	79	1019	881	86	66-130	9.10	(< 20)
1,2,3-Trichloropropane	16.9U	1019	1085	106	1019	1064	105	73-125	1.50	(< 20)
1,2,4-Trichlorobenzene	16.9U	1019	823	81	1019	884	87	67-129	7.10	(< 20)
1,2,4-Trimethylbenzene	34.0U	1019	1096	107	1019	1117	109	75-123	1.80	(< 20)
1,2-Dibromo-3-chloropropane	68.0U	1019	1064	105	1019	1106	109	61-132	3.90	(< 20)
1,2-Dibromoethane	6.80U	1019	1074	106	1019	1138	111	78-122	5.00	(< 20)
1,2-Dichlorobenzene	16.9U	1019	1010	99	1019	1014	99	78-121	0.37	(< 20)
1,2-Dichloroethane	6.80U	1019	1004	99	1019	1033	101	73-128	2.80	(< 20)
1,2-Dichloropropane	6.80U	1019	1053	103	1019	1085	106	76-123	2.60	(< 20)
1,3,5-Trimethylbenzene	16.9U	1019	1138	112	1019	1160	114	73-124	1.50	(< 20)
1,3-Dichlorobenzene	16.9U	1019	1032	101	1019	1054	103	77-121	2.10	(< 20)
1,3-Dichloropropane	6.80U	1019	1054	103	1019	1106	109	77-121	5.00	(< 20)
1,4-Dichlorobenzene	16.9U	1019	1033	101	1019	1047	103	75-120	1.40	(< 20)
2,2-Dichloropropane	16.9U	1019	1038	102	1019	1043	102	67-133	0.42	(< 20)
2-Butanone (MEK)	170U	3064	3074	101	3064	3234	106	51-148	5.00	(< 20)
2-Chlorotoluene	16.9U	1019	1128	111	1019	1138	112	75-122	0.60	(< 20)
2-Hexanone	68.0U	3064	3170	104	3064	3394	111	53-145	6.80	(< 20)
4-Chlorotoluene	16.9U	1019	1117	109	1019	1117	109	72-124	0.38	(< 20)
4-Isopropyltoluene	68.0U	1019	1128	110	1019	1181	116	73-127	4.80	(< 20)
4-Methyl-2-pentanone (MIBK)	170U	3064	2968	97	3064	3170	104	65-135	6.60	(< 20)
Acetone	170U	3064	3213	105	3064	3298	108	36-164	2.50	(< 20)
Benzene	8.50U	1019	1005	99	1019	1023	100	77-121	1.80	(< 20)
Bromobenzene	16.9U	1019	1096	107	1019	1096	108	78-121	0.65	(< 20)
Bromochloromethane	16.9U	1019	962	94	1019	979	96	78-125	1.70	(< 20)
Bromodichloromethane	16.9U	1019	1128	110	1019	1149	113	75-127	2.50	(< 20)
Bromoform	16.9U	1019	989	97	1019	1031	101	67-132	4.10	(< 20)
Bromomethane	136U	1019	1003	98	1019	977	96	53-143	2.70	(< 20)
Carbon disulfide	68.0U	1532	1681	110	1532	1628	107	63-132	3.00	(< 20)
Carbon tetrachloride	8.50U	1019	994	97	1019	1015	100	70-135	2.10	(< 20)
Chlorobenzene	16.9U	1019	1036	102	1019	1064	105	79-120	2.90	(< 20)

Print Date: 08/16/2018 3:17:01PM



Matrix Spike Summary

Original Sample ID: 1189585007
 MS Sample ID: 1465531 MS
 MSD Sample ID: 1465532 MSD

Analysis Date: 08/07/2018 15:49
 Analysis Date: 08/07/2018 13:46
 Analysis Date: 08/07/2018 14:04
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1184206003, 1184206004, 1184206006

Results by SW8260C

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Chloroethane	136U	1019	1041	102	1019	1023	100	59-139	1.80	(< 20)
Chloroform	16.9U	1019	984	97	1019	1003	98	78-123	1.80	(< 20)
Chloromethane	16.9U	1019	1027	101	1019	991	97	50-136	3.50	(< 20)
cis-1,2-Dichloroethene	16.9U	1019	990	97	1019	985	97	77-123	0.47	(< 20)
cis-1,3-Dichloropropene	8.50U	1019	1149	113	1019	1181	116	74-126	2.70	(< 20)
Dibromochloromethane	16.9U	1019	1026	101	1019	1064	105	74-126	4.00	(< 20)
Dibromomethane	16.9U	1019	973	96	1019	1009	99	78-125	3.50	(< 20)
Dichlorodifluoromethane	34.0U	1019	941	92	1019	922	91	29-149	2.00	(< 20)
Ethylbenzene	16.9U	1019	1015	100	1019	1057	104	76-122	4.10	(< 20)
Freon-113	68.0U	1532	1511	99	1532	1511	99	66-136	0.19	(< 20)
Hexachlorobutadiene	13.6U	1019	1128	111	1019	1138	112	61-135	0.38	(< 20)
Isopropylbenzene (Cumene)	16.9U	1019	1030	101	1019	1096	107	68-134	6.10	(< 20)
Methylene chloride	68.0U	1019	979	96	1019	982	96	70-128	0.29	(< 20)
Methyl-t-butyl ether	68.0U	1532	1489	97	1532	1543	101	73-125	3.40	(< 20)
Naphthalene	16.9U	1019	916	90	1019	953	94	62-129	4.10	(< 20)
n-Butylbenzene	16.9U	1019	1160	114	1019	1202	118	70-128	3.50	(< 20)
n-Propylbenzene	16.9U	1019	1181	115	1019	1191	117	73-125	1.60	(< 20)
o-Xylene	16.9U	1019	1006	99	1019	1052	103	77-123	4.40	(< 20)
P & M -Xylene	34.0U	2043	2011	99	2043	2096	103	77-124	4.20	(< 20)
sec-Butylbenzene	16.9U	1019	1160	114	1019	1191	117	73-126	2.60	(< 20)
Styrene	16.9U	1019	1034	101	1019	1074	106	76-124	4.10	(< 20)
tert-Butylbenzene	16.9U	1019	1138	112	1019	1181	116	73-125	3.40	(< 20)
Tetrachloroethene	8.50U	1019	1037	102	1019	1074	105	73-128	3.60	(< 20)
Toluene	16.9U	1019	978	96	1019	1014	99	77-121	3.70	(< 20)
trans-1,2-Dichloroethene	16.9U	1019	1006	99	1019	1002	98	74-125	0.42	(< 20)
trans-1,3-Dichloropropene	8.50U	1019	1013	99	1019	1052	103	71-130	3.80	(< 20)
Trichloroethene	6.80U	1019	1057	104	1019	1064	105	77-123	1.10	(< 20)
Trichlorofluoromethane	34.0U	1019	1106	108	1019	1012	99	62-140	8.70	(< 20)
Vinyl acetate	68.0U	1019	1106	109	1019	1149	112	50-151	3.00	(< 20)
Vinyl chloride	6.80U	1019	1046	103	1019	1005	99	56-135	3.90	(< 20)
Xylenes (total)	51.0U	3064	3011	99	3064	3149	103	78-124	4.30	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		1019	979	96	1019	993	97	71-136	1.40	
4-Bromofluorobenzene (surr)		1532	1638	107	1532	1649	107	55-151	0.58	
Toluene-d8 (surr)		1019	1026	101	1019	1036	102	85-116	0.96	

Print Date: 08/16/2018 3:17:01PM

Matrix Spike Summary

Original Sample ID: 1189585007
 MS Sample ID: 1465531 MS
 MSD Sample ID: 1465532 MSD

Analysis Date:
 Analysis Date: 08/07/2018 13:46
 Analysis Date: 08/07/2018 14:04
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1184206003, 1184206004, 1184206006

Results by SW8260C

Parameter	Sample	Matrix Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			

Batch Information

Analytical Batch: VMS18144
 Analytical Method: SW8260C
 Instrument: VQA 7890/5975 GC/MS
 Analyst: NRO
 Analytical Date/Time: 8/7/2018 1:46:00PM

Prep Batch: VXX32830
 Prep Method: Vol. Extraction SW8260 Field Extracted L
 Prep Date/Time: 8/7/2018 6:00:00AM
 Prep Initial Wt./Vol.: 43.30g
 Prep Extract Vol: 27.61mL

Print Date: 08/16/2018 3:17:01PM

Method Blank

Blank ID: MB for HBN 1783941 [VXX/32834]
 Blank Lab ID: 1465788

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1184206001, 1184206002, 1184206005

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	0.0500U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	75.4	50-150		%

Batch Information

Analytical Batch: VFC14334
 Analytical Method: AK101
 Instrument: Agilent 7890A PID/FID
 Analyst: ST
 Analytical Date/Time: 8/8/2018 2:01:00PM

Prep Batch: VXX32834
 Prep Method: SW5030B
 Prep Date/Time: 8/8/2018 8:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 08/16/2018 3:17:03PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1184206 [VXX32834]
 Blank Spike Lab ID: 1465791
 Date Analyzed: 08/08/2018 21:14

Spike Duplicate ID: LCSD for HBN 1184206 [VXX32834]
 Spike Duplicate Lab ID: 1465792
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1184206001, 1184206002, 1184206005

Results by AK101

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	1.00	0.967	97	1.00	0.933	93	(60-120)	3.50	(< 20)

Surrogates

4-Bromofluorobenzene (surr)	0.0500	83.5	84	0.0500	82.8	83	(50-150)	0.84	
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Batch Information

Analytical Batch: **VFC14334**
 Analytical Method: **AK101**
 Instrument: **Agilent 7890A PID/FID**
 Analyst: **ST**

Prep Batch: **VXX32834**
 Prep Method: **SW5030B**
 Prep Date/Time: **08/08/2018 08:00**
 Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

Print Date: 08/16/2018 3:17:04PM

Method Blank

Blank ID: MB for HBN 1783948 [VXX/32836]

Blank Lab ID: 1465817

QC for Samples:

1184206003, 1184206004

Matrix: Soil/Solid (dry weight)

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	1.25U	2.50	0.750	mg/Kg
Surrogates				
4-Bromofluorobenzene (surr)	94.1	50-150		%

Batch Information

Analytical Batch: VFC14332

Analytical Method: AK101

Instrument: Agilent 7890 PID/FID

Analyst: ST

Analytical Date/Time: 8/8/2018 10:47:00AM

Prep Batch: VXX32836

Prep Method: SW5035A

Prep Date/Time: 8/8/2018 8:00:00AM

Prep Initial Wt./Vol.: 50 g

Prep Extract Vol: 25 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1184206 [VXX32836]
 Blank Spike Lab ID: 1465818
 Date Analyzed: 08/08/2018 10:11

Spike Duplicate ID: LCSD for HBN 1184206 [VXX32836]
 Spike Duplicate Lab ID: 1465819
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1184206003, 1184206004

Results by AK101

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	12.5	12.8	103	12.5	12.9	103	(60-120)	0.71	(< 20)

Surrogates

4-Bromofluorobenzene (surr)	1.25	99.1	99	1.25	98.5	99	(50-150)	0.59	
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Batch Information

Analytical Batch: **VFC14332**
 Analytical Method: **AK101**
 Instrument: **Agilent 7890 PID/FID**
 Analyst: **ST**

Prep Batch: **VXX32836**
 Prep Method: **SW5035A**
 Prep Date/Time: **08/08/2018 08:00**
 Spike Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL
 Dupe Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL

Print Date: 08/16/2018 3:17:07PM

Method Blank

Blank ID: MB for HBN 1783651 [XXX/40092]

Blank Lab ID: 1464529

QC for Samples:

1184206003, 1184206004

Matrix: Soil/Solid (dry weight)

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	10.0U	20.0	6.20	mg/Kg
Surrogates				
5a Androstane (surr)	104	60-120		%

Batch Information

Analytical Batch: XFC14454

Analytical Method: AK102

Instrument: Agilent 7890B F

Analyst: VDL

Analytical Date/Time: 8/7/2018 11:54:00AM

Prep Batch: XXX40092

Prep Method: SW3550C

Prep Date/Time: 8/3/2018 8:11:09PM

Prep Initial Wt./Vol.: 30 g

Prep Extract Vol: 5 mL

Print Date: 08/16/2018 3:17:09PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1184206 [XXX40092]
 Blank Spike Lab ID: 1464530
 Date Analyzed: 08/07/2018 12:04

Spike Duplicate ID: LCSD for HBN 1184206
 [XXX40092]
 Spike Duplicate Lab ID: 1464531
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1184206003, 1184206004

Results by AK102

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL	
	Spike	Result	Rec (%)	Spike	Result	Rec (%)				
Diesel Range Organics	833	957	115	833	871	105	(75-125)	9.40	(< 20)	
Surrogates										
5a Androstane (surr)	16.7	112	112	16.7	102	102	(60-120)	9.00		

Batch Information

Analytical Batch: **XFC14454**
 Analytical Method: **AK102**
 Instrument: **Agilent 7890B F**
 Analyst: **VDL**

Prep Batch: **XXX40092**
 Prep Method: **SW3550C**
 Prep Date/Time: **08/03/2018 20:11**
 Spike Init Wt./Vol.: 833 mg/Kg Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 833 mg/Kg Extract Vol: 5 mL

Print Date: 08/16/2018 3:17:10PM

Method Blank

Blank ID: MB for HBN 1783651 [XXX/40092]

Blank Lab ID: 1464529

QC for Samples:

1184206003, 1184206004

Matrix: Soil/Solid (dry weight)

Results by AK103

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Residual Range Organics	10.0U	20.0	6.20	mg/Kg
Surrogates				
n-Triacontane-d62 (surr)	100	60-120		%

Batch Information

Analytical Batch: XFC14454

Analytical Method: AK103

Instrument: Agilent 7890B F

Analyst: VDL

Analytical Date/Time: 8/7/2018 11:54:00AM

Prep Batch: XXX40092

Prep Method: SW3550C

Prep Date/Time: 8/3/2018 8:11:09PM

Prep Initial Wt./Vol.: 30 g

Prep Extract Vol: 5 mL

Print Date: 08/16/2018 3:17:11PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1184206 [XXX40092]
 Blank Spike Lab ID: 1464530
 Date Analyzed: 08/07/2018 12:04

Spike Duplicate ID: LCSD for HBN 1184206
 [XXX40092]
 Spike Duplicate Lab ID: 1464531
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1184206003, 1184206004

Results by AK103

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL	
	Spike	Result	Rec (%)	Spike	Result	Rec (%)				
Residual Range Organics	833	931	112	833	837	100	(60-120)	10.60	(< 20)	
Surrogates										
n-Triacontane-d62 (surr)	16.7	102	102	16.7	93.3	93	(60-120)	8.90		

Batch Information

Analytical Batch: **XFC14454**
 Analytical Method: **AK103**
 Instrument: **Agilent 7890B F**
 Analyst: **VDL**

Prep Batch: **XXX40092**
 Prep Method: **SW3550C**
 Prep Date/Time: **08/03/2018 20:11**
 Spike Init Wt./Vol.: 833 mg/Kg Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 833 mg/Kg Extract Vol: 5 mL

Print Date: 08/16/2018 3:17:13PM

Method Blank

Blank ID: MB for HBN 1783655 [XXX/40094]

Blank Lab ID: 1464550

QC for Samples:

1184206001, 1184206002

Matrix: Water (Surface, Eff., Ground)

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	0.300U	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	84.4	60-120		%

Batch Information

Analytical Batch: XFC14453

Analytical Method: AK102

Instrument: Agilent 7890B R

Analyst: CMS

Analytical Date/Time: 8/6/2018 9:02:00AM

Prep Batch: XXX40094

Prep Method: SW3520C

Prep Date/Time: 8/4/2018 8:08:27AM

Prep Initial Wt./Vol.: 250 mL

Prep Extract Vol: 1 mL

Print Date: 08/16/2018 3:17:15PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1184206 [XXX40094]
 Blank Spike Lab ID: 1464551
 Date Analyzed: 08/06/2018 09:11

Spike Duplicate ID: LCSD for HBN 1184206
 [XXX40094]
 Spike Duplicate Lab ID: 1464552
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1184206001, 1184206002

Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	20	18.6	93	20	16.3	82	(75-125)	13.00	(< 20)

Surrogates

5a Androstane (surr)	0.4	105	105	0.4	95.1	95	(60-120)	9.50	
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Batch Information

Analytical Batch: **XFC14453**
 Analytical Method: **AK102**
 Instrument: **Agilent 7890B R**
 Analyst: **CMS**

Prep Batch: **XXX40094**
 Prep Method: **SW3520C**
 Prep Date/Time: **08/04/2018 08:08**
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

Print Date: 08/16/2018 3:17:17PM

Method Blank

Blank ID: MB for HBN 1783655 [XXX/40094]

Blank Lab ID: 1464550

QC for Samples:

1184206001, 1184206002

Matrix: Water (Surface, Eff., Ground)

Results by AK103

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Residual Range Organics	0.207J	0.500	0.150	mg/L
Surrogates				
n-Triacontane-d62 (surr)	88.6	60-120		%

Batch Information

Analytical Batch: XFC14453

Analytical Method: AK103

Instrument: Agilent 7890B R

Analyst: CMS

Analytical Date/Time: 8/6/2018 9:02:00AM

Prep Batch: XXX40094

Prep Method: SW3520C

Prep Date/Time: 8/4/2018 8:08:27AM

Prep Initial Wt./Vol.: 250 mL

Prep Extract Vol: 1 mL

Print Date: 08/16/2018 3:17:17PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1184206 [XXX40094]
 Blank Spike Lab ID: 1464551
 Date Analyzed: 08/06/2018 09:11

Spike Duplicate ID: LCSD for HBN 1184206
 [XXX40094]
 Spike Duplicate Lab ID: 1464552
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1184206001, 1184206002

Results by AK103

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Residual Range Organics	20	20.7	103	20	17.7	89	(60-120)	15.40	(< 20)
Surrogates									
n-Triacontane-d62 (surr)	0.4	106	106	0.4	94.3	94	(60-120)	11.40	

Batch Information

Analytical Batch: **XFC14453**
 Analytical Method: **AK103**
 Instrument: **Agilent 7890B R**
 Analyst: **CMS**

Prep Batch: **XXX40094**
 Prep Method: **SW3520C**
 Prep Date/Time: **08/04/2018 08:08**
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

Method Blank

Blank ID: MB for HBN 1783667 [XXX/40096]

Blank Lab ID: 1464613

QC for Samples:

1184206001, 1184206002

Matrix: Water (Surface, Eff., Ground)

Results by 8270D SIM LV (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1-Methylnaphthalene	0.0250U	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	0.0100U	0.0200	0.00620	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	0.0100U	0.0200	0.00620	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	0.0500U	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-Methylnaphthalene-d10 (surr)	76.8	47-106		%
Fluoranthene-d10 (surr)	101	24-116		%

Batch Information

Analytical Batch: XMS10961
 Analytical Method: 8270D SIM LV (PAH)
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: DSD
 Analytical Date/Time: 8/10/2018 11:37:00AM

Prep Batch: XXX40096
 Prep Method: SW3520C
 Prep Date/Time: 8/5/2018 8:05:04AM
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1184206 [XXX40096]
 Blank Spike Lab ID: 1464614
 Date Analyzed: 08/10/2018 11:58

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1184206001, 1184206002

Results by 8270D SIM LV (PAH)

Blank Spike (ug/L)

Parameter	Spike	Result	Rec (%)	CL
1-Methylnaphthalene	2	1.87	94	(41-115)
2-Methylnaphthalene	2	1.75	88	(39-114)
Acenaphthene	2	1.99	100	(48-114)
Acenaphthylene	2	1.83	92	(35-121)
Anthracene	2	1.71	85	(53-119)
Benzo(a)Anthracene	2	1.88	94	(59-120)
Benzo[a]pyrene	2	1.65	83	(53-120)
Benzo[b]Fluoranthene	2	1.87	94	(53-126)
Benzo[g,h,i]perylene	2	1.66	83	(44-128)
Benzo[k]fluoranthene	2	1.98	99	(54-125)
Chrysene	2	2.08	104	(57-120)
Dibenzo[a,h]anthracene	2	1.53	77	(44-131)
Fluoranthene	2	2.17	109	(58-120)
Fluorene	2	1.72	86	(50-118)
Indeno[1,2,3-c,d] pyrene	2	1.67	84	(48-130)
Naphthalene	2	1.96	98	(43-114)
Phenanthrene	2	1.65	83	(53-115)
Pyrene	2	2.21	111	(53-121)

Surrogates

2-Methylnaphthalene-d10 (surr)	2	87	87	(47-106)
Fluoranthene-d10 (surr)	2	102	102	(24-116)

Batch Information

Analytical Batch: **XMS10961**
 Analytical Method: **8270D SIM LV (PAH)**
 Instrument: **Agilent GC 7890B/5977A SWA**
 Analyst: **DSD**

Prep Batch: **XXX40096**
 Prep Method: **SW3520C**
 Prep Date/Time: **08/05/2018 08:05**
 Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: Extract Vol:

Matrix Spike Summary

Original Sample ID: 1184182006
 MS Sample ID: 1464615 MS
 MSD Sample ID: 1464616 MSD

Analysis Date: 08/10/2018 12:39
 Analysis Date: 08/10/2018 12:59
 Analysis Date: 08/10/2018 13:20
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1184206001, 1184206002

Results by 8270D SIM LV (PAH)

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1-Methylnaphthalene	0.0232U	1.85	1.79	97	1.85	1.67	90	41-115	7.20	(< 20)
2-Methylnaphthalene	0.0232U	1.85	1.67	90	1.85	1.57	85	39-114	5.80	(< 20)
Acenaphthene	0.0232U	1.85	1.8	97	1.85	1.76	95	48-114	2.30	(< 20)
Acenaphthylene	0.0232U	1.85	1.72	93	1.85	1.66	90	35-121	4.00	(< 20)
Anthracene	0.0232U	1.85	1.49	80	1.85	1.44	78	53-119	3.30	(< 20)
Benzo(a)Anthracene	0.0232U	1.85	1.6	87	1.85	1.51	82	59-120	5.80	(< 20)
Benzo(a)pyrene	0.00925U	1.85	1.29	70	1.85	1.23	66	53-120	4.80	(< 20)
Benzo(b)Fluoranthene	0.0232U	1.85	1.34	73	1.85	1.45	78	53-126	7.50	(< 20)
Benzo(g,h,i)perylene	0.0232U	1.85	1.11	60	1.85	1.04	56	44-128	6.40	(< 20)
Benzo(k)fluoranthene	0.0232U	1.85	1.39	75	1.85	1.48	80	54-125	6.30	(< 20)
Chrysene	0.0232U	1.85	1.74	94	1.85	1.74	94	57-120	0.09	(< 20)
Dibenzo(a,h)anthracene	0.00925U	1.85	.988	53	1.85	0.932	50	44-131	5.80	(< 20)
Fluoranthene	0.0232U	1.85	1.94	105	1.85	1.81	98	58-120	6.70	(< 20)
Fluorene	0.0232U	1.85	1.64	89	1.85	1.52	82	50-118	7.30	(< 20)
Indeno[1,2,3-c,d] pyrene	0.0232U	1.85	1.06	57	1.85	0.997	54	48-130	5.90	(< 20)
Naphthalene	0.0463U	1.85	1.92	104	1.85	1.79	97	43-114	6.80	(< 20)
Phenanthrene	0.0232U	1.85	1.49	80	1.85	1.37	74	53-115	8.60	(< 20)
Pyrene	0.0232U	1.85	2.02	109	1.85	1.93	104	53-121	5.00	(< 20)
Surrogates										
2-Methylnaphthalene-d10 (surr)		1.85	1.67	90	1.85	1.57	85	47-106	6.30	
Fluoranthene-d10 (surr)		1.85	1.84	99	1.85	1.68	91	24-116	9.00	

Batch Information

Analytical Batch: XMS10961
 Analytical Method: 8270D SIM LV (PAH)
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: DSD
 Analytical Date/Time: 8/10/2018 12:59:00PM

Prep Batch: XXX40096
 Prep Method: 3520 Liq/Liq Ext for 8270 PAH SIM LV
 Prep Date/Time: 8/5/2018 8:05:04AM
 Prep Initial Wt./Vol.: 270.00mL
 Prep Extract Vol: 1.00mL

Method Blank

Blank ID: MB for HBN 1783688 [XXX/40104]
 Blank Lab ID: 1464757

Matrix: Soil/Solid (dry weight)

QC for Samples:
 1184206003, 1184206004

Results by 8270D SIM (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1-Methylnaphthalene	12.5U	25.0	6.25	ug/Kg
2-Methylnaphthalene	12.5U	25.0	6.25	ug/Kg
Acenaphthene	12.5U	25.0	6.25	ug/Kg
Acenaphthylene	12.5U	25.0	6.25	ug/Kg
Anthracene	12.5U	25.0	6.25	ug/Kg
Benzo(a)Anthracene	12.5U	25.0	6.25	ug/Kg
Benzo[a]pyrene	12.5U	25.0	6.25	ug/Kg
Benzo[b]Fluoranthene	12.5U	25.0	6.25	ug/Kg
Benzo[g,h,i]perylene	12.5U	25.0	6.25	ug/Kg
Benzo[k]fluoranthene	12.5U	25.0	6.25	ug/Kg
Chrysene	12.5U	25.0	6.25	ug/Kg
Dibenzo[a,h]anthracene	12.5U	25.0	6.25	ug/Kg
Fluoranthene	12.5U	25.0	6.25	ug/Kg
Fluorene	12.5U	25.0	6.25	ug/Kg
Indeno[1,2,3-c,d] pyrene	12.5U	25.0	6.25	ug/Kg
Naphthalene	10.0U	20.0	5.00	ug/Kg
Phenanthrene	12.5U	25.0	6.25	ug/Kg
Pyrene	12.5U	25.0	6.25	ug/Kg
Surrogates				
2-Methylnaphthalene-d10 (surr)	90.6	58-103		%
Fluoranthene-d10 (surr)	98.8	54-113		%

Batch Information

Analytical Batch: XMS10978
 Analytical Method: 8270D SIM (PAH)
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: DSD
 Analytical Date/Time: 8/16/2018 12:25:00AM

Prep Batch: XXX40104
 Prep Method: SW3550C
 Prep Date/Time: 8/6/2018 11:36:41AM
 Prep Initial Wt./Vol.: 22.5 g
 Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1184206 [XXX40104]

Blank Spike Lab ID: 1464758

Date Analyzed: 08/16/2018 00:46

Matrix: Soil/Solid (dry weight)

QC for Samples: 1184206003, 1184206004

Results by 8270D SIM (PAH)

Blank Spike (ug/Kg)

Parameter	Spike	Result	Rec (%)	CL
1-Methylnaphthalene	111	104	94	(43-111)
2-Methylnaphthalene	111	94.9	85	(39-114)
Acenaphthene	111	113	101	(44-111)
Acenaphthylene	111	104	93	(39-116)
Anthracene	111	100	90	(50-114)
Benzo(a)Anthracene	111	104	94	(54-122)
Benzo[a]pyrene	111	104	94	(50-125)
Benzo[b]Fluoranthene	111	110	99	(53-128)
Benzo[g,h,i]perylene	111	111	100	(49-127)
Benzo[k]fluoranthene	111	107	96	(56-123)
Chrysene	111	112	101	(57-118)
Dibenzo[a,h]anthracene	111	110	99	(50-129)
Fluoranthene	111	114	102	(55-119)
Fluorene	111	102	92	(47-114)
Indeno[1,2,3-c,d] pyrene	111	110	99	(49-130)
Naphthalene	111	97.9	88	(38-111)
Phenanthrene	111	98.3	89	(49-113)
Pyrene	111	117	105	(55-117)

Surrogates

2-Methylnaphthalene-d10 (surr)	111	86.4	86	(58-103)
Fluoranthene-d10 (surr)	111	92.9	93	(54-113)

Batch Information

Analytical Batch: XMS10978

Analytical Method: 8270D SIM (PAH)

Instrument: Agilent GC 7890B/5977A SWA

Analyst: DSD

Prep Batch: XXX40104

Prep Method: SW3550C

Prep Date/Time: 08/06/2018 11:36

Spike Init Wt./Vol.: 111 ug/Kg Extract Vol: 5 mL

Dupe Init Wt./Vol.: Extract Vol:

Matrix Spike Summary

Original Sample ID: 1184206003
 MS Sample ID: 1464759 MS
 MSD Sample ID: 1464760 MSD

Analysis Date: 08/16/2018 3:09
 Analysis Date: 08/16/2018 3:29
 Analysis Date: 08/16/2018 3:50
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1184206003, 1184206004

Results by 8270D SIM (PAH)

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1-Methylnaphthalene	207	134	338	97	137	367	117 *	43-111	8.20	(< 20)
2-Methylnaphthalene	227	134	345	88	137	376	109	39-114	8.60	(< 20)
Acenaphthene	15.3U	134	148	110	137	145	107	44-111	1.50	(< 20)
Acenaphthylene	15.3U	134	132	98	137	129	95	39-116	2.10	(< 20)
Anthracene	15.3U	134	132	98	137	132	97	50-114	0.00	(< 20)
Benzo(a)Anthracene	15.3U	134	128	95	137	125	91	54-122	2.80	(< 20)
Benzo(a)pyrene	15.3U	134	137	102	137	128	94	50-125	6.10	(< 20)
Benzo(b)Fluoranthene	15.3U	134	138	102	137	136	100	53-128	1.50	(< 20)
Benzo(g,h,i)perylene	15.3U	134	139	104	137	133	97	49-127	4.90	(< 20)
Benzo(k)fluoranthene	15.3U	134	141	104	137	134	98	56-123	4.70	(< 20)
Chrysene	15.3U	134	141	104	137	128	94	57-118	9.10	(< 20)
Dibenzo(a,h)anthracene	15.3U	134	147	109	137	134	99	50-129	8.20	(< 20)
Fluoranthene	15.3U	134	136	101	137	132	97	55-119	2.50	(< 20)
Fluorene	16.4J	134	145	96	137	143	92	47-114	2.10	(< 20)
Indeno[1,2,3-c,d] pyrene	15.3U	134	142	106	137	131	96	49-130	8.10	(< 20)
Naphthalene	95.2	134	202	80	137	234	102	38-111	14.60	(< 20)
Phenanthrene	15.3U	134	131	97	137	138	101	49-113	6.10	(< 20)
Pyrene	15.3U	134	142	105	137	136	99	55-117	4.30	(< 20)
Surrogates										
2-Methylnaphthalene-d10 (surr)		134	123	91	137	118	86	58-103	4.50	
Fluoranthene-d10 (surr)		134	126	94	137	118	86	54-113	6.80	

Batch Information

Analytical Batch: XMS10978
 Analytical Method: 8270D SIM (PAH)
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: DSD
 Analytical Date/Time: 8/16/2018 3:29:00AM

Prep Batch: XXX40104
 Prep Method: Sonication Extr Soil 8270 PAH SIM 5ml
 Prep Date/Time: 8/6/2018 11:36:41AM
 Prep Initial Wt./Vol.: 22.90g
 Prep Extract Vol: 5.00mL

Print Date: 08/16/2018 3:17:26PM



SGS North America Inc.
CHAIN OF CUSTODY RECORD

1184206



REVIEWED S.D

CLIENT: DNA Environmental, LLC					Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.										Page <u>1</u> of <u>1</u>						
CONTACT: Dan Frank 907-350-4897					Section 3		Preservative														
PROJECT NAME: City of McGrath					PROJECT/ PWSID/ PERMIT#:		#		None MeOH HCl HCl HCl None												
REPORTS TO: Dan Frank					E-MAIL: daniel.frank@dnaenviro.com		CONTAINERS		DRO/RRO GRO/VOC GRO VOC DRO/Rro PAHs												
INVOICE TO: DNA Environmental					QUOTE #:		MI (Multi-incremental)														
P.O. #: N/A																					
RESERVED for lab use	SAMPLE IDENTIFICATION		DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	#	Grab	DRO/RRO	GRO/VOC	GRO	VOC	DRO/Rro	PAHs							REMARKS/LOC ID	
DA-J	18-MCG-101-GW		8/2/18	1500		10	Grab			X	X	X	X								
2A-J	18-MCG-102-GW		8/2/18	1530		10	Grab			X	X	X	X								
3A-B	18-MCG-01-SO		8/1/18	1145		2	Grab	X	X				X								
4A-B	18-MCG-02-SO		8/1/18	1245		2	Grab	X	X				X								
5A-C																					
6A																					
Relinquished By: (1)			Date	Time	Received By:			Section 4		DOD Project? Yes No		Data Deliverable Requirements:									
			8/3/18					Cooler ID:													
Relinquished By: (2)			Date	Time	Received By:			Requested Turnaround Time and/or Special Instructions:													
								standard													
Relinquished By: (3)			Date	Time	Received By:			Temp Blank °C:			Chain of Custody Seal: (Circle)										
								-1.1 D26			INTACT BROKEN ABSENT										
Relinquished By: (4)			Date	Time	Received For Laboratory By:			or Ambient []			Delivery Method: Hand Delivery [X] Commerical Delivery []										
			8/3/18	13:15				[]													



e-Sample Receipt Form

SGS Workorder #:

1184206



1 1 8 4 2 0 6

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements	<input checked="" type="checkbox"/>	Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	<input type="text" value="n/a"/>	
COC accompanied samples?	<input checked="" type="checkbox"/>	
<input type="text" value="n/a"/> **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	<input type="text" value="no"/>	Cooler ID: 1 @ -1.1 °C Therm. ID: D26
	<input type="text" value="n/a"/>	Cooler ID: @ °C Therm. ID:
	<input type="text" value="n/a"/>	Cooler ID: @ °C Therm. ID:
	<input type="text" value="n/a"/>	Cooler ID: @ °C Therm. ID:
	<input type="text" value="n/a"/>	Cooler ID: @ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?	<input type="text" value="n/a"/>	
If <0°C, were sample containers ice free?	<input checked="" type="checkbox"/>	
If samples received <u>without</u> a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled".		
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.
Were samples received within holding time?	<input checked="" type="checkbox"/>	
Do samples match COC ** (i.e., sample IDs, dates/times collected)?	<input type="text" value="no"/>	see below
**Note: If times differ <1hr, record details & login per COC.		
Were analyses requested unambiguous? (i.e., method is specified for analyses with >1 option for analysis)	<input checked="" type="checkbox"/>	
Were proper containers (type/mass/volume/preservative***) used?	<input checked="" type="checkbox"/>	<input type="text" value="n/a"/> ***Exemption permitted for metals (e.g.200.8/6020A).
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	<input checked="" type="checkbox"/>	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	<input checked="" type="checkbox"/>	
Were all soil VOAs field extracted with MeOH+BFB?	<input checked="" type="checkbox"/>	
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		
Times/Sample IDs of sample 1 and times of sample 2 do not match COC - Logging in using times on COC and in order of earliest collection times.		

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ATTACHMENT 6

ADEC Checklist and Data Quality Report

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Date: 9/5/2018
Project name: City of McGrath Water Treatment Plant
Laboratory: SGS North America, Inc. - Anchorage
Sample Delivery Groups: 1184206
ADS Project Number: 10083.01
Reviewed by: Alex Thompson
Title: Chemist
Approved by: Rodney Guritz
Title: Principal Chemist

To: Mr. Dan Frank
DNA Environmental Consultants, LLC
111 W 9th Ave.
Anchorage, AK, 99501

Data Quality Memorandum

This memorandum summarizes the findings of data quality review conducted by Arctic Data Services, LLC (ADS) for the above-referenced project data. Precision, accuracy, sensitivity, representativeness, comparability, and completeness of the data was evaluated by reviewing laboratory-supplied quality assurance/quality control (QA/QC) information as well as conducting independent QA/QC checks on the data. The review was conducted in accordance with ADS *Standard Operating Procedures for Stage 2A Data Validation v1.0* (ADS, 2017) which meet requirements for data review from the Alaska Department of Environmental Conservation (ADEC) Technical Memorandum on Data Quality Objectives, Checklists, Quality Assurance Requirements for Laboratory Data, and Sample Handling (2017). In the absence of project-specific measurement performance criteria or measurement quality objectives (MQOs), laboratory QC sample recoveries and RPDs were compared to laboratory control limits. Field-duplicate RPDs were compared to ADEC-recommended MQOs.

An ADEC data review checklist was completed for the one sample delivery group (SDG), and is attached to this memo. A summary of qualified data (Table 1) and an analytical sensitivity summary (Table 2) are also attached. In the event a sample result was affected by more than one sample-handling anomaly or QC failure, a determination was made as to which qualifier is most conservative, and only that qualifier is retained for reporting. The following sections provide a summary of our findings for each QA/QC element reviewed; anomalies that had no impact to data quality are discussed in the ADEC data review checklist, and are not further described herein.

Sample Analysis Summary

The following summarizes sample collection and analysis for the project sample data reviewed in this data quality memorandum (DQM). Field duplicates are included in the sample tally below.

A total of 2 soil samples were analyzed for:

- Volatile organic compounds (VOCs) by EPA SW-846 Method 8260C.
- Gasoline range organics (GRO) by Alaska Method AK101
- Diesel range organics (DRO) by Alaska Method AK102
- Residual range organics (RRO) by Alaska Method AK103
- Polycyclic aromatic hydrocarbons (PAHs) by EPA SW-846 Method 8270D SIM.

A total of 2 groundwater samples were analyzed by the same methods.

Sample Preservation, Handling, Custody, and Holding Times

Sample receipt forms were reviewed to check that samples were received in good condition, properly preserved, and within the required temperature range. Chain of custody forms were reviewed to confirm that custody was not breached during sample handling. Dates of sample collection, preparation, and analysis were compared to check that method holding times were not exceeded.

The laboratory received the sample cooler below the acceptable temperature range at -1.1 °C, however no ice was observed in water samples so no data are considered affected. There were no other sample preservation, handling, custody, or holding times discrepancies or failures that affected data quality for this project.

Analytical Sensitivity

Limits of quantitation (LOQs) and limits of detection (LODs) for soil samples were compared to the applicable ADEC soil cleanup levels (SCLs) to determine whether the required minimum detection levels had been met for the project. LOQs and LODs for groundwater samples were compared to the ADEC groundwater cleanup levels (GCLs).

A total of 17 VOC analytes had LOQs that exceeded the most stringent SCLs for both soil samples; for 14 of these analytes, LODs also exceeded the most stringent SCL. Refer to Table 2 for details. The VOC analyte 1,2,3-trichloropropane had LODs and LOQs that exceeded the ADEC GCLs for both groundwater samples.

Results for analytes where the LOD exceeded the SCLs or GCLs should be used with caution, and cannot be used to rule out the presence of that analyte above cleanup levels.

Method Blanks

The laboratory analyzed and reported a method blank for each preparatory batch, to check for laboratory-based sample contamination.

RRO was detected below the LOQ in the method blank for the water AK103 analysis. RRO was detected in both associated groundwater samples, 18-MCG-101-GW and 18-MCG-102-GW. RRO results for these samples are flagged 'UB' at the LOQ, indicating that the detection may be attributable to laboratory-based contamination.

Trip Blanks

Two trip blanks were submitted, one each with the soil and groundwater samples, to check for cross-contamination of samples during sampling, shipment, or storage. The trip blanks were not listed on the COC, but were analyzed with the project samples.

Chloromethane was detected below the LOQ in the water trip blank; however, chloromethane was not detected in any associated groundwater project samples, so no results are affected. There were no trip blank detections that affected data quality for this project.

Laboratory Control Samples

The laboratory analyzed and reported a laboratory control sample (LCS) for each preparatory batch, to assess laboratory extraction efficiency and analytical accuracy. In some cases, LCS duplicates (LCSDs) were used to assess analytical precision. LCS and LCSD recovery information and LCS/LCSD RPD information (where available) were reviewed.

There were no LCS/LCSD recovery or RPD failures affecting data quality for this project.

Matrix Spike Samples

In addition to the LCS, the laboratory analyzed and reported matrix spike (MS) and MS duplicate (MSD) samples for one or more preparatory batch, to check for potential matrix interference. MS/MSD recovery and RPDs were evaluated only if the parent sample (the sample spiked for the MS/MSD) was a project sample.

There are no MS/MSD recovery failures affecting data quality for this project; see checklist for details.

Surrogate Recovery

Samples submitted for organic compound analyses were spiked with analyte surrogates to evaluate extraction efficiency and to check for matrix interference. Surrogate recoveries were reviewed for each project sample and analysis.

There were no surrogate recovery failures affecting data quality for this project.

Field Duplicates

Field duplicate samples were collected for groundwater and soil samples. The field-duplicate collection frequency met the required minimum frequency of 10%. RPDs between field-duplicate results were calculated where at least one of the results was quantitatively detected (above the limit of quantitation). In cases where one result was above the LOQ but the other result was not detected, an RPD was calculated using the LOQ for the non-detect result.

A number of RPDs for groundwater field duplicate sample results were above the MQO of 30%. Affected analytes include the following PAHs: 1-methylnaphthalene; 2-methylnaphthalene; acenaphthene; naphthalene (by 8260C and 8270D SIM); and phenanthrene. Affected results are flagged 'J' indicating the results are estimated, due to poor analytical precision, for the primary and field duplicate samples.

All soil field-duplicate sample RPDs met the MQO of 50%, where calculable.

Other QC Anomalies

The laboratory noted no other QC anomalies affecting data quality or usability.

Conclusions

There were a number of VOC analytes that lacked analytical sensitivity; these results should not be used to rule out potential soil or groundwater contamination by these compounds. Two data flags were applied due to a method blank detection of RRO; impact to data usability was relatively minor as the results are still significantly below GCLs. Ten data flags were applied to PAH analyte results for groundwater samples due to field duplicate RPD failures, indicating poor analytical precision of the affected analytes. Effect to data usability is minimal for most of the analytes, as results are significantly below relevant PALs. 1-Methylnaphthalene results are close to the GCL and should be used with caution. However, overall precision, accuracy, sensitivity, representativeness, comparability, and completeness of the dataset were deemed acceptable, and the data are usable for the purposes of this project as qualified.

Limitations

Our review was based solely on information provided by the analytical laboratory in the laboratory reports for the SDGs reviewed. We did not review instrument-level QC elements, such as calibration verification or internal standard response, except to the extent that the laboratory identified instrument-level anomalies in the case narrative. We did not conduct independent validation of the data (e.g. recalculating results based on instrument responses) or review any raw chemical data (e.g. chromatograms).

The user of this data quality memo is solely responsible for applying the flags discussed above and contained in the individual ADEC data review checklists listed below.

Attachments:

ADEC Data Review Checklists: 1184206

Table 1 – Summary of Qualified Data

Table 2 – Analytical Sensitivity Summary

Table 1
Summary of Qualified Data
City of McGrath
Data Quality Memorandum

Sample ID	Matrix	Method	Analyte	Units	DL	LOD	LOQ	Result	Lab Flags	Original Result	QC Flags	Note	Final Qualified Result
18-MCG-101-GW	Groundwater	8260C	Naphthalene	ug/L	0.31	0.5	1	65.1		65.1	J	2	65.1 J
18-MCG-101-GW	Groundwater	8270DSIM	1-Methylnaphthalene	ug/L	0.0762	0.127	0.254	18.9		18.9	J	2	18.9 J
18-MCG-101-GW	Groundwater	8270DSIM	2-Methylnaphthalene	ug/L	0.0762	0.127	0.254	21.4		21.4	J	2	21.4 J
18-MCG-101-GW	Groundwater	8270DSIM	Acenaphthene	ug/L	0.0152	0.0254	0.0508	0.18		0.18	J	2	0.180 J
18-MCG-101-GW	Groundwater	8270DSIM	Naphthalene	ug/L	0.158	0.254	0.508	33.2		33.2	J	2	33.2 J
18-MCG-101-GW	Groundwater	8270DSIM	Phenanthrene	ug/L	0.0152	0.0254	0.0508	0.0697		0.0697	J	2	0.0697 J
18-MCG-101-GW	Groundwater	AK103	Residual Range Organics	mg/L	0.15	0.25	0.5	0.451	J	0.451 J	UB	1	0.500 UB
18-MCG-102-GW	Groundwater	8260C	Naphthalene	ug/L	0.31	0.5	1	65.6		65.6	J	2	65.6 J
18-MCG-102-GW	Groundwater	8270DSIM	1-Methylnaphthalene	ug/L	0.164	0.274	0.548	27.3		27.3	J	2	27.3 J
18-MCG-102-GW	Groundwater	8270DSIM	2-Methylnaphthalene	ug/L	0.164	0.274	0.548	29.6		29.6	J	2	29.6 J
18-MCG-102-GW	Groundwater	8270DSIM	Acenaphthene	ug/L	0.0164	0.0274	0.0548	0.247		0.247	J	2	0.247 J
18-MCG-102-GW	Groundwater	8270DSIM	Naphthalene	ug/L	0.34	0.55	1.1	50.6		50.6	J	2	50.6 J
18-MCG-102-GW	Groundwater	8270DSIM	Phenanthrene	ug/L	0.0164	0.0274	0.0548	0.107		0.107	J	2	0.107 J
18-MCG-102-GW	Groundwater	AK103	Residual Range Organics	mg/L	0.163	0.272	0.543	0.491	J	0.491 J	UB	1	0.543 UB

Table 1
Summary of Qualified Data
City of McGrath
Data Quality Memorandum

Arctic Data Services, LLC

Notes

- 1 Method blank detection
- 2 Primary/duplicate RPD failure

- ug/L micrograms per liter
- mg/L milligrams per liter
- DL Detection limit
- LOD Limit of Detection
- LOQ Limit of Quantitation
- QC quality control

Flag definitions

- J Estimated concentration; analyte was detected between the DL and LOQ, or was affected by QC failures (see above).
- UB The analyte was detected; however, the detection is attributable to method blank contamination and should be treated as not detected.

Table 2 - Analytical Sensitivity Summary
City of McGrath
Data Quality Memorandum

Sample ID	Matrix	Method	Analyte	CAS	Units	DL	LOD	LOQ	Lab Flag	PAL ¹²
18-MCG-01-SO	Soil	8260C	1,1,1,2-Tetrachloroethane	630-20-6	µg/kg	14	22.6 *	45.1 *	ND	22
18-MCG-01-SO	Soil	8260C	1,1,2,2-Tetrachloroethane	79-34-5	µg/kg	8.8 *	14.1 *	28.2 *	ND	3
18-MCG-01-SO	Soil	8260C	1,1,2-Trichloroethane	79-00-5	µg/kg	7 *	11.3 *	22.6 *	ND	1.4
18-MCG-01-SO	Soil	8260C	1,2,3-Trichloropropane	96-18-4	µg/kg	17.6 *	28.2 *	56.4 *	ND	0.031
18-MCG-01-SO	Soil	8260C	1,2-Dibromoethane	106-93-4	µg/kg	7 *	11.3 *	22.6 *	ND	0.24
18-MCG-01-SO	Soil	8260C	1,2-Dichloroethane	107-06-2	µg/kg	7 *	11.3 *	22.6 *	ND	5.5
18-MCG-01-SO	Soil	8260C	1,2-Dichloropropane	78-87-5	µg/kg	7	11.3	22.6 *	ND	16
18-MCG-01-SO	Soil	8260C	1,4-Dichlorobenzene	106-46-7	µg/kg	17.6	28.2	56.4 *	ND	37
18-MCG-01-SO	Soil	8260C	2-Hexanone	591-78-6	µg/kg	70	113 *	226 *	ND	110
18-MCG-01-SO	Soil	8260C	Bromodichloromethane	75-27-4	µg/kg	17.6 *	28.2 *	56.4 *	ND	4.3
18-MCG-01-SO	Soil	8260C	Bromomethane	74-83-9	µg/kg	140 *	226 *	451 *	ND	24
18-MCG-01-SO	Soil	8260C	Carbon tetrachloride	56-23-5	µg/kg	8.8	14.1	28.2 *	ND	21
18-MCG-01-SO	Soil	8260C	Chloroform	67-66-3	µg/kg	17.6 *	28.2 *	56.4 *	ND	7.1
18-MCG-01-SO	Soil	8260C	Dibromochloromethane	124-48-1	µg/kg	17.6 *	28.2 *	56.4 *	ND	2.7
18-MCG-01-SO	Soil	8260C	Hexachlorobutadiene	87-68-3	µg/kg	14	22.6 *	45.1 *	ND	20
18-MCG-01-SO	Soil	8260C	Trichloroethene	79-01-6	µg/kg	7	11.3 *	22.6 *	ND	11
18-MCG-01-SO	Soil	8260C	Vinyl chloride	75-01-4	µg/kg	7 *	11.3 *	22.6 *	ND	0.8
18-MCG-02-SO	Soil	8260C	1,1,1,2-Tetrachloroethane	630-20-6	µg/kg	13.8	22.3 *	44.6 *	ND	22
18-MCG-02-SO	Soil	8260C	1,1,2,2-Tetrachloroethane	79-34-5	µg/kg	8.7 *	13.9 *	27.9 *	ND	3
18-MCG-02-SO	Soil	8260C	1,1,2-Trichloroethane	79-00-5	µg/kg	6.92 *	11.2 *	22.3 *	ND	1.4
18-MCG-02-SO	Soil	8260C	1,2,3-Trichloropropane	96-18-4	µg/kg	17.4 *	27.9 *	55.8 *	ND	0.031
18-MCG-02-SO	Soil	8260C	1,2-Dibromoethane	106-93-4	µg/kg	6.92 *	11.2 *	22.3 *	ND	0.24
18-MCG-02-SO	Soil	8260C	1,2-Dichloroethane	107-06-2	µg/kg	6.92 *	11.2 *	22.3 *	ND	5.5
18-MCG-02-SO	Soil	8260C	1,2-Dichloropropane	78-87-5	µg/kg	6.92	11.2	22.3 *	ND	16
18-MCG-02-SO	Soil	8260C	1,4-Dichlorobenzene	106-46-7	µg/kg	17.4	27.9	55.8 *	ND	37
18-MCG-02-SO	Soil	8260C	2-Hexanone	591-78-6	µg/kg	69.2	112 *	223 *	ND	110
18-MCG-02-SO	Soil	8260C	Bromodichloromethane	75-27-4	µg/kg	17.4 *	27.9 *	55.8 *	ND	4.3
18-MCG-02-SO	Soil	8260C	Bromomethane	74-83-9	µg/kg	138 *	223 *	446 *	ND	24
18-MCG-02-SO	Soil	8260C	Carbon tetrachloride	56-23-5	µg/kg	8.7	13.9	27.9 *	ND	21
18-MCG-02-SO	Soil	8260C	Chloroform	67-66-3	µg/kg	17.4 *	27.9 *	55.8 *	ND	7.1
18-MCG-02-SO	Soil	8260C	Dibromochloromethane	124-48-1	µg/kg	17.4 *	27.9 *	55.8 *	ND	2.7

Table 2 - Analytical Sensitivity Summary
City of McGrath
Data Quality Memorandum

Arctic Data Services, LLC

Sample ID	Matrix	Method	Analyte	CAS	Units	DL	LOD	LOQ	Lab Flag	PAL ¹²
18-MCG-02-SO	Soil	8260C	Hexachlorobutadiene	87-68-3	µg/kg	13.8	22.3 *	44.6 *	ND	20
18-MCG-02-SO	Soil	8260C	Trichloroethene	79-01-6	µg/kg	6.92	11.2 *	22.3 *	ND	11
18-MCG-02-SO	Soil	8260C	Vinyl chloride	75-01-4	µg/kg	6.92 *	11.2 *	22.3 *	ND	0.8
18-MCG-101-GW	Groundwater	8260C	1,2,3-Trichloropropane	96-18-4	µg/L	0.31 *	0.5 *	1 *	ND	0.0075
18-MCG-102-GW	Groundwater	8260C	1,2,3-Trichloropropane	96-18-4	µg/L	0.31 *	0.5 *	1 *	ND	0.0075

**Table 2 - Analytical Sensitivity Summary
City of McGrath
Data Quality Memorandum**

Notes

¹ Soil PALs are listed are the most stringent from the following sources:

Alaska Department of Environmental Conservation Migration to Groundwater Soil Cleanup Levels (November 2017)

Alaska Department of Environmental Under 40-Inch Human Health Soil Cleanup Levels (November 2017)

² Groundwater PALs are listed from the following sources:

Alaska Department of Environmental Conservation Groundwater Cleanup Levels (November 2017)

µg/L micrograms per liter

µg/kg micrograms per kilogram

* DL or MRL exceeds the PAL

CAS Chemical Abstract Service number

DL Detection Limit

LOQ Limit of Quantitation

LOD Limit of Detection

ND Not Detected

PAL Project Action Limit

SDG Sample Delivery Group

NA Not Applicable

Laboratory Data Review Checklist

Completed by:

Alex Thompson

Title:

Chemist

Date:

August 23rd, 2018

CS Report Name:

City of McGrath Water Treatment Plant

Report Date:

September 2018

Consultant Firm:

Arctic Data Services, LLC on behalf of DNA Environmental Consultants, LLC

Laboratory Name:

SGS North America – Anchorage, Alaska

Laboratory Report Number:

1184206

ADEC File Number:

2612.38.003

Hazard Identification Number

1568

1. Laboratory

- a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes No NA 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 Comments:

All samples were received and analyzed by SGS North America, Inc. in Anchorage, AK.

2. Chain of Custody (COC)

- a. COC information completed, signed, and dated (including released/received by)?

Yes No NA Comments:

Trip blank samples are not listed in the COC, although they were submitted and analyzed. Matrix type is not listed on the COC; refer to sample names (-GW, -SO) for matrix type.

- b. Correct analyses requested?

Yes No NA Comments:

3. Laboratory Sample Receipt Documentation

- a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes No NA Comments:

A single cooler was hand delivered to SGS Anchorage, and was received below the temperature range at -1.1 °C. No ice was present in sample containers, so no data are considered affected.

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

Yes No NA Comments:

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

Yes No NA Comments:

Samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No NA Comments:

Samples were received below the acceptable temperature range; see above. In addition, there appears to have been an issue with samples label times and IDs not matching the COC. The laboratory logged times from the COC. No data were considered affected.

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

Comments:

Data quality and usability were not affected.

4. Case Narrative

a. Present and understandable?

Yes No NA Comments:

b. Discrepancies, errors or QC failures identified by the lab?

Yes No NA Comments:

The laboratory documented a single QC anomaly that is addressed in the following sections of the checklist. The laboratory did not document any instrument-level QC failures.

c. Were all corrective actions documented?

Yes No NA Comments:

No corrective actions were performed.

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

Comments:

The case narrative makes no conclusions regarding data quality or usability.

5. Sample Results

a. Correct analyses performed/reported as requested on COC?

Yes No NA Comments:

b. All applicable holding times met?

Yes No NA Comments:

c. All soils reported on a dry weight basis?

Yes No NA Comments:

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes No NA Comments:

Soil sample LODs and LOQs were compared to ADEC Method Two under-40-inch zone human health soil cleanup levels (SCLs) and migration to groundwater SCLs. Groundwater LODs and LOQs were compared to ADEC Table C groundwater cleanup levels. A number of VOC analyte LODs and LOQs exceeded the relevant PALs for both soil and water samples. See the attached Analytical Sensitivity Summary table for a list of analyte LODs and LOQs that exceeded project PALs.

e. Data quality or usability affected?

Comments:

Data quality was not affected; however, results where the analyte was not detected and the LOD exceeds the PAL should not be used to rule out the potential presence of that analyte above the PAL.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis, and 20 samples?

Yes No NA Comments:

ii. All method blank results less than limit of quantitation (LOQ)?

Yes No NA Comments:

However, carbon tetrachloride, tetrachloroethene, and trichloroethene were detected below the LOQ in the method blank for soil VOC (8260C) analysis. None of these analytes were detected in associated project samples, so no results were affected. RRO was detected in the method blank for water AK103 analysis.

iii. If above LOQ, what samples are affected?

Comments:

RRO was detected below the LOQ in both ground water samples, 18-MCG-101-GW and 18-MCG-102-GW. RRO results for these samples will be flagged 'UB' at the LOQ, indicating that the detection may be attributable to laboratory-based contamination.

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

Yes No NA Comments:

Samples were flagged 'J' as estimated by the laboratory. 'UB' QC flags will be applied to the affected samples.

v. Data quality and usability affected?

Comments:

Data quality was affected as described above. Impact to data usability is minor, as affected results were well below the groundwater cleanup level.

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 Comments:

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

Yes No NA Comments:

No metals/inorganic analyses were performed.

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 Comments:

Matrix spike duplicate (MSD) recovery for 1-methylnaphthalene was above laboratory limits; sample 18-MCG-01-SO was the parent sample spiked for the MSD. However, the spiking concentration was less than the native analyte concentration, and the recovery was only slightly above control limits, so results were not considered affected.

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

Yes No NA Comments:

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

Comments:

No sample results were affected; see above.

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

Yes No NA Comments:

Please see above.

vii. Data quality and usability affected? (Use comment box to explain.)

Comments:

Data quality and usability were not affected.

c. Surrogates – Organics Only

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

Yes No NA 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 Comments:

There were no surrogate recovery failures.

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

Yes No NA Comments:

No sample results were affected; see above.

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

Comments:

Data quality and usability were not affected.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)?

Yes No NA 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 Comments:

Samples were submitted in a single cooler.

iii. All results less than LOQ?

Yes No NA Comments:

However, chloromethane was detected below the LOQ in the water trip blank.

iv. If above LOQ, what samples are affected?

Comments:

Chloromethane was not detected in any water project samples, so no results are affected.

v. Data quality and usability affected?

Comments:

Data quality and usability were not affected.

e. Field Duplicate

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

Yes No NA

Comments:

Two field duplicate samples were submitted in this work order, one for each matrix type. 18-MSG-102-GW was submitted as a field duplicate of 18-MSG-101-GW. Sample 18-MSG-02-SO was submitted as a duplicate sample to 18-MCFG01-SO.

ii. Submitted blind to lab?

Yes No NA

Comments:

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

$$\text{RPD (\%)} = \text{Absolute value of: } (R1-R2) / ((R1+R2)/2) \times 100$$

Where R1 = Sample Concentration

R2 = Field Duplicate Concentration

Yes No NA

Comments:

RPDs exceeded the DQO of 30% for the water matrix primary/duplicate sample pair for multiple polycyclic aromatic hydrocarbon (PAH) analytes. The affected analytes include:

1-Methylnaphthalene

2-Methylnaphthalene

Acenaphthene

Naphthalene (by 8260C and 8270D SIM)

Phenanthrene

iv. Data quality and usability affected?

Comments:

The analyte results for the affected samples will be flagged 'J' indicating the results are estimated, due to poor analytical precision for the listed PAH analytes. Effect to data usability is minimal for most of the analytes, as results are significantly below relevant PALs. However, results for 1-methylnaphthalene are close to the GCL and should be used with caution.

f. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below.)

Yes No NA Comments:

Samples were collected using dedicated or disposable sampling equipment; no equipment blanks were required.

i. All results less than LOQ?

Yes No NA Comments:

See above.

ii. If above LOQ, what samples are affected?

Comments:

No sample results were affected; see above.

iii. Data quality and usability affected?

Comments:

Data quality and usability were not affected.

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

a. Defined and appropriate?

Yes No NA Comments:

There were no laboratory-specific or other data flags/qualifiers.

ATTACHMENT 7

Conceptual Site Model

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Appendix A - Human Health Conceptual Site Model Scoping Form and Standardized Graphic

Site Name:

File Number:

Completed by:

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)*

- | | |
|--|--|
| <input type="checkbox"/> USTs | <input type="checkbox"/> Vehicles |
| <input checked="" type="checkbox"/> ASTs | <input type="checkbox"/> Landfills |
| <input type="checkbox"/> Dispensers/fuel loading racks | <input type="checkbox"/> Transformers |
| <input type="checkbox"/> Drums | <input type="checkbox"/> Other: <input type="text"/> |

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

- | | |
|--|--|
| <input checked="" type="checkbox"/> Spills | <input checked="" type="checkbox"/> Direct discharge |
| <input checked="" type="checkbox"/> Leaks | <input type="checkbox"/> Burning |
| | <input type="checkbox"/> Other: <input type="text"/> |

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

- | | |
|---|--|
| <input type="checkbox"/> Surface soil (0-2 feet bgs*) | <input checked="" type="checkbox"/> Groundwater |
| <input checked="" type="checkbox"/> Subsurface soil (>2 feet bgs) | <input checked="" type="checkbox"/> Surface water |
| <input checked="" type="checkbox"/> Air | <input type="checkbox"/> Biota |
| <input checked="" type="checkbox"/> Sediment | <input type="checkbox"/> Other: <input type="text"/> |

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

- | | |
|--|--|
| <input type="checkbox"/> Residents (adult or child) | <input checked="" type="checkbox"/> Site visitor |
| <input checked="" type="checkbox"/> Commercial or industrial worker | <input checked="" type="checkbox"/> Trespasser |
| <input checked="" type="checkbox"/> Construction worker | <input type="checkbox"/> Recreational user |
| <input type="checkbox"/> Subsistence harvester (i.e. gathers wild foods) | <input type="checkbox"/> Farmer |
| <input type="checkbox"/> Subsistence consumer (i.e. eats wild foods) | <input type="checkbox"/> Other: <input type="text"/> |

* 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:

Removal of 2,500 CY of diesel-contaminated soil was completed in the 1990s. Residual impact remains.

2. Dermal Absorption of Contaminants from Soil

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

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

If both boxes are checked, label this pathway complete:

Complete

Comments:

The following Appendix B contaminants are present above cleanup levels in soil at approximately 13 feet bgs: Naphthalene.

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 groundwater is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350.

If both boxes are checked, label this pathway complete:

Complete

Comments:

Groundwater is not used as drinking water in the vicinity of the site as City of McGrath has a drinking water system with service to buildings in the area. The following contaminates are present in groundwater above Table C values: 1,2,4-Trimethylbenzene, Benzene, Ethylbenzene, Naphthalene, and 1-Methylnaphthalene.

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:

Complete

Comments:

The impact to groundwater (plume extent) is not defined, and a groundwater to surface water pathway may exist.

3. Ingestion of Wild and Farmed Foods

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



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



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



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

Incomplete

Comments:

The site is within a 1/4 mile of the Kuskokwim River, however no Appendix C compounds were detected in groundwater at the site.

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:

Appendix D compounds in soil include: Naphthalene, Ethylbenzene, & 1,2,4-Trimethylbenzene.

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 contaminated 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:

Appendix D compounds are present, however no buildings are currently found within 30 horizontal feet of contaminant soil or groundwater. In addition to the Appendix D compounds found in soil the following compounds are also found in groundwater above Table C values: Benzene and 1-Methylnaphthalene.

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 deemed protective of this pathway because dermal absorption is incorporated into the groundwater exposure equation for residential uses.

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.)

DEC groundwater cleanup levels in 18 AAC 75, Table C are protective of this pathway because the inhalation of vapors during normal household activities is incorporated into the groundwater exposure equation.

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 - PM₁₀). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.

DEC human health soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because the inhalation of particulates is incorporated into the soil exposure equation.

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

Comments:

Direct Contact with Sediment

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

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

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

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

Comments:

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

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: City of McGrath Water Treatment Plant Site, McGrath, Alaska
DEC File No. 2612.38.003

Completed By: D. Frank (DNA Environmental)
 Date Completed: 11/19/18

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

(1) Media	(2) Transport Mechanisms			
<input checked="" type="checkbox"/> Surface Soil (0-2 ft bgs)	<input checked="" type="checkbox"/> Direct release to surface soil <i>check soil</i> <input checked="" type="checkbox"/> Migration to subsurface <i>check soil</i> <input checked="" type="checkbox"/> Migration to groundwater <i>check groundwater</i> <input checked="" type="checkbox"/> Volatilization <i>check air</i> <input type="checkbox"/> Runoff or erosion <i>check surface water</i> <input type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list):			
	<input checked="" type="checkbox"/> Subsurface Soil (2-15 ft bgs)	<input checked="" type="checkbox"/> Direct release to subsurface soil <i>check soil</i> <input checked="" type="checkbox"/> Migration to groundwater <i>check groundwater</i> <input checked="" type="checkbox"/> Volatilization <i>check air</i> <input type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list):		
	<input checked="" type="checkbox"/> Ground-water	<input checked="" type="checkbox"/> Direct release to groundwater <i>check groundwater</i> <input checked="" type="checkbox"/> Volatilization <i>check air</i> <input checked="" type="checkbox"/> Flow to surface water body <i>check surface water</i> <input type="checkbox"/> Flow to sediment <i>check sediment</i> <input type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list):		
		<input checked="" type="checkbox"/> Surface Water	<input checked="" type="checkbox"/> Direct release to surface water <i>check surface water</i> <input type="checkbox"/> Volatilization <i>check air</i> <input type="checkbox"/> Sedimentation <i>check sediment</i> <input type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list):	
			<input type="checkbox"/> Sediment	<input type="checkbox"/> Direct release to sediment <i>check sediment</i> <input type="checkbox"/> Resuspension, runoff, or erosion <i>check surface water</i> <input type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list):

(3) Exposure Media	(4) Exposure Pathway/Route	(5) Current & Future Receptors						
<input checked="" type="checkbox"/> soil	<input checked="" type="checkbox"/> Incidental Soil Ingestion <input checked="" type="checkbox"/> Dermal Absorption of Contaminants from Soil <input type="checkbox"/> Inhalation of Fugitive Dust		C/F	C/F	C/F			
	<input checked="" type="checkbox"/> groundwater	<input checked="" type="checkbox"/> Ingestion of Groundwater <input checked="" type="checkbox"/> Dermal Absorption of Contaminants in Groundwater <input checked="" type="checkbox"/> Inhalation of Volatile Compounds in Tap Water	F	F	F	F		
		<input checked="" type="checkbox"/> air	<input checked="" type="checkbox"/> Inhalation of Outdoor Air <input checked="" type="checkbox"/> Inhalation of Indoor Air <input type="checkbox"/> Inhalation of Fugitive Dust		C/F	C/F	C/F	
<input checked="" type="checkbox"/> surface water			<input checked="" type="checkbox"/> Ingestion of Surface Water <input checked="" type="checkbox"/> Dermal Absorption of Contaminants in Surface Water <input checked="" type="checkbox"/> Inhalation of Volatile Compounds in Tap Water	C/F	C/F	C/F	C/F	
	<input type="checkbox"/> sediment		<input type="checkbox"/> Direct Contact with Sediment					
	<input type="checkbox"/> biota	<input type="checkbox"/> Ingestion of Wild or Farmed Foods						

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

Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
--------------------------------	----------------------------------	---	----------------------	-----------------------------------	-----------------------	-------