Phase II Environmental Site Assessment
1207 Fifth Avenue
Dawson City, Yukon

PRESENTED TO

Government of Yukon, Community Services, Land Development Branch

NOVEMBER 17, 2020
ISSUED FOR REVIEW
FILE: 704-ENW.PENW03102-01

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EXECUTIVE SUMMARY

Tetra Tech Canada Inc. (Tetra Tech) was retained by the Government of Yukon, Community Services, Land Development Branch (YG-CS) to conduct a Phase II Environmental Site Assessment (ESA) at 1207 Fifth Avenue, Goldrush Campground, Dawson City, Yukon (hereinafter referred to as the "Site").

Summary of Background, Objectives and Methods

Since circa 1970s, the Site, which is owned by the City of Dawson, has been operating as a recreation vehicle (RV) park. At the time of Tetra Tech's field investigation, the Site was occupied by the Goldrush Campground – an 82-spot campsite and (recreational vehicle) RV park; however, the campground was closed for the season. According to the City of Dawson Zoning Bylaw No. 2018-2019 (City of Dawson 2019), the Site is zoned as R1 – single-detached/duplex residential. Tetra Tech understands that YG-CS is considering developing the Site for use as a community centre.

This Phase II ESA follows the report titled *Phase I Environmental Site Assessment, Lots 1-20, Block Q Ladue Estate, 8338A CLSR, Dawson City, Yukon (Gold Rush Campground)* prepared by Golder Associates Ltd. (Golder) for Department of Community Services, Infrastructure on July 31, 2020 (2020 Phase I ESA; Golder 2020). The Phase I ESA identified two on-site areas of potential environmental concern (APECs) based on a review of the current and historical use of the Site and surrounding areas. The APECs and potential contaminants of concern (PCOCs) are outlined in the table below.

Table EX1: 2020 Phase I ESA APEC and PCOCs

APEC	Rationale	PCOCs
APEC 1 Former land use for waste disposal activities	The current tenant and former tenant reported that waste disposal may have occurred on-Site prior to circa 1970s. Possible large equipment and associated fuel and lubricant may have been buried in place with fill material.	Metals, LEPH/HEPH, PAH, VOC, VPH, BTEXS, MTBE
APEC 2 Site-wide fill material	Large quantities of fill material of unknown origin was reportedly brought on-Site to infill a swamp. The quality of the fill is unknown; however, it was reported to be locally-sourced gravel and channel rock.	Metals, LEPH/HEPH, PAH, VOC, VPH, BTEXS, MTBE

Notes:
LEPH – Light Extractable Petroleum Hydrocarbons
HEPH – Heavy Extractable Petroleum Hydrocarbons
VPH – Volatile Petroleum Hydrocarbons
MTBE – methyl tert-butyl ether
PAH – Polycyclic Aromatic Hydrocarbons
VOC – Volatile Organic Compounds
BTEXS – benzene, toluene, ethylbenzene, xylene, styrene

The objective of this Phase II ESA was to assess the PCOCs in soil and groundwater in APECs 1 and 2 relative to the applicable *Yukon Contaminated Sites Regulation* (YCSR) standards. During the Phase II ESA soil and/or groundwater quality were assessed through the analytical testing of subsurface soil samples collected at seven testpits, and groundwater samples collected from three groundwater wells installed as part of the geotechnical investigation conducted by Tetra Tech, reported under a separate cover – *Detailed Geotechnical Evaluation, Proposed Recreation Centre on Gold Rush Campground Property – Dawson City, Yukon*, prepared by Tetra Tech, 2020 (Tetra Tech in progress). Analytical results were compared to the YCSR residential land use soil standards (RL) and groundwater standards protective of drinking water (DW) and freshwater aquatic life (AW).

Phase II ESA Findings:

- Soil samples collected from the testpits (TP20-01, TP20-03 through TP20-05, and TP20-07 through TP20-09) were analyzed for PCOCs consisting of metals, hydrocarbons and/or glycols. Reported concentrations for hydrocarbons and glycols were less than the reportable method detection limit (MDL). Reported concentrations of select metals at select locations were greater than the applicable standards. Chromium concentrations were greater than the YCSR RL standard at TP20-01 and TP20-03 through TP20-05. Following chromium speciation, the reported concentrations of the hexavalent species were less than the YCSR RL standards at the four locations tested and reported concentrations of the trivalent species were less than the YCSR RL at TP20-03. However, reported concentrations of the trivalent species were greater than the YCSR RL standard for groundwater flow to surface water used by freshwater AW for samples collected from TP20-01, TP20-04 and TP20-05. In addition, reported concentrations of nickel at TP20-05 at 0.75 m in the fill unit, and at 1.25 m (an in the duplicate pair) in the silt and organics unit were greater than the YCSR RL standard. The source of the metals exceedances may in part be due to poor quality fill identified throughout the Site and/or elevated background concentrations for chromium and nickel.

- Groundwater samples collected from the Site were analyzed for metals, hydrocarbons and glycols. Reported concentrations of glycols at the three monitoring wells were less than the MDL. At the three monitoring wells, the reported concentrations of dissolved cobalt were greater than the YCSR AW standard, and the reported concentrations of dissolved iron and manganese were greater than the YCSR DW standard. Reported concentrations of chromium in MW20-02 and MW20-03 were greater than the YCSR AW standards. Reported concentrations of arsenic in MW20-02, and arsenic, barium and lead in MW20-03 were greater than the YCSR DW standards. All other dissolved metals concentrations were less than the YCSR AW and DW standards. Hydrocarbon concentrations were less than the YCSR AW and DW standards; however, detectable concentrations of ethylbenzene, toluene and polycyclic aromatic hydrocarbon (PAH) parameters of benz(a)anthracene, benzo(a)pyrene, chrysene, fluoranthene, fluorene, 1-methylnaphthalene, 2-methylnaphthalene and naphthalene, phenanthrene and pyrene were reported in groundwater.

  Reported concentrations of light extractable petroleum hydrocarbons (LEPH) in MW20-01 were greater than the YCSR AW standards; however, given the high organic content noted within soils on-Site, Tetra Tech conducted a silica-gel cleanup for the analysis of extractable petroleum hydrocarbons (EPH). Per the British Columbia (BC) Environmental Laboratory Manual produced by the BC Ministry of Environment and Climate Change Strategy (ENV; ENV 2020), the silica-gel cleanup is a method which “can exclude biogenic organics from quantitative EPH results, based on the premise that most naturally occurring hydrocarbons are polar, and so will be irreversibly retained by activated silica gel.” Based on the stratigraphy encountered at the Site (consisting of high organic content), there is sufficient evidence to support that naturally occurring organics are present in soils immediately below the Site. Following the silica-gel cleanup, the EPH analytical results came back below the MDL. Therefore, the concentrations of LEPH above the YCSR AW standards are considered to have been caused by the naturally occurring organics present at the Site. Therefore, LEPH is not considered a contaminant of concern at the Site.

- Trivalent chromium concentrations in soil exceeded the YCSR RL standard for groundwater flow to surface water used by freshwater AW. For comparison purposes, the BC *Contaminated Site Regulation* (ENV 2019) standard for this site-specific factor is 60 mg/g for hexavalent chromium (a known toxic substance) and > 1,000 mg/g for trivalent chromium. The speciated chromium at the Site was shown to be entirely trivalent.

Recommendations:

Tetra Tech recommends at least one more groundwater monitoring event be conducted, preferably during the spring as water quality may fluctuate seasonally. Given that clear groundwater could not be sampled from any of the monitoring wells, Tetra Tech recommends sampling when the groundwater table is likely to be higher (i.e., during the early spring) so that more groundwater is available within the wells for purging and subsequent sampling. The intent of the groundwater monitoring event(s) is to further characterize the subsurface groundwater conditions on-Site and assess whether metals concentrations on-Site are greater than the YCSR standards or if they were caused by silty groundwater samples. Future water quality monitoring should consist of the PCOCs tested in this Phase II ESA. Future monitoring events should include soil vapour modelling of detectable volatile hydrocarbon concentrations for residential indoor and outdoor exposure per BC ENV *Technical Guidance 4 – Vapour Investigation and Remediation (2017)*. In addition, if drinking water wells are installed on-Site, these wells should be tested for potable water quality including metals and hydrocarbons prior to use to confirm water quality is suitable for consumption.

Tetra Tech also recommends additional soil sampling in proximity to the identified soil exceedances in order to delineate the chromium and nickel exceedances in soil found at these locations.

TABLE OF CONTENTS

LIST OF TABLES IN TEXT

APPENDIX SECTIONS

TABLES

FIGURES

APPENDICES

ACRONYMS & ABBREVIATIONS

Acronyms/Abbreviations	Definition
ALS	ALS Environmental
APEC	area of potential environmental concern
Arcrite	Arcrite Northern Ltd.
AW	aquatic life
BC	British Columbia
BTEXS	benzene, toluene, ethylbenzene, xylene and styrene
CALA	Canadian Association of Laboratory Accreditation
DQO	data quality objective
DW	drinking water
ENV	Ministry of Environment and Climate Change Strategy
EPH	extractable petroleum hydrocarbons
ESA	Environmental Site Assessment
Golder	Golder Associates Ltd.
GPR	ground penetrating radar
Grenon	Grenon Enterprises
HDPE	high-density polyethylene
HEPH	heavy extractable petroleum hydrocarbons
IR	irrigation
LEPH	light extractable petroleum hydrocarbons
LNAPL	light non-aqueous phase liquids
LW	livestock water
masl	metres above sea level
mbgs	metres below ground surface
mbTOC	metres below top of casing
MDL	method detection limit
Midnight Sun	Midnight Sun Drilling Inc.
MTBE	methyl tert-butyl ether
OVE	organic vapour emissions
PAH	polycyclic aromatic hydrocarbons
PCOC	potential contaminants of concern

Acronyms/Abbreviations	Definition
Phase I ESA	*Phase I Environmental Site Assessment, Lots 1-20, Block Q Ladue Estate, 8338A CLSR, Dawson City, Yukon (Gold Rush Campground)*, prepared by Golder Associates Ltd, July 31, 2020
PID	photo-ionization detector
ppmv	parts per million by volume
Protocol No. 6	*Protocol No. 6: Application of Water Quality Standards*
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
QMS	Quality Management System
RL	residential land use
RL	residential land use
RM	reference material
RPD	relative percent difference
Tetra Tech	Tetra Tech Canada Inc.
VH	volatile hydrocarbons
VOC	volatile organic compounds
VPH	volatile petroleum hydrocarbons
YCSR	*Yukon Contaminated Sites Regulation*
YG-CS	Government of Yukon, Community Services, Land Development Branch
YSI	YSI ProDSS multi-parameter water quality

LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of the Government of Yukon and their agents. Tetra Tech Canada Inc. (Tetra Tech) does not accept any responsibility for the accuracy of any of the data, the analysis, or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than the Government of Yukon, or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user. Use of this document is subject to the Limitations on the Use of this Document attached in Appendix A or Contractual Terms and Conditions executed by both parties.

1.0 INTRODUCTION AND BACKGROUND

Tetra Tech Canada Inc. (Tetra Tech), was retained by the Government of Yukon, Community Services, Land Development Branch (YG-CS) to conduct a Phase II Environmental Site Assessment (ESA) for 1207 Fifth Avenue, Dawson City, Yukon (hereinafter referred to as the "Site").

Since circa 1970s, the Site, which is owned by the City of Dawson, has been operating as a recreation vehicle (RV) park. At the time of Tetra Tech's field investigation, the Site was occupied by the Goldrush Campground. Tetra Tech understands that YG-CS is considering developing the Site for use as a community centre. The location and the current layout for the Site is shown on the attached Figures 1 and 2, respectively.

This Phase II ESA follows the report titled *Phase I Environmental Site Assessment, Lots 1-20, Block Q Ladue Estate, 8338A CLSR, Dawson City, Yukon (Gold Rush Campground)* prepared by Golder Associates Ltd. (Golder) for Department of Community Services, Infrastructure on July 31, 2020 (Phase I ESA; Golder 2020). The Phase I ESA identified two areas of potential environmental concern (APECs) for the Site based on a review of the current and historical use of the Site and surrounding area. The Phase I ESA findings are further described in Section 1.2.

Authorization to proceed with the Phase II ESA was provided to Tetra Tech from YG-CS via government contract C00056362 with a dated contract start date of September 11, 2020.

1.1 Site Description

Legal Description and Location

The legal description, plan number and cartographic coordinates for the Site are summarized below.

- Legal Description: Lots 1-20, Block Q Ladue Estate, 8338A CLSR YT 8338A LTO YT
- Cartographic coordinates:
  - UTM Zone: 7 W
  - Northing: 7105056 m N
  - Easting: 576790 m E

Site Usage and Zoning

The Site is approximately 2.5 acres in size. According to the City of Dawson Zoning Bylaw No. 2018-2019 (City of Dawson 2019), the Site is zoned as R1 – single-detached/duplex residential. At the time of Tetra Tech's field investigation, the Site was occupied by Goldrush Campground – an 82-spot campsite and RV park; however, the campground was closed for the season. Per the Phase I ESA, "a single structure (building with an office, gift shop, laundry room and washroom/shower facilities) [was] located on the southern [property] boundary near York Street" (Golder 2020). The remaining areas of the Site were largely gravelled and undeveloped, with the fill material reportedly comprised of locally-sourced gravel and channel rock (Golder 2020).

Surrounding Area Usage and Zoning

Per the City of Dawson (2019), the majority of the surrounding parcels are zoned R1 land use with the exception of two land parcels southeast of the Site which are zoned as P2 – Institutional; and portions of the parcels to the south and northwest which are zoned as R2 – multi-unit residential.

1.2 Phase I ESA Findings

Table A summarizes the APECs and associated potential contaminants of concern (PCOCs) identified during the Phase I ESA (Golder 2020).

Table A: 2020 Phase I ESA APEC and PCOCs

APEC	Rationale	PCOCs
APEC 1 Former land use for waste disposal activities	The current tenant and former tenant reported that waste disposal may have occurred on-Site prior to circa 1970s. Possible large equipment and associated fuel and lubricant may have been buried in place with fill material.	Metals, LEPH/HEPH, PAH, VOC, VPH, BTEXS, MTBE
APEC 2 Site-wide fill material	Large quantities of fill material of unknown origin was reportedly brought on-Site to infill a swamp. The quality of the fill is unknown; however, it was reported to be locally-sourced gravel and channel rock.	Metals, LEPH/HEPH, PAH, VOC, VPH, BTEXS, MTBE

Notes: LEPH – Light Extractable Petroleum Hydrocarbons
HEPH – Heavy Extractable Petroleum Hydrocarbons
VPH – Volatile Petroleum Hydrocarbons
MTBE – methyl tert-butyl ether
PAH – Polycyclic Aromatic Hydrocarbons
VOC – Volatile Organic Compounds
BTEXS – benzene, toluene, ethylbenzene, xylene, styrene

1.3 Project Objective

The objective of this Phase II ESA was to assess the PCOCs in soil and groundwater in APECs 1 and 2 relative to the applicable Yukon Contaminated Sites Regulation (YCSR) standards.

2.0 SCOPE OF SERVICES

The scope of services for the Phase II ESA included the following tasks:

- Preparing a health and safety plan to be implemented during the field program.
- Contacting Northwestel and municipal public works to have them carry out checks for any of their utility infrastructure that may exist at the planned borehole and testpit locations.
- Contacting the Site lease-holders regarding utility infrastructure that may exist on the Site.
- Retaining an independent utility locator, Arcrite Northern Ltd. (Arcrite) of Whitehorse, YT, to survey the planned borehole and testpit locations for the potential presence of underground utilities.
- As part of the geotechnical investigation, retaining Midnight Sun Drilling Inc. (Midnight Sun) of Whitehorse, YT, to advance three boreholes within the Site (BH20-01 through BH20-03) to a maximum depth of 16.2 metres below ground surface (mbgs) using an air rotary rig.
- Retaining Grenon Enterprises (Grenon) of Dawson City, YT, to advance seven testpits within the Site (TP20-01, TP20-03 through TP20-05, and TP20-07 through TP20-09) to a maximum depth of 2.5 mbgs using a rubber tire backhoe/loader.
- Completing the three boreholes as groundwater monitoring wells (MW20-01 through MW20-03) installed to a maximum depth of approximately 3.0 mbgs.

- Logging soil stratigraphy from each testpit and borehole location and collecting soil samples from the testpits at regular depth intervals and/or at changes in material type or color. Field screening the collected soil samples with a photo-ionization detector (PID) for potential volatile hydrocarbon impacts.
- Measuring depths to water in the monitoring wells to help assess groundwater flow direction and to observe the potential presence of free-phase liquid, if any, using an oil-water interface probe.
- Developing the monitoring wells using Waterra tubing and surge blocks. Purging all monitoring wells, prior to groundwater sampling, until field measurements of electrical conductivity, pH and temperature of groundwater met the stabilization criteria, or until water is purged dry. Following stabilizations or purging, collecting groundwater samples from the monitoring well locations using a low-flow sampling method with a peristaltic pump (MW20-01) or bailer (MW20-02 and MW20-03).
- Submitting selected soil samples (based on sample depth, stratigraphic changes, and PID readings) and groundwater samples to ALS Environmental (ALS) of Burnaby, British Columbia (BC), for analysis of the PCOCs.
- Retaining Lamerton Land Surveys of Dawson City, YT, to survey the locations and elevations of the monitoring well locations.
- Tabulating analytical results with comparison to the applicable standards outlined in the Yukon *Environment Act*, YCSR, O.I.C. 2002/171 dated September 30, 2002.
- Preparing this Phase II ESA report summarizing the activities completed during the Phase II ESA, the findings, conclusions and recommendations.

3.0 ASSESSMENT STANDARDS

Chemical contaminants in soil and groundwater quality are regulated under the YCSR (O.I.C. 2002/171, dated September 30, 2002). Applicable standards from the YCSR are detailed in the following subsections.

3.1 Soil Assessment Standards

Environmental standards for the assessment and remediation of soils are detailed in YCSR Schedules 1 and 2. Based on the proposed redevelopment of the Site as a community centre. Per the YCSR, commercial land use is defined as “the use of land for the purpose of buying, selling or trading merchandise or services and storage associated with these uses”, whereas residential (RL) land use is defined as “the use of land for the purpose of (a) a residence by persons on a permanent, temporary, or seasonal basis, or (b) institutional facilities” (Yukon Government 2002). Institutional facilities are not further defined within the YCSR, however, per the BC *Contaminated Sites Regulation*, community centres are identified as an institutional facility under the definition of RL land use (BC Ministry of Environment and Climate Change Strategy (ENV) 2019). Therefore, the YCSR RL land use standards were used for comparison to the analytical results.

Matrix-based numerical soil standards are listed in Schedule 2 of the YCSR and are applied based on groundwater use at the site and surrounding area and site-specific factors that consider contaminant migration routes and potential routes for human or environmental exposure to contaminants. By default, the following exposure factors apply to all sites:

- Human Health Protection – intake of contaminated soils; and
- Environmental Protection – toxicity to soil invertebrates and plants.

Yukon Environment *Protocol No. 6: Application of Water Quality Standards* (Protocol No. 6; 2012) sets out procedures for water use determination at contaminated sites. The following subsections detail the assessment to determine if soil standards protective of drinking water (DW), aquatic life (AW), irrigation (IR) and livestock water (LW) apply to the Site based on this protocol.

Per the Phase I ESA, 25 monitoring points were registered within 1.5 km of the Site. Most of the monitoring points were located primarily hydraulically down-gradient and cross-gradient of the Site (Golder 2020).

Matrix Soil Standards Protective of Drinking Water

Protocol No. 6 states that standards protective of DW apply to a site if an existing or probable DW source is located within a 1.5 km radius of the site. According the to the Yukon Water Data Catalogue map (Government of Yukon 2020), groundwater quality sites are located within a 1.5 km radius of the Site. Therefore, due to the potential for groundwater in the vicinity to be accessed for potable use, soil standards protective of groundwater use for DW apply to the Site.

Matrix Soil Standards Protective of Aquatic Life

Protocol No. 6 states that standards protective of AW applies to a site if the closest surface water potentially containing aquatic life is located within a 1 km radius of the site. Yukon River is located approximately 300 m west of the Site. Therefore, soil standards protective of surface water used by freshwater AW apply to the Site.

Matrix Soil Standards Protective of Irrigation and Livestock Water

Protocol No. 6 states that standards protective of IR and LW apply to a site if the closest surface water body used for an IR water source or drinking water for livestock is located within a 1.5 km radius of the site. Tetra Tech did not identify any surface water bodies used for IR or LW located within a 1.5 km radius of the Site. Therefore, soil standards protective of irrigation and livestock water have not been applied.

The applicable YCSR soil standards are included in the attached Table 1.

3.2 Groundwater Assessment Standards

Environmental standards for the assessment and remediation of groundwater are detailed in the YCSR Schedule 3. Groundwater numerical standards are based on water use rather than on land use. Groundwater analytical results have been compared to the Schedule 3 DW and freshwater AW water quality standards based on the assessment of water use by applying Protocol No. 6 guidelines outlined in Section 3.1 above.

The applicable YCSR groundwater standards are included in the attached Table 2.

4.0 METHODS

Tetra Tech completed the Phase II ESA field program between September 14 and 25, 2020. The Site activities and methods employed during the field program are detailed in the following subsections.

4.1 Sampling Locations

As part of the geotechnical investigation, boreholes completed as groundwater monitoring wells were advanced at three on-Site locations. As part of the Phase II ESA, testpits were advanced at seven on-Site locations. The sampling locations are shown on Figure 2.

Sample Locations

The borehole locations were primarily positioned to meet the objectives of the geotechnical investigation. Testpit locations were positioned throughout the Site to test geophysical anomalies identified by ground penetrating radar (GPR) which may be indicative of buried objects and to obtain coverage across the Site.

Locations and Summary of Placement Rationale

Phase II ESA monitoring well sampling locations were surveyed on October 19, 2020 by Lamerton Land Surveys (see Section 5.2 for elevation data). Table B below lists the testpit and borehole locations, and rationale for the selection of each investigation location.

Table B: Phase II ESA Sampling Locations and Rationale

Investigation Location	Associated APEC(s)	Rationale
BH/MW20-01	1, 2	Three boreholes were advanced to obtain geotechnical information. Monitoring wells were installed in the boreholes to address the possibility of surficial or subsurface contaminant migration related to the former waste disposal activities (APEC 1) and the unknown origin/quality fill (APEC 2).
BH/MW20-02		
BH/MW20-03		
TP20-01		Seven testpits were advanced to target GPR anomalies identified on-Site for the purpose of evaluating the reported historical waste disposal and possible large equipment (and associated fuel and lubricant) that may have been buried on-Site and the unknown origin/quality fill material.
TP20-03		
TP20-04		
TP20-05		
TP20-07		
TP20-08		
TP20-09		

4.2 Utility Locates

Tetra Tech contacted Northwestel, municipal public works and the current Site lease-holders to provide utility location information at/or near the planned drilling locations. No utilities were noted by Northwestel or municipal public works. The lease-holders provided Tetra Tech with information regarding underground utilities which was provided to Arcrite prior to the subsurface scan. Arcrite completed a scan of each drilling location on September 15-16, 2020 and confirmed the presence of tech cables, water lines, propane lines and other unidentified objects beneath the Site which were used to identify unknown anomalies that could be targeted through the testpitting investigation. GPR anomalies identified by Arcrite and field observations are shown on Figure 2.

4.3 Testpitting

On September 15, 2020, Tetra Tech monitored the excavation of seven testpits (TP20-01, TP20-03 through TP20-05, and TP20-07 through TP20-09) using a 430 rubber tire backhoe/loader supplied and operated by Grenon. The seven testpits were excavated to a maximum depth of 2.5 mbgs.

Note that the planned testpits TP20-02 and TP20-06 could not be excavated due to underground utilities (water/sewer line) identified during the GPR survey and time constraints, respectively.

Testpit logs are attached in Appendix B.

4.4 Borehole Drilling

Prior to drilling, Tetra Tech conducted a site- and task-specific safety meeting with the drill rig operators. On September 15 and 16, 2020, Tetra Tech monitored the advancement of three boreholes using the Prospector P1 RC/Geotechnical track-mounted solid-stem drill rig equipped with air rotary, supplied and operated by Midnight Sun. The three boreholes were advanced to a maximum depth of 16.2 mbgs.

Stratigraphic units encountered during the drilling program are shown on the borehole logs in Appendix B. Borehole details are shown in Table C below.

Note: no geoenvironmental soil samples were collected as part of the drilling program.

Table C: Borehole Details

Borehole	Completion Date	Depth (mbgs)	Status of Borehole	Rationale
BH20-01	September 15, 2020	16.2	Groundwater well installed	Encountered saturated soils indicative of groundwater
BH20-02	September 16, 2020	16.2	Groundwater well installed	Encountered saturated soils indicative of groundwater
BH20-03	September 16, 2020	2.1	Groundwater well installed	Did not reach the target depth due to a broken drill but encountered saturated soils indicative of groundwater

4.5 Testpit Soil Sampling

During the testpitting program, soil samples were collected directly from each testpit to a depth of 1.0 mbgs and from the backhoe bucket for all samples greater than 1.0 mbgs. Samples were collected at regular depth intervals of approximately 0.5 m to 1.0 m, at changes in soil conditions, and/or from depths where any potential contamination was suspected based on field observations. Prior to collecting the soil samples, the exposed soil surface at each sample location (testpit wall or excavator bucket) was scraped away so that an undisturbed sample could be collected. Soil sample intervals are shown on the attached testpit logs in Appendix B.

After the soil samples were collected, the testpits were backfilled with the soil that was excavated from the subsurface. Backfilled testpits were compacted using the excavator bucket.

Sampling intervals and the stratigraphic units encountered at each testpit are shown on the testpit logs in Appendix B.

For each soil sample, two soil plugs were obtained and placed into two clean, labelled, laboratory-supplied 40 mL glass vials containing 5 mL of methanol. In addition to the vial samples, two soil samples were obtained and placed into clean, labelled, laboratory-supplied Teflon™-lined glass jars for laboratory analysis. Tetra Tech field personnel changed nitrile gloves between each soil sample to prevent cross-contamination. Collected samples were stored in an ice-chilled cooler or a fridge, and then shipped under chain-of-custody protocol to ALS for analysis of PCOCs.

Soil samples were screened in the field for organic vapour emissions (OVE) using a PID which was calibrated daily using laboratory-provided 100 ppm isobutylene. Samples for OVE screening were placed into laboratory-supplied plastic sampling bags, sealed and allowed to volatilize at the ambient air temperature for at least 20 minutes. OVEs were measured and recorded on the testpit logs in parts per million volume (ppmv).

4.6 Groundwater Monitoring Well Installations

Groundwater monitoring wells were installed in all three boreholes (BH/MW20-01 through BH/MW20-03). Each monitoring well was installed using a slotted 51 mm polyvinyl chloride (PVC) standpipe installed at the bottom of the well. Unslotted PVC pipe was installed from the top of the slotted section to the surface. Slough material backfilled into boreholes BH20-01 and BH20-02 from the base of the borehole to a minimum depth of approximately 3.3 mbgs. Silica sand was placed from the base of the slotted interval to approximately 0.15 m to 0.3 m above the slotted interval of the standpipe within the borehole annulus at each borehole. The annulus of each monitoring well, above the screened section, was sealed with activated bentonite clay to a minimum depth of approximately 0.15 mbgs, and a mixture of sand and cement was placed above the bentonite to surface. At ground surface, the PVC pipe from the monitoring wells were set in flush-mounted protective casing and cemented into place.

Monitoring well installation details are shown on the borehole logs in Appendix B.

4.7 Monitoring Well Development and Groundwater Sampling

Monitoring well development took place September 22 and 24, 2020. Monitoring wells were developed prior to sampling to remove silt and debris from the well following drilling.

- Total well depth and depth to groundwater (measured from the top of casing) were measured within each monitoring well to determine the volume of water within the well; and
- All three wells were purged dry (minimum of 1 L volume of water removed per event) using dedicated high-density polyethylene (HDPE) tubing with a foot valve and surge block. Water was removed using a Waterra Pump, and the surge block and foot valve were moved along the entire length of the well screen to pump out surrounding silt and debris.

Table D provides specific development details for each groundwater monitoring well.

Table D: Groundwater Well Development Details

Monitoring Well	Approximate Well Volumes/ Litres of Groundwater Removed	Max. Screen Depth (mbgs)	Notes
MW20-01	5.4 well volumes/12 L (September 22, 2020) 5.4 well volumes/12 L (September 24, 2020)	3.05	September 22, 2020: ▪ Dark brown; well purged dry September 24, 2020: ▪ Brown; well purged dry
MW20-02	0.7 well volumes/1 L (September 22, 2020) 7.1 well volumes/5 L (September 24, 2020)	3.05	September 22, 2020: ▪ Dark brown; well purged dry September 24, 2020: ▪ Brown, frothy; well purged dry
MW20-03	0.9 well volumes/1 L (September 24, 2020) 3.4 well volumes/3 L (September 24, 2020)	2.1	September 24, 2020: ▪ Dark brown; well purged dry September 24, 2020: ▪ Brown, frothy; well purged dry

Tetra Tech completed the groundwater sampling September 25, 2020. Prior to sampling, depth to water and depth to the bottom of the wells were measured and each groundwater well was inspected.

The groundwater in well MW20-01 was sampled using a low-flow sampling technique with a peristaltic pump. The low-flow sampling technique was carried out by inserting new 6.3 mm diameter HDPE tubing into each well with its intake at the midpoint of the well screen. The tubing was attached to a flow cell unit attached to the field monitoring equipment. The groundwater in wells MW20-02 and MW20-03 was sampled using a dedicated, disposable bailer.

Field parameters were measured during sampling with a YSI ProDSS multi-parameter water quality meter (YSI). Physical parameters including pH, temperature, conductivity, dissolved oxygen and oxidation-reduction potential were measured and recorded during the sampling process. Groundwater samples were collected from MW20-01 once all physical parameters stabilized within 10% of previous values. Due to insufficient water within monitoring wells MW20-02 and MW20-03, groundwater samples were collected immediately from the wells once the initial parameters were recorded, using a dedicated, disposable bailer.

Groundwater samples were collected into clean, labelled, laboratory-supplied bottles and preserved as directed by ALS for laboratory analysis. Groundwater samples collected for dissolved metals analysis were field-filtered through a new, disposable 0.45 µm in-line filter attached to the peristaltic pump discharge tubing or through a fitted adapter attached to the bottom of the bailer, and preserved with laboratory-supplied nitric acid. Samples were stored in ice-filled coolers or a fridge and then shipped under chain-of-custody protocol to ALS.

4.8 Analytical Testing

Groundwater and selected soil samples were submitted to ALS, a Canadian Association of Laboratory Accreditation (CALA)-accredited laboratory, that is qualified to analyze the samples using Yukon Environment-approved procedures.

At testpit locations, soil samples were collected from multiple depth intervals (see testpit logs in Appendix B). Soil samples were selected for specific laboratory testing of PCOCs associated with the targeted APECs, based on field screening, field observations and professional judgement. Groundwater samples were selected for laboratory testing based on PCOCs associated with the targeted APECs. Analytical testing at each APEC is summarized in Table E.

Table E: Summary of Analytical Testing

APECs		PCOCs Analyzed	
		Soil	Groundwater
APEC 1	Former land use for waste disposal activities	Metals, LEPH, HEPH, PAH, VPH, VOC, BTEXS, MTBE glycols	Dissolved metals, LEPH, HEPH, PAH, VPH, VH, VOC, BTEXS, MTBE, glycols
APEC 2	Site-wide fill material	Metals, LEPH, HEPH, PAH, VPH, VOC, BTEXS, MTBE	Dissolved metals, LEPH, HEPH, PAH, VPH, VH, VOC, BTEXS, MTBE

Notes:
LEPH – light extractable petroleum hydrocarbons
HEPH – heavy extractable petroleum hydrocarbons
PAH – polycyclic aromatic hydrocarbons
VPH – volatile petroleum hydrocarbons
VH – volatile hydrocarbons
VOC – volatile organic compounds
BTEXS – benzene, toluene, ethylbenzene, xylene, styrene
MTBE – methyl tert-butyl ether

Although not identified in the Phase I ESA (Golder 2020), Tetra Tech included glycols as a PCOC due to its association with coolants and antifreeze in machinery which may have been buried on-Site (APEC 1).

Soil and groundwater analytical results from ALS are summarized in Tables 1 and 2, respectively.

4.9 Quality Assurance/Quality Control

During the Phase II ESA, Tetra Tech implemented a quality assurance/quality control (QA/QC) program to ensure the integrity of the sampling methods and analytical testing. The QA/QC program adhered to Tetra Tech's in-house Quality Management System (QMS), which was designed to generate representative samples, minimize the potential for cross-contamination between sampling locations and samples, and reduce the potential for systematic bias. A summary of the QA/QC program tasks conducted by Tetra Tech is provided in Appendix C.

To assess analytical accuracy, it is recommended that one of every ten samples be analyzed in duplicate (i.e., sampling duplicate frequency of 10%). During the Phase II ESA, Tetra Tech submitted 14 soil samples and 1 duplicate, and 3 groundwater samples and 1 duplicate for laboratory analysis for an overall duplicate frequency of 9.5%. The following duplicate pairs were submitted for laboratory testing:

- Soil duplicates:
  - TP20-05-1.25m (duplicate designated TP00-05-1.25m) – analyzed for metals, light extractable petroleum hydrocarbons (LEPH), heavy extractable petroleum hydrocarbons (HEPH), polycyclic aromatic hydrocarbons (PAH) and speciated chromium
- Groundwater duplicate:
  - MW20-01 (duplicate designated DUP) – analyzed for dissolved metals, volatile organic carbons (VOCs), LEPH, HEPH, PAH, benzene, toluene, ethylbenzene, xylene, and styrene (BTEXS), volatile petroleum hydrocarbons (VPH), volatile hydrocarbons (VH) and glycols

Tetra Tech formed the duplicate soil and groundwater samples by alternately placing approximately 10% of the sample volume into the original sample container and then placing the same amount into the duplicate sample container. Tetra Tech continued placing additional aliquots of approximately 10% of the sample volume into each container until both containers were filled.

5.0 SUBSURFACE OBSERVATIONS

5.1 Soil Conditions

Detailed descriptions of the soil stratigraphy encountered at each borehole and testpit location are presented on the attached logs in Appendix B. Based on the observed soil conditions, overall soil units encountered at the Site were generally as follows:

- **Unit 1**: SAND (FILL) gravelly or SAND and GRAVEL, no silt to silty, no clay to clayey, no cobbles to cobbly, no boulders to bouldery, dry with numerous suspect inclusions including wires, metal, bones, glass bottles, and a boot. Unit 1 was encountered from surface to a maximum depth of approximately 1.75 mbgs.
- **Unit 2**: SILT and ORGANICS or SILT, no clay to clayey with variable moisture content from damp to wet. Unit 2 was encountered underlying Unit 1 at a minimum depth of approximately 0.3 mbgs to 4.5 mbgs.
- **Unit 3**: SAND and GRAVEL, damp. Unit 3 was encountered underlying Unit 2 at a minimum depth of approximately 4.0 mbgs to 14.0 mbgs.
- **Unit 4**: BEDROCK. Unit 4 was encountered underlying Unit 3 at a minimum depth of approximately 13.7 mbgs to a maximum depth of approximately 16.2 mbgs.

PID headspace measurements for the soil samples varied from 0 ppmv to 2.2 ppmv – values that are consistent with those typically found as background levels. Field screening tests are subject to confirmation by laboratory analytical results.

5.2 Hydrogeology

Light non-aqueous phase liquid (LNAPL) was not detected in the Phase II ESA monitoring wells. Table F shows the piezometric elevations and depth to groundwater for each monitoring well location.

Table F: Groundwater Elevations at Monitoring Well Locations

Monitoring Location	Elevations (masl)		Flush-mount Casing (mbgs)	Groundwater Depth (mbTOC)	Groundwater Depth (mbgs)	Groundwater Elevation (masl)
	Ground Surface	TOC				
MW20-01	319.93	319.92	0.01	1.984	1.994	319.936
MW20-02	320.28	320.29	0.01	2.328	2.338	317.942
MW20-03	319.69	319.68	0.01	1.784	1.794	317.896

Notes: TOC – top of monitoring well casing; masl – metres above sea level
mbTOC – metres below top of monitoring well casing; mbgs – metres below ground surface

The depth to groundwater as measured on September 25, 2020, ranged from a minimum depth of approximately 1.784 mbgs (MW20-03) to a maximum depth of approximately 2.328 mbgs (MW20-02). The direction of groundwater flow below the Site is inferred to be northwest towards the Yukon River.

A groundwater contour map is attached as Figure 3.

6.0 ANALYTICAL RESULTS AND DISCUSSION

The following subsections summarize the comparison of the Phase II ESA laboratory results to the applicable YCSR standards and the QA/QC program laboratory results. Laboratory testing results are summarized in Tables 1 and 2 and on Figures 4 and 5. Laboratory certificates are attached in Appendix D.

6.1 Soil Analytical Results

The following subsection summarizes the comparison of soil analytical results obtained during this Phase II ESA to the YCSR RL standards.

Table G summarizes the comparison of soil analytical results obtained for both APECs during this Phase II ESA to the YCSR RL standards.

Table G: Soil Analytical Results

Location ID	Soil Sample Depth (mbgs)	Analyzed Parameters	Analytical Results
TP20-01	0.5	Metals, LEPH, HEPH, PAH, speciated chromium	▪ **> YCSR RL for chromium trivalent** ▪ < YCSR RL for all other parameters analyzed
	1.0	BTEXS, MTBE, VPH, VH	▪ < YCSR RL for all parameters analyzed
	1.75	Speciated chromium	▪ **> YCSR RL for chromium trivalent** ▪ < YCSR RL for chromium hexavalent
TP20-03	0.5	Metals	▪ < YCSR RL for all parameters analyzed
	1.3	Metals, LEPH, HEPH, PAH, VPH, VH, VOC, BTEXS, MTBE, glycols, speciated chromium	▪ < YCSR RL for all other parameters analyzed
TP20-04	1.25	Metals, LEPH, HEPH, PAH, BTEXS, MTBE, VPH, VH, speciated chromium	▪ **> YCSR RL for chromium trivalent** ▪ < YCSR RL for all other parameters analyzed
	2.0	Speciated chromium	▪ **> YCSR RL for chromium trivalent** ▪ < YCSR RL for all other parameters analyzed
TP20-05	0.75	Nickel	▪ **> YCSR RL for nickel**
	1.25	Metals, LEPH, HEPH, PAH, speciated chromium	▪ **> YCSR RL for chromium trivalent and nickel** ▪ <YCSR RL for all other parameters analyzed
	1.25 (DUP)	Metals, LEPH, HEPH, PAH, speciated chromium	▪ **> YCSR RL for chromium trivalent and nickel** ▪ < YCSR RL for all other parameters analyzed
TP20-07	0.3	Metals, LEPH, HEPH, PAH, BTEXS, MTBE, VPH, VH	▪ <YCSR RL for all parameters analyzed
TP20-08	0.5	Metals, LEPH, HEPH, PAH	▪ <YCSR RL for all parameters analyzed
	1.7	VOC, VPH, VH, BTEXS, MTBE	▪ <YCSR RL for all parameters analyzed
TP20-09	0.5	Metals, LEPH, HEPH, PAH	▪ <YCSR RL for all parameters analyzed
	1.25	BTEXS, MTBE, VPH, VH	▪ <YCSR RL for all parameters analyzed

Notes:
<YCSR RL – less than the YCSR RL standard
>YCSR RL – greater than the YCSR RL standard
LEPH – light extractable petroleum hydrocarbons
HEPH – heavy extractable petroleum hydrocarbons
PAH – polycyclic aromatic hydrocarbons
VPH – volatile petroleum hydrocarbons
VH – volatile hydrocarbons
VOC – volatile organic compound
MTBE – methyl tert-butyl ether
BTEXS – benzene, toluene, ethylbenzene, styrene and styrene

A total of 14 soil samples and one duplicate soil sample collected from testpits TP20-01, TP20-03 through TP20-05, and TP20-07 through TP20-09, were analyzed for PCOCs consisting of metals, hydrocarbons and glycols. Reported concentrations for hydrocarbons and glycols at the locations analyzed were less than the reportable method detection limit (MDL). Reported concentrations of select metals at select locations were greater than the applicable standards. Chromium concentrations were greater than the YCSR RL standard at TP20-01 and TP20-03 through TP20-05 in either or both the fill unit and/or the native silt with organics unit. Following chromium speciation, the reported concentrations of the trivalent and hexavalent species were less than the YCSR RL standards at TP20-03. Reported concentrations of the trivalent species were, however, greater than the YCSR RL standard for groundwater flow to surface water used by AW at TP20-01, TP20-04 and TP20-05. The reported concentrations of the hexavalent species were less than the YCSR RL standard at those three locations. Reported concentrations of nickel at TP20-05 at 0.75 m in the fill unit, and at 1.25 m (and its duplicate pair) in the silt and organics unit were greater than the YCSR RL standard. Soil analytical testing results are included in the attached Table 1 and summarized on Figure 4.

6.2 Groundwater Analytical Results

The following subsection summarizes the comparison of the groundwater analytical results obtained during this Phase II ESA to the YCSR DW and AW standards.

Table H summarizes the comparison of groundwater analytical results obtained during this Phase II ESA to the YCSR DW and freshwater AW standards.

Table H: Groundwater Analytical Results

Location ID	Analyzed Parameters	Analytical Results
MW20-01	Dissolved metals, LEPH, HEPH, PAH, VPH, VH, VOC, BTEXS, MTBE, glycols, EPH by silica-gel cleanup	▪ **> YCSR AW standards for cobalt** ▪ **> YCSR DW standards for iron and manganese** ▪ **> YCSR AW standards for LEPH** but < YCSR AW standards for LEPH following silica-gel cleanup ▪ Detectable concentration of 1-methylnaphthalene, 2-methylnaphthalene and naphthalene but less than YCSR AW and DW standards ▪ < YCSR AW and DW standards for all other parameters analyzed
MW20-02	Dissolved metals, LEPH, HEPH, PAH, VPH, VH, VOC, BTEXS, MTBE, glycols	▪ **> YCSR AW standards for chromium and cobalt** ▪ **> YCSR DW standards for arsenic, iron and manganese** ▪ < YCSR AW and DW standards for all other parameters analyzed
MW20-03	Dissolved metals, LEPH, HEPH, PAH, VPH, VH, VOC, BTEXS, MTBE, glycols	▪ **> YCSR AW standards for cadmium, chromium and cobalt** ▪ **> YCSR DW standards for aluminum, arsenic, barium, iron, lead and manganese** ▪ Detectable concentrations of benz(a)anthracene, benzo(a)pyrene, chrysene, fluoranthene, fluorene, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, phenanthrene and pyrene but <YCSR AW and DW standards ▪ <YCSR AW and DW standards for all other parameters analyzed

Notes:
<YCSR AW and DW – less than the YCSR AW and DW standards
>YCSR AW – greater than the YCSR AW standard
HEPH – heavy extractable petroleum hydrocarbons
VPH – volatile petroleum hydrocarbons
VOC – volatile organic compounds
MTBE – methyl tert-butyl ether
>YCSR DW – greater than the YCSR DW standard
LEPH – light extractable petroleum hydrocarbons
PAH – polycyclic aromatic hydrocarbons
VH – volatile hydrocarbons
BTEXS – benzene, toluene, ethylbenzene, xylene, styrene
EPH – extractable petroleum hydrocarbons

In summary, groundwater analytical results were less than the applicable YCSR freshwater AW and DW standards except for the following:

- Reported concentrations of dissolved cobalt in the three samples were greater than the YCSR AW standard.
- Reported concentrations of dissolved iron and manganese in the three samples were greater than the YCSR DW standard.
- Reported concentrations of chromium in MW20-02 and MW20-03 were greater than the YCSR AW standards.
- Reported concentrations of arsenic in MW20-02, and arsenic, barium and lead in MW20-03 were greater than the YCSR DW standards.

Other dissolved metals and hydrocarbon concentrations were less than the DW and AW standards; however, detectable concentrations of ethylbenzene, toluene and PAH parameters of benz(a)anthracene, benzo(a)pyrene, chrysene, fluoranthene, fluorene, 1-methylnaphthalene, 2-methylnaphthalene and naphthalene, phenanthrene and pyrene were detected in groundwater, indicates hydrocarbon contamination associated with APEC 1 may be impacting groundwater quality on-Site.

Reported concentrations of LEPH in MW20-01 were greater than the YCSR AW standards in the parent sample but were less than the detection limit in the duplicate pair. Given the high organic content noted within soils on-Site, Tetra Tech conducted a silica-gel cleanup for the analysis of extractable petroleum hydrocarbons (EPH) on the parent sample. Lacking a comparable methodology document in the Yukon, Tetra Tech has referenced the document “Silica Gel Cleanup of [EPH] - Prescriptive” found in Section D of the BC Environmental Laboratory Manual produced by the BC ENV (ENV 2020). In this document, the silica-gel cleanup is a method which “can exclude biogenic organics from quantitative EPH results, based on the premise that most naturally occurring hydrocarbons are polar, and so will be irreversibly retained by activated silica gel.” This document further states that “[s]ilica gel cleanup is appropriate for use when the end user of the analytical data has good reason to suspect that naturally occurring organics are present at the site, to an extent where EPH results would likely be significantly elevated.”

Based on the stratigraphy encountered at the Site (consisting of high organic content as shown on the testpit and borehole logs in Appendix B), there is sufficient evidence to support that naturally occurring organics are present in soils immediately below the Site. In addition, the olfactory and visual field observations made during the investigation and the soil and groundwater analytical data suggest the elevated EPH is anomalous.

Following the silica-gel cleanup, the EPH analytical results were below the MDL. Therefore, the elevated concentrations of LEPH above the YCSR AW standards are considered to have been caused by the naturally occurring organics present at the Site. Therefore, LEPH is not considered a contaminant of concern at the Site.

Groundwater analytical results are included in the attached Table 2 and summarized on Figure 5.

6.3 Quality Assurance/Quality Control Results

During the Phase II ESA, the accuracy of laboratory analyses was assessed by calculating relative percent difference (RPD) values for duplicate pairs when the result of each analysis was greater than a multiple of five of the laboratory MDL. Elevated analytical variability is common when analyte concentrations are within a factor of five of the MDL. The screening thresholds were applied as stated in Appendix C and the calculated RPD values for soil and groundwater are presented in Tables 3 and 4, respectively.

To assess the overall accuracy of the sampling and analytical program, Tetra Tech submitted two soil duplicates and one groundwater duplicate. Duplicate values were considered having passed the QA/QC reproducibility goal if the RPD is less than or equal to the trigger value of 30%, indicating a close correlation between the sample-duplicate pair. The calculated RPD values are summarized Table I.

Table I: RPD Summary

Duplicate Pairs		Matrix	Analyzed Parameters	RPD Results
Sample	Duplicate			
TP20-05-1.25	TP00-05-1.25	Soil	Metals, LEPH, HEPH, PAH, speciated chromium	▪ **>RPD discussion trigger for chromium trivalent (60%) and magnesium (47%)** ▪ <RPD discussion trigger for remaining 20 out of 22 calculated RPD values
MW20-01	DUP	Groundwater	dissolved metals, LEPH, HEPH, PAH, VPH, VH, VOC, BTEXS, MTBE, glycols	▪ **>RPD discussion trigger for copper (32%)** ▪ <RPD discussion trigger for remaining 27 out of 28 calculated RPD values

Notes:
<RPD discussion trigger – less than RPD discussion trigger
>RPD discussion trigger – greater than RPD discussion trigger
RPD – relative percent difference
LEPH – light extractable petroleum hydrocarbons
HEPH – heavy extractable petroleum hydrocarbons
PAH – polycyclic aromatic hydrocarbons
VPH – volatile petroleum hydrocarbons
VH – volatile hydrocarbons
VOC – volatile organic compounds
BTEXS – benzene, toluene, ethylbenzene, xylene, styrene
MTBE – methyl tert-butyl ether

In summary, the majority (47 out of 50) calculated RPD values met the RPD value of 30%. Tetra Tech requested ALS investigate the reason for each of the exceeding RPD values. Results of ALS' QA/QC investigation confirmed that:

- The samples were labelled correctly;
- All preparation and analysis procedures were completed within ALS' standard operating procedures;
- The calibration and quality control measures for the laboratory analysis were correct and adequate;
- No errors occurred within data calculations;
- No interferences or issues occurred with the laboratory exceedances; and
- Sample heterogeneity is the likely source for the high RPD values.

Correspondence with ALS regarding the analytical variability is included in Appendix D.

In addition, ALS conducts an internal QA/QC check on the laboratory analysis for samples and found that results were within acceptable limits. Tetra Tech performed a review of the laboratory reports to identify whether or not potential sample qualifiers had impacted the results. The following qualifiers were identified in the ALS laboratory report:

- The lab duplicate was outside ALS' data quality objective (DQO) for antimony and arsenic for an anonymous sample;
- The lab duplicate was outside ALS' DQO for nickel, phosphorus, and titanium for sample TP20-01-0.5m;
- The reference material (RM) soil sample recovery for antimony and molybdenum was above the ALS DQO; however, the reported non-detect results for associated samples are considered reliable;
- The lab control sample recovery for EPH (silica gel treated) was slightly outside ALS' DQO; however, reported non-detect results for associated samples were unaffected;

- The regular soil sample hydrocarbon surrogate recovery was less than ALS' lower DQO for 3,4-dichlorotoluene in TP20-04-1.25m; and
- The lab regular water sample glycol surrogate recovery was less than lower DQO for 1,3-propanediol in samples MW20-02 and MW20-03.

Overall, no qualifiers were reported to have affected the integrity of the analytical results. Thus, the analytical results were considered representative of the soil samples and groundwater samples obtained from the Site. ALS' internal QA/QC results are found within Appendix D.

7.0 CONCLUSION AND RECOMMENDATIONS

7.1 Conclusion

Key findings from the Phase II ESA are provided below.

- Soil samples collected from the testpits (TP20-01, TP20-03 through TP20-05, and TP20-07 through TP20-09) were analyzed for PCOCs consisting of metals, hydrocarbons and glycols. Reported concentrations for hydrocarbons and glycols were less than the reportable MDL. Reported concentrations of select metals at select locations were greater than the applicable standards. Chromium concentrations were greater than the YCSR RL standard at TP20-01 and TP20-03 through TP20-05. Following chromium speciation, the reported concentrations of the hexavalent species were less than the YCSR RL standards at the four locations tested and reported concentrations of the trivalent species were less than the YCSR RL at TP20-03. However, reported concentrations of the trivalent species were greater than the YCSR RL standard for groundwater flow to surface water used by freshwater AW for samples collected from TP20-01, TP20-04 and TP20-05. In addition, reported concentrations of nickel at TP20-05 at 0.75 m in the fill unit, and at 1.25 m (an in the duplicate pair) in the silt and organics unit were greater than the YCSR RL standard. The source of the metals exceedances may in part be due to poor quality fill identified throughout the Site and/or elevated background concentrations for chromium and nickel.
- Groundwater samples collected from the Site were analyzed for metals, hydrocarbons and glycols. Reported concentrations of glycols at the three monitoring wells were less than the MDL. At the three monitoring wells, the reported concentrations of dissolved cobalt were greater than the YCSR AW standard, and the reported concentrations of dissolved iron and manganese were greater than the YCSR DW standard. Reported concentrations of chromium in MW20-02 and MW20-03 were greater than the YCSR AW standards. Reported concentrations of arsenic in MW20-02, and arsenic, barium and lead in MW20-03 were greater than the YCSR DW standards. All other dissolved metals concentrations were less than the YCSR AW and DW standards. Hydrocarbon concentrations were less than the YCSR AW and DW standards; however, detectable concentrations of ethylbenzene, toluene and PAH parameters of benz(a)anthracene, benzo(a)pyrene, chrysene, fluoranthene, fluorene, 1-methylnaphthalene, 2-methylnaphthalene and naphthalene, phenanthrene and pyrene were reported in groundwater.

  Reported concentrations of LEPH in MW20-01 were greater than the YCSR AW standards; however, given the high organic content noted within soils on-Site, Tetra Tech conducted a silica-gel cleanup for the analysis of EPH. Per the BC Environmental Laboratory Manual produced by the BC ENV (ENV 2020), the silica-gel cleanup is a method which "can exclude biogenic organics from quantitative EPH results, based on the premise that most naturally occurring hydrocarbons are polar, and so will be irreversibly retained by activated silica gel." Based on the stratigraphy encountered at the Site (consisting of high organic content), there is sufficient evidence to support that naturally occurring organics are present in soils immediately below the Site.

Following the silica-gel cleanup, the EPH analytical results came back below the MDL. Therefore, the concentrations of LEPH above the YCSR AW standards are considered to have been caused by the naturally occurring organics present at the Site. Therefore, LEPH is not considered a contaminant of concern at the Site.

- Trivalent chromium concentrations in soil exceeded the YCSR RL standard for groundwater flow to surface water used by freshwater AW. For comparison purposes, the BC *Contaminated Site Regulation* (ENV 2019) standard for this site-specific factor is 60 mg/g for hexavalent chromium (a known toxic substance) and > 1,000 mg/g for trivalent chromium. The speciated chromium at the Site was shown to be entirely trivalent.

7.2 Recommendations

Tetra Tech recommends at least one more groundwater monitoring event be conducted, preferably during the spring as water quality may fluctuate seasonally. Given that clear groundwater could not be sampled from any of the monitoring wells, Tetra Tech recommends sampling when the groundwater table is likely to be higher (i.e. during the early spring) so that more groundwater is available within the wells for purging and subsequent sampling. The intent of the groundwater monitoring event(s) is to further characterize the subsurface groundwater conditions on-Site and assess whether metals concentrations on-Site are greater than the YCSR standards or if they were caused by silty groundwater samples. Future water quality monitoring should consist of the PCOCs tested in this Phase II ESA. Future monitoring events should include soil vapour modelling of detectable volatile hydrocarbon concentrations for residential indoor and outdoor exposure per BC ENV *Technical Guidance 4 – Vapour Investigation and Remediation (2017)*. In addition, if drinking water wells are installed on-Site, these wells should be tested for potable water quality including metals and hydrocarbons prior to use to confirm water quality is suitable for consumption.

Tetra Tech also recommends additional soil sampling in proximity to the identified soil exceedances in order to delineate the chromium and nickel exceedances in soil found at these locations.

8.0 CLOSURE

This report has been prepared based on the scope of services and for the use of the Government of Yukon, Community Services, Land Development Branch, which includes distribution as required for the purposes for which this assessment was commissioned. The assessment has been carried out in accordance with generally accepted engineering practices. No other warranty is made, either express or implied. Professional judgement has been applied in developing the recommendations in this report.

We trust this report meets your present requirements. If you have any questions or comments please contact the undersigned.

Respectfully submitted,
Tetra Tech Canada Inc.

FILE: 704-ENW.PENW03102-01
ISSUED FOR REVIEW
FILE: 704-ENW.PENW03102-01

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FILE: 704-ENW.PENW03102-01
ISSUED FOR REVIEW
FILE: 704-ENW.PENW03102-01

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TABLES

Table 1: Soil Analytical Results

		Location	TP20-01			TP20-03		TP20-04		TP20-05			TP20-07	TP20-08			TP20-09	
		Field ID	TP20-01-0.5m	TP20-01-1.0m	TP20-01-1.75m	TP20-03-0.5m	TP20-03-1.3m	TP20-04-1.25m	TP20-04-2.0m	TP20-05-0.75m	TP20-05-1.25m	TP00-05-1.25	TP20-07-0.3m	TP20-08-0.5m	TP20-08-1.7m	TP20-9-0.5m	TP20-09-1.25m
		Sample Depth	0.50	1.0	1.75	0.50	1.30	1.25	2.0	0.75	1.25	1.25	0.30	0.50	1.70	0.50	1.25
		Sample Date	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020
		Laboratory Report Number	WR2000970	WR2000970	WR2000970	WR2000970	WR2000970	WR2000970	WR2000970	WR2000970	WR2000970	WR2000970	WR2000970	WR2000970	WR2000970	WR2000970	WR2000970
		Laboratory ID	WR2000970-001	WR2000970-002	WR2000970-003	WR2000970-016	WR2000970-017	WR2000970-005	WR2000970-006	WR2000970-014	WR2000970-015	WR2000970-022	WR2000970-010	WR2000970-019	WR2000970-021	WR2000970-007	WR2000970-008
Parameter	**Unit**	**Yukon CSR [1,2]**															
Physical Parameters																	
pH (1:2 soil:water)	pH Units	-	8.88	-	-	8.84	8.21	8.42	-	-	7.64	7.87	8.51	8.99	-	7.83	-
Moisture	%	-	5.49	8.92	32.6	-	8.27	13.4	40.5	-	17.4	18.2	3.66	4.69	39.3	4.26	10.6
Metals																	
Aluminum	µg/g	-	9530	-	-	2610	14,100	34,100	-	-	14,500	19,000	2840	3260	-	2880	-
Antimony	µg/g	20	<0.40	-	-	<0.30	<0.80	<0.40	-	-	<0.80	<0.80	<0.30	<0.40	-	<0.30	-
Arsenic	µg/g	15	4.23	-	-	2.74	7.90	3.54	-	-	7.01	6.58	2.74	3.14	-	2.18	-
Barium	µg/g	500	78.8	-	-	57.6	200	44.2	-	-	257	212	71.4	106	-	106	-
Beryllium	µg/g	4	0.18	-	-	0.13	0.35	0.28	-	-	0.29	0.27	0.13	0.15	-	0.11	-
Bismuth	µg/g	-	<0.20	-	-	<0.20	<0.20	<0.20	-	-	<0.20	<0.20	<0.20	<0.20	-	<0.20	-
Boron	µg/g	-	<5.0	-	-	<5.0	<5.0	<5.0	-	-	<5.0	<5.0	<5.0	<5.0	-	<5.0	-
Cadmium	µg/g	25 - 35 [3]	0.110	-	-	0.098	0.236	0.022	-	-	0.118	0.108	0.075	0.107	-	0.061	-
Calcium	µg/g	-	2020	-	-	633	2790	5910	-	-	5300	5730	852	1840	-	678	-
Chromium	µg/g	60	**116**	-	**165**	5.61	**63.4**	**177**	**168**	-	**196**	**364**	8.19	10.9	-	28.2	-
Chromium (Hexavalent)	µg/g	60	<0.10	-	<0.20	-	<0.10	<0.10	<0.20	-	<0.10	<0.10	-	-	-	-	-
Chromium (Trivalent)	µg/g	65	**116**	-	**165**	-	63.4	**177**	**168**	-	**196**	**364**	-	-	-	-	-
Cobalt	µg/g	50	9.19	-	-	1.82	12.6	31.4	-	-	24.7	29.1	1.85	2.18	-	2.66	-
Copper	µg/g	150 [3]	15.6	-	-	8.52	30.6	39.3	-	-	24.0	24.7	8.39	9.14	-	7.50	-
Iron	µg/g	-	14,000	-	-	3950	23,300	49,700	-	-	25,500	29,600	4180	4620	-	3670	-
Lead	µg/g	500 [3]	4.91	-	-	6.99	6.83	2.11	-	-	5.66	4.71	6.51	9.27	-	5.30	-
Lithium	µg/g	-	9.4	-	-	3.2	10.8	30.4	-	-	12.8	15.9	3.6	4.2	-	3.3	-
Magnesium	µg/g	-	9650	-	-	1200	10,400	30,300	-	-	19,600	31,700	1320	1650	-	2880	-
Manganese	µg/g	-	169	-	-	40	305	508	-	-	371	472	44.7	52.9	-	42.8	-
Mercury	µg/g	15	0.0201	-	-	<0.050	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-	<0.050	-
Molybdenum	µg/g	10	0.27	-	-	0.23	0.78	<0.10	-	-	0.34	0.38	0.22	0.26	-	0.15	-
Nickel	µg/g	100	46.0	-	-	5.96	38.9	85.5	-	**188**	**316**	**352**	10.4	12.5	-	29.3	-
Phosphorus	µg/g	-	339	-	-	117	396	88	-	-	520	417	150	576	-	135	-
Potassium	µg/g	-	550	-	-	540	590	370	-	-	390	340	530	560	-	570	-
Selenium	µg/g	3	<0.20	-	-	<0.20	0.22	<0.20	-	-	<0.20	<0.20	<0.20	<0.20	-	<0.20	-
Silver	µg/g	20	<0.10	-	-	<0.10	0.11	<0.10	-	-	<0.10	<0.10	<0.10	<0.10	-	<0.10	-
Sodium	µg/g	-	<50	-	-	80	70	114	-	-	195	152	<50	<50	-	<50	-
Strontium	µg/g	-	11.9	-	-	5.94	16.1	19.8	-	-	26.4	25.3	6.64	19.7	-	5.12	-
Sulphur	µg/g	-	<1000	-	-	<1000	<1000	<1000	-	-	<1000	<1000	<1000	<1000	-	<1000	-
Thallium	µg/g	-	<0.050	-	-	<0.050	0.066	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-	<0.050	-
Tin	µg/g	50	<2.0	-	-	<2.0	<2.0	<2.0	-	-	<2.0	<2.0	<2.0	<2.0	-	<2.0	-
Titanium	µg/g	-	245	-	-	102	370	1100	-	-	565	640	99.4	110	-	89	-
Tungsten	µg/g	-	<0.50	-	-	<0.50	<0.50	<0.50	-	-	<0.50	<0.50	<0.50	<0.50	-	<0.50	-
Uranium	µg/g	-	0.51	-	-	0.642	0.911	0.215	-	-	0.575	0.616	0.484	1.03	-	0.446	-
Vanadium	µg/g	200	29.6	-	-	9.72	47.0	102	-	-	52.4	64.5	8.77	17.7	-	7.53	-
Zinc	µg/g	450 [3]	28.0	-	-	22.2	44.8	43.9	-	-	50.2	43.5	17.6	18.9	-	16.7	-
Zirconium	µg/g	-	2.6	-	-	3.4	3.8	1.1	-	-	4.6	4.6	2.8	3.0	-	2.4	-

Notes:

[1] Environment Act. Contaminated Sites Regulation (CSR) (2002/171). Schedule 1 - Generic Numerical Soil Standards and Schedule 2 - Matrix Numerical Soil Standards for Residential (RL) land use

[2] Schedule 2 Parameter. Pathways included:

Intake of contaminated soil

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[3] Standard is pH dependent. Most conservative value shown based on site pH range of 7.64 to 8.99.

"-" No applicable standard or not analyzed

BOLD - Greater than Guideline

N/A - Not applicable

TETRA TECH

Table 1: Soil Analytical Results

Location			TP20-01			TP20-03		TP20-04		TP20-05			TP20-07	TP20-08		TP20-09	
Field ID			TP20-01-0.5m	TP20-01-1.0m	TP20-01-1.75m	TP20-03-0.5m	TP20-03-1.3m	TP20-04-1.25m	TP20-04-2.0m	TP20-05-0.75m	TP20-05-1.25m	TP00-05-1.25	TP20-07-0.3m	TP20-08-0.5m	TP20-08-1.7m	TP20-9-0.5m	TP20-09-1.25m
Sample Depth			0.50	1.0	1.75	0.50	1.30	1.25	2.0	0.75	1.25	1.25	0.30	0.50	1.70	0.50	1.25
Sample Date			23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020
Laboratory Report Number			WR2000970	WR2000970	WR2000970	WR2000970	WR2000970	WR2000970	WR2000970	WR2000970	WR2000970	WR2000970	WR2000970	WR2000970	WR2000970	WR2000970	WR2000970
Laboratory ID			WR2000970-001	WR2000970-002	WR2000970-003	WR2000970-016	WR2000970-017	WR2000970-005	WR2000970-006	WR2000970-014	WR2000970-015	WR2000970-022	WR2000970-010	WR2000970-019	WR2000970-021	WR2000970-007	WR2000970-008
Parameter	**Unit**	**Yukon CSR [1,2]**															
BTEXS & MTBE																	
Benzene	µg/g	0.04	-	<0.0050	-	-	<0.0050	<0.0050	-	-	-	-	<0.0050	-	<0.0050	-	<0.0050
Toluene	µg/g	1.5	-	<0.050	-	-	<0.050	<0.050	-	-	-	-	<0.050	-	<0.050	-	<0.050
Ethylbenzene	µg/g	1	-	<0.015	-	-	<0.015	<0.015	-	-	-	-	<0.015	-	<0.015	-	<0.015
Xylenes (m & p)	µg/g	-	-	<0.050	-	-	<0.050	<0.050	-	-	-	-	<0.050	-	<0.050	-	<0.050
Xylene (o)	µg/g	-	-	<0.050	-	-	<0.050	<0.050	-	-	-	-	<0.050	-	<0.050	-	<0.050
Xylenes Total	µg/g	5	-	<0.075	-	-	<0.075	<0.075	-	-	-	-	<0.075	-	<0.075	-	<0.075
Styrene	µg/g	5	-	<0.050	-	-	<0.050	<0.050	-	-	-	-	<0.050	-	<0.050	-	<0.050
Methyl t-butyl ether (MTBE)	µg/g	-	-	<0.200	-	-	<0.050	<0.200	-	-	-	-	<0.200	-	<0.050	-	<0.200
Extractable Petroleum Hydrocarbons																	
EPH_{10-19}	µg/g	-	<200	-	-	-	<200	<200	-	-	<200	<200	<200	<200	-	<200	-
EPH_{19-32}	µg/g	-	<200	-	-	-	<200	<200	-	-	<200	<200	<200	<200	-	<200	-
LEPH	µg/g	1000	<200	-	-	-	<200	<200	-	-	<200	<200	<200	<200	-	<200	-
HEPH	µg/g	1000	<200	-	-	-	<200	<200	-	-	<200	<200	<200	<200	-	<200	-
Volatile Hydrocarbons																	
VH_{6-10}	µg/g	-	-	<10	-	-	<10	<10	-	-	-	-	<10	-	<10	-	<10
VPHs	µg/g	200	-	<10	-	-	<10	<10	-	-	-	-	<10	-	<10	-	<10
Glycols																	
Diethylene glycol	µg/g	-	-	-	-	-	<10	-	-	-	-	-	-	-	-	-	-
Ethylene glycol	µg/g	1500	-	-	-	-	<10	-	-	-	-	-	-	-	-	-	-
Propylene glycol	µg/g	-	-	-	-	-	<10	-	-	-	-	-	-	-	-	-	-
Triethylene Glycol	µg/g	-	-	-	-	-	<10	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons (PAHs)																	
B(a)P Total Potency Equivalent	N/A	-	<0.010	-	-	-	<0.010	<0.010	-	-	<0.010	<0.010	<0.010	<0.010	-	<0.010	-
IACR (CCME)	N/A	-	<0.11	-	-	-	<0.11	<0.11	-	-	<0.11	<0.11	<0.11	<0.11	-	<0.11	-
Acenaphthene	µg/g	-	<0.0050	-	-	-	<0.0050	<0.0050	-	-	<0.0050	<0.0050	<0.0050	<0.0050	-	<0.0050	-
Acenaphthylene	µg/g	-	<0.0050	-	-	-	<0.0050	<0.0050	-	-	<0.0050	<0.0050	<0.0050	<0.0050	-	<0.0050	-
Acridine	µg/g	-	<0.010	-	-	-	<0.010	<0.010	-	-	<0.010	<0.010	<0.010	<0.010	-	<0.010	-
Anthracene	µg/g	-	<0.0040	-	-	-	<0.0040	<0.0040	-	-	<0.0040	<0.0040	<0.0040	<0.0040	-	<0.0040	-
Benz(a)anthracene	µg/g	1	<0.010	-	-	-	<0.010	<0.010	-	-	<0.010	<0.010	<0.010	<0.010	-	<0.010	-
Benzo(a)pyrene	µg/g	1	<0.010	-	-	-	<0.010	<0.010	-	-	<0.010	<0.010	<0.010	<0.010	-	<0.010	-
Benzo(b,j,k)fluoranthene	µg/g	-	<0.015	-	-	-	<0.015	<0.015	-	-	<0.015	<0.015	<0.015	<0.015	-	<0.015	-
Benzo(b+j)fluoranthene	µg/g	-	<0.010	-	-	-	<0.010	<0.010	-	-	<0.010	<0.010	<0.010	<0.010	-	<0.010	-
Benzo(g,h,i)perylene	µg/g	-	<0.010	-	-	-	<0.010	<0.010	-	-	<0.010	<0.010	<0.010	<0.010	-	<0.010	-
Benzo(k)fluoranthene	µg/g	1	<0.010	-	-	-	<0.010	<0.010	-	-	<0.010	<0.010	<0.010	<0.010	-	<0.010	-
Chrysene	µg/g	-	<0.010	-	-	-	<0.010	<0.010	-	-	<0.010	<0.010	<0.010	<0.010	-	<0.010	-
Dibenz(a,h)anthracene	µg/g	1	<0.0050	-	-	-	<0.0050	<0.0050	-	-	<0.0050	<0.0050	<0.0050	<0.0050	-	<0.0050	-
Fluoranthene	µg/g	-	<0.010	-	-	-	<0.010	<0.010	-	-	<0.010	<0.010	<0.010	<0.010	-	<0.010	-
Fluorene	µg/g	-	<0.010	-	-	-	<0.010	<0.010	-	-	<0.010	<0.010	<0.010	<0.010	-	<0.010	-
Indeno(1,2,3-c,d)pyrene	µg/g	1	<0.010	-	-	-	<0.010	<0.010	-	-	<0.010	<0.010	<0.010	<0.010	-	<0.010	-
1-Methylnaphthalene	µg/g	-	<0.010	-	-	-	<0.010	<0.010	-	-	<0.010	<0.010	<0.010	<0.010	-	<0.010	-
2-Methylnaphthalene	µg/g	-	<0.010	-	-	-	<0.010	<0.010	-	-	<0.010	<0.010	<0.010	<0.010	-	<0.010	-
Naphthalene	µg/g	5	<0.010	-	-	-	<0.010	<0.010	-	-	<0.010	<0.010	<0.010	<0.010	-	<0.010	-
Phenanthrene	µg/g	5	<0.010	-	-	-	<0.010	<0.010	-	-	<0.010	<0.010	<0.010	<0.010	-	<0.010	-
Pyrene	µg/g	10	<0.010	-	-	-	<0.010	<0.010	-	-	<0.010	<0.010	<0.010	<0.010	-	<0.010	-
Quinoline	µg/g	-	<0.010	-	-	-	<0.010	<0.010	-	-	<0.010	<0.010	<0.010	<0.010	-	<0.010	-

Notes:

[1] Environment Act. Contaminated Sites Regulation (CSR) (2002/171). Schedule 1 - Generic Numerical Soil Standards and Schedule 2 - Matrix Numerical Soil Standards for Residential (RL) land use

[2] Schedule 2 Parameter. Pathways included:

Intake of contaminated soil

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BOLD - Greater than Guideline

N/A - Not applicable

TETRA TECH

Table 1: Soil Analytical Results

Location			TP20-01			TP20-03		TP20-04		TP20-05			TP20-07	TP20-08		TP20-09	
Field ID			TP20-01-0.5m	TP20-01-1.0m	TP20-01-1.75m	TP20-03-0.5m	TP20-03-1.3m	TP20-04-1.25m	TP20-04-2.0m	TP20-05-0.75m	TP20-05-1.25m	TP00-05-1.25	TP20-07-0.3m	TP20-08-0.5m	TP20-08-1.7m	TP20-9-0.5m	TP20-09-1.25m
Sample Depth			0.50	1.0	1.75	0.50	1.30	1.25	2.0	0.75	1.25	1.25	0.30	0.50	1.70	0.50	1.25
Sample Date			23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020
Laboratory Report Number			WR2000970	WR2000970	WR2000970	WR2000970	WR2000970	WR2000970	WR2000970	WR2000970	WR2000970	WR2000970	WR2000970	WR2000970	WR2000970	WR2000970	WR2000970
Laboratory ID			WR2000970-001	WR2000970-002	WR2000970-003	WR2000970-016	WR2000970-017	WR2000970-005	WR2000970-006	WR2000970-014	WR2000970-015	WR2000970-022	WR2000970-010	WR2000970-019	WR2000970-021	WR2000970-007	WR2000970-008
Parameter	**Unit**	**Yukon CSR [1,2]**															
Volatile Organic Compounds (VOCs)																	
Bromodichloromethane	µg/g	-	-	-	-	-	<0.050	-	-	-	-	-	-	-	<0.050	-	-
Bromoform	µg/g	-	-	-	-	-	<0.050	-	-	-	-	-	-	-	<0.050	-	-
Carbon tetrachloride	µg/g	5	-	-	-	-	<0.050	-	-	-	-	-	-	-	<0.050	-	-
Chlorobenzene	µg/g	1	-	-	-	-	<0.050	-	-	-	-	-	-	-	<0.050	-	-
Chloroethane	µg/g	-	-	-	-	-	<0.050	-	-	-	-	-	-	-	<0.050	-	-
Chloroform	µg/g	5	-	-	-	-	<0.050	-	-	-	-	-	-	-	<0.050	-	-
Chloromethane	µg/g	-	-	-	-	-	<0.050	-	-	-	-	-	-	-	<0.050	-	-
Dibromochloromethane	µg/g	-	-	-	-	-	<0.050	-	-	-	-	-	-	-	<0.050	-	-
1,2-Dichlorobenzene	µg/g	1	-	-	-	-	<0.050	-	-	-	-	-	-	-	<0.050	-	-
1,3-Dichlorobenzene	µg/g	1	-	-	-	-	<0.050	-	-	-	-	-	-	-	<0.050	-	-
1,4-Dichlorobenzene	µg/g	1	-	-	-	-	<0.050	-	-	-	-	-	-	-	<0.050	-	-
1,1-Dichloroethane	µg/g	5	-	-	-	-	<0.050	-	-	-	-	-	-	-	<0.050	-	-
1,2-Dichloroethane	µg/g	5	-	-	-	-	<0.050	-	-	-	-	-	-	-	<0.050	-	-
1,1-Dichloroethene	µg/g	5	-	-	-	-	<0.050	-	-	-	-	-	-	-	<0.050	-	-
1,2-Dichloroethene (cis)	µg/g	-	-	-	-	-	<0.050	-	-	-	-	-	-	-	<0.050	-	-
1,2-Dichloroethene (trans)	µg/g	-	-	-	-	-	<0.050	-	-	-	-	-	-	-	<0.050	-	-
1,2-Dichloropropane	µg/g	5	-	-	-	-	<0.050	-	-	-	-	-	-	-	<0.050	-	-
1,3-Dichloropropene	µg/g	5	-	-	-	-	<0.075	-	-	-	-	-	-	-	<0.075	-	-
1,3-Dichloropropene [cis]	µg/g	5	-	-	-	-	<0.050	-	-	-	-	-	-	-	<0.050	-	-
1,3-Dichloropropene [trans]	µg/g	5	-	-	-	-	<0.050	-	-	-	-	-	-	-	<0.050	-	-
Methylene Chloride	µg/g	5	-	-	-	-	<0.050	-	-	-	-	-	-	-	<0.050	-	-
1,1,1,2-Tetrachloroethane	µg/g	-	-	-	-	-	<0.050	-	-	-	-	-	-	-	<0.050	-	-
1,1,2,2-Tetrachloroethane	µg/g	5	-	-	-	-	<0.050	-	-	-	-	-	-	-	<0.050	-	-
Tetrachloroethene	µg/g	5	-	-	-	-	<0.050	-	-	-	-	-	-	-	<0.050	-	-
1,1,1-Trichloroethane	µg/g	5	-	-	-	-	<0.050	-	-	-	-	-	-	-	<0.050	-	-
1,1,2-Trichloroethane	µg/g	5	-	-	-	-	<0.050	-	-	-	-	-	-	-	<0.050	-	-
Trichloroethene	µg/g	0.15	-	-	-	-	<0.010	-	-	-	-	-	-	-	<0.010	-	-
Trichlorofluoromethane	µg/g	-	-	-	-	-	<0.050	-	-	-	-	-	-	-	<0.050	-	-
Vinyl chloride	µg/g	-	-	-	-	-	<0.050	-	-	-	-	-	-	-	<0.050	-	-

Notes:

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"-" No applicable standard or not analyzed

BOLD - Greater than Guideline

N/A - Not applicable

Table 2: Groundwater Analytical Results

Location				MW20-01		MW20-02	MW20-03
Field ID				MW20-01	DUP	MW20-02	MW20-03
Sample Date				25-Sep-2020	25-Sep-2020	25-Sep-2020	25-Sep-2020
Laboratory Report Number				WR2000970	WR2000970	WR2000970	WR2000970
Laboratory ID				WR2000970-023	WR2000970-026	WR2000970-024	WR2000970-025
Parameter	**Unit**	**Yukon CSR [1]**					
		AW (Fresh)	**DW**				
Physical Parameters							
Dissolved Hardness as $CaCO_3$	µg/L	-	-	573,000	564,000	769,000	719,000
Dissolved Metals							
Aluminum	µg/L	-	200	11.9	11.2	106	**12,000**
Antimony	µg/L	200	6	1.17	1.19	0.92	1.49
Arsenic	µg/L	50	25	12.4	12.5	**44.7**	**30.0**
Barium	µg/L	10,000	1000	577	580	883	**1030**
Beryllium	µg/L	53	-	<0.100	<0.100	<0.100	0.818
Bismuth	µg/L	-	-	<0.050	<0.050	<0.050	0.124
Boron	µg/L	50,000	5000	38	37	12	33
Cadmium	µg/L	0.6 [2]	5	0.0417	0.0387	0.0930	**2.42**
Calcium	µg/L	-	-	143,000	141,000	211,000	201,000
Cesium	µg/L	-	-	<0.010	0.010	<0.010	0.828
Chromium	µg/L	10 [3]	50	2.27	2.30	**13.4**	**39.3**
Cobalt	µg/L	9	-	**14.0**	**13.7**	**31.3**	**93**
Copper	µg/L	90 [2]	1000	4.16	5.75	6.96	70.5
Iron	µg/L	-	300	**1680**	**1700**	**32,400**	**43,500**
Lead	µg/L	160 [2]	10	0.083	0.123	0.771	**20.4**
Lithium	µg/L	-	-	7.7	7.3	4.0	15
Magnesium	µg/L	-	100,000	52,700	51,200	59,000	52,700
Manganese	µg/L	-	50	**2750**	**2680**	**4760**	**7990**
Mercury	µg/L	1	1	0.0064	0.0057	<0.0050	<0.050
Molybdenum	µg/L	10,000	250	10.3	10.3	5.18	2.16
Nickel	µg/L	1500 [2]	-	28.8	28.5	112	223
Phosphorus	µg/L	-	-	86	63	495	1460
Potassium	µg/L	-	-	5710	5770	2970	8520
Rubidium	µg/L	-	-	2.77	2.64	1.60	15.3
Selenium	µg/L	10	10	0.842	0.850	2.33	2.30
Silicon	µg/L	-	-	10,900	10,800	19,100	44,800
Silver	µg/L	15 [2]	-	0.028	0.028	0.049	0.28
Sodium	µg/L	-	200,000	17,800	17,600	14,900	19,000
Strontium	µg/L	-	-	570	579	772	694
Sulphur	µg/L	-	-	19,400	19,700	11,800	13,500
Tellurium	µg/L	-	-	<0.20	<0.20	<0.20	<0.40
Thallium	µg/L	3	-	0.026	0.026	0.012	0.339
Thorium	µg/L	-	-	<0.10	<0.10	0.14	4.3
Tin	µg/L	-	-	0.24	0.26	1.87	4.02
Titanium	µg/L	1000	-	2.15	1.98	18.4	305
Tungsten	µg/L	-	-	<0.10	<0.10	0.13	0.67
Uranium	µg/L	3000	100	6.67	6.58	2.81	5.93
Vanadium	µg/L	-	-	2.84	2.90	8.98	42.2
Zinc	µg/L	2400 [2]	5000	15.1	15.8	10.8	145
Zirconium	µg/L	-	-	2.45	2.46	4.82	25.8
BTEXS & MTBE							
Benzene	µg/L	4000	5	<0.50	<0.50	<0.50	<0.50
Toluene	µg/L	390	24	<0.40	<0.40	<0.40	<0.40
Ethylbenzene	µg/L	2000	2.4	<0.50	<0.50	<0.50	<0.50
Xylenes (m & p)	µg/L	-	-	<0.50	<0.50	<0.50	<0.50
Xylene (o)	µg/L	-	-	<0.50	<0.50	<0.50	<0.50
Xylenes Total	µg/L	-	300	<0.75	<0.75	<0.75	<0.75
Styrene	µg/L	720	-	<0.50	<0.50	<0.50	<0.50
Methyl t-butyl ether (MTBE)	µg/L	-	-	<0.50	<0.50	<0.50	<0.50
TPH (C_{10}-C_{32})-sg	µg/L	-	-	<500	-	-	-
Extractable Petroleum Hydrocarbons							
EPH_{10-19}	µg/L	5000	5000	1420	<250	<250	<250
EPH_{19-32}	µg/L	-	-	<250	<250	<250	<250
EPH_{10-19} - sg	µg/L	5000	5000	<250	-	-	-
EPH_{19-32} - sg	µg/L	-	-	<250	-	-	-
LEPH	µg/L	500	-	**1420**	<250	<250	<250
HEPH	µg/L	-	-	<250	<250	<250	<250
LEPH-sg	µg/L	500	-	<250	-	-	-
HEPH-sg	µg/L	-	-	<250	-	-	-
Volatile Hydrocarbons							
VH_{6-10}	µg/L	15,000	15,000	<100	<100	<100	<100
VPHw	µg/L	1500	-	<100	<100	<100	<100
Glycols							
Diethylene glycol	µg/L	-	-	<5000	<5000	<5000	<5000
Ethylene glycol	µg/L	1,920,000	-	<5000	<5000	<5000	<5000
Propylene glycol	µg/L	5,000,000	-	<5000	<5000	<5000	<5000
Triethylene Glycol	µg/L	-	-	<5000	<5000	<5000	<5000
Polycyclic Aromatic Hydrocarbons (PAHs)							
Acenaphthene	µg/L	60	-	<0.010	<0.010	<0.010	<0.010
Acenaphthylene	µg/L	-	-	<0.010	<0.010	<0.010	<0.010
Acridine	µg/L	0.5	-	<0.010	<0.010	<0.010	<0.010
Anthracene	µg/L	1	-	<0.010	<0.010	<0.010	<0.010
Benz(a)anthracene	µg/L	1	-	<0.010	<0.010	<0.010	0.012
Benzo(a)pyrene	µg/L	0.1	0.01	<0.0050	<0.0050	<0.0050	0.0050
Benzo(b,j,k)fluoranthene	µg/L	-	-	<0.015	<0.015	<0.015	<0.015
Benzo(b+j)fluoranthene	µg/L	-	-	<0.010	<0.010	<0.010	<0.010
Benzo(g,h,i)perylene	µg/L	-	-	<0.010	<0.010	<0.010	<0.010
Benzo(k)fluoranthene	µg/L	-	-	<0.010	<0.010	<0.010	<0.010
Chrysene	µg/L	-	-	<0.010	<0.010	<0.010	0.014
Dibenz(a,h)anthracene	µg/L	-	-	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	µg/L	2	-	<0.010	<0.010	<0.010	0.021
Fluorene	µg/L	120	-	<0.010	<0.010	<0.010	0.019
Indeno(1,2,3-c,d)pyrene	µg/L	-	-	<0.010	<0.010	<0.010	<0.010
1-Methylnaphthalene	µg/L	-	-	0.018	0.017	<0.010	0.027
2-Methylnaphthalene	µg/L	-	-	0.028	0.026	<0.010	0.049
Naphthalene	µg/L	10	-	0.066	0.065	<0.050	0.065
Phenanthrene	µg/L	3	-	<0.020	<0.020	<0.020	0.05
Pyrene	µg/L	0.2	-	<0.010	<0.010	<0.010	0.031
Quinoline	µg/L	34	-	<0.050	<0.050	<0.050	<0.050
Volatile Organic Compounds (VOCs)							
Bromodichloromethane	µg/L	-	-	<0.50	<0.50	<0.50	<0.50
Bromoform	µg/L	-	-	<0.50	<0.50	<0.50	<0.50
Carbon tetrachloride	µg/L	130	5	<0.50	<0.50	<0.50	<0.50
Chlorobenzene	µg/L	13	30	<0.50	<0.50	<0.50	<0.50
Chloroethane	µg/L	-	-	<0.50	<0.50	<0.50	<0.50
Chloroform	µg/L	20	100	<0.50	<0.50	<0.50	<0.50
Chloromethane	µg/L	-	-	<0.50	<0.50	<0.50	<0.50
Dibromochloromethane	µg/L	-	-	<0.50	<0.50	<0.50	<0.50
1,2-Dichlorobenzene	µg/L	-	3	<0.50	<0.50	<0.50	<0.50
1,3-Dichlorobenzene	µg/L	1500	-	<0.50	<0.50	<0.50	<0.50
1,4-Dichlorobenzene	µg/L	260	1	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethane	µg/L	-	-	<0.50	<0.50	<0.50	<0.50
1,2-Dichloroethane	µg/L	1000	5	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethene	µg/L	-	14	<0.50	<0.50	<0.50	<0.50
1,2-Dichloroethene (cis)	µg/L	-	-	<0.50	<0.50	<0.50	<0.50
1,2-Dichloroethene (trans)	µg/L	-	-	<0.50	<0.50	<0.50	<0.50
1,2-Dichloropropane	µg/L	-	-	<0.50	<0.50	<0.50	<0.50
1,3-Dichloropropene	µg/L	-	-	<0.75	<0.75	<0.75	<0.75
1,3-Dichloropropene [cis]	µg/L	-	-	<0.50	<0.50	<0.50	<0.50
1,3-Dichloropropene [trans]	µg/L	-	-	<0.50	<0.50	<0.50	<0.50
Methylene Chloride	µg/L	980	50	<0.50	<0.50	<0.50	<0.50
1,1,1,2-Tetrachloroethane	µg/L	-	-	<0.50	<0.50	<0.50	<0.50
1,1,2,2-Tetrachloroethane	µg/L	-	-	<0.20	<0.20	<0.20	<0.20
Tetrachloroethene	µg/L	1100	30	<0.50	<0.50	<0.50	<0.50
1,1,1-Trichloroethane	µg/L	-	-	<0.50	<0.50	<0.50	<0.50
1,1,2-Trichloroethane	µg/L	-	-	<0.50	<0.50	<0.50	<0.50
Trichloroethene	µg/L	200	50	<0.50	<0.50	<0.50	<0.50
Trichlorofluoromethane	µg/L	-	-	<0.50	<0.50	<0.50	<0.50
Vinyl chloride	µg/L	-	2	<0.40	<0.40	<0.40	<0.40

Notes:

[1] Environment Act. Contaminated Sites Regulation (CSR) (2002/171). Schedule 3, Generic Numerical Water Standards for Freshwater Aquatic Life (AW) and Drinking Water (DW)

[2] Standard varies with hardness. Values shown based on hardness range of 564 mg/L to 769 mg/L.

[3] Standard is for Chromium VI

"-" No applicable standard

BOLD - Greater than Guideline

Table 3: Soil Quality Assurance/Quality Control Analytical Results

		Field ID	TP20-05	TP00-05	RPD (%)
		Sample Depth	1.25	1.25	
		Sample Date	23-Sep-2020	23-Sep-2020	
		Laboratory Report Number	WR2000970	WR2000970	
		Laboratory ID	WR2000970-015	WR2000970-022	
Parameter	**Unit**	**RDL**			
Physical Parameters					
pH (1:2 soil:water)	pH Units	0.1	7.64	7.87	3
Moisture	%	0.25	17.4	18.2	4
Metals					
Aluminum	µg/g	50	14,500	19,000	27
Antimony	µg/g	0.3	<0.80	<0.80	-
Arsenic	µg/g	0.1	7.01	6.58	6
Barium	µg/g	0.5	257	212	19
Beryllium	µg/g	0.1	0.29	0.27	-
Bismuth	µg/g	0.2	<0.20	<0.20	-
Boron	µg/g	5	<5.0	<5.0	-
Cadmium	µg/g	0.02	0.118	0.108	9
Calcium	µg/g	50	5300	5730	8
Chromium	µg/g	0.5	196	364	**60**
Chromium (Hexavalent)	µg/g	0.1	<0.10	<0.10	-
Chromium (Trivalent)	µg/g	14.3	196	364	**60**
Cobalt	µg/g	0.1	24.7	29.1	16
Copper	µg/g	0.5	24.0	24.7	3
Iron	µg/g	50	25,500	29,600	15
Lead	µg/g	0.5	5.66	4.71	18
Lithium	µg/g	2	12.8	15.9	22
Magnesium	µg/g	20	19,600	31,700	**47**
Manganese	µg/g	1	371	472	24
Mercury	µg/g	0.005	<0.050	<0.050	-
Molybdenum	µg/g	0.1	0.34	0.38	-
Nickel	µg/g	0.5	316	352	11
Phosphorus	µg/g	50	520	417	22
Potassium	µg/g	100	390	340	-
Selenium	µg/g	0.2	<0.20	<0.20	-
Silver	µg/g	0.1	<0.10	<0.10	-
Sodium	µg/g	50	195	152	-
Strontium	µg/g	0.5	26.4	25.3	4
Sulphur	µg/g	1000	<1000	<1000	-
Thallium	µg/g	0.05	<0.050	<0.050	-
Tin	µg/g	2	<2.0	<2.0	-
Titanium	µg/g	1	565	640	12
Tungsten	µg/g	0.5	<0.50	<0.50	-
Uranium	µg/g	0.05	0.575	0.616	7
Vanadium	µg/g	0.2	52.4	64.5	21
Zinc	µg/g	2	50.2	43.5	14
Zirconium	µg/g	1	4.6	4.6	-
Extractable Petroleum Hydrocarbons					
EPH_{10-19}	µg/g	200	<200	<200	-
EPH_{19-32}	µg/g	200	<200	<200	-
LEPH	µg/g	200	<200	<200	-
HEPH	µg/g	200	<200	<200	-
Polycyclic Aromatic Hydrocarbons (PAHs)					
B(a)P Total Potency Equivalent	N/A	0.01	<0.010	<0.010	-
IACR (CCME)	N/A	0.11	<0.11	<0.11	-
Acenaphthene	µg/g	0.005	<0.0050	<0.0050	-
Acenaphthylene	µg/g	0.005	<0.0050	<0.0050	-
Acridine	µg/g	0.01	<0.010	<0.010	-
Anthracene	µg/g	0.004	<0.0040	<0.0040	-
Benz(a)anthracene	µg/g	0.01	<0.010	<0.010	-
Benzo(a)pyrene	µg/g	0.01	<0.010	<0.010	-
Benzo(b,j,k)fluoranthene	µg/g	0.015	<0.015	<0.015	-
Benzo(b+j)fluoranthene	µg/g	0.01	<0.010	<0.010	-
Benzo(g,h,i)perylene	µg/g	0.01	<0.010	<0.010	-
Benzo(k)fluoranthene	µg/g	0.01	<0.010	<0.010	-
Chrysene	µg/g	0.01	<0.010	<0.010	-
Dibenz(a,h)anthracene	µg/g	0.005	<0.0050	<0.0050	-
Fluoranthene	µg/g	0.01	<0.010	<0.010	-
Fluorene	µg/g	0.01	<0.010	<0.010	-
Indeno(1,2,3-c,d)pyrene	µg/g	0.01	<0.010	<0.010	-
1-Methylnaphthalene	µg/g	0.01	<0.010	<0.010	-
2-Methylnaphthalene	µg/g	0.01	<0.010	<0.010	-
Naphthalene	µg/g	0.01	<0.010	<0.010	-
Phenanthrene	µg/g	0.01	<0.010	<0.010	-
Pyrene	µg/g	0.01	<0.010	<0.010	-
Quinoline	µg/g	0.01	<0.010	<0.010	-

Notes:

RDL - Reportable detection limit

RPD - Relative Percentage Difference calculated as RPD(%)=(|V1-V2|)/[(V1+V2)/2])*100 where V1,V2 = concentrations of parent and duplicate sample, respectively.

"-" Indicates RPD not calculated. RPDs have only been calculated where a concentration is greater than 5 times the RDL

N/A - Not applicable

BOLD - RPD value greater than 30%

Table 4: Groundwater Quality Assurance/Quality Control Analytical Results

	QAQC Type	Blanks	Duplicate			
	Field ID	Field Blank	MW20-01	DUP	RPD (%)	
	Sample Date	25-Sep-2020	25-Sep-2020	25-Sep-2020		
	Laboratory Report Number	WR2000970	WR2000970	WR2000970		
	Laboratory ID	WR2000970-027	WR2000970-023	WR2000970-026		
Parameter	**Unit**	**RDL**				
Physical Parameters						
Dissolved Hardness as $CaCO_3$	µg/L	600	<600	573,000	564,000	2
Dissolved Metals						
Aluminum	µg/L	1	<1.0	11.9	11.2	6
Antimony	µg/L	0.1	<0.10	1.17	1.19	2
Arsenic	µg/L	0.1	<0.10	12.4	12.5	1
Barium	µg/L	0.1	<0.10	577	580	1
Beryllium	µg/L	0.1	<0.100	<0.100	<0.100	-
Bismuth	µg/L	0.05	<0.050	<0.050	<0.050	-
Boron	µg/L	10	<10	38	37	-
Cadmium	µg/L	0.005	<0.0050	0.0417	0.0387	7
Calcium	µg/L	50	<50	143,000	141,000	1
Cesium	µg/L	0.01	<0.010	<0.010	0.010	-
Chromium	µg/L	0.1	<0.10	2.27	2.30	1
Cobalt	µg/L	0.1	<0.10	14.0	13.7	2
Copper	µg/L	0.2	<0.20	4.16	5.75	**32**
Iron	µg/L	10	<10	1680	1700	1
Lead	µg/L	0.05	<0.050	0.083	0.123	-
Lithium	µg/L	1	<1.0	7.7	7.3	5
Magnesium	µg/L	5	<5.0	52,700	51,200	3
Manganese	µg/L	0.1	<0.10	2750	2680	3
Mercury	µg/L	0.005	<0.0050	0.0064	0.0057	-
Molybdenum	µg/L	0.05	<0.050	10.3	10.3	0
Nickel	µg/L	0.5	<0.50	28.8	28.5	1
Phosphorus	µg/L	50	<50	86	63	-
Potassium	µg/L	50	<50	5710	5770	1
Rubidium	µg/L	0.2	<0.20	2.77	2.64	5
Selenium	µg/L	0.05	<0.050	0.842	0.850	1
Silicon	µg/L	50	<50	10,900	10,800	1
Silver	µg/L	0.01	<0.010	0.028	0.028	-
Sodium	µg/L	50	<50	17,800	17,600	1
Strontium	µg/L	0.2	<0.20	570	579	2
Sulphur	µg/L	500	<500	19,400	19,700	2
Tellurium	µg/L	0.2	<0.20	<0.20	<0.20	-
Thallium	µg/L	0.01	<0.010	0.026	0.026	-
Thorium	µg/L	0.1	<0.10	<0.10	<0.10	-
Tin	µg/L	0.1	<0.10	0.24	0.26	-
Titanium	µg/L	0.3	<0.30	2.15	1.98	8
Tungsten	µg/L	0.1	<0.10	<0.10	<0.10	-
Uranium	µg/L	0.01	<0.010	6.67	6.58	1
Vanadium	µg/L	0.5	<0.50	2.84	2.90	2
Zinc	µg/L	1	<1.0	15.1	15.8	5
Zirconium	µg/L	0.2	<0.20	2.45	2.46	0.4
BTEXS & MTBE						
Benzene	µg/L	0.5	<0.50	<0.50	<0.50	-
Toluene	µg/L	0.4	<0.40	<0.40	<0.40	-
Ethylbenzene	µg/L	0.5	<0.50	<0.50	<0.50	-
Xylenes (m & p)	µg/L	0.5	<0.50	<0.50	<0.50	-
Xylene (o)	µg/L	0.5	<0.50	<0.50	<0.50	-
Xylenes Total	µg/L	0.75	<0.75	<0.75	<0.75	-
Styrene	µg/L	0.5	<0.50	<0.50	<0.50	-
Methyl t-butyl ether (MTBE)	µg/L	0.5	<0.50	<0.50	<0.50	-
Extractable Petroleum Hydrocarbons						
EPH_{10-19}	µg/L	250	<250	1420	<250	-
EPH_{19-32}	µg/L	250	<250	<250	<250	-
LEPH	µg/L	250	<250	1420	<250	-
HEPH	µg/L	250	<250	<250	<250	-
Volatile Hydrocarbons						
VH_{6-10}	µg/L	100	<100	<100	<100	-
VPHw	µg/L	100	<100	<100	<100	-
Glycols						
Diethylene glycol	µg/L	5000	<5000	<5000	<5000	-
Ethylene glycol	µg/L	5000	<5000	<5000	<5000	-
Propylene glycol	µg/L	5000	<5000	<5000	<5000	-
Triethylene Glycol	µg/L	5000	<5000	<5000	<5000	-
Polycyclic Aromatic Hydrocarbons (PAHs)						
Acenaphthene	µg/L	0.01	<0.010	<0.010	<0.010	-
Acenaphthylene	µg/L	0.01	<0.010	<0.010	<0.010	-
Acridine	µg/L	0.01	<0.010	<0.010	<0.010	-
Anthracene	µg/L	0.01	<0.010	<0.010	<0.010	-
Benz(a)anthracene	µg/L	0.01	<0.010	<0.010	<0.010	-
Benzo(a)pyrene	µg/L	0.005	<0.0050	<0.0050	<0.0050	-
Benzo(b,j,k)fluoranthene	µg/L	0.015	<0.015	<0.015	<0.015	-
Benzo(b+j)fluoranthene	µg/L	0.01	<0.010	<0.010	<0.010	-
Benzo(g,h,i)perylene	µg/L	0.01	<0.010	<0.010	<0.010	-
Benzo(k)fluoranthene	µg/L	0.01	<0.010	<0.010	<0.010	-
Chrysene	µg/L	0.01	<0.010	<0.010	<0.010	-
Dibenz(a,h)anthracene	µg/L	0.005	<0.0050	<0.0050	<0.0050	-
Fluoranthene	µg/L	0.01	<0.010	<0.010	<0.010	-
Fluorene	µg/L	0.01	<0.010	<0.010	<0.010	-
Indeno(1,2,3-c,d)pyrene	µg/L	0.01	<0.010	<0.010	<0.010	-
1-Methylnaphthalene	µg/L	0.01	<0.010	0.018	0.017	-
2-Methylnaphthalene	µg/L	0.01	<0.010	0.028	0.026	-
Naphthalene	µg/L	0.05	<0.050	0.066	0.065	-
Phenanthrene	µg/L	0.02	<0.020	<0.020	<0.020	-
Pyrene	µg/L	0.01	<0.010	<0.010	<0.010	-
Quinoline	µg/L	0.05	<0.050	<0.050	<0.050	-
Volatile Organic Compounds (VOCs)						
Bromodichloromethane	µg/L	0.5	<0.50	<0.50	<0.50	-
Bromoform	µg/L	0.5	<0.50	<0.50	<0.50	-
Carbon tetrachloride	µg/L	0.5	<0.50	<0.50	<0.50	-
Chlorobenzene	µg/L	0.5	<0.50	<0.50	<0.50	-
Chloroethane	µg/L	0.5	<0.50	<0.50	<0.50	-
Chloroform	µg/L	0.5	<0.50	<0.50	<0.50	-
Chloromethane	µg/L	0.5	<0.50	<0.50	<0.50	-
Dibromochloromethane	µg/L	0.5	<0.50	<0.50	<0.50	-
1,2-Dichlorobenzene	µg/L	0.5	<0.50	<0.50	<0.50	-
1,3-Dichlorobenzene	µg/L	0.5	<0.50	<0.50	<0.50	-
1,4-Dichlorobenzene	µg/L	0.5	<0.50	<0.50	<0.50	-
1,1-Dichloroethane	µg/L	0.5	<0.50	<0.50	<0.50	-
1,2-Dichloroethane	µg/L	0.5	<0.50	<0.50	<0.50	-
1,1-Dichloroethene	µg/L	0.5	<0.50	<0.50	<0.50	-
1,2-Dichloroethene (cis)	µg/L	0.5	<0.50	<0.50	<0.50	-
1,2-Dichloroethene (trans)	µg/L	0.5	<0.50	<0.50	<0.50	-
1,2-Dichloropropane	µg/L	0.5	<0.50	<0.50	<0.50	-
1,3-Dichloropropene	µg/L	0.75	<0.75	<0.75	<0.75	-
1,3-Dichloropropene [cis]	µg/L	0.5	<0.50	<0.50	<0.50	-
1,3-Dichloropropene [trans]	µg/L	0.5	<0.50	<0.50	<0.50	-
Methylene Chloride	µg/L	0.5	<0.50	<0.50	<0.50	-
1,1,1,2-Tetrachloroethane	µg/L	0.5	<0.50	<0.50	<0.50	-
1,1,2,2-Tetrachloroethane	µg/L	0.2	<0.20	<0.20	<0.20	-
Tetrachloroethene	µg/L	0.5	<0.50	<0.50	<0.50	-
1,1,1-Trichloroethane	µg/L	0.5	<0.50	<0.50	<0.50	-
1,1,2-Trichloroethane	µg/L	0.5	<0.50	<0.50	<0.50	-
Trichloroethene	µg/L	0.5	<0.50	<0.50	<0.50	-
Trichlorofluoromethane	µg/L	0.5	<0.50	<0.50	<0.50	-
Vinyl chloride	µg/L	0.4	<0.40	<0.40	<0.40	-

Notes:
RDL - Reportable detection limit
RPD - Relative Percentage Difference calculated as RPD(%)=(|V1-V2|)/[(V1+V2)/2])*100 where V1,V2 = concentrations of parent and duplicate sample, respectively.
"-" Indicates RPD not calculated. RPDs have only been calculated where a concentration is greater than 5 times the RDL
BOLD - RPD value greater than 30%
Shaded- Detect Value in Blank Sample

FIGURES

LEGEND

- Site Boundary
- Road

NOTES
Base data source:
Canvec (2019)
Imagery source: ESRI-Maxar (2017)

STATUS
ISSUED FOR REVIEW

PHASE II ENVIRONMENTAL SITE ASSESSMENT
1207 FIFTH AVENUE
DAWSON CITY, YUKON

Site Location

PROJECTION	DATUM	CLIENT
Yukon Albers	NAD83	Yukon

Scale: 1:25,000
500 250 0 500
Metres

TETRA TECH

FILE NO. PENW03102-01_Figure1_SiteLoc.mxd

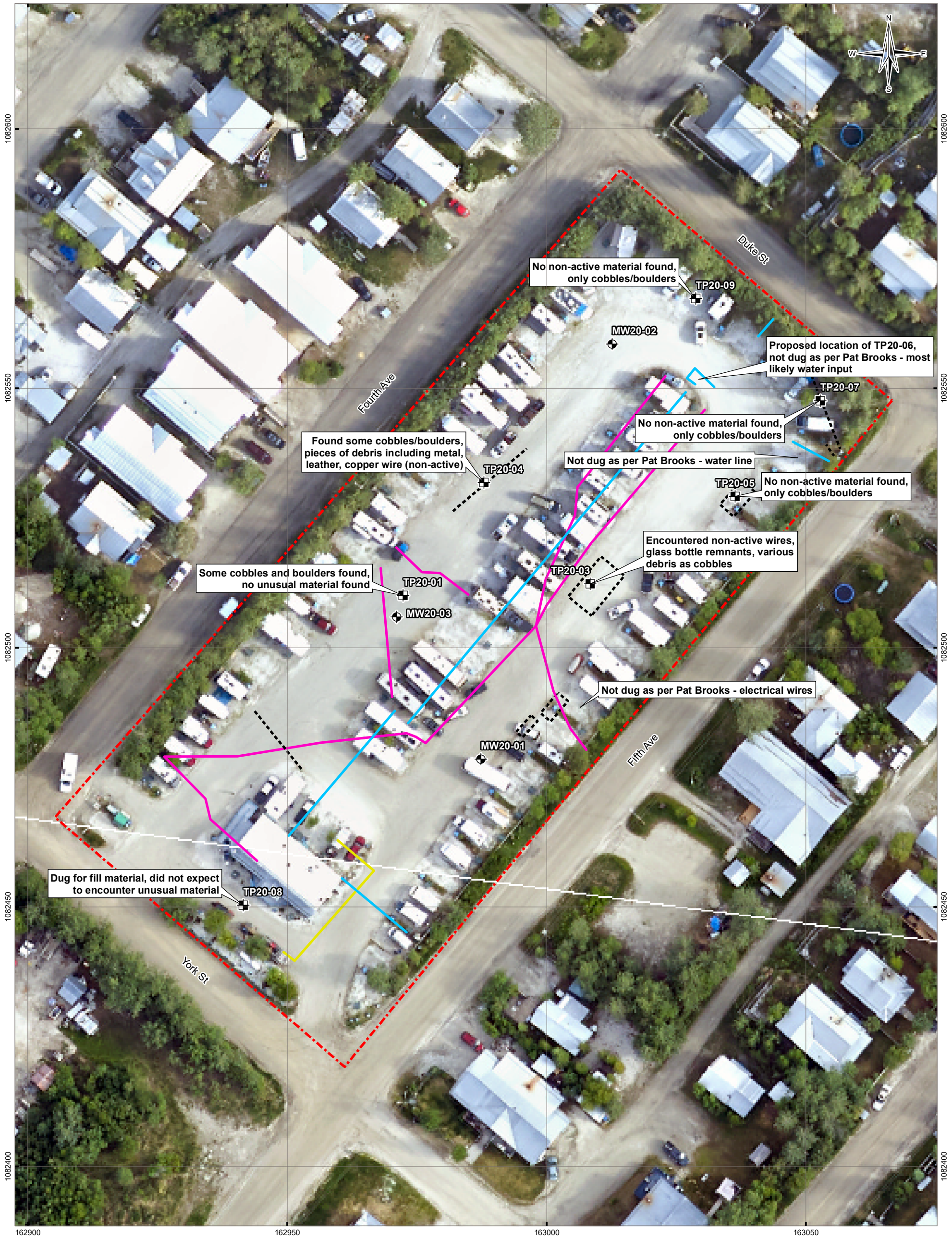
OFFICE	DWN	CKD	APVD	REV
Tt-CAL	RG	SL	RC	0

DATE October 28, 2020
PROJECT NO. ENW.PENW03102-01

Figure 1

M:\ENVIRONMENTAL\PENW\PENW03102-01\Maps\PENW03102-01_Figure1_SiteLoc.mxd modified 2020-10-28 by rhia.goo

M:\ENVIRONMENTAL\PENW\PENW03102-01\Maps\PENW03102-01_Figure2_SiteLayout.mxd modified 11/17/2020 by megan.verburg



LEGEND

- Site Boundary
- Monitoring Well
- Testpit
- Propane Line
- Water/Sewer Line
- Teck Cable
- Unidentified Object

NOTES
Base data source: Imagery provided by GeoYukon (June 11, 2019)

STATUS
ISSUED FOR REVIEW

PHASE II ENVIRONMENTAL SITE ASSESSMENT
1207 FIFTH AVENUE
DAWSON CITY, YUKON

Site Layout Plan

PROJECTION	DATUM	CLIENT
Yukon Albers	NAD83	Yukon

Scale: 1:700
10 5 0 10
Metres

FILE NO. PENW03102-01_Figure2_SiteLayout.mxd

OFFICE	DWN	CKD	APVD	REV
Tt-CAL	RG	SL	SK	0

DATE	PROJECT NO.
November 17, 2020	ENW.PENW03102-01

TETRA TECH

Figure 2

M:\ENVIRONMENTAL\PENW\PENW03102-01\Maps\PENW03102-01_Figure3_GWcontour_Sept2020.mxd modified 2020-10-28 by rhia.goo

LEGEND

- Site Boundary
- Monitoring Well
- Groundwater Elevation Contour (masl)
- Inferred Groundwater Flow Direction
- (319.936 masl) Groundwater Elevation (metres above sea level)

NOTES
Base data source: Imagery provided by GeoYukon (June 11, 2019)

STATUS
ISSUED FOR REVIEW

PHASE II ENVIRONMENTAL SITE ASSESSMENT
1207 FIFTH AVENUE
DAWSON CITY, YUKON

Groundwater Elevation Contour Map
September 25, 2020

PROJECTION	DATUM	CLIENT
Yukon Albers	NAD83	Yukon

Scale: 1:700
10 5 0 10
Metres

FILE NO.
PENW03102-01_Figure3_GWcontour_Sept2020.mxd

OFFICE	DWN	CKD	APVD	REV
Tt-CAL	RG	SL	SK	0

DATE	PROJECT NO.
October 28, 2020	ENW.PENW03102-01

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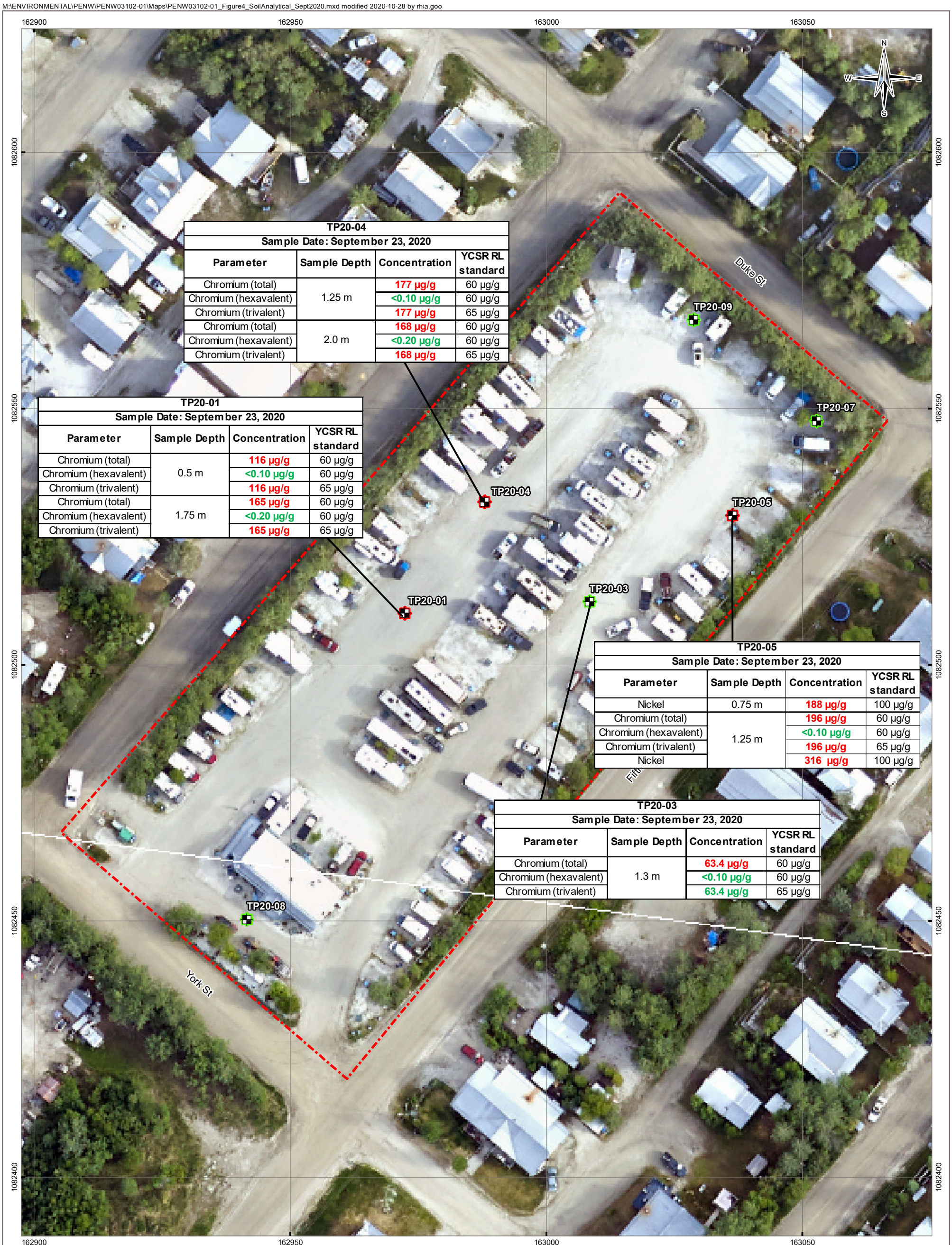
Figure 3

M:\ENVIRONMENTAL\PENW\PENW03102-01\Maps\PENW03102-01_Figure4_SoilAnalytical_Sept2020.mxd modified 2020-10-28 by rhia.goo



TP20-04			
Sample Date: September 23, 2020			
Parameter	Sample Depth	Concentration	YCSR RL standard
Chromium (total)	1.25 m	177 µg/g	60 µg/g
Chromium (hexavalent)		<0.10 µg/g	60 µg/g
Chromium (trivalent)		177 µg/g	65 µg/g
Chromium (total)	2.0 m	168 µg/g	60 µg/g
Chromium (hexavalent)		<0.20 µg/g	60 µg/g
Chromium (trivalent)		168 µg/g	65 µg/g

TP20-01			
Sample Date: September 23, 2020			
Parameter	Sample Depth	Concentration	YCSR RL standard
Chromium (total)	0.5 m	116 µg/g	60 µg/g
Chromium (hexavalent)		<0.10 µg/g	60 µg/g
Chromium (trivalent)		116 µg/g	65 µg/g
Chromium (total)	1.75 m	165 µg/g	60 µg/g
Chromium (hexavalent)		<0.20 µg/g	60 µg/g
Chromium (trivalent)		165 µg/g	65 µg/g

TP20-05			
Sample Date: September 23, 2020			
Parameter	Sample Depth	Concentration	YCSR RL standard
Nickel	0.75 m	188 µg/g	100 µg/g
Chromium (total)	1.25 m	196 µg/g	60 µg/g
Chromium (hexavalent)		<0.10 µg/g	60 µg/g
Chromium (trivalent)		196 µg/g	65 µg/g
Nickel		316 µg/g	100 µg/g

TP20-03			
Sample Date: September 23, 2020			
Parameter	Sample Depth	Concentration	YCSR RL standard
Chromium (total)	1.3 m	63.4 µg/g	60 µg/g
Chromium (hexavalent)		<0.10 µg/g	60 µg/g
Chromium (trivalent)		63.4 µg/g	65 µg/g

LEGEND

- Site Boundary
- Testpit
- Soil samples contain parameters with concentrations that exceeded the Yukon Contaminated Sites Regulation (YCSR) standards for residential (RL) land use
- Soil samples contain parameters with concentrations that meet the YCSR standards for RL land use

NOTES
Base data source: Imagery provided by GeoYukon (June 11, 2019)

STATUS
ISSUED FOR REVIEW

PHASE II ENVIRONMENTAL SITE ASSESSMENT
1207 FIFTH AVENUE
DAWSON CITY, YUKON

Soil Analytical Results

PROJECTION	DATUM	CLIENT
Yukon Albers	NAD83	Yukon

Scale: 1:700
10 5 0 10
Metres

FILE NO.
PENW03102-01_Figure4_SoilAnalytical_Sept2020.mxd

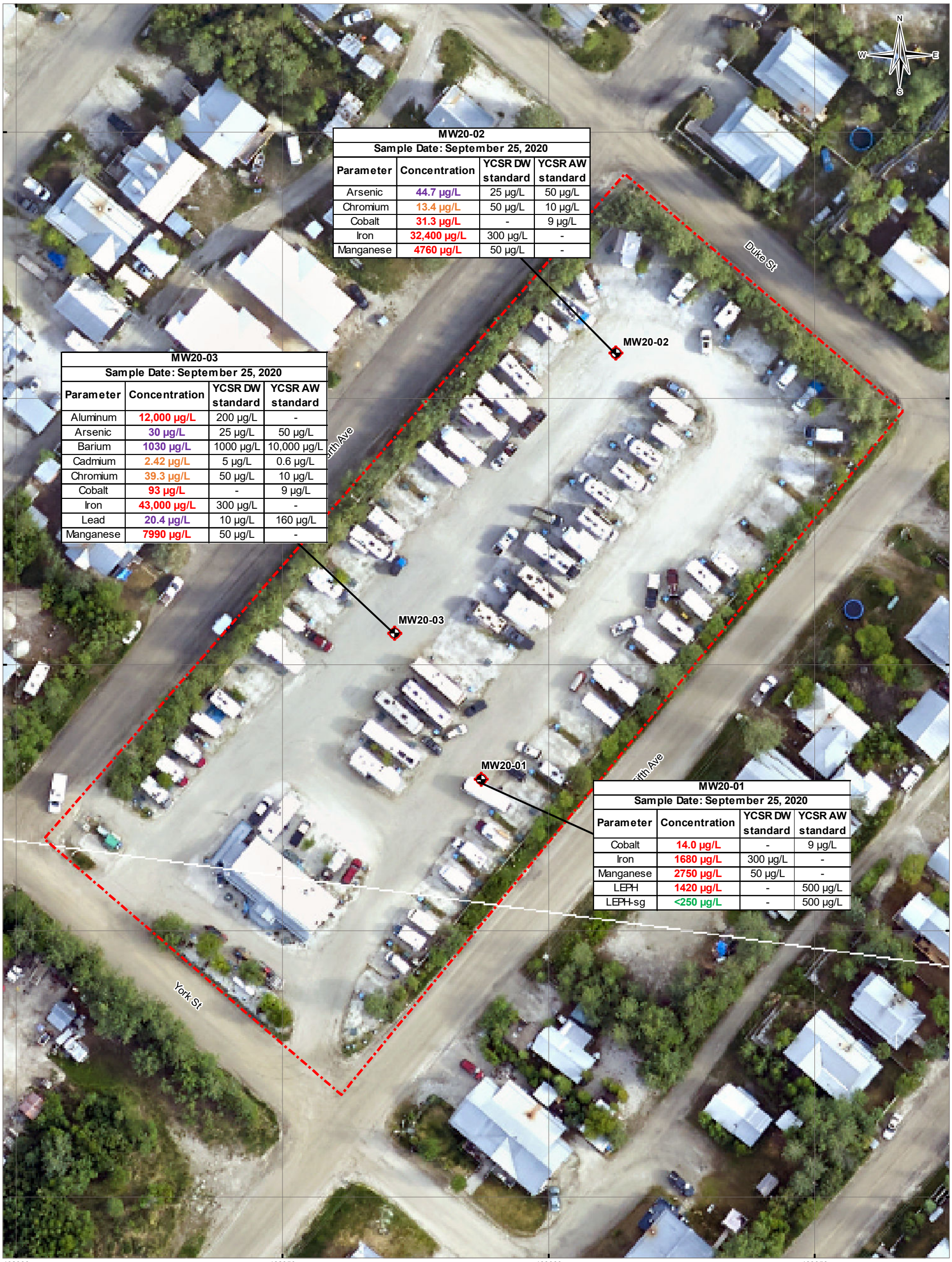
OFFICE	DWN	CKD	APVD	REV
Tt-CAL	RG	SL	SK	0

DATE	PROJECT NO.
October 28, 2020	ENW.PENW03102-01

TETRA TECH

Figure 4

M:\ENVIRONMENTAL\PENW\PENW03102-01\Maps\PENW03102-01_Figure5_GWAnalytical_Sept2020.mxd modified 2020-10-28 by rhia.goo



MW20-02			
Sample Date: September 25, 2020			
Parameter	Concentration	YCSR DW standard	YCSR AW standard
Arsenic	44.7 µg/L	25 µg/L	50 µg/L
Chromium	13.4 µg/L	50 µg/L	10 µg/L
Cobalt	31.3 µg/L	-	9 µg/L
Iron	32,400 µg/L	300 µg/L	-
Manganese	4760 µg/L	50 µg/L	-

MW20-03			
Sample Date: September 25, 2020			
Parameter	Concentration	YCSR DW standard	YCSR AW standard
Aluminum	12,000 µg/L	200 µg/L	-
Arsenic	30 µg/L	25 µg/L	50 µg/L
Barium	1030 µg/L	1000 µg/L	10,000 µg/L
Cadmium	2.42 µg/L	5 µg/L	0.6 µg/L
Chromium	39.3 µg/L	50 µg/L	10 µg/L
Cobalt	93 µg/L	-	9 µg/L
Iron	43,000 µg/L	300 µg/L	-
Lead	20.4 µg/L	10 µg/L	160 µg/L
Manganese	7990 µg/L	50 µg/L	-

MW20-01			
Sample Date: September 25, 2020			
Parameter	Concentration	YCSR DW standard	YCSR AW standard
Cobalt	14.0 µg/L	-	9 µg/L
Iron	1680 µg/L	300 µg/L	-
Manganese	2750 µg/L	50 µg/L	-
LEPH	1420 µg/L	-	500 µg/L
LEPH-sg	<250 µg/L	-	500 µg/L

LEGEND

- Site Boundary
- Monitoring Well
- Groundwater samples contain parameters with concentrations that exceeded the Yukon Contaminated Sites Regulation (YCSR) standards for drinking water (DW) and/or aquatic life (AW)
- Groundwater samples contain parameters with concentrations that exceeded the YCSR standards for DW
- Groundwater samples contain parameters with concentrations that exceeded the YCSR standards for AW
- Groundwater samples contain parameters with concentrations that met the YCSR standards for DW and AW

NOTES
Base data source: Imagery provided by GeoYukon (June 11, 2019)

STATUS
ISSUED FOR REVIEW

PHASE II ENVIRONMENTAL SITE ASSESSMENT
1207 FIFTH AVENUE
DAWSON CITY, YUKON

Groundwater Analytical Results

PROJECTION: Yukon Albers		DATUM: NAD83	CLIENT: Yukon
Scale: 1:700 (10 5 0 10 Metres)			TETRA TECH
FILE NO.: PENW03102-01_Figure5_GWAnalytical_Sept2020.mxd			
OFFICE: Tt-CAL	DWN: RG / CKD: SL / APVD: SK / REV: 0		Figure 5
DATE: October 28, 2020	PROJECT NO.: ENW.PENW03102-01		

APPENDIX A

TETRA TECH'S LIMITATIONS ON THE USE OF THIS DOCUMENT

LIMITATIONS ON USE OF THIS DOCUMENT

GEOENVIRONMENTAL

1.1 USE OF DOCUMENT AND OWNERSHIP

This document pertains to a specific site, a specific development, and a specific scope of work. The document may include plans, drawings, profiles and other supporting documents that collectively constitute the document (the "Professional Document").

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Where TETRA TECH submits electronic file and/or hard copy versions of the Professional Document or any drawings or other project-related documents and deliverables (collectively termed TETRA TECH's "Instruments of Professional Service"), only the signed and/or sealed versions shall be considered final. The original signed and/or sealed electronic file and/or hard copy version archived by TETRA TECH shall be deemed to be the original. TETRA TECH will archive a protected digital copy of the original signed and/or sealed version for a period of 10 years.

Both electronic file and/or hard copy versions of TETRA TECH's Instruments of Professional Service shall not, under any circumstances, be altered by any party except TETRA TECH. TETRA TECH's Instruments of Professional Service will be used only and exactly as submitted by TETRA TECH.

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1.3 STANDARD OF CARE

Services performed by TETRA TECH for the Professional Document have been conducted in accordance with the Contract, in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions in the jurisdiction in which the services are provided. Professional judgment has been applied in developing the conclusions and/or recommendations provided in this Professional Document. No warranty or guarantee, express or implied, is made concerning the test results, comments, recommendations, or any other portion of the Professional Document.

If any error or omission is detected by the Client or an Authorized Party, the error or omission must be immediately brought to the attention of TETRA TECH.

1.4 DISCLOSURE OF INFORMATION BY CLIENT

The Client acknowledges that it has fully cooperated with TETRA TECH with respect to the provision of all available information on the past, present, and proposed conditions on the site, including historical information respecting the use of the site. The Client further acknowledges that in order for TETRA TECH to properly provide the services contracted for in the Contract, TETRA TECH has relied upon the Client with respect to both the full disclosure and accuracy of any such information.

1.5 INFORMATION PROVIDED TO TETRA TECH BY OTHERS

During the performance of the work and the preparation of this Professional Document, TETRA TECH may have relied on information provided by persons other than the Client.

While TETRA TECH endeavours to verify the accuracy of such information, TETRA TECH accepts no responsibility for the accuracy or the reliability of such information even where inaccurate or unreliable information impacts any recommendations, design or other deliverables and causes the Client or an Authorized Party loss or damage.

1.6 GENERAL LIMITATIONS OF DOCUMENT

This Professional Document is based solely on the conditions presented and the data available to TETRA TECH at the time the data were collected in the field or gathered from available databases.

The Client, and any Authorized Party, acknowledges that the Professional Document is based on limited data and that the conclusions, opinions, and recommendations contained in the Professional Document are the result of the application of professional judgment to such limited data.

The Professional Document is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site conditions present, or variation in assumed conditions which might form the basis of design or recommendations as outlined in this report, at or on the development proposed as of the date of the Professional Document requires a supplementary investigation and assessment.

TETRA TECH is neither qualified to, nor is it making, any recommendations with respect to the purchase, sale, investment or development of the property, the decisions on which are the sole responsibility of the Client.

1.7 NOTIFICATION OF AUTHORITIES

In certain instances, the discovery of hazardous substances or conditions and materials may require that regulatory agencies and other persons be informed and the client agrees that notification to such bodies or persons as required may be done by TETRA TECH in its reasonably exercised discretion.

APPENDIX B

BOREHOLE LOGS

BOREHOLE KEYSHEET

Water Level Measurement

 Measured in standpipe, piezometer or well

 Inferred

Sample Types

 A-Casing

 Core

 Disturbed, Bag, Grab

 HQ Core

 Jar

 Jar and Bag

 75 mm SPT

 No Recovery

 Split Spoon/SPT

 Tube

 CRREL Core

Backfill Materials

 Asphalt

 Bentonite

 Cement/ Grout

 Drill Cuttings

 Grout

 Gravel

 Sand

 Slough

 Topsoil Backfill

Lithology - Graphical Legend[1]

 Asphalt

 Bedrock

 Cobbles/Boulders

 Clay

 Coal

 Concrete

 Fill

 Gravel

 Limestone

 Mudstone

 Organics

 Peat

 Sand

 Sandstone

 Shale

 Silt

 Siltstone

 Conglomerate

 Topsoil

 Till

1. The graphical legend is an approximation and for visual representation only. Soil strata may comprise a combination of the basic symbols shown above. Particle sizes are not drawn to scale

TETRA TECH

Borehole No: **BH20-01**

Project: Detailed Recreation Center Evaluation	Project No: 704-ENG.WARC03386-65
Location: Gold Rush Campground	
Dawson City	UTM: 576781 E; 7105019 N; Z 7 NAD83

Depth (m)	Method	Soil Description	Ground Ice Description	Sample Type	Sample Number	SPT (N)	Moisture Content (%)	SPT (N) 20 40 60 80 / Plastic Limit / Moisture Content / Liquid Limit 20 40 60 80	BH20-01	Depth (ft)
0										0
1	Air Rotary	SAND and GRAVEL - trace silt, well graded, sub rounded to sub angular, damp, white	Unfrozen							2
		SILT and ORGANICS - interbedded, frozen (estimated)	Frozen (estimated) - Nbn		SA1	9		■		4
2		▼ 09/17/2020 - water measured at 1.92 m, September 17							▼ 09/17/2020	6
					SA2	9		■		8
3		SILT								10
4		SAND and GRAVEL- sub rounded, damp, brown								12
5										14
6										16
7										18
8										20
9										22
10										24
11										26
12										28
13										30
14		BEDROCK - brown (oxidized)								32
15										34
16										36
		End of Borehole at 16.2 m - Target Depth								38
17										40
										42
										44
										46
										48
										50
										52
										54

DRAFT

TETRA TECH

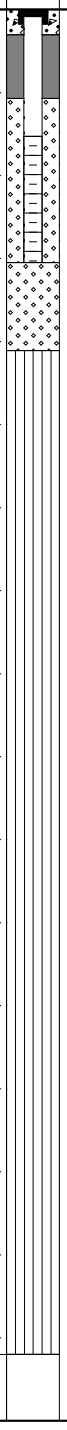
Contractor: Midnight Sun Drilling	Completion Depth: 16.2 m
Drilling Rig Type: Rig 5	Start Date: 2020 September 15
Logged By: TTP	Completion Date: 2020 September 15
Reviewed By: JRT	Page 1 of 1

Borehole No: **BH20-02**

Project: Detailed Recreation Center Evaluation	Project No: 704-ENG.WARC03386-65
Location: Gold Rush Campground	
Dawson City	UTM: 576798 E; 7105105 N; Z 7 NAD83

Depth (m)	Method	Soil Description	Ground Ice Description
0		SAND and GRAVEL - trace silt, well graded, sub rounded to sub angular, damp, white	Unfrozen
1		SILT and ORGANICS - interbedded, frozen (estimated)	Frozen (estimated) - Nbn
2 ▼ 09/17/2020		- water measured at 2.27, September 17	
3			
4			
5	Air Rotary	SAND and GRAVEL- sub rounded, damp, brown	
6			
7			
8			
9			
10			
11			
12			
13			
14		BEDROCK - brown	
15		- grey	
16		- light brown	
17		End of Borehole at 16.2 m - Target Depth	

Moisture Content (%): Plastic Limit | Moisture Content | Liquid Limit; 20 40 60 80



Depth (ft): 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54

DRAFT

TETRA TECH

Contractor: Midnight Sun Drilling	Completion Depth: 16.2 m
Drilling Rig Type: Rig 5	Start Date: 2020 September 15
Logged By: TTP	Completion Date: 2020 September 16
Reviewed By: JRT	Page 1 of 1

Borehole No: **BH20-03**

Project: Detailed Recreation Center Evaluation	Project No: 704-ENG.WARC03386-65
Location: Gold Rush Campground	
Dawson City	UTM: 576766 E; 7105049 N; Z 7 NAD83

Depth (m)	Method	Soil Description	Ground Ice Description
0		SAND and GRAVEL - trace silt, well graded, sub rounded to sub angular, damp, white	Unfrozen
1	Air Rotary	SILT and ORGANICS - interbedded, frozen (estimated)	Frozen (estimated) - Nbn
2		- water measured at 1.7 m, September 17	
3		End of Borehole at 2.1 m - Broken Drill	

Moisture Content (%): Plastic Limit | Moisture Content | Liquid Limit; 20 40 60 80

BH20-03

Depth (ft): 0 1 2 3 4 5 6 7 8 9

09/17/2020

DRAFT

Contractor: Midnight Sun Drilling	Completion Depth: 2.1 m
Drilling Rig Type: Rig 5	Start Date: 2020 September 16
Logged By: TTP	Completion Date: 2020 September 16
Reviewed By: JRT	Page 1 of 1

TETRA TECH

Testpit No: **TP20-01**

Project: Phase II Environmental Site Assessment	Project No: ENW.PENW03102-01
Location: 1207 Fifth Avenue (Goldrush Campground)	
Dawson City, Yukon	

Depth (m)	Method	Soil Description	Sample Type	Vapour readings (ppmv) 1 2 3 4	Notes and Comments	Depth (ft)
0						0
	Excavated	SAND (FILL) - gravelly, some cobbles, trace boulders, damp, light brown, coarse sand			Analyzed for LEPH, HEPH, PAH and metals	1
						2
		- grey green, medium sand			Analyzed for BTEXS, MTBE, VPH and VH	3
1						4
		SILT AND ORGANICS - clayey, roots, moist, non plastic, dark brown			Analyzed for speciated chromium	5
						6
2		END OF TESTPIT (2.0 metres) Note: Reached target depth				7
						8
						9
3						

TETRA TECH

Contractor: Grenon	Completion Depth: 2 m
Drilling Rig Type: 416 Rubber Tire Backhoe/Loader	Start Date: 2020 September 23
Logged By: KS	Completion Date: 2020 September 23
Reviewed By: EOB	Page 1 of 1

Testpit No: **TP20-03**

Project: Phase II Environmental Site Assessment	Project No: ENW.PENW03102-01
Location: 1207 Fifth Avenue (Goldrush Campground)	
Dawson City, Yukon	

Depth (m)	Method	Soil Description	Sample Type	Vapour readings (ppmv) 1 2 3 4	Notes and Comments	Depth (ft)
0						0
	Excavated	SAND (FILL) - gravelly, some cobbles, trace boulders, damp, light brown, contains wires, old metal, glass bottles and butcher bones			Analyzed for metals	1
						2
1						3
		- silty, trace cobbles, grey green, contains metal wiring			Analyzed for LEPH, HEPH, PAH, VPH, VH, VOC, glycols and metals	4
		SILT AND ORGANICS - clayey, moist, non plastic, dark brown, organics lenses				5
						6
2		END OF TESTPIT (2.0 metres) Note: Reached target depth				7
						8
						9
3						

Contractor: Grenon	Completion Depth: 2 m
Drilling Rig Type: 416 Rubber Tire Backhoe/Loader	Start Date: 2020 September 23
Logged By: KS	Completion Date: 2020 September 23
Reviewed By: EOB	Page 1 of 1

Testpit No: **TP20-04**

Project: Phase II Environmental Site Assessment	Project No: ENW.PENW03102-01
Location: 1207 Fifth Avenue (Goldrush Campground)	
Dawson City, Yukon	

Depth (m)	Method	Soil Description	Sample Type	Vapour readings (ppmv) 1 2 3 4	Notes and Comments	Depth (ft)
0						0
	Excavated	SAND (FILL) - gravelly, some cobbles, trace boulders, damp, light brown, coarse sand				
		- silty, trace cobbles, grey green			Analyzed for LEPH, HEPH, PAH, BTEXS, MTBE, VPH, VH and metals	1
1						2
						3
						4
		- insulated copper wire, tin sheet, old leather boot				5
		SILT AND ORGANICS - clayey, moist, non plastic, dark brown			Analyzed for speciated chromium	6
2						7
						8
		END OF TESTPIT (2.5 metres) Note: Reached target depth				9
3						

TETRA TECH	Contractor: Grenon	Completion Depth: 2.5 m
	Drilling Rig Type: 416 Rubber Tire Backhoe/Loader	Start Date: 2020 September 23
	Logged By: KS	Completion Date: 2020 September 23
	Reviewed By: EOB	Page 1 of 1

Testpit No: **TP20-05**

Project: Phase II Environmental Site Assessment	Project No: ENW.PENW03102-01
Location: 1207 Fifth Avenue (Goldrush Campground)	
Dawson City, Yukon	

Depth (m)	Method	Soil Description	Sample Type	Vapour readings (ppmv) 1 2 3 4	Notes and Comments	Depth (ft)
0						0
	Excavated	SAND (FILL) - gravelly, some cobbles, some boulders, damp, light brown, coarse sand, boulders to 500 mm diameter				
		SILT AND ORGANICS - clayey, damp, non plastic, dark brown, organic lenses			Analyzed for nickel	1
1					Analyzed for LEPH, HEPH, PAH and metals	2
						3
						4
						5
						6
2		END OF TESTPIT (2.0 metres) Note: Reached target depth				7
						8
						9
3						

TETRA TECH

Contractor: Grenon	Completion Depth: 2 m
Drilling Rig Type: 416 Rubber Tire Backhoe/Loader	Start Date: 2020 September 23
Logged By: KS	Completion Date: 2020 September 23
Reviewed By: EOB	Page 1 of 1

Testpit No: **TP20-07**

Project: Phase II Environmental Site Assessment	Project No: ENW.PENW03102-01
Location: 1207 Fifth Avenue (Goldrush Campground)	
Dawson City, Yukon	

Depth (m)	Method	Soil Description	Sample Type	Vapour readings (ppmv) 1 2 3 4	Notes and Comments	Depth (ft)
0						0
	Excavated	SAND (FILL) - gravelly, some cobbles, damp, light brown, coarse sand			Analyzed for LEPH, HEPH, PAH, BTEXS, MTBE, VPH, VH and metals	
1		SILT AND ORGANICS - clayey, some cobbles, damp, non plastic, brown, subangular cobbles				1
						2
						3
						4
		- no visible cobbles, darker brown				5
2						6
		END OF TESTPIT (2.0 metres) Note: Reached target depth				7
						8
						9
3						

TETRA TECH

Contractor: Grenon	Completion Depth: 2 m
Drilling Rig Type: 416 Rubber Tire Backhoe/Loader	Start Date: 2020 September 23
Logged By: KS	Completion Date: 2020 September 23
Reviewed By: EOB	Page 1 of 1

Testpit No: **TP20-08**

Project: Phase II Environmental Site Assessment	Project No: ENW.PENW03102-01
Location: 1207 Fifth Avenue (Goldrush Campground)	
Dawson City, Yukon	

Depth (m)	Method	Soil Description	Sample Type	Vapour readings (ppmv) 1 2 3 4	Notes and Comments	Depth (ft)
0						0
	Excavated	SAND (FILL) - gravelly, some cobbles, damp, light brown, coarse sand		■	Analyzed for LEPH, HEPH, PAH and metals	1
						2
1						3
		- silty, some gravel, brown		■		4
				■	Analyzed for VOC, VPH and VH	5
		SILT AND ORGANICS - clayey, moist, firm, non plastic, dark brown				6
2						7
		END OF TESTPIT (2.25 metres) Note: Reached target depth				8
						9
3						

TETRA TECH

Contractor: Grenon	Completion Depth: 2.25 m
Drilling Rig Type: 416 Rubber Tire Backhoe/Loader	Start Date: 2020 September 23
Logged By: KS	Completion Date: 2020 September 23
Reviewed By: EOB	Page 1 of 1

Testpit No: **TP20-09**

Project: Phase II Environmental Site Assessment	Project No: ENW.PENW03102-01
Location: 1207 Fifth Avenue (Goldrush Campground)	
Dawson City, Yukon	

Depth (m)	Method	Soil Description	Sample Type	Vapour readings (ppmv) 1 2 3 4	Notes and Comments	Depth (ft)
0						0
	Excavated	SAND (FILL) - gravelly, some cobbles, trace boulders, damp, light brown, coarse sand		■	Analyzed for LEPH, HEPH, PAH and metals	1
						2
		- no visible gravel, grey brown, medium sand, subangular cobbles and boulders				3
1				■	Analyzed for BTEXS, MTBE, VPH and VH	4
		SILT AND ORGANICS - clayey, moist, non plastic, dark brown		■		5
						6
2		END OF TESTPIT (2.0 metres) Note: Reached target depth				7
						8
						9
3						

TETRA TECH

Contractor: Grenon	Completion Depth: 2 m
Drilling Rig Type: 416 Rubber Tire Backhoe/Loader	Start Date: 2020 September 23
Logged By: KS	Completion Date: 2020 September 23
Reviewed By: EOB	Page 1 of 1

APPENDIX C

QUALITY ASSURANCE/QUALITY CONTROL SUMMARY

Tetra Tech Quality Assurance/Quality Control Program

During the Phase II ESA, Tetra Tech implemented a Quality Assurance/Quality Control (QA/QC) program to ensure the integrity of the sampling methods and analytical testing. The QA/QC program adhered to Tetra Tech's in-house Quality Management System (QMS), which was designed to generate representative samples, minimize the potential for cross-contamination between sampling locations and samples, and reduce the potential for systematic bias.

The QA/QC program included the following tasks:

- Logging subsurface conditions and sampling of environmental media;
- Recording the results of field activities in the field concurrent with the activities;
- Use of clean, new sampling gloves at each sampling location;
- Placing samples into new, labelled laboratory-supplied containers;
- Transporting temperature-sensitive samples to ALS in chilled coolers using chain-of-custody procedures;
- Using a Canadian Association for Laboratory Accreditation (CALA)-accredited laboratory that is qualified to analyze the samples using Yukon Environment-approved procedures;
- Requiring that one person who did not compile the tables appearing in this report review the tables and compare the tabulated analytical results with the original information appearing on the laboratory certificates to verify the accuracy of the information in the tables; and
- Conducting a review of this report by a qualified senior Tetra Tech professional to ensure that the report meets Tetra Tech technical and reporting requirements.

The duplicate pairs submitted for laboratory testing were as follows:

- Soil duplicates:
  - TP20-05-1.25m (duplicate designated TP00-05-1.25m) – analyzed for metals, LEPH, HEPH, PAH and speciated chromium
- Groundwater duplicate:
  - MW20-01 (duplicate designated DUP) – analyzed for dissolved metals, VOCs, LEPH, HEPH, PAH, VPH, VH and glycols

Tetra Tech formed the duplicate sample by alternately placing approximately 10% of the sample volume into the original sample container and then placing the same amount into the duplicate sample container. Tetra Tech continued placing additional aliquots of approximately 10% of the sample volume into each container until both containers were filled.

Part of the QA/QC program involved calculating the RPD between sample concentrations of paired blind duplicates. Results were calculated as follows:

$$RPD\ (\%) = 2 \times 100 \times |X - Y| / (X + Y)$$

Where:

X = the measured concentration in the original sample; and
Y = the measured concentration in the duplicate sample.

RPDs should be calculated and assessed only when both the sample and the duplicate concentration is greater than five times the method detection limit (MDL), referred to as the Practical Quantification Limit (PQL).

Duplicate results were considered as having passed the QA/QC reproducibility goal if the RPD is less than or equal to the trigger value of 30%, indicating a close correlation between the sample-duplicate pair. Should the RPD exceed the recommended value, an explanation for the variation is required.

APPENDIX D

LABORATORY CERTIFICATES

Yeung, Shelila

From: Brent Mack <Brent.Mack@ALSGlobal.com>
Sent: October 20, 2020 3:38 PM
To: Croxall, Roxanne
Subject: RE: [EXTERNAL] - High Variability

⚠ **CAUTION:** This email originated from an external sender. Verify the source before opening links or attachments. ⚠

Hi Roxanne,

Looking at our own Lab Dups for this report we noted Sample Heterogeneity as well, so that's your likely source for the RPDs for these Metals below. All QA/QC, calculations, labels, etc. in the batch looks good.

Brent

Brent Mack
Account Manager, Environmental
Vancouver Laboratory

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From: Croxall, Roxanne [mailto:Roxanne.Croxall@tetratech.com]
Sent: Tuesday, October 20, 2020 2:13 PM
To: Brent Mack <Brent.Mack@ALSGlobal.com>
Subject: [EXTERNAL] - High Variability

CAUTION: This email originated from outside of ALS. Do not click links or open attachments unless you recognize the sender and are sure content is relevant to you.

Hi Brent,

We are currently completing the QA/QC section of our report for PN: ENW.PENW03102-01 and noticed quite a bit of variability between the following duplicate samples:

- TP20-05-1.25 (WR2000970-015) and TP00-03 (WR2000970-022)
    - Chromium relative percent difference (RPD) = 60%
    - Magnesium RPD = 47%
- MW20-01 (WR2000970-023) and DUP (WR2000970-026)
    - Copper RPD = 32%

Can you confirm/discuss the following for these samples:

- All samples were labelled correctly;
- All preparation and analysis procedures were completed within ALS' standard operating procedures;
- The calibration and quality control measured for the laboratory analysis were correct and adequate;
- No errors occurred within data calculations; and
- No interferences or issues occurred with laboratory instruments.

We are not requesting any material be reanalyzed but instead just hoping to get a response to help address the poor QA/QC results associated with the ALS lab results in the report.

Thanks again,

Roxanne Croxall, B.Sc., GIT | Environmental Scientist
Direct **+1 (778) 744-5938**| Mobile **+1 (250) 714-2760**| Roxanne.Croxall@tetratech.com

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TETRA TECH

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **WR2000970**	Page	: 1 of 19
Amendment	: **4**		
Client	: **Tetra Tech Canada Inc.**	Laboratory	: Whitehorse - Environmental
Contact	: Kristina Schmidt	Account Manager	: Brent Mack
Address	: 61 Wasson Place Whitehorse YT Canada Y1A 0H7	Address	: #12 151 Industrial Road Whitehorse YT Canada Y1A 2V3
Telephone	: ----	Telephone	: +1 867 668 6689
Project	: 704-ENW.PENW03102-01	Date Samples Received	: 29-Sep-2020 16:20
PO	: ----	Date Analysis Commenced	: 03-Oct-2020
C-O-C number	: ----	Issue Date	: 27-Oct-2020 10:26
Sampler	: KS		
Site	: ----		
Quote number	: Standard Client Price List (BC & YK)		
No. of samples received	: 27		
No. of samples analysed	: 20		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Alex Drake	Lab Analyst	Inorganics, Edmonton, Alberta
Ann Ho	Laboratory Analyst	Metals, Burnaby, British Columbia
Brieanna Allen	Department Manager - Organics	Organics, Burnaby, British Columbia
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Jashan Kaur	Lab Assistant	Metals, Burnaby, British Columbia
Jeanie Mark		Organics, Calgary, Alberta
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Ophelia Chiu	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Ping Yeung	Team Leader - Inorganics	Inorganics, Edmonton, Alberta
Ping Yeung	Team Leader - Inorganics	Metals, Edmonton, Alberta
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µg/L	micrograms per litre
mg/kg	milligrams per kilogram
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Workorder Comments

RRR = Detection limits raised for Antimony due to a high Antimony recovery in the reference material. Non-detect results for Antimony are considered reliable.

Qualifiers

Qualifier	*Description*
DLA	*Detection Limit adjusted for required dilution.*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*
RRR	*Refer to report remarks for issues regarding this analysis.*
SUR-ND	*Surrogate recovery marginally exceeded ALS DQO. Reported non-detect results for associated samples were deemed to be unaffected.*

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	TP20-01-0.5m	TP20-01-1.0m	TP20-01-1.75m	TP20-04-1.25m	TP20-04-2.0m
					Client sampling date / time	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020
						WR2000970-001	WR2000970-002	WR2000970-003	WR2000970-005	WR2000970-006
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.25	%		5.49	8.92	32.6	13.4	40.5
pH (1:2 soil:water)	----	E108	0.10	pH units		8.88	----	----	8.42	----
Metals										
aluminum	7429-90-5	E440	50	mg/kg		9530	----	----	34100	----
antimony	7440-36-0	E440	0.10	mg/kg		<0.40 RRR	----	----	<0.40 RRR	----
arsenic	7440-38-2	E440	0.10	mg/kg		4.23	----	----	3.54	----
barium	7440-39-3	E440	0.50	mg/kg		78.8	----	----	44.2	----
beryllium	7440-41-7	E440	0.10	mg/kg		0.18	----	----	0.28	----
bismuth	7440-69-9	E440	0.20	mg/kg		<0.20	----	----	<0.20	----
boron	7440-42-8	E440	5.0	mg/kg		<5.0	----	----	<5.0	----
cadmium	7440-43-9	E440	0.020	mg/kg		0.110	----	----	0.022	----
calcium	7440-70-2	E440	50	mg/kg		2020	----	----	5910	----
chromium	7440-47-3	E440	0.50	mg/kg		116	----	165	177	168
cobalt	7440-48-4	E440	0.10	mg/kg		9.19	----	----	31.4	----
copper	7440-50-8	E440	0.50	mg/kg		15.6	----	----	39.3	----
iron	7439-89-6	E440	50	mg/kg		14000	----	----	49700	----
lead	7439-92-1	E440	0.50	mg/kg		4.91	----	----	2.11	----
lithium	7439-93-2	E440	2.0	mg/kg		9.4	----	----	30.4	----
magnesium	7439-95-4	E440	20	mg/kg		9650	----	----	30300	----
manganese	7439-96-5	E440	1.0	mg/kg		169	----	----	508	----
mercury	7439-97-6	E510	0.0050	mg/kg		0.0201	----	----	----	----
mercury	7439-97-6	E510	0.0500	mg/kg		----	----	----	<0.0500	----
molybdenum	7439-98-7	E440	0.10	mg/kg		0.27	----	----	<0.10	----
nickel	7440-02-0	E440	0.50	mg/kg		46.0	----	----	85.5	----
phosphorus	7723-14-0	E440	50	mg/kg		339	----	----	88	----
potassium	7440-09-7	E440	100	mg/kg		550	----	----	370	----
selenium	7782-49-2	E440	0.20	mg/kg		<0.20	----	----	<0.20	----
silver	7440-22-4	E440	0.10	mg/kg		<0.10	----	----	<0.10	----
sodium	7440-23-5	E440	50	mg/kg		<50	----	----	114	----
strontium	7440-24-6	E440	0.50	mg/kg		11.9	----	----	19.8	----
sulfur	7704-34-9	E440	1000	mg/kg		<1000	----	----	<1000	----

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	TP20-01-0.5m	TP20-01-1.0m	TP20-01-1.75m	TP20-04-1.25m	TP20-04-2.0m
					Client sampling date / time	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020
						WR2000970-001	WR2000970-002	WR2000970-003	WR2000970-005	WR2000970-006
						Result	Result	Result	Result	Result
Metals										
thallium	7440-28-0	E440	0.050	mg/kg		<0.050	----	----	<0.050	----
tin	7440-31-5	E440	2.0	mg/kg		<2.0	----	----	<2.0	----
titanium	7440-32-6	E440	1.0	mg/kg		245	----	----	1100	----
tungsten	7440-33-7	E440	0.50	mg/kg		<0.50	----	----	<0.50	----
uranium	7440-61-1	E440	0.050	mg/kg		0.510	----	----	0.215	----
vanadium	7440-62-2	E440	0.20	mg/kg		29.6	----	----	102	----
zinc	7440-66-6	E440	2.0	mg/kg		28.0	----	----	43.9	----
zirconium	7440-67-7	E440	1.0	mg/kg		2.6	----	----	1.1	----
Speciated Metals										
chromium, hexavalent [Cr VI]	18540-29-9	E532	0.10	mg/kg		<0.10	----	<0.20 DLM	<0.10	<0.20 DLM
chromium, trivalent [Cr III]	16065-83-1	EC535C	0.030	mg/kg		116	----	165	177	168
Volatile Organic Compounds [BTEXS+MTBE]										
benzene	71-43-2	E611A	0.0050	mg/kg		----	<0.0050	----	<0.0050	----
ethylbenzene	100-41-4	E611A	0.015	mg/kg		----	<0.015	----	<0.015	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.200	mg/kg		----	<0.200	----	<0.200	----
styrene	100-42-5	E611A	0.050	mg/kg		----	<0.050	----	<0.050	----
toluene	108-88-3	E611A	0.050	mg/kg		----	<0.050	----	<0.050	----
xylene, m+p-	179601-23-1	E611A	0.050	mg/kg		----	<0.050	----	<0.050	----
xylene, o-	95-47-6	E611A	0.050	mg/kg		----	<0.050	----	<0.050	----
xylenes, total	1330-20-7	E611A	0.075	mg/kg		----	<0.075	----	<0.075	----
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611A	0.050	%		----	98.6	----	93.7	----
difluorobenzene, 1,4-	540-36-3	E611A	0.050	%		----	106	----	118	----
Hydrocarbons										
EPH (C10-C19)	----	E601A	200	mg/kg		<200	----	----	<200	----
EPH (C19-C32)	----	E601A	200	mg/kg		<200	----	----	<200	----
VHs (C6-C10)	----	E581.VH+F1	10	mg/kg		----	<10	----	<10	----
HEPHs	----	EC600A	200	mg/kg		<200	----	----	<200	----
LEPHs	----	EC600A	200	mg/kg		<200	----	----	<200	----
VPHs	----	EC580A	10	mg/kg		----	<10	----	<10	----
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	5.0	%		95.3	----	----	92.5	----

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	TP20-01-0.5m	TP20-01-1.0m	TP20-01-1.75m	TP20-04-1.25m	TP20-04-2.0m
					Client sampling date / time	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020
						WR2000970-001	WR2000970-002	WR2000970-003	WR2000970-005	WR2000970-006
						Result	Result	Result	Result	Result
Hydrocarbons Surrogates										
dichlorotoluene, 3,4-	97-75-0	E581.VH+F1	1.0	%		----	106	----	68.4 SUR-ND	----
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A-L	0.0050	mg/kg		<0.0050	----	----	<0.0050	----
acenaphthylene	208-96-8	E641A-L	0.0050	mg/kg		<0.0050	----	----	<0.0050	----
acridine	260-94-6	E641A-L	0.010	mg/kg		<0.010	----	----	<0.010	----
anthracene	120-12-7	E641A-L	0.0040	mg/kg		<0.0040	----	----	<0.0040	----
benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg		<0.010	----	----	<0.010	----
benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg		<0.010	----	----	<0.010	----
benzo(b+j)fluoranthene	----	E641A-L	0.010	mg/kg		<0.010	----	----	<0.010	----
benzo(b+j+k)fluoranthene	----	E641A-L	0.015	mg/kg		<0.015	----	----	<0.015	----
benzo(g,h,i)perylene	191-24-2	E641A-L	0.010	mg/kg		<0.010	----	----	<0.010	----
benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg		<0.010	----	----	<0.010	----
chrysene	218-01-9	E641A-L	0.010	mg/kg		<0.010	----	----	<0.010	----
dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg		<0.0050	----	----	<0.0050	----
fluoranthene	206-44-0	E641A-L	0.010	mg/kg		<0.010	----	----	<0.010	----
fluorene	86-73-7	E641A-L	0.010	mg/kg		<0.010	----	----	<0.010	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.010	mg/kg		<0.010	----	----	<0.010	----
methylnaphthalene, 1-	90-12-0	E641A-L	0.010	mg/kg		<0.010	----	----	<0.010	----
methylnaphthalene, 2-	91-57-6	E641A-L	0.010	mg/kg		<0.010	----	----	<0.010	----
naphthalene	91-20-3	E641A-L	0.010	mg/kg		<0.010	----	----	<0.010	----
phenanthrene	85-01-8	E641A-L	0.010	mg/kg		<0.010	----	----	<0.010	----
pyrene	129-00-0	E641A-L	0.010	mg/kg		<0.010	----	----	<0.010	----
quinoline	6027-02-7	E641A-L	0.010	mg/kg		<0.010	----	----	<0.010	----
B(a)P total potency equivalents [B(a)P TPE]	----	E641A-L	0.020	mg/kg		<0.010	----	----	<0.010	----
IACR (CCME)	----	E641A-L	0.15	mg/kg		<0.11	----	----	<0.11	----
Polycyclic Aromatic Hydrocarbons Surrogates										
acridine-d9	34749-75-2	E641A-L	0.010	%		92.6	----	----	78.6	----
chrysene-d12	1719-03-5	E641A-L	0.010	%		111	----	----	94.1	----
naphthalene-d8	1146-65-2	E641A-L	0.010	%		105	----	----	86.1	----
phenanthrene-d10	1517-22-2	E641A-L	0.010	%		107	----	----	90.8	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	TP20-9-0.5m	TP20-09-1.25m	TP20-07-0.3m	TP20-05-0.75m	TP20-05-1.25m
					Client sampling date / time	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020
						WR2000970-007	WR2000970-008	WR2000970-010	WR2000970-014	WR2000970-015
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.25	%		4.26	10.6	3.66	----	17.4
pH (1:2 soil:water)	----	E108	0.10	pH units		7.83	----	8.51	----	7.64
Metals										
aluminum	7429-90-5	E440	50	mg/kg		2880	----	2840	----	14500
antimony	7440-36-0	E440	0.10	mg/kg		<0.30 RRR	----	<0.30 RRR	----	<0.80 RRR
arsenic	7440-38-2	E440	0.10	mg/kg		2.18	----	2.74	----	7.01
barium	7440-39-3	E440	0.50	mg/kg		106	----	71.4	----	257
beryllium	7440-41-7	E440	0.10	mg/kg		0.11	----	0.13	----	0.29
bismuth	7440-69-9	E440	0.20	mg/kg		<0.20	----	<0.20	----	<0.20
boron	7440-42-8	E440	5.0	mg/kg		<5.0	----	<5.0	----	<5.0
cadmium	7440-43-9	E440	0.020	mg/kg		0.061	----	0.075	----	0.118
calcium	7440-70-2	E440	50	mg/kg		678	----	852	----	5300
chromium	7440-47-3	E440	0.50	mg/kg		28.2	----	8.19	----	196
cobalt	7440-48-4	E440	0.10	mg/kg		2.66	----	1.85	----	24.7
copper	7440-50-8	E440	0.50	mg/kg		7.50	----	8.39	----	24.0
iron	7439-89-6	E440	50	mg/kg		3670	----	4180	----	25500
lead	7439-92-1	E440	0.50	mg/kg		5.30	----	6.51	----	5.66
lithium	7439-93-2	E440	2.0	mg/kg		3.3	----	3.6	----	12.8
magnesium	7439-95-4	E440	20	mg/kg		2880	----	1320	----	19600
manganese	7439-96-5	E440	1.0	mg/kg		42.8	----	44.7	----	371
mercury	7439-97-6	E510	0.0500	mg/kg		<0.0500	----	<0.0500	----	<0.0500
molybdenum	7439-98-7	E440	0.10	mg/kg		0.15	----	0.22	----	0.34
nickel	7440-02-0	E440	0.50	mg/kg		29.3	----	10.4	188	316
phosphorus	7723-14-0	E440	50	mg/kg		135	----	150	----	520
potassium	7440-09-7	E440	100	mg/kg		570	----	530	----	390
selenium	7782-49-2	E440	0.20	mg/kg		<0.20	----	<0.20	----	<0.20
silver	7440-22-4	E440	0.10	mg/kg		<0.10	----	<0.10	----	<0.10
sodium	7440-23-5	E440	50	mg/kg		<50	----	<50	----	195
strontium	7440-24-6	E440	0.50	mg/kg		5.12	----	6.64	----	26.4
sulfur	7704-34-9	E440	1000	mg/kg		<1000	----	<1000	----	<1000
thallium	7440-28-0	E440	0.050	mg/kg		<0.050	----	<0.050	----	<0.050
tin	7440-31-5	E440	2.0	mg/kg		<2.0	----	<2.0	----	<2.0

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	TP20-9-0.5m	TP20-09-1.25m	TP20-07-0.3m	TP20-05-0.75m	TP20-05-1.25m
					Client sampling date / time	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020
						WR2000970-007	WR2000970-008	WR2000970-010	WR2000970-014	WR2000970-015
						Result	Result	Result	Result	Result
Metals										
titanium	7440-32-6	E440	1.0	mg/kg		89.0	----	99.4	----	565
tungsten	7440-33-7	E440	0.50	mg/kg		<0.50	----	<0.50	----	<0.50
uranium	7440-61-1	E440	0.050	mg/kg		0.446	----	0.484	----	0.575
vanadium	7440-62-2	E440	0.20	mg/kg		7.53	----	8.77	----	52.4
zinc	7440-66-6	E440	2.0	mg/kg		16.7	----	17.6	----	50.2
zirconium	7440-67-7	E440	1.0	mg/kg		2.4	----	2.8	----	4.6
Speciated Metals										
chromium, hexavalent [Cr VI]	18540-29-9	E532	0.10	mg/kg		----	----	----	----	<0.10
chromium, trivalent [Cr III]	16065-83-1	EC535C	0.030	mg/kg		----	----	----	----	196
Volatile Organic Compounds [BTEXS+MTBE]										
benzene	71-43-2	E611A	0.0050	mg/kg		----	<0.0050	<0.0050	----	----
ethylbenzene	100-41-4	E611A	0.015	mg/kg		----	<0.015	<0.015	----	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.200	mg/kg		----	<0.200	<0.200	----	----
styrene	100-42-5	E611A	0.050	mg/kg		----	<0.050	<0.050	----	----
toluene	108-88-3	E611A	0.050	mg/kg		----	<0.050	<0.050	----	----
xylene, m+p-	179601-23-1	E611A	0.050	mg/kg		----	<0.050	<0.050	----	----
xylene, o-	95-47-6	E611A	0.050	mg/kg		----	<0.050	<0.050	----	----
xylenes, total	1330-20-7	E611A	0.075	mg/kg		----	<0.075	<0.075	----	----
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611A	0.050	%		----	96.0	104	----	----
difluorobenzene, 1,4-	540-36-3	E611A	0.050	%		----	103	120	----	----
Hydrocarbons										
EPH (C10-C19)	----	E601A	200	mg/kg		<200	----	<200	----	<200
EPH (C19-C32)	----	E601A	200	mg/kg		<200	----	<200	----	<200
VHs (C6-C10)	----	E581.VH+F1	10	mg/kg		----	<10	<10	----	----
HEPHs	----	EC600A	200	mg/kg		<200	----	<200	----	<200
LEPHs	----	EC600A	200	mg/kg		<200	----	<200	----	<200
VPHs	----	EC580A	10	mg/kg		----	<10	<10	----	----
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	5.0	%		95.2	----	85.3	----	92.4
dichlorotoluene, 3,4-	97-75-0	E581.VH+F1	1.0	%		----	101	102	----	----
Polycyclic Aromatic Hydrocarbons										

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	TP20-9-0.5m	TP20-09-1.25m	TP20-07-0.3m	TP20-05-0.75m	TP20-05-1.25m
					Client sampling date / time	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020
						WR2000970-007	WR2000970-008	WR2000970-010	WR2000970-014	WR2000970-015
						Result	Result	Result	Result	Result
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A-L	0.0050	mg/kg		<0.0050	----	<0.0050	----	<0.0050
acenaphthylene	208-96-8	E641A-L	0.0050	mg/kg		<0.0050	----	<0.0050	----	<0.0050
acridine	260-94-6	E641A-L	0.010	mg/kg		<0.010	----	<0.010	----	<0.010
anthracene	120-12-7	E641A-L	0.0040	mg/kg		<0.0040	----	<0.0040	----	<0.0040
benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg		<0.010	----	<0.010	----	<0.010
benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg		<0.010	----	<0.010	----	<0.010
benzo(b+j)fluoranthene	----	E641A-L	0.010	mg/kg		<0.010	----	<0.010	----	<0.010
benzo(b+j+k)fluoranthene	----	E641A-L	0.015	mg/kg		<0.015	----	<0.015	----	<0.015
benzo(g,h,i)perylene	191-24-2	E641A-L	0.010	mg/kg		<0.010	----	<0.010	----	<0.010
benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg		<0.010	----	<0.010	----	<0.010
chrysene	218-01-9	E641A-L	0.010	mg/kg		<0.010	----	<0.010	----	<0.010
dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg		<0.0050	----	<0.0050	----	<0.0050
fluoranthene	206-44-0	E641A-L	0.010	mg/kg		<0.010	----	<0.010	----	<0.010
fluorene	86-73-7	E641A-L	0.010	mg/kg		<0.010	----	<0.010	----	<0.010
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.010	mg/kg		<0.010	----	<0.010	----	<0.010
methylnaphthalene, 1-	90-12-0	E641A-L	0.010	mg/kg		<0.010	----	<0.010	----	<0.010
methylnaphthalene, 2-	91-57-6	E641A-L	0.010	mg/kg		<0.010	----	<0.010	----	<0.010
naphthalene	91-20-3	E641A-L	0.010	mg/kg		<0.010	----	<0.010	----	<0.010
phenanthrene	85-01-8	E641A-L	0.010	mg/kg		<0.010	----	<0.010	----	<0.010
pyrene	129-00-0	E641A-L	0.010	mg/kg		<0.010	----	<0.010	----	<0.010
quinoline	6027-02-7	E641A-L	0.010	mg/kg		<0.010	----	<0.010	----	<0.010
B(a)P total potency equivalents [B(a)P TPE]	----	E641A-L	0.020	mg/kg		<0.010	----	<0.010	----	<0.010
IACR (CCME)	----	E641A-L	0.15	mg/kg		<0.11	----	<0.11	----	<0.11
Polycyclic Aromatic Hydrocarbons Surrogates										
acridine-d9	34749-75-2	E641A-L	0.010	%		85.2	----	81.8	----	85.4
chrysene-d12	1719-03-5	E641A-L	0.010	%		104	----	95.3	----	100.0
naphthalene-d8	1146-65-2	E641A-L	0.010	%		96.3	----	87.9	----	94.3
phenanthrene-d10	1517-22-2	E641A-L	0.010	%		101	----	91.6	----	97.2

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	TP20-03-0.5m	TP20-03-1.3m	TP20-08-0.5m	TP20-08-1.7m	TP00-05-1.25m
					Client sampling date / time	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020
						WR2000970-016	WR2000970-017	WR2000970-019	WR2000970-021	WR2000970-022
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.25	%		----	8.27	4.69	39.3	18.2
pH (1:2 soil:water)	----	E108	0.10	pH units		8.84	8.21	8.99	----	7.87
Metals										
aluminum	7429-90-5	E440	50	mg/kg		2610	14100	3260	----	19000
antimony	7440-36-0	E440	0.10	mg/kg		<0.30 RRR	<0.80 RRR	<0.40 RRR	----	<0.80 RRR
arsenic	7440-38-2	E440	0.10	mg/kg		2.74	7.90	3.14	----	6.58
barium	7440-39-3	E440	0.50	mg/kg		57.6	200	106	----	212
beryllium	7440-41-7	E440	0.10	mg/kg		0.13	0.35	0.15	----	0.27
bismuth	7440-69-9	E440	0.20	mg/kg		<0.20	<0.20	<0.20	----	<0.20
boron	7440-42-8	E440	5.0	mg/kg		<5.0	<5.0	<5.0	----	<5.0
cadmium	7440-43-9	E440	0.020	mg/kg		0.098	0.236	0.107	----	0.108
calcium	7440-70-2	E440	50	mg/kg		633	2790	1840	----	5730
chromium	7440-47-3	E440	0.50	mg/kg		5.61	63.4	10.9	----	364
cobalt	7440-48-4	E440	0.10	mg/kg		1.82	12.6	2.18	----	29.1
copper	7440-50-8	E440	0.50	mg/kg		8.52	30.6	9.14	----	24.7
iron	7439-89-6	E440	50	mg/kg		3950	23300	4620	----	29600
lead	7439-92-1	E440	0.50	mg/kg		6.99	6.83	9.27	----	4.71
lithium	7439-93-2	E440	2.0	mg/kg		3.2	10.8	4.2	----	15.9
magnesium	7439-95-4	E440	20	mg/kg		1200	10400	1650	----	31700
manganese	7439-96-5	E440	1.0	mg/kg		40.0	305	52.9	----	472
mercury	7439-97-6	E510	0.0500	mg/kg		<0.0500	<0.0500	<0.0500	----	<0.0500
molybdenum	7439-98-7	E440	0.10	mg/kg		0.23	0.78	0.26	----	0.38
nickel	7440-02-0	E440	0.50	mg/kg		5.96	38.9	12.5	----	352
phosphorus	7723-14-0	E440	50	mg/kg		117	396	576	----	417
potassium	7440-09-7	E440	100	mg/kg		540	590	560	----	340
selenium	7782-49-2	E440	0.20	mg/kg		<0.20	0.22	<0.20	----	<0.20
silver	7440-22-4	E440	0.10	mg/kg		<0.10	0.11	<0.10	----	<0.10
sodium	7440-23-5	E440	50	mg/kg		80	70	<50	----	152
strontium	7440-24-6	E440	0.50	mg/kg		5.94	16.1	19.7	----	25.3
sulfur	7704-34-9	E440	1000	mg/kg		<1000	<1000	<1000	----	<1000
thallium	7440-28-0	E440	0.050	mg/kg		<0.050	0.066	<0.050	----	<0.050
tin	7440-31-5	E440	2.0	mg/kg		<2.0	<2.0	<2.0	----	<2.0

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	TP20-03-0.5m	TP20-03-1.3m	TP20-08-0.5m	TP20-08-1.7m	TP00-05-1.25m
					Client sampling date / time	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020
						WR2000970-016	WR2000970-017	WR2000970-019	WR2000970-021	WR2000970-022
						Result	Result	Result	Result	Result
Metals										
titanium	7440-32-6	E440	1.0	mg/kg		102	370	110	----	640
tungsten	7440-33-7	E440	0.50	mg/kg		<0.50	<0.50	<0.50	----	<0.50
uranium	7440-61-1	E440	0.050	mg/kg		0.642	0.911	1.03	----	0.616
vanadium	7440-62-2	E440	0.20	mg/kg		9.72	47.0	17.7	----	64.5
zinc	7440-66-6	E440	2.0	mg/kg		22.2	44.8	18.9	----	43.5
zirconium	7440-67-7	E440	1.0	mg/kg		3.4	3.8	3.0	----	4.6
Speciated Metals										
chromium, hexavalent [Cr VI]	18540-29-9	E532	0.10	mg/kg		----	<0.10	----	----	<0.10
chromium, trivalent [Cr III]	16065-83-1	EC535C	0.030	mg/kg		----	63.4	----	----	364
Volatile Organic Compounds										
chlorobenzene	108-90-7	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
chloromethane	74-87-3	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
dichlorobenzene, 1,2-	95-50-1	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
dichlorobenzene, 1,3-	541-73-1	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
dichlorobenzene, 1,4-	106-46-7	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
dichloropropane, 1,2-	78-87-5	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
dichloropropylene, cis+trans-1,3-	542-75-6	E611C	0.075	mg/kg		----	<0.075	----	<0.075	----
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
trichloroethane, 1,1,2-	79-00-5	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
trichlorofluoromethane	75-69-4	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
Volatile Organic Compounds [BTEXS+MTBE]										
benzene	71-43-2	E611C	0.0050	mg/kg		----	<0.0050	----	<0.0050	----
ethylbenzene	100-41-4	E611C	0.015	mg/kg		----	<0.015	----	<0.015	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
styrene	100-42-5	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
toluene	108-88-3	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
xylene, m+p-	179601-23-1	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
xylene, o-	95-47-6	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
xylenes, total	1330-20-7	E611C	0.075	mg/kg		----	<0.075	----	<0.075	----
Volatile Organic Compounds [Drycleaning]										

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	TP20-03-0.5m	TP20-03-1.3m	TP20-08-0.5m	TP20-08-1.7m	TP00-05-1.25m
					Client sampling date / time	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020
						WR2000970-016	WR2000970-017	WR2000970-019	WR2000970-021	WR2000970-022
						Result	Result	Result	Result	Result
Volatile Organic Compounds [Drycleaning]										
carbon tetrachloride	56-23-5	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
chloroethane	75-00-3	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
dichloroethane, 1,1-	75-34-3	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
dichloroethane, 1,2-	107-06-2	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
dichloroethylene, 1,1-	75-35-4	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
dichloroethylene, cis-1,2-	156-59-4	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
dichloroethylene, trans-1,2-	156-60-5	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
dichloromethane	75-09-2	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
tetrachloroethylene	127-18-4	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
trichloroethane, 1,1,1-	71-55-6	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
trichloroethylene	79-01-6	E611C	0.010	mg/kg		----	<0.010	----	<0.010	----
vinyl chloride	75-01-4	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611C	0.050	%		----	92.5	----	76.3	----
difluorobenzene, 1,4-	540-36-3	E611C	0.050	%		----	96.7	----	78.5	----
Hydrocarbons										
EPH (C10-C19)	----	E601A	200	mg/kg		----	<200	<200	----	<200
EPH (C19-C32)	----	E601A	200	mg/kg		----	<200	<200	----	<200
VHs (C6-C10)	----	E581.VH+F1	10	mg/kg		----	<10	----	<10	----
HEPHs	----	EC600A	200	mg/kg		----	<200	<200	----	<200
LEPHs	----	EC600A	200	mg/kg		----	<200	<200	----	<200
VPHs	----	EC580A	10	mg/kg		----	<10	----	<10	----
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	5.0	%		----	89.0	90.6	----	86.8
dichlorotoluene, 3,4-	97-75-0	E581.VH+F1	1.0	%		----	88.4	----	71.3	----
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A-L	0.0050	mg/kg		----	<0.0050	<0.0050	----	<0.0050
acenaphthylene	208-96-8	E641A-L	0.0050	mg/kg		----	<0.0050	<0.0050	----	<0.0050
acridine	260-94-6	E641A-L	0.010	mg/kg		----	<0.010	<0.010	----	<0.010
anthracene	120-12-7	E641A-L	0.0040	mg/kg		----	<0.0040	<0.0040	----	<0.0040
benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg		----	<0.010	<0.010	----	<0.010

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	TP20-03-0.5m	TP20-03-1.3m	TP20-08-0.5m	TP20-08-1.7m	TP00-05-1.25m
					Client sampling date / time	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020
						WR2000970-016	WR2000970-017	WR2000970-019	WR2000970-021	WR2000970-022
						Result	Result	Result	Result	Result
Polycyclic Aromatic Hydrocarbons										
benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg		----	<0.010	<0.010	----	<0.010
benzo(b+j)fluoranthene	----	E641A-L	0.010	mg/kg		----	<0.010	<0.010	----	<0.010
benzo(b+j+k)fluoranthene	----	E641A-L	0.015	mg/kg		----	<0.015	<0.015	----	<0.015
benzo(g,h,i)perylene	191-24-2	E641A-L	0.010	mg/kg		----	<0.010	<0.010	----	<0.010
benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg		----	<0.010	<0.010	----	<0.010
chrysene	218-01-9	E641A-L	0.010	mg/kg		----	<0.010	<0.010	----	<0.010
dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg		----	<0.0050	<0.0050	----	<0.0050
fluoranthene	206-44-0	E641A-L	0.010	mg/kg		----	<0.010	<0.010	----	<0.010
fluorene	86-73-7	E641A-L	0.010	mg/kg		----	<0.010	<0.010	----	<0.010
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.010	mg/kg		----	<0.010	<0.010	----	<0.010
methylnaphthalene, 1-	90-12-0	E641A-L	0.010	mg/kg		----	<0.010	<0.010	----	<0.010
methylnaphthalene, 2-	91-57-6	E641A-L	0.010	mg/kg		----	<0.010	<0.010	----	<0.010
naphthalene	91-20-3	E641A-L	0.010	mg/kg		----	<0.010	<0.010	----	<0.010
phenanthrene	85-01-8	E641A-L	0.010	mg/kg		----	<0.010	<0.010	----	<0.010
pyrene	129-00-0	E641A-L	0.010	mg/kg		----	<0.010	<0.010	----	<0.010
quinoline	6027-02-7	E641A-L	0.010	mg/kg		----	<0.010	<0.010	----	<0.010
B(a)P total potency equivalents [B(a)P TPE]	----	E641A-L	0.020	mg/kg		----	<0.010	<0.010	----	<0.010
IACR (CCME)	----	E641A-L	0.15	mg/kg		----	<0.11	<0.11	----	<0.11
Polycyclic Aromatic Hydrocarbons Surrogates										
acridine-d9	34749-75-2	E641A-L	0.010	%		----	85.9	81.2	----	90.3
chrysene-d12	1719-03-5	E641A-L	0.010	%		----	105	98.7	----	104
naphthalene-d8	1146-65-2	E641A-L	0.010	%		----	97.2	90.9	----	97.4
phenanthrene-d10	1517-22-2	E641A-L	0.010	%		----	100	93.2	----	98.8
Volatile Organic Compounds [THMs]										
bromodichloromethane	75-27-4	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
bromoform	75-25-2	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
chloroform	67-66-3	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
dibromochloromethane	124-48-1	E611C	0.050	mg/kg		----	<0.050	----	<0.050	----
Glycols										
diethylene glycol	111-46-6	E680E	10	mg/kg		----	<10	----	----	----
ethylene glycol	107-21-1	E680E	10	mg/kg		----	<10	----	----	----
propylene glycol, 1,2-	57-55-6	E680E	10	mg/kg		----	<10	----	----	----

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	TP20-03-0.5m	TP20-03-1.3m	TP20-08-0.5m	TP20-08-1.7m	TP00-05-1.25m
					Client sampling date / time	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020	23-Sep-2020
						WR2000970-016	WR2000970-017	WR2000970-019	WR2000970-021	WR2000970-022
						Result	Result	Result	Result	Result
Glycols										
triethylene glycol	112-27-6	E680E	10	mg/kg		----	<10	----	----	----
Glycols Surrogates										
propanediol, 1,3-	504-63-2	E680E	10	%		----	80.9	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW20-01	MW20-02	MW20-03	DUP	FB
					Client sampling date / time	25-Sep-2020	25-Sep-2020	25-Sep-2020	25-Sep-2020	25-Sep-2020
						WR2000970-023	WR2000970-024	WR2000970-025	WR2000970-026	WR2000970-027
						Result	Result	Result	Result	Result
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L		573	769	719	564	<0.60
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0119	0.106	12.0	0.0112	<0.0010
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.00117	0.00092	0.00149	0.00119	<0.00010
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.0124	0.0447	0.0300	0.0125	<0.00010
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.577	0.883	1.03	0.580	<0.00010
beryllium, dissolved	7440-41-7	E421	0.000100	mg/L		<0.000100	<0.000100	0.000818	<0.000100	<0.000100
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	0.000124	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L		0.038	0.012	0.033	0.037	<0.010
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000417	0.0000930	0.00242	0.0000387	<0.0000050
calcium, dissolved	7440-70-2	E421	0.050	mg/L		143	211	201	141	<0.050
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		<0.000010	<0.000010	0.000828	0.000010	<0.000010
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L		0.00227	0.0134	0.0393	0.00230	<0.00010
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.0140	0.0313	0.0930	0.0137	<0.00010
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00416	0.00696	0.0705	0.00575	<0.00020
iron, dissolved	7439-89-6	E421	0.010	mg/L		1.68	32.4	43.5	1.70	<0.010
lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000083	0.000771	0.0204	0.000123	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0077	0.0040	0.0150	0.0073	<0.0010
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		52.7	59.0	52.7	51.2	<0.0050
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		2.75	4.76	7.99	2.68	<0.00010
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L		0.0000064	<0.0000050	<0.0000500 DLM	0.0000057	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.0103	0.00518	0.00216	0.0103	<0.000050
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.0288	0.112	0.223	0.0285	<0.00050
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		0.086	0.495	1.46	0.063	<0.050
potassium, dissolved	7440-09-7	E421	0.050	mg/L		5.71	2.97	8.52	5.77	<0.050
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00277	0.00160	0.0153	0.00264	<0.00020
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000842	0.00233	0.00230	0.000850	<0.000050
silicon, dissolved	7440-21-3	E421	0.050	mg/L		10.9	19.1	44.8	10.8	<0.050
silver, dissolved	7440-22-4	E421	0.000010	mg/L		0.000028	0.000049	0.000280	0.000028	<0.000010
sodium, dissolved	17341-25-2	E421	0.050	mg/L		17.8	14.9	19.0	17.6	<0.050
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.570	0.772	0.694	0.579	<0.00020
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		19.4	11.8	13.5	19.7	<0.50

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW20-01	MW20-02	MW20-03	DUP	FB
					Client sampling date / time	25-Sep-2020	25-Sep-2020	25-Sep-2020	25-Sep-2020	25-Sep-2020
						WR2000970-023	WR2000970-024	WR2000970-025	WR2000970-026	WR2000970-027
						Result	Result	Result	Result	Result
Dissolved Metals										
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00040 DLA	<0.00020	<0.00020
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		0.000026	0.000012	0.000339	0.000026	<0.000010
thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	0.00014	0.00430	<0.00010	<0.00010
tin, dissolved	7440-31-5	E421	0.00010	mg/L		0.00024	0.00187	0.00402	0.00026	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		0.00215	0.0184	0.305	0.00198	<0.00030
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	0.00013	0.00067	<0.00010	<0.00010
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.00667	0.00281	0.00593	0.00658	<0.000010
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		0.00284	0.00898	0.0422	0.00290	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0151	0.0108	0.145	0.0158	<0.0010
zirconium, dissolved	7440-67-7	E421	0.00020	mg/L		0.00245	0.00482	0.0258	0.00246	<0.00020
dissolved mercury filtration location	----	EP509	-	-		Field	Field	Laboratory	Field	Field
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field
Volatile Organic Compounds										
chlorobenzene	108-90-7	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
chloromethane	74-87-3	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichlorobenzene, 1,2-	95-50-1	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichlorobenzene, 1,3-	541-73-1	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichlorobenzene, 1,4-	106-46-7	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropane, 1,2-	78-87-5	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropylene, cis+trans-1,3-	542-75-6	E611C	0.75	µg/L		<0.75	<0.75	<0.75	<0.75	<0.75
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.20	µg/L		<0.20	<0.20	<0.20	<0.20	<0.20
trichloroethane, 1,1,2-	79-00-5	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichlorofluoromethane	75-69-4	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Volatile Organic Compounds [BTEXS+MTBE]										
benzene	71-43-2	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
ethylbenzene	100-41-4	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
styrene	100-42-5	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
toluene	108-88-3	E611C	0.40	µg/L		<0.40	<0.40	<0.40	<0.40	<0.40
xylene, m+p-	179601-23-1	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW20-01	MW20-02	MW20-03	DUP	FB
					Client sampling date / time	25-Sep-2020	25-Sep-2020	25-Sep-2020	25-Sep-2020	25-Sep-2020
						WR2000970-023	WR2000970-024	WR2000970-025	WR2000970-026	WR2000970-027
						Result	Result	Result	Result	Result
Volatile Organic Compounds [BTEXS+MTBE]										
xylene, o-	95-47-6	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
xylenes, total	1330-20-7	E611C	0.75	µg/L		<0.75	<0.75	<0.75	<0.75	<0.75
Volatile Organic Compounds [Drycleaning]										
carbon tetrachloride	56-23-5	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
chloroethane	75-00-3	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethane, 1,1-	75-34-3	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethane, 1,2-	107-06-2	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethylene, 1,1-	75-35-4	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethylene, cis-1,2-	156-59-4	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethylene, trans-1,2-	156-60-5	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloromethane	75-09-2	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
tetrachloroethylene	127-18-4	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichloroethane, 1,1,1-	71-55-6	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichloroethylene	79-01-6	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
vinyl chloride	75-01-4	E611C	0.40	µg/L		<0.40	<0.40	<0.40	<0.40	<0.40
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611C	0.50	%		102	99.2	102	98.8	99.0
difluorobenzene, 1,4-	540-36-3	E611C	0.50	%		104	118	108	99.8	108
Hydrocarbons										
EPH (C10-C19)	----	E601A	250	µg/L		1420	<250	<250	<250	<250
EPH (C10-C19), silica gel treated	----	E601A.SG	250	µg/L		<250	----	----	----	----
EPH (C19-C32)	----	E601A	250	µg/L		<250	<250	<250	<250	<250
EPH (C19-C32), silica gel treated	----	E601A.SG	250	µg/L		<250	----	----	----	----
HEPHw, silica gel treated	----	EC600A.SG	250	µg/L		<250	----	----	----	----
LEPHw, silica gel treated	----	EC600A.SG	250	µg/L		<250	----	----	----	----
VHw (C6-C10)	----	E581.VH+F1	100	µg/L		<100	<100	<100	<100	<100
HEPHw	----	EC600A	250	µg/L		<250	<250	<250	<250	<250
LEPHw	----	EC600A	250	µg/L		1420	<250	<250	<250	<250
VPHw	----	EC580A	100	µg/L		<100	<100	<100	<100	<100
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	50	%		90.0	95.8	106	87.1	78.3

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW20-01	MW20-02	MW20-03	DUP	FB
					Client sampling date / time	25-Sep-2020	25-Sep-2020	25-Sep-2020	25-Sep-2020	25-Sep-2020
						WR2000970-023	WR2000970-024	WR2000970-025	WR2000970-026	WR2000970-027
						Result	Result	Result	Result	Result
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH-sg surr)	392-83-6	E601A.SG	50	%		61.0	----	----	----	----
dichlorotoluene, 3,4-	97-75-0	E581.VH+F1	1.0	%		89.1	83.0	77.4	83.6	89.4
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A	0.010	µg/L		<0.010	<0.010	<0.010	<0.010	<0.010
acenaphthylene	208-96-8	E641A	0.010	µg/L		<0.010	<0.010	<0.010	<0.010	<0.010
acridine	260-94-6	E641A	0.010	µg/L		<0.010	<0.010	<0.010	<0.010	<0.010
anthracene	120-12-7	E641A	0.010	µg/L		<0.010	<0.010	<0.010	<0.010	<0.010
benz(a)anthracene	56-55-3	E641A	0.010	µg/L		<0.010	<0.010	0.012	<0.010	<0.010
benzo(a)pyrene	50-32-8	E641A	0.0050	µg/L		<0.0050	<0.0050	0.0050	<0.0050	<0.0050
benzo(b+j)fluoranthene	----	E641A	0.010	µg/L		<0.010	<0.010	<0.010	<0.010	<0.010
benzo(b+j+k)fluoranthene	----	E641A	0.015	µg/L		<0.015	<0.015	<0.015	<0.015	<0.015
benzo(g,h,i)perylene	191-24-2	E641A	0.010	µg/L		<0.010	<0.010	<0.010	<0.010	<0.010
benzo(k)fluoranthene	207-08-9	E641A	0.010	µg/L		<0.010	<0.010	<0.010	<0.010	<0.010
chrysene	218-01-9	E641A	0.010	µg/L		<0.010	<0.010	0.014	<0.010	<0.010
dibenz(a,h)anthracene	53-70-3	E641A	0.0050	µg/L		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
fluoranthene	206-44-0	E641A	0.010	µg/L		<0.010	<0.010	0.021	<0.010	<0.010
fluorene	86-73-7	E641A	0.010	µg/L		<0.010	<0.010	0.019	<0.010	<0.010
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.010	µg/L		<0.010	<0.010	<0.010	<0.010	<0.010
methylnaphthalene, 1-	90-12-0	E641A	0.010	µg/L		0.018	<0.010	0.027	0.017	<0.010
methylnaphthalene, 2-	91-57-6	E641A	0.010	µg/L		0.028	<0.010	0.049	0.026	<0.010
naphthalene	91-20-3	E641A	0.050	µg/L		0.066	<0.050	0.065	0.065	<0.050
phenanthrene	85-01-8	E641A	0.020	µg/L		<0.020	<0.020	0.050	<0.020	<0.020
pyrene	129-00-0	E641A	0.010	µg/L		<0.010	<0.010	0.031	<0.010	<0.010
quinoline	6027-02-7	E641A	0.050	µg/L		<0.050	<0.050	<0.050	<0.050	<0.050
Polycyclic Aromatic Hydrocarbons Surrogates										
acridine-d9	34749-75-2	E641A	0.010	%		86.7	74.0	69.8	89.3	101
chrysene-d12	1719-03-5	E641A	0.010	%		97.3	96.4	99.0	97.0	101
naphthalene-d8	1146-65-2	E641A	0.010	%		94.2	95.0	102	94.9	94.4
phenanthrene-d10	1517-22-2	E641A	0.010	%		104	103	113	99.4	97.1
Volatile Organic Compounds [THMs]										
bromodichloromethane	75-27-4	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
bromoform	75-25-2	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW20-01	MW20-02	MW20-03	DUP	FB
					Client sampling date / time	25-Sep-2020	25-Sep-2020	25-Sep-2020	25-Sep-2020	25-Sep-2020
						WR2000970-023	WR2000970-024	WR2000970-025	WR2000970-026	WR2000970-027
						Result	Result	Result	Result	Result
Volatile Organic Compounds [THMs]										
chloroform	67-66-3	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dibromochloromethane	124-48-1	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Glycols										
diethylene glycol	111-46-6	E680E	5.0	mg/L		<5.0	<5.0	<5.0	<5.0	<5.0
ethylene glycol	107-21-1	E680E	5.0	mg/L		<5.0	<5.0	<5.0	<5.0	<5.0
propylene glycol, 1,2-	57-55-6	E680E	5.0	mg/L		<5.0	<5.0	<5.0	<5.0	<5.0
triethylene glycol	112-27-6	E680E	5.0	mg/L		<5.0	<5.0	<5.0	<5.0	<5.0
Glycols Surrogates										
propanediol, 1,3-	504-63-2	E680E	5.0	%		94.4	47.2 SUR-ND	45.7 SUR-ND	91.6	101

Please refer to the General Comments section for an explanation of any qualifiers detected.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WR2000970**	Page	: 1 of 26
Amendment	: **4**		
Client	: **Tetra Tech Canada Inc.**	Laboratory	: Whitehorse - Environmental
Contact	: Kristina Schmidt	Account Manager	: Brent Mack
Address	: 61 Wasson Place Whitehorse YT Canada Y1A 0H7	Address	: #12 151 Industrial Road Whitehorse, Yukon Canada Y1A 2V3
Telephone	: ----	Telephone	: +1 867 668 6689
Project	: 704-ENW.PENW03102-01	Date Samples Received	: 29-Sep-2020 16:20
PO	: ----	Issue Date	: 27-Oct-2020 10:26
C-O-C number	: ----		
Sampler	: KS		
Site	: ----		
Quote number	: Standard Client Price List (BC & YK)		
No. of samples received	: 27		
No. of samples analysed	: 20		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Matrix Spike outliers occur.
- Duplicate outliers occur - please see following pages for full details.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- Test sample Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.

Outliers: Reference Material (RM) Samples

- Reference Material (RM) Sample outliers occur - please see the following pages for full details.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Soil/Solid**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Duplicate (DUP) RPDs								
Metals	Anonymous	Anonymous	antimony	7440-36-0	E440	33.1 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	Anonymous	Anonymous	arsenic	7440-38-2	E440	33.9 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	WR2000970-001	TP20-01-0.5m	nickel	7440-02-0	E440	32.5 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	WR2000970-001	TP20-01-0.5m	phosphorus	7723-14-0	E440	147 % DUP-H	Diff <2x LOR	Low Level DUP DQO exceeded (difference > 2 LOR).
Metals	WR2000970-001	TP20-01-0.5m	titanium	7440-32-6	E440	56.7 % DUP-H	40%	Duplicate RPD does not meet the DQO for this test.

Result Qualifiers

Qualifier	*Description*
DUP-H	*Duplicate results outside ALS DQO, due to sample heterogeneity.*

Reference Material (RM) Sample								
Metals	QC-MRG2-97746003	----	antimony	7440-36-0	E440	158 % RM-H	70.0-130%	Recovery greater than upper control limit
Metals	QC-103114-003	----	molybdenum	7439-98-7	E440	135 % MES	70.0-130%	Recovery greater than upper control limit

Result Qualifiers

Qualifier	*Description*
MES	*Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).*
RM-H	*Reference Material recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Laboratory Control Sample (LCS) Recoveries								
Hydrocarbons	QC-103096-002	----	EPH (C19-C32), silica gel treated	----	E601A.SG	59.4 % LCS-ND	70.0-130%	Recovery less than lower control limit

Result Qualifiers

Qualifier	*Description*
LCS-ND	*Lab Control Sample recovery was slightly outside ALS DQO. Reported non-detect results for associated samples were unaffected.*

Regular Sample Surrogates

Sub-Matrix: **Soil**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Result	Limits	Comment
Samples Submitted							
Hydrocarbons Surrogates	WR2000970-005	TP20-04-1.25m	dichlorotoluene, 3,4-	97-75-0	68.4 %	70.0-130 %	Recovery less than lower data quality objective

Sub-Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Result	Limits	Comment
Samples Submitted							
Glycols Surrogates	WR2000970-024	MW20-02	propanediol, 1,3-	504-63-2	47.2 %	70.0-130 %	Recovery less than lower data quality objective
Glycols Surrogates	WR2000970-025	MW20-03	propanediol, 1,3-	504-63-2	45.7 %	70.0-130 %	Recovery less than lower data quality objective

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 is used for calculation purposes.

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Glycols : Glycols (BC List) by GC-FID										
Glass soil jar/Teflon lined cap TP20-03-1.3m	E680E	23-Sep-2020	03-Oct-2020	14 days	9 days	✓	05-Oct-2020	40 days	2 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap TP00-05-1.25m	E601A	23-Sep-2020	06-Oct-2020	14 days	12 days	✓	08-Oct-2020	40 days	2 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap TP20-01-0.5m	E601A	23-Sep-2020	06-Oct-2020	14 days	12 days	✓	08-Oct-2020	40 days	2 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap TP20-03-1.3m	E601A	23-Sep-2020	06-Oct-2020	14 days	12 days	✓	08-Oct-2020	40 days	2 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap TP20-04-1.25m	E601A	23-Sep-2020	06-Oct-2020	14 days	12 days	✓	08-Oct-2020	40 days	2 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap TP20-05-1.25m	E601A	23-Sep-2020	06-Oct-2020	14 days	12 days	✓	08-Oct-2020	40 days	2 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap TP20-07-0.3m	E601A	23-Sep-2020	06-Oct-2020	14 days	12 days	✓	08-Oct-2020	40 days	2 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
TP20-08-0.5m	E601A	23-Sep-2020	06-Oct-2020	14 days	12 days	✓	08-Oct-2020	40 days	2 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
TP20-9-0.5m	E601A	23-Sep-2020	06-Oct-2020	14 days	12 days	✓	08-Oct-2020	40 days	2 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial										
TP20-03-1.3m	E581.VH+F1	23-Sep-2020	04-Oct-2020	40 days	10 days	✓	05-Oct-2020	29 days	0 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial										
TP20-08-1.7m	E581.VH+F1	23-Sep-2020	04-Oct-2020	40 days	10 days	✓	05-Oct-2020	29 days	0 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial										
TP20-01-1.0m	E581.VH+F1	23-Sep-2020	04-Oct-2020	40 days	10 days	✓	05-Oct-2020	29 days	1 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial										
TP20-04-1.25m	E581.VH+F1	23-Sep-2020	04-Oct-2020	40 days	10 days	✓	05-Oct-2020	29 days	1 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial										
TP20-07-0.3m	E581.VH+F1	23-Sep-2020	04-Oct-2020	40 days	10 days	✓	05-Oct-2020	29 days	1 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial										
TP20-09-1.25m	E581.VH+F1	23-Sep-2020	04-Oct-2020	40 days	10 days	✓	05-Oct-2020	29 days	1 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
TP00-05-1.25m	E510	23-Sep-2020	07-Oct-2020	28 days	14 days	✓	08-Oct-2020	13 days	0 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap TP20-01-0.5m	E510	23-Sep-2020	07-Oct-2020	28 days	14 days	✓	08-Oct-2020	13 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap TP20-03-0.5m	E510	23-Sep-2020	07-Oct-2020	28 days	14 days	✓	08-Oct-2020	13 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap TP20-03-1.3m	E510	23-Sep-2020	07-Oct-2020	28 days	14 days	✓	08-Oct-2020	13 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap TP20-04-1.25m	E510	23-Sep-2020	07-Oct-2020	28 days	14 days	✓	08-Oct-2020	13 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap TP20-05-1.25m	E510	23-Sep-2020	07-Oct-2020	28 days	14 days	✓	08-Oct-2020	13 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap TP20-07-0.3m	E510	23-Sep-2020	07-Oct-2020	28 days	14 days	✓	08-Oct-2020	13 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap TP20-08-0.5m	E510	23-Sep-2020	07-Oct-2020	28 days	14 days	✓	08-Oct-2020	13 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap TP20-9-0.5m	E510	23-Sep-2020	07-Oct-2020	28 days	14 days	✓	08-Oct-2020	13 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap TP00-05-1.25m	E440	23-Sep-2020	07-Oct-2020	180 days	14 days	✓	08-Oct-2020	165 days	0 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap TP20-01-0.5m	E440	23-Sep-2020	07-Oct-2020	180 days	14 days	✓	08-Oct-2020	165 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap TP20-03-0.5m	E440	23-Sep-2020	07-Oct-2020	180 days	14 days	✓	08-Oct-2020	165 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap TP20-03-1.3m	E440	23-Sep-2020	07-Oct-2020	180 days	14 days	✓	08-Oct-2020	165 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap TP20-04-1.25m	E440	23-Sep-2020	07-Oct-2020	180 days	14 days	✓	08-Oct-2020	165 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap TP20-05-1.25m	E440	23-Sep-2020	07-Oct-2020	180 days	14 days	✓	08-Oct-2020	165 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap TP20-07-0.3m	E440	23-Sep-2020	07-Oct-2020	180 days	14 days	✓	08-Oct-2020	165 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap TP20-08-0.5m	E440	23-Sep-2020	07-Oct-2020	180 days	14 days	✓	08-Oct-2020	165 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap TP20-9-0.5m	E440	23-Sep-2020	07-Oct-2020	180 days	14 days	✓	08-Oct-2020	165 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap TP20-05-0.75m	E440	23-Sep-2020	16-Oct-2020	180 days	22 days	✓	16-Oct-2020	157 days	0 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap TP20-01-1.75m	E440	23-Sep-2020	24-Oct-2020	180 days	30 days	✓	24-Oct-2020	149 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap TP20-04-2.0m	E440	23-Sep-2020	24-Oct-2020	180 days	30 days	✓	24-Oct-2020	149 days	0 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap TP00-05-1.25m	E144	23-Sep-2020	----	----	----		06-Oct-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap TP20-01-0.5m	E144	23-Sep-2020	----	----	----		06-Oct-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap TP20-01-1.0m	E144	23-Sep-2020	----	----	----		08-Oct-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap TP20-01-1.75m	E144	23-Sep-2020	----	----	----		23-Oct-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap TP20-03-1.3m	E144	23-Sep-2020	----	----	----		06-Oct-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap TP20-04-1.25m	E144	23-Sep-2020	----	----	----		06-Oct-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap TP20-04-2.0m	E144	23-Sep-2020	----	----	----		23-Oct-2020	----	----	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap TP20-05-1.25m	E144	23-Sep-2020	----	----	----		06-Oct-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap TP20-07-0.3m	E144	23-Sep-2020	----	----	----		06-Oct-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap TP20-08-0.5m	E144	23-Sep-2020	----	----	----		06-Oct-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap TP20-08-1.7m	E144	23-Sep-2020	----	----	----		08-Oct-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap TP20-09-1.25m	E144	23-Sep-2020	----	----	----		08-Oct-2020	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap TP20-9-0.5m	E144	23-Sep-2020	----	----	----		06-Oct-2020	----	----	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap TP00-05-1.25m	E108	23-Sep-2020	07-Oct-2020	30 days	14 days	✓	08-Oct-2020	15 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap TP20-01-0.5m	E108	23-Sep-2020	07-Oct-2020	30 days	14 days	✓	08-Oct-2020	15 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap TP20-03-0.5m	E108	23-Sep-2020	07-Oct-2020	30 days	14 days	✓	08-Oct-2020	15 days	0 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap TP20-03-1.3m	E108	23-Sep-2020	07-Oct-2020	30 days	14 days	✓	08-Oct-2020	15 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap TP20-04-1.25m	E108	23-Sep-2020	07-Oct-2020	30 days	14 days	✓	08-Oct-2020	15 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap TP20-05-1.25m	E108	23-Sep-2020	07-Oct-2020	30 days	14 days	✓	08-Oct-2020	15 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap TP20-07-0.3m	E108	23-Sep-2020	07-Oct-2020	30 days	14 days	✓	08-Oct-2020	15 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap TP20-08-0.5m	E108	23-Sep-2020	07-Oct-2020	30 days	14 days	✓	08-Oct-2020	15 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap TP20-9-0.5m	E108	23-Sep-2020	07-Oct-2020	30 days	14 days	✓	08-Oct-2020	15 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap TP00-05-1.25m	E641A-L	23-Sep-2020	06-Oct-2020	14 days	12 days	✓	08-Oct-2020	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap TP20-01-0.5m	E641A-L	23-Sep-2020	06-Oct-2020	14 days	12 days	✓	08-Oct-2020	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap TP20-03-1.3m	E641A-L	23-Sep-2020	06-Oct-2020	14 days	12 days	✓	08-Oct-2020	40 days	1 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap TP20-04-1.25m	E641A-L	23-Sep-2020	06-Oct-2020	14 days	12 days	✓	08-Oct-2020	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap TP20-05-1.25m	E641A-L	23-Sep-2020	06-Oct-2020	14 days	12 days	✓	08-Oct-2020	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap TP20-07-0.3m	E641A-L	23-Sep-2020	06-Oct-2020	14 days	12 days	✓	08-Oct-2020	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap TP20-08-0.5m	E641A-L	23-Sep-2020	06-Oct-2020	14 days	12 days	✓	08-Oct-2020	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap TP20-9-0.5m	E641A-L	23-Sep-2020	06-Oct-2020	14 days	12 days	✓	08-Oct-2020	40 days	1 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap TP00-05-1.25m	E532	23-Sep-2020	18-Oct-2020	30 days	24 days	✓	20-Oct-2020	7 days	1 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap TP20-01-0.5m	E532	23-Sep-2020	18-Oct-2020	30 days	24 days	✓	20-Oct-2020	7 days	1 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap TP20-03-1.3m	E532	23-Sep-2020	18-Oct-2020	30 days	24 days	✓	20-Oct-2020	7 days	1 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap TP20-04-1.25m	E532	23-Sep-2020	18-Oct-2020	30 days	24 days	✓	20-Oct-2020	7 days	1 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap TP20-05-1.25m	E532	23-Sep-2020	18-Oct-2020	30 days	24 days	✓	20-Oct-2020	7 days	1 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap TP20-01-1.75m	E532	23-Sep-2020	24-Oct-2020	30 days	30 days	✓	24-Oct-2020	7 days	0 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap TP20-04-2.0m	E532	23-Sep-2020	24-Oct-2020	30 days	30 days	✓	24-Oct-2020	7 days	0 days	✓
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial TP20-03-1.3m	E611C	23-Sep-2020	04-Oct-2020	----	----		05-Oct-2020	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial TP20-08-1.7m	E611C	23-Sep-2020	04-Oct-2020	----	----		05-Oct-2020	----	----	
Volatile Organic Compounds [BTEXS+MTBE] : BTEX by Headspace GC-MS										
Glass soil methanol vial TP20-01-1.0m	E611A	23-Sep-2020	04-Oct-2020	40 days	10 days	✓	05-Oct-2020	29 days	1 days	✓
Volatile Organic Compounds [BTEXS+MTBE] : BTEX by Headspace GC-MS										
Glass soil methanol vial TP20-04-1.25m	E611A	23-Sep-2020	04-Oct-2020	40 days	10 days	✓	05-Oct-2020	29 days	1 days	✓
Volatile Organic Compounds [BTEXS+MTBE] : BTEX by Headspace GC-MS										
Glass soil methanol vial TP20-07-0.3m	E611A	23-Sep-2020	04-Oct-2020	40 days	10 days	✓	05-Oct-2020	29 days	1 days	✓
Volatile Organic Compounds [BTEXS+MTBE] : BTEX by Headspace GC-MS										
Glass soil methanol vial TP20-09-1.25m	E611A	23-Sep-2020	04-Oct-2020	40 days	10 days	✓	05-Oct-2020	29 days	1 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [BTEXS+MTBE] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial TP20-03-1.3m	E611C	23-Sep-2020	04-Oct-2020	40 days	10 days	✓	05-Oct-2020	29 days	0 days	✓
Volatile Organic Compounds [BTEXS+MTBE] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial TP20-08-1.7m	E611C	23-Sep-2020	04-Oct-2020	40 days	10 days	✓	05-Oct-2020	29 days	0 days	✓
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial TP20-03-1.3m	E611C	23-Sep-2020	04-Oct-2020	----	----		05-Oct-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial TP20-08-1.7m	E611C	23-Sep-2020	04-Oct-2020	----	----		05-Oct-2020	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial TP20-03-1.3m	E611C	23-Sep-2020	04-Oct-2020	----	----		05-Oct-2020	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial TP20-08-1.7m	E611C	23-Sep-2020	04-Oct-2020	----	----		05-Oct-2020	----	----	

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE - dissolved (lab preserved) DUP	E421.Cr-L	25-Sep-2020	05-Oct-2020	180 days	9 days	✓	06-Oct-2020	170 days	0 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE - dissolved (lab preserved) FB	E421.Cr-L	25-Sep-2020	05-Oct-2020	180 days	9 days	✓	06-Oct-2020	170 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE - dissolved (lab preserved) MW20-01	E421.Cr-L	25-Sep-2020	05-Oct-2020	180 days	9 days	✓	06-Oct-2020	170 days	0 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE - dissolved (lab preserved) MW20-02	E421.Cr-L	25-Sep-2020	05-Oct-2020	180 days	9 days	✓	06-Oct-2020	170 days	0 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE - dissolved (lab preserved) MW20-03	E421.Cr-L	25-Sep-2020	05-Oct-2020	180 days	9 days	✓	06-Oct-2020	170 days	0 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) DUP	E509	25-Sep-2020	06-Oct-2020	28 days	10 days	✓	06-Oct-2020	17 days	0 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) FB	E509	25-Sep-2020	06-Oct-2020	28 days	10 days	✓	06-Oct-2020	17 days	0 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) MW20-01	E509	25-Sep-2020	06-Oct-2020	28 days	10 days	✓	06-Oct-2020	17 days	0 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) MW20-02	E509	25-Sep-2020	06-Oct-2020	28 days	10 days	✓	06-Oct-2020	17 days	0 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) MW20-03	E509	25-Sep-2020	06-Oct-2020	28 days	11 days	✓	06-Oct-2020	16 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) DUP	E421	25-Sep-2020	05-Oct-2020	180 days	9 days	✓	06-Oct-2020	170 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) FB	E421	25-Sep-2020	05-Oct-2020	180 days	9 days	✓	06-Oct-2020	170 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) MW20-01	E421	25-Sep-2020	05-Oct-2020	180 days	9 days	✓	06-Oct-2020	170 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) MW20-02	E421	25-Sep-2020	05-Oct-2020	180 days	9 days	✓	06-Oct-2020	170 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) MW20-03	E421	25-Sep-2020	05-Oct-2020	180 days	9 days	✓	06-Oct-2020	170 days	0 days	✓
Glycols : Glycols (BC List) by GC-FID										
Glass vial (sodium bisulfate) DUP	E680E	25-Sep-2020	03-Oct-2020	14 days	7 days	✓	05-Oct-2020	40 days	2 days	✓
Glycols : Glycols (BC List) by GC-FID										
Glass vial (sodium bisulfate) FB	E680E	25-Sep-2020	03-Oct-2020	14 days	7 days	✓	05-Oct-2020	40 days	2 days	✓
Glycols : Glycols (BC List) by GC-FID										
Glass vial (sodium bisulfate) MW20-01	E680E	25-Sep-2020	03-Oct-2020	14 days	7 days	✓	05-Oct-2020	40 days	2 days	✓
Glycols : Glycols (BC List) by GC-FID										
Glass vial (sodium bisulfate) MW20-02	E680E	25-Sep-2020	03-Oct-2020	14 days	7 days	✓	05-Oct-2020	40 days	2 days	✓
Glycols : Glycols (BC List) by GC-FID										
Glass vial (sodium bisulfate) MW20-03	E680E	25-Sep-2020	03-Oct-2020	14 days	7 days	✓	05-Oct-2020	40 days	2 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : BC PHC - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
DUP	E601A	25-Sep-2020	05-Oct-2020	14 days	9 days	✓	06-Oct-2020	40 days	1 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
FB	E601A	25-Sep-2020	05-Oct-2020	14 days	9 days	✓	06-Oct-2020	40 days	1 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
MW20-01	E601A	25-Sep-2020	05-Oct-2020	14 days	9 days	✓	06-Oct-2020	40 days	1 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
MW20-02	E601A	25-Sep-2020	05-Oct-2020	14 days	9 days	✓	06-Oct-2020	40 days	1 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
MW20-03	E601A	25-Sep-2020	05-Oct-2020	14 days	9 days	✓	06-Oct-2020	40 days	1 days	✓
Hydrocarbons : BC PHC - EPH(sg) by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
MW20-01	E601A.SG	25-Sep-2020	05-Oct-2020	14 days	9 days	✓	16-Oct-2020	40 days	11 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate)										
DUP	E581.VH+F1	25-Sep-2020	05-Oct-2020	14 days	9 days	✓	05-Oct-2020	4 days	0 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate)										
FB	E581.VH+F1	25-Sep-2020	05-Oct-2020	14 days	9 days	✓	05-Oct-2020	4 days	0 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate)										
MW20-01	E581.VH+F1	25-Sep-2020	05-Oct-2020	14 days	9 days	✓	05-Oct-2020	4 days	0 days	✓

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW20-02	E581.VH+F1	25-Sep-2020	05-Oct-2020	14 days	9 days	✓	05-Oct-2020	4 days	0 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW20-03	E581.VH+F1	25-Sep-2020	05-Oct-2020	14 days	9 days	✓	05-Oct-2020	4 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate) DUP	E641A	25-Sep-2020	05-Oct-2020	14 days	9 days	✓	08-Oct-2020	40 days	2 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate) FB	E641A	25-Sep-2020	05-Oct-2020	14 days	9 days	✓	08-Oct-2020	40 days	2 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate) MW20-01	E641A	25-Sep-2020	05-Oct-2020	14 days	9 days	✓	08-Oct-2020	40 days	2 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate) MW20-02	E641A	25-Sep-2020	05-Oct-2020	14 days	9 days	✓	08-Oct-2020	40 days	2 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate) MW20-03	E641A	25-Sep-2020	05-Oct-2020	14 days	9 days	✓	08-Oct-2020	40 days	2 days	✓
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) DUP	E611C	25-Sep-2020	05-Oct-2020	----	----		05-Oct-2020	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) FB	E611C	25-Sep-2020	05-Oct-2020	----	----		05-Oct-2020	----	----	

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW20-01	E611C	25-Sep-2020	05-Oct-2020	----	----		05-Oct-2020	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW20-02	E611C	25-Sep-2020	05-Oct-2020	----	----		05-Oct-2020	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW20-03	E611C	25-Sep-2020	05-Oct-2020	----	----		05-Oct-2020	----	----	
Volatile Organic Compounds [BTEXS+MTBE] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) DUP	E611C	25-Sep-2020	05-Oct-2020	14 days	9 days	✓	05-Oct-2020	4 days	0 days	✓
Volatile Organic Compounds [BTEXS+MTBE] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) FB	E611C	25-Sep-2020	05-Oct-2020	14 days	9 days	✓	05-Oct-2020	4 days	0 days	✓
Volatile Organic Compounds [BTEXS+MTBE] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW20-01	E611C	25-Sep-2020	05-Oct-2020	14 days	9 days	✓	05-Oct-2020	4 days	0 days	✓
Volatile Organic Compounds [BTEXS+MTBE] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW20-02	E611C	25-Sep-2020	05-Oct-2020	14 days	9 days	✓	05-Oct-2020	4 days	0 days	✓
Volatile Organic Compounds [BTEXS+MTBE] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW20-03	E611C	25-Sep-2020	05-Oct-2020	14 days	9 days	✓	05-Oct-2020	4 days	0 days	✓
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) DUP	E611C	25-Sep-2020	05-Oct-2020	----	----		05-Oct-2020	----	----	

Matrix: **Water**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
FB	E611C	25-Sep-2020	05-Oct-2020	----	----		05-Oct-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
MW20-01	E611C	25-Sep-2020	05-Oct-2020	----	----		05-Oct-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
MW20-02	E611C	25-Sep-2020	05-Oct-2020	----	----		05-Oct-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
MW20-03	E611C	25-Sep-2020	05-Oct-2020	----	----		05-Oct-2020	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
DUP	E611C	25-Sep-2020	05-Oct-2020	----	----		05-Oct-2020	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
FB	E611C	25-Sep-2020	05-Oct-2020	----	----		05-Oct-2020	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
MW20-01	E611C	25-Sep-2020	05-Oct-2020	----	----		05-Oct-2020	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
MW20-02	E611C	25-Sep-2020	05-Oct-2020	----	----		05-Oct-2020	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
MW20-03	E611C	25-Sep-2020	05-Oct-2020	----	----		05-Oct-2020	----	----	

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Soil/Solid**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
BC PHC - EPH by GC-FID	E601A	97750	1	9	11.1	5.0	✓
BTEX by Headspace GC-MS	E611A	96996	1	18	5.5	5.0	✓
Glycols (BC List) by GC-FID	E680E	96523	1	4	25.0	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	104491	2	7	28.5	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	97746	1	9	11.1	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	97747	3	24	12.5	5.0	✓
Moisture Content by Gravimetry	E144	97753	3	37	8.1	5.0	✓
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L	97749	1	9	11.1	5.0	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	97748	1	9	11.1	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	96997	2	38	5.2	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	97001	1	6	16.6	5.0	✓
Laboratory Control Samples (LCS)							
BC PHC - EPH by GC-FID	E601A	97750	2	9	22.2	10.0	✓
BTEX by Headspace GC-MS	E611A	96996	1	18	5.5	5.0	✓
Glycols (BC List) by GC-FID	E680E	96523	1	4	25.0	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	104491	4	7	57.1	10.0	✓
Mercury in Soil/Solid by CVAAS	E510	97746	2	9	22.2	10.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	97747	6	24	25.0	10.0	✓
Moisture Content by Gravimetry	E144	97753	3	37	8.1	5.0	✓
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L	97749	2	9	22.2	10.0	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	97748	1	9	11.1	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	96997	2	38	5.2	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	97001	1	6	16.6	5.0	✓
Method Blanks (MB)							
BC PHC - EPH by GC-FID	E601A	97750	1	9	11.1	5.0	✓
BTEX by Headspace GC-MS	E611A	96996	1	18	5.5	5.0	✓
Glycols (BC List) by GC-FID	E680E	96523	1	4	25.0	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	104491	2	7	28.5	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	97746	1	9	11.1	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	97747	3	24	12.5	5.0	✓
Moisture Content by Gravimetry	E144	97753	3	37	8.1	5.0	✓
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L	97749	1	9	11.1	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	96997	2	38	5.2	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	97001	1	6	16.6	5.0	✓
Matrix Spikes (MS)							
BTEX by Headspace GC-MS	E611A	96996	1	18	5.5	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	96997	2	38	5.2	5.0	✓

Matrix: **Soil/Solid**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS) - Continued							
VOCs (BC List) by Headspace GC-MS	E611C	97001	1	6	16.6	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	97162	1	14	7.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	97817	2	29	6.9	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	97161	1	18	5.5	5.0	✓
Glycols (BC List) by GC-FID	E680E	96522	1	6	16.6	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	97143	1	19	5.2	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	97142	1	19	5.2	5.0	✓
Laboratory Control Samples (LCS)							
BC PHC - EPH by GC-FID	E601A	97117	1	16	6.2	5.0	✓
BC PHC - EPH(sg) by GC-FID	E601A.SG	103096	1	1	100.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	97162	1	14	7.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	97817	2	29	6.9	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	97161	1	18	5.5	5.0	✓
Glycols (BC List) by GC-FID	E680E	96522	1	6	16.6	5.0	✓
PAHs by Hexane LVI GC-MS	E641A	97116	1	19	5.2	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	97143	1	19	5.2	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	97142	1	19	5.2	5.0	✓
Method Blanks (MB)							
BC PHC - EPH by GC-FID	E601A	97117	1	16	6.2	5.0	✓
BC PHC - EPH(sg) by GC-FID	E601A.SG	103096	1	1	100.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	97162	1	14	7.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	97817	2	29	6.9	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	97161	2	18	11.1	5.0	✓
Glycols (BC List) by GC-FID	E680E	96522	1	6	16.6	5.0	✓
PAHs by Hexane LVI GC-MS	E641A	97116	1	19	5.2	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	97143	1	19	5.2	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	97142	1	19	5.2	5.0	✓
Matrix Spikes (MS)							
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	97162	1	14	7.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	97817	2	29	6.9	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	97161	1	18	5.5	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	97143	1	19	5.2	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	97142	1	19	5.2	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
pH by Meter (1:2 Soil:Water Extraction)	E108 Vancouver - Environmental	Soil/Solid	BC Lab Manual	pH is determined by potentiometric measurement with a pH electrode at ambient laboratory temperature (normally 20 ± 5°C), and is carried out in accordance with procedures described in the BC Lab Manual (prescriptive method). The procedure involves mixing the dried (at <60 ºC) and sieved (10mesh/2mm) sample with ultra pure water at a 1:2 ratio of sediment to water. The pH is then measured by a standard pH probe.
Moisture Content by Gravimetry	E144 Vancouver - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
Metals in Soil/Solid by CRC ICPMS	E440 Vancouver - Environmental	Soil/Solid	EPA 6020B (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl. This method is intended to liberate metals that may be environmentally available. Silicate minerals are not solubilized. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. Analysis is by Collision/Reaction Cell ICPMS.
Mercury in Soil/Solid by CVAAS	E510 Vancouver - Environmental	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl, followed by CVAAS analysis.
Hexavalent Chromium (Cr VI) by IC	E532 Edmonton - Environmental	Soil/Solid	APHA 3500-CR C	Instrumental analysis is performed by ion chromatography with UV detection.
VH and F1 by Headspace GC-FID	E581.VH+F1 Vancouver - Environmental	Soil/Solid	BC MOE Lab Manual / CCME PHC in Soil - Tier 1 (mod)	Volatile Hydrocarbons (VH and F1) is analyzed by static headspace GC-FID. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
BC PHC - EPH by GC-FID	E601A Vancouver - Environmental	Soil/Solid	BC MOE Lab Manual (EPH in Solids by GC/FID) (mod)	Extractable Petroleum Hydrocarbons (EPH) are analyzed by GC-FID.
BTEX by Headspace GC-MS	E611A Vancouver - Environmental	Soil/Solid	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
VOCs (BC List) by Headspace GC-MS	E611C Vancouver - Environmental	Soil/Solid	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L Vancouver - Environmental	Soil/Solid	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by GC-MS.
Glycols (BC List) by GC-FID	E680E Vancouver - Environmental	Soil/Solid	EPA 8015D (mod)	Derivatized glycols are analyzed by GC-FID.
Trivalent Chromium (Cr III) by Calculation	EC535C Edmonton - Environmental	Soil/Solid	BC WLAP LAB MANUAL / EPA 3060A & 7196A	This analysis is carried out using the method "Trivalent Chromium in Solids", as published in the BC WLAP Laboratory Methods Manual (2003). Chromium (III) is determined by subtraction of chromium (VI) from total chromium. Chromium (VI) is determined by the alkaline leach method, and total chromium is determined using CSR Analytical Method 8 "Strong Acid Leachable Metals (SALM) in Soil", BC Ministry of Environment, Lands and Parks, 26 June 2001. All results are reported as milligrams per dry kilogram of sediment/soil. The Limit of Reporting for Chromium (III) varies as a function of the test results.
VPH: VH-BTEX-Styrene	EC580A Vancouver - Environmental	Soil/Solid	BC MOE Lab Manual (VPH in Water and Solids) (mod)	Volatile Petroleum Hydrocarbons (VPH) is calculated as follows: VH-BTEX = Volatile Hydrocarbons (VH6-10) minus benzene, toluene, ethylbenzene, xylenes (BTEX) and styrene.
LEPH and HEPH: EPH-PAH	EC600A Vancouver - Environmental	Soil/Solid	BC MOE Lab Manual (LEPH and HEPH) (mod)	Light Extractable Petroleum Hydrocarbons (LEPH) and Heavy Extractable Petroleum Hydrocarbons (HEPH) are calculated as follows: LEPH = Extractable Petroleum Hydrocarbons (EPH10-19) minus Naphthalene and Phenanthrene; HEPH = Extractable Petroleum Hydrocarbons (EPH19-32) minus Benz(a)anthracene, Benzo(b+j+k)fluoranthene, Benzo(a)pyrene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene, and Pyrene.
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L Vancouver - Environmental	Water	APHA 3030 B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
VH and F1 by Headspace GC-FID	E581.VH+F1 Vancouver - Environmental	Water	BC MOE Lab Manual / CCME PHC in Soil - Tier 1 (mod)	Volatile Hydrocarbons (VH and F1) is analyzed by static headspace GC-FID. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
BC PHC - EPH by GC-FID	E601A Calgary - Environmental	Water	BC MOE Lab Manual	Extractable Petroleum Hydrocarbons (EPH) are analyzed by GC-FID.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
BC PHC - EPH(sg) by GC-FID	E601A.SG Vancouver - Environmental	Water	BC MOE Lab Manual (EPH in Water by GC/FID) (mod)	Silica gel cleaned Extractable Petroleum Hydrocarbons (EPHsg) are analyzed by GC-FID.
VOCs (BC List) by Headspace GC-MS	E611C Vancouver - Environmental	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
PAHs by Hexane LVI GC-MS	E641A Calgary - Environmental	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.
Glycols (BC List) by GC-FID	E680E Vancouver - Environmental	Water	EPA 8015D (mod)	Derivatized glycols are analyzed by GC-FID.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
VPH: VH-BTEX-Styrene	EC580A Vancouver - Environmental	Water	BC MOE Lab Manual (VPH in Water and Solids) (mod)	Volatile Petroleum Hydrocarbons (VPH) is calculated as follows: VPHw = Volatile Hydrocarbons (VH6-10) minus benzene, toluene, ethylbenzene, xylenes (BTEX) and styrene.
LEPH and HEPH: EPH-PAH	EC600A Calgary - Environmental	Water	BC MOE Lab Manual (LEPH and HEPH) (mod)	Light Extractable Petroleum Hydrocarbons (LEPH) and Heavy Extractable Petroleum Hydrocarbons (HEPH) are calculated as follows: LEPH = Extractable Petroleum Hydrocarbons (EPH10-19) minus Acenaphthene, Acridine, Anthracene, Fluorene, Naphthalene and Phenanthrene; HEPH = Extractable Petroleum Hydrocarbons (EPH19-32) minus Benz(a)anthracene, Benzo(a)pyrene, Fluoranthene, and Pyrene.
LEPHsg and HEPHsg: EPHsg-PAH	EC600A.SG Vancouver - Environmental	Water	BC MOE Lab Manual (LEPH and HEPH) (mod)	Silca gel treated Light Extractable Petroleum Hydrocarbons (LEPH-sg) and silica gel treated Heavy Extractable Petroleum Hydrocarbons (HEPH-sg) are calculated as follows: LEPH-sg = Silica gel treated Extractable Petroleum Hydrocarbons (EPH10-19-sg) minus Acenaphthene, Acridine, Anthracene, Fluorene, Naphthalene and Phenanthrene; HEPH-sg = Silica gel treated Extractable Petroleum Hydrocarbons (EPH19-32-sg) minus Benz(a)anthracene, Benzo(a)pyrene, Fluoranthene, and Pyrene.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil:Water for pH	EP108 Vancouver - Environmental	Soil/Solid	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL	The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water.
Digestion for Metals and Mercury	EP440 Vancouver - Environmental	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl. This method is intended to liberate metals that may be environmentally available.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation of Hexavalent Chromium (Cr VI) for IC	EP532 Edmonton - Environmental	Soil/Solid	EPA 3060A	Field moist samples are digested with a sodium hydroxide/sodium carbonate solution as described in EPA 3060A.
VOCs Methanol Extraction for Headspace Analysis	EP581 Vancouver - Environmental	Soil/Solid	EPA 5035A (mod)	VOCs in samples are extracted with methanol. Extracts are then prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
PHCs and PAHs Hexane-Acetone Tumbler Extraction	EP601 Vancouver - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1 (mod)	Samples are subsampled and Petroleum Hydrocarbons (PHC) and PAHs are extracted with 1:1 hexane:acetone using a rotary extractor.
Glycols Extraction and Derivatization (BC Only)	EP680E Vancouver - Environmental	Soil/Solid	EPA 8015D (mod)	Samples are subsampled and analytes are extracted with aqueous solvent. The extracts are then derivatized.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
Dissolved Mercury Water Filtration	EP509 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
VOCs Preparation for Headspace Analysis	EP581 Vancouver - Environmental	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.
PHCs and PAHs Hexane Extraction	EP601 Calgary - Environmental	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
Glycols Extraction and Derivatization (BC Only)	EP680E Vancouver - Environmental	Water	EPA 8015D (mod)	Aqueous sample is derivatized and extracted with orgaic solvent.

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **WR2000970**	Page	: 1 of 38
Amendment	: **4**		

Client	: Tetra Tech Canada Inc.	Laboratory	: Whitehorse - Environmental
Contact	: Kristina Schmidt	Account Manager	: Brent Mack
Address	: 61 Wasson Place Whitehorse YT Canada Y1A 0H7	Address	: #12 151 Industrial Road Whitehorse, Yukon Canada Y1A 2V3
Telephone	: ----	Telephone	: +1 867 668 6689
Project	: 704-ENW.PENW03102-01	Date Samples Received	: 29-Sep-2020 16:20
PO	: ----	Date Analysis Commenced	: 03-Oct-2020
C-O-C number	: ----	Issue Date	: 27-Oct-2020 10:26
Sampler	: KS		
Site	: ----		
Quote number	: Standard Client Price List (BC & YK)		
No. of samples received	: 27		
No. of samples analysed	: 20		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Alex Drake	Lab Analyst	Inorganics, Edmonton, Alberta
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Brieanna Allen	Department Manager - Organics	Organics, Burnaby, British Columbia
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Ping Yeung	Team Leader - Inorganics	Inorganics, Edmonton, Alberta
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Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percentage Difference
# = Indicates a QC result that did not meet the ALS DQO.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 107142)											
VA20B8747-001	Anonymous	moisture	----	E144	0.25	%	8.05	8.04	0.139%	20%	----
Physical Tests (QC Lot: 97748)											
WR2000970-001	TP20-01-0.5m	pH (1:2 soil:water)	----	E108	0.10	pH units	8.88	8.71	1.93%	5%	----
Physical Tests (QC Lot: 97753)											
VA20B6308-011	Anonymous	moisture	----	E144	0.25	%	7.25	6.37	12.9%	20%	----
Physical Tests (QC Lot: 99712)											
VA20B7211-001	Anonymous	moisture	----	E144	0.25	%	16.7	15.8	5.26%	20%	----
Metals (QC Lot: 103114)											
WR2000970-014	TP20-05-0.75m	aluminum	7429-90-5	E440	50	mg/kg	16400	14900	9.20%	40%	----
		antimony	7440-36-0	E440	0.10	mg/kg	0.36	0.37	0.02	Diff <2x LOR	----
		arsenic	7440-38-2	E440	0.10	mg/kg	3.56	3.04	15.6%	30%	----
		barium	7440-39-3	E440	0.50	mg/kg	150	143	4.81%	40%	----
		beryllium	7440-41-7	E440	0.10	mg/kg	0.20	0.18	0.02	Diff <2x LOR	----
		bismuth	7440-69-9	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	----
		boron	7440-42-8	E440	5.0	mg/kg	<5.0	<5.0	0	Diff <2x LOR	----
		cadmium	7440-43-9	E440	0.020	mg/kg	0.097	0.091	0.006	Diff <2x LOR	----
		calcium	7440-70-2	E440	50	mg/kg	4110	3850	6.59%	30%	----
		chromium	7440-47-3	E440	0.50	mg/kg	219	202	7.94%	30%	----
		cobalt	7440-48-4	E440	0.10	mg/kg	17.2	16.5	4.26%	30%	----
		copper	7440-50-8	E440	0.50	mg/kg	22.6	20.3	11.0%	30%	----
		iron	7439-89-6	E440	50	mg/kg	21000	19700	6.50%	30%	----
		lead	7439-92-1	E440	0.50	mg/kg	3.25	3.89	18.0%	40%	----
		lithium	7439-93-2	E440	2.0	mg/kg	11.9	11.9	0.03	Diff <2x LOR	----
		magnesium	7439-95-4	E440	20	mg/kg	16700	16000	4.55%	30%	----
		manganese	7439-96-5	E440	1.0	mg/kg	247	225	9.20%	30%	----
		molybdenum	7439-98-7	E440	0.10	mg/kg	0.24	0.28	0.04	Diff <2x LOR	----
		nickel	7440-02-0	E440	0.50	mg/kg	188	181	3.62%	30%	----
		phosphorus	7723-14-0	E440	50	mg/kg	349	383	9.33%	30%	----
		potassium	7440-09-7	E440	100	mg/kg	370	330	40	Diff <2x LOR	----
		selenium	7782-49-2	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	----
		silver	7440-22-4	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		sodium	7440-23-5	E440	50	mg/kg	140	128	12	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Metals (QC Lot: 103114) - continued											
WR2000970-014	TP20-05-0.75m	strontium	7440-24-6	E440	0.50	mg/kg	22.2	19.7	11.9%	40%	----
		sulfur	7704-34-9	E440	1000	mg/kg	<1000	<1000	0	Diff <2x LOR	----
		thallium	7440-28-0	E440	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		tin	7440-31-5	E440	2.0	mg/kg	<2.0	<2.0	0	Diff <2x LOR	----
		titanium	7440-32-6	E440	1.0	mg/kg	722	620	15.1%	40%	----
		tungsten	7440-33-7	E440	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		uranium	7440-61-1	E440	0.050	mg/kg	0.445	0.372	18.0%	30%	----
		vanadium	7440-62-2	E440	0.20	mg/kg	52.9	48.3	9.21%	30%	----
		zinc	7440-66-6	E440	2.0	mg/kg	32.0	31.8	0.927%	30%	----
		zirconium	7440-67-7	E440	1.0	mg/kg	4.0	3.4	0.6	Diff <2x LOR	----
Metals (QC Lot: 107135)											
VA20B8747-001	Anonymous	aluminum	7429-90-5	E440	50	mg/kg	13600	17300	23.5%	40%	----
		antimony	7440-36-0	E440	0.10	mg/kg	2.83	2.02	33.1%	30%	DUP-H
		arsenic	7440-38-2	E440	0.10	mg/kg	7.38	5.24	33.9%	30%	DUP-H
		barium	7440-39-3	E440	0.50	mg/kg	145	119	19.6%	40%	----
		beryllium	7440-41-7	E440	0.10	mg/kg	0.23	0.29	0.06	Diff <2x LOR	----
		bismuth	7440-69-9	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	----
		boron	7440-42-8	E440	5.0	mg/kg	7.7	5.9	1.8	Diff <2x LOR	----
		cadmium	7440-43-9	E440	0.020	mg/kg	0.373	0.374	0.178%	30%	----
		calcium	7440-70-2	E440	50	mg/kg	11200	12200	8.80%	30%	----
		chromium	7440-47-3	E440	0.50	mg/kg	20.1	26.3	27.0%	30%	----
		cobalt	7440-48-4	E440	0.10	mg/kg	8.86	10.4	15.8%	30%	----
		copper	7440-50-8	E440	0.50	mg/kg	69.6	52.1	28.8%	30%	----
		iron	7439-89-6	E440	50	mg/kg	24100	27400	12.7%	30%	----
		lead	7439-92-1	E440	0.50	mg/kg	102	75.9	29.0%	40%	----
		lithium	7439-93-2	E440	2.0	mg/kg	7.9	8.9	1.0	Diff <2x LOR	----
		magnesium	7439-95-4	E440	20	mg/kg	6150	7440	19.0%	30%	----
		manganese	7439-96-5	E440	1.0	mg/kg	440	533	19.0%	30%	----
		molybdenum	7439-98-7	E440	0.10	mg/kg	0.71	0.56	23.2%	40%	----
		nickel	7440-02-0	E440	0.50	mg/kg	20.9	23.7	12.8%	30%	----
		phosphorus	7723-14-0	E440	50	mg/kg	778	751	3.42%	30%	----
		potassium	7440-09-7	E440	100	mg/kg	670	710	5.95%	40%	----
		selenium	7782-49-2	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	----
		silver	7440-22-4	E440	0.10	mg/kg	0.18	0.21	0.03	Diff <2x LOR	----
		sodium	7440-23-5	E440	50	mg/kg	338	346	2.33%	40%	----
		strontium	7440-24-6	E440	0.50	mg/kg	78.8	75.0	5.00%	40%	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Metals (QC Lot: 107135) - continued											
VA20B8747-001	Anonymous	sulfur	7704-34-9	E440	1000	mg/kg	<1000	<1000	0	Diff <2x LOR	----
		thallium	7440-28-0	E440	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		tin	7440-31-5	E440	2.0	mg/kg	5.3	6.5	1.2	Diff <2x LOR	----
		titanium	7440-32-6	E440	1.0	mg/kg	1020	1100	8.03%	40%	----
		tungsten	7440-33-7	E440	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		uranium	7440-61-1	E440	0.050	mg/kg	0.360	0.324	10.4%	30%	----
		vanadium	7440-62-2	E440	0.20	mg/kg	54.6	65.5	18.3%	30%	----
		zinc	7440-66-6	E440	2.0	mg/kg	193	174	10.5%	30%	----
		zirconium	7440-67-7	E440	1.0	mg/kg	2.0	2.5	0.5	Diff <2x LOR	----
Metals (QC Lot: 97746)											
WR2000970-001	TP20-01-0.5m	mercury	7439-97-6	E510	0.0050	mg/kg	0.0201	0.0164	0.0036	Diff <2x LOR	----
Metals (QC Lot: 97747)											
WR2000970-001	TP20-01-0.5m	aluminum	7429-90-5	E440	50	mg/kg	9530	12200	24.7%	40%	----
		antimony	7440-36-0	E440	0.40	mg/kg	<0.40	<0.40	0	Diff <2x LOR	----
		arsenic	7440-38-2	E440	0.10	mg/kg	4.23	3.44	20.7%	30%	----
		barium	7440-39-3	E440	0.50	mg/kg	78.8	66.5	17.0%	40%	----
		beryllium	7440-41-7	E440	0.10	mg/kg	0.18	0.15	0.03	Diff <2x LOR	----
		bismuth	7440-69-9	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	----
		boron	7440-42-8	E440	5.0	mg/kg	<5.0	<5.0	0	Diff <2x LOR	----
		cadmium	7440-43-9	E440	0.020	mg/kg	0.110	0.092	0.018	Diff <2x LOR	----
		calcium	7440-70-2	E440	50	mg/kg	2020	2560	23.3%	30%	----
		chromium	7440-47-3	E440	0.50	mg/kg	116	152	26.5%	30%	----
		cobalt	7440-48-4	E440	0.10	mg/kg	9.19	12.0	26.6%	30%	----
		copper	7440-50-8	E440	0.50	mg/kg	15.6	16.3	4.64%	30%	----
		iron	7439-89-6	E440	50	mg/kg	14000	15800	12.0%	30%	----
		lead	7439-92-1	E440	0.50	mg/kg	4.91	4.44	9.94%	40%	----
		lithium	7439-93-2	E440	2.0	mg/kg	9.4	11.5	2.1	Diff <2x LOR	----
		magnesium	7439-95-4	E440	20	mg/kg	9650	12400	25.2%	30%	----
		manganese	7439-96-5	E440	1.0	mg/kg	169	221	26.6%	30%	----
		molybdenum	7439-98-7	E440	0.10	mg/kg	0.27	0.28	0.009	Diff <2x LOR	----
		nickel	7440-02-0	E440	0.50	mg/kg	46.0	63.8	32.5%	30%	DUP-H
		phosphorus	7723-14-0	E440	50	mg/kg	339	# 192	147	Diff <2x LOR	DUP-H
		potassium	7440-09-7	E440	100	mg/kg	550	480	13.6%	40%	----
		selenium	7782-49-2	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	----
		silver	7440-22-4	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		sodium	7440-23-5	E440	50	mg/kg	<50	<50	0	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Metals (QC Lot: 97747) - continued											
WR2000970-001	TP20-01-0.5m	strontium	7440-24-6	E440	0.50	mg/kg	11.9	11.3	5.36%	40%	----
		sulfur	7704-34-9	E440	1000	mg/kg	<1000	<1000	0	Diff <2x LOR	----
		thallium	7440-28-0	E440	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		tin	7440-31-5	E440	2.0	mg/kg	<2.0	<2.0	0	Diff <2x LOR	----
		titanium	7440-32-6	E440	1.0	mg/kg	245	440	56.7%	40%	DUP-H
		tungsten	7440-33-7	E440	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		uranium	7440-61-1	E440	0.050	mg/kg	0.510	0.442	14.3%	30%	----
		vanadium	7440-62-2	E440	0.20	mg/kg	29.6	33.6	12.7%	30%	----
		zinc	7440-66-6	E440	2.0	mg/kg	28.0	24.1	15.0%	30%	----
		zirconium	7440-67-7	E440	1.0	mg/kg	2.6	2.2	0.5	Diff <2x LOR	----
Speciated Metals (QC Lot: 104491)											
WR2000970-015	TP20-05-1.25m	chromium, hexavalent [Cr VI]	18540-29-9	E532	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
Speciated Metals (QC Lot: 107728)											
WR2000970-003	TP20-01-1.75m	chromium, hexavalent [Cr VI]	18540-29-9	E532	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 96996)											
WR2000999-001	Anonymous	benzene	71-43-2	E611A	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	----
		ethylbenzene	100-41-4	E611A	0.015	mg/kg	<0.015	<0.015	0	Diff <2x LOR	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.200	mg/kg	<0.200	<0.200	0	Diff <2x LOR	----
		styrene	100-42-5	E611A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		toluene	108-88-3	E611A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		xylene, m+p-	179601-23-1	E611A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		xylene, o-	95-47-6	E611A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 97001)											
VA20B6777-003	Anonymous	benzene	71-43-2	E611C	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	----
		bromodichloromethane	75-27-4	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		bromoform	75-25-2	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		carbon tetrachloride	56-23-5	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		chlorobenzene	108-90-7	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		chloroethane	75-00-3	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		chloroform	67-66-3	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		chloromethane	74-87-3	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dibromochloromethane	124-48-1	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichlorobenzene, 1,2-	95-50-1	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichlorobenzene, 1,3-	541-73-1	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichlorobenzene, 1,4-	106-46-7	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 97001) - continued											
VA20B6777-003	Anonymous	dichloroethane, 1,1-	75-34-3	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichloroethane, 1,2-	107-06-2	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichloroethylene, 1,1-	75-35-4	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichloroethylene, cis-1,2-	156-59-4	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichloroethylene, trans-1,2-	156-60-5	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichloromethane	75-09-2	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichloropropane, 1,2-	78-87-5	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichloropropylene, cis-1,3-	10061-01-5	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		dichloropropylene, trans-1,3-	10061-02-6	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		ethylbenzene	100-41-4	E611C	0.015	mg/kg	<0.015	<0.015	0	Diff <2x LOR	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		styrene	100-42-5	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		tetrachloroethylene	127-18-4	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		toluene	108-88-3	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		trichloroethane, 1,1,1-	71-55-6	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		trichloroethane, 1,1,2-	79-00-5	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		trichloroethylene	79-01-6	E611C	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		trichlorofluoromethane	75-69-4	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		vinyl chloride	75-01-4	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		xylene, m+p-	179601-23-1	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		xylene, o-	95-47-6	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 96997)											
WR2000999-003	Anonymous	VHs (C6-C10)	----	E581.VH+F1	10	mg/kg	<10	<10	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 97000)											
VA20B6777-002	Anonymous	VHs (C6-C10)	----	E581.VH+F1	10	mg/kg	<10	<10	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 97750)											
VA20B6308-011	Anonymous	EPH (C10-C19)	----	E601A	200	mg/kg	470	530	60	Diff <2x LOR	----
		EPH (C19-C32)	----	E601A	200	mg/kg	8420	9590	12.9%	40%	----
Polycyclic Aromatic Hydrocarbons (QC Lot: 97749)											
VA20B6308-011	Anonymous	acenaphthene	83-32-9	E641A-L	0.0090	mg/kg	<0.0090	<0.0200	0.0110	Diff <2x LOR	----
		acenaphthylene	208-96-8	E641A-L	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	----
		acridine	260-94-6	E641A-L	0.060	mg/kg	<0.060	<0.050	0.010	Diff <2x LOR	----
		anthracene	120-12-7	E641A-L	0.0040	mg/kg	<0.0040	<0.0040	0	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Polycyclic Aromatic Hydrocarbons (QC Lot: 97749) - continued											
VA20B6308-011	Anonymous	benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		benzo(b+j)fluoranthene	----	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		benzo(g,h,i)perylene	191-24-2	E641A-L	0.010	mg/kg	0.082	0.082	0.119%	50%	----
		benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		chrysene	218-01-9	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	----
		fluoranthene	206-44-0	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		fluorene	86-73-7	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		methylnaphthalene, 1-	90-12-0	E641A-L	0.010	mg/kg	0.039	0.045	13.6%	50%	----
		methylnaphthalene, 2-	91-57-6	E641A-L	0.010	mg/kg	0.036	0.041	0.006	Diff <2x LOR	----
		naphthalene	91-20-3	E641A-L	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		phenanthrene	85-01-8	E641A-L	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		pyrene	129-00-0	E641A-L	0.010	mg/kg	0.062	0.060	3.79%	50%	----
		quinoline	6027-02-7	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
Glycols (QC Lot: 96523)											
VA20B6777-006	Anonymous	diethylene glycol	111-46-6	E680E	10	mg/kg	<10	<10	0	Diff <2x LOR	----
		ethylene glycol	107-21-1	E680E	10	mg/kg	<10	<10	0	Diff <2x LOR	----
		propylene glycol, 1,2-	57-55-6	E680E	10	mg/kg	<10	<10	0	Diff <2x LOR	----
		triethylene glycol	112-27-6	E680E	10	mg/kg	<10	<10	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 97161)											
VA20B6870-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0019	0.0018	0.0001	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00075	0.00075	0.000007	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0628	0.0621	1.03%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000077	0.0000098	0.0000021	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	75.9	74.2	2.16%	20%	----
		cesium, dissolved	7440-46-2	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 97161) - continued											
VA20B6870-001	Anonymous	copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00037	0.00036	0.00001	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0046	0.0046	0.000003	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	19.7	20.3	2.99%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00158	0.00156	1.59%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00325	0.00334	2.64%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.80	3.83	0.820%	20%	----
		rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00075	0.00083	0.00008	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.00567	0.00556	1.93%	20%	----
		silicon, dissolved	7440-21-3	E421	0.100	mg/L	8.95	8.84	1.19%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	8.34	8.46	1.49%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.832	0.827	0.672%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	25.0	25.1	0.535%	20%	----
		tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00098	0.00096	0.00002	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00190	0.00196	2.58%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00050	0.00051	0.000005	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 97162)											
VA20B6870-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00015	0.00015	0.0000005	Diff <2x LOR	----
Dissolved Metals (QC Lot: 97817)											
VA20B6963-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 98014)											
VA20B6928-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 97142)											
VA20B6540-003	Anonymous	benzene	71-43-2	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 97142) - continued											
VA20B6540-003	Anonymous	bromodichloromethane	75-27-4	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		bromoform	75-25-2	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		carbon tetrachloride	56-23-5	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		chlorobenzene	108-90-7	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		chloroethane	75-00-3	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		chloroform	67-66-3	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		chloromethane	74-87-3	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dibromochloromethane	124-48-1	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichlorobenzene, 1,2-	95-50-1	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichlorobenzene, 1,3-	541-73-1	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichlorobenzene, 1,4-	106-46-7	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethane, 1,1-	75-34-3	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethane, 1,2-	107-06-2	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethylene, 1,1-	75-35-4	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethylene, cis-1,2-	156-59-4	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethylene, trans-1,2-	156-60-5	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloromethane	75-09-2	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloropropane, 1,2-	78-87-5	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloropropylene, cis-1,3-	10061-01-5	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloropropylene, trans-1,3-	10061-02-6	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		ethylbenzene	100-41-4	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		styrene	100-42-5	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		tetrachloroethylene	127-18-4	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		toluene	108-88-3	E611C	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		trichloroethane, 1,1,1-	71-55-6	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichloroethane, 1,1,2-	79-00-5	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichloroethylene	79-01-6	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichlorofluoromethane	75-69-4	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		vinyl chloride	75-01-4	E611C	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		xylene, m+p-	179601-23-1	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		xylene, o-	95-47-6	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 97143)											
VA20B6540-001	Anonymous	VHw (C6-C10)	----	E581.VH+F1	100	µg/L	<100	<100	0.00%	30%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Glycols (QC Lot: 96522)											
KS2001985-003	Anonymous	diethylene glycol	111-46-6	E680E	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR	----
		ethylene glycol	107-21-1	E680E	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR	----
		propylene glycol, 1,2-	57-55-6	E680E	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR	----
		triethylene glycol	112-27-6	E680E	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR	----

Qualifiers

Qualifier	*Description*
DUP-H	*Duplicate results outside ALS DQO, due to sample heterogeneity.*

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 107142)						
moisture	----	E144	0.25	%	<0.25	----
Physical Tests (QCLot: 97753)						
moisture	----	E144	0.25	%	<0.25	----
Physical Tests (QCLot: 99712)						
moisture	----	E144	0.25	%	<0.25	----
Metals (QCLot: 103114)						
aluminum	7429-90-5	E440	50	mg/kg	<50	----
antimony	7440-36-0	E440	0.1	mg/kg	<0.10	----
arsenic	7440-38-2	E440	0.1	mg/kg	<0.10	----
barium	7440-39-3	E440	0.5	mg/kg	<0.50	----
beryllium	7440-41-7	E440	0.1	mg/kg	<0.10	----
bismuth	7440-69-9	E440	0.2	mg/kg	<0.20	----
boron	7440-42-8	E440	5	mg/kg	<5.0	----
cadmium	7440-43-9	E440	0.02	mg/kg	<0.020	----
calcium	7440-70-2	E440	50	mg/kg	<50	----
chromium	7440-47-3	E440	0.5	mg/kg	<0.50	----
cobalt	7440-48-4	E440	0.1	mg/kg	<0.10	----
copper	7440-50-8	E440	0.5	mg/kg	<0.50	----
iron	7439-89-6	E440	50	mg/kg	<50	----
lead	7439-92-1	E440	0.5	mg/kg	<0.50	----
lithium	7439-93-2	E440	2	mg/kg	<2.0	----
magnesium	7439-95-4	E440	20	mg/kg	<20	----
manganese	7439-96-5	E440	1	mg/kg	<1.0	----
molybdenum	7439-98-7	E440	0.1	mg/kg	<0.10	----
nickel	7440-02-0	E440	0.5	mg/kg	<0.50	----
phosphorus	7723-14-0	E440	50	mg/kg	<50	----
potassium	7440-09-7	E440	100	mg/kg	<100	----
selenium	7782-49-2	E440	0.2	mg/kg	<0.20	----
silver	7440-22-4	E440	0.1	mg/kg	<0.10	----
sodium	7440-23-5	E440	50	mg/kg	<50	----
strontium	7440-24-6	E440	0.5	mg/kg	<0.50	----
sulfur	7704-34-9	E440	1000	mg/kg	<1000	----
thallium	7440-28-0	E440	0.05	mg/kg	<0.050	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 103114) - continued						
tin	7440-31-5	E440	2	mg/kg	<2.0	----
titanium	7440-32-6	E440	1	mg/kg	<1.0	----
tungsten	7440-33-7	E440	0.5	mg/kg	<0.50	----
uranium	7440-61-1	E440	0.05	mg/kg	<0.050	----
vanadium	7440-62-2	E440	0.2	mg/kg	<0.20	----
zinc	7440-66-6	E440	2	mg/kg	<2.0	----
zirconium	7440-67-7	E440	1	mg/kg	<1.0	----
Metals (QCLot: 107135)						
aluminum	7429-90-5	E440	50	mg/kg	<50	----
antimony	7440-36-0	E440	0.1	mg/kg	<0.10	----
arsenic	7440-38-2	E440	0.1	mg/kg	<0.10	----
barium	7440-39-3	E440	0.5	mg/kg	<0.50	----
beryllium	7440-41-7	E440	0.1	mg/kg	<0.10	----
bismuth	7440-69-9	E440	0.2	mg/kg	<0.20	----
boron	7440-42-8	E440	5	mg/kg	<5.0	----
cadmium	7440-43-9	E440	0.02	mg/kg	<0.020	----
calcium	7440-70-2	E440	50	mg/kg	<50	----
chromium	7440-47-3	E440	0.5	mg/kg	<0.50	----
cobalt	7440-48-4	E440	0.1	mg/kg	<0.10	----
copper	7440-50-8	E440	0.5	mg/kg	<0.50	----
iron	7439-89-6	E440	50	mg/kg	<50	----
lead	7439-92-1	E440	0.5	mg/kg	<0.50	----
lithium	7439-93-2	E440	2	mg/kg	<2.0	----
magnesium	7439-95-4	E440	20	mg/kg	<20	----
manganese	7439-96-5	E440	1	mg/kg	<1.0	----
molybdenum	7439-98-7	E440	0.1	mg/kg	<0.10	----
nickel	7440-02-0	E440	0.5	mg/kg	<0.50	----
phosphorus	7723-14-0	E440	50	mg/kg	<50	----
potassium	7440-09-7	E440	100	mg/kg	<100	----
selenium	7782-49-2	E440	0.2	mg/kg	<0.20	----
silver	7440-22-4	E440	0.1	mg/kg	<0.10	----
sodium	7440-23-5	E440	50	mg/kg	<50	----
strontium	7440-24-6	E440	0.5	mg/kg	<0.50	----
sulfur	7704-34-9	E440	1000	mg/kg	<1000	----
thallium	7440-28-0	E440	0.05	mg/kg	<0.050	----
tin	7440-31-5	E440	2	mg/kg	<2.0	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 107135) - continued						
titanium	7440-32-6	E440	1	mg/kg	<1.0	----
tungsten	7440-33-7	E440	0.5	mg/kg	<0.50	----
uranium	7440-61-1	E440	0.05	mg/kg	<0.050	----
vanadium	7440-62-2	E440	0.2	mg/kg	<0.20	----
zinc	7440-66-6	E440	2	mg/kg	<2.0	----
zirconium	7440-67-7	E440	1	mg/kg	<1.0	----
Metals (QCLot: 97746)						
mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	----
Metals (QCLot: 97747)						
aluminum	7429-90-5	E440	50	mg/kg	<50	----
antimony	7440-36-0	E440	0.1	mg/kg	<0.10	----
arsenic	7440-38-2	E440	0.1	mg/kg	<0.10	----
barium	7440-39-3	E440	0.5	mg/kg	<0.50	----
beryllium	7440-41-7	E440	0.1	mg/kg	<0.10	----
bismuth	7440-69-9	E440	0.2	mg/kg	<0.20	----
boron	7440-42-8	E440	5	mg/kg	<5.0	----
cadmium	7440-43-9	E440	0.02	mg/kg	<0.020	----
calcium	7440-70-2	E440	50	mg/kg	<50	----
chromium	7440-47-3	E440	0.5	mg/kg	<0.50	----
cobalt	7440-48-4	E440	0.1	mg/kg	<0.10	----
copper	7440-50-8	E440	0.5	mg/kg	<0.50	----
iron	7439-89-6	E440	50	mg/kg	<50	----
lead	7439-92-1	E440	0.5	mg/kg	<0.50	----
lithium	7439-93-2	E440	2	mg/kg	<2.0	----
magnesium	7439-95-4	E440	20	mg/kg	<20	----
manganese	7439-96-5	E440	1	mg/kg	<1.0	----
molybdenum	7439-98-7	E440	0.1	mg/kg	<0.10	----
nickel	7440-02-0	E440	0.5	mg/kg	<0.50	----
phosphorus	7723-14-0	E440	50	mg/kg	<50	----
potassium	7440-09-7	E440	100	mg/kg	<100	----
selenium	7782-49-2	E440	0.2	mg/kg	<0.20	----
silver	7440-22-4	E440	0.1	mg/kg	<0.10	----
sodium	7440-23-5	E440	50	mg/kg	<50	----
strontium	7440-24-6	E440	0.5	mg/kg	<0.50	----
sulfur	7704-34-9	E440	1000	mg/kg	<1000	----
thallium	7440-28-0	E440	0.05	mg/kg	<0.050	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 97747) - continued						
tin	7440-31-5	E440	2	mg/kg	<2.0	----
titanium	7440-32-6	E440	1	mg/kg	<1.0	----
tungsten	7440-33-7	E440	0.5	mg/kg	<0.50	----
uranium	7440-61-1	E440	0.05	mg/kg	<0.050	----
vanadium	7440-62-2	E440	0.2	mg/kg	<0.20	----
zinc	7440-66-6	E440	2	mg/kg	<2.0	----
zirconium	7440-67-7	E440	1	mg/kg	<1.0	----
Speciated Metals (QCLot: 104491)						
chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	<0.10	----
Speciated Metals (QCLot: 107728)						
chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	<0.10	----
Volatile Organic Compounds (QCLot: 96996)						
benzene	71-43-2	E611A	0.005	mg/kg	<0.0050	----
ethylbenzene	100-41-4	E611A	0.015	mg/kg	<0.015	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.05	mg/kg	<0.050	----
styrene	100-42-5	E611A	0.05	mg/kg	<0.050	----
toluene	108-88-3	E611A	0.05	mg/kg	<0.050	----
xylene, m+p-	179601-23-1	E611A	0.05	mg/kg	<0.050	----
xylene, o-	95-47-6	E611A	0.05	mg/kg	<0.050	----
Volatile Organic Compounds (QCLot: 97001)						
benzene	71-43-2	E611C	0.005	mg/kg	<0.0050	----
bromodichloromethane	75-27-4	E611C	0.05	mg/kg	<0.050	----
bromoform	75-25-2	E611C	0.05	mg/kg	<0.050	----
carbon tetrachloride	56-23-5	E611C	0.05	mg/kg	<0.050	----
chlorobenzene	108-90-7	E611C	0.05	mg/kg	<0.050	----
chloroethane	75-00-3	E611C	0.05	mg/kg	<0.050	----
chloroform	67-66-3	E611C	0.05	mg/kg	<0.050	----
chloromethane	74-87-3	E611C	0.05	mg/kg	<0.050	----
dibromochloromethane	124-48-1	E611C	0.05	mg/kg	<0.050	----
dichlorobenzene, 1,2-	95-50-1	E611C	0.05	mg/kg	<0.050	----
dichlorobenzene, 1,3-	541-73-1	E611C	0.05	mg/kg	<0.050	----
dichlorobenzene, 1,4-	106-46-7	E611C	0.05	mg/kg	<0.050	----
dichloroethane, 1,1-	75-34-3	E611C	0.05	mg/kg	<0.050	----
dichloroethane, 1,2-	107-06-2	E611C	0.05	mg/kg	<0.050	----
dichloroethylene, 1,1-	75-35-4	E611C	0.05	mg/kg	<0.050	----
dichloroethylene, cis-1,2-	156-59-4	E611C	0.05	mg/kg	<0.050	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 97001) - continued						
dichloroethylene, trans-1,2-	156-60-5	E611C	0.05	mg/kg	<0.050	----
dichloromethane	75-09-2	E611C	0.05	mg/kg	<0.050	----
dichloropropane, 1,2-	78-87-5	E611C	0.05	mg/kg	<0.050	----
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.05	mg/kg	<0.050	----
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.05	mg/kg	<0.050	----
ethylbenzene	100-41-4	E611C	0.015	mg/kg	<0.015	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.05	mg/kg	<0.050	----
styrene	100-42-5	E611C	0.05	mg/kg	<0.050	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.05	mg/kg	<0.050	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.05	mg/kg	<0.050	----
tetrachloroethylene	127-18-4	E611C	0.05	mg/kg	<0.050	----
toluene	108-88-3	E611C	0.05	mg/kg	<0.050	----
trichloroethane, 1,1,1-	71-55-6	E611C	0.05	mg/kg	<0.050	----
trichloroethane, 1,1,2-	79-00-5	E611C	0.05	mg/kg	<0.050	----
trichloroethylene	79-01-6	E611C	0.01	mg/kg	<0.010	----
trichlorofluoromethane	75-69-4	E611C	0.05	mg/kg	<0.050	----
vinyl chloride	75-01-4	E611C	0.05	mg/kg	<0.050	----
xylene, m+p-	179601-23-1	E611C	0.05	mg/kg	<0.050	----
xylene, o-	95-47-6	E611C	0.05	mg/kg	<0.050	----
Hydrocarbons (QCLot: 96997)						
VHs (C6-C10)	----	E581.VH+F1	10	mg/kg	<10	----
Hydrocarbons (QCLot: 97000)						
VHs (C6-C10)	----	E581.VH+F1	10	mg/kg	<10	----
Hydrocarbons (QCLot: 97750)						
EPH (C10-C19)	----	E601A	200	mg/kg	<200	----
					<200	----
EPH (C19-C32)	----	E601A	200	mg/kg	<200	----
					<200	----
Polycyclic Aromatic Hydrocarbons (QCLot: 97749)						
acenaphthene	83-32-9	E641A-L	0.005	mg/kg	<0.0050	----
					<0.0050	----
acenaphthylene	208-96-8	E641A-L	0.005	mg/kg	<0.0050	----
					<0.0050	----
acridine	260-94-6	E641A-L	0.01	mg/kg	<0.010	----
anthracene	120-12-7	E641A-L	0.004	mg/kg	<0.0040	----
					<0.0040	----
benz(a)anthracene	56-55-3	E641A-L	0.01	mg/kg	<0.010	----
					<0.010	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 97749) - continued						
benzo(a)pyrene	50-32-8	E641A-L	0.01	mg/kg	<0.010	----
benzo(b+j)fluoranthene	----	E641A-L	0.01	mg/kg	<0.010	----
benzo(g,h,i)perylene	191-24-2	E641A-L	0.01	mg/kg	<0.010	----
benzo(k)fluoranthene	207-08-9	E641A-L	0.01	mg/kg	<0.010	----
chrysene	218-01-9	E641A-L	0.01	mg/kg	<0.010	----
dibenz(a,h)anthracene	53-70-3	E641A-L	0.005	mg/kg	<0.0050	----
					<0.0050	----
fluoranthene	206-44-0	E641A-L	0.01	mg/kg	<0.010	----
fluorene	86-73-7	E641A-L	0.01	mg/kg	<0.010	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.01	mg/kg	<0.010	----
					<0.010	----
methylnaphthalene, 1-	90-12-0	E641A-L	0.01	mg/kg	<0.010	----
methylnaphthalene, 2-	91-57-6	E641A-L	0.01	mg/kg	<0.010	----
naphthalene	91-20-3	E641A-L	0.01	mg/kg	<0.010	----
phenanthrene	85-01-8	E641A-L	0.01	mg/kg	<0.010	----
pyrene	129-00-0	E641A-L	0.01	mg/kg	<0.010	----
quinoline	6027-02-7	E641A-L	0.01	mg/kg	<0.010	----
Glycols (QCLot: 96523)						
diethylene glycol	111-46-6	E680E	10	mg/kg	<10	----
ethylene glycol	107-21-1	E680E	10	mg/kg	<10	----
propylene glycol, 1,2-	57-55-6	E680E	10	mg/kg	<10	----
triethylene glycol	112-27-6	E680E	10	mg/kg	<10	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 97161)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 97161) - continued						
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----
Dissolved Metals (QCLot: 97162)						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
Dissolved Metals (QCLot: 97817)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 98014)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Volatile Organic Compounds (QCLot: 97142)						
benzene	71-43-2	E611C	0.5	µg/L	<0.50	----
bromodichloromethane	75-27-4	E611C	0.5	µg/L	<0.50	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 97142) - continued						
bromoform	75-25-2	E611C	0.5	µg/L	<0.50	----
carbon tetrachloride	56-23-5	E611C	0.5	µg/L	<0.50	----
chlorobenzene	108-90-7	E611C	0.5	µg/L	<0.50	----
chloroethane	75-00-3	E611C	0.5	µg/L	<0.50	----
chloroform	67-66-3	E611C	0.5	µg/L	<0.50	----
chloromethane	74-87-3	E611C	0.5	µg/L	<0.50	----
dibromochloromethane	124-48-1	E611C	0.5	µg/L	<0.50	----
dichlorobenzene, 1,2-	95-50-1	E611C	0.5	µg/L	<0.50	----
dichlorobenzene, 1,3-	541-73-1	E611C	0.5	µg/L	<0.50	----
dichlorobenzene, 1,4-	106-46-7	E611C	0.5	µg/L	<0.50	----
dichloroethane, 1,1-	75-34-3	E611C	0.5	µg/L	<0.50	----
dichloroethane, 1,2-	107-06-2	E611C	0.5	µg/L	<0.50	----
dichloroethylene, 1,1-	75-35-4	E611C	0.5	µg/L	<0.50	----
dichloroethylene, cis-1,2-	156-59-4	E611C	0.5	µg/L	<0.50	----
dichloroethylene, trans-1,2-	156-60-5	E611C	0.5	µg/L	<0.50	----
dichloromethane	75-09-2	E611C	0.5	µg/L	<0.50	----
dichloropropane, 1,2-	78-87-5	E611C	0.5	µg/L	<0.50	----
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.5	µg/L	<0.50	----
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.5	µg/L	<0.50	----
ethylbenzene	100-41-4	E611C	0.5	µg/L	<0.50	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.5	µg/L	<0.50	----
styrene	100-42-5	E611C	0.5	µg/L	<0.50	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.5	µg/L	<0.50	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.2	µg/L	<0.20	----
tetrachloroethylene	127-18-4	E611C	0.5	µg/L	<0.50	----
toluene	108-88-3	E611C	0.4	µg/L	<0.40	----
trichloroethane, 1,1,1-	71-55-6	E611C	0.5	µg/L	<0.50	----
trichloroethane, 1,1,2-	79-00-5	E611C	0.5	µg/L	<0.50	----
trichloroethylene	79-01-6	E611C	0.5	µg/L	<0.50	----
trichlorofluoromethane	75-69-4	E611C	0.5	µg/L	<0.50	----
vinyl chloride	75-01-4	E611C	0.4	µg/L	<0.40	----
xylene, m+p-	179601-23-1	E611C	0.5	µg/L	<0.50	----
xylene, o-	95-47-6	E611C	0.5	µg/L	<0.50	----
Hydrocarbons (QCLot: 103096)						
EPH (C10-C19), silica gel treated	----	E601A.SG	250	µg/L	<250	----
EPH (C19-C32), silica gel treated	----	E601A.SG	250	µg/L	<250	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Hydrocarbons (QCLot: 97117)						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
Hydrocarbons (QCLot: 97143)						
VHw (C6-C10)	----	E581.VH+F1	100	µg/L	<100	----
Polycyclic Aromatic Hydrocarbons (QCLot: 97116)						
acenaphthene	83-32-9	E641A	0.01	µg/L	<0.010	----
acenaphthylene	208-96-8	E641A	0.01	µg/L	<0.010	----
acridine	260-94-6	E641A	0.01	µg/L	<0.010	----
anthracene	120-12-7	E641A	0.01	µg/L	<0.010	----
benz(a)anthracene	56-55-3	E641A	0.01	µg/L	<0.010	----
benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	<0.0050	----
benzo(b+j)fluoranthene	----	E641A	0.01	µg/L	<0.010	----
benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	<0.010	----
benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	<0.010	----
chrysene	218-01-9	E641A	0.01	µg/L	<0.010	----
dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	<0.0050	----
fluoranthene	206-44-0	E641A	0.01	µg/L	<0.010	----
fluorene	86-73-7	E641A	0.01	µg/L	<0.010	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	<0.010	----
methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	<0.010	----
methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	<0.010	----
naphthalene	91-20-3	E641A	0.05	µg/L	<0.050	----
phenanthrene	85-01-8	E641A	0.02	µg/L	<0.020	----
pyrene	129-00-0	E641A	0.01	µg/L	<0.010	----
quinoline	6027-02-7	E641A	0.05	µg/L	<0.050	----
Glycols (QCLot: 96522)						
diethylene glycol	111-46-6	E680E	5	mg/L	<5.0	----
ethylene glycol	107-21-1	E680E	5	mg/L	<5.0	----
propylene glycol, 1,2-	57-55-6	E680E	5	mg/L	<5.0	----
triethylene glycol	112-27-6	E680E	5	mg/L	<5.0	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 107142)									
moisture	----	E144	0.25	%	50 %	101	90.0	110	----
Physical Tests (QCLot: 97748)									
pH (1:2 soil:water)	----	E108	----	pH units	6 pH units	100	95.0	105	----
Physical Tests (QCLot: 97753)									
moisture	----	E144	0.25	%	50 %	100	90.0	110	----
Physical Tests (QCLot: 99712)									
moisture	----	E144	0.25	%	50 %	102	90.0	110	----
Metals (QCLot: 103114)									
aluminum	7429-90-5	E440	50	mg/kg	200 mg/kg	102	80.0	120	----
antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	102	80.0	120	----
arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	101	80.0	120	----
barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	97.6	80.0	120	----
beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	88.8	80.0	120	----
bismuth	7440-69-9	E440	0.2	mg/kg	100 mg/kg	95.7	80.0	120	----
boron	7440-42-8	E440	5	mg/kg	100 mg/kg	91.7	80.0	120	----
cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	103	80.0	120	----
calcium	7440-70-2	E440	50	mg/kg	5000 mg/kg	94.4	80.0	120	----
chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	103	80.0	120	----
cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	101	80.0	120	----
copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	103	80.0	120	----
iron	7439-89-6	E440	50	mg/kg	100 mg/kg	106	80.0	120	----
lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	92.7	80.0	120	----
lithium	7439-93-2	E440	2	mg/kg	25 mg/kg	86.2	80.0	120	----
magnesium	7439-95-4	E440	20	mg/kg	5000 mg/kg	102	80.0	120	----
manganese	7439-96-5	E440	1	mg/kg	25 mg/kg	102	80.0	120	----
molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	99.2	80.0	120	----
nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	101	80.0	120	----
phosphorus	7723-14-0	E440	50	mg/kg	1000 mg/kg	92.4	80.0	120	----
potassium	7440-09-7	E440	100	mg/kg	5000 mg/kg	104	80.0	120	----
selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	102	80.0	120	----
silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	102	80.0	120	----
sodium	7440-23-5	E440	50	mg/kg	5000 mg/kg	104	80.0	120	----
strontium	7440-24-6	E440	0.5	mg/kg	25 mg/kg	98.2	80.0	120	----

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 103114) - continued									
sulfur	7704-34-9	E440	1000	mg/kg	5000 mg/kg	98.2	80.0	120	----
thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	93.1	80.0	120	----
tin	7440-31-5	E440	2	mg/kg	50 mg/kg	100	80.0	120	----
titanium	7440-32-6	E440	1	mg/kg	25 mg/kg	98.9	80.0	120	----
tungsten	7440-33-7	E440	0.5	mg/kg	10 mg/kg	94.6	80.0	120	----
uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	104	80.0	120	----
vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	104	80.0	120	----
zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	107	80.0	120	----
zirconium	7440-67-7	E440	1	mg/kg	10 mg/kg	93.8	80.0	120	----
Metals (QCLot: 107135)									
aluminum	7429-90-5	E440	50	mg/kg	200 mg/kg	104	80.0	120	----
antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	102	80.0	120	----
arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	102	80.0	120	----
barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	106	80.0	120	----
beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	98.8	80.0	120	----
bismuth	7440-69-9	E440	0.2	mg/kg	100 mg/kg	97.8	80.0	120	----
boron	7440-42-8	E440	5	mg/kg	100 mg/kg	97.8	80.0	120	----
cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	107	80.0	120	----
calcium	7440-70-2	E440	50	mg/kg	5000 mg/kg	102	80.0	120	----
chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	104	80.0	120	----
cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	102	80.0	120	----
copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	102	80.0	120	----
iron	7439-89-6	E440	50	mg/kg	100 mg/kg	101	80.0	120	----
lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	97.0	80.0	120	----
lithium	7439-93-2	E440	2	mg/kg	25 mg/kg	96.5	80.0	120	----
magnesium	7439-95-4	E440	20	mg/kg	5000 mg/kg	104	80.0	120	----
manganese	7439-96-5	E440	1	mg/kg	25 mg/kg	105	80.0	120	----
molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	98.4	80.0	120	----
nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	103	80.0	120	----
phosphorus	7723-14-0	E440	50	mg/kg	1000 mg/kg	103	80.0	120	----
potassium	7440-09-7	E440	100	mg/kg	5000 mg/kg	104	80.0	120	----
selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	103	80.0	120	----
silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	101	80.0	120	----
sodium	7440-23-5	E440	50	mg/kg	5000 mg/kg	106	80.0	120	----
strontium	7440-24-6	E440	0.5	mg/kg	25 mg/kg	102	80.0	120	----
sulfur	7704-34-9	E440	1000	mg/kg	5000 mg/kg	106	80.0	120	----
thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	102	80.0	120	----

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 107135) - continued									
tin	7440-31-5	E440	2	mg/kg	50 mg/kg	102	80.0	120	----
titanium	7440-32-6	E440	1	mg/kg	25 mg/kg	105	80.0	120	----
tungsten	7440-33-7	E440	0.5	mg/kg	10 mg/kg	96.2	80.0	120	----
uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	102	80.0	120	----
vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	104	80.0	120	----
zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	101	80.0	120	----
zirconium	7440-67-7	E440	1	mg/kg	10 mg/kg	99.8	80.0	120	----
Metals (QCLot: 97746)									
mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	99.2	80.0	120	----
Metals (QCLot: 97747)									
aluminum	7429-90-5	E440	50	mg/kg	200 mg/kg	102	80.0	120	----
antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	110	80.0	120	----
arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	103	80.0	120	----
barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	106	80.0	120	----
beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	98.5	80.0	120	----
bismuth	7440-69-9	E440	0.2	mg/kg	100 mg/kg	107	80.0	120	----
boron	7440-42-8	E440	5	mg/kg	100 mg/kg	103	80.0	120	----
cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	104	80.0	120	----
calcium	7440-70-2	E440	50	mg/kg	5000 mg/kg	106	80.0	120	----
chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	101	80.0	120	----
cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	105	80.0	120	----
copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	102	80.0	120	----
iron	7439-89-6	E440	50	mg/kg	100 mg/kg	110	80.0	120	----
lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	107	80.0	120	----
lithium	7439-93-2	E440	2	mg/kg	25 mg/kg	94.0	80.0	120	----
magnesium	7439-95-4	E440	20	mg/kg	5000 mg/kg	106	80.0	120	----
manganese	7439-96-5	E440	1	mg/kg	25 mg/kg	102	80.0	120	----
molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	104	80.0	120	----
nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	104	80.0	120	----
phosphorus	7723-14-0	E440	50	mg/kg	1000 mg/kg	111	80.0	120	----
potassium	7440-09-7	E440	100	mg/kg	5000 mg/kg	104	80.0	120	----
selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	107	80.0	120	----
silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	110	80.0	120	----
sodium	7440-23-5	E440	50	mg/kg	5000 mg/kg	102	80.0	120	----
strontium	7440-24-6	E440	0.5	mg/kg	25 mg/kg	106	80.0	120	----
sulfur	7704-34-9	E440	1000	mg/kg	5000 mg/kg	106	80.0	120	----
thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	106	80.0	120	----

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 97747) - continued									
tin	7440-31-5	E440	2	mg/kg	50 mg/kg	102	80.0	120	----
titanium	7440-32-6	E440	1	mg/kg	25 mg/kg	100.0	80.0	120	----
tungsten	7440-33-7	E440	0.5	mg/kg	10 mg/kg	108	80.0	120	----
uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	110	80.0	120	----
vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	105	80.0	120	----
zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	109	80.0	120	----
zirconium	7440-67-7	E440	1	mg/kg	10 mg/kg	106	80.0	120	----
Speciated Metals (QCLot: 104491)									
chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	16 mg/kg	94.2	80.0	120	----
Speciated Metals (QCLot: 107728)									
chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	16 mg/kg	95.7	80.0	120	----
Volatile Organic Compounds (QCLot: 96996)									
benzene	71-43-2	E611A	0.005	mg/kg	2.5 mg/kg	103	70.0	130	----
ethylbenzene	100-41-4	E611A	0.015	mg/kg	2.5 mg/kg	100	70.0	130	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.05	mg/kg	2.5 mg/kg	122	70.0	130	----
styrene	100-42-5	E611A	0.05	mg/kg	2.5 mg/kg	97.0	70.0	130	----
toluene	108-88-3	E611A	0.05	mg/kg	2.5 mg/kg	101	70.0	130	----
xylene, m+p-	179601-23-1	E611A	0.05	mg/kg	5 mg/kg	100	70.0	130	----
xylene, o-	95-47-6	E611A	0.05	mg/kg	2.5 mg/kg	104	70.0	130	----
Volatile Organic Compounds (QCLot: 97001)									
benzene	71-43-2	E611C	0.005	mg/kg	2.5 mg/kg	101	70.0	130	----
bromodichloromethane	75-27-4	E611C	0.05	mg/kg	2.5 mg/kg	108	70.0	130	----
bromoform	75-25-2	E611C	0.05	mg/kg	2.5 mg/kg	125	70.0	130	----
carbon tetrachloride	56-23-5	E611C	0.05	mg/kg	2.5 mg/kg	116	70.0	130	----
chlorobenzene	108-90-7	E611C	0.05	mg/kg	2.5 mg/kg	102	70.0	130	----
chloroethane	75-00-3	E611C	0.05	mg/kg	2.5 mg/kg	101	60.0	140	----
chloroform	67-66-3	E611C	0.05	mg/kg	2.5 mg/kg	102	70.0	130	----
chloromethane	74-87-3	E611C	0.05	mg/kg	2.5 mg/kg	103	60.0	140	----
dibromochloromethane	124-48-1	E611C	0.05	mg/kg	2.5 mg/kg	116	70.0	130	----
dichlorobenzene, 1,2-	95-50-1	E611C	0.05	mg/kg	2.5 mg/kg	97.8	70.0	130	----
dichlorobenzene, 1,3-	541-73-1	E611C	0.05	mg/kg	2.5 mg/kg	96.7	70.0	130	----
dichlorobenzene, 1,4-	106-46-7	E611C	0.05	mg/kg	2.5 mg/kg	99.0	70.0	130	----
dichloroethane, 1,1-	75-34-3	E611C	0.05	mg/kg	2.5 mg/kg	96.2	70.0	130	----
dichloroethane, 1,2-	107-06-2	E611C	0.05	mg/kg	2.5 mg/kg	96.6	70.0	130	----
dichloroethylene, 1,1-	75-35-4	E611C	0.05	mg/kg	2.5 mg/kg	100	70.0	130	----

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 97001) - continued									
dichloroethylene, cis-1,2-	156-59-4	E611C	0.05	mg/kg	2.5 mg/kg	99.0	70.0	130	----
dichloroethylene, trans-1,2-	156-60-5	E611C	0.05	mg/kg	2.5 mg/kg	101	70.0	130	----
dichloromethane	75-09-2	E611C	0.05	mg/kg	2.5 mg/kg	100.0	60.0	140	----
dichloropropane, 1,2-	78-87-5	E611C	0.05	mg/kg	2.5 mg/kg	102	70.0	130	----
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.05	mg/kg	2.5 mg/kg	114	70.0	130	----
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.05	mg/kg	2.5 mg/kg	120	70.0	130	----
ethylbenzene	100-41-4	E611C	0.015	mg/kg	2.5 mg/kg	108	70.0	130	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.05	mg/kg	2.5 mg/kg	109	70.0	130	----
styrene	100-42-5	E611C	0.05	mg/kg	2.5 mg/kg	103	70.0	130	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.05	mg/kg	2.5 mg/kg	118	70.0	130	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.05	mg/kg	2.5 mg/kg	101	70.0	130	----
tetrachloroethylene	127-18-4	E611C	0.05	mg/kg	2.5 mg/kg	94.9	70.0	130	----
toluene	108-88-3	E611C	0.05	mg/kg	2.5 mg/kg	92.4	70.0	130	----
trichloroethane, 1,1,1-	71-55-6	E611C	0.05	mg/kg	2.5 mg/kg	105	70.0	130	----
trichloroethane, 1,1,2-	79-00-5	E611C	0.05	mg/kg	2.5 mg/kg	96.4	70.0	130	----
trichloroethylene	79-01-6	E611C	0.01	mg/kg	2.5 mg/kg	102	70.0	130	----
trichlorofluoromethane	75-69-4	E611C	0.05	mg/kg	2.5 mg/kg	95.4	60.0	140	----
vinyl chloride	75-01-4	E611C	0.05	mg/kg	2.5 mg/kg	101	60.0	140	----
xylene, m+p-	179601-23-1	E611C	0.05	mg/kg	5 mg/kg	102	70.0	130	----
xylene, o-	95-47-6	E611C	0.05	mg/kg	2.5 mg/kg	100	70.0	130	----
Hydrocarbons (QCLot: 96997)									
VHs (C6-C10)	----	E581.VH+F1	10	mg/kg	85.8 mg/kg	119	70.0	130	----
Hydrocarbons (QCLot: 97000)									
VHs (C6-C10)	----	E581.VH+F1	10	mg/kg	64.8 mg/kg	76.0	70.0	130	----
Hydrocarbons (QCLot: 97750)									
EPH (C10-C19)	----	E601A	200	mg/kg	1134.37 mg/kg	116	70.0	130	----
					7113 mg/kg	111	70.0	130	----
EPH (C19-C32)	----	E601A	200	mg/kg	575.98 mg/kg	114	70.0	130	----
					10183 mg/kg	108	70.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 97749)									
acenaphthene	83-32-9	E641A-L	0.005	mg/kg	0.5 mg/kg	103	60.0	130	----
					0.638 mg/kg	94.7	60.0	130	----
acenaphthylene	208-96-8	E641A-L	0.005	mg/kg	0.5 mg/kg	101	60.0	130	----
					0.2 mg/kg	96.4	60.0	130	----
acridine	260-94-6	E641A-L	0.01	mg/kg	0.5 mg/kg	82.9	60.0	130	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 97749) - continued									
anthracene	120-12-7	E641A-L	0.004	mg/kg	0.5 mg/kg	101	60.0	130	----
					0.32 mg/kg	96.7	60.0	130	----
benz(a)anthracene	56-55-3	E641A-L	0.01	mg/kg	0.5 mg/kg	100	60.0	130	----
					0.545 mg/kg	92.9	60.0	130	----
benzo(a)pyrene	50-32-8	E641A-L	0.01	mg/kg	0.5 mg/kg	97.8	60.0	130	----
benzo(b+j)fluoranthene	----	E641A-L	0.01	mg/kg	0.5 mg/kg	99.5	60.0	130	----
benzo(g,h,i)perylene	191-24-2	E641A-L	0.01	mg/kg	0.5 mg/kg	101	60.0	130	----
benzo(k)fluoranthene	207-08-9	E641A-L	0.01	mg/kg	0.5 mg/kg	104	60.0	130	----
chrysene	218-01-9	E641A-L	0.01	mg/kg	0.5 mg/kg	97.4	60.0	130	----
dibenz(a,h)anthracene	53-70-3	E641A-L	0.005	mg/kg	0.5 mg/kg	96.7	60.0	130	----
					1.196 mg/kg	95.7	60.0	130	----
fluoranthene	206-44-0	E641A-L	0.01	mg/kg	0.5 mg/kg	99.7	60.0	130	----
fluorene	86-73-7	E641A-L	0.01	mg/kg	0.5 mg/kg	101	60.0	130	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.01	mg/kg	0.5 mg/kg	100	60.0	130	----
					0.445 mg/kg	94.1	60.0	130	----
methylnaphthalene, 1-	90-12-0	E641A-L	0.01	mg/kg	0.5 mg/kg	96.2	60.0	130	----
methylnaphthalene, 2-	91-57-6	E641A-L	0.01	mg/kg	0.5 mg/kg	97.3	60.0	130	----
naphthalene	91-20-3	E641A-L	0.01	mg/kg	0.5 mg/kg	97.3	50.0	130	----
phenanthrene	85-01-8	E641A-L	0.01	mg/kg	0.5 mg/kg	103	60.0	130	----
pyrene	129-00-0	E641A-L	0.01	mg/kg	0.5 mg/kg	105	60.0	130	----
quinoline	6027-02-7	E641A-L	0.01	mg/kg	0.5 mg/kg	81.2	60.0	130	----
Glycols (QCLot: 96523)									
diethylene glycol	111-46-6	E680E	10	mg/kg	50 mg/kg	98.0	70.0	130	----
ethylene glycol	107-21-1	E680E	10	mg/kg	50 mg/kg	97.7	70.0	130	----
propylene glycol, 1,2-	57-55-6	E680E	10	mg/kg	50 mg/kg	95.1	70.0	130	----
triethylene glycol	112-27-6	E680E	10	mg/kg	50 mg/kg	96.4	70.0	130	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Dissolved Metals (QCLot: 97161)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	96.9	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	98.8	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	97.2	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	91.4	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 97161) - continued									
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	97.0	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	87.2	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.9	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	97.1	80.0	120	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	101	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.7	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.7	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.8	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	87.8	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	96.8	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.2	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	97.2	70.0	130	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	97.3	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	99.7	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	104	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	100	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	99.6	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	104	80.0	120	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	103	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	97.3	80.0	120	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	94.9	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.8	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	87.5	80.0	120	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	96.2	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	98.5	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	98.2	80.0	120	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	98.0	80.0	120	----
Dissolved Metals (QCLot: 97162)									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	99.0	80.0	120	----
Dissolved Metals (QCLot: 97817)									
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	108	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 98014)									
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.0	80.0	120	----
Volatile Organic Compounds (QCLot: 97142)									
benzene	71-43-2	E611C	0.5	µg/L	100 µg/L	92.4	70.0	130	----
bromodichloromethane	75-27-4	E611C	0.5	µg/L	100 µg/L	95.7	70.0	130	----
bromoform	75-25-2	E611C	0.5	µg/L	100 µg/L	103	70.0	130	----
carbon tetrachloride	56-23-5	E611C	0.5	µg/L	100 µg/L	93.4	70.0	130	----
chlorobenzene	108-90-7	E611C	0.5	µg/L	100 µg/L	99.0	70.0	130	----
chloroethane	75-00-3	E611C	0.5	µg/L	100 µg/L	108	60.0	140	----
chloroform	67-66-3	E611C	0.5	µg/L	100 µg/L	84.8	70.0	130	----
chloromethane	74-87-3	E611C	0.5	µg/L	100 µg/L	102	60.0	140	----
dibromochloromethane	124-48-1	E611C	0.5	µg/L	100 µg/L	102	70.0	130	----
dichlorobenzene, 1,2-	95-50-1	E611C	0.5	µg/L	100 µg/L	101	70.0	130	----
dichlorobenzene, 1,3-	541-73-1	E611C	0.5	µg/L	100 µg/L	95.0	70.0	130	----
dichlorobenzene, 1,4-	106-46-7	E611C	0.5	µg/L	100 µg/L	97.2	70.0	130	----
dichloroethane, 1,1-	75-34-3	E611C	0.5	µg/L	100 µg/L	92.2	70.0	130	----
dichloroethane, 1,2-	107-06-2	E611C	0.5	µg/L	100 µg/L	95.6	70.0	130	----
dichloroethylene, 1,1-	75-35-4	E611C	0.5	µg/L	100 µg/L	90.5	70.0	130	----
dichloroethylene, cis-1,2-	156-59-4	E611C	0.5	µg/L	100 µg/L	91.9	70.0	130	----
dichloroethylene, trans-1,2-	156-60-5	E611C	0.5	µg/L	100 µg/L	93.6	70.0	130	----
dichloromethane	75-09-2	E611C	0.5	µg/L	100 µg/L	93.2	70.0	130	----
dichloropropane, 1,2-	78-87-5	E611C	0.5	µg/L	100 µg/L	94.0	70.0	130	----
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.5	µg/L	100 µg/L	104	70.0	130	----
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.5	µg/L	100 µg/L	109	70.0	130	----
ethylbenzene	100-41-4	E611C	0.5	µg/L	100 µg/L	104	70.0	130	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.5	µg/L	100 µg/L	104	70.0	130	----
styrene	100-42-5	E611C	0.5	µg/L	100 µg/L	97.9	70.0	130	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.5	µg/L	100 µg/L	107	70.0	130	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.2	µg/L	100 µg/L	100	70.0	130	----
tetrachloroethylene	127-18-4	E611C	0.5	µg/L	100 µg/L	98.0	70.0	130	----
toluene	108-88-3	E611C	0.4	µg/L	100 µg/L	106	70.0	130	----
trichloroethane, 1,1,1-	71-55-6	E611C	0.5	µg/L	100 µg/L	95.8	70.0	130	----
trichloroethane, 1,1,2-	79-00-5	E611C	0.5	µg/L	100 µg/L	94.3	70.0	130	----
trichloroethylene	79-01-6	E611C	0.5	µg/L	100 µg/L	93.9	70.0	130	----
trichlorofluoromethane	75-69-4	E611C	0.5	µg/L	100 µg/L	77.5	60.0	140	----
vinyl chloride	75-01-4	E611C	0.4	µg/L	100 µg/L	106	60.0	140	----
xylene, m+p-	179601-23-1	E611C	0.5	µg/L	200 µg/L	116	70.0	130	----
xylene, o-	95-47-6	E611C	0.5	µg/L	100 µg/L	106	70.0	130	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Hydrocarbons (QCLot: 103096)									
EPH (C10-C19), silica gel treated	----	E601A.SG	250	µg/L	6491 µg/L	81.4	70.0	130	----
EPH (C19-C32), silica gel treated	----	E601A.SG	250	µg/L	3363 µg/L	# 59.4	70.0	130	LCS-ND
Hydrocarbons (QCLot: 97117)									
EPH (C10-C19)	----	E601A	250	µg/L	8310 µg/L	89.8	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3570 µg/L	74.0	70.0	130	----
Hydrocarbons (QCLot: 97143)									
VHw (C6-C10)	----	E581.VH+F1	100	µg/L	6310 µg/L	111	70.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 97116)									
acenaphthene	83-32-9	E641A	0.01	µg/L	0.5 µg/L	109	60.0	130	----
acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5 µg/L	99.2	60.0	130	----
acridine	260-94-6	E641A	0.01	µg/L	0.5 µg/L	95.6	60.0	130	----
anthracene	120-12-7	E641A	0.01	µg/L	0.5 µg/L	92.5	60.0	130	----
benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5 µg/L	92.5	60.0	130	----
benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5 µg/L	95.7	60.0	130	----
benzo(b+j)fluoranthene	----	E641A	0.01	µg/L	0.5 µg/L	105	60.0	130	----
benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	0.5 µg/L	93.6	60.0	130	----
benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5 µg/L	94.6	60.0	130	----
chrysene	218-01-9	E641A	0.01	µg/L	0.5 µg/L	96.2	60.0	130	----
dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5 µg/L	97.3	60.0	130	----
fluoranthene	206-44-0	E641A	0.01	µg/L	0.5 µg/L	99.8	60.0	130	----
fluorene	86-73-7	E641A	0.01	µg/L	0.5 µg/L	100	60.0	130	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5 µg/L	91.8	60.0	130	----
methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	0.5 µg/L	110	60.0	130	----
methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5 µg/L	104	60.0	130	----
naphthalene	91-20-3	E641A	0.05	µg/L	0.5 µg/L	118	60.0	130	----
phenanthrene	85-01-8	E641A	0.02	µg/L	0.5 µg/L	100	60.0	130	----
pyrene	129-00-0	E641A	0.01	µg/L	0.5 µg/L	102	60.0	130	----
quinoline	6027-02-7	E641A	0.05	µg/L	0.5 µg/L	96.7	60.0	130	----
Glycols (QCLot: 96522)									
diethylene glycol	111-46-6	E680E	5	mg/L	25 mg/L	76.5	70.0	130	----
ethylene glycol	107-21-1	E680E	5	mg/L	25 mg/L	76.8	70.0	130	----
propylene glycol, 1,2-	57-55-6	E680E	5	mg/L	25 mg/L	77.1	70.0	130	----
triethylene glycol	112-27-6	E680E	5	mg/L	25 mg/L	75.6	70.0	130	----

Qualifiers

Qualifier	Description
LCS-ND	Lab Control Sample recovery was slightly outside ALS DQO. Reported non-detect results for associated samples were unaffected.

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 96996)										
WR2000999-002	Anonymous	benzene	71-43-2	E611A	2.52 mg/kg	3.125 mg/kg	98.8	60.0	140	----
		ethylbenzene	100-41-4	E611A	2.60 mg/kg	3.125 mg/kg	102	60.0	140	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	2.85 mg/kg	3.125 mg/kg	111	60.0	140	----
		styrene	100-42-5	E611A	2.35 mg/kg	3.125 mg/kg	91.8	60.0	140	----
		toluene	108-88-3	E611A	2.97 mg/kg	3.125 mg/kg	116	60.0	140	----
		xylene, m+p-	179601-23-1	E611A	4.74 mg/kg	6.25 mg/kg	92.8	60.0	140	----
		xylene, o-	95-47-6	E611A	ND mg/kg	3.125 mg/kg	ND	60.0	140	----
Volatile Organic Compounds (QCLot: 97001)										
VA20B6777-005	Anonymous	benzene	71-43-2	E611C	1.92 mg/kg	3.125 mg/kg	96.9	60.0	140	----
		bromodichloromethane	75-27-4	E611C	2.24 mg/kg	3.125 mg/kg	113	60.0	140	----
		bromoform	75-25-2	E611C	2.47 mg/kg	3.125 mg/kg	125	60.0	140	----
		carbon tetrachloride	56-23-5	E611C	2.12 mg/kg	3.125 mg/kg	107	60.0	140	----
		chlorobenzene	108-90-7	E611C	1.90 mg/kg	3.125 mg/kg	95.9	60.0	140	----
		chloroethane	75-00-3	E611C	1.99 mg/kg	3.125 mg/kg	100	60.0	140	----
		chloroform	67-66-3	E611C	1.90 mg/kg	3.125 mg/kg	96.1	60.0	140	----
		chloromethane	74-87-3	E611C	2.15 mg/kg	3.125 mg/kg	109	60.0	140	----
		dibromochloromethane	124-48-1	E611C	2.26 mg/kg	3.125 mg/kg	114	60.0	140	----
		dichlorobenzene, 1,2-	95-50-1	E611C	1.79 mg/kg	3.125 mg/kg	90.6	60.0	140	----
		dichlorobenzene, 1,3-	541-73-1	E611C	1.73 mg/kg	3.125 mg/kg	87.7	60.0	140	----
		dichlorobenzene, 1,4-	106-46-7	E611C	1.75 mg/kg	3.125 mg/kg	88.6	60.0	140	----
		dichloroethane, 1,1-	75-34-3	E611C	1.82 mg/kg	3.125 mg/kg	92.3	60.0	140	----
		dichloroethane, 1,2-	107-06-2	E611C	1.88 mg/kg	3.125 mg/kg	95.1	60.0	140	----
		dichloroethylene, 1,1-	75-35-4	E611C	1.93 mg/kg	3.125 mg/kg	97.4	60.0	140	----
		dichloroethylene, cis-1,2-	156-59-4	E611C	1.86 mg/kg	3.125 mg/kg	94.1	60.0	140	----
		dichloroethylene, trans-1,2-	156-60-5	E611C	1.89 mg/kg	3.125 mg/kg	95.4	60.0	140	----
		dichloromethane	75-09-2	E611C	1.92 mg/kg	3.125 mg/kg	96.9	60.0	140	----
		dichloropropane, 1,2-	78-87-5	E611C	1.93 mg/kg	3.125 mg/kg	97.5	60.0	140	----
		dichloropropylene, cis-1,3-	10061-01-5	E611C	2.14 mg/kg	3.125 mg/kg	108	60.0	140	----
		dichloropropylene, trans-1,3-	10061-02-6	E611C	2.14 mg/kg	3.125 mg/kg	108	60.0	140	----
		ethylbenzene	100-41-4	E611C	2.02 mg/kg	3.125 mg/kg	102	60.0	140	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	2.04 mg/kg	3.125 mg/kg	103	60.0	140	----

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 97001) - continued										
VA20B6777-005	Anonymous	styrene	100-42-5	E611C	1.98 mg/kg	3.125 mg/kg	99.9	60.0	140	----
		tetrachloroethane, 1,1,1,2-	630-20-6	E611C	2.24 mg/kg	3.125 mg/kg	113	60.0	140	----
		tetrachloroethane, 1,1,2,2-	79-34-5	E611C	1.96 mg/kg	3.125 mg/kg	99.1	60.0	140	----
		tetrachloroethylene	127-18-4	E611C	1.76 mg/kg	3.125 mg/kg	88.9	60.0	140	----
		toluene	108-88-3	E611C	1.73 mg/kg	3.125 mg/kg	87.7	60.0	140	----
		trichloroethane, 1,1,1-	71-55-6	E611C	1.94 mg/kg	3.125 mg/kg	98.2	60.0	140	----
		trichloroethane, 1,1,2-	79-00-5	E611C	1.54 mg/kg	3.125 mg/kg	78.1	60.0	140	----
		trichloroethylene	79-01-6	E611C	1.89 mg/kg	3.125 mg/kg	95.5	60.0	140	----
		trichlorofluoromethane	75-69-4	E611C	1.64 mg/kg	3.125 mg/kg	82.9	60.0	140	----
		vinyl chloride	75-01-4	E611C	2.05 mg/kg	3.125 mg/kg	103	60.0	140	----
		xylene, m+p-	179601-23-1	E611C	3.72 mg/kg	6.25 mg/kg	94.1	60.0	140	----
		xylene, o-	95-47-6	E611C	1.86 mg/kg	3.125 mg/kg	94.2	60.0	140	----
Hydrocarbons (QCLot: 96997)										
WR2000999-004	Anonymous	VHs (C6-C10)	----	E581.VH+F1	160 mg/kg	171.9 mg/kg	102	60.0	140	----
Hydrocarbons (QCLot: 97000)										
VA20B6777-003	Anonymous	VHs (C6-C10)	----	E581.VH+F1	118 mg/kg	171.9 mg/kg	93.8	60.0	140	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 97161)										
VA20B7191-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.194 mg/L	0.2 mg/L	97.0	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0388 mg/L	0.04 mg/L	97.1	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00947 mg/L	0.01 mg/L	94.7	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.091 mg/L	0.1 mg/L	91.0	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00403 mg/L	0.004 mg/L	101	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cesium, dissolved	7440-46-2	E421	0.0102 mg/L	0.01 mg/L	102	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0193 mg/L	0.02 mg/L	96.7	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0190 mg/L	0.02 mg/L	94.8	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.98 mg/L	2 mg/L	98.9	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0196 mg/L	0.02 mg/L	98.2	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0922 mg/L	0.1 mg/L	92.2	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 97161) - continued										
VA20B7191-001	Anonymous	magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0209 mg/L	0.02 mg/L	104	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0378 mg/L	0.04 mg/L	94.4	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	10.3 mg/L	10 mg/L	103	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.10 mg/L	4 mg/L	102	70.0	130	----
		rubidium, dissolved	7440-17-7	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0432 mg/L	0.04 mg/L	108	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.45 mg/L	10 mg/L	94.5	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00396 mg/L	0.004 mg/L	99.0	70.0	130	----
		sodium, dissolved	17341-25-2	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	22.8 mg/L	20 mg/L	114	70.0	130	----
		tellurium, dissolved	13494-80-9	E421	0.0389 mg/L	0.04 mg/L	97.2	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00383 mg/L	0.004 mg/L	95.7	70.0	130	----
		thorium, dissolved	7440-29-1	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0380 mg/L	0.04 mg/L	94.9	70.0	130	----
		tungsten, dissolved	7440-33-7	E421	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00402 mg/L	0.004 mg/L	100	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.390 mg/L	0.4 mg/L	97.6	70.0	130	----
		zirconium, dissolved	7440-67-7	E421	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
Dissolved Metals (QCLot: 97162)										
VA20B7191-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0400 mg/L	0.04 mg/L	100	70.0	130	----
Dissolved Metals (QCLot: 97817)										
VA20B6963-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000965 mg/L	0.0001 mg/L	96.5	70.0	130	----
Dissolved Metals (QCLot: 98014)										
VA20B6928-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0001000 mg/L	0.0001 mg/L	100.0	70.0	130	----
Volatile Organic Compounds (QCLot: 97142)										
VA20B6540-004	Anonymous	benzene	71-43-2	E611C	97.1 µg/L	100 µg/L	97.1	60.0	140	----
		bromodichloromethane	75-27-4	E611C	106 µg/L	100 µg/L	106	60.0	140	----
		bromoform	75-25-2	E611C	110 µg/L	100 µg/L	110	60.0	140	----
		carbon tetrachloride	56-23-5	E611C	99.6 µg/L	100 µg/L	99.6	60.0	140	----
		chlorobenzene	108-90-7	E611C	99.9 µg/L	100 µg/L	99.9	60.0	140	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 97142) - continued										
VA20B6540-004	Anonymous	chloroethane	75-00-3	E611C	103 µg/L	100 µg/L	103	50.0	150	----
		chloroform	67-66-3	E611C	94.4 µg/L	100 µg/L	94.4	60.0	140	----
		chloromethane	74-87-3	E611C	93.7 µg/L	100 µg/L	93.7	50.0	150	----
		dibromochloromethane	124-48-1	E611C	107 µg/L	100 µg/L	107	60.0	140	----
		dichlorobenzene, 1,2-	95-50-1	E611C	99.4 µg/L	100 µg/L	99.4	60.0	140	----
		dichlorobenzene, 1,3-	541-73-1	E611C	91.5 µg/L	100 µg/L	91.5	60.0	140	----
		dichlorobenzene, 1,4-	106-46-7	E611C	93.1 µg/L	100 µg/L	93.1	60.0	140	----
		dichloroethane, 1,1-	75-34-3	E611C	97.6 µg/L	100 µg/L	97.6	60.0	140	----
		dichloroethane, 1,2-	107-06-2	E611C	106 µg/L	100 µg/L	106	60.0	140	----
		dichloroethylene, 1,1-	75-35-4	E611C	90.8 µg/L	100 µg/L	90.8	60.0	140	----
		dichloroethylene, cis-1,2-	156-59-4	E611C	94.4 µg/L	100 µg/L	94.4	60.0	140	----
		dichloroethylene, trans-1,2-	156-60-5	E611C	90.6 µg/L	100 µg/L	90.6	60.0	140	----
		dichloromethane	75-09-2	E611C	99.4 µg/L	100 µg/L	99.4	60.0	140	----
		dichloropropane, 1,2-	78-87-5	E611C	102 µg/L	100 µg/L	102	60.0	140	----
		dichloropropylene, cis-1,3-	10061-01-5	E611C	100 µg/L	100 µg/L	100	60.0	140	----
		dichloropropylene, trans-1,3-	10061-02-6	E611C	97.9 µg/L	100 µg/L	97.9	60.0	140	----
		ethylbenzene	100-41-4	E611C	97.5 µg/L	100 µg/L	97.5	60.0	140	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	105 µg/L	100 µg/L	105	60.0	140	----
		styrene	100-42-5	E611C	93.1 µg/L	100 µg/L	93.1	60.0	140	----
		tetrachloroethane, 1,1,1,2-	630-20-6	E611C	111 µg/L	100 µg/L	111	60.0	140	----
		tetrachloroethane, 1,1,2,2-	79-34-5	E611C	103 µg/L	100 µg/L	103	60.0	140	----
		tetrachloroethylene	127-18-4	E611C	91.9 µg/L	100 µg/L	91.9	60.0	140	----
		toluene	108-88-3	E611C	89.0 µg/L	100 µg/L	89.0	60.0	140	----
		trichloroethane, 1,1,1-	71-55-6	E611C	101 µg/L	100 µg/L	101	60.0	140	----
		trichloroethane, 1,1,2-	79-00-5	E611C	102 µg/L	100 µg/L	102	60.0	140	----
		trichloroethylene	79-01-6	E611C	95.4 µg/L	100 µg/L	95.4	60.0	140	----
		trichlorofluoromethane	75-69-4	E611C	90.4 µg/L	100 µg/L	90.4	50.0	150	----
		vinyl chloride	75-01-4	E611C	96.5 µg/L	100 µg/L	96.5	50.0	150	----
		xylene, m+p-	179601-23-1	E611C	219 µg/L	200 µg/L	110	60.0	140	----
		xylene, o-	95-47-6	E611C	102 µg/L	100 µg/L	102	60.0	140	----
Hydrocarbons (QCLot: 97143)										
VA20B6540-002	Anonymous	VHw (C6-C10)	----	E581.VH+F1	6110 µg/L	6310 µg/L	96.8	60.0	140	----

Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix: **Soil/Solid**

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Metals (QCLot: 103114)									
QC-103114-003	SCP SS-2	aluminum	7429-90-5	E440	9817 mg/kg	106	70.0	130	----
QC-103114-003	SCP SS-2	antimony	7440-36-0	E440	3.99 mg/kg	97.6	70.0	130	----
QC-103114-003	SCP SS-2	arsenic	7440-38-2	E440	3.73 mg/kg	102	70.0	130	----
QC-103114-003	SCP SS-2	barium	7440-39-3	E440	105 mg/kg	97.6	70.0	130	----
QC-103114-003	SCP SS-2	beryllium	7440-41-7	E440	0.349 mg/kg	92.1	70.0	130	----
QC-103114-003	SCP SS-2	boron	7440-42-8	E440	8.5 mg/kg	114	40.0	160	----
QC-103114-003	SCP SS-2	cadmium	7440-43-9	E440	0.91 mg/kg	109	70.0	130	----
QC-103114-003	SCP SS-2	calcium	7440-70-2	E440	31082 mg/kg	98.1	70.0	130	----
QC-103114-003	SCP SS-2	chromium	7440-47-3	E440	101 mg/kg	112	70.0	130	----
QC-103114-003	SCP SS-2	cobalt	7440-48-4	E440	6.9 mg/kg	103	70.0	130	----
QC-103114-003	SCP SS-2	copper	7440-50-8	E440	123 mg/kg	108	70.0	130	----
QC-103114-003	SCP SS-2	iron	7439-89-6	E440	23558 mg/kg	106	70.0	130	----
QC-103114-003	SCP SS-2	lead	7439-92-1	E440	267 mg/kg	91.7	70.0	130	----
QC-103114-003	SCP SS-2	lithium	7439-93-2	E440	9.5 mg/kg	92.6	70.0	130	----
QC-103114-003	SCP SS-2	magnesium	7439-95-4	E440	5509 mg/kg	105	70.0	130	----
QC-103114-003	SCP SS-2	manganese	7439-96-5	E440	269 mg/kg	108	70.0	130	----
QC-103114-003	SCP SS-2	molybdenum	7439-98-7	E440	1.03 mg/kg	# 135	70.0	130	MES
QC-103114-003	SCP SS-2	nickel	7440-02-0	E440	26.7 mg/kg	111	70.0	130	----
QC-103114-003	SCP SS-2	phosphorus	7723-14-0	E440	752 mg/kg	98.6	70.0	130	----
QC-103114-003	SCP SS-2	potassium	7440-09-7	E440	1587 mg/kg	111	70.0	130	----
QC-103114-003	SCP SS-2	sodium	7440-23-5	E440	797 mg/kg	106	70.0	130	----
QC-103114-003	SCP SS-2	strontium	7440-24-6	E440	86.1 mg/kg	95.2	70.0	130	----
QC-103114-003	SCP SS-2	thallium	7440-28-0	E440	0.0786 mg/kg	97.4	40.0	160	----
QC-103114-003	SCP SS-2	tin	7440-31-5	E440	10.6 mg/kg	92.5	70.0	130	----
QC-103114-003	SCP SS-2	titanium	7440-32-6	E440	839 mg/kg	117	70.0	130	----
QC-103114-003	SCP SS-2	uranium	7440-61-1	E440	0.52 mg/kg	99.8	70.0	130	----
QC-103114-003	SCP SS-2	vanadium	7440-62-2	E440	32.7 mg/kg	108	70.0	130	----
QC-103114-003	SCP SS-2	zinc	7440-66-6	E440	297 mg/kg	107	70.0	130	----
QC-103114-003	SCP SS-2	zirconium	7440-67-7	E440	5.73 mg/kg	96.8	70.0	130	----

Sub-Matrix: **Soil/Solid**

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Metals (QCLot: 107135)									
QC-107135-003	SCP SS-2	aluminum	7429-90-5	E440	9817 mg/kg	107	70.0	130	----
QC-107135-003	SCP SS-2	antimony	7440-36-0	E440	3.99 mg/kg	106	70.0	130	----
QC-107135-003	SCP SS-2	arsenic	7440-38-2	E440	3.73 mg/kg	104	70.0	130	----
QC-107135-003	SCP SS-2	barium	7440-39-3	E440	105 mg/kg	99.3	70.0	130	----
QC-107135-003	SCP SS-2	beryllium	7440-41-7	E440	0.349 mg/kg	102	70.0	130	----
QC-107135-003	SCP SS-2	boron	7440-42-8	E440	8.5 mg/kg	107	40.0	160	----
QC-107135-003	SCP SS-2	cadmium	7440-43-9	E440	0.91 mg/kg	99.0	70.0	130	----
QC-107135-003	SCP SS-2	calcium	7440-70-2	E440	31082 mg/kg	102	70.0	130	----
QC-107135-003	SCP SS-2	chromium	7440-47-3	E440	101 mg/kg	109	70.0	130	----
QC-107135-003	SCP SS-2	cobalt	7440-48-4	E440	6.9 mg/kg	100	70.0	130	----
QC-107135-003	SCP SS-2	copper	7440-50-8	E440	123 mg/kg	103	70.0	130	----
QC-107135-003	SCP SS-2	iron	7439-89-6	E440	23558 mg/kg	101	70.0	130	----
QC-107135-003	SCP SS-2	lead	7439-92-1	E440	267 mg/kg	96.9	70.0	130	----
QC-107135-003	SCP SS-2	lithium	7439-93-2	E440	9.5 mg/kg	97.3	70.0	130	----
QC-107135-003	SCP SS-2	magnesium	7439-95-4	E440	5509 mg/kg	103	70.0	130	----
QC-107135-003	SCP SS-2	manganese	7439-96-5	E440	269 mg/kg	108	70.0	130	----
QC-107135-003	SCP SS-2	molybdenum	7439-98-7	E440	1.03 mg/kg	100	70.0	130	----
QC-107135-003	SCP SS-2	nickel	7440-02-0	E440	26.7 mg/kg	104	70.0	130	----
QC-107135-003	SCP SS-2	phosphorus	7723-14-0	E440	752 mg/kg	92.4	70.0	130	----
QC-107135-003	SCP SS-2	potassium	7440-09-7	E440	1587 mg/kg	111	70.0	130	----
QC-107135-003	SCP SS-2	sodium	7440-23-5	E440	797 mg/kg	102	70.0	130	----
QC-107135-003	SCP SS-2	strontium	7440-24-6	E440	86.1 mg/kg	102	70.0	130	----
QC-107135-003	SCP SS-2	thallium	7440-28-0	E440	0.0786 mg/kg	93.4	40.0	160	----
QC-107135-003	SCP SS-2	tin	7440-31-5	E440	10.6 mg/kg	94.4	70.0	130	----
QC-107135-003	SCP SS-2	titanium	7440-32-6	E440	839 mg/kg	117	70.0	130	----
QC-107135-003	SCP SS-2	uranium	7440-61-1	E440	0.52 mg/kg	98.6	70.0	130	----
QC-107135-003	SCP SS-2	vanadium	7440-62-2	E440	32.7 mg/kg	106	70.0	130	----
QC-107135-003	SCP SS-2	zinc	7440-66-6	E440	297 mg/kg	99.6	70.0	130	----
QC-107135-003	SCP SS-2	zirconium	7440-67-7	E440	5.73 mg/kg	94.0	70.0	130	----
Metals (QCLot: 97746)									
QC-97746-003	SCP SS-2	mercury	7439-97-6	E510	0.059 mg/kg	96.3	70.0	130	----
Metals (QCLot: 97747)									

Sub-Matrix: **Soil/Solid**

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Metals (QCLot: 97747) - continued									
QC-97747-003	SCP SS-2	aluminum	7429-90-5	E440	9817 mg/kg	100	70.0	130	----
QC-97747-003	SCP SS-2	antimony	7440-36-0	E440	3.99 mg/kg	# 158	70.0	130	RM-H
QC-97747-003	SCP SS-2	arsenic	7440-38-2	E440	3.73 mg/kg	104	70.0	130	----
QC-97747-003	SCP SS-2	barium	7440-39-3	E440	105 mg/kg	104	70.0	130	----
QC-97747-003	SCP SS-2	beryllium	7440-41-7	E440	0.349 mg/kg	103	70.0	130	----
QC-97747-003	SCP SS-2	boron	7440-42-8	E440	8.5 mg/kg	112	40.0	160	----
QC-97747-003	SCP SS-2	cadmium	7440-43-9	E440	0.91 mg/kg	98.6	70.0	130	----
QC-97747-003	SCP SS-2	calcium	7440-70-2	E440	31082 mg/kg	105	70.0	130	----
QC-97747-003	SCP SS-2	chromium	7440-47-3	E440	101 mg/kg	105	70.0	130	----
QC-97747-003	SCP SS-2	cobalt	7440-48-4	E440	6.9 mg/kg	103	70.0	130	----
QC-97747-003	SCP SS-2	copper	7440-50-8	E440	123 mg/kg	101	70.0	130	----
QC-97747-003	SCP SS-2	iron	7439-89-6	E440	23558 mg/kg	101	70.0	130	----
QC-97747-003	SCP SS-2	lead	7439-92-1	E440	267 mg/kg	120	70.0	130	----
QC-97747-003	SCP SS-2	lithium	7439-93-2	E440	9.5 mg/kg	99.1	70.0	130	----
QC-97747-003	SCP SS-2	magnesium	7439-95-4	E440	5509 mg/kg	103	70.0	130	----
QC-97747-003	SCP SS-2	manganese	7439-96-5	E440	269 mg/kg	104	70.0	130	----
QC-97747-003	SCP SS-2	molybdenum	7439-98-7	E440	1.03 mg/kg	99.6	70.0	130	----
QC-97747-003	SCP SS-2	nickel	7440-02-0	E440	26.7 mg/kg	104	70.0	130	----
QC-97747-003	SCP SS-2	phosphorus	7723-14-0	E440	752 mg/kg	107	70.0	130	----
QC-97747-003	SCP SS-2	potassium	7440-09-7	E440	1587 mg/kg	109	70.0	130	----
QC-97747-003	SCP SS-2	sodium	7440-23-5	E440	797 mg/kg	103	70.0	130	----
QC-97747-003	SCP SS-2	strontium	7440-24-6	E440	86.1 mg/kg	102	70.0	130	----
QC-97747-003	SCP SS-2	thallium	7440-28-0	E440	0.0786 mg/kg	106	40.0	160	----
QC-97747-003	SCP SS-2	tin	7440-31-5	E440	10.6 mg/kg	92.0	70.0	130	----
QC-97747-003	SCP SS-2	titanium	7440-32-6	E440	839 mg/kg	110	70.0	130	----
QC-97747-003	SCP SS-2	uranium	7440-61-1	E440	0.52 mg/kg	104	70.0	130	----
QC-97747-003	SCP SS-2	vanadium	7440-62-2	E440	32.7 mg/kg	104	70.0	130	----
QC-97747-003	SCP SS-2	zinc	7440-66-6	E440	297 mg/kg	104	70.0	130	----
QC-97747-003	SCP SS-2	zirconium	7440-67-7	E440	5.73 mg/kg	96.6	70.0	130	----
Speciated Metals (QCLot: 104491)									
QC-104491-003	RM	chromium, hexavalent [Cr VI]	18540-29-9	E532	220 mg/kg	98.9	80.0	120	----
Speciated Metals (QCLot: 107728)									

Sub-Matrix: **Soil/Solid**

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Speciated Metals (QCLot: 107728) - continued									
QC-107728-003	RM	chromium, hexavalent [Cr VI]	18540-29-9	E532	220 mg/kg	110	80.0	120	----
Polycyclic Aromatic Hydrocarbons (QCLot: 97749)									
QC-97749-003	RM	benzo(a)pyrene	50-32-8	E641A-L	0.135 mg/kg	102	60.0	130	----
QC-97749-003	RM	benzo(b+j)fluoranthene	----	E641A-L	0.793 mg/kg	95.1	60.0	130	----
QC-97749-003	RM	benzo(g,h,i)perylene	191-24-2	E641A-L	0.377 mg/kg	99.0	60.0	130	----
QC-97749-003	RM	benzo(k)fluoranthene	207-08-9	E641A-L	0.34 mg/kg	87.5	60.0	130	----
QC-97749-003	RM	chrysene	218-01-9	E641A-L	0.666 mg/kg	94.3	60.0	130	----
QC-97749-003	RM	fluoranthene	206-44-0	E641A-L	1.757 mg/kg	92.4	60.0	130	----
QC-97749-003	RM	fluorene	86-73-7	E641A-L	0.989 mg/kg	94.0	60.0	130	----
QC-97749-003	RM	methylnaphthalene, 1-	90-12-0	E641A-L	1.256 mg/kg	90.8	60.0	130	----
QC-97749-003	RM	methylnaphthalene, 2-	91-57-6	E641A-L	1.088 mg/kg	91.0	60.0	130	----
QC-97749-003	RM	naphthalene	91-20-3	E641A-L	1.03 mg/kg	94.4	50.0	130	----
QC-97749-003	RM	phenanthrene	85-01-8	E641A-L	1.13 mg/kg	96.7	60.0	130	----
QC-97749-003	RM	pyrene	129-00-0	E641A-L	1.325 mg/kg	96.2	60.0	130	----

Qualifiers

Qualifier	Description
MES	*Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).*
RM-H	*Reference Material recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.*

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here
(lab use only)

COC Number: 20 -

Report To	Contact and company name below will appear on the final report
Company:	Tetra Tech
Contact:	Kristina Schmidt, Erin O'Brien
Phone:	867-689-5104
	Company address below will appear on the final report
Street:	61 Wasson Place
City/Province:	Whitehorse, YT
Postal Code:	Y1A0H7
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	Tetra Tech
Contact:	EBA.Accounts.Payable@tetratech.com

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Kristina.Schmidt@tetratech.com
Email 2	Erin.Obrien@tetratech.com
Email 3	EBA.labdata@tetratech.com

Invoice Distribution	
Select Invoice Distribution:	☐ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	EBA.Accounts.Payable@tetratech.com
Email 2	

Project Information	
ALS Account # / Quote #:	
Job #:	704-ENW.PENW03102-01
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)		
AFE/Cost Center:		PO#
Major/Minor Code:		Routing Code:
Requisitioner:		
Location:		

ALS Lab Work Order # (lab use only):

ALS Contact: Jesse **Sampler:** KS

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Busines ☐ | Same Day | 200% (Lab

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level s

Analysis

Indicate Filtered (F), Preserved (P) or Filtered a

Environmental Division
Whitehorse
Work Order Reference
WR2000970

Telephone : +1 867 668 6689

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	LEPH/HEP/PAH	BTEX/VPH	VOC	Metals (dissolved)	Glycols	SAMPLES ON HOLD	Sample is hazardous (pl	NUMBER OF CONTAINERS
	TP20-01-0.5m	23-Sep-20		Soil	R			R				
	TP20-01-1.0m	23-Sep-20		Soil		R						
	TP20-01-1.75m	23-Sep-20		Soil								
	TP20-04-0.5m	23-Sep-20		Soil								
	TP20-04-1.25m	23-Sep-20		Soil	R	R		R				
	TP20-04-2.0m	23-Sep-20		Soil								
	TP20-09-0.5m	23-Sep-20		Soil	R			R				
	TP20-09-1.25m	23-Sep-20		Soil		R						
	TP20-09-1.6m	23-Sep-20		Soil								
	TP20-07-0.3m	23-Sep-20		Soil	R	R	R	R				
	TP20-07-1.0m	23-Sep-20		Soil								
	TP20-07-1.75m	23-Sep-20		Soil								

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ ☑

Are samples for human consumption/ use? ☐ ☑

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
12	15	3					

SHIPMENT RELEASE (client use)		
Released by: Kristina Schmidt	Date: 23 September 2020	Time:

INITIAL SHIPMENT RECEPTION (lab use only)		
Received by:	Date: Sept 28/20	Time: 16:20

FINAL SHIPMENT RECEPTION (lab use only)		
Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here
(lab use only)

COC Number: 20 -

Report To	Contact and company name below will appear on the final report
Company:	Tetra Tech
Contact:	Kristina Schmidt, Erin O'Brien
Phone:	867-689-5104
	Company address below will appear on the final report
Street:	61 Wasson Place
City/Province:	Whitehorse, YT
Postal Code:	Y1A0H7
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	Tetra Tech
Contact:	EBA.Accounts.Payable@tetratech.com

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Kristina.Schmidt@tetratech.com
Email 2	Erin.Obrien@tetratech.com
Email 3	EBA.labdata@tetratech.com
Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	EBA.Accounts.Payable@tetratech.com
Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:		AFE/Cost Center:	PO#
Job #:	704-ENW.PENW03102-01	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):		ALS Contact:	Sampler:

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E1 - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 - 200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	LEPH/HEP/PAH	BTEX/VPH	VOC	Metals (dissolved)	Glycols	SAMPLES ON HOLD	Sample is hazardous (please provide further details	NUMBER OF CONTAINERS
	TP20-05-0.2m	23-Sep-20		Soil								
	TP20-05-0.75m	23-Sep-20		Soil								
	TP20-05-1.25m	23-Sep-20		Soil	R			R				
	TP20-03-0.5m	23-Sep-20		Soil				R				
	TP20-03-1.3m	23-Sep-20		Soil	R	R	R	R	R			
	TP20-03-1.6m	23-Sep-20		Soil								
	TP20-08-0.5m	23-Sep-20		Soil	R			R				
	TP20-08-1.5m	23-Sep-20		Soil								
	TP20-08-1.7m	23-Sep-20		Soil		R	R					
	TP00-03-1.3m	23-Sep-20		Soil	R			R				

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ ☐

Are samples for human consumption/ use? ☐ ☐

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Kristina Schmidt	Date: 23 September 2020	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here
(lab use only)

COC Number: 20 -

Report To	Contact and company name below will appear on the final report
Company:	Tetra Tech
Contact:	Kristina Schmidt, Erin O'Brien
Phone:	867-689-5104
	Company address below will appear on the final report
Street:	61 Wasson Place
City/Province:	Whitehorse, YT
Postal Code:	Y1A0H7
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	Tetra Tech
Contact:	EBA.Accounts.Payable@tetratech.com

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Kristina.Schmidt@tetratech.com
Email 2	Erin.Obrien@tetratech.com
Email 3	EBA.labdata@tetratech.com
Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	EBA.Accounts.Payable@tetratech.com
Email 2	

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days)
- 4 day [P4-20%] ☐
- 3 day [P3-25%] ☐
- 2 day [P2-50%] ☐

EMERGENCY
- 1 Business day [E1 - 100%] ☐
- Same Day, Weekend or Statutory holiday [E2 - 200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:		AFE/Cost Center:	PO#
Job #:	704-ENW.PENW03102-01	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):		ALS Contact:	Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	LEPH/HEP/PAH	BTEX/VPH	VOC	Metals (dissolved)	Glycols	SAMPLES ON HOLD	Sample is hazardous (please provide further details	NUMBER OF CONTAINERS
	MW20-01	25-Sep-20		Water	R	R	R	R	R			
	MW20-02	25-Sep-20		Water	R	R	R	R	R			
	MW20-03	25-Sep-20		Water	R	R	R	R	R			
	DUP	25-Sep-20		Water	R	R	R	R	R			
	FB	25-Sep-20		Water								

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ ☐

Are samples for human consumption/ use? ☐ ☐

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Kristina Schmidt	Date: 23 September 2020	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 20 -

Report To	Contact and company name below will appear on the final report
Company:	Tetra Tech
Contact:	Kristina Schmidt, Erin O'Brien
Phone:	867-689-5104
	Company address below will appear on the final report
Street:	61 Wasson Place
City/Province:	Whitehorse, YT
Postal Code:	Y1A0H7
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	Tetra Tech
Contact:	EBA.Accounts.Payable@tetratech.com

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Kristina.Schmidt@tetratech.com
Email 2	Erin.Obrien@tetratech.com
Email 3	EBA.labdata@tetratech.com
Invoice Distribution	
Select Invoice Distribution:	☐ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	EBA.Accounts.Payable@tetratech.com
Email 2	

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Busines ☐ | Same Day ☐ | 200% (Lab

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level s

Environmental Division Whitehorse

Work Order Reference WR2000970

Telephone : +1 867 668 8689

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:		AFE/Cost Center:	PO#
Job #:	704-ENW.PENW03102-01	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	

ALS Lab Work Order # (lab use only): **ALS Contact:** Jesse **Sampler:** KS

Analysis — Indicate Filtered (F), Preserved (P) or Filtered

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	LEPH/HEP/PAH	BTEX/VPH	VOC	Metals (dissolved)	Glycols	SAMPLES ON HOLD	Sample is hazardous (pl	NUMBER OF CONTAINERS
	TP20-01-0.5m	23-Sep-20		Soil	R			R				
	TP20-01-1.0m	23-Sep-20		Soil		R						
	TP20-01-1.75m	23-Sep-20		Soil								
	TP20-04-0.5m	23-Sep-20		Soil								
	TP20-04-1.25m	23-Sep-20		Soil	R	R		R				
	TP20-04-2.0m	23-Sep-20		Soil								
	TP20-09-0.5m	23-Sep-20		Soil	R			R				
	TP20-09-1.25m	23-Sep-20		Soil		R						
	TP20-09-1.6m	23-Sep-20		Soil								
	TP20-07-0.3m	23-Sep-20		Soil	R	R	R	R				
	TP20-07-1.0m	23-Sep-20		Soil								
	TP20-07-1.75m	23-Sep-20		Soil								

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ ☑

Are samples for human consumption/ use? ☐ ☑

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ | SIF Observations Yes ☐ No ☐

Ice Packs ☑ Ice Cubes ☐ | Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
12	15	3		10			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Kristina Schmidt	Date: 23 September 2020	Time:	Received by:	Date: Sept 28/20	Time: 16:20	Received by:	Date: SEP 30 2020	Time: 3:15

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ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 20 -

Report To	Contact and company name below will appear on the final report
Company:	Tetra Tech
Contact:	Kristina Schmidt, Erin O'Brien
Phone:	867-689-5104
	Company address below will appear on the final report
Street:	61 Wasson Place
City/Province:	Whitehorse, YT
Postal Code:	Y1A0H7
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	Tetra Tech
Contact:	EBA.Accounts.Payable@tetratech.com

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Kristina.Schmidt@tetratech.com
Email 2	Erin.Obrien@tetratech.com
Email 3	EBA.labdata@tetratech.com

Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	EBA.Accounts.Payable@tetratech.com
Email 2	

Project Information	
ALS Account # / Quote #:	
Job #:	704-ENW.PENW03102-01
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (lab use only): | **ALS Contact:** | **Sampler:**

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E1 - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 - 200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	LEPH/HEP/PAH	BTEX/VPH	VOC	Metals (dissolved)	Glycols	SAMPLES ON HOLD	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS
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	TP20-05-0.75m	23-Sep-20		Soil								
	TP20-05-1.25m	23-Sep-20		Soil	R			R				
	TP20-03-0.5m	23-Sep-20		Soil				R				
	TP20-03-1.3m	23-Sep-20		Soil	R	R	R	R	R			
	TP20-03-1.6m	23-Sep-20		Soil								
	TP20-08-0.5m	23-Sep-20		Soil	R			R				
	TP20-08-1.5m	23-Sep-20		Soil								
	TP20-08-1.7m	23-Sep-20		Soil		R	R					
	TP00-03-1.3m	23-Sep-20		Soil	R			R				

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ ☐

Are samples for human consumption/ use? ☐ ☐

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ | SIF Observations Yes ☐ No ☐

Ice Packs ☑ Ice Cubes ☐ | Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C					FINAL COOLER TEMPERATURES °C				
					10				

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Kristina Schmidt	Date: 23 September 2020	Time:	Received by:	Date:	Time:	Received by:	Date: SEP 30 2020	Time: 3:15

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Chain of Custody (COC) / Analytical Request Form

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COC Number: 20 -

Report To	Contact and company name below will appear on the final report
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Contact:	Kristina Schmidt, Erin O'Brien
Phone:	867-689-5104
	Company address below will appear on the final report
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Postal Code:	Y1A0H7
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	Tetra Tech
Contact:	EBA.Accounts.Payable@tetratech.com

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Kristina.Schmidt@tetratech.com
Email 2	Erin.Obrien@tetratech.com
Email 3	EBA.labdata@tetratech.com
Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	EBA.Accounts.Payable@tetratech.com
Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:		AFE/Cost Center:	PO#
Job #:	704-ENW.PENW03102-01	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	

ALS Lab Work Order # (lab use only): | **ALS Contact:** | **Sampler:**

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

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PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E1 - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 - 200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

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Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	LEPH/HEP/PAH	BTEX/VPH	VOC	Metals (dissolved)	Glycols	SAMPLES ON HOLD	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS
	MW20-01	25-Sep-20		Water	R	R	R	R	R			
	MW20-02	25-Sep-20		Water	R	R	R	R	R			
	MW20-03	25-Sep-20		Water	R	R	R	R	R			
	DUP	25-Sep-20		Water	R	R	R	R	R			
	FB	25-Sep-20		Water								

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ ☐

Are samples for human consumption/ use? ☐ ☐

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ | SIF Observations Yes ☐ No ☐

Ice Packs ☑ Ice Cubes ☐ | Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				10			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Kristina Schmidt	Date: 23 September 2020	Time:	Received by:	Date:	Time:	Received by:	Date: SEP 30 2020	Time: 3:45

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