

Metrotower II – Suite 2100
4720 Kingsway
Burnaby, BC V5H 4N2
Canada
T +1.604.684.3282
F +1.604.684.3292
www.jacobs.com

Subject Waste Discharge Authorization Sampling and Analysis for the BC Rail Site

Project Name Eagle Mountain – Woodfibre Gas Pipeline Project (EGP Project)

Attention Ignacio Calvo Gonzalez, FortisBC Energy Inc. (FortisBC)

From Jacobs Consultancy Canada Inc. (Jacobs)

Date September 1, 2022

Copies to Ilona Berbekar, FortisBC

1. Introduction

The EGP Project involves the construction of approximately 47 kilometres (km) of 24-inch outside diameter pipeline, including a 9-km tunnel (EGP Tunnel) from the BC Rail Properties Ltd. (BC Rail Site) to the proposed Woodfibre Liquefied Natural Gas Ltd. (WLNG) production facility (WLNG Site) in Squamish, BC. The EGP Project will expand FortisBC's existing natural gas transmission system to supply natural gas to the proposed WLNG Site, located southwest of Squamish, BC.

1.1 Water Sources

Water will be generated at the BC Rail Site during construction activities of the EGP Tunnel, including water from precipitation, groundwater generated during construction, and industrial water from drilling, grouting, and slurry panel installation (MJA 2020). The BC Rail Site location will have a water treatment plant to meet the BC Approved Water Quality Guidelines (BC ENV 2021) as detailed in Appendix A, and BC Oil and Gas Commission (OGC) criteria.

1.2 Existing Groundwater Quality

The BC Rail Site is part of a larger area owned by BC Rail (Property) that is the subject of a Risk-Based Certificate of Compliance issued May 16, 2016. The EGP Project is leasing a portion of the Property at the south end as shown on Figure 1. There were four areas of environmental concern (AEC) identified in the area where the BC Rail Site is located and an additional two AEC located north and upgradient to the BC Rail Site which are also shown on Figure 1. The constituents of concern identified in soil and groundwater at the AEC (numbers 13, 26, 27, 28 (A & C), 31 (D, E, F & G)) are presented in the following table.

Table 1-1. 2016 Certificate of Compliance Constituents of Concern in and around the BC Rail Site

AEC	CONSTITUENTS OF CONCERN	
	SOIL	GROUNDWATER
13	LEPH, HEPH, VPH, arsenic, barium, cadmium, chromium, copper, lead, molybdenum, selenium, zinc	LEPHw, naphthalene, phenanthrene, ethylbenzene, vinyl chloride, trichloroethylene, cadmium, cobalt, copper, magnesium, zinc
26	LEPH	-
27	LEPH, HEPH, chromium	LEPHw, ethylbenzene
28A	pentachlorophenol	-
28C	pentachlorophenol	-
31D	-	cadmium, copper, zinc
31E	barium, copper, lead, zinc	-
31F	arsenic, cadmium, chromium, copper, lead, tin	-
31G	LEPH, chromium, copper, lead	-
NOTES: LEPH = light extractable petroleum hydrocarbons, VPH – volatile petroleum hydrocarbons HEPH = heavy extractable petroleum hydrocarbons, w = in water		

Quarterly baseline groundwater quality monitoring in the area of the BC Rail Site was conducted from 2020 to 2021. A total of 11 wells were sampled during the program. The results of the water sampling were compared to the Approved and Working BC Water Quality Guidelines (BC WQG).

The initial investigation results are presented in the appended letter report "Eagle Mountain-Woodfibre Gas Pipeline Project – Soil and Groundwater Investigation on the BC Rail Property in Squamish, BC" dated February 10, 2021, prepared by Jacobs. The groundwater monitoring results are summarized in the appended letter report "Eagle Mountain-Woodfibre Gas Pipeline Project – Comparing Annual Groundwater Monitoring Results to Regulatory Conditions in 2021" dated December 17, 2021, prepared by Jacobs.

The groundwater monitoring program confirmed the presence of select total metals (beryllium, cobalt, chromium, iron, and zinc) and various polycyclic aromatic hydrocarbons (PAHs) at concentrations greater than the current BC WQG. PAH concentrations exceeding the guidelines were only reported at one well - MW06-34. Total metal concentrations exceeding the BC WQGs were detected at all monitoring wells during one or more sampling events. Figures 1, 2 and 3 in Appendix C show the locations of the wells and the organic and inorganic water results, respectively. Tables 1 and 2 in Appendix C show the analytical results compared to the BC Freshwater Aquatic Standards and the BC WQG.

1.3 Target Parameters for Discharge Water Monitoring

The following parameters are identified as the target BC Rail Site specific parameters of concern.

Table 1-2. Target Parameters for Discharge Water based on Previous Groundwater Sampling Events
TARGET PARAMETERS OF CONCERN FOR DISCHARGE WATER
Inorganic Parameters
arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, molybdenum, selenium, tin, zinc
Organic Parameters
acenaphthene, acridine, anthracene, benzo(a)anthracene, benzo(a)pyrene, chrysene, ethylbenzene, fluoranthene, fluorene, naphthalene, phenols, phenanthrene, pyrene

1.4 Sampling

Water quality sampling (for lab analysis and field monitoring) will be conducted prior to discharge at the BC Rail Site to verify effective treatment of the water and compliance with the Waste Discharge Authorization from the BC OGC. Water quality monitoring (field monitoring and visual observations) will be conducted prior to discharge, throughout discharge and post discharge. All water quality sampling will be conducted according to the B.C. Field Sampling Manual – Part E (BC MOE 2013).

1.5 Sampling Plan

- Initial discharge water will be sampled for all parameters in Table 2-1 prior to release to verify compliance with the Waste Discharge Authorization from the BC OGC
- During water discharge, treated water will be sampled on a frequency as outlined in Table 2-1, as well as on an as-needed basis. Refer to Appendix A for water quality parameter guidelines.
- Treated water cannot be released to the environment unless it meets discharge parameter guidelines (see Appendix A). Contractor will continue to treat the water until it meets discharge parameters.
- Lab samples will be taken with sample containers provided by the lab. Samples will be kept at the correct temperature and brought to the lab within the specified holding time, as per the instructions.
- Sampling protocols will follow the B.C. Field Sampling Manual - Part E Water and Wastewater Sampling (BC MOE 2013).
- The standardized field protocol in the B.C. Field Sampling Manual (BC MOE 2013) requires a minimum of 10 percent of the samples to be replicate samples and an additional 10 percent to be blank samples, both of which are, to be submitted to the lab as part of the quality control program.
- Field equipment will be calibrated as per factory instructions.
- Water samples will be collected at the outlet of the treatment facility on the BC Rail Site.

1.6 Methodology

The sampling parameters chosen reflect the target parameters listed in Section 1.3, identified from the background information (Certificate of Compliance and recent groundwater monitoring and analytical test results), known geological influences in the area (sulfate bearing rock) and additional parameters based on proposed usage of the Site as staging and construction area for the pipeline.

1.7 Sampling Frequency and Parameters

Frequent testing and monitoring will be conducted to verify that the water treatment system is working properly. Initial monitoring will be done on a more frequent basis (“stabilization of parameters” frequency) until three consecutive rounds of sampling results are obtained that are below the BC WQG which indicates that the system is working as per design specifications. Once the system has been confirmed, routine sampling frequency will be followed, (see Table 2-1).

If during routine sampling, there is an exceedance, the sampling frequency for that parameter will revert to the stabilization frequency as described in Table 2-1.

See Table 2-1 for a description of the sampling frequency and parameters to be tested for the treated water.

Table 2-1. Water Sampling Parameters and Frequency ^a

Parameter	Sampling Frequency	
	Stabilization of Parameters ¹	Routine Sampling
<i>Anions and Nutrients</i>		
Chloride (chloride ion)	Every 2 weeks	monthly
Total residual chlorine (TRC) or Cl-produced oxidants (CPO)	Twice per week	weekly
Sulphate (SO ₄ -2)	Every 2 weeks	Monthly
Sulphide	Every 2 weeks	Monthly
<i>Glycols</i>		
Ethylene glycol	Twice per week	Weekly
Propylene glycol, 1,2-	Twice per week	Weekly
<i>Organics - Polycyclic Aromatic Hydrocarbons</i>		
acenaphthene	Twice per week	Weekly
acridine	Twice per week	Weekly
anthracene	Twice per week	Weekly
benzo(a)anthracene	Twice per week	Weekly
benzo(a)pyrene	Twice per week	Weekly
chrysene	Twice per week	Weekly

Table 2-1. Water Sampling Parameters and Frequency ^a

Parameter	Sampling Frequency	
	Stabilization of Parameters ¹	Routine Sampling
fluoranthene	Twice per week	Weekly
fluorene	Twice per week	Weekly
naphthalene	Twice per week	Weekly
phenanthrene	Twice per week	Weekly
pyrene	Twice per week	Weekly
Organics - Volatile Organic Compounds		
Benzene	Twice per week	Weekly
Ethylbenzene (C ₈ H ₁₀)	Twice per week	Weekly
Monochlorobenzene	Twice per week	Weekly
Styrene	Twice per week	Weekly
Toluene	Twice per week	Weekly
Xylene (C ₆ H ₄ (CH ₃) ₂)	Twice per week	Weekly
Organics – Others		
Phenols	Twice per week	Weekly
Organic carbon	Twice per week	Weekly
Physical Parameters		
pH ^b	Daily	Daily
Dissolved oxygen ^b	Daily	Daily
Salinity ^b	Daily	Daily
Temperature ^b	Daily	Daily
Dissolved Metals		
Aluminum (pH dependent)	Weekly	Monthly
Cadmium	Twice per week	Weekly
Iron	Twice per week	Weekly
Total Metals		
Arsenic	Weekly	Monthly
Barium	Weekly	Monthly
Beryllium	Weekly	Monthly
Cadmium	Weekly	Monthly

Table 2-1. Water Sampling Parameters and Frequency ^a

Parameter	Sampling Frequency	
	Stabilization of Parameters ¹	Routine Sampling
Chloride	Weekly	Monthly
Chromium- III	Weekly	Monthly
Chromium- IV	Weekly	Monthly
Cobalt	Weekly	Monthly
Copper	Weekly	Monthly
Iron	Weekly	Monthly
Lead total	Weekly	Monthly
Molybdenum	Weekly	Monthly
Nickel (hardness dependent)	Weekly	Monthly
Selenium	Weekly	Monthly
Zinc (hardness dependent)	Weekly	Monthly

¹ Frequency to be used during initial system set up until stabilization is achieved (three consecutive rounds of sampling that meet the BC WQG) **OR** to be applied on a parameter by parameter basis during routine sampling when any parameter is found to exceed the BC WQG.

^a Refer to the Appendix A, Water Quality Objectives - Fresh and Marine Aquatic Life for parameter concentration guidelines.

^b Field Parameters.

1.7.1 Materials and Equipment

Materials and equipment for lab samples will be obtained from a lab (including bottles, additives, and filters). Field water quality parameters will be measured by a calibrated field meter.

1.8 Recordkeeping

FortisBC (or its Contractor) will document and retain all records from sampling and monitoring of water discharge, including:

- Sampling logs
- Photos
- Field and lab sample results
- Field notes
- Field Meter calibration log
- Reports
- Quantity and rate of water discharge

1.9 Closing

If you have any questions or concerns regarding this information, do not hesitate to contact Lori Larsen at 778.984.6404 or via email at lori.larsen@jacobs.com.

Sincerely
Jacobs Consultancy Canada Inc.

Written by:



Lori Larsen, P.Ag., CSAP
Senior Technical Consultant

2. References

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Appendix A
Water Quality Objectives - Fresh and Marine Aquatic
Life

Table A-1. Water Quality Objectives - Fresh and Marine Aquatic Life

Approved and Working Water Quality Guidelines (WQG) ^{1, 2, 3}																		
PARAMETERS		SHORT TERM ACUTE ⁴					LONG TERM CHRONIC ⁵											
		Surface Water Freshwater Aquatic Life			Marine	Units	Surface Water Freshwater Aquatic Life			Marine	Units							
Anions and Nutrients																		
Alkalinity (total CaCO ₃)		-			-	mg/L	Default is 10	highly sensitive to acid inputs < 10 ^{6A} moderately sensitive to acid inputs 10 to 20 ^{6B} low sensitivity to acid inputs > 20 ^{6C}			-	mg/L						
Chlorate		-			-	mg/L	≤ 30			≤ 5	mg/L							
Chloride (chloride ion)		600			Human activities should not cause the chloride of marine and estuarine waters to fluctuate by more than 10% of the natural chloride expected at that time and depth.	mg/L	150			Human activities should not cause the chloride of marine and estuarine waters to fluctuate by more than 10% of the natural chloride expected at that time and depth.	mg/L							
Total residual chlorine (TRC) or Cl-produced oxidants (CPO)	Short-term Controlled Intermittent Exposure ^{7A}	≤100			≤ 40	µg/L	≤100			≤ 40	µg/L							
	Controlled Intermittent Exposure Calculation ^{7B}	1,074 (duration in minutes) ^{-0.74}			20.36 (duration in minutes) ^{-0.4}	µg/L	1,074 (duration in minutes) ^{-0.74}			20.36 (duration in minutes) ^{-0.4}	µg/L							
	Continuous Exposure ^{7C}	2			3	µg/L	2			3	µg/L							
Cyanide - weak acid dissociable - unfiltered		10			1	µg/L	≤ 5 (30 day average)			1	µg/L							
Fluoride		Hardness dependent H = 10 standard is 0.4 H > 10 to 385 mg/L calculate criteria WQG = LC ₅₀ = [-51.73 + 92.57 log ₁₀ (hardness)] × 0.01			1.5	mg/L	-			-	mg/L							
Nitrate		32.8 reported as N.			-	mg/L	3 reported as N			3.7 reported as N	mg/L							
Nitrite	Chloride mg/L	< 2	2 to 4	4 to 6	6 to 8	8 to 10	> 10	-	mg/L	Chloride mg/L	< 2	2 to 4	4 to 6	6 to 8	8 to 10	> 10	-	mg/L
	WQG =	0.06	0.12	0.18	0.24	0.3	0.6	-	mg/L	WQG =	0.02	0.04	0.06	0.08	0.1	0.2	-	mg/L
Sulphate (SO ₄ -2)		-			-	mg/L	Water hardness (mg/L CaCO ₃) Very soft (0-30) Soft to moderately soft (31-75) Moderately soft/hard to hard (76-180) Very hard (181-250) > 250			128 218 309 429	-	mg/L						
Sulphide ⁸		-			-	µg/L	2			-	µg/L							
Glycols ⁹																		
Ethylene glycol		-			-	mg/L	192			-	mg/L							
Propylene glycol, 1,2-		-			-	mg/L	500			-	mg/L							

Table A-1. Water Quality Objectives - Fresh and Marine Aquatic Life

Approved and Working Water Quality Guidelines (WQG) ^{1, 2, 3}							
PARAMETERS	SHORT TERM ACUTE ⁴			LONG TERM CHRONIC ⁵			
	Surface Water Freshwater Aquatic Life	Marine	Units	Surface Water Freshwater Aquatic Life	Marine	Units	
Organics - Polycyclic Aromatic Hydrocarbons ⁹							
Acenaphthene	-	6	ug/L	6	-	ug/L	
Acridine	0.05	-	µg/L	3	-	µg/L	
Anthracene	0.1	4	µg/L	-	-	µg/L	
Benz[a]anthracene	0.1	-	µg/L	0.1	-	µg/L	
Benzo[a]pyrene	-	-	µg/g	0.01	0.01	µg/g	
Chrysene	-	0.1	µg/L	-	0.1	µg/L	
Fluoranthene	0.2	-	µg/L	4.0	-	µg/L	
Fluorene	-	-	µg/L	12	12	µg/L	
Methylated naphthalene	-	-	µg/L	-	1	µg/L	
Naphthalene	1	-	µg/L	1	1	µg/L	
Phenanthrene	0.3	-	µg/L	-	-	µg/L	
Pyrene	0.02	-	µg/L	-	-	µg/L	
Quinoline	-	-	µg/L	3.4	-	µg/L	
Organics - Volatile Organic Compounds ⁹							
Benzene	40	110	µg/L	40	110	µg/L	
Ethylbenzene (C ₈ H ₁₀)	-	-	mg/L	0.2	0.25	mg/L	
Monochlorobenzene	-	-	µg/L	1.3	25	µg/L	
Styrene	-	-	µg/L	72	-	µg/L	
Toluene	-	-	µg/L	0.5	-	µg/L	
Xylene (C ₆ H ₄ (CH ₃) ₂)	-	-	mg/L	0.3	-	mg/L	
Organics - Others ⁹							
Phenols	4-hydroxyphenol (hydroquinone, quinol)	4.5	-	µg/L	-	-	µg/L
	3-hydroxyphenol (resorcinol)	12.5	-	µg/L	-	-	µg/L
	All other phenols	50	-	µg/L	-	-	µg/L
Nitrogen as ammonia	See Table 26C ¹		See Table 26E ¹	-	See Table 26D ¹	See Table 26F ¹	-
Organic carbon	-	-	-	Dissolved:	Long-term median within 20% of background median	-	-
	-	-	-	Total:	Long-term median within 20% of background median	-	-

Table A-1. Water Quality Objectives - Fresh and Marine Aquatic Life

Approved and Working Water Quality Guidelines (WQG) ^{1, 2, 3}							
PARAMETERS	SHORT TERM ACUTE ⁴			LONG TERM CHRONIC ⁵			
	Surface Water Freshwater Aquatic Life	Marine	Units	Surface Water Freshwater Aquatic Life	Marine	Units	
Physical Parameters							
Dissolved oxygen (DO)	≥ 5		-	mg/L O ₂	≥ 8	-	mg/L O ₂
pH	See Table 30 ¹		7.0 to 8.7	unitless	See Table 30 ¹	7.0 to 8.7	unitless
Salinity	-		-	-	-	+/- 10% change	-
Temperature	Streams with bull trout and/or dolly varden	Short-term daily temperature is 15. Short-term incubation temperature is 10. Minimum incubation temperature is 2. Short-term spawning temperature is 10.		+/- 1 degree over natural ambient temperature.	°C	-	-
	Streams with known fish distribution	± 1 change beyond optimum temperature range as shown in Table 42B ¹ for each life-history phase of the most sensitive salmonid species present. Hourly rate of change not to exceed 1.				-	-
	Streams with unknown fish distribution	Mean minimum weekly temperature = 18. (Short-term daily temperature = 19). Hourly rate of change not to exceed 1. Short-term incubation temperature = 12 (in spring and fall).				-	-
	Lakes and impoundments	± 1 change from ambient background.				-	-
Total dissolved solids	During clear flows or in clear waters	-		mg/L	Change from background of 5 mg/L at any one time.		mg/L
	During high flows or in turbid waters	Change from background of 10 mg/L at any time when background is 25 - 100 mg/L. Change from background of 10% when background is > 100 mg/L.		mg/L	Change from background of 20 mg/L when background is < 100 mg/L.		mg/L
Dissolved Metals ¹⁰							
Aluminum	Calculated value (use pH of sample [e=2.71828]) = e[1.209-2.426(pH)+0.286(pH) ²]		-	mg/L	Calculated value (use median of sample pH over averaged period [e=2.71828]) = e[1.6-3.327(median pH)+0.402(median pH) ²]	-	mg/L
Aluminum <u>dissolved</u> and pH < 6.5			-			-	
Aluminum <u>dissolved</u> and pH ≥ 6.5	0.1		-	mg/L	0.05	-	mg/L
Cadmium	Calculated value (use water hardness [mg/L CaCO ₃ between 7-455 mg/L]) = e[1.03 x ln (hardness)-5.274]		-	µg/L	Calculated value (use water hardness [mg/L CaCO ₃ between 3.4-285 mg/L]) = e[0.736 x ln (hardness)-4.943]	-	µg/L
Iron	0.35		-	mg/L	-	-	mg/L

Table A-1. Water Quality Objectives - Fresh and Marine Aquatic Life

Approved and Working Water Quality Guidelines (WQG) ^{1, 2, 3}						
PARAMETERS	SHORT TERM ACUTE ⁴			LONG TERM CHRONIC ⁵		
	Surface Water Freshwater Aquatic Life	Marine	Units	Surface Water Freshwater Aquatic Life	Marine	Units
Total Metals ¹⁰						
Antimony (III)	-	-	µg/L	9	270	µg/L
Arsenic	5	12.5	µg/L	5	12.5	µg/L
Barium	1	-	mg/L	-	-	mg/L
Beryllium	-	-	µg/L	0.13	100	µg/L
Boron	-	-	mg/L	1.2	1.2	mg/L
Cadmium	-	-	-	-	-	-
Calcium	See alkalinity	See alkalinity	-	See alkalinity	See alkalinity	-
Chromium (total)	-	-	-	-	-	-
Chromium - III	-	-	µg/L	8.9	56	µg/L
Chromium - VI	-	-	µg/L	1	1.5	µg/L
Cobalt	110	-	µg/L	4	-	µg/L
Copper - total	Calculated using BC BLM ¹¹	3	µg/L	Calculated using BC BLM ¹¹	≤ 2	µg/L
Iron	1	-	mg/L	-	-	mg/L
Lead - total	Hardness ≤ 8 mg/L CaCO ₃	3	µg/L	-	≤ 2	µg/L
	Hardness > 8 mg/L CaCO ₃	Calculated value - hardness dependent > 8 - 360 mg/L CaCO ₃ WQG = e ^[1.273 ln (hardness) - 1.460]		140		
Lead - Tetra-ethyl lead	-	-	µg/L	0.0007	-	µg/L
Lead - Tetra-methyl lead	-	-	µg/L	0.0006	-	µg/L
Manganese - Total	Calculated value - hardnesses between 25-259 mg/L CaCO ₃ WQG ≤ 0.01102 hardness + 0.54	-	mg/L	Calculated value - hardnesses between 37-450 mg/L CaCO ₃ WQG ≤ 0.0044 hardness + 0.605	100 ug/L	mg/L
Mercury - Total	-	-	µg/L	WQG = 0.0001 / (MeHg/total Hg), where MeHg is mass (or concentration) of methyl mercury and total Hg is total mass (or concentration) of mercury in a given water volume When MeHg is ≤ 0.5% of total Hg, WQG = 0.02		µg/L
Molybdenum - Total	46	-	mg/L	7.6	-	mg/L
Nickel ^{3 & 13}	0 to ≤ 60 mg/L CaCO ₃	-	µg/L	25	-	µg/L
	60 - 120 mg/L CaCO ₃ ^{3 & 13}	-	µg/L	WQG (µg/L) = e ^{0.76[ln (hardness)]+1.06} where CaCO ₃ is in mg/L ^{3 & 13}		µg/L
	120 mg/L CaCO ₃ ¹³	-	µg/L	110	-	µg/L
	≥ 180 mg/L CaCO ₃ ¹³	-	µg/L	150	-	µg/L
Selenium	-	-	µg/L	2	2	µg/L
Silver	0.1 @ hardness ≤ 100 3 @ hardness > 100	3	µg/L	0.05 @ hardness ≤ 100 0.1 @ hardness > 100	1.5	µg/L
Thallium	-	-	µg/L	0.8	-	µg/L
Tin, tributyltin	-	0.0001	µg/L	0.008	0.001	µg/L
Uranium	-	-	µg/L	8.5	-	µg/L
Zinc	Water hardness ≤ 90 mg/L	33	µg/L	7.5	10	µg/L
	Water hardness > 90 mg/L	Calculated WQG = 33 + 0.75(hardness - 90) Where hardness is between 90-500 mg/L CaCO ₃	-	mg/L	Calculated WQG = 7.5 + 0.75 (hardness - 90) Where hardness is between 90-330 mg/L CaCO ₃	mg/L

Table A-1. Water Quality Objectives - Fresh and Marine Aquatic Life

Approved and Working Water Quality Guidelines (WQG) ^{1, 2, 3}							
PARAMETERS	SHORT TERM ACUTE ⁴			LONG TERM CHRONIC ⁵			
	Surface Water	Freshwater Aquatic Life	Marine	Units	Surface Water	Freshwater Aquatic Life	Marine

Footnotes:

- 1 Values from the *British Columbia Approved Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture - Guideline Summary - Water Quality Guideline Series, WQG-20* (BC Ministry of Environment and Climate Change Strategy 2021). https://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/waterquality/water-quality-guidelines/approved-wqgs/wqg_summary_aquaticlife_wildlife_agri.pdf
- 2 Values from the *British Columbia Working Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture* (BC Ministry of Environment and Climate Change Strategy, February 2021) https://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/waterquality/water-quality-guidelines/bc_env_working_water_quality_guidelines.pdf
- 3 Values adopted from the Canadian Council of Ministers of the Environment - Water Quality Guidelines for the protection of Aquatic Life
Set to protect against severe effects such as lethality (for example, LC₅₀) or other equivalent measures (for example, EC₅₀) to the most sensitive species and life stage over a defined short-term exposure period (for example, 96 hours).
- 4 A short-term maximum (i.e. acute) WQG is a level that should never be exceeded in order to meet the intended protection of the most sensitive species and life stage against severe effects such as lethality over a defined short term exposure period (e.g. 96 hrs). Short-term maximum WQGs are intended to assess risks associated with infrequent exposure events such as spills.
- 5 Intended to protect the most sensitive species and life stage against sublethal and lethal effects for indefinite exposures. An averaging period approach is used for these WQGs. This approach allows concentrations of a substance to fluctuate above and below the guideline provided that the short-term acute is never exceeded and the long-term chronic is met over the specified averaging period (for example, five samples in 30 days).
 - A Water body is highly sensitive to acid inputs (< 4 mg/L dissolved calcium).
 - B Water body is moderately sensitive to acid inputs (4-8 mg/L dissolved calcium).
 - C Water body has low sensitivity to acid inputs (> 8 mg/L dissolved calcium).
- 6
 - A For the maximum controlled intermittent exposure of aquatic life, the total duration of exposure in any consecutive 24-hour period should not exceed 2 hours, and is the threshold of short-term toxicity.
 - B The duration in controlled intermittent exposures, the exposure period (min), is the threshold of short-term toxicity.
- 7 C The continuous exposure average should be based on at least five samples equally spaced in time, and the averaging period should be not be less than 4 days or more than 30 days for fresh water, and not less than 2 hours or more than 30 days for marine or estuarine water. This is the threshold of long-term toxicity.
- 8 Total sulphide = dissolved H₂S + HS + acid-soluble metal sulphides present in suspended matter. Dissolved sulphide is that remaining after suspended solids have been removed after flocculation or settling. In aquatic environments, H₂S and HS are in equilibrium as H₂S = H⁺ + HS⁻. The unionized H₂S can be calculated from dissolved sulphide, the sample pH and the ionization constant (which is dependent on the sample water temperature) of H₂S.
- 9 Criterion for surface water samples analyzed for all organic substances presented are based on total substance concentrations. Any water sample to be analyzed for organic substances should not be filtered.
- 10 Criterion for surface water samples analyzed for inorganic parameters, metals, heavy metals, metalloids, and inorganic ions that are presented are based on total substance concentrations, unless otherwise stated. In addition, it is recommended that surface water samples being analyzed for heavy metals, metalloids, and inorganic ions should also be analyzed for dissolved substance concentrations.
- 11 Copper WQGs are dependent on the specific chemistry of the water body and can only be calculated using the BC BLM software. The BC BLM User's Manual 1 provides clear instruction of how the software should be used to calculate chronic and acute WQGs (BC ENV 2019b). Calculating a WQG using the full BC BLM requires 11 water chemistry parameters. To overcome the fact that these parameters are not always routinely measured, a simplified version of the BC BLM was included in the software and requires only four water chemistry parameters, which cannot be estimated: **temperature, DOC, pH, and hardness**. The remaining seven parameters are estimated based on the criteria described in Cu WQGs Technical Report (BC ENV 2019b).
- 12 Lead: No more than 20% (for example, one in five) of values in a 30-day period should exceed 1.5 times the long-term chronic WQG.
- 13 Nickel: For hardness values > 60 mg/L to ≤ 180 mg/L, the WWQG is calculated using an equation. $WQG (\mu\text{g/L}) = e^{(0.76[\ln(\text{hardness})] + 1.06)}$ where CaCO₃ is in mg/L - An online chronic guideline calculator can be found here: https://ccme.ca/en/chemical/139#_aq_fresh_concentration Accessed January 5, 2022.

Notes:

°C = degree(s) Celsius
 > = greater than
 < = less than
 ≤ = less than or equal to

µg/L = microgram(s) per litre
 BC = British Columbia
 CaCO₃ = calcium carbonate
 DOC = Dissolved Organic Carbon

H₂S = hydrogen sulfide
 Hg = mercury
 HS = hydrogensulfide
 MeHg = methylmercury

mg/L = milligram(s) per litre
 O₂ = oxygen
 TOC = total organic carbon
 WQG = Water Quality Guidelines

Table A-1. Water Quality Objectives - Fresh and Marine Aquatic Life

Approved and Working Water Quality Guidelines (WQG) ^{1, 2, 3}						
PARAMETERS	SHORT TERM ACUTE ⁴			LONG TERM CHRONIC ⁵		
	Surface Water Freshwater Aquatic Life	Marine	Units	Surface Water Freshwater Aquatic Life	Marine	Units

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Canadian Council of Ministers of the Environment (CCME) 2022 **Copper Water Quality Guideline for the Protection of Aquatic Life** - Accessed January 4, 2022.

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Appendix B
Letter Report "Eagle Mountain-Woodfibre Gas
Pipeline Project – Soil and Groundwater
Investigation on the BC Rail Property in Squamish,
BC" dated February 10, 2021

February 10, 2021

Todd Lewis
Environmental Lead - EGP
FortisBC Energy Inc.
16705 Fraser Highway
Surrey, BC V4N 0E8

Subject: Eagle Mountain-Woodfibre Gas Pipeline Project – Soil and Groundwater Investigation on the BC Rail Property in Squamish, BC

Dear Mr. Lewis,

Jacobs Consultancy Canada Inc. (Jacobs) has been providing environmental and permitting support for the FortisBC Energy Inc. (FortisBC) Eagle Mountain - Woodfibre Gas Pipeline Project (the Project) since 2012. As a part of the Project, FortisBC retained Jacobs to complete intrusive soil and groundwater investigation at the British Columbia (BC) Rail property located in Squamish, BC (the Site) to assess the stability of a pre-existing groundwater plume.

This technical memorandum (TM) provides an interim update on environmental investigation work completed on the Site to date.

1. Project Background and Objectives

In May 2016, the BC Ministry of Environment and Climate Change Strategy (BC ENV) issued a Risk-Based Certificate of Compliance (CofC) for the Site. The Risk-Based CofC allows for contamination in soil and groundwater which is above the BC *Contaminated Sites Regulation* (BC CSR) numerical standards to be left on the Site if the risk of leaving the contamination is deemed acceptable by BC ENV. For the CofC to be valid, the performance verification requirements, as listed in the AECOM Human Health and Ecological Risk Assessment report (AECOM 2016), must be maintained and upheld.

One of the performance verification requirements involves the existing groundwater plume at Area of Concern (AEC) 13. The risk assessment indicated that "Downward solute transport from the shallow to the deeper aquifers is at steady-state" was a critical assumption to the conclusion that groundwater substances will not migrate beyond the Site boundary (AECOM 2016). This indicates that the extent of the AEC 13 groundwater plume must remain stable in order to keep the CofC valid.

As the Project will have to dewater and dispose of groundwater, there is the potential to draw down the groundwater from the area south of AEC 13 groundwater plume which may induce the plume to move. The objective of the investigation was to determine the current status of the AEC 13 groundwater plume and the quality of the soils at various points between the AEC 13 groundwater plume and the general location of the tunnel.

2. Investigation Methodology

Investigation locations are shown on Figures 1 and 2, while the corresponding borehole logs are provided in Appendix A.

Borehole Drilling and Monitoring Well Installation

In total, ten boreholes were advanced at the Site between December 10 and 13, 2020. The boreholes were advanced using a sonic drill rig provided and operated by Mud Bay Drilling Co. Ltd. (Mud Bay). Three pre-existing wells were present on the Site: MW19-01, MW19-03, and MW06-34.

The ten boreholes were completed as groundwater monitoring wells (20MW-04 S/D to 20MW-10 S/D). The construction details of the installed monitoring wells are illustrated in the borehole logs provided in Appendix A. The wells were constructed from 50-millimetre (mm) diameter Schedule 40 polyvinyl chloride casing with threaded connections; well screens consisted of 0.051-mm slotted pipe 1.5 metre (m) (5 feet) in length. A filter pack consisting of 10/20 filter sand was installed around the well screen to approximately 0.15 m above the top of the screen. A bentonite seal was installed above the filter pack using 3/8-inch bentonite chips, extending to just shy of the ground surface. Wells were capped with a J-plug and with steel casing flush mounts. Table 1 provides a summary of investigation locations and monitoring well construction details.

Soil Sampling

Soil sampling was completed according to the BC ENV Technical Guidance 1 – Site Characterization and Confirmation Testing (BC MOE 2009). Soil samples were collected directly from core sleeves from the sonic drill rig. Soil samples were collected into 120-millilitre (mL) glass jars and were also extracted into methanol-preserved 40-mL glass vials using TerraCore samplers provided by the laboratory for volatile organic compounds (VOCs). Soil samples were immediately placed on ice in laboratory-provided coolers and taken directly to ALS Environmental Ltd (ALS). Additional sample volumes were collected simultaneously into soil bags to field-screen the headspace for volatile petroleum hydrocarbons (VPHs) using a MiniRAE 3000 photoionization detector (PID). PID readings are noted in the borehole logs provided in Appendix A.

Soil cuttings were deposited into clean 205 litre (45-gallon) steel drums provided by Mud Bay and disposed of at a permitted landfill. The bill of lading for the removal of the soil cuttings is provided in Appendix B.

Groundwater Well Development and Sampling

Well development was completed on December 11 to 13, 2020, for the ten newly installed wells after waiting a minimum of 24-hours after well installation. Existing wells MW19-01 and MW19-03 were also developed at this time while existing well MW06-34 was developed December 17, 2020. The wells were developed using 5/8-inch Waterra tubing fitted with surge blocks and foot-valves. Each well was surged for 10 minutes to promote flow of formation water through the filter pack. Surging was accomplished by rapidly oscillating the foot-valve and surge block along the length of the submerged well screen. Following surging, the surge blocks were removed, and each well was pumped rapidly to remove the suspended sediment in the well casing and to continue to promote groundwater flow through the filter pack. Each well was purged dry three times; before starting each water removal cycle, the water level was

allowed to recharge to the original static level. Water level measurements were recorded, using a water level meter, immediately before starting development at each well.

During the well development, a light non-aqueous phase liquid (LNAPL) was observed in groundwater monitoring well MW06-34. The LNAPL was observed as suspended small round semi-opaque globules within the water which did not coalesce into a layer at the top of the water. Water level/LNAPL measurements were collected on December 22, 2020 and January 14, 2021 from MW06-34 to evaluate trends in LNAPL thickness and groundwater levels. Measurements were taken with a dual phase probe with an electrical sounding device and accuracy of ± 0.3 centimeters, to determine the depth to water or LNAPL and oil-water interface. A sample of the LNAPL product was collected on December 22, 2020 prior to developing this well and the sample was submitted to ALS for laboratory analyses.

Groundwater sampling was conducted on December 16 and 17, 2020 and on January 14, 2021 for well MW06-34. Low-flow sampling was performed, using peristaltic pumps and dedicated high-density polyethylene tubing. During low-flow sampling, field parameters for pH, specific conductivity, temperature, oxidation-reduction potential, dissolved oxygen, and turbidity were monitored using multiparameter sondes with flow-through cells.

Regulatory Framework

Contaminated sites within BC are governed by the *Environmental Management Act (EMA)* (BC MOE 2003). The enabling regulation of the *EMA*, with respect to contaminated sites, is the *BC CSR*, including amendments up to *BC Regulation 13/2019* as of January 24, 2019 (BC ENV 2019).

The *BC CSR* prescribes numerical standards for soil, sediment, groundwater, and soil vapour quality for specific land, sediment, and groundwater uses. The applicable land use for the Site is Industrial Land (IL) use.

In addition, per Protocol 21 – Water Use Determination of the *BC CSR* (BC MOE 2017), Drinking Water (DW) standards are applied to all sites for future use, until further investigation proves otherwise. As such, DW standards were applied for both soil and groundwater at the Site.

Soil

Based on the *BC CSR* and the characteristics at the Site, soil analytical results were compared to *BC CSR* IL standards, including the following:

- Schedule 3.1.1 (Matrix Numerical Soil Standards):
 - Human Health Protection – Intake of contaminated soil and groundwater used for DW
 - Environmental Protection – Toxicity to soil invertebrates and plant and groundwater flow to surface water used by Aquatic Life for use of Freshwater (AWfw)
- Schedule 3.1.2 (Generic Numerical Soil Standards to Protect Human Health) for IL use
- Schedule 3.1.3 (Generic Numerical Soil Standards to Protect Ecological Health) for IL use

Groundwater

Based on the BC *CSR* and the characteristics at the Site, the applicable groundwater standards at the Site that apply to the Schedule 3.1.1 (Matrix Numerical Soil Standards) are for the protection of AWfw and for DW.

As per footnotes 43/44 and 46/47 found in BC *CSR* Schedule 3.2 – Generic Numerical Water Standards, the applicability of iron and manganese standards only apply to a site if certain listed Schedule 2 activities in the footnote have occurred at the site. The 2016 Update to Stage 1 Preliminary Site Investigation report describes several former activities associated with the Site that are included in Schedule 2 of the BC *CSR* (Piteau 2016a). As welding or machine shops (C-6) was noted as a Schedule 2 activity for the Site in this report, iron and manganese standards apply to the Site.

The interim background groundwater concentration for cobalt of 20 micrograms per litre ($\mu\text{g/L}$) (0.02 milligrams per litre) was applied. The BC ENV extended the cobalt interim background groundwater concentration that was established in October 2002 until regional Background Groundwater Estimates are incorporated into a revised Protocol 9. Concentrations exceeding the groundwater standard for cobalt were identified; however, for the requirements of the BC *CSR*, any concentrations in groundwater exceeding the standard however not exceeding the cobalt interim background groundwater concentration will not be considered as contaminated under Section 11 (3) of the BC *CSR*.

The Site is not used for irrigation purposes nor were livestock land uses identified in or around the Site. Irrigation and livestock standards have been determined not to be applicable at the Site.

3. Analytical Results

Soil

Laboratory analytical results were compared to:

- the maximum reported concentrations of the parameters which were listed on the 2016 CofC, 2016 BC *CSR* IL standards applicable at the time the CofC was issued for the Site; and
- the current BC *CSR* IL standards.

Analytical results are summarized in the following paragraphs and in Tables 2 and 3. Laboratory Certificates of Analyses are provided in Appendix C.

Select soil samples were submitted for laboratory analyses. Analytical tests included metals, light and heavy extractable petroleum hydrocarbons (LEPHs and HEPHs), polycyclic aromatic hydrocarbons (PAHs), VPHs, and VOCs. Sample concentrations were less than the applicable BC *CSR* IL standards.

The analytical results are further summarized with regards to reported laboratory detection limits and 2016 BC *CSR* IL standards as follows:

- Reported concentrations for LEPHs and HEPHs were also less than the reported laboratory detection limit.

- Except for soil samples from the 20MW-06 and 20MW-10 test locations, PAH concentrations were less than the laboratory detection limit and less than the applicable 2016 and current BC CSR IL standard. Detectable concentrations of select PAHs were identified at the following test locations (which were less than the most stringent applicable 2016 and current BC CSR IL standards):
 - 20MW-06: at 3.4 to 3.7 metres below ground surface (mbgs) (1-Methylnaphthalene, Fluorene, Phenanthrene) and at 6.4 to 6.7 mbgs (1-Methylnaphthalene, 2-Methylnaphthalene, Naphthalene, Phenanthrene).
 - 20MW-10: at 1.5 to 3.0 mbgs (2-Methylnaphthalene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b&j)fluoranthene, Benzo(b,j,k)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, Benzo[a]pyrene, Dibenz(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Naphthalene, Phenanthrene, Pyrene).
- VOC concentrations were less than the laboratory detection limit and less than the applicable 2016 and current BC CSR IL standard in all test locations except for the 20MW-10 test location. Detectable trichloroethene at 0.018 micrograms per gram ($\mu\text{g/g}$) was identified at 20MW-10 at 1.5 to 3.0 mbgs which was higher than the 2016 BC CSR IL standard of 0.015 $\mu\text{g/g}$, however less than the current BC CSR IL standard of 0.03 $\mu\text{g/g}$.

Groundwater

Laboratory analytical results were compared to the BC CSR applicable AWfw and DW standards and are summarized in the following paragraphs and in Tables 4 and 5. Historical analytical results for MW06-34 from the 2016 Confirmation Remediation report are also shown in Table 4. LNAPL analytical results are summarized in Table 6 for the MW06-34 sample (Piteau 2016b). The Laboratory Certificates of Analyses are provided in Appendix C.

The groundwater analytical results are summarized as follows:

- Dissolved metals concentrations are less than the applicable 2016 and current BC CSR standards with the following exceptions:
 - Dissolved arsenic concentration of 15.6 $\mu\text{g/L}$ in excess of the BC CSR DW standard of 10 $\mu\text{g/L}$ at MW06-34.
 - Dissolved cobalt at concentrations in excess of the BC CSR DW standard of 1 $\mu\text{g/L}$ at the following wells: 20MW-05, 20MW-06, 20MW-09, and 20MW-10S. All of these concentrations were less than the interim cobalt background standard of 20 $\mu\text{g/L}$.
 - Dissolved iron at concentrations in excess of the BC CSR DW standard of 6,500 $\mu\text{g/L}$ where measured in the groundwater from the following wells: 20MW-05, 20MW-06, 20MW-08, 20MW-10S/D, 20MW-11, MW19-01, MW19-03, and MW06-34.
 - Dissolved mercury concentration of 0.0062 $\mu\text{g/L}$ in excess of the 2016 BC CSR DW standard of 0.001 $\mu\text{g/L}$ was present in the groundwater from MW06-34; however, the dissolved mercury concentration was below the current BC CSR DW standard of 1 $\mu\text{g/L}$.
- All reported concentrations for Light Extractable Petroleum Hydrocarbons in Water (LEPHw), extractable petroleum hydrocarbons in water (EPHw), and VOC were less than the applicable 2016 and current BC CSR AWfw and DW standards.

- PAH concentrations are less than the applicable 2016 and current BC *CSR* standards with the following exceptions:
 - 1-Methylnaphthalene, Acenaphthene, Acridine, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Fluoranthene, Fluorene, Naphthalene Phenanthrene and Phenanthrene are present with concentrations in excess of the BC *CSR* DW standard in groundwater from MW06-34.

Analytical results of the LNAPL product collected from well MW06-34 can be summarized as follows:

- All reported concentrations for EPHw and VOC were less than the applicable 2016 and current BC *CSR* Aww and DW standards.
- Reported LEPHw concentration of 1,050 µg/L was greater than the 2016 BC *CSR* DW standard of 500 µg/L.
- PAH concentrations are less than the applicable 2016 and current BC *CSR* standards with the following exceptions:
 - 1-Methylnaphthalene, Acenaphthene, Acridine, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Fluoranthene, Fluorene, Phenanthrene, and Phenanthrene in excess of the current BC *CSR* DW standard.
- In addition to the analytical results, the following observations were made regarding analysis of the chromatograms:
 - The sample chromatogram consisted of several relatively small peaks between approximately C15 and C22. There are small peaks present beyond C22, however, these are appeared to be faint and may be due to interference or noise from the instrumental analysis.
 - Due to the similar hydrocarbon range and irregular peak patterns, the sample chromatogram resembles the creosote reference chromatogram. The sample chromatogram has noticeably less peaks, which may indicate a weathered creosote source. The sample chromatogram also resembles the water-washed diesel pattern, which could also indicate a weathered diesel or bio-diesel source.

4. Discussion of Analytical Results

The south leading edge of the groundwater plume at AEC 13 has not reached the location of wells that were installed downgradient from the 2016 delineated plume extent.

The soil and groundwater investigation have confirmed the presence in groundwater of select metals (arsenic, cobalt, iron, and mercury) and PAH at concentrations greater than the current BC *CSR* standards in the groundwater at the Site. In addition, the presence of LNAPL was noted in MW06-34.

A sample of the LNAPL mixed with water from MW06-34 was analyzed and observations made on the resulting chromatograms. The groundwater/LNAPL sample appears to be a hydrocarbon mixture that consists of weathered creosote and water-washed diesel. Historically, LNAPL contamination was identified at the Site in area of AEC 27, which is hydraulically up-gradient from the well MW06-34, refer to Figure 2.

The LNAPL in AEC 27 was associated with the former turn-around wye in the south end of the Site. The Piteau Confirmation of Remediation report, supporting the CofC, indicate LNAPL contamination was remediated using vacuum trucks to remove floating LNAPL off of surface water until dissolved concentrations within the water met the numerical BC *CSR* standards applicable at the time CofC was issued in 2016 (Piteau 2016).


As investigation of the full extent of LNAPL and groundwater contamination on the Site has not been completed, the interpretation of these results is limited. The management of the contaminated water is highly dependent on future construction requirements and the nature of the contaminants. What is not known at this time is the full lateral extent of LNAPL and groundwater contamination. This could be assessed during future investigation at the Site as needed and will inform the possible management options available.

5. Closing

This TM is intended for FortisBC's sole and exclusive use and is not for the benefit of any third-party and may not be distributed to, disclosed in any form to, used by, or relied upon by, any third-party without prior written consent of Jacobs, which consent may be withheld in its sole discretion.

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Regards
Jacobs Consultancy Canada Inc.



Jelena Sladojevic, M.Sc., EP
Project Manager



Lori C. Larsen, P.Ag., CSAP
Senior Contaminated Sites Specialist

6. References

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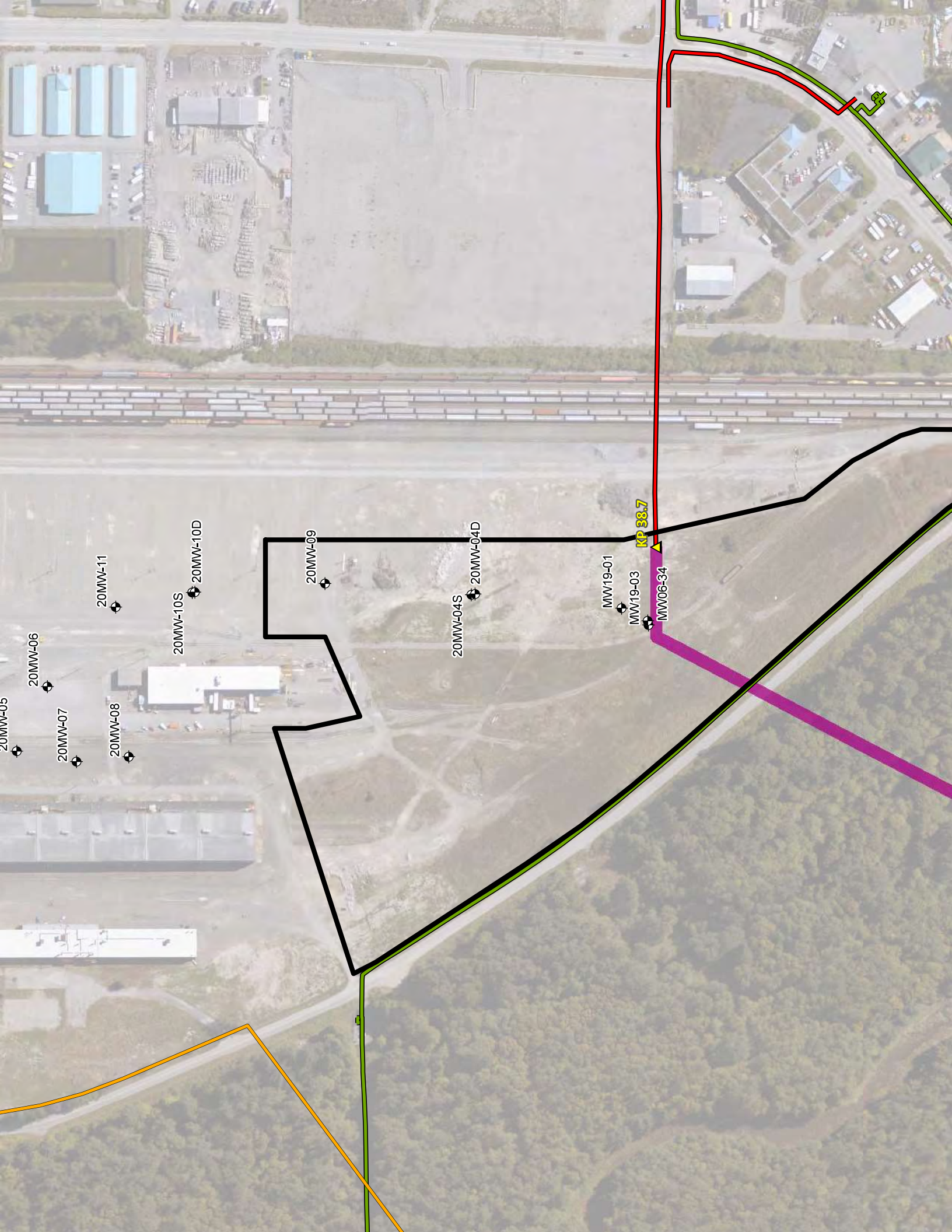
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Piteau Associates Engineering Ltd. (Piteau). 2016b. Confirmation of Remediation, Former Rail Yard Site – 39500 Government Road, Squamish, British Columbia. January.

Figures



20MW-05

20MW-06

20MW-07

20MW-11

20MW-08

20MW-10S

20MW-10D

20MW-09

20MW-04S

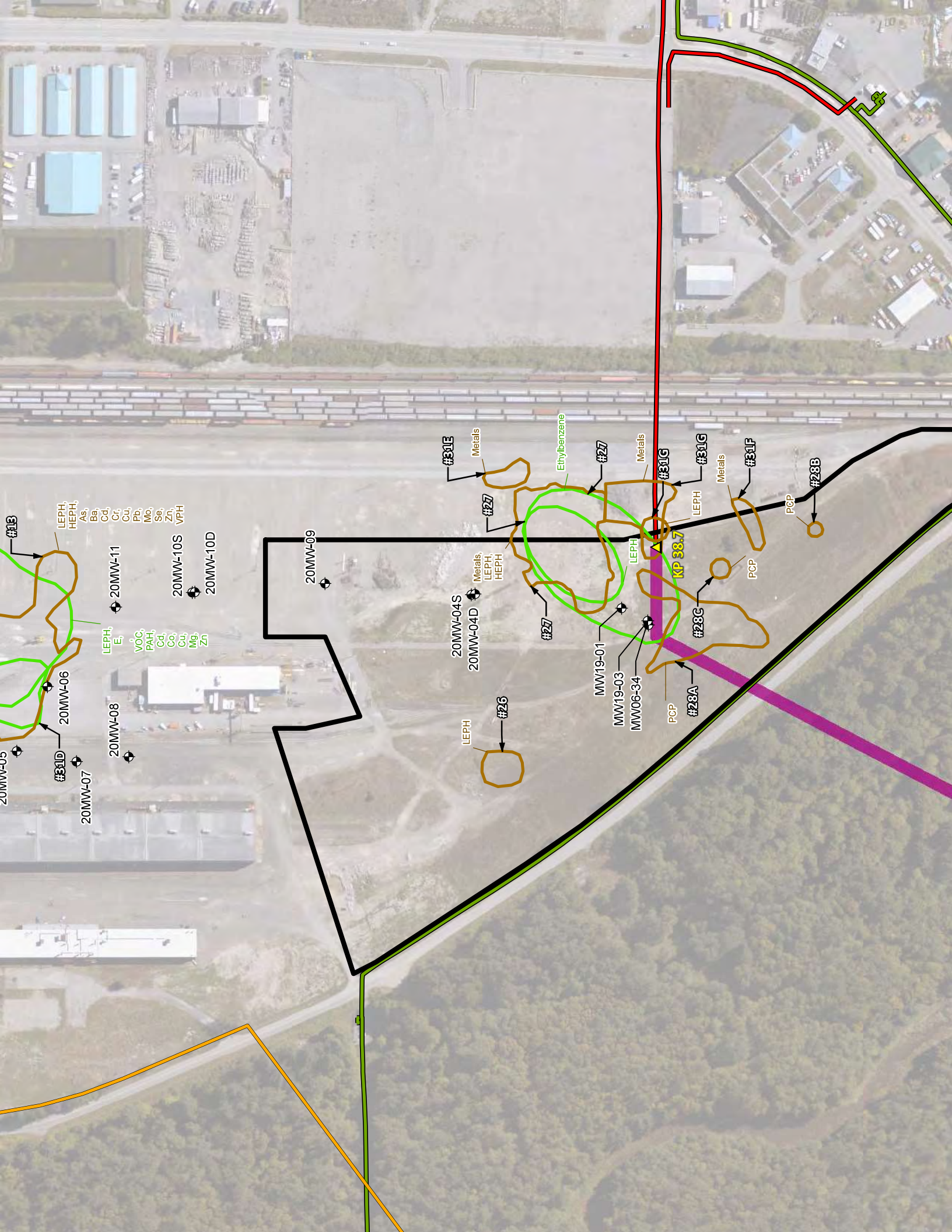
20MW-04D

MW19-01

MW19-03

MW06-34

KP 38.7



20MW-05
 #31D
 20MW-06
 20MW-07
 20MW-08
 20MW-09
 20MW-10S
 20MW-10D

LEPH, HEPH, As, Ba, Cd, Cr, Cu, Pb, Mo, Se, Zn, VPH
 LEPH, E, VOC, PAH, Co, Ni, Mg, Zn

#26
 LEPH
 #27
 Metals, LEPH, HEPH
 #27
 Ethylbenzene
 #27
 Metals
 #31E
 Metals
 #31G
 LEPH
 #31F
 Metals
 #28A
 PCP
 #28B
 PCP
 #28C
 PCP
 #28G
 PCP
 MW19-01
 MW19-03
 MW06-34
 KP 38.7
 20MW-04S
 20MW-04D

Tables

Table 1. Investigation Location Summary
Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

Location ID	Date	Drilled Depth (m)	Northing ^a (m)	Easting ^a (m)	Elevation ^b (masl)	Top of Casing (TOC) Elevation ^c (masl)	Well Depth (mbTOC)	Top of Screen (mbTOC)	Screen Length ^e (m)
20MW-04D ^d	12-Dec-2020	24.4	5507446.64	488471.48	4.17	4.85	15.27	13.45	1.82
20MW-04S ^d	10-Dec-2020	4.6	5507449.08	488471.01	4.17	4.91	6.38	4.56	1.82
20MW-05	12-Dec-2020	7.6	5507758.56	488364.47	4.67	4.58	7.22	5.40	1.82
20MW-06	12-Dec-2020	7.6	5507737.68	488408.38	5.11	5.04	7.25	5.43	1.82
20MW-07	12-Dec-2020	6.1	5507717.81	488357.37	4.52	4.43	5.93	4.41	1.52
20MW-08	12-Dec-2020	7.6	5507682.28	488360.59	4.61	4.50	7.10	5.28	1.82
20MW-09	11-Dec-2020	4.6	5507548.75	488478.57	4.53	4.44	4.58	2.76	1.82
20MW-10D	11-Dec-2020	19.8	5507637.40	488472.60	4.61	4.46	15.27	14.06	1.21
20MW-10S	11-Dec-2020	6.4	5507639.15	488472.51	4.60	4.54	6.38	4.56	1.82
20MW-11	11-Dec-2020	7.6	5507691.07	488462.59	4.84	4.76	7.54	5.72	1.82
MW19-01	01-Jun-2019	41.8	5507346.9	488461.9	NA	NA	16.99	13.59	3.40
MW19-03	17-Jun-2019	40.8	5507328.8	488450.3	NA	NA	11.57	9.77	1.80
MW06-34	29-Mar-2006	4.6	NA	NA	NA	NA	4.57	1.25	3.32

^a Coordinates and elevations were surveyed using NAD 1983 UTM Zone 10 N

^b Elevations are referenced to the existing ground surface at the time of installation

^c Elevations are referenced to the top of the standpipe at the time of installation

^d Top of standpipe elevation corrected to account for stickup conversion; 20MW-04S stickup = 0.82 m and; 20MW-04D stickup = 0.75 m

^e Screen length measured from bottom of slotted PVC pipe to top of filter pack

Notes:

m = metre(s)

masl = metre(s) above sea level

mbTOC = metre(s) below top of casing

NA = Not Applicable

Sample Date	Laboratory Certificate Sample #			12 Dec 2020																															
	12 Dec 2020	12 Dec 2020	12 Dec 2020	12 Dec 2020	12 Dec 2020	12 Dec 2020	12 Dec 2020	12 Dec 2020	12 Dec 2020	12 Dec 2020	12 Dec 2020	12 Dec 2020	12 Dec 2020	12 Dec 2020	12 Dec 2020	12 Dec 2020	12 Dec 2020	11 Dec 2020	11 Dec 2020	11 Dec 2020	11 Dec 2020	11 Dec 2020	11 Dec 2020												
	2019 BC CSR*			VA20C3271-003																															
BC CSR 3.1.1	BC CSR 3.1.1	BC CSR 3.1.1	BC CSR 3.1.1	BC CSR 3.1.1	BC CSR 3.1.1	BC CSR 3.1.1	BC CSR 3.1.1	BC CSR 3.1.1	BC CSR 3.1.1	BC CSR 3.1.1	BC CSR 3.1.1	BC CSR 3.1.1	BC CSR 3.1.1	BC CSR 3.1.1	BC CSR 3.1.1	BC CSR 3.1.1	BC CSR 3.1.1	BC CSR 3.1.1	BC CSR 3.1.1	BC CSR 3.1.1	BC CSR 3.1.1	BC CSR 3.1.1	BC CSR 3.1.1	BC CSR 3.1.1	BC CSR 3.1.1	BC CSR 3.1.1	BC CSR 3.1.1	BC CSR 3.1.1							
1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b						
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1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b	1 ^b					

REG 375/96 O.C. 1480/96

Land Use Standards
 W₁₋₃ = Wildlands Natural
 W_{1R} = Wildlands Reverted
 AL = Agricultural
 PL = Urban Park
 R₁₋₁₀ = Residential Low Density
 R₁₋₁₀ = Residential High Density
 CL = Commercial
 IL = Industrial

^a - IL Standard
^b - IL Standard
 water - IL Standard
 re - IL Standard

enter, the lowest applicable value in the columns become the standard.

Approximate concentration of the analyte in the sample.
 5 times the detection limit

2016 BC CSR AW Standards	AW Standards for GW			2020 BC CSR AW Standards Freshwater			2020 BC CSR AW Standards Marine			Laboratory Certificate Sample #			2016 BC CSR DW Standards			2020 BC CSR DW Standards		
	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	200	90	2500	27.9	69.6	11.6	16.2	73.8	18.6	6.9	8	6.2	25%	38.3	22.7	VA20C3659-001	VA20C3659-002	VA20C3659-003
	50000	12000	12000	1.5	50000	50000	12000	12000	12000	50000	50000	50000	7%	35	35	VA20C3659-004	VA20C3659-005	VA20C3659-006
0.1 (H ≤ 30) ^c																		
0.3 (30 ≤ H < 90)																		
0.5 (90 ≤ H < 150)																		
0.6 (150 ≤ H < 210)																		
1 (150 ≤ H < 210)																		
NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NC	0.0298	< 0.0050	< 0.0050	< 0.0050	< 0.0050
90 (10 ≤ H < 210)	90	10	560 ^{d,15e}	0.37	68.8	0.42	0.73	0.65	1.31	0.28	0.4	0.42	9%	31500	23200	18600	18600	
40 (H ≥ 210)	40	NS	40	0.53	0.54	2.56	2.99	0.80	0.86	1.58	0.24	0.25	4%	2.43	0.58	0.35	0.29	
20 (H < 50) ^c																		
30 (50 ≤ H < 75)																		
40 (75 ≤ H < 100)																		
50 (100 ≤ H < 125)																		
60 (125 ≤ H < 150)																		
70 (150 ≤ H < 175)																		
80 (175 ≤ H < 200)																		
90 (H ≥ 200)																		
NS	NS	NS	NS	4.110	61	12200	6560	2090	41900	45	24100	24100	0%	13000	15700	12700	12700	
40 (H < 50) ^c																		
50 (50 ≤ H < 100)																		
60 (100 ≤ H < 200)																		
110 (200 ≤ H < 300)																		
160 (H ≥ 300)																		
NS	NS	NS	NS	0.116	0.309	< 0.050	< 0.050	0.055	< 0.050	< 0.050	< 0.050	< 0.050	NC	< 0.050	< 0.050	< 0.050	< 0.050	
NS	NS	NS	NS	3.8	730	4.0	2.4	< 1.0	< 1.0	1.8	3.1	3	3%	1.4	< 1.0	4	4	
NS	NS	NS	NS	3500	100000	5000	6340	2830	5530	12600	6560	6400	2%	7640	6770	2830	2830	
NS	NS	NS	NS	4.36	68.7	1020	1050	342	1060	83.3	868	830	4%	1140	507	475	475	
0.001	0.001	0.025	0.25	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	NC	< 0.0050	< 0.0050	< 0.0050	< 0.0050	
10 (10000)	10	10000	5.13	1.12	1.53	1.12	1.15	3.82	0.993	0.848	0.804	0.809	1%	0.383	0.285	0.323	0.323	
250 (H < 60) ^c																		
650 (60 ≤ H < 120)																		
1100 (120 ≤ H < 180)																		
1500 (H ≥ 180)																		
NS	NS	NS	NS	0.158	0.61	2.09	2.71	1.50	0.91	2.90	0.87	0.8	8%	2.51	0.78	0.52	0.52	
10	20	20	0.743	3920	1310	3770	3290	2410	2940	2880	3410	3510	3%	2970	2720	2910	2910	
0.5 (H ≤ 100) ^c																		
15 (H > 100)																		
NS	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	NC	< 0.010	< 0.010	< 0.010	< 0.010	
3	3	3	31300	6990	3400	9090	6540	6540	8660	4900	8240	8260	0%	5530	4710	8030	8030	
1000	1000	1000	< 0.010	< 0.010	< 0.010	< 0.010	0.017	0.012	< 0.010	< 0.020	< 0.010	< 0.010	NC	0.012	< 0.010	< 0.010	< 0.010	
3000	85	85	0.45	0.78	0.31	0.42	0.42	1.18	0.65	< 0.30	< 0.30	< 0.30	NC	1.62	0.44	< 0.30	< 0.30	
NS	NS	NS	0.527	0.084	0.094	0.094	0.187	0.507	0.050	0.537	0.023	0.025	8%	0.112	0.033	0.063	0.063	
75 (H ≤ 90) ^c																		
150 (90 ≤ H < 100)																		
900 (100 ≤ H < 200)																		
1650 (200 ≤ H < 300)																		
2400 (300 ≤ H < 400)																		
NS	NS	NS	NS	2.4	1.6	2.8	2.6	2.3	1.9	1.3	10.6	9.8	8%	7.5	2.6	2.2	2.2	
NS	NS	NS	70900	33300	97400	122000	94700	67000	234000	79000	73700	58000	7%	110000	85700	58000	58000	

(CSR),^h BC REG re-calculated.
Drinking Water Qualityⁱ for the substance
Advisory Committee reference analytical detection limit for the substance
Concentrations are greater than the applicable standard

^h standard.
ⁱ applicable standard.
^j is the approximate concentration of the analyte in the sample.
equal to 5 times the detection limit

at	µg/L	5	NS	300	NS	300	90 ^b	< 0.75
Petroleum Hydrocarbons								
9	µg/L	NS	5000	5000	5000	5000	5000	1480
2	µg/L	NS	NS	NS	NS	NS	NS	1260
32	µg/L	NS	NS	NS	NS	NS	NS	1090
19	µg/L	1350	500	500	500	NS	NS	1050
Aromatic Hydrocarbons								
phthalene	µg/L	NS	NS	NS	NS	NS	5.5	7.56
phthalene	µg/L	NS	NS	NS	NS	NS	15	6.88
ene	µg/L	NS	60	60	60	NS	250	143
	µg/L	NS	0.5	0.5	0.5	NS	NS	< 3.50
	µg/L	3.93	1	1	1	NS	1000	30.8
thracene	µg/L	3.39	1	1	1	NS	0.07	7.37
ene	µg/L	0.04	0.1	0.1	0.1	0.01	0.01 ^b	1.29
luoranthene	µg/L	NS	NS	NS	NS	NS	0.07	2.22
perylene	µg/L	NS	NS	NS	NS	NS	NS	0.238
oranthene	µg/L	NS	NS	NS	NS	NS	NS	0.804
	µg/L	2.8	1	1	1	NS	7	≤ 10.0
anthracene	µg/L	NS	NS	NS	NS	NS	0.01	0.106
ne	µg/L	2.04	2	2	2	NS	150	89.4
	µg/L	NS	120	120	120	NS	150	79.4
3-cd)pyrene	µg/L	NS	NS	NS	NS	NS	NS	0.219
e	µg/L	14.3	10	10	10	NS	80	2.49
ne	µg/L	3.36	3	3	3	NS	NS	171
	µg/L	1.26	0.2	0.2	0.2	NS	100	74.3
	µg/L	NS	34	34	34	NS	<u>0.05</u>	≤ 1.00
Chlorinated Hydrocarbons								
achloroethane	µg/L	NS	NS	NS	NS	NS	6	< 0.50
roethane	µg/L	NS	NS	NS	NS	NS	8000	< 0.50
achloroethane	µg/L	NS	NS	NS	NS	NS	0.8	< 0.20
roethane	µg/L	NS	NS	NS	NS	12	3	< 0.50
ethane	µg/L	NS	NS	NS	NS	NS	30	< 0.50
ethene	µg/L	NS	NS	NS	NS	NS	14 ^b	< 2.25
obenzene	µg/L	NS	NS	7	420	NS	200 ^b	< 0.50
ethane	µg/L	NS	NS	1000	1000	NS	5	< 0.50
opropane	µg/L	NS	NS	NS	NS	NS	4.5	< 0.50
obenzene	µg/L	NS	NS	1500	1500	NS	NS	< 0.50
obenzene	µg/L	NS	NS	260	260	NS	5 ^b	< 0.50
romethane	µg/L	NS	NS	NS	NS	NS	100 ^b	< 0.50
	µg/L	NS	NS	NS	NS	NS	100 ^b	< 0.50
achloride	µg/L	NS	NS	130	130	NS	2 ^b	< 0.50
ene	µg/L	NS	NS	13	250	NS	80 ^b	< 0.50
momethane	µg/L	NS	NS	NS	NS	NS	100 ^b	< 0.50
	µg/L	NS	NS	20	20	NS	100 ^b	< 0.50
loroethene	µg/L	NS	NS	NS	NS	370	8	< 0.50
loropropene	µg/L	NS	NS	NS	NS	NS	NS	< 0.50
thane	µg/L	NS	NS	980	980	NS	50 ^b	0.63
butyl ether (MTBE)	µg/L	NS	NS	34000	4400	NS	95	< 0.50
	µg/L	NS	NS	720	720	NS	800	< 0.50
ethene	µg/L	NS	1100	1100	1100	30	30 ^b	< 0.50
chloroethene	µg/L	NS	NS	NS	NS	NS	80	< 0.50
chloropropene	µg/L	NS	NS	NS	NS	NS	NS	< 0.50
ene	µg/L	32.2	200	200	200	5	5 ^b	< 0.50
romethane	µg/L	NS	NS	NS	NS	NS	1000	< 0.50
le	µg/L	3.7	NS	NS	NS	2	2	< 0.40

Environmental Management Act
 Remedial Sites Regulation (CSR)."
 1996 O.C. 1480/96
 Amendments up to B.C. Reg
 January 2019
 Values set to the 2014 Health Canada "Guidelines for Canadian Drinking Water Quality" for the substance

g and bold indicates value exceeds a BC CSR 2020 standard.
 g indicates value exceeds a 2016 BC CSR standard.
 indicates value is non-detect and detection limit exceeds one applicable standard.

rogram per litre
 c life water use fw=fresh water m=marine e=estuarine
 minated sites regulation
 uplicate sample
 ng water use
 cation

te was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
 could not be calculated, as one or more results is less than or equal to 5 times the detection limit
 ecified

Appendix A

Borehole Logs

RECORD OF BOREHOLE:

20MW-04S/D



Location Coordinates: Northing: 5507446.64 m Easting: 488471.48 m (Deep Well)
 Northing: 5507449.08 m Easting: 488471.01 m (Shallow Well)

TOP OF PIPE: 4.10 masl (Deep) / 4.09 masl (Shallow) DRILLER: Mud Bay / Conetec

DATE DRILLED: 12/10/2020 4:00:00 PM

GROUND: 4.17 masl

DRILLING METHOD: Sonic - Boart Longyear Mini-Sonic (110mm OD Core Barrel, 150mm OD Casing, 3m lengths) on Rubber Track carrier.

LOGGEDBY: A. Campbell

DEPTH (mbgs)	SAMPLES	SOIL DESCRIPTION	STRATA PLOT	MONITORING WELL DETAILS		DRILLING COMMENT
				(masl) ELEV. DEPTH (mbgs)	Deep Shallow	
1		Silty Sand (SM), grey, wet, fine sand, trace fine to coarse subrounded gravel, trace organics (rootlets). transitions to moist with depth		3.56		Welded Steel Flush Mount Protective Casing
		Silty Sand (SM), grey, moist, fine sand, trace organics (rootlets). at 1.5m - 1cm band of orange oxide staining; soil colour changes to grey-brown below 1.5m		0.61		
2	SOA (shallow boring) 0 ppm (isobutylene)/hexane	Silty Sand (SM), grey-brown, moist, fine sand, trace fine to coarse subrounded gravel, trace organics (rootlets)		2.65		Bentonite Chips
	SOB (shallow boring) 0 ppm (isobutylene)/hexane			1.52		
3	SOC (shallow boring) 0 ppm (isobutylene)/hexane	Well Graded Sand (SW), grey-brown, wet, medium to coarse sand.		1.73		(12/13/2020)
				2.44		
4		Sandy Well Graded Gravel (GW), grey-brown, wet, fine to coarse subrounded to rounded gravel, medium to coarse sand, trace subrounded cobbles up to 90mm Orange oxide staining throughout 4.3 - 4.6m interval		1.27		10-20 Sand
				2.90		
5	SOE (shallow boring) 0 ppm (isobutylene)/hexane	Silt (ML), grey-brown, wet, low plasticity		0.55		Schedule 40 50mm PVC Machine Slotted Screen (10 Slot) w/ Threaded Bottom Cap
6		Sandy Well Graded Gravel (GW), grey-brown, wet, fine to coarse subrounded to rounded gravel, medium to coarse sand		0.71		
				4.88		
7	SOE (deep boring) 0 ppm (isobutylene)/hexane	Well Graded Gravel (GW) and cobbles, grey-brown, wet, fine to coarse subrounded to rounded gravel, trace to some medium to coarse sand, bulk material is ~50% subrounded to rounded cobbles up to 120mm		2.69		Bentonite chips
		Well Graded Sand (SW), grey-brown, wet, medium to coarse sand		3.45		
				7.62		

Notes: Sonic Core Recovery:
 -Samples were collected as grabs from LDPE Sonic Core Recovery:
 -Soil vapour headspace readings were measured with RKL Eagle II PID
 Deep Boring: 3.0-6.1m: 2.1m 12.2-15.2m: 2.7m 21.3-24.4m: 1.1m 3.0-4.6m: 0.9m
 0.0-1.5m: 1.5m 6.1-9.1m: 1.8m 15.2-18.3m: 2.7m Shallow Boring:
 1.5-3.0m: 0.9m 9.1-12.2m: 2.7m 18.3-21.3m: 2.7m 0.0-3.0m: 1.8m



RECORD OF BOREHOLE:

20MW-04S/D

Location Coordinates: Northing: 5507446.64 m Easting: 488471.48 m (Deep Well)
 Northing: 5507449.08 m Easting: 488471.01 m (Shallow Well)

TOP OF PIPE: 4.10 masl (Deep) / 4.09 masl (Shallow)

DRILLER: Mud Bay / Conetec

DATE DRILLED: 12/10/2020 4:00:00 PM

GROUND: 4.17 masl

DRILLING METHOD: Sonic - Boart Longyear Mini-Sonic (110mm OD Core Barrel, 150mm OD Casing, 3m lengths) on Rubber Track carrier.

LOGGED BY: A. Campbell

DEPTH (mbgs)	SAMPLES	SOIL DESCRIPTION	STRATA PLOT	MONITORING WELL DETAILS		DRILLING COMMENT
				(masl) ELEV . DEPTH (mbgs)	Deep Shallow	
9	SDG (deep boring) 0 ppm Isobutylene/Hexane	Sandy Gravel (GW), grey-brown, wet, fine to coarse subrounded to rounded gravel, medium to coarse sand		-4.97 9.14		
10		Well Graded Sand (SW), grey, wet, fine to coarse sand grades finer with depth		-5.43 9.60		
10		Poorly Graded Sand (SP), grey, wet, fine to medium sand, trace silt		-5.89 10.06		
11	SDH (deep boring) 0 ppm Isobutylene/Hexane	Gravelly Well Graded Sand (SW), grey, wet, medium to coarse sand, fine to coarse subrounded to rounded gravel, trace subrounded cobbles up to 80mm		-6.50 10.67		
12	SDX (deep boring) 0 ppm Isobutylene/Hexane	Well Graded sand (SW), grey, wet, fine to coarse sand, trace fine to coarse subrounded to rounded gravel increase to some gravel at 14.9m		-8.02 12.19		
14	SDK (deep boring) 0 ppm Isobutylene/Hexane					
15	SDI (deep boring) 0 ppm Isobutylene/Hexane	Well Graded Sand (SW), grey, wet, fine to medium sand		-11.37 15.54		Driller notes "lots of heave" in drill string from 15-21mbgs



Notes: Sonic Core Recovery:
 -Samples were collected as grabs from LDPE sonic core bags
 -Soil vapour headspace readings were measured with RKI Eagle II PID

Deep Boring: 3.0-6.1m: 2.1m 12.2-15.2m: 2.7m 21.3-24.4m: 1.1m 3.0-4.6m: 0.9m
 0.0-1.5m: 1.5m 6.1-9.1m: 1.8m 15.2-18.3m: 2.7m Shallow Boring:
 1.5-3.0m: 0.9m 9.1-12.2m: 2.7m 18.3-21.3m: 2.7m 0.0-3.0m: 1.8m



RECORD OF BOREHOLE:

20MW-04S/D

Location Coordinates: Northing: 5507446.64 m Easting: 488471.48 m (Deep Well)
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 GROUND: 4.17 masl DRILLING METHOD: Sonic - Boart Longyear Mini-Sonic (110mm OD Core Barrel, 150mm OD Casing, 3m lengths) on Rubber Track carrier.
 LOGGED BY: A. Campbell

DEPTH (mbgs)	SAMPLES	SOIL DESCRIPTION	STRATA PLOT	MONITORING WELL DETAILS		DRILLING COMMENT
				(masl) ELEV. DEPTH (mbgs)	Deep Shallow	
17		Well Graded Sand (SW), grey, wet, fine to coarse sand, trace fine subrounded to rounded gravel		-12.59 16.76		
18						
19		Well Graded Sand (SW), grey, wet, fine to coarse sand, trace silt		-14.73 18.90		
20	SO ₄ (deep boring) 0 ppm 0 ppm (isobutylene)/Hexane	Well Graded Sand (SW), grey, wet, fine to coarse sand, trace fine subrounded to rounded gravel, trace wood chips		-15.03 19.20		
21					Bentonite chips	Poor recovery from 21-24mbgs.
22	SO ₄ (deep boring) 0 ppm 0 ppm (isobutylene)/Hexane					
23						

Notes: Sonic Core Recovery:
 -Samples were collected as grabs from LDPE sonic core bags
 -Soil vapour headspace readings were measured with RKI Eagle II PID

Deep Boring: 3.0-6.1m: 2.1m 12.2-15.2m: 2.7m 21.3-24.4m: 1.1m 3.0-4.6m: 0.9m
 0.0-1.5m: 1.5m 6.1-9.1m: 1.8m 15.2-18.3m: 2.7m Shallow Boring:
 1.5-3.0m: 0.9m 9.1-12.2m: 2.7m 18.3-21.3m: 2.7m 0.0-3.0m: 1.8m



RECORD OF BOREHOLE:

20MW-04S/D

Location Coordinates: Northing: 5507446.64 m Easting: 488471.48 m (Deep Well)
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 GROUND: 4.17 masl DRILLING METHOD: Sonic - Boart Longyear Mini-Sonic (110mm OD Core Barrel, 150mm OD Casing, 3m lengths) on Rubber Track carrier.
 LOGGED BY: A. Campbell

DEPTH (mbgs)	SAMPLES	SOIL DESCRIPTION	STRATA PLOT	MONITORING WELL DETAILS		DRILLING COMMENT
				(masl) ELEV .	DEPTH (mbgs)	
					Deep Shallow	
		End of Hole		-20.21 24.38		
25						
26						
27						
28						
29						
30						
31						

Notes: Sonic Core Recovery:
 -Samples were collected as grabs from LDPE sonic Deep Boring: 3.0-6.1m: 2.1m 12.2-15.2m: 2.7m 21.3-24.4m: 1.1m 3.0-4.6m: 0.9m
 core bags 0.0-1.5m: 1.5m 6.1-9.1m: 1.8m 15.2-18.3m: 2.7m Shallow Boring:
 -Soil vapour headspace readings were measured 1.5-3.0m: 0.9m 9.1-12.2m: 2.7m 18.3-21.3m: 2.7m 0.0-3.0m: 1.8m
 with Rkl Eagle II PID



RECORD OF BOREHOLE:

20MW-05

Location Coordinates: Northing: 5507758.56 m

Easting: 488364.47 m

TOP OF PIPE: "4.58 masl

DRILLER: Mud Bay / Conetec

DATE DRILLED: 12/12/2020 3:00:00 PM

GROUND: 4.67 masl

DRILLING METHOD: Sonic - Boart Longyear Mini-Sonic (110mm OD Core Barrel, 150mm OD Casing, 3m lengths) on Rubber Track carrier.

LOGGED BY: A. Campbell

DEPTH (mbgs)	SAMPLES	SOIL DESCRIPTION	STRATA PLOT	MONITORING WELL DETAILS		DRILLING COMMENT
				(masl) ELEV.	DEPTH (mbgs)	
1		Asphalt		4.52		Daylighted to 3m with hydrovac on 12/11. Advanced sonic through bottom of daylighted hole. Samples were collected from 0-3m using a sample pole / spoon.
	SoA 0 ppm 0 ppm (Isobutylene)(Hexane)	Well Graded Sand (SW), grey-brown, moist, fine to coarse, some fine subrounded to rounded gravel		0.15		
		limited sampling - daylighted by hydrovac		4.37		
2				0.30		Welded steel flush mount protective casing.
	SoB 0 ppm 0 ppm (Isobutylene)(Hexane)	Well Graded Sand (SW), grey-brown, moist, fine to coarse, some fine subrounded to rounded gravel, trace to some silt		3.15		
		limited sampling - daylighted by hydrovac		1.52		
3				2.84		Bentonite Chips
	SoC 0 ppm 0 ppm (Isobutylene)(Hexane)	Silt (ML), grey, wet, non-plastic, trace fine sand		1.62		
		Silty Sand (SM), grey, wet, fine sand, trace fine subrounded gravel		3.05		
4				1.32		10-20 filter sand
	SoD 0 ppm 0 ppm (Isobutylene)(Hexane)			3.35		
				0.51		
5				5.18		Schedule 40 50mm PVC Machine Slotted Screen (10 Slot) w/ Threaded Bottom Cap
	SoE 0 ppm 0 ppm (Isobutylene)(Hexane)	Well Graded Sand (SW), grey-brown, wet, fine to medium sand		-0.51		
		50mm band of faint orange oxidation at ~5.2m		5.18		
6				-1.43		
	SoF 0 ppm 0 ppm (Isobutylene)(Hexane)	Well Graded Sand (SW), grey-brown, wet, fine to coarse sand, trace fine subrounded to rounded gravel		6.10		
				-2.80		
7				7.47		
	SoG 0 ppm 0 ppm (Isobutylene)(Hexane)	Well Graded Gravel (GW), mixed colour (red, grey, brown), wet, fine to coarse subrounded to rounded gravel, and (~50%) subrounded to rounded cobble up to 20mm, some medium to coarse sand		2.96		
				7.62		

Notes: Sonic Core Recovery:
 -Samples were collected as grabs from LDPE sonic core bags 3.0-6.1m: 1.5m
 -Soil vapour headspace readings were measured with RKI Eagle II PID 6.1m-7.6m: 1.5m

RECORD OF BOREHOLE:

20MW-06



Location Coordinates: Northing: 5507737.68 m

Easting: 488408.38 m

TOP OF PIPE: "5.04 masl

DRILLER: Mud Bay / Conetec

DATE DRILLED: 12/12/2020 4:10:00 PM

GROUND: 5.11 masl

DRILLING METHOD: Sonic - Boart Longyear Mini-Sonic (110mm OD Core Barrel, 150mm OD Casing, 3m lengths) on Rubber Track carrier.

LOGGED BY: A. Campbell

DEPTH (mbgs)	SAMPLES	SOIL DESCRIPTION	STRATA PLOT	MONITORING WELL DETAILS		DRILLING COMMENT	
				ELEV. (masl)	DEPTH (mbgs)		
1	SiA 0.0ppm (isobutylene) 0.0ppm (Hexane)	Well Graded Sand (SW), brown, wet, fine to coarse sand, some fine to coarse subrounded to rounded gravel		4.81	0.30	Welded steel flush mount protective casing. Welded steel flush mount protective casing.	Daylighted to 3m with hydrovac on 12/11. Advanced sonic through bottom of daylighted hole. Samples were collected from 0-3m using a sample pole / spoon.
		limited sampling - daylighted by hydrovac					
2	SiB 0.0ppm (isobutylene) 0.0ppm (Hexane)	Gravelly Well Graded Sand (SW), brown, wet, medium to coarse sand, fine to coarse subrounded to rounded gravel		3.59	1.52	Bentonite Chips (12/13/2020)	
		limited sampling - daylighted by hydrovac		3.28	1.83		
3	SiC 0.0ppm (isobutylene) 0.0ppm (Hexane)	Gravelly Well Graded Sand (SW), grey-brown, wet, medium to coarse sand, fine to coarse subrounded to rounded gravel, faint HC odour		2.06	3.05	10-20 filter sand	
				1.45	3.66		
4	SiD 0.0ppm (isobutylene) 0.0ppm (Hexane)	Silt (ML), grey, wet, non-plastic, trace organics		-0.07	5.18	Schedule 40 50mm PVC Machine Slotted Screen (10 Slot) w/ Threaded Bottom Cap	
				-0.38	5.49		
5	SiE 0.0ppm (isobutylene) 0.0ppm (Hexane)	Silty Fine Sand (SM), grey, wet		-2.21	7.32		
		Well Graded Sand (SW), grey-brown, wet, fine to medium sand grades to medium to coarse sand with depth		-2.51	7.62		
6	SiF 0.0ppm (isobutylene) 0.0ppm (Hexane)						
7	SiG 0.0ppm (isobutylene) 0.0ppm (Hexane)	Sandy Well Graded Gravel (GW), grey-brown, wet, fine to coarse subrounded to rounded gravel, fine to coarse sand					
		End of Hole					

Notes: Sonic Core Recovery:
 -Samples were collected as grabs from LDPE sonic core bags 3.0-4.6m: 0.6m
 4.6-6.1m: 1.2m
 -Soil vapour headspace readings were measured with RKI Eagle II PID

RECORD OF BOREHOLE:

20MW-07



Location Coordinates: Northing: 5507717.81 m

Easting: 488357.37 m

TOP OF PIPE: "4.43 masl

DRILLER: Mud Bay / Conetec

DATE DRILLED: 12/12/2020 2:15:00 PM

GROUND: 4.52 masl

DRILLING METHOD: Sonic - Boart Longyear Mini-Sonic (110mm OD Core Barrel, 150mm OD Casing, 3m lengths) on Rubber Track carrier.

LOGGED BY: A. Campbell

DEPTH (mbgs)	SAMPLES	SOIL DESCRIPTION	STRATA PLOT	MONITORING WELL DETAILS		DRILLING COMMENT
				(masl) ELEV .	DEPTH (mbgs)	
1	SoA 0 ppm (Isobutylene) (Hexane)	Well Graded Sand (SW), grey-brown, wet, fine to coarse sand, some fine to coarse subrounded to rounded gravel		4.22	Welded steel flush mount protective casing.	Daylighted to 3m with hydrovac on 12/11. Advanced sonic through bottom of daylighted hole. Samples were collected from 0-3m using a sample pole / spoon.
		limited sampling - daylighted by hydrovac		0.30		
2	SoB 0 ppm (Isobutylene) (Hexane)	Well Graded Sand and Gravel (SW/GW), grey-brown, moist, fine to coarse sand, fine to coarse subrounded to rounded gravel		3.00	Bentonite Chips (12/13/2020)	
		limited sampling - daylighted by hydrovac		1.52		
3				2.69		
				1.83		
4	SoC 0 ppm (Isobutylene) (Hexane)	Silt (ML), grey, wet, non-plastic		1.47		
		Silty Sand (SM), grey, wet, fine sand		3.05		
5				0.86	10-20 Filter Sand	
		Well Graded Sand (SW), grey-brown, wet, fine to coarse sand 10mm lense of woodchips at 5.94m		3.66		
6	SoD 0 ppm (Isobutylene) (Hexane)			0.25	Schedule 40 50mm PVC Machine Slotted Screen (10 Slot) w/ Threaded Bottom Cap	
				4.27		
7		End of Hole		-1.58		
				6.10		

Notes: Sonic Core Recovery:
 -Samples were collected as grabs from LDPE sonic 3.0-6.1m: 1.4m core bags
 -Soil vapour headspace readings were measured with RKI Eagle II PID

RECORD OF BOREHOLE:

20MW-08



Location Coordinates: Northing: 5507682.28 m

Easting: 488360.59 m

TOP OF PIPE: "4.50 masl

DRILLER: Mud Bay / Conetec

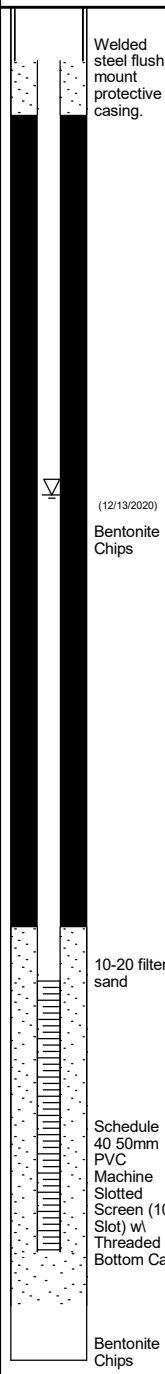
DATE DRILLED: 12/12/2020 12:30:00 PM

GROUND: 4.61 masl

DRILLING METHOD: Sonic - Boart Longyear Mini-Sonic (110mm OD Core Barrel, 150mm OD Casing, 3m lengths) on Rubber Track carrier.

LOGGED BY: A. Campbell

DEPTH (mbgs)	SAMPLES	SOIL DESCRIPTION	STRATA PLOT	MONITORING WELL DETAILS		DRILLING COMMENT
				(masl) ELEV .	DEPTH (mbgs)	
1	SoA 0 ppm (Isobutylene) 0 ppm (Hexane)	Well Graded Sand (SW), brown, wet, fine to coarse sand, some fine to coarse subangular to subrounded gravel		4.31		Daylighted to 3m with hydrovac on 12/11. Advanced sonic through bottom of daylighted hole. Samples were collected from 0-3m using a sample pole / spoon.
		limited sampling - daylighted by hydrovac		0.30		
2	SoB 0 ppm (Isobutylene) 0 ppm (Hexane)	Well Graded Sand (SW), brown, moist, fine to coarse sand, some fine to coarse subangular to subrounded gravel		3.09		
		limited sampling - daylighted by hydrovac		1.52		
3	SoC 0 ppm (Isobutylene) 0 ppm (Hexane)	Silt (ML), grey, wet, non-plastic, rapid dilatancy, laminated structure (0.5-2mm laminae)		1.56		
				3.05		
4	SoD 0 ppm (Isobutylene) 0 ppm (Hexane)	Silty Sand (SM), grey, wet, fine sand		0.34		
				4.27		
5	SoE 0 ppm (Isobutylene) 0 ppm (Hexane)	Well Graded Sand (SW), grey-brown, wet, fine to coarse sand, trace fine subrounded gravel		0.04		
				4.57		
6	SoF 0 ppm (Isobutylene) 0 ppm (Hexane)	Well Graded Sand (SW), grey-brown, wet, medium to coarse sand, trace fine subrounded gravel		-1.49		
				6.10		
7	SoG 0 ppm (Isobutylene) 0 ppm (Hexane)	20mm lense of woodchips at 6.4m				
		20mm lense of woodchips at 7.3m				
		End of Hole		-3.01		
				7.62		



Notes: Sonic Core Recovery:
 -Samples were collected as grabs from LDPE sonic core bags 3.0-4.6m: 1.5m
 -Soil vapour headspace readings were measured with RKI Eagle II PID 4.6-7.6m: 2.1m

RECORD OF BOREHOLE:

20MW-09



Location Coordinates: Northing: 5507548.75 m

Easting: 488478.57 m

TOP OF PIPE: "4.44 masl

DRILLER: Mud Bay / Conetec

DATE DRILLED: 12/11/2020 11:10:00 AM

GROUND: 4.53 masl

DRILLING METHOD: Sonic - Boart Longyear Mini-Sonic (110mm OD Core Barrel, 150mm OD Casing, 3m lengths) on Rubber Track carrier.

LOGGED BY: A. Campbell

DEPTH (mbgs)	SAMPLES	SOIL DESCRIPTION	STRATA PLOT	MONITORING WELL DETAILS		DRILLING COMMENT
				(masl) ELEV .	DEPTH (mbgs)	
1	SOA 0 ppm (Isobutylene) (Hexane)	Sandy Well Graded Gravel (GW), brown, wet, fine to coarse subangular to subrounded gravel, fine to coarse sand, trace silt, trace fine gravel-sized clasts of silt, trace subrounded cobbles up to 90mm (Fill), no apparent odour		3.31	Welded steel flush mount protective casing.	
		Well Graded Sand (SW), brown, moist, fine to coarse sand, some fine to coarse subrounded to rounded gravel, clean sand, (Fill)		1.22		
2	SOE 0 ppm (Isobutylene) (Hexane)	1cm band of orange oxidation at abrupt contact with below unit (2.44m)		2.09	Bentonite Chips	
		Silt (ML), grey, moist, non-plastic, trace fine sand, laminated structure - 0.5 - 1mm laminae of grey, blue-grey, and dark grey silt		2.44		
3	SOB 0 ppm (Isobutylene) (Hexane)	trace pockets (fine gravel-size) of orange oxidation in upper 2cm of interval		1.94	(12/13/2020)	
		bottom 2cm of interval is homogenous brown silt with some fine sand		2.59		
4	SOB 0 ppm (Isobutylene) (Hexane)	Poorly Graded Sand (SP), dark grey-brown to black, wet, fine to medium sand, trace silt, trace metallic flecks, no apparent odour		1.18	10-20 filter sand	
		Poorly Graded Sand (SP), grey-brown, wet, trace silt, subtle laminated structure, some cross-cutting laminae of silty fine sand		3.35		
4	SOB 0 ppm (Isobutylene) (Hexane)	grades coarser with depth		0.57	Schedule 40 50mm PVC Machine Slotted Screen (10 Slot) w/ Threaded Bottom Cap	
		Well Graded Sand (SW), grey-brown, wet, fine to coarse sand		3.96		
5		End of Hole		-0.04		
6				4.57		
7						

Notes: Sonic Core Recovery:
 -Samples were collected as grabs from LDPE sonic core bags 0.0-3.0m: 1.8m
 3.0-4.6m: 1.5m
 -Soil vapour headspace readings were measured with RKI Eagle II PID



RECORD OF BOREHOLE:

20MW-10S/D

Location Coordinates: Northing: 5507637.4 m Easting: 488472.6 m (Deep Well)
 Northing: 5507639.15 m Easting: 488472.51 m (Shallow Well)

TOP OF PIPE: 4.46 masl (Deep) / 4.54 masl (Shallow) DRILLER: Mud Bay / Conetec

DATE DRILLED: 12/11/2020 12:20:00 PM

GROUND: 4.61 masl

DRILLING METHOD: Sonic - Boart Longyear Mini-Sonic (110mm OD Core Barrel, 150mm OD Casing, 3m lengths) on Rubber Track carrier.

LOGGED BY: A. Campbell

DEPTH (mbgs)	SAMPLES	SOIL DESCRIPTION	STRATA PLOT	MONITORING WELL DETAILS		DRILLING COMMENT	
				ELEV. (masl)	DEPTH (mbgs)		
1	SDA (deep boring) 0 ppm (Isobutylene) (Hexane)	Sandy Well Graded Gravel (GW), brown, moist, fine to coarse subangular to subrounded gravel, fine to coarse sand, trace silt (Fill) wet at approximately 2.5mbgs		4.46	4.46	Welded steel flush mount protective casing.	
2	SDC (deep boring) 0 ppm (Isobutylene) (Hexane)			4.54	4.54		Welded steel flush mount protective casing.
3	SDC (deep boring) 0 ppm (Isobutylene) (Hexane)			4.54	4.54		
4	SDC (deep boring) 0 ppm (Isobutylene) (Hexane)	Well Graded Sand and Gravel (SW/GW), brown, wet, clean fine to coarse sand, fine to coarse subrounded to rounded gravel abrupt contact with unit below		1.56 3.05	1.56 3.05	Bentonite Chips	
5	SDC (deep boring) 0 ppm (Isobutylene) (Hexane)	Silt (ML), grey, wet, low plasticity, laminated structure - 0.5-10mm laminae of grey, purple-grey, and brown silt numerous laminae of organics (rootlets, wood, decomposing leaves) at 4.1 - 4.25mbgs		0.65 3.96	0.65 3.96		
6	SDC (deep boring) 5 ppm (Isobutylene) (Hexane)	Well Graded Sand (SW), grey-brown, wet, fine to medium sand, trace organics (woodchips), no apparent odour		0.27 4.88	0.27 4.88	10-20 Filter Sand Schedule 40 50mm PVC Machine Slotted Screen (10 Slot) w/ Threaded Bottom Cap	
7	SDC (deep boring) 0 ppm (Isobutylene) (Hexane)			0.27 4.88	0.27 4.88		
	SDC (deep boring) 0 ppm (Isobutylene) (Hexane)			-3.31	-3.31	Bentonite Chips	

Notes: Sonic Core Recovery:
 -Samples were collected as grabs from LDPE sonic core bags
 -Soil vapour headspace readings were measured with RKI Eagle II PID

Deep Boring:	3.0-4.6m: 1.2m	7.6-9.1m: 1.5m	12.2-13.7m: 1.2m	16.8-18.3m: 1.2m	0.0-1.5m: 1.2m	4.6-6.1m: 1.2m
	0.0-1.5m: 1.2m	4.6-6.1m: 1.2m	9.1-10.7m: 1.5m	13.7-15.2m: 1.5m	18.3-19.8m: 3.0m	1.5-3.0m: 0.9m
	1.5-3.0m: 0.3m	6.1-7.6m: 0.9m	10.7-12.2m: 1.2m	15.2-16.8m: 1.5m	Shallow Boring:	3.0-4.6m: 0.9m

RECORD OF BOREHOLE:

20MW-10S/D



Location Coordinates: Northing: 5507637.4 m Easting: 488472.6 m (Deep Well)
 Northing: 5507639.15 m Easting: 488472.51 m (Shallow Well)

TOP OF PIPE: 4.46 masl (Deep) / 4.54 masl (Shallow)

DRILLER: Mud Bay / Conetec

DATE DRILLED: 12/11/2020 12:20:00 PM

GROUND: 4.61 masl

DRILLING METHOD: Sonic - Boart Longyear Mini-Sonic (110mm OD Core Barrel, 150mm OD Casing, 3m lengths) on Rubber Track carrier.

LOGGED BY: A. Campbell

DEPTH (mbgs)	SAMPLES	SOIL DESCRIPTION	STRATA PLOT	MONITORING WELL DETAILS		DRILLING COMMENT
				(masl) ELEV .	DEPTH (mbgs)	
9		Well Graded Sand (SW), grey-brown, wet, fine to coarse sand, trace organics (woodchips), faint HC odour from 8.2-8.5mbgs		7.92		
	SDK (deep boring) 0 ppm : 50 ppm (toluene) (Hexane)	Wood - cored log, grey-brown, intact cored disks (90mm diameter) of fresh wood, 10 to 30mm segments broken along grain direction (perpendicular to drill axis)		-3.92 8.53		
10		Well Graded Sand (SW), grey-brown, wet, medium to coarse sand, trace subrounded to rounded fine gravel, trace organics (rootlets, wood chips)		-4.53 9.14		
		Well graded Gravel (GW), grey-brown, wet, fine to coarse subrounded to rounded gravel, trace to some medium to coarse sand, trace silt, trace to some subrounded to rounded cobbles up to 95mm		-5.75 10.36		
11		Well Graded Sand (SW), grey-brown, wet, medium to coarse sand, some fine to coarse subrounded to rounded gravel		-6.36 10.97		
	SOI (deep boring) 0 ppm : 0 ppm (toluene) (Hexane)	Silty Gravel (GM), grey, wet, fine to coarse subangular to subrounded gravel, some fine to coarse sand. (Suspect in situ formation was a silt lense, disturbed / mixed with gravel by drilling)		-7.43 12.04		
12		Well Graded Sand (SW), grey-brown, wet, medium to coarse sand, some fine to coarse subrounded to rounded gravel		-7.68 12.19		
		Well Graded Gravel (GW), grey-brown, wet, fine to coarse subrounded to rounded gravel, some medium to coarse sand, trace to some subrounded to rounded cobbles up to 90mm		-9.72 14.33		
13		Well Graded Sand (SW), grey-brown, wet, medium to coarse sand, trace to some fine to coarse subrounded to rounded gravel		-10.63 15.24		
	SDK (deep boring) 0 ppm : 10 ppm (toluene) (Hexane)	5cm interval of silty sand and gravel at 16.75mbgs and 18 mbgs (suspect in situ formations were silt lenses, disturbed/mixed with sand and gravel by drilling)				
14						
	SOI (deep boring)					



Notes: Sonic Core Recovery:
 -Samples were collected as grabs from LDPE sonic core bags
 -Soil vapour headspace readings were measured with RKI Eagle II PID

Deep Boring: 3.0-4.6m: 1.2m 4.6-6.1m: 1.2m 6.1-7.6m: 0.9m 7.6-9.1m: 1.5m 9.1-10.7m: 1.5m 10.7-12.2m: 1.2m 12.2-13.7m: 1.2m 13.7-15.2m: 1.5m 15.2-16.8m: 1.5m 16.8-18.3m: 1.2m 18.3-19.8m: 3.0m 19.8-21.3m: 1.5m 21.3-22.8m: 1.5m 22.8-24.3m: 1.5m 24.3-25.8m: 1.5m 25.8-27.3m: 1.5m 27.3-28.8m: 1.5m 28.8-30.3m: 1.5m 30.3-31.8m: 1.5m 31.8-33.3m: 1.5m 33.3-34.8m: 1.5m 34.8-36.3m: 1.5m 36.3-37.8m: 1.5m 37.8-39.3m: 1.5m 39.3-40.8m: 1.5m 40.8-42.3m: 1.5m 42.3-43.8m: 1.5m 43.8-45.3m: 1.5m 45.3-46.8m: 1.5m 46.8-48.3m: 1.5m 48.3-49.8m: 1.5m 49.8-51.3m: 1.5m 51.3-52.8m: 1.5m 52.8-54.3m: 1.5m 54.3-55.8m: 1.5m 55.8-57.3m: 1.5m 57.3-58.8m: 1.5m 58.8-60.3m: 1.5m 60.3-61.8m: 1.5m 61.8-63.3m: 1.5m 63.3-64.8m: 1.5m 64.8-66.3m: 1.5m 66.3-67.8m: 1.5m 67.8-69.3m: 1.5m 69.3-70.8m: 1.5m 70.8-72.3m: 1.5m 72.3-73.8m: 1.5m 73.8-75.3m: 1.5m 75.3-76.8m: 1.5m 76.8-78.3m: 1.5m 78.3-79.8m: 1.5m 79.8-81.3m: 1.5m 81.3-82.8m: 1.5m 82.8-84.3m: 1.5m 84.3-85.8m: 1.5m 85.8-87.3m: 1.5m 87.3-88.8m: 1.5m 88.8-90.3m: 1.5m 90.3-91.8m: 1.5m 91.8-93.3m: 1.5m 93.3-94.8m: 1.5m 94.8-96.3m: 1.5m 96.3-97.8m: 1.5m 97.8-99.3m: 1.5m 99.3-100.8m: 1.5m



RECORD OF BOREHOLE:

20MW-10S/D

Location Coordinates: Northing: 5507637.4 m Easting: 488472.6 m (Deep Well)
 Northing: 5507639.15 m Easting: 488472.51 m (Shallow Well)

TOP OF PIPE: 4.46 masl (Deep) / 4.54 masl (Shallow) DRILLER: Mud Bay / Conetec
 DATE DRILLED: 12/11/2020 12:20:00 PM GROUND: 4.61 masl DRILLING METHOD: Sonic - Boart Longyear Mini-Sonic (110mm OD Core Barrel, 150mm OD Casing, 3m lengths) on Rubber Track carrier.
 LOGGED BY: A. Campbell

DEPTH (mbgs)	SAMPLES	SOIL DESCRIPTION	STRATA PLOT	MONITORING WELL DETAILS		DRILLING COMMENT
				(masl) ELEV .	(mbgs) DEPTH	
17	SOI (deep boring) 0.0ppm (deep boring) 0.0ppm (deep boring) (SOI) (SOI) (Hexane)	Well Graded Sand and Gravel (SW/GW), grey-brown, wet, fine to coarse sand, fine to coarse subrounded to rounded gravel, trace subrounded cobbles up to 80mm		-12.46 17.07		
18		Well Graded Sand (SW), grey-brown, wet, medium to coarse sand, trace fine rounded gravel, trace organics (woodchips)		-13.07 17.68	Bentonite Chips	
19	SOI (deep boring) 0.0ppm (deep boring) 0.0ppm (deep boring) (SOI) (SOI) (Hexane)			-14.74 19.35		
20	SOI (deep boring) 0.0ppm (deep boring) 0.0ppm (deep boring) (SOI) (SOI) (Hexane)	Poorly Graded Fine Sand with Silt (SP-SM), grey, wet, trace medium sand, 1cm laminations of organics (wood chips), trace to some silt.		-15.20 19.81		
20		End of Hole				
21						
22						
23						

Notes: Sonic Core Recovery:
 -Samples were collected as grabs from LDPE sonic core bags
 -Soil vapour headspace readings were measured with RKI Eagle II PID

Deep Boring: 3.0-4.6m: 1.2m 7.6-9.1m: 1.5m 12.2-13.7m: 1.2m 16.8-18.3m: 1.2m 0.0-1.5m: 1.2m 4.6-6.1m: 1.2m
 0.0-1.5m: 1.2m 4.6-6.1m: 1.2m 9.1-10.7m: 1.5m 13.7-15.2m: 1.5m 18.3-19.8m: 3.0m 1.5-3.0m: 0.9m
 1.5-3.0m: 0.3m 6.1-7.6m: 0.9m 10.7-12.2m: 1.2m 15.2-16.8m: 1.5m Shallow Boring: 3.0-4.6m: 0.9m

TOP OF PIPE: "4.76 masl

DRILLER: Mud Bay / Conetec

DATE DRILLED: 12/11/2020 3:50:00 PM

GROUND: 4.84 masl

DRILLING METHOD: Sonic - Boart Longyear Mini-Sonic (110mm OD Core Barrel, 150mm OD Casing, 3m lengths) on Rubber Track carrier.

LOGGED BY: A. Campbell

DEPTH (mbgs)	SAMPLES	SOIL DESCRIPTION	STRATA PLOT	ELEV.		MONITORING WELL DETAILS	DRILLING COMMENT
				(masl)	(mbgs)		
1		Asphalt		4.69		Welded steel flush mount protective casing. (12/13/2020) 10-20 filter sand Schedule 40 50mm PVC Machine Slotted Screen (10 Slot) w/ Threaded Bottom Cap	Daylighted to 2.1m with hydrovac on 12/11. Advanced sonic through bottom of daylighted hole. Samples were collected from 0-2.1m using a sample pole / spoon.
		Sandy Well Graded Gravel (GW), brown, wet, fine to coarse subangular to subrounded gravel, fine to coarse sand, trace silt, trace organics (woodchips), (Fill), no apparent odour		0.15	4.54		
		some subrounded cobbles and boulders up to 30cm between 0.6mbgs and 2.3mbgs limited sampling - daylighted by hydrovac		0.30			
2		Sandy Well Graded Gravel (GW), grey-brown, wet, fine to coarse subrounded to rounded gravel, fine to coarse sand (fill), some rounded cobbles up to 100mm		3.32	1.52		
		limited sampling - daylighted by hydrovac		3.01	1.83		
3		Silt (ML), grey, wet, low-plasticity, rapid dilatency, laminated structure- 0.5-2mm laminae of grey, purple-grey, brown silt, trace laminae of dark brown organics (roolets, wood)		1.79	3.05		
4		Silty Fine Sand (SM), grey, wet, laminated structure,		0.57	4.27		
		Well Graded Sand (SW), grey, wet, fine to medium sand, trace to some silt		0.27	4.57		
5		Wood - cored log, light brown, soft, rotted, pieces up to 90mm, easily crumbled by hand		-0.34	5.18		
		Gravelly Well Graded Sand (SW), grey, wet, fine to medium sand, fine to coarse subrounded gravel, trace organics (woodchips)		-0.80	5.64		
		Well Graded Sand (SW), grey, wet, fine to coarse sand		-1.26	6.10		
7		Well Graded Gravel (GW), grey, wet, fine gravel, trace to some medium to coarse sand		-1.87	6.71		
		grades to fine to coarse gravel with depth		-2.17	7.01		
		Well Graded Sand (SW), Grey, wet, fine to medium sand, trace fine gravel		-2.78			
		End of Hole		7.62			

Notes: Sonic Core Recovery:
 -Samples were collected as grabs from LDPE sonic core bags 2.1-4.6m: 2.1m
 4.6-7.6m: 2.7m
 -Soil vapour headspace readings were measured with RKI Eagle II PID



BCR PROPERTIES
STAGE 2 PSI AND DSI
SQUAMISH RAIL YARD
39500 GOVERNMENT RD
SQUAMISH, BC

Drilling Contractor : Downrite Drilling
Drilling Method : Solid Stem Auger
Project Supervisor : David Tiplady
Field Engineer : Robert Bulger
Date : March 29, 2006

Project Number : 2695
Borehole Location : See Figure 1
Hole Diameter : 152mm

Depth (metres)	DESCRIPTION	GRAPHIC	REMARKS	: MW06-34
0	Grey SILT and WOOD WASTE (0.31)			<p>Diagram labels: Cover, Steel Stick-up Casing, Concrete, Cuttings, Bentonite, 1.52m, Filter Sand, Screen, Water Table at 3.06m on May 8, 2006, 4.57m</p>
	Grey-brown SAND, some silt, some gravel, moist (1.07)		Sample S594 @ 0.31m - 0.76m - bgl Headspace vapour reading = 50ppmv	
1	WOOD WASTE, moist (1.37)			
	Grey-brown SILT, moist (2.13)		Sample S595 @ 1.37m - 1.52m - bgl Headspace vapour reading = 25ppmv	
2	Grey-brown SILT, some fine sand, moist (2.59)			
	Grey SAND, moist becoming wet at 2.9m (3.05)		Sample S596 @ 2.59m - 3.05m - bgl Headspace vapour reading = 130ppmv	
3	Light brown coarse SAND, some gravel, wet (4.57)		Sample S597 @ 3.20m - 3.51m - bgl Headspace vapour reading = 5% LEL	
4	End of Hole			
5				



Borehole No: MR19-01

Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.9 m

Squamish, BC

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Sample Type Sample Number	Particle Size Distribution				Field Blowcount (blows/300 mm) <input type="checkbox"/> SPT	Plastic Limit Moisture Content Liquid Limit	VWP-19-01-10 m	VWP-19-01-20 m	Elevation (m)
					Gravel (%)	Sand (%)	Fines						
							Silt (%)	Clay (%)					
0		SAND AND GRAVEL (FILL) (Not sampled due to possible contamination).											
3.7	Mud Rotary Drill	SAND, gravelly, trace silt, wet, dense, grey; fine to coarse sand; fine to coarse gravel. SPT at 3.7 m: 5/18/19/22 (N=37) Recovery = 50%		SPT-01	29	66	6						3
5.5	Mud Rotary Drill	GRAVEL, sandy, trace silt, wet, compact, grey; fine to coarse sand; fine to coarse gravel. SPT at 5.5 m: 9/10/10/8 (N=20) Recovery = 50%		SPT-02	71	27	2						0
7.3	Mud Rotary Drill	GRAVEL AND SAND, wet, compact, grey; fine to coarse sand; fine to coarse gravel. SPT at 7.3 m: 9/8/5/11 (N=13) Recovery = 50%		SPT-03									-2
9.1	Mud Rotary Drill	SPT at 9.1 m: 4/16/19/15 (N=35) Recovery = 75%		SPT-04									-3



Contractor: Mud Bay Drilling

Completion Depth: 40.8 m

Drilling Rig Type: Fraste Mud Rotary Drill

Start Date: 2019 June 13

Logged By: CR

Completion Date: 2019 June 14

Reviewed By: PK

Page 1 of 5



Borehole No: MR19-01

Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.9 m

Squamish, BC

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Sample Type	Sample Number	Particle Size Distribution				Field Blowcount (blows/300 mm) <input type="checkbox"/> SPT	Plastic Limit Moisture Content Liquid Limit	VWP19-01-10 m	VWP19-01-20 m	Elevation (m)
						Gravel (%)	Sand (%)	Fines						
								Silt (%)	Clay (%)					
10														
11		SPT at 11.0 m: 17/16/7/7 (N=23) Recovery = 75% - Trace silt.			SPT-05	53	41	6						-5
12														-6
13		SAND, trace to some gravel, trace silt, wet, loose to compact, grey, sand is fine to coarse grained, gravel is fine to coarse grained SPT at 12.8 m: 8/6/4/3 (N=10) Recovery = 50%			SPT-06									-7
14														-8
15	Mud Rotary Drill	SPT at 14.6 m: 5/4/5/5 (N=9) Recovery = 50%			SPT-07	10	84	6						-9
16														-10
17		SPT at 16.5 m: 9/7/7/9 (N=14) Recovery = 50%			SPT-08									-11
18														-12
19		SPT at 18.3 m: 12/10/11/16 (N=21) Recovery = 0%			SPT-09									-13
20														-14



Contractor: Mud Bay Drilling

Completion Depth: 40.8 m

Drilling Rig Type: Fraste Mud Rotary Drill

Start Date: 2019 June 13

Logged By: CR

Completion Date: 2019 June 14

Reviewed By: PK

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Borehole No: MR19-01

Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.9 m

Squamish, BC

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Sample Type	Sample Number	Particle Size Distribution				Field Blowcount (blows/300 mm) <input type="checkbox"/> SPT	Plastic Limit Moisture Content Liquid Limit	VWP19-01-10 m	VWP19-01-20 m	Elevation (m)
						Gravel (%)	Sand (%)	Fines						
								Silt (%)	Clay (%)					
20	120	SPT at 20.1 m: 7/12/10/8 (N=22) Recovery = 50%		X	SPT-10					<input type="checkbox"/>				-15
21		SPT at 21.3 m: 11/9/8/10 (N=17) Recovery = 50%		X	SPT-11	13	83	4		<input type="checkbox"/>	●			-16
22														-17
23														-18
24		SPT at 23.7 m: 9/6/9/9 (N=15) Recovery = 50% - Gravelly between 23.9 m and 25.7 m.		X	SPT-12					<input type="checkbox"/>				-19
25														-20
26		SPT at 25.6 m: 8/11/12/12 (N=23) Recovery = 85%		X	SPT-13	6	90	4		<input type="checkbox"/>	●			-21
27														-22
28		SPT at 27.4 m: 10/4/4/6 (N=8) Recovery = 50%		X	SPT-14					<input type="checkbox"/>				-23
29														-24
30		SPT at 29.3 m: 7/9/8/10 (N=17) Recovery = 50%		X	SPT-15	16	80	4		<input type="checkbox"/>	●			-24



Contractor: Mud Bay Drilling

Completion Depth: 40.8 m

Drilling Rig Type: Fraste Mud Rotary Drill

Start Date: 2019 June 13

Logged By: CR

Completion Date: 2019 June 14

Reviewed By: PK

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Borehole No: MR19-01

Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.9 m

Squamish, BC

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Sample Type	Sample Number	Particle Size Distribution				Field Blowcount (blows/300 mm) <input type="checkbox"/> SPT	Plastic Limit Moisture Content Liquid Limit			VWP19-01-10 m	VWP19-01-20 m	Elevation (m)					
						Gravel (%)	Sand (%)	Fines			20	40	60				80	20	40	60	80
								Silt (%)	Clay (%)												
30																					
31		SPT at 31.1 m: 13/6/12/10 (N=18) Recovery = 5% Poor recovery due to coarse gravel blocking the spoon.		X	SPT-16					<input type="checkbox"/>						-25					
32																-26					
33		SPT at 32.9 m: 5/8/11/12 (N=19) Recovery = 100%		X	SPT-17	1	95	4		<input type="checkbox"/>	●					-27					
34																-28					
35	Mud Rotary Drill	SPT at 34.8 m: 8/10/9/12 (N=19) Recovery = 85%		X	SPT-18					<input type="checkbox"/>						-29					
36																-30					
37		SPT at 36.6 m: 9/11/12/11 (N=23) Recovery = 85%		X	SPT-19					<input type="checkbox"/>						-31					
38																-32					
39		SPT at 38.4 m: 16/13/10/10 (N=23) Recovery = 75% - Gravelly below 38.4 m.		X	SPT-20					<input type="checkbox"/>						-33					
40																-34					



Contractor: Mud Bay Drilling

Completion Depth: 40.8 m

Drilling Rig Type: Fraste Mud Rotary Drill

Start Date: 2019 June 13

Logged By: CR

Completion Date: 2019 June 14

Reviewed By: PK

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Borehole No: MR19-01

Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.9 m

Squamish, BC

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Sample Type	Sample Number	Particle Size Distribution				Field Blowcount (blows/300 mm) <input type="checkbox"/> SPT	Plastic Limit Moisture Content Liquid Limit	VWP19-01-10 m	VWP19-01-20 m	Elevation (m)
						Gravel (%)	Sand (%)	Fines						
								Silt (%)	Clay (%)					
40														
40.2		SPT at 40.2 m: 9/9/11/19 (N=20) Recovery = 50%			SPT-21									
40.8		End of testhole at 40.8 m -Upon completion of drilling, two nested vibrating wire piezometers were installed as described in the testhole logs. - Soil descriptions and estimates of soil consistency were interpreted from drilling effort, insitu data, and visual classification of recovered samples. These descriptions are based on engineering judgement. - UTM coordinates and ground surface elevations have been surveyed with a RTK Trimble system. - SS = Salinity Sample, SE = Environmental Sample, SG = Geotechnical Sample, SPT = Geotechnical Split Spoon Sample.												-35
41														-36
42														-37
43														-38
44														-39
45														-40
46														-41
47														-42
48														-43
49														-44



Contractor: Mud Bay Drilling

Completion Depth: 40.8 m

Drilling Rig Type: Fraste Mud Rotary Drill

Start Date: 2019 June 13

Logged By: CR

Completion Date: 2019 June 14

Reviewed By: PK

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Borehole No: MR19-02

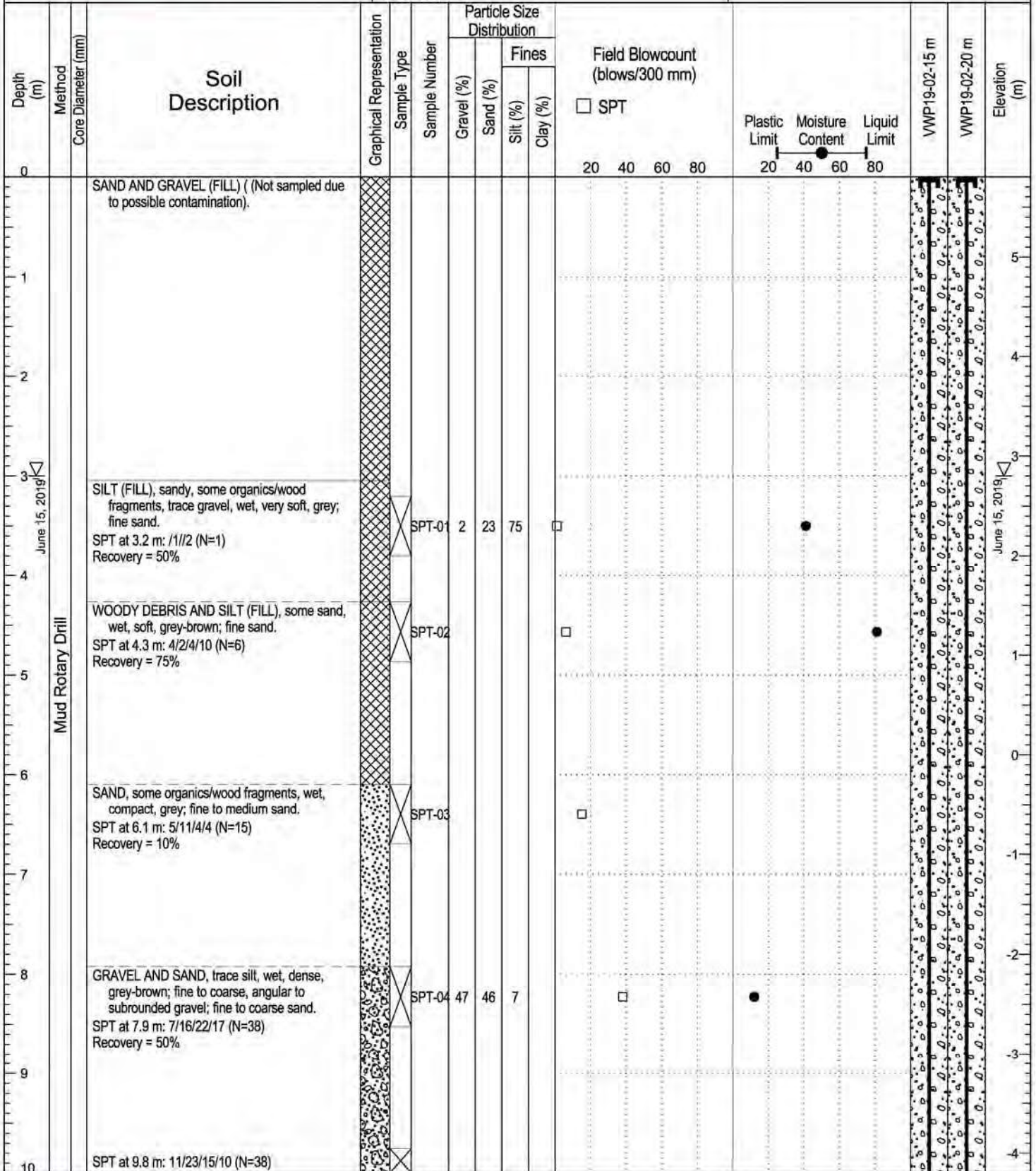
Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.8 m

Squamish, BC



Contractor: Mud Bay Drilling

Completion Depth: 50.6 m

Drilling Rig Type: Fraste Mud Rotary Drill

Start Date: 2019 June 15

Logged By: CR

Completion Date: 2019 June 17

Reviewed By: PK

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Borehole No: MR19-02

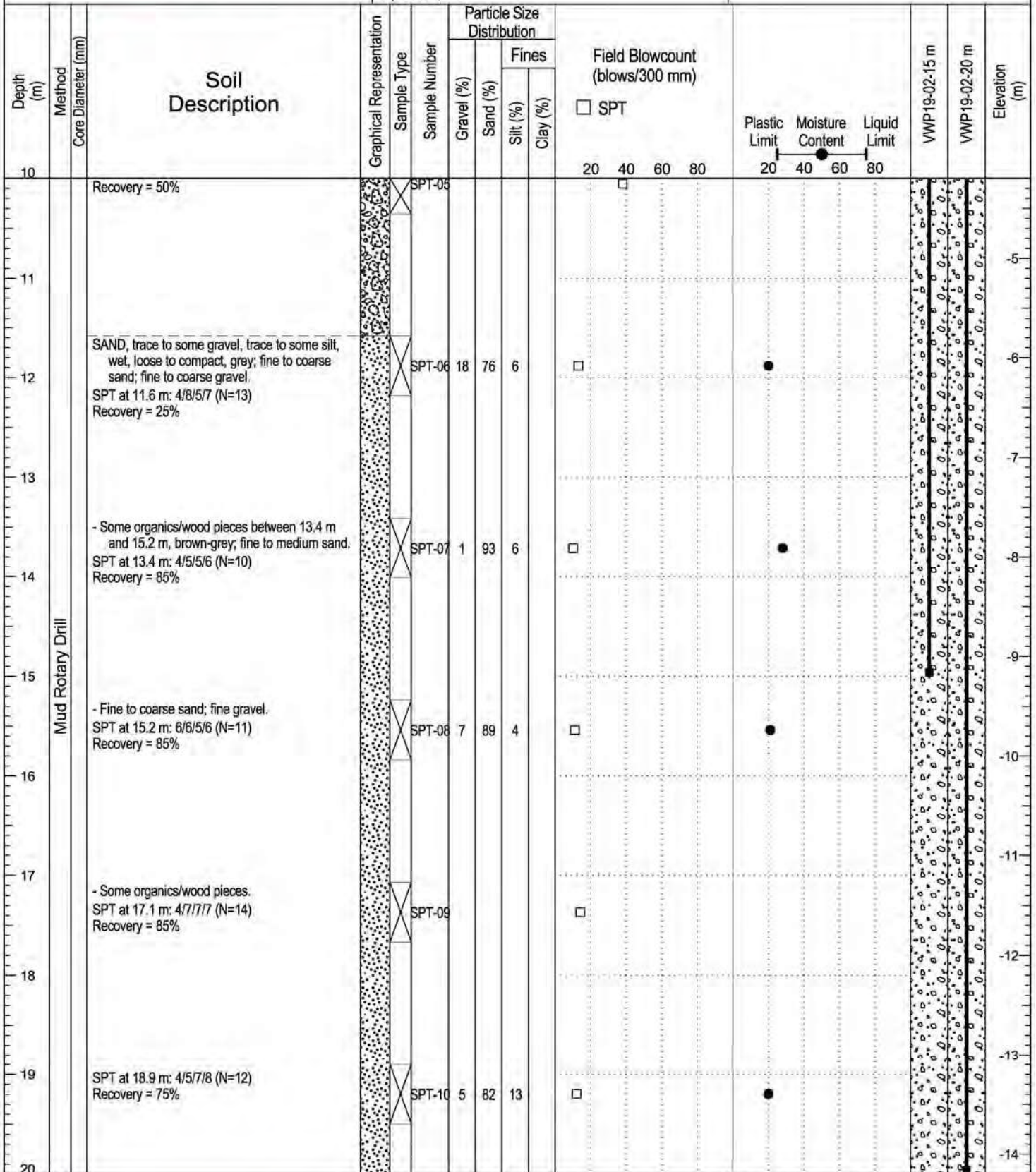
Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.8 m

Squamish, BC



Contractor: Mud Bay Drilling

Completion Depth: 50.6 m

Drilling Rig Type: Fraste Mud Rotary Drill

Start Date: 2019 June 15

Logged By: CR

Completion Date: 2019 June 17

Reviewed By: PK

Page 2 of 6



Borehole No: MR19-02

Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.8 m

Squamish, BC

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Sample Type	Sample Number	Particle Size Distribution				Field Blowcount (blows/300 mm) <input type="checkbox"/> SPT	Plastic Limit Moisture Content Liquid Limit	VWP19-02-15 m	VWP19-02-20 m	Elevation (m)
						Gravel (%)	Sand (%)	Fines						
								Silt (%)	Clay (%)					
20														
21		SPT at 20.7 m: 3/4/5/5 (N=9) Recovery = 75%			SPT-11									-15
22														-16
23		- Trace organics/wood fragments. SPT at 22.6 m: 6/5/7/8 (N=12) Recovery = 85%			SPT-12									-17
24														-18
25	Mud Rotary Drill 120	SPT at 24.4 m: 5/5/6/6 (N=11) Recovery = 75%			SPT-13	0	96	4						-19
26														-20
27		SPT at 26.2 m: 7/4/5/6 (N=9) Recovery = 50% - Gravelly, some wood pieces between 26.2 m and 28.0.			SPT-14									-21
28		- Interbedded layers of organics/wood pieces. SPT at 28.0 m: 4/6/4/4 (N=10) Recovery = 65%			SPT-15	4	78	18						-22
29														-23
30														-24



Contractor: Mud Bay Drilling

Completion Depth: 50.6 m

Drilling Rig Type: Fraste Mud Rotary Drill

Start Date: 2019 June 15

Logged By: CR

Completion Date: 2019 June 17

Reviewed By: PK

Page 3 of 6



Borehole No: MR19-02

Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.8 m

Squamish, BC

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Sample Type	Sample Number	Particle Size Distribution				Field Blowcount (blows/300 mm) <input type="checkbox"/> SPT	Plastic Limit Moisture Content Liquid Limit	VWP19-02-15 m	VWP19-02-20 m	Elevation (m)
						Gravel (%)	Sand (%)	Fines						
								Silt (%)	Clay (%)					
30		SPT at 29.9 m: 6/4/5/6 (N=9) Recovery = 65%		X	SPT-16									-25
31														-26
32		SPT at 31.7 m: 4/8/8/8 (N=16) Recovery = 65%		X	SPT-17									-27
33														-28
34		SPT at 33.5 m: 8/9/11/11 (N=20) Recovery = 85%		X	SPT-18	0	95	5						-29
35	Mud Rotary Drill													-30
36		- Fine gravel. SPT at 35.4 m: 8/12/11/11 (N=23) Recovery = 85%		X	SPT-19									-31
37														-32
38		SPT at 37.2 m: 7/9/11/12 (N=20) Recovery = 85%		X	SPT-20									-33
39														-34
40		- Gravelly between 39.1 m and 40.9 m. SPT at 39.0 m: 12/12/8/9 (N=20) Recovery = 75%		X	SPT-21	20	76	4						-34



Contractor: Mud Bay Drilling

Completion Depth: 50.6 m

Drilling Rig Type: Fraste Mud Rotary Drill

Start Date: 2019 June 15

Logged By: CR

Completion Date: 2019 June 17

Reviewed By: PK

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Borehole No: MR19-02

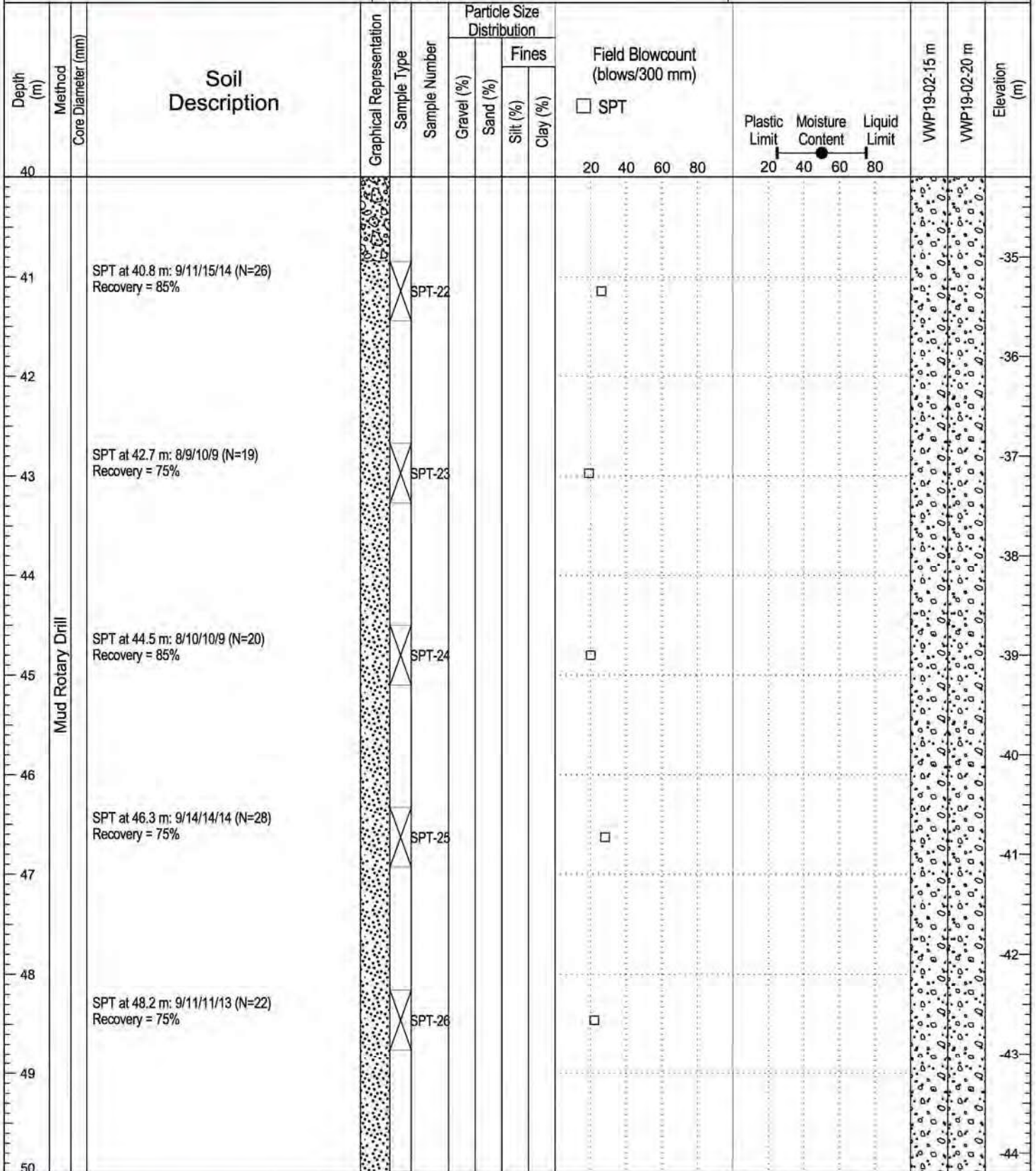
Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.8 m

Squamish, BC



Contractor: Mud Bay Drilling

Completion Depth: 50.6 m

Drilling Rig Type: Fraste Mud Rotary Drill

Start Date: 2019 June 15

Logged By: CR

Completion Date: 2019 June 17

Reviewed By: PK

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Borehole No: MR19-02

Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.8 m

Squamish, BC

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Sample Type	Sample Number	Particle Size Distribution				Field Blowcount (blows/300 mm) <input type="checkbox"/> SPT	Plastic Limit Moisture Content Liquid Limit	VWP19-02-15 m	VWP19-02-20 m	Elevation (m)
						Gravel (%)	Sand (%)	Fines						
								Silt (%)	Clay (%)					
50														
50		SPT at 50 m: 10/12/11/13 (N=23) Recovery = 75%			SPT-27									
51		End of testhole at 50.6 m -Upon completion of drilling, two nested vibrating wire piezometers were installed as described in the testhole logs. - Soil descriptions and estimates of soil consistency were interpreted from drilling effort, insitu data, and visual classification of recovered samples. These descriptions are based on engineering judgement. - UTM coordinates and ground surface elevations have been surveyed with a RTK Trimble system. - SS = Salinity Sample, SE = Environmental Sample, SG = Geotechnical Sample, SPT = Geotechnical Split Spoon Sample.												-45
52														-46
53														-47
54														-48
55														-49
56														-50
57														-51
58														-52
59														-53
60														-54



Contractor: Mud Bay Drilling

Completion Depth: 50.6 m

Drilling Rig Type: Fraste Mud Rotary Drill

Start Date: 2019 June 15

Logged By: CR

Completion Date: 2019 June 17

Reviewed By: PK

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Borehole No: MR19-03

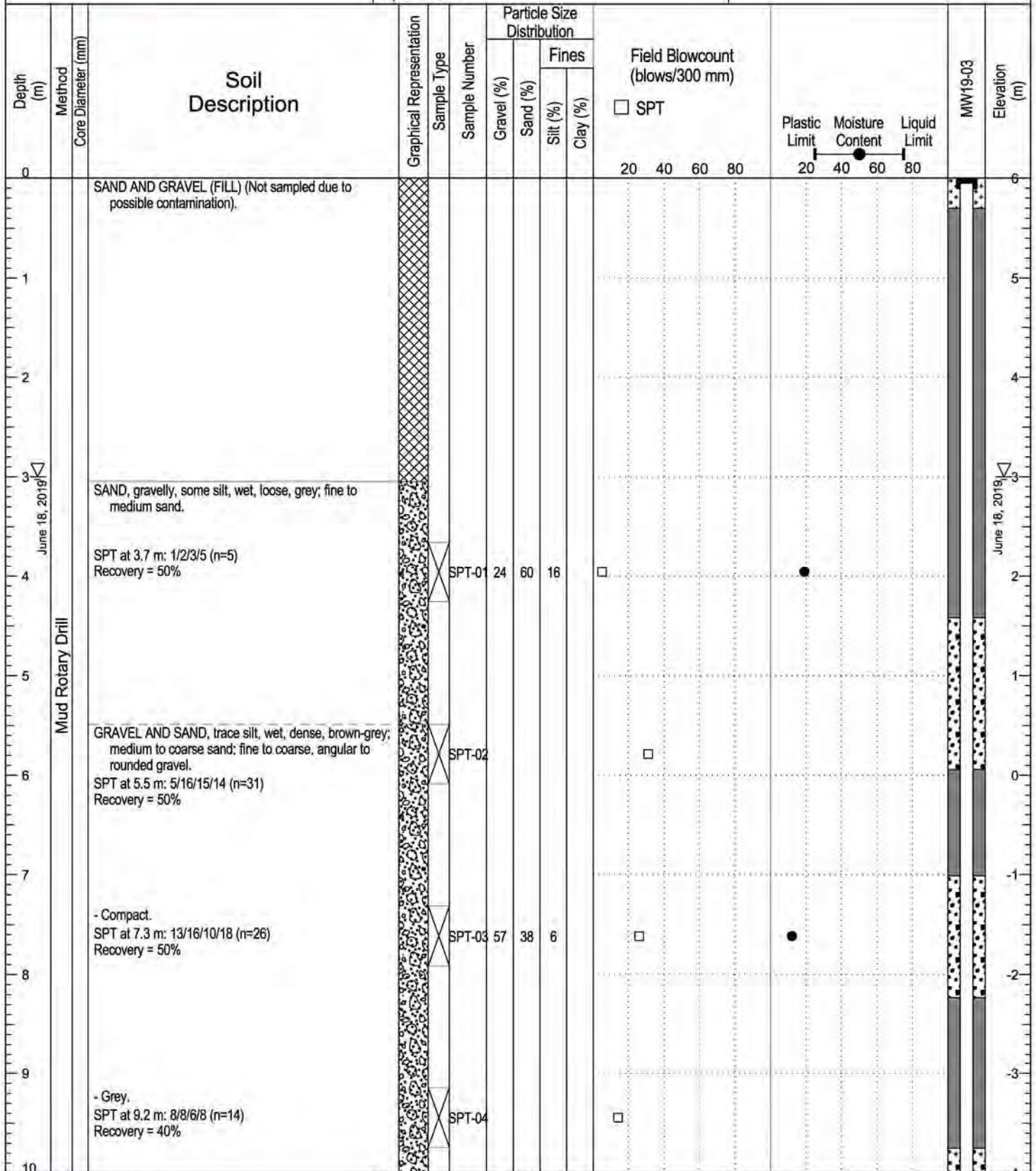
Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 6 m

Squamish, BC



Contractor: Mud Bay Drilling

Completion Depth: 40.8 m

Drilling Rig Type: Fraste Mud Rotary Drill

Start Date: 2019 June 17

Logged By: CR

Completion Date: 2019 June 18

Reviewed By: PK

Page 1 of 5



Borehole No: MR19-03

Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 6 m

Squamish, BC

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Sample Type	Sample Number	Particle Size Distribution				Field Blowcount (blows/300 mm) □ SPT	Plastic Limit Moisture Content Liquid Limit			MW19-03	Elevation (m)	
						Gravel (%)	Sand (%)	Fines			20	40	60			80
								Silt (%)	Clay (%)							
10																
11		- Dense. SPT at 11.0 m: 20/25/15/11 (n=40) Recovery = 50%			SPT-05	50	43	7								
12		SAND, trace to some gravel, trace silt, wet, compact, grey; fine to coarse sand; fine to coarse gravel.														
13		SPT at 12.8 m: 7/10/8/8 (n=18) Recovery = 100%			SPT-06	5	90	5								
14																
15	Mud Rotary Drill	SPT at 14.7 m: 6/5/5/5 (n=10) Recovery = 0%			SPT-07											
16																
17		SPT at 16.5 m: 6/6/7/9 (n=13) Recovery = 60%			SPT-08	3	93	4								
18																
19		SPT at 18.3 m: 8/8/6/6 (n=14) Recovery = 50%			SPT-09											
20																



Contractor: Mud Bay Drilling

Completion Depth: 40.8 m

Drilling Rig Type: Fraste Mud Rotary Drill

Start Date: 2019 June 17

Logged By: CR

Completion Date: 2019 June 18

Reviewed By: PK

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Borehole No: MR19-03

Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 6 m

Squamish, BC

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Sample Type	Sample Number	Particle Size Distribution				Field Blowcount (blows/300 mm) <input type="checkbox"/> SPT	Plastic Limit	Moisture Content	Liquid Limit	MW19-03	Elevation (m)
						Gravel (%)	Sand (%)	Fines							
								Silt (%)	Clay (%)						
20	120	- 15 cm lense of: SAND, trace silt, trace gravel, trace organics/wood fragments, wet, loose, grey, fine sand. SPT at 20.1 m: 5/5/4/6 (n=9) Recovery = 75%		X	SPT-10	2	91	7						-14	
21														-15	
22		SPT at 22.0 m: 7/6/5/6 (n=11) Recovery = 65%		X	SPT-11									-16	
23														-17	
24		- Trace to some gravel, no silt; medium to coarse sand. SPT at 23.8 m: 6/4/6/8 (n=10) Recovery = 65%		X	SPT-12									-18	
25	Mud Rotary Drill													-19	
26		- 20 cm lense of SAND, some organics. SPT at 25.6 m: 7/5/6/8 (n=11) Recovery = 60% - Trace organics between 25.9 m and 29.4 m.		X	SPT-13	11	83	6						-20	
27														-21	
28		SPT at 27.5 m: 7/6/8/8 (n=14) Recovery = 75%		X	SPT-14									-22	
29														-23	
30		SPT at 29.3 m: 6/5/5/7 (n=10) Recovery = 65%		X	SPT-15	1	96	3						-24	



Contractor: Mud Bay Drilling

Completion Depth: 40.8 m

Drilling Rig Type: Fraste Mud Rotary Drill

Start Date: 2019 June 17

Logged By: CR

Completion Date: 2019 June 18

Reviewed By: PK

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Borehole No: MR19-03

Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 6 m

Squamish, BC

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Sample Type Sample Number	Particle Size Distribution				Field Blowcount (blows/300 mm) <input type="checkbox"/> SPT	Plastic Limit Moisture Content Liquid Limit			MW19-03	Elevation (m)	
					Gravel (%)	Sand (%)	Fines			20	40	60			80
							Silt (%)	Clay (%)							
30															
31		SPT at 31.1 m: 5/5/6/6 (n=11) Recovery = 50%		SPT-16											
32															
33		SPT at 32.9 m: 8/8/7/8 (n=15) Recovery = 50%		SPT-17											
34															
35	Mud Rotary Drill	SPT at 34.8 m: 6/8/14/15 (n=22) Recovery = 65%		SPT-18	2	92	6								
36															
37		SPT at 36.6 m: 10/13/11/10 (n=24) Recovery = 20%		SPT-19											
38															
39		SPT at 38.4 m: 14/14/11/10 (n=25) Recovery = 50%		SPT-20											
40															



Contractor: Mud Bay Drilling

Completion Depth: 40.8 m

Drilling Rig Type: Fraste Mud Rotary Drill

Start Date: 2019 June 17

Logged By: CR

Completion Date: 2019 June 18

Reviewed By: PK

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Borehole No: MR19-03

Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 6 m

Squamish, BC

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Sample Type	Sample Number	Particle Size Distribution				Field Blowcount (blows/300 mm)	Plasticity Chart			MW19-03	Elevation (m)	
						Gravel (%)	Sand (%)	Fines			SPT	Plastic Limit	Moisture Content			Liquid Limit
								Silt (%)	Clay (%)							
40		- Some gravel to gravelly. SPT at 40.3 m: 10/10/8/8 (n=18) Recovery = 35%			SPT-2					20	40	60	80		-34	
41		End of testhole at 40.8 m -Upon completion of drilling, a groundwater monitoring well was installed as shown. - Soil descriptions and estimates of soil consistency were interpreted from drilling effort, in-situ data, and visual classification of recovered samples. These descriptions are based on engineering judgement. - UTM coordinates and ground surface elevations have been surveyed with a RTK Trimble system. - SS = Salinity Sample, SE = Environmental Sample, SG = Geotechnical Sample, SPT = Geotechnical Split Spoon Sample.													-35	
42															-36	
43															-37	
44															-38	
45															-39	
46															-40	
47															-41	
48															-42	
49															-43	
50															-44	



Contractor: Mud Bay Drilling

Completion Depth: 40.8 m

Drilling Rig Type: Fraste Mud Rotary Drill

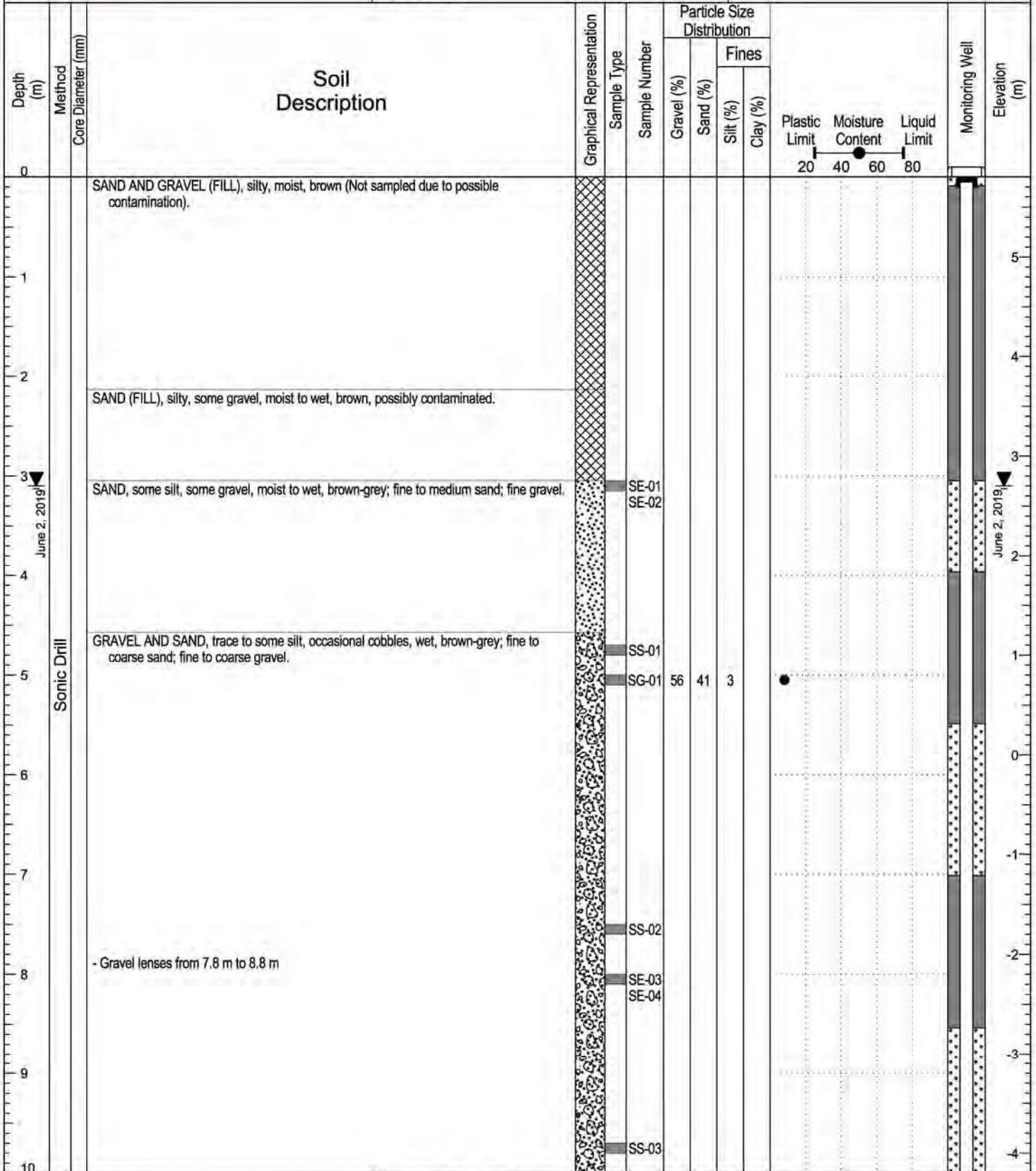
Start Date: 2019 June 17

Logged By: CR

Completion Date: 2019 June 18

Reviewed By: PK

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Sonic Hole No: SH19-01

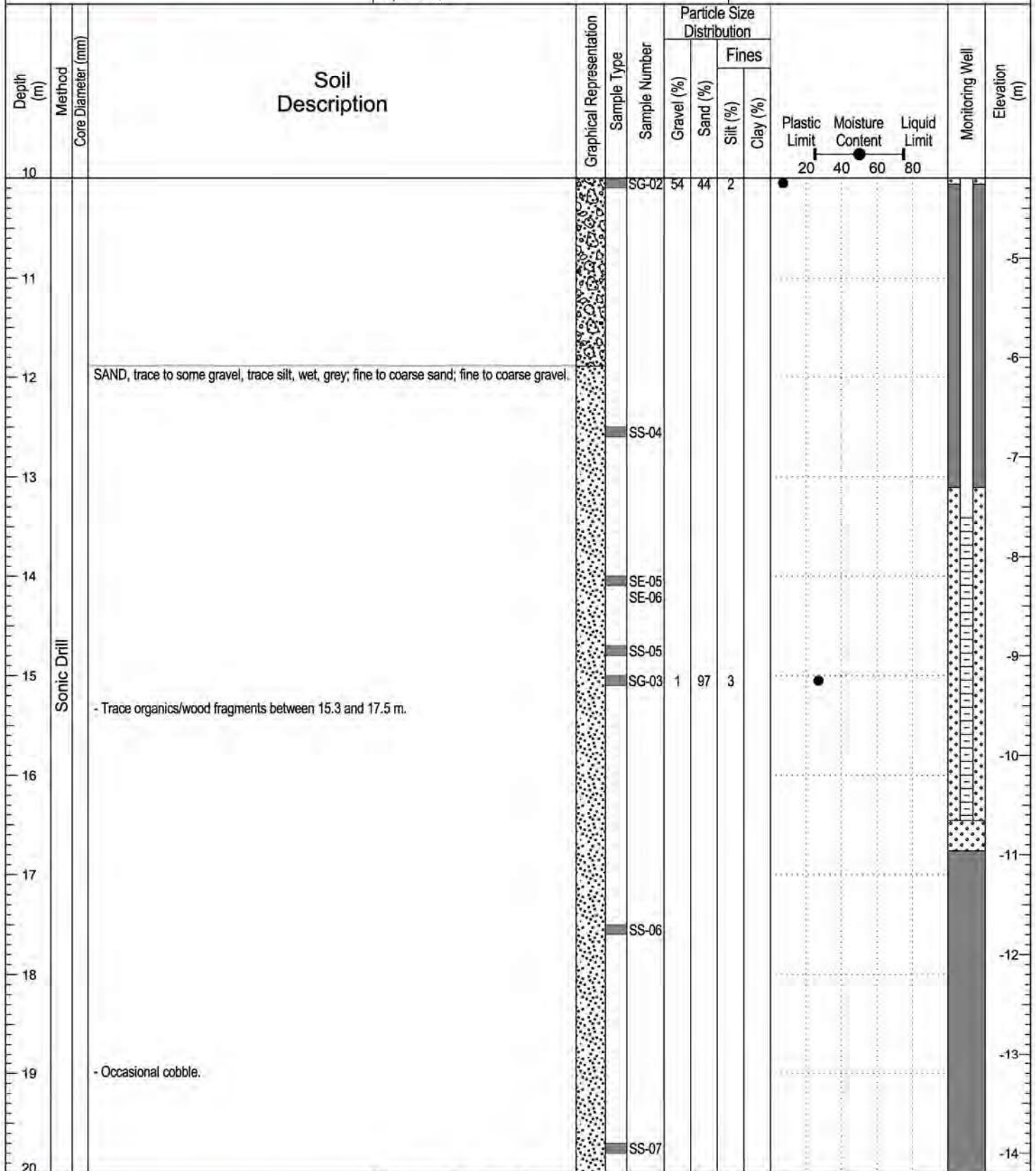
Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.8 m

Squamish, BC



Contractor: Mud Bay Drilling

Completion Depth: 41.8 m

Drilling Rig Type: LS600 Sonic Drill

Start Date: 2019 June 01

Logged By: CR

Completion Date: 2019 June 01

Reviewed By: PK

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Sonic Hole No: SH19-01

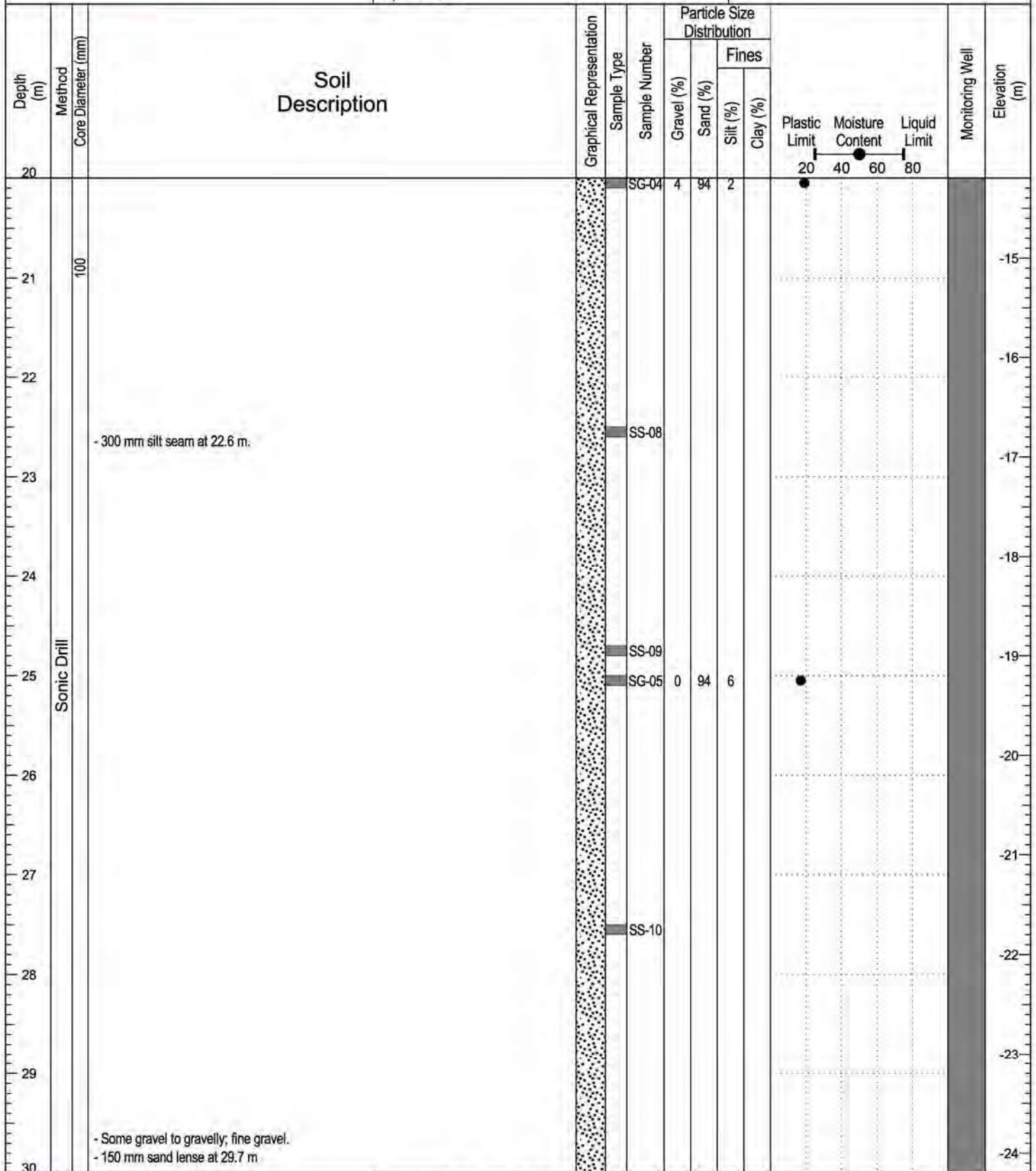
Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.8 m

Squamish, BC



Contractor: Mud Bay Drilling

Completion Depth: 41.8 m

Drilling Rig Type: LS600 Sonic Drill

Start Date: 2019 June 01

Logged By: CR

Completion Date: 2019 June 01

Reviewed By: PK

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Sonic Hole No: SH19-01

Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.8 m

Squamish, BC

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Sample Type	Sample Number	Particle Size Distribution				Monitoring Well	Elevation (m)			
						Gravel (%)	Sand (%)	Fines				Plastic Limit	Moisture Content	Liquid Limit
								Silt (%)	Clay (%)					
30														
31		- Seam of SAND, silty, some gravel at 30.8 m.			SS-11									
32		- 300 mm seam of SAND and SILT and ORGANICS/WOOD FRAGMENTS at 31.7 m.			SG-06	1	51	48						
33		NO RECOVERY from 32.6 m to 35.7 m.			SG-07	25	74	1						
34														
35	Sonic Drill													
36		SAND, trace silt, trace gravel, wet, grey; fine to medium sand, fine gravel.												
37														
38														
39														
40														



Contractor: Mud Bay Drilling

Completion Depth: 41.8 m

Drilling Rig Type: LS600 Sonic Drill

Start Date: 2019 June 01

Logged By: CR

Completion Date: 2019 June 01

Reviewed By: PK

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Sonic Hole No: SH19-01

Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.8 m

Squamish, BC

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Sample Type	Sample Number	Particle Size Distribution				Monitoring Well	Elevation (m)			
						Gravel (%)	Sand (%)	Fines				Plastic Limit	Moisture Content	Liquid Limit
								Silt (%)	Clay (%)					
40														
41	Sonic Drill				SG-08	0	98	2				-35		
42		End of testhole at 41.8 m - Upon completion of drilling, a groundwater monitoring well was installed as shown. - Soil descriptions and estimates of soil consistency were interpreted from drilling effort, insitu data, and visual classification of recovered samples. These descriptions are based on engineering judgement. - UTM coordinates and ground surface elevations have been surveyed with a RTK Trimble system. - SS = Salinity Sample, SE = Environmental Sample, SG = Geotechnical Sample, SPT = Geotechnical Split Spoon Sample.										-36		
43												-37		
44												-38		
45												-39		
46												-40		
47												-41		
48												-42		
49												-43		
50												-44		



Contractor: Mud Bay Drilling

Completion Depth: 41.8 m

Drilling Rig Type: LS600 Sonic Drill

Start Date: 2019 June 01

Logged By: CR

Completion Date: 2019 June 01

Reviewed By: PK

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Sonic Hole No: SH19-02

Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.8 m

Squamish, BC

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Sample Type	Sample Number	Particle Size Distribution				Plastic Limit Moisture Content Liquid Limit	Elevation (m)
						Gravel (%)	Sand (%)	Fines			
								Silt (%)	Clay (%)		
0		SAND AND GRAVEL (FILL), some wood debris, moist, brown (Not sampled due to possible contamination).									5.8
0.5		- Becomes wet at 2.4 m									
2.4		SAND, silty, moist, grey; fine sand.		SE-3.3							
5.2		SAND, some gravel, trace silt, wet, grey, fine to medium sand; fine to coarse, subangular to subrounded gravel. - No gravel, fine to coarse sand.		SE-5.2 SG-01 SS-5.3	0	99	1				
5.8		GRAVEL AND SAND, trace silt, occasional cobbles, wet, grey, medium to coarse sand, fine to coarse gravel; cobbles up to 100 mm.		SG-02	53	46	1				
7.5				SS-7.5							
8.3		GRAVEL, some cobbles, trace sand, wet, grey; fine to coarse sand, angular to rounded cobbles.		SE-8.3							
8.6		GRAVEL, sandy, trace silt, occasional cobbles, wet, grey; angular to rounded cobbles; fine to coarse sand; fine to coarse gravel.		SG-03 SS-8.6	72	27	1				
9.1 - 11.3		NO RECOVERY from 9.1 m to 11.3 m.									



Contractor: Mud Bay Drilling

Completion Depth: 200.2 m

Drilling Rig Type: LS600 Sonic Drill

Start Date: 2019 June 03

Logged By: CR

Completion Date: 2019 June 14

Reviewed By: PK

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Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Sample Type	Sample Number	Particle Size Distribution				Plastic Limit Moisture Content Liquid Limit	VSP19-01	Elevation (m)
						Gravel (%)	Sand (%)	Fines				
								Silt (%)	Clay (%)			
10												
11												
11.3		SAND, trace gravel, trace silt, occasional cobbles, wet, grey, fine to coarse sand; fine gravel; cobbles up to 90 mm.			SE-11.3 SG-04 SS-11.4	1	98	1				
12												
13		NO RECOVERY from 12.8 m to 14.3 m.										
14												
15	Sonic Drill											
15.6					SE-15.6 SS-15.6 SG-05	0	50	50				
16		SAND AND SILT, occasional rootlets/wood fragments, wet, brown-grey; fine sand, wood fragments up to 50 mm.										
16.5					SS-16.5							
17												
18		SAND, trace silt, trace to some gravel, trace organics/wood fragments, wet, grey, fine to coarse sand, fine to coarse gravel. - Increasing gravel with depth.										
19												
20												



Sonic Hole No: SH19-02

Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.8 m

Squamish, BC

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Sample Type	Sample Number	Particle Size Distribution				Plastic Limit Moisture Content Liquid Limit	VSP19-01	Elevation (m)
						Gravel (%)	Sand (%)	Fines				
								Silt (%)	Clay (%)			
20												
21												
22												
23												
24												
25	Sonic Drill	SAND and GRAVEL, trace silt, wet, grey, fine to medium sand; fine to coarse, subangular to subrounded gravel. NO RECOVERY from 24.7 m to 26.5 m.			SG-06 SS-21.0	3 95	2					
26												
27		SAND, trace silt to silty, trace to some gravel, trace organics/wood fragments, wet, grey, fine to coarse sand, fine to coarse gravel. - Cobble at 27.1 m (80 mm nominal diameter).			SG-07 SS-24.4	39 56	5					
28												
29												
30					SG-08 SS-29.3	5 92	3					



Contractor: Mud Bay Drilling

Completion Depth: 200.2 m

Drilling Rig Type: LS600 Sonic Drill

Start Date: 2019 June 03

Logged By: CR

Completion Date: 2019 June 14

Reviewed By: PK

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Sonic Hole No: SH19-02

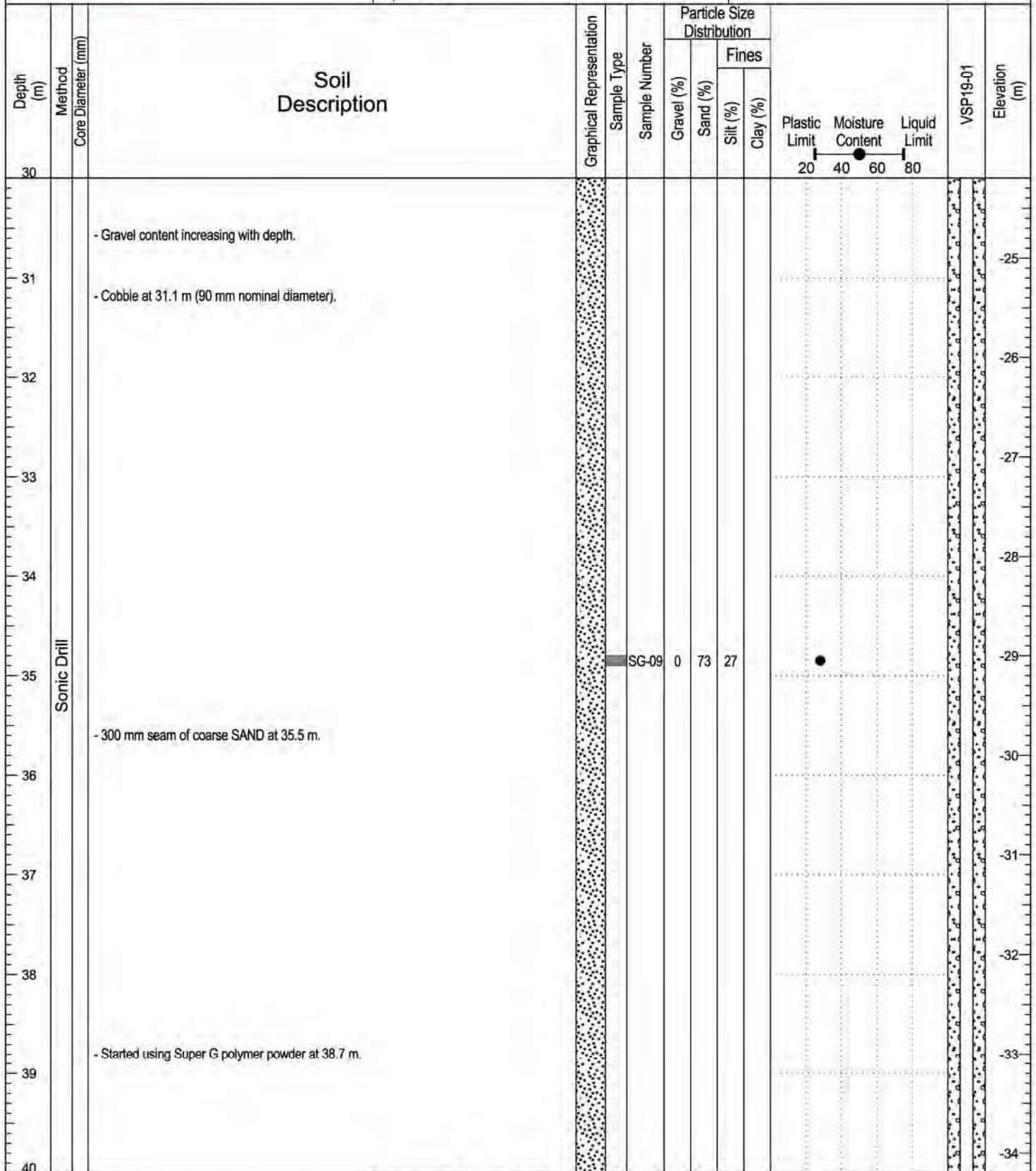
Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.8 m

Squamish, BC



Contractor: Mud Bay Drilling

Completion Depth: 200.2 m

Drilling Rig Type: LS600 Sonic Drill

Start Date: 2019 June 03

Logged By: CR

Completion Date: 2019 June 14

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Sonic Hole No: SH19-02

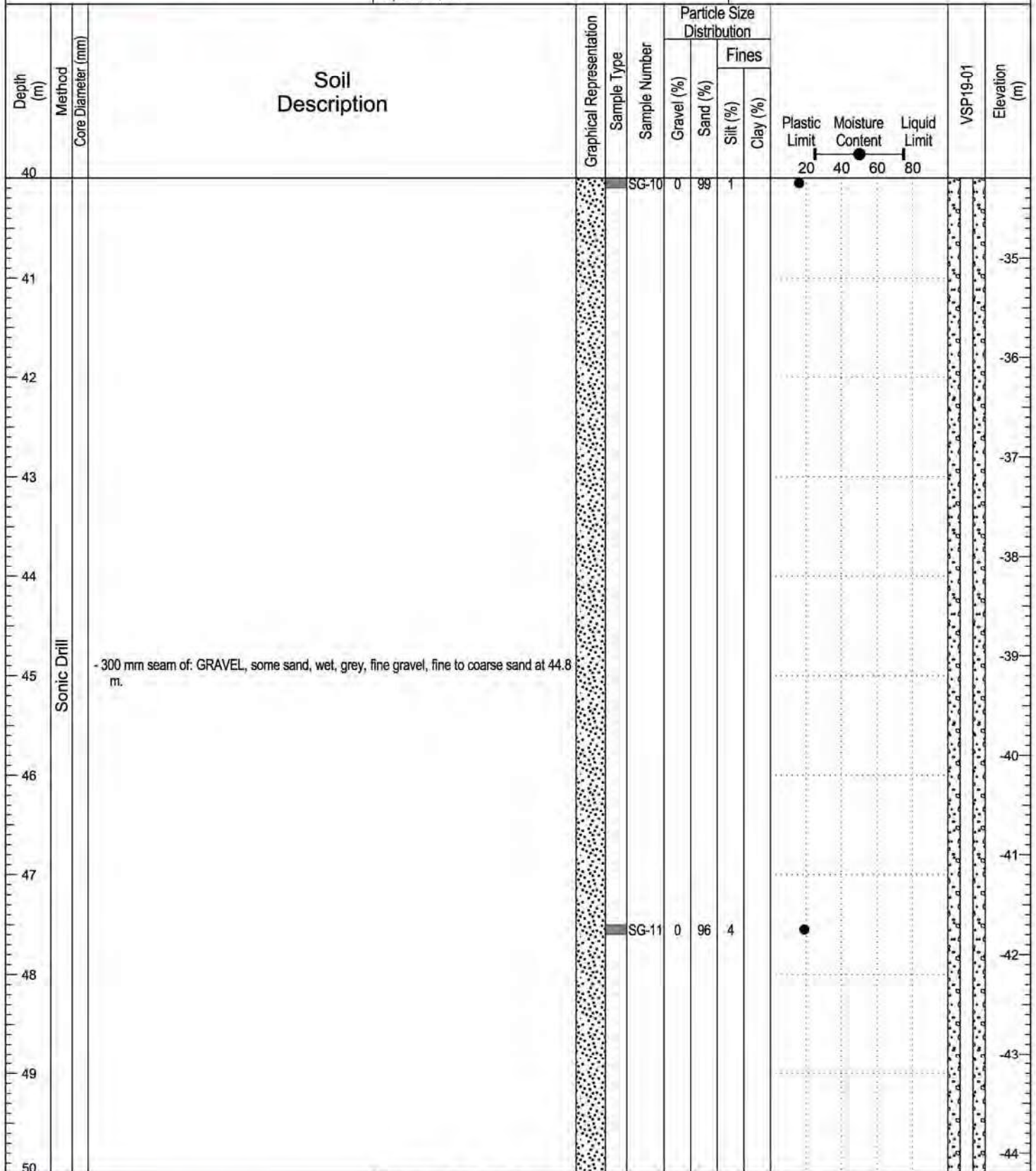
Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.8 m

Squamish, BC



Contractor: Mud Bay Drilling

Completion Depth: 200.2 m

Drilling Rig Type: LS600 Sonic Drill

Start Date: 2019 June 03

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Completion Date: 2019 June 14

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Sonic Hole No: SH19-02

Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.8 m

Squamish, BC

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Sample Type	Sample Number	Particle Size Distribution				Plastic Limit Moisture Content Liquid Limit	VSP19-01	Elevation (m)
						Gravel (%)	Sand (%)	Fines				
								Silt (%)	Clay (%)			
50												
51												
52		- Cobble at 51.8m (70 mm nominal diameter).										
53												
54		- Gravelly, occasional cobbles between 53.4 m and 54.0 m; cobbles up to 120 mm nominal diameter.										
55	Sonic Drill				SG-12	0	98	2				
56												
57												
58												
59												
60												



Contractor: Mud Bay Drilling

Completion Depth: 200.2 m

Drilling Rig Type: LS600 Sonic Drill

Start Date: 2019 June 03

Logged By: CR

Completion Date: 2019 June 14

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Sonic Hole No: SH19-02

Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.8 m

Squamish, BC

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Sample Type	Sample Number	Particle Size Distribution				Plastic Limit Moisture Content Liquid Limit	VSP19-01	Elevation (m)
						Gravel (%)	Sand (%)	Fines				
								Silt (%)	Clay (%)			
60												
61		- Seam of silty SAND at 61.0 m.										
62												
63					SG-13							
64												
65	Sonic Drill											
66												
67		- 150 mm seam of silty SAND at 66.8 m.										
68												
69												
70												



Contractor: Mud Bay Drilling

Completion Depth: 200.2 m

Drilling Rig Type: LS600 Sonic Drill

Start Date: 2019 June 03

Logged By: CR

Completion Date: 2019 June 14

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Sonic Hole No: SH19-02

Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.8 m

Squamish, BC

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Sample Type	Sample Number	Particle Size Distribution				Plastic Limit	Moisture Content	Liquid Limit	VSP19-01	Elevation (m)
						Gravel (%)	Sand (%)	Fines						
								Silt (%)	Clay (%)					
70					SG-14	0	96	4		20	40			
71														-65
72														-66
73		- Interbedded layers of SILT, sandy to SAND, silty (up to 150 mm thick).												-67
74														-68
75	Sonic Drill													-69
76														-70
77														-71
78					SG-15									-72
79		- Seam of SAND, silty, wet, brown at 78.8 m. - Cobble at 79.2 m (120 mm nominal diameter).												-73
80														-74



Contractor: Mud Bay Drilling

Completion Depth: 200.2 m

Drilling Rig Type: LS600 Sonic Drill

Start Date: 2019 June 03

Logged By: CR

Completion Date: 2019 June 14

Reviewed By: PK

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Sonic Hole No: SH19-02

Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.8 m

Squamish, BC

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Sample Type	Sample Number	Particle Size Distribution				Plastic Limit 20	Moisture Content 40	Liquid Limit 80	VSP19-01	Elevation (m)
						Gravel (%)	Sand (%)	Fines						
								Silt (%)	Clay (%)					
80														
81														-75
82														-76
83														-77
84														-78
85	Sonic Drill				SG-16									-79
86														-80
87														-81
88														-82
89														-83
90														-84



Contractor: Mud Bay Drilling

Completion Depth: 200.2 m

Drilling Rig Type: LS600 Sonic Drill

Start Date: 2019 June 03

Logged By: CR

Completion Date: 2019 June 14

Reviewed By: PK

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Sonic Hole No: SH19-02

Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.8 m

Squamish, BC

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Sample Type	Sample Number	Particle Size Distribution				Plastic Limit Moisture Content Liquid Limit	VSP19-01	Elevation (m)
						Gravel (%)	Sand (%)	Fines				
								Silt (%)	Clay (%)			
90												
91												
92												
93					SG-17	14	85	1				
94												
95	Sonic Drill	- Gravelly, occasional cobbles; medium to coarse sand; fine to coarse gravel; cobbles up to 100 mm nominal diameter.										
96												
97		- Silty, trace organics; fine sand.										
98												
99												
100												



Contractor: Mud Bay Drilling

Completion Depth: 200.2 m

Drilling Rig Type: LS600 Sonic Drill

Start Date: 2019 June 03

Logged By: CR

Completion Date: 2019 June 14

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Sonic Hole No: SH19-02

Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.8 m

Squamish, BC

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Sample Type	Sample Number	Particle Size Distribution				Plastic Limit 20	Moisture Content 40	Liquid Limit 80	VSP19-01	Elevation (m)
						Gravel (%)	Sand (%)	Fines						
								Silt (%)	Clay (%)					
100	100	- Cobble at 100.3 m.			SG-18									
101		NO RECOVERY from 100.6 m to 102.7 m												-95
102														-96
103		SAND, trace to some gravel, occasional cobbles, wet, grey; fine to coarse sand; fine to coarse, rounded gravel; cobbles up to 70 mm nominal diameter.												-97
104														-98
105	Sonic Drill													-99
106		- 300 mm seam of SILT, some organics, trace clay, wet, medium plastic, grey at 105.4 m.												-100
107		- Increasing grain size distribution from 106.4 m to 107.3 m.												-101
108					SG-19									-102
109														-103
110		SILT, trace to some sand, moist to wet, low plastic, grey; fine sand.												-104



Contractor: Mud Bay Drilling

Completion Depth: 200.2 m

Drilling Rig Type: LS600 Sonic Drill

Start Date: 2019 June 03

Logged By: CR

Completion Date: 2019 June 14

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Sonic Hole No: SH19-02

Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.8 m

Squamish, BC

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Sample Type	Sample Number	Particle Size Distribution				Plastic Limit 20	Moisture Content 40	Liquid Limit 80	VSP19-01	Elevation (m)
						Gravel (%)	Sand (%)	Fines						
								Silt (%)	Clay (%)					
110					SG-20									
111														
112														
113														
114					SG-21	0	10	90						
115					SG-22	0	11	89						
116		SAND, silty, wet, loose to compact, grey, fine sand.												
117														
118					SG-23									
119														
120		- 300 mm seam of SAND, some silt; fine to medium sand at 119.8 m.												



Contractor: Mud Bay Drilling

Completion Depth: 200.2 m

Drilling Rig Type: LS600 Sonic Drill

Start Date: 2019 June 03

Logged By: CR

Completion Date: 2019 June 14

Reviewed By: PK

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Sonic Hole No: SH19-02

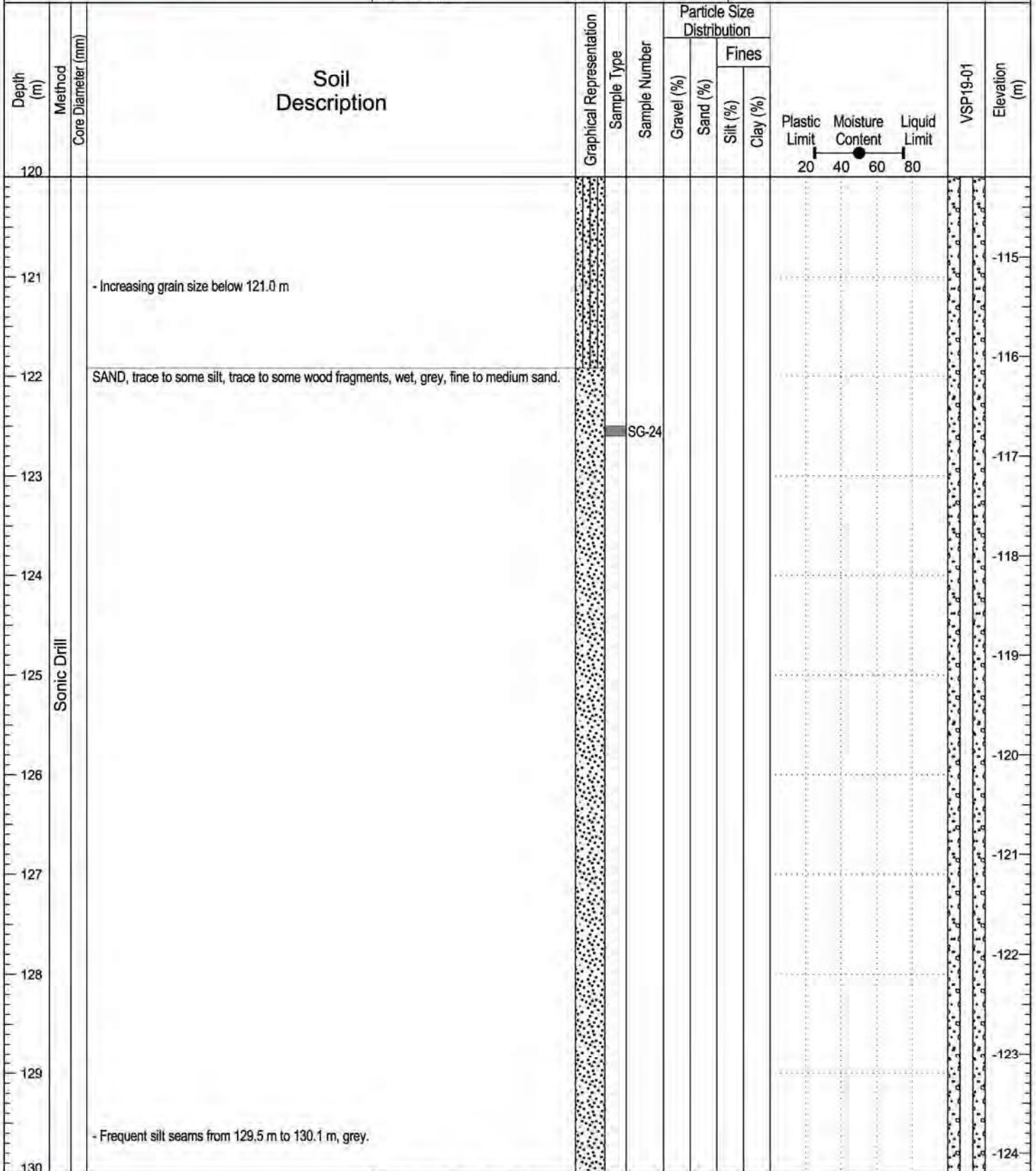
Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.8 m

Squamish, BC



Contractor: Mud Bay Drilling

Completion Depth: 200.2 m

Drilling Rig Type: LS600 Sonic Drill

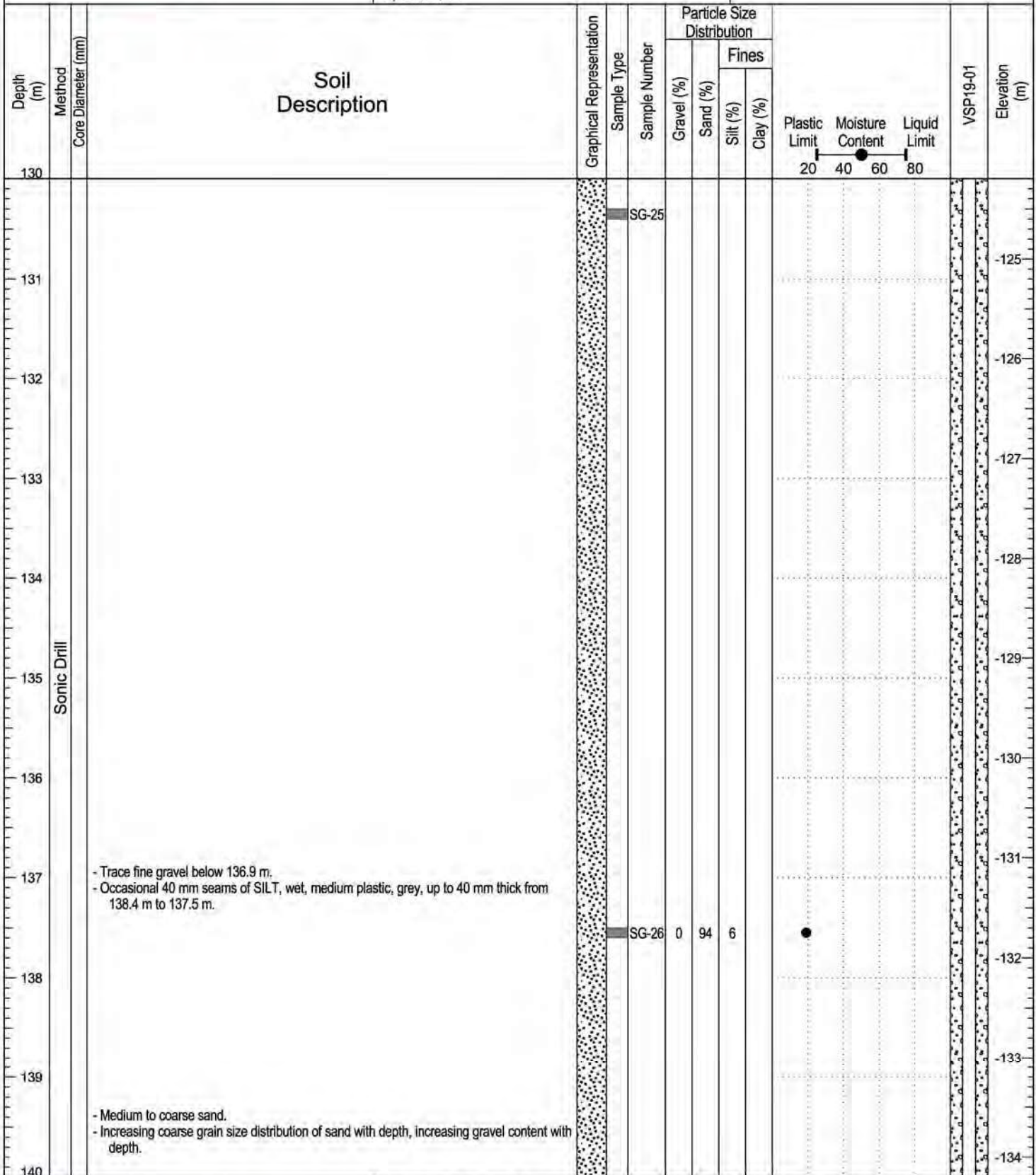
Start Date: 2019 June 03

Logged By: CR

Completion Date: 2019 June 14

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TETRA TECH

Contractor: Mud Bay Drilling

Completion Depth: 200.2 m

Drilling Rig Type: LS600 Sonic Drill

Start Date: 2019 June 03

Logged By: CR

Completion Date: 2019 June 14

Reviewed By: PK

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Sonic Hole No: SH19-02

Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.8 m

Squamish, BC

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Sample Type	Sample Number	Particle Size Distribution				Plastic Limit Moisture Content Liquid Limit	VSP19-01	Elevation (m)
						Gravel (%)	Sand (%)	Fines				
								Silt (%)	Clay (%)			
140												
141												
142												
143												
144												
145	Sonic Drill	- Some gravel, occasional cobbles; medium to coarse sand; fine to coarse gravel.			SG-27							
146												
147		- Cobble at 147.5 m, rounded, 100 mm nominal diameter.										
148												
149												
150		- 300 mm seam of: SAND and GRAVEL, occasional cobble, wet, grey; fine to coarse gravel; medium to coarse sand; angular cobbles.			SG-28							



TETRA TECH

Contractor: Mud Bay Drilling

Completion Depth: 200.2 m

Drilling Rig Type: LS600 Sonic Drill

Start Date: 2019 June 03

Logged By: CR

Completion Date: 2019 June 14

Reviewed By: PK

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Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Sample Type	Sample Number	Particle Size Distribution				Plastic Limit 20	Moisture Content 40	Liquid Limit 80	VSP19-01	Elevation (m)
						Gravel (%)	Sand (%)	Fines						
								Silt (%)	Clay (%)					
150														
151														
152		<ul style="list-style-type: none"> - Trace gravel, no cobbles; fine to coarse sand. - 300 mm seam of SAND, gravelly, some cobbles up to 90 mm nominal diameter. 												
153					SG-29									
154		GRAVEL AND SAND, trace silt, some cobbles, wet, grey; medium to coarse sand; fine to coarse gravel; cobbles up to 90 mm nominal diameter, angular to subrounded.			SG-30	58	39	3						
155														
156		SAND, trace to some gravel, occasional cobbles, wet, grey, fine to coarse sand, fine to coarse gravel.												
157		<ul style="list-style-type: none"> - Gravelly between 157.3 m and 157.6 m. 												
158														
159														
160														



Sonic Hole No: SH19-02

Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.8 m

Squamish, BC

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Sample Type	Sample Number	Particle Size Distribution				Plastic Limit Moisture Content Liquid Limit	VSP19-01	Elevation (m)
						Gravel (%)	Sand (%)	Fines				
								Silt (%)	Clay (%)			
160					SG-31							
161												-155
162		- Interbedded seams of: Fine SAND, silty; up to 300 mm thick.										-156
163												-157
164												-158
165	Sonic Drill											-159
166		- Occasional cobbles; fine to coarse sand; fine to coarse gravel.										-160
167												-161
168					SG-32							-162
169		- Trace gravel; fine to medium sand; fine gravel.										-163
170		- Some cobbles between 169.8 m and 170.7; cobbles up to 80 mm nominal diameter.										-164



Contractor: Mud Bay Drilling

Completion Depth: 200.2 m

Drilling Rig Type: LS600 Sonic Drill

Start Date: 2019 June 03

Logged By: CR

Completion Date: 2019 June 14

Reviewed By: PK

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Sonic Hole No: SH19-02

Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.8 m

Squamish, BC

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Sample Type	Sample Number	Particle Size Distribution				Plastic Limit Moisture Content Liquid Limit	VSP19-01	Elevation (m)
						Gravel (%)	Sand (%)	Fines				
								Silt (%)	Clay (%)			
170												
171												
172												
173												
174												
175	Sonic Drill				SG-33							
176		<ul style="list-style-type: none"> - Trace silt, no gravel. - Occasional cobbles between 176.0 m and 176.5 m. 										
177												
178												
179		<ul style="list-style-type: none"> - Silty, fine sand. - Interbedded seams of fine to medium SAND. 										
180												



Contractor: Mud Bay Drilling

Completion Depth: 200.2 m

Drilling Rig Type: LS600 Sonic Drill

Start Date: 2019 June 03

Logged By: CR

Completion Date: 2019 June 14

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Sonic Hole No: SH19-02

Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.8 m

Squamish, BC

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Sample Type	Sample Number	Particle Size Distribution				Plastic Limit Moisture Content Liquid Limit	VSP19-01	Elevation (m)
						Gravel (%)	Sand (%)	Fines				
								Silt (%)	Clay (%)			
180												
181		- Some gravel; fine to coarse sand; fine to coarse gravel. - Gravelly, some cobbles below 181.5 m.										-175
182		SAND AND GRAVEL, some silt, occasional cobbles, wet, grey; fine to coarse sand; fine to coarse gravel; cobbles up to 90 mm nominal diameter.			SG-34	37	52	11				-176
183		- Some gravel between 183.2 m and 183.8 m.										-177
184		- Some cobbles; cobbles up to 130 mm nominal diameter.										-178
185	Sonic Drill											-179
186		- Some gravel between 185.9 m and 186.8 m.										-180
187		- 300 mm seam of GRAVEL at 187.1 m.										-181
188												-182
189		- SAND, some gravel to gravelly, occasional cobble, wet, grey; fine to coarse sand; fine to coarse gravel; cobbles up to 90 mm nominal diameter.										-183
190												-184



Contractor: Mud Bay Drilling

Completion Depth: 200.2 m

Drilling Rig Type: LS600 Sonic Drill

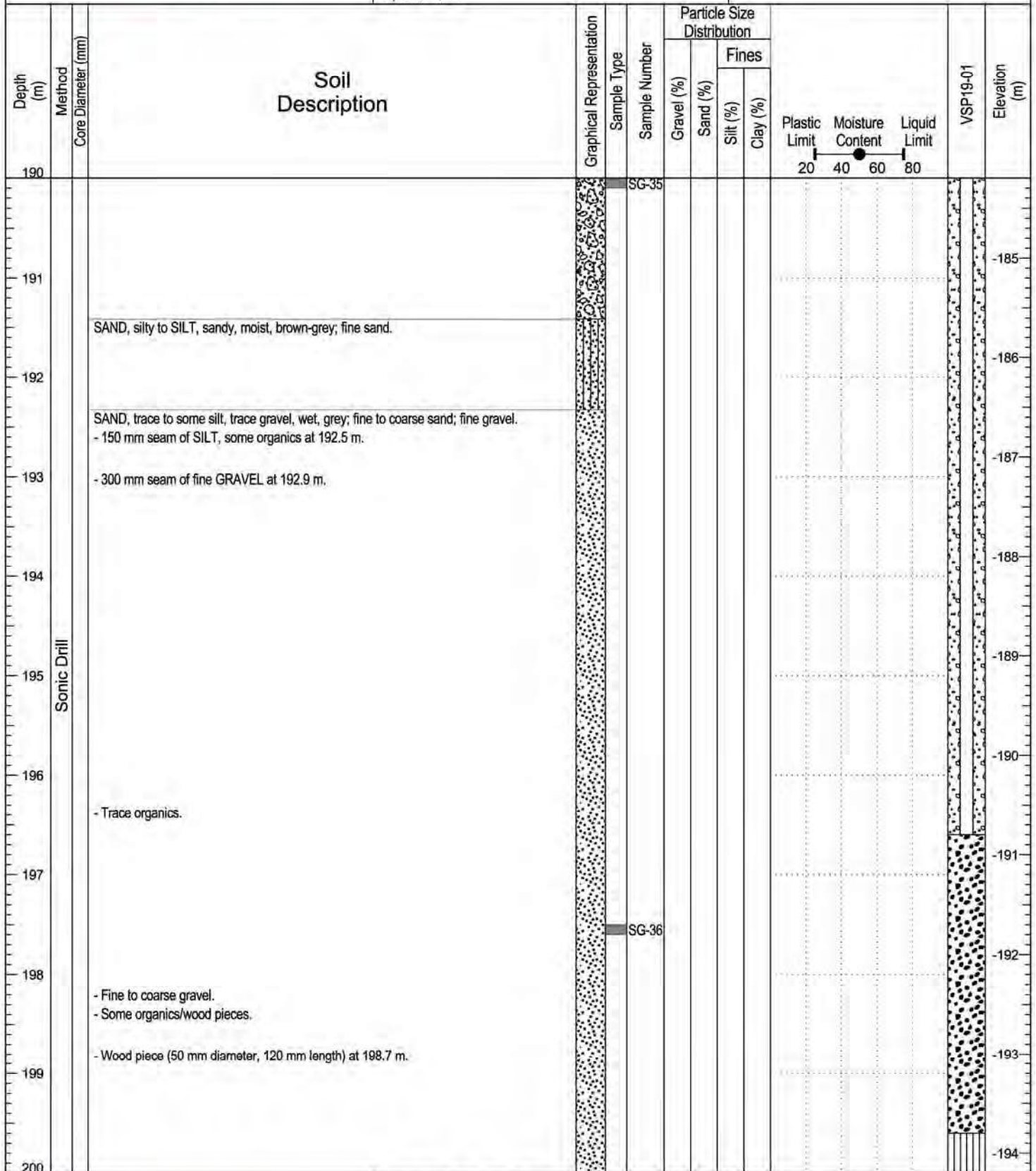
Start Date: 2019 June 03

Logged By: CR

Completion Date: 2019 June 14

Reviewed By: PK

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Sonic Hole No: SH19-02

Project: Eagle Mountain - Woodfibre Gas Pipeline

Project No: 704-ENG.VGEO03612-01

Location: BC Rail Site

Ground Elev: 5.8 m

Squamish, BC

Depth (m)	Method Core Diameter (mm)	Soil Description	Graphical Representation	Sample Type	Sample Number	Particle Size Distribution				Plastic Limit Moisture Content Liquid Limit	VSP19-01	Elevation (m)
						Gravel (%)	Sand (%)	Fines				
								Silt (%)	Clay (%)			
200												
201		<p>End of testhole at 200.2 m</p> <ul style="list-style-type: none"> - Upon completion of drilling, a 2.5" nominal diameter, Schedule 80 PVC pipe was installed to 199.6m and the bottom 3.0 m was backfilled with pea gravel. - The hole was sounded to 196.6 m after installation was completed - Soil descriptions and estimates of soil consistency were interpreted from drilling effort, in-situ data, and visual classification of recovered samples. These descriptions are based on engineering judgement. - UTM coordinates and ground surface elevations have been surveyed with a RTK Trimble system. - SS = Salinity Sample, SE = Environmental Sample, SG = Geotechnical Sample, SPT = Geotechnical Split Spoon Sample. 									-195	
202												-196
203												-197
204												-198
205												-199
206												-200
207												-201
208												-202
209												-203
210												-204



Contractor: Mud Bay Drilling

Completion Depth: 200.2 m

Drilling Rig Type: LS600 Sonic Drill

Start Date: 2019 June 03

Logged By: CR

Completion Date: 2019 June 14

Reviewed By: PK

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Appendix B
Bill of Lading

**CANADA
BILL OF LADING**

*Mud Bay
MAX Net*



07061
BILL OF LADING #

Consignor (full name and address):
Mud Bay Polling
39400 Government Road
Squamish B.C.

Receiver (full name and address):
Sumas Environmental Services Inc.
4623 Byrne Road
Burnaby B.C.

Consignor 24-Hour phone #: 779 871 3738

Name of Carrier: Lonestar Prepaid Collect

Transport Unit Number: 7995 Date: Dec/11/20

24 Hours Emergency Phone Number: 1-800-483-3718

RESIDUE- LAST CONTAINED (✓)	UN#	SHIPPING NAME OF DANGEROUS GOODS	CLASS	SUB CLASS	PG	PIECES / PACKAGES	TOTAL AMOUNT Kg/LM ³
		PB044109					
		NA					
	1993	FLAMMABLE LIQUID, N.O.S. ()	3	—	I/II/III		
	3175	SOLIDS CONTAINING FLAMMABLE LIQUID, N.O.S. ()	4.1	—	II		
	2924	MIXED OILFIELD PRODUCTION FLUIDS, TREAT AS FLAMMABLE LIQUIDS, CORROSIVE, N.O.S. - MAY RELEASE HAZARDOUS VAPOURS.					
	1267	PETROLEUM CRUDE OIL					
	1230	METHANOL					

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipper, safety marks properly affixed or displayed on them, and are in all respects in proper condition for transport according to applicable regulations.

NON REGULATED GOODS BILL OF LADING

# PIECES	DESCRIPTION OF ARTICLES
	<u>NON Regulated Hydrocarbons Solids</u>

Inbound Truck
02:34:22 PM 12/11/20
Scale 2
Ticket #3139
Truck ID: 7061
Gross 31170 kg

25310
5860 Net

SPECIAL INSTRUCTION

* Charge load to investigation LTD account

Consignment received in good order Yes No

If 'NO' specify:

Job # (Sales Order): 2001

Field Ticket (LE):

Consignor Name: TREVO

Agent/Driver Sig: [Signature]

LS - 04110

CANADA BILL OF LADING



A Clean Harbors Company

07062

BILL OF LADING #

Consignor (full name and address): <u>MUD BAY DRILLING LTD</u> <u>39400 Government Road</u>	Receiver (full name and address): <u>Sumas Environmental Services</u> <u>4623 Byrne Road</u> <u>Burnaby, B.C</u>
Consignor 24-Hour phone #: <u>(778) 871-3738</u>	

Name of Carrier <u>Lonestar</u>	<input type="checkbox"/> Prepaid <input type="checkbox"/> Collect	Transport Unit Number <u>7995</u>	Date <u>Dec/13/20</u>
--	--	---	---------------------------------

REGULATED DANGEROUS GOODS 24 Hours Emergency Phone Number 1-800-483-3718

RESIDUE- LAST CONTAINED (✓)	UN#	SHIPPING NAME OF DANGEROUS GOODS	CLASS	SUB CLASS	PG	PIECES / PACKAGES	TOTAL AMOUNT Kg/L/M ³
		<u>NA</u>					
	1993	FLAMMABLE LIQUID, N.O.S. ()	3	—	I/II/III		
	3175	SOLIDS CONTAINING FLAMMABLE LIQUID, N.O.S. ()	4.1	—	II		
	2924	MIXED OILFIELD PRODUCTION FLUIDS, TREAT AS FLAMMABLE LIQUIDS, CORROSIVE, N.O.S. - MAY RELEASE HAZARDOUS VAPOURS.	3	8	II		
	1267	PETROLEUM CRUDE OIL	3	—	I/II/III		
	1230	METHANOL	3	6.1	II		

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, are properly classified and packaged, have dangerous goods safety marks properly affixed or displayed on them, and are in all respects in proper condition for transport according to the Transportation of Dangerous Goods Regulations.

NON REGULATED GOODS BILL OF LADING

# PIECES	DESCRIPTION OF ARTICLES	WEIGHT	DECLARED VALUE
	<u>NON Regulated Hydrovac Slurry</u>	<u>3m³</u>	

SPECIAL INSTRUCTION <u>* Charge load to context investigation CTD account *</u>	Job # (Sales Order #): <u>2006292044</u>
Consignment received in good order <input type="checkbox"/> Yes <input type="checkbox"/> No	Field Ticket (LEM): _____
If 'NO' specify: _____	Consignor Name <u>Trevor Bradley</u>
_____	Agent/Driver Signature <u>Keith Marcott</u>
_____	LS - 04110

LS 07062

BOL 1037 09/2018

Outbound Truck

03:38:44 PM 12/14/20

Scale2

Ticket W3166

Truck ID:27

Gross 27910 kg

Tare 25360 kg

Net 2450 kg

Appendix C
Laboratory Certificates of Analyses



Environmental

CERTIFICATE OF ANALYSIS

Work Order : VA20C3271 Page : 1 of 38
Amendment : 1
Client : CH2M Hill Canada Limited Laboratory : Vancouver - Environmental
Contact : Jelena Sladojevic Account Manager : Edward Ngai
Address : Metrotower II, Suite 2100 4720 Kingsway Address : 8081 Lougheed Highway
Burnaby BC Canada V5A 1W9
Telephone : Telephone : +1 604 253 4188
Project : EGP/BC Rail Site - Fortis Date Samples Received : 13-Dec-2020 15:15
PO : 670014CH.B0.01.09 Date Analysis Commenced : 19-Dec-2020
C-O-C number : 17-862379 to 83, 17-861178 Issue Date : 14-Jan-2021 16:38
Sampler : Issue Date : 14-Jan-2021 16:38
Site : Issue Date : 14-Jan-2021 16:38
Quote number : VA20-CHMH100-013
No. of samples received : 67
No. of samples analysed : 38

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
Angelia Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Hedy Lai	Team Leader - Inorganics	Inorganics, Saskatoon, Saskatchewan
Janice Leung	Supervisor - Organics Extractions	Organics, Burnaby, British Columbia
Paul Cushing	Team Leader - Organics	Organics, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	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
mg/kg	milligrams per kilogram
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.

Qualifiers

Qualifier	Description
DLCI	Detection Limit Raised: Chromatographic interference due to co-elution.
DLQ	Detection Limit raised due to co-eluting interference. GCMS qualifier ion ratio did not meet acceptance criteria.



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)	Client sample ID					
	20MW-04-SOA	20MW-04-SOC	20MW-04-SOD	20MW-04-SOE	20MW-04-SOH	
Analyte	CAS Number	Method	LOR	Unit	Client sampling date / time	Result
Physical Tests						
moisture	---	E144	0.25	%	12-Dec-2020 16:30	---
pH (1:2 soil:water)	---	E108	0.10	pH units	12-Dec-2020 16:40	---
Particle Size						
passing (9.5 mm)	---	E181	1.0	%	12-Dec-2020 16:15	98.1
passing (4.75 mm)	---	E181	1.0	%	VA20C3271-001	59.9
passing (19 mm)	---	E181	1.0	%	VA20C3271-003	48.7
passing (25.4 mm)	---	E181	1.0	%	VA20C3271-004	80.6
passing (38.1 mm)	---	E181	1.0	%	VA20C3271-005	85.2
passing (50.8 mm)	---	E181	1.0	%	VA20C3271-008	100
passing (76.2 mm)	---	E181	1.0	%		100
passing (1.0 mm)	---	E182	1.0	%		100
passing (0.841 mm)	---	E182	1.0	%		100
passing (0.50 mm)	---	E182	1.0	%		100
passing (0.420 mm)	---	E182	1.0	%		100
passing (0.250 mm)	---	E182	1.0	%		100
passing (0.149 mm)	---	E182	1.0	%		100
passing (0.125 mm)	---	E182	1.0	%		100
passing (0.075 mm)	---	E182	1.0	%		100
passing (0.063 mm)	---	E182	1.0	%		100
passing (0.05 mm)	---	E182	1.0	%		100
passing (0.0312 mm)	---	E184	1.0	%		100
passing (0.020 mm)	---	E184	1.0	%		100
passing (0.005 mm)	---	E184	1.0	%		100
passing (0.004 mm)	---	E184	1.0	%		100
passing (0.002 mm)	---	E184	1.0	%		100
grain size curve	---	E185A	-	-		100
passing (2.0 mm)	---	E181	1.0	%		100
Metals						
aluminum	7429-90-5	E440	50	mg/kg		9420



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)		Client sample ID							
Analyte	CAS Number	Method	LOR	Unit	Client sampling date / time				
					20MW-04-SOA	20MW-04-SOC	20MW-04-SOD	20MW-04-SOE	20MW-04-SOH
					12-Dec-2020 16:15	12-Dec-2020 16:30	12-Dec-2020 16:35	12-Dec-2020 16:40	12-Dec-2020 09:40
					VA20C3271-001	VA20C3271-003	VA20C3271-004	VA20C3271-005	VA20C3271-008
					Result	Result	Result	Result	Result
Metals									
antimony	7440-36-0	E440	0.10	mg/kg	---	<0.10	---	---	---
arsenic	7440-38-2	E440	0.10	mg/kg	---	1.13	---	---	---
barium	7440-39-3	E440	0.50	mg/kg	---	90.3	---	---	---
beryllium	7440-41-7	E440	0.10	mg/kg	---	<0.10	---	---	---
bismuth	7440-69-9	E440	0.20	mg/kg	---	<0.20	---	---	---
boron	7440-42-8	E440	5.0	mg/kg	---	<5.0	---	---	---
cadmium	7440-43-9	E440	0.020	mg/kg	---	0.068	---	---	---
calcium	7440-70-2	E440	50	mg/kg	---	3790	---	---	---
chromium	7440-47-3	E440	0.50	mg/kg	---	18.7	---	---	---
cobalt	7440-48-4	E440	0.10	mg/kg	---	5.90	---	---	---
copper	7440-50-8	E440	0.50	mg/kg	---	18.1	---	---	---
iron	7439-89-6	E440	50	mg/kg	---	23300	---	---	---
lead	7439-92-1	E440	0.50	mg/kg	---	1.50	---	---	---
lithium	7439-93-2	E440	2.0	mg/kg	---	4.7	---	---	---
magnesium	7439-95-4	E440	20	mg/kg	---	4710	---	---	---
manganese	7439-96-5	E440	1.0	mg/kg	---	281	---	---	---
mercury	7439-97-6	E510	0.0500	mg/kg	---	<0.0500	---	---	---
molybdenum	7439-98-7	E440	0.10	mg/kg	---	0.28	---	---	---
nickel	7440-02-0	E440	0.50	mg/kg	---	8.09	---	---	---
phosphorus	7723-14-0	E440	50	mg/kg	---	1000	---	---	---
potassium	7440-09-7	E440	100	mg/kg	---	1300	---	---	---
selenium	7782-49-2	E440	0.20	mg/kg	---	<0.20	---	---	---
silver	7440-22-4	E440	0.10	mg/kg	---	<0.10	---	---	---
sodium	7440-23-5	E440	50	mg/kg	---	464	---	---	---
strontium	7440-24-6	E440	0.50	mg/kg	---	35.7	---	---	---
sulfur	7704-34-9	E440	1000	mg/kg	---	<1000	---	---	---
thallium	7440-28-0	E440	0.050	mg/kg	---	0.054	---	---	---
tin	7440-31-5	E440	2.0	mg/kg	---	<2.0	---	---	---
titanium	7440-32-6	E440	1.0	mg/kg	---	864	---	---	---
tungsten	7440-33-7	E440	0.50	mg/kg	---	<0.50	---	---	---
uranium	7440-61-1	E440	0.050	mg/kg	---	0.405	---	---	---



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)		Client sample ID		20MW-04-SOA		20MW-04-SOC		20MW-04-SOD		20MW-04-SOE		20MW-04-SOH	
Analyte	CAS Number	Method	LOR	Unit	12-Dec-2020 16:15	12-Dec-2020 16:30	12-Dec-2020 16:35	12-Dec-2020 16:40	12-Dec-2020 16:35	12-Dec-2020 16:40	12-Dec-2020 09:40	Result	Result
Metals													
vanadium	7440-62-2	E440	0.20	mg/kg	----	69.7	----	----	----	----	----	----	----
zinc	7440-66-6	E440	2.0	mg/kg	----	39.1	----	----	----	----	----	----	----
zirconium	7440-67-7	E440	1.0	mg/kg	----	<1.0	----	----	----	----	----	----	----
Volatile Organic Compounds													
chlorobenzene	108-90-7	E611C	0.050	mg/kg	----	<0.050	----	----	----	----	----	----	----
chloromethane	74-87-3	E611C	0.050	mg/kg	----	<0.050	----	----	----	----	----	----	----
dichlorobenzene, 1,2-	95-50-1	E611C	0.050	mg/kg	----	<0.050	----	----	----	----	----	----	----
dichlorobenzene, 1,3-	541-73-1	E611C	0.050	mg/kg	----	<0.050	----	----	----	----	----	----	----
dichlorobenzene, 1,4-	106-46-7	E611C	0.050	mg/kg	----	<0.050	----	----	----	----	----	----	----
dichloropropane, 1,2-	78-87-5	E611C	0.050	mg/kg	----	<0.050	----	----	----	----	----	----	----
dichloropropylene, cis+trans-1,3-	542-75-6	E611C	0.075	mg/kg	----	<0.075	----	----	----	----	----	----	----
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.050	mg/kg	----	<0.050	----	----	----	----	----	----	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.050	mg/kg	----	<0.050	----	----	----	----	----	----	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.050	mg/kg	----	<0.050	----	----	----	----	----	----	----
trichloroethane, 1,1,2-	79-00-5	E611C	0.050	mg/kg	----	<0.050	----	----	----	----	----	----	----
trichlorofluoromethane	75-69-4	E611C	0.050	mg/kg	----	<0.050	----	----	----	----	----	----	----
Volatile Organic Compounds [Drycleaning]													
carbon tetrachloride	56-23-5	E611C	0.050	mg/kg	----	<0.050	----	----	----	----	----	----	----
chloroethane	75-00-3	E611C	0.050	mg/kg	----	<0.050	----	----	----	----	----	----	----
dichloroethane, 1,1-	75-34-3	E611C	0.050	mg/kg	----	<0.050	----	----	----	----	----	----	----
dichloroethane, 1,2-	107-06-2	E611C	0.050	mg/kg	----	<0.050	----	----	----	----	----	----	----
dichloroethylene, 1,1-	75-35-4	E611C	0.050	mg/kg	----	<0.050	----	----	----	----	----	----	----
dichloroethylene, cis-1,2-	156-59-4	E611C	0.050	mg/kg	----	<0.050	----	----	----	----	----	----	----
dichloroethylene, trans-1,2-	156-60-5	E611C	0.050	mg/kg	----	<0.050	----	----	----	----	----	----	----
dichloromethane	75-09-2	E611C	0.050	mg/kg	----	<0.050	----	----	----	----	----	----	----
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.050	mg/kg	----	<0.050	----	----	----	----	----	----	----
tetrachloroethylene	127-18-4	E611C	0.050	mg/kg	----	<0.050	----	----	----	----	----	----	----
trichloroethane, 1,1,1-	71-55-6	E611C	0.050	mg/kg	----	<0.050	----	----	----	----	----	----	----
trichloroethylene	79-01-6	E611C	0.010	mg/kg	----	<0.010	----	----	----	----	----	----	----
vinyl chloride	75-01-4	E611C	0.050	mg/kg	----	<0.050	----	----	----	----	----	----	----
Volatile Organic Compounds [Fuels]													



Analytical Results

Analyte	CAS Number	Method	LOR	Unit	Client sample ID					
					20MW-04-SOA	20MW-04-SOC	20MW-04-SOD	20MW-04-SOE	20MW-04-SOH	
					Client sampling date / time	Result	Result	Result	Result	Result
Polycyclic Aromatic Hydrocarbons										
benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg	12-Dec-2020 16:15	12-Dec-2020 16:30	12-Dec-2020 16:35	12-Dec-2020 16:40	12-Dec-2020 09:40	
chrysene	218-01-9	E641A-L	0.010	mg/kg	VA20C3271-001	VA20C3271-003	VA20C3271-004	VA20C3271-005	VA20C3271-008	
dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg	Result	Result	Result	Result	Result	
fluoranthene	206-44-0	E641A-L	0.010	mg/kg						
fluorene	86-73-7	E641A-L	0.010	mg/kg						
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.010	mg/kg						
methylanthracene, 1-	90-12-0	E641A-L	0.010	mg/kg						
methylanthracene, 2-	91-57-6	E641A-L	0.010	mg/kg						
naphthalene	91-20-3	E641A-L	0.010	mg/kg						
phenanthrene	85-01-8	E641A-L	0.010	mg/kg						
pyrene	129-00-0	E641A-L	0.010	mg/kg						
quinoline	6027-02-7	E641A-L	0.010	mg/kg						
B(a)P total potency equivalents [B(a)P TPE]	---	E641A-L	0.020	mg/kg						
IACR (CCME)	---	E641A-L	0.15	-						
Polycyclic Aromatic Hydrocarbons Surrogates										
acridine-d9	34749-75-2	E641A-L	0.010	%		87.8				
chrysene-d12	1719-03-5	E641A-L	0.010	%		114				
naphthalene-d8	1146-65-2	E641A-L	0.010	%		98.9				
phenanthrene-d10	1517-22-2	E641A-L	0.010	%		115				
Volatile Organic Compounds [THMs]										
bromodichloromethane	75-27-4	E611C	0.050	mg/kg		<0.050				
bromoform	75-25-2	E611C	0.050	mg/kg		<0.050				
chloroform	67-66-3	E611C	0.050	mg/kg		<0.050				
dibromochloromethane	124-48-1	E611C	0.050	mg/kg		<0.050				

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



Analytical Results

Analyte	CAS Number	Method	LOR	Unit	Client sample ID				
					20MW-04-SOI	20MW-04-SOJ	20MW-04-SOK	20MW-04-SOL	20MW-05-SOC
Client sampling date / time					Result	Result	Result	Result	Result
Physical Tests									
moisture		E144	0.25	%	---	---	---	---	39.6
pH (1:2 soil:water)		E108	0.10	pH units	---	---	---	---	5.74
Particle Size									
passing (9.5 mm)		E181	1.0	%	97.7	99.5	98.6	100	100
passing (4.75 mm)		E181	1.0	%	96.4	98.5	97.4	100	99.8
passing (19 mm)		E181	1.0	%	99.2	100	99.9	100	100
passing (25.4 mm)		E181	1.0	%	100	100	100	100	100
passing (38.1 mm)		E181	1.0	%	100	100	100	100	100
passing (50.8 mm)		E181	1.0	%	100	100	100	100	100
passing (76.2 mm)		E181	1.0	%	100	100	100	100	100
passing (1.0 mm)		E182	1.0	%	86.0	90.6	82.7	93.5	98.8
passing (0.841 mm)		E182	1.0	%	76.5	85.4	73.6	85.5	98.6
passing (0.50 mm)		E182	1.0	%	47.9	69.5	46.5	61.3	98.1
passing (0.420 mm)		E182	1.0	%	37.4	58.5	36.0	50.0	98.0
passing (0.250 mm)		E182	1.0	%	10.0	29.7	8.7	20.4	97.5
passing (0.149 mm)		E182	1.0	%	5.7	18.0	4.2	10.8	91.3
passing (0.125 mm)		E182	1.0	%	4.2	14.1	2.6	7.5	89.2
passing (0.075 mm)		E182	1.0	%	2.9	9.8	1.9	4.5	64.5
passing (0.063 mm)		E182	1.0	%	2.6	8.8	1.7	3.8	58.6
passing (0.05 mm)		E182	1.0	%	2.2	7.7	1.6	3.0	52.2
passing (0.0312 mm)		E184	1.0	%	1.4	5.2	1.0	2.0	35.6
passing (0.020 mm)		E184	1.0	%	1.1	4.2	<1.0	1.7	29.1
passing (0.005 mm)		E184	1.0	%	<1.0	1.1	<1.0	<1.0	7.1
passing (0.004 mm)		E184	1.0	%	<1.0	<1.0	<1.0	<1.0	5.5
passing (0.002 mm)		E184	1.0	%	<1.0	<1.0	<1.0	<1.0	2.4
grain size curve		E185A	-	-	See Attached	See Attached	See Attached	See Attached	See Attached
passing (2.0 mm)		E181	1.0	%	93.9	96.1	94.4	99.4	99.4
Metals									
aluminum	7429-90-5	E440	50	mg/kg	---	---	---	---	19200
antimony	7440-36-0	E440	0.10	mg/kg	---	---	---	---	<0.10



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)		Client sample ID							
Analyte	CAS Number	Method	LOR	Unit	Client sampling date / time				
					20MW-04-SOI	20MW-04-SOJ	20MW-04-SOK	20MW-04-SOL	20MW-05-SOC
					12-Dec-2020 09:45	12-Dec-2020 09:50	12-Dec-2020 09:55	12-Dec-2020 10:00	12-Dec-2020 10:25
					VA20C3271-009	VA20C3271-010	VA20C3271-011	VA20C3271-012	VA20C3271-016
					Result	Result	Result	Result	Result
Metals									
arsenic	7440-38-2	E440	0.10	mg/kg	---	---	---	---	3.03
barium	7440-39-3	E440	0.50	mg/kg	---	---	---	---	183
beryllium	7440-41-7	E440	0.10	mg/kg	---	---	---	---	0.19
bismuth	7440-69-9	E440	0.20	mg/kg	---	---	---	---	<0.20
boron	7440-42-8	E440	5.0	mg/kg	---	---	---	---	<5.0
cadmium	7440-43-9	E440	0.020	mg/kg	---	---	---	---	0.110
calcium	7440-70-2	E440	50	mg/kg	---	---	---	---	5540
chromium	7440-47-3	E440	0.50	mg/kg	---	---	---	---	18.6
cobalt	7440-48-4	E440	0.10	mg/kg	---	---	---	---	11.3
copper	7440-50-8	E440	0.50	mg/kg	---	---	---	---	38.1
iron	7439-89-6	E440	50	mg/kg	---	---	---	---	25100
lead	7439-92-1	E440	0.50	mg/kg	---	---	---	---	6.93
lithium	7439-93-2	E440	2.0	mg/kg	---	---	---	---	9.0
magnesium	7439-95-4	E440	20	mg/kg	---	---	---	---	8630
manganese	7439-96-5	E440	1.0	mg/kg	---	---	---	---	556
mercury	7439-97-6	E510	0.0500	mg/kg	---	---	---	---	<0.0500
molybdenum	7439-98-7	E440	0.10	mg/kg	---	---	---	---	0.85
nickel	7440-02-0	E440	0.50	mg/kg	---	---	---	---	12.4
phosphorus	7723-14-0	E440	50	mg/kg	---	---	---	---	882
potassium	7440-09-7	E440	100	mg/kg	---	---	---	---	2420
selenium	7782-49-2	E440	0.20	mg/kg	---	---	---	---	<0.20
silver	7440-22-4	E440	0.10	mg/kg	---	---	---	---	<0.10
sodium	7440-23-5	E440	50	mg/kg	---	---	---	---	752
strontium	7440-24-6	E440	0.50	mg/kg	---	---	---	---	60.4
sulfur	7704-34-9	E440	1000	mg/kg	---	---	---	---	<1000
thallium	7440-28-0	E440	0.050	mg/kg	---	---	---	---	0.115
tin	7440-31-5	E440	2.0	mg/kg	---	---	---	---	<2.0
titanium	7440-32-6	E440	1.0	mg/kg	---	---	---	---	1290
tungsten	7440-33-7	E440	0.50	mg/kg	---	---	---	---	<0.50
uranium	7440-61-1	E440	0.050	mg/kg	---	---	---	---	0.745
vanadium	7440-62-2	E440	0.20	mg/kg	---	---	---	---	68.2



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)		Client sample ID							
Analyte	CAS Number	Method	LOR	Unit	20MW-04-SOI	20MW-04-SOJ	20MW-04-SOK	20MW-04-SOL	20MW-05-SOC
					12-Dec-2020 09:45	12-Dec-2020 09:50	12-Dec-2020 09:55	12-Dec-2020 10:00	12-Dec-2020 10:25
					Result	Result	Result	Result	Result
Metals									
zinc	7440-66-6	E440	2.0	mg/kg	----	----	----	----	66.6
zirconium	7440-67-7	E440	1.0	mg/kg	----	----	----	----	1.3
Volatile Organic Compounds									
chlorobenzene	108-90-7	E611C	0.050	mg/kg	----	----	----	----	<0.050
chloromethane	74-87-3	E611C	0.050	mg/kg	----	----	----	----	<0.050
dichlorobenzene, 1,2-	95-50-1	E611C	0.050	mg/kg	----	----	----	----	<0.050
dichlorobenzene, 1,3-	541-73-1	E611C	0.050	mg/kg	----	----	----	----	<0.050
dichlorobenzene, 1,4-	106-46-7	E611C	0.050	mg/kg	----	----	----	----	<0.050
dichloropropane, 1,2-	78-87-5	E611C	0.050	mg/kg	----	----	----	----	<0.050
dichloropropylene, cis+trans-1,3-	542-75-6	E611C	0.075	mg/kg	----	----	----	----	<0.075
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.050	mg/kg	----	----	----	----	<0.050
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.050	mg/kg	----	----	----	----	<0.050
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.050	mg/kg	----	----	----	----	<0.050
trichloroethane, 1,1,2-	79-00-5	E611C	0.050	mg/kg	----	----	----	----	<0.050
trichlorofluoromethane	75-69-4	E611C	0.050	mg/kg	----	----	----	----	<0.050
Volatile Organic Compounds [Drycleaning]									
carbon tetrachloride	56-23-5	E611C	0.050	mg/kg	----	----	----	----	<0.050
chloroethane	75-00-3	E611C	0.050	mg/kg	----	----	----	----	<0.050
dichloroethane, 1,1-	75-34-3	E611C	0.050	mg/kg	----	----	----	----	<0.050
dichloroethane, 1,2-	107-06-2	E611C	0.050	mg/kg	----	----	----	----	<0.050
dichloroethylene, 1,1-	75-35-4	E611C	0.050	mg/kg	----	----	----	----	<0.050
dichloroethylene, cis-1,2-	156-59-4	E611C	0.050	mg/kg	----	----	----	----	<0.050
dichloroethylene, trans-1,2-	156-80-5	E611C	0.050	mg/kg	----	----	----	----	<0.050
dichloromethane	75-09-2	E611C	0.050	mg/kg	----	----	----	----	<0.050
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.050	mg/kg	----	----	----	----	<0.050
tetrachloroethylene	127-18-4	E611C	0.050	mg/kg	----	----	----	----	<0.050
trichloroethane, 1,1,1-	71-55-6	E611C	0.050	mg/kg	----	----	----	----	<0.050
trichloroethylene	79-01-6	E611C	0.010	mg/kg	----	----	----	----	<0.010
vinyl chloride	75-01-4	E611C	0.050	mg/kg	----	----	----	----	<0.050
Volatile Organic Compounds [Fuels]									
benzene	71-43-2	E611C	0.0050	mg/kg	----	----	----	----	<0.0050



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)		Client sample ID			
Analyte	CAS Number	Method	LOR	Unit	Client sampling date / time
Polycyclic Aromatic Hydrocarbons					
chrysene	218-01-9	E641A-L	0.010	mg/kg	20MW-04-SOI 12-Dec-2020 09:45 VA20C3271-009 Result
dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg	20MW-04-SOI 12-Dec-2020 09:50 VA20C3271-010 Result
fluoranthene	206-44-0	E641A-L	0.010	mg/kg	20MW-04-SOK 12-Dec-2020 09:55 VA20C3271-011 Result
fluorene	86-73-7	E641A-L	0.010	mg/kg	20MW-04-SOL 12-Dec-2020 10:00 VA20C3271-012 Result
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.010	mg/kg	20MW-05-SOC 12-Dec-2020 10:25 VA20C3271-016 Result
methylnaphthalene, 1-	90-12-0	E641A-L	0.010	mg/kg	
methylnaphthalene, 2-	91-57-6	E641A-L	0.010	mg/kg	
naphthalene	91-20-3	E641A-L	0.010	mg/kg	
phenanthrene	85-01-8	E641A-L	0.010	mg/kg	
pyrene	129-00-0	E641A-L	0.010	mg/kg	
quinoline	6027-02-7	E641A-L	0.010	mg/kg	
B(a)p total potency equivalents [B(a)p TPE]	----	E641A-L	0.020	mg/kg	
IACR (CCME)	----	E641A-L	0.15	-	
Polycyclic Aromatic Hydrocarbons Surrogates					
acridine-d9	34749-75-2	E641A-L	0.010	%	
chrysene-d12	1719-03-5	E641A-L	0.010	%	
naphthalene-d8	1146-65-2	E641A-L	0.010	%	
phenanthrene-d10	1517-22-2	E641A-L	0.010	%	
Volatile Organic Compounds [THMs]					
bromodichloromethane	75-27-4	E611C	0.050	mg/kg	
bromoform	75-25-2	E611C	0.050	mg/kg	
chloroform	67-66-3	E611C	0.050	mg/kg	
dibromochloromethane	124-48-1	E611C	0.050	mg/kg	

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



Analytical Results

Analyte	CAS Number	Method	LOR	Unit	Client sample ID				
					20MW-05-SOD	20MW-05-SOF	20MW-06-SOB	20MW-06-SOD	20MW-06-SOE
		Client sampling date / time							
					Result	Result	Result	Result	Result
Physical Tests									
moisture	---	E144	0.25	%	---	15.8	16.6	19.9	---
pH (1:2 soil:water)	---	E108	0.10	pH units	---	6.28	6.54	5.63	---
Particle Size									
passing (9.5 mm)	---	E181	1.0	%	90.1	99.4	---	---	100
passing (4.75 mm)	---	E181	1.0	%	89.6	98.3	---	---	99.9
passing (19 mm)	---	E181	1.0	%	92.0	100	---	---	100
passing (25.4 mm)	---	E181	1.0	%	93.6	100	---	---	100
passing (38.1 mm)	---	E181	1.0	%	100	100	---	---	100
passing (50.8 mm)	---	E181	1.0	%	100	100	---	---	100
passing (76.2 mm)	---	E181	1.0	%	100	100	---	---	100
passing (1.0 mm)	---	E182	1.0	%	88.5	81.2	---	---	98.8
passing (0.841 mm)	---	E182	1.0	%	88.2	72.4	---	---	98.4
passing (0.50 mm)	---	E182	1.0	%	87.4	45.9	---	---	97.1
passing (0.420 mm)	---	E182	1.0	%	86.8	35.9	---	---	96.6
passing (0.250 mm)	---	E182	1.0	%	85.3	9.9	---	---	95.5
passing (0.149 mm)	---	E182	1.0	%	69.9	4.2	---	---	87.2
passing (0.125 mm)	---	E182	1.0	%	64.6	2.3	---	---	84.3
passing (0.075 mm)	---	E182	1.0	%	36.1	1.6	---	---	58.6
passing (0.063 mm)	---	E182	1.0	%	29.3	1.4	---	---	52.4
passing (0.05 mm)	---	E182	1.0	%	21.8	1.2	---	---	45.7
passing (0.0312 mm)	---	E184	1.0	%	12.7	<1.0	---	---	30.8
passing (0.020 mm)	---	E184	1.0	%	10.2	<1.0	---	---	25.2
passing (0.005 mm)	---	E184	1.0	%	1.6	<1.0	---	---	6.3
passing (0.004 mm)	---	E184	1.0	%	1.3	<1.0	---	---	5.1
passing (0.002 mm)	---	E184	1.0	%	<1.0	<1.0	---	---	2.6
grain size curve	---	E185A	-	-	See Attached	See Attached	---	---	See Attached
passing (2.0 mm)	---	E181	1.0	%	89.0	94.3	---	---	99.3
Metals									
aluminum	7429-90-5	E440	50	mg/kg	---	4410	4810	7320	---
antimony	7440-36-0	E440	0.10	mg/kg	---	<0.10	<0.10	<0.10	---



Analytical Results

Analyte	CAS Number	Method	LOR	Unit	Client sample ID					
					20MW-05-SOD	20MW-05-SOF	20MW-06-SOB	20MW-06-SOD	20MW-06-SOE	
(Matrix: Soil/Solid)					Client sampling date / time	Result	Result	Result	Result	Result
Metals										
arsenic	7440-38-2	E440	0.10	mg/kg	12-Dec-2020 15:05	0.38	0.59	1.04	12-Dec-2020 16:10	12-Dec-2020 16:15
barium	7440-39-3	E440	0.50	mg/kg	---	34.4	53.8	58.7	---	---
beryllium	7440-41-7	E440	0.10	mg/kg	---	<0.10	<0.10	<0.10	---	---
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	---	0.022	<0.020	0.056	---	---
calcium	7440-70-2	E440	50	mg/kg	---	2050	2100	3040	---	---
chromium	7440-47-3	E440	0.50	mg/kg	---	5.44	5.56	13.5	---	---
cobalt	7440-48-4	E440	0.10	mg/kg	---	2.86	3.16	4.13	---	---
copper	7440-50-8	E440	0.50	mg/kg	---	9.99	8.85	16.7	---	---
iron	7439-89-6	E440	50	mg/kg	---	7560	8630	11100	---	---
lead	7439-92-1	E440	0.50	mg/kg	---	0.81	0.79	2.87	---	---
lithium	7439-93-2	E440	2.0	mg/kg	---	2.8	3.4	4.0	---	---
magnesium	7439-95-4	E440	20	mg/kg	---	2390	2360	3520	---	---
manganese	7439-96-5	E440	1.0	mg/kg	---	111	117	169	---	---
mercury	7439-97-6	E510	0.0500	mg/kg	---	<0.0500	<0.0500	<0.0500	---	---
molybdenum	7439-98-7	E440	0.10	mg/kg	---	0.12	0.18	0.32	---	---
nickel	7440-02-0	E440	0.50	mg/kg	---	4.66	4.07	6.22	---	---
phosphorus	7723-14-0	E440	50	mg/kg	---	354	394	525	---	---
potassium	7440-09-7	E440	100	mg/kg	---	760	1100	960	---	---
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	---	249	294	463	---	---
strontium	7440-24-6	E440	0.50	mg/kg	---	19.9	36.0	38.2	---	---
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	---	---
titanium	7440-32-6	E440	1.0	mg/kg	---	405	498	673	---	---
tungsten	7440-33-7	E440	0.50	mg/kg	---	<0.50	<0.50	<0.50	---	---
uranium	7440-61-1	E440	0.050	mg/kg	---	0.135	1.19	0.254	---	---
vanadium	7440-62-2	E440	0.20	mg/kg	---	24.9	24.6	35.1	---	---



Analytical Results

Analyte	CAS Number	Method	LOR	Unit	Client sample ID		Client sampling date / time		20MW-05-SOD	20MW-05-SOF	20MW-06-SOB	20MW-06-SOD	20MW-06-SOE
					Result	Result	Result	Result	Result	Result	Result	Result	
Metals													
zinc	7440-86-6	E440	2.0	mg/kg	----	12-Dec-2020 15:05	VA20C3271-017	12-Dec-2020 15:20	22.4	11-Dec-2020 11:30	21.5	12-Dec-2020 16:10	12-Dec-2020 16:15
zirconium	7440-87-7	E440	1.0	mg/kg	----			1.6	1.8			31.3	----
Volatile Organic Compounds													
chlorobenzene	108-90-7	E611C	0.050	mg/kg	----			<0.050	<0.050			<0.050	----
chloromethane	74-87-3	E611C	0.050	mg/kg	----			<0.050	<0.050			<0.050	----
dichlorobenzene, 1,2-	95-50-1	E611C	0.050	mg/kg	----			<0.050	<0.050			<0.050	----
dichlorobenzene, 1,3-	541-73-1	E611C	0.050	mg/kg	----			<0.050	<0.050			<0.050	----
dichlorobenzene, 1,4-	106-46-7	E611C	0.050	mg/kg	----			<0.050	<0.050			<0.050	----
dichloropropane, 1,2-	78-87-5	E611C	0.050	mg/kg	----			<0.050	<0.050			<0.050	----
dichloropropylene, cis+trans-1,3-	542-75-6	E611C	0.075	mg/kg	----			<0.075	<0.075			<0.075	----
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.050	mg/kg	----			<0.050	<0.050			<0.050	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.050	mg/kg	----			<0.050	<0.050			<0.050	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.050	mg/kg	----			<0.050	<0.050			<0.050	----
trichloroethane, 1,1,2-	79-00-5	E611C	0.050	mg/kg	----			<0.050	<0.050			<0.050	----
trichlorofluoromethane	75-69-4	E611C	0.050	mg/kg	----			<0.050	<0.050			<0.050	----
Volatile Organic Compounds [Drycleaning]													
carbon tetrachloride	56-23-5	E611C	0.050	mg/kg	----			<0.050	<0.050			<0.050	----
chloroethane	75-00-3	E611C	0.050	mg/kg	----			<0.050	<0.050			<0.050	----
dichloroethane, 1,1-	75-34-3	E611C	0.050	mg/kg	----			<0.050	<0.050			<0.050	----
dichloroethane, 1,2-	107-06-2	E611C	0.050	mg/kg	----			<0.050	<0.050			<0.050	----
dichloroethylene, 1,1-	75-35-4	E611C	0.050	mg/kg	----			<0.050	<0.050			<0.050	----
dichloroethylene, cis-1,2-	156-59-4	E611C	0.050	mg/kg	----			<0.050	<0.050			<0.050	----
dichloroethylene, trans-1,2-	156-60-5	E611C	0.050	mg/kg	----			<0.050	<0.050			<0.050	----
dichloromethane	75-09-2	E611C	0.050	mg/kg	----			<0.050	<0.050			<0.050	----
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.050	mg/kg	----			<0.050	<0.050			<0.050	----
tetrachloroethylene	127-18-4	E611C	0.050	mg/kg	----			<0.050	<0.050			<0.050	----
trichloroethane, 1,1,1-	71-55-6	E611C	0.050	mg/kg	----			<0.050	<0.050			<0.050	----
trichloroethylene	79-01-6	E611C	0.010	mg/kg	----			<0.010	<0.010			<0.010	----
vinyl chloride	75-01-4	E611C	0.050	mg/kg	----			<0.050	<0.050			<0.050	----
Volatile Organic Compounds [Fuels]													
benzene	71-43-2	E611C	0.0050	mg/kg	----			<0.0050	<0.0050			<0.0050	----



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)		Client sample ID		Client sampling date / time		20MW-05-SOD		20MW-05-SOF		20MW-06-SOB		20MW-06-SOD		20MW-06-SOE	
Analyte	CAS Number	Method	LOR	Unit	12-Dec-2020 15:05	12-Dec-2020 15:20	11-Dec-2020 11:30	12-Dec-2020 16:10	12-Dec-2020 16:15	Result	Result	Result	Result	Result	Result
Volatile Organic Compounds [Fuels]															
ethylbenzene	100-41-4	E611C	0.015	mg/kg	----	<0.015	<0.015	<0.015	<0.015	----	<0.015	<0.015	<0.015	----	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	<0.050	----	<0.050	<0.050	<0.050	----	----
styrene	100-42-5	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	<0.050	----	<0.050	<0.050	<0.050	----	----
toluene	108-88-3	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	<0.050	----	<0.050	<0.050	<0.050	----	----
xylylene, m+p-	179601-23-1	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	<0.050	----	<0.050	<0.050	<0.050	----	----
xylylene, o-	95-47-6	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	<0.050	----	<0.050	<0.050	<0.050	----	----
xylenes, total	1330-20-7	E611C	0.075	mg/kg	----	<0.075	<0.075	<0.075	<0.075	----	<0.075	<0.075	<0.075	----	----
Volatile Organic Compounds Surrogates															
bromofluorobenzene, 4-	460-00-4	E611C	0.050	%	----	77.7	88.9	85.9	85.9	----	88.9	85.9	85.9	----	----
difluorobenzene, 1,4-	540-36-3	E611C	0.050	%	----	90.6	98.0	96.6	96.6	----	98.0	96.6	96.6	----	----
Hydrocarbons															
EPH (C10-C19)	----	E601A	200	mg/kg	----	<200	<200	<200	<200	----	<200	<200	<200	----	----
EPH (C19-C32)	----	E601A	200	mg/kg	----	<200	<200	<200	<200	----	<200	<200	<200	----	----
VHs (C6-C10)	----	E581.VH+F1	10	mg/kg	----	<10	<10	<10	<10	----	<10	<10	<10	----	----
HEPHs	----	EC600A	200	mg/kg	----	<200	<200	<200	<200	----	<200	<200	<200	----	----
LEPHs	----	EC600A	200	mg/kg	----	<200	<200	<200	<200	----	<200	<200	<200	----	----
VPHs	----	EC580A	10	mg/kg	----	<10	<10	<10	<10	----	<10	<10	<10	----	----
Hydrocarbons Surrogates															
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	5.0	%	----	96.5	94.3	93.6	93.6	----	94.3	93.6	93.6	----	----
dichlorotoluene, 3,4-	97-75-0	E581.VH+F1	1.0	%	----	90.4	76.8	84.0	84.0	----	76.8	84.0	84.0	----	----
Polycyclic Aromatic Hydrocarbons															
acenaphthene	83-32-9	E641A-L	0.0050	mg/kg	----	<0.0050	<0.0050	<0.0050	<0.0050	----	<0.0050	<0.0050	<0.0050	----	----
acenaphthylene	208-96-8	E641A-L	0.0050	mg/kg	----	<0.0050	<0.0050	<0.0050	<0.0050	----	<0.0050	<0.0050	<0.0050	----	----
acridine	260-94-6	E641A-L	0.010	mg/kg	----	<0.010	<0.010	<0.010	<0.010	----	<0.010	<0.010	<0.010	----	----
anthracene	120-12-7	E641A-L	0.0040	mg/kg	----	<0.0040	<0.0040	<0.0040	<0.0040	----	<0.0040	<0.0040	<0.0040	----	----
benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg	----	<0.010	<0.010	<0.010	<0.010	----	<0.010	<0.010	<0.010	----	----
benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg	----	<0.010	<0.010	<0.010	<0.010	----	<0.010	<0.010	<0.010	----	----
benzo(b+j)fluoranthene	----	E641A-L	0.010	mg/kg	----	<0.010	<0.010	<0.010	<0.010	----	<0.010	<0.010	<0.010	----	----
benzo(b+j+k)fluoranthene	----	E641A-L	0.015	mg/kg	----	<0.015	<0.015	<0.015	<0.015	----	<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	<0.010	----	<0.010	<0.010	<0.010	----	----
benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg	----	<0.010	<0.010	<0.010	<0.010	----	<0.010	<0.010	<0.010	----	----



Analytical Results

Analyte	CAS Number	Method	LOR	Unit	Client sample ID				
					20MW-05-SOD	20MW-05-SOF	20MW-06-SOB	20MW-06-SOD	
(Matrix: Soil/Solid)					Client sampling date / time	Result	Result	Result	Result
					12-Dec-2020 15:05	12-Dec-2020 15:20	11-Dec-2020 11:30	12-Dec-2020 16:10	12-Dec-2020 16:15
					VA20C3271-017	VA20C3271-019	VA20C3271-021	VA20C3271-023	VA20C3271-024
					Result	Result	Result	Result	Result
Polycyclic Aromatic Hydrocarbons									
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	----
methylanthralene, 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	0.019	----
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	----	<0.020	<0.020	<0.020	----
IACR (CCME)	----	E641A-L	0.15	-	----	<0.15	<0.15	<0.15	----
Polycyclic Aromatic Hydrocarbons Surrogates									
acridine-d9	34749-75-2	E641A-L	0.010	%	----	85.0	85.3	106	----
chrysene-d12	1719-03-5	E641A-L	0.010	%	----	122	102	127	----
naphthalene-d8	1146-65-2	E641A-L	0.010	%	----	98.0	103	116	----
phenanthrene-d10	1517-22-2	E641A-L	0.010	%	----	96.0	111	127	----
Volatile Organic Compounds [THMs]									
bromodichloromethane	75-27-4	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	----
bromoform	75-25-2	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	----
chloroform	67-66-3	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	----
dibromochloromethane	124-48-1	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	----

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



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)		Client sample ID								
Analyte	CAS Number	Method	LOR	Client sampling date / time	Unit	20MW-06-SOF	20MW-07-SOC	20MW-07-SOD	20MW-08-SOB	20MW-08-SOD
						Result	Result	Result	Result	Result
Physical Tests										
moisture	---	E144	0.25	%		18.6	---	21.2	---	26.1
pH (1:2 soil:water)	---	E108	0.10	pH units		6.74	---	6.29	---	6.27
Particle Size										
passing (9.5 mm)	---	E181	1.0	%		86.5	100	100	77.4	---
passing (4.75 mm)	---	E181	1.0	%		81.2	99.8	100	73.0	---
passing (19 mm)	---	E181	1.0	%		92.8	100	100	81.8	---
passing (25.4 mm)	---	E181	1.0	%		94.4	100	100	85.2	---
passing (38.1 mm)	---	E181	1.0	%		100	100	100	90.7	---
passing (50.8 mm)	---	E181	1.0	%		100	100	100	100	---
passing (76.2 mm)	---	E181	1.0	%		100	100	100	100	---
passing (1.0 mm)	---	E182	1.0	%		61.8	98.9	94.5	52.8	---
passing (0.841 mm)	---	E182	1.0	%		57.6	98.6	89.6	47.3	---
passing (0.50 mm)	---	E182	1.0	%		45.2	97.8	75.1	30.8	---
passing (0.420 mm)	---	E182	1.0	%		36.6	97.4	62.2	26.8	---
passing (0.250 mm)	---	E182	1.0	%		14.2	96.5	28.6	16.4	---
passing (0.149 mm)	---	E182	1.0	%		7.7	82.9	18.1	12.5	---
passing (0.125 mm)	---	E182	1.0	%		5.5	78.3	14.5	11.1	---
passing (0.075 mm)	---	E182	1.0	%		3.8	47.3	10.1	8.5	---
passing (0.063 mm)	---	E182	1.0	%		3.4	39.9	9.1	7.9	---
passing (0.05 mm)	---	E182	1.0	%		3.0	31.8	7.9	7.2	---
passing (0.0312 mm)	---	E184	1.0	%		2.1	19.3	5.5	5.0	---
passing (0.020 mm)	---	E184	1.0	%		1.7	15.6	4.5	4.1	---
passing (0.005 mm)	---	E184	1.0	%		<1.0	2.9	1.3	<1.0	---
passing (0.004 mm)	---	E184	1.0	%		<1.0	2.3	1.0	<1.0	---
passing (0.002 mm)	---	E184	1.0	%		<1.0	1.2	<1.0	<1.0	---
grain size curve	---	E185A	-	-		See Attached	See Attached	See Attached	See Attached	---
passing (2.0 mm)	---	E181	1.0	%		71.2	99.6	99.2	64.2	---
Metals										
aluminum	7429-90-5	E440	50	mg/kg		4970	---	5400	---	10400
antimony	7440-36-0	E440	0.10	mg/kg		<0.10	---	<0.10	---	<0.10



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)		Client sample ID							
Analyte	CAS Number	Method	LOR	Unit	Client sampling date / time				
					20MW-06-SOF	20MW-07-SOC	20MW-07-SOD	20MW-08-SOB	20MW-08-SOD
					12-Dec-2020 16:20	11-Dec-2020 10:50	12-Dec-2020 14:10	11-Dec-2020 14:20	12-Dec-2020 12:30
					VA20C3271-025	VA20C3271-028	VA20C3271-029	VA20C3271-031	VA20C3271-033
					Result	Result	Result	Result	Result
Metals									
arsenic	7440-38-2	E440	0.10	mg/kg	0.48	---	0.50	---	1.52
barium	7440-39-3	E440	0.50	mg/kg	41.2	---	47.6	---	104
beryllium	7440-41-7	E440	0.10	mg/kg	<0.10	---	<0.10	---	<0.10
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	<0.020	---	<0.020	---	0.044
calcium	7440-70-2	E440	50	mg/kg	2260	---	2100	---	4140
chromium	7440-47-3	E440	0.50	mg/kg	6.46	---	4.54	---	16.0
cobalt	7440-48-4	E440	0.10	mg/kg	3.34	---	2.95	---	6.25
copper	7440-50-8	E440	0.50	mg/kg	12.8	---	9.45	---	22.9
iron	7439-89-6	E440	50	mg/kg	9530	---	8940	---	16600
lead	7439-92-1	E440	0.50	mg/kg	1.07	---	0.74	---	1.82
lithium	7439-93-2	E440	2.0	mg/kg	2.9	---	3.3	---	5.7
magnesium	7439-95-4	E440	20	mg/kg	2740	---	2400	---	5000
manganese	7439-96-5	E440	1.0	mg/kg	133	---	124	---	242
mercury	7439-97-6	E510	0.0500	mg/kg	<0.0500	---	<0.0500	---	<0.0500
molybdenum	7439-98-7	E440	0.10	mg/kg	0.19	---	0.11	---	0.59
nickel	7440-02-0	E440	0.50	mg/kg	5.44	---	4.18	---	8.09
phosphorus	7723-14-0	E440	50	mg/kg	411	---	350	---	975
potassium	7440-09-7	E440	100	mg/kg	750	---	740	---	1950
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	312	---	335	---	533
strontium	7440-24-6	E440	0.50	mg/kg	28.6	---	38.9	---	40.6
sulfur	7704-34-9	E440	1000	mg/kg	<1000	---	<1000	---	<1000
thallium	7440-28-0	E440	0.050	mg/kg	<0.050	---	<0.050	---	0.067
tin	7440-31-5	E440	2.0	mg/kg	<2.0	---	<2.0	---	<2.0
titanium	7440-32-6	E440	1.0	mg/kg	543	---	545	---	937
tungsten	7440-33-7	E440	0.50	mg/kg	<0.50	---	<0.50	---	<0.50
uranium	7440-61-1	E440	0.050	mg/kg	0.178	---	0.169	---	0.448
vanadium	7440-62-2	E440	0.20	mg/kg	31.9	---	24.6	---	53.3



Analytical Results

Analyte	CAS Number	Method	LOR	Unit	Client sample ID				
					20MW-06-SOF	20MW-07-SOC	20MW-07-SOD	20MW-08-SOB	20MW-08-SOD
					Result	Result	Result	Result	Result
Metals									
zinc	7440-86-6	E440	2.0	mg/kg	25.8	---	22.3	---	37.5
zirconium	7440-87-7	E440	1.0	mg/kg	2.2	---	1.9	---	<1.0
Volatile Organic Compounds									
chlorobenzene	108-90-7	E611C	0.050	mg/kg	<0.050	---	<0.050	---	<0.050
chloromethane	74-87-3	E611C	0.050	mg/kg	<0.050	---	<0.050	---	<0.050
dichlorobenzene, 1,2-	95-50-1	E611C	0.050	mg/kg	<0.050	---	<0.050	---	<0.050
dichlorobenzene, 1,3-	541-73-1	E611C	0.050	mg/kg	<0.050	---	<0.050	---	<0.050
dichlorobenzene, 1,4-	106-46-7	E611C	0.050	mg/kg	<0.050	---	<0.050	---	<0.050
dichloropropane, 1,2-	78-87-5	E611C	0.050	mg/kg	<0.050	---	<0.050	---	<0.050
dichloropropylene, cis+trans-1,3-	542-75-6	E611C	0.075	mg/kg	<0.075	---	<0.075	---	<0.075
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.050	mg/kg	<0.050	---	<0.050	---	<0.050
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.050	mg/kg	<0.050	---	<0.050	---	<0.050
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.050	mg/kg	<0.050	---	<0.050	---	<0.050
trichloroethane, 1,1,2-	79-00-5	E611C	0.050	mg/kg	<0.050	---	<0.050	---	<0.050
trichlorofluoromethane	75-69-4	E611C	0.050	mg/kg	<0.050	---	<0.050	---	<0.050
Volatile Organic Compounds [Drycleaning]									
carbon tetrachloride	56-23-5	E611C	0.050	mg/kg	<0.050	---	<0.050	---	<0.050
chloroethane	75-00-3	E611C	0.050	mg/kg	<0.050	---	<0.050	---	<0.050
dichloroethane, 1,1-	75-34-3	E611C	0.050	mg/kg	<0.050	---	<0.050	---	<0.050
dichloroethane, 1,2-	107-06-2	E611C	0.050	mg/kg	<0.050	---	<0.050	---	<0.050
dichloroethylene, 1,1-	75-35-4	E611C	0.050	mg/kg	<0.050	---	<0.050	---	<0.050
dichloroethylene, cis-1,2-	156-59-4	E611C	0.050	mg/kg	<0.050	---	<0.050	---	<0.050
dichloroethylene, trans-1,2-	156-60-5	E611C	0.050	mg/kg	<0.050	---	<0.050	---	<0.050
dichloromethane	75-09-2	E611C	0.050	mg/kg	<0.050	---	<0.050	---	<0.050
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.050	mg/kg	<0.050	---	<0.050	---	<0.050
tetrachloroethylene	127-18-4	E611C	0.050	mg/kg	<0.050	---	<0.050	---	<0.050
trichloroethane, 1,1,1-	71-55-6	E611C	0.050	mg/kg	<0.050	---	<0.050	---	<0.050
trichloroethylene	79-01-6	E611C	0.010	mg/kg	<0.010	---	<0.010	---	<0.010
vinyl chloride	75-01-4	E611C	0.050	mg/kg	<0.050	---	<0.050	---	<0.050
Volatile Organic Compounds [Fuels]									
benzene	71-43-2	E611C	0.0050	mg/kg	<0.0050	---	<0.0050	---	<0.0050



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)		Client sample ID		20MW-06-SOF	20MW-07-SOC	20MW-07-SOD	20MW-08-SOB	20MW-08-SOD
Analyte	CAS Number	Method	LOR	Unit	Client sampling date / time	Result	Result	Result
Volatile Organic Compounds [Fuels]								
ethylbenzene	100-41-4	E611C	0.015	mg/kg	12-Dec-2020 16:20	<0.015	----	<0.015
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.050	mg/kg	11-Dec-2020 10:50	<0.050	----	<0.050
styrene	100-42-5	E611C	0.050	mg/kg	12-Dec-2020 14:10	<0.050	----	<0.050
toluene	108-88-3	E611C	0.050	mg/kg	11-Dec-2020 10:50	<0.050	----	<0.050
xylylene, m+p-	179601-23-1	E611C	0.050	mg/kg	12-Dec-2020 14:10	<0.050	----	<0.050
xylylene, o-	95-47-6	E611C	0.050	mg/kg	11-Dec-2020 10:50	<0.050	----	<0.050
xylenes, total	1330-20-7	E611C	0.075	mg/kg	12-Dec-2020 14:10	<0.075	----	<0.075
Volatile Organic Compounds Surrogates								
bromofluorobenzene, 4-	460-00-4	E611C	0.050	%	12-Dec-2020 16:20	94.9	----	77.7
difluorobenzene, 1,4-	540-36-3	E611C	0.050	%	11-Dec-2020 14:20	108	----	90.4
Hydrocarbons								
EPH (C10-C19)	----	E601A	200	mg/kg	12-Dec-2020 16:20	<200	----	<200
EPH (C19-C32)	----	E601A	200	mg/kg	11-Dec-2020 14:20	<200	----	<200
VHs (C6-C10)	----	E581.VH+F1	10	mg/kg	12-Dec-2020 14:10	<10	----	<10
HEPHs	----	EC600A	200	mg/kg	11-Dec-2020 10:50	<200	----	<200
LEPHs	----	EC600A	200	mg/kg	12-Dec-2020 14:10	<200	----	<200
VPHs	----	EC580A	10	mg/kg	11-Dec-2020 10:50	<10	----	<10
Hydrocarbons Surrogates								
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	5.0	%	12-Dec-2020 16:20	95.4	----	94.9
dichlorotoluene, 3,4-	97-75-0	E581.VH+F1	1.0	%	11-Dec-2020 10:50	118	----	74.2
Polycyclic Aromatic Hydrocarbons								
acenaphthene	83-32-9	E641A-L	0.0050	mg/kg	12-Dec-2020 16:20	<0.0050	----	<0.0050
acenaphthylene	208-96-8	E641A-L	0.0050	mg/kg	11-Dec-2020 14:20	<0.0050	----	<0.0050
acridine	260-94-6	E641A-L	0.010	mg/kg	12-Dec-2020 14:10	<0.010	----	<0.010
anthracene	120-12-7	E641A-L	0.0040	mg/kg	11-Dec-2020 10:50	<0.0040	----	<0.0040
benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg	12-Dec-2020 14:10	<0.010	----	<0.010
benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg	11-Dec-2020 10:50	<0.010	----	<0.010
benzo(b+j)fluoranthene	----	E641A-L	0.010	mg/kg	12-Dec-2020 14:10	<0.010	----	<0.010
benzo(b+j+k)fluoranthene	----	E641A-L	0.015	mg/kg	11-Dec-2020 14:20	<0.015	----	<0.015
benzo(g,h,i)perylene	191-24-2	E641A-L	0.010	mg/kg	12-Dec-2020 14:10	<0.010	----	<0.010
benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg	11-Dec-2020 14:20	<0.010	----	<0.010



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)		Client sample ID			
Analyte	CAS Number	Method	LOR	Unit	Client sampling date / time
Polycyclic Aromatic Hydrocarbons					
chrysene	218-01-9	E641A-L	0.010	mg/kg	20MW-06-SOF 12-Dec-2020 16:20 VA20C3271-025 Result <0.010
dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg	20MW-07-SOC 11-Dec-2020 10:50 VA20C3271-028 Result ----
fluoranthene	206-44-0	E641A-L	0.010	mg/kg	20MW-07-SOD 12-Dec-2020 14:10 VA20C3271-029 Result <0.0050
fluorene	86-73-7	E641A-L	0.010	mg/kg	20MW-08-SOB 11-Dec-2020 14:20 VA20C3271-031 Result ----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.010	mg/kg	20MW-08-SOD 12-Dec-2020 14:30 VA20C3271-033 Result <0.010
methylanthralene, 1-	90-12-0	E641A-L	0.010	mg/kg	Result <0.010
methylanthralene, 2-	91-57-6	E641A-L	0.010	mg/kg	Result <0.010
naphthalene	91-20-3	E641A-L	0.010	mg/kg	Result <0.010
phenanthrene	85-01-8	E641A-L	0.010	mg/kg	Result <0.010
pyrene	129-00-0	E641A-L	0.010	mg/kg	Result <0.010
quinoline	6027-02-7	E641A-L	0.010	mg/kg	Result <0.010
B(a)p total potency equivalents [B(a)p TPE]	----	E641A-L	0.020	mg/kg	Result <0.020
IACR (CCME)	----	E641A-L	0.15	-	Result <0.15
Polycyclic Aromatic Hydrocarbons Surrogates					
acridine-d9	34749-75-2	E641A-L	0.010	%	Result 83.8
chrysene-d12	1719-03-5	E641A-L	0.010	%	Result 107
naphthalene-d8	1146-65-2	E641A-L	0.010	%	Result 101
phenanthrene-d10	1517-22-2	E641A-L	0.010	%	Result 104
Volatile Organic Compounds [THMs]					
bromodichloromethane	75-27-4	E611C	0.050	mg/kg	Result <0.050
bromoform	75-25-2	E611C	0.050	mg/kg	Result <0.050
chloroform	67-66-3	E611C	0.050	mg/kg	Result <0.050
dibromochloromethane	124-48-1	E611C	0.050	mg/kg	Result <0.050

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



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)		Client sample ID			
Analyte	CAS Number	Method	LOR	Client sampling date / time	
				Unit	Result
Particle Size					
passing (9.5 mm)	---	E181	1.0	%	100
passing (4.75 mm)	---	E181	1.0	%	99.7
passing (19 mm)	---	E181	1.0	%	100
passing (25.4 mm)	---	E181	1.0	%	100
passing (38.1 mm)	---	E181	1.0	%	100
passing (50.8 mm)	---	E181	1.0	%	100
passing (76.2 mm)	---	E181	1.0	%	100
passing (1.0 mm)	---	E182	1.0	%	97.6
passing (0.841 mm)	---	E182	1.0	%	96.9
passing (0.50 mm)	---	E182	1.0	%	94.6
passing (0.420 mm)	---	E182	1.0	%	93.4
passing (0.250 mm)	---	E182	1.0	%	90.0
passing (0.149 mm)	---	E182	1.0	%	88.5
passing (0.125 mm)	---	E182	1.0	%	87.9
passing (0.075 mm)	---	E182	1.0	%	83.6
passing (0.063 mm)	---	E182	1.0	%	82.6
passing (0.05 mm)	---	E182	1.0	%	81.5
passing (0.0312 mm)	---	E184	1.0	%	61.2
passing (0.020 mm)	---	E184	1.0	%	50.7
passing (0.005 mm)	---	E184	1.0	%	15.6
passing (0.004 mm)	---	E184	1.0	%	12.4
passing (0.002 mm)	---	E184	1.0	%	5.9
grain size curve	---	E185A	-	-	See Attached
passing (2.0 mm)	---	E181	1.0	%	98.6

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



Analytical Results

Analyte	CAS Number	Method	LOR	Client sampling date / time		Client sample ID					
				Unit	Result	20MW-10-SOC	20MW-10-SOE	20MW-10-SOF	20MW-10-SOJ	20MW-10-SOK	
Physical Tests											
moisture	---	E144	0.25	%	11-Dec-2020 12:35	20.1	---	---	---	11-Dec-2020 13:05	11.8
pH (1:2 soil:water)	---	E108	0.10	pH units	11-Dec-2020 12:25	7.03	---	---	---	11-Dec-2020 13:00	6.40
Particle Size											
passing (9.5 mm)	---	E181	1.0	%	11-Dec-2020 12:25	92.5	100	100	100	11-Dec-2020 13:00	89.3
passing (4.75 mm)	---	E181	1.0	%		83.7	100	100	100		86.4
passing (19 mm)	---	E181	1.0	%		98.8	100	100	100		91.8
passing (25.4 mm)	---	E181	1.0	%		100	100	100	100		93.4
passing (38.1 mm)	---	E181	1.0	%		100	100	100	100		100
passing (50.8 mm)	---	E181	1.0	%		100	100	100	100		100
passing (76.2 mm)	---	E181	1.0	%		100	100	100	100		100
passing (1.0 mm)	---	E182	1.0	%		60.3	100	99.0	99.0		58.2
passing (0.841 mm)	---	E182	1.0	%		56.7	99.9	97.3	97.3		46.8
passing (0.50 mm)	---	E182	1.0	%		46.0	99.7	91.9	91.9		12.8
passing (0.420 mm)	---	E182	1.0	%		42.7	99.5	80.8	80.8		10.1
passing (0.250 mm)	---	E182	1.0	%		34.0	99.0	51.6	51.6		3.0
passing (0.149 mm)	---	E182	1.0	%		28.3	98.4	30.4	30.4		1.4
passing (0.125 mm)	---	E182	1.0	%		26.3	98.1	23.2	23.2		<1.0
passing (0.075 mm)	---	E182	1.0	%		21.4	95.9	13.1	13.1		<1.0
passing (0.063 mm)	---	E182	1.0	%		20.2	95.4	10.7	10.7		<1.0
passing (0.05 mm)	---	E182	1.0	%		18.9	94.8	8.1	8.1		<1.0
passing (0.0312 mm)	---	E184	1.0	%		12.8	75.5	4.9	4.9		<1.0
passing (0.020 mm)	---	E184	1.0	%		10.6	62.5	4.0	4.0		<1.0
passing (0.005 mm)	---	E184	1.0	%		3.1	20.1	<1.0	<1.0		<1.0
passing (0.004 mm)	---	E184	1.0	%		2.6	15.4	<1.0	<1.0		<1.0
passing (0.002 mm)	---	E184	1.0	%		1.7	6.2	<1.0	<1.0		<1.0
grain size curve	---	E185A	-	-		See Attached	See Attached	See Attached	See Attached		See Attached
passing (2.0 mm)	---	E181	1.0	%		70.6	100	99.9	81.0		61.2
Metals											
aluminum	7429-90-5	E440	50	mg/kg		5970	---	5680	---		4160
antimony	7440-36-0	E440	0.10	mg/kg		0.19	---	<0.10	---		<0.10



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)		Client sample ID						
Analyte	CAS Number	Method	LOR	Client sampling date / time		20MW-10-SOK		
				20MW-10-SOC	20MW-10-SOE		20MW-10-SOF	20MW-10-SOJ
				11-Dec-2020 12:25	11-Dec-2020 12:35	11-Dec-2020 12:40	11-Dec-2020 13:00	11-Dec-2020 13:05
				Result	Result	Result	Result	Result
Metals								
arsenic	7440-38-2	E440	0.10	1.00	---	0.63	---	0.40
barium	7440-39-3	E440	0.50	55.4	---	49.8	---	29.2
beryllium	7440-41-7	E440	0.10	<0.10	---	<0.10	---	<0.10
bismuth	7440-69-9	E440	0.20	<0.20	---	<0.20	---	<0.20
boron	7440-42-8	E440	5.0	<5.0	---	<5.0	---	<5.0
cadmium	7440-43-9	E440	0.020	0.052	---	<0.020	---	<0.020
calcium	7440-70-2	E440	50	2780	---	2140	---	2060
chromium	7440-47-3	E440	0.50	9.50	---	6.78	---	4.59
cobalt	7440-48-4	E440	0.10	4.15	---	5.27	---	2.71
copper	7440-50-8	E440	0.50	23.5	---	12.1	---	8.40
iron	7439-89-6	E440	50	11400	---	9150	---	7560
lead	7439-92-1	E440	0.50	6.53	---	1.03	---	0.98
lithium	7439-93-2	E440	2.0	3.2	---	3.9	---	2.3
magnesium	7439-95-4	E440	20	2860	---	2730	---	2140
manganese	7439-96-5	E440	1.0	179	---	136	---	110
mercury	7439-97-6	E510	0.0500	<0.0500	---	<0.0500	---	<0.0500
molybdenum	7439-98-7	E440	0.10	0.81	---	0.26	---	0.17
nickel	7440-02-0	E440	0.50	6.86	---	5.83	---	4.05
phosphorus	7723-14-0	E440	50	475	---	362	---	435
potassium	7440-09-7	E440	100	1030	---	920	---	680
selenium	7782-49-2	E440	0.20	<0.20	---	<0.20	---	<0.20
silver	7440-22-4	E440	0.10	<0.10	---	<0.10	---	<0.10
sodium	7440-23-5	E440	50	440	---	339	---	288
strontium	7440-24-6	E440	0.50	33.9	---	31.0	---	27.4
sulfur	7704-34-9	E440	1000	<1000	---	<1000	---	<1000
thallium	7440-28-0	E440	0.050	<0.050	---	<0.050	---	<0.050
tin	7440-31-5	E440	2.0	<2.0	---	<2.0	---	<2.0
titanium	7440-32-6	E440	1.0	652	---	660	---	420
tungsten	7440-33-7	E440	0.50	<0.50	---	<0.50	---	<0.50
uranium	7440-61-1	E440	0.050	0.202	---	0.172	---	0.165
vanadium	7440-62-2	E440	0.20	33.4	---	36.9	---	24.3



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)		Client sample ID												
Analyte	CAS Number	Method	LOR	Unit	20MW-10-SOC		20MW-10-SOE		20MW-10-SOF		20MW-10-SOJ		20MW-10-SOK	
					11-Dec-2020 12:25	VA20C3271-043	11-Dec-2020 12:35	VA20C3271-045	11-Dec-2020 12:40	VA20C3271-046	11-Dec-2020 13:00	VA20C3271-050	11-Dec-2020 13:05	VA20C3271-051
Client sampling date / time					Result	Result	Result	Result	Result	Result	Result	Result	Result	
Metals														
zinc	7440-86-6	E440	2.0	mg/kg	36.6	---	---	27.1	---	---	---	---	23.3	
zirconium	7440-87-7	E440	1.0	mg/kg	2.9	---	---	2.6	---	---	---	---	1.8	
Volatile Organic Compounds														
chlorobenzene	108-90-7	E611C	0.050	mg/kg	<0.050	---	---	<0.050	---	---	---	---	<0.050	
chloromethane	74-87-3	E611C	0.050	mg/kg	<0.050	---	---	<0.050	---	---	---	---	<0.050	
dichlorobenzene, 1,2-	95-50-1	E611C	0.050	mg/kg	<0.050	---	---	<0.050	---	---	---	---	<0.050	
dichlorobenzene, 1,3-	541-73-1	E611C	0.050	mg/kg	<0.050	---	---	<0.050	---	---	---	---	<0.050	
dichlorobenzene, 1,4-	106-46-7	E611C	0.050	mg/kg	<0.050	---	---	<0.050	---	---	---	---	<0.050	
dichloropropane, 1,2-	78-87-5	E611C	0.050	mg/kg	<0.050	---	---	<0.050	---	---	---	---	<0.050	
dichloropropylene, cis+trans-1,3-	542-75-6	E611C	0.075	mg/kg	<0.075	---	---	<0.075	---	---	---	---	<0.075	
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.050	mg/kg	<0.050	---	---	<0.050	---	---	---	---	<0.050	
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.050	mg/kg	<0.050	---	---	<0.050	---	---	---	---	<0.050	
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.050	mg/kg	<0.050	---	---	<0.050	---	---	---	---	<0.050	
trichloroethane, 1,1,2-	79-00-5	E611C	0.050	mg/kg	<0.050	---	---	<0.050	---	---	---	---	<0.050	
trichlorofluoromethane	75-69-4	E611C	0.050	mg/kg	<0.050	---	---	<0.050	---	---	---	---	<0.050	
Volatile Organic Compounds [Drycleaning]														
carbon tetrachloride	56-23-5	E611C	0.050	mg/kg	<0.050	---	---	<0.050	---	---	---	---	<0.050	
chloroethane	75-00-3	E611C	0.050	mg/kg	<0.050	---	---	<0.050	---	---	---	---	<0.050	
dichloroethane, 1,1-	75-34-3	E611C	0.050	mg/kg	<0.050	---	---	<0.050	---	---	---	---	<0.050	
dichloroethane, 1,2-	107-06-2	E611C	0.050	mg/kg	<0.050	---	---	<0.050	---	---	---	---	<0.050	
dichloroethylene, 1,1-	75-35-4	E611C	0.050	mg/kg	<0.050	---	---	<0.050	---	---	---	---	<0.050	
dichloroethylene, cis-1,2-	156-59-4	E611C	0.050	mg/kg	<0.050	---	---	<0.050	---	---	---	---	<0.050	
dichloroethylene, trans-1,2-	156-60-5	E611C	0.050	mg/kg	<0.050	---	---	<0.050	---	---	---	---	<0.050	
dichloromethane	75-09-2	E611C	0.050	mg/kg	<0.050	---	---	<0.050	---	---	---	---	<0.050	
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.050	mg/kg	<0.050	---	---	<0.050	---	---	---	---	<0.050	
tetrachloroethylene	127-18-4	E611C	0.050	mg/kg	<0.050	---	---	<0.050	---	---	---	---	<0.050	
trichloroethane, 1,1,1-	71-55-6	E611C	0.050	mg/kg	<0.050	---	---	<0.050	---	---	---	---	<0.050	
trichloroethylene	79-01-6	E611C	0.010	mg/kg	0.018	---	---	<0.010	---	---	---	---	<0.010	
vinyl chloride	75-01-4	E611C	0.050	mg/kg	<0.050	---	---	<0.050	---	---	---	---	<0.050	
Volatile Organic Compounds [Fuels]														
benzene	71-43-2	E611C	0.0050	mg/kg	<0.0050	---	---	<0.0050	---	---	---	---	<0.0050	



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)		Client sample ID		20MW-10-SOC	20MW-10-SOE	20MW-10-SOF	20MW-10-SOJ	20MW-10-SOK
Analyte	CAS Number	Method	LOR	Client sampling date / time	Result	Result	Result	Result
Volatile Organic Compounds [Fuels]								
ethylbenzene	100-41-4	E611C	0.015	11-Dec-2020 12:25	<0.015	<0.015	<0.015	<0.015
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.050	11-Dec-2020 12:35	<0.050	<0.050	<0.050	<0.050
styrene	100-42-5	E611C	0.050	11-Dec-2020 12:40	<0.050	<0.050	<0.050	<0.050
toluene	108-88-3	E611C	0.050	11-Dec-2020 13:00	<0.050	<0.050	<0.050	<0.050
xylylene, m+p-	179601-23-1	E611C	0.050		<0.050	<0.050	<0.050	<0.050
xylylene, o-	95-47-6	E611C	0.050		<0.050	<0.050	<0.050	<0.050
xylenes, total	1330-20-7	E611C	0.075		<0.075	<0.075	<0.075	<0.075
Volatile Organic Compounds Surrogates								
bromofluorobenzene, 4-	460-00-4	E611C	0.050	11-Dec-2020 12:25	81.8	77.3	94.5	94.5
difluorobenzene, 1,4-	540-36-3	E611C	0.050	11-Dec-2020 12:35	97.3	90.6	116	116
Hydrocarbons								
EPH (C10-C19)	----	E601A	200	11-Dec-2020 12:25	<200	<200	<200	<200
EPH (C19-C32)	----	E601A	200	11-Dec-2020 12:35	<200	<200	<200	<200
VHs (C6-C10)	----	E581.VH+F1	10	11-Dec-2020 12:40	<10	<10	<10	<10
HEPHs	----	EC600A	200	11-Dec-2020 13:00	<200	<200	<200	<200
LEPHs	----	EC600A	200		<200	<200	<200	<200
VPHs	----	EC580A	10		<10	<10	<10	<10
Hydrocarbons Surrogates								
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	5.0	11-Dec-2020 12:25	94.4	95.3	95.1	95.1
dichlorotoluene, 3,4-	97-75-0	E581.VH+F1	1.0	11-Dec-2020 12:35	80.4	106	92.0	92.0
Polycyclic Aromatic Hydrocarbons								
acenaphthene	83-32-9	E641A-L	0.0050	11-Dec-2020 12:25	<0.0050	<0.0050	<0.0050	<0.0050
acenaphthylene	208-96-8	E641A-L	0.0050	11-Dec-2020 12:35	0.0064	<0.0050	<0.0050	<0.0050
acridine	260-94-6	E641A-L	0.010	11-Dec-2020 12:40	<0.010	<0.010	<0.010	<0.010
anthracene	120-12-7	E641A-L	0.0040	11-Dec-2020 13:00	0.0168	<0.0040	<0.0040	<0.0040
benz(a)anthracene	56-55-3	E641A-L	0.010		0.030	<0.010	<0.010	<0.010
benzo(a)pyrene	50-32-8	E641A-L	0.010		0.048	<0.010	<0.010	<0.010
benzo(b+j)fluoranthene	----	E641A-L	0.010		0.060	<0.010	<0.010	<0.010
benzo(b+j+k)fluoranthene	----	E641A-L	0.015		0.081	<0.015	<0.015	<0.015
benzo(g,h,i)perylene	191-24-2	E641A-L	0.010		0.058	<0.010	<0.010	<0.010
benzo(k)fluoranthene	207-08-9	E641A-L	0.010		0.021	<0.010	<0.010	<0.010



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)		Client sample ID								
Analyte	CAS Number	Method	LOR	Unit	Client sampling date / time	20MW-10-SOC	20MW-10-SOE	20MW-10-SOF	20MW-10-SOJ	20MW-10-SOK
						Result	Result	Result	Result	Result
Polycyclic Aromatic Hydrocarbons										
chrysene	218-01-9	E641A-L	0.010	mg/kg	11-Dec-2020 12:25	<0.050 ^{α,Cl}	---	<0.010	---	<0.010
dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg	11-Dec-2020 12:35	0.0112	---	<0.0050	---	<0.0050
fluoranthene	206-44-0	E641A-L	0.010	mg/kg	11-Dec-2020 13:00	0.070	---	<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		0.039	---	<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		0.018	---	<0.010	---	<0.010
phenanthrene	85-01-8	E641A-L	0.010	mg/kg		0.059	---	<0.010	---	<0.010
pyrene	129-00-0	E641A-L	0.010	mg/kg		0.100	---	<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]	---		0.020	mg/kg		0.075	---	<0.020	---	<0.020
IACR (CCME)	---		0.15	-		0.81	---	<0.15	---	<0.15
Polycyclic Aromatic Hydrocarbons Surrogates										
acridine-d9	34749-75-2	E641A-L	0.010	%	11-Dec-2020 12:40	107	---	96.3	---	75.3
chrysene-d12	1719-03-5	E641A-L	0.010	%		117	---	119	---	115
naphthalene-d8	1146-65-2	E641A-L	0.010	%		111	---	105	---	97.4
phenanthrene-d10	1517-22-2	E641A-L	0.010	%		116	---	119	---	92.4
Volatile Organic Compounds [THMs]										
bromodichloromethane	75-27-4	E611C	0.050	mg/kg		<0.050	---	<0.050	---	<0.050
bromoform	75-25-2	E611C	0.050	mg/kg		<0.050	---	<0.050	---	<0.050
chloroform	67-66-3	E611C	0.050	mg/kg		<0.050	---	<0.050	---	<0.050
dibromochloromethane	124-48-1	E611C	0.050	mg/kg		<0.050	---	<0.050	---	<0.050

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



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)		Client sample ID												
Analyte	CAS Number	Method	LOR	Unit	20MW-10-SOL		20MW-10-SON		20MW-10-SOO		20MW-11-SOC		20MW-11-SOF	
					Client sampling date / time	Result	Client sampling date / time	Result	Client sampling date / time	Result	Client sampling date / time	Result	Client sampling date / time	Result
Physical Tests														
moisture	---	E144	0.25	%	11-Dec-2020 13:10	---	11-Dec-2020 13:20	---	11-Dec-2020 13:25	---	11-Dec-2020 16:10	---	11-Dec-2020 16:25	20.5
pH (1:2 soil:water)	---	E108	0.10	pH units	11-Dec-2020 13:10	---	11-Dec-2020 13:20	---	11-Dec-2020 13:25	---	11-Dec-2020 16:10	---	11-Dec-2020 16:25	6.35
Particle Size														
passing (9.5 mm)	---	E181	1.0	%	11-Dec-2020 13:10	95.4	11-Dec-2020 13:20	98.2	11-Dec-2020 13:25	99.7	11-Dec-2020 16:10	99.8	11-Dec-2020 16:25	99.5
passing (4.75 mm)	---	E181	1.0	%	11-Dec-2020 13:10	90.6	11-Dec-2020 13:20	96.9	11-Dec-2020 13:25	99.7	11-Dec-2020 16:10	99.6	11-Dec-2020 16:25	97.4
passing (19 mm)	---	E181	1.0	%	11-Dec-2020 13:10	97.9	11-Dec-2020 13:20	98.6	11-Dec-2020 13:25	100	11-Dec-2020 16:10	100	11-Dec-2020 16:25	100
passing (25.4 mm)	---	E181	1.0	%	11-Dec-2020 13:10	100	11-Dec-2020 13:20	100	11-Dec-2020 13:25	100	11-Dec-2020 16:10	100	11-Dec-2020 16:25	100
passing (38.1 mm)	---	E181	1.0	%	11-Dec-2020 13:10	100	11-Dec-2020 13:20	100	11-Dec-2020 13:25	100	11-Dec-2020 16:10	100	11-Dec-2020 16:25	100
passing (50.8 mm)	---	E181	1.0	%	11-Dec-2020 13:10	100	11-Dec-2020 13:20	100	11-Dec-2020 13:25	100	11-Dec-2020 16:10	100	11-Dec-2020 16:25	100
passing (76.2 mm)	---	E181	1.0	%	11-Dec-2020 13:10	100	11-Dec-2020 13:20	100	11-Dec-2020 13:25	100	11-Dec-2020 16:10	100	11-Dec-2020 16:25	100
passing (1.0 mm)	---	E182	1.0	%	11-Dec-2020 13:10	59.2	11-Dec-2020 13:20	80.3	11-Dec-2020 13:25	97.9	11-Dec-2020 16:10	98.7	11-Dec-2020 16:25	75.0
passing (0.841 mm)	---	E182	1.0	%	11-Dec-2020 13:10	49.8	11-Dec-2020 13:20	72.3	11-Dec-2020 13:25	97.6	11-Dec-2020 16:10	98.6	11-Dec-2020 16:25	65.7
passing (0.50 mm)	---	E182	1.0	%	11-Dec-2020 13:10	21.6	11-Dec-2020 13:20	48.4	11-Dec-2020 13:25	96.6	11-Dec-2020 16:10	98.1	11-Dec-2020 16:25	37.6
passing (0.420 mm)	---	E182	1.0	%	11-Dec-2020 13:10	16.8	11-Dec-2020 13:20	39.5	11-Dec-2020 13:25	95.4	11-Dec-2020 16:10	97.8	11-Dec-2020 16:25	29.4
passing (0.250 mm)	---	E182	1.0	%	11-Dec-2020 13:10	4.2	11-Dec-2020 13:20	16.1	11-Dec-2020 13:25	92.3	11-Dec-2020 16:10	97.0	11-Dec-2020 16:25	8.0
passing (0.149 mm)	---	E182	1.0	%	11-Dec-2020 13:10	2.6	11-Dec-2020 13:20	9.5	11-Dec-2020 13:25	73.3	11-Dec-2020 16:10	96.4	11-Dec-2020 16:25	4.1
passing (0.125 mm)	---	E182	1.0	%	11-Dec-2020 13:10	2.1	11-Dec-2020 13:20	7.3	11-Dec-2020 13:25	66.8	11-Dec-2020 16:10	96.2	11-Dec-2020 16:25	2.8
passing (0.075 mm)	---	E182	1.0	%	11-Dec-2020 13:10	1.7	11-Dec-2020 13:20	4.6	11-Dec-2020 13:25	37.6	11-Dec-2020 16:10	93.0	11-Dec-2020 16:25	2.0
passing (0.063 mm)	---	E182	1.0	%	11-Dec-2020 13:10	1.6	11-Dec-2020 13:20	3.9	11-Dec-2020 13:25	30.6	11-Dec-2020 16:10	92.2	11-Dec-2020 16:25	1.9
passing (0.05 mm)	---	E182	1.0	%	11-Dec-2020 13:10	1.5	11-Dec-2020 13:20	3.2	11-Dec-2020 13:25	23.1	11-Dec-2020 16:10	91.3	11-Dec-2020 16:25	1.7
passing (0.0312 mm)	---	E184	1.0	%	11-Dec-2020 13:10	<1.0	11-Dec-2020 13:20	1.9	11-Dec-2020 13:25	13.9	11-Dec-2020 16:10	60.3	11-Dec-2020 16:25	1.0
passing (0.020 mm)	---	E184	1.0	%	11-Dec-2020 13:10	<1.0	11-Dec-2020 13:20	1.5	11-Dec-2020 13:25	11.2	11-Dec-2020 16:10	49.2	11-Dec-2020 16:25	<1.0
passing (0.005 mm)	---	E184	1.0	%	11-Dec-2020 13:10	<1.0	11-Dec-2020 13:20	<1.0	11-Dec-2020 13:25	1.9	11-Dec-2020 16:10	11.5	11-Dec-2020 16:25	<1.0
passing (0.004 mm)	---	E184	1.0	%	11-Dec-2020 13:10	<1.0	11-Dec-2020 13:20	<1.0	11-Dec-2020 13:25	1.5	11-Dec-2020 16:10	9.2	11-Dec-2020 16:25	<1.0
passing (0.002 mm)	---	E184	1.0	%	11-Dec-2020 13:10	<1.0	11-Dec-2020 13:20	<1.0	11-Dec-2020 13:25	<1.0	11-Dec-2020 16:10	4.5	11-Dec-2020 16:25	<1.0
grain size curve	---	E185A	-	-	11-Dec-2020 13:10	See Attached	11-Dec-2020 13:20	See Attached	11-Dec-2020 13:25	See Attached	11-Dec-2020 16:10	See Attached	11-Dec-2020 16:25	See Attached
passing (2.0 mm)	---	E181	1.0	%	11-Dec-2020 13:10	79.6	11-Dec-2020 13:20	91.7	11-Dec-2020 13:25	99.3	11-Dec-2020 16:10	99.2	11-Dec-2020 16:25	90.5
Metals														
aluminum	7429-90-5	E440	50	mg/kg	11-Dec-2020 13:10	---	11-Dec-2020 13:20	---	11-Dec-2020 13:25	---	11-Dec-2020 16:10	---	11-Dec-2020 16:25	4710
antimony	7440-36-0	E440	0.10	mg/kg	11-Dec-2020 13:10	---	11-Dec-2020 13:20	---	11-Dec-2020 13:25	---	11-Dec-2020 16:10	---	11-Dec-2020 16:25	<0.10



Analytical Results

Analyte	CAS Number	Method	LOR	Unit	Client sample ID				
					20MW-10-SOL	20MW-10-SON	20MW-10-SOO	20MW-11-SOC	20MW-11-SOF
Client sampling date / time					11-Dec-2020 13:10	11-Dec-2020 13:20	11-Dec-2020 13:25	11-Dec-2020 16:10	11-Dec-2020 16:25
					Result	Result	Result	Result	Result
Metals									
arsenic	7440-38-2	E440	0.10	mg/kg	---	---	---	---	0.82
barium	7440-39-3	E440	0.50	mg/kg	---	---	---	---	37.6
beryllium	7440-41-7	E440	0.10	mg/kg	---	---	---	---	<0.10
bismuth	7440-69-9	E440	0.20	mg/kg	---	---	---	---	<0.20
boron	7440-42-8	E440	5.0	mg/kg	---	---	---	---	<5.0
cadmium	7440-43-9	E440	0.020	mg/kg	---	---	---	---	<0.020
calcium	7440-70-2	E440	50	mg/kg	---	---	---	---	1970
chromium	7440-47-3	E440	0.50	mg/kg	---	---	---	---	6.57
cobalt	7440-48-4	E440	0.10	mg/kg	---	---	---	---	3.32
copper	7440-50-8	E440	0.50	mg/kg	---	---	---	---	9.08
iron	7439-89-6	E440	50	mg/kg	---	---	---	---	6700
lead	7439-92-1	E440	0.50	mg/kg	---	---	---	---	0.61
lithium	7439-93-2	E440	2.0	mg/kg	---	---	---	---	2.6
magnesium	7439-95-4	E440	20	mg/kg	---	---	---	---	2100
manganese	7439-96-5	E440	1.0	mg/kg	---	---	---	---	99.8
mercury	7439-97-6	E510	0.0500	mg/kg	---	---	---	---	<0.0500
molybdenum	7439-98-7	E440	0.10	mg/kg	---	---	---	---	0.38
nickel	7440-02-0	E440	0.50	mg/kg	---	---	---	---	4.80
phosphorus	7723-14-0	E440	50	mg/kg	---	---	---	---	378
potassium	7440-09-7	E440	100	mg/kg	---	---	---	---	730
selenium	7782-49-2	E440	0.20	mg/kg	---	---	---	---	<0.20
silver	7440-22-4	E440	0.10	mg/kg	---	---	---	---	<0.10
sodium	7440-23-5	E440	50	mg/kg	---	---	---	---	280
strontium	7440-24-6	E440	0.50	mg/kg	---	---	---	---	25.9
sulfur	7704-34-9	E440	1000	mg/kg	---	---	---	---	<1000
thallium	7440-28-0	E440	0.050	mg/kg	---	---	---	---	<0.050
tin	7440-31-5	E440	2.0	mg/kg	---	---	---	---	<2.0
titanium	7440-32-6	E440	1.0	mg/kg	---	---	---	---	494
tungsten	7440-33-7	E440	0.50	mg/kg	---	---	---	---	<0.50
uranium	7440-61-1	E440	0.050	mg/kg	---	---	---	---	0.162
vanadium	7440-62-2	E440	0.20	mg/kg	---	---	---	---	28.5



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)		Client sample ID							
Analyte	CAS Number	Method	LOR	Unit	20MW-10-SOL	20MW-10-SON	20MW-10-SOO	20MW-11-SOC	20MW-11-SOF
					11-Dec-2020 13:10 VA20C3271-052 Result	11-Dec-2020 13:20 VA20C3271-054 Result	11-Dec-2020 13:25 VA20C3271-055 Result	11-Dec-2020 16:10 VA20C3271-058 Result	11-Dec-2020 16:25 VA20C3271-061 Result
Metals									
zinc	7440-86-6	E440	2.0	mg/kg	----	----	----	----	43.6
zirconium	7440-87-7	E440	1.0	mg/kg	----	----	----	----	1.9
Volatile Organic Compounds									
chlorobenzene	108-90-7	E611C	0.050	mg/kg	----	----	----	----	<0.050
chloromethane	74-87-3	E611C	0.050	mg/kg	----	----	----	----	<0.050
dichlorobenzene, 1,2-	95-50-1	E611C	0.050	mg/kg	----	----	----	----	<0.050
dichlorobenzene, 1,3-	541-73-1	E611C	0.050	mg/kg	----	----	----	----	<0.050
dichlorobenzene, 1,4-	106-46-7	E611C	0.050	mg/kg	----	----	----	----	<0.050
dichloropropane, 1,2-	78-87-5	E611C	0.050	mg/kg	----	----	----	----	<0.050
dichloropropylene, cis+trans-1,3-	542-75-6	E611C	0.075	mg/kg	----	----	----	----	<0.075
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.050	mg/kg	----	----	----	----	<0.050
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.050	mg/kg	----	----	----	----	<0.050
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.050	mg/kg	----	----	----	----	<0.050
trichloroethane, 1,1,2-	79-00-5	E611C	0.050	mg/kg	----	----	----	----	<0.050
trichlorofluoromethane	75-69-4	E611C	0.050	mg/kg	----	----	----	----	<0.050
Volatile Organic Compounds [Drycleaning]									
carbon tetrachloride	56-23-5	E611C	0.050	mg/kg	----	----	----	----	<0.050
chloroethane	75-00-3	E611C	0.050	mg/kg	----	----	----	----	<0.050
dichloroethane, 1,1-	75-34-3	E611C	0.050	mg/kg	----	----	----	----	<0.050
dichloroethane, 1,2-	107-06-2	E611C	0.050	mg/kg	----	----	----	----	<0.050
dichloroethylene, 1,1-	75-35-4	E611C	0.050	mg/kg	----	----	----	----	<0.050
dichloroethylene, cis-1,2-	156-59-4	E611C	0.050	mg/kg	----	----	----	----	<0.050
dichloroethylene, trans-1,2-	156-80-5	E611C	0.050	mg/kg	----	----	----	----	<0.050
dichloromethane	75-09-2	E611C	0.050	mg/kg	----	----	----	----	<0.050
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.050	mg/kg	----	----	----	----	<0.050
tetrachloroethylene	127-18-4	E611C	0.050	mg/kg	----	----	----	----	<0.050
trichloroethane, 1,1,1-	71-55-6	E611C	0.050	mg/kg	----	----	----	----	<0.050
trichloroethylene	79-01-6	E611C	0.010	mg/kg	----	----	----	----	<0.010
vinyl chloride	75-01-4	E611C	0.050	mg/kg	----	----	----	----	<0.050
Volatile Organic Compounds [Fuels]									
benzene	71-43-2	E611C	0.0050	mg/kg	----	----	----	----	<0.0050



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)		Client sample ID			
Analyte	CAS Number	Method	LOR	Unit	Client sampling date / time
Polycyclic Aromatic Hydrocarbons					
chrysene	218-01-9	E641A-L	0.010	mg/kg	20MW-10-SOL 11-Dec-2020 13:10 VA20C3271-052 Result
dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg	20MW-10-SOL 11-Dec-2020 13:20 VA20C3271-054 Result
fluoranthene	206-44-0	E641A-L	0.010	mg/kg	20MW-10-SOL 11-Dec-2020 13:25 VA20C3271-055 Result
fluorene	86-73-7	E641A-L	0.010	mg/kg	20MW-10-SOL 11-Dec-2020 16:10 VA20C3271-058 Result
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.010	mg/kg	20MW-11-SOF 11-Dec-2020 16:25 VA20C3271-061 Result
methylanthralene, 1-	90-12-0	E641A-L	0.010	mg/kg	
methylanthralene, 2-	91-57-6	E641A-L	0.010	mg/kg	
naphthalene	91-20-3	E641A-L	0.010	mg/kg	
phenanthrene	85-01-8	E641A-L	0.010	mg/kg	
pyrene	129-00-0	E641A-L	0.010	mg/kg	
quinoline	6027-02-7	E641A-L	0.010	mg/kg	
B(a)p total potency equivalents [B(a)p TPE]	----	E641A-L	0.020	mg/kg	
IACR (CCME)	----	E641A-L	0.15	-	
Polycyclic Aromatic Hydrocarbons Surrogates					
acridine-d9	34749-75-2	E641A-L	0.010	%	83.2
chrysene-d12	1719-03-5	E641A-L	0.010	%	94.0
naphthalene-d8	1146-65-2	E641A-L	0.010	%	100.0
phenanthrene-d10	1517-22-2	E641A-L	0.010	%	101
Volatile Organic Compounds [THMs]					
bromodichloromethane	75-27-4	E611C	0.050	mg/kg	<0.050
bromoform	75-25-2	E611C	0.050	mg/kg	<0.050
chloroform	67-66-3	E611C	0.050	mg/kg	<0.050
dibromochloromethane	124-48-1	E611C	0.050	mg/kg	<0.050

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



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)		Client sample ID		Client sampling date / time		Dup 3		QA-1		20MW-11-SOH	
Analyte	CAS Number	Method	LOR	Unit	11-Dec-2020 16:35	11-Dec-2020	12-Dec-2020	11-Dec-2020	11-Dec-2020	11-Dec-2020 16:35	12-Dec-2020
					Result	Result	Result	Result	Result	Result	Result
Physical Tests											
moisture		E144	0.25	%	----	7.93	15.6	----	----	----	----
pH (1:2 soil:water)		E108	0.10	pH units	----	6.16	6.03	----	----	----	----
Particle Size											
passing (9.5 mm)		E181	1.0	%	99.6	----	----	----	----	----	----
passing (4.75 mm)		E181	1.0	%	98.9	----	----	----	----	----	----
passing (19 mm)		E181	1.0	%	100	----	----	----	----	----	----
passing (25.4 mm)		E181	1.0	%	100	----	----	----	----	----	----
passing (38.1 mm)		E181	1.0	%	100	----	----	----	----	----	----
passing (50.8 mm)		E181	1.0	%	100	----	----	----	----	----	----
passing (76.2 mm)		E181	1.0	%	100	----	----	----	----	----	----
passing (1.0 mm)		E182	1.0	%	97.8	----	----	----	----	----	----
passing (0.841 mm)		E182	1.0	%	96.1	----	----	----	----	----	----
passing (0.50 mm)		E182	1.0	%	90.8	----	----	----	----	----	----
passing (0.420 mm)		E182	1.0	%	73.4	----	----	----	----	----	----
passing (0.250 mm)		E182	1.0	%	27.8	----	----	----	----	----	----
passing (0.149 mm)		E182	1.0	%	10.9	----	----	----	----	----	----
passing (0.125 mm)		E182	1.0	%	5.2	----	----	----	----	----	----
passing (0.075 mm)		E182	1.0	%	2.9	----	----	----	----	----	----
passing (0.063 mm)		E182	1.0	%	2.3	----	----	----	----	----	----
passing (0.05 mm)		E182	1.0	%	1.7	----	----	----	----	----	----
passing (0.0312 mm)		E184	1.0	%	<1.0	----	----	----	----	----	----
passing (0.020 mm)		E184	1.0	%	<1.0	----	----	----	----	----	----
passing (0.005 mm)		E184	1.0	%	<1.0	----	----	----	----	----	----
passing (0.004 mm)		E184	1.0	%	<1.0	----	----	----	----	----	----
passing (0.002 mm)		E184	1.0	%	<1.0	----	----	----	----	----	----
grain size curve		E185A	-	-	See Attached	----	----	----	----	----	----
passing (2.0 mm)		E181	1.0	%	98.5	----	----	----	----	----	----
Metals											
aluminum	7429-90-5	E440	50	mg/kg	----	5200	5320	----	----	----	----
antimony	7440-36-0	E440	0.10	mg/kg	----	<0.10	<0.10	----	----	----	----



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)		Client sample ID					
Analyte	CAS Number	Method	LOR	Unit	Client sampling date / time		
					20MW-11-SOH		
					11-Dec-2020 16:35		
					Result		
					VA20C3271-063		
					Result		
					VA20C3271-064		
					Result		
					11-Dec-2020		
					Result		
					VA20C3271-067		
					Result		
					12-Dec-2020		
					Result		
					Dup 3		
					Result		
Metals							
arsenic	7440-38-2	E440	0.10	mg/kg	0.43	0.70	0.70
barium	7440-39-3	E440	0.50	mg/kg	36.1	41.1	41.1
beryllium	7440-41-7	E440	0.10	mg/kg	<0.10	<0.10	<0.10
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	<0.020	0.021	0.021
calcium	7440-70-2	E440	50	mg/kg	2700	2310	2310
chromium	7440-47-3	E440	0.50	mg/kg	6.52	9.69	9.69
cobalt	7440-48-4	E440	0.10	mg/kg	3.26	3.51	3.51
copper	7440-50-8	E440	0.50	mg/kg	10.4	11.9	11.9
iron	7439-89-6	E440	50	mg/kg	9640	9840	9840
lead	7439-92-1	E440	0.50	mg/kg	0.80	1.24	1.24
lithium	7439-93-2	E440	2.0	mg/kg	3.1	3.1	3.1
magnesium	7439-95-4	E440	20	mg/kg	2550	2680	2680
manganese	7439-96-5	E440	1.0	mg/kg	133	129	129
mercury	7439-97-6	E510	0.0500	mg/kg	<0.0500	<0.0500	<0.0500
molybdenum	7439-98-7	E440	0.10	mg/kg	0.24	0.26	0.26
nickel	7440-02-0	E440	0.50	mg/kg	4.42	5.48	5.48
phosphorus	7723-14-0	E440	50	mg/kg	416	500	500
potassium	7440-09-7	E440	100	mg/kg	740	830	830
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	377	357	357
strontium	7440-24-6	E440	0.50	mg/kg	31.4	36.9	36.9
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
titanium	7440-32-6	E440	1.0	mg/kg	545	516	516
tungsten	7440-33-7	E440	0.50	mg/kg	<0.50	<0.50	<0.50
uranium	7440-61-1	E440	0.050	mg/kg	0.164	0.192	0.192
vanadium	7440-62-2	E440	0.20	mg/kg	31.7	28.7	28.7



Analytical Results

Sub-Matrix: Soil (Matrix: Soil/Solid)		Client sample ID		Client sampling date / time			20MW-11-SOH	QA-1	Dup 3	Result
Analyte	CAS Number	Method	LOR	Unit	11-Dec-2020 16:35	11-Dec-2020	11-Dec-2020 16:35	11-Dec-2020	12-Dec-2020	Result
Metals										
zinc	7440-86-6	E440	2.0	mg/kg	----	24.5	24.5	24.5	----	----
zirconium	7440-87-7	E440	1.0	mg/kg	----	2.5	2.5	1.4	----	----
Volatile Organic Compounds										
chlorobenzene	108-90-7	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	----	----
chloromethane	74-87-3	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	----	----
dichlorobenzene, 1,2-	95-50-1	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	----	----
dichlorobenzene, 1,3-	541-73-1	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	----	----
dichlorobenzene, 1,4-	106-46-7	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	----	----
dichloropropane, 1,2-	78-87-5	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	----	----
dichloropropylene, cis+trans-1,3-	542-75-6	E611C	0.075	mg/kg	----	<0.075	<0.075	<0.075	----	----
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	----	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	----	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	----	----
trichloroethane, 1,1,2-	79-00-5	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	----	----
trichlorofluoromethane	75-69-4	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	----	----
Volatile Organic Compounds [Drycleaning]										
carbon tetrachloride	56-23-5	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	----	----
chloroethane	75-00-3	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	----	----
dichloroethane, 1,1-	75-34-3	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	----	----
dichloroethane, 1,2-	107-06-2	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	----	----
dichloroethylene, 1,1-	75-35-4	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	----	----
dichloroethylene, cis-1,2-	156-59-4	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	----	----
dichloroethylene, trans-1,2-	156-80-5	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	----	----
dichloromethane	75-09-2	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	----	----
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	----	----
tetrachloroethylene	127-18-4	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	----	----
trichloroethane, 1,1,1-	71-55-6	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	----	----
trichloroethylene	79-01-6	E611C	0.010	mg/kg	----	<0.010	<0.010	<0.010	----	----
vinyl chloride	75-01-4	E611C	0.050	mg/kg	----	<0.050	<0.050	<0.050	----	----
Volatile Organic Compounds [Fuels]										
benzene	71-43-2	E611C	0.0050	mg/kg	----	<0.0050	<0.0050	<0.0050	----	----



Analytical Results

Analyte	CAS Number	Method	LOR	Unit	Client sample ID			
					20MW-11-SOH	QA-1	Dup 3	
(Matrix: Soil/Solid)					Client sampling date / time			
					11-Dec-2020 16:35	11-Dec-2020	12-Dec-2020	
					Result	Result	Result	Result
Polycyclic Aromatic Hydrocarbons								
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	0.021	----
methylnaphthalene, 2-	91-57-6	E641A-L	0.010	mg/kg	----	<0.010	0.014	----
naphthalene	91-20-3	E641A-L	0.010	mg/kg	----	<0.010	0.015	----
phenanthrene	85-01-8	E641A-L	0.010	mg/kg	----	<0.010	0.014	----
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]	----	----	0.020	mg/kg	----	<0.020	<0.020	----
IACR (CCME)	----	----	0.15	-	----	<0.15	<0.15	----
Polycyclic Aromatic Hydrocarbons Surrogates								
acridine-d9	34749-75-2	E641A-L	0.010	%	----	96.6	101	----
chrysene-d12	1719-03-5	E641A-L	0.010	%	----	112	103	----
naphthalene-d8	1146-65-2	E641A-L	0.010	%	----	86.9	106	----
phenanthrene-d10	1517-22-2	E641A-L	0.010	%	----	108	119	----
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	----

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



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : **VA20C3271** Page : 1 of 39

Amendment : 1

Client : **CH2M Hill Canada Limited** Laboratory : Vancouver - Environmental
Contact : Jelena Sladojevic Account Manager : Edward Ngai
Address : Metrotower II, Suite 2100 4720 Kingsway : 8081 Lougheed Highway
Burnaby BC Canada V5H 4N2 Burnaby, British Columbia Canada V5A 1W9
Telephone : Telephone : +1 604 253 4188
Project : EGP/BC Rail Site - Fortis Date Samples Received : 13-Dec-2020 15:15
PO : 670014CH.B0.01.09 Issue Date : 14-Jan-2021 16:38
C-O-C number : 17-862379 to 83, 17-861178
Sampler :
Site :
Quote number : VA20-CHMH100-013
No. of samples received : 67
No. of samples analysed : 38

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.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Page : 3 of 39
 Work Order : VA20C3271 Amendment 1
 Client : CH2M Hill Canada Limited
 Project : EGP/BC Rail Site - Fortis

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	VA20C3271-003	20MW-04-SOC	cadmium	7440-43-9	E440	0.052 % DUP-H	Diff <2x LOR	Low Level DUP DQO exceeded (difference > 2 LOR).

Result Qualifiers

Qualifier Description

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

Laboratory Control Sample (LCS) Recoveries

Volatile Organic Compounds	QC-MRG2-1336100 02	----	dichloropropylene, trans-1,3-	10061-02-6	E611C	65.1 % LCS-ND	70.0-130%	Recovery less than lower control limit
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Result Qualifiers

Qualifier Description

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



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	Method	Sampling Date	Extraction / Preparation			Analysis				
			Preparation Date	Holding Times Rec	Holding Times Actual	Analysis Date	Holding Times Rec	Holding Times Actual	Eval	
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap 20MW-04-SOC	E601A	12-Dec-2020	20-Dec-2020	14 days	7 days	✓	21-Dec-2020	40 days	1 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap 20MW-05-SOF	E601A	12-Dec-2020	20-Dec-2020	14 days	7 days	✓	21-Dec-2020	40 days	1 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap 20MW-06-SOD	E601A	12-Dec-2020	20-Dec-2020	14 days	7 days	✓	21-Dec-2020	40 days	1 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap 20MW-06-SOF	E601A	12-Dec-2020	20-Dec-2020	14 days	7 days	✓	21-Dec-2020	40 days	1 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap 20MW-07-SOD	E601A	12-Dec-2020	20-Dec-2020	14 days	7 days	✓	21-Dec-2020	40 days	1 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap 20MW-08-SOD	E601A	12-Dec-2020	20-Dec-2020	14 days	7 days	✓	21-Dec-2020	40 days	1 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass soil jar/Teflon lined cap Dup 3	E601A	12-Dec-2020	20-Dec-2020	14 days	7 days	✓	21-Dec-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		Analysis Date	Eval	Holding Times		Eval
					Rec	Actual			Rec	Actual	
Hydrocarbons : BC PHC - EPH by GC-FID											
Glass soil jar/Teflon lined cap 20MW-05-SOC		E601A	12-Dec-2020	20-Dec-2020	14 days	8 days	✓	21-Dec-2020	40 days	1 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID											
Glass soil jar/Teflon lined cap 20MW-06-SOB		E601A	11-Dec-2020	20-Dec-2020	14 days	8 days	✓	21-Dec-2020	40 days	1 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID											
Glass soil jar/Teflon lined cap 20MW-10-SOC		E601A	11-Dec-2020	20-Dec-2020	14 days	8 days	✓	21-Dec-2020	40 days	1 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID											
Glass soil jar/Teflon lined cap 20MW-10-SOF		E601A	11-Dec-2020	20-Dec-2020	14 days	8 days	✓	21-Dec-2020	40 days	1 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID											
Glass soil jar/Teflon lined cap 20MW-10-SOK		E601A	11-Dec-2020	20-Dec-2020	14 days	8 days	✓	21-Dec-2020	40 days	1 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID											
Glass soil jar/Teflon lined cap 20MW-11-SOF		E601A	11-Dec-2020	20-Dec-2020	14 days	8 days	✓	21-Dec-2020	40 days	1 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID											
Glass soil jar/Teflon lined cap QA-1		E601A	11-Dec-2020	20-Dec-2020	14 days	8 days	✓	22-Dec-2020	40 days	1 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID											
Glass soil methanol vial Dup 3		E581.VH+F1	12-Dec-2020	20-Dec-2020	40 days	7 days	✓	21-Dec-2020	32 days	0 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID											
Glass soil methanol vial 20MW-04-SOC		E581.VH+F1	12-Dec-2020	20-Dec-2020	40 days	7 days	✓	21-Dec-2020	32 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		Analysis Date	Eval	Holding Times		
					Rec	Actual			Rec	Actual	
Hydrocarbons : VH and F1 by Headspace GC-FID											
Glass soil methanol vial 20MW-05-SOC		E581.VH+F1	12-Dec-2020	20-Dec-2020	40 days	7 days	32 days	21-Dec-2020	32 days	1 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID											
Glass soil methanol vial 20MW-05-SOF		E581.VH+F1	12-Dec-2020	20-Dec-2020	40 days	7 days	32 days	21-Dec-2020	32 days	1 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID											
Glass soil methanol vial 20MW-06-SOD		E581.VH+F1	12-Dec-2020	20-Dec-2020	40 days	7 days	32 days	21-Dec-2020	32 days	1 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID											
Glass soil methanol vial 20MW-06-SOF		E581.VH+F1	12-Dec-2020	20-Dec-2020	40 days	7 days	32 days	21-Dec-2020	32 days	1 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID											
Glass soil methanol vial 20MW-07-SOD		E581.VH+F1	12-Dec-2020	20-Dec-2020	40 days	7 days	32 days	21-Dec-2020	32 days	1 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID											
Glass soil methanol vial 20MW-08-SOD		E581.VH+F1	12-Dec-2020	20-Dec-2020	40 days	7 days	32 days	21-Dec-2020	32 days	1 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID											
Glass soil methanol vial 20MW-10-SOK		E581.VH+F1	11-Dec-2020	20-Dec-2020	40 days	8 days	31 days	21-Dec-2020	31 days	0 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID											
Glass soil methanol vial 20MW-11-SOF		E581.VH+F1	11-Dec-2020	20-Dec-2020	40 days	8 days	31 days	21-Dec-2020	31 days	0 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID											
Glass soil methanol vial QA-1		E581.VH+F1	11-Dec-2020	20-Dec-2020	40 days	8 days	31 days	21-Dec-2020	31 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 Actual	Eval	Analysis Date	Holding Times Rec Actual	Eval		
Hydrocarbons : VH and F1 by Headspace GC-FID											
Glass soil methanol vial	20MW-06-SOB	E581.VH+F1	11-Dec-2020	20-Dec-2020	40 days	8 days	✓	21-Dec-2020	31 days	1 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID											
Glass soil methanol vial	20MW-10-SOC	E581.VH+F1	11-Dec-2020	20-Dec-2020	40 days	8 days	✓	21-Dec-2020	31 days	1 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID											
Glass soil methanol vial	20MW-10-SOF	E581.VH+F1	11-Dec-2020	20-Dec-2020	40 days	8 days	✓	21-Dec-2020	31 days	1 days	✓
Metals : Mercury in Soil/Solid by CVAAS											
Glass soil jar/Teflon lined cap	20MW-04-SOC	E510	12-Dec-2020	22-Dec-2020	28 days	10 days	✓	23-Dec-2020	17 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS											
Glass soil jar/Teflon lined cap	20MW-05-SOC	E510	12-Dec-2020	22-Dec-2020	28 days	10 days	✓	23-Dec-2020	17 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS											
Glass soil jar/Teflon lined cap	20MW-05-SOF	E510	12-Dec-2020	22-Dec-2020	28 days	10 days	✓	23-Dec-2020	17 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS											
Glass soil jar/Teflon lined cap	20MW-06-SOD	E510	12-Dec-2020	22-Dec-2020	28 days	10 days	✓	23-Dec-2020	17 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS											
Glass soil jar/Teflon lined cap	20MW-06-SOF	E510	12-Dec-2020	22-Dec-2020	28 days	10 days	✓	23-Dec-2020	17 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS											
Glass soil jar/Teflon lined cap	20MW-07-SOD	E510	12-Dec-2020	22-Dec-2020	28 days	10 days	✓	23-Dec-2020	17 days	0 days	✓



Matrix: **Soil/Solid** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation			Analysis				
			Preparation Date	Holding Times Rec Actual	Eval	Analysis Date	Holding Times Rec Actual	Eval		
Metals : Mercury in Soil/Solid by CVAAS										
Container / Client Sample ID(s) Glass soil jar/Teflon lined cap 20MW-08-SOD	E510	12-Dec-2020	22-Dec-2020	28 days	10 days	✓	23-Dec-2020	17 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Dup 3 Glass soil jar/Teflon lined cap	E510	12-Dec-2020	22-Dec-2020	28 days	10 days	✓	23-Dec-2020	17 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
QA-1 Glass soil jar/Teflon lined cap	E510	11-Dec-2020	22-Dec-2020	28 days	10 days	✓	23-Dec-2020	17 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap 20MW-06-SOB	E510	11-Dec-2020	22-Dec-2020	28 days	11 days	✓	23-Dec-2020	16 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap 20MW-10-SOC	E510	11-Dec-2020	22-Dec-2020	28 days	11 days	✓	23-Dec-2020	16 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap 20MW-10-SOF	E510	11-Dec-2020	22-Dec-2020	28 days	11 days	✓	23-Dec-2020	16 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap 20MW-10-SOK	E510	11-Dec-2020	22-Dec-2020	28 days	11 days	✓	23-Dec-2020	16 days	0 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap 20MW-11-SOF	E510	11-Dec-2020	22-Dec-2020	28 days	11 days	✓	23-Dec-2020	16 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap 20MW-04-SOC	E440	12-Dec-2020	22-Dec-2020	180 days	10 days	✓	23-Dec-2020	169 days	0 days	✓



Matrix: **Soil/Solid** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation			Analysis				
			Preparation Date	Holding Times		Analysis Date	Eval	Holding Times		
				Rec	Actual			Rec	Actual	
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap 20MW-05-SOC	E440	12-Dec-2020	22-Dec-2020	180 days	10 days	✓	23-Dec-2020	169 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap 20MW-05-SOF	E440	12-Dec-2020	22-Dec-2020	180 days	10 days	✓	23-Dec-2020	169 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap 20MW-06-SOD	E440	12-Dec-2020	22-Dec-2020	180 days	10 days	✓	23-Dec-2020	169 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap 20MW-06-SOF	E440	12-Dec-2020	22-Dec-2020	180 days	10 days	✓	23-Dec-2020	169 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap 20MW-07-SOD	E440	12-Dec-2020	22-Dec-2020	180 days	10 days	✓	23-Dec-2020	169 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap 20MW-08-SOD	E440	12-Dec-2020	22-Dec-2020	180 days	10 days	✓	23-Dec-2020	169 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap Dup 3	E440	12-Dec-2020	22-Dec-2020	180 days	10 days	✓	23-Dec-2020	169 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap QA-1	E440	11-Dec-2020	22-Dec-2020	180 days	10 days	✓	22-Dec-2020	169 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap 20MW-06-SOB	E440	11-Dec-2020	22-Dec-2020	180 days	11 days	✓	23-Dec-2020	168 days	0 days	✓



Matrix: **Soil/Solid** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation			Analysis				
			Preparation Date	Holding Times Rec Actual	Eval	Analysis Date	Holding Times Rec Actual	Eval		
Metals : Metals in Soil/Solid by CRC ICPMS										
Container / Client Sample ID(s) Glass soil jar/Teflon lined cap 20MW-10-SOC	E440	11-Dec-2020	22-Dec-2020	180 days	11 days	✓	23-Dec-2020	168 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Container / Client Sample ID(s) Glass soil jar/Teflon lined cap 20MW-10-SOF	E440	11-Dec-2020	22-Dec-2020	180 days	11 days	✓	23-Dec-2020	168 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Container / Client Sample ID(s) Glass soil jar/Teflon lined cap 20MW-10-SOK	E440	11-Dec-2020	22-Dec-2020	180 days	11 days	✓	23-Dec-2020	168 days	0 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Container / Client Sample ID(s) Glass soil jar/Teflon lined cap 20MW-11-SOF	E440	11-Dec-2020	22-Dec-2020	180 days	11 days	✓	23-Dec-2020	168 days	0 days	✓
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method										
LDPE bag 20MW-04-SOA	E185A	12-Dec-2020	---	---	---		14-Jan-2021	---	---	
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method										
LDPE bag 20MW-04-SOD	E185A	12-Dec-2020	---	---	---		14-Jan-2021	---	---	
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method										
LDPE bag 20MW-04-SOE	E185A	12-Dec-2020	---	---	---		14-Jan-2021	---	---	
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method										
LDPE bag 20MW-04-SOH	E185A	12-Dec-2020	---	---	---		14-Jan-2021	---	---	
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method										
LDPE bag 20MW-04-SOI	E185A	12-Dec-2020	---	---	---		14-Jan-2021	---	---	



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
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method										
LDPE bag	20MW-04-SOJ	E185A	12-Dec-2020	----	----	----	14-Jan-2021	----	----	
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method										
LDPE bag	20MW-04-SOK	E185A	12-Dec-2020	----	----	----	14-Jan-2021	----	----	
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method										
LDPE bag	20MW-04-SOL	E185A	12-Dec-2020	----	----	----	14-Jan-2021	----	----	
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method										
LDPE bag	20MW-05-SOC	E185A	12-Dec-2020	----	----	----	14-Jan-2021	----	----	
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method										
LDPE bag	20MW-05-SOD	E185A	12-Dec-2020	----	----	----	14-Jan-2021	----	----	
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method										
LDPE bag	20MW-05-SOF	E185A	12-Dec-2020	----	----	----	14-Jan-2021	----	----	
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method										
LDPE bag	20MW-06-SOE	E185A	12-Dec-2020	----	----	----	14-Jan-2021	----	----	
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method										
LDPE bag	20MW-06-SOF	E185A	12-Dec-2020	----	----	----	14-Jan-2021	----	----	
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method										
LDPE bag	20MW-07-SOC	E185A	11-Dec-2020	----	----	----	14-Jan-2021	----	----	



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	Actual	Eval	Analysis Date	Holding Times Rec	Actual
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method										
LDPE bag	20MW-07-SOD	E185A	12-Dec-2020	----	----	----	14-Jan-2021	----	----	
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method										
LDPE bag	20MW-08-SOB	E185A	11-Dec-2020	----	----	----	14-Jan-2021	----	----	
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method										
LDPE bag	20MW-08-SOE	E185A	12-Dec-2020	----	----	----	14-Jan-2021	----	----	
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method										
LDPE bag	20MW-08-SOF	E185A	12-Dec-2020	----	----	----	14-Jan-2021	----	----	
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method										
LDPE bag	20MW-09-SOB	E185A	11-Dec-2020	----	----	----	14-Jan-2021	----	----	
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method										
LDPE bag	20MW-09-SOC	E185A	11-Dec-2020	----	----	----	14-Jan-2021	----	----	
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method										
LDPE bag	20MW-09-SOD	E185A	11-Dec-2020	----	----	----	14-Jan-2021	----	----	
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method										
LDPE bag	20MW-10-SOC	E185A	11-Dec-2020	----	----	----	14-Jan-2021	----	----	
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method										
LDPE bag	20MW-10-SOE	E185A	11-Dec-2020	----	----	----	14-Jan-2021	----	----	



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
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method											
LDPE bag	20MW-10-SOF	E185A	11-Dec-2020	----	----	----	----	----	14-Jan-2021	----	----
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method											
LDPE bag	20MW-10-SOJ	E185A	11-Dec-2020	----	----	----	----	----	14-Jan-2021	----	----
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method											
LDPE bag	20MW-10-SOK	E185A	11-Dec-2020	----	----	----	----	----	14-Jan-2021	----	----
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method											
LDPE bag	20MW-10-SOL	E185A	11-Dec-2020	----	----	----	----	----	14-Jan-2021	----	----
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method											
LDPE bag	20MW-10-SON	E185A	11-Dec-2020	----	----	----	----	----	14-Jan-2021	----	----
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method											
LDPE bag	20MW-10-SOO	E185A	11-Dec-2020	----	----	----	----	----	14-Jan-2021	----	----
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method											
LDPE bag	20MW-11-SOC	E185A	11-Dec-2020	----	----	----	----	----	14-Jan-2021	----	----
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method											
LDPE bag	20MW-11-SOF	E185A	11-Dec-2020	----	----	----	----	----	14-Jan-2021	----	----
Particle Size : Grain Size Report (Attachment) Pipet/Sieve Method											
LDPE bag	20MW-11-SOH	E185A	11-Dec-2020	----	----	----	----	----	14-Jan-2021	----	----



Matrix: **Soil/Solid** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Container / Client Sample ID(s)	Method	Sampling Date	Preparation / Preparation			Analysis					
				Preparation Date	Holding Times		Analysis Date	Holding Times		Eval		
					Rec	Actual		Rec	Actual			
Particle Size : Particle Size Analysis - Pipette Method												
LDPE bag	20MW-04-SOA	E184	12-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Pipette Method												
LDPE bag	20MW-04-SOD	E184	12-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Pipette Method												
LDPE bag	20MW-04-SOE	E184	12-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Pipette Method												
LDPE bag	20MW-04-SOH	E184	12-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Pipette Method												
LDPE bag	20MW-04-SOI	E184	12-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Pipette Method												
LDPE bag	20MW-04-SOJ	E184	12-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Pipette Method												
LDPE bag	20MW-04-SOK	E184	12-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Pipette Method												
LDPE bag	20MW-04-SOL	E184	12-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Pipette Method												
LDPE bag	20MW-05-SOC	E184	12-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 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
Particle Size : Particle Size Analysis - Pipette Method										
LDPE bag	20MW-05-SOD	E184	12-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Pipette Method										
LDPE bag	20MW-05-SOF	E184	12-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Pipette Method										
LDPE bag	20MW-06-SOE	E184	12-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Pipette Method										
LDPE bag	20MW-06-SOF	E184	12-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Pipette Method										
LDPE bag	20MW-07-SOC	E184	11-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Pipette Method										
LDPE bag	20MW-07-SOD	E184	12-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Pipette Method										
LDPE bag	20MW-08-SOB	E184	11-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Pipette Method										
LDPE bag	20MW-08-SOE	E184	12-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Pipette Method										
LDPE bag	20MW-08-SOF	E184	12-Dec-2020	----	----	----	12-Jan-2021	0 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		Analysis Date	Holding Times		Eval		
					Rec	Actual		Rec	Actual			
Particle Size : Particle Size Analysis - Pipette Method												
LDPE bag	20MW-09-SOB	E184	11-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Pipette Method												
LDPE bag	20MW-09-SOC	E184	11-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Pipette Method												
LDPE bag	20MW-09-SOD	E184	11-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Pipette Method												
LDPE bag	20MW-10-SOC	E184	11-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Pipette Method												
LDPE bag	20MW-10-SOE	E184	11-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Pipette Method												
LDPE bag	20MW-10-SOF	E184	11-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Pipette Method												
LDPE bag	20MW-10-SOJ	E184	11-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Pipette Method												
LDPE bag	20MW-10-SOK	E184	11-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Pipette Method												
LDPE bag	20MW-10-SOL	E184	11-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 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		Analysis Date	Holding Times		Eval		
					Rec	Actual		Rec	Actual			
Particle Size : Particle Size Analysis - Pipette Method												
LDPE bag	20MW-10-SON	E184	11-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Pipette Method												
LDPE bag	20MW-10-SOO	E184	11-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Pipette Method												
LDPE bag	20MW-11-SOC	E184	11-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Pipette Method												
LDPE bag	20MW-11-SOF	E184	11-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Pipette Method												
LDPE bag	20MW-11-SOH	E184	11-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve <2mm												
LDPE bag	20MW-04-SOA	E182	12-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve <2mm												
LDPE bag	20MW-04-SOD	E182	12-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve <2mm												
LDPE bag	20MW-04-SOE	E182	12-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve <2mm												
LDPE bag	20MW-04-SOH	E182	12-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓



Matrix: **Soil/Solid** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation			Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Particle Size : Particle Size Analysis - Sieve <2mm									
LDPE bag 20MW-04-SOI	E182	12-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve <2mm									
LDPE bag 20MW-04-SOJ	E182	12-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve <2mm									
LDPE bag 20MW-04-SOK	E182	12-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve <2mm									
LDPE bag 20MW-04-SOL	E182	12-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve <2mm									
LDPE bag 20MW-05-SOC	E182	12-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve <2mm									
LDPE bag 20MW-05-SOD	E182	12-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve <2mm									
LDPE bag 20MW-05-SOF	E182	12-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve <2mm									
LDPE bag 20MW-06-SOE	E182	12-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve <2mm									
LDPE bag 20MW-06-SOF	E182	12-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓



Matrix: **Soil/Solid** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation			Analysis			
			Preparation Date	Holding Times		Analysis Date	Holding Times		
				Rec	Actual		Rec	Actual	
Particle Size : Particle Size Analysis - Sieve <2mm									
LDPE bag 20MW-07-SOC	E182	11-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve <2mm									
LDPE bag 20MW-07-SOD	E182	12-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve <2mm									
LDPE bag 20MW-08-SOB	E182	11-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve <2mm									
LDPE bag 20MW-08-SOE	E182	12-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve <2mm									
LDPE bag 20MW-08-SOF	E182	12-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve <2mm									
LDPE bag 20MW-09-SOB	E182	11-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve <2mm									
LDPE bag 20MW-09-SOC	E182	11-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve <2mm									
LDPE bag 20MW-09-SOD	E182	11-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve <2mm									
LDPE bag 20MW-10-SOC	E182	11-Dec-2020	----	----	----	12-Jan-2021	0 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		Analysis Date	Holding Times		Eval		
					Rec	Actual		Rec	Actual			
Particle Size : Particle Size Analysis - Sieve <2mm												
LDPE bag	20MW-10-SOE	E182	11-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve <2mm												
LDPE bag	20MW-10-SOF	E182	11-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve <2mm												
LDPE bag	20MW-10-SOJ	E182	11-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve <2mm												
LDPE bag	20MW-10-SOK	E182	11-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve <2mm												
LDPE bag	20MW-10-SOL	E182	11-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve <2mm												
LDPE bag	20MW-10-SON	E182	11-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve <2mm												
LDPE bag	20MW-10-SOO	E182	11-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve <2mm												
LDPE bag	20MW-11-SOC	E182	11-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve <2mm												
LDPE bag	20MW-11-SOF	E182	11-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓



Matrix: **Soil/Solid** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation			Analysis		
			Preparation Date	Holding Times Rec	Holding Times Actual	Analysis Date	Holding Times Rec	Holding Times Actual
Container / Client Sample ID(s)								
Particle Size : Particle Size Analysis - Sieve <2mm								
LDPE bag 20MW-11-SOH	E182	11-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days
Particle Size : Particle Size Analysis - Sieve >2mm								
LDPE bag 20MW-04-SOA	E181	12-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days
Particle Size : Particle Size Analysis - Sieve >2mm								
LDPE bag 20MW-04-SOD	E181	12-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days
Particle Size : Particle Size Analysis - Sieve >2mm								
LDPE bag 20MW-04-SOE	E181	12-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days
Particle Size : Particle Size Analysis - Sieve >2mm								
LDPE bag 20MW-04-SOH	E181	12-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days
Particle Size : Particle Size Analysis - Sieve >2mm								
LDPE bag 20MW-04-SOI	E181	12-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days
Particle Size : Particle Size Analysis - Sieve >2mm								
LDPE bag 20MW-04-SOJ	E181	12-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days
Particle Size : Particle Size Analysis - Sieve >2mm								
LDPE bag 20MW-04-SOK	E181	12-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days
Particle Size : Particle Size Analysis - Sieve >2mm								
LDPE bag 20MW-04-SOL	E181	12-Dec-2020	----	----	----	12-Jan-2021	0 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		Analysis Date	Holding Times		Eval		
					Rec	Actual		Rec	Actual			
Particle Size : Particle Size Analysis - Sieve >2mm												
LDPE bag	20MW-05-SOC	E181	12-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve >2mm												
LDPE bag	20MW-05-SOD	E181	12-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve >2mm												
LDPE bag	20MW-05-SOF	E181	12-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve >2mm												
LDPE bag	20MW-06-SOE	E181	12-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve >2mm												
LDPE bag	20MW-06-SOF	E181	12-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve >2mm												
LDPE bag	20MW-07-SOC	E181	11-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve >2mm												
LDPE bag	20MW-07-SOD	E181	12-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve >2mm												
LDPE bag	20MW-08-SOB	E181	11-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve >2mm												
LDPE bag	20MW-08-SOE	E181	12-Dec-2020	----	----	----	0 days	0 days	12-Jan-2021	0 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	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Particle Size : Particle Size Analysis - Sieve >2mm										
LDPE bag	20MW-08-SOF	E181	12-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve >2mm										
LDPE bag	20MW-09-SOB	E181	11-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve >2mm										
LDPE bag	20MW-09-SOC	E181	11-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve >2mm										
LDPE bag	20MW-09-SOD	E181	11-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve >2mm										
LDPE bag	20MW-10-SOC	E181	11-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve >2mm										
LDPE bag	20MW-10-SOE	E181	11-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve >2mm										
LDPE bag	20MW-10-SOF	E181	11-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve >2mm										
LDPE bag	20MW-10-SOJ	E181	11-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve >2mm										
LDPE bag	20MW-10-SOK	E181	11-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓



Matrix: **Soil/Solid** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation			Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Container / Client Sample ID(s)									
Particle Size : Particle Size Analysis - Sieve >2mm									
LDPE bag 20MW-10-SOL	E181	11-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve >2mm									
LDPE bag 20MW-10-SON	E181	11-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve >2mm									
LDPE bag 20MW-10-SOO	E181	11-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve >2mm									
LDPE bag 20MW-11-SOC	E181	11-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve >2mm									
LDPE bag 20MW-11-SOF	E181	11-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Particle Size : Particle Size Analysis - Sieve >2mm									
LDPE bag 20MW-11-SOH	E181	11-Dec-2020	----	----	----	12-Jan-2021	0 days	0 days	✓
Physical Tests : Moisture Content by Gravimetry									
Glass soil jar/Teflon lined cap 20MW-04-SOC	E144	12-Dec-2020	----	----	----	19-Dec-2020	----	----	
Physical Tests : Moisture Content by Gravimetry									
Glass soil jar/Teflon lined cap 20MW-05-SOC	E144	12-Dec-2020	----	----	----	19-Dec-2020	----	----	
Physical Tests : Moisture Content by Gravimetry									
Glass soil jar/Teflon lined cap 20MW-05-SOF	E144	12-Dec-2020	----	----	----	19-Dec-2020	----	----	



Matrix: **Soil/Solid** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation			Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual
Physical Tests : Moisture Content by Gravimetry									
Container / Client Sample ID(s)									
Glass soil jar/Teflon lined cap 20MW-06-SOB	E144	11-Dec-2020	----	----	----		19-Dec-2020	----	----
Physical Tests : Moisture Content by Gravimetry									
Glass soil jar/Teflon lined cap 20MW-06-SOD	E144	12-Dec-2020	----	----	----		19-Dec-2020	----	----
Physical Tests : Moisture Content by Gravimetry									
Glass soil jar/Teflon lined cap 20MW-06-SOF	E144	12-Dec-2020	----	----	----		19-Dec-2020	----	----
Physical Tests : Moisture Content by Gravimetry									
Glass soil jar/Teflon lined cap 20MW-07-SOD	E144	12-Dec-2020	----	----	----		19-Dec-2020	----	----
Physical Tests : Moisture Content by Gravimetry									
Glass soil jar/Teflon lined cap 20MW-08-SOD	E144	12-Dec-2020	----	----	----		19-Dec-2020	----	----
Physical Tests : Moisture Content by Gravimetry									
Glass soil jar/Teflon lined cap 20MW-10-SOC	E144	11-Dec-2020	----	----	----		19-Dec-2020	----	----
Physical Tests : Moisture Content by Gravimetry									
Glass soil jar/Teflon lined cap 20MW-10-SOF	E144	11-Dec-2020	----	----	----		19-Dec-2020	----	----
Physical Tests : Moisture Content by Gravimetry									
Glass soil jar/Teflon lined cap 20MW-10-SOK	E144	11-Dec-2020	----	----	----		19-Dec-2020	----	----
Physical Tests : Moisture Content by Gravimetry									
Glass soil jar/Teflon lined cap 20MW-11-SOF	E144	11-Dec-2020	----	----	----		19-Dec-2020	----	----



Matrix: **Soil/Solid** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation			Analysis		
			Preparation Date	Holding Times Rec Actual	Eval	Analysis Date	Holding Times Rec Actual	Eval
Physical Tests : Moisture Content by Gravimetry								
Container / Client Sample ID(s)								
Glass soil jar/Teflon lined cap Dup 3	E144	12-Dec-2020	----	----		19-Dec-2020	----	
Physical Tests : Moisture Content by Gravimetry								
Glass soil jar/Teflon lined cap QA-1	E144	11-Dec-2020	----	----		20-Dec-2020	----	
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)								
Glass soil jar/Teflon lined cap 20MW-04-SOC	E108	12-Dec-2020	22-Dec-2020	30 days	10 days	23-Dec-2020	19 days	0 days ✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)								
Glass soil jar/Teflon lined cap 20MW-05-SOC	E108	12-Dec-2020	22-Dec-2020	30 days	10 days	23-Dec-2020	19 days	0 days ✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)								
Glass soil jar/Teflon lined cap 20MW-05-SOF	E108	12-Dec-2020	22-Dec-2020	30 days	10 days	23-Dec-2020	19 days	0 days ✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)								
Glass soil jar/Teflon lined cap 20MW-06-SOD	E108	12-Dec-2020	22-Dec-2020	30 days	10 days	23-Dec-2020	19 days	0 days ✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)								
Glass soil jar/Teflon lined cap 20MW-06-SOF	E108	12-Dec-2020	22-Dec-2020	30 days	10 days	23-Dec-2020	19 days	0 days ✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)								
Glass soil jar/Teflon lined cap 20MW-07-SOD	E108	12-Dec-2020	22-Dec-2020	30 days	10 days	23-Dec-2020	19 days	0 days ✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)								
Glass soil jar/Teflon lined cap 20MW-08-SOD	E108	12-Dec-2020	22-Dec-2020	30 days	10 days	23-Dec-2020	19 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 Actual	Eval	Analysis Date	Holding Times Rec Actual	Eval		
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
Glass soil jar/Teflon lined cap Dup 3		E108	12-Dec-2020	22-Dec-2020	30 days	10 days	✓	23-Dec-2020	19 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
Glass soil jar/Teflon lined cap QA-1		E108	11-Dec-2020	22-Dec-2020	30 days	10 days	✓	22-Dec-2020	19 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
Glass soil jar/Teflon lined cap 20MW-06-SOB		E108	11-Dec-2020	22-Dec-2020	30 days	11 days	✓	23-Dec-2020	18 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
Glass soil jar/Teflon lined cap 20MW-10-SOC		E108	11-Dec-2020	22-Dec-2020	30 days	11 days	✓	23-Dec-2020	18 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
Glass soil jar/Teflon lined cap 20MW-10-SOF		E108	11-Dec-2020	22-Dec-2020	30 days	11 days	✓	23-Dec-2020	18 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
Glass soil jar/Teflon lined cap 20MW-10-SOK		E108	11-Dec-2020	22-Dec-2020	30 days	11 days	✓	23-Dec-2020	18 days	0 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)											
Glass soil jar/Teflon lined cap 20MW-11-SOF		E108	11-Dec-2020	22-Dec-2020	30 days	11 days	✓	23-Dec-2020	18 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex: Ace GC-MS (Low Level CCME)											
Glass soil jar/Teflon lined cap 20MW-04-SOC		E641A-L	12-Dec-2020	20-Dec-2020	14 days	7 days	✓	21-Dec-2020	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex: Ace GC-MS (Low Level CCME)											
Glass soil jar/Teflon lined cap 20MW-05-SOF		E641A-L	12-Dec-2020	20-Dec-2020	14 days	7 days	✓	21-Dec-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		Eval	Analysis Date	Holding Times		
					Rec	Actual			Rec	Actual	
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)											
Glass soil jar/Teflon lined cap 20MW-06-SOD		E641A-L	12-Dec-2020	20-Dec-2020	14 days	7 days	40 days	21-Dec-2020	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)											
Glass soil jar/Teflon lined cap 20MW-06-SOF		E641A-L	12-Dec-2020	20-Dec-2020	14 days	7 days	40 days	21-Dec-2020	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)											
Glass soil jar/Teflon lined cap 20MW-07-SOD		E641A-L	12-Dec-2020	20-Dec-2020	14 days	7 days	40 days	21-Dec-2020	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)											
Glass soil jar/Teflon lined cap 20MW-08-SOD		E641A-L	12-Dec-2020	20-Dec-2020	14 days	7 days	40 days	21-Dec-2020	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)											
Glass soil jar/Teflon lined cap Dup 3		E641A-L	12-Dec-2020	20-Dec-2020	14 days	7 days	40 days	21-Dec-2020	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)											
Glass soil jar/Teflon lined cap 20MW-05-SOC		E641A-L	12-Dec-2020	20-Dec-2020	14 days	8 days	40 days	21-Dec-2020	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)											
Glass soil jar/Teflon lined cap 20MW-06-SOB		E641A-L	11-Dec-2020	20-Dec-2020	14 days	8 days	40 days	21-Dec-2020	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)											
Glass soil jar/Teflon lined cap 20MW-10-SOC		E641A-L	11-Dec-2020	20-Dec-2020	14 days	8 days	40 days	21-Dec-2020	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)											
Glass soil jar/Teflon lined cap 20MW-10-SOF		E641A-L	11-Dec-2020	20-Dec-2020	14 days	8 days	40 days	21-Dec-2020	40 days	1 days	✓



Matrix: **Soil/Solid** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation			Analysis							
			Preparation Date	Holding Times		Analysis Date	Eval	Holding Times					
				Rec	Actual			Rec	Actual				
Container / Client Sample ID(s)													
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)													
Glass soil jar/Teflon lined cap 20MW-10-SOK	E641A-L	11-Dec-2020	20-Dec-2020	14 days	8 days	✓	21-Dec-2020	40 days	1 days		✓		
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)													
Glass soil jar/Teflon lined cap 20MW-11-SOF	E641A-L	11-Dec-2020	20-Dec-2020	14 days	8 days	✓	21-Dec-2020	40 days	1 days		✓		
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)													
Glass soil jar/Teflon lined cap QA-1	E641A-L	11-Dec-2020	20-Dec-2020	14 days	8 days	✓	22-Dec-2020	40 days	1 days		✓		
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS													
Glass soil methanol vial 20MW-04-SOC	E611C	12-Dec-2020	20-Dec-2020	----	----		21-Dec-2020	----	----				
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS													
Glass soil methanol vial 20MW-05-SOC	E611C	12-Dec-2020	20-Dec-2020	----	----		21-Dec-2020	----	----				
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS													
Glass soil methanol vial 20MW-05-SOF	E611C	12-Dec-2020	20-Dec-2020	----	----		21-Dec-2020	----	----				
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS													
Glass soil methanol vial 20MW-06-SOB	E611C	11-Dec-2020	20-Dec-2020	----	----		21-Dec-2020	----	----				
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS													
Glass soil methanol vial 20MW-06-SOD	E611C	12-Dec-2020	20-Dec-2020	----	----		21-Dec-2020	----	----				
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS													
Glass soil methanol vial 20MW-06-SOF	E611C	12-Dec-2020	20-Dec-2020	----	----		21-Dec-2020	----	----				



Matrix: **Soil/Solid** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Analysis Date	Eval	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Volatlie Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-07-SOD	E611C	12-Dec-2020	20-Dec-2020	----	----	21-Dec-2020	----	----		
Volatlie Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-08-SOD	E611C	12-Dec-2020	20-Dec-2020	----	----	21-Dec-2020	----	----		
Volatlie Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-10-SOC	E611C	11-Dec-2020	20-Dec-2020	----	----	21-Dec-2020	----	----		
Volatlie Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-10-SOF	E611C	11-Dec-2020	20-Dec-2020	----	----	21-Dec-2020	----	----		
Volatlie Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-10-SOK	E611C	11-Dec-2020	20-Dec-2020	----	----	21-Dec-2020	----	----		
Volatlie Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-11-SOF	E611C	12-Dec-2020	20-Dec-2020	----	----	21-Dec-2020	----	----		
Volatlie Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Dup 3	E611C	12-Dec-2020	20-Dec-2020	----	----	21-Dec-2020	----	----		
Volatlie Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial QA-1	E611C	11-Dec-2020	20-Dec-2020	----	----	21-Dec-2020	----	----		
Volatlie Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial 20MW-04-SOC	E611C	12-Dec-2020	20-Dec-2020	----	----	21-Dec-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		Analysis Date	Holding Times		Eval
					Rec	Actual		Rec	Actual	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial	20MW-05-SOC	E611C	12-Dec-2020	20-Dec-2020	----	----	21-Dec-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial	20MW-05-SOF	E611C	12-Dec-2020	20-Dec-2020	----	----	21-Dec-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial	20MW-06-SOB	E611C	11-Dec-2020	20-Dec-2020	----	----	21-Dec-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial	20MW-06-SOD	E611C	12-Dec-2020	20-Dec-2020	----	----	21-Dec-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial	20MW-06-SOF	E611C	12-Dec-2020	20-Dec-2020	----	----	21-Dec-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial	20MW-07-SOD	E611C	12-Dec-2020	20-Dec-2020	----	----	21-Dec-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial	20MW-08-SOD	E611C	12-Dec-2020	20-Dec-2020	----	----	21-Dec-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial	20MW-10-SOC	E611C	11-Dec-2020	20-Dec-2020	----	----	21-Dec-2020	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass soil methanol vial	20MW-10-SOF	E611C	11-Dec-2020	20-Dec-2020	----	----	21-Dec-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		Analysis Date	Eval	Holding Times		Eval
					Rec	Actual			Rec	Actual	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS											
Glass soil methanol vial 20MW-10-SOK		E611C	11-Dec-2020	20-Dec-2020	---	---	---	21-Dec-2020	---	---	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS											
Glass soil methanol vial 20MW-11-SOF		E611C	11-Dec-2020	20-Dec-2020	---	---	---	21-Dec-2020	---	---	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS											
Glass soil methanol vial Dup 3		E611C	12-Dec-2020	20-Dec-2020	---	---	---	21-Dec-2020	---	---	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS											
Glass soil methanol vial QA-1		E611C	11-Dec-2020	20-Dec-2020	---	---	---	21-Dec-2020	---	---	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass soil methanol vial Dup 3		E611C	12-Dec-2020	20-Dec-2020	40 days	7 days	✓	21-Dec-2020	32 days	0 days	✓
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass soil methanol vial 20MW-04-SOC		E611C	12-Dec-2020	20-Dec-2020	40 days	7 days	✓	21-Dec-2020	32 days	1 days	✓
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass soil methanol vial 20MW-05-SOC		E611C	12-Dec-2020	20-Dec-2020	40 days	7 days	✓	21-Dec-2020	32 days	1 days	✓
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass soil methanol vial 20MW-05-SOF		E611C	12-Dec-2020	20-Dec-2020	40 days	7 days	✓	21-Dec-2020	32 days	1 days	✓
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass soil methanol vial 20MW-06-SOD		E611C	12-Dec-2020	20-Dec-2020	40 days	7 days	✓	21-Dec-2020	32 days	1 days	✓



Matrix: **Soil/Solid** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation			Analysis Date	Analysis		
			Preparation Date	Holding Times			Eval	Eval	
				Rec	Actual				Rec
Volatlie Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS									
Glass soil methanol vial 20MW-06-SOF	E611C	12-Dec-2020	20-Dec-2020	40 days	7 days	21-Dec-2020	32 days	1 days	✓
Volatlie Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS									
Glass soil methanol vial 20MW-07-SOD	E611C	12-Dec-2020	20-Dec-2020	40 days	7 days	21-Dec-2020	32 days	1 days	✓
Volatlie Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS									
Glass soil methanol vial 20MW-08-SOD	E611C	12-Dec-2020	20-Dec-2020	40 days	7 days	21-Dec-2020	32 days	1 days	✓
Volatlie Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS									
Glass soil methanol vial 20MW-10-SOK	E611C	11-Dec-2020	20-Dec-2020	40 days	8 days	21-Dec-2020	31 days	0 days	✓
Volatlie Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS									
Glass soil methanol vial 20MW-11-SOF	E611C	11-Dec-2020	20-Dec-2020	40 days	8 days	21-Dec-2020	31 days	0 days	✓
Volatlie Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS									
Glass soil methanol vial QA-1	E611C	11-Dec-2020	20-Dec-2020	40 days	8 days	21-Dec-2020	31 days	0 days	✓
Volatlie Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS									
Glass soil methanol vial 20MW-06-SOB	E611C	11-Dec-2020	20-Dec-2020	40 days	8 days	21-Dec-2020	31 days	1 days	✓
Volatlie Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS									
Glass soil methanol vial 20MW-10-SOC	E611C	11-Dec-2020	20-Dec-2020	40 days	8 days	21-Dec-2020	31 days	1 days	✓
Volatlie Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS									
Glass soil methanol vial 20MW-10-SOF	E611C	11-Dec-2020	20-Dec-2020	40 days	8 days	21-Dec-2020	31 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		Analysis Date	Holding Times	
					Rec	Actual		Rec	Actual
Volatlie Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS									
Glass soil methanol vial	20MW-04-SOC	E611C	12-Dec-2020	20-Dec-2020	----	----	21-Dec-2020	----	----
Volatlie Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS									
Glass soil methanol vial	20MW-05-SOC	E611C	12-Dec-2020	20-Dec-2020	----	----	21-Dec-2020	----	----
Volatlie Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS									
Glass soil methanol vial	20MW-05-SOF	E611C	12-Dec-2020	20-Dec-2020	----	----	21-Dec-2020	----	----
Volatlie Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS									
Glass soil methanol vial	20MW-06-SOB	E611C	11-Dec-2020	20-Dec-2020	----	----	21-Dec-2020	----	----
Volatlie Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS									
Glass soil methanol vial	20MW-06-SOD	E611C	12-Dec-2020	20-Dec-2020	----	----	21-Dec-2020	----	----
Volatlie Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS									
Glass soil methanol vial	20MW-06-SOF	E611C	12-Dec-2020	20-Dec-2020	----	----	21-Dec-2020	----	----
Volatlie Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS									
Glass soil methanol vial	20MW-07-SOD	E611C	12-Dec-2020	20-Dec-2020	----	----	21-Dec-2020	----	----
Volatlie Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS									
Glass soil methanol vial	20MW-08-SOD	E611C	12-Dec-2020	20-Dec-2020	----	----	21-Dec-2020	----	----
Volatlie Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS									
Glass soil methanol vial	20MW-10-SOC	E611C	11-Dec-2020	20-Dec-2020	----	----	21-Dec-2020	----	----



Matrix: **Soil/Solid** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation			Analysis		
			Preparation Date	Holding Times		Analysis Date	Holding Times	
				Rec	Actual		Rec	Actual
Volatle Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS								
Glass soil methanol vial 20MW-10-SOF	E611C	11-Dec-2020	20-Dec-2020	----	----	21-Dec-2020	----	----
Volatle Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS								
Glass soil methanol vial 20MW-10-SOK	E611C	11-Dec-2020	20-Dec-2020	----	----	21-Dec-2020	----	----
Volatle Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS								
Glass soil methanol vial 20MW-11-SOF	E611C	11-Dec-2020	20-Dec-2020	----	----	21-Dec-2020	----	----
Volatle Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS								
Glass soil methanol vial Dup 3	E611C	12-Dec-2020	20-Dec-2020	----	----	21-Dec-2020	----	----
Volatle Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS								
Glass soil methanol vial QA-1	E611C	11-Dec-2020	20-Dec-2020	----	----	21-Dec-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 Analytical Methods	Method	QC Lot #	Count			Frequency (%)		Evaluation
			QC	Regular	Actual	Expected		
Laboratory Duplicates (DUP)								
BC PHC - EPH by GC-FID	E601A	133429	2	28	7.1	5.0	✓	
Mercury in Soil/Solid by CVAAS	E510	133425	2	22	9.0	5.0	✓	
Metals in Soil/Solid by CRC ICPMs	E440	133426	2	22	9.0	5.0	✓	
Moisture Content by Gravimetry	E144	133430	2	28	7.1	5.0	✓	
PAHs by Hex: Ace GC-MS (Low Level CCME)	E641A-L	133428	2	28	7.1	5.0	✓	
Particle Size Analysis - Pipette Method	E184	139896	2	32	6.2	5.0	✓	
Particle Size Analysis - Sieve <2mm	E182	139897	2	32	6.2	5.0	✓	
pH by Meter (1:2 Soil:Water Extraction)	E108	133427	2	28	7.1	5.0	✓	
VH and F1 by Headspace GC-FID	E581.VH+F1	133606	2	39	5.1	5.0	✓	
VOCs (BC List) by Headspace GC-MS	E611C	133607	2	33	6.0	5.0	✓	
Laboratory Control Samples (LCS)								
BC PHC - EPH by GC-FID	E601A	133429	4	28	14.2	10.0	✓	
Mercury in Soil/Solid by CVAAS	E510	133425	4	22	18.1	10.0	✓	
Metals in Soil/Solid by CRC ICPMs	E440	133426	4	22	18.1	10.0	✓	
Moisture Content by Gravimetry	E144	133430	2	28	7.1	5.0	✓	
PAHs by Hex: Ace GC-MS (Low Level CCME)	E641A-L	133428	4	28	14.2	10.0	✓	
Particle Size Analysis - Pipette Method	E184	139896	2	32	6.2	5.0	✓	
Particle Size Analysis - Sieve <2mm	E182	139897	2	32	6.2	5.0	✓	
Particle Size Analysis - Sieve >2mm	E181	139895	2	32	6.2	5.0	✓	
pH by Meter (1:2 Soil:Water Extraction)	E108	133427	2	28	7.1	5.0	✓	
VH and F1 by Headspace GC-FID	E581.VH+F1	133606	2	39	5.1	5.0	✓	
VOCs (BC List) by Headspace GC-MS	E611C	133607	2	33	6.0	5.0	✓	
Method Blanks (MB)								
BC PHC - EPH by GC-FID	E601A	133429	2	28	7.1	5.0	✓	
Mercury in Soil/Solid by CVAAS	E510	133425	2	22	9.0	5.0	✓	
Metals in Soil/Solid by CRC ICPMs	E440	133426	2	22	9.0	5.0	✓	
Moisture Content by Gravimetry	E144	133430	2	28	7.1	5.0	✓	
PAHs by Hex: Ace GC-MS (Low Level CCME)	E641A-L	133428	2	28	7.1	5.0	✓	
VH and F1 by Headspace GC-FID	E581.VH+F1	133606	2	39	5.1	5.0	✓	
VOCs (BC List) by Headspace GC-MS	E611C	133607	2	33	6.0	5.0	✓	
Matrix Spikes (MS)								
VH and F1 by Headspace GC-FID	E581.VH+F1	133606	2	39	5.1	5.0	✓	
VOCs (BC List) by Headspace GC-MS	E611C	133607	2	33	6.0	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 °C) 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.
Particle Size Analysis - Sieve >2mm	E181 Saskatoon - Environmental	Soil/Solid	ASTM D6913-04	Soil samples are disaggregated and sieved through a 2mm sieve. Material retained on the sieve is then further sieved through a series of sieves. The amount passing through the sieves is measured gravimetrically.
Particle Size Analysis - Sieve <2mm	E182 Saskatoon - Environmental	Soil/Solid	ASTM D6913-04	Soil samples are disaggregated and sieved through a 2mm sieve. Material passed through the sieve is then further disaggregated using calgon solution and passed through a series of sieves. The amount passing through the sieves is measured gravimetrically.
Particle Size Analysis - Pipette Method	E184 Saskatoon - Environmental	Soil/Solid	SSIR-51 Method 3.2.1	Soil material is separated from coarse material (>2mm). A specimen is then disaggregated through mixing with Calgon solution. The material is then suspended in solution wherein regular aliquots are taken using a mechanical pipette at specific time intervals. The aliquots are dried and material in suspension determined gravimetrically. The principles of Stokes' Law are applied to determine the amount of material remaining in solution as well as the maximum particle size remaining in solution at the specified time.
Grain Size Report (Attachment) Pipet/Sieve Method	E185A Saskatoon - Environmental	Soil/Solid	SSIR-51 Method 3.2.1	A grain size curve is a graphical representation of the particle sizing of a sample representing the percent passing against the effective particle size.
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, 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.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
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.
PAHs by Hex: Ace GC-MS (Low Level CCME)	E641A-L Vancouver - Environmental	Soil/Solid	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are extracted with hexane/acetone and analyzed by GC-MS. If reported, IACR (index of additive cancer risk, unitless) and B(a)P toxic potency equivalent (in soil concentration units) are calculated as per CCME PAH Soil Quality Guidelines fact sheet (2010) or ABT1.
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, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene, and Pyrene.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil:Water for pH/EC	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.
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.



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Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dry and Grind	EPP442 Saskatoon - Environmental	Soil/Solid	Soil Sampling and Methods of Analysis, Carter 2008	After removal of any coarse fragments and reservation of wet subsamples a portion of homogenized sample is set in a tray and dried at less than 60 C until dry. The sample is then particle size reduced with an automated crusher or mortar and pestle, typically to <2 mm. Further size reduction may be needed for particular tests.

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 Amendment : **1**

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Client	: CH2M Hill Canada Limited	Laboratory	: Vancouver - Environmental
Contact	: Jelena Sladojevic	Account Manager	: Edward Ngai
Address	: Metrotower II, Suite 2100 4720 Kingsway Burnaby BC Canada V5H 4N2	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: EGP/BC Rail Site - Fortis	Date Samples Received	: 13-Dec-2020 15:15
PO	: 670014CH.B0.01.09	Date Analysis Commenced	: 19-Dec-2020
C-O-C number	: 17-862379 to 83, 17-861178	Issue Date	: 14-Jan-2021 16:38
Sampler	: ----		
Site	: ----		
Quote number	: VA20-CHMH100-013		
No. of samples received	: 67		
No. of samples analysed	: 38		

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
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Hedy Lai	Team Leader - Inorganics	Inorganics, Saskatoon, Saskatchewan
Janice Leung	Supervisor - Organics Extractions	Organics, Burnaby, British Columbia
Paul Cushing	Team Leader - Organics	Organics, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia



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Client : CH2M Hill Canada Limited
Project : EGP/BC Rail Site - Fortis

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).

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: 133427)											
VA20C3271-003	20MW-04-SOC	pH (1:2 soil:water)	----	E108	0.10	pH units	5.99	5.91	1.34%	5%	----
Physical Tests (QC Lot: 133430)											
VA20C3271-003	20MW-04-SOC	moisture	----	E144	0.25	%	18.2	18.5	1.30%	20%	----
Physical Tests (QC Lot: 133685)											
VA20C3271-064	QA-1	pH (1:2 soil:water)	----	E108	0.10	pH units	6.16	6.14	0.325%	5%	----
Physical Tests (QC Lot: 133688)											
VA20C3271-064	QA-1	moisture	----	E144	0.25	%	7.93	9.02	12.8%	20%	----
Particle Size (QC Lot: 139896)											
VA20C3271-001	20MW-04-SOA	passing (0.002 mm)	----	E184	1.0	%	2.6	2.5	0.07	Diff <2x LOR	----
		passing (0.004 mm)	----	E184	1.0	%	4.6	4.4	0.1	Diff <2x LOR	----
		passing (0.005 mm)	----	E184	1.0	%	5.6	5.4	0.2	Diff <2x LOR	----
		passing (0.020 mm)	----	E184	1.0	%	19.9	19.6	0.3	Diff <2x LOR	----
		passing (0.0312 mm)	----	E184	1.0	%	24.2	23.8	0.4	Diff <2x LOR	----
Particle Size (QC Lot: 139897)											
VA20C3271-001	20MW-04-SOA	passing (0.05 mm)	----	E182	1.0	%	35.2	35.0	0.719%	20%	----
		passing (0.063 mm)	----	E182	1.0	%	37.9	37.6	0.633%	20%	----
		passing (0.075 mm)	----	E182	1.0	%	40.3	40.1	0.563%	20%	----
		passing (0.125 mm)	----	E182	1.0	%	50.6	50.4	0.346%	20%	----
		passing (0.149 mm)	----	E182	1.0	%	52.9	52.6	0.438%	20%	----
		passing (0.250 mm)	----	E182	1.0	%	59.8	59.4	0.665%	20%	----
		passing (0.420 mm)	----	E182	1.0	%	66.2	65.9	0.510%	20%	----
		passing (0.50 mm)	----	E182	1.0	%	68.7	68.4	0.458%	20%	----
		passing (0.841 mm)	----	E182	1.0	%	74.6	74.6	0.0684%	20%	----
		passing (1.0 mm)	----	E182	1.0	%	76.6	76.6	0.0479%	20%	----
Particle Size (QC Lot: 139904)											
VA20C3271-039	20MW-09-SOD	passing (0.002 mm)	----	E184	1.0	%	<1.0	<1.0	0	Diff <2x LOR	----
		passing (0.004 mm)	----	E184	1.0	%	<1.0	<1.0	0	Diff <2x LOR	----
		passing (0.005 mm)	----	E184	1.0	%	<1.0	<1.0	0	Diff <2x LOR	----
		passing (0.020 mm)	----	E184	1.0	%	1.8	1.7	0.05	Diff <2x LOR	----
		passing (0.0312 mm)	----	E184	1.0	%	2.2	2.1	0.06	Diff <2x LOR	----
Particle Size (QC Lot: 139905)											



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 Work Order : VA20C3271 Amendment 1
 Client : CH2M Hill Canada Limited
 Project : EGP/BC Rail Site - Fortis

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
Particle Size (QC Lot: 139905) - continued											
VA20C3271-039	20MW-09-SOD	passing (0.05 mm)	----	E182	1.0	%	3.3	3.4	0.03	Diff <2x LOR	----
		passing (0.063 mm)	----	E182	1.0	%	3.9	3.9	0.06	Diff <2x LOR	----
		passing (0.075 mm)	----	E182	1.0	%	4.4	4.5	0.09	Diff <2x LOR	----
		passing (0.125 mm)	----	E182	1.0	%	6.5	6.7	0.2	Diff <2x LOR	----
		passing (0.149 mm)	----	E182	1.0	%	9.8	10.5	5.98%	20%	----
		passing (0.250 mm)	----	E182	1.0	%	19.7	21.5	8.57%	20%	----
		passing (0.420 mm)	----	E182	1.0	%	61.5	62.7	1.98%	20%	----
		passing (0.50 mm)	----	E182	1.0	%	77.5	78.5	1.31%	20%	----
		passing (0.841 mm)	----	E182	1.0	%	92.3	92.6	0.355%	20%	----
		passing (1.0 mm)	----	E182	1.0	%	97.2	97.3	0.0990%	20%	----
Metals (QC Lot: 133425)											
VA20C3271-003	20MW-04-SOC	mercury	7439-97-6	E510	0.0500	mg/kg	<0.0500	<0.0500	0	Diff <2x LOR	----
Metals (QC Lot: 133426)											
VA20C3271-003	20MW-04-SOC	aluminum	7429-90-5	E440	50	mg/kg	9420	8840	6.38%	40%	----
		antimony	7440-36-0	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		arsenic	7440-38-2	E440	0.10	mg/kg	1.13	0.99	13.6%	30%	----
		barium	7440-39-3	E440	0.50	mg/kg	90.3	106	16.2%	40%	----
		beryllium	7440-41-7	E440	0.10	mg/kg	<0.10	0.10	0.003	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	0.068	# 0.120	0.052	Diff <2x LOR	DUP-H
		calcium	7440-70-2	E440	50	mg/kg	3790	3500	7.70%	30%	----
		chromium	7440-47-3	E440	0.50	mg/kg	18.7	15.8	16.7%	30%	----
		cobalt	7440-48-4	E440	0.10	mg/kg	5.90	5.58	5.48%	30%	----
		copper	7440-50-8	E440	0.50	mg/kg	18.1	19.9	9.31%	30%	----
		iron	7439-89-6	E440	50	mg/kg	23300	19800	16.5%	30%	----
		lead	7439-92-1	E440	0.50	mg/kg	1.50	1.39	0.12	Diff <2x LOR	----
		lithium	7439-93-2	E440	2.0	mg/kg	4.7	4.6	0.08	Diff <2x LOR	----
		magnesium	7439-95-4	E440	20	mg/kg	4710	4180	11.8%	30%	----
		manganese	7439-96-5	E440	1.0	mg/kg	281	267	5.06%	30%	----
		molybdenum	7439-98-7	E440	0.10	mg/kg	0.28	0.29	0.003	Diff <2x LOR	----
		nickel	7440-02-0	E440	0.50	mg/kg	8.09	7.61	6.06%	30%	----
		phosphorus	7723-14-0	E440	50	mg/kg	1000	951	5.03%	30%	----
		potassium	7440-09-7	E440	100	mg/kg	1300	1270	2.57%	40%	----
		selenium	7782-49-2	E440	0.20	mg/kg	<0.20	<0.20	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: 133426) - continued											
VA20C3271-003	20MW-04-SOC	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	464	384	18.8%	40%	----
		strontium	7440-24-6	E440	0.50	mg/kg	35.7	33.0	7.72%	40%	----
		sulfur	7704-34-9	E440	1000	mg/kg	<1000	<1000	0	Diff <2x LOR	----
		thallium	7440-28-0	E440	0.050	mg/kg	0.054	0.051	0.004	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	864	749	14.3%	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	0.405	0.390	3.89%	30%	----
		vanadium	7440-62-2	E440	0.20	mg/kg	69.7	58.6	17.2%	30%	----
		zinc	7440-66-6	E440	2.0	mg/kg	39.1	37.8	3.16%	30%	----
		zirconium	7440-67-7	E440	1.0	mg/kg	<1.0	<1.0	0	Diff <2x LOR	----
Metals (QC Lot: 133686)											
VA20C3271-064	QA-1	mercury	7439-97-6	E510	0.0500	mg/kg	<0.0500	<0.0500	0	Diff <2x LOR	----
Metals (QC Lot: 133687)											
VA20C3271-064	QA-1	aluminum	7429-90-5	E440	50	mg/kg	5200	4260	19.8%	40%	----
		antimony	7440-36-0	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		arsenic	7440-38-2	E440	0.10	mg/kg	0.43	0.36	0.06	Diff <2x LOR	----
		barium	7440-39-3	E440	0.50	mg/kg	36.1	34.8	3.55%	40%	----
		beryllium	7440-41-7	E440	0.10	mg/kg	<0.10	<0.10	0	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	<0.020	0.022	0.002	Diff <2x LOR	----
		calcium	7440-70-2	E440	50	mg/kg	2700	2270	17.2%	30%	----
		chromium	7440-47-3	E440	0.50	mg/kg	6.52	5.55	16.1%	30%	----
		cobalt	7440-48-4	E440	0.10	mg/kg	3.26	2.94	10.2%	30%	----
		copper	7440-50-8	E440	0.50	mg/kg	10.4	11.6	11.0%	30%	----
		iron	7439-89-6	E440	50	mg/kg	9640	8520	12.4%	30%	----
		lead	7439-92-1	E440	0.50	mg/kg	0.80	0.73	0.07	Diff <2x LOR	----
		lithium	7439-93-2	E440	2.0	mg/kg	3.1	2.4	0.7	Diff <2x LOR	----
		magnesium	7439-95-4	E440	20	mg/kg	2550	2080	20.0%	30%	----
		manganese	7439-96-5	E440	1.0	mg/kg	133	108	20.3%	30%	----
		molybdenum	7439-98-7	E440	0.10	mg/kg	0.24	0.18	0.06	Diff <2x LOR	----
		nickel	7440-02-0	E440	0.50	mg/kg	4.42	3.99	10.2%	30%	----
		phosphorus	7723-14-0	E440	50	mg/kg	416	440	5.51%	30%	----



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: 133687) - continued											
VA20C3271-064	QA-1	potassium	7440-09-7	E440	100	mg/kg	740	670	10.3%	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	377	319	16.7%	40%	----
		strontium	7440-24-6	E440	0.50	mg/kg	31.4	29.3	6.87%	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	545	470	14.8%	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	0.164	0.157	0.006	Diff <2x LOR	----
		vanadium	7440-62-2	E440	0.20	mg/kg	31.7	27.9	12.8%	30%	----
		zinc	7440-66-6	E440	2.0	mg/kg	24.5	19.7	21.6%	30%	----
		zirconium	7440-67-7	E440	1.0	mg/kg	2.5	2.5	0.002	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 133607)											
VA20C3238-010	Anonymous	benzene	71-43-2	E611C	0.050	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	----
		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	----



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: 133607) - continued											
VA20C3238-010	Anonymous	dichloropropylene, trans-1,3-ethylbenzene	10061-02-6	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		methyl-tert-butyl ether [MTBE]	100-41-4	E611C	0.015	mg/kg	<0.015	<0.015	0	Diff <2x LOR	----
		styrene	1634-04-4	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		tetrachloroethane, 1,1,1,2-	100-42-5	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		tetrachloroethane, 1,1,2,2-	630-20-6	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		tetrachloroethylene	79-34-5	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		toluene	127-18-4	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		trichloroethane, 1,1,1-	108-88-3	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		trichloroethane, 1,1,2-	71-55-6	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		trichloroethylene	79-00-5	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		trichlorofluoromethane	79-01-6	E611C	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		vinyl chloride	75-69-4	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		xylene, m+p-	75-01-4	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		xylene, o-	179601-23-1	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
			95-47-6	E611C	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 133611)											
VA20C3271-051	20MW-10-SOK	benzene	71-43-2	E611C	0.050	mg/kg	<0.050	<0.050	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-	54-173-1	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	----
		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	----



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: 133611) - continued											
VA20C3271-051	20MW-10-SOK	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: 133429)											
VA20C3271-003	20MW-04-SOC	EPH (C10-C19)	----	E601A	200	mg/kg	<200	<200	0	Diff <2x LOR	----
		EPH (C19-C32)	----	E601A	200	mg/kg	<200	<200	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 133606)											
VA20C3238-010	Anonymous	VHs (C6-C10)	----	E581.VH+FI	10	mg/kg	<10	<10	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 133609)											
VA20C3238-056	Anonymous	VHs (C6-C10)	----	E581.VH+FI	10	mg/kg	<10	<10	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 133682)											
VA20C3271-064	QA-1	EPH (C10-C19)	----	E601A	200	mg/kg	<200	<200	0	Diff <2x LOR	----
		EPH (C19-C32)	----	E601A	200	mg/kg	<200	<200	0	Diff <2x LOR	----
Polycyclic Aromatic Hydrocarbons (QC Lot: 133428)											
VA20C3271-003	20MW-04-SOC	acenaphthene	83-32-9	E641A-L	0.0050	mg/kg	<0.0050	<0.0050	0	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	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		anthracene	120-12-7	E641A-L	0.0040	mg/kg	<0.0040	<0.0040	0	Diff <2x LOR	----
		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+g,h,i)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	<0.010	<0.010	0	Diff <2x LOR	----



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 Client : CH2M Hill Canada Limited
 Project : EGP/BC Rail Site - Fortis

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: 133428) - continued											
VA20C3271-003	20MW-04-SOC	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	<0.020	0.010	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	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		methylnaphthalene, 1-	90-12-0	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		methylnaphthalene, 2-	91-57-6	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		naphthalene	91-20-3	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		phenanthrene	85-01-8	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		pyrene	129-00-0	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		quinoline	6027-02-7	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
Polycyclic Aromatic Hydrocarbons (QC Lot: 133681)											
VA20C3271-064	QA-1	acenaphthene	83-32-9	E641A-L	0.0050	mg/kg	<0.0050	<0.0050	0	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	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		anthracene	120-12-7	E641A-L	0.0040	mg/kg	<0.0040	<0.0040	0	Diff <2x LOR	----
		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+g)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	<0.010	<0.010	0	Diff <2x LOR	----
		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	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		methylnaphthalene, 1-	90-12-0	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		methylnaphthalene, 2-	91-57-6	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		naphthalene	91-20-3	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		phenanthrene	85-01-8	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		pyrene	129-00-0	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		quinoline	6027-02-7	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----

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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: 133430)						
moisture	----	E144	0.25	%	<0.25	----
Physical Tests (QCLot: 133688)						
moisture	----	E144	0.25	%	<0.25	----
Metals (QCLot: 133425)						
mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	----
Metals (QCLot: 133426)						
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: 133426) - 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: 133686)						
mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	----
Metals (QCLot: 133687)						
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	----



Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 133687) - continued						
thallium	7440-28-0	E440	0.05	mg/kg	<0.050	----
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	----
Volatile Organic Compounds (QCLot: 133607)						
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	----
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	----



Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 133607) - continued						
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	----
xylylene, m+p-	179601-23-1	E611C	0.05	mg/kg	<0.050	----
xylylene, o-	95-47-6	E611C	0.05	mg/kg	<0.050	----
Volatile Organic Compounds (QCLot: 133611)						
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	----
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	----



Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 133611) - continued						
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: 133429)						
EPH (C10-C19)	----	E601A	200	mg/kg	<200	----
EPH (C19-C32)	----	E601A	200	mg/kg	<200	----
Hydrocarbons (QCLot: 133606)						
VHs (C6-C10)	----	E581.VH+F1	10	mg/kg	<10	----
Hydrocarbons (QCLot: 133609)						
VHs (C6-C10)	----	E581.VH+F1	10	mg/kg	<10	----
Hydrocarbons (QCLot: 133682)						
EPH (C10-C19)	----	E601A	200	mg/kg	<200	----
EPH (C19-C32)	----	E601A	200	mg/kg	<200	----
Polycyclic Aromatic Hydrocarbons (QCLot: 133428)						
acenaphthene	83-32-9	E641A-L	0.005	mg/kg	<0.0050	----
acenaphthylene	208-96-8	E641A-L	0.005	mg/kg	<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	----
benz(a)anthracene	56-55-3	E641A-L	0.01	mg/kg	<0.010	----
benzo(a)pyrene	50-32-8	E641A-L	0.01	mg/kg	<0.010	----
benzo(b+g,h,i)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	----
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,o)pyrene	193-39-5	E641A-L	0.01	mg/kg	<0.010	----



Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 133428) - continued						
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	----
Polycyclic Aromatic Hydrocarbons (QCLot: 133687)						
acenaphthene	83-32-9	E641A-L	0.005	mg/kg	<0.0050	----
acenaphthylene	208-96-8	E641A-L	0.005	mg/kg	<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	----
benz(a)anthracene	56-55-3	E641A-L	0.01	mg/kg	<0.010	----
benzo(a)pyrene	50-32-8	E641A-L	0.01	mg/kg	<0.010	----
benzo(b+g)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	----
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	----
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	----



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**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier	
					Spike Concentration	Recovery (%)	LCS	Recovery Limits (%)		
Physical Tests (QCLot: 133427)										
pH (1:2 soil:water)	----	E108	----	pH units	6 pH units	99.7	99.7	95.0	105	----
Physical Tests (QCLot: 133430)										
moisture	----	E144	0.25	%	50 %	99.4	99.4	90.0	110	----
Physical Tests (QCLot: 133685)										
pH (1:2 soil:water)	----	E108	----	pH units	6 pH units	99.8	99.8	95.0	105	----
Physical Tests (QCLot: 133688)										
moisture	----	E144	0.25	%	50 %	102	102	90.0	110	----
Metals (QCLot: 133425)										
mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	97.0	97.0	80.0	120	----
Metals (QCLot: 133426)										
aluminum	7429-90-5	E440	50	mg/kg	200 mg/kg	110	110	80.0	120	----
antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	106	106	80.0	120	----
arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	105	105	80.0	120	----
barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	105	105	80.0	120	----
beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	97.8	97.8	80.0	120	----
bismuth	7440-69-9	E440	0.2	mg/kg	100 mg/kg	104	104	80.0	120	----
boron	7440-42-8	E440	5	mg/kg	100 mg/kg	97.2	97.2	80.0	120	----
cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	103	103	80.0	120	----
calcium	7440-70-2	E440	50	mg/kg	5000 mg/kg	100	100	80.0	120	----
chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	105	105	80.0	120	----
cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	103	103	80.0	120	----
copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	101	101	80.0	120	----
iron	7439-89-6	E440	50	mg/kg	100 mg/kg	97.2	97.2	80.0	120	----
lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	109	109	80.0	120	----
lithium	7439-93-2	E440	2	mg/kg	25 mg/kg	95.6	95.6	80.0	120	----
magnesium	7439-95-4	E440	20	mg/kg	5000 mg/kg	109	109	80.0	120	----
manganese	7439-96-5	E440	1	mg/kg	25 mg/kg	100	100	80.0	120	----
molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	97.5	97.5	80.0	120	----
nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	103	103	80.0	120	----
phosphorus	7723-14-0	E440	50	mg/kg	1000 mg/kg	99.4	99.4	80.0	120	----
potassium	7440-09-7	E440	100	mg/kg	5000 mg/kg	99.8	99.8	80.0	120	----
selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	99.9	99.9	80.0	120	----



Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery Limits (%)		Qualifier	
						Recovery (%)	Low		High
Metals (QCLot: 133426) - continued									
silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	97.3	80.0	120	---
sodium	7440-23-5	E440	50	mg/kg	5000 mg/kg	108	80.0	120	---
strontium	7440-24-6	E440	0.5	mg/kg	25 mg/kg	99.0	80.0	120	---
sulfur	7704-34-9	E440	1000	mg/kg	5000 mg/kg	103	80.0	120	---
thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	110	80.0	120	---
tin	7440-31-5	E440	2	mg/kg	50 mg/kg	100.0	80.0	120	---
titanium	7440-32-6	E440	1	mg/kg	25 mg/kg	101	80.0	120	---
tungsten	7440-33-7	E440	0.5	mg/kg	10 mg/kg	105	80.0	120	---
uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	107	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	105	80.0	120	---
zirconium	7440-67-7	E440	1	mg/kg	10 mg/kg	98.5	80.0	120	---
Metals (QCLot: 133686)									
mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	98.6	80.0	120	---
Metals (QCLot: 133687)									
aluminum	7429-90-5	E440	50	mg/kg	200 mg/kg	114	80.0	120	---
antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	113	80.0	120	---
arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	104	80.0	120	---
barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	107	80.0	120	---
beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	87.3	80.0	120	---
bismuth	7440-69-9	E440	0.2	mg/kg	100 mg/kg	116	80.0	120	---
boron	7440-42-8	E440	5	mg/kg	100 mg/kg	89.1	80.0	120	---
cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	102	80.0	120	---
calcium	7440-70-2	E440	50	mg/kg	5000 mg/kg	93.4	80.0	120	---
chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	105	80.0	120	---
cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	108	80.0	120	---
copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	106	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	112	80.0	120	---
lithium	7439-93-2	E440	2	mg/kg	25 mg/kg	87.8	80.0	120	---
magnesium	7439-95-4	E440	20	mg/kg	5000 mg/kg	117	80.0	120	---
manganese	7439-96-5	E440	1	mg/kg	25 mg/kg	107	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	109	80.0	120	---
potassium	7440-09-7	E440	100	mg/kg	5000 mg/kg	113	80.0	120	---
selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	104	80.0	120	---



Sub-Matrix: **Soil/Solid**

Laboratory Control Sample (LCS) Report									
Analyte	CAS Number	Method	LOR	Unit	Recovery Limits (%)			Qualifier	
					Spike Concentration	LCS	Low		High
Metals (QCLot: 133687) - continued									
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	112	80.0	120	---
strontium	7440-24-6	E440	0.5	mg/kg	25 mg/kg	111	80.0	120	---
sulfur	7704-34-9	E440	1000	mg/kg	5000 mg/kg	105	80.0	120	---
thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	120	80.0	120	---
tin	7440-31-5	E440	2	mg/kg	50 mg/kg	103	80.0	120	---
titanium	7440-32-6	E440	1	mg/kg	25 mg/kg	99.6	80.0	120	---
tungsten	7440-33-7	E440	0.5	mg/kg	10 mg/kg	103	80.0	120	---
uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	103	80.0	120	---
vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	110	80.0	120	---
zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	108	80.0	120	---
zirconium	7440-67-7	E440	1	mg/kg	10 mg/kg	97.2	80.0	120	---
Volatile Organic Compounds (QCLot: 133607)									
benzene	71-43-2	E611C	0.005	mg/kg	2.5 mg/kg	107	70.0	130	---
bromodichloromethane	75-27-4	E611C	0.05	mg/kg	2.5 mg/kg	126	70.0	130	---
bromoform	75-25-2	E611C	0.05	mg/kg	2.5 mg/kg	89.6	70.0	130	---
carbon tetrachloride	56-23-5	E611C	0.05	mg/kg	2.5 mg/kg	91.5	70.0	130	---
chlorobenzene	108-90-7	E611C	0.05	mg/kg	2.5 mg/kg	111	70.0	130	---
chloroethane	75-00-3	E611C	0.05	mg/kg	2.5 mg/kg	115	60.0	140	---
chloroform	67-66-3	E611C	0.05	mg/kg	2.5 mg/kg	120	70.0	130	---
chloromethane	74-87-3	E611C	0.05	mg/kg	2.5 mg/kg	120	60.0	140	---
dibromochloromethane	124-48-1	E611C	0.05	mg/kg	2.5 mg/kg	117	70.0	130	---
dichlorobenzene, 1,2-	95-50-1	E611C	0.05	mg/kg	2.5 mg/kg	104	70.0	130	---
dichlorobenzene, 1,3-	541-73-1	E611C	0.05	mg/kg	2.5 mg/kg	100	70.0	130	---
dichlorobenzene, 1,4-	106-46-7	E611C	0.05	mg/kg	2.5 mg/kg	101	70.0	130	---
dichloroethane, 1,1-	75-34-3	E611C	0.05	mg/kg	2.5 mg/kg	99.3	70.0	130	---
dichloroethane, 1,2-	107-06-2	E611C	0.05	mg/kg	2.5 mg/kg	106	70.0	130	---
dichloroethylene, 1,1-	75-35-4	E611C	0.05	mg/kg	2.5 mg/kg	108	70.0	130	---
dichloroethylene, cis-1,2-	156-59-4	E611C	0.05	mg/kg	2.5 mg/kg	98.5	70.0	130	---
dichloroethylene, trans-1,2-	156-60-5	E611C	0.05	mg/kg	2.5 mg/kg	106	70.0	130	---
dichloromethane	75-09-2	E611C	0.05	mg/kg	2.5 mg/kg	111	60.0	140	---
dichloropropane, 1,2-	78-87-5	E611C	0.05	mg/kg	2.5 mg/kg	112	70.0	130	---
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.05	mg/kg	2.5 mg/kg	129	70.0	130	---
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.05	mg/kg	2.5 mg/kg	100	70.0	130	---
ethylbenzene	100-41-4	E611C	0.015	mg/kg	2.5 mg/kg	123	70.0	130	---
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.05	mg/kg	2.5 mg/kg	110	70.0	130	---
styrene	100-42-5	E611C	0.05	mg/kg	2.5 mg/kg	107	70.0	130	---



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 Work Order : VA20C3271 Amendment 1
 Client : CH2M Hill Canada Limited
 Project : EGP/BC Rail Site - Fortis

Sub-Matrix: **Soil/Solid**

Laboratory Control Sample (LCS) Report									
Analyte	CAS Number	Method	LOR	Unit	Recovery Limits (%)			Qualifier	
					Spike Concentration	LCS Recovery (%)	Low		High
Volatile Organic Compounds (QCLot: 133607) - continued									
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.05	mg/kg	2.5 mg/kg	92.6	70.0	130	---
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.05	mg/kg	2.5 mg/kg	111	70.0	130	---
tetrachloroethylene	127-18-4	E611C	0.05	mg/kg	2.5 mg/kg	87.9	70.0	130	---
toluene	108-88-3	E611C	0.05	mg/kg	2.5 mg/kg	99.8	70.0	130	---
trichloroethane, 1,1,1-	71-55-6	E611C	0.05	mg/kg	2.5 mg/kg	123	70.0	130	---
trichloroethane, 1,1,2-	79-00-5	E611C	0.05	mg/kg	2.5 mg/kg	106	70.0	130	---
trichloroethylene	79-01-6	E611C	0.01	mg/kg	2.5 mg/kg	95.9	70.0	130	---
trichlorofluoromethane	75-69-4	E611C	0.05	mg/kg	2.5 mg/kg	123	60.0	140	---
vinyl chloride	75-01-4	E611C	0.05	mg/kg	2.5 mg/kg	123	60.0	140	---
xylylene, m+p-	179601-23-1	E611C	0.05	mg/kg	5 mg/kg	114	70.0	130	---
xylylene, o-	95-47-6	E611C	0.05	mg/kg	2.5 mg/kg	105	70.0	130	---
Volatile Organic Compounds (QCLot: 133611)									
benzene	71-43-2	E611C	0.005	mg/kg	2.5 mg/kg	110	70.0	130	---
bromodichloromethane	75-27-4	E611C	0.05	mg/kg	2.5 mg/kg	124	70.0	130	---
bromoform	75-25-2	E611C	0.05	mg/kg	2.5 mg/kg	91.4	70.0	130	---
carbon tetrachloride	56-23-5	E611C	0.05	mg/kg	2.5 mg/kg	93.9	70.0	130	---
chlorobenzene	108-90-7	E611C	0.05	mg/kg	2.5 mg/kg	108	70.0	130	---
chloroethane	75-00-3	E611C	0.05	mg/kg	2.5 mg/kg	83.8	60.0	140	---
chloroform	67-66-3	E611C	0.05	mg/kg	2.5 mg/kg	123	70.0	130	---
chloromethane	74-87-3	E611C	0.05	mg/kg	2.5 mg/kg	67.0	60.0	140	---
dibromochloromethane	124-48-1	E611C	0.05	mg/kg	2.5 mg/kg	91.6	70.0	130	---
dichlorobenzene, 1,2-	95-50-1	E611C	0.05	mg/kg	2.5 mg/kg	106	70.0	130	---
dichlorobenzene, 1,3-	54-1-73-1	E611C	0.05	mg/kg	2.5 mg/kg	104	70.0	130	---
dichlorobenzene, 1,4-	106-46-7	E611C	0.05	mg/kg	2.5 mg/kg	108	70.0	130	---
dichloroethane, 1,1-	75-34-3	E611C	0.05	mg/kg	2.5 mg/kg	109	70.0	130	---
dichloroethane, 1,2-	107-06-2	E611C	0.05	mg/kg	2.5 mg/kg	119	70.0	130	---
dichloroethylene, 1,1-	75-35-4	E611C	0.05	mg/kg	2.5 mg/kg	111	70.0	130	---
dichloroethylene, cis-1,2-	156-59-4	E611C	0.05	mg/kg	2.5 mg/kg	120	70.0	130	---
dichloroethylene, trans-1,2-	156-60-5	E611C	0.05	mg/kg	2.5 mg/kg	116	70.0	130	---
dichloromethane	75-09-2	E611C	0.05	mg/kg	2.5 mg/kg	117	60.0	140	---
dichloropropane, 1,2-	78-87-5	E611C	0.05	mg/kg	2.5 mg/kg	114	70.0	130	---
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.05	mg/kg	2.5 mg/kg	94.7	70.0	130	---
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.05	mg/kg	2.5 mg/kg	# 65.1	70.0	130	LCS-ND
ethylbenzene	100-41-4	E611C	0.015	mg/kg	2.5 mg/kg	96.5	70.0	130	---
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.05	mg/kg	2.5 mg/kg	114	70.0	130	---
styrene	100-42-5	E611C	0.05	mg/kg	2.5 mg/kg	101	70.0	130	---
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.05	mg/kg	2.5 mg/kg	100.0	70.0	130	---



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 Work Order : VA20C3271 Amendment 1
 Client : CH2M Hill Canada Limited
 Project : EGP/BC Rail Site - Fortis

Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Recovery (%)		Recovery Limits (%)		
					Concentration	LCS	Low	High	
Volatile Organic Compounds (QCLot: 133611) - continued									
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.05	mg/kg	2.5 mg/kg	115	70.0	130	---
tetrachloroethylene	127-18-4	E611C	0.05	mg/kg	2.5 mg/kg	85.6	70.0	130	---
toluene	108-88-3	E611C	0.05	mg/kg	2.5 mg/kg	100	70.0	130	---
trichloroethane, 1,1,1-	71-55-6	E611C	0.05	mg/kg	2.5 mg/kg	100	70.0	130	---
trichloroethane, 1,1,2-	79-00-5	E611C	0.05	mg/kg	2.5 mg/kg	107	70.0	130	---
trichloroethylene	79-01-6	E611C	0.01	mg/kg	2.5 mg/kg	103	70.0	130	---
trichlorofluoromethane	75-69-4	E611C	0.05	mg/kg	2.5 mg/kg	112	60.0	140	---
vinyl chloride	75-01-4	E611C	0.05	mg/kg	2.5 mg/kg	62.2	60.0	140	---
xylene, m+p-	179601-23-1	E611C	0.05	mg/kg	5 mg/kg	108	70.0	130	---
xylene, o-	95-47-6	E611C	0.05	mg/kg	2.5 mg/kg	98.0	70.0	130	---
Hydrocarbons (QCLot: 133429)									
EPH (C10-C19)	----	E601A	200	mg/kg	1134.37 mg/kg	102	70.0	130	---
EPH (C19-C32)	----	E601A	200	mg/kg	575.98 mg/kg	100	70.0	130	---
Hydrocarbons (QCLot: 133606)									
VHs (C6-C10)	----	E581.VH+F1	10	mg/kg	85.8 mg/kg	124	70.0	130	---
Hydrocarbons (QCLot: 133609)									
VHs (C6-C10)	----	E581.VH+F1	10	mg/kg	85.8 mg/kg	96.7	70.0	130	---
Hydrocarbons (QCLot: 133682)									
EPH (C10-C19)	----	E601A	200	mg/kg	1134.37 mg/kg	108	70.0	130	---
EPH (C19-C32)	----	E601A	200	mg/kg	575.98 mg/kg	108	70.0	130	---
Polycyclic Aromatic Hydrocarbons (QCLot: 133428)									
acenaphthene	83-32-9	E641A-L	0.005	mg/kg	0.5 mg/kg	103	60.0	130	---
acenaphthylene	208-96-8	E641A-L	0.005	mg/kg	0.5 mg/kg	99.4	60.0	130	---
acridine	260-94-6	E641A-L	0.01	mg/kg	0.2 mg/kg	94.8	60.0	130	---
anthracene	120-12-7	E641A-L	0.004	mg/kg	0.5 mg/kg	91.8	60.0	130	---
benz(a)anthracene	56-55-3	E641A-L	0.01	mg/kg	0.5 mg/kg	108	60.0	130	---
benzo(a)pyrene	50-32-8	E641A-L	0.01	mg/kg	0.32 mg/kg	99.3	60.0	130	---
benzo(b+g)fluoranthene	----	E641A-L	0.01	mg/kg	0.5 mg/kg	95.3	60.0	130	---
benzo(g,h,i)perylene	191-24-2	E641A-L	0.01	mg/kg	0.545 mg/kg	83.6	60.0	130	---
benzo(k)fluoranthene	207-08-9	E641A-L	0.01	mg/kg	0.5 mg/kg	90.5	60.0	130	---
chrysene	218-01-9	E641A-L	0.01	mg/kg	0.5 mg/kg	92.2	60.0	130	---
					102	60.0	60.0	130	---
					95.7	60.0	60.0	130	---
					104	60.0	60.0	130	---
					89.2	60.0	60.0	130	---



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 Client : CH2M Hill Canada Limited
 Project : EGP/BC Rail Site - Fortis

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery Limits (%)			Qualifier
						Recovery (%)	LCS	Low	
Polycyclic Aromatic Hydrocarbons (QCLot: 133428) - continued									
dibenz(a,h)anthracene	53-70-3	E641A-L	0.005	mg/kg	0.5 mg/kg	94.1	60.0	130	---
fluoranthene	206-44-0	E641A-L	0.01	mg/kg	1.196 mg/kg	95.8	60.0	130	---
fluorene	86-73-7	E641A-L	0.01	mg/kg	0.5 mg/kg	108	60.0	130	---
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.01	mg/kg	0.5 mg/kg	111	60.0	130	---
methylnaphthalene, 1-	90-12-0	E641A-L	0.01	mg/kg	0.5 mg/kg	99.9	60.0	130	---
methylnaphthalene, 2-	91-57-6	E641A-L	0.01	mg/kg	0.5 mg/kg	94.0	60.0	130	---
naphthalene	91-20-3	E641A-L	0.01	mg/kg	0.5 mg/kg	91.0	60.0	130	---
phenanthrene	85-01-8	E641A-L	0.01	mg/kg	1.03 mg/kg	95.2	50.0	130	---
pyrene	129-00-0	E641A-L	0.01	mg/kg	0.5 mg/kg	98.7	50.0	130	---
quinoline	6027-02-7	E641A-L	0.01	mg/kg	1.13 mg/kg	112	60.0	130	---
					0.5 mg/kg	102	60.0	130	---
					0.5 mg/kg	112	60.0	130	---
					0.5 mg/kg	78.5	60.0	130	---
Polycyclic Aromatic Hydrocarbons (QCLot: 133681)									
acenaphthene	83-32-9	E641A-L	0.005	mg/kg	0.5 mg/kg	87.7	60.0	130	---
acenaphthylene	208-96-8	E641A-L	0.005	mg/kg	0.638 mg/kg	84.4	60.0	130	---
acridine	260-94-6	E641A-L	0.01	mg/kg	0.5 mg/kg	87.4	60.0	130	---
anthracene	120-12-7	E641A-L	0.004	mg/kg	0.5 mg/kg	96.0	60.0	130	---
benz(a)anthracene	56-55-3	E641A-L	0.01	mg/kg	0.5 mg/kg	96.0	60.0	130	---
benzo(a)pyrene	50-32-8	E641A-L	0.01	mg/kg	0.545 mg/kg	80.6	60.0	130	---
benzo(b+g)fluoranthene	---	E641A-L	0.01	mg/kg	0.5 mg/kg	80.7	60.0	130	---
benzo(g,h,i)perylene	191-24-2	E641A-L	0.01	mg/kg	0.135 mg/kg	92.3	60.0	130	---
benzo(k)fluoranthene	207-08-9	E641A-L	0.01	mg/kg	0.5 mg/kg	93.5	60.0	130	---
chrysene	218-01-9	E641A-L	0.01	mg/kg	0.5 mg/kg	84.6	60.0	130	---
dibenz(a,h)anthracene	53-70-3	E641A-L	0.005	mg/kg	0.5 mg/kg	84.9	60.0	130	---
fluoranthene	206-44-0	E641A-L	0.01	mg/kg	0.5 mg/kg	80.0	60.0	130	---
fluorene	86-73-7	E641A-L	0.01	mg/kg	0.34 mg/kg	71.1	60.0	130	---
indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.01	mg/kg	0.5 mg/kg	73.5	60.0	130	---
methylnaphthalene, 1-	90-12-0	E641A-L	0.01	mg/kg	0.445 mg/kg	93.8	60.0	130	---
methylnaphthalene, 2-	91-57-6	E641A-L	0.01	mg/kg	0.5 mg/kg	96.7	60.0	130	---
					0.5 mg/kg	99.1	60.0	130	---
					0.5 mg/kg	99.5	60.0	130	---
					0.5 mg/kg	95.0	60.0	130	---
					0.5 mg/kg	83.0	60.0	130	---
					1.256 mg/kg	84.5	60.0	130	---
					0.5 mg/kg	75.6	60.0	130	---
					1.088 mg/kg	79.6	60.0	130	---



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 Client : CH2M Hill Canada Limited
 Project : EGP/BC Rail Site - Fortis

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery Limits (%)		Qualifier	
						LCS	Low		High
Polycyclic Aromatic Hydrocarbons (QCLot: 133681) - continued									
naphthalene	91-20-3	E641A-L	0.01	mg/kg	0.5 mg/kg	77.8	50.0	130	---
phenanthrene	85-01-8	E641A-L	0.01	mg/kg	1.03 mg/kg	87.6	50.0	130	---
pyrene	129-00-0	E641A-L	0.01	mg/kg	0.5 mg/kg	96.9	60.0	130	---
quinoline	6027-02-7	E641A-L	0.01	mg/kg	0.5 mg/kg	93.2	60.0	130	---
						87.8	60.0	130	---
						82.4	60.0	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 $\geq 1 \times$ spike level.

Sub-Matrix: **Soil/Solid**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report			Recovery Limits (%)		Qualifier
					Concentration	Target	Recovery (%)	MS	Low	
VA20C3238-032	Anonymous	benzene	71-43-2	E611C	2.32 mg/kg	4.6875 mg/kg	87.7	60.0	140	---
		bromodichloromethane	75-27-4	E611C	2.75 mg/kg	4.6875 mg/kg	104	60.0	140	---
		bromoform	75-25-2	E611C	2.01 mg/kg	4.6875 mg/kg	75.8	60.0	140	---
		carbon tetrachloride	56-23-5	E611C	2.05 mg/kg	4.6875 mg/kg	77.3	60.0	140	---
		chlorobenzene	108-90-7	E611C	2.59 mg/kg	4.6875 mg/kg	97.7	60.0	140	---
		chloroethane	75-00-3	E611C	2.14 mg/kg	4.6875 mg/kg	80.8	60.0	140	---
		chloroform	67-66-3	E611C	2.97 mg/kg	4.6875 mg/kg	112	60.0	140	---
		chloromethane	74-87-3	E611C	2.14 mg/kg	4.6875 mg/kg	80.6	60.0	140	---
		dibromochloromethane	124-48-1	E611C	2.67 mg/kg	4.6875 mg/kg	101	60.0	140	---
		dichlorobenzene, 1,2-	95-50-1	E611C	2.40 mg/kg	4.6875 mg/kg	90.7	60.0	140	---
		dichlorobenzene, 1,3-	541-73-1	E611C	2.29 mg/kg	4.6875 mg/kg	86.5	60.0	140	---
		dichlorobenzene, 1,4-	106-46-7	E611C	2.33 mg/kg	4.6875 mg/kg	87.8	60.0	140	---
		dichloroethane, 1,1-	75-34-3	E611C	2.25 mg/kg	4.6875 mg/kg	85.0	60.0	140	---
		dichloroethane, 1,2-	107-06-2	E611C	2.23 mg/kg	4.6875 mg/kg	84.1	60.0	140	---
		dichloroethylene, 1,1-	75-35-4	E611C	2.24 mg/kg	4.6875 mg/kg	84.6	60.0	140	---
		dichloroethylene, cis-1,2-	156-59-4	E611C	2.16 mg/kg	4.6875 mg/kg	81.6	60.0	140	---
		dichloroethylene, trans-1,2-	156-60-5	E611C	2.28 mg/kg	4.6875 mg/kg	85.9	60.0	140	---
		dichloromethane	75-09-2	E611C	2.29 mg/kg	4.6875 mg/kg	86.5	60.0	140	---
		dichloropropane, 1,2-	78-87-5	E611C	2.45 mg/kg	4.6875 mg/kg	92.6	60.0	140	---
		dichloropropylene, cis-1,3-	10061-01-5	E611C	2.76 mg/kg	4.6875 mg/kg	104	60.0	140	---
		dichloropropylene, trans-1,3-	10061-02-6	E611C	2.23 mg/kg	4.6875 mg/kg	84.1	60.0	140	---
		ethylbenzene	100-41-4	E611C	3.25 mg/kg	4.6875 mg/kg	123	60.0	140	---
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	2.56 mg/kg	4.6875 mg/kg	96.5	60.0	140	---
		styrene	100-42-5	E611C	2.49 mg/kg	4.6875 mg/kg	93.9	60.0	140	---
		tetrachloroethane, 1,1,1,2-	630-20-6	E611C	2.16 mg/kg	4.6875 mg/kg	81.4	60.0	140	---
		tetrachloroethane, 1,1,2,2-	79-34-5	E611C	2.60 mg/kg	4.6875 mg/kg	98.2	60.0	140	---
		tetrachloroethylene	127-18-4	E611C	1.86 mg/kg	4.6875 mg/kg	70.3	60.0	140	---
		toluene	108-88-3	E611C	2.34 mg/kg	4.6875 mg/kg	88.1	60.0	140	---
		trichloroethane, 1,1,1-	71-55-6	E611C	2.75 mg/kg	4.6875 mg/kg	104	60.0	140	---
		trichloroethane, 1,1,2-	79-00-5	E611C	2.38 mg/kg	4.6875 mg/kg	89.6	60.0	140	---
		trichloroethylene	79-01-6	E611C	2.14 mg/kg	4.6875 mg/kg	80.8	60.0	140	---
		trichlorofluoromethane	75-69-4	E611C	3.03 mg/kg	4.6875 mg/kg	114	60.0	140	---



Sub-Matrix: Soil/Solid

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Spike			Recovery Limits (%)			Qualifier
					Concentration	Target	MS	Low	High		
Volatile Organic Compounds (QCLOT: 133607) - continued											
VA20C3238-032	Anonymous	vinyl chloride	75-01-4	E611C	2.20 mg/kg	4.6875 mg/kg	83.0	60.0	140	---	
		xylene, m+p-	179601-23-1	E611C	5.31 mg/kg	9.375 mg/kg	100	60.0	140	---	
		xylene, o-	95-47-6	E611C	2.45 mg/kg	4.6875 mg/kg	92.4	60.0	140	---	
Volatile Organic Compounds (QCLOT: 133611)											
VA20C3271-061	20MW-11-SOF	benzene	71-43-2	E611C	2.59 mg/kg	3.125 mg/kg	108	60.0	140	---	
		bromodichloromethane	75-27-4	E611C	2.99 mg/kg	3.125 mg/kg	125	60.0	140	---	
		bromofom	75-25-2	E611C	2.04 mg/kg	3.125 mg/kg	85.4	60.0	140	---	
		carbon tetrachloride	56-23-5	E611C	2.25 mg/kg	3.125 mg/kg	94.1	60.0	140	---	
		chlorobenzene	108-90-7	E611C	2.33 mg/kg	3.125 mg/kg	97.4	60.0	140	---	
		chloroethane	75-00-3	E611C	1.88 mg/kg	3.125 mg/kg	70.3	60.0	140	---	
		chloroform	67-66-3	E611C	2.82 mg/kg	3.125 mg/kg	118	60.0	140	---	
		chloromethane	74-87-3	E611C	1.50 mg/kg	3.125 mg/kg	62.8	60.0	140	---	
		dibromochloromethane	124-48-1	E611C	2.03 mg/kg	3.125 mg/kg	84.6	60.0	140	---	
		dichlorobenzene, 1,2-	95-50-1	E611C	2.30 mg/kg	3.125 mg/kg	96.2	60.0	140	---	
		dichlorobenzene, 1,3-	541-73-1	E611C	2.20 mg/kg	3.125 mg/kg	92.1	60.0	140	---	
		dichlorobenzene, 1,4-	106-46-7	E611C	2.30 mg/kg	3.125 mg/kg	96.0	60.0	140	---	
		dichloroethane, 1,1-	75-34-3	E611C	2.56 mg/kg	3.125 mg/kg	107	60.0	140	---	
		dichloroethane, 1,2-	107-06-2	E611C	2.81 mg/kg	3.125 mg/kg	117	60.0	140	---	
		dichloroethylene, 1,1-	75-35-4	E611C	2.41 mg/kg	3.125 mg/kg	101	60.0	140	---	
		dichloroethylene, cis-1,2-	156-59-4	E611C	2.81 mg/kg	3.125 mg/kg	117	60.0	140	---	
		dichloroethylene, trans-1,2-	156-60-5	E611C	2.62 mg/kg	3.125 mg/kg	110	60.0	140	---	
		dichloromethane	75-09-2	E611C	2.67 mg/kg	3.125 mg/kg	111	60.0	140	---	
		dichloropropane, 1,2-	78-87-5	E611C	2.76 mg/kg	3.125 mg/kg	115	60.0	140	---	
		dichloropropylene, cis-1,3-	10061-01-5	E611C	2.24 mg/kg	3.125 mg/kg	93.5	60.0	140	---	
		dichloropropylene, trans-1,3-	10061-02-6	E611C	1.48 mg/kg	3.125 mg/kg	61.6	60.0	140	---	
		ethylbenzene	100-41-4	E611C	2.11 mg/kg	3.125 mg/kg	88.3	60.0	140	---	
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	2.44 mg/kg	3.125 mg/kg	102	60.0	140	---	
		styrene	100-42-5	E611C	2.18 mg/kg	3.125 mg/kg	91.1	60.0	140	---	
		tetrachloroethane, 1,1,1,2-	630-20-6	E611C	2.34 mg/kg	3.125 mg/kg	97.8	60.0	140	---	
		tetrachloroethane, 1,1,2,2-	79-34-5	E611C	2.56 mg/kg	3.125 mg/kg	107	60.0	140	---	
		tetrachloroethylene	127-18-4	E611C	1.85 mg/kg	3.125 mg/kg	77.2	60.0	140	---	
		toluene	108-88-3	E611C	1.94 mg/kg	3.125 mg/kg	80.8	60.0	140	---	
		trichloroethane, 1,1,1-	71-55-6	E611C	2.40 mg/kg	3.125 mg/kg	100	60.0	140	---	
		trichloroethane, 1,1,2-	79-00-5	E611C	2.31 mg/kg	3.125 mg/kg	96.5	60.0	140	---	
		trichloroethylene	79-01-6	E611C	2.45 mg/kg	3.125 mg/kg	102	60.0	140	---	
		trichlorofluoromethane	75-69-4	E611C	2.30 mg/kg	3.125 mg/kg	96.1	60.0	140	---	



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 Client : CH2M Hill Canada Limited
 Project : EGP/BC Rail Site - Fortis

Sub-Matrix: **Soil/Solid**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)		Recovery Limits (%)	Qualifier
					Concentration	Target	MS	Low		
Volatile Organic Compounds (QCLot: 133611) - continued										
VA20C3271-061	20MW-11-SOF	vinyl chloride	75-01-4	E611C	1.49 mg/kg	3,125 mg/kg	62.3	60.0	140	----
		xylene, m+p-	179601-23-1	E611C	5.02 mg/kg	6.25 mg/kg	105	60.0	140	----
		xylene, o-	95-47-6	E611C	2.14 mg/kg	3,125 mg/kg	89.3	60.0	140	----
Hydrocarbons (QCLot: 133606)										
VA20C3238-024	Anonymous	VHs (C6-C10)	----	E581.VH+F1	119 mg/kg	171.9 mg/kg	105	60.0	140	----
Hydrocarbons (QCLot: 133609)										
VA20C3238-056	Anonymous	VHs (C6-C10)	----	E581.VH+F1	103 mg/kg	171.9 mg/kg	95.1	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

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report				
					RM Target Concentration	Recovery (%)	RM	Recovery Limits (%)	Low
Particle Size (QC Lot: 139895)									
QC-139895-001	RM	passing (19 mm)	----	E181	100 %	100	90.0	110	----
QC-139895-001	RM	passing (2.0 mm)	----	E181	100 %	100	90.0	110	----
QC-139895-001	RM	passing (25.4 mm)	----	E181	100 %	100	90.0	110	----
QC-139895-001	RM	passing (38.1 mm)	----	E181	100 %	100	90.0	110	----
QC-139895-001	RM	passing (4.75 mm)	----	E181	100 %	100	90.0	110	----
QC-139895-001	RM	passing (50.8 mm)	----	E181	100 %	100	90.0	110	----
QC-139895-001	RM	passing (76.2 mm)	----	E181	100 %	100	90.0	110	----
QC-139895-001	RM	passing (9.5 mm)	----	E181	100 %	100	90.0	110	----
Particle Size (QC Lot: 139896)									
QC-139896-001	RM	passing (0.002 mm)	----	E184	19.34 %	100.0	60.0	140	----
QC-139896-001	RM	passing (0.004 mm)	----	E184	21.51 %	100	60.0	140	----
QC-139896-001	RM	passing (0.005 mm)	----	E184	22.6 %	100	60.0	140	----
QC-139896-001	RM	passing (0.020 mm)	----	E184	35.27 %	105	60.0	140	----
QC-139896-001	RM	passing (0.0312 mm)	----	E184	41.61 %	99.6	60.0	140	----
Particle Size (QC Lot: 139897)									
QC-139897-001	RM	passing (0.05 mm)	----	E182	49.81 %	104	80.0	120	----
QC-139897-001	RM	passing (0.063 mm)	----	E182	54.27 %	101	80.0	120	----
QC-139897-001	RM	passing (0.075 mm)	----	E182	58.38 %	98.1	80.0	120	----
QC-139897-001	RM	passing (0.125 mm)	----	E182	68.06 %	100	80.0	120	----
QC-139897-001	RM	passing (0.149 mm)	----	E182	72.71 %	99.9	80.0	120	----
QC-139897-001	RM	passing (0.250 mm)	----	E182	85.38 %	99.8	80.0	120	----
QC-139897-001	RM	passing (0.420 mm)	----	E182	92.78 %	98.9	80.0	120	----
QC-139897-001	RM	passing (0.50 mm)	----	E182	93.78 %	100	80.0	120	----
QC-139897-001	RM	passing (0.841 mm)	----	E182	97.34 %	99.6	80.0	120	----
QC-139897-001	RM	passing (1.0 mm)	----	E182	97.77 %	100	80.0	120	----
Particle Size (QC Lot: 139903)									
QC-139903-001	RM	passing (19 mm)	----	E181	100 %	100	90.0	110	----
QC-139903-001	RM	passing (2.0 mm)	----	E181	100 %	100	90.0	110	----
QC-139903-001	RM	passing (25.4 mm)	----	E181	100 %	100	90.0	110	----



Sub-Matrix: **Soil/Solid**

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report				Qualifier
					RM Target Concentration	Recovery (%)	RM	Recovery Limits (%)	
					Low	High			
Particle Size (QCLot: 139903) - continued									
QC-139903-001	RM	passing (38.1 mm)	----	E181	100 %	100	90.0	110	----
QC-139903-001	RM	passing (4.75 mm)	----	E181	100 %	100	90.0	110	----
QC-139903-001	RM	passing (50.8 mm)	----	E181	100 %	100	90.0	110	----
QC-139903-001	RM	passing (76.2 mm)	----	E181	100 %	100	90.0	110	----
QC-139903-001	RM	passing (9.5 mm)	----	E181	100 %	100	90.0	110	----
Particle Size (QCLot: 139904)									
QC-139904-001	RM	passing (0.002 mm)	----	E184	19.34 %	97.4	60.0	140	----
QC-139904-001	RM	passing (0.004 mm)	----	E184	21.51 %	97.0	60.0	140	----
QC-139904-001	RM	passing (0.005 mm)	----	E184	22.6 %	96.7	60.0	140	----
QC-139904-001	RM	passing (0.020 mm)	----	E184	35.27 %	102	60.0	140	----
QC-139904-001	RM	passing (0.0312 mm)	----	E184	41.61 %	96.6	60.0	140	----
Particle Size (QCLot: 139905)									
QC-139905-001	RM	passing (0.05 mm)	----	E182	49.81 %	102	80.0	120	----
QC-139905-001	RM	passing (0.063 mm)	----	E182	54.27 %	99.2	80.0	120	----
QC-139905-001	RM	passing (0.075 mm)	----	E182	58.38 %	96.9	80.0	120	----
QC-139905-001	RM	passing (0.125 mm)	----	E182	68.06 %	100.0	80.0	120	----
QC-139905-001	RM	passing (0.149 mm)	----	E182	72.71 %	99.6	80.0	120	----
QC-139905-001	RM	passing (0.250 mm)	----	E182	85.38 %	99.9	80.0	120	----
QC-139905-001	RM	passing (0.420 mm)	----	E182	92.78 %	99.3	80.0	120	----
QC-139905-001	RM	passing (0.50 mm)	----	E182	93.78 %	101	80.0	120	----
QC-139905-001	RM	passing (0.841 mm)	----	E182	97.34 %	100	80.0	120	----
QC-139905-001	RM	passing (1.0 mm)	----	E182	97.77 %	100	80.0	120	----
Metals (QCLot: 133425)									
QC-133425-003	SCP SS-2	mercury	7439-97-6	E510	0.059 mg/kg	90.4	70.0	130	----
Metals (QCLot: 133426)									
QC-133426-003	SCP SS-2	aluminum	7429-90-5	E440	9817 mg/kg	125	70.0	130	----
QC-133426-003	SCP SS-2	antimony	7440-36-0	E440	3.99 mg/kg	99.6	70.0	130	----
QC-133426-003	SCP SS-2	arsenic	7440-38-2	E440	3.73 mg/kg	106	70.0	130	----
QC-133426-003	SCP SS-2	barium	7440-39-3	E440	105 mg/kg	104	70.0	130	----
QC-133426-003	SCP SS-2	beryllium	7440-41-7	E440	0.349 mg/kg	104	70.0	130	----
QC-133426-003	SCP SS-2	boron	7440-42-8	E440	8.5 mg/kg	122	40.0	160	----
QC-133426-003	SCP SS-2	cadmium	7440-43-9	E440	0.91 mg/kg	104	70.0	130	----
QC-133426-003	SCP SS-2	calcium	7440-70-2	E440	31082 mg/kg	105	70.0	130	----



Sub-Matrix: **Soil/Solid**

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report				Qualifier
					RM Target Concentration	Recovery (%)	Recovery Limits (%)		
							RM	Low	
Metals (QCLot: 133426) - continued									
QC-133426-003	SCP SS-2	chromium	7440-47-3	E440	101 mg/kg	113	70.0	130	---
QC-133426-003	SCP SS-2	cobalt	7440-48-4	E440	6.9 mg/kg	103	70.0	130	---
QC-133426-003	SCP SS-2	copper	7440-50-8	E440	123 mg/kg	101	70.0	130	---
QC-133426-003	SCP SS-2	iron	7439-89-6	E440	23558 mg/kg	103	70.0	130	---
QC-133426-003	SCP SS-2	lead	7439-92-1	E440	267 mg/kg	109	70.0	130	---
QC-133426-003	SCP SS-2	lithium	7439-93-2	E440	9.5 mg/kg	102	70.0	130	---
QC-133426-003	SCP SS-2	magnesium	7439-95-4	E440	5509 mg/kg	110	70.0	130	---
QC-133426-003	SCP SS-2	manganese	7439-96-5	E440	269 mg/kg	106	70.0	130	---
QC-133426-003	SCP SS-2	molybdenum	7439-98-7	E440	1.03 mg/kg	99.9	70.0	130	---
QC-133426-003	SCP SS-2	nickel	7440-02-0	E440	26.7 mg/kg	105	70.0	130	---
QC-133426-003	SCP SS-2	phosphorus	7723-14-0	E440	752 mg/kg	96.4	70.0	130	---
QC-133426-003	SCP SS-2	potassium	7440-09-7	E440	1587 mg/kg	115	70.0	130	---
QC-133426-003	SCP SS-2	sodium	7440-23-5	E440	797 mg/kg	108	70.0	130	---
QC-133426-003	SCP SS-2	strontium	7440-24-6	E440	86.1 mg/kg	99.8	70.0	130	---
QC-133426-003	SCP SS-2	thallium	7440-28-0	E440	0.0786 mg/kg	113	40.0	160	---
QC-133426-003	SCP SS-2	tin	7440-31-5	E440	10.6 mg/kg	93.2	70.0	130	---
QC-133426-003	SCP SS-2	titanium	7440-32-6	E440	839 mg/kg	124	70.0	130	---
QC-133426-003	SCP SS-2	uranium	7440-61-1	E440	0.52 mg/kg	108	70.0	130	---
QC-133426-003	SCP SS-2	vanadium	7440-62-2	E440	32.7 mg/kg	108	70.0	130	---
QC-133426-003	SCP SS-2	zinc	7440-66-6	E440	297 mg/kg	119	70.0	130	---
QC-133426-003	SCP SS-2	zirconium	7440-67-7	E440	5.73 mg/kg	98.8	70.0	130	---
Metals (QCLot: 133686)									
QC-133686-003	SCP SS-2	mercury	7439-97-6	E510	0.059 mg/kg	93.2	70.0	130	---
Metals (QCLot: 133687)									
QC-133687-003	SCP SS-2	aluminum	7429-90-5	E440	9817 mg/kg	128	70.0	130	---
QC-133687-003	SCP SS-2	antimony	7440-36-0	E440	3.99 mg/kg	105	70.0	130	---
QC-133687-003	SCP SS-2	arsenic	7440-38-2	E440	3.73 mg/kg	106	70.0	130	---
QC-133687-003	SCP SS-2	barium	7440-39-3	E440	105 mg/kg	110	70.0	130	---
QC-133687-003	SCP SS-2	beryllium	7440-41-7	E440	0.349 mg/kg	113	70.0	130	---
QC-133687-003	SCP SS-2	boron	7440-42-8	E440	8.5 mg/kg	126	40.0	160	---
QC-133687-003	SCP SS-2	cadmium	7440-43-9	E440	0.91 mg/kg	110	70.0	130	---
QC-133687-003	SCP SS-2	calcium	7440-70-2	E440	31082 mg/kg	123	70.0	130	---



Sub-Matrix: **Soil/Solid**

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report				
					RM Target Concentration	Recovery (%)	Recovery Limits (%)		Qualifier
							RM	Low	
Metals (QCLot: 133687) - continued									
QC-133687-003	SCP SS-2	chromium	7440-47-3	E440	101 mg/kg	115	70.0	130	----
QC-133687-003	SCP SS-2	cobalt	7440-48-4	E440	6.9 mg/kg	111	70.0	130	----
QC-133687-003	SCP SS-2	copper	7440-50-8	E440	123 mg/kg	111	70.0	130	----
QC-133687-003	SCP SS-2	iron	7439-89-6	E440	23558 mg/kg	106	70.0	130	----
QC-133687-003	SCP SS-2	lead	7439-92-1	E440	267 mg/kg	118	70.0	130	----
QC-133687-003	SCP SS-2	lithium	7439-93-2	E440	9.5 mg/kg	109	70.0	130	----
QC-133687-003	SCP SS-2	magnesium	7439-95-4	E440	5509 mg/kg	116	70.0	130	----
QC-133687-003	SCP SS-2	manganese	7439-96-5	E440	269 mg/kg	114	70.0	130	----
QC-133687-003	SCP SS-2	molybdenum	7439-98-7	E440	1.03 mg/kg	108	70.0	130	----
QC-133687-003	SCP SS-2	nickel	7440-02-0	E440	26.7 mg/kg	103	70.0	130	----
QC-133687-003	SCP SS-2	phosphorus	7723-14-0	E440	752 mg/kg	108	70.0	130	----
QC-133687-003	SCP SS-2	potassium	7440-09-7	E440	1587 mg/kg	119	70.0	130	----
QC-133687-003	SCP SS-2	sodium	7440-23-5	E440	797 mg/kg	107	70.0	130	----
QC-133687-003	SCP SS-2	strontium	7440-24-6	E440	86.1 mg/kg	116	70.0	130	----
QC-133687-003	SCP SS-2	thallium	7440-28-0	E440	0.0786 mg/kg	113	40.0	160	----
QC-133687-003	SCP SS-2	tin	7440-31-5	E440	10.6 mg/kg	107	70.0	130	----
QC-133687-003	SCP SS-2	titanium	7440-32-6	E440	839 mg/kg	118	70.0	130	----
QC-133687-003	SCP SS-2	uranium	7440-61-1	E440	0.52 mg/kg	107	70.0	130	----
QC-133687-003	SCP SS-2	vanadium	7440-62-2	E440	32.7 mg/kg	113	70.0	130	----
QC-133687-003	SCP SS-2	zinc	7440-66-6	E440	297 mg/kg	105	70.0	130	----
QC-133687-003	SCP SS-2	zirconium	7440-67-7	E440	5.73 mg/kg	106	70.0	130	----
Hydrocarbons (QCLot: 133429)									
QC-133429-003	Petroleum Hydrocarbon IRM	EPH (C10-C19)	----	E601A	7113 mg/kg	100	70.0	130	----
QC-133429-003	Petroleum Hydrocarbon IRM	EPH (C19-C32)	----	E601A	10183 mg/kg	102	70.0	130	----
Hydrocarbons (QCLot: 133682)									
QC-133682-003	Petroleum Hydrocarbon IRM	EPH (C10-C19)	----	E601A	7113 mg/kg	102	70.0	130	----
QC-133682-003	Petroleum Hydrocarbon IRM	EPH (C19-C32)	----	E601A	10183 mg/kg	105	70.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 133428)									
QC-133428-003	RM	acenaphthene	83-32-9	E641A-L	0.638 mg/kg	95.5	60.0	130	----
QC-133428-003	RM	benzo(a)pyrene	50-32-8	E641A-L	0.135 mg/kg	78.1	60.0	130	----
QC-133428-003	RM	benzo(b+j)fluoranthene	----	E641A-L	0.793 mg/kg	83.6	60.0	130	----

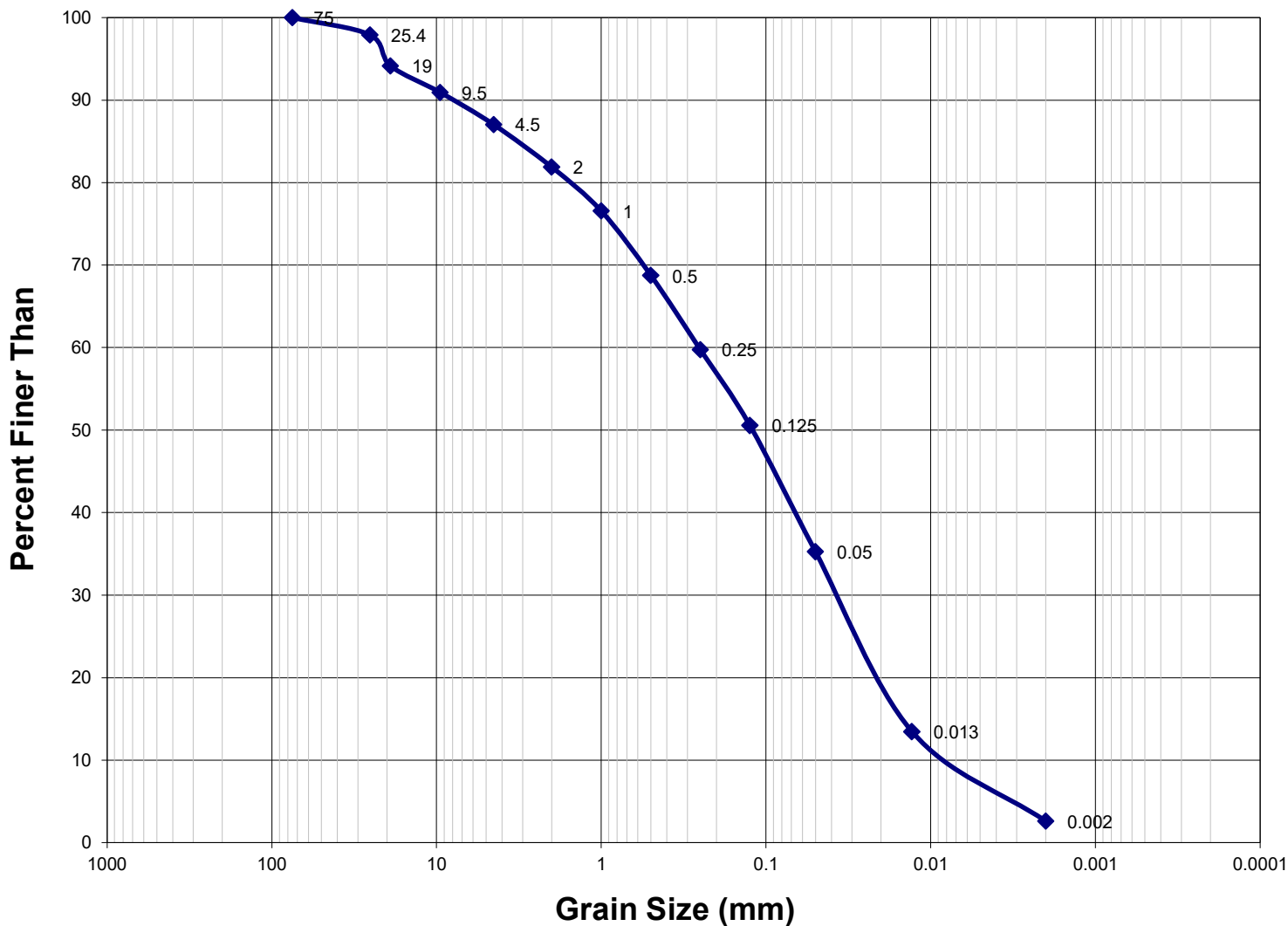


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 Work Order : VA20C3271 Amendment 1
 Client : CH2M Hill Canada Limited
 Project : EGP/BC Rail Site - Fortis

Sub-Matrix: **Soil/Solid**

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report				
					RM Target Concentration	Recovery (%) RM	Recovery Limits (%) Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 133428) - continued									
QC-133428-003	RM	benzo(g,h,i)perylene	191-24-2	E641A-L	0.377 mg/kg	95.4	60.0	130	----
QC-133428-003	RM	benzo(k)fluoranthene	207-08-9	E641A-L	0.34 mg/kg	91.5	60.0	130	----
QC-133428-003	RM	fluoranthene	206-44-0	E641A-L	1.757 mg/kg	100	60.0	130	----
QC-133428-003	RM	fluorene	86-73-7	E641A-L	0.989 mg/kg	106	60.0	130	----
QC-133428-003	RM	indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.445 mg/kg	94.0	60.0	130	----
QC-133428-003	RM	methylnaphthalene, 1-	90-12-0	E641A-L	1.256 mg/kg	94.1	60.0	130	----
QC-133428-003	RM	methylnaphthalene, 2-	91-57-6	E641A-L	1.088 mg/kg	90.4	60.0	130	----
QC-133428-003	RM	pyrene	129-00-0	E641A-L	1.325 mg/kg	102	60.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 133681)									
QC-133681-003	RM	acenaphthylene	208-96-8	E641A-L	0.2 mg/kg	96.3	60.0	130	----
QC-133681-003	RM	anthracene	120-12-7	E641A-L	0.32 mg/kg	95.9	60.0	130	----
QC-133681-003	RM	benzo(b+)fluoranthene	----	E641A-L	0.793 mg/kg	79.9	60.0	130	----
QC-133681-003	RM	benzo(g,h,i)perylene	191-24-2	E641A-L	0.377 mg/kg	85.1	60.0	130	----
QC-133681-003	RM	chrysene	218-01-9	E641A-L	0.666 mg/kg	74.2	60.0	130	----
QC-133681-003	RM	dibenz(a,h)anthracene	53-70-3	E641A-L	1.196 mg/kg	94.9	60.0	130	----
QC-133681-003	RM	fluoranthene	206-44-0	E641A-L	1.757 mg/kg	90.6	60.0	130	----
QC-133681-003	RM	fluorene	86-73-7	E641A-L	0.989 mg/kg	96.2	60.0	130	----
QC-133681-003	RM	phenanthrene	85-01-8	E641A-L	1.13 mg/kg	92.0	60.0	130	----

Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

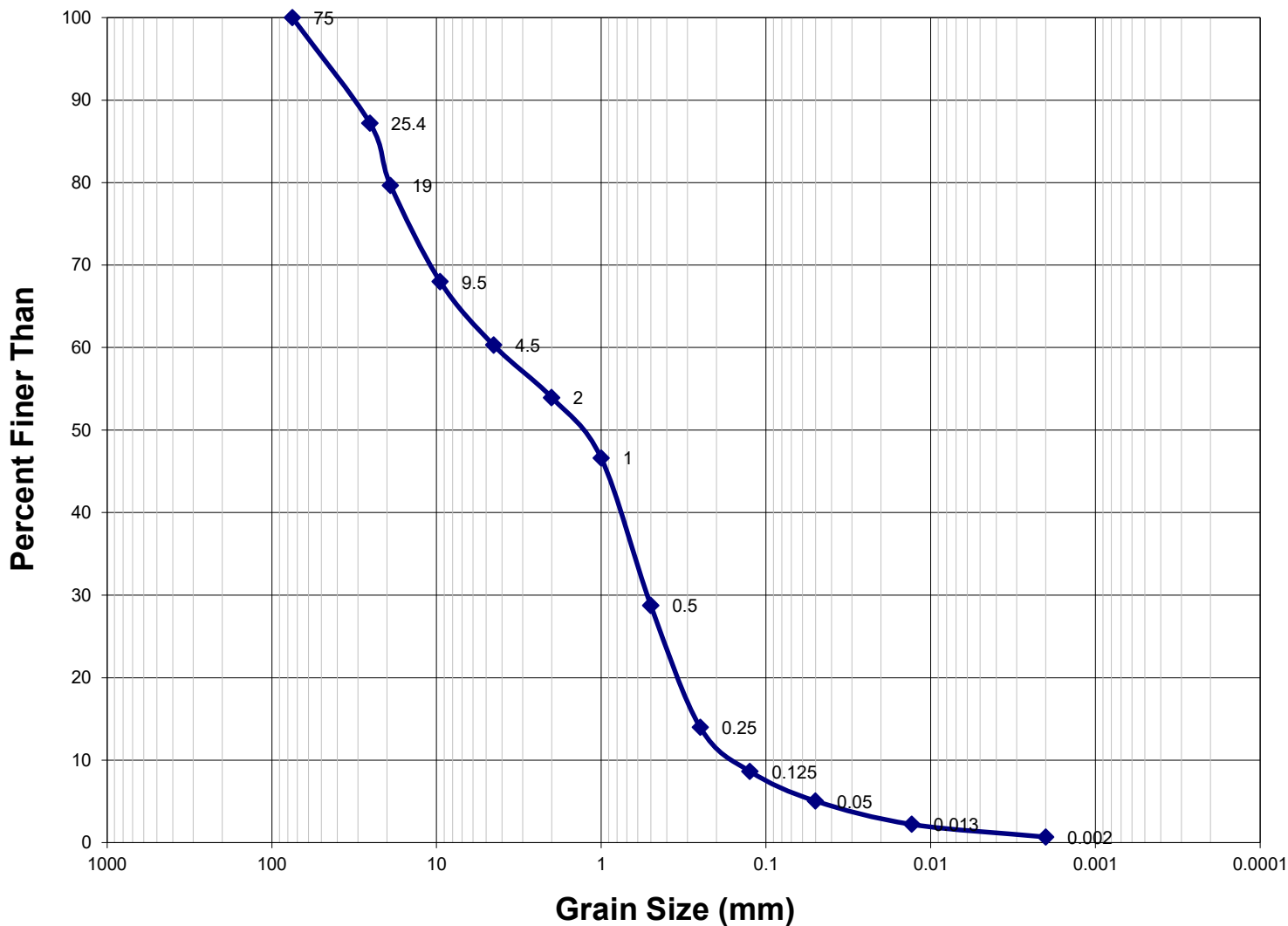
Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	13
Coarse Sand	2.0mm - 4.75mm	5
Medium Sand	0.425mm - 2.0mm	13
Fine Sand	0.075mm - 0.425mm	28
Fines	< 0.075mm	40

Canadian Soil Survey Committee (CSSC)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	18
Sand	0.05mm - 2mm	47
Silt	0.002mm - 0.05mm	33
Clay	< 0.002mm	3

Texture Sample contains material greater than 4.75mm. T

Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

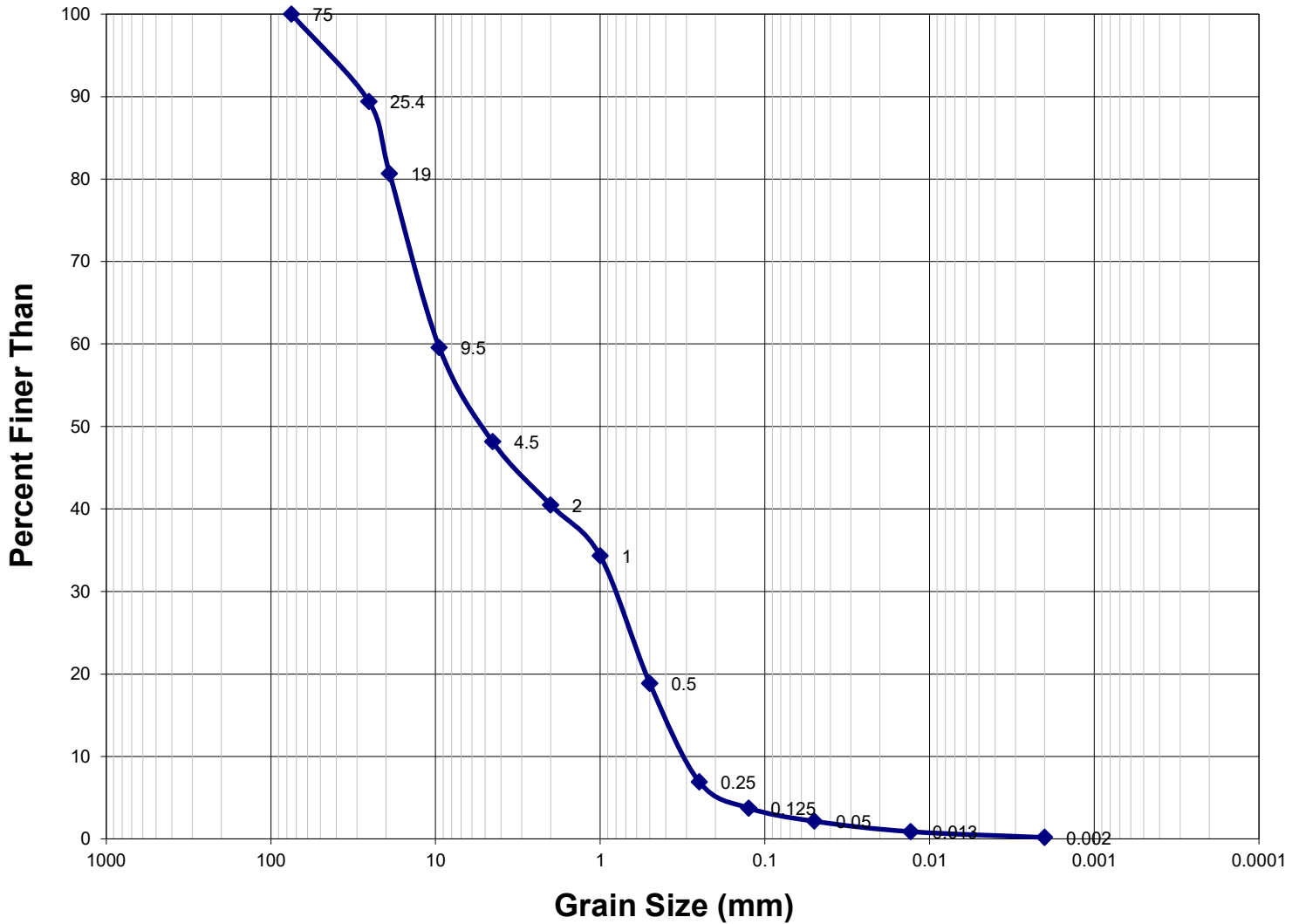
Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	39
Coarse Sand	2.0mm - 4.75mm	7
Medium Sand	0.425mm - 2.0mm	25
Fine Sand	0.075mm - 0.425mm	23
Fines	< 0.075mm	6

Canadian Soil Survey Committee (CSSC)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	46
Sand	0.05mm - 2mm	49
Silt	0.002mm - 0.05mm	4
Clay	< 0.002mm	1

Texture Sample contains material greater than 4.75mm. T

Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

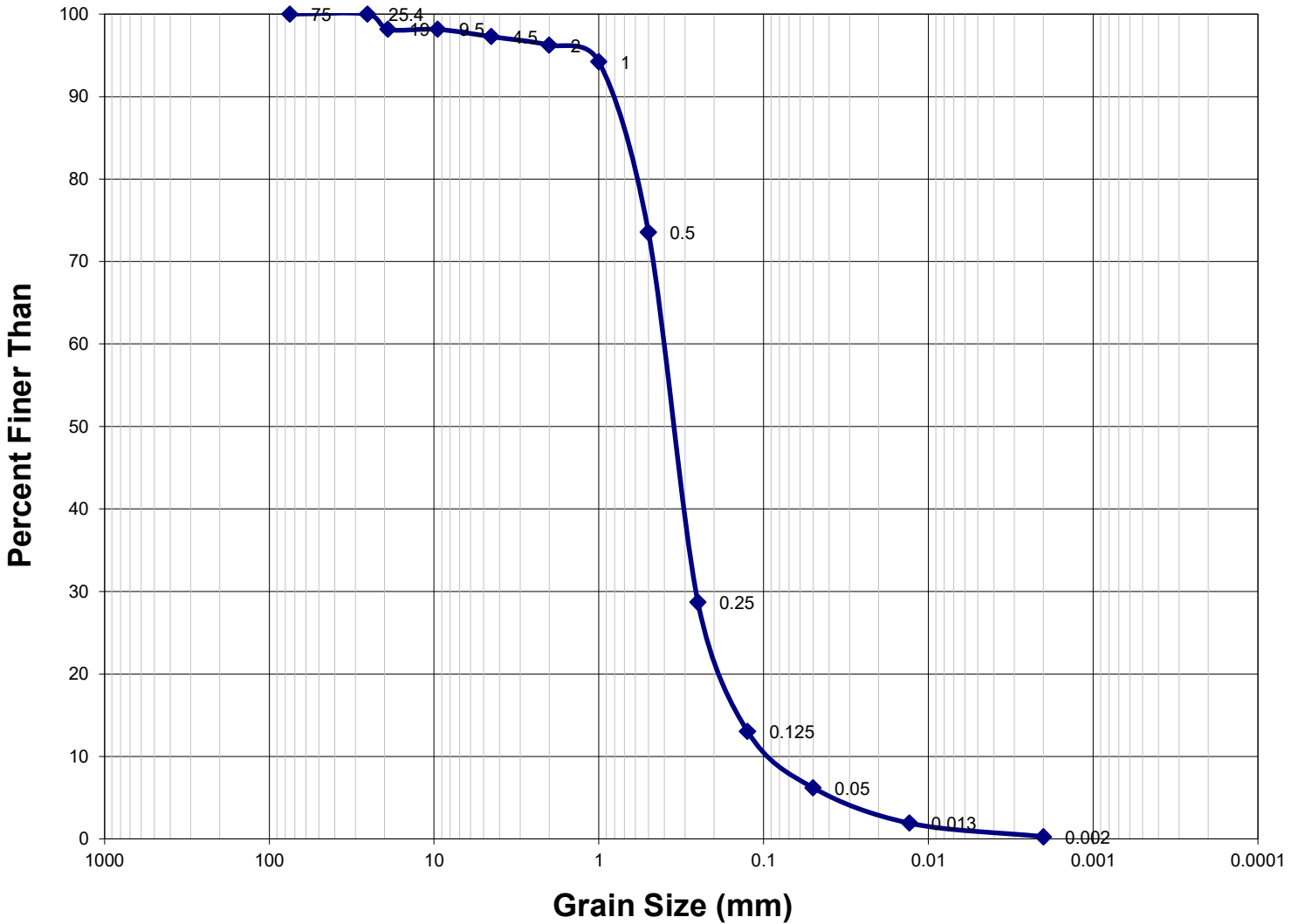
Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	51
Coarse Sand	2.0mm - 4.75mm	8
Medium Sand	0.425mm - 2.0mm	22
Fine Sand	0.075mm - 0.425mm	16
Fines	< 0.075mm	3

Canadian Soil Survey Committee (CSSC)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	60
Sand	0.05mm - 2mm	38
Silt	0.002mm - 0.05mm	2
Clay	< 0.002mm	0

Texture Sample contains material greater than 4.75mm. T

Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

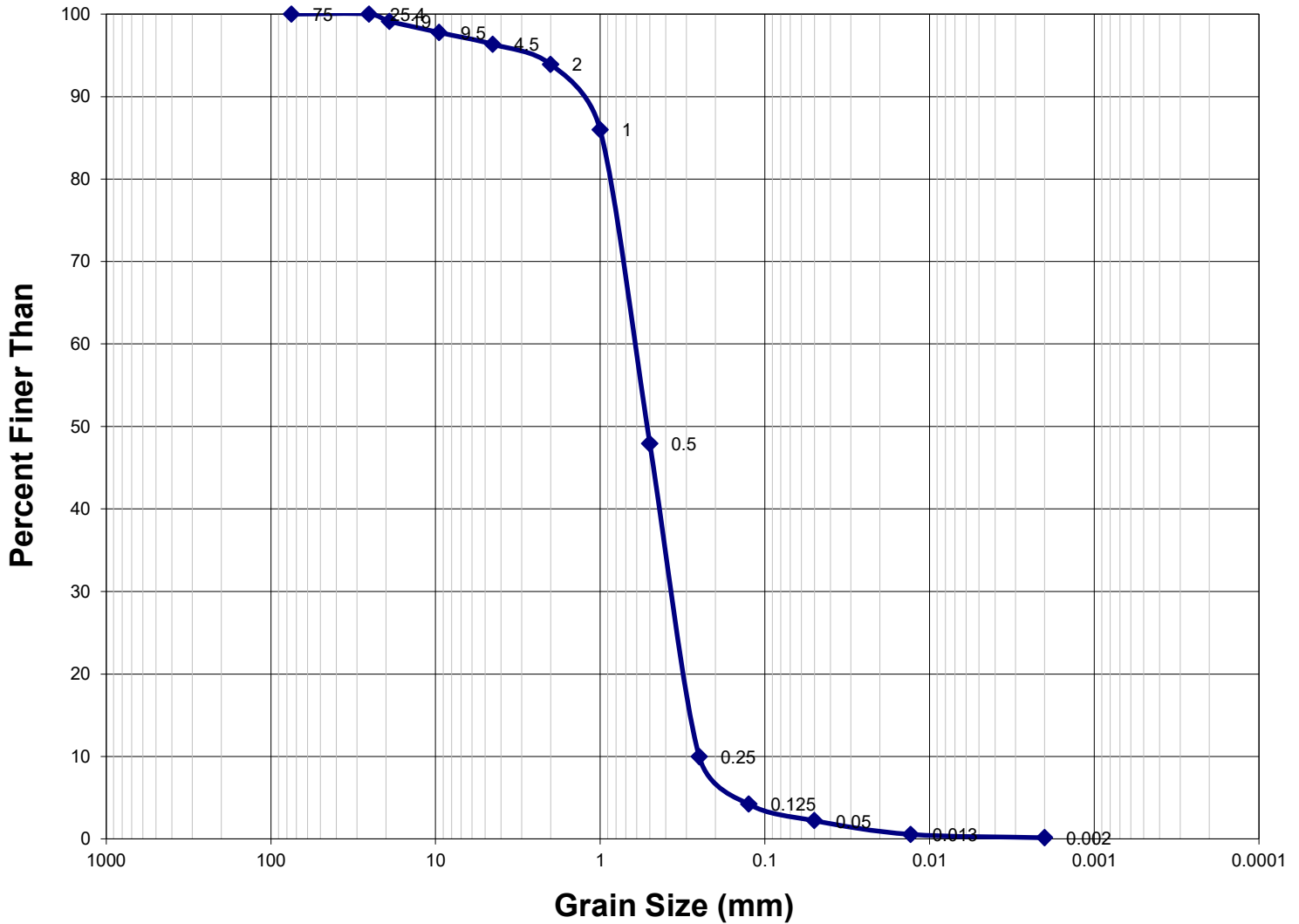
Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	3
Coarse Sand	2.0mm - 4.75mm	1
Medium Sand	0.425mm - 2.0mm	23
Fine Sand	0.075mm - 0.425mm	65
Fines	< 0.075mm	8

Canadian Soil Survey Committee (CSSC)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	4
Sand	0.05mm - 2mm	90
Silt	0.002mm - 0.05mm	6
Clay	< 0.002mm	0

Texture Sample contains material greater than 4.75mm. T

Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

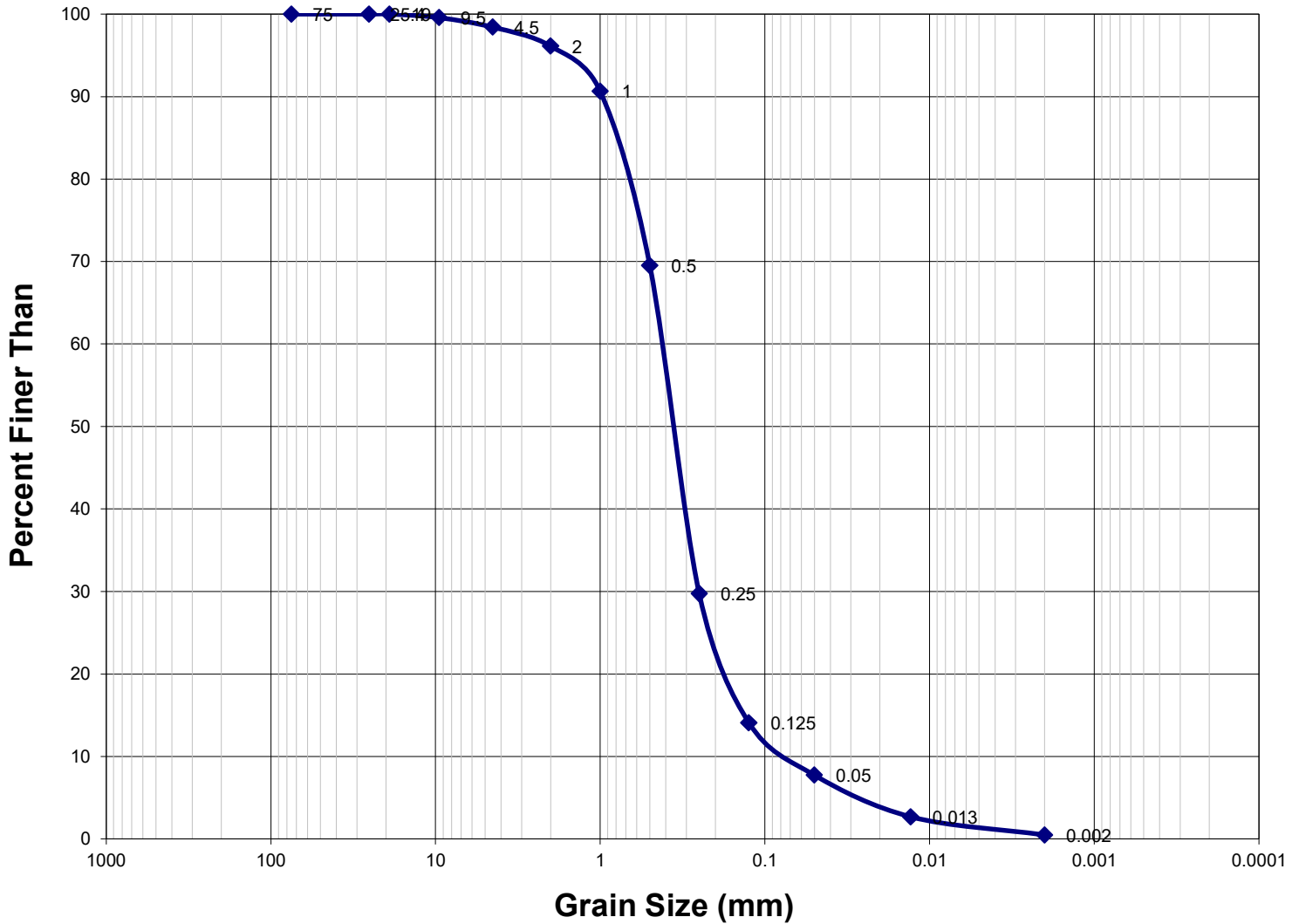
Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	4
Coarse Sand	2.0mm - 4.75mm	3
Medium Sand	0.425mm - 2.0mm	46
Fine Sand	0.075mm - 0.425mm	45
Fines	< 0.075mm	3

Canadian Soil Survey Committee (CSSC)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	6
Sand	0.05mm - 2mm	92
Silt	0.002mm - 0.05mm	2
Clay	< 0.002mm	0

Texture Sample contains material greater than 4.75mm. T

Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

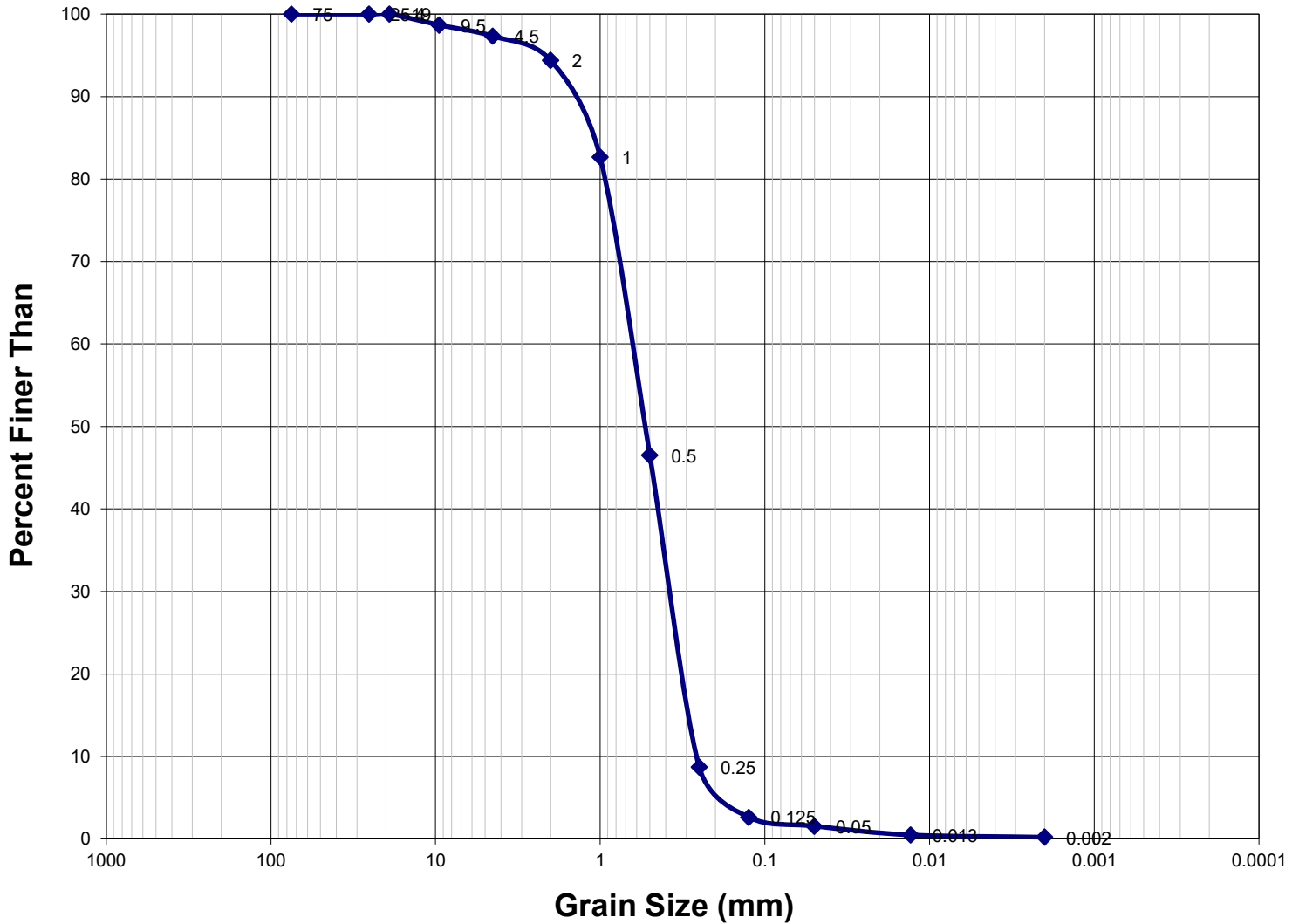
Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	2
Coarse Sand	2.0mm - 4.75mm	2
Medium Sand	0.425mm - 2.0mm	27
Fine Sand	0.075mm - 0.425mm	60
Fines	< 0.075mm	10

Canadian Soil Survey Committee (CSSC)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	4
Sand	0.05mm - 2mm	88
Silt	0.002mm - 0.05mm	7
Clay	< 0.002mm	0

Texture Sample contains material greater than 4.75mm. T

Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

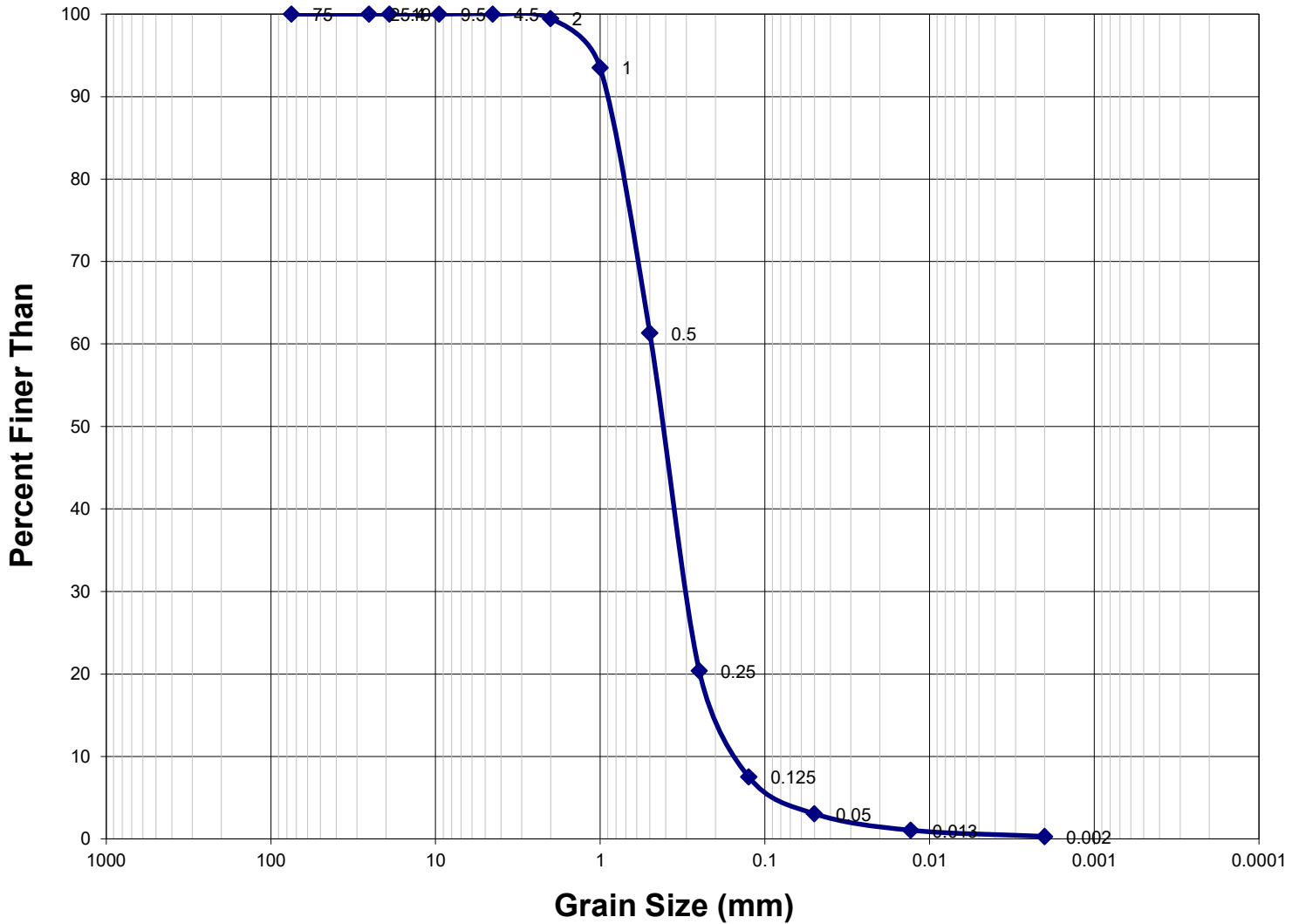
Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	3
Coarse Sand	2.0mm - 4.75mm	3
Medium Sand	0.425mm - 2.0mm	48
Fine Sand	0.075mm - 0.425mm	45
Fines	< 0.075mm	2

Canadian Soil Survey Committee (CSSC)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	6
Sand	0.05mm - 2mm	93
Silt	0.002mm - 0.05mm	1
Clay	< 0.002mm	0

Texture Sample contains material greater than 4.75mm. T

Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

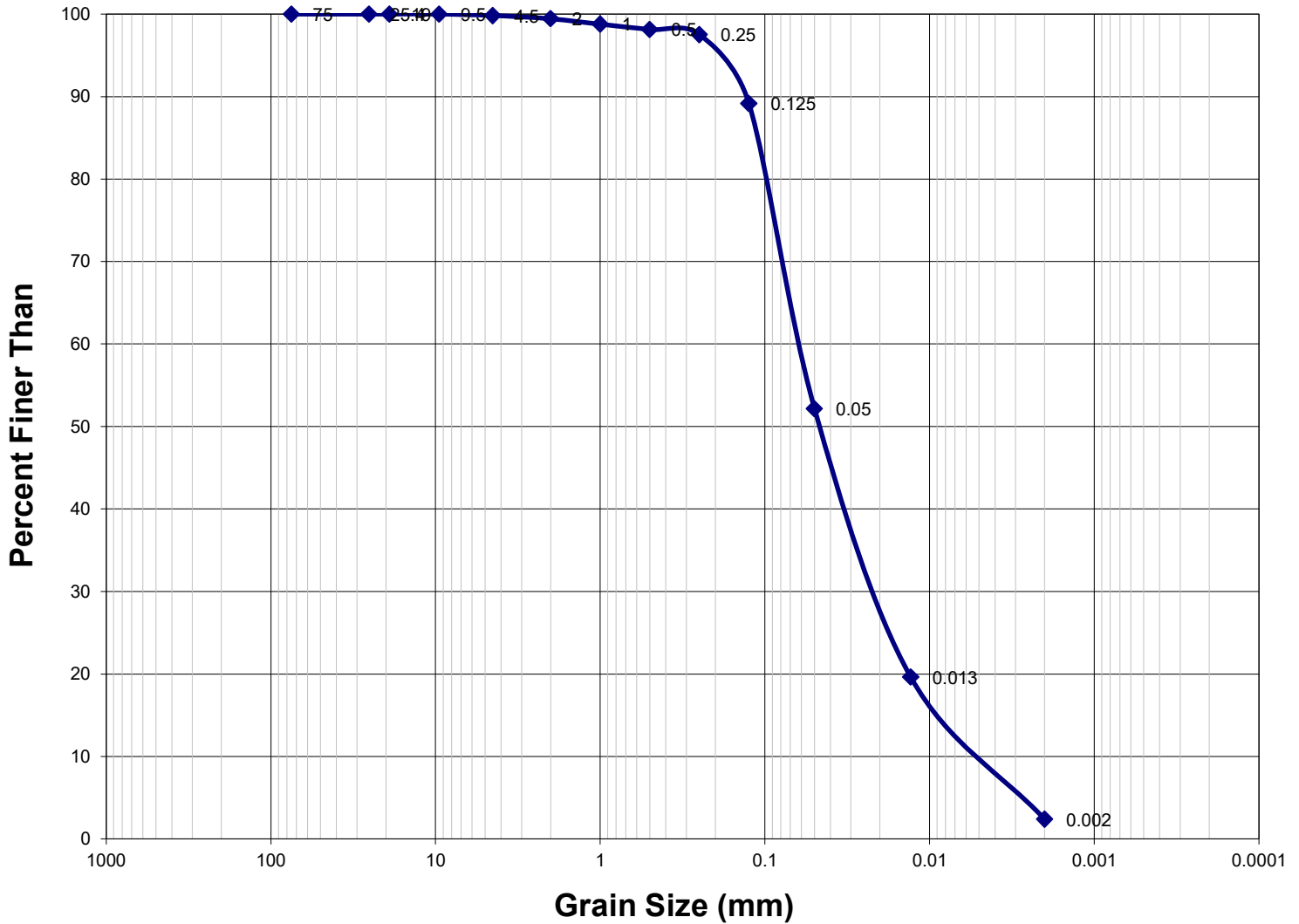
Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	0
Coarse Sand	2.0mm - 4.75mm	1
Medium Sand	0.425mm - 2.0mm	38
Fine Sand	0.075mm - 0.425mm	57
Fines	< 0.075mm	5

Canadian Soil Survey Committee (CSSC)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	1
Sand	0.05mm - 2mm	96
Silt	0.002mm - 0.05mm	3
Clay	< 0.002mm	0

Texture Sample contains material greater than 4.75mm. T

Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

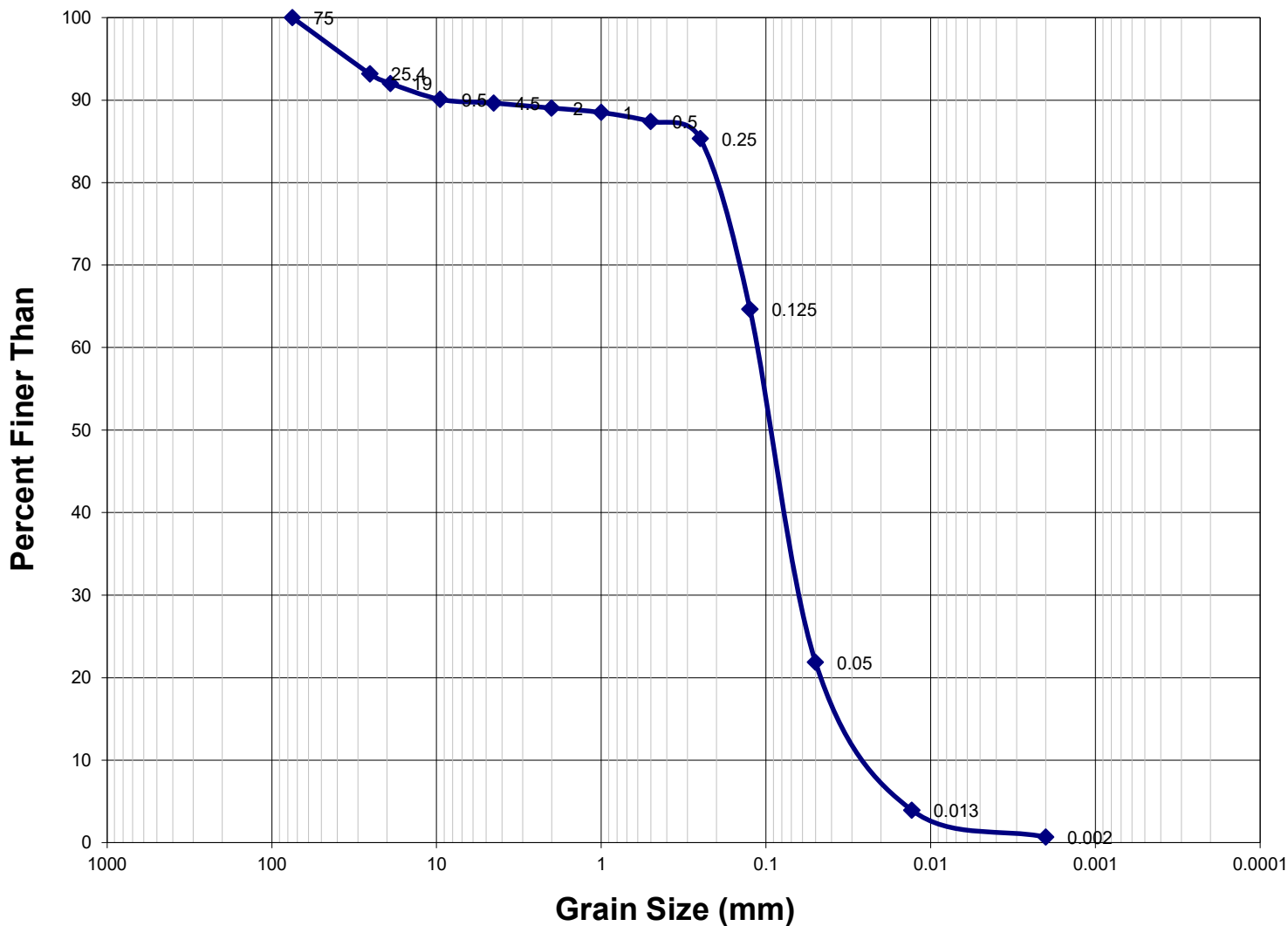
Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	0
Coarse Sand	2.0mm - 4.75mm	0
Medium Sand	0.425mm - 2.0mm	1
Fine Sand	0.075mm - 0.425mm	34
Fines	< 0.075mm	65

Canadian Soil Survey Committee (CSSC)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	1
Sand	0.05mm - 2mm	47
Silt	0.002mm - 0.05mm	50
Clay	< 0.002mm	2

Texture Sample contains material greater than 4.75mm. T

Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

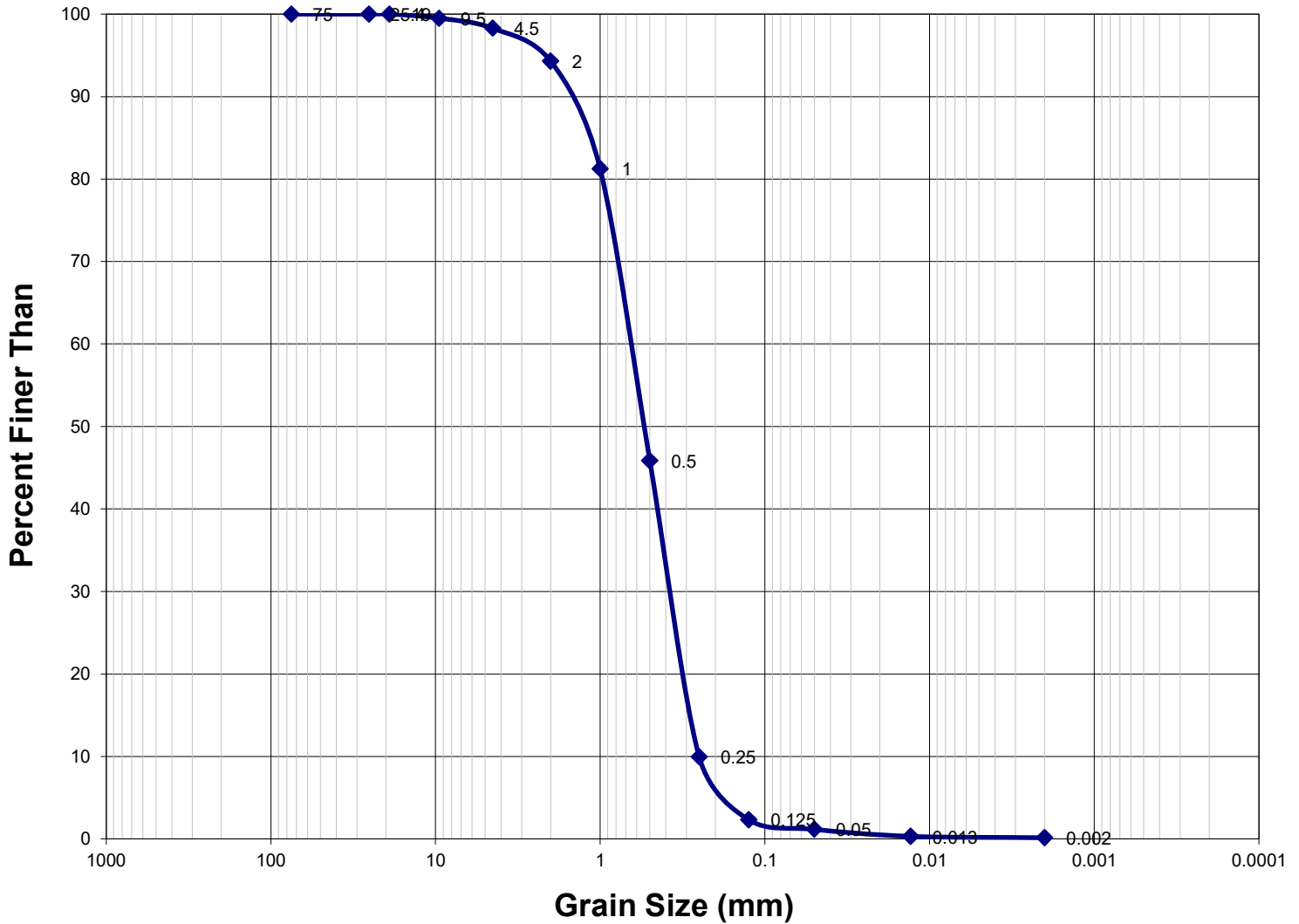
Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	10
Coarse Sand	2.0mm - 4.75mm	1
Medium Sand	0.425mm - 2.0mm	2
Fine Sand	0.075mm - 0.425mm	51
Fines	< 0.075mm	36

Canadian Soil Survey Committee (CSSC)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	11
Sand	0.05mm - 2mm	67
Silt	0.002mm - 0.05mm	21
Clay	< 0.002mm	1

Texture Sample contains material greater than 4.75mm. T

Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

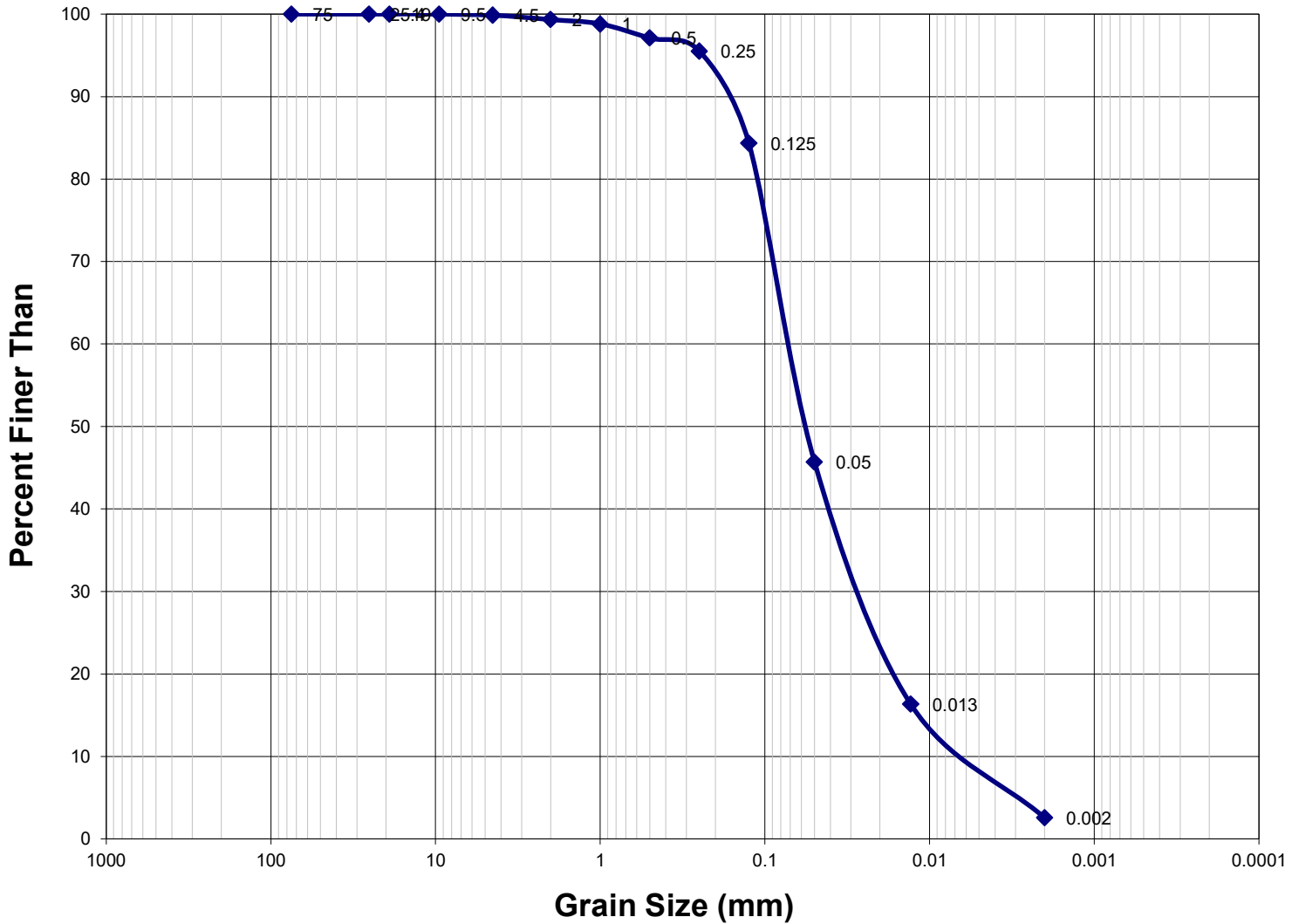
Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	2
Coarse Sand	2.0mm - 4.75mm	4
Medium Sand	0.425mm - 2.0mm	48
Fine Sand	0.075mm - 0.425mm	44
Fines	< 0.075mm	2

Canadian Soil Survey Committee (CSSC)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	6
Sand	0.05mm - 2mm	93
Silt	0.002mm - 0.05mm	1
Clay	< 0.002mm	0

Texture Sample contains material greater than 4.75mm. T

Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

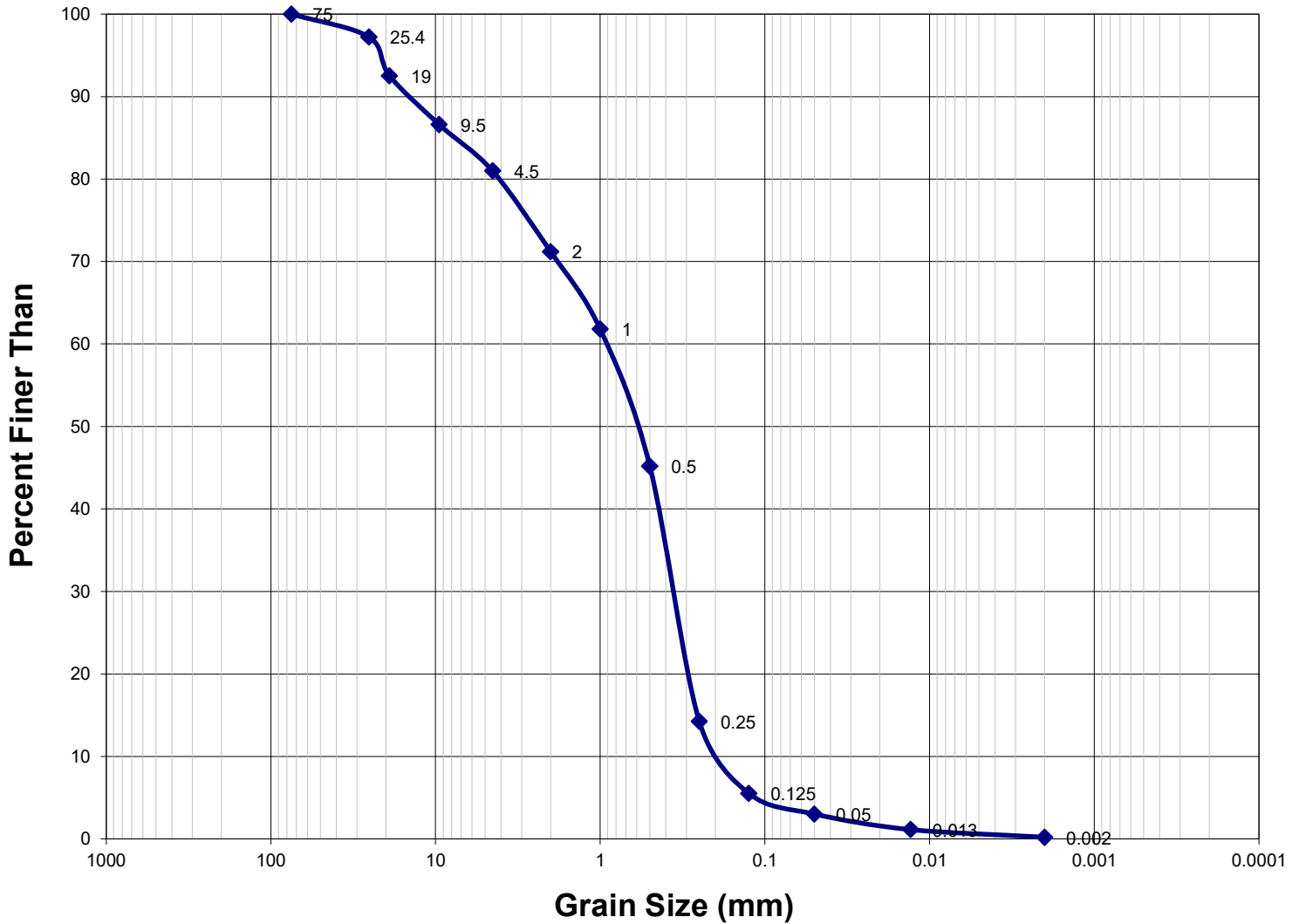
Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	0
Coarse Sand	2.0mm - 4.75mm	1
Medium Sand	0.425mm - 2.0mm	2
Fine Sand	0.075mm - 0.425mm	39
Fines	< 0.075mm	59

Canadian Soil Survey Committee (CSSC)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	1
Sand	0.05mm - 2mm	54
Silt	0.002mm - 0.05mm	43
Clay	< 0.002mm	3

Texture Sample contains material greater than 4.75mm. T

Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

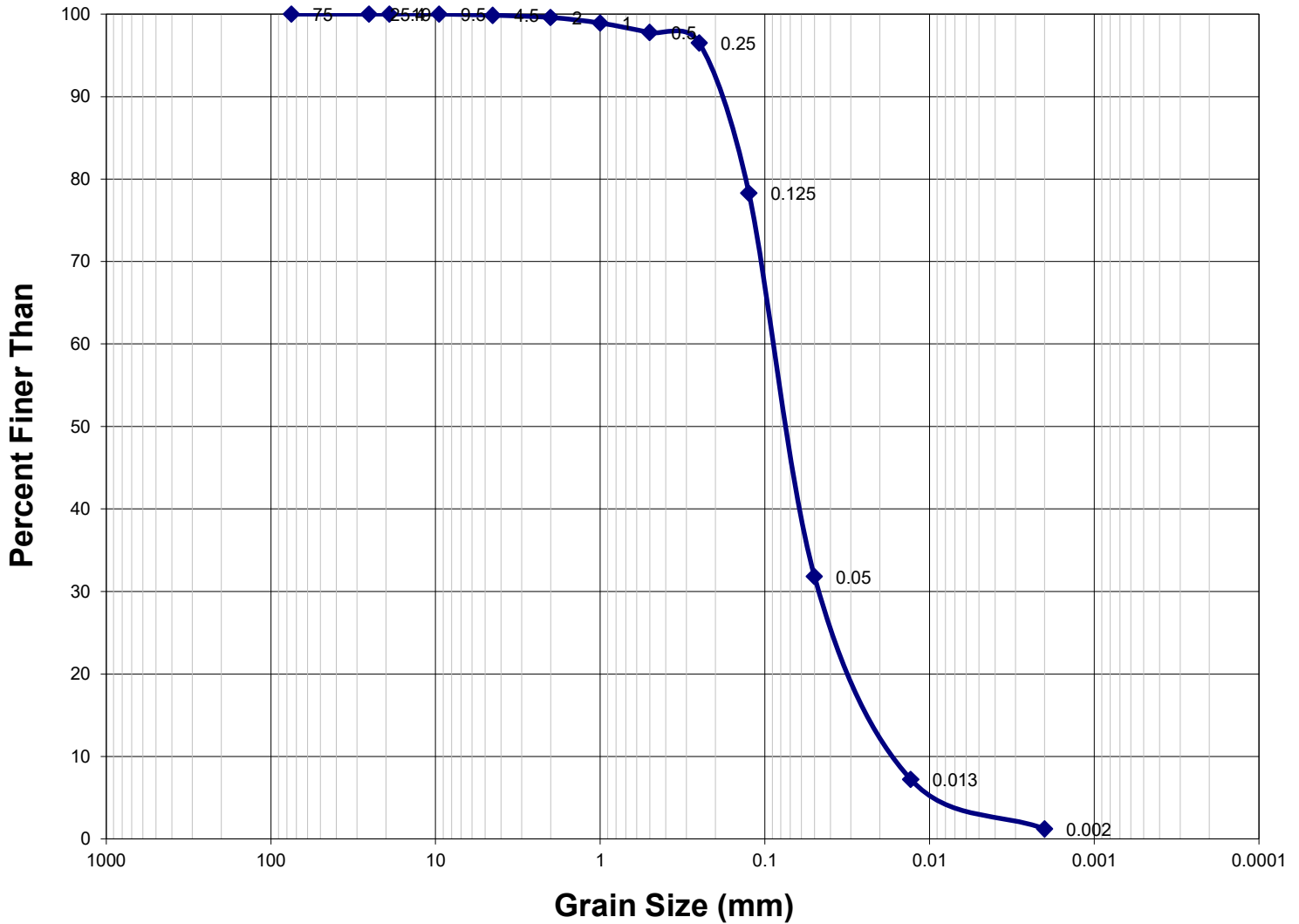
Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	19
Coarse Sand	2.0mm - 4.75mm	10
Medium Sand	0.425mm - 2.0mm	26
Fine Sand	0.075mm - 0.425mm	41
Fines	< 0.075mm	4

Canadian Soil Survey Committee (CSSC)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	29
Sand	0.05mm - 2mm	68
Silt	0.002mm - 0.05mm	3
Clay	< 0.002mm	0

Texture Sample contains material greater than 4.75mm. T

Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

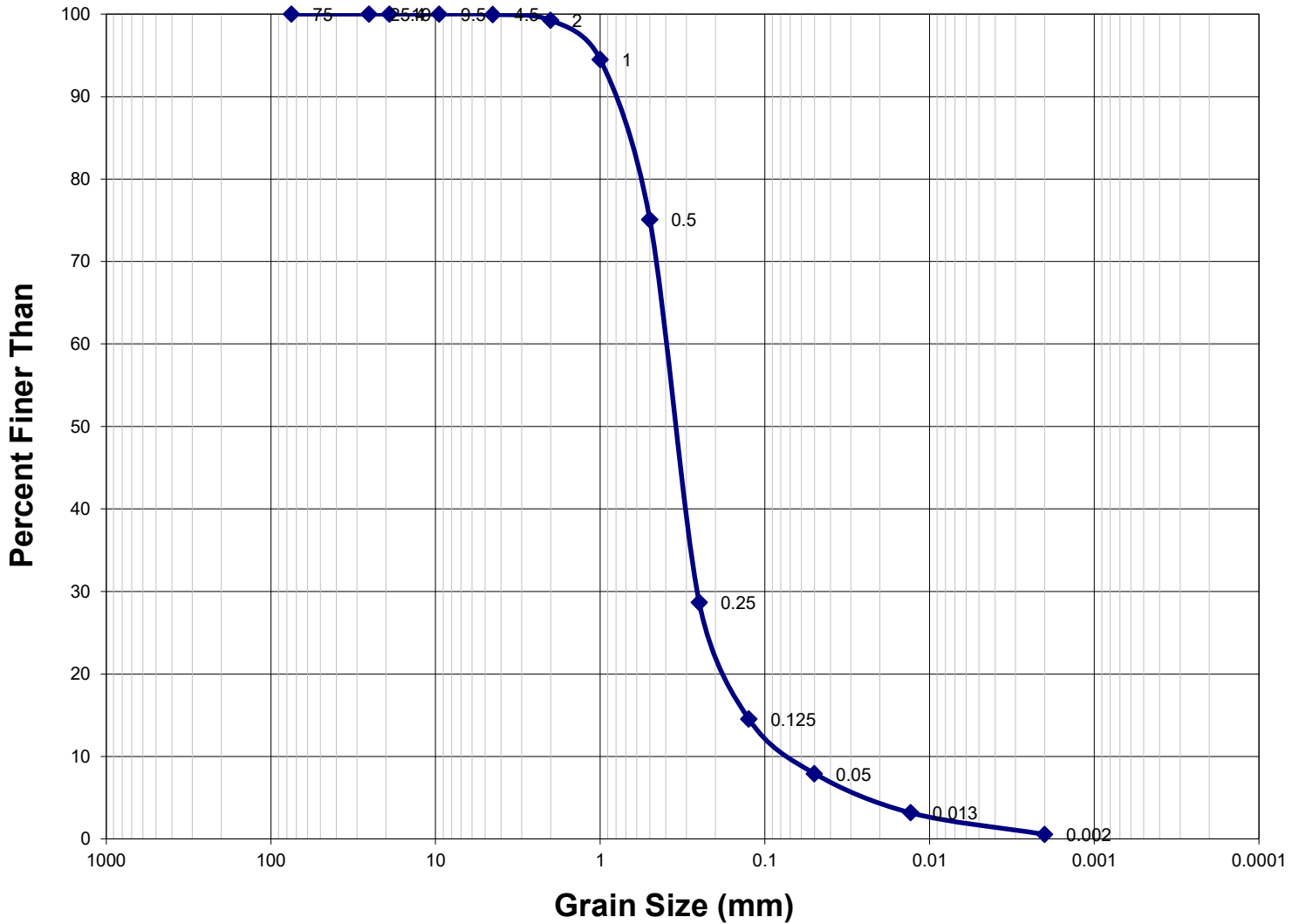
Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	0
Coarse Sand	2.0mm - 4.75mm	0
Medium Sand	0.425mm - 2.0mm	2
Fine Sand	0.075mm - 0.425mm	50
Fines	< 0.075mm	47

Canadian Soil Survey Committee (CSSC)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	0
Sand	0.05mm - 2mm	68
Silt	0.002mm - 0.05mm	31
Clay	< 0.002mm	1

Texture Sample contains material greater than 4.75mm. T

Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

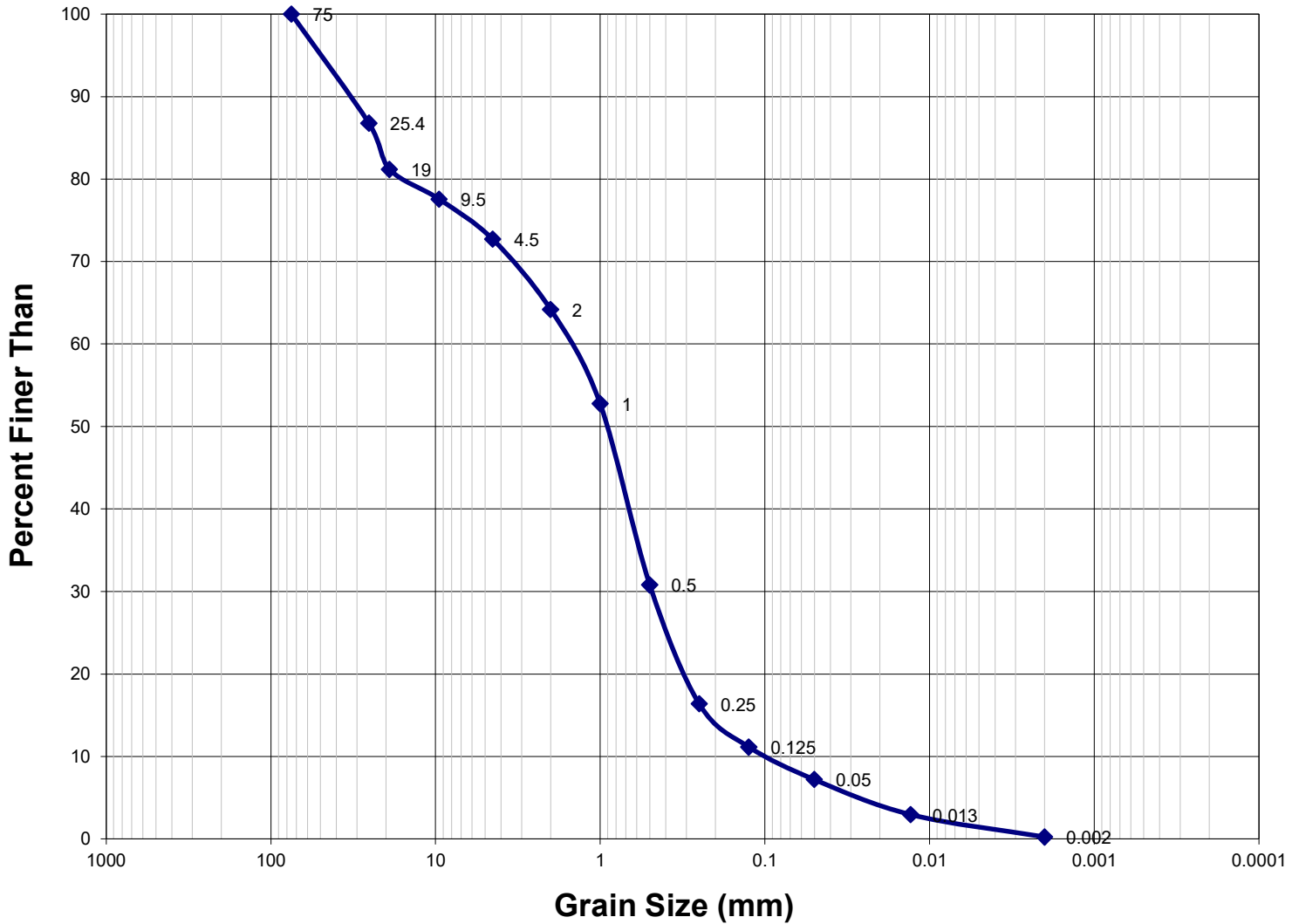
Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	0
Coarse Sand	2.0mm - 4.75mm	1
Medium Sand	0.425mm - 2.0mm	24
Fine Sand	0.075mm - 0.425mm	65
Fines	< 0.075mm	10

Canadian Soil Survey Committee (CSSC)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	1
Sand	0.05mm - 2mm	91
Silt	0.002mm - 0.05mm	7
Clay	< 0.002mm	1

Texture Sample contains material greater than 4.75mm. T

Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

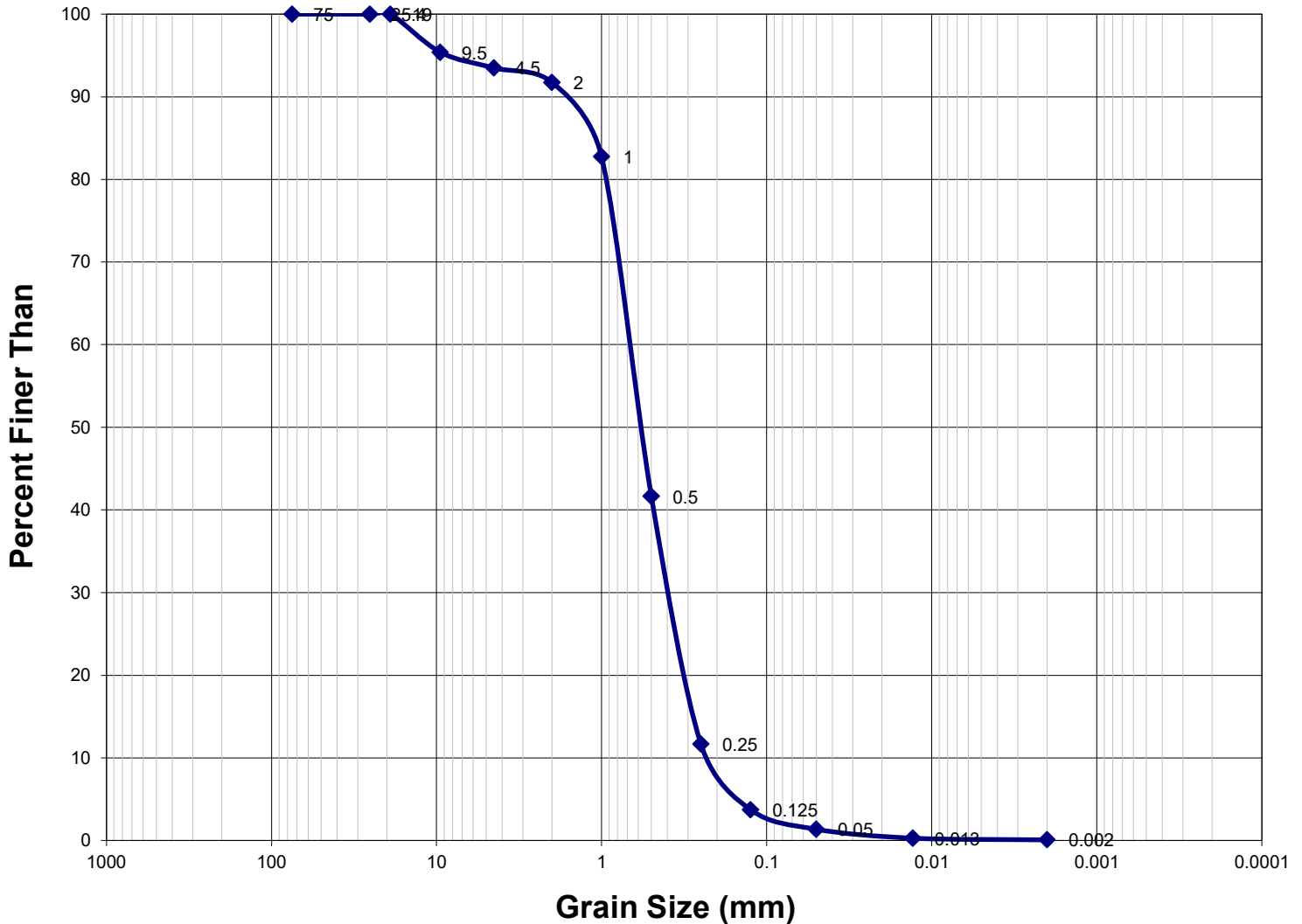
Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	27
Coarse Sand	2.0mm - 4.75mm	9
Medium Sand	0.425mm - 2.0mm	33
Fine Sand	0.075mm - 0.425mm	22
Fines	< 0.075mm	9

Canadian Soil Survey Committee (CSSC)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	36
Sand	0.05mm - 2mm	57
Silt	0.002mm - 0.05mm	7
Clay	< 0.002mm	0

Texture Sample contains material greater than 4.75mm. T

Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

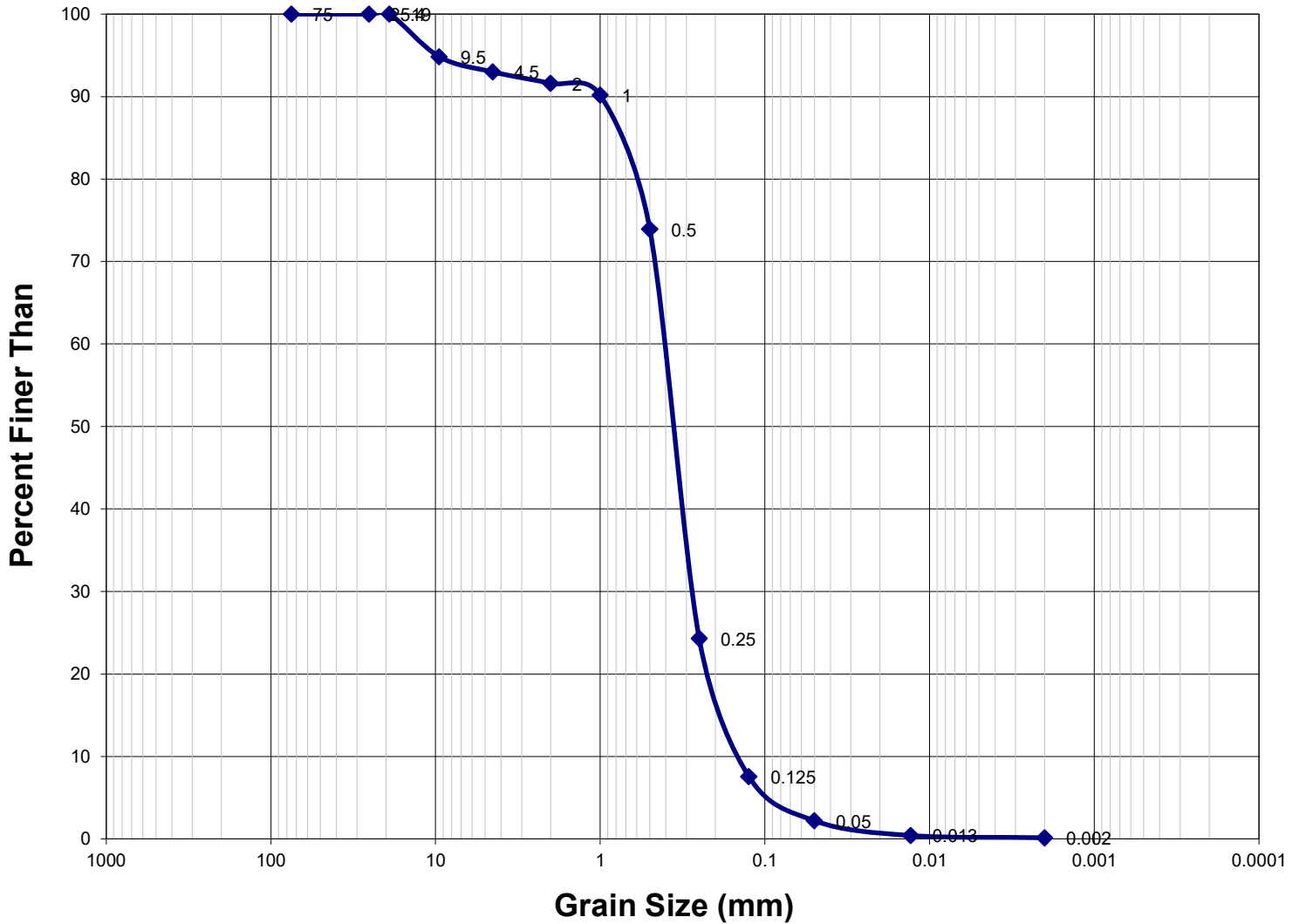
Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	6
Coarse Sand	2.0mm - 4.75mm	2
Medium Sand	0.425mm - 2.0mm	50
Fine Sand	0.075mm - 0.425mm	40
Fines	< 0.075mm	2

Canadian Soil Survey Committee (CSSC)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	8
Sand	0.05mm - 2mm	90
Silt	0.002mm - 0.05mm	1
Clay	< 0.002mm	0

Texture Sample contains material greater than 4.75mm. T

Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

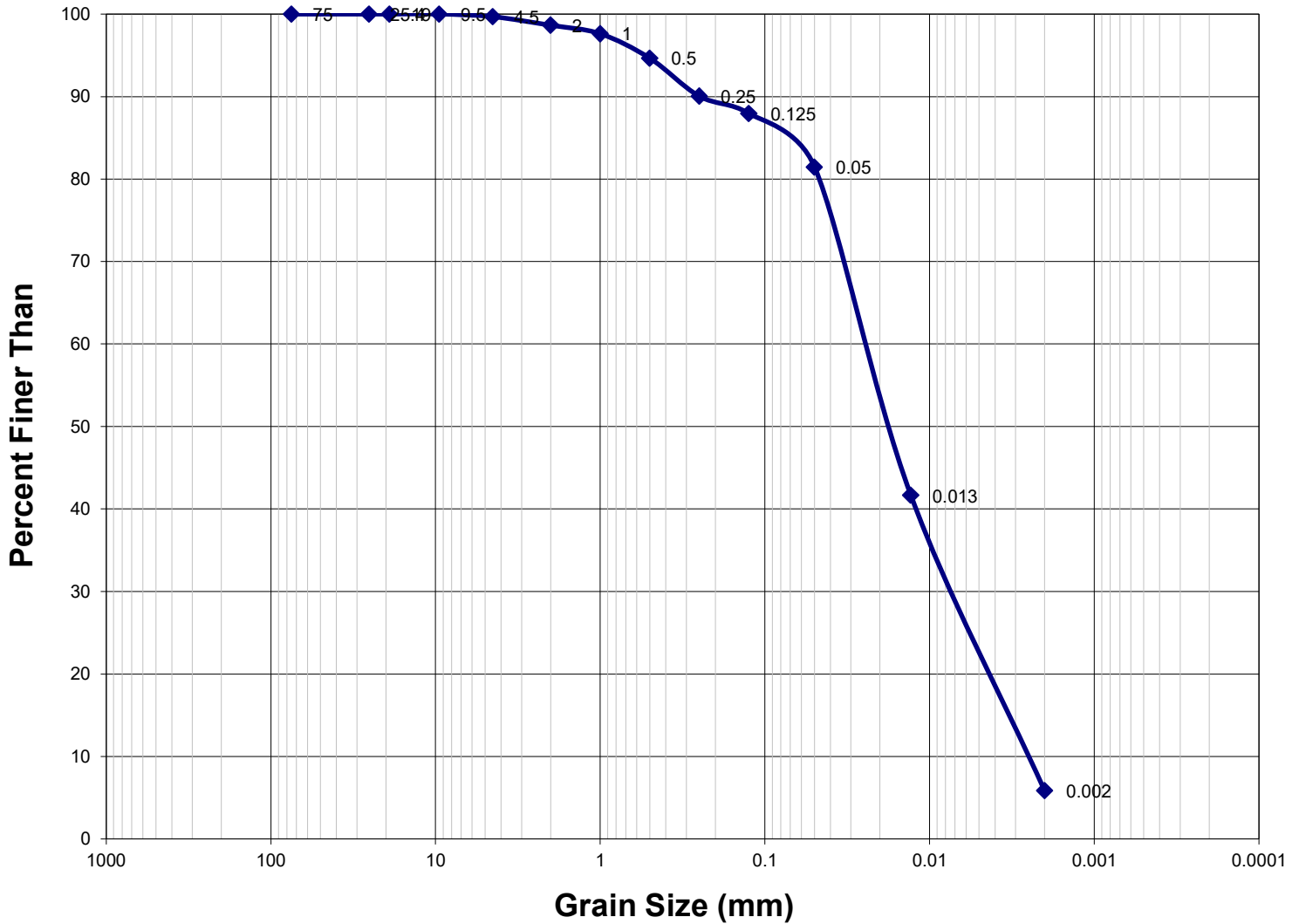
Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	7
Coarse Sand	2.0mm - 4.75mm	1
Medium Sand	0.425mm - 2.0mm	18
Fine Sand	0.075mm - 0.425mm	70
Fines	< 0.075mm	4

Canadian Soil Survey Committee (CSSC)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	8
Sand	0.05mm - 2mm	89
Silt	0.002mm - 0.05mm	2
Clay	< 0.002mm	0

Texture Sample contains material greater than 4.75mm. T

Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

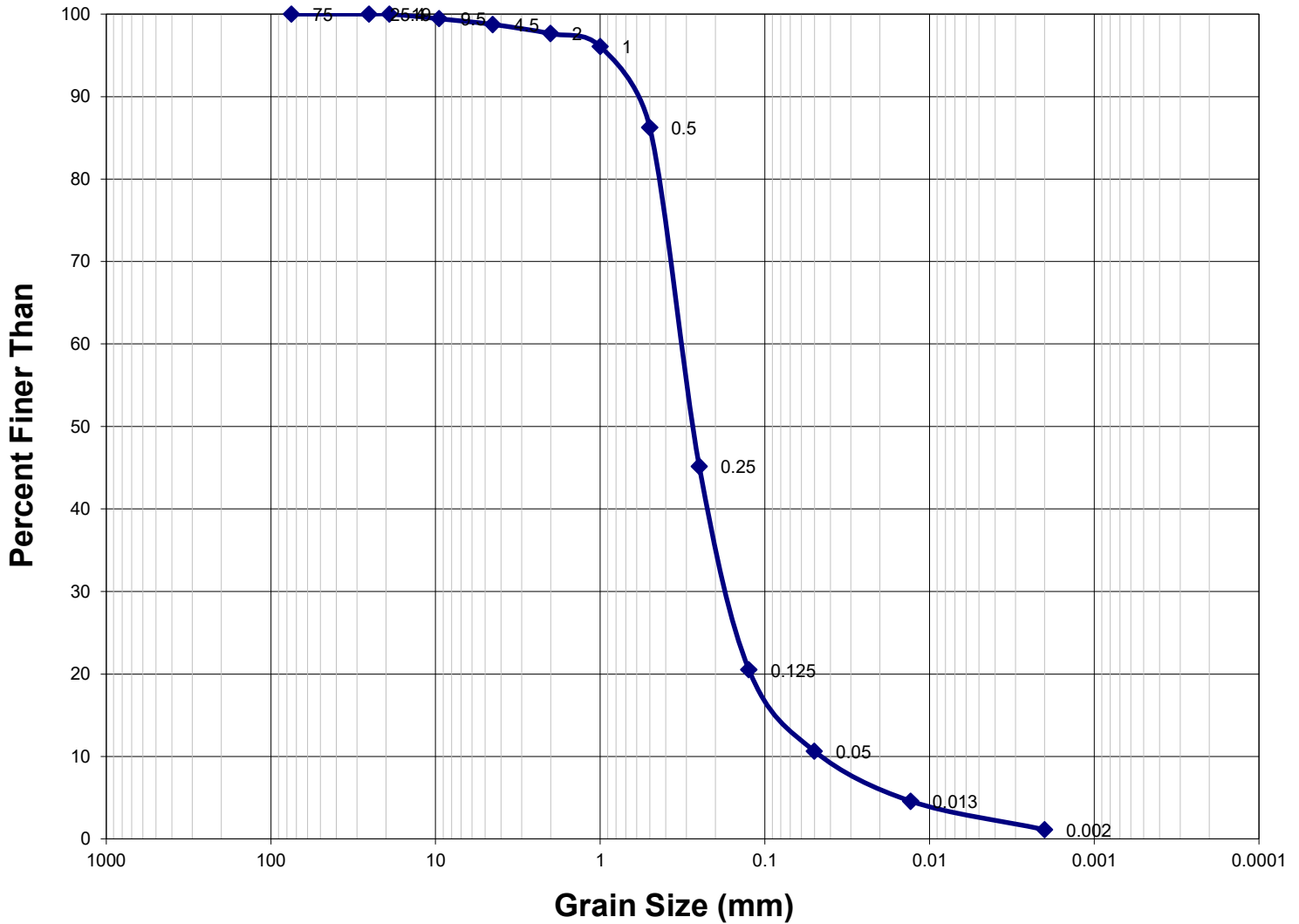
Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	0
Coarse Sand	2.0mm - 4.75mm	1
Medium Sand	0.425mm - 2.0mm	4
Fine Sand	0.075mm - 0.425mm	11
Fines	< 0.075mm	84

Canadian Soil Survey Committee (CSSC)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	1
Sand	0.05mm - 2mm	17
Silt	0.002mm - 0.05mm	76
Clay	< 0.002mm	6

Texture Sample contains material greater than 4.75mm. T

Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

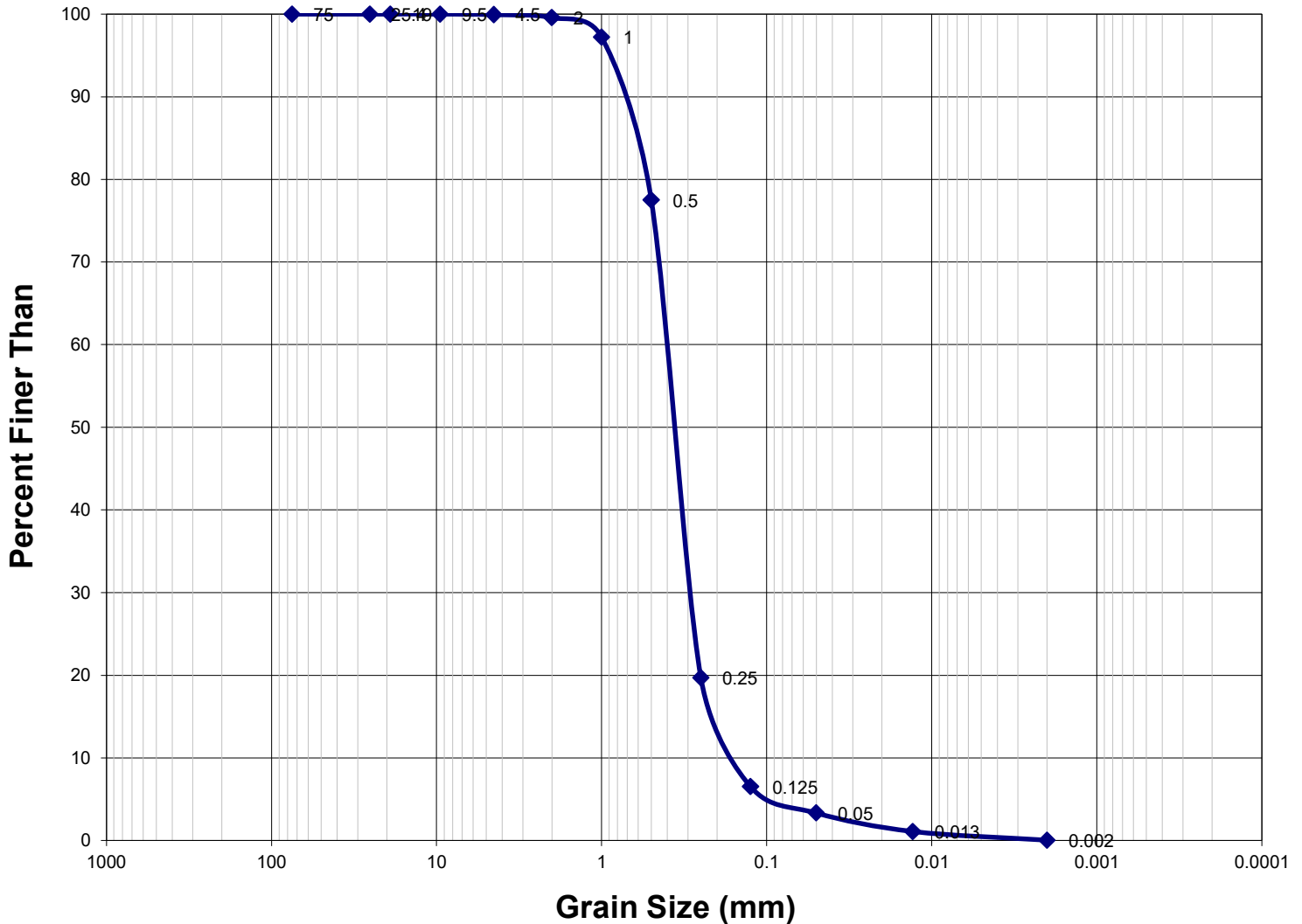
Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	1
Coarse Sand	2.0mm - 4.75mm	1
Medium Sand	0.425mm - 2.0mm	11
Fine Sand	0.075mm - 0.425mm	72
Fines	< 0.075mm	14

Canadian Soil Survey Committee (CSSC)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	2
Sand	0.05mm - 2mm	87
Silt	0.002mm - 0.05mm	10
Clay	< 0.002mm	1

Texture Sample contains material greater than 4.75mm. T

Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

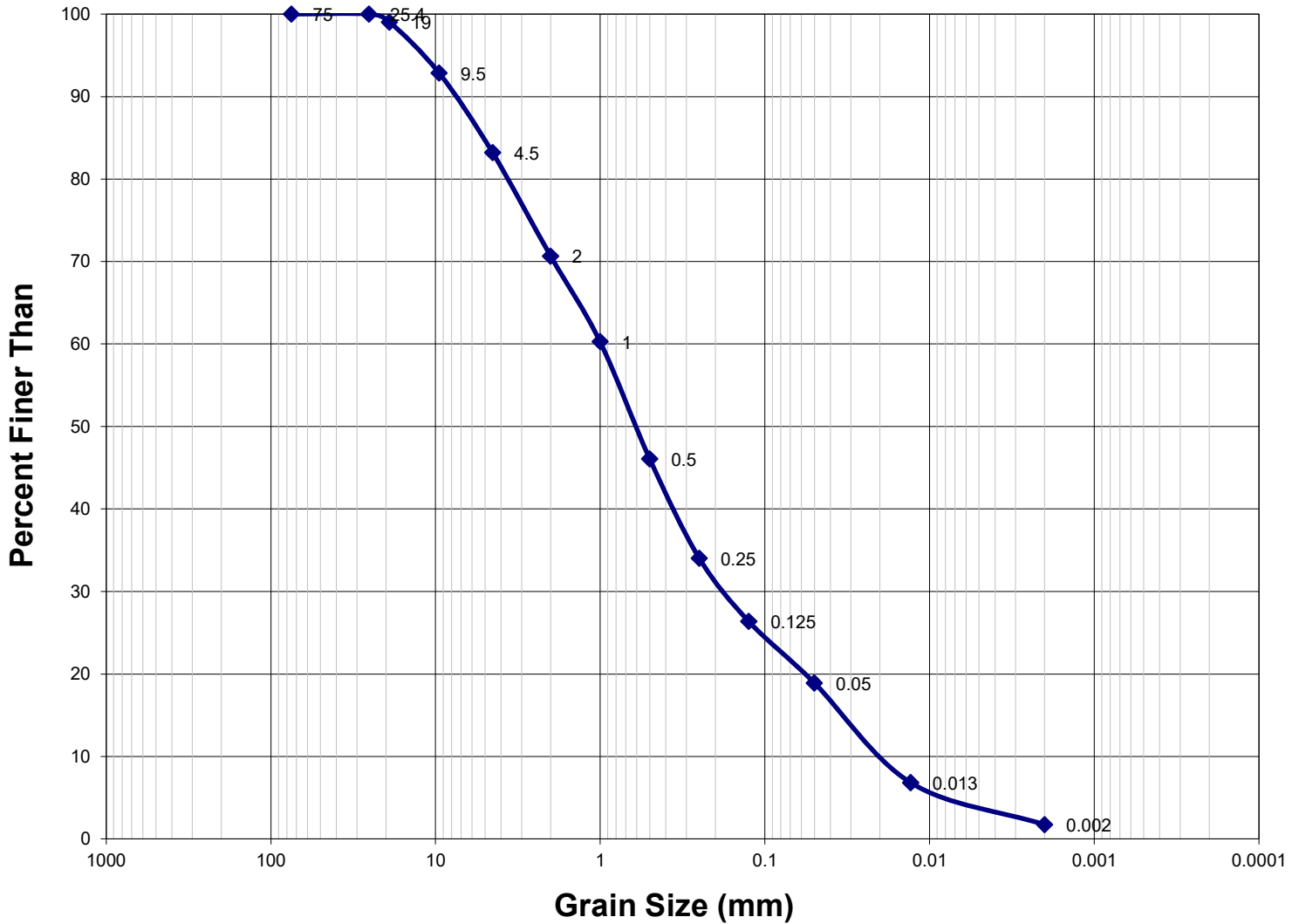
Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	0
Coarse Sand	2.0mm - 4.75mm	0
Medium Sand	0.425mm - 2.0mm	22
Fine Sand	0.075mm - 0.425mm	73
Fines	< 0.075mm	4

Canadian Soil Survey Committee (CSSC)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	0
Sand	0.05mm - 2mm	96
Silt	0.002mm - 0.05mm	3
Clay	< 0.002mm	0

Texture Sample contains material greater than 4.75mm. T

Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

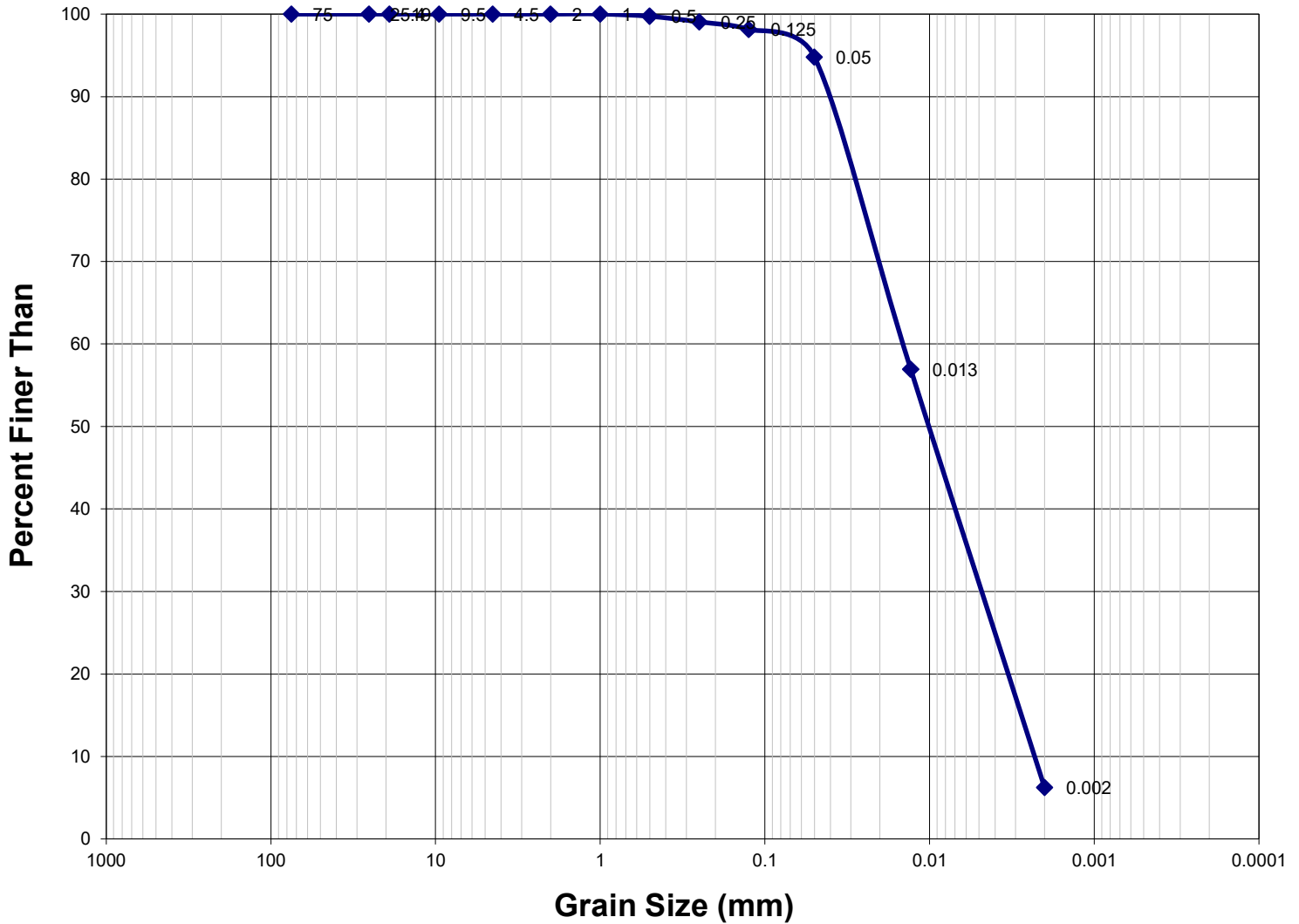
Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	16
Coarse Sand	2.0mm - 4.75mm	13
Medium Sand	0.425mm - 2.0mm	25
Fine Sand	0.075mm - 0.425mm	25
Fines	< 0.075mm	21

Canadian Soil Survey Committee (CSSC)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	29
Sand	0.05mm - 2mm	52
Silt	0.002mm - 0.05mm	17
Clay	< 0.002mm	2

Texture Sample contains material greater than 4.75mm. T

Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

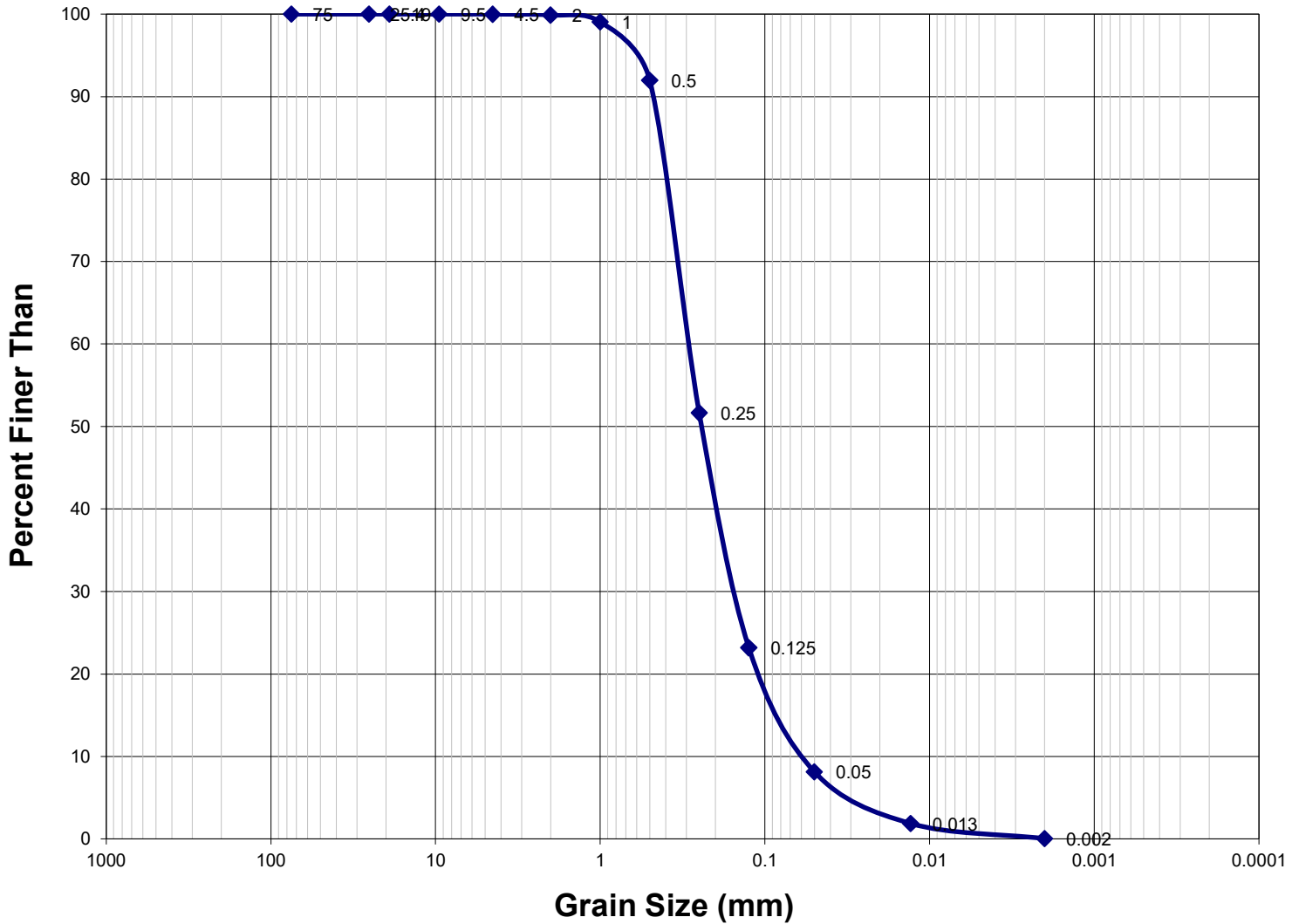
Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	0
Coarse Sand	2.0mm - 4.75mm	0
Medium Sand	0.425mm - 2.0mm	0
Fine Sand	0.075mm - 0.425mm	4
Fines	< 0.075mm	96

Canadian Soil Survey Committee (CSCS)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	0
Sand	0.05mm - 2mm	5
Silt	0.002mm - 0.05mm	89
Clay	< 0.002mm	6

Texture: Silt

Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

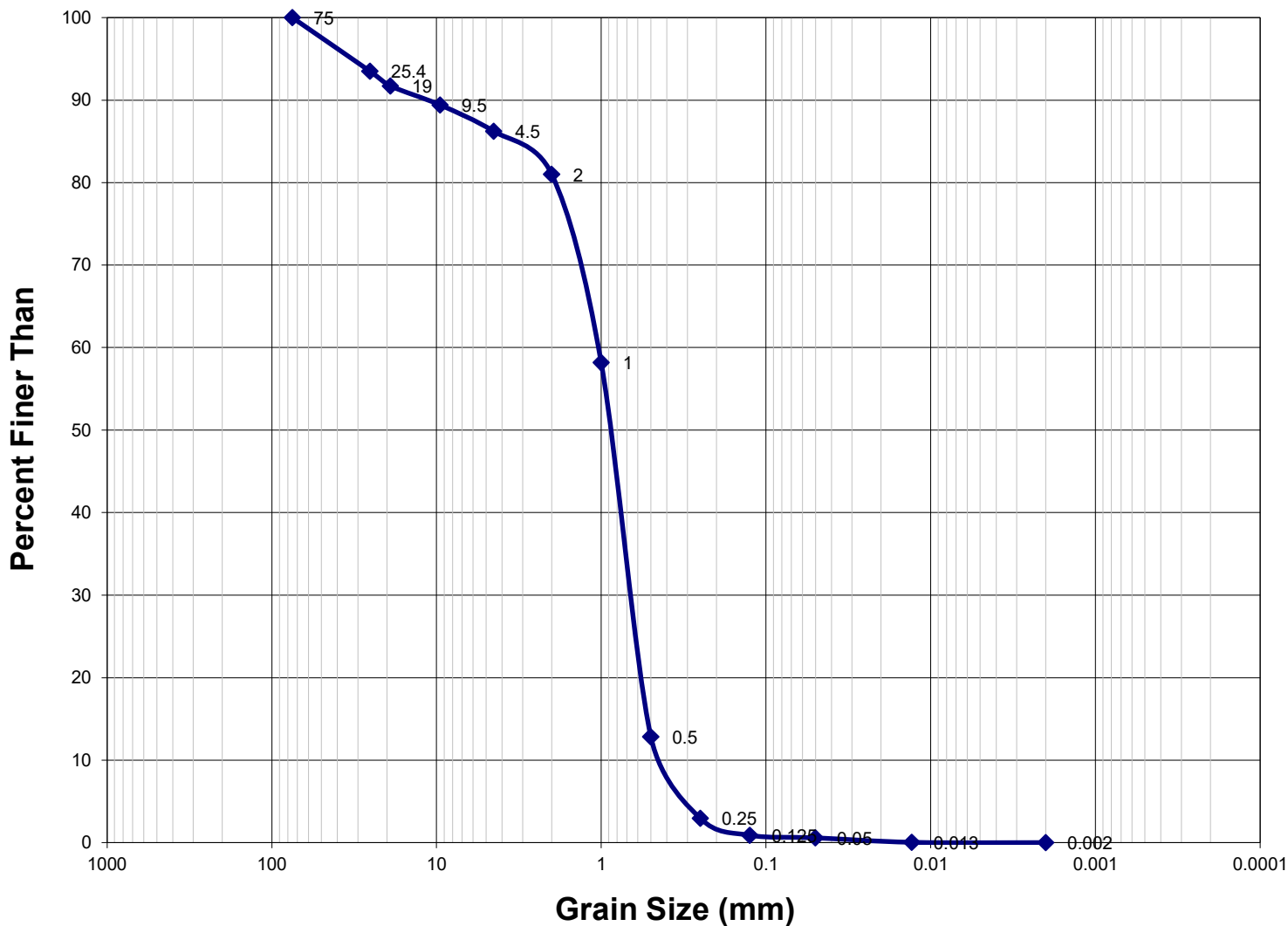
Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	0
Coarse Sand	2.0mm - 4.75mm	0
Medium Sand	0.425mm - 2.0mm	8
Fine Sand	0.075mm - 0.425mm	79
Fines	< 0.075mm	13

Canadian Soil Survey Committee (CSSC)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	0
Sand	0.05mm - 2mm	92
Silt	0.002mm - 0.05mm	8
Clay	< 0.002mm	0

Texture Sample contains material greater than 4.75mm. T

Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	14
Coarse Sand	2.0mm - 4.75mm	5
Medium Sand	0.425mm - 2.0mm	68
Fine Sand	0.075mm - 0.425mm	12
Fines	< 0.075mm	1

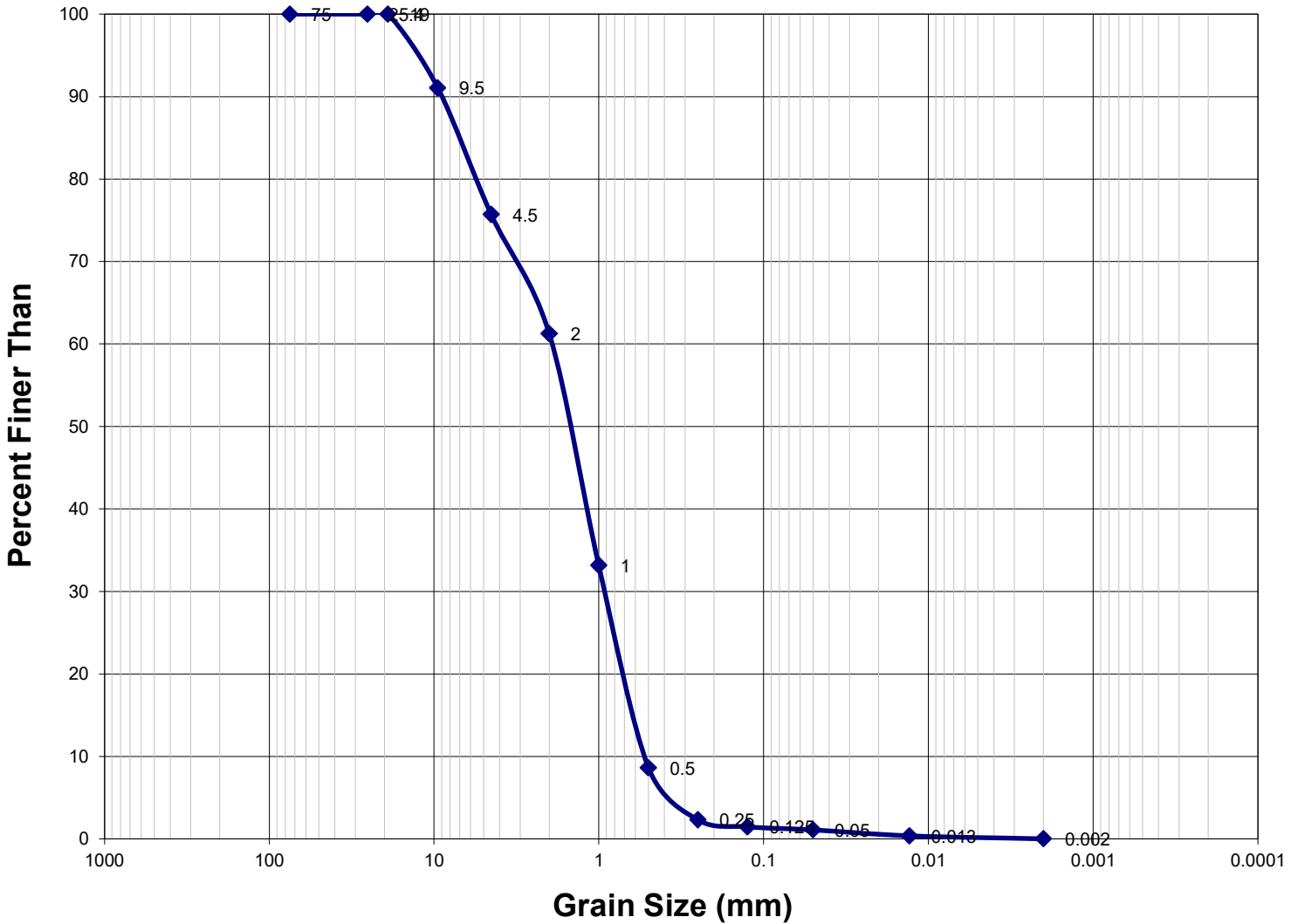
Canadian Soil Survey Committee (CSCS)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	19
Sand	0.05mm - 2mm	80
Silt	0.002mm - 0.05mm	1
Clay	< 0.002mm	0

Texture Sample contains material greater than 4.75mm. T



Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

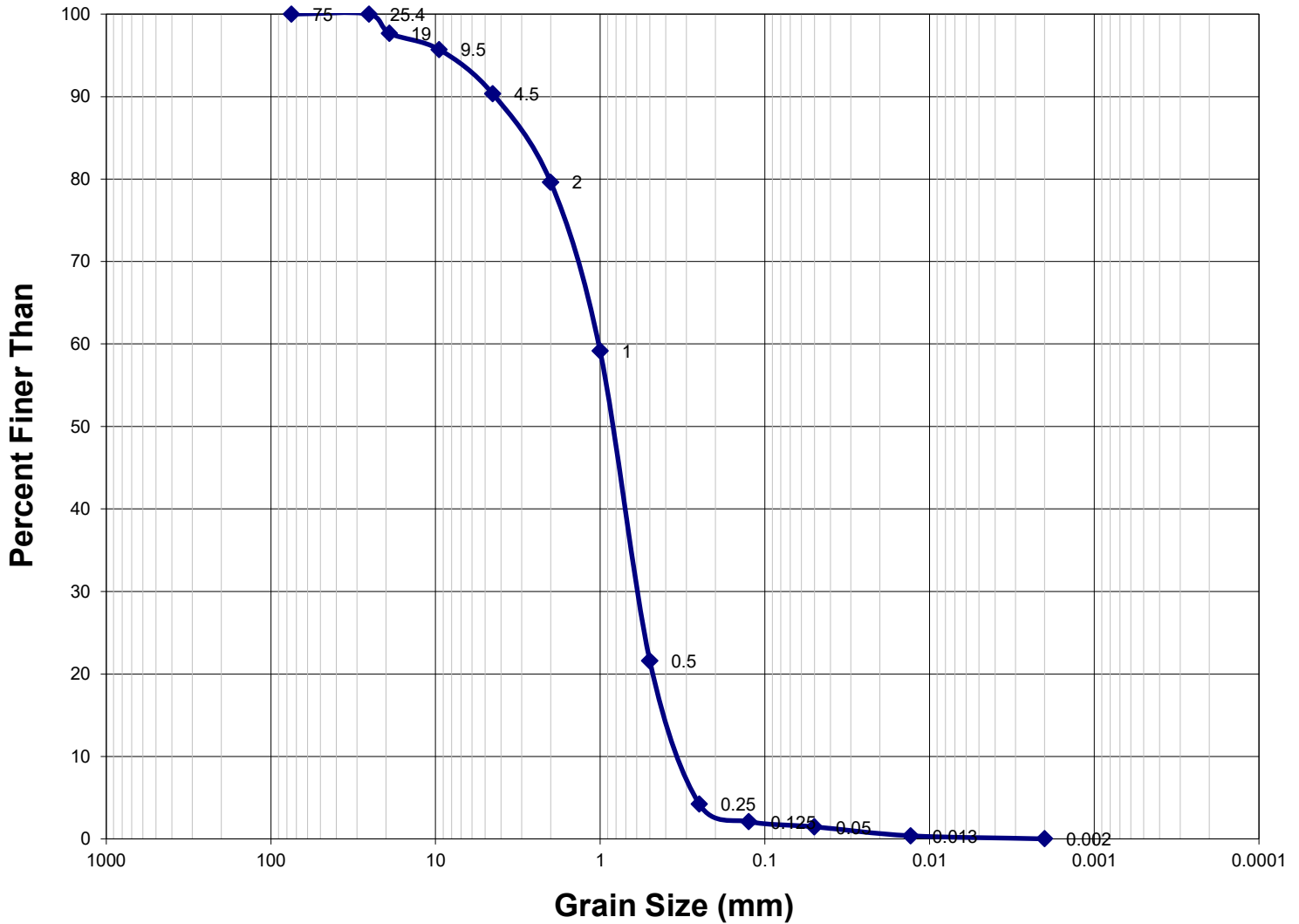
Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	24
Coarse Sand	2.0mm - 4.75mm	15
Medium Sand	0.425mm - 2.0mm	53
Fine Sand	0.075mm - 0.425mm	7
Fines	< 0.075mm	1

Canadian Soil Survey Committee (CSCS)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	39
Sand	0.05mm - 2mm	60
Silt	0.002mm - 0.05mm	1
Clay	< 0.002mm	0

Texture Sample contains material greater than 4.75mm. T

Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

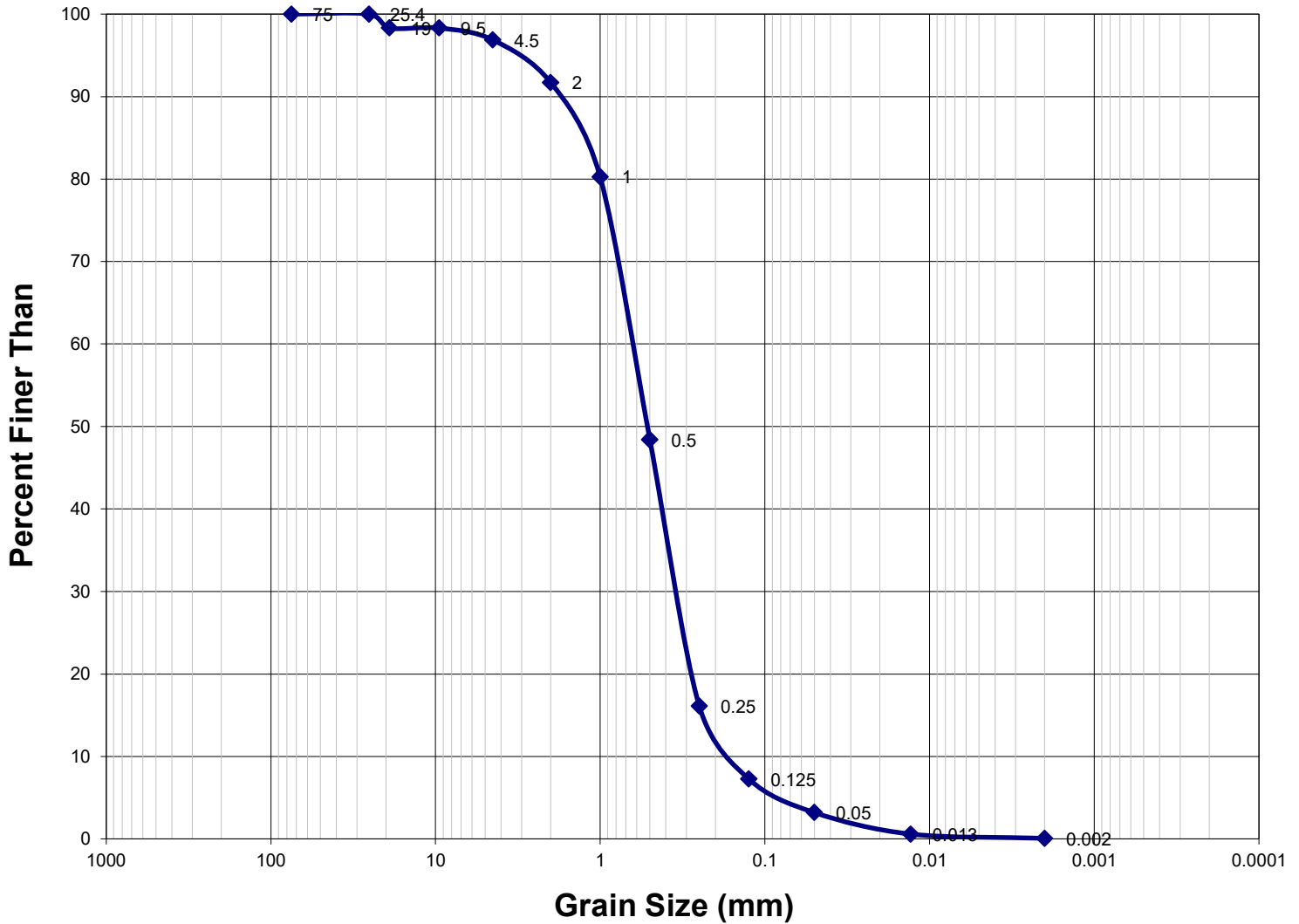
Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	9
Coarse Sand	2.0mm - 4.75mm	11
Medium Sand	0.425mm - 2.0mm	58
Fine Sand	0.075mm - 0.425mm	20
Fines	< 0.075mm	2

Canadian Soil Survey Committee (CSSC)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	20
Sand	0.05mm - 2mm	78
Silt	0.002mm - 0.05mm	1
Clay	< 0.002mm	0

Texture Sample contains material greater than 4.75mm. T

Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

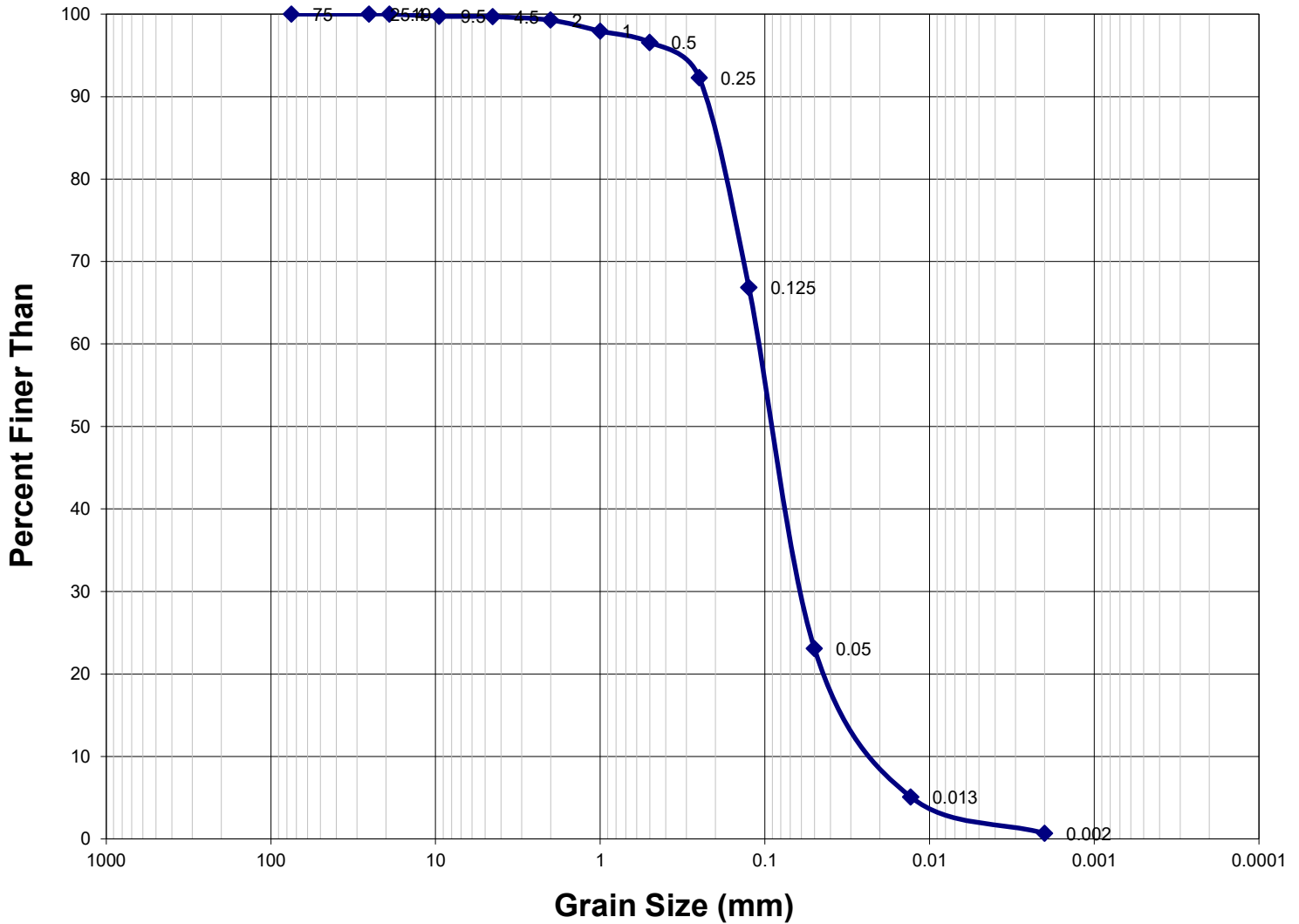
Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	3
Coarse Sand	2.0mm - 4.75mm	5
Medium Sand	0.425mm - 2.0mm	43
Fine Sand	0.075mm - 0.425mm	44
Fines	< 0.075mm	5

Canadian Soil Survey Committee (CSSC)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	8
Sand	0.05mm - 2mm	89
Silt	0.002mm - 0.05mm	3
Clay	< 0.002mm	0

Texture Sample contains material greater than 4.75mm. T

Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

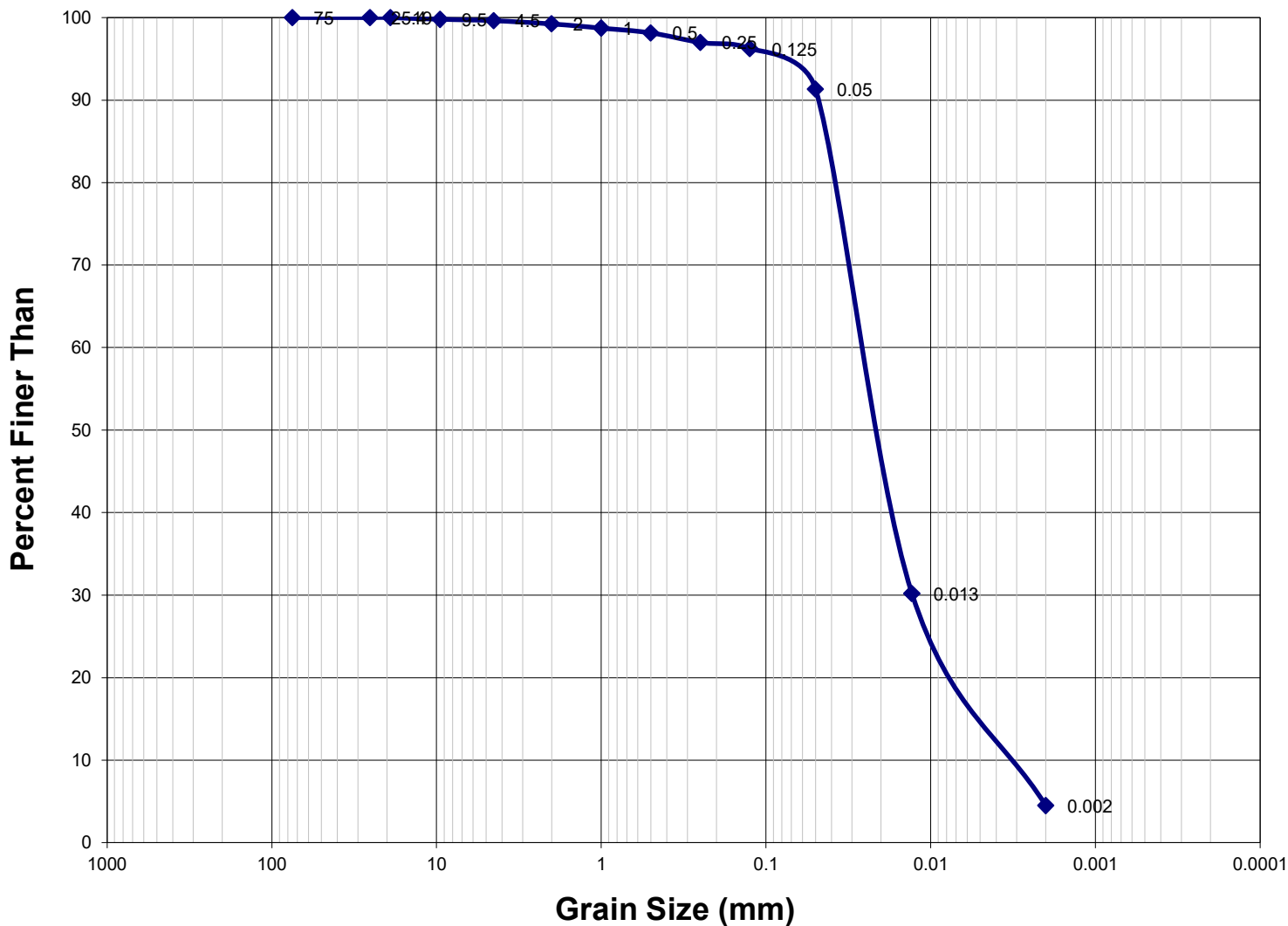
Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	0
Coarse Sand	2.0mm - 4.75mm	0
Medium Sand	0.425mm - 2.0mm	3
Fine Sand	0.075mm - 0.425mm	59
Fines	< 0.075mm	38

Canadian Soil Survey Committee (CSSC)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	1
Sand	0.05mm - 2mm	76
Silt	0.002mm - 0.05mm	22
Clay	< 0.002mm	1

Texture Sample contains material greater than 4.75mm. T

Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

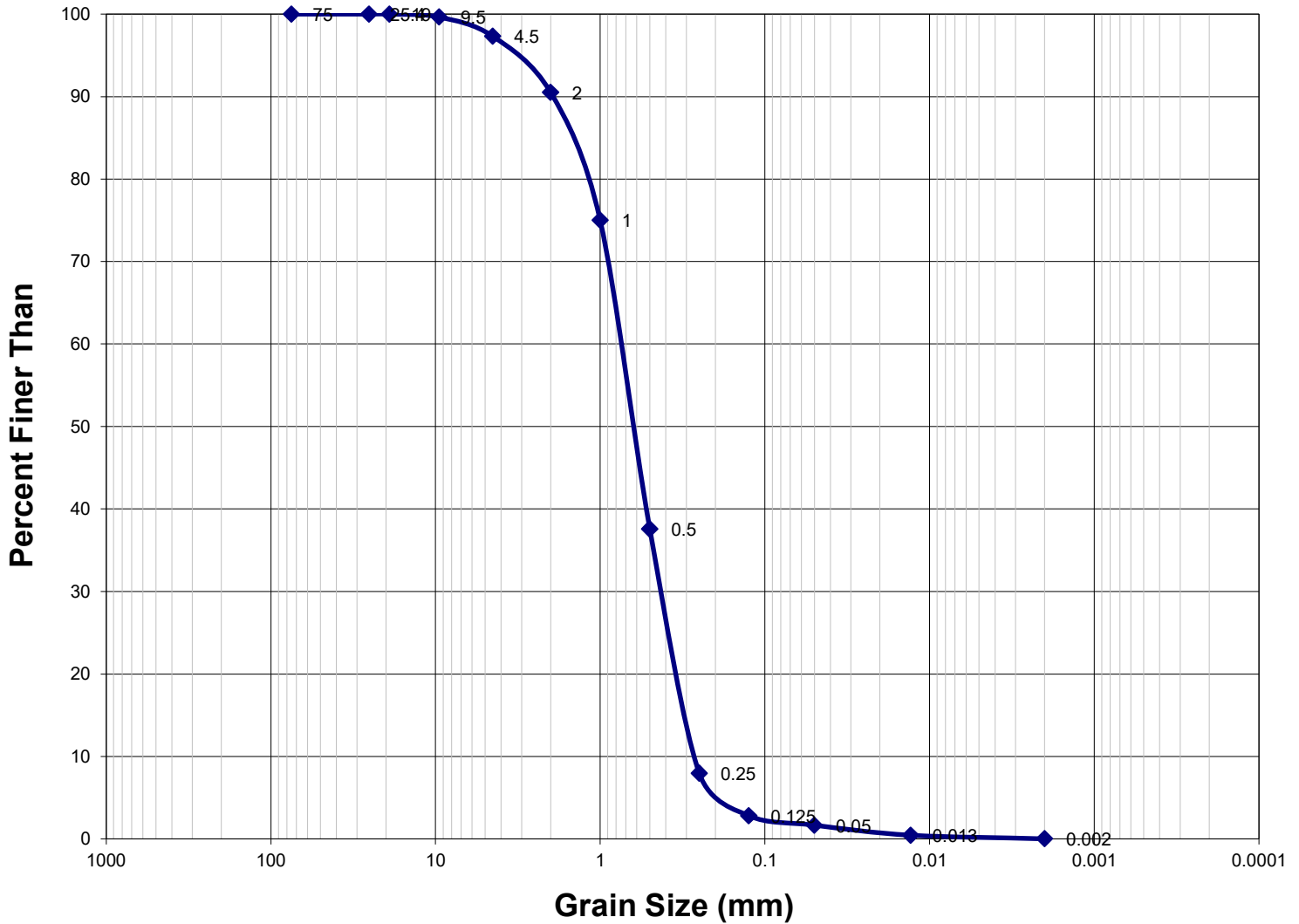
Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	0
Coarse Sand	2.0mm - 4.75mm	0
Medium Sand	0.425mm - 2.0mm	1
Fine Sand	0.075mm - 0.425mm	5
Fines	< 0.075mm	93

Canadian Soil Survey Committee (CSSC)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	1
Sand	0.05mm - 2mm	8
Silt	0.002mm - 0.05mm	87
Clay	< 0.002mm	5

Texture Sample contains material greater than 4.75mm. T

Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

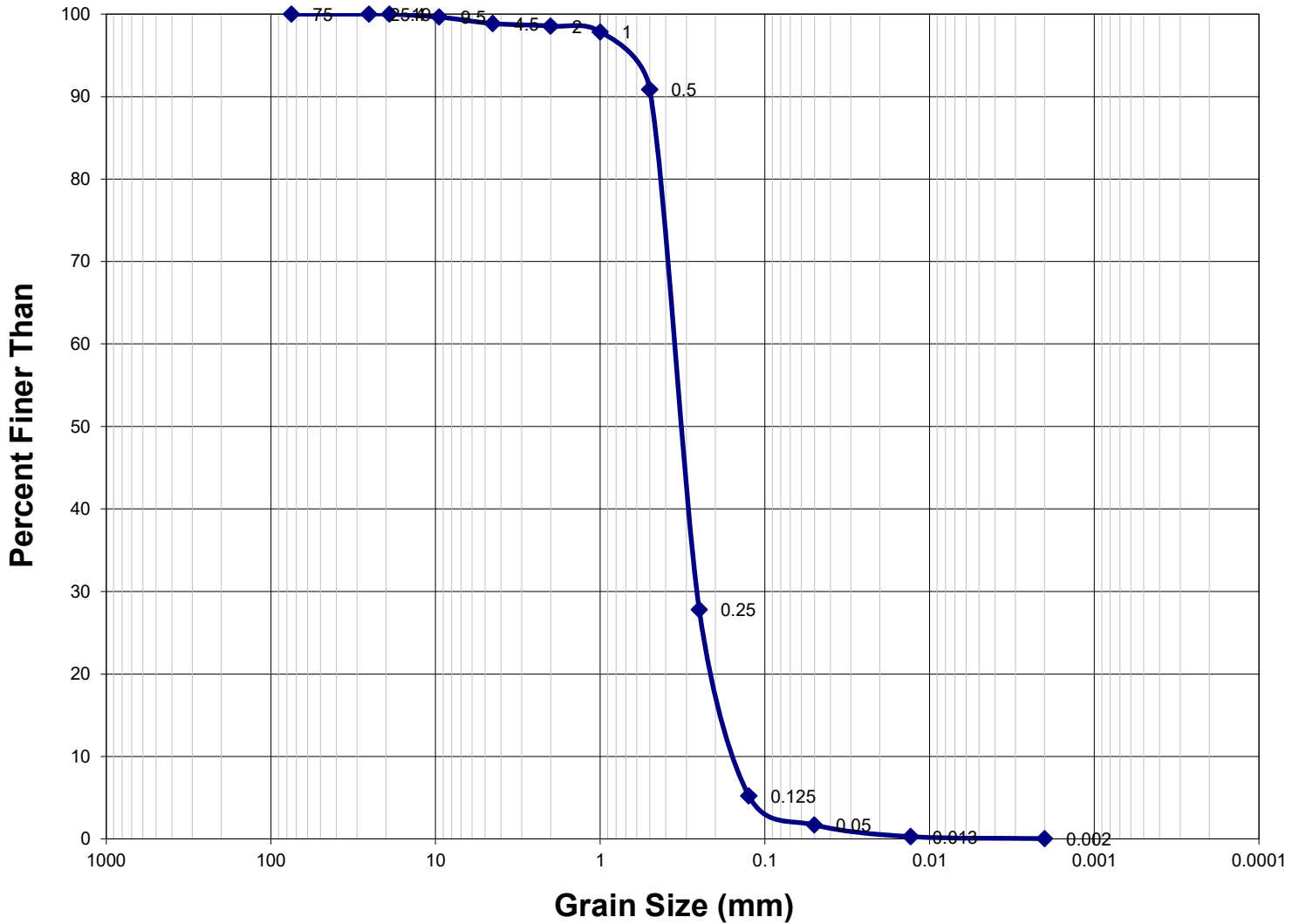
Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	3
Coarse Sand	2.0mm - 4.75mm	7
Medium Sand	0.425mm - 2.0mm	53
Fine Sand	0.075mm - 0.425mm	36
Fines	< 0.075mm	2

Canadian Soil Survey Committee (CSSC)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	10
Sand	0.05mm - 2mm	89
Silt	0.002mm - 0.05mm	2
Clay	< 0.002mm	0

Texture Sample contains material greater than 4.75mm. T

Particle Size Distribution Curve



Summary of Results

Unified Soil Classification System (USCS)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	4.75mm - 3"	1
Coarse Sand	2.0mm - 4.75mm	0
Medium Sand	0.425mm - 2.0mm	8
Fine Sand	0.075mm - 0.425mm	88
Fines	< 0.075mm	3

Canadian Soil Survey Committee (CSSC)

Size Class	Size Range	Wt. (%)
Cobbles	> 3"	0
Gravel	2mm - 3"	1
Sand	0.05mm - 2mm	97
Silt	0.002mm - 0.05mm	2
Clay	< 0.002mm	0

Texture Sample contains material greater than 4.75mm. T



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Affix ALS barcode label here (lab use only)

COC Number: 17-862379

Page 1 of 6

Report To Contact and company name below will appear on the final report: Company: <u>Solebs Engineering</u> Contact: <u>Solebs Engineering</u> Phone: <u>778-814-3187</u> Company address below will appear on the final report:		Report Format / Distribution Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EOD (DIGITAL) Quality Control (QC) Report with Report <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: <u>Solebs Engineering</u> Email 2 Email 3					
City/Province Postal Code Invoice To Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Copy of Invoice with Report <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO Company: Contact:		Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax Email 2 Project Information ALS Account # / Quote #: <u>VA20-CHMH100-013</u> Job #: PO / AFE: LSD:					
ALS Lab Work Order # (lab use only): <u>3271</u> ALS Sample # (lab use only)		ALS Contact: Date Time Sample Type					
Sample Identification and/or Coordinates (This description will appear on the report)		Oil and Gas Required Fields (client use) AFE/Cost Center: PO# Major/Minor Code: Routing Code: Requisitioner: Location:					
1 2 3 4 5 6 7 8 9 10 11 12	20 MW - 04 - 50A 20 MW - 04 - 50B 20 MW - 04 - 50C 20 MW - 04 - 50D 20 MW - 04 - 50E 20 MW - 04 - 50F 20 MW - 04 - 50G 20 MW - 04 - 50H 20 MW - 04 - 50I 20 MW - 04 - 50J 20 MW - 04 - 50K 20 MW - 04 - 50L	12-10-20 12-10-20 12-10-20 12-10-20 12-10-20 12-12-20 12-12-20 12-12-20 12-12-20 12-12-20 12-12-20	16:15 16:20 16:30 16:35 9:30 9:35 9:40 9:45 9:50 9:55 10:00	Soil Soil Soil Soil Soil Soil Soil Soil Soil Soil Soil	5 5 5 5 5 5 5 5 5 5 5 5	Environmental Division Vancouver Work Order Reference VA20C3271 Telephone: +1 604 253 4188	SUSPECTED HAZARD (see Special Instructions) SAMPLES ON HOLD
Drinking Water (DW) Samples (client use) Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input type="checkbox"/> NO Are samples for human consumption/ use? <input type="checkbox"/> YES <input type="checkbox"/> NO		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)					
SHIPMENT RELEASE (client use) Released by: <u>[Signature]</u> Date: <u>12/13/2020 15:20</u> Received by: <u>R. Hong</u> Date: <u>Dec 13, 2020</u> Time: <u>3:15pm</u>		INITIAL SHIPMENT RECEPTION (lab use only) Received by: _____ Date: _____ Time: _____					
SHIPPING INFORMATION REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION		FINAL SHIPMENT RECEPTION (lab use only) Received by: _____ Date: _____ Time: _____					

White - Laboratory Copy Yellow - Client Copy

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

ALS 988 0001



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Affix ALS barcode label here (lab use only)

COC Number: 17- 862380

Page 2 of 6

Contact and company name below will appear on the final report

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

1 Business day [E - 100%]

Same Day, Weekend or Statutory holiday [E2 - 200% (Laboratory opening fees may apply)]

Emergency [E3 - 300%]

4 day [P4-20%] 3 day [P3-25%] 2 day [P2-50%]

Date and Time Required for all E&P TATs: dd-mm-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 (FP) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	Number of Containers	SUSPECTED HAZARD (see Special Instructions)
13	20MW-04-SOX	12-12-20	10:30	SOX	1	X
14	20MW-05-SOA	12-12-20	10:15		1	
15	20MW-05-SOB	12-12-20	10:20		1	
16	20MW-05-SOC	12-12-20	15:05		1	
17	20MW-05-SOD	12-12-20	15:15		1	
18	20MW-05-SOE	12-12-20	15:20		1	
19	20MW-05-SOF	12-12-20	15:20		1	
20	20MW-06-SOA	12-12-20	11:25		1	
21	20MW-06-SOB	11-12-20	11:30		1	
22	20MW-06-SOC	11-12-20	11:35		1	
23	20MW-06-SOD	12-12-20	16:10		1	
24	20MW-06-SOE	12-12-20	16:15		1	X

Report Format / Distribution

Select Report Format: PDF EXCEL EDD (DIGITAL)

Quality Control (QC) Report with Report: YES NO

Compare Results to Criteria on Report - provide data below if box checked

Select Distribution: EMAIL MAIL FAX

Email 1 or Fax: _____

Email 2: _____

Email 3: _____

Select Invoice Distribution: EMAIL MAIL FAX

Invoice Distribution: _____

Oil and Gas Required Fields (client use)

AFE/Cost Center: _____ PO#: _____

Major/Minor Code: _____ Routing Code: _____

Requisitioner: _____

Location: _____

ALS Contact: _____

ALS Lab Work Order # (lab use only): _____

ALS Contact: _____

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

Drinking Water (DW) Samples (client use)

Are samples taken from a Regulated DW System? YES NO

Are samples for human consumption/ use? YES NO

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)

Released by: [Signature] Date: 12/13/20 Time: 15:21

INITIAL SHIPMENT RECEPTION (lab use only)

Received by: _____ Date: _____ Time: _____

FINAL SHIPMENT RECEPTION (lab use only)

Received by: _____ Date: _____ Time: _____

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT 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
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

Affix ALS barcode label here
(lab use only)



Report To Contact and company name below will appear on the final report

Company: _____

Contact: _____

Phone: _____

Company address below will appear on the final report

Street: _____

City/Province: _____

Postal Code: _____

Invoice To: Same as Report To YES NO

Copy of Invoice with Report: YES NO

Company: _____

Contact: _____

Project Information

ALS Account # / Quote #: _____

Job #: _____

PO / A/E: _____

LSD: _____

Report Format / Distribution

Select Report Format: PDF EXCEL EDD (DIGITAL)

Quality Control (QC) Report with Report: YES NO

Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: EMAIL MAIL FAX

Email 1 or Fax: _____

Email 2: _____

Email 3: _____

Select Invoice Distribution: EMAIL FAX

Email 1 or Fax: _____

Email 2: _____

Oil and Gas Required Fields (client use)

A/E/Cust. Center: _____ PO# _____

Major/Minor Code: _____ Routing Code: _____

Requisitioner: _____

Location: _____

ALS Contact: _____ Sampler: _____

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type
25	ZOMW-06-SOF	12-12-20	16:20	SOF
26	ZOMW-07-SOA	11-12-20	10:40	↓
27	ZOMW-07-SOB	11-12-20	10:45	↓
28	ZOMW-07-SOC	11-12-20	10:50	↓
29	ZOMW-07-SOD	12-12-20	14:10	↓
30	ZOMW-08-SOA	11-12-20	14:15	↓
31	ZOMW-08-SOB	11-12-20	14:20	↓
32	ZOMW-08-SOC	11-12-20	14:25	↓
33	ZOMW-08-SOD	12-12-20	12:30	↓
34	ZOMW-08-SOE	12-12-20	12:35	↓
35	ZOMW-08-SOF	12-12-20	12:40	↓
36	ZOMW-09-SOA	11-12-20	11:00	SOF

NUMBER OF CONTAINERS

Indicate Filled (F), Preserved (P) or Filtered and Preserved (FP) below

25	26	27	28	29	30	31	32	33	34	35	36

SUSPECTED HAZARD (see Special Instructions)

SAMPLES ON HOLD

DRINKING WATER (DW) SAMPLES (client use)

Are samples taken from a Regulated DW System? YES NO

Are samples for human consumption use? YES NO

SHIPPING RELEASE (client use)

Released by: _____ Date: 12/13/2020

SHIPMENT RECEPTION (lab use only)

Received by: _____ Date: _____

INITIAL SHIPMENT RECEPTION (lab use only)

Received by: _____ Date: _____

FINAL SHIPMENT RECEPTION (lab use only)

Received by: _____ Date: _____

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 _____



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Affix ALS barcode label here (lab use only)

COC Number: 17-862382

Page 4 of 6

Report To: Contact and company name below will appear on the final report.

Company: Select Report Format: PDF EXCEL EOD (DIGITAL)

Contact: Quality Control (QC) Report with Report YES NO

Phone: Compare Results to Criteria in Report - provide details below if box checked

Street: Select Distribution: EMAIL MAIL FAX

City/Province: Email 1 or Fax

Postal Code: Email 2

Invoice To: Same as Report YES NO

Company: Copy of Invoice with Report YES NO

Contact: Project Information

ALS Account # / Quote #:

Job #:

PO / A/E:

LSD:

ALS Lab Work Order # (lab use only):

Sample Identification and/or Coordinates (This description will appear on the report):

ALS Sample # (lab use only)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type
37	11-12-20	11:10	SOL
38	11-12-20	11:20	A
39	11-12-20	11:30	
40	11-12-20	11:40	
41	11-12-20	12:15	
42	"	12:20	
43	"	12:25	
44	"	12:30	
45	"	12:35	
46	"	12:40	
47	"	12:45	
48	"	12:50	SOL

Drinking Water (DW) Samples (client use)

Are samples taken from a Regulated DW System? YES NO

Are samples for human consumption/ use? YES NO

SHIPMENT RELEASE (client use)

Released by: [Signature] Date: 12/13/20

Initial Shipment Reception (lab use only)

Received by: [Signature] Date: 15:20

Time: 15:20

Special Instructions / Specify Criteria to add on report by clicking on the drop-down (lab use only)

Sample Condition as Received (lab use only)

Frozen YES NO

SIF Observations YES NO

Ice Packs YES NO

Ice Cubes YES NO

Custody seal intact YES NO

Cooling Initiated YES NO

INITIAL COOLER TEMPERATURES °C

FINAL COOLER TEMPERATURES °C

Final Shipment Reception (lab use only)

Received by: [Signature] Date: [Signature]

Time: [Signature]

White - Laboratory Copy Yellow - Client Copy

SUSPECTED HAZARD (see Special Instructions)

NUMBER OF CONTAINERS

SAMPLES ON HOLD

Analysis Request

Indicate Filled (F), Preserved (P) or Filled and Preserved (FP) below

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

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

1 Business day [E - 100%]

Same Day, Weekend or Statutory holiday [E2 - 200%] (Laboratory opening fees may apply)

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

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

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2019 FORM



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC Number: 17-862383

Affix ALS barcode label here (lab use only)

Page 5 of 6

Report To: Contact and company name below will appear on the final report.

Company: Select Report Format: PDF EXCEL EDD (DIGITAL)

Contact: Quality Control (QC) Report with Report YES NO

Phone: Compare Results to Criteria on Report - provide details below (if box checked)

Street: Select Distribution: EMAIL MAIL FAX

City/Province: Email 1 or Fax

Postal Code: Email 2

Invoice To: Same as Report To YES NO

Company: Copy of Invoice with Report YES NO

Contact: Project Information

ALS Account # / Quote #

Job #: Major/Minor Code: PO#

PO / A/E: Requisitioner: Routing Code:

LSD: Location:

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hr:mm)	Sample Type
49	20MW-10-50I	11-12-20	12:55	Soil
50	20MW-10-50J	↓	13:00	Hold
51	20MW-10-50K		13:05	
52	20MW-10-50L		13:10	
53	20MW-10-50M	↓	13:15	Hold
54	20MW-10-50N		13:20	
55	20MW-10-50O	11-12-20	13:25	↓
56	20MW-10-50A		16:00	
57	20MW-11-50B	↓	16:05	↓
58	20MW-11-50C		16:10	
59	20MW-11-50D	11-12-20	16:15	↓
60	20MW-11-50E		16:20	

Drinking Water (DW) Samples (client use)

Are samples taken from a Regulated DW System? YES NO

Are samples for human consumption/ use? YES NO

SHIPMENT RELEASE (client use)

Released by: *[Signature]* Date: 12/13/20

INITIAL SHIPMENT RECEPTION (lab use only)

Received by: _____ Date: _____

Time: 15:20

Time: _____

FINAL SHIPMENT RECEPTION (lab use only)

Received by: _____ Date: _____

Time: _____

Time: _____

Drinking Water (DW) Samples (client use only)

Are samples taken from a Regulated DW System? YES NO

Are samples for human consumption/ use? YES NO

Coasting initiated

Ice Packs

SIF Observations

Ice Cubes

Custody seal intact

Yes No

Yes No

Yes No

Yes No

INITIAL COOLER TEMPERATURES °C

FINAL COOLER TEMPERATURES °C

NUMBER OF CONTAINERS

4

1

5

SAMPLES ON HOLD

SUSPECTED HAZARD (see Special Instructions)

Analysis Request

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

Date and Time Required for all EAP TATs: dd-mm-yy hr:mm

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

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

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

1 Business day [E - 100%]

4 day [P4-20%]

3 day [P3-25%]

2 day [P2-50%]

Same Day, Weekend or Statutory holiday [E2-200%] (Laboratory opening fees may apply)

Emergency

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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

DATE 2014 PRINT



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC Number - 17- 861178

Affix ALS barcode label here (lab use only)

Page 6 of 6

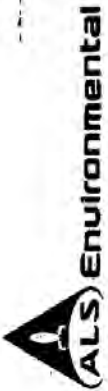
Report To Company: _____ Contact: _____ Phone: _____ Street: _____ City/Province: _____ Postal Code: _____ Invoice To: _____ Company: _____ Contact: _____		Report Format / Distribution Select Report Format: <input type="checkbox"/> PDF <input type="checkbox"/> EXCEL <input type="checkbox"/> ECD (DIGITAL) Quality Control (QC) Report with Report <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked Select Distribution: <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax _____ Email 2 _____ Email 3 _____		Analysis Request Indicate Filtered (F), Preserved (P) or Filtered and Preserved (FP) below <table border="1"> <tr> <th>ALS Sample # (lab use only)</th> <th>Sample Identification and/or Coordinates (This description will appear on the report)</th> <th>Date (dd-mm-yy)</th> <th>Time (h:mm)</th> <th>Sample Type</th> </tr> <tr> <td>61</td> <td>20 MW-11-50F</td> <td>11-12-20</td> <td>16:25</td> <td>S&1</td> </tr> <tr> <td>62</td> <td>20 MW-11-50G</td> <td>11-12-20</td> <td>16:30</td> <td>S&1</td> </tr> <tr> <td>63</td> <td>20 MW-11-50A</td> <td>11-12-20</td> <td>16:35</td> <td>S&1</td> </tr> <tr> <td>64</td> <td>QA-1</td> <td>12-12-20</td> <td></td> <td></td> </tr> <tr> <td>65</td> <td>Dup 1</td> <td>12-12-20</td> <td></td> <td></td> </tr> <tr> <td>66</td> <td>Dup 2</td> <td>12-12-20</td> <td></td> <td></td> </tr> <tr> <td>67</td> <td>Dup 3</td> <td>12-12-20</td> <td></td> <td></td> </tr> </table>		ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (h:mm)	Sample Type	61	20 MW-11-50F	11-12-20	16:25	S&1	62	20 MW-11-50G	11-12-20	16:30	S&1	63	20 MW-11-50A	11-12-20	16:35	S&1	64	QA-1	12-12-20			65	Dup 1	12-12-20			66	Dup 2	12-12-20			67	Dup 3	12-12-20			Project Information AFE/Coast Center: _____ PO# _____ Major/Minor Code: _____ Routing Code: _____ Requisitioner: _____ Location: _____ ALS Contact: _____ Sampler: _____	
ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (h:mm)	Sample Type																																											
61	20 MW-11-50F	11-12-20	16:25	S&1																																											
62	20 MW-11-50G	11-12-20	16:30	S&1																																											
63	20 MW-11-50A	11-12-20	16:35	S&1																																											
64	QA-1	12-12-20																																													
65	Dup 1	12-12-20																																													
66	Dup 2	12-12-20																																													
67	Dup 3	12-12-20																																													
Drinking Water (DW) Samples (client use) Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input type="checkbox"/> NO Are samples for human consumption/ use? <input type="checkbox"/> YES <input type="checkbox"/> NO		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only) 		Shipping and Reception Shipping Release (client use) Released by: _____ Date: 12/13/20 Received by: _____ Date: _____ Time: 15:20																																											
Drinking Water (DW) Samples (client use) Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input type="checkbox"/> NO Are samples for human consumption/ use? <input type="checkbox"/> YES <input type="checkbox"/> NO		Initial Shipment Reception (lab use only) Received by: _____ Date: _____ Time: _____		Final Shipment Reception (lab use only) Received by: _____ Date: _____ Time: _____																																											
Drinking Water (DW) Samples (client use) Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input type="checkbox"/> NO Are samples for human consumption/ use? <input type="checkbox"/> YES <input type="checkbox"/> NO		Initial Shipment Reception (lab use only) Received by: _____ Date: _____ Time: _____		Final Shipment Reception (lab use only) Received by: _____ Date: _____ Time: _____																																											

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

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

2012.014 (REV)



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC Number: 17 - 862379

Affix ALS barcode label here (lab use only)

Page 1 of 6

Report To Contact and company name below will appear on the final report. Company: <u>3065 Englewood</u> Contact: <u>3065 Englewood</u> Phone: <u>778-814-3187</u> Company address below will appear on the final report.		Report Format / Distribution Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL) Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: <u>To Lora, 5104 of York</u> Email 2: <u>LORI.LARSEN@JACOBS.COM</u> Email 3: <u>RAY.BILYK@JACOBS.COM</u> Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: _____ Email 2: _____	
Project Information ALS Account # / Quote #: <u>VA20-CMH100-013</u> Job #: <u>EGP/BC Rail Site - Fortis</u> PO / AFE: _____ Location: _____		Oil and Gas Required Fields (client use) AFE/Client Center: _____ PO#: _____ Major/Minor Code: _____ Routing Code: _____ Requisitioner: _____ Location: _____	
ALS Lab Work Order # (lab use only): <u>3271</u>		ALS Contact: _____ Sampler: _____	
Sample Identification and/or Coordinates (This description will appear on the report)		Date (dd-mm-yy) Time (h:mm) Sample Type	
1 20 MW - 04 - 50A		12-10-20 16:15 Soil	
2 20 MW - 04 - 50B		12-10-20 16:20	
3 20 MW - 04 - 50C		12-10-20 16:30	
4 20 MW - 04 - 50D		12-10-20 16:35	
5 20 MW - 04 - 50E		12-10-20 16:40	
6 20 MW - 04 - 50F		12-12-20 9:30	
7 20 MW - 04 - 50G		12-12-20 9:35	
8 20 MW - 04 - 50H		12-12-20 9:40	
9 20 MW - 04 - 50I		12-12-20 9:45	
10 20 MW - 04 - 50J		12-12-20 9:50	
11 20 MW - 04 - 50K		12-12-20 9:55	
12 20 MW - 04 - 50L		12-12-20 10:00 Soil	
Drinking Water (DW) Samples (client use) Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input type="checkbox"/> NO Are samples for human consumption/ use? <input type="checkbox"/> YES <input type="checkbox"/> NO		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)	
SHIPMENT RELEASE (client use) Released by: <u>OK</u> Date: <u>12/13/2020 15:20</u> Received by: <u>R. Hong</u> Date: <u>Dec 13, 2020</u> Type: <u>560m</u>		INITIAL SHIPMENT RECEPTION (lab use only) Received by: _____ Date: _____ Type: _____	
SHIPPING INFORMATION REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION		INITIAL SHIPMENT RECEPTION (lab use only) Received by: _____ Date: _____ Type: _____	

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

Regular (R) Standard TAT received by 3 pm - business days - no surcharges apply

1 Business day (E - 100%)

4 day (P4-20%) Same Day, Weekend or Statutory holiday (E2 - 200%) (Laboratory opening fees may apply)

3 day (P3-25%)

2 day (P2-50%)

Emergency (Business Days)

Priority

Business Days

Same Day, Weekend or Statutory holiday (E2 - 200%) (Laboratory opening fees may apply)

dc-mm-yy-hh:mm

Analysis Request

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

SUSPECTED HAZARD (see Special Instructions)

LEPH/HEPH	X
PAH	X
BTEX/VPH	X
METALS	X
VOCs	X

NUMBER OF CONTAINERS	Environmental Division Vancouver Work Order Reference VA20C3271
5	Telephone: +1 804 253 4188

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: 0.3 3.5 10.4 7.9

FINAL COOLER TEMPERATURES °C: _____

0.3	3.5	10.4	7.9
FINAL SHIPMENT RECEPTION (lab use only) Received by: _____ Date: _____ Type: _____			



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Affix ALS barcode label here (lab use only)

COC Number: 17-862380 Page 2 of 6

Contact and company name below will appear on the final report

Company: _____

Contact: _____

Phone: _____

Street: _____

City/Province: _____

Postal Code: _____

Invoice To: Same as Report To YES NO

Copy of Invoices with Report: YES NO

Company: _____

Contact: _____

Project Information

ALS Account # / Quote #: _____

Job #: _____

PO / AFE: _____

LSD: _____

ALS Lab Work Order # (lab use only): _____

Sample Identification and/or Coordinates (This description will appear on the report):

13	20MW-04-SOX	12-12-20	10:30	SOX
14	20MW-05-SOA	12-12-20	10:15	↑
15	20MW-05-SOB	12-12-20	10:20	↑
16	20MW-05-SOC	12-12-20	15:05	↑
17	20MW-05-SOD	12-12-20	15:15	↑
18	20MW-05-SOE	12-12-20	15:20	↑
19	20MW-05-SOF	12-12-20	11:25	↑
20	20MW-06-SOA	11-12-20	11:30	↑
21	20MW-06-SOB	11-12-20	11:35	↑
22	20MW-06-SOC	12-12-20	16:10	↑
23	20MW-06-SOD	12-12-20	16:15	SOX
24	20MW-06-SOE			

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

Drinking Water (DW) Samples (client use)

Are samples taken from a Regulated DW System? YES NO

Are samples for human consumption/ use? YES NO

SHIPMENT RELEASE (client use)

Released by: WMM Date: 12/13/20 Time: 15:21

SHIPPING INFORMATION

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

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

4 day (P4-20%) 1 Business day (E - 100%)

3 day (P3-25%) Same Day, Weekend or Statutory holiday (E2 - 200%)

2 day (P2-50%) (Laboratory opening fees may apply)

Date and Time Required for all E&P TATs: dd-mm-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 (FP) below

NUMBER OF CONTAINERS	LEPH/HEPH	PAH	BTEX/VPH	METALS	VOCs	SUSPECTED HAZARD (see Special Instructions)
1	X	X	X	X	X	X
2	X	X	X	X	X	↑
3	X	X	X	X	X	↑
4	X	X	X	X	X	↑
5	X	X	X	X	X	X

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

INITIAL SHIPMENT RECEPTION (lab use only)

Received by: _____ Date: _____ Time: _____

FINAL SHIPMENT RECEPTION (lab use only)

Received by: _____ Date: _____ Time: _____



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Affix ALS barcode label here (lab use only)

COC Number: 17- 862381
Page 3 of 6

Report To Contact and company name below will appear on the final report		Report Format / Distribution Select Report Format: <input type="checkbox"/> PDF <input type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)	
Company: Quality Control (QC) Report with Report <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX	
Phone: Company address below will appear on the final report		Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> FAX	
Street:		Email 1 or Fax	
City/Province:		Email 2	
Postal Code:		Email 3	
Invoice To Same as Report To <input type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution	
Company: Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> FAX	
Contact:		Email 1 or Fax	
Project Information		Email 2	
ALS Account # / Quote #:		Oil and Gas Required Fields (client use)	
Job #:		JAFE/Coast Center: PO#	
PO / AFE:		Major/Minor Code: Routing Code:	
LSD:		Requisitioner:	
ALS Lab Work Order # (lab use only):		Location:	
ALS Sample # (lab use only)		ALS Contact:	
Sample Identification and/or Coordinates (This description will appear on the report)		Sampler:	
25 20MW-06-S0F		Date (dd-mm-yy) Time (hh:mm) Sample Type	
26 20MW-07-S0A		12-12-20 16:20 S0F	
27 20MW-07-S0B		11-12-20 10:40	
28 20MW-07-S0C		11-12-20 10:45	
29 20MW-07-S0D		12-12-20 14:10	
30 20MW-08-S0A		11-12-20 14:15	
31 20MW-08-S0B		11-12-20 14:20	
32 20MW-08-S0C		11-12-20 14:25	
33 20MW-08-S0D		12-12-20 12:30	
34 20MW-08-S0E		12-12-20 12:35	
35 20MW-08-S0F		12-12-20 12:40	
36 20MW-09-S0A		11-12-20 11:00 S0F	
Drinking Water (DW) Samples (client use) <input type="checkbox"/> YES <input type="checkbox"/> NO Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input type="checkbox"/> NO Are samples for human consumption/ use? <input type="checkbox"/> YES <input type="checkbox"/> NO		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below. (electronic COC only)	
SHIPMENT RELEASE (client use) Released by: <i>[Signature]</i> Date: 12/13/2020 Time: 15:20		INITIAL SHIPMENT RECEPTION (lab use only) Received by: _____ Date: _____ Time: _____	

NUMBER OF CONTAINERS	LPH/HEPH				PAH				BTEX/VPH				METALS				VOCs			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

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

Analysis Request

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

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

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

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
 4 day [P4-20%]
 3 day [P3-25%]
 2 day [P2-50%]

Priority Business Days: EMERGENCY

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)
 Released by: *[Signature]* Date: 12/13/2020
 Time: 15:20

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



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Affix ALS barcode label here (lab use only)

COC Number: 17-862382

Page 4 of 6

Report To: [Blank] Contact and company name below will appear on the final report.

Company: [Blank] Select Report Format: PDF EXCEL EOD (DIGITAL)

Contact: [Blank] Quality Control (QC) Report with Report YES NO

Phone: [Blank] Compare Results to Criteria in Report - provide details below if box checked

Street: [Blank] Select Distribution: EMAIL MAIL FAX

City/Province: [Blank] Email 1 or Fax

Postal Code: [Blank] Email 2

Invoice To: [Blank] Same as Report YES NO

Company: [Blank] Copy of Invoice with Report YES NO

Contact: [Blank]

Project Information

ALS Account # / Quote #: [Blank]

Job #: [Blank] AFE/Cost Center: [Blank]

PO / AFE: [Blank] Major/Minor Code: [Blank]

LSD: [Blank] Requisitioner: [Blank]

Location: [Blank]

ALS Lab Work Order # (lab use only): [Blank]

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type
37	20MW-09-50B	11-12-20	11:10	Soil
38	20MW-09-50C	11-12-20	11:30	
39	20MW-09-50D	11-12-20	11:30	
40	20MW-09-50E	11-12-20	11:40	
41	20MW-10-50A	11-12-20	12:15	
42	20MW-10-50B	" "	12:20	
43	20MW-10-50C	" "	12:25	
44	20MW-10-50D	" "	12:30	
45	20MW-10-50E	" "	12:35	
46	20MW-10-50F	" "	12:40	
47	20MW-10-50G	" "	12:45	
48	20MW-10-50H	" "	12:50	

Special Instructions / Specify Criteria to add on report by clicking on the drop-down (lab use only)

Drinking Water (DW) Samples (client use)

Are samples taken from a Regulated DW System? YES NO

Are samples for human consumption/use? YES NO

Shipping Release (client use)

Released by: [Signature] Date: 12/13/20

Initial Shipment Reception (lab use only)

Received by: [Blank] Date: [Blank]

Time: 15:20

Final Shipment Reception (lab use only)

Received by: [Blank] Date: [Blank]

Time: [Blank]

Report Format / Distribution

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

4 day (P4-20%) Business day (E - 100%)

3 day (P3-25%) Same Day, Weekend or Statutory holiday (E2 - 200%)

2 day (P2-50%) (Laboratory opening fees may apply)

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

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

Analysis Request

Indicate Filled (F), Preserved (P) or Filled and Preserved (FP) below

LEPH/HEPH	PAH	BTEX/VPH	METALS	VOCS
X	X	X	X	X
X	X	X	X	X
X	X	X	X	X
X	X	X	X	X

SAMPLES ON HOLD

NUMBER OF CONTAINERS

Sample #	Containers
37	5
38	1
39	1
40	1
41	1
42	1
43	1
44	1
45	1
46	1
47	1
48	1

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 [Blank]

FINAL COOLER TEMPERATURES °C [Blank]

SUSPECTED HAZARD (see Special Instructions)

WHITE - LABORATORY COPY YELLOW - CLIENT 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

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC Number: 17-862383

Affix ALS barcode label here (lab use only)

Page 5 of 6

Report To: Contact and company name below will appear on the final report.

Company: Select Report Format: PDF EXCEL EDD (DIGITAL)

Contact: Quality Control (QC) Report with Report YES NO

Phone: Compare Results to Criteria on Report - provide details below (if box checked)

Select Distribution: EMAIL MAIL FAX

Company address below will appear on the final report.

Street: Email 1 or Fax: Email 2

City/Province: Email 3

Postal Code: Invoice To: Same as Report To YES NO

Company: Copy of Invoice with Report YES NO

Contact: Project Information

ALS Account # / Quote #

Job #: Major/Minor Code: PO#

PO / A/E: Requisitioner: Routing Code:

LSD: Location:

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (h:mm)	Sample Type
49	20MW-10-50I	11-12-20	12:55	Soil
50	20MW-10-50J		13:00	
51	20MW-10-50K		13:05	
52	20MW-10-50L		13:10	
53	20MW-10-50M		13:15	
54	20MW-10-50N		13:20	
55	20MW-10-50O		13:25	
56	20MW-10-50A	11-12-20	16:00	
57	20MW-11-50B		16:05	
58	20MW-11-50C		16:10	
59	20MW-11-50D		16:15	
60	20MW-11-50E	11-12-20	16:20	Soil

Drinking Water (DW) Samples (client use)

Are samples taken from a Regulated DW System? YES NO

Are samples for human consumption/ use? YES NO

SHIPMENT RELEASE (client use)

Released by: Date: 12/13/20

INITIAL SHIPMENT RECEPTION (lab use only)

Received by: Date:

Time: 15:20

Time: 15:20

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

Drinking Water (DW) Samples (client use)

Are samples taken from a Regulated DW System? YES NO

Are samples for human consumption/ use? YES NO

SHIPMENT RELEASE (client use)

Released by: Date:

INITIAL SHIPMENT RECEPTION (lab use only)

Received by: Date:

Time: 15:20

Time: 15:20

Drinking Water (DW) Samples (client use)

Are samples taken from a Regulated DW System? YES NO

Are samples for human consumption/ use? YES NO

SHIPMENT RELEASE (client use)

Released by: Date:

INITIAL SHIPMENT RECEPTION (lab use only)

Received by: Date:

Time: 15:20

Time: 15:20

Analysis Request	Indicates Filtered (F), Preserved (P) or Filled and Preserved (F/P) below
LEPH/HEPH	
PAH	
BTEX/VPH	
METALS	
VOCS	

NUMBER OF CONTAINERS: 4

SAMPLES ON HOLD: X

DATE: 11-12-20

TIME: 16:20

INITIAL SHIPMENT RECEPTION (lab use only)

Received by: Date:

Time: 15:20

Time: 15:20

Drinking Water (DW) Samples (client use)

Are samples taken from a Regulated DW System? YES NO

Are samples for human consumption/ use? YES NO

SHIPMENT RELEASE (client use)

Released by: Date:

INITIAL SHIPMENT RECEPTION (lab use only)

Received by: Date:

Time: 15:20

Time: 15:20

Drinking Water (DW) Samples (client use)

Are samples taken from a Regulated DW System? YES NO

Are samples for human consumption/ use? YES NO

SHIPMENT RELEASE (client use)

Released by: Date:

INITIAL SHIPMENT RECEPTION (lab use only)

Received by: Date:

Time: 15:20

Time: 15:20

Drinking Water (DW) Samples (client use)

Are samples taken from a Regulated DW System? YES NO

Are samples for human consumption/ use? YES NO

SHIPMENT RELEASE (client use)



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC Number - 17- 861178

Affix ALS barcode label here (lab use only)

Page 6 of 6

Report To Contact and company name below will appear on the final report		Report Format / Distribution Select Report Format: <input type="checkbox"/> PDF <input type="checkbox"/> EXCEL <input type="checkbox"/> ECD (DIGITAL) Quality Control (QC) Report with Report <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked Select Distribution: <input type="checkbox"/> MAIL <input type="checkbox"/> FAX	
Company: Contact: Phone:		Select Service Level Below - Contact your AM to confirm all E&P TATS (surcharges may apply) Regular (R) <input type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply 1 Business day (E - 100%) 4 day (P4-20%) <input type="checkbox"/> 3 day (P3-25%) <input type="checkbox"/> 2 day (P2-50%) <input type="checkbox"/> Same Day, Weekend or Statutory holiday (E2 -200% (Laboratory opening fees may apply))	
Street: City/Province: Postal Code:		Date and Time Required for all E&P TATS: dd-mm-yy :hh:mm dd-mm-yy :hh:mm	
Invoice To: Same as Report to <input type="checkbox"/> YES <input type="checkbox"/> NO Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Analysis Request Indicate Filtered (F), Preserved (P) or Filtered and Preserved (FP) below For tests that can not be performed according to the service level selected, you will be contacted.	
Company: Contact:		Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX	
Project Information ALS Account # / Quote #: Job #: PO / AFE: LSD:		Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: Email 2: Email 3:	
ALS Lab Work Order # (lab use only):		Oil and Gas Required Fields (client use) AFE/Coast Center: PO# Major/Minor Code: Routing Code: Requisitioner: Location:	
Sample Identification and/or Coordinates (This description will appear on the report)		ALS Contact: Sampler:	
ALS Sample # (lab use only)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type
61	11-12-20	16:25	SOF
62	11-12-20	16:30	SOF
63	11-12-20	16:35	SOF
64	11-12-20		
65	12-12-20		
66	12-12-20		
67	12-12-20		
Drinking Water (DW) Samples (client use) Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input type="checkbox"/> NO Are samples for human consumption/ use? <input type="checkbox"/> YES <input type="checkbox"/> NO		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)	
SHIPMENT RELEASE (client use) Released by: <i>[Signature]</i> Date: 12/13/20 Time: 15:20		INITIAL SHIPMENT RECEPTION (lab use only) Received by: _____ Date: _____ Time: _____	
FINAL SHIPMENT RECEPTION (lab use only) Received by: _____ Date: _____ Time: _____		SAMPLE CONDITION AS RECEIVED (lab use only) Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/> Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/> Cooling Initiated <input type="checkbox"/>	
INITIAL COOLER TEMPERATURES °C FINAL COOLER TEMPERATURES °C		SUSPECTED HAZARD (see Special Instructions)	

NUMBER OF CONTAINERS	LEPH/HEPH	PAH	BTEX/VPH	METALS	VOCS
5	X	X	X	X	X
5	X	X	X	X	X
3	X	X	X	X	X
4	X	X	X	X	X
4	X	X	X	X	X

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION
 WHITE - LABORATORY COPY YELLOW - CLIENT 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

Canada Toll Free: 1 800 668 9878

COC Number: 17-862379

Affix ALS barcode label here (lab use only)

Page 1 of 6

Report To: Contact and company name below will appear on the final report

Company: Solo by Engineering

Contact: Solo by Engineering

Phone: 778-814-3187

Company address below will appear on the final report

Street: _____

City/Province: _____

Postal Code: _____

Invoice To: YES NO

Copy of Invoice with Report: YES NO

Company: _____

Contact: _____

Project Information

ALS Account # / Quote #: VA 20-C HMA100-013

Job #: EGP/BC Rail Site - Fortis

PO / A/E: _____

LSD: _____

ALS Lab Work Order # (lab use only): 3271

Sample Identification and/or Coordinates (This description will appear on the report)

ALS Sample # (lab use only)	Sample Description	Date (dd-mm-yy)	Time (hh:mm)	Sampler:
1	20 MW-04-50A	12-10-20	16:15	Sol
2	20 MW-04-50B	12-10-20	16:20	U
3	20 MW-04-50C	12-10-20	16:30	U
4	20 MW-04-50D	12-10-20	16:35	U
5	20 MW-04-50E	12-10-20	16:40	U
6	20 MW-04-50F	12-12-20	9:30	U
7	20 MW-04-50G	12-12-20	9:35	U
8	20 MW-04-50H	12-12-20	9:40	U
9	20 MW-04-50I	12-12-20	9:45	U
10	20 MW-04-50J	12-12-20	9:50	U
11	20 MW-04-50K	12-12-20	9:55	U
12	20 MW-04-50L	12-12-20	10:00	Sol

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

Are samples taken from a Regulated DW System? YES NO

Are samples for human consumption/use? YES NO

SHIPMENT RELEASE (client use)

Date: 12/13/2020 Time: 15:30

Released by: AK

SHIPMENT RECEPTION (lab use only)

Date: Dec 12, 2020 Time: 5:40

Received by: R. Cheng

INITIAL SHIPMENT RECEPTION (lab use only)

Date: Dec 12, 2020 Time: _____

Received by: _____

FINAL SHIPMENT RECEPTION (lab use only)

Date: _____ Time: _____

Number of Containers: _____

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

LEPH/HEPH	PAH	BTEX/VPH	METALS	VOCs	Grainsize-SK
X	X	X	X	X	X
X	X	X	X	X	X
X	X	X	X	X	X
X	X	X	X	X	X
X	X	X	X	X	X
X	X	X	X	X	X
X	X	X	X	X	X
X	X	X	X	X	X
X	X	X	X	X	X
X	X	X	X	X	X
X	X	X	X	X	X
X	X	X	X	X	X
X	X	X	X	X	X
X	X	X	X	X	X
X	X	X	X	X	X
X	X	X	X	X	X
X	X	X	X	X	X

SUSPECTED HAZARD (see Special Instructions)

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: 0.3, 3.5, 10.4, 7.9

FINAL COOLER TEMPERATURES °C: _____

White - Laboratory Copy Yellow - Client Copy

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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



ALS Environmental

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Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 17-862380

Page 2 of 6

Report To: [Blank] Contact and company name below will appear on the final report.

Company: [Blank] Selected Report Format: PDF EXCEL BOD (DIGITAL)

Contact: [Blank] Quality Control (QC) Report with Report: YES NO

Phone: [Blank] Compare Results to Criteria on Report, provide details below if box checked

Select Distribution: EMAIL MAIL FAX

Company address below will appear on the final report

Street: [Blank]

City/Province: [Blank]

Postal Code: [Blank]

Invoice To: YES NO

Copy of Invoice with Report: YES NO

Company: [Blank]

Contact: [Blank]

Project Information

ALS Account # / Quote #: [Blank]

Job #: [Blank] AFE/Cost Center: [Blank] PO# [Blank]

PO / AFE: [Blank] Major/Memo Code: [Blank] Routing Code: [Blank]

LSD: [Blank] Requisition#: [Blank] Location: [Blank]

ALS Lab Work Order # (lab use only): [Blank] Sampler: [Blank]

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (h:mm)	Sample Type
13	ZOMW-04-SOX	12-12-20	10:30	S&L
14	ZOMW-05-SOA	12-12-20	10:15	↑
15	ZOMW-05-SOB	12-12-20	10:20	↑
16	ZOMW-05-SOC	12-12-20	10:25	↑
17	ZOMW-05-SOD	12-12-20	15:05	↑
18	ZOMW-05-SOE	12-12-20	15:15	↑
19	ZOMW-05-SOF	12-12-20	15:20	↑
20	ZOMW-06-SOA	12-12-20	15:25	↑
21	ZOMW-06-SOB	11-12-20	11:30	↑
22	ZOMW-06-SOC	11-12-20	11:35	↑
23	ZOMW-06-SOD	12-12-20	15:10	↑
24	ZOMW-06-SOE	12-12-20	15:15	S&L

Drinking Water (DW) Samples (client use)

Are samples taken from a Regulated DW System? YES NO

Are samples for human consumption use? YES NO

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

Shipping Release (client use)

Released By: [Signature] Date: 12/13/20

Initial Shipment Reception (lab use only)

Received by: [Signature] Date: 12/13/20

Final Shipment Reception (lab use only)

Received by: [Signature] Date: 12/13/20

Time: 15:20

NUMBER OF CONTAINERS	LEPH/HEPH	PAH	BTEX/VPH	METALS	VOCS	Grainsize-SK
1	X	X	X	X	X	X
5	X	X	X	X	X	X
5	X	X	X	X	X	X
5	X	X	X	X	X	X
5	X	X	X	X	X	X
5	X	X	X	X	X	X

Analysis Request

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

SUSPECTED HAZARD (see Special Instructions)

SAMPLES ON HOLD

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



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Affix ALS barcode label here (lab use only)

COC Number: 17-862381

Page 3 of 6

Report To: Client and company name below will appear on the final report

Company: _____

Contact: _____

Phone: _____

Street: _____

City/Province: _____

Postal Code: _____

Invoice To: Same as Report To YES NO

Company: _____

Contact: _____

Project Information

ALS Account # / Quote # _____

Job #: _____

PO / A/E: _____

LSD: _____

ALS Lab Work Order # (lab use only): _____

Sample Identification and/or Coordinates (this description will appear on the report)

25	20MW-06-50A	12-20-20	16:20	50A
26	20MW-07-50A	11-20-20	10:240	7
27	20MW-07-50B	11-20-20	10:240	7
28	20MW-07-50C	11-20-20	10:250	7
29	20MW-07-50D	12-20-20	14:10	7
30	20MW-08-50A	11-20-20	14:15	7
31	20MW-08-50B	11-12-20	14:20	7
32	20MW-08-50C	11-12-20	14:25	7
33	20MW-08-50D	12-12-20	12:31	7
34	20MW-08-50E	12-12-20	12:35	7
35	20MW-08-50F	12-12-20	12:40	7
36	20MW-09-50A	11-12-20	11:00	50A

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

Drinking Water (DW) Samples (client use)

Are samples taken from a Regulated DW System? YES NO

Are samples for human consumption / use? YES NO

Report Format / Distribution

Selected Report Format: PDF EXCEL EDD (DIGITAL)

Quality Control (QC) Report with Report YES NO

Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: EMAIL MAIL FAX

Report Format / Distribution

Selected Report Format: PDF EXCEL EDD (DIGITAL)

Quality Control (QC) Report with Report YES NO

Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: EMAIL MAIL FAX

Oil and Gas Required Fields (client use)

AF/Coast Center: _____

Major Area Code: _____

Routing Code: _____

Requisitioner: _____

Location: _____

ALS Contact: _____

Sampler: _____

Time (hh:mm) _____

Date (dd-mm-yy) _____

Sample Type _____

Number of Containers

5	PAH	X	PAH/HEPH	X
5	BTEX/VPH	X	BTEX/VPH	X
5	METALS	X	METALS	X
5	VOCs	X	VOCs	X
5	Grainsize-SK	X	Grainsize-SK	X

SAMPLES ON HOLD

SUSPECTED HAZARD (see Special Instructions)

Drinking Water (DW) Samples (client use)

Are samples taken from a Regulated DW System? YES NO

Are samples for human consumption / use? YES NO

SHIPMENT RELEASE (client use)

Released by: _____ Date: 12/13/2020

SHIPMENT RECEPTION (lab use only)

Received by: _____ Date: _____

Time: _____

Time: _____

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 _____

INITIAL SHIPMENT RECEPTION (lab use only)

Received by: _____ Date: _____

Time: _____

Time: _____

WHITE - LABORATORY COPY YELLOW - CLIENT 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

COC Number: 17-862382

Page 4 of 6

Affix ALS barcode label here
(lab use only)

Report To: *Gre* Contact and company name below will appear on the final report.

Company: *Gre* Select Report Format: PDF EXCEL DOC (Digital)

Contact: *Gre* Quality Control (QC) Report with Report YES NO

Phone: *Gre* Compare Results to Criteria in Report - provide details below if box checked

Street: *Gre* Company address below will appear on the final report

City/Province: *Gre* Select Distribution: EMAIL MAIL FAX

Postal Code: *Gre* Email 1 or Fax: *Gre*

Invoice To: Same as Report YES NO Email 2: *Gre*

Company: Copy of Invoice with Report YES NO

Contact: *Gre*

Project Information: Oil and Gas Required Fields (client use)

ALS Account # / Quote #: *Gre*

Job #: *Gre* AF/Exec Center: *Gre*

PO / AFE: *Gre* Valuator Code: *Gre*

LSD: *Gre* Requisitioner: *Gre*

ALS Lab Work Order # (lab use only): *Gre* Localon: *Gre*

Sample Identification and/or Coordinates (This description will appear on the report)

ALS Sample # (lab use only)	Sample Description	Date (dd-mm-yy)	Time (hh:mm)	Sampler	Sample Type
37	20MW-09-S08	11-12-20	11:10		S01
38	20MW-09-S0C	11-12-20	11:20		A
39	20MW-09-S0D	11-12-20	11:30		
40	20MW-09-S0E	11-12-20	11:40		
41	20MW-10-S0A	11-12-20	12:15		
42	20MW-10-S0B	"	12:20		
43	20MW-10-S0C	"	12:25		
44	20MW-10-S0D	"	12:30		
45	20MW-10-S0E	"	12:35		
46	20MW-10-S0F	"	12:40		
47	20MW-10-S0G	"	12:45		
48	20MW-10-S0H	"	12:50		

Drinking Water (DW) Samples (client use)

Are samples taken from a Regulated DW System? YES NO

Are samples for human consumption/use? YES NO

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

Shipping Information: SHIPMENT RELEASE (client use) Date: 12/13/20

Initial Shipment Reception (lab use only) Date: 12/13/20

Final Shipment Reception (lab use only) Date: 12/13/20

Number of Containers: 5

LEPH/HEPH	PAH	BTEX/VPH	METALS	VOCS	Grainsize-SK
X	X	X	X	X	X
X	X	X	X	X	X
X	X	X	X	X	X
X	X	X	X	X	X
X	X	X	X	X	X
X	X	X	X	X	X

SUSPECTED HAZARD (see Special Instructions)

SAMPLES ON HOLD

Analysis Request: Indicate Filtered (F), Preserved (P) or Filtered and Preserved (FP) below.

Regular [R] Standard TAT if received by 3 pm - Business days - no archiving apply

1 Business day [E - 100%]

Same Day, Weekend or Statutory Holiday [E2 - 200%]

Laboratory opening fees may apply

DATE and TIME Required for ALL EAP TATS: 08-Nov-20 13:30:00

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



ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 17 - 862383

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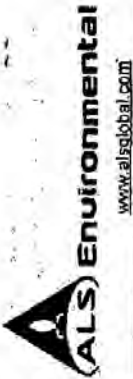
Affix ALS barcode label here (lab use only)

Report To: Company: _____ Contact: _____ Phone: _____ Street: _____ City/Province: _____ Postal Code: _____ Invoice To: Same as Report To <input type="checkbox"/> YES <input type="checkbox"/> NO Copy of Invoice with Report: <input type="checkbox"/> YES <input type="checkbox"/> NO Company: _____ Contact: _____		Report Format / Distribution Select Report Format: <input type="checkbox"/> PDF <input type="checkbox"/> EXCEL <input type="checkbox"/> EOD (DIRECTAL) Quality Control (QC) Report with Report: <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: _____ Email 2: _____ Email 3: _____		Project Information ALS Account # / Quote #: _____ Job #: _____ PO / A/E: _____ LSD: _____		ALS Lab Work Order # (lab use only): Sample Identification and/or Coordinates (This description will appear on the report) 49 20MW-10-50I 50 20MW-10-50J 51 20MW-10-50K 52 20MW-10-50L 53 20MW-10-50M 54 20MW-10-50N 55 20MW-10-50O 56 20MW-11-50A 57 20MW-11-50B 58 20MW-11-50C 59 20MW-11-50D 60 20MW-11-50E		ALS Contact: Name: _____ Title: _____ Phone: _____ Fax: _____ Email: _____		Sampler: Name: _____ Title: _____ Phone: _____ Fax: _____ Email: _____		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below - (electronic COC only) Drinking Water (DW) Samples (client use) <input type="checkbox"/> Are samples taken from a Regulated DW System? <input type="checkbox"/> Are samples for human consumption/use? SHIPMENT RELEASE (client use) Date: 12/13/20 Time: 15:28	
Report Format / Distribution Select Report Format: <input type="checkbox"/> PDF <input type="checkbox"/> EXCEL <input type="checkbox"/> EOD (DIRECTAL) Quality Control (QC) Report with Report: <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: _____ Email 2: _____ Email 3: _____		Project Information ALS Account # / Quote #: _____ Job #: _____ PO / A/E: _____ LSD: _____		ALS Contact: Name: _____ Title: _____ Phone: _____ Fax: _____ Email: _____		Sampler: Name: _____ Title: _____ Phone: _____ Fax: _____ Email: _____		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below - (electronic COC only) Drinking Water (DW) Samples (client use) <input type="checkbox"/> Are samples taken from a Regulated DW System? <input type="checkbox"/> Are samples for human consumption/use? SHIPMENT RELEASE (client use) Date: 12/13/20 Time: 15:28					
Company address below will appear on the final report Street: _____ City/Province: _____ Postal Code: _____		Report Format / Distribution Select Report Format: <input type="checkbox"/> PDF <input type="checkbox"/> EXCEL <input type="checkbox"/> EOD (DIRECTAL) Quality Control (QC) Report with Report: <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: _____ Email 2: _____ Email 3: _____		Project Information ALS Account # / Quote #: _____ Job #: _____ PO / A/E: _____ LSD: _____		ALS Contact: Name: _____ Title: _____ Phone: _____ Fax: _____ Email: _____		Sampler: Name: _____ Title: _____ Phone: _____ Fax: _____ Email: _____		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below - (electronic COC only) Drinking Water (DW) Samples (client use) <input type="checkbox"/> Are samples taken from a Regulated DW System? <input type="checkbox"/> Are samples for human consumption/use? SHIPMENT RELEASE (client use) Date: 12/13/20 Time: 15:28			

NUMBER OF CONTAINERS 5		LEPH/HEPH X		PAH X		BTEX/VPH X		METALS X		VOCS X		Grainsize-SK X		SAMPLES ON HOLD X		SUSPECTED HAZARD (see Special Instructions)	
Analysis Request Indicates Filtered (F), Preserved (P) or Filtered and Preserved (FP) below																	
Sample Condition AS RECEIVED (lab use only) Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/> Ice Packs <input type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/> Cooling Initiated <input type="checkbox"/>		INITIAL COOLER TEMPERATURES °C 1 _____ 2 _____ 3 _____		FINAL COOLER TEMPERATURES °C 1 _____ 2 _____ 3 _____		INITIAL SHIPMENT RECEPTION (lab use only) Received by: _____ Date: _____ Time: _____		FINAL SHIPMENT RECEPTION (lab use only) Received by: _____ Date: _____ Time: _____									

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

WHITE - LABORATORY COPY YELLOW - CLIENT COPY



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 8878

www.alsglobal.com

COC Number: 17- 861178

Page 6 of 6

Affix ALS barcode label here (lab use only)

<p>Report To: Contact and company name below will appear on the final report</p>		<p>Report Format / Distribution</p> <p>Selected Report Format: <input type="checkbox"/> PDF <input type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)</p> <p>Quality Control (QC) Report with Report: <input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p><input type="checkbox"/> Compare Results to Criteria on Report - provide details below # bar checked</p> <p>Selected Distribution: <input type="checkbox"/> MAIL <input type="checkbox"/> FAX</p>																																											
<p>Company: [Blank]</p> <p>Contact: [Blank]</p> <p>Phone: [Blank]</p> <p>Company address below will appear on the final report</p>		<p>Selected Distribution: <input type="checkbox"/> MAIL <input type="checkbox"/> FAX</p> <p>Email 1 or Fax: [Blank]</p> <p>Email 2: [Blank]</p> <p>Email 3: [Blank]</p>																																											
<p>City/Province: [Blank]</p> <p>Postal Code: [Blank]</p> <p>Invoice To: <input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>Copy of Invoice with Report: <input type="checkbox"/> YES <input type="checkbox"/> NO</p>		<p>Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX</p> <p>Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX</p> <p>Email 1 of Fax: [Blank]</p> <p>Email 2: [Blank]</p>																																											
<p>Project Information</p> <p>ALS Account # / Quote #: [Blank]</p> <p>Job #: [Blank]</p> <p>PO / A/E: [Blank]</p> <p>LSD: [Blank]</p>																																													
<p>ALS Lab Work Order # (lab use only): [Blank]</p>																																													
<p>Sample Identification and/or Coordinates (This description will appear on the report)</p> <p>61 20 MW-11-50F</p> <p>62 20 MW-11-50G</p> <p>63 20 MW-11-50A</p> <p>64 GA-1</p> <p>65 Dup 1</p> <p>66 Dup 2</p> <p>67 Dup 3</p>		<p>Date (dd-mm-yy)</p> <p>11-12-20 16:25 50F</p> <p>11-12-20 16:30 50G</p> <p>11-12-20 16:35 50A</p> <p>12-12-20</p> <p>12-12-20</p> <p>12-12-20</p>																																											
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<p>SHIPMENT RELEASE (client use)</p> <p>Relinquished by: [Signature]</p> <p>Date: 12/13/20</p>		<p>INITIAL SHIPMENT RECEPTION (lab use only)</p> <p>Received by: [Blank]</p> <p>Date: [Blank]</p>																																											
<p>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</p>		<p>INITIAL COOLER TEMPERATURES °C</p> <p>FINAL COOLER TEMPERATURES °C</p>																																											
<p>NUMBER OF CONTAINERS</p>																																													
<p>Analysis Request</p> <p>Regulable Filtered (F), Preserved (P) or Filtered and Preserved (FP) basis</p> <p>SUSPECTED HAZARD (see Special Instructions)</p>																																													
<table border="1"> <thead> <tr> <th>LEPH/HEPH</th> <th>PAH</th> <th>BTEX/VPH</th> <th>METALS</th> <th>VOCS</th> <th>Grain Size-SK</th> </tr> </thead> <tbody> <tr> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> </tr> <tr> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> </tr> <tr> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> </tr> <tr> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> </tr> <tr> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> </tr> <tr> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> </tr> </tbody> </table>				LEPH/HEPH	PAH	BTEX/VPH	METALS	VOCS	Grain Size-SK	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
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REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY



Environmental

CERTIFICATE OF ANALYSIS

Work Order : VA20C3659 Page : 1 of 8

Amendment : 3

Client : CH2M Hill Canada Limited

Contact : Jelena Sladojevic

Address : Metrotower II, Suite 2100 4720 Kingsway
Burnaby BC Canada V5H 4N2

Telephone : -----

Project : CE777000 TU.CP Jacobs

PO : 670014CH.B0.01.09

C-O-C number : 17-861490

Sampler : Andrew Canali

Site : -----

Quote number : VA20-CHMH100-013

No. of samples received : 5

No. of samples analysed : 5

Laboratory : Vancouver - Environmental

Account Manager : Edward Ngai

Address : 8081 Lougheed Highway
Burnaby BC Canada V5A 1W9

Telephone : +1 604 253 4188

Date Samples Received : 17-Dec-2020 18:00

Date Analysis Commenced : 17-Dec-2020

Issue Date : 30-Dec-2020 12:39

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
Angelo Salandanan	Lab Assistant
Janice Leung	Supervisor - Organics Extractions
Kim Jensen	Department Manager - Metals
Monica Ko	Lab Assistant
Paul Cushing	Team Leader - Organics
Robin Weeks	Team Leader - Metals

Laboratory Department

Metals, Burnaby, British Columbia
Organics, Burnaby, British Columbia
Metals, Burnaby, British Columbia
Metals, Burnaby, British Columbia
Organics, Burnaby, British Columbia
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
µg/L	micrograms per litre
mg/L	milligrams per litre

<: 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.

Qualifiers

Qualifier	Description
DLCI	Detection Limit Raised: Chromatographic interference due to co-elution.
DTMF	Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.



Analytical Results

Sub-Matrix: Water		Client sample ID									
(Matrix: Water)		Client sampling date / time									
Analyte	CAS Number	Method	LOR	Unit	20MW-07	20MW-08	20MW-10D	20MW-10S	QA2		
					Result	Result	Result	Result	Result		
Physical Tests											
hardness (as CaCO3), from total Ca/Mg	---	EC100A	0.60	mg/L	81.0	62.8	68.5	97.8	74.5		
hardness (as CaCO3), dissolved	---	EC100	0.60	mg/L	94.7	67.0	79.0	110	73.7		
Total Metals											
aluminum, total	7429-90-5	E420	0.0030	mg/L	1.06	0.275	0.438	0.490	0.422		
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00033	<0.00010	<0.00010	<0.00010	<0.00010		
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00157	0.00135	0.00021	0.00083	0.00022		
barium, total	7440-39-3	E420	0.00010	mg/L	0.0450	0.0656	0.0308	0.0747	0.0314		
beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100		
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050		
boron, total	7440-42-8	E420	0.010	mg/L	0.017	0.039	0.013	0.033	0.014		
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000433	0.0000067	0.0000071	0.000193	0.0000053		
calcium, total	7440-70-2	E420	0.050	mg/L	28.8	16.3	17.4	27.4	19.6		
cesium, total	7440-46-2	E420	0.000010	mg/L	0.000038	0.000072	0.000048	0.000029	0.000050		
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00223	0.00183	0.00168	0.00335	0.00162		
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00097	0.00113	0.00040	0.00273	0.00040		
copper, total	7440-50-8	E420	0.00050	mg/L	0.00538	0.00078	0.00360	0.00162	0.00353		
iron, total	7439-89-6	E420	0.010	mg/L	2.48	42.0	28.2	14.0	29.3		
lead, total	7439-92-1	E420	0.000050	mg/L	0.00488	0.000080	0.000351	0.000392	0.000343		
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0010	<0.00010	0.0031	0.0016	0.0033		
magnesium, total	7439-95-4	E420	0.0050	mg/L	2.22	5.36	6.07	7.14	6.19		
manganese, total	7439-96-5	E420	0.00010	mg/L	0.264	1.01	0.816	1.08	0.829		
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050		
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00273	0.00108	0.00106	0.000452	0.00108		
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00184	0.00121	0.00115	0.00268	0.00123		
phosphorus, total	7723-14-0	E420	0.050	mg/L	0.077	<0.050	0.078	<0.050	0.056		
potassium, total	7440-09-7	E420	0.050	mg/L	2.03	3.10	3.56	3.11	3.61		
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00296	0.00970	0.00470	0.00816	0.00465		
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000213	0.000076	<0.000050	0.000164	<0.000050		
silicon, total	7440-21-3	E420	0.10	mg/L	8.82	12.6	16.0	12.8	15.9		
silver, total	7440-22-4	E420	0.000010	mg/L	0.000010	<0.000010	<0.000010	<0.000010	<0.000010		



Analytical Results

Sub-Matrix: Water (Matrix: Water)		Client sample ID				20MW-07	20MW-08	20MW-10D	20MW-10S	QA2
Analyte	CAS Number	Method	LOR	Unit	16-Dec-2020 16:30	17-Dec-2020 11:30	17-Dec-2020 09:30	17-Dec-2020 09:30	17-Dec-2020 17-Dec-2020	
					Result	Result	Result	Result	Result	
Total Metals										
sodium, total	17341-25-2	E420	0.050	mg/L	5.45	9.03	8.52	5.61	8.94	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.133	0.129	0.141	0.159	0.141	
sulfur, total	7704-34-9	E420	0.50	mg/L	0.68	<0.50	<0.50	2.79	<0.50	
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
thallium, total	7440-28-0	E420	0.00010	mg/L	0.00015	<0.00010	<0.00010	0.00014	<0.00010	
thorium, total	7440-29-1	E420	0.00010	mg/L	0.00025	<0.00010	<0.00010	<0.00010	<0.00010	
tin, total	7440-31-5	E420	0.00010	mg/L	0.00034	<0.00010	0.00018	0.00019	0.00019	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.0412	0.0149	0.0182	0.0279	0.0179	
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
uranium, total	7440-61-1	E420	0.00010	mg/L	0.000495	0.000070	0.000050	0.000138	0.000052	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00927	0.00794	0.00260	0.0120	0.00266	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0104	<0.0030	0.0124	0.0068	0.0125	
zirconium, total	7440-67-7	E420	0.00020	mg/L	0.00042	0.00063	0.00029	0.00076	0.00035	
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0738	0.0186	0.0080	0.0383	0.0062	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00016	<0.00010	<0.00010	<0.00010	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00179	0.00138	<0.00010	0.00075	0.00010	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0396	0.0640	0.0281	0.0719	0.0272	
beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.021	0.039	0.015	0.035	0.014	
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000225	<0.0000050	<0.0000050	0.0000298	<0.0000050	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	33.2	17.7	20.8	31.5	19.0	
cesium, dissolved	7440-46-2	E421	0.000010	mg/L	<0.000010	0.000069	0.000034	0.000013	0.000033	
chromium, dissolved	7440-47-3	E421, Cr-L	0.00010	mg/L	0.00065	0.00131	0.00040	0.00229	0.00042	
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00080	0.00086	0.00024	0.00243	0.00025	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00101	0.00033	0.00047	0.00023	<0.00020	
iron, dissolved	7439-89-6	E421	0.010	mg/L	2.09	41.9	24.1	13.0	24.1	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000055	<0.000050	<0.000050	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	0.0031	0.0014	0.0030	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	2.83	5.53	6.56	7.64	6.40	



Analytical Results

Sub-Matrix: Water (Matrix: Water)		Client sample ID				20MW-07	20MW-08	20MW-10D	20MW-10S	QA2
Analyte	CAS Number	Method	LOR	Unit	Client sampling date / time	Result	Result	Result	Result	Result
Dissolved Metals										
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	16-Dec-2020 16:30	0.342	1.06	0.868	1.14	0.830
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	17-Dec-2020 09:30	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	17-Dec-2020 11:30	0.00382 ^{DTMF}	0.000993	0.000804	0.000383	0.000809
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00150	0.00091	0.00087	0.00251	0.00080
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
potassium, dissolved	7440-09-7	E421	0.050	mg/L		2.41	2.94	3.41	2.97	3.51
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00326	0.00976	0.00461	0.00807	0.00443
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000252	0.000061	<0.000050	0.000118	<0.000050
silicon, dissolved	7440-21-3	E421	0.050	mg/L		9.03	12.8	15.1	12.7	14.8
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	17341-25-2	E421	0.050	mg/L		6.54	8.66	8.24	5.53	8.26
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.132	0.132	0.133	0.152	0.136
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		<0.50	<0.50	<0.50	2.27	<0.50
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
thallium, dissolved	7440-28-0	E421	0.00010	mg/L		0.000012	<0.000010	<0.000010	0.000012	<0.000010
thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		0.00118	0.00065	<0.00030	0.00162	<0.00030
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000507	0.000050	0.000023	0.000112	0.000025
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		0.00890	0.00683	0.00100	0.00940	0.00097
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0023	0.0019	0.0106	0.0075	0.0098
zirconium, dissolved	7440-67-7	E421	0.00020	mg/L		0.00022	0.00051	<0.00020	0.00076	<0.00020
dissolved mercury filtration location	----	EP509	-	-		Field	Field	Field	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



Analytical Results

Sub-Matrix: Water
 (Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID					
					Client sampling date / time	20MW-07	20MW-08	20MW-10D	20MW-10S	QA2
Volatile Organic Compounds										
dichloropropane, 1,2-	78-87-5	E611C	0.50	µg/L	16-Dec-2020 16:30	<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropylene, cis+trans-1,3-	542-75-6	E611C	0.75	µg/L	17-Dec-2020 11:30	<0.75	<0.75	<0.75	<0.75	<0.75
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.50	µg/L	17-Dec-2020 09:30	<0.50	<0.50	<0.50	<0.50	<0.50
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.50	µg/L	17-Dec-2020 09:30	<0.50	<0.50	<0.50	<0.50	<0.50
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.20	µg/L	17-Dec-2020 09:30	<0.20	<0.20	<0.20	<0.20	<0.20
trichloroethane, 1,1,2-	79-00-5	E611C	0.50	µg/L	17-Dec-2020 09:30	<0.50	<0.50	<0.50	<0.50	<0.50
trichlorofluoromethane	75-69-4	E611C	0.50	µg/L	17-Dec-2020 09:30	<0.50	<0.50	<0.50	<0.50	<0.50
Volatile Organic Compounds [Drycleaning]										
carbon tetrachloride	56-23-5	E611C	0.50	µg/L	16-Dec-2020 16:30	<0.50	<0.50	<0.50	<0.50	<0.50
chloroethane	75-00-3	E611C	0.50	µg/L	16-Dec-2020 16:30	<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethane, 1,1-	75-34-3	E611C	0.50	µg/L	16-Dec-2020 16:30	<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethane, 1,2-	107-06-2	E611C	0.50	µg/L	16-Dec-2020 16:30	<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethylene, 1,1-	75-35-4	E611C	0.50	µg/L	16-Dec-2020 16:30	<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethylene, cis-1,2-	156-59-4	E611C	0.50	µg/L	16-Dec-2020 16:30	<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethylene, trans-1,2-	156-60-5	E611C	0.50	µg/L	16-Dec-2020 16:30	<0.50	<0.50	<0.50	<0.50	<0.50
dichloromethane	75-09-2	E611C	0.50	µg/L	16-Dec-2020 16:30	<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.50	µg/L	16-Dec-2020 16:30	<0.50	<0.50	<0.50	<0.50	<0.50
tetra chloroethylene	127-18-4	E611C	0.50	µg/L	16-Dec-2020 16:30	<0.50	<0.50	<0.50	<0.50	<0.50
trichloroethane, 1,1,1-	71-55-6	E611C	0.50	µg/L	16-Dec-2020 16:30	<0.50	<0.50	<0.50	<0.50	<0.50
trichloroethylene	79-01-6	E611C	0.50	µg/L	16-Dec-2020 16:30	<0.50	<0.50	<0.50	<0.50	<0.50
vinyl chloride	75-01-4	E611C	0.40	µg/L	16-Dec-2020 16:30	<0.40	<0.40	<0.40	<0.40	<0.40
Volatile Organic Compounds [Fuels]										
benzene	71-43-2	E611C	0.50	µg/L	16-Dec-2020 16:30	<0.50	<0.50	<0.50	<0.50	<0.50
ethylbenzene	100-41-4	E611C	0.50	µg/L	16-Dec-2020 16:30	<0.50	<0.50	<0.50	<0.50	<0.50
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.50	µg/L	16-Dec-2020 16:30	<0.50	<0.50	<0.50	<0.50	<0.50
styrene	100-42-5	E611C	0.50	µg/L	16-Dec-2020 16:30	<0.50	<0.50	<0.50	<0.50	<0.50
toluene	108-88-3	E611C	0.40	µg/L	16-Dec-2020 16:30	<0.40	<0.40	<0.40	<0.40	<0.40
xylene, m+p-	179601-23-1	E611C	0.50	µg/L	16-Dec-2020 16:30	<0.50	<0.50	<0.50	<0.50	<0.50
xylene, o-	95-47-6	E611C	0.50	µg/L	16-Dec-2020 16:30	<0.50	<0.50	<0.50	<0.50	<0.50
xylene, total	1330-20-7	E611C	0.75	µg/L	16-Dec-2020 16:30	<0.75	<0.75	<0.75	<0.75	<0.75
Volatile Organic Compounds Surrogates										



Analytical Results

Sub-Matrix: Water (Matrix: Water)		Client sample ID													
Analyte	CAS Number	Method	LOR	Client sampling date / time		20MW-07		20MW-08		20MW-10D		20MW-10S		QA2	
				Unit	Result	Unit	Result	Unit	Result	Unit	Result	Unit	Result	Unit	Result
Volatile Organic Compounds Surrogates															
bromofluorobenzene, 4-	460-00-4	E611C	0.50	%	16-Dec-2020 16:30	98.5	17-Dec-2020 11:30	95.3	17-Dec-2020 09:30	97.9	17-Dec-2020 09:30	95.3	17-Dec-2020 09:30	98.0	17-Dec-2020
difluorobenzene, 1,4-	540-36-3	E611C	0.50	%		108		104		104		109		100	
Hydrocarbons															
EPH (C10-C19)	---	E601A	250	µg/L		<250		<250		<250		<250		<250	
EPH (C19-C32)	---	E601A	250	µg/L		<250		<250		<250		<250		<250	
VHw (C6-C10)	---	E581.VH+F1	100	µg/L		<100		<100		<100		<100		<100	
VPHw	---	EC580A	100	µg/L		<100		<100		<100		<100		<100	
HEPHw	---	EC600A	250	µg/L		<250		<250		<250		<250		<250	
LEPHw	---	EC600A	250	µg/L		<250		<250		<250		<250		<250	
Hydrocarbons Surrogates															
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	50	%		79.7		78.2		81.6		77.1		98.1	
dichlorotoluene, 3,4-	97-75-0	E581.VH+F1	1.0	%		98.0		90.7		106		86.5		90.9	
Polycyclic Aromatic Hydrocarbons															
acenaphthene	83-32-9	E641A	0.010	µg/L		<0.010		<0.010		<0.020 ^{DLCL}		<0.010		<0.030 ^{DLCL}	
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		<0.020 ^{DLCL}		<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		<0.010		<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		<0.010		<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		<0.010		<0.010		<0.010	
fluorene	86-73-7	E641A	0.010	µg/L		<0.010		<0.010		0.036		<0.010		0.053	
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	
methylanthralene, 1-	90-12-0	E641A	0.010	µg/L		<0.010		<0.010		0.021		<0.010		0.030	
methylnaphthalene, 2-	91-57-6	E641A	0.010	µg/L		<0.010		<0.010		<0.010		<0.010		<0.010	
naphthalene	91-20-3	E641A	0.050	µg/L		<0.050		<0.050		0.273		<0.050		0.329	



Analytical Results

Sub-Matrix: Water
 (Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID				
					20MW-07	20MW-08	20MW-10D	20MW-10S	QA2
Client sampling date / time					16-Dec-2020 16:30	17-Dec-2020 11:30	17-Dec-2020 09:30	17-Dec-2020 09:30	17-Dec-2020
Client sample ID					VA20C3659-001	VA20C3659-002	VA20C3659-003	VA20C3659-004	VA20C3659-005
					Result	Result	Result	Result	Result
Polycyclic Aromatic Hydrocarbons									
phenanthrene	85-01-8	E641A	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	0.024
pyrene	129-00-0	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<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	%	102	107	101	103	114
chrysene-d12	1719-03-5	E641A	0.010	%	122	128	119	125	126
naphthalene-d8	1146-65-2	E641A	0.010	%	87.8	88.5	81.7	87.2	94.7
phenanthrene-d10	1517-22-2	E641A	0.010	%	99.6	102	95.5	101	110
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
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

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



QUALITY CONTROL INTERPRETIVE REPORT

Page : 1 of 14

Work Order : **VA20C3659**

Amendment : 3

Client : **CH2M Hill Canada Limited**
Contact : Jelena Sladojevic
Address : Metrotower II, Suite 2100 4720 Kingsway
Burnaby BC Canada V5H 4N2

Laboratory : Vancouver - Environmental
Account Manager : Edward Ngai
Address : 8081 Lougheed Highway
Burnaby, British Columbia Canada V5A 1W9

Telephone : ----

Telephone : +1 604 253 4188

Project : CE777000 TU.CP Jacobs

Date Samples Received : 17-Dec-2020 18:00

PO : 670014CH.B0.01.09

Issue Date : 30-Dec-2020 12:39

C-O-C number : 17-861490

Sampler : Andrew Canali

Site : ----

Quote number : VA20-CHMH100-013

No. of samples received : 5

No. of samples analysed : 5

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 Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



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: **Water** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation			Analysis						
			Preparation Date	Holding Times Rec	Actual	Eval	Analysis Date	Holding Times Rec	Actual	Eval		
Container / Client Sample ID(s)												
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)												
HDPE dissolved (nitric acid) 20MW-08	E421.Cr-L	17-Dec-2020	17-Dec-2020	180 days	0 days	✓	18-Dec-2020	179 days	0 days	✓		
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)												
HDPE dissolved (nitric acid) 20MW-10D	E421.Cr-L	17-Dec-2020	17-Dec-2020	180 days	0 days	✓	18-Dec-2020	179 days	0 days	✓		
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)												
HDPE dissolved (nitric acid) 20MW-10S	E421.Cr-L	17-Dec-2020	17-Dec-2020	180 days	0 days	✓	18-Dec-2020	179 days	0 days	✓		
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)												
HDPE dissolved (nitric acid) 20MW-07	E421.Cr-L	16-Dec-2020	17-Dec-2020	180 days	1 days	✓	18-Dec-2020	178 days	0 days	✓		
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)												
HDPE dissolved (nitric acid) QA2	E421.Cr-L	17-Dec-2020	18-Dec-2020	181 days	1 days	✓	18-Dec-2020	179 days	0 days	✓		
Dissolved Metals : Dissolved Mercury in Water by CVAAS												
Glass vial dissolved (hydrochloric acid) 20MW-08	E509	17-Dec-2020	18-Dec-2020	28 days	0 days	✓	18-Dec-2020	27 days	0 days	✓		
Dissolved Metals : Dissolved Mercury in Water by CVAAS												
Glass vial dissolved (hydrochloric acid) 20MW-10D	E509	17-Dec-2020	18-Dec-2020	28 days	0 days	✓	18-Dec-2020	27 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		Eval	Analysis Date	Holding Times		
					Rec	Actual			Rec	Actual	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-10S		E509	17-Dec-2020	18-Dec-2020	28 days	0 days	✓	18-Dec-2020	27 days	0 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-07		E509	16-Dec-2020	18-Dec-2020	28 days	1 days	✓	18-Dec-2020	26 days	0 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) QA2		E509	17-Dec-2020	18-Dec-2020	29 days	1 days	✓	18-Dec-2020	27 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) 20MW-08		E421	17-Dec-2020	17-Dec-2020	180 days	0 days	✓	18-Dec-2020	179 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) 20MW-10D		E421	17-Dec-2020	17-Dec-2020	180 days	0 days	✓	18-Dec-2020	179 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) 20MW-10S		E421	17-Dec-2020	17-Dec-2020	180 days	0 days	✓	18-Dec-2020	179 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) 20MW-07		E421	16-Dec-2020	17-Dec-2020	180 days	1 days	✓	18-Dec-2020	178 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) QA2		E421	17-Dec-2020	18-Dec-2020	181 days	1 days	✓	18-Dec-2020	179 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-08		E601A	17-Dec-2020	18-Dec-2020	14 days	0 days	✓	18-Dec-2020	40 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		Analysis Date	Eval	Holding Times		
					Rec	Actual			Rec	Actual	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-10D		E601A	17-Dec-2020	18-Dec-2020	14 days	0 days	40 days	18-Dec-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-10S		E601A	17-Dec-2020	18-Dec-2020	14 days	0 days	40 days	18-Dec-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-07		E601A	16-Dec-2020	18-Dec-2020	14 days	1 days	40 days	18-Dec-2020	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) QA2		E601A	17-Dec-2020	18-Dec-2020	15 days	1 days	40 days	21-Dec-2020	40 days	3 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID											
Glass vial (sodium bisulfate) 20MW-08		E581.VH+F1	17-Dec-2020	18-Dec-2020	14 days	1 days	12 days	21-Dec-2020	12 days	3 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID											
Glass vial (sodium bisulfate) 20MW-10D		E581.VH+F1	17-Dec-2020	18-Dec-2020	14 days	1 days	12 days	21-Dec-2020	12 days	3 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID											
Glass vial (sodium bisulfate) 20MW-10S		E581.VH+F1	17-Dec-2020	18-Dec-2020	14 days	1 days	11 days	21-Dec-2020	12 days	3 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID											
Glass vial (sodium bisulfate) 20MW-07		E581.VH+F1	16-Dec-2020	18-Dec-2020	14 days	2 days	11 days	21-Dec-2020	11 days	3 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID											
Glass vial (sodium bisulfate) QA2		E581.VH+F1	17-Dec-2020	18-Dec-2020	15 days	1 days	13 days	21-Dec-2020	13 days	3 days	✓



Matrix: **Water** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation		Analysis Date	Analysis	
			Preparation Date	Holding Times Rec / Actual		Eval	Holding Times Rec / Actual
Container / Client Sample ID(s)							
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS							
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-08	E641A	17-Dec-2020	18-Dec-2020	14 days	18-Dec-2020	40 days	0 days ✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS							
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-10D	E641A	17-Dec-2020	18-Dec-2020	14 days	18-Dec-2020	40 days	0 days ✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS							
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-10S	E641A	17-Dec-2020	18-Dec-2020	14 days	18-Dec-2020	40 days	0 days ✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS							
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-07	E641A	16-Dec-2020	18-Dec-2020	14 days	18-Dec-2020	40 days	0 days ✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS							
Amber glass/Teflon lined cap (sodium bisulfate) QA2	E641A	17-Dec-2020	18-Dec-2020	15 days	18-Dec-2020	40 days	0 days ✓
Total Metals : Total Chromium in Water by CRC IC-PMS (Low Level)							
HDPE total (nitric acid) 20MW-08	E420.Cr-L	17-Dec-2020	----	----	18-Dec-2020	180 days	0 days ✓
Total Metals : Total Chromium in Water by CRC IC-PMS (Low Level)							
HDPE total (nitric acid) 20MW-07	E420.Cr-L	16-Dec-2020	----	----	18-Dec-2020	180 days	1 days ✓
Total Metals : Total Chromium in Water by CRC IC-PMS (Low Level)							
HDPE total (nitric acid) 20MW-10D	E420.Cr-L	17-Dec-2020	----	----	18-Dec-2020	180 days	1 days ✓
Total Metals : Total Chromium in Water by CRC IC-PMS (Low Level)							
HDPE total (nitric acid) 20MW-10S	E420.Cr-L	17-Dec-2020	----	----	18-Dec-2020	180 days	1 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	Analysis Date	Holding Times Rec	Holding Times Actual	Eval	
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)											
HDPE total (nitric acid)	QA2	E420.Cr-L	17-Dec-2020	----	----	----	181 days	181 days	18-Dec-2020	1 days	✓
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid)	20MW-08	E508	17-Dec-2020	----	----	----	28 days	28 days	18-Dec-2020	0 days	✓
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid)	20MW-10D	E508	17-Dec-2020	----	----	----	28 days	28 days	18-Dec-2020	0 days	✓
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid)	20MW-10S	E508	17-Dec-2020	----	----	----	28 days	28 days	18-Dec-2020	0 days	✓
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid)	20MW-07	E508	16-Dec-2020	----	----	----	28 days	28 days	18-Dec-2020	1 days	✓
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid)	QA2	E508	17-Dec-2020	----	----	----	29 days	29 days	18-Dec-2020	1 days	✓
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE total (nitric acid)	20MW-08	E420	17-Dec-2020	----	----	----	180 days	180 days	18-Dec-2020	0 days	✓
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE total (nitric acid)	20MW-07	E420	16-Dec-2020	----	----	----	180 days	180 days	18-Dec-2020	1 days	✓
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE total (nitric acid)	20MW-10D	E420	17-Dec-2020	----	----	----	180 days	180 days	18-Dec-2020	1 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
Total Metals : Total Metals in Water by CRC ICPMS									
HDPE total (nitric acid)	20MW-10S	E420	17-Dec-2020	----	----	----	180 days	1 days	✓
Total Metals : Total Metals in Water by CRC ICPMS									
HDPE total (nitric acid)	QA2	E420	17-Dec-2020	----	----	----	181 days	1 days	✓
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS									
Glass vial (sodium bisulfate)	20MW-07	E611C	16-Dec-2020	18-Dec-2020	----	----	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS									
Glass vial (sodium bisulfate)	20MW-08	E611C	17-Dec-2020	18-Dec-2020	----	----	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS									
Glass vial (sodium bisulfate)	20MW-10D	E611C	17-Dec-2020	18-Dec-2020	----	----	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS									
Glass vial (sodium bisulfate)	20MW-10S	E611C	17-Dec-2020	18-Dec-2020	----	----	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS									
Glass vial (sodium bisulfate)	QA2	E611C	17-Dec-2020	18-Dec-2020	----	----	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS									
Glass vial (sodium bisulfate)	20MW-07	E611C	16-Dec-2020	18-Dec-2020	----	----	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS									
Glass vial (sodium bisulfate)	20MW-08	E611C	17-Dec-2020	18-Dec-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		Analysis Date	Eval	Holding Times	
					Rec	Actual			Rec	Actual
Volatle Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-10D		E611C	17-Dec-2020	18-Dec-2020	---	---	---	18-Dec-2020	---	---
Volatle Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-10S		E611C	17-Dec-2020	18-Dec-2020	---	---	---	18-Dec-2020	---	---
Volatle Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) QA2		E611C	17-Dec-2020	18-Dec-2020	---	---	---	18-Dec-2020	---	---
Volatle Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-08		E611C	17-Dec-2020	18-Dec-2020	14 days	1 days	✓	18-Dec-2020	12 days	0 days
Volatle Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-10D		E611C	17-Dec-2020	18-Dec-2020	14 days	1 days	✓	18-Dec-2020	12 days	0 days
Volatle Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-10S		E611C	17-Dec-2020	18-Dec-2020	14 days	1 days	✓	18-Dec-2020	12 days	0 days
Volatle Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-07		E611C	16-Dec-2020	18-Dec-2020	14 days	2 days	✓	18-Dec-2020	11 days	0 days
Volatle Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) QA2		E611C	17-Dec-2020	18-Dec-2020	15 days	1 days	✓	18-Dec-2020	13 days	0 days
Volatle Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-07		E611C	16-Dec-2020	18-Dec-2020	---	---	---	18-Dec-2020	---	---



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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		Analysis Date	Holding Times		Eval
					Rec	Actual		Rec	Actual	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)	20MW-08	E611C	17-Dec-2020	18-Dec-2020	---	---	18-Dec-2020	---	---	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)	20MW-10D	E611C	17-Dec-2020	18-Dec-2020	---	---	18-Dec-2020	---	---	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)	20MW-10S	E611C	17-Dec-2020	18-Dec-2020	---	---	18-Dec-2020	---	---	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)	QA2	E611C	17-Dec-2020	18-Dec-2020	---	---	18-Dec-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: **Water** Evaluation: * = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type Analytical Methods	Method	QC Lot #	Count			Frequency (%)		Evaluation
			QC	Regular	Actual	Expected		
Laboratory Duplicates (DUP)								
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	132556	2	18	11.1	5.0	✓	
Dissolved Mercury in Water by CVAAS	E509	132645	1	12	8.3	5.0	✓	
Dissolved Metals in Water by CRC ICPMS	E421	132555	3	27	11.1	5.0	✓	
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	132551	2	12	16.6	5.0	✓	
Total Mercury in Water by CVAAS	E508	132652	1	8	12.5	5.0	✓	
Total Metals in Water by CRC ICPMS	E420	132552	2	27	7.4	5.0	✓	
VH and F1 by Headspace GC-FID	E581.VH+F1	134068	0	5	0.0	5.0	✗	
VOCs (BC List) by Headspace GC-MS	E611C	132936	1	20	5.0	5.0	✓	
Laboratory Control Samples (LCS)								
BC PHC - EPH by GC-FID	E601A	132553	2	26	7.6	5.0	✓	
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	132556	2	18	11.1	5.0	✓	
Dissolved Mercury in Water by CVAAS	E509	132645	1	12	8.3	5.0	✓	
Dissolved Metals in Water by CRC ICPMS	E421	132555	2	27	7.4	5.0	✓	
PAHs by Hexane LVI GC-MS	E641A	132554	2	25	8.0	5.0	✓	
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	132551	2	12	16.6	5.0	✓	
Total Mercury in Water by CVAAS	E508	132652	1	8	12.5	5.0	✓	
Total Metals in Water by CRC ICPMS	E420	132552	2	27	7.4	5.0	✓	
VH and F1 by Headspace GC-FID	E581.VH+F1	134068	1	5	20.0	5.0	✓	
VOCs (BC List) by Headspace GC-MS	E611C	132936	1	20	5.0	5.0	✓	
Method Blanks (MB)								
BC PHC - EPH by GC-FID	E601A	132553	2	26	7.6	5.0	✓	
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	132556	2	18	11.1	5.0	✓	
Dissolved Mercury in Water by CVAAS	E509	132645	1	12	8.3	5.0	✓	
Dissolved Metals in Water by CRC ICPMS	E421	132555	2	27	7.4	5.0	✓	
PAHs by Hexane LVI GC-MS	E641A	132554	2	25	8.0	5.0	✓	
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	132551	2	12	16.6	5.0	✓	
Total Mercury in Water by CVAAS	E508	132652	1	8	12.5	5.0	✓	
Total Metals in Water by CRC ICPMS	E420	132552	2	27	7.4	5.0	✓	
VH and F1 by Headspace GC-FID	E581.VH+F1	134068	1	5	20.0	5.0	✓	
VOCs (BC List) by Headspace GC-MS	E611C	132936	1	20	5.0	5.0	✓	
Matrix Spikes (MS)								
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	132556	2	18	11.1	5.0	✓	
Dissolved Mercury in Water by CVAAS	E509	132645	1	12	8.3	5.0	✓	
Dissolved Metals in Water by CRC ICPMS	E421	132555	2	27	7.4	5.0	✓	
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	132551	2	12	16.6	5.0	✓	
Total Mercury in Water by CVAAS	E508	132652	1	8	12.5	5.0	✓	
Total Metals in Water by CRC ICPMS	E420	132552	2	27	7.4	5.0	✓	
VH and F1 by Headspace GC-FID	E581.VH+F1	134068	1	5	20.0	5.0	✓	
VOCs (BC List) by Headspace GC-MS	E611C	132936	1	20	5.0	5.0	✓	



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Matrix: **Water** Evaluation: * = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
Analytical Methods							
Matrix Spikes (MS) - Continued							
VH and F1 by Headspace GC-FID	E581.VH+F1	134068	0	5	0.0	5.0	✘
VOCs (BC List) by Headspace GC-MS	E611C	132936	1	20	5.0	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
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cf-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
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.Cf-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
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
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 Vancouver - Environmental	Water	BC MOE Lab Manual	Extractable Petroleum Hydrocarbons (EPH) 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.



Analytical Methods		Method / Lab	Matrix	Method Reference	Method Descriptions
PAHs by Hexane LVI GC-MS	E641A Vancouver - Environmental	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.	
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO ₃ , dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO ₃ 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.	
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO ₃), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO ₃ 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. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.	
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 Vancouver - 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.	
Preparation Methods					
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO ₃ .	
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 Vancouver - Environmental	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.	

Work Order : **VA20C3659**
 Amendment : **3**

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Client : CH2M Hill Canada Limited Contact : Jelena Sladojevic Address : Metrotower II, Suite 2100 4720 Kingsway Burnaby BC Canada V5H 4N2 Telephone : ---- Project : CE777000 TU:CP Jacobs PO : 670014CH:B0.01.09 C-O-C number : 17-861490 Sampler : Andrew Canali Site : ---- Quote number : VA20-CHMH100-013 No. of samples received : 5 No. of samples analysed : 5	Laboratory : Vancouver - Environmental Account Manager : Edward Ngai Address : 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9 Telephone : +1 604 253 4188 Date Samples Received : 17-Dec-2020 18:00 Date Analysis Commenced : 17-Dec-2020 Issue Date : 30-Dec-2020 12:40
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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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory/Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Janice Leung	Supervisor - Organics Extractions	Organics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Paul Cushing	Team Leader - Organics	Organics, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	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 (QC) 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).

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
Total Metals (QC Lot: 132551)											
VA20C3657-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00111	0.00107	4.18%	20%	----
Total Metals (QC Lot: 132552)											
VA20C3657-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.478	0.477	0.187%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00055	0.00053	0.00002	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0630	0.0626	0.684%	20%	----
		beryllium, total	7440-41-7	E420	0.00010	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.00050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.014	0.014	0.00005	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000216	0.0000193	0.0000022	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	27.3	27.1	0.759%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	0.0000025	0.0000023	0.0000003	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00279	0.00274	1.83%	20%	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00146	0.00230	0.00084	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	13.2	13.0	2.21%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000256	0.000259	0.000002	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0040	0.0039	0.0001	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	4.93	4.59	7.32%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.965	0.954	1.14%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00109	0.00114	4.67%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00239	0.00228	0.00011	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	3.83	3.78	1.27%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00357	0.00360	0.776%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000066	0.000066	0.0000002	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	17.8	16.7	6.69%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	9.60	9.39	2.24%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.146	0.144	1.49%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000010	0.000010	0.00000004	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
Total Metals (QC Lot: 132552) - continued											
VA20C3657-001	Anonymous	thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	0.00010	0.00010	0.000001	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.0216	0.0206	4.70%	20%	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.00010	mg/L	0.000116	0.000113	2.63%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00297	0.00285	0.00012	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0044	0.0047	0.0003	Diff <2x LOR	----
		zirconium, total	7440-67-7	E420	0.00020	mg/L	0.00035	0.00034	0.00002	Diff <2x LOR	----
Total Metals (QC Lot: 132579)											
VA20C3659-005	QA2	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.422	0.439	4.05%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00022	0.00023	0.00001	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0314	0.0318	1.39%	20%	----
		beryllium, total	7440-41-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.014	0.014	0.00002	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.000050	mg/L	0.000053	0.000059	0.000007	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	19.6	18.3	7.11%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	0.000050	0.000047	0.000004	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00040	0.00040	0.0000008	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00353	0.00369	0.00016	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	29.3	28.2	3.70%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000343	0.000348	0.000005	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0033	0.0034	0.000009	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	6.19	6.06	2.09%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.829	0.839	1.20%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00108	0.00103	4.56%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00123	0.00121	0.00002	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	0.056	0.069	0.013	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	3.61	3.63	0.430%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00465	0.00482	3.59%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	15.9	15.7	1.34%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	8.94	8.96	0.241%	20%	----



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 Work Order : VA20C3659 Amendment 3
 Client : CH2M Hill Canada Limited
 Project : CE777000 TU.CP Jacobs

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
Total Metals (QC Lot: 132579) - continued											
VA20C3659-005	QA2	strontium, total	7440-24-6	E420	0.00020	mg/L	0.141	0.136	3.74%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	0.00019	0.00018	0.00001	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.0179	0.0184	2.96%	20%	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000052	0.000057	0.000005	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00266	0.00265	0.00001	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0125	0.0125	0.00007	Diff <2x LOR	----
		zirconium, total	7440-67-7	E420	0.00020	mg/L	0.00035	0.00035	0.000008	Diff <2x LOR	----
Total Metals (QC Lot: 132580)											
VA20C3659-005	QA2	chromium, total	7440-47-3	E420 Cr-L	0.00010	mg/L	0.00162	0.00160	0.982%	20%	----
Total Metals (QC Lot: 132652)											
VA20C3657-001	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 132555)											
VA20C3657-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0116	0.0120	3.54%	20%	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-39-2	E421	0.00010	mg/L	0.00048	0.00046	0.00003	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0612	0.0618	0.923%	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	0.014	0.014	0.0004	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000158	0.0000197	0.0000039	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	30.8	31.4	1.87%	20%	----
		cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000012	0.000013	0.000001	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00256	0.00256	0.0252%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	12.2	12.3	0.434%	20%	----
		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	0.0040	0.0039	0.0001	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	5.00	4.82	3.62%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	1.02	1.04	1.00%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00112	0.00112	0.411%	20%	----



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 Work Order : VA20C3659 Amendment 3
 Client : CH2M Hill Canada Limited
 Project : CE777000 TU.CP Jacobs

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: 132555) - continued											
VA20C3657-001	Anonymous	nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00209	0.00205	0.00004	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	3.77	3.85	2.08%	20%	----
		rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00340	0.00328	3.71%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000061	0.000057	0.000004	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	16.5	16.4	0.375%	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	9.09	9.30	2.33%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.143	0.144	0.255%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		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	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	0.00031	0.00039	0.00009	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	0.000094	0.000092	0.000002	Diff <2x LOR	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00159	0.00156	0.00003	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0028	0.0029	0.0001	Diff <2x LOR	----
		zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	0.00021	<0.00020	0.000006	Diff <2x LOR	----
Dissolved Metals (QC Lot: 132556)											
VA20C3657-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00042	0.00043	0.000009	Diff <2x LOR	----
Dissolved Metals (QC Lot: 132606)											
KS2002904-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 132607)											
KS2002904-001	Anonymous	zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0338	0.0334	1.08%	20%	----
		aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0483	0.0491	1.61%	20%	----
		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	0.00050	0.00052	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00160	0.00164	2.84%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	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	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	1.73	1.71	1.22%	20%	----



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 Work Order : VA20C3659 Amendment 3
 Client : CH2M Hill Canada Limited
 Project : CE777000 TU,CP Jacobs

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: 132607) - continued											
KS2002904-001	Anonymous	cesium, dissolved	7440-46-2	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.000020	mg/L	<0.000020	<0.000020	0	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	0.0017	0.0017	0.00003	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
		manganese, dissolved	7439-96-5	E421	0.000010	mg/L	0.00859	0.00860	0.154%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00161	0.00161	0.120%	20%	----
		nickel, dissolved	7440-02-0	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	0.062	0.062	0.0001	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	0.787	0.785	0.002	Diff <2x LOR	----
		rubidium, dissolved	7440-17-7	E421	0.000020	mg/L	0.00097	0.00101	0.00004	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.65	4.70	1.15%	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	43.7	43.6	0.263%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0310	0.0314	1.09%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	3.90	3.91	0.01	Diff <2x LOR	----
		tellurium, dissolved	13494-80-9	E421	0.000020	mg/L	<0.000020	<0.000020	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	<0.00010	<0.00010	0	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	0.00848	0.00851	0.424%	20%	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000095	0.000096	0.000001	Diff <2x LOR	----
		vanadium, dissolved	7440-62-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		zirconium, dissolved	7440-67-7	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 132645)											
VA20C3213-005	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 132936)											
VA20C3237-001	Anonymous	benzene	71-43-2	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		bromochloromethane	75-27-4	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		bromoforn	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	----



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
VA20C3237-001	Anonymous	Volatile Organic Compounds (QC Lot: 132936) - continued									
		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	----



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: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 132551)						
chromium, total	7440-47-3	E420.Cf-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 132552)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 132552) - continued						
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Total Metals (QCLot: 132579)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 132579) - continued						
tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Total Metals (QCLot: 132580)						
chromium, total	7440-47-3	E420,Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 132652)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 132555)						
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	----
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	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QC Lot: 132555) - continued						
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 (QC Lot: 132556)						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
Dissolved Metals (QC Lot: 132606)						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
Dissolved Metals (QC Lot: 132607)						
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	----
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	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QC Lot: 132607) - continued						
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 (QC Lot: 132645)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Volatile Organic Compounds (QC Lot: 132936)						
benzene	71-43-2	E611C	0.5	µg/L	<0.50	----
bromodichloromethane	75-27-4	E611C	0.5	µg/L	<0.50	----
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	----



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 Work Order : VA20C3659 Amendment 3
 Client : CH2M Hill Canada Limited
 Project : CE777000 TU.CP Jacobs

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 132936) - continued						
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: 132553)						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
Hydrocarbons (QCLot: 132832)						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
Hydrocarbons (QCLot: 134068)						
VHw (C6-C10)	----	E581.VH+F1	100	µg/L	<100	----
Polycyclic Aromatic Hydrocarbons (QCLot: 132554)						
acenaphthene	83-32-9	E641A	0.01	µg/L	<0.010	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QC Lot: 132554) - continued						
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+g,h,i)fluoranthene	----	E641A	0.01	µg/L	<0.010	----
benzo(b+g,h,i)fluoranthene	----	E641A	0.015	µg/L	<0.015	----
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	----
Polycyclic Aromatic Hydrocarbons (QC Lot: 132831)						
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+g,h,i)fluoranthene	----	E641A	0.01	µg/L	<0.010	----
benzo(b+g,h,i)fluoranthene	----	E641A	0.015	µg/L	<0.015	----
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	----



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 Work Order : VA20C3659 Amendment 3
 Client : CH2M Hill Canada Limited
 Project : CE777000 TU.CP Jacobs

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 132831) - continued						
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	----



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: **Water**

Analyte	CAS Number	Method	LOR	Unit	Concentration	Laboratory Control Sample (LCS) Report			Qualifier
						Recovery (%)	Low	High	
Total Metals (QCLot: 132551)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	99.4	80.0	120	---
Total Metals (QCLot: 132552)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	98.8	80.0	120	---
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	101	80.0	120	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	98.8	80.0	120	---
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	99.1	80.0	120	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	95.6	80.0	120	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	99.6	80.0	120	---
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	89.4	80.0	120	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	96.4	80.0	120	---
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	95.7	80.0	120	---
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	99.2	80.0	120	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	99.5	80.0	120	---
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	96.9	80.0	120	---
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	103	80.0	120	---
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	95.0	80.0	120	---
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	92.9	80.0	120	---
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	99.4	80.0	120	---
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	96.6	80.0	120	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	101	80.0	120	---
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	96.6	80.0	120	---
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	110	80.0	120	---
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	101	80.0	120	---
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	100	80.0	120	---
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	98.6	80.0	120	---
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	97.1	80.0	120	---
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	99.9	80.0	120	---
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	104	80.0	120	---
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	101	80.0	120	---
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	96.1	80.0	120	---
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	99.5	80.0	120	---
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	97.9	80.0	120	---
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	92.5	80.0	120	---
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	95.1	80.0	120	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike Concentration	Recovery (%)	LCS	Recovery Limits (%)	
Total Metals (QCLot: 132552) - continued									
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	93.9	80.0	120	---
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	96.1	80.0	120	---
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	97.4	80.0	120	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	99.4	80.0	120	---
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	99.2	80.0	120	---
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	95.6	80.0	120	---
Total Metals (QCLot: 132579)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	105	80.0	120	---
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	108	80.0	120	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	106	80.0	120	---
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	110	80.0	120	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	102	80.0	120	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	108	80.0	120	---
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	98.4	80.0	120	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	103	80.0	120	---
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	105	80.0	120	---
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	100	80.0	120	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	---
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	101	80.0	120	---
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	98.4	80.0	120	---
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	108	80.0	120	---
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	105	80.0	120	---
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	103	80.0	120	---
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	104	80.0	120	---
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	---
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	99.1	80.0	120	---
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	105	80.0	120	---
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	102	80.0	120	---
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	101	80.0	120	---
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	97.1	80.0	120	---
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	100	80.0	120	---
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	105	80.0	120	---
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	103	80.0	120	---
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	107	80.0	120	---
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	107	80.0	120	---
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	104	80.0	120	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report			Qualifier
					Spike Concentration	Recovery (%)	Recovery Limits (%)	
					LCS	Low	High	
Total Metals (QCLot: 132579) - continued								
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	80.0	120	---
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	80.0	120	---
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	80.0	120	---
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	80.0	120	---
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	80.0	120	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	80.0	120	---
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	80.0	120	---
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	80.0	120	---
Total Metals (QCLot: 132580)								
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	80.0	120	---
Total Metals (QCLot: 132652)								
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	80.0	120	---
Dissolved Metals (QCLot: 132555)								
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	80.0	120	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	80.0	120	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	80.0	120	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	80.0	120	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	80.0	120	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	80.0	120	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	80.0	120	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	80.0	120	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	80.0	120	---
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	80.0	120	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	80.0	120	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	80.0	120	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	80.0	120	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	80.0	120	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	80.0	120	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	80.0	120	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	80.0	120	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	80.0	120	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	80.0	120	---
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	70.0	130	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	80.0	120	---
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	80.0	120	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	80.0	120	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Recovery (%)		Recovery Limits (%)		
					Concentration	LCS	Low	High	
Dissolved Metals (QCLot: 132555) - continued									
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	99.0	80.0	120	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	103	80.0	120	---
sironium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	97.7	80.0	120	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	93.6	80.0	120	---
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	97.5	80.0	120	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	94.2	80.0	120	---
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	94.4	80.0	120	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.1	80.0	120	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.1	80.0	120	---
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	94.2	80.0	120	---
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	95.5	80.0	120	---
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.9	80.0	120	---
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	103	80.0	120	---
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	94.5	80.0	120	---
Dissolved Metals (QCLot: 132556)									
chromium, dissolved	7440-47-3	E421,Cr-L	0.0001	mg/L	0.25 mg/L	98.8	80.0	120	---
Dissolved Metals (QCLot: 132606)									
chromium, dissolved	7440-47-3	E421,Cr-L	0.0001	mg/L	0.25 mg/L	97.1	80.0	120	---
Dissolved Metals (QCLot: 132607)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	100	80.0	120	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.6	80.0	120	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	95.2	80.0	120	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	92.6	80.0	120	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	97.0	80.0	120	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	96.5	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	100	80.0	120	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.3	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	98.1	80.0	120	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	93.6	80.0	120	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	97.6	80.0	120	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	97.2	80.0	120	---



Sub-Matrix: **Water**

Laboratory Control Sample (LCS) Report									
Analyte	CAS Number	Method	LOR	Unit	Spike Concentration	Recovery Limits (%)			Qualifier
						LCS	Low	High	
Disolved Metals (QCLot: 132607) - continued									
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	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	110	70.0	130	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	102	80.0	120	---
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	95.6	80.0	120	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	99.4	80.0	120	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	101	80.0	120	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	107	80.0	120	---
sironium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	96.3	80.0	120	---
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	101	80.0	120	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	102	80.0	120	---
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	98.7	80.0	120	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.1 mg/L	97.1	80.0	120	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.5 mg/L	92.5	80.0	120	---
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	97.0	80.0	120	---
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	101	80.0	120	---
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.4	80.0	120	---
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	102	80.0	120	---
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	98.0	80.0	120	---
mercury, dissolved	7439-97-6	E509	0.00005	mg/L	0.0001 mg/L	96.6	80.0	120	---
Volatile Organic Compounds (QCLot: 132936)									
benzene	71-43-2	E611C	0.5	µg/L	100 µg/L	92.6	70.0	130	---
bromodichloromethane	75-27-4	E611C	0.5	µg/L	100 µg/L	103	70.0	130	---
bromoform	75-25-2	E611C	0.5	µg/L	100 µg/L	84.7	70.0	130	---
carbon tetrachloride	56-23-5	E611C	0.5	µg/L	100 µg/L	86.0	70.0	130	---
chlorobenzene	108-90-7	E611C	0.5	µg/L	100 µg/L	95.7	70.0	130	---
chloroethane	75-00-3	E611C	0.5	µg/L	100 µg/L	75.2	60.0	140	---
chloroform	67-66-3	E611C	0.5	µg/L	100 µg/L	102	70.0	130	---
chloromethane	74-87-3	E611C	0.5	µg/L	100 µg/L	77.3	60.0	140	---
dibromochloromethane	124-48-1	E611C	0.5	µg/L	100 µg/L	78.6	70.0	130	---
dichlorobenzene, 1,2-	95-50-1	E611C	0.5	µg/L	100 µg/L	93.0	70.0	130	---
dichlorobenzene, 1,3-	541-73-1	E611C	0.5	µg/L	100 µg/L	91.0	70.0	130	---
dichlorobenzene, 1,4-	106-46-7	E611C	0.5	µg/L	100 µg/L	94.5	70.0	130	---
dichloroethane, 1,1-	75-34-3	E611C	0.5	µg/L	100 µg/L	90.2	70.0	130	---
dichloroethane, 1,2-	107-06-2	E611C	0.5	µg/L	100 µg/L	91.8	70.0	130	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike Concentration	Recovery Limits (%)		High	
						Recovery (%)	LCS		
Volatile Organic Compounds (QCLot: 132936) - continued									
dichloroethylene, 1,1-	75-35-4	E611C	0.5	µg/L	100 µg/L	84.6	70.0	130	---
dichloroethylene, cis-1,2-	156-59-4	E611C	0.5	µg/L	100 µg/L	96.4	70.0	130	---
dichloroethylene, trans-1,2-	156-60-5	E611C	0.5	µg/L	100 µg/L	89.0	70.0	130	---
dichloromethane	75-09-2	E611C	0.5	µg/L	100 µg/L	86.8	70.0	130	---
dichloropropane, 1,2-	78-87-5	E611C	0.5	µg/L	100 µg/L	94.6	70.0	130	---
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.5	µg/L	100 µg/L	88.6	70.0	130	---
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.5	µg/L	100 µg/L	70.6	70.0	130	---
ethylbenzene	100-41-4	E611C	0.5	µg/L	100 µg/L	86.5	70.0	130	---
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.5	µg/L	100 µg/L	93.6	70.0	130	---
styrene	100-42-5	E611C	0.5	µg/L	100 µg/L	88.1	70.0	130	---
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.5	µg/L	100 µg/L	92.6	70.0	130	---
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.2	µg/L	100 µg/L	84.5	70.0	130	---
tetrachloroethylene	127-18-4	E611C	0.5	µg/L	100 µg/L	87.0	70.0	130	---
toluene	108-88-3	E611C	0.4	µg/L	100 µg/L	85.7	70.0	130	---
trichloroethane, 1,1,1-	71-55-6	E611C	0.5	µg/L	100 µg/L	94.3	70.0	130	---
trichloroethane, 1,1,2-	79-00-5	E611C	0.5	µg/L	100 µg/L	86.0	70.0	130	---
trichloroethylene	79-01-6	E611C	0.5	µg/L	100 µg/L	94.5	70.0	130	---
trichlorofluoromethane	75-69-4	E611C	0.5	µg/L	100 µg/L	86.6	60.0	140	---
vinyl chloride	75-01-4	E611C	0.4	µg/L	100 µg/L	77.8	60.0	140	---
xylene, m+p-	179601-23-1	E611C	0.5	µg/L	200 µg/L	102	70.0	130	---
xylene, o-	95-47-6	E611C	0.5	µg/L	100 µg/L	87.4	70.0	130	---
Hydrocarbons (QCLot: 132553)									
EPH (C10-C19)	---	E601A	250	µg/L	6491 µg/L	115	70.0	130	---
EPH (C19-C32)	---	E601A	250	µg/L	3363 µg/L	111	70.0	130	---
Hydrocarbons (QCLot: 132832)									
EPH (C10-C19)	---	E601A	250	µg/L	6491 µg/L	124	70.0	130	---
EPH (C19-C32)	---	E601A	250	µg/L	3363 µg/L	130	70.0	130	---
Hydrocarbons (QCLot: 134068)									
VHw (C6-C10)	---	E581.VHwF1	100	µg/L	6310 µg/L	94.0	70.0	130	---
Polycyclic Aromatic Hydrocarbons (QCLot: 132554)									
acenaphthene	83-32-9	E641A	0.01	µg/L	0.5 µg/L	98.7	60.0	130	---
acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5 µg/L	102	60.0	130	---
acridine	260-94-6	E641A	0.01	µg/L	0.5 µg/L	104	60.0	130	---
anthracene	120-12-7	E641A	0.01	µg/L	0.5 µg/L	106	60.0	130	---
benz(e)anthracene	56-55-3	E641A	0.01	µg/L	0.5 µg/L	116	60.0	130	---



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 Work Order : VA20C3659 Amendment 3
 Client : CH2M Hill Canada Limited
 Project : CE777000 TU.CP Jacobs

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike Concentration	Recovery (%)	LCS	Recovery Limits (%)	
Polycyclic Aromatic Hydrocarbons (QCLot: 132554) - continued									
benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5 µg/L	102	60.0	130	---
benzo(b+)fluoranthene	---	E641A	0.01	µg/L	0.5 µg/L	97.3	60.0	130	---
benzo(b+h)fluoranthene	---	E641A	0.015	µg/L	1 µg/L	101	60.0	130	---
benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	0.5 µg/L	106	60.0	130	---
benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5 µg/L	105	60.0	130	---
chrysene	218-01-9	E641A	0.01	µg/L	0.5 µg/L	114	60.0	130	---
dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5 µg/L	106	60.0	130	---
fluoranthene	206-44-0	E641A	0.01	µg/L	0.5 µg/L	107	60.0	130	---
fluorene	86-73-7	E641A	0.01	µg/L	0.5 µg/L	101	60.0	130	---
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5 µg/L	109	60.0	130	---
methyl(naphthalene, 1-	90-12-0	E641A	0.01	µg/L	0.5 µg/L	92.0	60.0	130	---
methyl(naphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5 µg/L	90.9	60.0	130	---
naphthalene	91-20-3	E641A	0.05	µg/L	0.5 µg/L	95.5	50.0	130	---
phenanthrene	85-01-8	E641A	0.02	µg/L	0.5 µg/L	107	60.0	130	---
pyrene	129-00-0	E641A	0.01	µg/L	0.5 µg/L	110	60.0	130	---
quinoline	6027-02-7	E641A	0.05	µg/L	0.5 µg/L	112	60.0	130	---
Polycyclic Aromatic Hydrocarbons (QCLot: 132831)									
acenaphthene	83-32-9	E641A	0.01	µg/L	0.5 µg/L	114	60.0	130	---
acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5 µg/L	114	60.0	130	---
acridine	260-94-6	E641A	0.01	µg/L	0.5 µg/L	116	60.0	130	---
anthracene	120-12-7	E641A	0.01	µg/L	0.5 µg/L	121	60.0	130	---
benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5 µg/L	128	60.0	130	---
benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5 µg/L	117	60.0	130	---
benzo(b+)fluoranthene	---	E641A	0.01	µg/L	0.5 µg/L	110	60.0	130	---
benzo(b+h)fluoranthene	---	E641A	0.015	µg/L	1 µg/L	115	60.0	130	---
benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	0.5 µg/L	109	60.0	130	---
benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5 µg/L	119	60.0	130	---
chrysene	218-01-9	E641A	0.01	µg/L	0.5 µg/L	118	60.0	130	---
dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5 µg/L	124	60.0	130	---
fluoranthene	206-44-0	E641A	0.01	µg/L	0.5 µg/L	120	60.0	130	---
fluorene	86-73-7	E641A	0.01	µg/L	0.5 µg/L	118	60.0	130	---
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5 µg/L	115	60.0	130	---
methyl(naphthalene, 1-	90-12-0	E641A	0.01	µg/L	0.5 µg/L	111	60.0	130	---
methyl(naphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5 µg/L	109	60.0	130	---
naphthalene	91-20-3	E641A	0.05	µg/L	0.5 µg/L	108	50.0	130	---
phenanthrene	85-01-8	E641A	0.02	µg/L	0.5 µg/L	116	60.0	130	---
pyrene	129-00-0	E641A	0.01	µg/L	0.5 µg/L	124	60.0	130	---



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 Work Order : VA20C3659 Amendment 3
 Client : CH2M Hill Canada Limited
 Project : CE777000 TU.CP Jacobs

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report			
					Recovery (%)	LCS	Low	High
Polycyclic Aromatic Hydrocarbons (QCLot: 132831) - continued quinoline	6027-02-7	E641A	0.05	µg/L	118	60.0	130	---



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 $\geq 1 \times$ spike level.

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report			Recovery Limits (%)	Qualifier	
					Concentration	Target	Recovery (%)			
Total Metals (QC Lot: 132551)										
VA20C3657-002	Anonymous	chromium, total	7440-47-3	E420-Cr-L	0.0403 mg/L	0.04 mg/L	101	70.0	130	---
Total Metals (QC Lot: 132552)										
VA20C3657-002	Anonymous	aluminum, total	7429-90-5	E420	0.232 mg/L	0.2 mg/L	116	70.0	130	---
		antimony, total	7440-36-0	E420	0.0201 mg/L	0.02 mg/L	100	70.0	130	---
		arsenic, total	7440-38-2	E420	0.0201 mg/L	0.02 mg/L	100	70.0	130	---
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	---
		beryllium, total	7440-41-7	E420	0.0404 mg/L	0.04 mg/L	101	70.0	130	---
		bismuth, total	7440-69-9	E420	0.00997 mg/L	0.01 mg/L	99.7	70.0	130	---
		boron, total	7440-42-8	E420	0.095 mg/L	0.1 mg/L	95.4	70.0	130	---
		cadmium, total	7440-43-9	E420	0.00399 mg/L	0.004 mg/L	99.7	70.0	130	---
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	---
		cesium, total	7440-46-2	E420	0.0104 mg/L	0.01 mg/L	104	70.0	130	---
		cobalt, total	7440-48-4	E420	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	---
		copper, total	7440-50-8	E420	0.0192 mg/L	0.02 mg/L	95.9	70.0	130	---
		iron, total	7439-89-6	E420	ND mg/L	2 mg/L	ND	70.0	130	---
		lead, total	7439-92-1	E420	0.0193 mg/L	0.02 mg/L	96.3	70.0	130	---
		lithium, total	7439-93-2	E420	0.0985 mg/L	0.1 mg/L	98.5	70.0	130	---
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	---
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	---
		molybdenum, total	7439-98-7	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	---
		nickel, total	7440-02-0	E420	0.0379 mg/L	0.04 mg/L	94.8	70.0	130	---
		phosphorus, total	7723-14-0	E420	11.0 mg/L	10 mg/L	110	70.0	130	---
		potassium, total	7440-09-7	E420	3.72 mg/L	4 mg/L	93.0	70.0	130	---
		rubidium, total	7440-17-7	E420	0.0200 mg/L	0.02 mg/L	99.9	70.0	130	---
		selenium, total	7782-49-2	E420	0.0413 mg/L	0.04 mg/L	103	70.0	130	---
		silicon, total	7440-21-3	E420	ND mg/L	10 mg/L	ND	70.0	130	---
		silver, total	7440-22-4	E420	0.00396 mg/L	0.004 mg/L	98.9	70.0	130	---
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	---
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	---
		sulfur, total	7704-34-9	E420	20.6 mg/L	20 mg/L	103	70.0	130	---
		tellurium, total	13494-80-9	E420	0.0404 mg/L	0.04 mg/L	101	70.0	130	---



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Spike		Recovery (%)		Qualifier	
					Concentration	Target	MS	Low		High
Total Metals (QCLot: 132552) - continued										
VA20C3657-002	Anonymous	thallium, total	7440-28-0	E420	0.00387 mg/L	0.004 mg/L	96.7	70.0	130	---
		thorium, total	7440-29-1	E420	0.0205 mg/L	0.02 mg/L	102	70.0	130	---
		tin, total	7440-31-5	E420	0.0196 mg/L	0.02 mg/L	98.2	70.0	130	---
		titanium, total	7440-32-6	E420	0.0399 mg/L	0.04 mg/L	99.8	70.0	130	---
		tungsten, total	7440-33-7	E420	0.0198 mg/L	0.02 mg/L	99.1	70.0	130	---
		uranium, total	7440-61-1	E420	0.00402 mg/L	0.004 mg/L	101	70.0	130	---
		vanadium, total	7440-62-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	---
		zinc, total	7440-66-6	E420	0.402 mg/L	0.4 mg/L	100	70.0	130	---
		zirconium, total	7440-67-7	E420	0.0402 mg/L	0.04 mg/L	100	70.0	130	---
Total Metals (QCLot: 132579)										
VA20C3594-004	Anonymous	aluminum, total	7429-90-5	E420	0.196 mg/L	0.2 mg/L	98.3	70.0	130	---
		antimony, total	7440-36-0	E420	0.0209 mg/L	0.02 mg/L	104	70.0	130	---
		arsenic, total	7440-38-2	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130	---
		barium, total	7440-39-3	E420	0.0201 mg/L	0.02 mg/L	101	70.0	130	---
		beryllium, total	7440-41-7	E420	0.0404 mg/L	0.04 mg/L	101	70.0	130	---
		bismuth, total	7440-69-9	E420	0.0102 mg/L	0.01 mg/L	102	70.0	130	---
		boron, total	7440-42-8	E420	0.097 mg/L	0.1 mg/L	96.8	70.0	130	---
		cadmium, total	7440-43-9	E420	0.00403 mg/L	0.004 mg/L	101	70.0	130	---
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	---
		cesium, total	7440-46-2	E420	0.0104 mg/L	0.01 mg/L	104	70.0	130	---
		cobalt, total	7440-48-4	E420	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	---
		copper, total	7440-50-8	E420	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	---
		iron, total	7439-89-6	E420	1.97 mg/L	2 mg/L	98.6	70.0	130	---
		lead, total	7439-92-1	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	---
		lithium, total	7439-93-2	E420	0.103 mg/L	0.1 mg/L	103	70.0	130	---
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	---
		manganese, total	7439-96-5	E420	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	---
		molybdenum, total	7439-98-7	E420	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	---
		nickel, total	7440-02-0	E420	0.0396 mg/L	0.04 mg/L	98.9	70.0	130	---
		phosphorus, total	7723-14-0	E420	9.94 mg/L	10 mg/L	99.4	70.0	130	---
		potassium, total	7440-09-7	E420	3.95 mg/L	4 mg/L	98.8	70.0	130	---
		rubidium, total	7440-17-7	E420	0.0194 mg/L	0.02 mg/L	97.3	70.0	130	---
		selenium, total	7782-49-2	E420	0.0404 mg/L	0.04 mg/L	101	70.0	130	---
		silicon, total	7440-21-3	E420	8.84 mg/L	10 mg/L	88.4	70.0	130	---
		silver, total	7440-22-4	E420	0.00415 mg/L	0.004 mg/L	104	70.0	130	---
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	---



Sub-Matrix: **Water**

					Matrix Spike (MS) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Spike		Recovery (%)		Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High		
Total Metals (QCLot: 132579) - continued											
VA20C3594-004	Anonymous	strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	130	---
		sulfur, total	7704-34-9	E420	20.3 mg/L	20 mg/L	101	70.0	130	130	---
		tellurium, total	13494-80-9	E420	0.0413 mg/L	0.04 mg/L	103	70.0	130	130	---
		thallium, total	7440-28-0	E420	0.00393 mg/L	0.004 mg/L	98.3	70.0	130	130	---
		thorium, total	7440-29-1	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	130	---
		tin, total	7440-31-5	E420	0.0201 mg/L	0.02 mg/L	100	70.0	130	130	---
		titanium, total	7440-32-6	E420	0.0377 mg/L	0.04 mg/L	94.3	70.0	130	130	---
		tungsten, total	7440-33-7	E420	0.0213 mg/L	0.02 mg/L	106	70.0	130	130	---
		uranium, total	7440-61-1	E420	0.00388 mg/L	0.004 mg/L	97.0	70.0	130	130	---
		vanadium, total	7440-62-2	E420	0.0990 mg/L	0.1 mg/L	99.0	70.0	130	130	---
		zinc, total	7440-66-6	E420	0.389 mg/L	0.4 mg/L	97.2	70.0	130	130	---
		zirconium, total	7440-67-7	E420	0.0426 mg/L	0.04 mg/L	106	70.0	130	130	---
Total Metals (QCLot: 132580)											
VA20C3594-004	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0398 mg/L	0.04 mg/L	99.4	70.0	130	130	---
Total Metals (QCLot: 132652)											
VA20C3657-002	Anonymous	mercury, total	7439-97-6	E508	0.0000934 mg/L	0.0001 mg/L	93.4	70.0	130	130	---
Dissolved Metals (QCLot: 132555)											
VA20C3657-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.203 mg/L	0.2 mg/L	101	70.0	130	130	---
		antimony, dissolved	7440-36-0	E421	0.0191 mg/L	0.02 mg/L	95.7	70.0	130	130	---
		arsenic, dissolved	7440-38-2	E421	0.0203 mg/L	0.02 mg/L	102	70.0	130	130	---
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	130	---
		beryllium, dissolved	7440-41-7	E421	0.0409 mg/L	0.04 mg/L	102	70.0	130	130	---
		bismuth, dissolved	7440-69-9	E421	0.00882 mg/L	0.01 mg/L	88.2	70.0	130	130	---
		boron, dissolved	7440-42-8	E421	0.092 mg/L	0.1 mg/L	91.8	70.0	130	130	---
		cadmium, dissolved	7440-43-9	E421	0.00394 mg/L	0.004 mg/L	98.6	70.0	130	130	---
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	130	---
		cesium, dissolved	7440-46-2	E421	0.00974 mg/L	0.01 mg/L	97.4	70.0	130	130	---
		cobalt, dissolved	7440-48-4	E421	0.0193 mg/L	0.02 mg/L	96.4	70.0	130	130	---
		copper, dissolved	7440-50-8	E421	0.0191 mg/L	0.02 mg/L	95.6	70.0	130	130	---
		iron, dissolved	7439-89-6	E421	ND mg/L	2 mg/L	ND	70.0	130	130	---
		lead, dissolved	7439-92-1	E421	0.0186 mg/L	0.02 mg/L	92.9	70.0	130	130	---
		lithium, dissolved	7439-93-2	E421	0.0986 mg/L	0.1 mg/L	98.6	70.0	130	130	---
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	130	---
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	130	---
		molybdenum, dissolved	7439-98-7	E421	0.0203 mg/L	0.02 mg/L	101	70.0	130	130	---
		nickel, dissolved	7440-02-0	E421	0.0391 mg/L	0.04 mg/L	97.7	70.0	130	130	---



Sub-Matrix: **Water**

				Matrix Spike (MS) Report							
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Spike		Recovery (%)		Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High		
Dissolved Metals (QC Lot: 132555) - continued											
VA20C3657-002	Anonymous	phosphorus, dissolved	7723-14-0	E421	9.99 mg/L	10 mg/L	99.9	70.0	130	---	
		potassium, dissolved	7440-09-7	E421	4.02 mg/L	4 mg/L	100	70.0	130	---	
		rubidium, dissolved	7440-17-7	E421	0.0196 mg/L	0.02 mg/L	98.1	70.0	130	---	
		selenium, dissolved	7782-49-2	E421	0.0424 mg/L	0.04 mg/L	106	70.0	130	---	
		silicon, dissolved	7440-21-3	E421	ND mg/L	10 mg/L	ND	70.0	130	---	
		silver, dissolved	7440-22-4	E421	0.00285 mg/L	0.004 mg/L	71.2	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	20.3 mg/L	20 mg/L	102	70.0	130	---	
		tellurium, dissolved	13494-80-9	E421	0.0397 mg/L	0.04 mg/L	99.3	70.0	130	---	
		thallium, dissolved	7440-28-0	E421	0.00357 mg/L	0.004 mg/L	89.4	70.0	130	---	
		thorium, dissolved	7440-29-1	E421	0.0209 mg/L	0.02 mg/L	105	70.0	130	---	
		tin, dissolved	7440-31-5	E421	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	---	
		titanium, dissolved	7440-32-6	E421	0.0392 mg/L	0.04 mg/L	98.0	70.0	130	---	
		tungsten, dissolved	7440-33-7	E421	0.0183 mg/L	0.02 mg/L	91.7	70.0	130	---	
		uranium, dissolved	7440-61-1	E421	0.00364 mg/L	0.004 mg/L	90.9	70.0	130	---	
		vanadium, dissolved	7440-62-2	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	---	
		zinc, dissolved	7440-66-6	E421	0.412 mg/L	0.4 mg/L	103	70.0	130	---	
		zirconium, dissolved	7440-67-7	E421	0.0401 mg/L	0.04 mg/L	100	70.0	130	---	
Dissolved Metals (QC Lot: 132556)											
VA20C3657-002	Anonymous	chromium, dissolved	7440-47-3	E421 Cr-L	0.0393 mg/L	0.04 mg/L	98.2	70.0	130	---	
Dissolved Metals (QC Lot: 132606)											
KS2002904-002	Anonymous	chromium, dissolved	7440-47-3	E421 Cr-L	0.0389 mg/L	0.04 mg/L	97.3	70.0	130	---	
Dissolved Metals (QC Lot: 132607)											
KS2002904-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.193 mg/L	0.2 mg/L	96.3	70.0	130	---	
		antimony, dissolved	7440-36-0	E421	0.0198 mg/L	0.02 mg/L	98.9	70.0	130	---	
		arsenic, dissolved	7440-38-2	E421	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	---	
		barium, dissolved	7440-39-3	E421	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	---	
		beryllium, dissolved	7440-41-7	E421	0.0400 mg/L	0.04 mg/L	100	70.0	130	---	
		bismuth, dissolved	7440-69-9	E421	0.00937 mg/L	0.01 mg/L	93.7	70.0	130	---	
		boron, dissolved	7440-42-8	E421	0.096 mg/L	0.1 mg/L	96.2	70.0	130	---	
		cadmium, dissolved	7440-43-9	E421	0.00391 mg/L	0.004 mg/L	97.7	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	0.0101 mg/L	0.01 mg/L	101	70.0	130	---	
		cobalt, dissolved	7440-48-4	E421	0.0196 mg/L	0.02 mg/L	97.9	70.0	130	---	
		copper, dissolved	7440-50-8	E421	0.0193 mg/L	0.02 mg/L	96.4	70.0	130	---	



Sub-Matrix: **Water**

				Matrix Spike (MS) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Recovery Limits (%)	Qualifier	
				Spike		Recovery (%)		Low	High	
Dissolved Metals (QCLot: 132607) - continued										
KS2002904-002	Anonymous	iron, dissolved	7439-89-6	E421	1.89 mg/L	2 mg/L	94.5	70.0	130	---
		lead, dissolved	7439-92-1	E421	0.0188 mg/L	0.02 mg/L	93.8	70.0	130	---
		lithium, dissolved	7439-93-2	E421	0.0960 mg/L	0.1 mg/L	96.0	70.0	130	---
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	---
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	---
		molybdenum, dissolved	7439-98-7	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	---
		nickel, dissolved	7440-02-0	E421	0.0379 mg/L	0.04 mg/L	94.6	70.0	130	---
		phosphorus, dissolved	7723-14-0	E421	10.6 mg/L	10 mg/L	106	70.0	130	---
		potassium, dissolved	7440-09-7	E421	4.01 mg/L	4 mg/L	100	70.0	130	---
		rubidium, dissolved	7440-17-7	E421	0.0194 mg/L	0.02 mg/L	96.8	70.0	130	---
		selenium, dissolved	7782-49-2	E421	0.0383 mg/L	0.04 mg/L	95.8	70.0	130	---
		silicon, dissolved	7440-21-3	E421	9.12 mg/L	10 mg/L	91.2	70.0	130	---
		silver, dissolved	7440-22-4	E421	0.00348 mg/L	0.004 mg/L	87.0	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	20.1 mg/L	20 mg/L	101	70.0	130	---
		tellurium, dissolved	13494-80-9	E421	0.0404 mg/L	0.04 mg/L	101	70.0	130	---
		thallium, dissolved	7440-28-0	E421	0.00379 mg/L	0.004 mg/L	94.8	70.0	130	---
		thorium, dissolved	7440-29-1	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	---
		tin, dissolved	7440-31-5	E421	0.0190 mg/L	0.02 mg/L	95.1	70.0	130	---
		titanium, dissolved	7440-32-6	E421	0.0379 mg/L	0.04 mg/L	94.7	70.0	130	---
		tungsten, dissolved	7440-33-7	E421	0.0192 mg/L	0.02 mg/L	96.2	70.0	130	---
		uranium, dissolved	7440-61-1	E421	0.00393 mg/L	0.004 mg/L	98.3	70.0	130	---
		vanadium, dissolved	7440-62-2	E421	0.0996 mg/L	0.1 mg/L	99.6	70.0	130	---
		zinc, dissolved	7440-66-6	E421	0.422 mg/L	0.4 mg/L	105	70.0	130	---
		zirconium, dissolved	7440-67-7	E421	0.0401 mg/L	0.04 mg/L	100	70.0	130	---
Dissolved Metals (QCLot: 132645)										
VA20C3215-004	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000940 mg/L	0.0001 mg/L	94.0	70.0	130	---
Volatile Organic Compounds (QCLot: 132936)										
VA20C3237-002	Anonymous	benzene	71-43-2	E611C	93.8 µg/L	100 µg/L	93.8	60.0	140	---
		bromodichloromethane	75-27-4	E611C	106 µg/L	100 µg/L	106	60.0	140	---
		bromoform	75-25-2	E611C	83.9 µg/L	100 µg/L	83.9	60.0	140	---
		carbon tetrachloride	56-23-5	E611C	87.9 µg/L	100 µg/L	87.9	60.0	140	---
		chlorobenzene	108-90-7	E611C	95.0 µg/L	100 µg/L	95.0	60.0	140	---
		chloroethane	75-00-3	E611C	75.2 µg/L	100 µg/L	75.2	50.0	150	---
		chloroform	67-66-3	E611C	104 µg/L	100 µg/L	104	60.0	140	---



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 Work Order : VA20C3659 Amendment 3
 Client : CH2M Hill Canada Limited
 Project : CE777000 T.U.C.P Jacobs

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Spike			Recovery Limits (%)			Qualifier
					Concentration	Target	MS	Low	High		
					Matrix Spike (MS) Report						
Volatile Organic Compounds (QCLot: 132936) - continued											
VA20C3237-002	Anonymous	chloromethane	74-87-3	E611C	55.6 µg/L	100 µg/L	55.6	50.0	150	---	
		dibromochloromethane	124-48-1	E611C	79.2 µg/L	100 µg/L	79.2	60.0	140	---	
		dichlorobenzene, 1,2-	95-50-1	E611C	90.7 µg/L	100 µg/L	90.7	60.0	140	---	
		dichlorobenzene, 1,3-	541-73-1	E611C	88.2 µg/L	100 µg/L	88.2	60.0	140	---	
		dichlorobenzene, 1,4-	106-46-7	E611C	91.4 µg/L	100 µg/L	91.4	60.0	140	---	
		dichloroethane, 1,1-	75-34-3	E611C	91.8 µg/L	100 µg/L	91.8	60.0	140	---	
		dichloroethane, 1,2-	107-06-2	E611C	96.4 µg/L	100 µg/L	96.4	60.0	140	---	
		dichloroethylenes, 1,1-	75-35-4	E611C	84.9 µg/L	100 µg/L	84.9	60.0	140	---	
		dichloroethylenes, cis-1,2-	156-59-4	E611C	97.6 µg/L	100 µg/L	97.6	60.0	140	---	
		dichloroethylenes, trans-1,2-	156-60-5	E611C	90.5 µg/L	100 µg/L	90.5	60.0	140	---	
		dichloromethane	75-09-2	E611C	89.1 µg/L	100 µg/L	89.1	60.0	140	---	
		dichloropropane, 1,2-	78-87-5	E611C	96.2 µg/L	100 µg/L	96.2	60.0	140	---	
		dichloropropylene, cis-1,3-	10061-01-5	E611C	91.5 µg/L	100 µg/L	91.5	60.0	140	---	
		dichloropropylene, trans-1,3-	10061-02-6	E611C	71.7 µg/L	100 µg/L	71.7	60.0	140	---	
		ethylbenzene	100-41-4	E611C	83.5 µg/L	100 µg/L	83.5	60.0	140	---	
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	92.6 µg/L	100 µg/L	92.6	60.0	140	---	
		styrene	100-42-5	E611C	85.4 µg/L	100 µg/L	85.4	60.0	140	---	
		tetrachloroethane, 1,1,1,2-	630-20-6	E611C	92.1 µg/L	100 µg/L	92.1	60.0	140	---	
		tetrachloroethane, 1,1,2,2-	79-34-5	E611C	83.4 µg/L	100 µg/L	83.4	60.0	140	---	
		tetrachloroethylene	127-18-4	E611C	84.0 µg/L	100 µg/L	84.0	60.0	140	---	
		toluene	108-88-3	E611C	83.2 µg/L	100 µg/L	83.2	60.0	140	---	
		trichloroethane, 1,1,1-	71-55-6	E611C	95.8 µg/L	100 µg/L	95.8	60.0	140	---	
		trichloroethane, 1,1,2-	79-00-5	E611C	85.8 µg/L	100 µg/L	85.8	60.0	140	---	
		trichloroethylene	79-01-6	E611C	95.2 µg/L	100 µg/L	95.2	60.0	140	---	
		trichlorofluoromethane	75-69-4	E611C	88.8 µg/L	100 µg/L	88.8	50.0	150	---	
		vinyl chloride	75-01-4	E611C	58.2 µg/L	100 µg/L	58.2	50.0	150	---	
		xylene, m+p-	179601-23-1	E611C	198 µg/L	200 µg/L	98.9	60.0	140	---	
		xylene, o-	95-47-6	E611C	84.1 µg/L	100 µg/L	84.1	60.0	140	---	

Chain of Custody (COC) / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com



Report To
 Company: CHARM HILL CANADA LTD/JACOBI
 Contact: CAA@INVOLE.SQJ.ACSQ.COM
 Phone: [Blank]
 Street: [Blank]
 City/Province: [Blank]
 Postal Code: [Blank]

Report Format / Distribution
 Select Report Format: PDF EXCEL BDD (DIGITAL)
 Quality Control (QC) Report with Report: YES NO
 Compare Results to Criteria on Report - provide details below if box checked
 Select Distribution: EMAIL MAIL FAX
 Email 1 or Fax: SELENA BLA DO JEVIĆ JACOBI
 Email 2: 612-VANU-A-ARNEGOVIC@JACOBI.COM
 Email 3: [Blank]

Invoice To
 Same as Report To: YES NO
 Copy of Invoice with Report: YES NO
 Company: [Blank]
 Contact: [Blank]

Project Information
 ALS Account # / Quote #: VAB-CH100-013
 Job #: CE77000 TUSA
 PO / AFE: [Blank]
 LSD: [Blank]

ALS Lab Work Order # (lab use only): [Blank]

ALS Contact: EP NGAI
 Date: 16-12-20
 Time (hh:mm): 16:30
 Sample Type: WATER
 Date: 17-12-20
 Time (hh:mm): 11:30
 Sample Type: [Blank]
 Date: 17-12-20
 Time (hh:mm): 09:30
 Sample Type: [Blank]
 Date: 17-12-20
 Time (hh:mm): [Blank]
 Sample Type: [Blank]

ALS Contact: ACANALI
 Date: [Blank]
 Time (hh:mm): [Blank]
 Sample Type: [Blank]

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS				SUSPECTED HAZARD (see Special Instructions)
					VOC/BTEX	LEAD/HEX/PAH	TOTAL METALS & Hg	DISSOLVED METALS & Hg	
20 MW-07		16-12-20	16:30	WATER	X	X	X	X	
20 MW-08		17-12-20	11:30		X	X	X	X	
20 MW-10P		17-12-20	09:30		X	X	X	X	
20 MW-10S		17-12-20	09:30		X	X	X	X	
QA2		17-12-20			X	X	X	X	

Environmental Division Vancouver
 Work Order Reference: VA20C3659
 Telephone: +1 604 263 4186

Analysis Request
 Indicate Filtered (F), Preserved (P) or Filtered and Preserved (FP) below
 For tests that can not be performed according to the correct level selected, you will be contacted

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
 TREAT "11W20" BOTTLE LABELS AS "H20BOM"

Drinking Water (DW) Samples (client use)
 Are samples taken from a Regulated DW System? YES NO
 Are samples for human consumption/use? YES NO

SHIPMENT RELEASE (client use)
 Released by: ACANALI
 Date: DEC 17, 2020
 Time: 19:02

INITIAL SHIPMENT RECEPTION (lab use only)
 Received by: [Signature]
 Date: [Blank]
 Time: [Blank]

FINAL SHIPMENT RECEPTION (lab use only)
 Received by: [Signature]
 Date: [Blank]
 Time: [Blank]

SAMPLE CONDITION AS RECEIVED (lab use only)
 Frozen: Observations: Yes No
 Ice Packs: Ice Cubes: Custody seal intact: Yes No
 Cooling Initiated:

INITIAL COOLER TEMPERATURES °C: [Blank]
FINAL COOLER TEMPERATURES °C: [Blank]



Environmental

CERTIFICATE OF ANALYSIS

Work Order : VA20C3660 Page : 1 of 14
Amendment : 1
Client : CH2M Hill Canada Limited Laboratory : Vancouver - Environmental
Contact : Jelena Sladojevic Account Manager : Edward Ngai
Address : Metrotower II, Suite 2100 4720 Kingsway Address : 8081 Lougheed Highway
Burnaby BC Canada V5A 1W9
Telephone : ----- Telephone : +1 604 253 4188
Project : CE777000 TU.CP Jacobs Date Samples Received : 17-Dec-2020 18:00
PO : 670014CH.B0.01.09 Date Analysis Commenced : 18-Dec-2020
C-O-C number : 17-662851 Issue Date : 30-Dec-2020 12:36
Sampler : A CANALI
Site : -----
Quote number : VA20-CHMH100-013
No. of samples received : 6
No. of samples analysed : 6

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
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Cristina Alexandre	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Janice Leung	Supervisor - Organics Extractions	Organics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Ophelia Chiu	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Woochan Song	Lab Assistant	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
µg/L	micrograms per litre
mg/L	milligrams per litre

<: 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.

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).



Analytical Results

Sub-Matrix: Water		Client sample ID							
(Matrix: Water)		Client sampling date / time							
Analyte	CAS Number	Method	LOR	Unit	MW19-01	MW19-03	20MW-09	20MW-04D	20MW-04S
					Result	Result	Result	Result	Result
Physical Tests									
hardness (as CaCO ₃), from total Ca/Mg	---	EC100A	0.60	mg/L	61.1	69.0	260	77.3	39.0
hardness (as CaCO ₃), dissolved	---	EC100	0.60	mg/L	58.0	64.7	234	70.9	33.3
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.574	0.0443	0.223	2.74	2.28
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0.00020	0.00028	0.00065
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00112	0.00023	0.00109	0.00273	0.00075
barium, total	7440-39-3	E420	0.00010	mg/L	0.0493	0.0357	0.0984	0.0368	0.0357
beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	<0.000100	0.000195	<0.000100
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L	0.018	0.018	0.039	0.014	<0.010
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000053	<0.0000050	0.0000506	0.0000780	0.0000688
calcium, total	7440-70-2	E420	0.050	mg/L	19.3	20.2	82.0	24.1	13.6
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	0.000035	0.000010	0.000083	0.000077
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00061	0.00064	0.00054	0.0102	0.00404
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00038	<0.00010	0.00171	0.00122	0.00163
copper, total	7440-50-8	E420	0.00050	mg/L	<0.000050	<0.000050	0.00103	0.0181	0.0164
iron, total	7439-89-6	E420	0.010	mg/L	16.2	22.8	0.279	8.55	2.00
lead, total	7439-92-1	E420	0.000050	mg/L	0.000237	<0.000050	0.000103	0.00357	0.00428
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0041	0.0024	0.0022	0.0053	0.0010
magnesium, total	7439-95-4	E420	0.0050	mg/L	3.14	4.54	13.6	4.15	1.21
manganese, total	7439-96-5	E420	0.00010	mg/L	0.508	0.660	0.907	0.454	0.120
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	0.0000140	<0.0000250 ^{DLM}
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000295	0.000235	0.000898	0.00546	0.00160
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00071	<0.00050	0.00325	0.00325	0.00224
phosphorus, total	7723-14-0	E420	0.050	mg/L	0.141	0.096	0.073	0.130	0.133
potassium, total	7440-09-7	E420	0.050	mg/L	3.04	3.64	2.97	3.99	1.56
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00307	0.00490	0.00185	0.00435	0.00223
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000051	<0.000050	0.000129	0.000983	0.000128
silicon, total	7440-21-3	E420	0.10	mg/L	16.5	15.3	12.9	14.1	5.57
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	0.000025	0.000026



Analytical Results

Sub-Matrix: Water (Matrix: Water)		Client sample ID			
Analyte	CAS Number	Method	LOR	Unit	Client sampling date / time
					Result
Total Metals					
sodium, total	17341-25-2	E420	0.050	mg/L	MW19-01 16-Dec-2020 12:30 VA20C3660-001 Result 7.63
strontium, total	7440-24-6	E420	0.00020	mg/L	MW19-03 16-Dec-2020 13:40 VA20C3660-002 Result 6.17
sulfur, total	7704-34-9	E420	0.50	mg/L	20MW-09 17-Dec-2020 10:20 VA20C3660-003 Result 4.89
tellurium, total	13494-80-9	E420	0.00020	mg/L	20MW-04D 16-Dec-2020 10:30 VA20C3660-004 Result 33.6
thallium, total	7440-28-0	E420	0.000010	mg/L	Result 0.238
thorium, total	7440-29-1	E420	0.00010	mg/L	Result 2.96
tin, total	7440-31-5	E420	0.00010	mg/L	Result <0.00020
titanium, total	7440-32-6	E420	0.00030	mg/L	Result <0.000010
tungsten, total	7440-33-7	E420	0.00010	mg/L	Result <0.000010
uranium, total	7440-61-1	E420	0.000010	mg/L	Result 0.000021
vanadium, total	7440-62-2	E420	0.00050	mg/L	Result <0.00010
zinc, total	7440-66-6	E420	0.0030	mg/L	Result <0.00010
zirconium, total	7440-67-7	E420	0.00020	mg/L	Result 0.00068
Dissolved Metals					
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	Result 0.0127
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	Result <0.00010
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	Result <0.00010
barium, dissolved	7440-39-3	E421	0.00010	mg/L	Result 0.0604
beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	Result <0.00010
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	Result <0.00010
boron, dissolved	7440-42-8	E421	0.010	mg/L	Result 0.036
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	Result 0.0000408
calcium, dissolved	7440-70-2	E421	0.050	mg/L	Result 73.0
cesium, dissolved	7440-46-2	E421	0.000010	mg/L	Result <0.000010
chromium, dissolved	7440-47-3	E421,Cr-L	0.00010	mg/L	Result 0.00037
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	Result 0.00053
copper, dissolved	7440-50-8	E421	0.00020	mg/L	Result 0.00158
iron, dissolved	7439-89-6	E421	0.010	mg/L	Result 0.00038
lead, dissolved	7439-92-1	E421	0.000050	mg/L	Result 21.6
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	Result <0.000050
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	Result 0.0022



Analytical Results

Sub-Matrix: Water
 (Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID				
					MW19-01	MW19-03	20MW-09	20MW-04D	20MW-04S
Client sampling date / time					16-Dec-2020 12:30	16-Dec-2020 13:40	17-Dec-2020 10:20	16-Dec-2020 10:30	16-Dec-2020 10:30
Result					VA20C3660-001	VA20C3660-002	VA20C3660-003	VA20C3660-004	VA20C3660-005
Dissolved Metals									
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.475	0.627	0.833	0.436	0.0687
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000323	0.000177	0.000848	0.00513	0.00153
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00052	<0.00050	0.00290	0.00158	0.00061
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	0.064	0.093	<0.050	<0.050	<0.050
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.91	3.66	2.88	3.92	1.31
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00258	0.00471	0.00157	0.00310	0.00110
selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0.000162	0.000743	0.000110
silicon, dissolved	7440-21-3	E421	0.050	mg/L	15.9	15.9	12.9	10.1	3.21
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	17341-25-2	E421	0.050	mg/L	8.03	6.02	4.90	31.3	3.40
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0740	0.120	0.236	0.116	0.0437
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	2.76	7.07	1.52
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000020 ^{DLA}	<0.000010	<0.000010
thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	0.00016	0.00011
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	0.00032	<0.00030	0.00045	0.00078
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000063	<0.000010	0.000537	0.000527	0.000084
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00110	0.00360	0.00057	0.00186	0.00130
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0022	0.0011	0.0013	0.0024	0.0016
zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	<0.00020	0.00027	<0.00020	<0.00020	<0.00020
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	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



Analytical Results

Sub-Matrix: Water (Matrix: Water)		Client sample ID				20MW-04S				
Analyte	CAS Number	Method	LOR	Unit	Client sampling date / time	MW19-01	MW19-03	20MW-09	20MW-04D	20MW-04S
						16-Dec-2020 12:30	16-Dec-2020 13:40	17-Dec-2020 10:20	16-Dec-2020 10:30	16-Dec-2020 10:30
						VA20C3660-001	VA20C3660-002	VA20C3660-003	VA20C3660-004	VA20C3660-005
						Result	Result	Result	Result	Result
Volatile Organic Compounds										
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 [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
tetra chloroethylene	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 [Fuels]										
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
xylene, o-	95-47-6	E611C	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
xylene, total	1330-20-7	E611C	0.75	µg/L		<0.75	<0.75	<0.75	<0.75	<0.75
Volatile Organic Compounds Surrogates										



Analytical Results

Sub-Matrix: Water
 (Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID				
					MW19-01	MW19-03	20MW-09	20MW-04D	20MW-04S
Client sampling date / time					16-Dec-2020 12:30	16-Dec-2020 13:40	17-Dec-2020 10:20	16-Dec-2020 10:30	16-Dec-2020 10:30
					VA20C3660-001	VA20C3660-002	VA20C3660-003	VA20C3660-004	VA20C3660-005
					Result	Result	Result	Result	Result
Polycyclic Aromatic Hydrocarbons									
phenanthrene	85-01-8	E641A	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020
pyrene	129-00-0	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<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	%	105	105	97.2	104	104
chrysene-d12	1719-03-5	E641A	0.010	%	122	122	118	122	123
naphthalene-d8	1146-65-2	E641A	0.010	%	89.5	90.0	89.9	92.6	92.6
phenanthrene-d10	1517-22-2	E641A	0.010	%	106	105	104	107	107
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
chloroform	67-66-3	E611C	0.50	µg/L	<0.50	<0.50	<0.50	3.82	<0.50
dibromochloromethane	124-48-1	E611C	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50

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



Analytical Results

Sub-Matrix: Water (Matrix: Water)		Client sample ID					QA1
Analyte	CAS Number	Method	LOR	Client sampling date / time	Unit	Result	
Physical Tests							
hardness (as CaCO ₃), from total Ca/Mg	----	EC100A	0.60		mg/L	61.2	
hardness (as CaCO ₃), dissolved	----	EC-100	0.60		mg/L	57.0	
Total Metals							
aluminum, total	7429-90-5	E420	0.0030		mg/L	1.70	
antimony, total	7440-36-0	E420	0.00010		mg/L	0.00010	
arsenic, total	7440-38-2	E420	0.00010		mg/L	0.00109	
barium, total	7440-39-3	E420	0.00010		mg/L	0.0514	
beryllium, total	7440-41-7	E420	0.000100		mg/L	<0.000100	
bismuth, total	7440-69-9	E420	0.000050		mg/L	<0.000050	
boron, total	7440-42-8	E420	0.010		mg/L	0.018	
cadmium, total	7440-43-9	E420	0.0000050		mg/L	0.0000129	
calcium, total	7440-70-2	E420	0.050		mg/L	19.3	
cesium, total	7440-46-2	E420	0.000010		mg/L	0.000022	
chromium, total	7440-47-3	E420.Cr-L	0.00010		mg/L	0.00085	
cobalt, total	7440-48-4	E420	0.00010		mg/L	0.00053	
copper, total	7440-50-8	E420	0.00050		mg/L	0.00125	
iron, total	7439-89-6	E420	0.010		mg/L	15.5	
lead, total	7439-92-1	E420	0.000050		mg/L	0.000496	
lithium, total	7439-93-2	E420	0.0010		mg/L	0.0044	
magnesium, total	7439-95-4	E420	0.0050		mg/L	3.17	
manganese, total	7439-96-5	E420	0.00010		mg/L	0.496	
mercury, total	7439-97-6	E508	0.0000050		mg/L	<0.0000050	
molybdenum, total	7439-98-7	E420	0.000050		mg/L	0.000493	
nickel, total	7440-02-0	E420	0.00050		mg/L	0.00087	
phosphorus, total	7723-14-0	E420	0.050		mg/L	0.116	
potassium, total	7440-09-7	E420	0.050		mg/L	3.11	
rubidium, total	7440-17-7	E420	0.00020		mg/L	0.00332	
selenium, total	7782-49-2	E420	0.000050		mg/L	<0.000050	
silicon, total	7440-21-3	E420	0.10		mg/L	18.3	
silver, total	7440-22-4	E420	0.000010		mg/L	<0.000010	
sodium, total	17341-25-2	E420	0.050		mg/L	9.53	
strontium, total	7440-24-6	E420	0.00020		mg/L	0.0759	



Analytical Results

Sub-Matrix: Water (Matrix: Water)		Client sample ID										
Analyte	CAS Number	Method	Client sampling date / time		LOR	Unit	QA1				Result	
			16-Dec-2020	VA20C3660-006			16-Dec-2020	VA20C3660-006	16-Dec-2020	VA20C3660-006		
Total Metals												
sulfur, total	7704-34-9	E420	0.50			mg/L						0.51
tellurium, total	13494-80-9	E420	0.00020			mg/L						<0.00020
thallium, total	7440-28-0	E420	0.000010			mg/L						<0.000010
thorium, total	7440-29-1	E420	0.00010			mg/L						0.00039
tin, total	7440-31-5	E420	0.00010			mg/L						0.00029
titanium, total	7440-32-6	E420	0.00030			mg/L						0.0334
tungsten, total	7440-33-7	E420	0.00010			mg/L						<0.00010
uranium, total	7440-61-1	E420	0.000010			mg/L						0.000217
vanadium, total	7440-62-2	E420	0.00050			mg/L						0.00243
zinc, total	7440-66-6	E420	0.0030			mg/L						0.0080
zirconium, total	7440-67-7	E420	0.00020			mg/L						0.00170
Dissolved Metals												
aluminum, dissolved	7429-90-5	E421	0.0010			mg/L						0.0080
antimony, dissolved	7440-36-0	E421	0.00010			mg/L						<0.00010
arsenic, dissolved	7440-38-2	E421	0.00010			mg/L						0.00063
barium, dissolved	7440-39-3	E421	0.00010			mg/L						0.0433
beryllium, dissolved	7440-41-7	E421	0.000100			mg/L						<0.000100
bismuth, dissolved	7440-69-9	E421	0.000050			mg/L						<0.000050
boron, dissolved	7440-42-8	E421	0.010			mg/L						0.017
cadmium, dissolved	7440-43-9	E421	0.0000050			mg/L						<0.0000050
calcium, dissolved	7440-70-2	E421	0.050			mg/L						18.3
cesium, dissolved	7440-46-2	E421	0.000010			mg/L						<0.000010
chromium, dissolved	7440-47-3	E421, Cr-L	0.00010			mg/L						0.00027
cobalt, dissolved	7440-48-4	E421	0.00010			mg/L						0.00033
copper, dissolved	7440-50-8	E421	0.00020			mg/L						0.00024
iron, dissolved	7439-89-6	E421	0.010			mg/L						10.0
lead, dissolved	7439-92-1	E421	0.000050			mg/L						<0.000050
lithium, dissolved	7439-93-2	E421	0.0010			mg/L						0.0038
magnesium, dissolved	7439-95-4	E421	0.0050			mg/L						2.74
manganese, dissolved	7439-96-5	E421	0.00010			mg/L						0.469
mercury, dissolved	7439-97-6	E509	0.0000050			mg/L						<0.0000050
molybdenum, dissolved	7439-98-7	E421	0.000050			mg/L						0.000429



Analytical Results

Sub-Matrix: Water (Matrix: Water)		Client sample ID		QA1						
Analyte	CAS Number	Method	LOR	Unit	Client sampling date / time	Result				
Dissolved Metals										
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	16-Dec-2020	0.00055				
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050				
potassium, dissolved	7440-09-7	E421	0.050	mg/L		2.97				
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00255				
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000050				
silicon, dissolved	7440-21-3	E421	0.050	mg/L		15.1				
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010				
sodium, dissolved	17341-25-2	E421	0.050	mg/L		9.02				
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.0768				
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		<0.50				
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020				
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010				
thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010				
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010				
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		0.00034				
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010				
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000090				
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		0.00087				
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0037				
zirconium, dissolved	7440-67-7	E421	0.00020	mg/L		<0.00020				
dissolved mercury filtration location	---	EP509	-	-		Field				
dissolved metals filtration location	---	EP421	-	-		Field				
Volatile Organic Compounds										
chlorobenzene	108-90-7	E611C	0.50	µg/L		<0.50				
chloromethane	74-87-3	E611C	0.50	µg/L		<0.50				
dichlorobenzene, 1,2-	95-50-1	E611C	0.50	µg/L		<0.50				
dichlorobenzene, 1,3-	541-73-1	E611C	0.50	µg/L		<0.50				
dichlorobenzene, 1,4-	106-46-7	E611C	0.50	µg/L		<0.50				
dichloropropane, 1,2-	78-87-5	E611C	0.50	µg/L		<0.50				
dichloropropylene, cis+trans-1,3-	542-75-6	E611C	0.75	µg/L		<0.75				
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.50	µg/L		<0.50				
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.50	µg/L		<0.50				



Analytical Results

Sub-Matrix: Water (Matrix: Water)		Client sample ID					QA1
Analyte	CAS Number	Method	LOR	Client sampling date / time	Unit	16-Dec-2020	
						VA20C3660-006	
						Result	
Volatile Organic Compounds							
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.20		µg/L	<0.20	
trichloroethane, 1,1,2-	79-00-5	E611C	0.50		µg/L	<0.50	
trichlorofluoromethane	75-69-4	E611C	0.50		µg/L	<0.50	
Volatile Organic Compounds [Drycleaning]							
carbon tetrachloride	56-23-5	E611C	0.50		µg/L	<0.50	
chloroethane	75-00-3	E611C	0.50		µg/L	<0.50	
dichloroethane, 1,1-	75-34-3	E611C	0.50		µg/L	<0.50	
dichloroethane, 1,2-	107-06-2	E611C	0.50		µg/L	<0.50	
dichloroethylene, 1,1-	75-35-4	E611C	0.50		µg/L	<0.50	
dichloroethylene, cis-1,2-	156-59-4	E611C	0.50		µg/L	<0.50	
dichloroethylene, trans-1,2-	156-60-5	E611C	0.50		µg/L	<0.50	
dichloromethane	75-09-2	E611C	0.50		µg/L	<0.50	
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.50		µg/L	<0.50	
tetra chloroethylene	127-18-4	E611C	0.50		µg/L	<0.50	
trichloroethane, 1,1,1-	71-55-6	E611C	0.50		µg/L	<0.50	
trichloroethylene	79-01-6	E611C	0.50		µg/L	<0.50	
vinyl chloride	75-01-4	E611C	0.40		µg/L	<0.40	
Volatile Organic Compounds [Fuels]							
benzene	71-43-2	E611C	0.50		µg/L	<0.50	
ethylbenzene	100-41-4	E611C	0.50		µg/L	<0.50	
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.50		µg/L	<0.50	
styrene	100-42-5	E611C	0.50		µg/L	<0.50	
toluene	108-88-3	E611C	0.40		µg/L	<0.40	
xylene, m+p-	179601-23-1	E611C	0.50		µg/L	<0.50	
xylene, o-	95-47-6	E611C	0.50		µg/L	<0.50	
xylene, total	1330-20-7	E611C	0.75		µg/L	<0.75	
Volatile Organic Compounds Surrogates							
bromofluorobenzene, 4-	460-00-4	E611C	0.50		%	91.0	
difluorobenzene, 1,4-	540-36-3	E611C	0.50		%	93.7	
Hydrocarbons							
EPH (C10-C19)	---	E601A	250		µg/L	<250	
EPH (C19-C32)	---	E601A	250		µg/L	<250	



Analytical Results

Sub-Matrix: Water (Matrix: Water)		Client sample ID									
Analyte	CAS Number	Method	LOR	Client sampling date / time		QA1	Result	Result	Result	Result	Result
				Unit	Unit						
Hydrocarbons											
VHw (C6-C10)		E581.VH+F1	100			<100					
HEPHw		EC600A	250			<250					
LEPHw		EC600A	250			<250					
VPHw		EC580A	100			<100					
Hydrocarbons Surrogates											
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	50			84.4					
dichlorotoluene, 3,4-	97-75-0	E581.VH+F1	1.0			109					
Polycyclic Aromatic Hydrocarbons											
acenaphthene	83-32-9	E641A	0.010			<0.010					
acenaphthylene	208-96-8	E641A	0.010			<0.010					
acridine	260-94-6	E641A	0.010			<0.010					
anthracene	120-12-7	E641A	0.010			<0.010					
benz(a)anthracene	56-55-3	E641A	0.010			<0.010					
benzo(a)pyrene	50-32-8	E641A	0.0050			<0.0050					
benzo(b+j)fluoranthene		E641A	0.010			<0.010					
benzo(b+j+k)fluoranthene		E641A	0.015			<0.015					
benzo(g,h,i)perylene	191-24-2	E641A	0.010			<0.010					
benzo(k)fluoranthene	207-08-9	E641A	0.010			<0.010					
chrysene	218-01-9	E641A	0.010			<0.010					
dibenz(a,h)anthracene	53-70-3	E641A	0.0050			<0.0050					
fluoranthene	206-44-0	E641A	0.010			<0.010					
fluorene	86-73-7	E641A	0.010			<0.010					
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.010			<0.010					
methylnaphthalene, 1-	90-12-0	E641A	0.010			<0.010					
methylnaphthalene, 2-	91-57-6	E641A	0.010			0.011					
naphthalene	91-20-3	E641A	0.050			<0.050					
phenanthrene	85-01-8	E641A	0.020			<0.020					
pyrene	129-00-0	E641A	0.010			<0.010					
quinoline	6027-02-7	E641A	0.050			<0.050					
Polycyclic Aromatic Hydrocarbons Surrogates											
acridine-d9	34749-75-2	E641A	0.010			112					
chrysene-d12	1719-03-5	E641A	0.010			124					



Analytical Results

Sub-Matrix: Water (Matrix: Water)		Client sample ID				QA1
Analyte	CAS Number	Method	LOR	Client sampling date / time	Unit	16-Dec-2020
						VA20C3660-006
						Result
Polycyclic Aromatic Hydrocarbons Surrogates						
naphthalene-d8	1146-65-2	E641A	0.010		%	90.8
phenanthrene-d10	1517-22-2	E641A	0.010		%	109
Volatile Organic Compounds [THMs]						
bromodichloromethane	75-27-4	E611C	0.50		µg/L	<0.50
bromoform	75-25-2	E611C	0.50		µg/L	<0.50
chloroform	67-66-3	E611C	0.50		µg/L	<0.50
dibromochloromethane	124-48-1	E611C	0.50		µg/L	<0.50

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



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : **VA20C3660** Page : 1 of 16

Amendment : 1

Client : **CH2M Hill Canada Limited** Laboratory : Vancouver - Environmental
Contact : Jelena Sladojevic Account Manager : Edward Ngai
Address : Metrotower II, Suite 2100 4720 Kingsway : 8081 Lougheed Highway
Burnaby BC Canada V5H 4N2 Burnaby, British Columbia Canada V5A 1W9
Telephone : ---- Telephone : +1 604 253 4188
Project : CE777000 TU.CP Jacobs Date Samples Received : 17-Dec-2020 18:00
PO : 670014CH.B0.01.09 Issue Date : 30-Dec-2020 12:36
C-O-C number : 17-662851
Sampler : A CANALI
Site : ----
Quote number : VA20-CHMH100-013
No. of samples received : 6
No. of samples analysed : 6

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Page : 3 of 16
 Work Order : VA20C3660 Amendment 1
 Client : CH2M Hill Canada Limited
 Project : CE777000 TU.CP Jacobs

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Duplicate (DUP) RPDs								
Total Metals	VA20C3660-001	MW19-01	aluminum, total	7429-90-5	E420	63.9 % DUP-H	20%	Duplicate RPD does not meet the DQO for this test.
Total Metals	VA20C3660-001	MW19-01	titanium, total	7440-32-6	E420	37.1 % DUP-H	20%	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.*



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: **Water** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation			Analysis				
			Preparation Date	Holding Times Rec	Actual	Eval	Analysis Date	Holding Times Rec	Actual	Eval
Container / Client Sample ID(s)										
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) 20MW-09	E421.Cr-L	17-Dec-2020	18-Dec-2020	180 days	0 days	✓	18-Dec-2020	179 days	0 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) 20MW-04D	E421.Cr-L	16-Dec-2020	18-Dec-2020	180 days	1 days	✓	18-Dec-2020	178 days	0 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) 20MW-04S	E421.Cr-L	16-Dec-2020	18-Dec-2020	180 days	1 days	✓	18-Dec-2020	178 days	0 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) MW19-01	E421.Cr-L	16-Dec-2020	18-Dec-2020	180 days	1 days	✓	18-Dec-2020	178 days	0 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) MW19-03	E421.Cr-L	16-Dec-2020	18-Dec-2020	180 days	1 days	✓	18-Dec-2020	178 days	0 days	✓
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) QA1	E421.Cr-L	16-Dec-2020	18-Dec-2020	181 days	2 days	✓	18-Dec-2020	178 days	0 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 20MW-09	E509	17-Dec-2020	19-Dec-2020	28 days	2 days	✓	19-Dec-2020	25 days	0 days	✓



Matrix: **Water** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	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 Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 20MW-04D	E509	16-Dec-2020	19-Dec-2020	28 days	3 days	✓	19-Dec-2020	24 days	0 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) 20MW-04S	E509	16-Dec-2020	19-Dec-2020	28 days	3 days	✓	19-Dec-2020	24 days	0 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) MW19-01	E509	16-Dec-2020	19-Dec-2020	28 days	3 days	✓	19-Dec-2020	24 days	0 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) MW19-03	E509	16-Dec-2020	19-Dec-2020	28 days	3 days	✓	19-Dec-2020	24 days	0 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) QA1	E509	16-Dec-2020	19-Dec-2020	29 days	3 days	✓	19-Dec-2020	25 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 20MW-09	E421	17-Dec-2020	18-Dec-2020	180 days	0 days	✓	18-Dec-2020	179 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 20MW-04D	E421	16-Dec-2020	18-Dec-2020	180 days	1 days	✓	18-Dec-2020	178 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 20MW-04S	E421	16-Dec-2020	18-Dec-2020	180 days	1 days	✓	18-Dec-2020	178 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW19-01	E421	16-Dec-2020	18-Dec-2020	180 days	1 days	✓	18-Dec-2020	178 days	0 days	✓



Matrix: **Water** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation			Analysis				
			Preparation Date	Holding Times Rec Actual	Eval	Analysis Date	Holding Times Rec Actual	Eval		
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW19-03	E421	16-Dec-2020	18-Dec-2020	180 days	1 days	✓	18-Dec-2020	178 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) QA1	E421	16-Dec-2020	18-Dec-2020	181 days	2 days	✓	18-Dec-2020	178 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-09	E601A	17-Dec-2020	18-Dec-2020	14 days	1 days	✓	21-Dec-2020	40 days	3 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW19-01	E601A	16-Dec-2020	18-Dec-2020	14 days	1 days	✓	21-Dec-2020	40 days	3 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW19-03	E601A	16-Dec-2020	18-Dec-2020	14 days	1 days	✓	21-Dec-2020	40 days	3 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-04D	E601A	16-Dec-2020	18-Dec-2020	14 days	2 days	✓	21-Dec-2020	40 days	3 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-04S	E601A	16-Dec-2020	18-Dec-2020	14 days	2 days	✓	21-Dec-2020	40 days	3 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) QA1	E601A	16-Dec-2020	18-Dec-2020	15 days	2 days	✓	21-Dec-2020	40 days	3 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) 20MW-09	E581.VH+F1	17-Dec-2020	22-Dec-2020	14 days	5 days	✓	22-Dec-2020	8 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		Analysis Date	Holding Times	
					Rec	Actual		Rec	Actual
Hydrocarbons : VH and F1 by Headspace GC-FID									
Glass vial (sodium bisulfate) 20MW-04D		E581.VH+F1	16-Dec-2020	22-Dec-2020	14 days	6 days	7 days	0 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID									
Glass vial (sodium bisulfate) 20MW-04S		E581.VH+F1	16-Dec-2020	22-Dec-2020	14 days	6 days	7 days	0 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID									
Glass vial (sodium bisulfate) MW19-01		E581.VH+F1	16-Dec-2020	22-Dec-2020	14 days	6 days	7 days	0 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID									
Glass vial (sodium bisulfate) MW19-03		E581.VH+F1	16-Dec-2020	22-Dec-2020	14 days	6 days	7 days	0 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID									
Glass vial (sodium bisulfate) QA1		E581.VH+F1	16-Dec-2020	22-Dec-2020	15 days	6 days	8 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS									
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-09		E641A	17-Dec-2020	18-Dec-2020	14 days	1 days	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS									
Amber glass/Teflon lined cap (sodium bisulfate) MW19-01		E641A	16-Dec-2020	18-Dec-2020	14 days	1 days	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS									
Amber glass/Teflon lined cap (sodium bisulfate) MW19-03		E641A	16-Dec-2020	18-Dec-2020	14 days	1 days	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS									
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-04D		E641A	16-Dec-2020	18-Dec-2020	14 days	2 days	40 days	0 days	✓



Matrix: **Water** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation			Analysis				
			Preparation Date	Holding Times Rec	Holding Times Actual	Analysis Date	Eval	Holding Times Rec	Holding Times Actual	Eval
Container / Client Sample ID(s)										
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-04S	E641A	16-Dec-2020	18-Dec-2020	14 days	2 days	✓	18-Dec-2020	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate) QA1	E641A	16-Dec-2020	18-Dec-2020	15 days	2 days	✓	18-Dec-2020	40 days	0 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) 20MW-09	E420.Cr-L	17-Dec-2020	---	---	---		18-Dec-2020	180 days	1 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) 20MW-04D	E420.Cr-L	16-Dec-2020	---	---	---		18-Dec-2020	180 days	2 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) 20MW-04S	E420.Cr-L	16-Dec-2020	---	---	---		18-Dec-2020	180 days	2 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) MW19-01	E420.Cr-L	16-Dec-2020	---	---	---		18-Dec-2020	180 days	2 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) MW19-03	E420.Cr-L	16-Dec-2020	---	---	---		18-Dec-2020	180 days	2 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) QA1	E420.Cr-L	16-Dec-2020	---	---	---		18-Dec-2020	181 days	2 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) 20MW-09	E508	17-Dec-2020	---	---	---		21-Dec-2020	28 days	4 days	✓



Matrix: **Water** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation			Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Container / Client Sample ID(s)									
Total Metals : Total Mercury in Water by CVAAS									
Glass vial total (hydrochloric acid) MW19-03	E508	16-Dec-2020	----	----	----	21-Dec-2020	28 days	4 days	✓
Total Metals : Total Mercury in Water by CVAAS									
Glass vial total (hydrochloric acid) 20MW-04D	E508	16-Dec-2020	----	----	----	21-Dec-2020	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS									
Glass vial total (hydrochloric acid) 20MW-04S	E508	16-Dec-2020	----	----	----	21-Dec-2020	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS									
Glass vial total (hydrochloric acid) MW19-01	E508	16-Dec-2020	----	----	----	21-Dec-2020	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS									
Glass vial total (hydrochloric acid) QA1	E508	16-Dec-2020	----	----	----	21-Dec-2020	29 days	5 days	✓
Total Metals : Total Metals in Water by CRC ICPMS									
HDPE total (nitric acid) 20MW-09	E420	17-Dec-2020	----	----	----	18-Dec-2020	180 days	1 days	✓
Total Metals : Total Metals in Water by CRC ICPMS									
HDPE total (nitric acid) 20MW-04D	E420	16-Dec-2020	----	----	----	18-Dec-2020	180 days	2 days	✓
Total Metals : Total Metals in Water by CRC ICPMS									
HDPE total (nitric acid) 20MW-04S	E420	16-Dec-2020	----	----	----	18-Dec-2020	180 days	2 days	✓
Total Metals : Total Metals in Water by CRC ICPMS									
HDPE total (nitric acid) MW19-01	E420	16-Dec-2020	----	----	----	18-Dec-2020	180 days	2 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	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
MW19-03		E420	16-Dec-2020	----	----	----	180 days	2 days		✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
QA1		E420	16-Dec-2020	----	----	----	181 days	2 days		✓
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
20MW-04D		E611C	16-Dec-2020	22-Dec-2020	----	----	----	----		
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
20MW-04S		E611C	16-Dec-2020	22-Dec-2020	----	----	----	----		
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
20MW-09		E611C	17-Dec-2020	22-Dec-2020	----	----	----	----		
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
MW19-01		E611C	16-Dec-2020	22-Dec-2020	----	----	----	----		
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
MW19-03		E611C	16-Dec-2020	22-Dec-2020	----	----	----	----		
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
QA1		E611C	16-Dec-2020	22-Dec-2020	----	----	----	----		
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
20MW-04D		E611C	16-Dec-2020	22-Dec-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		Analysis Date	Holding Times		Eval
					Rec	Actual		Rec	Actual	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)	20MW-04S	E611C	16-Dec-2020	22-Dec-2020	---	---	---	22-Dec-2020	---	---
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)	20MW-09	E611C	17-Dec-2020	22-Dec-2020	---	---	---	22-Dec-2020	---	---
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)	MW19-01	E611C	16-Dec-2020	22-Dec-2020	---	---	---	22-Dec-2020	---	---
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)	MW19-03	E611C	16-Dec-2020	22-Dec-2020	---	---	---	22-Dec-2020	---	---
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)	QA1	E611C	16-Dec-2020	22-Dec-2020	---	---	---	22-Dec-2020	---	---
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)	20MW-09	E611C	17-Dec-2020	22-Dec-2020	14 days	5 days	✓	22-Dec-2020	8 days	0 days ✓
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)	20MW-04D	E611C	16-Dec-2020	22-Dec-2020	14 days	6 days	✓	22-Dec-2020	7 days	0 days ✓
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)	20MW-04S	E611C	16-Dec-2020	22-Dec-2020	14 days	6 days	✓	22-Dec-2020	7 days	0 days ✓
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)	MW19-01	E611C	16-Dec-2020	22-Dec-2020	14 days	6 days	✓	22-Dec-2020	7 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		Analysis Date	Eval	Holding Times	
					Rec	Actual			Rec	Actual
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)	MW19-03	E611C	16-Dec-2020	22-Dec-2020	14 days	6 days	22-Dec-2020	7 days	0 days	✓
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)	QA1	E611C	16-Dec-2020	22-Dec-2020	15 days	6 days	22-Dec-2020	8 days	0 days	✓
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)	20MW-04D	E611C	16-Dec-2020	22-Dec-2020	----	----	22-Dec-2020	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)	20MW-04S	E611C	16-Dec-2020	22-Dec-2020	----	----	22-Dec-2020	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)	20MW-09	E611C	17-Dec-2020	22-Dec-2020	----	----	22-Dec-2020	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)	MW19-01	E611C	16-Dec-2020	22-Dec-2020	----	----	22-Dec-2020	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)	MW19-03	E611C	16-Dec-2020	22-Dec-2020	----	----	22-Dec-2020	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)	QA1	E611C	16-Dec-2020	22-Dec-2020	----	----	22-Dec-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: **Water** Evaluation: * = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type Analytical Methods	Method	QC Lot #	Count			Frequency (%)		Evaluation
			QC	Regular	Actual	Expected		
Laboratory Duplicates (DUP)								
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	132606	1	11	9.0	5.0	✓	
Dissolved Mercury in Water by CVAAS	E509	133485	1	17	5.8	5.0	✓	
Dissolved Metals in Water by CRC ICPMS	E421	132607	2	20	10.0	5.0	✓	
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	132587	1	6	16.6	5.0	✓	
Total Mercury in Water by CVAAS	E508	133974	1	8	12.5	5.0	✓	
Total Metals in Water by CRC ICPMS	E420	132586	2	15	13.3	5.0	✓	
VH and F1 by Headspace GC-FID	E581.VH+F1	134417	1	18	5.5	5.0	✓	
VOCs (BC List) by Headspace GC-MS	E611C	134418	1	20	5.0	5.0	✓	
Laboratory Control Samples (LCS)								
BC PHC - EPH by GC-FID	E601A	132832	1	19	5.2	5.0	✓	
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	132606	1	11	9.0	5.0	✓	
Dissolved Mercury in Water by CVAAS	E509	133485	1	17	5.8	5.0	✓	
Dissolved Metals in Water by CRC ICPMS	E421	132607	1	20	5.0	5.0	✓	
PAHs by Hexane LVI GC-MS	E641A	132831	1	18	5.5	5.0	✓	
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	132587	1	6	16.6	5.0	✓	
Total Mercury in Water by CVAAS	E508	133974	1	8	12.5	5.0	✓	
Total Metals in Water by CRC ICPMS	E420	132586	1	15	6.6	5.0	✓	
VH and F1 by Headspace GC-FID	E581.VH+F1	134417	1	18	5.5	5.0	✓	
VOCs (BC List) by Headspace GC-MS	E611C	134418	1	20	5.0	5.0	✓	
Method Blanks (MB)								
BC PHC - EPH by GC-FID	E601A	132832	1	19	5.2	5.0	✓	
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	132606	1	11	9.0	5.0	✓	
Dissolved Mercury in Water by CVAAS	E509	133485	1	17	5.8	5.0	✓	
Dissolved Metals in Water by CRC ICPMS	E421	132607	1	20	5.0	5.0	✓	
PAHs by Hexane LVI GC-MS	E641A	132831	1	18	5.5	5.0	✓	
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	132587	1	6	16.6	5.0	✓	
Total Mercury in Water by CVAAS	E508	133974	1	8	12.5	5.0	✓	
Total Metals in Water by CRC ICPMS	E420	132586	1	15	6.6	5.0	✓	
VH and F1 by Headspace GC-FID	E581.VH+F1	134417	1	18	5.5	5.0	✓	
VOCs (BC List) by Headspace GC-MS	E611C	134418	1	20	5.0	5.0	✓	
Matrix Spikes (MS)								
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	132606	1	11	9.0	5.0	✓	
Dissolved Mercury in Water by CVAAS	E509	133485	1	17	5.8	5.0	✓	
Dissolved Metals in Water by CRC ICPMS	E421	132607	1	20	5.0	5.0	✓	
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	132587	1	6	16.6	5.0	✓	
Total Mercury in Water by CVAAS	E508	133974	1	8	12.5	5.0	✓	
Total Metals in Water by CRC ICPMS	E420	132586	1	15	6.6	5.0	✓	
VH and F1 by Headspace GC-FID	E581.VH+F1	134417	1	18	5.5	5.0	✓	
VOCs (BC List) by Headspace GC-MS	E611C	134418	1	20	5.0	5.0	✓	



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 Work Order : VA20C3660 Amendment 1
 Client : CH2M Hill Canada Limited
 Project : CE777000 TU.CP Jacobs

Matrix: **Water** Evaluation: * = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
Analytical Methods							
Matrix Spikes (MS) - Continued							
VH and F1 by Headspace GC-FID	E581.VH+F1	134417	1	18	5.5	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	134418	1	20	5.0	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
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cf-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
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.Cf-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
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
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 Vancouver - Environmental	Water	BC MOE Lab Manual	Extractable Petroleum Hydrocarbons (EPH) 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.



Analytical Methods		Method / Lab	Matrix	Method Reference	Method Descriptions
PAHs by Hexane LVI GC-MS	E641A Vancouver - Environmental	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.	
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO ₃ , dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO ₃ 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.	
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO ₃), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO ₃ 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. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.	
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 Vancouver - 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.	
Preparation Methods					
Dissolved Metals Water Filtration		EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO ₃ .
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 Vancouver - Environmental	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.

Work Order : **VA20C3660**
 Amendment : **1**

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Client : CH2M Hill Canada Limited Contact : Jelena Sladojevic Address : Metrotower II, Suite 2100 4720 Kingsway Burnaby BC Canada V5H 4N2 Telephone : ---- Project : CE777000 TU:CP Jacobs PO : 670014CH:B0.01.09 C-O-C number : 17-662851 Sampler : A CANALI Site : ---- Quote number : VA20-CHMH100-013 No. of samples received : 6 No. of samples analysed : 6	Laboratory : Vancouver - Environmental Account Manager : Edward Ngai Address : 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9 Telephone : +1 604 253 4188 Date Samples Received : 17-Dec-2020 18:00 Date Analysis Commenced : 18-Dec-2020 Issue Date : 30-Dec-2020 12:36
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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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory/Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Cristina Alexandre	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Janice Leung	Supervisor - Organics Extractions	Organics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Ophelia Chiu	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Woochan Song	Lab Assistant	Metals, Burnaby, British Columbia



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Work Order : VA20C3660 Amendment 1
Client : CH2M Hill Canada Limited
Project : CE777000 TU.CP Jacobs

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 (QC) 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).

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
Total Metals (QC Lot: 132586)											
VA20C3660-001	MW19-01	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.574	0.296	63.9%	20%	DUP-H
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000053	<0.0000050	0.0000003	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	19.3	19.7	2.35%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	0.141	0.097	0.044	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000051	0.000063	0.000012	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	16.5	16.5	0.236%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		thorium, total	7440-29-1	E420	0.00010	mg/L	0.00019	0.00020	0.00001	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	0.00011	0.00011	0.000008	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.0135	0.00925	37.1%	20%	DUP-H
		tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00170	0.00160	0.00011	Diff <2x LOR	----
		zirconium, total	7440-67-7	E420	0.00020	mg/L	0.00036	0.00034	0.00002	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00112	0.00104	7.30%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0493	0.0476	3.61%	20%	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.018	0.018	0.0007	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00038	0.00036	0.00002	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	16.2	16.1	0.588%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000237	0.000225	0.000012	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0041	0.0043	0.0002	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	3.14	2.97	5.68%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.508	0.484	4.83%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000295	0.000304	0.000009	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00071	0.00071	0.000001	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	3.04	2.92	4.07%	20%	----

Sub-Matrix: Water



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 Work Order : VA20C3660 Amendment 1
 Client : CH2M Hill Canada Limited
 Project : CE777000 TU,CP Jacobs

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
Total Metals (QC Lot: 132586) - continued											
VA20C3660-001	MW19-01	rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00307	0.00311	1.34%	20%	----
		sodium, total	17341-25-2	E420	0.050	mg/L	7.63	7.64	0.180%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.0729	0.0748	2.51%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000108	0.000107	1.01%	20%	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0032	<0.0030	0.0002	Diff <2x LOR	----
Total Metals (QC Lot: 132587)											
VA20C3660-001	MW19-01	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00061	0.00056	0.00005	Diff <2x LOR	----
Total Metals (QC Lot: 133974)											
VA20C3660-001	MW19-01	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 132606)											
KS2002904-001	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 132607)											
KS2002904-001	Anonymous	zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0338	0.0334	1.08%	20%	----
		aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0483	0.0491	1.61%	20%	----
		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	0.00050	0.00052	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00160	0.00164	2.84%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	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	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	1.73	1.71	1.22%	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	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	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	0.0017	0.0017	0.00003	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00859	0.00860	0.154%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00161	0.00161	0.120%	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	0.062	0.062	0.0001	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	0.787	0.785	0.002	Diff <2x LOR	----



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 Work Order : VA20C3660 Amendment 1
 Client : CH2M Hill Canada Limited
 Project : CE777000 TU,CP Jacobs

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: 132607) - continued											
KS2002904-001	Anonymous	rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00097	0.00101	0.00004	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.65	4.70	1.15%	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	43.7	43.6	0.263%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0310	0.0314	1.09%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	3.90	3.91	0.01	Diff <2x LOR	----
		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	<0.00010	<0.00010	0	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	0.00848	0.00851	0.424%	20%	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000095	0.000096	0.000001	Diff <2x LOR	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 133485)											
VA20C3611-005	Anonymous	mercury, dissolved	7439-97-6	E509	0.00500	mg/L	0.0059 µg/L	0.0000054	0.0000005	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 134418)											
VA20C3660-001	MW19-01	benzene	71-43-2	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		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, dis-1,2-	156-59-4	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: 134418) - continued											
VA20C3660-001	MW19-01	dichloroethylene, trans-1,2-	156-50-5	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: 134417)											
VA20C3660-001	MW19-01	VHw (C6-C10)	----	E581.VH+FI	100	µg/L	<100	<100	0.00%	30%	----

Qualifiers
 Qualifier

DUP-H

Description

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: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 132586)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----



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 Work Order : VA20C3660 Amendment 1
 Client : CH2M Hill Canada Limited
 Project : CE777000 TU.CP Jacobs

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 132586) - continued						
tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Total Metals (QCLot: 132587)						
chromium, total	7440-47-3	E420.Cf-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 133974)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QC Lot: 132606)						
chromium, dissolved	7440-47-3	E421.Cf-L	0.0001	mg/L	<0.00010	----
Dissolved Metals (QC Lot: 132607)						
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	----
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	----



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Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QC Lot: 132607) - continued						
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 (QC Lot: 133485)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Volatile Organic Compounds (QC Lot: 134418)						
benzene	71-43-2	E611C	0.5	µg/L	<0.50	----
bromodichloromethane	75-27-4	E611C	0.5	µg/L	<0.50	----
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	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 134418) - continued						
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	----
xylylene, m+p-	179601-23-1	E611C	0.5	µg/L	<0.50	----
xylylene, o-	95-47-6	E611C	0.5	µg/L	<0.50	----
Hydrocarbons (QCLot: 132832)						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
Hydrocarbons (QCLot: 134417)						
VHw (C6-C10)	----	E581.VH+F1	100	µg/L	<100	----
Polycyclic Aromatic Hydrocarbons (QCLot: 132831)						
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+g)fluoranthene	----	E641A	0.01	µg/L	<0.010	----
benzo(b+h,i)fluoranthene	----	E641A	0.015	µg/L	<0.015	----
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	----



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 Project : CE777000 TU.CP Jacobs

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 132831) - continued						
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	----



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: **Water**

Analyte	CAS Number	Method	LOR	Unit	Concentration	Laboratory Control Sample (LCS) Report			Qualifier
						LCS	Low	High	
Total Metals (QCLot: 132588)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	104	80.0	120	---
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	107	80.0	120	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	104	80.0	120	---
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	108	80.0	120	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	105	80.0	120	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	102	80.0	120	---
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	102	80.0	120	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	105	80.0	120	---
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	107	80.0	120	---
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	100	80.0	120	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	---
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	100	80.0	120	---
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	97.2	80.0	120	---
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	106	80.0	120	---
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	111	80.0	120	---
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	101	80.0	120	---
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	97.9	80.0	120	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	103	80.0	120	---
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	---
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	95.3	80.0	120	---
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	101	80.0	120	---
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	103	80.0	120	---
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	102	80.0	120	---
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	96.8	80.0	120	---
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	98.3	80.0	120	---
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	104	80.0	120	---
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	105	80.0	120	---
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	103	80.0	120	---
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	108	80.0	120	---
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	100	80.0	120	---
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	96.1	80.0	120	---
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	106	80.0	120	---
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	99.2	80.0	120	---
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	104	80.0	120	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike Concentration	Recovery (%)	LCS	Recovery Limits (%)	
Total Metals (QCLot: 132586) - continued									
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	103	80.0	120	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	---
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	102	80.0	120	---
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	106	80.0	120	---
Total Metals (QCLot: 132587)									
chromium, total	7440-47-3	E420,Cr-L	0.0001	mg/L	0.25 mg/L	104	80.0	120	---
Total Metals (QCLot: 133974)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	100	80.0	120	---
Dissolved Metals (QCLot: 132606)									
chromium, dissolved	7440-47-3	E421,Cr-L	0.0001	mg/L	0.25 mg/L	97.1	80.0	120	---
Dissolved Metals (QCLot: 132607)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	100	80.0	120	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.6	80.0	120	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	95.2	80.0	120	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	92.6	80.0	120	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	97.0	80.0	120	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	96.5	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	100	80.0	120	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.3	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	98.1	80.0	120	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	93.6	80.0	120	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	97.6	80.0	120	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	97.2	80.0	120	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	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	110	70.0	130	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	102	80.0	120	---
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	95.6	80.0	120	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	99.4	80.0	120	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	101	80.0	120	---



Sub-Matrix: **Water**

Laboratory Control Sample (LCS) Report									
Analyte	CAS Number	Method	LOR	Unit	Spike Concentration	Recovery Limits (%)			Qualifier
						LCS	Low	High	
Dissolved Metals (QCLot: 132607) - continued									
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	107	80.0	120	---
sironium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	---
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	96.3	80.0	120	---
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	101	80.0	120	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	102	80.0	120	---
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	98.7	80.0	120	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.1	80.0	120	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	92.5	80.0	120	---
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	97.0	80.0	120	---
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	101	80.0	120	---
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.4	80.0	120	---
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	102	80.0	120	---
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	98.0	80.0	120	---
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	102	80.0	120	---
Volatile Organic Compounds (QCLot: 134418)									
benzene	71-43-2	E611C	0.5	µg/L	100 µg/L	82.8	70.0	130	---
bromodichloromethane	75-27-4	E611C	0.5	µg/L	100 µg/L	95.6	70.0	130	---
bromoform	75-25-2	E611C	0.5	µg/L	100 µg/L	70.0	70.0	130	---
carbon tetrachloride	56-23-5	E611C	0.5	µg/L	100 µg/L	73.8	70.0	130	---
chlorobenzene	108-90-7	E611C	0.5	µg/L	100 µg/L	91.9	70.0	130	---
chloroethane	75-00-3	E611C	0.5	µg/L	100 µg/L	81.5	60.0	140	---
chloroform	67-66-3	E611C	0.5	µg/L	100 µg/L	104	70.0	130	---
chloromethane	74-87-3	E611C	0.5	µg/L	100 µg/L	89.2	60.0	140	---
dibromochloromethane	124-48-1	E611C	0.5	µg/L	100 µg/L	92.5	70.0	130	---
dichlorobenzene, 1,2-	95-50-1	E611C	0.5	µg/L	100 µg/L	85.8	70.0	130	---
dichlorobenzene, 1,3-	541-73-1	E611C	0.5	µg/L	100 µg/L	83.4	70.0	130	---
dichlorobenzene, 1,4-	106-46-7	E611C	0.5	µg/L	100 µg/L	84.4	70.0	130	---
dichloroethane, 1,1-	75-34-3	E611C	0.5	µg/L	100 µg/L	79.1	70.0	130	---
dichloroethane, 1,2-	107-06-2	E611C	0.5	µg/L	100 µg/L	78.0	70.0	130	---
dichloroethylene, 1,1-	75-35-4	E611C	0.5	µg/L	100 µg/L	83.4	70.0	130	---
dichloroethylene, cis-1,2-	156-59-4	E611C	0.5	µg/L	100 µg/L	75.7	70.0	130	---
dichloroethylene, trans-1,2-	156-60-5	E611C	0.5	µg/L	100 µg/L	81.4	70.0	130	---
dichloromethane	75-09-2	E611C	0.5	µg/L	100 µg/L	82.2	70.0	130	---
dichloropropane, 1,2-	78-87-5	E611C	0.5	µg/L	100 µg/L	85.0	70.0	130	---
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.5	µg/L	100 µg/L	87.6	70.0	130	---
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.5	µg/L	100 µg/L	70.2	70.0	130	---
ethylbenzene	100-41-4	E611C	0.5	µg/L	100 µg/L	117	70.0	130	---



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 Work Order : VA20C3660 Amendment 1
 Client : CH2M Hill Canada Limited
 Project : CE777000 TU.CP Jacobs

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike Concentration	Recovery Limits (%)		High	
						Recovery (%)	LCS		
Volatile Organic Compounds (QCLot: 134418) - continued									
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.5	µg/L	100 µg/L	86.4	70.0	130	---
styrene	100-42-5	E611C	0.5	µg/L	100 µg/L	86.7	70.0	130	---
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.5	µg/L	100 µg/L	74.7	70.0	130	---
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.2	µg/L	100 µg/L	86.7	70.0	130	---
tetrachloroethylene	127-18-4	E611C	0.5	µg/L	100 µg/L	73.0	70.0	130	---
toluene	108-88-3	E611C	0.4	µg/L	100 µg/L	75.3	70.0	130	---
trichloroethane, 1,1,1-	71-55-6	E611C	0.5	µg/L	100 µg/L	97.0	70.0	130	---
trichloroethane, 1,1,2-	79-00-5	E611C	0.5	µg/L	100 µg/L	82.8	70.0	130	---
trichloroethylene	79-01-6	E611C	0.5	µg/L	100 µg/L	76.2	70.0	130	---
trichlorofluoromethane	75-69-4	E611C	0.5	µg/L	100 µg/L	94.5	60.0	140	---
vinyl chloride	75-01-4	E611C	0.4	µg/L	100 µg/L	89.1	60.0	140	---
xylene, m+p-	179601-23-1	E611C	0.5	µg/L	200 µg/L	96.5	70.0	130	---
xylene, o-	95-47-6	E611C	0.5	µg/L	100 µg/L	87.8	70.0	130	---
Hydrocarbons (QCLot: 132832)									
EPH (C10-C19)	----	E601A	250	µg/L	6491 µg/L	124	70.0	130	---
EPH (C19-C32)	----	E601A	250	µg/L	3363 µg/L	130	70.0	130	---
Hydrocarbons (QCLot: 134417)									
VHw (C6-C10)	----	E581.VH+F1	100	µg/L	6310 µg/L	104	70.0	130	---
Polycyclic Aromatic Hydrocarbons (QCLot: 132831)									
acenaphthene	83-32-9	E641A	0.01	µg/L	0.5 µg/L	114	60.0	130	---
acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5 µg/L	114	60.0	130	---
acridine	260-94-6	E641A	0.01	µg/L	0.5 µg/L	116	60.0	130	---
anthracene	120-12-7	E641A	0.01	µg/L	0.5 µg/L	121	60.0	130	---
benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5 µg/L	128	60.0	130	---
benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5 µg/L	117	60.0	130	---
benzo(b+g)fluoranthene	----	E641A	0.01	µg/L	0.5 µg/L	110	60.0	130	---
benzo(b+h)fluoranthene	----	E641A	0.015	µg/L	1 µg/L	115	60.0	130	---
benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	0.5 µg/L	109	60.0	130	---
benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5 µg/L	119	60.0	130	---
chrysene	218-01-9	E641A	0.01	µg/L	0.5 µg/L	118	60.0	130	---
dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5 µg/L	124	60.0	130	---
fluoranthene	206-44-0	E641A	0.01	µg/L	0.5 µg/L	120	60.0	130	---
fluorene	86-73-7	E641A	0.01	µg/L	0.5 µg/L	118	60.0	130	---
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5 µg/L	115	60.0	130	---
methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	0.5 µg/L	111	60.0	130	---
methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5 µg/L	109	60.0	130	---



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 Work Order : VA20C3660 Amendment 1
 Client : CH2M Hill Canada Limited
 Project : CE777000 TU.CP Jacobs

Sub-Matrix: **Water**

Laboratory Control Sample (LCS) Report										
Analyte	CAS Number	Method	LOR	Unit	Spike Concentration	Recovery Limits (%)				Qualifier
						LCS	Low	High		
Polycyclic Aromatic Hydrocarbons (QCLot: 132831) - continued										
naphthalene	91-20-3	E641A	0.05	µg/L	0.5 µg/L	108	50.0	130		---
phenanthrene	85-01-8	E641A	0.02	µg/L	0.5 µg/L	116	60.0	130		---
pyrene	129-00-0	E641A	0.01	µg/L	0.5 µg/L	124	60.0	130		---
quinoline	6027-02-7	E641A	0.05	µg/L	0.5 µg/L	118	60.0	130		---



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 $\geq 1 \times$ spike level.

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report			Recovery Limits (%)	Qualifier	
					Concentration	Target	Recovery (%)			
Total Metals (QC Lot: 132586)										
VA20C3660-002	MW19-03	aluminum, total	7429-90-5	E420	0.190 mg/L	0.2 mg/L	95.3	70.0	130	---
		antimony, total	7440-36-0	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	---
		arsenic, total	7440-38-2	E420	0.0200 mg/L	0.02 mg/L	100.0	70.0	130	---
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	---
		beryllium, total	7440-41-7	E420	0.0395 mg/L	0.04 mg/L	98.8	70.0	130	---
		bismuth, total	7440-69-9	E420	0.0102 mg/L	0.01 mg/L	102	70.0	130	---
		boron, total	7440-42-8	E420	0.097 mg/L	0.1 mg/L	96.7	70.0	130	---
		cadmium, total	7440-43-9	E420	0.00402 mg/L	0.004 mg/L	101	70.0	130	---
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	---
		cesium, total	7440-46-2	E420	0.00986 mg/L	0.01 mg/L	98.6	70.0	130	---
		cobalt, total	7440-48-4	E420	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	---
		copper, total	7440-50-8	E420	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	---
		iron, total	7439-89-6	E420	ND mg/L	2 mg/L	ND	70.0	130	---
		lead, total	7439-92-1	E420	0.0203 mg/L	0.02 mg/L	102	70.0	130	---
		lithium, total	7439-93-2	E420	0.103 mg/L	0.1 mg/L	103	70.0	130	---
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	---
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	---
		molybdenum, total	7439-98-7	E420	0.0196 mg/L	0.02 mg/L	98.3	70.0	130	---
		nickel, total	7440-02-0	E420	0.0400 mg/L	0.04 mg/L	100	70.0	130	---
		phosphorus, total	7723-14-0	E420	9.72 mg/L	10 mg/L	97.2	70.0	130	---
		potassium, total	7440-09-7	E420	3.99 mg/L	4 mg/L	99.7	70.0	130	---
		rubidium, total	7440-17-7	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	---
		selenium, total	7782-49-2	E420	0.0422 mg/L	0.04 mg/L	106	70.0	130	---
		silicon, total	7440-21-3	E420	ND mg/L	10 mg/L	ND	70.0	130	---
		silver, total	7440-22-4	E420	0.00410 mg/L	0.004 mg/L	102	70.0	130	---
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	---
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	---
		sulfur, total	7704-34-9	E420	21.8 mg/L	20 mg/L	109	70.0	130	---
		tellurium, total	13494-80-9	E420	0.0401 mg/L	0.04 mg/L	100	70.0	130	---
		thallium, total	7440-28-0	E420	0.00386 mg/L	0.004 mg/L	96.6	70.0	130	---
		thorium, total	7440-29-1	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130	---
		tin, total	7440-31-5	E420	0.0200 mg/L	0.02 mg/L	99.8	70.0	130	---



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Recovery (%)	Recovery Limits (%)	Qualifier
					Low	High				
Total Metals (QC Lot: 132586) - continued										
VA20C3660-002	MW19-03	titanium, total	7440-32-6	E420	0.0400 mg/L	0.04 mg/L	99.9	70.0	130	---
		tungsten, total	7440-33-7	E420	0.0217 mg/L	0.02 mg/L	108	70.0	130	---
		uranium, total	7440-61-1	E420	0.00405 mg/L	0.004 mg/L	101	70.0	130	---
		vanadium, total	7440-62-2	E420	0.101 mg/L	0.1 mg/L	101	70.0	130	---
		zinc, total	7440-66-6	E420	0.388 mg/L	0.4 mg/L	97.0	70.0	130	---
		zirconium, total	7440-67-7	E420	0.0415 mg/L	0.04 mg/L	104	70.0	130	---
Total Metals (QC Lot: 132587)										
VA20C3660-002	MW19-03	chromium, total	7440-47-3	E420.Cr-L	0.0411 mg/L	0.04 mg/L	103	70.0	130	---
Total Metals (QC Lot: 133974)										
VA20C3660-002	MW19-03	mercury, total	7439-97-6	E508	0.0000964 mg/L	0.0001 mg/L	96.4	70.0	130	---
Dissolved Metals (QC Lot: 132606)										
KS2002904-002	Anonymous	chromium, dissolved	7440-47-3	E421.Cr-L	0.0389 mg/L	0.04 mg/L	97.3	70.0	130	---
Dissolved Metals (QC Lot: 132607)										
KS2002904-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.193 mg/L	0.2 mg/L	96.3	70.0	130	---
		antimony, dissolved	7440-36-0	E421	0.0198 mg/L	0.02 mg/L	98.9	70.0	130	---
		arsenic, dissolved	7440-38-2	E421	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	---
		barium, dissolved	7440-39-3	E421	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	---
		beryllium, dissolved	7440-41-7	E421	0.0400 mg/L	0.04 mg/L	100	70.0	130	---
		bismuth, dissolved	7440-69-9	E421	0.00937 mg/L	0.01 mg/L	93.7	70.0	130	---
		boron, dissolved	7440-42-8	E421	0.096 mg/L	0.1 mg/L	96.2	70.0	130	---
		cadmium, dissolved	7440-43-9	E421	0.00391 mg/L	0.004 mg/L	97.7	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	0.0101 mg/L	0.01 mg/L	101	70.0	130	---
		cobalt, dissolved	7440-48-4	E421	0.0196 mg/L	0.02 mg/L	97.9	70.0	130	---
		copper, dissolved	7440-50-8	E421	0.0193 mg/L	0.02 mg/L	96.4	70.0	130	---
		iron, dissolved	7439-89-6	E421	1.89 mg/L	2 mg/L	94.5	70.0	130	---
		lead, dissolved	7439-92-1	E421	0.0188 mg/L	0.02 mg/L	93.8	70.0	130	---
		lithium, dissolved	7439-93-2	E421	0.0960 mg/L	0.1 mg/L	96.0	70.0	130	---
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	---
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	---
		molybdenum, dissolved	7439-98-7	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	---
		nickel, dissolved	7440-02-0	E421	0.0379 mg/L	0.04 mg/L	94.6	70.0	130	---
		phosphorus, dissolved	7723-14-0	E421	10.6 mg/L	10 mg/L	106	70.0	130	---
		potassium, dissolved	7440-09-7	E421	4.01 mg/L	4 mg/L	100	70.0	130	---
		rubidium, dissolved	7440-17-7	E421	0.0194 mg/L	0.02 mg/L	96.8	70.0	130	---



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 Work Order : VA20C3660 Amendment 1
 Client : CH2M Hill Canada Limited
 Project : CE777000 TU,CP Jacobs

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Spike			Recovery Limits (%)		
					Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QC Lot: 132607) - continued										
KS2002904-002	Anonymous	selenium, dissolved	7782-49-2	E421	0.0383 mg/L	0.04 mg/L	95.8	70.0	130	---
		silicon, dissolved	7440-21-3	E421	9.12 mg/L	10 mg/L	91.2	70.0	130	---
		silver, dissolved	7440-22-4	E421	0.00348 mg/L	0.004 mg/L	87.0	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	20.1 mg/L	20 mg/L	101	70.0	130	---
		tellurium, dissolved	13494-80-9	E421	0.0404 mg/L	0.04 mg/L	101	70.0	130	---
		thallium, dissolved	7440-28-0	E421	0.00379 mg/L	0.004 mg/L	94.8	70.0	130	---
		thorium, dissolved	7440-29-1	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	---
		tin, dissolved	7440-31-5	E421	0.0190 mg/L	0.02 mg/L	95.1	70.0	130	---
		titanium, dissolved	7440-32-6	E421	0.0379 mg/L	0.04 mg/L	94.7	70.0	130	---
		tungsten, dissolved	7440-33-7	E421	0.0182 mg/L	0.02 mg/L	96.2	70.0	130	---
		uranium, dissolved	7440-61-1	E421	0.00393 mg/L	0.004 mg/L	98.3	70.0	130	---
		vanadium, dissolved	7440-62-2	E421	0.0996 mg/L	0.1 mg/L	99.6	70.0	130	---
		zinc, dissolved	7440-66-6	E421	0.422 mg/L	0.4 mg/L	105	70.0	130	---
zirconium, dissolved	7440-67-7	E421	0.0401 mg/L	0.04 mg/L	100	70.0	130	---		
Dissolved Metals (QC Lot: 133485)										
VA20C3611-006	Anonymous	mercury, dissolved	7439-97-6	E509	0.000100 mg/L	0.0001 mg/L	100	70.0	130	---
Volatile Organic Compounds (QC Lot: 134418)										
VA20C3660-002	MW19-03	benzene	71-43-2	E611C	80.8 µg/L	100 µg/L	80.8	60.0	140	---
		bromodichloromethane	75-27-4	E611C	93.2 µg/L	100 µg/L	93.2	60.0	140	---
		bromoforn	75-25-2	E611C	74.0 µg/L	100 µg/L	74.0	60.0	140	---
		carbon tetrachloride	56-23-5	E611C	71.2 µg/L	100 µg/L	71.2	60.0	140	---
		chlorobenzene	108-90-7	E611C	94.0 µg/L	100 µg/L	94.0	60.0	140	---
		chloroethane	75-00-3	E611C	77.9 µg/L	100 µg/L	77.9	50.0	150	---
		chloroform	67-66-3	E611C	101 µg/L	100 µg/L	101	60.0	140	---
		chloromethane	74-87-3	E611C	87.3 µg/L	100 µg/L	87.3	50.0	150	---
		dibromochloromethane	124-48-1	E611C	94.3 µg/L	100 µg/L	94.3	60.0	140	---
		dichlorobenzene, 1,2-	95-50-1	E611C	88.2 µg/L	100 µg/L	88.2	60.0	140	---
		dichlorobenzene, 1,3-	541-73-1	E611C	88.4 µg/L	100 µg/L	88.4	60.0	140	---
		dichlorobenzene, 1,4-	106-46-7	E611C	89.3 µg/L	100 µg/L	89.3	60.0	140	---
		dichloroethane, 1,1-	75-34-3	E611C	82.5 µg/L	100 µg/L	82.5	60.0	140	---
		dichloroethane, 1,2-	107-06-2	E611C	77.4 µg/L	100 µg/L	77.4	60.0	140	---
		dichloroethylene, 1,1-	75-35-4	E611C	80.6 µg/L	100 µg/L	80.6	60.0	140	---
dichloroethylene, cis-1,2-	156-59-4	E611C	73.7 µg/L	100 µg/L	73.7	60.0	140	---		
dichloroethylene, trans-1,2-	156-60-5	E611C	79.8 µg/L	100 µg/L	79.8	60.0	140	---		



Page : 20 of 20
 Work Order : VA20C3660 Amendment 1
 Client : CH2M Hill Canada Limited
 Project : CE777000 TU.CP Jacobs

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Spike			Matrix Spike (MS) Report			
					Concentration	Target	Recovery (%)	MS	Low	High	Qualifier
								Recovery (%)	Low	High	
Volatile Organic Compounds (QCLot: 134418) - continued											
VA20C3660-002	MW19-03	dichloromethane	75-09-2	E611C	80.1 µg/L	100 µg/L	80.1	60.0	140	---	
		dichloropropane, 1,2-	78-87-5	E611C	83.4 µg/L	100 µg/L	83.4	60.0	140	---	
		dichloropropylene, cis-1,3-	10061-01-5	E611C	86.2 µg/L	100 µg/L	86.2	60.0	140	---	
		dichloropropylene, trans-1,3-	10061-02-6	E611C	72.7 µg/L	100 µg/L	72.7	60.0	140	---	
		ethylbenzene	100-41-4	E611C	119 µg/L	100 µg/L	119	60.0	140	---	
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	88.8 µg/L	100 µg/L	88.8	60.0	140	---	
		styrene	100-42-5	E611C	89.1 µg/L	100 µg/L	89.1	60.0	140	---	
		tetrachloroethane, 1,1,1,2-	630-20-6	E611C	76.8 µg/L	100 µg/L	76.8	60.0	140	---	
		tetrachloroethane, 1,1,2,2-	79-34-5	E611C	90.3 µg/L	100 µg/L	90.3	60.0	140	---	
		tetrachloroethylene	127-18-4	E611C	71.7 µg/L	100 µg/L	71.7	60.0	140	---	
		toluene	108-88-3	E611C	76.4 µg/L	100 µg/L	76.4	60.0	140	---	
		trichloroethane, 1,1,1-	71-55-6	E611C	94.0 µg/L	100 µg/L	94.0	60.0	140	---	
		trichloroethane, 1,1,2-	79-00-5	E611C	84.2 µg/L	100 µg/L	84.2	60.0	140	---	
		trichloroethylene	79-01-6	E611C	74.6 µg/L	100 µg/L	74.6	60.0	140	---	
		trichlorofluoromethane	75-69-4	E611C	127 µg/L	100 µg/L	127	50.0	150	---	
		vinyl chloride	75-01-4	E611C	87.0 µg/L	100 µg/L	87.0	50.0	150	---	
		xylene, m+p-	179601-23-1	E611C	198 µg/L	200 µg/L	98.8	60.0	140	---	
		xylene, o-	95-47-6	E611C	90.0 µg/L	100 µg/L	90.0	60.0	140	---	
Hydrocarbons (QCLot: 134417)											
VA20C3660-001	MW19-01	VHw (C6-C10)	----	E581.VH+F1	6000 µg/L	6310 µg/L	95.0	60.0	140	---	



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9678

www.alsglobal.com

COC Number: 17 - 662851 Page 1 of 1

Affix ALS barcode label here (lab use only)

Report To
 Contact and company name below will appear on the final report
 Company: CHAN MIC CAN ADA LTD (JACOBS)
 Contact: CAA PINVOICES (JACOBS CON)
 Phone: [blank]
 Company address below will appear on the final report

Report Format / Distribution
 Select Report Format: PDF EXCEL EDD (DIGITAL)
 Quality Control (QC) Report with Report YES NO
 Compare Results to Criteria on Report - provide details below if box checked
 Select Distribution: EMAIL MAIL FAX
 Email 1 or Fax: TELENA SLAW JEWIC @ JACOBS CON
 Email 2: LP VAN WALTER @ JACOBS CON
 Email 3: [blank]

Invoice Distribution
 Select Invoice Distribution: EMAIL MAIL FAX
 Email 1 or Fax: TELENA SLAW JEWIC @ JACOBS CON
 Email 2: [blank]

Project Information
 ALS Account # / Quote #: [blank]
 Job #: [blank]
 PO / AFE: [blank]
 LSD: [blank]
 AFE/Coast Center: [blank]
 Major/Minor Code: [blank]
 Requisitioner: [blank]
 Location: [blank]
 Oil and Gas Required Fields (client use)
 PO#: [blank]
 Routing Code: [blank]

ALS Lab Work Order # (lab use only): [blank]
ALS Sample # (lab use only): [blank]
 Sample Identification and/or Coordinates (This description will appear on the report)
 PW 19-01
 PW 19-03
 2019-08 2019-09
 2019-04
 2019-04
 QAI

ALS Contact: EN. NGAI
 Date: 16-12-20
 16-12-20
 17-12-20
 16-12-20
 16-12-20
 16-12-20
 Time (hh:mm): 1230
 1340
 1020
 1030
 1030
 Sampler: A CANALI
 Sample Type: WATER
 ↓

Shipping and Receipt
 SHIPMENT RELEASE (client use)
 Released by: A CANALI
 Date: DEC 17, 2020
 Time: 1800
 INITIAL SHIPMENT RECEPTION (lab use only)
 Received by: [blank]
 Date: [blank]
 Time: [blank]

Drinking Water (DW) Samples (client use)
 Are samples taken from a Regulated DW System? YES NO
 Are samples for human consumption/ use? YES NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
 TREAT "M20" BOTTLE UPPER A "2019"

Final Shipment Reception
 Received by: [blank]
 Date: [blank]
 Time: [blank]

Analysis Request
 Indicate Filtered (F), Preserved (P) or Filtered and Preserved (FP) below
 Sample is hazardous (please provide further details): [blank]
 SAMPLES ON HOLD: [blank]
 NUMBER OF CONTAINERS: [blank]

Environmental Division Vancouver Work Order Reference VA20C3660
 Telephone: +1 604 253 4188

Barcode: [blank]

Priority: [blank]
 Regular [R] Standard [AT] if received by 3 pm - business days - no surcharges apply
 4 day [P4-20%]
 3 day [P3-25%]
 2 day [P2-50%]
 1 Business day [E-100%]
 Same Day, Weekend or Statutory holiday [E2-200%] (Laboratory opening fees may apply)

Final Shipment Reception (lab use only)
 Received by: [blank]
 Date: [blank]
 Time: [blank]

SHIPPING AND SAMPLING INFORMATION
 Refer to BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION
 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.



Environmental

CERTIFICATE OF ANALYSIS

Work Order	: VA20C4120	Page	: 1 of 5
Client	: CH2M Hill Canada Limited	Laboratory	: Vancouver - Environmental
Contact	: Jelena Sladojevic	Account Manager	: Edward Ngai
Address	: Metrotower II, Suite 2100 4720 Kingsway Burnaby BC Canada V5H 4N2	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: CE777000 TU:CP Jacobs	Date Samples Received	: 23-Dec-2020 13:40
PO	: 670014CH:BO:01.09	Date Analysis Commenced	: 04-Jan-2021
C-O-C number	: 17-662857	Issue Date	: 05-Jan-2021 17:02
Sampler	: ----		
Site	: ----		
Quote number	: VA20-CHMH100-013		
No. of samples received	: 1		
No. of samples analysed	: 1		

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
Ophelia Chiu	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Paul Cushing	Team Leader - Organics	Organics, 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
µg/L	micrograms per litre

<: 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.

Sample Comments

Sample	Client Id	Comment
VA20C4120-001	MW06-34	2-BBTF and d10-phenanthrene surrogates did not meet ALS DQO minimums for EPH and PAH; reanalysis is not possible. Affected data has an "ABL" qualifier added, and is biased low.

Qualifiers

Qualifier	Description
ABL	Approximate Result: May be biased low.
DLCI	Detection Limit Raised: Chromatographic interference due to co-elution.
DLQ	Detection Limit raised due to co-eluting interference. GCMS qualifier ion ratio did not meet acceptance criteria.
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: Water		Client sample ID		MW06-34	
(Matrix: Water)		Client sampling date / time		22-Dec-2020 13:00	
Analyte	CAS Number	Method	LOR	Unit	VA20C4120-001 Result
Volatile Organic Compounds					
chlorobenzene	108-90-7	E611C	0.50	µg/L	<0.50
chloromethane	74-87-3	E611C	0.50	µg/L	<0.50
dichlorobenzene, 1,2-	95-50-1	E611C	0.50	µg/L	<0.50
dichlorobenzene, 1,3-	541-73-1	E611C	0.50	µg/L	<0.50
dichlorobenzene, 1,4-	106-46-7	E611C	0.50	µg/L	<0.50
dichloropropane, 1,2-	78-87-5	E611C	0.50	µg/L	<0.50
dichloropropylene, cis+trans-1,3-	542-75-6	E611C	0.75	µg/L	<0.75
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.50	µg/L	<0.50
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.50	µg/L	<0.50
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.20	µg/L	<0.20
trichloroethane, 1,1,2-	79-00-5	E611C	0.50	µg/L	<0.50
trichlorofluoromethane	75-69-4	E611C	0.50	µg/L	<0.50
Volatile Organic Compounds [Drycleaning]					
carbon tetrachloride	56-23-5	E611C	0.50	µg/L	<0.50
chloroethane	75-00-3	E611C	0.50	µg/L	<0.50
dichloroethane, 1,1-	75-34-3	E611C	0.50	µg/L	<0.50
dichloroethane, 1,2-	107-06-2	E611C	0.50	µg/L	<0.50
dichloroethylene, 1,1-	75-35-4	E611C	0.50	µg/L	<2.25 ^{α,α}
dichloroethylene, cis-1,2-	156-59-4	E611C	0.50	µg/L	<0.50
dichloroethylene, trans-1,2-	156-60-5	E611C	0.50	µg/L	<0.50
dichloromethane	75-09-2	E611C	0.50	µg/L	0.63
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.50	µg/L	<0.50
tetrachloroethylene	127-18-4	E611C	0.50	µg/L	<0.50
trichloroethane, 1,1,1-	71-55-6	E611C	0.50	µg/L	<0.50
trichloroethylene	79-01-6	E611C	0.50	µg/L	<0.50
vinyl chloride	75-01-4	E611C	0.40	µg/L	<0.40
Volatile Organic Compounds [Fuels]					
benzene	71-43-2	E611C	0.50	µg/L	<0.50
ethylbenzene	100-41-4	E611C	0.50	µg/L	<0.50
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.50	µg/L	<0.50



Analytical Results

Sub-Matrix: Water (Matrix: Water)		Client sample ID									
Analyte	CAS Number	Method	LOR	Unit	Client sampling date / time	MW06-34	Result	Result	Result	Result	Result
Volatile Organic Compounds [Fuels]											
styrene	100-42-5	E611C	0.50	µg/L	22-Dec-2020 13:00		<0.50				
toluene	108-88-3	E611C	0.40	µg/L			<0.40				
xylylene, m+p-	179601-23-1	E611C	0.50	µg/L			<0.50				
xylylene, o-	95-47-6	E611C	0.50	µg/L			<0.50				
xylenes, total	1330-20-7	E611C	0.75	µg/L			<0.75				
Volatile Organic Compounds Surrogates											
bromofluorobenzene, 4-	460-00-4	E611C	0.50	%			82.8				
difluorobenzene, 1,4-	540-36-3	E611C	0.50	%			94.7				
Hydrocarbons											
EPH (C10-C19)	---	E601A	250	µg/L			1480 ^{ABL}				
EPH (C19-C32)	---	E601A	250	µg/L			1260 ^{ABL}				
VHw (C6-C10)	---	E581.VH+F1	100	µg/L			<100				
HEPHw	---	EC600A	250	µg/L			1090				
LEPHw	---	EC600A	250	µg/L			1050				
VPHw	---	EC580A	100	µg/L			<100				
Hydrocarbons Surrogates											
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	50	%			49.6 ^{RRR}				
dichlorotoluene, 3,4-	97-75-0	E581.VH+F1	1.0	%			61.2 ^{SUR-ND}				
Polycyclic Aromatic Hydrocarbons											
acenaphthene	83-32-9	E641A	0.010	µg/L			143				
acenaphthylene	208-96-8	E641A	0.010	µg/L			0.906				
acridine	260-94-6	E641A	0.010	µg/L			<3.50 ^{DLCl}				
anthracene	120-12-7	E641A	0.010	µg/L			30.8 ^{ABL}				
benz(a)anthracene	56-55-3	E641A	0.010	µg/L			7.37				
benzo(a)pyrene	50-32-8	E641A	0.0050	µg/L			1.29				
benzo(b+j)fluoranthene	---	E641A	0.010	µg/L			2.22				
benzo(b+j+k)fluoranthene	---	E641A	0.015	µg/L			3.02				
benzo(g,h,i)perylene	191-24-2	E641A	0.010	µg/L			0.238				
benzo(k)fluoranthene	207-08-9	E641A	0.010	µg/L			0.804				
chrysene	218-01-9	E641A	0.010	µg/L			<10.0 ^{DLCl}				
dibenz(a,h)anthracene	53-70-3	E641A	0.0050	µg/L			0.106				



Analytical Results

Sub-Matrix: Water (Matrix: Water)		Client sample ID					
Analyte	CAS Number	Method	LOR	Unit	Client sampling date / time	Result	
Polycyclic Aromatic Hydrocarbons							
fluoranthene	206-44-0	E641A	0.010	µg/L	22-Dec-2020 13:00	89.4	
fluorene	86-73-7	E641A	0.010	µg/L		79.4	
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.010	µg/L		0.219	
methylnaphthalene, 1-	90-12-0	E641A	0.010	µg/L		7.56	
methylnaphthalene, 2-	91-57-6	E641A	0.010	µg/L		6.88	
naphthalene	91-20-3	E641A	0.050	µg/L		2.49	
phenanthrene	85-01-8	E641A	0.020	µg/L		171	
pyrene	129-00-0	E641A	0.010	µg/L		74.3	
quinoline	6027-02-7	E641A	0.050	µg/L		<1.00 ^{DLCL}	
Polycyclic Aromatic Hydrocarbons Surrogates							
acridine-d9	34749-75-2	E641A	0.010	%		61.5	
chrysene-d12	1719-03-5	E641A	0.010	%		65.3	
naphthalene-d8	1146-65-2	E641A	0.010	%		55.6	
phenanthrene-d10	1517-22-2	E641A	0.010	%		58.6 ^{RRR}	
Volatile Organic Compounds [THMs]							
bromodichloromethane	75-27-4	E611C	0.50	µg/L		<0.50	
bromoform	75-25-2	E611C	0.50	µg/L		<0.50	
chloroform	67-66-3	E611C	0.50	µg/L		<0.50	
dibromochloromethane	124-48-1	E611C	0.50	µg/L		<0.50	

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



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : **VA20C4120** Page : 1 of 7

Client : **CH2M Hill Canada Limited** Laboratory : Vancouver - Environmental
Contact : Jelena Sladojevic Account Manager : Edward Ngai
Address : Metrotower II, Suite 2100 4720 Kingsway
Burnaby BC Canada V5H 4N2 Address : 8081 Lougheed Highway
Burnaby, British Columbia Canada V5A 1W9
Telephone : --- Telephone : +1 604 253 4188
Project : CE77000 TU.CP Jacobs Date Samples Received : 23-Dec-2020 13:40
PO : 670014CH.B0.01.09 Issue Date : 05-Jan-2021 17:03
C-O-C number : 17-662857
Sampler : ---
Site : ---
Quote number : VA20-CHMH100-013
No. of samples received : 1
No. of samples analysed : 1

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.

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Page : 3 of 7
 Work Order : VA20C4120
 Client : CH2M Hill Canada Limited
 Project : CE777000 TU.CP Jacobs

Regular Sample Surrogates

Sub-Matrix: Water	Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Result	Limits	Comment
	Samples Submitted							
	Hydrocarbons Surrogates	VA20C4120-001	MW06-34	dichlorotoluene, 3,4-	97-75-0	61.2 %	70.0-130 %	Recovery less than lower data quality objective
	Hydrocarbons Surrogates	VA20C4120-001	MW06-34	bromobenzotrifluoride, 2-(EPH surr)	392-83-6	49.6 %	60.0-140 %	Recovery less than lower data quality objective
	Polycyclic Aromatic Hydrocarbons Surrogates	VA20C4120-001	MW06-34	phenanthrene-d10	1517-22-2	58.6 %	60.0-130 %	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: **Water** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation			Analysis				
			Preparation Date	Holding Times		Analysis Date	Holding Times			
				Rec	Actual		Eval	Rec	Actual	Eval
Hydrocarbons : BC PHC - EPH by GC-FID										
Glass vial MW06-34	E601A	22-Dec-2020	05-Jan-2021	7 days	13 days	* EHT	05-Jan-2021	40 days	0 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial MW06-34	E581.VH+F1	22-Dec-2020	04-Jan-2021	7 days	13 days	* EHT	05-Jan-2021	-7 days	0 days	*
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Glass vial MW06-34	E641A	22-Dec-2020	05-Jan-2021	7 days	13 days	* EHT	05-Jan-2021	40 days	0 days	✓
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial MW06-34	E611C	22-Dec-2020	04-Jan-2021	---	---	---	05-Jan-2021	---	---	---
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial MW06-34	E611C	22-Dec-2020	04-Jan-2021	---	---	---	05-Jan-2021	---	---	---
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass vial MW06-34	E611C	22-Dec-2020	04-Jan-2021	7 days	13 days	* EHT	05-Jan-2021	-7 days	0 days	*
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial MW06-34	E611C	22-Dec-2020	04-Jan-2021	---	---	---	05-Jan-2021	---	---	---

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EHT: Exceeded ALS recommended hold time prior to analysis.
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: **Water** Evaluation: * = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count			Frequency (%)		Evaluation
			QC	Regular	Actual	Expected		
Analytical Methods								
Laboratory Duplicates (DUP)								
VH and F1 by Headspace GC-FID	E581.VH+F1	137442	1	2	50.0	5.0	✓	
VOCs (BC List) by Headspace GC-MS	E611C	137443	1	3	33.3	5.0	✓	
Laboratory Control Samples (LCS)								
BC PHC - EPH by GC-FID	E601A	137566	1	4	25.0	5.0	✓	
PAHs by Hexane LVI GC-MS	E641A	137567	1	5	20.0	5.0	✓	
VH and F1 by Headspace GC-FID	E581.VH+F1	137442	1	2	50.0	5.0	✓	
VOCs (BC List) by Headspace GC-MS	E611C	137443	1	3	33.3	5.0	✓	
Method Blanks (MB)								
BC PHC - EPH by GC-FID	E601A	137566	1	4	25.0	5.0	✓	
PAHs by Hexane LVI GC-MS	E641A	137567	1	5	20.0	5.0	✓	
VH and F1 by Headspace GC-FID	E581.VH+F1	137442	1	2	50.0	5.0	✓	
VOCs (BC List) by Headspace GC-MS	E611C	137443	1	3	33.3	5.0	✓	
Matrix Spikes (MS)								
VH and F1 by Headspace GC-FID	E581.VH+F1	137442	1	2	50.0	5.0	✓	
VOCs (BC List) by Headspace GC-MS	E611C	137443	1	3	33.3	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
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 Vancouver - Environmental	Water	BC MOE Lab Manual	Extractable Petroleum Hydrocarbons (EPH) 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 Vancouver - Environmental	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.
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 Vancouver - 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.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 Vancouver - Environmental	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.

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Client	: CH2M Hill Canada Limited	Laboratory	: Vancouver - Environmental
Contact	: Jelena Sladojevic	Account Manager	: Edward Ngai
Address	: Metrotower II, Suite 2100 4720 Kingsway Burnaby BC Canada V5H 4N2	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: CE777000 TU.CP Jacobs	Date Samples Received	: 23-Dec-2020 13:40
PO	: 670014CH.B0.01.09	Date Analysis Commenced	: 04-Jan-2021
C-O-C number	: 17-662857	Issue Date	: 05-Jan-2021 17:03
Sampler	: ----		
Site	: ----		
Quote number	: VA20-CHMH100-013		
No. of samples received	: 1		
No. of samples analysed	: 1		

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Ophelia Chiu	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Paul Cushing	Team Leader - Organics	Organics, Burnaby, British Columbia

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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 (QC) 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).

Laboratory sample ID		Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
VA20C4120-001	MW06-34											
Volatile Organic Compounds (QC Lot: 137443)												
			benzene	71-43-2	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
			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	2.25	µg/L	<2.25	<2.25	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	0.63	0.61	0.02	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	----



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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: 137443) - continued											
VA20C4120-001	MW06-34	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: 137442)											
VA20C4120-001	MW06-34	VHw (C6-C10)	----	ES81.VH+F1	100	µg/L	<100	<100	0.00%	30%	----



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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: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 137443)						
benzene	71-43-2	E611C	0.5	µg/L	<0.50	----
bromodichloromethane	75-27-4	E611C	0.5	µg/L	<0.50	----
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	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 137443) - continued						
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: 137442)						
VHw (C6-C10)	----	E581.VH+F1	100	µg/L	<100	----
Hydrocarbons (QCLot: 137566)						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
Polycyclic Aromatic Hydrocarbons (QCLot: 137567)						
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+g)fluoranthene	----	E641A	0.01	µg/L	<0.010	----
benzo(b+h)fluoranthene	----	E641A	0.015	µg/L	<0.015	----
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	----



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: **Water**

Analyte	CAS Number	Method	LOR	Unit	Concentration	Laboratory Control Sample (LCS) Report			Qualifier
						Recovery (%)	Low	High	
Volatile Organic Compounds (QCLot: 137443)									
benzene	71-43-2	E611C	0.5	µg/L	100 µg/L	89.0	70.0	130	---
bromodichloromethane	75-27-4	E611C	0.5	µg/L	100 µg/L	108	70.0	130	---
bromofom	75-25-2	E611C	0.5	µg/L	100 µg/L	79.0	70.0	130	---
carbon tetrachloride	56-23-5	E611C	0.5	µg/L	100 µg/L	78.4	70.0	130	---
chlorobenzene	108-90-7	E611C	0.5	µg/L	100 µg/L	101	70.0	130	---
chloroethane	75-00-3	E611C	0.5	µg/L	100 µg/L	80.6	60.0	140	---
chloroform	67-66-3	E611C	0.5	µg/L	100 µg/L	114	70.0	130	---
chloromethane	74-87-3	E611C	0.5	µg/L	100 µg/L	85.4	60.0	140	---
dibromochloromethane	124-48-1	E611C	0.5	µg/L	100 µg/L	110	70.0	130	---
dichlorobenzene, 1,2-	95-50-1	E611C	0.5	µg/L	100 µg/L	87.2	70.0	130	---
dichlorobenzene, 1,3-	541-73-1	E611C	0.5	µg/L	100 µg/L	83.2	70.0	130	---
dichlorobenzene, 1,4-	106-46-7	E611C	0.5	µg/L	100 µg/L	85.2	70.0	130	---
dichloroethane, 1,1-	75-34-3	E611C	0.5	µg/L	100 µg/L	90.0	70.0	130	---
dichloroethane, 1,2-	107-06-2	E611C	0.5	µg/L	100 µg/L	92.4	70.0	130	---
dichloroethylene, 1,1-	75-35-4	E611C	0.5	µg/L	100 µg/L	85.1	70.0	130	---
dichloroethylene, cis-1,2-	156-59-4	E611C	0.5	µg/L	100 µg/L	82.6	70.0	130	---
dichloroethylene, trans-1,2-	156-60-5	E611C	0.5	µg/L	100 µg/L	86.8	70.0	130	---
dichloromethane	75-09-2	E611C	0.5	µg/L	100 µg/L	91.8	70.0	130	---
dichloropropane, 1,2-	78-87-5	E611C	0.5	µg/L	100 µg/L	93.9	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	77.2	70.0	130	---
ethylbenzene	100-41-4	E611C	0.5	µg/L	100 µg/L	119	70.0	130	---
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.5	µg/L	100 µg/L	108	70.0	130	---
styrene	100-42-5	E611C	0.5	µg/L	100 µg/L	93.8	70.0	130	---
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.5	µg/L	100 µg/L	83.0	70.0	130	---
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.2	µg/L	100 µg/L	93.6	70.0	130	---
tetrachloroethylene	127-18-4	E611C	0.5	µg/L	100 µg/L	75.7	70.0	130	---
toluene	108-88-3	E611C	0.4	µg/L	100 µg/L	86.7	70.0	130	---
trichloroethane, 1,1,1-	71-55-6	E611C	0.5	µg/L	100 µg/L	102	70.0	130	---
trichloroethane, 1,1,2-	79-00-5	E611C	0.5	µg/L	100 µg/L	95.3	70.0	130	---
trichloroethylene	79-01-6	E611C	0.5	µg/L	100 µg/L	81.7	70.0	130	---
trichlorofluoromethane	75-69-4	E611C	0.5	µg/L	100 µg/L	107	60.0	140	---
vinyl chloride	75-01-4	E611C	0.4	µg/L	100 µg/L	84.9	60.0	140	---
xylene, m+p-	179601-23-1	E611C	0.5	µg/L	200 µg/L	102	70.0	130	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike Concentration	Recovery (%)	LCS	Recovery Limits (%)	
Volatile Organic Compounds (QCLot: 137443) - continued									
xylene, o-	95-47-6	E611C	0.5	µg/L	100 µg/L	92.5	70.0	130	---
Hydrocarbons (QCLot: 137442)									
VHw (C6-C10)	----	E581.VH+F1	100	µg/L	6310 µg/L	94.0	70.0	130	---
Hydrocarbons (QCLot: 137566)									
EPH (C10-C19)	----	E601A	250	µg/L	6491 µg/L	120	70.0	130	---
EPH (C19-C32)	----	E601A	250	µg/L	3363 µg/L	115	70.0	130	---
Polycyclic Aromatic Hydrocarbons (QCLot: 137567)									
acenaphthene	83-32-9	E641A	0.01	µg/L	0.5 µg/L	76.8	60.0	130	---
acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5 µg/L	79.3	60.0	130	---
acridine	260-94-6	E641A	0.01	µg/L	0.5 µg/L	84.6	60.0	130	---
anthracene	120-12-7	E641A	0.01	µg/L	0.5 µg/L	83.4	60.0	130	---
benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5 µg/L	87.3	60.0	130	---
benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5 µg/L	84.4	60.0	130	---
benzo(b+g)fluoranthene	----	E641A	0.01	µg/L	0.5 µg/L	81.4	60.0	130	---
benzo(b+h)fluoranthene	----	E641A	0.015	µg/L	1 µg/L	88.6	60.0	130	---
benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	0.5 µg/L	96.2	60.0	130	---
benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5 µg/L	95.7	60.0	130	---
chrysene	218-01-9	E641A	0.01	µg/L	0.5 µg/L	94.0	60.0	130	---
dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5 µg/L	93.5	60.0	130	---
fluoranthene	206-44-0	E641A	0.01	µg/L	0.5 µg/L	92.2	60.0	130	---
fluorene	86-73-7	E641A	0.01	µg/L	0.5 µg/L	80.8	60.0	130	---
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5 µg/L	89.6	60.0	130	---
methyl(naphthalene, 1-	90-12-0	E641A	0.01	µg/L	0.5 µg/L	72.9	60.0	130	---
methyl(naphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5 µg/L	66.9	60.0	130	---
naphthalene	91-20-3	E641A	0.05	µg/L	0.5 µg/L	73.9	50.0	130	---
phenanthrene	85-01-8	E641A	0.02	µg/L	0.5 µg/L	85.2	60.0	130	---
pyrene	129-00-0	E641A	0.01	µg/L	0.5 µg/L	95.8	60.0	130	---
quinoline	6027-02-7	E641A	0.05	µg/L	0.5 µg/L	81.8	60.0	130	---



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 $\geq 1 \times$ spike level.

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report			Recovery Limits (%)		Qualifier
					Concentration	Target	Recovery (%)	MS	Low	
VA21A0033-001	Anonymous	benzene	71-43-2	E611C	95.0 µg/L	100 µg/L	95.0	60.0	140	---
		bromodichloromethane	75-27-4	E611C	115 µg/L	100 µg/L	115	60.0	140	---
		bromoform	75-25-2	E611C	76.0 µg/L	100 µg/L	76.0	60.0	140	---
		carbon tetrachloride	56-23-5	E611C	83.2 µg/L	100 µg/L	83.2	60.0	140	---
		chlorobenzene	108-90-7	E611C	98.1 µg/L	100 µg/L	98.1	60.0	140	---
		chloroethane	75-00-3	E611C	76.8 µg/L	100 µg/L	76.8	50.0	150	---
		chloroform	67-66-3	E611C	113 µg/L	100 µg/L	113	60.0	140	---
		chloromethane	74-87-3	E611C	73.2 µg/L	100 µg/L	73.2	50.0	150	---
		dibromochloromethane	124-48-1	E611C	104 µg/L	100 µg/L	104	60.0	140	---
		dichlorobenzene, 1,2-	95-50-1	E611C	84.7 µg/L	100 µg/L	84.7	60.0	140	---
		dichlorobenzene, 1,3-	541-73-1	E611C	82.0 µg/L	100 µg/L	82.0	60.0	140	---
		dichlorobenzene, 1,4-	106-46-7	E611C	83.4 µg/L	100 µg/L	83.4	60.0	140	---
		dichloroethane, 1,1-	75-34-3	E611C	96.7 µg/L	100 µg/L	96.7	60.0	140	---
		dichloroethane, 1,2-	107-06-2	E611C	96.6 µg/L	100 µg/L	96.6	60.0	140	---
		dichloroethylene, 1,1-	75-35-4	E611C	85.1 µg/L	100 µg/L	85.1	60.0	140	---
		dichloroethylene, cis-1,2-	156-59-4	E611C	87.8 µg/L	100 µg/L	87.8	60.0	140	---
		dichloroethylene, trans-1,2-	156-60-5	E611C	89.6 µg/L	100 µg/L	89.6	60.0	140	---
		dichloromethane	75-09-2	E611C	93.7 µg/L	100 µg/L	93.7	60.0	140	---
		dichloropropane, 1,2-	78-87-5	E611C	100 µg/L	100 µg/L	100	60.0	140	---
		dichloropropylene, cis-1,3-	10061-01-5	E611C	111 µg/L	100 µg/L	111	60.0	140	---
		dichloropropylene, trans-1,3-	10061-02-6	E611C	73.8 µg/L	100 µg/L	73.8	60.0	140	---
		ethylbenzene	100-41-4	E611C	117 µg/L	100 µg/L	117	60.0	140	---
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	102 µg/L	100 µg/L	102	60.0	140	---
		styrene	100-42-5	E611C	90.8 µg/L	100 µg/L	90.8	60.0	140	---
		tetrachloroethane, 1,1,1,2-	630-20-6	E611C	80.5 µg/L	100 µg/L	80.5	60.0	140	---
		tetrachloroethane, 1,1,2,2-	79-34-5	E611C	89.2 µg/L	100 µg/L	89.2	60.0	140	---
		tetrachloroethylene	127-18-4	E611C	72.7 µg/L	100 µg/L	72.7	60.0	140	---
		toluene	108-88-3	E611C	83.5 µg/L	100 µg/L	83.5	60.0	140	---
		trichloroethane, 1,1,1-	71-55-6	E611C	109 µg/L	100 µg/L	109	60.0	140	---
		trichloroethane, 1,1,2-	79-00-5	E611C	89.4 µg/L	100 µg/L	89.4	60.0	140	---
		trichloroethylene	79-01-6	E611C	87.4 µg/L	100 µg/L	87.4	60.0	140	---
		trichlorofluoromethane	75-69-4	E611C	109 µg/L	100 µg/L	109	50.0	150	---



Page : 10 of 10
 Work Order : VA20C4120
 Client : CH2M Hill Canada Limited
 Project : CE777000 TU.CP Jacobs

Sub-Matrix: **Water**

							Matrix Spike (MS) Report				
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Spike		Recovery (%)		Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High		
Volatile Organic Compounds (QCLot: 137443) - continued											
VA21A0033-001	Anonymous	vinyl chloride	75-01-4	E611C	75.4 µg/L	100 µg/L	75.4	50.0	150		----
		xylene, m+p-	179601-23-1	E611C	198 µg/L	200 µg/L	99.1	60.0	140		----
		xylene, o-	95-47-6	E611C	89.9 µg/L	100 µg/L	89.9	60.0	140		----
Hydrocarbons (QCLot: 137442)											
VA20C4120-001	MW06-34	VHw (G6-C10)	----	E581.VH+F1	5100 µg/L	6310 µg/L	80.8	60.0	140		----

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



www.alsglobal.com

COC Number: 17 - 662857

Page 1 of 1

Affix ALS barcode label here (lab use only)

<p>Report To Contact and company name below will appear on the final report Company: <u>WARMHILL CANADA LTD (JACOBS)</u> Contact: <u>CAROL VOYLES @ JACOBS.COM</u> Phone: _____ Company address below will appear on the final report Street: _____ City/Province: _____ Postal Code: _____ Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Copy of Invoice with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Company: _____ Contact: _____</p>		<p>Report Format / Distribution Select Report Format: PDF <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL) Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Compare Results to Criteria on Report - provide details below if box checked Select Distribution: EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: <u>SAK.BILYUK@JACOBS.COM</u> Email 2: <u>JELENA.SIADOSEVNE@JACOBS.COM</u> Email 3: <u>LARA.VARSEN@JACOBS.COM</u></p>		<p>Select Service Level Below - Contact your AM to confirm all E&P TAT's (surcharges may apply) Regular [R] <input type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply 1 Business day [E-100%] Same Day, Weekend or Statutory holiday [E-200%] (Laboratory opening fees may apply) Date and Time Required for all E&P TAT's: dd-mm-yy hh:mm For tests that can not be performed according to the service level selected, you will be contacted.</p>	
<p>Project Information ALS Account # / Quote #: <u>VA20-CHH100-013</u> Job #: <u>GEM000-TH-CF</u> PO / AFE: _____ LSD: _____</p>		<p>Invoice Distribution Select Invoice Distribution: EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: <u>JELENA.SIADOSEVNE@JACOBS.COM</u> Email 2: _____ AFE/Client Center: _____ Region/Minor Code: _____ Requisitioner: _____ Location: _____ PO#: _____ Routing Code: _____</p>			
<p>ALS Lab Work Order # (lab use only): <u>MW06-24</u></p>		<p>ALS Contact: Environmental Division Vancouver Work Order Reference VA20C4120 Telephone: +1 604-253-4188</p>			
<p>ALS Sample # (lab use only) <u>MW06-24</u></p>		<p>Sample Identification and/or Coordinates (This description will appear on the report) <u>PRODUCT RECOVERED FROM WELL, NO PRESERVATIVE IN VIAL.</u></p>			
<p>ALS Date <u>22-12-20</u></p>		<p>Date <u>22-12-20</u></p>			
<p>ALS Time <u>13:00</u></p>		<p>Time (hh:mm) <u>13:00</u></p>			
<p>ALS Sample Type <u>WATER</u></p>		<p>Sample Type <u>WATER</u></p>			
<p>ALS Location</p>		<p>Sampler:</p>			
<p>SHIPMENT RELEASE (client use) Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO Are samples for human consumption/ use? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO Released by: <u>A.CANALI</u> Date: <u>DEC 23, 2020</u> Time: <u>13:10</u></p>					
<p>INITIAL SHIPMENT RECEPTION (lab use only) Received by: <u>RR</u> Date: <u>23/12/20</u> Time: <u>13:40</u></p>					
<p>SHIPPING INFORMATION Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only) Drinking Water (DW) Samples (client use) Are samples taken from a Regulated DW System? Are samples for human consumption/ use? Initial Cooler Temperatures °C: <u>17.3°C</u> Final Cooler Temperatures °C: _____ SIF Observations: Yes <input type="checkbox"/> No <input type="checkbox"/> Custody seal intact: Yes <input type="checkbox"/> No <input type="checkbox"/> Cooling Initiated: <input type="checkbox"/></p>					
<p>FINAL SHIPMENT RECEPTION (lab use only) Received by: _____ Date: _____ Time: _____</p>					

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

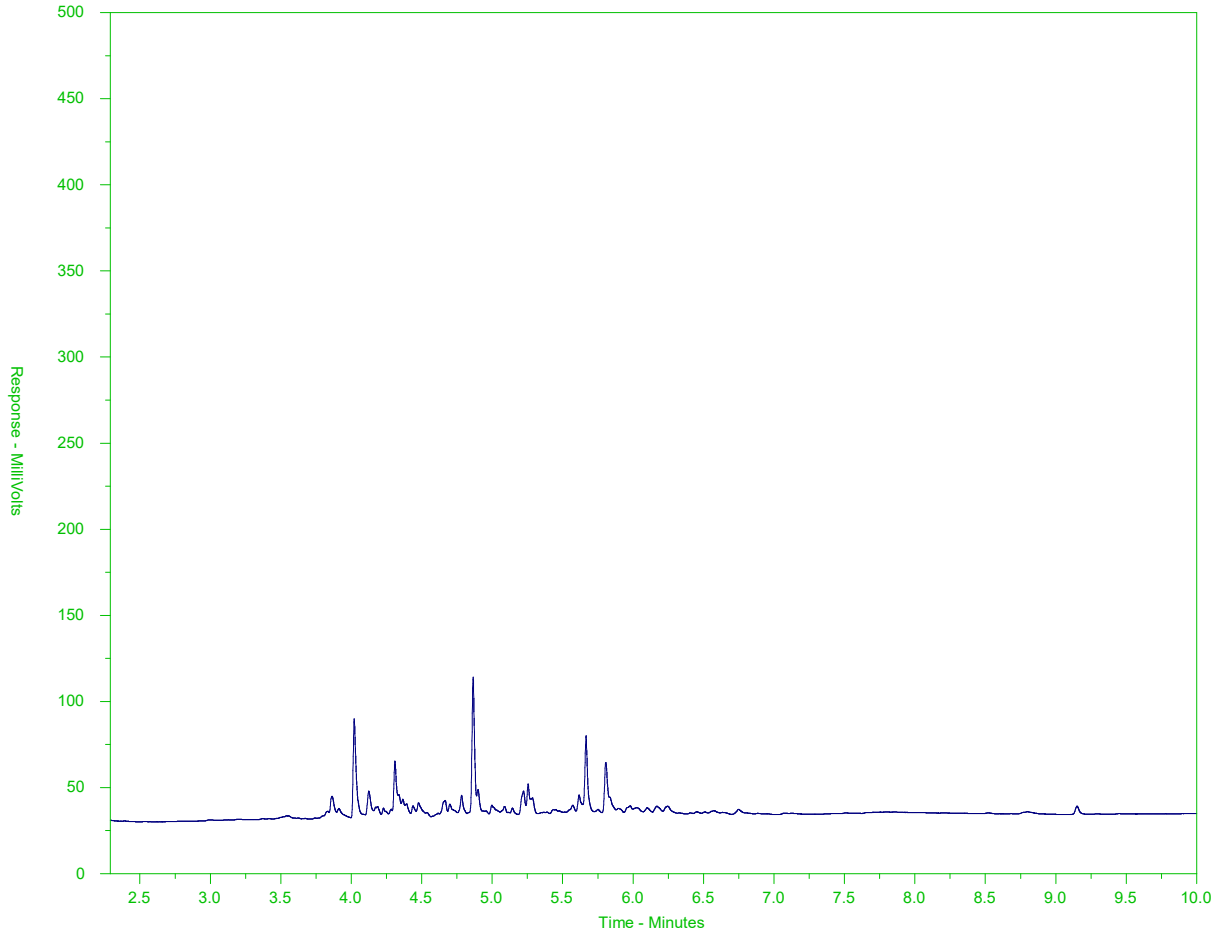
Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the whole - report copy.

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

BC EPH HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: VA20C4120-001-E601A
 Client Sample ID: MW06-34



← EPH10-19 →		← EPH19-32 →	
nC10	nC19	nC32	
174°C	330°C	467°C	
346°F	626°F	873°F	
← Gasoline →	← Diesel/ Jet Fuels →		
		← Motor Oils/ Lube Oils/ Grease →	

The BC EPH Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and three n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

A "-L-" in the sample ID denotes a low level sample. A "-S-" denotes a silica gel cleaned sample.

Note: This chromatogram was produced using GC conditions that are specific to the ALS Canada EPH method. Refer to the ALS Canada EPH Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.



Environmental

CERTIFICATE OF ANALYSIS

Work Order : VA21A0730 Page : 1 of 8
Amendment : 1
Client : CH2M Hill Canada Limited Laboratory : Vancouver - Environmental
Contact : Jelena Sladojevic Account Manager : Edward Ngai
Address : Metrotower II, Suite 2100 4720 Kingsway Address : 8081 Lougheed Highway
Burnaby BC Canada V5A 1W9
Telephone : Telephone : +1 604 253 4188
Project : CE777000 TU.CP.H6 Date Samples Received : 14-Jan-2021 16:10
PO : 670014CH.B0.01.09 Date Analysis Commenced : 14-Jan-2021
C-O-C number : 20-905295 Issue Date : 19-Jan-2021 10:14
Sampler : Date Analysis Commenced : 14-Jan-2021
Site : Issue Date : 19-Jan-2021 10:14
Quote number : VA20-CHMH100-013
No. of samples received : 3
No. of samples analysed : 1

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.

<i>Signatories</i>	<i>Position</i>
Annabelle Prasad	Analyst
Bireanna Allen	Department Manager - Organics
Dee Lee	Analyst
Kim Jensen	Department Manager - Metals

Laboratory Department

Metals, Burnaby, British Columbia
 Organics, Burnaby, British Columbia
 Metals, Burnaby, British Columbia
 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
µg/L	micrograms per litre
mg/L	milligrams per litre

<: 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.

Qualifiers

Qualifier	Description
DLCI	Detection Limit Raised: Chromatographic interference due to co-elution.
DTS	Dissolved Sulfur concentration exceeds total. Negative bias on Total Sulfur suspected due to presence of volatile sulfur species lost during digestion.
DTSE	Dissolved Se concentration exceeds total. Positive bias on D-Se suspected due to signal enhancement from volatile selenium species. Contact ALS if an alternative test to address this interference is needed.



Analytical Results

Sub-Matrix: Water		Client sample ID				
(Matrix: Water)		Client sampling date / time				
Analyte	CAS Number	Method	LOR	Unit	MW06-34	
Physical Tests						
hardness (as CaCO ₃), from total Ca/Mg	---	EC100A	0.60	mg/L	14-Jan-2021 11:45	---
hardness (as CaCO ₃), dissolved	---	EC100	0.60	mg/L	VA21A0730-001	---
Total Metals						
aluminum, total	7429-90-5	E420	0.0030	mg/L	Result	---
antimony, total	7440-36-0	E420	0.00010	mg/L	0.488	---
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00015	---
barium, total	7440-39-3	E420	0.00010	mg/L	0.0158	---
beryllium, total	7440-41-7	E420	0.000100	mg/L	0.0320	---
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000100	---
boron, total	7440-42-8	E420	0.010	mg/L	<0.000050	---
cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.010	---
calcium, total	7440-70-2	E420	0.050	mg/L	0.0000086	---
cesium, total	7440-46-2	E420	0.000010	mg/L	12.3	---
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.000010	---
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00688	---
copper, total	7440-50-8	E420	0.00050	mg/L	0.00198	---
iron, total	7439-89-6	E420	0.010	mg/L	0.00604	---
lead, total	7439-92-1	E420	0.000050	mg/L	25.4	---
lithium, total	7439-93-2	E420	0.0010	mg/L	0.00105	---
magnesium, total	7439-95-4	E420	0.0050	mg/L	0.0011	---
manganese, total	7439-96-5	E420	0.00010	mg/L	2.10	---
mercury, total	7439-97-6	E508	0.0000050	mg/L	0.616	---
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0000070	---
nickel, total	7440-02-0	E420	0.00050	mg/L	0.000091	---
phosphorus, total	7723-14-0	E420	0.050	mg/L	0.00146	---
potassium, total	7440-09-7	E420	0.050	mg/L	<0.050	---
rubidium, total	7440-17-7	E420	0.00020	mg/L	2.12	---
selenium, total	7782-49-2	E420	0.000050	mg/L	0.00366	---
silicon, total	7440-21-3	E420	0.10	mg/L	0.000052	---
silver, total	7440-22-4	E420	0.000010	mg/L	7.43	---
					0.000017	---



Analytical Results

Sub-Matrix: Water (Matrix: Water)		Client sample ID				
Analyte	CAS Number	Method	LOR	Unit	Client sampling date / time	MW06-34
Total Metals						
sodium, total	17341-25-2	E420	0.050	mg/L	14-Jan-2021 11:45	2.53
strontium, total	7440-24-6	E420	0.00020	mg/L		0.0870
sulfur, total	7704-34-9	E420	0.50	mg/L		<0.50
tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010
thorium, total	7440-29-1	E420	0.00010	mg/L		0.00011
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L		0.00675
tungsten, total	7440-33-7	E420	0.00010	mg/L		0.00011
uranium, total	7440-61-1	E420	0.000010	mg/L		0.000121
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00320
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030
zirconium, total	7440-67-7	E420	0.00020	mg/L		0.00104
Dissolved Metals						
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.451
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.00013
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.0156
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0323
beryllium, dissolved	7440-41-7	E421	0.000100	mg/L		<0.000100
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L		<0.010
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000067
calcium, dissolved	7440-70-2	E421	0.050	mg/L		12.8
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		<0.000010
chromium, dissolved	7440-47-3	E421, Cr-L	0.00010	mg/L		0.00642
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00189
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00440
iron, dissolved	7439-89-6	E421	0.010	mg/L		25.2
lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000691
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		<0.0010
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		1.97



Analytical Results

Sub-Matrix: Water (Matrix: Water)		Client sample ID		MW06-34						
Analyte	CAS Number	Method	LOR	Unit	Client sampling date / time					
Dissolved Metals										
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	14-Jan-2021 11:45					
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L						
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L						
nickel, dissolved	7440-02-0	E421	0.00050	mg/L						
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L						
potassium, dissolved	7440-09-7	E421	0.050	mg/L						
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L						
selenium, dissolved	7782-49-2	E421	0.000050	mg/L						
silicon, dissolved	7440-21-3	E421	0.050	mg/L						
silver, dissolved	7440-22-4	E421	0.000010	mg/L						
sodium, dissolved	17341-25-2	E421	0.050	mg/L						
strontium, dissolved	7440-24-6	E421	0.00020	mg/L						
sulfur, dissolved	7704-34-9	E421	0.50	mg/L						
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L						
thallium, dissolved	7440-28-0	E421	0.000010	mg/L						
thorium, dissolved	7440-29-1	E421	0.00010	mg/L						
tin, dissolved	7440-31-5	E421	0.00010	mg/L						
titanium, dissolved	7440-32-6	E421	0.00030	mg/L						
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L						
uranium, dissolved	7440-61-1	E421	0.000010	mg/L						
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L						
zinc, dissolved	7440-66-6	E421	0.0010	mg/L						
zirconium, dissolved	7440-67-7	E421	0.00020	mg/L						
dissolved mercury filtration location	----	EP509	-	-						
dissolved metals filtration location	----	EP421	-	-						
Volatile Organic Compounds										
chlorobenzene	108-90-7	E611C	0.50	µg/L						
chloromethane	74-87-3	E611C	0.50	µg/L						
dichlorobenzene, 1,2-	95-50-1	E611C	0.50	µg/L						
dichlorobenzene, 1,3-	541-73-1	E611C	0.50	µg/L						
dichlorobenzene, 1,4-	106-46-7	E611C	0.50	µg/L						



Analytical Results

Sub-Matrix: Water (Matrix: Water)		Client sample ID									
Analyte	CAS Number	Method	LOR	Unit	Client sampling date / time	MW06-34					
						14-Jan-2021 11:45	VA21A0730-001	Result			
Volatile Organic Compounds											
dichloropropane, 1,2-	78-87-5	E611C	0.50	µg/L				<0.50			
dichloropropylene, cis+trans-1,3-	542-75-6	E611C	0.75	µg/L				<0.75			
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.50	µg/L				<0.50			
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.50	µg/L				<0.50			
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.20	µg/L				<0.20			
trichloroethane, 1,1,2-	79-00-5	E611C	0.50	µg/L				<0.50			
trichlorofluoromethane	75-69-4	E611C	0.50	µg/L				<0.50			
Volatile Organic Compounds [Drycleaning]											
carbon tetrachloride	56-23-5	E611C	0.50	µg/L				<0.50			
chloroethane	75-00-3	E611C	0.50	µg/L				<0.50			
dichloroethane, 1,1-	75-34-3	E611C	0.50	µg/L				<0.50			
dichloroethane, 1,2-	107-06-2	E611C	0.50	µg/L				<0.50			
dichloroethylene, 1,1-	75-35-4	E611C	0.50	µg/L				<0.50			
dichloroethylene, cis-1,2-	156-59-4	E611C	0.50	µg/L				<0.50			
dichloroethylene, trans-1,2-	156-60-5	E611C	0.50	µg/L				<0.50			
dichloromethane	75-09-2	E611C	0.50	µg/L				<0.50			
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.50	µg/L				<0.50			
tetrachloroethylene	127-18-4	E611C	0.50	µg/L				<0.50			
trichloroethane, 1,1,1-	71-55-6	E611C	0.50	µg/L				<0.50			
trichloroethylene	79-01-6	E611C	0.50	µg/L				<0.50			
vinyl chloride	75-01-4	E611C	0.40	µg/L				<0.40			
Volatile Organic Compounds [Fuels]											
benzene	71-43-2	E611C	0.50	µg/L				<0.50			
ethylbenzene	100-41-4	E611C	0.50	µg/L				<0.50			
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.50	µg/L				<0.50			
styrene	100-42-5	E611C	0.50	µg/L				<0.50			
toluene	108-88-3	E611C	0.40	µg/L				0.60			
xylene, m+p-	179601-23-1	E611C	0.40	µg/L				0.51			
xylene, o-	95-47-6	E611C	0.30	µg/L				<0.30			
xylene, total	1330-20-7	E611C	0.50	µg/L				0.51			
Volatile Organic Compounds Surrogates											



Analytical Results

Sub-Matrix: Water (Matrix: Water)		Client sample ID									
Analyte	CAS Number	Method	LOR	Unit	Client sampling date / time	MW06-34					
Volatile Organic Compounds Surrogates											
bromofluorobenzene, 4-	460-00-4	E611C	0.50	%	14-Jan-2021 11:45	82.5					
difluorobenzene, 1,4-	540-36-3	E611C	0.50	%		94.3					
Hydrocarbons											
EPH (C10-C19)	---	E601A	250	µg/L		510					
EPH (C19-C32)	---	E601A	250	µg/L		<250					
VHw (C6-C10)	---	E581.VH+F1	100	µg/L		<100					
VPHw	---	EC580A	100	µg/L		<100					
HEPHw	---	EC600A	250	µg/L		<250					
LEPHw	---	EC600A	250	µg/L		330					
Hydrocarbons Surrogates											
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	50	%		93.8					
dichlorotoluene, 3,4-	97-75-0	E581.VH+F1	1.0	%		98.2					
Polycyclic Aromatic Hydrocarbons											
acenaphthene	83-32-9	E641A	0.010	µg/L		85.5					
acenaphthylene	208-96-8	E641A	0.010	µg/L		0.475					
acridine	260-94-6	E641A	0.010	µg/L		<2.80 ^{DLCL}					
anthracene	120-12-7	E641A	0.010	µg/L		6.15					
benz(a)anthracene	56-55-3	E641A	0.010	µg/L		0.437					
benzo(a)pyrene	50-32-8	E641A	0.0050	µg/L		0.120					
benzo(b+j)fluoranthene	---	E641A	0.010	µg/L		0.176					
benzo(b+j+k)fluoranthene	---	E641A	0.015	µg/L		0.248					
benzo(g,h,i)perylene	191-24-2	E641A	0.010	µg/L		0.034					
benzo(k)fluoranthene	207-08-9	E641A	0.010	µg/L		0.072					
chrysene	218-01-9	E641A	0.010	µg/L		0.440					
dibenz(a,h)anthracene	53-70-3	E641A	0.0050	µg/L		0.0140					
fluoranthene	206-44-0	E641A	0.010	µg/L		10.6					
fluorene	86-73-7	E641A	0.010	µg/L		37.4					
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.010	µg/L		0.024					
methylnaphthalene, 1-	90-12-0	E641A	0.010	µg/L		8.73					
methylnaphthalene, 2-	91-57-6	E641A	0.010	µg/L		10.9					
naphthalene	91-20-3	E641A	0.050	µg/L		13.6					



Analytical Results

Sub-Matrix: Water (Matrix: Water)		Client sample ID				
Analyte	CAS Number	Method	LOR	Unit	Client sampling date / time	MW06-34
						14-Jan-2021 11:45
						VA21A0730-001
						Result
Polycyclic Aromatic Hydrocarbons						
phenanthrene	85-01-8	E641A	0.020	µg/L		39.4
pyrene	129-00-0	E641A	0.010	µg/L		5.87
quinoline	6027-02-7	E641A	0.050	µg/L		<0.050
Polycyclic Aromatic Hydrocarbons Surrogates						
chrysene-d12	1719-03-5	E641A	0.010	%		92.2
naphthalene-d8	1146-65-2	E641A	0.010	%		101
phenanthrene-d10	1517-22-2	E641A	0.010	%		109
Volatile Organic Compounds [THMs]						
bromodichloromethane	75-27-4	E611C	0.50	µg/L		<0.50
bromoform	75-25-2	E611C	0.50	µg/L		<0.50
chloroform	67-66-3	E611C	0.50	µg/L		<0.50
dibromochloromethane	124-48-1	E611C	0.50	µg/L		<0.50

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



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : **VA21A0730** Page : 1 of 8
Amendment : 1
Client : **CH2M Hill Canada Limited** Laboratory : Vancouver - Environmental
Contact : Jelena Sladojevic Account Manager : Edward Ngai
Address : Metrotower II, Suite 2100 4720 Kingsway : 8081 Lougheed Highway
Burnaby BC Canada V5H 4N2 Burnaby, British Columbia Canada V5A 1W9
Telephone : --- Telephone : +1 604 253 4188
Project : CE777000 TU.CP.H6 Date Samples Received : 14-Jan-2021 16:10
PO : 670014CH.B0.01.09 Issue Date : 19-Jan-2021 10:15
C-O-C number : 20-905295
Sampler : ---
Site : ---
Quote number : VA20-CHMH100-013
No. of samples received : 3
No. of samples analysed : 1

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 Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



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: **Water** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation			Analysis				
			Preparation Date	Holding Times Rec	Actual	Eval	Analysis Date	Holding Times Rec	Actual	Eval
Container / Client Sample ID(s)										
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)										
HDPE dissolved (nitric acid) MW06-34	E421.Cr-L	14-Jan-2021	14-Jan-2021	180 days	0 days	✓	14-Jan-2021	179 days	0 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) MW06-34	E509	14-Jan-2021	15-Jan-2021	28 days	0 days	✓	15-Jan-2021	27 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW06-34	E421	14-Jan-2021	14-Jan-2021	180 days	0 days	✓	14-Jan-2021	179 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW06-34	E601A	14-Jan-2021	14-Jan-2021	14 days	0 days	✓	15-Jan-2021	40 days	0 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW06-34	E581.VH+F1	14-Jan-2021	18-Jan-2021	14 days	4 days	✓	19-Jan-2021	9 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate) MW06-34	E641A	14-Jan-2021	14-Jan-2021	14 days	0 days	✓	15-Jan-2021	40 days	0 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) MW06-34	E420.Cr-L	14-Jan-2021	---	---	---	---	15-Jan-2021	180 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		Analysis Date	Holding Times		Eval
					Rec	Actual		Rec	Actual	
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)	MW06-34	E508	14-Jan-2021	----	----	----	15-Jan-2021	28 days	0 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)	MW06-34	E420	14-Jan-2021	----	----	----	15-Jan-2021	180 days	0 days	✓
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)	MW06-34	E611C	14-Jan-2021	14-Jan-2021	----	----	15-Jan-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)	MW06-34	E611C	14-Jan-2021	14-Jan-2021	----	----	15-Jan-2021	----	----	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)	MW06-34	E611C	14-Jan-2021	14-Jan-2021	14 days	0 days	15-Jan-2021	13 days	0 days	✓
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)	MW06-34	E611C	14-Jan-2021	14-Jan-2021	----	----	15-Jan-2021	----	----	

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: **Water** Evaluation: * = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type Analytical Methods	Method	QC Lot #	Count			Frequency (%)		Evaluation
			QC	Regular	Actual	Expected		
Laboratory Duplicates (DUP)								
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	141022	1	1	100.0	5.0	✓	
Dissolved Mercury in Water by CVAAS	E509	141134	1	17	5.8	5.0	✓	
Dissolved Metals in Water by CRC ICPMS	E421	141021	1	1	100.0	5.0	✓	
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	141026	1	1	100.0	5.0	✓	
Total Mercury in Water by CVAAS	E508	141131	1	19	5.2	5.0	✓	
Total Metals in Water by CRC ICPMS	E420	141027	1	1	100.0	5.0	✓	
VH and F1 by Headspace GC-FID	E581.VH+F1	142213	1	10	10.0	5.0	✓	
VOCs (BC List) by Headspace GC-MS	E611C	141068	1	7	14.2	5.0	✓	
Laboratory Control Samples (LCS)								
BC PHC - EPH by GC-FID	E601A	141051	1	5	20.0	5.0	✓	
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	141022	1	1	100.0	5.0	✓	
Dissolved Mercury in Water by CVAAS	E509	141134	1	17	5.8	5.0	✓	
Dissolved Metals in Water by CRC ICPMS	E421	141021	1	1	100.0	5.0	✓	
PAHs by Hexane LVI GC-MS	E641A	141052	1	5	20.0	5.0	✓	
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	141026	1	1	100.0	5.0	✓	
Total Mercury in Water by CVAAS	E508	141131	1	19	5.2	5.0	✓	
Total Metals in Water by CRC ICPMS	E420	141027	1	1	100.0	5.0	✓	
VH and F1 by Headspace GC-FID	E581.VH+F1	142213	1	10	10.0	5.0	✓	
VOCs (BC List) by Headspace GC-MS	E611C	141068	1	7	14.2	5.0	✓	
Method Blanks (MB)								
BC PHC - EPH by GC-FID	E601A	141051	1	5	20.0	5.0	✓	
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	141022	1	1	100.0	5.0	✓	
Dissolved Mercury in Water by CVAAS	E509	141134	1	17	5.8	5.0	✓	
Dissolved Metals in Water by CRC ICPMS	E421	141021	1	1	100.0	5.0	✓	
PAHs by Hexane LVI GC-MS	E641A	141052	1	5	20.0	5.0	✓	
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	141026	1	1	100.0	5.0	✓	
Total Mercury in Water by CVAAS	E508	141131	1	19	5.2	5.0	✓	
Total Metals in Water by CRC ICPMS	E420	141027	1	1	100.0	5.0	✓	
VH and F1 by Headspace GC-FID	E581.VH+F1	142213	1	10	10.0	5.0	✓	
VOCs (BC List) by Headspace GC-MS	E611C	141068	1	7	14.2	5.0	✓	
Matrix Spikes (MS)								
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	141022	1	1	100.0	5.0	✓	
Dissolved Mercury in Water by CVAAS	E509	141134	1	17	5.8	5.0	✓	
Dissolved Metals in Water by CRC ICPMS	E421	141021	1	1	100.0	5.0	✓	
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	141026	1	1	100.0	5.0	✓	
Total Mercury in Water by CVAAS	E508	141131	1	19	5.2	5.0	✓	
Total Metals in Water by CRC ICPMS	E420	141027	1	1	100.0	5.0	✓	
VH and F1 by Headspace GC-FID	E581.VH+F1	142213	1	10	10.0	5.0	✓	
VOCs (BC List) by Headspace GC-MS	E611C	141068	1	7	14.2	5.0	✓	



Page : 6 of 8
 Work Order : VA21A0730 Amendment 1
 Client : CH2M Hill Canada Limited
 Project : CE777000 TU.CP.H6

Matrix: **Water** Evaluation: * = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
Analytical Methods							
Matrix Spikes (MS) - Continued							
VH and F1 by Headspace GC-FID	E581.VH+F1	142213	1	10	10.0	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	141068	1	7	14.2	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
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cf-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
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.Cf-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
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
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 Vancouver - Environmental	Water	BC MOE Lab Manual	Extractable Petroleum Hydrocarbons (EPH) 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.



Analytical Methods		Method / Lab	Matrix	Method Reference	Method Descriptions
PAHs by Hexane LVI GC-MS	E641A Vancouver - Environmental	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.	
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO ₃), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO ₃ 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.	
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO ₃), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO ₃ 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. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.	
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 Vancouver - 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.	
Preparation Methods		Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO ₃ .	
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 Vancouver - Environmental	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.	

Work Order : **VA21A0730**
 Amendment : **1**

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Client : CH2M Hill Canada Limited Contact : Jelena Sladojevic Address : Metrotower II, Suite 2100 4720 Kingsway Burnaby BC Canada V5H 4N2 Telephone : ---- Project : CE777000 TU:CP:H6 PO : 670014CH:B0.01.09 C-O-C number : 20-905295 Sampler : ---- Site : ---- Quote number : VA20-CHMH100-013 No. of samples received : 3 No. of samples analysed : 1	Laboratory : Vancouver - Environmental Account Manager : Edward Ngai Address : 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9 Telephone : +1 604 253 4188 Date Samples Received : 14-Jan-2021 16:10 Date Analysis Commenced : 14-Jan-2021 Issue Date : 19-Jan-2021 10:15
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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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory/Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Brieanna Allen	Department Manager - Organics	Organics, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia



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Work Order : VA21A0730 Amendment 1
Client : CH2M Hill Canada Limited
Project : CE777000 TU.CP.H6

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 (QC) 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).

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
Total Metals (QC Lot: 141026)											
VA21A0730-001	MW06-34	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00688	0.00689	0.0510%	20%	----
Total Metals (QC Lot: 141027)											
VA21A0730-001	MW06-34	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.488	0.494	1.22%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00015	0.00016	0.000009	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.0158	0.0156	1.02%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0320	0.0321	0.276%	20%	----
		beryllium, total	7440-41-7	E420	0.00010	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.00050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000086	0.0000082	0.0000004	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	12.3	12.4	0.132%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00198	0.00200	0.959%	20%	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00604	0.00593	1.82%	20%	----
		iron, total	7439-89-6	E420	0.010	mg/L	25.4	25.5	0.416%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.00105	0.00106	1.04%	20%	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0011	0.0011	0.00005	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	2.10	2.06	1.97%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.616	0.612	0.651%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000091	0.000096	0.000005	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00146	0.00149	0.00004	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	2.12	2.10	1.03%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00366	0.00358	2.02%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000052	0.000070	0.000018	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	7.43	7.29	1.90%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	0.000017	0.000015	0.000002	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	2.53	2.53	0.303%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.0870	0.0923	5.94%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	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
Total Metals (QC Lot: 141027) - continued											
VA21A0730-001	MW06-34	thorium, total	7440-29-1	E420	0.00010	mg/L	0.00011	<0.00010	0.00001	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00675	0.00672	0.460%	20%	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	0.00011	0.00011	0.00000001	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.00010	mg/L	0.00012	0.000120	0.631%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00320	0.00319	0.000006	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		zirconium, total	7440-67-7	E420	0.00020	mg/L	0.00104	0.00115	0.00012	Diff <2x LOR	----
Total Metals (QC Lot: 141131)											
FJ2100016-001	Anonymous	mercury, total	7439-97-6	E508	0.0000500	mg/L	<0.0000500	<0.0000500	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 141021)											
VA21A0730-001	MW06-34	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.451	0.440	2.39%	20%	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00013	0.00013	0.000002	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.0156	0.0156	0.0636%	20%	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0323	0.0317	1.86%	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	0.0000067	<0.0000050	0.0000017	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	12.8	12.4	3.44%	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	0.00189	0.00185	1.73%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00440	0.00438	0.396%	20%	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	25.2	24.6	2.10%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000691	0.000671	2.95%	20%	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	1.97	1.91	2.86%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.602	0.621	3.04%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000063	0.000066	0.000004	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00132	0.00132	0.000003	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	2.18	2.13	2.29%	20%	----
		rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00334	0.00331	1.08%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.00320	0.00334	4.22%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	7.42	7.34	1.02%	20%	----



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 Client : CH2M Hill Canada Limited
 Project : CE777000 TU.CP.H6

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: 141021) - continued											
VA21A0730-001	MW06-34	silver, dissolved	7440-22-4	E421	0.000010	mg/L	0.000012	0.000014	0.000002	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.31	2.41	4.10%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0839	0.0858	2.14%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	1.94	2.22	0.28	Diff <2x LOR	----
		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	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	0.00635	0.00597	6.23%	20%	----
		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	0.000121	0.000120	1.42%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00299	0.00292	0.00006	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	0.00020	mg/L	0.00143	0.00150	0.00007	Diff <2x LOR	----
Dissolved Metals (QC Lot: 141022)											
VA21A0730-001	MW06-34	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00642	0.00643	0.140%	20%	----
Dissolved Metals (QC Lot: 141134)											
FJ2100016-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000250	mg/L	<0.0000250	<0.0000250	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 141068)											
VA21A0699-001	Anonymous	benzene	71-43-2	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		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	----



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: 141068) - continued											
VA21A0699-001	Anonymous	dichloroethylene, trans-1,2-	156-50-5	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	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		xylene, o-	95-47-6	E611C	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 142213)											
VA21A0730-001	MW06-34	VHw (C6-C10)	----	E581.VH+FI	100	µg/L	<100	<100	0.00%	30%	----



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: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 141026)						
chromium, total	7440-47-3	E420.Cf-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 141027)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 141027) - continued						
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Total Metals (QCLot: 141134)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QC Lot: 141024)						
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	----
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	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QC Lot: 141021) - continued						
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 (QC Lot: 141022)						
chromium, dissolved	7440-47-3	E421,Cr-L	0.0001	mg/L	<0.00010	----
Dissolved Metals (QC Lot: 141134)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Volatile Organic Compounds (QC Lot: 141068)						
benzene	71-43-2	E611C	0.5	µg/L	<0.50	----
bromodichloromethane	75-27-4	E611C	0.5	µg/L	<0.50	----
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	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 141068) - continued						
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	----
xylylene, m+p-	179601-23-1	E611C	0.4	µg/L	<0.40	----
xylylene, o-	95-47-6	E611C	0.3	µg/L	<0.30	----
Hydrocarbons (QCLot: 141051)						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
Hydrocarbons (QCLot: 142213)						
VHw (C6-C10)	----	E581.VH+F1	100	µg/L	<100	----
Polycyclic Aromatic Hydrocarbons (QCLot: 141052)						
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+g)fluoranthene	----	E641A	0.01	µg/L	<0.010	----
benzo(b+h,i)fluoranthene	----	E641A	0.015	µg/L	<0.015	----
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	----



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 Work Order : VA21A0730 Amendment 1
 Client : CH2M Hill Canada Limited
 Project : CE777000 TU.CP.H6

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 141052) - continued						
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	----



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: **Water**

Analyte	CAS Number	Method	LOR	Unit	Concentration	Laboratory Control Sample (LCS) Report			Qualifier
						Recovery (%)	Low	High	
Total Metals (QCLot: 141026)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	---
Total Metals (QCLot: 141027)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	101	80.0	120	---
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	105	80.0	120	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	99.8	80.0	120	---
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	99.3	80.0	120	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	97.2	80.0	120	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	106	80.0	120	---
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	92.5	80.0	120	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	101	80.0	120	---
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	100	80.0	120	---
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	98.2	80.0	120	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	---
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.3	80.0	120	---
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	99.0	80.0	120	---
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	107	80.0	120	---
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	96.2	80.0	120	---
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	98.8	80.0	120	---
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	99.7	80.0	120	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	103	80.0	120	---
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	97.6	80.0	120	---
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	102	80.0	120	---
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	97.0	80.0	120	---
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	106	80.0	120	---
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	94.5	80.0	120	---
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	96.7	80.0	120	---
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	105	80.0	120	---
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	103	80.0	120	---
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	102	80.0	120	---
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	87.3	80.0	120	---
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	101	80.0	120	---
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	108	80.0	120	---
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	105	80.0	120	---
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	97.9	80.0	120	---



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 Work Order : VA21A0730 Amendment 1
 Client : CH2M Hill Canada Limited
 Project : CE777000 TU.CP.H6

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Concentration	Laboratory Control Sample (LCS) Report			Qualifier
						Recovery (%)	LCS	Recovery Limits (%)	
Total Metals (QCLot: 141027) - continued									
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	98.3	80.0	120	---
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	106	80.0	120	---
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	109	80.0	120	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	---
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	98.0	80.0	120	---
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	98.7	80.0	120	---
Total Metals (QCLot: 141131)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	104	80.0	120	---
Dissolved Metals (QCLot: 141021)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	103	80.0	120	---
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	109	80.0	120	---
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	102	80.0	120	---
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	106	80.0	120	---
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	100	80.0	120	---
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	---
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	100	80.0	120	---
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	103	80.0	120	---
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	106	80.0	120	---
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	111	80.0	120	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	---
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	---
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	110	80.0	120	---
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	104	80.0	120	---
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	98.1	80.0	120	---
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	99.3	80.0	120	---
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	---
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	104	80.0	120	---
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	---
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	113	70.0	130	---
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	---
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	101	80.0	120	---
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	---
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	101	80.0	120	---
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	107	80.0	120	---
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	---
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	106	80.0	120	---



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 Work Order : VA21A0730 Amendment 1
 Client : CH2M Hill Canada Limited
 Project : CE777000 TU.CP.H6

Sub-Matrix: **Water**

Laboratory Control Sample (LCS) Report									
Analyte	CAS Number	Method	LOR	Unit	Spike Concentration	Recovery Limits (%)			Qualifier
						LCS	Low	High	
Dissolved Metals (QCLot: 141021) - continued									
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	99.8	80.0	120	---
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	107	80.0	120	---
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	104	80.0	120	---
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	98.4	80.0	120	---
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	103	80.0	120	---
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	99.7	80.0	120	---
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	104	80.0	120	---
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	109	80.0	120	---
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	---
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	98.7	80.0	120	---
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	103	80.0	120	---
Dissolved Metals (QCLot: 141022)									
chromium, dissolved	7440-47-3	E421.C+L	0.0001	mg/L	0.25 mg/L	102	80.0	120	---
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	103	80.0	120	---
Volatile Organic Compounds (QCLot: 141068)									
benzene	71-43-2	E611C	0.5	µg/L	100 µg/L	89.6	70.0	130	---
bromodichloromethane	75-27-4	E611C	0.5	µg/L	100 µg/L	101	70.0	130	---
bromoform	75-25-2	E611C	0.5	µg/L	100 µg/L	75.4	70.0	130	---
carbon tetrachloride	56-23-5	E611C	0.5	µg/L	100 µg/L	81.3	70.0	130	---
chlorobenzene	108-90-7	E611C	0.5	µg/L	100 µg/L	98.6	70.0	130	---
chloroethane	75-00-3	E611C	0.5	µg/L	100 µg/L	102	60.0	140	---
chloroform	67-66-3	E611C	0.5	µg/L	100 µg/L	111	70.0	130	---
chloromethane	74-87-3	E611C	0.5	µg/L	100 µg/L	128	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	84.5	70.0	130	---
dichlorobenzene, 1,3-	541-73-1	E611C	0.5	µg/L	100 µg/L	83.2	70.0	130	---
dichlorobenzene, 1,4-	106-46-7	E611C	0.5	µg/L	100 µg/L	84.3	70.0	130	---
dichloroethane, 1,1-	75-34-3	E611C	0.5	µg/L	100 µg/L	87.9	70.0	130	---
dichloroethane, 1,2-	107-06-2	E611C	0.5	µg/L	100 µg/L	87.3	70.0	130	---
dichloroethylene, 1,1-	75-35-4	E611C	0.5	µg/L	100 µg/L	102	70.0	130	---
dichloroethylene, cis-1,2-	156-59-4	E611C	0.5	µg/L	100 µg/L	82.9	70.0	130	---
dichloroethylene, trans-1,2-	156-60-5	E611C	0.5	µg/L	100 µg/L	94.1	70.0	130	---
dichloromethane	75-09-2	E611C	0.5	µg/L	100 µg/L	92.1	70.0	130	---
dichloropropane, 1,2-	78-87-5	E611C	0.5	µg/L	100 µg/L	89.5	70.0	130	---
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.5	µg/L	100 µg/L	94.3	70.0	130	---
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.5	µg/L	100 µg/L	71.0	70.0	130	---



Sub-Matrix: **Water**

Laboratory Control Sample (LCS) Report									
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery Limits (%)		Qualifier	
					Concentration	LCS	Low		High
Volatle Organic Compounds (QCLot: 141068) - continued									
ethylbenzene	100-41-4	E611C	0.5	µg/L	100 µg/L	120	70.0	130	---
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.5	µg/L	100 µg/L	103	70.0	130	---
styrene	100-42-5	E611C	0.5	µg/L	100 µg/L	89.6	70.0	130	---
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.5	µg/L	100 µg/L	79.1	70.0	130	---
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.2	µg/L	100 µg/L	85.4	70.0	130	---
tetrachloroethylene	127-18-4	E611C	0.5	µg/L	100 µg/L	77.1	70.0	130	---
toluene	108-88-3	E611C	0.4	µg/L	100 µg/L	90.5	70.0	130	---
trichloroethane, 1,1,1-	71-55-6	E611C	0.5	µg/L	100 µg/L	102	70.0	130	---
trichloroethane, 1,1,2-	79-00-5	E611C	0.5	µg/L	100 µg/L	86.7	70.0	130	---
trichloroethylene	79-01-6	E611C	0.5	µg/L	100 µg/L	80.4	70.0	130	---
trichlorofluoromethane	75-69-4	E611C	0.5	µg/L	100 µg/L	138	60.0	140	---
vinyl chloride	75-01-4	E611C	0.4	µg/L	100 µg/L	123	60.0	140	---
xylene, m+p-	179601-23-1	E611C	0.4	µg/L	200 µg/L	101	70.0	130	---
xylene, o-	95-47-6	E611C	0.3	µg/L	100 µg/L	90.6	70.0	130	---
Hydrocarbons (QCLot: 141051)									
EPH (C10-C19)	---	E601A	250	µg/L	6491 µg/L	106	70.0	130	---
EPH (C19-C32)	---	E601A	250	µg/L	3363 µg/L	91.2	70.0	130	---
Hydrocarbons (QCLot: 142213)									
VHw (C6-C10)	---	E581.VH+F1	100	µg/L	6310 µg/L	96.7	70.0	130	---
Polycyclic Aromatic Hydrocarbons (QCLot: 141052)									
acenaphthene	83-32-9	E641A	0.01	µg/L	0.5 µg/L	89.6	60.0	130	---
acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5 µg/L	91.2	60.0	130	---
acridine	260-94-6	E641A	0.01	µg/L	0.5 µg/L	82.0	60.0	130	---
anthracene	120-12-7	E641A	0.01	µg/L	0.5 µg/L	90.4	60.0	130	---
benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5 µg/L	80.4	60.0	130	---
benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5 µg/L	88.0	60.0	130	---
benzo(b+g)fluoranthene	---	E641A	0.01	µg/L	0.5 µg/L	84.1	60.0	130	---
benzo(b+h)fluoranthene	---	E641A	0.015	µg/L	1 µg/L	89.3	60.0	130	---
benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	0.5 µg/L	95.3	60.0	130	---
benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5 µg/L	94.5	60.0	130	---
chrysene	218-01-9	E641A	0.01	µg/L	0.5 µg/L	88.3	60.0	130	---
dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5 µg/L	90.9	60.0	130	---
fluoranthene	206-44-0	E641A	0.01	µg/L	0.5 µg/L	93.6	60.0	130	---
fluorene	86-73-7	E641A	0.01	µg/L	0.5 µg/L	95.0	60.0	130	---
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5 µg/L	89.0	60.0	130	---
methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	0.5 µg/L	91.4	60.0	130	---



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 Work Order : VA21A0730 Amendment 1
 Client : CH2M Hill Canada Limited
 Project : CE777000 TU.CP.H6

Sub-Matrix: **Water**

Laboratory Control Sample (LCS) Report								
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery Limits (%)	Qualifier	
					Concentration	LCS		Low
Polycyclic Aromatic Hydrocarbons (QCLot: 141052) - continued								
methyl-naphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5 µg/L	86.1	60.0 130	---
naphthalene	91-20-3	E641A	0.05	µg/L	0.5 µg/L	90.6	50.0 130	---
phenanthrene	85-01-8	E641A	0.02	µg/L	0.5 µg/L	95.8	60.0 130	---
pyrene	129-00-0	E641A	0.01	µg/L	0.5 µg/L	96.6	60.0 130	---
quinoline	6027-02-7	E641A	0.05	µg/L	0.5 µg/L	125	60.0 130	---



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 $\geq 1 \times$ spike level.

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report				Qualifier	
					Concentration	Target	Recovery (%)	MS		Low
Total Metals (QC Lot: 141026)										
VA21A0730-001	MW06-34	chromium, total	7440-47-3	E420-Cr-L	0.0404 mg/L	0.04 mg/L	101	70.0	130	---
Total Metals (QC Lot: 141027)										
VA21A0730-001	MW06-34	aluminum, total	7429-90-5	E420	ND mg/L	0.2 mg/L	ND	70.0	130	---
		antimony, total	7440-36-0	E420	0.0199 mg/L	0.02 mg/L	99.7	70.0	130	---
		arsenic, total	7440-38-2	E420	0.0194 mg/L	0.02 mg/L	97.1	70.0	130	---
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	---
		beryllium, total	7440-41-7	E420	0.0392 mg/L	0.04 mg/L	98.0	70.0	130	---
		bismuth, total	7440-69-9	E420	0.00966 mg/L	0.01 mg/L	96.6	70.0	130	---
		boron, total	7440-42-8	E420	0.093 mg/L	0.1 mg/L	93.2	70.0	130	---
		cadmium, total	7440-43-9	E420	0.00393 mg/L	0.004 mg/L	98.2	70.0	130	---
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	---
		cesium, total	7440-46-2	E420	0.00981 mg/L	0.01 mg/L	98.1	70.0	130	---
		cobalt, total	7440-48-4	E420	0.0201 mg/L	0.02 mg/L	101	70.0	130	---
		copper, total	7440-50-8	E420	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	---
		iron, total	7439-89-6	E420	ND mg/L	2 mg/L	ND	70.0	130	---
		lead, total	7439-92-1	E420	0.0194 mg/L	0.02 mg/L	97.3	70.0	130	---
		lithium, total	7439-93-2	E420	0.0970 mg/L	0.1 mg/L	97.0	70.0	130	---
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	---
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	---
		molybdenum, total	7439-98-7	E420	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	---
		nickel, total	7440-02-0	E420	0.0395 mg/L	0.04 mg/L	98.7	70.0	130	---
		phosphorus, total	7723-14-0	E420	9.88 mg/L	10 mg/L	98.8	70.0	130	---
		potassium, total	7440-09-7	E420	3.65 mg/L	4 mg/L	91.3	70.0	130	---
		rubidium, total	7440-17-7	E420	0.0207 mg/L	0.02 mg/L	104	70.0	130	---
		selenium, total	7782-49-2	E420	0.0392 mg/L	0.04 mg/L	98.0	70.0	130	---
		silicon, total	7440-21-3	E420	8.86 mg/L	10 mg/L	88.6	70.0	130	---
		silver, total	7440-22-4	E420	0.00405 mg/L	0.004 mg/L	101	70.0	130	---
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	---
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	---
		sulfur, total	7704-34-9	E420	20.6 mg/L	20 mg/L	103	70.0	130	---
		tellurium, total	13494-80-9	E420	0.0395 mg/L	0.04 mg/L	98.8	70.0	130	---



Sub-Matrix: **Water**

					Matrix Spike (MS) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Spike		Recovery (%)		Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High		
Total Metals (QC Lot: 141027) - continued											
VA21A0730-001	MW06-34	thallium, total	7440-28-0	E420	0.00389 mg/L	0.004 mg/L	97.2	70.0	130		---
		thorium, total	7440-29-1	E420	0.0195 mg/L	0.02 mg/L	97.4	70.0	130		---
		tin, total	7440-31-5	E420	0.0193 mg/L	0.02 mg/L	96.7	70.0	130		---
		titanium, total	7440-32-6	E420	0.0384 mg/L	0.04 mg/L	95.9	70.0	130		---
		tungsten, total	7440-33-7	E420	0.0198 mg/L	0.02 mg/L	99.0	70.0	130		---
		uranium, total	7440-61-1	E420	0.00396 mg/L	0.004 mg/L	99.1	70.0	130		---
		vanadium, total	7440-62-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130		---
		zinc, total	7440-66-6	E420	0.397 mg/L	0.4 mg/L	99.2	70.0	130		---
		zirconium, total	7440-67-7	E420	0.0395 mg/L	0.04 mg/L	98.7	70.0	130		---
Total Metals (QC Lot: 141131)											
FJ2100016-002	Anonymous	mercury, total	7439-97-6	E508	0.000931 mg/L	0.001 mg/L	93.1	70.0	130		---
Dissolved Metals (QC Lot: 141021)											
VA21A0730-001	MW06-34	aluminum, dissolved	7429-90-5	E421	ND mg/L	0.2 mg/L	ND	70.0	130		---
		antimony, dissolved	7440-36-0	E421	0.0207 mg/L	0.02 mg/L	104	70.0	130		---
		arsenic, dissolved	7440-38-2	E421	0.0211 mg/L	0.02 mg/L	105	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	0.0408 mg/L	0.04 mg/L	102	70.0	130		---
		bismuth, dissolved	7440-69-9	E421	0.00972 mg/L	0.01 mg/L	97.2	70.0	130		---
		boron, dissolved	7440-42-8	E421	0.102 mg/L	0.1 mg/L	102	70.0	130		---
		cadmium, dissolved	7440-43-9	E421	0.00417 mg/L	0.004 mg/L	104	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	0.0104 mg/L	0.01 mg/L	104	70.0	130		---
		cobalt, dissolved	7440-48-4	E421	0.0203 mg/L	0.02 mg/L	102	70.0	130		---
		copper, dissolved	7440-50-8	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130		---
		iron, dissolved	7439-89-6	E421	ND mg/L	2 mg/L	ND	70.0	130		---
		lead, dissolved	7439-92-1	E421	0.0200 mg/L	0.02 mg/L	99.8	70.0	130		---
		lithium, dissolved	7439-93-2	E421	0.0998 mg/L	0.1 mg/L	99.8	70.0	130		---
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130		---
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130		---
		molybdenum, dissolved	7439-98-7	E421	0.0193 mg/L	0.02 mg/L	96.4	70.0	130		---
		nickel, dissolved	7440-02-0	E421	0.0401 mg/L	0.04 mg/L	100	70.0	130		---
		phosphorus, dissolved	7723-14-0	E421	11.2 mg/L	10 mg/L	112	70.0	130		---
		potassium, dissolved	7440-09-7	E421	3.94 mg/L	4 mg/L	98.4	70.0	130		---
		rubidium, dissolved	7440-17-7	E421	0.0198 mg/L	0.02 mg/L	99.3	70.0	130		---
		selenium, dissolved	7782-49-2	E421	0.0462 mg/L	0.04 mg/L	116	70.0	130		---
		silicon, dissolved	7440-21-3	E421	8.98 mg/L	10 mg/L	89.8	70.0	130		---



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 Work Order : VA21A0730 Amendment 1
 Client : CH2M Hill Canada Limited
 Project : CE777000 TU.CP.H6

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Recovery (%)	Recovery Limits (%)	Qualifier
					Low	High				
Dissolved Metals (QC Lot: 141021) - continued										
VA21A0730-001	MW06-34	silver, dissolved	7440-22-4	E421	0.00383 mg/L	0.004 mg/L	95.8	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	20.8 mg/L	20 mg/L	104	70.0	130	---
		tellurium, dissolved	13494-80-9	E421	0.0398 mg/L	0.04 mg/L	99.6	70.0	130	---
		thallium, dissolved	7440-28-0	E421	0.00388 mg/L	0.004 mg/L	96.9	70.0	130	---
		thorium, dissolved	7440-29-1	E421	0.0200 mg/L	0.02 mg/L	99.8	70.0	130	---
		tin, dissolved	7440-31-5	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	---
		titanium, dissolved	7440-32-6	E421	0.0383 mg/L	0.04 mg/L	95.8	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	0.00416 mg/L	0.004 mg/L	104	70.0	130	---
		vanadium, dissolved	7440-62-2	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	---
		zinc, dissolved	7440-66-6	E421	0.406 mg/L	0.4 mg/L	101	70.0	130	---
		zirconium, dissolved	7440-67-7	E421	0.0414 mg/L	0.04 mg/L	104	70.0	130	---
Dissolved Metals (QC Lot: 141022)										
VA21A0730-001	MW06-34	chromium, dissolved	7440-47-3	E421.Cr-L	0.0404 mg/L	0.04 mg/L	101	70.0	130	---
Dissolved Metals (QC Lot: 141134)										
FJ2100016-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.000503 mg/L	0.0005 mg/L	101	70.0	130	---
Volatile Organic Compounds (QC Lot: 141068)										
VA21A0699-002	Anonymous	benzene	71-43-2	E611C	96.6 µg/L	100 µg/L	96.6	60.0	140	---
		bromodichloromethane	75-27-4	E611C	111 µg/L	100 µg/L	111	60.0	140	---
		bromoform	75-25-2	E611C	77.3 µg/L	100 µg/L	77.3	60.0	140	---
		carbon tetrachloride	56-23-5	E611C	87.7 µg/L	100 µg/L	87.7	60.0	140	---
		chlorobenzene	108-90-7	E611C	103 µg/L	100 µg/L	103	60.0	140	---
		chloroethane	75-00-3	E611C	105 µg/L	100 µg/L	105	50.0	150	---
		chloroform	67-66-3	E611C	120 µg/L	100 µg/L	120	60.0	140	---
		chloromethane	74-87-3	E611C	125 µg/L	100 µg/L	125	50.0	150	---
		dibromochloromethane	124-48-1	E611C	106 µg/L	100 µg/L	106	60.0	140	---
		dichlorobenzene, 1,2-	95-50-1	E611C	87.2 µg/L	100 µg/L	87.2	60.0	140	---
		dichlorobenzene, 1,3-	541-73-1	E611C	85.2 µg/L	100 µg/L	85.2	60.0	140	---
		dichlorobenzene, 1,4-	106-46-7	E611C	86.8 µg/L	100 µg/L	86.8	60.0	140	---
		dichloroethane, 1,1-	75-34-3	E611C	98.4 µg/L	100 µg/L	98.4	60.0	140	---
		dichloroethane, 1,2-	107-06-2	E611C	96.0 µg/L	100 µg/L	96.0	60.0	140	---
		dichloroethene, 1,1-	75-35-4	E611C	106 µg/L	100 µg/L	106	60.0	140	---
		dichloroethene, cis-1,2-	156-59-4	E611C	90.4 µg/L	100 µg/L	90.4	60.0	140	---
		dichloroethene, trans-1,2-	156-60-5	E611C	100 µg/L	100 µg/L	100	60.0	140	---



Page : 20 of 20
 Work Order : VA21A0730 Amendment 1
 Client : CH2M Hill Canada Limited
 Project : CE777000 TU.CP.H6

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)		Recovery Limits (%)	
					Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 141068) - continued										
VA21A0699-002	Anonymous	dichloromethane	75-09-2	E611C	99.2 µg/L	100 µg/L	99.2	60.0	140	---
		dichloropropane, 1,2-	78-87-5	E611C	97.8 µg/L	100 µg/L	97.8	60.0	140	---
		dichloropropylene, cis-1,3-	10061-01-5	E611C	104 µg/L	100 µg/L	104	60.0	140	---
		dichloropropylene, trans-1,3-	10061-02-6	E611C	78.3 µg/L	100 µg/L	78.3	60.0	140	---
		ethylbenzene	100-41-4	E611C	123 µg/L	100 µg/L	123	60.0	140	---
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	109 µg/L	100 µg/L	109	60.0	140	---
		styrene	100-42-5	E611C	92.9 µg/L	100 µg/L	92.9	60.0	140	---
		tetrachloroethane, 1,1,1,2-	630-20-6	E611C	82.0 µg/L	100 µg/L	82.0	60.0	140	---
		tetrachloroethane, 1,1,2,2-	79-34-5	E611C	87.7 µg/L	100 µg/L	87.7	60.0	140	---
		tetrachloroethylene	127-18-4	E611C	80.0 µg/L	100 µg/L	80.0	60.0	140	---
		toluene	108-88-3	E611C	92.2 µg/L	100 µg/L	92.2	60.0	140	---
		trichloroethane, 1,1,1-	71-55-6	E611C	110 µg/L	100 µg/L	110	60.0	140	---
		trichloroethane, 1,1,2-	79-00-5	E611C	91.5 µg/L	100 µg/L	91.5	60.0	140	---
		trichloroethylene	79-01-6	E611C	87.2 µg/L	100 µg/L	87.2	60.0	140	---
		trichlorofluoromethane	75-69-4	E611C	140 µg/L	100 µg/L	140	50.0	150	---
		vinyl chloride	75-01-4	E611C	120 µg/L	100 µg/L	120	50.0	150	---
		xylene, m+p-	179601-23-1	E611C	210 µg/L	200 µg/L	105	60.0	140	---
		xylene, o-	95-47-6	E611C	93.5 µg/L	100 µg/L	93.5	60.0	140	---
Hydrocarbons (QCLot: 142213)										
VA21A0730-001	MW06-34	VHw (C6-C10)	----	E581.VH+F1	5450 µg/L	6310 µg/L	86.4	60.0	140	---



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Canada Toll Free: 1 800 668 9878

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 - 905295

Page 1 of 1

Report To: Contact and company name below will appear on the final report.

Company: GRIFF HILL CANADA LTD (JACOBS)

Contact: CARRIVICES @ JACOBS.COM

Phone:

Street:

City/Province:

Postal Code:

Invoice To: Same as Report To YES NO

Company:

Contact: Copy of Invoice with Report YES NO

Project Information

ALS Account # / Quote #: VA20-CH-11100-013

Job #: C-E77000-TU-0116

PO / A/E:

LSD:


ALS Lab Work Order # (ALS use only): A0130

ALS Sample # (ALS use only):

Sample Identification and/or Coordinates (This description will appear on the report)

Mw06-34
Mw06-34-TOP
Mw06-34-BOT

Environmental Division
Vancouver
Work Order Reference
VA21A0730



Telephone: +1 604 293 9188

Drinking Water (DW) Samples (client)

Are samples taken from a Regulated DW System? YES NO

Are samples for human consumption/ use? YES NO

Shipping Release (client use)

Released by: A-CAN AC

Date: 08-20-20/01/14

Time: 1600

Shipment Release (ALS use only)

Received by: [Signature]

Date: JAN 14

Time: 1510

REPORT TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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.

Turnaround Time (TAT) Requested

Routine (R) if received by 3pm M-F - no surcharges apply

4 day (P4) if received by 3pm M-F - 20% rush surcharge minimum

3 day (P3) if received by 3pm M-F - 25% rush surcharge minimum

2 day (P2) if received by 3pm M-F - 50% rush surcharge minimum

1 day (E) if received by 3pm M-F - 100% rush surcharge minimum

Same day (S) if received by 10am M-F - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-odious tests

Date and Time Required for all ESP TATs: dd-mm-yy hh:mm am/pm

For all tests with rush TATs requested, please contact your AM to confirm availability.

NUMBER OF CONTAINERS

Indicate Filled (F), Preserved (P) or Filled and Preserved (FP) below	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
VOC/BTEX			
LEAD/HEAVY METALS			
DETERMINIS TESTING			
OB METALS TESTING			
1 QM HOLD	✓		
1 QM HOLD			

ANALYSIS REQUEST

COOLING METHOD: NONE ICE ICE PACKS FROZEN COOLING INITIATED

SAMPLE RECEIPT DETAILS (ALS use only)

Submission Comments identified on Sample Receipt Notification: YES NO

Cooler Custody Seals Intact: YES N/A Sample Custody Seals Intact: YES N/A

INITIAL COOLER TEMPERATURES °C: [] [] [] []

FINAL COOLER TEMPERATURES °C: [] [] [] []

SHIPMENT RELEASE (client use)

Received by: [Signature]

Date: JAN 14

Time: 1510

FINAL SHIPMENT RECEPTION (ALS use only)

Received by: [Signature]

Date: JAN 14

Time: 1510

Appendix C
**Letter Report: “Eagle Mountain-Woodfibre Gas
Pipeline Project – Comparing Annual Groundwater
Monitoring Results to Regulatory Conditions in
2021” dated December 17, 2021**

December 17, 2021

Todd Lewis
Environmental Lead - EGP
FortisBC Energy Inc.
16705 Fraser Highway
Surrey, BC V4N 0E8

Subject: Eagle Mountain-Woodfibre Gas Pipeline Project – Comparing Annual Groundwater Monitoring Results to Regulatory Conditions in 2021

Dear Todd Lewis,

Jacobs Consultancy Canada Inc. (Jacobs) has been retained by FortisBC Energy Inc. (FortisBC) to provide environmental and permitting support for the Eagle Mountain - Woodfibre Gas Pipeline Project (the Project) since 2012. As part of the Project, FortisBC retained Jacobs to complete a groundwater quality investigation at the British Columbia (BC) Rail property located in Squamish, BC (the Site) to assess the groundwater quality and the potential impacts associated with construction dewatering activities.

This letter report provides details of the quarterly groundwater sampling completed at the Site between December 2020 and September 2021 and compares the results to applicable standards and guidelines to provide direction for discharge requirements for water management during construction.

Project Background and Objectives

The Project will build a tunnel (EGP Tunnel) from the Site to the Woodfibre LNG Limited Site. The east end of the EGP Tunnel is located on the Site, which is an area of identified contamination. The contamination was investigated, delineated, and remediated by BC Rail (Piteau 2016), and a risk-based Certificate of Compliance was issued for the Site.

The Project is assumed to require dewatering during the EGP Tunnel construction. The quality of the groundwater and surface water requiring management will be assessed to either determine the suitability for discharge back into the environment, or to determine the treatment required prior to discharge.

The objective of this groundwater investigation is to determine the status of the groundwater quality in comparison to the BC Groundwater Quality Guidelines (BC MOE 1996).

Investigation Methodology

Groundwater samples were collected from monitoring wells installed on the Site from various investigations (some wells remained from the previous delineation and some wells were installed to support various aspects of FortisBC's work and the Site). Monitoring well locations are shown on Figure 1.

Groundwater Monitoring Well Sampling

Quarterly groundwater sampling events were completed between December 15 and September 21, 2021. The following sampling events were completed:

- Quarter 1 (Q1): December 15 to 18, 2020
- Quarter 2 (Q2): March 15, 2021
- Quarter 3 (Q3): June 21 and 23, 2021
- Quarter 4 (Q4): September 21 to 22, 2021

During each sampling event, groundwater levels were measured using an interface probe. Low-flow sampling was performed, using peristaltic pumps and dedicated high-density polyethylene tubing. During low-flow sampling, field parameters for pH, specific conductivity, temperature, oxidation-reduction potential, dissolved oxygen, and turbidity were monitored using multiparameter sondes and a flow-through cell. When monitoring indicated the field parameters had stabilized, and groundwater monitoring showed well levels had stabilized, groundwater samples were collected.

Due to monitoring well obstructions, the following wells were not included in select quarterly sampling events:

- Q3: wells MW20-07 and MW20-08 were not sampled
- Q4: well MW20-07 was not sampled

Regulatory Framework

Contaminated sites within BC are governed by the *Environmental Management Act (EMA)* (BC MOE 2003). The enabling regulation of the *EMA*, with respect to contaminated sites, is the *BC Contaminated Sites Regulation (BC CSR)*, including amendments up to *BC Reg. 13/2019* as of January 24, 2019 (BC ENV 2019).

The *BC CSR* prescribes numerical standards for soil, sediment, groundwater, and soil vapour quality for specific land, sediment, and groundwater uses. The applicable land use for the Site is Industrial (IL) land use. Based on the *BC CSR* and the characteristics at the Site, the applicable groundwater standards at the Site that apply to the Schedule 3.2 (generic numerical water standards) are the protection of Freshwater Aquatic Life (AW_{fw}) and Drinking Water.

The *BC CSR* prescribes numerical standards for soil, sediment, groundwater, and soil vapour quality for specific land, sediment, and groundwater uses. The applicable land use for the Site is IL land use.

Additionally, water at the surface (such as, water generated through construction dewatering activities) can be discharged overland to the environment provided that the contaminants of concern are less than the BC Water Quality Guidelines (BC WQGs). The purpose of this memorandum is to compare groundwater standards to the BC WQGs, to assess the status of the groundwater quality and the suitability of discharging it to the environment. Both long-term chronic and short-term acute AW_{fw} standards have been used to assess the data. It is important to note that the BC WQGs regulate total metals, not dissolved metals in the water being discharged.

Analytical Results

Groundwater

Laboratory analytical results were compared to the BC WQG Freshwater standards and are summarized in Tables 1 and 2 and Figures 2 and 3. The laboratory certificates of analyses are provided in Appendix B.

Table 1 presents the analytical results of benzene, toluene, ethylbenzene, and xylenes (BTEX)/volatile petroleum hydrocarbon (VPH), volatile organic compound (VOC), and petroleum aromatic hydrocarbon (PAH) compounds in groundwater. Figure 2 presents the analytical data for organic compounds which exceed the applicable standards in one or more sampling event. The following observations are presented regarding these results:

- All reported BTEX/VPH, VOCs, and PAH groundwater analytical results had concentrations of that met the applicable standards in all monitoring wells, except MW06-34 which had one or more exceedances in all sampling events.
- Groundwater from MW06-34 reported analytical results greater than the BC WQGs for acenaphthene, acridine, anthracene, benzo(a)anthracene, benzo(a)pyrene, chrysene, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene at one or more sampling event.

Table 2 presents the analytical results of total metal parameters in groundwater. Figure 3 presents the analytical data for total metal parameters which exceed the applicable standards in one or more sampling events. The following observations are presented regarding these results:

- All reported total metals groundwater analytical results were less than the BC WQGs with the exception of beryllium, chromium, cobalt, iron, and zinc, which exceeded the guidelines in one or more monitoring wells during all sampling events.
- Total iron concentrations were present in groundwater at all monitoring wells at concentrations greater than BC WQGs during one or more sampling events.
- Total chromium concentrations were present in groundwater at all monitoring wells (except MW19-03 and 20MW-09) at concentrations greater than BC WQGs during one or more sampling events.
- Total zinc concentrations were present in groundwater at concentrations greater than BC WQGs at 20MW-07, 20MW-04D, 20MW-04S, 20MW-06, 20MW-10D, 20MW-10S, and MW19-01 during one or more sampling events.
- Total beryllium concentrations were present in groundwater at concentrations greater than BC WQGs at 20MW-04D during the Q1 sampling event.
- Total cobalt concentrations were present in groundwater at concentrations greater than BC WQGs at 20MW-09 during the Q3 and Q4 sampling events.

Conclusion

The groundwater investigation confirms the presence of select total metals (beryllium, cobalt, chromium, iron, and zinc) and PAHs at concentrations greater than the current BC WQGs. PAH concentrations exceeding the guidelines were only reported at MW06-34. Total metal concentrations exceeding the BC WQGs were detected at all monitoring wells during one or more sampling events.

Due the presence of total metal and PAH concentrations in the groundwater at the Site, pumped groundwater during construction dewatering activities is not permitted to be discharged directly to the environment. Extracted water must be treated prior to discharge, to confirm that the discharged water meets the applicable discharge guidelines.

Closing

This technical memorandum is intended for FortisBC's sole and exclusive use and is not for the benefit of any third-party and may not be distributed to, disclosed in any form to, used by, or relied upon by, any third-party without prior written consent of Jacobs, which consent may be withheld in its sole discretion.

Use of this technical memorandum or any information contained herein, if by any party other than FortisBC, shall be at the sole risk of such party and shall constitute a release and agreement by such party to defend and indemnify Jacobs and its affiliates, officers, employees, and subcontractors from and against any liability for direct, indirect, incidental, consequential, or special loss or damage or other liability of any nature arising from its use of the technical memorandum or reliance upon any of its content. To the maximum extent permitted by law, such release from and indemnification against liability shall apply in contract, tort (including negligence), strict liability, or any other theory of liability.

Regards
Jacobs Consultancy Canada Inc.

Draft

Amy Casey, P.Eng.
Environmental Engineer

Draft

Liz van Warmerdam, M.Sc., P.Geo.
Senior Technical Consultant

References

British Columbia Ministry of Environment (BC MOE). 1996. *Environmental Management Act Contaminated Sites Regulation (CSR)*. BC Reg 375/96 O.C. 1480/96.

British Columbia Ministry of Environment (BC MOE). 2003. *Environmental Management Act*. SBC 2003, c53. Accessed January 25, 2021. http://www.bclaws.ca/Recon/document/ID/freeside/03053_00

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Figures

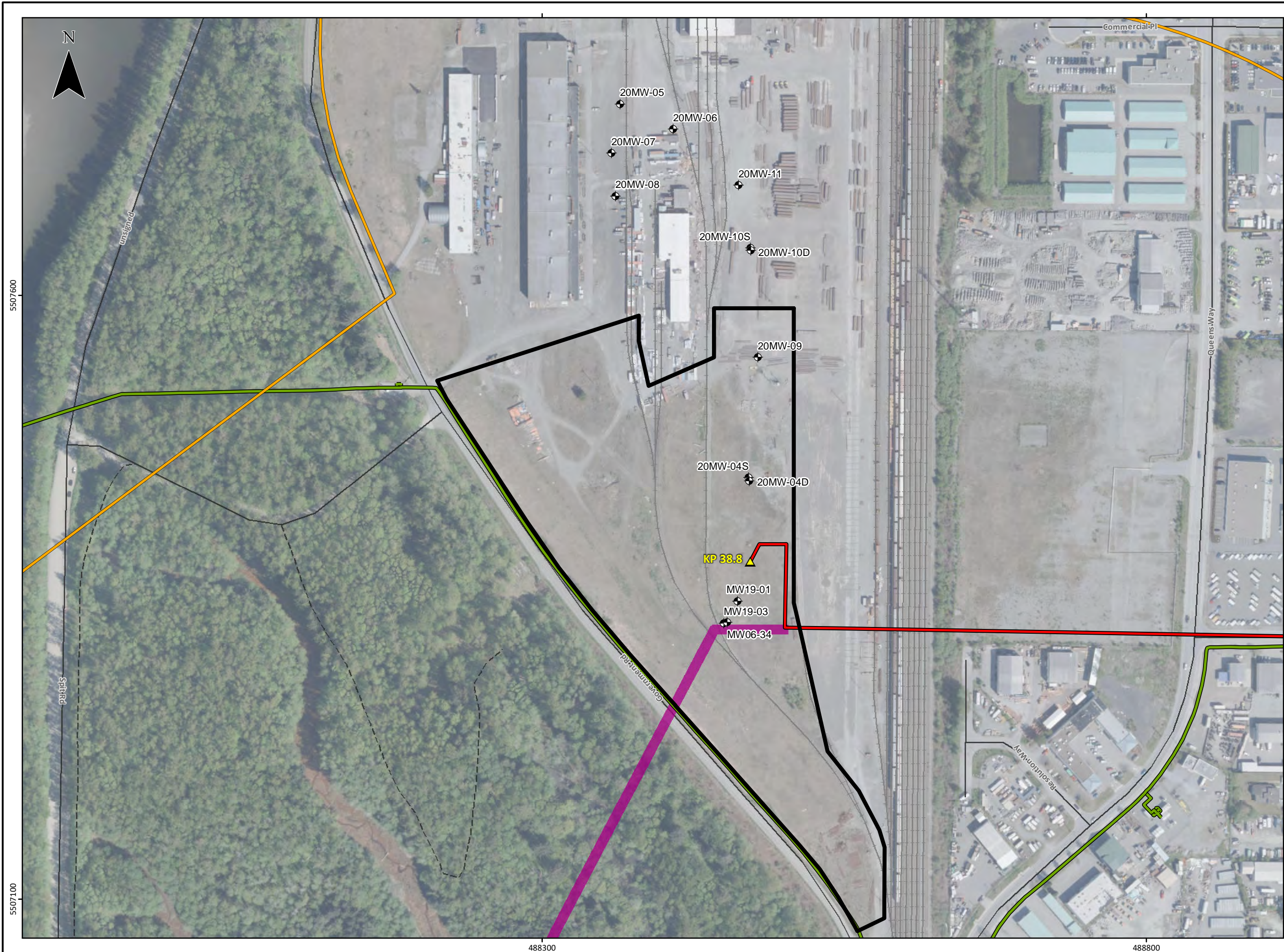


FIGURE 1
INVESTIGATION LOCATIONS
EAGLE MOUNTAIN - WOODFIBRE
GAS PIPELINE PROJECT

- ◆ Monitoring Well
- ▲ Kilometre Post (KP)
- Proposed NPS 24 (Amendment)
- Existing NPS 10 FortisBC Pipeline
- ▭ BC Rail Site Lease Area
- ▭ Proposed OGAA Application Corridor
- ▭ Tunnel Easement and Workspace
- Railway
- Road

SCALE: 1:3,000
 0 60 120 m
 (All Locations Approximate)



JACOBS Project Number CE777000

UTM Zone 10 North, NAD 1983.
 Proposed Pipeline Route: Universal Pegasus International (UPI) 05-17-2021 (Route 1024/2002); Pipeline Application Corridor: Jacobs 8-30-2019 (Revision 15); Existing Pipeline: FortisBC 2012 Tunnel Easement and Workspace: Jacobs, 2020; Monitoring Well: McMillen Jacobs Associates 2020, Tetra Tech 2019, Piteau Associates, Nov 2014; Base Imagery: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

Although there is no reason to believe that there are any errors associated with the data used to generate this product or in the product itself, users of these data are advised that errors in the data may be present.

Mapped By: SL Checked By: DJN



5507600

5507100

488300

488800

FIGURE 2
SUMMARY OF ORGANIC EXCEEDANCES
EAGLE MOUNTAIN - WOODFIBRE GAS PIPELINE PROJECT

- Monitoring Well
- Exceeds BC CSR Standard
- Does not exceed BC CSR Standard
- Kilometre Post (KP)
- Proposed NPS 24 (Amendment)
- Existing NPS 10 FortisBC Pipeline
- BC Rail Site Lease Area
- EAO Certified Corridor
- Tunnel Easement and Workspace
- Railway
- Road

SCALE: 1:3,000
0 60 120 m
(All Locations Approximate)

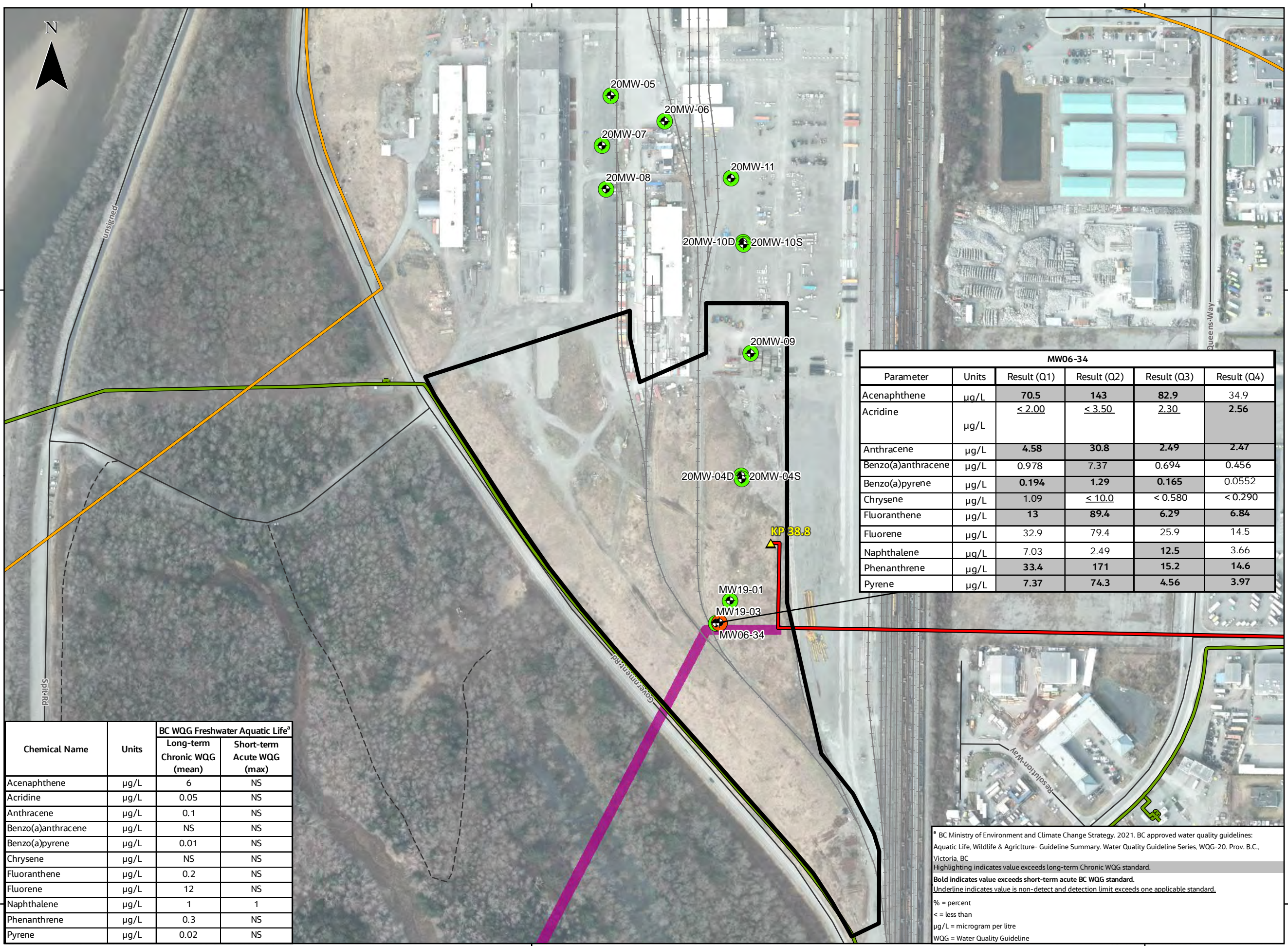
JACOBS

JACOBS Project Number CE777000

UTM Zone 10 North, NAD 1983
Proposed Pipeline Route: Universal Pegasus International (UPI) 10-20-2021 (Route 1025/4003); EAO Certified Corridor: Jacobs 8-30-2019 (Revision 15); Existing Pipeline: FortisBC 2012; Tunnel Easement and Workspace: Jacobs, 2020; Monitoring Well: McMillen Jacobs Associates 2020, Tetra Tech 2019; Piteau Associates, Nov 2014; Base Imagery: Atlantic Group 2013; Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

Although there is no reason to believe that there are any errors associated with the data used to generate this product or in the product itself, users of this data are advised that errors in the data may be present.

Mapped By: SL Checked By: DJN



MW06-34					
Parameter	Units	Result (Q1)	Result (Q2)	Result (Q3)	Result (Q4)
Acenaphthene	µg/L	70.5	143	82.9	34.9
Acridine	µg/L	<u>< 2.00</u>	<u>< 3.50</u>	<u>2.30</u>	2.56
Anthracene	µg/L	4.58	30.8	2.49	2.47
Benzo(a)anthracene	µg/L	0.978	7.37	0.694	0.456
Benzo(a)pyrene	µg/L	0.194	1.29	0.165	0.0552
Chrysene	µg/L	1.09	<u>< 10.0</u>	< 0.580	< 0.290
Fluoranthene	µg/L	13	89.4	6.29	6.84
Fluorene	µg/L	32.9	79.4	25.9	14.5
Naphthalene	µg/L	7.03	2.49	12.5	3.66
Phenanthrene	µg/L	33.4	171	15.2	14.6
Pyrene	µg/L	7.37	74.3	4.56	3.97

Chemical Name	Units	BC WQG Freshwater Aquatic Life ^a	
		Long-term Chronic WQG (mean)	Short-term Acute WQG (max)
Acenaphthene	µg/L	6	NS
Acridine	µg/L	0.05	NS
Anthracene	µg/L	0.1	NS
Benzo(a)anthracene	µg/L	NS	NS
Benzo(a)pyrene	µg/L	0.01	NS
Chrysene	µg/L	NS	NS
Fluoranthene	µg/L	0.2	NS
Fluorene	µg/L	12	NS
Naphthalene	µg/L	1	1
Phenanthrene	µg/L	0.3	NS
Pyrene	µg/L	0.02	NS

^a BC Ministry of Environment and Climate Change Strategy, 2021. BC approved water quality guidelines: Aquatic Life, Wildlife & Agriculture- Guideline Summary, Water Quality Guideline Series, WQG-20. Prov. B.C., Victoria, BC
Highlighting indicates value exceeds long-term Chronic WQG standard.
Bold indicates value exceeds short-term acute BC WQG standard.
Underline indicates value is non-detect and detection limit exceeds one applicable standard.
% = percent
< = less than
µg/L = microgram per litre
WQG = Water Quality Guideline

FIGURE 3
TOTAL METALS
EAGLE MOUNTAIN - WOODFIBRE GAS PIPELINE PROJECT

- Monitoring Well
- Exceeds BC CSR Standard
- Does not exceed BC CSR Standard
- Kilometre Post (KP)
- Proposed NPS 24 (Amendment)
- Existing NPS 10 FortisBC Pipeline
- BC Rail Site Lease Area
- Proposed OGAA Application Corridor
- Tunnel Easement and Workspace
- Railway
- Road

SCALE: 1:3,000
0 60 120 m
(All Locations Approximate)

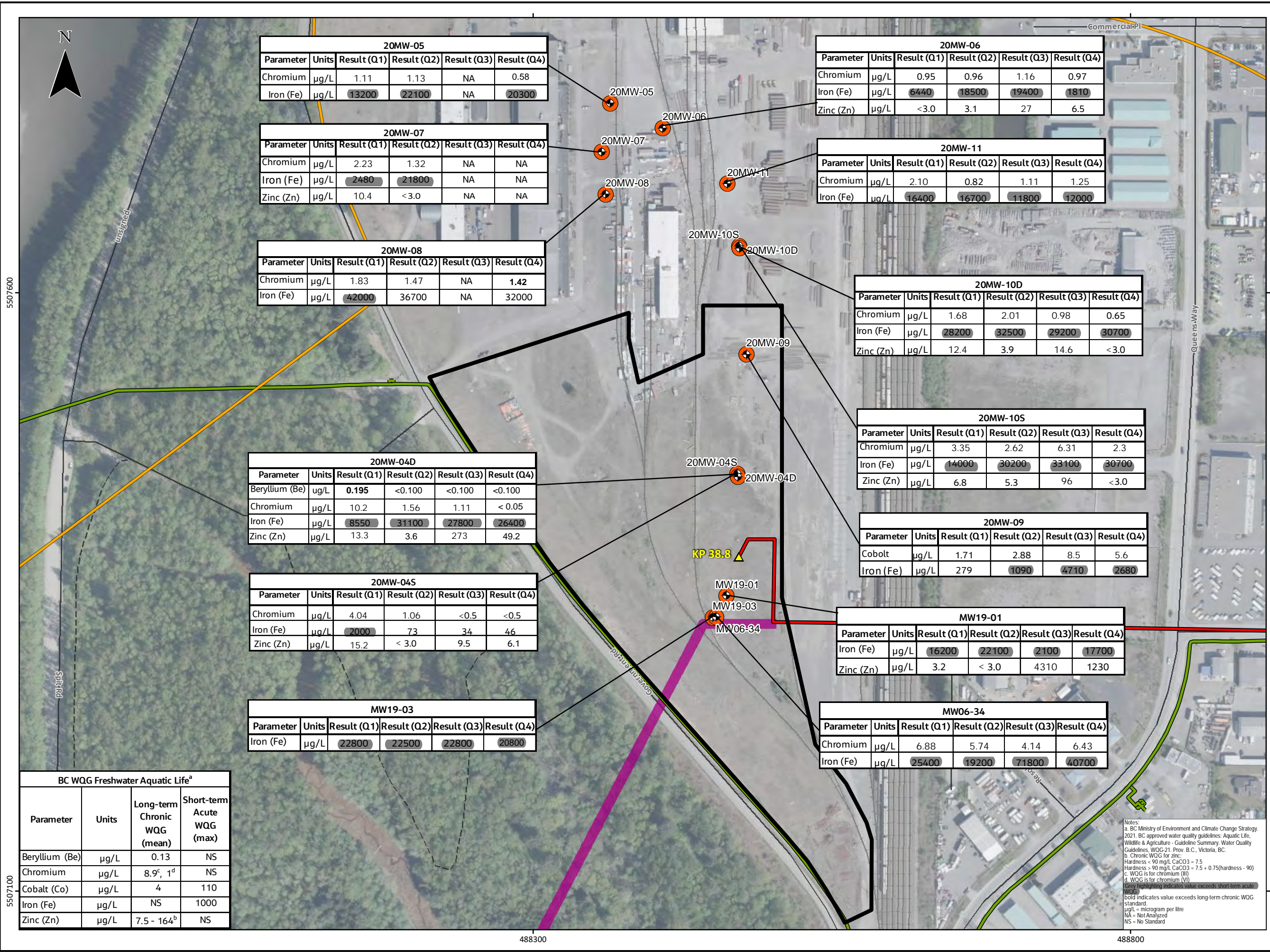
JACOBS

JACOBS Project Number CE777000

UTM Zone 10 North, NAD 1983.
Proposed Pipeline Route: Universal Pegasus International (UPI) 05-17-2021 (Route 1024/4002); Pipeline Application Corridor: Jacobs 8-30-2019 (Revision 15); Existing Pipeline: FortisBC 2012 Tunnel Easement and Workspace: Jacobs, 2020; Monitoring Well: McMillen Jacobs Associates 2020, Tetra Tech 2019; Piteau Associates, Nov 2014; Base Imagery: Atlantic Group 2013; Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

Although there is no reason to believe that there are any errors associated with the data used to generate this product or in the product itself, users of these data are advised that errors in the data may be present.

Mapped By: SL Checked By: DJN



20MW-05					
Parameter	Units	Result (Q1)	Result (Q2)	Result (Q3)	Result (Q4)
Chromium	µg/L	1.11	1.13	NA	0.58
Iron (Fe)	µg/L	13200	22100	NA	20300

20MW-06					
Parameter	Units	Result (Q1)	Result (Q2)	Result (Q3)	Result (Q4)
Chromium	µg/L	0.95	0.96	1.16	0.97
Iron (Fe)	µg/L	6440	18500	19400	1810
Zinc (Zn)	µg/L	<3.0	3.1	27	6.5

20MW-07					
Parameter	Units	Result (Q1)	Result (Q2)	Result (Q3)	Result (Q4)
Chromium	µg/L	2.23	1.32	NA	NA
Iron (Fe)	µg/L	2480	21800	NA	NA
Zinc (Zn)	µg/L	10.4	<3.0	NA	NA

20MW-11					
Parameter	Units	Result (Q1)	Result (Q2)	Result (Q3)	Result (Q4)
Chromium	µg/L	2.10	0.82	1.11	1.25
Iron (Fe)	µg/L	16400	16700	11800	12000

20MW-08					
Parameter	Units	Result (Q1)	Result (Q2)	Result (Q3)	Result (Q4)
Chromium	µg/L	1.83	1.47	NA	1.42
Iron (Fe)	µg/L	42000	36700	NA	32000

20MW-10D					
Parameter	Units	Result (Q1)	Result (Q2)	Result (Q3)	Result (Q4)
Chromium	µg/L	1.68	2.01	0.98	0.65
Iron (Fe)	µg/L	28200	32500	29200	30700
Zinc (Zn)	µg/L	12.4	3.9	14.6	<3.0

20MW-04D					
Parameter	Units	Result (Q1)	Result (Q2)	Result (Q3)	Result (Q4)
Beryllium (Be)	µg/L	0.195	<0.100	<0.100	<0.100
Chromium	µg/L	10.2	1.56	1.11	<0.05
Iron (Fe)	µg/L	8550	31100	27800	26400
Zinc (Zn)	µg/L	13.3	3.6	273	49.2

20MW-10S					
Parameter	Units	Result (Q1)	Result (Q2)	Result (Q3)	Result (Q4)
Chromium	µg/L	3.35	2.62	6.31	2.3
Iron (Fe)	µg/L	14000	30200	33100	30700
Zinc (Zn)	µg/L	6.8	5.3	96	<3.0

20MW-04S					
Parameter	Units	Result (Q1)	Result (Q2)	Result (Q3)	Result (Q4)
Chromium	µg/L	4.04	1.06	<0.5	<0.5
Iron (Fe)	µg/L	2000	73	34	46
Zinc (Zn)	µg/L	15.2	<3.0	9.5	6.1

20MW-09					
Parameter	Units	Result (Q1)	Result (Q2)	Result (Q3)	Result (Q4)
Cobalt	µg/L	1.71	2.88	8.5	5.6
Iron (Fe)	µg/L	279	1090	4710	2680

MW19-01					
Parameter	Units	Result (Q1)	Result (Q2)	Result (Q3)	Result (Q4)
Iron (Fe)	µg/L	16200	22100	2100	17700
Zinc (Zn)	µg/L	3.2	<3.0	4310	1230

MW19-03					
Parameter	Units	Result (Q1)	Result (Q2)	Result (Q3)	Result (Q4)
Iron (Fe)	µg/L	22800	22500	22800	20800

MW06-34					
Parameter	Units	Result (Q1)	Result (Q2)	Result (Q3)	Result (Q4)
Chromium	µg/L	6.88	5.74	4.14	6.43
Iron (Fe)	µg/L	25400	19200	71800	40700

BC WQG Freshwater Aquatic Life ^a			
Parameter	Units	Long-term Chronic WQG (mean)	Short-term Acute WQG (max)
Beryllium (Be)	µg/L	0.13	NS
Chromium	µg/L	8.9 ^c , 1 ^d	NS
Cobalt (Co)	µg/L	4	110
Iron (Fe)	µg/L	NS	1000
Zinc (Zn)	µg/L	7.5 - 164 ^b	NS

Notes:
a. BC Ministry of Environment and Climate Change Strategy, 2021. BC approved water quality guidelines: Aquatic Life, Wildlife & Agriculture - Guideline Summary. Water Quality Guidelines, WQG-21, Prov. B.C., Victoria, BC.
b. Chronic WQG for zinc: Hardness < 90 mg/L CaCO₃ = 7.5
Hardness > 90 mg/L CaCO₃ = 7.5 + 0.75(hardness - 90)
c. WQG is for chromium (III)
d. WQG is for chromium (VI)
Grey highlighting indicates value exceeds short-term acute WQG
Bold indicates value exceeds long-term chronic WQG standard.
µg/L = microgram per litre
NA = Not Analyzed
NS = No Standard

Tables

Table 1. Groundwater Analytical Results - Organic Parameters
 Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

				Location ID		20MW-04D					
				Sample ID		20MW-04D_031521	20MW-04D_121620	20MW-04D-0621	20MW-04D-0921	20MW-04D-1_01042021	20MW-04D-2_01042021
				Sample Date		15-Mar-21	16-Dec-20	21-Jun-21	21-Sep-21	01-Apr-21	01-Apr-21
				Laboratory Certificate Sample #		VA21A4849-004	VA20C3660-004	VA21B2503-002	VA21C0813-014	VA21A6200-001	VA21A6200-002
Chemical Name	CAS RN	Units	BC CSR AW Standards Freshwater	BC WQG Freshwater Aquatic Life ^a							
				Long-term Chronic WQG ^b (mean)	Short-term Acute WQG (max)						
BTEX/VPH											
Benzene	71-43-2	µg/L	400	40	NS	< 0.50	< 0.50	< 0.50	< 0.50	NT	NT
Ethylbenzene	100-41-4	µg/L	2000	200	NS	< 0.50	< 0.50	< 0.50	< 0.50	NT	NT
Toluene	108-88-3	µg/L	5	0.5	NS	< 0.40	< 0.40	< 0.40	< 0.40	NT	NT
Volatile Hydrocarbons (VH)	VH	µg/L	15000	NS	NS	NT	< 100	NT	NT	NT	NT
VPH minus BTEX, Styrene	VPH	µg/L	1500	NS	NS	NT	< 100	NT	NT	NT	NT
Xylene, o	95-47-6	µg/L	NS	NS	NS	< 0.30	< 0.50	< 0.30	< 0.30	NT	NT
Xylenes, m & p	179601-23-1	µg/L	NS	NS	NS	< 0.40	< 0.50	< 0.40	< 0.40	NT	NT
Xylenes, Total	1330-20-7	µg/L	300	30	NS	< 0.50	< 0.75	< 0.50	< 0.50	NT	NT
PAHs											
1-Methylnaphthalene	90-12-0	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
2-Methylnaphthalene	91-57-6	µg/L	NS	NS	NS	< 0.010	0.019	< 0.010	< 0.010	< 0.010	< 0.010
Acenaphthene	83-32-9	µg/L	60	6	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Acenaphthylene	208-96-8	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Acridine	260-94-6	µg/L	0.5	0.05	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Anthracene	120-12-7	µg/L	1	0.1	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo(a)anthracene	56-55-3	µg/L	1	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo(a)pyrene	50-32-8	µg/L	0.1	0.01	NS	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Benzo(b&j)fluoranthene	CH2M-BZBJF	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo(b,j,k)fluoranthene	CH2M-BZBJKF	µg/L	NS	NS	NS	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015
Benzo(g,h,i)perylene	191-24-2	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo(k)fluoranthene	207-08-9	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo(a)pyrene TPE	BaP TPE	µg/L	NS	NS	NS	NT	NT	NT	< 0.010	NT	NT
Chrysene	218-01-9	µg/L	1	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Dibenz(a,h)anthracene	53-70-3	µg/L	NS	NS	NS	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Fluoranthene	206-44-0	µg/L	2	0.2	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Fluorene	86-73-7	µg/L	120	12	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
High Molecular Weight PAHs	HMWPAH	µg/L	NS	NS	NS	NT	NT	NT	< 0.03	NT	NT
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Low Molecular Weight PAH	LMWPAH	µg/L	NS	NS	NS	NT	NT	NT	< 0.06	NT	NT
Methylnaphthalene	1321-94-4	µg/L	NS	NS	NS	NT	NT	NT	< 0.015	NT	NT
Naphthalene	91-20-3	µg/L	10	1	1	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Phenanthrene	85-01-8	µg/L	3	0.3	NS	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Pyrene	129-00-0	µg/L	0.2	0.02	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Quinoline	91-22-5	µg/L	34	3.4	NS	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Total PAHs	TPAH	µg/L	NS	NS	NS	NT	NT	NT	< 0.065	NT	NT
VOCs											
1,1,1,2-tetrachloroethane	630-20-6	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	NT	NT
1,1,1-trichloroethane	71-55-6	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	NT	NT
1,1,2,2-tetrachloroethane	79-34-5	µg/L	NS	NS	NS	< 0.20	< 0.20	< 0.20	< 0.20	NT	NT
1,1,2-trichloroethane	79-00-5	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	NT	NT
1,1-dichloroethane	75-34-3	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	NT	NT
1,1-dichloroethene	75-35-4	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	NT	NT
1,2-dichlorobenzene	95-50-1	µg/L	7	0.7	NS	< 0.50	< 0.50	< 0.50	< 0.50	NT	NT
1,2-dichloroethane	107-06-2	µg/L	1000	100	NS	< 0.50	< 0.50	< 0.50	< 0.50	NT	NT
1,2-dichloropropane	78-87-5	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	NT	NT
1,3-dichlorobenzene	541-73-1	µg/L	1500	150	NS	< 0.50	< 0.50	< 0.50	< 0.50	NT	NT
1,3-Dichloropropene	542-75-6	µg/L	NS	NS	NS	< 0.75	< 0.75	< 0.75	< 0.75	NT	NT
1,4-dichlorobenzene	106-46-7	µg/L	260	26	NS	< 0.50	< 0.50	< 0.50	< 0.50	NT	NT
Bromodichloromethane	75-27-4	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	NT	NT
Bromoform	75-25-2	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	NT	NT

Table 1. Groundwater Analytical Results - Organic Parameters
 Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

			Location ID		20MW-04D						
			Sample ID	20MW-04D_031521	20MW-04D_121620	20MW-04D-0621	20MW-04D-0921	20MW-04D-1_01042021	20MW-04D-2_01042021		
			Sample Date	15-Mar-21	16-Dec-20	21-Jun-21	21-Sep-21	01-Apr-21	01-Apr-21		
			Laboratory Certificate Sample #	VA21A4849-004	VA20C3660-004	VA21B2503-002	VA21C0813-014	VA21A6200-001	VA21A6200-002		
Chemical Name	CAS RN	Units	BC CSR AW Standards Freshwater	BC WQG Freshwater Aquatic Life ^a							
				Long-term Chronic WQG ^b (mean)	Short-term Acute WQG (max)						
Carbon tetrachloride	56-23-5	µg/L	130	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	NT	NT
Chlorobenzene	108-90-7	µg/L	13	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	NT	NT
Chlorodibromomethane	124-48-1	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	NT	NT
Chloroethane	75-00-3	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	NT	NT
Chloroform	67-66-3	µg/L	20	1.8	NS	< 0.50	3.82	< 0.50	< 0.50	NT	NT
Chloromethane	74-87-3	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	NT	NT
cis-1,2-dichloroethene	156-59-2	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	NT	NT
cis-1,3-dichloropropene	10061-01-5	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	NT	NT
Dichloromethane	75-09-2	µg/L	980	NS	NS	< 1.0	< 0.50	< 1.0	< 1.0	NT	NT
Methyl tert-butyl ether (MTBE)	1634-04-4	µg/L	34000	NS	3400	< 0.50	< 0.50	< 0.50	< 0.50	NT	NT
Styrene	100-42-5	µg/L	720	72	NS	< 0.50	< 0.50	< 0.50	< 0.50	NT	NT
Tetrachloroethene	127-18-4	µg/L	1100	110	NS	< 0.50	< 0.50	< 0.50	< 0.50	NT	NT
trans-1,2-dichloroethene	156-60-5	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	NT	NT
trans-1,3-dichloropropene	10061-02-6	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	NT	NT
Trichloroethene	79-01-6	µg/L	200	21	NS	< 0.50	< 0.50	< 0.50	< 0.50	NT	NT
Trichlorofluoromethane	75-69-4	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	NT	NT
Vinyl chloride	75-01-4	µg/L	NS	NS	NS	< 0.40	< 0.40	< 0.40	< 0.40	NT	NT

Table 1. Groundwater Analytical Results - Organic Parameters
 Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

		Location ID		20MW-04S				20MW-05			
		Sample ID	20MW-04S_031521	20MW-04S_121620	20MW-04S-0621	20MW-04S-0921	20MW-05_031521	20MW-05_121220	20MW-05-0921		
		Sample Date	15-Mar-21	16-Dec-20	21-Jun-21	22-Sep-21	15-Mar-21	12-Dec-20	22-Sep-21		
		Laboratory Certificate Sample #	VA21A4849-005	VA20C3660-005	VA21B2503-001	VA21C0813-003	VA21A4849-006	VA20C3657-001	VA21C0813-009		
		BC WQG Freshwater Aquatic Life ^a									
		BC CSR AW Standards Freshwater	Long-term Chronic WQG ^b (mean)	Short-term Acute WQG (max)							
Chemical Name	CAS RN	Units									
BTEX/VPH											
Benzene	71-43-2	µg/L	400	40	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Ethylbenzene	100-41-4	µg/L	2000	200	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Toluene	108-88-3	µg/L	5	0.5	NS	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40
Volatile Hydrocarbons (VH)	VH	µg/L	15000	NS	NS	NT	< 100	NT	NT	NT	NT
VPH minus BTEX, Styrene	VPH	µg/L	1500	NS	NS	NT	< 100	NT	NT	NT	NT
Xylene, o	95-47-6	µg/L	NS	NS	NS	< 0.30	< 0.50	< 0.30	< 0.30	< 0.50	< 0.30
Xylenes, m & p	179601-23-1	µg/L	NS	NS	NS	< 0.40	< 0.50	< 0.40	< 0.40	< 0.50	< 0.40
Xylenes, Total	1330-20-7	µg/L	300	30	NS	< 0.50	< 0.75	< 0.50	< 0.50	< 0.75	< 0.50
PAHs											
1-Methylnaphthalene	90-12-0	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
2-Methylnaphthalene	91-57-6	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Acenaphthene	83-32-9	µg/L	60	6	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Acenaphthylene	208-96-8	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Acridine	260-94-6	µg/L	0.5	0.05	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Anthracene	120-12-7	µg/L	1	0.1	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo(a)anthracene	56-55-3	µg/L	1	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo(a)pyrene	50-32-8	µg/L	0.1	0.01	NS	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Benzo(b&j)fluoranthene	CH2M-BZBJF	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo(b,j,k)fluoranthene	CH2M-BZBJKF	µg/L	NS	NS	NS	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015
Benzo(g,h,i)perylene	191-24-2	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo(k)fluoranthene	207-08-9	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo(a)pyrene TPE	BaP TPE	µg/L	NS	NS	NS	NT	NT	NT	NT	NT	< 0.010
Chrysene	218-01-9	µg/L	1	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Dibenz(a,h)anthracene	53-70-3	µg/L	NS	NS	NS	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Fluoranthene	206-44-0	µg/L	2	0.2	NS	< 0.010	0.01	< 0.010	< 0.010	< 0.010	< 0.010
Fluorene	86-73-7	µg/L	120	12	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
High Molecular Weight PAHs	HMWPAH	µg/L	NS	NS	NS	NT	NT	NT	< 0.03	NT	< 0.03
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Low Molecular Weight PAH	LMWPAH	µg/L	NS	NS	NS	NT	NT	NT	< 0.06	NT	< 0.06
Methylnaphthalene	1321-94-4	µg/L	NS	NS	NS	NT	NT	NT	< 0.015	NT	< 0.015
Naphthalene	91-20-3	µg/L	10	1	1	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Phenanthrene	85-01-8	µg/L	3	0.3	NS	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Pyrene	129-00-0	µg/L	0.2	0.02	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Quinoline	91-22-5	µg/L	34	3.4	NS	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Total PAHs	TPAH	µg/L	NS	NS	NS	NT	NT	NT	< 0.065	NT	< 0.065
VOCs											
1,1,1,2-tetrachloroethane	630-20-6	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,1-trichloroethane	71-55-6	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,2,2-tetrachloroethane	79-34-5	µg/L	NS	NS	NS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
1,1,2-trichloroethane	79-00-5	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1-dichloroethane	75-34-3	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1-dichloroethene	75-35-4	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-dichlorobenzene	95-50-1	µg/L	7	0.7	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-dichloroethane	107-06-2	µg/L	1000	100	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-dichloropropane	78-87-5	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-dichlorobenzene	541-73-1	µg/L	1500	150	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichloropropene	542-75-6	µg/L	NS	NS	NS	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,4-dichlorobenzene	106-46-7	µg/L	260	26	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane	75-27-4	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromoform	75-25-2	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Table 1. Groundwater Analytical Results - Organic Parameters
 Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

Chemical Name			CAS RN			Units			BC CSR AW Standards Freshwater			Location ID		20MW-04S				20MW-05					
												Sample ID	20MW-04S_031521	20MW-04S_121620	20MW-04S-0621	20MW-04S-0921	20MW-05_031521	20MW-05_121220	20MW-05-0921				
												Sample Date	15-Mar-21	16-Dec-20	21-Jun-21	22-Sep-21	15-Mar-21	12-Dec-20	22-Sep-21				
Laboratory Certificate Sample #			VA21A4849-005			VA20C3660-005			VA21B2503-001			VA21C0813-003			VA21A4849-006			VA20C3657-001			VA21C0813-009		
									Long-term Chronic WQG ^b (mean)		Short-term Acute WQG (max)												
Carbon tetrachloride	56-23-5	µg/L	130	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50						
Chlorobenzene	108-90-7	µg/L	13	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50						
Chlorodibromomethane	124-48-1	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50						
Chloroethane	75-00-3	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50						
Chloroform	67-66-3	µg/L	20	1.8	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50						
Chloromethane	74-87-3	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50						
cis-1,2-dichloroethene	156-59-2	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50						
cis-1,3-dichloropropene	10061-01-5	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50						
Dichloromethane	75-09-2	µg/L	980	NS	NS	< 1.0	< 0.50	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.50	< 1.0	< 0.50	< 1.0						
Methyl tert-butyl ether (MTBE)	1634-04-4	µg/L	34000	NS	3400	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50						
Styrene	100-42-5	µg/L	720	72	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50						
Tetrachloroethene	127-18-4	µg/L	1100	110	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50						
trans-1,2-dichloroethene	156-60-5	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50						
trans-1,3-dichloropropene	10061-02-6	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50						
Trichloroethene	79-01-6	µg/L	200	21	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50						
Trichlorofluoromethane	75-69-4	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50						
Vinyl chloride	75-01-4	µg/L	NS	NS	NS	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40						

Table 1. Groundwater Analytical Results - Organic Parameters
 Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

Chemical Name	CAS RN	Units	BC CSR AW Standards Freshwater	BC WQG Freshwater Aquatic Life*		20MW-06					RPD	
				Long-term Chronic WQG ^b (mean)	Short-term Acute WQG (max)	Location ID	20MW-06-0621	20MW-06-0921	DUP-1-0921			
						Sample ID	20MW-06-031521	20MW-06-121220	21-Jun-21	21-Sep-21		21-Sep-21
						Sample Date	15-Mar-21	12-Dec-20	21-Jun-21	21-Sep-21	21-Sep-21	
						Laboratory Certificate Sample #	VA21A4849-007	VA20C3657-002	VA21B2503-013	VA21C0813-013	VA21C0813-016	
BTEX/VPH												
Benzene	71-43-2	µg/L	400	40	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC
Ethylbenzene	100-41-4	µg/L	2000	200	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC
Toluene	108-88-3	µg/L	5	0.5	NS	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	NC
Volatile Hydrocarbons (VH)	VH	µg/L	15000	NS	NS	NT	NT	NT	NT	NT	NT	NC
VPH minus BTEX, Styrene	VPH	µg/L	1500	NS	NS	NT	NT	NT	NT	NT	NT	NC
Xylene, o	95-47-6	µg/L	NS	NS	NS	< 0.30	< 0.50	< 0.30	< 0.30	< 0.30	< 0.30	NC
Xylenes, m & p	179601-23-1	µg/L	NS	NS	NS	< 0.40	< 0.50	< 0.40	< 0.40	< 0.40	< 0.40	NC
Xylenes, Total	1330-20-7	µg/L	300	30	NS	< 0.50	< 0.75	< 0.50	< 0.50	< 0.50	< 0.50	NC
PAHs												
1-Methylnaphthalene	90-12-0	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	NC
2-Methylnaphthalene	91-57-6	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	NC
Acenaphthene	83-32-9	µg/L	60	6	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	NC
Acenaphthylene	208-96-8	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	NC
Acridine	260-94-6	µg/L	0.5	0.05	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	NC
Anthracene	120-12-7	µg/L	1	0.1	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	NC
Benzo(a)anthracene	56-55-3	µg/L	1	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	NC
Benzo(a)pyrene	50-32-8	µg/L	0.1	0.01	NS	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	NC
Benzo(b&j)fluoranthene	CH2M-BZBJF	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	NC
Benzo(b,j,k)fluoranthene	CH2M-BZBJKF	µg/L	NS	NS	NS	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	NC
Benzo(g,h,i)perylene	191-24-2	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	NC
Benzo(k)fluoranthene	207-08-9	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	NC
Benzo[a]pyrene TPE	BaP TPE	µg/L	NS	NS	NS	NT	NT	NT	< 0.010	< 0.010	< 0.010	NC
Chrysene	218-01-9	µg/L	1	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	NC
Dibenz(a,h)anthracene	53-70-3	µg/L	NS	NS	NS	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	NC
Fluoranthene	206-44-0	µg/L	2	0.2	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	NC
Fluorene	86-73-7	µg/L	120	12	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	NC
High Molecular Weight PAHs	HMWPAH	µg/L	NS	NS	NS	NT	NT	NT	< 0.03	< 0.03	< 0.03	NC
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	NC
Low Molecular Weight PAH	LMWPAH	µg/L	NS	NS	NS	NT	NT	NT	< 0.06	< 0.06	< 0.06	NC
Methylnaphthalene	1321-94-4	µg/L	NS	NS	NS	NT	NT	NT	< 0.015	< 0.015	< 0.015	NC
Naphthalene	91-20-3	µg/L	10	1	1	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	NC
Phenanthrene	85-01-8	µg/L	3	0.3	NS	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	NC
Pyrene	129-00-0	µg/L	0.2	0.02	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	NC
Quinoline	91-22-5	µg/L	34	3.4	NS	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	NC
Total PAHs	TPAH	µg/L	NS	NS	NS	NT	NT	NT	< 0.065	< 0.065	< 0.065	NC
VOCs												
1,1,1,2-tetrachloroethane	630-20-6	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC
1,1,1-trichloroethane	71-55-6	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC
1,1,2,2-tetrachloroethane	79-34-5	µg/L	NS	NS	NS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	NC
1,1,2-trichloroethane	79-00-5	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC
1,1-dichloroethane	75-34-3	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC
1,1-dichloroethene	75-35-4	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC
1,2-dichlorobenzene	95-50-1	µg/L	7	0.7	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC
1,2-dichloroethane	107-06-2	µg/L	1000	100	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC
1,2-dichloropropane	78-87-5	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC
1,3-dichlorobenzene	541-73-1	µg/L	1500	150	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC
1,3-Dichloropropene	542-75-6	µg/L	NS	NS	NS	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	NC
1,4-dichlorobenzene	106-46-7	µg/L	260	26	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC
Bromodichloromethane	75-27-4	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC
Bromoform	75-25-2	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC

Table 1. Groundwater Analytical Results - Organic Parameters
 Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

			Location ID		20MW-06					
			Sample ID	20MW-06_031521	20MW-06_121220	20MW-06-0621	20MW-06-0921	DUP-1-0921		
			Sample Date	15-Mar-21	12-Dec-20	21-Jun-21	21-Sep-21	21-Sep-21		
			Laboratory Certificate Sample #	VA21A4849-007	VA20C3657-002	VA21B2503-013	VA21C0813-013	VA21C0813-016	RPD	
			BC CSR AW Standards Freshwater	BC WQG Freshwater Aquatic Life ^a						
Chemical Name	CAS RN	Units		Long-term Chronic WQG ^b (mean)	Short-term Acute WQG (max)					
Carbon tetrachloride	56-23-5	µg/L	130	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	NC
Chlorobenzene	108-90-7	µg/L	13	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	NC
Chlorodibromomethane	124-48-1	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	NC
Chloroethane	75-00-3	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	NC
Chloroform	67-66-3	µg/L	20	1.8	NS	< 0.50	< 0.50	< 0.50	< 0.50	NC
Chloromethane	74-87-3	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	NC
cis-1,2-dichloroethene	156-59-2	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	NC
cis-1,3-dichloropropene	10061-01-5	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	NC
Dichloromethane	75-09-2	µg/L	980	NS	NS	< 1.0	< 0.50	< 1.0	< 1.0	NC
Methyl tert-butyl ether (MTBE)	1634-04-4	µg/L	34000	NS	3400	< 0.50	< 0.50	< 0.50	< 0.50	NC
Styrene	100-42-5	µg/L	720	72	NS	< 0.50	< 0.50	< 0.50	< 0.50	NC
Tetrachloroethene	127-18-4	µg/L	1100	110	NS	< 0.50	< 0.50	< 0.50	< 0.50	NC
trans-1,2-dichloroethene	156-60-5	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	NC
trans-1,3-dichloropropene	10061-02-6	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	NC
Trichloroethene	79-01-6	µg/L	200	21	NS	< 0.50	< 0.50	< 0.50	< 0.50	NC
Trichlorofluoromethane	75-69-4	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	NC
Vinyl chloride	75-01-4	µg/L	NS	NS	NS	< 0.40	< 0.40	< 0.40	< 0.40	NC

Table 1. Groundwater Analytical Results - Organic Parameters
 Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

				Location ID		20MW-07				20MW-08					
				Sample ID	Sample Date	Laboratory Certificate Sample #	20MW-07_031521 15-Mar-21 VA21A4849-008	20MW-07_121620 16-Dec-20 VA20C3659-001	20MW-08_031521 15-Mar-21 VA21A4849-009	20MW-08_121720 17-Dec-20 VA20C3659-002	20MW-08-0921 22-Sep-21 VA21C0813-007	DUP-2-0921 22-Sep-21 VA21C0813-006	RPD	20MW-09_031521 15-Mar-21 VA21A4849-010	
Chemical Name	CAS RN	Units	BC CSR AW Standards Freshwater	BC WQG Freshwater Aquatic Life ^a											
				Long-term Chronic WQG ^b (mean)	Short-term Acute WQG (max)										
BTEX/VPH															
Benzene	71-43-2	µg/L	400	40	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	
Ethylbenzene	100-41-4	µg/L	2000	200	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	
Toluene	108-88-3	µg/L	5	0.5	NS	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	NC	< 0.40	
Volatile Hydrocarbons (VH)	VH	µg/L	15000	NS	NS	NT	< 100	NT	< 100	NT	NT	NT	NC	NT	
VPH minus BTEX, Styrene	VPH	µg/L	1500	NS	NS	NT	< 100	NT	< 100	NT	NT	NT	NC	NT	
Xylene, o	95-47-6	µg/L	NS	NS	NS	< 0.30	< 0.50	< 0.30	< 0.50	< 0.30	< 0.30	< 0.30	NC	< 0.30	
Xylenes, m & p	179601-23-1	µg/L	NS	NS	NS	< 0.40	< 0.50	< 0.40	< 0.50	< 0.40	< 0.40	< 0.40	NC	< 0.40	
Xylenes, Total	1330-20-7	µg/L	300	30	NS	< 0.50	< 0.75	< 0.50	< 0.75	< 0.50	< 0.50	< 0.50	NC	< 0.50	
PAHs															
1-Methylnaphthalene	90-12-0	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	NC	< 0.010	
2-Methylnaphthalene	91-57-6	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	NC	0.013	
Acenaphthene	83-32-9	µg/L	60	6	NS	< 0.010	< 0.010	0.013	< 0.010	0.013	0.011	0.011	NC	< 0.010	
Acenaphthylene	208-96-8	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	NC	< 0.010	
Acridine	260-94-6	µg/L	0.5	0.05	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	NC	< 0.010	
Anthracene	120-12-7	µg/L	1	0.1	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	NC	< 0.010	
Benzo(a)anthracene	56-55-3	µg/L	1	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	NC	< 0.010	
Benzo(a)pyrene	50-32-8	µg/L	0.1	0.01	NS	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	NC	< 0.0050	
Benzo(b&j)fluoranthene	CH2M-BZBJF	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	NC	0.012	
Benzo(b,j,k)fluoranthene	CH2M-BZBJKF	µg/L	NS	NS	NS	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	NC	< 0.015	
Benzo(g,h,i)perylene	191-24-2	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	NC	< 0.010	
Benzo(k)fluoranthene	207-08-9	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	NC	< 0.010	
Benzo[a]pyrene TPE	BaP TPE	µg/L	NS	NS	NS	NT	NT	NT	NT	NT	NT	NT	NC	NT	
Chrysene	218-01-9	µg/L	1	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	NC	< 0.015	
Dibenz(a,h)anthracene	53-70-3	µg/L	NS	NS	NS	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	NC	< 0.0050	
Fluoranthene	206-44-0	µg/L	2	0.2	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	NC	0.022	
Fluorene	86-73-7	µg/L	120	12	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	NC	< 0.010	
High Molecular Weight PAHs	HMWPAH	µg/L	NS	NS	NS	NT	NT	NT	NT	NT	< 0.03	< 0.03	NC	NT	
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	NC	< 0.010	
Low Molecular Weight PAH	LMWPAH	µg/L	NS	NS	NS	NT	NT	NT	NT	NT	< 0.06	< 0.06	NC	NT	
Methylnaphthalene	1321-94-4	µg/L	NS	NS	NS	NT	NT	NT	NT	NT	< 0.015	< 0.015	NC	NT	
Naphthalene	91-20-3	µg/L	10	1	1	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	NC	< 0.050	
Phenanthrene	85-01-8	µg/L	3	0.3	NS	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	NC	< 0.020	
Pyrene	129-00-0	µg/L	0.2	0.02	NS	< 0.010	< 0.010	0.012	< 0.010	< 0.010	< 0.010	< 0.010	NC	0.02	
Quinoline	91-22-5	µg/L	34	3.4	NS	< 0.075	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	NC	< 0.050	
Total PAHs	TPAH	µg/L	NS	NS	NS	NT	NT	NT	NT	NT	< 0.065	< 0.065	NC	NT	
VOCs															
1,1,1,2-tetrachloroethane	630-20-6	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	
1,1,1-trichloroethane	71-55-6	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	
1,1,2,2-tetrachloroethane	79-34-5	µg/L	NS	NS	NS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	NC	< 0.20	
1,1,2-trichloroethane	79-00-5	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	
1,1-dichloroethane	75-34-3	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	
1,1-dichloroethene	75-35-4	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	
1,2-dichlorobenzene	95-50-1	µg/L	7	0.7	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	
1,2-dichloroethane	107-06-2	µg/L	1000	100	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	
1,2-dichloropropane	78-87-5	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	
1,3-dichlorobenzene	541-73-1	µg/L	1500	150	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	
1,3-Dichloropropene	542-75-6	µg/L	NS	NS	NS	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	NC	< 0.75	
1,4-dichlorobenzene	106-46-7	µg/L	260	26	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	
Bromodichloromethane	75-27-4	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	
Bromoform	75-25-2	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	

Table 1. Groundwater Analytical Results - Organic Parameters
 Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

			Location ID			20MW-07		20MW-08					
			Sample ID	20MW-07_031521	20MW-07_121620	20MW-08_031521	20MW-08_121720	20MW-08-0921	DUP-2-0921			20MW-09_031521	
			Sample Date	15-Mar-21	16-Dec-20	15-Mar-21	17-Dec-20	22-Sep-21	22-Sep-21			15-Mar-21	
			Laboratory Certificate Sample #	VA21A4849-008	VA20C3659-001	VA21A4849-009	VA20C3659-002	VA21C0813-007	VA21C0813-006	RPD		VA21A4849-010	
			BC CSR AW Standards Freshwater	BC WQG Freshwater Aquatic Life ^a									
Chemical Name	CAS RN	Units		Long-term Chronic WQG ^b (mean)	Short-term Acute WQG (max)								
Carbon tetrachloride	56-23-5	µg/L	130	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50
Chlorobenzene	108-90-7	µg/L	13	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50
Chlorodibromomethane	124-48-1	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50
Chloroethane	75-00-3	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50
Chloroform	67-66-3	µg/L	20	1.8	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50
Chloromethane	74-87-3	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0	< 5.0	NC	< 0.50
cis-1,2-dichloroethene	156-59-2	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50
cis-1,3-dichloropropene	10061-01-5	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50
Dichloromethane	75-09-2	µg/L	980	NS	NS	< 1.0	< 0.50	< 1.0	< 0.50	< 1.0	< 1.0	NC	< 1.0
Methyl tert-butyl ether (MTBE)	1634-04-4	µg/L	34000	NS	3400	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50
Styrene	100-42-5	µg/L	720	72	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50
Tetrachloroethene	127-18-4	µg/L	1100	110	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50
trans-1,2-dichloroethene	156-60-5	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50
trans-1,3-dichloropropene	10061-02-6	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50
Trichloroethene	79-01-6	µg/L	200	21	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50
Trichlorofluoromethane	75-69-4	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50
Vinyl chloride	75-01-4	µg/L	NS	NS	NS	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	NC	< 0.40

Table 1. Groundwater Analytical Results - Organic Parameters
Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

				Location ID		20MW-09		
				Sample ID	20MW-09_121720	20MW-09-0621	20MW-09-0921	
				Sample Date	17-Dec-20	21-Jun-21	21-Sep-21	
				Laboratory Certificate Sample #	VA20C3660-003	VA21B2503-006	VA21C0813-012	
Chemical Name	CAS RN	Units	BC CSR AW Standards Freshwater	BC WQG Freshwater Aquatic Life*				
				Long-term Chronic WQG ^b (mean)	Short-term Acute WQG (max)			
BTEX/VPH								
Benzene	71-43-2	µg/L	400	40	NS	< 0.50	< 0.50	< 0.50
Ethylbenzene	100-41-4	µg/L	2000	200	NS	< 0.50	< 0.50	< 0.50
Toluene	108-88-3	µg/L	5	0.5	NS	< 0.40	< 0.40	< 0.40
Volatile Hydrocarbons (VH)	VH	µg/L	15000	NS	NS	< 100	NT	NT
VPH minus BTEX, Styrene	VPH	µg/L	1500	NS	NS	< 100	NT	NT
Xylene, o	95-47-6	µg/L	NS	NS	NS	< 0.50	< 0.30	< 0.30
Xylenes, m & p	179601-23-1	µg/L	NS	NS	NS	< 0.50	< 0.40	< 0.40
Xylenes, Total	1330-20-7	µg/L	300	30	NS	< 0.75	< 0.50	< 0.50
PAHs								
1-Methylnaphthalene	90-12-0	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010
2-Methylnaphthalene	91-57-6	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010
Acenaphthene	83-32-9	µg/L	60	6	NS	< 0.010	< 0.010	< 0.010
Acenaphthylene	208-96-8	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010
Acridine	260-94-6	µg/L	0.5	0.05	NS	< 0.010	< 0.010	< 0.010
Anthracene	120-12-7	µg/L	1	0.1	NS	< 0.010	< 0.010	< 0.010
Benzo(a)anthracene	56-55-3	µg/L	1	NS	NS	< 0.010	< 0.010	< 0.010
Benzo(a)pyrene	50-32-8	µg/L	0.1	0.01	NS	< 0.0050	< 0.0050	< 0.0050
Benzo(b&j)fluoranthene	CH2M-BZBJF	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010
Benzo(b,j,k)fluoranthene	CH2M-BZBJKF	µg/L	NS	NS	NS	< 0.015	< 0.015	< 0.015
Benzo(g,h,i)perylene	191-24-2	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010
Benzo(k)fluoranthene	207-08-9	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010
Benzo[a]pyrene TPE	BaP TPE	µg/L	NS	NS	NS	NT	NT	< 0.010
Chrysene	218-01-9	µg/L	1	NS	NS	< 0.010	< 0.010	< 0.010
Dibenz(a,h)anthracene	53-70-3	µg/L	NS	NS	NS	< 0.0050	< 0.0050	< 0.0050
Fluoranthene	206-44-0	µg/L	2	0.2	NS	< 0.010	0.010	0.025
Fluorene	86-73-7	µg/L	120	12	NS	< 0.010	< 0.010	< 0.010
High Molecular Weight PAHs	HMWPAH	µg/L	NS	NS	NS	NT	NT	0.042
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010
Low Molecular Weight PAH	LMWPAH	µg/L	NS	NS	NS	NT	NT	< 0.06
Methylnaphthalene	1321-94-4	µg/L	NS	NS	NS	NT	NT	< 0.015
Naphthalene	91-20-3	µg/L	10	1	1	< 0.050	< 0.050	< 0.050
Phenanthrene	85-01-8	µg/L	3	0.3	NS	< 0.020	< 0.020	< 0.020
Pyrene	129-00-0	µg/L	0.2	0.02	NS	< 0.010	< 0.010	0.017
Quinoline	91-22-5	µg/L	34	3.4	NS	< 0.050	< 0.050	< 0.050
Total PAHs	TPAH	µg/L	NS	NS	NS	NT	NT	< 0.065
VOCs								
1,1,1,2-tetrachloroethane	630-20-6	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50
1,1,1-trichloroethane	71-55-6	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50
1,1,2,2-tetrachloroethane	79-34-5	µg/L	NS	NS	NS	< 0.20	< 0.20	< 0.20
1,1,2-trichloroethane	79-00-5	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50
1,1-dichloroethane	75-34-3	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50
1,1-dichloroethene	75-35-4	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50
1,2-dichlorobenzene	95-50-1	µg/L	7	0.7	NS	< 0.50	< 0.50	< 0.50
1,2-dichloroethane	107-06-2	µg/L	1000	100	NS	< 0.50	< 0.50	< 0.50
1,2-dichloropropane	78-87-5	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50
1,3-dichlorobenzene	541-73-1	µg/L	1500	150	NS	< 0.50	< 0.50	< 0.50
1,3-Dichloropropene	542-75-6	µg/L	NS	NS	NS	< 0.75	< 0.75	< 0.75
1,4-dichlorobenzene	106-46-7	µg/L	260	26	NS	< 0.50	< 0.50	< 0.50
Bromodichloromethane	75-27-4	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50
Bromoform	75-25-2	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50

Table 1. Groundwater Analytical Results - Organic Parameters
Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

						Location ID			
						20MW-09			
						Sample ID	20MW-09-121720	20MW-09-0621	20MW-09-0921
						Sample Date	17-Dec-20	21-Jun-21	21-Sep-21
						Laboratory Certificate Sample #	VA20C3660-003	VA21B2503-006	VA21C0813-012
Chemical Name	CAS RN	Units	BC CSR AW Standards Freshwater	BC WQG Freshwater Aquatic Life ^a					
				Long-term Chronic WQG ^b (mean)	Short-term Acute WQG (max)				
Carbon tetrachloride	56-23-5	µg/L	130	NS	NS	< 0.50	< 0.50	< 0.50	
Chlorobenzene	108-90-7	µg/L	13	NS	NS	< 0.50	< 0.50	< 0.50	
Chlorodibromomethane	124-48-1	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	
Chloroethane	75-00-3	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	
Chloroform	67-66-3	µg/L	20	1.8	NS	< 0.50	< 0.50	< 0.50	
Chloromethane	74-87-3	µg/L	NS	NS	NS	< 0.50	< 0.50	< 5.0	
cis-1,2-dichloroethene	156-59-2	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	
cis-1,3-dichloropropene	10061-01-5	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	
Dichloromethane	75-09-2	µg/L	980	NS	NS	< 0.50	< 1.0	< 1.0	
Methyl tert-butyl ether (MTBE)	1634-04-4	µg/L	34000	NS	3400	< 0.50	< 0.50	< 0.50	
Styrene	100-42-5	µg/L	720	72	NS	< 0.50	< 0.50	< 0.50	
Tetrachloroethene	127-18-4	µg/L	1100	110	NS	< 0.50	< 0.50	< 0.50	
trans-1,2-dichloroethene	156-60-5	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	
trans-1,3-dichloropropene	10061-02-6	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	
Trichloroethene	79-01-6	µg/L	200	21	NS	< 0.50	< 0.50	< 0.50	
Trichlorofluoromethane	75-69-4	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	
Vinyl chloride	75-01-4	µg/L	NS	NS	NS	< 0.40	< 0.40	< 0.40	

Table 1. Groundwater Analytical Results - Organic Parameters
 Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

Chemical Name						Location ID		20MW-10D											
						Sample ID		Sample Date		Laboratory Certificate Sample #		20MW-10D_031521	QA3_031521	RPD	20MW-10D_121720	QA2_121720	RPD	20MW-10D-0621	20MW-10D-0921
						CAS RN	Units	15-Mar-21	15-Mar-21	VA21A4849-011	VA21A4849-014	VA20C3659-003	VA20C3659-005		17-Dec-20	17-Dec-20		21-Jun-21	21-Sep-21
BC WQG Freshwater Aquatic Life*						BC CSR AW Standards													
Long-term Chronic WQG ^b (mean)						Short-term Acute WQG (max)													
BTEX/VPH																			
Benzene	71-43-2	µg/L	400	40	NS	< 0.50	< 0.50	NC	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50					
Ethylbenzene	100-41-4	µg/L	2000	200	NS	< 0.50	< 0.50	NC	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50					
Toluene	108-88-3	µg/L	5	0.5	NS	< 0.40	< 0.40	NC	< 0.40	< 0.40	NC	< 0.40	< 0.40	< 0.40					
Volatile Hydrocarbons (VH)	VH	µg/L	15000	NS	NS	NT	NT	NC	< 100	< 100	NC	NT	NT	NT					
VPH minus BTEX, Styrene	VPH	µg/L	1500	NS	NS	NT	NT	NC	< 100	< 100	NC	NT	NT	NT					
Xylene, o	95-47-6	µg/L	NS	NS	NS	< 0.30	< 0.30	NC	< 0.50	< 0.50	NC	< 0.30	< 0.30	< 0.30					
Xylenes, m & p	179601-23-1	µg/L	NS	NS	NS	< 0.40	< 0.40	NC	< 0.50	< 0.50	NC	< 0.40	< 0.40	< 0.40					
Xylenes, Total	1330-20-7	µg/L	300	30	NS	< 0.50	< 0.50	NC	< 0.75	< 0.75	NC	< 0.50	< 0.50	< 0.50					
PAHs																			
1-Methylnaphthalene	90-12-0	µg/L	NS	NS	NS	0.096	0.108	12%	0.021	0.03	NC	0.015	< 0.010	< 0.010					
2-Methylnaphthalene	91-57-6	µg/L	NS	NS	NS	0.019	0.022	NC	< 0.010	< 0.010	NC	< 0.010	< 0.010	< 0.010					
Acenaphthene	83-32-9	µg/L	60	6	NS	0.066	0.077	15%	< 0.020	< 0.030	NC	0.021	0.011	0.011					
Acenaphthylene	208-96-8	µg/L	NS	NS	NS	< 0.010	< 0.010	NC	< 0.010	< 0.010	NC	< 0.010	< 0.010	< 0.010					
Acridine	260-94-6	µg/L	0.5	0.05	NS	< 0.010	< 0.010	NC	< 0.020	< 0.010	NC	< 0.022	< 0.010	< 0.010					
Anthracene	120-12-7	µg/L	1	0.1	NS	< 0.010	< 0.010	NC	< 0.010	< 0.010	NC	< 0.010	< 0.010	< 0.010					
Benzo(a)anthracene	56-55-3	µg/L	1	NS	NS	< 0.010	< 0.010	NC	< 0.010	< 0.010	NC	< 0.010	< 0.010	< 0.010					
Benzo(a)pyrene	50-32-8	µg/L	0.1	0.01	NS	< 0.0050	< 0.0050	NC	< 0.0050	< 0.0050	NC	< 0.0050	< 0.0050	< 0.0050					
Benzo(b&j)fluoranthene	CH2M-BZBJF	µg/L	NS	NS	NS	< 0.010	< 0.010	NC	< 0.010	< 0.010	NC	< 0.010	< 0.010	< 0.010					
Benzo(b,j,k)fluoranthene	CH2M-BZBJKF	µg/L	NS	NS	NS	< 0.015	< 0.015	NC	< 0.015	< 0.015	NC	< 0.015	< 0.015	< 0.015					
Benzo(g,h,i)perylene	191-24-2	µg/L	NS	NS	NS	< 0.010	< 0.010	NC	< 0.010	< 0.010	NC	< 0.010	< 0.010	< 0.010					
Benzo(k)fluoranthene	207-08-9	µg/L	NS	NS	NS	< 0.010	< 0.010	NC	< 0.010	< 0.010	NC	< 0.010	< 0.010	< 0.010					
Benzo[a]pyrene TPE	BaP TPE	µg/L	NS	NS	NS	NT	NT	NC	NT	NT	NC	NT	NT	< 0.010					
Chrysene	218-01-9	µg/L	1	NS	NS	< 0.010	< 0.010	NC	< 0.010	< 0.010	NC	< 0.010	< 0.010	< 0.010					
Dibenz(a,h)anthracene	53-70-3	µg/L	NS	NS	NS	< 0.0050	< 0.0050	NC	< 0.0050	< 0.0050	NC	< 0.0050	< 0.0050	< 0.0050					
Fluoranthene	206-44-0	µg/L	2	0.2	NS	< 0.010	< 0.010	NC	< 0.010	< 0.010	NC	< 0.010	< 0.010	< 0.010					
Fluorene	86-73-7	µg/L	120	12	NS	0.138	0.16	15%	0.036	0.053	NC	0.063	0.028	0.028					
High Molecular Weight PAHs	HMWPAH	µg/L	NS	NS	NS	NT	NT	NC	NT	NT	NC	NT	NT	< 0.03					
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	NS	NS	NS	< 0.010	< 0.010	NC	< 0.010	< 0.010	NC	< 0.010	< 0.010	< 0.010					
Low Molecular Weight PAH	LMWPAH	µg/L	NS	NS	NS	NT	NT	NC	NT	NT	NC	NT	NT	< 0.06					
Methylnaphthalene	1321-94-4	µg/L	NS	NS	NS	NT	NT	NC	NT	NT	NC	NT	NT	< 0.015					
Naphthalene	91-20-3	µg/L	10	1	1	0.583	0.623	7%	0.273	0.329	19%	< 0.050	< 0.050	< 0.050					
Phenanthrene	85-01-8	µg/L	3	0.3	NS	0.058	0.068	NC	< 0.020	0.024	NC	0.029	< 0.020	< 0.020					
Pyrene	129-00-0	µg/L	0.2	0.02	NS	< 0.010	< 0.010	NC	< 0.010	< 0.010	NC	< 0.010	< 0.010	< 0.010					
Quinoline	91-22-5	µg/L	34	3.4	NS	< 0.050	< 0.050	NC	< 0.050	< 0.050	NC	< 0.050	< 0.050	< 0.050					
Total PAHs	TPAH	µg/L	NS	NS	NS	NT	NT	NC	NT	NT	NC	NT	NT	< 0.065					
VOCs																			
1,1,1,2-tetrachloroethane	630-20-6	µg/L	NS	NS	NS	< 0.50	< 0.50	NC	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50					
1,1,1-trichloroethane	71-55-6	µg/L	NS	NS	NS	< 0.50	< 0.50	NC	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50					
1,1,2,2-tetrachloroethane	79-34-5	µg/L	NS	NS	NS	< 0.20	< 0.20	NC	< 0.20	< 0.20	NC	< 0.20	< 0.20	< 0.20					
1,1,2-trichloroethane	79-00-5	µg/L	NS	NS	NS	< 0.50	< 0.50	NC	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50					
1,1-dichloroethane	75-34-3	µg/L	NS	NS	NS	< 0.50	< 0.50	NC	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50					
1,1-dichloroethene	75-35-4	µg/L	NS	NS	NS	< 0.50	< 0.50	NC	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50					
1,2-dichlorobenzene	95-50-1	µg/L	7	0.7	NS	< 0.50	< 0.50	NC	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50					
1,2-dichloroethane	107-06-2	µg/L	1000	100	NS	< 0.50	< 0.50	NC	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50					
1,2-dichloropropane	78-87-5	µg/L	NS	NS	NS	< 0.50	< 0.50	NC	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50					
1,3-dichlorobenzene	541-73-1	µg/L	1500	150	NS	< 0.50	< 0.50	NC	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50					
1,3-Dichloropropene	542-75-6	µg/L	NS	NS	NS	< 0.75	< 0.75	NC	< 0.75	< 0.75	NC	< 0.75	< 0.75	< 0.75					
1,4-dichlorobenzene	106-46-7	µg/L	260	26	NS	< 0.50	< 0.50	NC	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50					
Bromodichloromethane	75-27-4	µg/L	NS	NS	NS	< 0.50	< 0.50	NC	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50					
Bromoform	75-25-2	µg/L	NS	NS	NS	< 0.50	< 0.50	NC	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50					

Table 1. Groundwater Analytical Results - Organic Parameters
 Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

Chemical Name						20MW-10D											
						Location ID		Sample ID		Sample Date		Laboratory Certificate Sample #		20MW-10D		20MW-10D	
						20MW-10D_031521	QA3_031521	15-Mar-21	15-Mar-21	VA21A4849-011	VA21A4849-014	RPD	20MW-10D_121720	QA2_121720	17-Dec-20	17-Dec-20	RPD
						BC WQG Freshwater Aquatic Life ^a											
CAS RN			Units	BC CSR AW Standards Freshwater	Long-term Chronic WQG ^b (mean)	Short-term Acute WQG (max)											
56-23-5			µg/L	130	NS	NS	< 0.50	< 0.50	NC	< 0.50	< 0.50	NC	< 0.50	< 0.50			
108-90-7			µg/L	13	NS	NS	< 0.50	< 0.50	NC	< 0.50	< 0.50	NC	< 0.50	< 0.50			
124-48-1			µg/L	NS	NS	NS	< 0.50	< 0.50	NC	< 0.50	< 0.50	NC	< 0.50	< 0.50			
75-00-3			µg/L	NS	NS	NS	< 0.50	< 0.50	NC	< 0.50	< 0.50	NC	< 0.50	< 0.50			
67-66-3			µg/L	20	1.8	NS	< 0.50	< 0.50	NC	< 0.50	< 0.50	NC	< 0.50	< 0.50			
74-87-3			µg/L	NS	NS	NS	< 0.50	< 0.50	NC	< 0.50	< 0.50	NC	< 0.50	< 0.50			
156-59-2			µg/L	NS	NS	NS	< 0.50	< 0.50	NC	< 0.50	< 0.50	NC	< 0.50	< 0.50			
10061-01-5			µg/L	NS	NS	NS	< 0.50	< 0.50	NC	< 0.50	< 0.50	NC	< 0.50	< 0.50			
75-09-2			µg/L	980	NS	NS	< 1.0	< 1.0	NC	< 0.50	< 0.50	NC	< 1.0	< 1.0			
1634-04-4			µg/L	34000	NS	3400	< 0.50	< 0.50	NC	< 0.50	< 0.50	NC	< 0.50	< 0.50			
100-42-5			µg/L	720	72	NS	< 0.50	< 0.50	NC	< 0.50	< 0.50	NC	< 0.50	< 0.50			
127-18-4			µg/L	1100	110	NS	< 0.50	< 0.50	NC	< 0.50	< 0.50	NC	< 0.50	< 0.50			
156-60-5			µg/L	NS	NS	NS	< 0.50	< 0.50	NC	< 0.50	< 0.50	NC	< 0.50	< 0.50			
10061-02-6			µg/L	NS	NS	NS	< 0.50	< 0.50	NC	< 0.50	< 0.50	NC	< 0.50	< 0.50			
79-01-6			µg/L	200	21	NS	< 0.50	< 0.50	NC	< 0.50	< 0.50	NC	< 0.50	< 0.50			
75-69-4			µg/L	NS	NS	NS	< 0.50	< 0.50	NC	< 0.50	< 0.50	NC	< 0.50	< 0.50			
75-01-4			µg/L	NS	NS	NS	< 0.40	< 0.40	NC	< 0.40	< 0.40	NC	< 0.40	< 0.40			

Table 1. Groundwater Analytical Results - Organic Parameters
 Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

		Location ID		20MW-105								20MW-11	
		Sample ID	Sample Date	Laboratory Certificate Sample #		20MW-105_031521	20MW-105_121720	20MW-105-0621	20MW-105-0921	20MW-11_031521	20MW-11_121220	20MW-11-0621	
						VA21A4849-012	VA20C3659-004	VA21B2503-009	VA21C0813-011	VA21A4849-013	VA20C3657-003	VA21B2503-007	
		BC WQG Freshwater Aquatic Life ^a											
		BC CSR AW Standards Freshwater		Long-term Chronic WQG ^b (mean)		Short-term Acute WQG (max)							
Chemical Name	CAS RN	Units											
BTEX/VPH													
Benzene	71-43-2	µg/L	400	40	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Ethylbenzene	100-41-4	µg/L	2000	200	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Toluene	108-88-3	µg/L	5	0.5	NS	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40
Volatile Hydrocarbons (VH)	VH	µg/L	15000	NS	NS	NT	< 100	NT	NT	NT	NT	NT	NT
VPH minus BTEX, Styrene	VPH	µg/L	1500	NS	NS	NT	< 100	NT	NT	NT	NT	NT	NT
Xylene, o	95-47-6	µg/L	NS	NS	NS	< 0.30	< 0.50	< 0.30	< 0.30	< 0.30	< 0.50	< 0.30	< 0.30
Xylenes, m & p	179601-23-1	µg/L	NS	NS	NS	< 0.40	< 0.50	< 0.40	< 0.40	< 0.40	< 0.50	< 0.40	< 0.40
Xylenes, Total	1330-20-7	µg/L	300	30	NS	< 0.50	< 0.75	< 0.50	< 0.50	< 0.50	< 0.75	< 0.50	< 0.50
PAHs													
1-Methylnaphthalene	90-12-0	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
2-Methylnaphthalene	91-57-6	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Acenaphthene	83-32-9	µg/L	60	6	NS	< 0.010	< 0.010	< 0.010	< 0.010	0.012	< 0.010	0.015	< 0.010
Acenaphthylene	208-96-8	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Acridine	260-94-6	µg/L	0.5	0.05	NS	< 0.010	< 0.010	< 0.023	< 0.010	< 0.010	< 0.010	< 0.050	< 0.010
Anthracene	120-12-7	µg/L	1	0.1	NS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo(a)anthracene	56-55-3	µg/L	1	NS	NS	< 0.010	< 0.010	< 0.024	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo(a)pyrene	50-32-8	µg/L	0.1	0.01	NS	< 0.0050	< 0.0050	0.0239	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Benzo(b&j)fluoranthene	CH2M-BZBJF	µg/L	NS	NS	NS	< 0.010	< 0.010	0.037	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo(b,j,k)fluoranthene	CH2M-BZBJKF	µg/L	NS	NS	NS	< 0.015	< 0.015	0.048	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015
Benzo(g,h,i)perylene	191-24-2	µg/L	NS	NS	NS	< 0.010	< 0.010	0.033	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo(k)fluoranthene	207-08-9	µg/L	NS	NS	NS	< 0.010	< 0.010	0.011	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo(a)pyrene TPE	BaP TPE	µg/L	NS	NS	NS	NT	NT	NT	< 0.010	NT	NT	NT	NT
Chrysene	218-01-9	µg/L	1	NS	NS	< 0.010	< 0.010	< 0.034	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Dibenz(a,h)anthracene	53-70-3	µg/L	NS	NS	NS	< 0.0050	< 0.0050	< 0.0110	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Fluoranthene	206-44-0	µg/L	2	0.2	NS	< 0.010	< 0.010	0.053	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Fluorene	86-73-7	µg/L	120	12	NS	< 0.010	< 0.010	< 0.010	< 0.010	0.032	< 0.010	0.040	< 0.010
High Molecular Weight PAHs	HMWPAH	µg/L	NS	NS	NS	NT	NT	NT	< 0.03	NT	NT	NT	NT
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	NS	NS	NS	< 0.010	< 0.010	0.024	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Low Molecular Weight PAH	LMWPAH	µg/L	NS	NS	NS	NT	NT	NT	< 0.06	NT	NT	NT	NT
Methylnaphthalene	1321-94-4	µg/L	NS	NS	NS	NT	NT	NT	< 0.015	NT	NT	NT	NT
Naphthalene	91-20-3	µg/L	10	1	1	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Phenanthrene	85-01-8	µg/L	3	0.3	NS	< 0.020	< 0.020	0.026	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Pyrene	129-00-0	µg/L	0.2	0.02	NS	< 0.010	< 0.010	0.070	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Quinoline	91-22-5	µg/L	34	3.4	NS	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Total PAHs	TPAH	µg/L	NS	NS	NS	NT	NT	NT	< 0.065	NT	NT	NT	NT
VOCs													
1,1,1,2-tetrachloroethane	630-20-6	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,1-trichloroethane	71-55-6	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,2,2-tetrachloroethane	79-34-5	µg/L	NS	NS	NS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
1,1,2-trichloroethane	79-00-5	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1-dichloroethane	75-34-3	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1-dichloroethene	75-35-4	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-dichlorobenzene	95-50-1	µg/L	7	0.7	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-dichloroethane	107-06-2	µg/L	1000	100	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-dichloropropane	78-87-5	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-dichlorobenzene	541-73-1	µg/L	1500	150	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichloropropene	542-75-6	µg/L	NS	NS	NS	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,4-dichlorobenzene	106-46-7	µg/L	260	26	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane	75-27-4	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromoform	75-25-2	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Table 1. Groundwater Analytical Results - Organic Parameters
 Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

			Location ID			20MW-105				20MW-11		
			Sample ID	20MW-105_031521	20MW-105_121720	20MW-105-0621	20MW-105-0921	20MW-11_031521	20MW-11_121220	20MW-11-0621		
			Sample Date	15-Mar-21	17-Dec-20	21-Jun-21	21-Sep-21	15-Mar-21	12-Dec-20	21-Jun-21		
			Laboratory Certificate Sample #	VA21A4849-012	VA20C3659-004	VA21B2503-009	VA21C0813-011	VA21A4849-013	VA20C3657-003	VA21B2503-007		
			BC CSR AW Standards Freshwater	BC WQG Freshwater Aquatic Life ^a								
Chemical Name	CAS RN	Units		Long-term Chronic WQG ^b (mean)	Short-term Acute WQG (max)							
Carbon tetrachloride	56-23-5	µg/L	130	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chlorobenzene	108-90-7	µg/L	13	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chlorodibromomethane	124-48-1	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chloroethane	75-00-3	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chloroform	67-66-3	µg/L	20	1.8	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chloromethane	74-87-3	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
cis-1,2-dichloroethene	156-59-2	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	2.21	1.06	< 0.50
cis-1,3-dichloropropene	10061-01-5	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dichloromethane	75-09-2	µg/L	980	NS	NS	< 1.0	< 0.50	< 1.0	< 1.0	< 1.0	< 0.50	< 1.0
Methyl tert-butyl ether (MTBE)	1634-04-4	µg/L	34000	NS	3400	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Styrene	100-42-5	µg/L	720	72	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Tetrachloroethene	127-18-4	µg/L	1100	110	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
trans-1,2-dichloroethene	156-60-5	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
trans-1,3-dichloropropene	10061-02-6	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Trichloroethene	79-01-6	µg/L	200	21	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Trichlorofluoromethane	75-69-4	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Vinyl chloride	75-01-4	µg/L	NS	NS	NS	0.53	< 0.40	< 0.40	< 0.40	0.75	< 0.40	< 0.40

Table 1. Groundwater Analytical Results - Organic Parameters
Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

						Location ID		MW06-34							
						DUP1-0621		20MW-11-0921	MW06-34_011421	MW06-34_031521	QA4_031521		MW06-34_12220	MW06-34-0921	
						21-Jun-21	RPD	21-Sep-21	14-Jan-21	15-Mar-21	15-Mar-21	RPD	22-Dec-20	22-Sep-21	
						VA21B2503-011		VA21C0813-015	VA21A07300-001	VA21A4849-001	VA21A4849-015		VA20C4120-001	VA21C0813-002	
				BC WQG Freshwater Aquatic Life ^a											
Chemical Name	CAS RN	Units	BC CSR AW Standards Freshwater	Long-term Chronic WQG ^b (mean)	Short-term Acute WQG (max)										
BTEX/VPH															
Benzene	71-43-2	µg/L	400	40	NS	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50
Ethylbenzene	100-41-4	µg/L	2000	200	NS	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50
Toluene	108-88-3	µg/L	5	0.5	NS	< 0.40	NC	< 0.40	0.60	< 0.40	< 0.40	NC	< 0.40	< 0.40	< 0.40
Volatile Hydrocarbons (VH)	VH	µg/L	15000	NS	NS	NT	NC	NT	NT	NT	NT	NC	< 100	NT	NT
VPH minus BTEX, Styrene	VPH	µg/L	1500	NS	NS	NT	NC	NT	NT	NT	NT	NC	< 100	NT	NT
Xylene, o	95-47-6	µg/L	NS	NS	NS	< 0.30	NC	< 0.30	< 0.30	< 0.30	< 0.30	NC	< 0.50	< 0.30	< 0.30
Xylenes, m & p	179601-23-1	µg/L	NS	NS	NS	< 0.40	NC	< 0.40	0.51	< 0.40	< 0.40	NC	< 0.50	< 0.40	< 0.40
Xylenes, Total	1330-20-7	µg/L	300	30	NS	< 0.50	NC	< 0.50	0.51	< 0.50	< 0.50	NC	< 0.75	< 0.50	< 0.50
PAHs															
1-Methylnaphthalene	90-12-0	µg/L	NS	NS	NS	< 0.010	NC	< 0.010	8.73	7.13	6.03	17%	7.56	7.95	7.95
2-Methylnaphthalene	91-57-6	µg/L	NS	NS	NS	< 0.010	NC	< 0.010	10.9	6.84	5.88	15%	6.88	10.6	10.6
Acenaphthene	83-32-9	µg/L	60	6	NS	0.014	NC	< 0.010	85.5	70.5	79.4	12%	143	82.9	82.9
Acenaphthylene	208-96-8	µg/L	NS	NS	NS	< 0.010	NC	< 0.010	0.475	0.556	0.523	6%	0.906	0.224	0.224
Acridine	260-94-6	µg/L	0.5	0.05	NS	< 0.034	NC	< 0.034	< 2.80	< 2.00	1.91	NC	< 3.50	2.30	2.30
Anthracene	120-12-7	µg/L	1	0.1	NS	< 0.010	NC	< 0.010	6.15	4.58	5.14	12%	30.8	2.49	2.49
Benzo(a)anthracene	56-55-3	µg/L	1	NS	NS	< 0.010	NC	< 0.010	0.437	0.978	0.902	8%	7.37	0.694	0.694
Benzo(a)pyrene	50-32-8	µg/L	0.1	0.01	NS	< 0.0050	NC	< 0.0050	0.120	0.194	0.164	17%	1.29	0.165	0.165
Benzo(b&j)fluoranthene	CH2M-BZBJF	µg/L	NS	NS	NS	< 0.010	NC	< 0.010	0.176	0.235	0.23	2%	2.22	0.196	0.196
Benzo(b,j,k)fluoranthene	CH2M-BZBJKF	µg/L	NS	NS	NS	< 0.015	NC	< 0.015	0.248	0.319	0.328	3%	3.02	0.286	0.286
Benzo(g,h,i)perylene	191-24-2	µg/L	NS	NS	NS	< 0.010	NC	< 0.010	0.034	0.037	0.04	NC	0.238	0.023	0.023
Benzo(k)fluoranthene	207-08-9	µg/L	NS	NS	NS	< 0.010	NC	< 0.010	0.072	0.084	0.098	15%	0.804	0.090	0.090
Benzo[a]pyrene TPE	BaP TPE	µg/L	NS	NS	NS	NT	NC	< 0.010	NT	NT	NT	NC	NT	0.281	0.281
Chrysene	218-01-9	µg/L	1	NS	NS	< 0.010	NC	< 0.010	0.440	1.09	0.928	16%	< 10.0	< 0.580	< 0.580
Dibenz(a,h)anthracene	53-70-3	µg/L	NS	NS	NS	< 0.0050	NC	< 0.0050	0.0140	0.0199	0.0159	NC	0.106	0.0126	0.0126
Fluoranthene	206-44-0	µg/L	2	0.2	NS	< 0.010	NC	< 0.010	10.6	13	13	0%	89.4	6.29	6.29
Fluorene	86-73-7	µg/L	120	12	NS	0.038	NC	0.028	37.4	32.9	32.9	0%	79.4	25.9	25.9
High Molecular Weight PAHs	HMWPAH	µg/L	NS	NS	NS	NT	NC	< 0.03	NT	NT	NT	NC	NT	12.0	12.0
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	NS	NS	NS	< 0.010	NC	< 0.010	0.024	0.039	0.04	NC	0.219	0.027	0.027
Low Molecular Weight PAH	LMWPAH	µg/L	NS	NS	NS	NT	NC	< 0.06	NT	NT	NT	NC	NT	139	139
Methylnaphthalene	1321-94-4	µg/L	NS	NS	NS	NT	NC	< 0.015	NT	NT	NT	NC	NT	18.6	18.6
Naphthalene	91-20-3	µg/L	10	1	NS	< 0.050	NC	< 0.050	13.6	7.03	6.21	12%	2.49	12.5	12.5
Phenanthrene	85-01-8	µg/L	3	0.3	NS	< 0.020	NC	< 0.020	39.4	33.4	35.7	7%	171	15.2	15.2
Pyrene	129-00-0	µg/L	0.2	0.02	NS	< 0.010	NC	< 0.010	5.87	7.37	6.92	6%	74.3	4.56	4.56
Quinoline	91-22-5	µg/L	34	3.4	NS	< 0.050	NC	< 0.050	< 0.050	< 0.900	< 0.950	NC	< 1.00	< 2.30	< 2.30
Total PAHs	TPAH	µg/L	NS	NS	NS	NT	NC	< 0.065	NT	NT	NT	NC	NT	151	151
VOCs															
1,1,1,2-tetrachloroethane	630-20-6	µg/L	NS	NS	NS	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50
1,1,1-trichloroethane	71-55-6	µg/L	NS	NS	NS	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50
1,1,2,2-tetrachloroethane	79-34-5	µg/L	NS	NS	NS	< 0.20	NC	< 0.20	< 0.20	< 0.20	< 0.20	NC	< 0.20	< 0.20	< 0.20
1,1,2-trichloroethane	79-00-5	µg/L	NS	NS	NS	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50
1,1-dichloroethane	75-34-3	µg/L	NS	NS	NS	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50
1,1-dichloroethene	75-35-4	µg/L	NS	NS	NS	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 2.25	< 0.50	< 0.50
1,2-dichlorobenzene	95-50-1	µg/L	7	0.7	NS	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50
1,2-dichloroethane	107-06-2	µg/L	1000	100	NS	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50
1,2-dichloropropane	78-87-5	µg/L	NS	NS	NS	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50
1,3-dichlorobenzene	541-73-1	µg/L	1500	150	NS	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50
1,3-Dichloropropene	542-75-6	µg/L	NS	NS	NS	< 0.75	NC	< 0.75	< 0.75	< 0.75	< 0.75	NC	< 0.75	< 0.75	< 0.75
1,4-dichlorobenzene	106-46-7	µg/L	260	26	NS	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50
Bromodichloromethane	75-27-4	µg/L	NS	NS	NS	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50
Bromoform	75-25-2	µg/L	NS	NS	NS	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50

Table 1. Groundwater Analytical Results - Organic Parameters
 Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

			Location ID			MW06-34									
			Sample ID	DUP1-0621	20MW-11-0921	MW06-34_011421	MW06-34_031521	QA4_031521		MW06-34_12220	MW06-34-0921				
			Sample Date	21-Jun-21	21-Sep-21	14-Jan-21	15-Mar-21	15-Mar-21	RPD	22-Dec-20	22-Sep-21				
			Laboratory Certificate Sample #	VA21B2503-011	VA21C0813-015	VA21A0730-001	VA21A4849-001	VA21A4849-015	RPD	VA20C4120-001	VA21C0813-002				
			BC WQG Freshwater Aquatic Life ^a												
			BC CSR AW Standards Freshwater	Long-term Chronic WQG ^b (mean)	Short-term Acute WQG (max)										
Chemical Name	CAS RN	Units													
Carbon tetrachloride	56-23-5	µg/L	130	NS	NS	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	
Chlorobenzene	108-90-7	µg/L	13	NS	NS	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	
Chlorodibromomethane	124-48-1	µg/L	NS	NS	NS	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	
Chloroethane	75-00-3	µg/L	NS	NS	NS	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	
Chloroform	67-66-3	µg/L	20	1.8	NS	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	
Chloromethane	74-87-3	µg/L	NS	NS	NS	< 0.50	NC	< 5.0	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 5.0	
cis-1,2-dichloroethene	156-59-2	µg/L	NS	NS	NS	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	
cis-1,3-dichloropropene	10061-01-5	µg/L	NS	NS	NS	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	
Dichloromethane	75-09-2	µg/L	980	NS	NS	< 1.0	NC	< 1.0	< 0.50	< 1.0	< 1.0	NC	0.63	< 1.0	
Methyl tert-butyl ether (MTBE)	1634-04-4	µg/L	34000	NS	3400	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	
Styrene	100-42-5	µg/L	720	72	NS	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	
Tetrachloroethene	127-18-4	µg/L	1100	110	NS	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	
trans-1,2-dichloroethene	156-60-5	µg/L	NS	NS	NS	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	
trans-1,3-dichloropropene	10061-02-6	µg/L	NS	NS	NS	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	
Trichloroethene	79-01-6	µg/L	200	21	NS	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	
Trichlorofluoromethane	75-69-4	µg/L	NS	NS	NS	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	
Vinyl chloride	75-01-4	µg/L	NS	NS	NS	< 0.40	NC	< 0.40	< 0.40	< 0.40	< 0.40	NC	< 0.40	< 0.40	

Table 1. Groundwater Analytical Results - Organic Parameters
Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

			Location ID			
			Sample ID			
			Sample Date			
			Laboratory Certificate Sample #			
			MW06-34-W-0621			
			21-Jun-21			
			VA21B2503-003			
Chemical Name	CAS RN	Units	BC CSR AW Standards Freshwater	BC WQG Freshwater Aquatic Life ^a		
				Long-term Chronic WQG ^b (mean)	Short-term Acute WQG (max)	
BTEX/VPH						
Benzene	71-43-2	µg/L	400	40	NS	< 0.50
Ethylbenzene	100-41-4	µg/L	2000	200	NS	< 0.50
Toluene	108-88-3	µg/L	5	0.5	NS	< 0.40
Volatile Hydrocarbons (VH)	VH	µg/L	15000	NS	NS	NT
VPH minus BTEX, Styrene	VPH	µg/L	1500	NS	NS	NT
Xylene, o	95-47-6	µg/L	NS	NS	NS	< 0.30
Xylenes, m & p	179601-23-1	µg/L	NS	NS	NS	< 0.40
Xylenes, Total	1330-20-7	µg/L	300	30	NS	< 0.50
PAHs						
1-Methylnaphthalene	90-12-0	µg/L	NS	NS	NS	2.91
2-Methylnaphthalene	91-57-6	µg/L	NS	NS	NS	2.70
Acenaphthene	83-32-9	µg/L	60	6	NS	34.9
Acenaphthylene	208-96-8	µg/L	NS	NS	NS	0.190
Acridine	260-94-6	µg/L	0.5	0.05	NS	2.56
Anthracene	120-12-7	µg/L	1	0.1	NS	2.47
Benzo(a)anthracene	56-55-3	µg/L	1	NS	NS	0.456
Benzo(a)pyrene	50-32-8	µg/L	0.1	0.01	NS	0.0552
Benzo(b&j)fluoranthene	CH2M-BZBJF	µg/L	NS	NS	NS	0.069
Benzo(b,j,k)fluoranthene	CH2M-BZBJKF	µg/L	NS	NS	NS	0.098
Benzo(g,h,i)perylene	191-24-2	µg/L	NS	NS	NS	0.011
Benzo(k)fluoranthene	207-08-9	µg/L	NS	NS	NS	0.029
Benzo[a]pyrene TPE	BaP TPE	µg/L	NS	NS	NS	NT
Chrysene	218-01-9	µg/L	1	NS	NS	< 0.290
Dibenz(a,h)anthracene	53-70-3	µg/L	NS	NS	NS	< 0.0057
Fluoranthene	206-44-0	µg/L	2	0.2	NS	6.84
Fluorene	86-73-7	µg/L	120	12	NS	14.5
High Molecular Weight PAHs	HMWPAH	µg/L	NS	NS	NS	NT
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	NS	NS	NS	0.015
Low Molecular Weight PAH	LMWPAH	µg/L	NS	NS	NS	NT
Methylnaphthalene	1321-94-4	µg/L	NS	NS	NS	NT
Naphthalene	91-20-3	µg/L	10	1	1	3.66
Phenanthrene	85-01-8	µg/L	3	0.3	NS	14.6
Pyrene	129-00-0	µg/L	0.2	0.02	NS	3.97
Quinoline	91-22-5	µg/L	34	3.4	NS	< 0.440
Total PAHs	TPAH	µg/L	NS	NS	NS	NT
VOCs						
1,1,1,2-tetrachloroethane	630-20-6	µg/L	NS	NS	NS	< 0.50
1,1,1-trichloroethane	71-55-6	µg/L	NS	NS	NS	< 0.50
1,1,2,2-tetrachloroethane	79-34-5	µg/L	NS	NS	NS	< 0.20
1,1,2-trichloroethane	79-00-5	µg/L	NS	NS	NS	< 0.50
1,1-dichloroethane	75-34-3	µg/L	NS	NS	NS	< 0.50
1,1-dichloroethene	75-35-4	µg/L	NS	NS	NS	< 0.50
1,2-dichlorobenzene	95-50-1	µg/L	7	0.7	NS	< 0.50
1,2-dichloroethane	107-06-2	µg/L	1000	100	NS	< 0.50
1,2-dichloropropane	78-87-5	µg/L	NS	NS	NS	< 0.50
1,3-dichlorobenzene	541-73-1	µg/L	1500	150	NS	< 0.50
1,3-Dichloropropene	542-75-6	µg/L	NS	NS	NS	< 0.75
1,4-dichlorobenzene	106-46-7	µg/L	260	26	NS	< 0.50
Bromodichloromethane	75-27-4	µg/L	NS	NS	NS	< 0.50
Bromoform	75-25-2	µg/L	NS	NS	NS	< 0.50

Table 1. Groundwater Analytical Results - Organic Parameters
Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

						Location ID
						Sample ID
						Sample Date
						Laboratory Certificate Sample #
						MW06-34-W-0621
						21-Jun-21
						VA21B2503-003
Chemical Name	CAS RN	Units	BC CSR AW Standards Freshwater	BC WQG Freshwater Aquatic Life ^a		
				Long-term Chronic WQG ^b (mean)	Short-term Acute WQG (max)	
Carbon tetrachloride	56-23-5	µg/L	130	NS	NS	< 0.50
Chlorobenzene	108-90-7	µg/L	13	NS	NS	< 0.50
Chlorodibromomethane	124-48-1	µg/L	NS	NS	NS	< 0.50
Chloroethane	75-00-3	µg/L	NS	NS	NS	< 0.50
Chloroform	67-66-3	µg/L	20	1.8	NS	< 0.50
Chloromethane	74-87-3	µg/L	NS	NS	NS	< 0.50
cis-1,2-dichloroethene	156-59-2	µg/L	NS	NS	NS	< 0.50
cis-1,3-dichloropropene	10061-01-5	µg/L	NS	NS	NS	< 0.50
Dichloromethane	75-09-2	µg/L	980	NS	NS	< 1.0
Methyl tert-butyl ether (MTBE)	1634-04-4	µg/L	34000	NS	3400	< 0.50
Styrene	100-42-5	µg/L	720	72	NS	< 0.50
Tetrachloroethene	127-18-4	µg/L	1100	110	NS	< 0.50
trans-1,2-dichloroethene	156-60-5	µg/L	NS	NS	NS	< 0.50
trans-1,3-dichloropropene	10061-02-6	µg/L	NS	NS	NS	< 0.50
Trichloroethene	79-01-6	µg/L	200	21	NS	< 0.50
Trichlorofluoromethane	75-69-4	µg/L	NS	NS	NS	< 0.50
Vinyl chloride	75-01-4	µg/L	NS	NS	NS	< 0.40

Table 1. Groundwater Analytical Results - Organic Parameters
 Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

				Location ID		MW19-01								
				Sample ID	MW19-01_031521	MW19-01_121620	QA1_121620		MW19-01-0621	MW19-01-0921	MW19-03_031521	MW19-03_121620		
				Sample Date	15-Mar-21	16-Dec-20	17-Dec-20		21-Jun-21	22-Sep-21	15-Mar-21	16-Dec-20		
				Laboratory Certificate Sample #	VA21A4849-002	VA20C3660-001	VA20C3660-006	RPD	VA21B2503-004	VA21C0813-005	VA21A4849-003	VA20C3660-002		
				BC WQG Freshwater Aquatic Life ^a										
				BC CSR AW Standards Freshwater	Long-term Chronic WQG ^b (mean)	Short-term Acute WQG (max)								
Chemical Name	CAS RN	Units												
BTEX/VPH														
Benzene	71-43-2	µg/L	400	40	NS	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	
Ethylbenzene	100-41-4	µg/L	2000	200	NS	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	
Toluene	108-88-3	µg/L	5	0.5	NS	< 0.40	< 0.40	< 0.40	NC	< 0.40	< 0.40	< 0.40	< 0.40	
Volatile Hydrocarbons (VH)	VH	µg/L	15000	NS	NS	NT	< 100	< 100	NC	NT	NT	NT	< 100	
VPH minus BTEX, Styrene	VPH	µg/L	1500	NS	NS	NT	< 100	< 100	NC	NT	NT	NT	< 100	
Xylene, o	95-47-6	µg/L	NS	NS	NS	< 0.30	< 0.50	< 0.50	NC	< 0.30	< 0.30	< 0.30	< 0.50	
Xylenes, m & p	179601-23-1	µg/L	NS	NS	NS	< 0.40	< 0.50	< 0.50	NC	< 0.40	< 0.40	< 0.40	< 0.50	
Xylenes, Total	1330-20-7	µg/L	300	30	NS	< 0.50	< 0.75	< 0.75	NC	< 0.50	< 0.50	< 0.50	< 0.75	
PAHs														
1-Methylnaphthalene	90-12-0	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	NC	< 0.010	< 0.010	< 0.010	< 0.010	
2-Methylnaphthalene	91-57-6	µg/L	NS	NS	NS	< 0.010	< 0.010	0.011	NC	< 0.010	< 0.010	< 0.010	< 0.010	
Acenaphthene	83-32-9	µg/L	60	6	NS	< 0.010	< 0.010	< 0.010	NC	0.012	< 0.010	< 0.010	0.010	
Acenaphthylene	208-96-8	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	NC	< 0.010	< 0.010	< 0.010	< 0.010	
Acridine	260-94-6	µg/L	0.5	0.05	NS	< 0.010	< 0.010	< 0.010	NC	< 0.015	< 0.010	< 0.010	< 0.010	
Anthracene	120-12-7	µg/L	1	0.1	NS	< 0.010	< 0.010	< 0.010	NC	< 0.010	< 0.010	< 0.010	< 0.010	
Benzo(a)anthracene	56-55-3	µg/L	1	NS	NS	< 0.010	< 0.010	< 0.010	NC	< 0.012	< 0.010	< 0.010	< 0.010	
Benzo(a)pyrene	50-32-8	µg/L	0.1	0.01	NS	< 0.0050	< 0.0050	< 0.0050	NC	< 0.0050	< 0.0050	< 0.0050	< 0.0050	
Benzo(b&j)fluoranthene	CH2M-BZBJF	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	NC	< 0.010	< 0.010	< 0.010	< 0.010	
Benzo(b,j,k)fluoranthene	CH2M-BZBJKF	µg/L	NS	NS	NS	< 0.015	< 0.015	< 0.015	NC	< 0.015	< 0.015	< 0.015	< 0.015	
Benzo(g,h,i)perylene	191-24-2	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	NC	< 0.010	< 0.010	< 0.010	< 0.010	
Benzo(k)fluoranthene	207-08-9	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	NC	< 0.010	< 0.010	< 0.010	< 0.010	
Benzo[a]pyrene TPE	BaP TPE	µg/L	NS	NS	NS	NT	NT	NT	NC	NT	< 0.010	NT	NT	
Chrysene	218-01-9	µg/L	1	NS	NS	< 0.010	< 0.010	< 0.010	NC	< 0.010	< 0.010	< 0.010	< 0.010	
Dibenz(a,h)anthracene	53-70-3	µg/L	NS	NS	NS	< 0.0050	< 0.0050	< 0.0050	NC	< 0.0050	< 0.0050	< 0.0050	< 0.0050	
Fluoranthene	206-44-0	µg/L	2	0.2	NS	< 0.010	< 0.010	< 0.010	NC	0.022	< 0.010	< 0.010	< 0.010	
Fluorene	86-73-7	µg/L	120	12	NS	< 0.010	< 0.010	< 0.010	NC	< 0.010	< 0.010	< 0.010	< 0.010	
High Molecular Weight PAHs	HMWPAH	µg/L	NS	NS	NS	NT	NT	NT	NC	NT	< 0.03	NT	NT	
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	NC	< 0.010	< 0.010	< 0.010	< 0.010	
Low Molecular Weight PAH	LMWPAH	µg/L	NS	NS	NS	NT	NT	NT	NC	NT	< 0.06	NT	NT	
Methylnaphthalene	1321-94-4	µg/L	NS	NS	NS	NT	NT	NT	NC	NT	< 0.015	NT	NT	
Naphthalene	91-20-3	µg/L	10	1	1	< 0.050	< 0.050	< 0.050	NC	< 0.050	< 0.050	< 0.050	< 0.050	
Phenanthrene	85-01-8	µg/L	3	0.3	NS	< 0.020	< 0.020	< 0.020	NC	< 0.020	< 0.020	< 0.020	< 0.020	
Pyrene	129-00-0	µg/L	0.2	0.02	NS	< 0.010	< 0.010	< 0.010	NC	0.020	< 0.010	< 0.010	< 0.010	
Quinoline	91-22-5	µg/L	34	3.4	NS	< 0.050	< 0.050	< 0.050	NC	< 0.050	< 0.050	< 0.050	< 0.050	
Total PAHs	TPAH	µg/L	NS	NS	NS	NT	NT	NT	NC	NT	< 0.065	NT	NT	
VOCs														
1,1,1,2-tetrachloroethane	630-20-6	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	
1,1,1-trichloroethane	71-55-6	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	
1,1,2,2-tetrachloroethane	79-34-5	µg/L	NS	NS	NS	< 0.20	< 0.20	< 0.20	NC	< 0.20	< 0.20	< 0.20	< 0.20	
1,1,2-trichloroethane	79-00-5	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	
1,1-dichloroethane	75-34-3	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	
1,1-dichloroethene	75-35-4	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	
1,2-dichlorobenzene	95-50-1	µg/L	7	0.7	NS	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	
1,2-dichloroethane	107-06-2	µg/L	1000	100	NS	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	
1,2-dichloropropane	78-87-5	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	
1,3-dichlorobenzene	541-73-1	µg/L	1500	150	NS	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	
1,3-Dichloropropene	542-75-6	µg/L	NS	NS	NS	< 0.75	< 0.75	< 0.75	NC	< 0.75	< 0.75	< 0.75	< 0.75	
1,4-dichlorobenzene	106-46-7	µg/L	260	26	NS	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	
Bromodichloromethane	75-27-4	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	
Bromoform	75-25-2	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50	

Table 1. Groundwater Analytical Results - Organic Parameters
Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

			Location ID		MW19-01								
			Sample ID	MW19-01_031521	MW19-01_121620	QA1_121620		MW19-01-0621	MW19-01-0921	MW19-03_031521	MW19-03_121620		
			Sample Date	15-Mar-21	16-Dec-20	17-Dec-20		21-Jun-21	22-Sep-21	15-Mar-21	16-Dec-20		
			Laboratory Certificate Sample #	VA21A4849-002	VA20C3660-001	VA20C3660-006	RPD	VA21B2503-004	VA21C0813-005	VA21A4849-003	VA20C3660-002		
			BC CSR AW Standards Freshwater	BC WQG Freshwater Aquatic Life ^a									
Chemical Name	CAS RN	Units		Long-term Chronic WQG ^b (mean)	Short-term Acute WQG (max)								
Carbon tetrachloride	56-23-5	µg/L	130	NS	NS	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50
Chlorobenzene	108-90-7	µg/L	13	NS	NS	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50
Chlorodibromomethane	124-48-1	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50
Chloroethane	75-00-3	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50
Chloroform	67-66-3	µg/L	20	1.8	NS	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50
Chloromethane	74-87-3	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50
cis-1,2-dichloroethene	156-59-2	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50
cis-1,3-dichloropropene	10061-01-5	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50
Dichloromethane	75-09-2	µg/L	980	NS	NS	< 1.0	< 0.50	< 0.50	NC	< 1.0	< 1.0	< 1.0	< 0.50
Methyl tert-butyl ether (MTBE)	1634-04-4	µg/L	34000	NS	3400	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50
Styrene	100-42-5	µg/L	720	72	NS	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50
Tetrachloroethene	127-18-4	µg/L	1100	110	NS	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50
trans-1,2-dichloroethene	156-60-5	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50
trans-1,3-dichloropropene	10061-02-6	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50
Trichloroethene	79-01-6	µg/L	200	21	NS	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50
Trichlorofluoromethane	75-69-4	µg/L	NS	NS	NS	< 0.50	< 0.50	< 0.50	NC	< 0.50	< 0.50	< 0.50	< 0.50
Vinyl chloride	75-01-4	µg/L	NS	NS	NS	< 0.40	< 0.40	< 0.40	NC	< 0.40	< 0.40	< 0.40	< 0.40

Table 1. Groundwater Analytical Results - Organic Parameters
 Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

				Location ID		MW19-03			
				Sample ID		MW19-03-0921	MW19-03-1_01042021	MW19-03-2_01042021	MW19-03-W-0621
				Sample Date		22-Sep-21	01-Apr-21	01-Apr-21	21-Jun-21
				Laboratory Certificate Sample #		VA21C0813-001	VA21A6200-003	VA21A6200-004	VA21B2503-005
				BC WQG Freshwater Aquatic Life*					
				BC CSR AW Standards Freshwater	Long-term Chronic WQG ^b (mean)		Short-term Acute WQG (max)		
Chemical Name	CAS RN	Units							
BTEX/VPH									
Benzene	71-43-2	µg/L	400	40	NS	< 0.50	NT	NT	< 0.50
Ethylbenzene	100-41-4	µg/L	2000	200	NS	< 0.50	NT	NT	< 0.50
Toluene	108-88-3	µg/L	5	0.5	NS	< 0.40	NT	NT	< 0.40
Volatile Hydrocarbons (VH)	VH	µg/L	15000	NS	NS	NT	NT	NT	NT
VPH minus BTEX, Styrene	VPH	µg/L	1500	NS	NS	NT	NT	NT	NT
Xylene, o	95-47-6	µg/L	NS	NS	NS	< 0.30	NT	NT	< 0.30
Xylenes, m & p	179601-23-1	µg/L	NS	NS	NS	< 0.40	NT	NT	< 0.40
Xylenes, Total	1330-20-7	µg/L	300	30	NS	< 0.50	NT	NT	< 0.50
PAHs									
1-Methylnaphthalene	90-12-0	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	0.021
2-Methylnaphthalene	91-57-6	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	0.024
Acenaphthene	83-32-9	µg/L	60	6	NS	< 0.010	< 0.010	< 0.010	0.208
Acenaphthylene	208-96-8	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010
Acridine	260-94-6	µg/L	0.5	0.05	NS	< 0.010	< 0.010	< 0.010	< 0.010
Anthracene	120-12-7	µg/L	1	0.1	NS	< 0.010	< 0.010	< 0.010	< 0.020
Benzo(a)anthracene	56-55-3	µg/L	1	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010
Benzo(a)pyrene	50-32-8	µg/L	0.1	0.01	NS	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Benzo(b&j)fluoranthene	CH2M-BZBJF	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010
Benzo(b,j,k)fluoranthene	CH2M-BZBJKF	µg/L	NS	NS	NS	< 0.015	< 0.015	< 0.015	< 0.015
Benzo(g,h,i)perylene	191-24-2	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010
Benzo(k)fluoranthene	207-08-9	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010
Benzo[a]pyrene TPE	BaP TPE	µg/L	NS	NS	NS	< 0.010	NT	NT	NT
Chrysene	218-01-9	µg/L	1	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010
Dibenz(a,h)anthracene	53-70-3	µg/L	NS	NS	NS	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Fluoranthene	206-44-0	µg/L	2	0.2	NS	< 0.010	< 0.010	< 0.010	0.047
Fluorene	86-73-7	µg/L	120	12	NS	< 0.010	< 0.010	< 0.010	0.108
High Molecular Weight PAHs	HMWPAH	µg/L	NS	NS	NS	< 0.03	NT	NT	NT
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	NS	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010
Low Molecular Weight PAH	LMWPAH	µg/L	NS	NS	NS	< 0.06	NT	NT	NT
Methylnaphthalene	1321-94-4	µg/L	NS	NS	NS	< 0.015	NT	NT	NT
Naphthalene	91-20-3	µg/L	10	1	1	< 0.050	< 0.050	< 0.050	< 0.050
Phenanthrene	85-01-8	µg/L	3	0.3	NS	< 0.020	< 0.020	< 0.020	0.112
Pyrene	129-00-0	µg/L	0.2	0.02	NS	< 0.010	< 0.010	< 0.010	0.024
Quinoline	91-22-5	µg/L	34	3.4	NS	< 0.050	< 0.050	< 0.050	< 0.050
Total PAHs	TPAH	µg/L	NS	NS	NS	< 0.065	NT	NT	NT
VOCs									
1,1,1,2-tetrachloroethane	630-20-6	µg/L	NS	NS	NS	< 0.50	NT	NT	< 0.50
1,1,1-trichloroethane	71-55-6	µg/L	NS	NS	NS	< 0.50	NT	NT	< 0.50
1,1,2,2-tetrachloroethane	79-34-5	µg/L	NS	NS	NS	< 0.20	NT	NT	< 0.20
1,1,2-trichloroethane	79-00-5	µg/L	NS	NS	NS	< 0.50	NT	NT	< 0.50
1,1-dichloroethane	75-34-3	µg/L	NS	NS	NS	< 0.50	NT	NT	< 0.50
1,1-dichloroethene	75-35-4	µg/L	NS	NS	NS	< 0.50	NT	NT	< 0.50
1,2-dichlorobenzene	95-50-1	µg/L	7	0.7	NS	< 0.50	NT	NT	< 0.50
1,2-dichloroethane	107-06-2	µg/L	1000	100	NS	< 0.50	NT	NT	< 0.50
1,2-dichloropropane	78-87-5	µg/L	NS	NS	NS	< 0.50	NT	NT	< 0.50
1,3-dichlorobenzene	541-73-1	µg/L	1500	150	NS	< 0.50	NT	NT	< 0.50
1,3-Dichloropropene	542-75-6	µg/L	NS	NS	NS	< 0.75	NT	NT	< 0.75
1,4-dichlorobenzene	106-46-7	µg/L	260	26	NS	< 0.50	NT	NT	< 0.50
Bromodichloromethane	75-27-4	µg/L	NS	NS	NS	< 0.50	NT	NT	< 0.50
Bromoform	75-25-2	µg/L	NS	NS	NS	< 0.50	NT	NT	< 0.50

Table 1. Groundwater Analytical Results - Organic Parameters
Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

						Location ID				
						MW19-03				
						Sample ID	MW19-03-1_01042021	MW19-03-2_01042021	MW19-03-W-0621	
						Sample Date	01-Apr-21	01-Apr-21	21-Jun-21	
						Laboratory Certificate Sample #	VA21C0813-001	VA21A6200-003	VA21A6200-004	VA21B2503-005
Chemical Name	CAS RN	Units	BC CSR AW Standards Freshwater	BC WQG Freshwater Aquatic Life ^a						
				Long-term Chronic WQG ^b (mean)	Short-term Acute WQG (max)					
Carbon tetrachloride	56-23-5	µg/L	130	NS	NS	< 0.50	NT	NT	< 0.50	
Chlorobenzene	108-90-7	µg/L	13	NS	NS	< 0.50	NT	NT	< 0.50	
Chlorodibromomethane	124-48-1	µg/L	NS	NS	NS	< 0.50	NT	NT	< 0.50	
Chloroethane	75-00-3	µg/L	NS	NS	NS	< 0.50	NT	NT	< 0.50	
Chloroform	67-66-3	µg/L	20	1.8	NS	< 0.50	NT	NT	< 0.50	
Chloromethane	74-87-3	µg/L	NS	NS	NS	< 5.0	NT	NT	< 0.50	
cis-1,2-dichloroethene	156-59-2	µg/L	NS	NS	NS	< 0.50	NT	NT	< 0.50	
cis-1,3-dichloropropene	10061-01-5	µg/L	NS	NS	NS	< 0.50	NT	NT	< 0.50	
Dichloromethane	75-09-2	µg/L	980	NS	NS	< 1.0	NT	NT	< 1.0	
Methyl tert-butyl ether (MTBE)	1634-04-4	µg/L	34000	NS	3400	< 0.50	NT	NT	< 0.50	
Styrene	100-42-5	µg/L	720	72	NS	< 0.50	NT	NT	< 0.50	
Tetrachloroethene	127-18-4	µg/L	1100	110	NS	< 0.50	NT	NT	< 0.50	
trans-1,2-dichloroethene	156-60-5	µg/L	NS	NS	NS	< 0.50	NT	NT	< 0.50	
trans-1,3-dichloropropene	10061-02-6	µg/L	NS	NS	NS	< 0.50	NT	NT	< 0.50	
Trichloroethene	79-01-6	µg/L	200	21	NS	< 0.50	NT	NT	< 0.50	
Trichlorofluoromethane	75-69-4	µg/L	NS	NS	NS	< 0.50	NT	NT	< 0.50	
Vinyl chloride	75-01-4	µg/L	NS	NS	NS	< 0.40	NT	NT	< 0.40	

Table 1. Groundwater Analytical Results - Organic Parameters
 Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

Laboratory Certificate Sample #						Field QC			
						Location ID Sample ID	TB-0921 22-Sep-21	TRIP BLANK_01042021 01-Apr-21	TRIP BLANK-0621 21-Jun-21
						Sample Date	VA21C0813-008	VA21A6200-005	VA21B2503-012
Chemical Name	CAS RN	Units	BC CSR AW Standards Freshwater	BC WQG Freshwater Aquatic Life*					
				Long-term Chronic WQG ^b (mean)	Short-term Acute WQG (max)				
BTEX/VPH									
Benzene	71-43-2	µg/L	400	40	NS	< 0.50	NT	< 0.50	
Ethylbenzene	100-41-4	µg/L	2000	200	NS	< 0.50	NT	< 0.50	
Toluene	108-88-3	µg/L	5	0.5	NS	< 0.40	NT	< 0.40	
Volatile Hydrocarbons (VH)	VH	µg/L	15000	NS	NS	NT	NT	NT	
VPH minus BTEX, Styrene	VPH	µg/L	1500	NS	NS	NT	NT	NT	
Xylene, o	95-47-6	µg/L	NS	NS	NS	< 0.30	NT	< 0.30	
Xylenes, m & p	179601-23-1	µg/L	NS	NS	NS	< 0.40	NT	< 0.40	
Xylenes, Total	1330-20-7	µg/L	300	30	NS	< 0.50	NT	< 0.50	
PAHs									
1-Methylnaphthalene	90-12-0	µg/L	NS	NS	NS	< 0.010	< 0.010	NT	
2-Methylnaphthalene	91-57-6	µg/L	NS	NS	NS	< 0.010	< 0.010	NT	
Acenaphthene	83-32-9	µg/L	60	6	NS	< 0.010	< 0.010	NT	
Acenaphthylene	208-96-8	µg/L	NS	NS	NS	< 0.010	< 0.010	NT	
Acridine	260-94-6	µg/L	0.5	0.05	NS	< 0.010	< 0.010	NT	
Anthracene	120-12-7	µg/L	1	0.1	NS	< 0.010	< 0.010	NT	
Benzo(a)anthracene	56-55-3	µg/L	1	NS	NS	< 0.010	< 0.010	NT	
Benzo(a)pyrene	50-32-8	µg/L	0.1	0.01	NS	< 0.0050	< 0.0050	NT	
Benzo(b&j)fluoranthene	CH2M-BZBJF	µg/L	NS	NS	NS	< 0.010	< 0.010	NT	
Benzo(b,j,k)fluoranthene	CH2M-BZBJKF	µg/L	NS	NS	NS	< 0.015	< 0.015	NT	
Benzo(g,h,i)perylene	191-24-2	µg/L	NS	NS	NS	< 0.010	< 0.010	NT	
Benzo(k)fluoranthene	207-08-9	µg/L	NS	NS	NS	< 0.010	< 0.010	NT	
Benzo[a]pyrene TPE	BaP TPE	µg/L	NS	NS	NS	< 0.010	NT	NT	
Chrysene	218-01-9	µg/L	1	NS	NS	< 0.010	< 0.010	NT	
Dibenz(a,h)anthracene	53-70-3	µg/L	NS	NS	NS	< 0.0050	< 0.0050	NT	
Fluoranthene	206-44-0	µg/L	2	0.2	NS	< 0.010	< 0.010	NT	
Fluorene	86-73-7	µg/L	120	12	NS	< 0.010	< 0.010	NT	
High Molecular Weight PAHs	HMWPAH	µg/L	NS	NS	NS	< 0.03	NT	NT	
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	NS	NS	NS	< 0.010	< 0.010	NT	
Low Molecular Weight PAH	LMWPAH	µg/L	NS	NS	NS	< 0.06	NT	NT	
Methylnaphthalene	1321-94-4	µg/L	NS	NS	NS	< 0.015	NT	NT	
Naphthalene	91-20-3	µg/L	10	1	1	< 0.050	< 0.050	NT	
Phenanthrene	85-01-8	µg/L	3	0.3	NS	< 0.020	< 0.020	NT	
Pyrene	129-00-0	µg/L	0.2	0.02	NS	< 0.010	< 0.010	NT	
Quinoline	91-22-5	µg/L	34	3.4	NS	< 0.050	< 0.050	NT	
Total PAHs	TPAH	µg/L	NS	NS	NS	< 0.065	NT	NT	
VOCs									
1,1,1,2-tetrachloroethane	630-20-6	µg/L	NS	NS	NS	< 0.50	NT	< 0.50	
1,1,1-trichloroethane	71-55-6	µg/L	NS	NS	NS	< 0.50	NT	< 0.50	
1,1,2,2-tetrachloroethane	79-34-5	µg/L	NS	NS	NS	< 0.20	NT	< 0.20	
1,1,2-trichloroethane	79-00-5	µg/L	NS	NS	NS	< 0.50	NT	< 0.50	
1,1-dichloroethane	75-34-3	µg/L	NS	NS	NS	< 0.50	NT	< 0.50	
1,1-dichloroethene	75-35-4	µg/L	NS	NS	NS	< 0.50	NT	< 0.50	
1,2-dichlorobenzene	95-50-1	µg/L	7	0.7	NS	< 0.50	NT	< 0.50	
1,2-dichloroethane	107-06-2	µg/L	1000	100	NS	< 0.50	NT	< 0.50	
1,2-dichloropropane	78-87-5	µg/L	NS	NS	NS	< 0.50	NT	< 0.50	
1,3-dichlorobenzene	541-73-1	µg/L	1500	150	NS	< 0.50	NT	< 0.50	
1,3-Dichloropropene	542-75-6	µg/L	NS	NS	NS	< 0.75	NT	< 0.75	
1,4-dichlorobenzene	106-46-7	µg/L	260	26	NS	< 0.50	NT	< 0.50	
Bromodichloromethane	75-27-4	µg/L	NS	NS	NS	< 0.50	NT	< 0.50	
Bromoform	75-25-2	µg/L	NS	NS	NS	< 0.50	NT	< 0.50	

Table 1. Groundwater Analytical Results - Organic Parameters
Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

						Location ID	Field QC		
						Sample ID	TB-0921	TRIP BLANK_01042021	TRIP BLANK-0621
						Sample Date	22-Sep-21	01-Apr-21	21-Jun-21
						Laboratory Certificate Sample #	VA21C0813-008	VA21A6200-005	VA21B2503-012
			BC CSR AW Standards Freshwater	BC WQG Freshwater Aquatic Life ^a					
				Long-term Chronic WQG ^b (mean)	Short-term Acute WQG (max)				
Chemical Name	CAS RN	Units							
Carbon tetrachloride	56-23-5	µg/L	130	NS	NS	< 0.50	NT	< 0.50	
Chlorobenzene	108-90-7	µg/L	13	NS	NS	< 0.50	NT	< 0.50	
Chlorodibromomethane	124-48-1	µg/L	NS	NS	NS	< 0.50	NT	< 0.50	
Chloroethane	75-00-3	µg/L	NS	NS	NS	< 0.50	NT	< 0.50	
Chloroform	67-66-3	µg/L	20	1.8	NS	3.32	NT	< 0.50	
Chloromethane	74-87-3	µg/L	NS	NS	NS	< 5.0	NT	< 0.50	
cis-1,2-dichloroethene	156-59-2	µg/L	NS	NS	NS	< 0.50	NT	< 0.50	
cis-1,3-dichloropropene	10061-01-5	µg/L	NS	NS	NS	< 0.50	NT	< 0.50	
Dichloromethane	75-09-2	µg/L	980	NS	NS	< 1.0	NT	< 1.0	
Methyl tert-butyl ether (MTBE)	1634-04-4	µg/L	34000	NS	3400	< 0.50	NT	< 0.50	
Styrene	100-42-5	µg/L	720	72	NS	< 0.50	NT	< 0.50	
Tetrachloroethene	127-18-4	µg/L	1100	110	NS	< 0.50	NT	< 0.50	
trans-1,2-dichloroethene	156-60-5	µg/L	NS	NS	NS	< 0.50	NT	< 0.50	
trans-1,3-dichloropropene	10061-02-6	µg/L	NS	NS	NS	< 0.50	NT	< 0.50	
Trichloroethene	79-01-6	µg/L	200	21	NS	< 0.50	NT	< 0.50	
Trichlorofluoromethane	75-69-4	µg/L	NS	NS	NS	< 0.50	NT	< 0.50	
Vinyl chloride	75-01-4	µg/L	NS	NS	NS	< 0.40	NT	< 0.40	

Table 2. Groundwater Analytical Results - Total Metals
Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

Chemical Name	CAS RN	Units	Long-term Chronic WQG ^b (mean)	Short-term Acute WQG ^c (max)	20MW-04D				20MW-04S			
					Location ID	Sample ID	Sample Date	Laboratory Certificate Sample #	Location ID	Sample ID	Sample Date	Laboratory Certificate Sample #
					20MW-04D_121620	20MW-04D_031521	20MW-04D-0621	20MW-04D-0921	20MW-04S_121620	20MW-04S_031521	20MW-04S-0621	20MW-04S-0921
					16-Dec-20	15-Mar-21	21-Jun-21	21 Sep 2021	16-Dec-20	15-Mar-21	21-Jun-21	22 Sep 2021
					VA20C3660-004	VA21A4849-004	VA21B2503-002	VA21C0813-014	VA20C3660-005	VA21A4849-005	VA21B2503-001	VA21C0813-003
Total Metals												
Aluminum (Al)	7429-90-5	µg/L	NS	NS	2740	378	162	11.0	2280	174	35.0	31.3
Antimony (Sb)	7440-36-0	µg/L	9 ^d	NS	0.28	< 0.10	< 0.10	< 0.10	0.65	0.37	0.45	0.42
Arsenic (As)	7440-38-2	µg/L	NS	5	2.73	2.01	3.11	1.13	0.75	0.5	0.30	0.36
Barium (Ba)	7440-39-3	µg/L	1000	NS	36.8	40.1	51.0	34.7	35.7	17.8	52.0	52.2
Beryllium (Be)	7440-41-7	µg/L	0.13	NS	0.195	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100
Bismuth	7440-69-9	µg/L	NS	NS	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Boron (Bo)	7440-42-8	µg/L	1200	NS	14	13	14	12	< 10	< 10	< 10	< 10
Cadmium (Cd)	7440-43-9	µg/L	NS	NS	0.0780	0.0159	0.0065	< 0.0050	0.0688	< 0.0050	0.0218	0.0284
Calcium (Ca)	7440-70-2	µg/L	NS	NS	24100	25900	29300	29000	13600	19800	35300	35600
Cesium (Cs)	7440-46-2	µg/L	NS	NS	0.083	0.02	0.011	< 0.010	0.077	< 0.010	< 0.010	< 0.010
Chromium	7440-47-3	µg/L	8.9 ^e	NS	10.2	1.56	1.11	< 0.50	4.04	1.06	< 0.50	< 0.50
Chromium, Hexavalent (Cr6+)	18540-29-9	µg/L	1 ^f	NS	NT	NT	NT	< 0.50	NT	NT	NT	< 0.50
Cobalt (Co)	7440-48-4	µg/L	4	110	1.22	0.66	0.64	0.30	1.63	0.3	0.19	0.46
Copper (Cu)	7440-50-8	µg/L	NS	NS	18.1	2.51	2.48	< 0.50	16.4	16.5	2.91	3.16
Iron (Fe)	7439-89-6	µg/L	NS	1000	8550	31100	27800	26400	2000	73	34	46
Lead (Pb)	7439-92-1	µg/L	4.2-16.2 ^h	25-347 ⁱ	3.57	0.564	0.228	< 0.050	4.28	< 0.050	< 0.050	< 0.050
Lithium (Li)	7439-93-2	µg/L	NS	NS	5.3	5.2	7.1	5.3	1.0	< 1.0	< 1.0	< 1.0
Magnesium (Mg)	7439-95-4	µg/L	NS	NS	4150	4290	4240	4290	1210	424	1590	2230
Manganese (Mn)	7439-96-5	µg/L	768-192 ^j	948-3400 ^k	454	873	937	814	120	3.77	42.6	86.8
Mercury (Hg)	7439-97-6	µg/L	Calculated ^l	NS	0.0140	< 0.0050	< 0.0050	< 0.0050	< 0.0250	< 0.0050	< 0.0050	< 0.0050
Molybdenum (Mo)	7439-98-7	µg/L	1000	2000	5.46	0.922	0.554	0.220	1.60	1.6	0.358	0.441
Nickel (Ni)	7440-02-0	µg/L	25 - 150 ^m	NS	3.25	0.85	1.15	0.53	2.24	0.95	< 0.50	0.61
Phosphorus	7723-14-0	µg/L	NS	NS	130	120	120	116	133	55	< 50	< 50
Potassium (K)	7440-09-7	µg/L	NS	NS	3990	3800	3970	3640	1560	1440	2200	3120
Rubidium (Rb)	7440-17-7	µg/L	NS	NS	4.35	3.68	3.29	3.38	2.23	1.6	2.44	2.75
Selenium (Se)	7782-49-2	µg/L	2	NS	0.983	0.052	< 0.050	< 0.050	0.128	0.121	< 0.050	0.061
Silicon	7440-21-3	µg/L	NS	NS	14100	18800	18400	17800	5570	2640	4650	5080
Silver (Ag)	7440-22-4	µg/L	0.05	0.1	0.025	< 0.010	< 0.010	< 0.010	0.026	< 0.010	< 0.010	< 0.010
Sodium (Na)	7440-23-5	µg/L	NS	NS	33600	7300	11500	7780	3600	4020	2620	2660
Strontium	7440-24-6	µg/L	NS	NS	122	141	133	141	52.1	95.9	86.9	110
Sulfur	7704-34-9	µg/L	NS	NS	8660	< 500	1260	< 500	1600	690	1300	2070
Tellurium	13494-80-9	µg/L	NS	NS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Thallium (Tl)	7440-28-0	µg/L	NS	NS	0.014	< 0.010	< 0.010	< 0.010	0.016	< 0.010	0.012	0.016
Tin	7440-31-5	µg/L	NS	NS	0.68	0.71	0.17	< 0.10	0.54	< 0.10	< 0.10	< 0.10
Titanium (Ti)	7440-32-6	µg/L	NS	NS	60.4	8.27	6.40	0.51	78.8	1.69	0.95	1.05
Uranium (U)	7440-61-1	µg/L	8.5	NS	1.26	0.215	0.104	0.042	0.218	0.077	0.170	0.136
Vanadium (V)	7440-62-2	µg/L	NS	NS	8.99	2.45	1.65	1.37	5.80	1.32	0.85	0.90
Zinc (Zn)	7440-66-6	µg/L	7.5 - 164 ⁿ	33-190 ^o	13.3	3.6	273	49.2	15.2	< 3.0	9.5	6.1
Zirconium	7440-67-7	µg/L	NS	NS	1.79	0.26	0.21	< 0.20	0.84	< 0.20	< 0.20	< 0.20
Total Hardness (as CaCO3)	HARD	mg/L	NS	NS	77.3	82.3	90.6	90.1	39	51.2	94.7	98.1

Table 2. Groundwater Analytical Results - Total Metals
Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

Chemical Name	CAS RN	Units	Long-term Chronic WQG ^b (mean)	Short-term Acute WQG ^c (max)	20MW-05			20MW-06			
					Sample ID	Sample ID	Sample ID	Sample ID	Sample ID	Sample ID	Sample ID
					Sample Date	Sample Date	Sample Date	Sample Date	Sample Date	Sample Date	Sample Date
					20MW-05_121220	20MW-05_031521	20MW-05-0921	20MW-06_121220	20MW-06_031521	20MW-06-0621	20MW-06-0921
					12-Dec-20	15-Mar-21	22 Sep 2021	12-Dec-20	15-Mar-21	21-Jun-21	21 Sep 2021
					VA20C3657-001	VA21A4849-006	VA21C0813-009	VA20C3657-002	VA21A4849-007	VA21B2503-013	VA21C0813-013
					Laboratory Certificate Sample #						
					BC WQG Freshwater Aquatic Life ^a						
Total Metals											
Aluminum (Al)	7429-90-5	µg/L	NS	NS	478	555	13.6	173	31.4	162	103
Antimony (Sb)	7440-36-0	µg/L	9 ^d	NS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Arsenic (As)	7440-38-2	µg/L	NS	5	0.55	1.18	0.61	0.67	0.65	0.57	0.47
Barium (Ba)	7440-39-3	µg/L	1000	NS	63.0	49.1	41.4	71.0	53.2	51.6	46.8
Beryllium (Be)	7440-41-7	µg/L	0.13	NS	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100
Bismuth	7440-69-9	µg/L	NS	NS	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Boron (Bo)	7440-42-8	µg/L	1200	NS	14	13	13	28	27	28	22
Cadmium (Cd)	7440-43-9	µg/L	NS	NS	0.0216	0.0178	< 0.0050	0.0299	< 0.0050	0.0138	0.0102
Calcium (Ca)	7440-70-2	µg/L	NS	NS	27300	25700	22700	34900	25500	25500	21000
Cesium (Cs)	7440-46-2	µg/L	NS	NS	0.025	0.033	0.019	0.014	0.027	0.036	0.036
Chromium	7440-47-3	µg/L	8.9 ^e	NS	1.11	1.13	0.58	0.95	0.96	1.16	0.97
Chromium, Hexavalent (Cr6+)	18540-29-9	µg/L	1 ^f	NS	NT	NT	< 0.50	NT	NT	NT	< 0.50
Cobalt (Co)	7440-48-4	µg/L	4	110	2.79	0.43	0.20	3.19	0.26	0.24	0.19
Copper (Cu)	7440-50-8	µg/L	NS	NS	1.46	3.79	< 0.50	0.6	< 0.50	0.84	0.52
Iron (Fe)	7439-89-6	µg/L	NS	1000	13200	22100	20300	6440	18500	19400	18100
Lead (Pb)	7439-92-1	µg/L	4.2-16.2 ^h	25-347 ⁱ	0.256	8.51	0.404	0.078	< 0.050	0.193	0.126
Lithium (Li)	7439-93-2	µg/L	NS	NS	4.0	3	2.3	2.6	1.2	1.1	1.0
Magnesium (Mg)	7439-95-4	µg/L	NS	NS	4930	3570	3660	6200	5770	5730	5450
Manganese (Mn)	7439-96-5	µg/L	768-1921 ^j	948-3400 ^k	965	576	512	984	576	542	514
Mercury (Hg)	7439-97-6	µg/L	Calculated ^l	NS	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Molybdenum (Mo)	7439-98-7	µg/L	1000	2000	1.09	0.265	0.143	1.17	0.128	0.103	0.064
Nickel (Ni)	7440-02-0	µg/L	25 - 150 ^m	NS	2.39	0.81	< 0.50	2.80	< 0.50	0.98	< 0.50
Phosphorus	7723-14-0	µg/L	NS	NS	< 50	150	145	< 50	77	83	87
Potassium (K)	7440-09-7	µg/L	NS	NS	3830	3420	3150	3520	3190	3200	3130
Rubidium (Rb)	7440-17-7	µg/L	NS	NS	3.57	3.86	3.56	3.53	5.32	5.22	5.22
Selenium (Se)	7782-49-2	µg/L	2	NS	0.066	< 0.050	< 0.050	0.085	< 0.050	0.055	< 0.050
Silicon	7440-21-3	µg/L	NS	NS	17800	17500	15500	13800	14500	13900	14000
Silver (Ag)	7440-22-4	µg/L	0.05	0.1	< 0.010	0.018	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Sodium (Na)	7440-23-5	µg/L	NS	NS	9600	9340	8090	7100	7040	6600	6920
Strontium	7440-24-6	µg/L	NS	NS	146	133	136	141	133	135	135
Sulfur	7704-34-9	µg/L	NS	NS	< 500	< 500	< 500	< 500	< 500	< 500	< 500
Tellurium	13494-80-9	µg/L	NS	NS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Thallium (Tl)	7440-28-0	µg/L	NS	NS	0.010	< 0.010	< 0.010	0.019	< 0.010	< 0.010	< 0.010
Tin	7440-31-5	µg/L	NS	NS	0.10	0.26	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Titanium (Ti)	7440-32-6	µg/L	NS	NS	21.6	17.5	< 0.60	7.39	1.14	6.61	4.60
Uranium (U)	7440-61-1	µg/L	8.5	NS	0.116	0.196	0.020	0.224	0.069	0.062	0.043
Vanadium (V)	7440-62-2	µg/L	NS	NS	2.97	4.1	3.15	4.00	5.89	6.37	6.33
Zinc (Zn)	7440-66-6	µg/L	7.5 - 164 ⁿ	33-190 ^o	4.4	4.6	22.3	< 3.0	3.1	27	6.5
Zirconium	7440-67-7	µg/L	NS	NS	0.35	0.37	0.28	0.37	0.42	0.45	0.39
Total Hardness (as CaCO3)	HARD	mg/l	NS	NS	88.4	78.9	71.8	113	87.4	87.3	74.9

Table 2. Groundwater Analytical Results - Total Metals
Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

Chemical Name	CAS RN	Units	Long-term Chronic WQG ^b (mean)	Short-term Acute WQG ^c (max)	20MW-07		20MW-08				RPD
					Location ID	Sample ID	20MW-08_121720	20MW-08_031521	20MW-08-0921	DUP-2-0921	
					Sample Date	Laboratory Certificate Sample #	16-Dec-20	15-Mar-21	17-Dec-20	15-Mar-21	
					VA20C3659-001	VA21A4849-008	VA20C3659-002	VA21A4849-009	VA21C0813-007	VA21C0813-006	
					BC WQG Freshwater Aquatic Life ^a						
Total Metals											
Aluminum (Al)	7429-90-5	µg/L	NS	NS	1060	267	275	185	29.5	30.9	5%
Antimony (Sb)	7440-36-0	µg/L	9 ^d	NS	0.33	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	NC
Arsenic (As)	7440-38-2	µg/L	NS	5	1.57	1.13	1.35	1.26	1.15	1.13	2%
Barium (Ba)	7440-39-3	µg/L	1000	NS	45.0	66.7	65.6	55.5	50.6	50.6	0%
Beryllium (Be)	7440-41-7	µg/L	0.13	NS	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	NC
Bismuth	7440-69-9	µg/L	NS	NS	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	NC
Boron (Bo)	7440-42-8	µg/L	1200	NS	17	27	39	46	31	32	3%
Cadmium (Cd)	7440-43-9	µg/L	NS	NS	0.0433	0.0195	0.0067	0.0071	< 0.0050	< 0.0050	NC
Calcium (Ca)	7440-70-2	µg/L	NS	NS	28800	29600	16300	18900	16000	15800	1%
Cesium (Cs)	7440-46-2	µg/L	NS	NS	0.038	0.03	0.072	0.088	0.083	0.079	5%
Chromium	7440-47-3	µg/L	8.9 ^e	NS	2.23	1.32	1.83	1.47	1.42	1.38	3%
Chromium, Hexavalent (Cr6+)	18540-29-9	µg/L	1 ^f	NS	NT	NT	NT	NT	< 0.50	< 0.50	NC
Cobalt (Co)	7440-48-4	µg/L	4	110	0.97	0.48	1.13	0.4	0.27	0.26	4%
Copper (Cu)	7440-50-8	µg/L	NS	NS	5.38	0.99	0.78	0.91	< 0.50	< 0.50	NC
Iron (Fe)	7439-89-6	µg/L	NS	1000	2480	21800	42000	36700	32000	31900	0%
Lead (Pb)	7439-92-1	µg/L	4.2-16.2 ^h	25-347 ⁱ	4.88	0.531	0.08	0.908	0.11	0.108	2%
Lithium (Li)	7439-93-2	µg/L	NS	NS	1.0	1.1	< 1.0	< 1.0	< 1.0	< 1.0	NC
Magnesium (Mg)	7439-95-4	µg/L	NS	NS	2220	4300	5360	6110	5770	5590	3%
Manganese (Mn)	7439-96-5	µg/L	768-1921 ^j	948-3400 ^k	264	761	1010	919	764	739	3%
Mercury (Hg)	7439-97-6	µg/L	Calculated ^l	NS	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	NC
Molybdenum (Mo)	7439-98-7	µg/L	1000	2000	2.73	0.281	1.08	0.786	1	1.01	1%
Nickel (Ni)	7440-02-0	µg/L	25 - 150 ^m	NS	1.84	0.76	1.21	< 0.50	< 0.50	< 0.50	NC
Phosphorus	7723-14-0	µg/L	NS	NS	77	94	< 50	< 50	59	59	0%
Potassium (K)	7440-09-7	µg/L	NS	NS	2030	3150	3100	2970	2900	2870	1%
Rubidium (Rb)	7440-17-7	µg/L	NS	NS	2.96	6.36	9.70	9.44	8.81	8.67	2%
Selenium (Se)	7782-49-2	µg/L	2	NS	0.213	0.069	0.076	0.097	0.067	0.07	4%
Silicon	7440-21-3	µg/L	NS	NS	8820	14700	12600	11800	11800	11600	2%
Silver (Ag)	7440-22-4	µg/L	0.05	0.1	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	NC
Sodium (Na)	7440-23-5	µg/L	NS	NS	5450	7220	9030	9630	9080	9140	1%
Strontium	7440-24-6	µg/L	NS	NS	133	162	129	143	140	137	2%
Sulfur	7704-34-9	µg/L	NS	NS	680	< 500	< 500	< 500	< 500	< 500	NC
Tellurium	13494-80-9	µg/L	NS	NS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	NC
Thallium (Tl)	7440-28-0	µg/L	NS	NS	0.015	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	NC
Tin	7440-31-5	µg/L	NS	NS	0.34	0.14	< 0.10	< 0.10	< 0.10	< 0.10	NC
Titanium (Ti)	7440-32-6	µg/L	NS	NS	41.2	13.4	14.9	6.41	1.18	1.33	12%
Uranium (U)	7440-61-1	µg/L	8.5	NS	0.495	0.075	0.070	0.054	0.024	0.025	4%
Vanadium (V)	7440-62-2	µg/L	NS	NS	9.27	4.42	7.94	6.77	8.91	8.83	1%
Zinc (Zn)	7440-66-6	µg/L	7.5 - 164 ⁿ	33-190 ^o	10.4	< 3.0	< 3.0	5.4	3.4	3.4	0%
Zirconium	7440-67-7	µg/L	NS	NS	0.42	0.36	0.63	0.58	0.64	0.65	2%
Total Hardness (as CaCO3)	HARD	mg/l	NS	NS	81	91.6	62.8	72.4	63.7	62.5	2%

Table 2. Groundwater Analytical Results - Total Metals
Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

Chemical Name	CAS RN	Units	Long-term Chronic WQG ^b (mean)	Short-term Acute WQG ^c (max)	20MW-09				20MW-10D		RPD	20MW-10D		RPD				
					Location ID	Sample ID	Sample Date	Laboratory Certificate Sample #	20MW-09-121720	20MW-09-031521		20MW-09-0621	20MW-09-0921		20MW-10D-031521	QA3_031521	20MW-10D-121720	QA2_121720
					20MW-09-121720	20MW-09-031521	20MW-09-0621	20MW-09-0921	20MW-10D-031521	QA3_031521		20MW-10D-121720	QA2_121720					
					17-Dec-20	15-Mar-21	21-Jun-21	21 Sep 2021	15-Mar-21	15-Mar-21		17-Dec-20	17-Dec-20					
					VA20C3660-003	VA21A4849-010	VA21B2503-006	VA21C0813-012	VA21A4849-011	VA21A4849-014		VA20C3659-003	VA20C3659-005					
Total Metals																		
Aluminum (Al)	7429-90-5	µg/L	NS	NS	223	362	148	626	323	373	14%	438	422	4%				
Antimony (Sb)	7440-36-0	µg/L	9 ^d	NS	0.20	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	NC	< 0.10	< 0.10	NC				
Arsenic (As)	7440-38-2	µg/L	NS	5	1.09	1.05	1.22	1.48	0.18	0.23	24%	0.21	0.22	5%				
Barium (Ba)	7440-39-3	µg/L	1000	NS	98.4	200	179	222	24	25.7	7%	30.8	31.4	2%				
Beryllium (Be)	7440-41-7	µg/L	0.13	NS	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	NC	< 0.100	< 0.100	NC				
Bismuth	7440-69-9	µg/L	NS	NS	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	NC	< 0.050	< 0.050	NC				
Boron (Bo)	7440-42-8	µg/L	1200	NS	39	43	29	30	13	12	8%	13	14	7%				
Cadmium (Cd)	7440-43-9	µg/L	NS	NS	0.0506	0.126	0.104	0.154	< 0.0050	< 0.0050	NC	0.0071	0.0053	29%				
Calcium (Ca)	7440-70-2	µg/L	NS	NS	82000	83200	72300	77800	14100	13800	2%	17400	19600	12%				
Cesium (Cs)	7440-46-2	µg/L	NS	NS	0.010	0.016	< 0.010	0.033	0.034	0.036	6%	0.048	0.05	4%				
Chromium	7440-47-3	µg/L	8.9 ^e	NS	0.54	0.67	< 0.50	1.00	2.01	2.46	20%	1.68	1.62	4%				
Chromium, Hexavalent (Cr6+)	18540-29-9	µg/L	1 ^f	NS	NT	NT	NT	< 0.50	NT	NT	NC	NT	NT	NC				
Cobalt (Co)	7440-48-4	µg/L	4	110	1.71	2.88	8.50	5.69	0.23	0.24	4%	0.4	0.4	0%				
Copper (Cu)	7440-50-8	µg/L	NS	NS	1.03	2.71	1.26	5.31	3.7	4.09	10%	3.6	3.53	2%				
Iron (Fe)	7439-89-6	µg/L	NS	1000	279	1090	4710	2680	32500	32600	0%	28200	29300	4%				
Lead (Pb)	7439-92-1	µg/L	4.2-16.2 ^h	25-347 ⁱ	0.103	0.62	0.304	1.42	0.328	0.404	21%	0.351	0.343	2%				
Lithium (Li)	7439-93-2	µg/L	NS	NS	2.2	< 1.0	< 1.0	11.9	2.4	2.4	0%	3.1	3.3	6%				
Magnesium (Mg)	7439-95-4	µg/L	NS	NS	13600	22100	19500	23900	6860	6390	7%	6070	6190	2%				
Manganese (Mn)	7439-96-5	µg/L	768-1921 ^j	948-3400 ^k	907	1470	968	622	572	508	12%	816	829	2%				
Mercury (Hg)	7439-97-6	µg/L	Calculated ^l	NS	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	NC	< 0.0050	< 0.0050	NC				
Molybdenum (Mo)	7439-98-7	µg/L	1000	2000	0.898	0.317	0.289	0.284	0.5	0.531	6%	1.06	1.08	2%				
Nickel (Ni)	7440-02-0	µg/L	25 - 150 ^m	NS	3.25	5.5	8.80	7.75	< 0.50	< 0.50	NC	1.15	1.23	7%				
Phosphorus	7723-14-0	µg/L	NS	NS	73	< 50	91	149	249 J	361 J	37%	78	56	33%				
Potassium (K)	7440-09-7	µg/L	NS	NS	2970	2520	2590	2520	3000	3070	2%	3560	3610	1%				
Rubidium (Rb)	7440-17-7	µg/L	NS	NS	1.85	3.13	3.73	4.88	3.7	4.09	10%	4.7	4.65	1%				
Selenium (Se)	7782-49-2	µg/L	2	NS	0.129	< 0.050	< 0.050	0.055	< 0.050	< 0.050	NC	< 0.050	< 0.050	NC				
Silicon	7440-21-3	µg/L	NS	NS	12900	14400	12200	12400	15800	15200	4%	16000	15900	1%				
Silver (Ag)	7440-22-4	µg/L	0.05	0.1	< 0.010	< 0.010	< 0.010	0.028	< 0.010	< 0.010	NC	< 0.010	< 0.010	NC				
Sodium (Na)	7440-23-5	µg/L	NS	NS	4890	5960	5260	5200	6710	6830	2%	8520	8940	5%				
Strontium	7440-24-6	µg/L	NS	NS	238	265	280	290	118	121	3%	141	141	0%				
Sulfur	7704-34-9	µg/L	NS	NS	2960	3560	3100	2380	< 500	< 500	NC	< 500	< 500	NC				
Tellurium	13494-80-9	µg/L	NS	NS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	NC	< 0.20	< 0.20	NC				
Thallium (Tl)	7440-28-0	µg/L	NS	NS	0.021	0.019	0.022	0.024	< 0.010	< 0.010	NC	< 0.010	< 0.010	NC				
Tin	7440-31-5	µg/L	NS	NS	0.14	< 0.10	< 0.10	< 0.10	0.14	0.19	30%	0.18	0.19	5%				
Titanium (Ti)	7440-32-6	µg/L	NS	NS	12.7	< 17.7	6.83	32.6	15.1	18.4	20%	18.2	17.9	2%				
Uranium (U)	7440-61-1	µg/L	8.5	NS	0.599	0.145	0.079	0.123	0.022	0.027	20%	0.05	0.052	4%				
Vanadium (V)	7440-62-2	µg/L	NS	NS	1.16	1.4	0.84	2.12	3.36	3.85	14%	2.6	2.66	2%				
Zinc (Zn)	7440-66-6	µg/L	7.5 - 164 ⁿ	33-190 ^o	< 3.0	16.4	36.7	34.8	3.3	3.9	17%	12.4	12.5	1%				
Zirconium	7440-67-7	µg/L	NS	NS	< 0.20	0.22	< 0.20	0.21	0.27	0.34	23%	0.29	0.35	19%				
Total Hardness (as CaCO3)	HARD	mg/L	NS	NS	260	299	261	293	63.4	60.8	4%	68.5	74.5	8%				

Table 2. Groundwater Analytical Results - Total Metals
Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

Chemical Name	CAS RN	Units	Long-term Chronic WQG ^b (mean)	Short-term Acute WQG ^c (max)	20MW-10D		20MW-10S			
					Location ID	Sample ID	20MW-10S_121720	20MW-10S_031521	20MW-10S-0621	20MW-10S-0921
					Sample Date	Sample Date	17-Dec-20	15-Mar-21	21-Jun-21	21 Sep 2021
					Laboratory Certificate Sample #	Sample #	VA20C3659-004	VA21A4849-012	VA21B2503-009	VA21C0813-011
BC WQG Freshwater Aquatic Life ^a										
Total Metals										
Aluminum (Al)	7429-90-5	µg/L	NS	NS	78.4	20.2	490	77.8	1170	30.2
Antimony (Sb)	7440-36-0	µg/L	9 ^d	NS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Arsenic (As)	7440-38-2	µg/L	NS	5	0.25	0.14	0.83	1.09	1.98	0.60
Barium (Ba)	7440-39-3	µg/L	1000	NS	18.3	15.0	74.7	63.2	60.7	46.5
Beryllium (Be)	7440-41-7	µg/L	0.13	NS	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100	< 0.100
Bismuth	7440-69-9	µg/L	NS	NS	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Boron (Bo)	7440-42-8	µg/L	1200	NS	12	11	33	46	45	43
Cadmium (Cd)	7440-43-9	µg/L	NS	NS	< 0.0050	< 0.0050	0.193	0.0236	0.514	< 0.0050
Calcium (Ca)	7440-70-2	µg/L	NS	NS	12200	12200	27400	39200	32000	29100
Cesium (Cs)	7440-46-2	µg/L	NS	NS	0.028	0.028	0.029	0.023	0.060	0.025
Chromium	7440-47-3	µg/L	8.9 ^e	NS	0.98	0.65	3.35	2.62	6.31	2.30
Chromium, Hexavalent (Cr6+)	18540-29-9	µg/L	1 ^f	NS	NT	< 0.50	NT	NT	NT	< 0.50
Cobalt (Co)	7440-48-4	µg/L	4	110	0.12	< 0.10	2.73	0.58	1.07	0.43
Copper (Cu)	7440-50-8	µg/L	NS	NS	0.55	< 0.50	1.62	< 0.50	3.79	< 0.50
Iron (Fe)	7439-89-6	µg/L	NS	1000	29200	21600	14000	30200	33100	30700
Lead (Pb)	7439-92-1	µg/L	4.2-16.2 ^h	25-347 ⁱ	0.068	< 0.050	0.392	0.055	0.979	< 0.050
Lithium (Li)	7439-93-2	µg/L	NS	NS	2.5	2.5	1.6	1	1.6	1.0
Magnesium (Mg)	7439-95-4	µg/L	NS	NS	3660	3640	7140	10400	9410	9800
Manganese (Mn)	7439-96-5	µg/L	768-1921 ^j	948-3400 ^k	514	484	1080	1100	981	1100
Mercury (Hg)	7439-97-6	µg/L	Calculated ^l	NS	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Molybdenum (Mo)	7439-98-7	µg/L	1000	2000	0.361	0.196	0.452	0.225	0.268	0.116
Nickel (Ni)	7440-02-0	µg/L	25 - 150 ^m	NS	< 0.50	< 0.50	2.68	0.55	0.96	< 0.50
Phosphorus	7723-14-0	µg/L	NS	NS	142	117	< 50	63	258	< 50
Potassium (K)	7440-09-7	µg/L	NS	NS	3360	3200	3110	3330	2980	3030
Rubidium (Rb)	7440-17-7	µg/L	NS	NS	3.78	3.70	8.16	10.8	10.0	9.84
Selenium (Se)	7782-49-2	µg/L	2	NS	< 0.050	< 0.050	0.164	< 0.050	0.056	< 0.050
Silicon	7440-21-3	µg/L	NS	NS	16400	16000	12800	11100	12600	10400
Silver (Ag)	7440-22-4	µg/L	0.05	0.1	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Sodium (Na)	7440-23-5	µg/L	NS	NS	7710	8260	5610	7120	4980	4900
Strontium	7440-24-6	µg/L	NS	NS	103	111	159	260	203	228
Sulfur	7704-34-9	µg/L	NS	NS	< 500	< 500	2790	1700	< 500	< 500
Tellurium	13494-80-9	µg/L	NS	NS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Thallium (Tl)	7440-28-0	µg/L	NS	NS	< 0.010	< 0.010	0.014	< 0.010	< 0.010	< 0.010
Tin	7440-31-5	µg/L	NS	NS	< 0.10	< 0.10	0.19	< 0.10	0.25	< 0.10
Titanium (Ti)	7440-32-6	µg/L	NS	NS	2.75	0.71	27.9	3.96	56.1	1.05
Uranium (U)	7440-61-1	µg/L	8.5	NS	< 0.010	< 0.010	0.138	0.059	0.169	0.030
Vanadium (V)	7440-62-2	µg/L	NS	NS	3.36	3.33	12.0	13.7	45.5	12.6
Zinc (Zn)	7440-66-6	µg/L	7.5 - 164 ⁿ	33-190 ^o	14.6	< 3.0	6.8	5.3	96	< 3.0
Zirconium	7440-67-7	µg/L	NS	NS	0.33	0.26	0.76	0.64	0.74	0.67
Total Hardness (as CaCO3)	HARD	mg/l	NS	NS	45.5	45.4	97.8	141	119	113

Table 2. Groundwater Analytical Results - Total Metals
Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

Chemical Name	CAS RN	Units	Long-term Chronic WQG ^b (mean)	Short-term Acute WQG ^c (max)	20MW-11				RPD	20MW-11		MW06-34			RPD
					20MW-11_121220	20MW-11_031521	20MW-11-0621	DUP1-0621		20MW-11-0921	MW06-34_011421	MW06-34_031521	QA4_031521		
					Sample ID 12-Dec-20 Laboratory Certificate Sample # VA20C3657-003	Sample ID 15-Mar-21 VA21A4849-013	Sample ID 21-Jun-21 VA21B2503-007	Sample ID 21-Jun-21 VA21B2503-011		Sample Date 21 Sep 2021 VA21C0813-015	Sample Date 14-Jan-21 VA21A0730-001	Sample Date 15-Mar-21 VA21A4849-001	Sample Date 15-Mar-21 VA21A4849-015		
BC WQG Freshwater Aquatic Life ^a															
Total Metals															
Aluminum (Al)	7429-90-5	µg/L	NS	NS	522	113	190	193	2%	424	488	457	419	9%	
Antimony (Sb)	7440-36-0	µg/L	9 ^d	NS	< 0.10	< 0.10	< 0.10	< 0.10	NC	< 0.10	0.15	0.15	0.14	7%	
Arsenic (As)	7440-38-2	µg/L	NS	5	0.39	0.42	0.61	0.62	2%	0.44	15.8	20	17.4	14%	
Barium (Ba)	7440-39-3	µg/L	1000	NS	51.4	47	25.2	26.2	4%	28.6	32.0	32.9	33.3	1%	
Beryllium (Be)	7440-41-7	µg/L	0.13	NS	< 0.100	< 0.100	< 0.100	< 0.100	NC	< 0.100	< 0.100	< 0.100	< 0.100	NC	
Bismuth	7440-69-9	µg/L	NS	NS	< 0.050	< 0.050	< 0.050	< 0.050	NC	< 0.050	< 0.050	< 0.050	< 0.050	NC	
Boron (Bo)	7440-42-8	µg/L	1200	NS	35	24	23	25	8%	27	< 10	< 10	< 10	NC	
Cadmium (Cd)	7440-43-9	µg/L	NS	NS	0.0100	0.0055	0.0058	0.0096	49%	0.0204	0.0086	0.0133	0.0128	4%	
Calcium (Ca)	7440-70-2	µg/L	NS	NS	20700	27600	15700	16100	3%	14700	12300	12400	12300	1%	
Cesium (Cs)	7440-46-2	µg/L	NS	NS	0.034	0.028	0.031	0.031	0%	0.057	< 0.010	< 0.010	< 0.010	NC	
Chromium	7440-47-3	µg/L	8.9 ^e	NS	2.10	0.82	1.11	1.24	11%	1.25	6.88	5.74	5.5	4%	
Chromium, Hexavalent (Cr6+)	18540-29-9	µg/L	1 ^f	NS	NT	NT	NT	NT	NC	< 0.50	NT	NT	NT	NC	
Cobalt (Co)	7440-48-4	µg/L	4	110	0.85	1.2	0.64	0.66	3%	0.69	1.98	1.9	1.83	4%	
Copper (Cu)	7440-50-8	µg/L	NS	NS	1.4	0.93	1.84	1.97	7%	3.49	6.04	7.8	7.33	6%	
Iron (Fe)	7439-89-6	µg/L	NS	1000	16400	16700	11800	12000	2%	12000	25400	19200	17600	9%	
Lead (Pb)	7439-92-1	µg/L	4.2-16.2 ^h	25-347 ⁱ	0.119	0.1	0.157	0.164	4%	0.322	1.05	1.35	1.32	2%	
Lithium (Li)	7439-93-2	µg/L	NS	NS	1.1	< 1.0	< 1.0	< 1.0	NC	1.2	1.1	< 1.0	< 1.0	NC	
Magnesium (Mg)	7439-95-4	µg/L	NS	NS	6540	8200	5110	5270	3%	5530	2100	1830	1750	4%	
Manganese (Mn)	7439-96-5	µg/L	768-1921 ^j	948-3400 ^k	478	425	221	228	3%	216	616	570	500	13%	
Mercury (Hg)	7439-97-6	µg/L	Calculated ^l	NS	< 0.0050	< 0.0050	< 0.0050	< 0.0050	NC	< 0.0050	0.0070	0.0099	0.0096	3%	
Molybdenum (Mo)	7439-98-7	µg/L	1000	2000	0.341	0.63	0.625	0.654	5%	0.391	0.091	0.144	0.153	6%	
Nickel (Ni)	7440-02-0	µg/L	25 - 150 ^m	NS	1.13	1.04	< 0.50	< 0.50	NC	0.90	1.46	1.28	1.29	1%	
Phosphorus	7723-14-0	µg/L	NS	NS	< 50	< 50	128	126	2%	94	< 50	< 50	51	NC	
Potassium (K)	7440-09-7	µg/L	NS	NS	2880	2860	2470	2570	4%	2870	2120	1950	1860	5%	
Rubidium (Rb)	7440-17-7	µg/L	NS	NS	4.07	3.72	2.81	2.9	3%	3.92	3.66	3.47	3.25	7%	
Selenium (Se)	7782-49-2	µg/L	2	NS	< 0.050	< 0.050	< 0.050	< 0.050	NC	< 0.050	0.052	0.074	0.08	8%	
Silicon	7440-21-3	µg/L	NS	NS	13100	9580	10600	11000	4%	12500	7430	7930	7510	5%	
Silver (Ag)	7440-22-4	µg/L	0.05	0.1	< 0.010	< 0.010	< 0.010	< 0.010	NC	< 0.010	0.017	0.019	0.02	5%	
Sodium (Na)	7440-23-5	µg/L	NS	NS	4710	4100	3520	3600	2%	4550	2530	2150	2020	6%	
Strontium	7440-24-6	µg/L	NS	NS	107	126	64.8	66.4	2%	73.8	87.0	91.5	99.4	8%	
Sulfur	7704-34-9	µg/L	NS	NS	1580	5780	< 500	< 500	NC	< 500	< 500	640	720	12%	
Tellurium	13494-80-9	µg/L	NS	NS	< 0.20	< 0.20	< 0.20	< 0.20	NC	< 0.20	< 0.20	< 0.20	< 0.20	NC	
Thallium (Tl)	7440-28-0	µg/L	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	NC	< 0.010	< 0.010	< 0.010	< 0.010	NC	
Tin	7440-31-5	µg/L	NS	NS	0.14	0.1	< 0.10	< 0.10	NC	< 0.10	< 0.10	0.12	0.12	0%	
Titanium (Ti)	7440-32-6	µg/L	NS	NS	27.4	5.59	< 8.70	8.89	NC	25.9	6.75	7.39	6.97	6%	
Uranium (U)	7440-61-1	µg/L	8.5	NS	0.054	0.029	0.033	0.038	14%	0.040	0.121	0.128	0.126	2%	
Vanadium (V)	7440-62-2	µg/L	NS	NS	8.98	3.59	3.75	3.84	2%	4.75	3.20	4.31	3.69	16%	
Zinc (Zn)	7440-66-6	µg/L	7.5 - 164 ⁿ	33-190 ^o	4.5	6.4	11.9	11.5	3%	20.4	< 3.0	< 3.0	< 3.0	NC	
Zirconium	7440-67-7	µg/L	NS	NS	< 0.60	0.23	0.53	0.24	75%	0.23	1.04	< 0.80	0.62	NC	
Total Hardness (as CaCO3)	HARD	mg/L	NS	NS	78.7	103	60.2	61.9	3%	59.5	39.4	38.5	37.9	2%	

Table 2. Groundwater Analytical Results - Total Metals
 Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

Chemical Name	CAS RN	Units	Long-term Chronic WQG ^b (mean)	Short-term Acute WQG ^c (max)	MW06-34		MW19-01		RPD	MW19-01		
					Sample ID	Sample Date	Sample ID	Sample Date		Sample ID	Sample Date	
					Laboratory Certificate #	Laboratory Certificate #	Laboratory Certificate #	Laboratory Certificate #		Laboratory Certificate #	Laboratory Certificate #	
					MW06-34-W-0621	MW06-34-0921	MW19-01_121620	QA1_121620		MW19-01_031521	MW19-01-0621	MW19-01-0921
					21-Jun-21	22 Sep 2021	16-Dec-20	17-Dec-20		15-Mar-21	21-Jun-21	22 Sep 2021
					VA21B2503-003	VA21C0813-002	VA20C3660-001	VA20C3660-006		VA21A4849-002	VA21B2503-004	VA21C0813-005
Total Metals												
Aluminum (Al)	7429-90-5	µg/L	NS	NS	290	514	574	1700	99%	62.6	67.0	48.9
Antimony (Sb)	7440-36-0	µg/L	9 ^d	NS	0.14	0.12	< 0.10	0.1	NC	< 0.10	0.28	< 0.10
Arsenic (As)	7440-38-2	µg/L	NS	5	12.2	20.2	1.12	1.09	3%	0.4	0.20	0.34
Barium (Ba)	7440-39-3	µg/L	1000	NS	111	64.2	49.3	51.4	4%	22	33.4	14.8
Beryllium (Be)	7440-41-7	µg/L	0.13	NS	< 0.100	< 0.100	< 0.100	< 0.100	NC	< 0.100	< 0.100	< 0.100
Bismuth	7440-69-9	µg/L	NS	NS	< 0.050	< 0.050	< 0.050	< 0.050	NC	< 0.050	< 0.050	< 0.050
Boron (Bo)	7440-42-8	µg/L	1200	NS	12	17	18	18	0%	19	20	16
Cadmium (Cd)	7440-43-9	µg/L	NS	NS	0.0074	0.0152	0.0053	0.0129	84%	< 0.0050	0.0102	< 0.0050
Calcium (Ca)	7440-70-2	µg/L	NS	NS	34000	20200	19300	19300	0%	23400	28200	15000
Cesium (Cs)	7440-46-2	µg/L	NS	NS	0.080	0.023	< 0.010	0.022	NC	0.013	< 0.010	0.017
Chromium	7440-47-3	µg/L	8.9 ^e	NS	4.14	5.36	0.61	0.85	33%	0.5	< 0.50	0.52
Chromium, Hexavalent (Cr6+)	18540-29-9	µg/L	1 ^f	NS	NT	< 0.50	NT	NT	NC	NT	NT	< 0.50
Cobalt (Co)	7440-48-4	µg/L	4	110	13.4	2.50	0.38	0.53	33%	0.14	0.19	< 0.10
Copper (Cu)	7440-50-8	µg/L	NS	NS	4.34	8.90	< 0.50	1.25	NC	1.32	1.82	0.54
Iron (Fe)	7439-89-6	µg/L	NS	1000	71800	40700	16200	15500	4%	22100	2100	17700
Lead (Pb)	7439-92-1	µg/L	4.2-16.2 ^h	25-347 ⁱ	0.402	1.15	0.237	0.496	71%	0.174	0.092	0.092
Lithium (Li)	7439-93-2	µg/L	NS	NS	< 1.0	2.2	4.1	4.4	7%	4.4	3.7	3.2
Magnesium (Mg)	7439-95-4	µg/L	NS	NS	4590	2800	3140	3170	1%	4940	3410	3570
Manganese (Mn)	7439-96-5	µg/L	768-1921 ^j	948-3400 ^k	3390	870	508	496	2%	722	373	503
Mercury (Hg)	7439-97-6	µg/L	Calculated ^l	NS	< 0.0050	0.0130	< 0.0050	< 0.0050	NC	< 0.0050	< 0.0050	< 0.0050
Molybdenum (Mo)	7439-98-7	µg/L	1000	2000	1.23	0.136	0.295	0.493	50%	0.097	0.621	0.061
Nickel (Ni)	7440-02-0	µg/L	25 - 150 ^m	NS	2.51	1.57	0.71	0.87	20%	< 0.50	< 0.50	< 0.50
Phosphorus	7723-14-0	µg/L	NS	NS	51	69	141	116	19%	99	< 50	153
Potassium (K)	7440-09-7	µg/L	NS	NS	4530	3000	3040	3110	2%	3620	3820	3110
Rubidium (Rb)	7440-17-7	µg/L	NS	NS	10.6	5.93	3.07	3.32	8%	3.99	2.75	3.47
Selenium (Se)	7782-49-2	µg/L	2	NS	0.254	0.096	0.051	< 0.050	NC	< 0.050	0.062	< 0.050
Silicon	7440-21-3	µg/L	NS	NS	7930	14200	16500	18300	10%	17300	11900	16800
Silver (Ag)	7440-22-4	µg/L	0.05	0.1	0.015	0.032	< 0.010	< 0.010	NC	< 0.010	< 0.010	< 0.010
Sodium (Na)	7440-23-5	µg/L	NS	NS	4210	3110	7630	9530	22%	7730	16200	5790
Strontium	7440-24-6	µg/L	NS	NS	249	163	72.9	75.9	4%	114	120	87.6
Sulfur	7704-34-9	µg/L	NS	NS	6840	5090	< 500	510	NC	< 500	1840	< 500
Tellurium	13494-80-9	µg/L	NS	NS	< 0.20	< 0.20	< 0.20	< 0.20	NC	< 0.20	< 0.20	< 0.20
Thallium (Tl)	7440-28-0	µg/L	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010	NC	< 0.010	< 0.010	< 0.010
Tin	7440-31-5	µg/L	NS	NS	< 0.10	< 0.10	0.11	0.29	90%	< 0.10	0.11	< 0.10
Titanium (Ti)	7440-32-6	µg/L	NS	NS	5.04	8.74	13.5	33.4	85%	3.4	1.26	1.54
Uranium (U)	7440-61-1	µg/L	8.5	NS	0.172	0.142	0.108	0.217	67%	0.042	0.389	0.049
Vanadium (V)	7440-62-2	µg/L	NS	NS	6.71	8.35	1.7	2.43	35%	2.05	< 0.50	2.42
Zinc (Zn)	7440-66-6	µg/L	7.5 - 164 ⁿ	33-190 ^o	11.9	4.6	3.2	8	86%	< 3.0	4310	123
Zirconium	7440-67-7	µg/L	NS	NS	2.13	1.28	0.36	1.7	130%	0.26	< 0.20	< 0.20
Total Hardness (as CaCO3)	HARD	mg/l	NS	NS	104	62	61.1	61.2	0%	78.8	84.4	52.2

Table 2. Groundwater Analytical Results - Total Metals
 Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

Chemical Name	CAS RN	Units	Long-term Chronic WQG ^b (mean)	Short-term Acute WQG ^c (max)	MW19-03			
					Location ID	Sample ID	Sample Date	Laboratory Certificate Sample #
					MW19-03_121620	MW19-03_031521	MW19-03-W-0621	MW19-03-0921
					16-Dec-20	15-Mar-21	21-Jun-21	22 Sep 2021
BC WQG Freshwater Aquatic Life ^a					VA20C3660-002	VA21A4849-003	VA21B2503-005	VA21C0813-001
Total Metals								
Aluminum (Al)	7429-90-5	µg/L	NS	NS	44.3	41	72.4	475
Antimony (Sb)	7440-36-0	µg/L	9 ^d	NS	< 0.10	< 0.10	< 0.10	< 0.10
Arsenic (As)	7440-38-2	µg/L	NS	5	0.23	0.13	0.12	0.17
Barium (Ba)	7440-39-3	µg/L	1000	NS	35.7	33.7	33.8	33.3
Beryllium (Be)	7440-41-7	µg/L	0.13	NS	< 0.100	< 0.100	< 0.100	< 0.100
Bismuth	7440-69-9	µg/L	NS	NS	< 0.050	< 0.050	< 0.050	< 0.050
Boron (Bo)	7440-42-8	µg/L	1200	NS	18	24	20	18
Cadmium (Cd)	7440-43-9	µg/L	NS	NS	< 0.0050	< 0.0050	< 0.0050	0.0215
Calcium (Ca)	7440-70-2	µg/L	NS	NS	20200	18700	18700	17600
Cesium (Cs)	7440-46-2	µg/L	NS	NS	0.035	0.036	0.042	0.054
Chromium	7440-47-3	µg/L	8.9 ^e	NS	0.64	0.59	0.63	0.91
Chromium, Hexavalent (Cr6+)	18540-29-9	µg/L	1 ^f	NS	NT	NT	NT	< 0.50
Cobalt (Co)	7440-48-4	µg/L	4	110	< 0.10	< 0.10	< 0.10	0.19
Copper (Cu)	7440-50-8	µg/L	NS	NS	< 0.50	< 0.50	< 0.50	1.93
Iron (Fe)	7439-89-6	µg/L	NS	1000	22800	22500	22800	20800
Lead (Pb)	7439-92-1	µg/L	4.2-16.2 ^h	25-347 ⁱ	< 0.050	0.053	0.062	0.477
Lithium (Li)	7439-93-2	µg/L	NS	NS	2.4	2.4	2.4	2.4
Magnesium (Mg)	7439-95-4	µg/L	NS	NS	4540	4420	4270	4320
Manganese (Mn)	7439-96-5	µg/L	768-1921 ^j	948-3400 ^k	660	693	649	616
Mercury (Hg)	7439-97-6	µg/L	Calculated ^l	NS	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Molybdenum (Mo)	7439-98-7	µg/L	1000	2000	0.235	0.088	0.079	0.081
Nickel (Ni)	7440-02-0	µg/L	25 - 150 ^m	NS	< 0.50	< 0.50	< 0.50	< 0.50
Phosphorus	7723-14-0	µg/L	NS	NS	96	101	112	127
Potassium (K)	7440-09-7	µg/L	NS	NS	3640	3510	3780	3560
Rubidium (Rb)	7440-17-7	µg/L	NS	NS	4.90	4.83	5.08	4.95
Selenium (Se)	7782-49-2	µg/L	2	NS	< 0.050	< 0.050	< 0.050	< 0.050
Silicon	7440-21-3	µg/L	NS	NS	15300	15900	16400	17400
Silver (Ag)	7440-22-4	µg/L	0.05	0.1	< 0.010	< 0.010	< 0.010	0.012
Sodium (Na)	7440-23-5	µg/L	NS	NS	6170	5650	5770	5770
Strontium	7440-24-6	µg/L	NS	NS	118	118	114	116
Sulfur	7704-34-9	µg/L	NS	NS	< 500	< 500	< 500	< 500
Tellurium	13494-80-9	µg/L	NS	NS	< 0.20	< 0.20	< 0.20	< 0.20
Thallium (Tl)	7440-28-0	µg/L	NS	NS	< 0.010	< 0.010	< 0.010	< 0.010
Tin	7440-31-5	µg/L	NS	NS	< 0.10	< 0.10	< 0.10	< 0.10
Titanium (Ti)	7440-32-6	µg/L	NS	NS	1.57	< 1.80	3.27	12.9
Uranium (U)	7440-61-1	µg/L	8.5	NS	0.013	0.01	0.016	0.086
Vanadium (V)	7440-62-2	µg/L	NS	NS	3.80	3.87	3.83	4.72
Zinc (Zn)	7440-66-6	µg/L	7.5 - 164 ⁿ	33-190 ^o	< 3.0	4	5.6	18.4
Zirconium	7440-67-7	µg/L	NS	NS	0.33	0.3	0.31	0.34
Total Hardness (as CaCO3)	HARD	mg/l	NS	NS	69	64.9	64.3	61.7

Table 2. Groundwater Analytical Results - Total Metals
Hydrogeological Assessment at BC Rail Site for the FortisBC EGP Project

^a British Columbia Ministry of Environment and Climate Change Strategy. 2019. British Columbia Approved Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture. Where Approved Guidelines were not available, British Columbia Working Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture were used.

^b Long-term chronic (i.e., "average") WQGs are intended to protect the most sensitive species and life stage against sub-lethal and lethal effects for indefinite exposures. An averaging period approach is used for these WQGs. This approach allows concentrations of substance to fluctuate above and below the guideline provided that the short-term acute is never exceeded and the long-term chronic is met over the specified averaging period (e.g., 5 samples in 30 days).

^c Short-term acute (i.e., "maximum") WQGs are set to protect against severe effects such as lethality (e.g. LC50) or other equivalent measures (e.g., EC50) to the most sensitive species and life stage over a defined short-term exposure period (e.g., 96 hours).

^d WQG is for antimony (III)

^e WQG is for chromium (III)

^f WQG is for chromium (VI)

^g WQG is a sample-specific calculation which requires Dissolved Organic Carbon.

^h Chronic WQG for lead = $3.31 + e^{[1.273 \ln(\text{hardness}) - 4.704]}$

ⁱ Acute WQG for lead = $e^{[1.273 \ln(\text{hardness}) - 1.460]}$

^j Chronic WQG for manganese = $0.0044(\text{hardness}) + 0.605$

^k Acute WQG for manganese = $0.01102(\text{hardness}) + 0.54$

^l Chronic WQG for mercury = $0.0001 / (\text{MeHg}/\text{totalHg})$, where MeHg is concentration of methyl mercury. Calculation requires methyl mercury concentration.

^m Chronic WQG for nickel:

Hardness 0 to 60 mg/L CaCO₃ = 25

Hardness 60 to 180 mg/L CaCO₃ = $e^{[0.76 \ln(\text{hardness}) + 1.06]}$

Hardness > 180 mg/L CaCO₃ = 150

ⁿ Chronic WQG for zinc:

Hardness < 90 mg/L CaCO₃ = 7.5

Hardness > 90 mg/L CaCO₃ = $7.5 + 0.75(\text{hardness} - 90)$

^o Acute WQG for zinc:

Hardness < 90 mg/L CaCO₃ = 33

Hardness > 90 mg/L CaCO₃ = $33 + 0.75(\text{hardness} - 90)$

Notes:

Bold indicates value exceeds the Short-term Acute WQG.

Highlighting indicates value exceeds the Long-term Chronic WQG.

Underline indicates value is non-detect and detection limit exceeds one applicable standard.

% = percent

< = less than

µg/L = microgram per litre

mg/L = milligram per litre

QA = field duplicate sample

ID = identification

NS = not specified

NT = not tested

Appendix A
Laboratory Certificates of Analyses



CERTIFICATE OF ANALYSIS

Work Order : **VA21A0730**
Amendment : **1**
Client : **CH2M Hill Canada Limited**
Contact : Jelena Sladojevic
Address : Metrotower II, Suite 2100 4720 Kingsway
Burnaby BC Canada V5H 4N2
Telephone : ----
Project : CE777000 TU.CP.H6
PO : 670014CH.B0.01.09
C-O-C number : 20-905295
Sampler : ----
Site : ----
Quote number : VA20-CHMH100-013
No. of samples received : 3
No. of samples analysed : 1

Page : 1 of 8
Laboratory : Vancouver - Environmental
Account Manager : Edward Ngai
Address : 8081 Lougheed Highway
Burnaby BC Canada V5A 1W9
Telephone : +1 604 253 4188
Date Samples Received : 14-Jan-2021 16:10
Date Analysis Commenced : 14-Jan-2021
Issue Date : 19-Jan-2021 10:14

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Brieanna Allen	Department Manager - Organics	Organics, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	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).

<i>Unit</i>	<i>Description</i>
-	No Unit
µg/L	micrograms per litre
mg/L	milligrams per litre

<: 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.

Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLCI	Detection Limit Raised: Chromatographic interference due to co-elution.
DTS	Dissolved Sulfur concentration exceeds total. Negative bias on Total Sulfur suspected due to presence of volatile sulfur species lost during digestion.
DTSE	Dissolved Se concentration exceeds total. Positive bias on D-Se suspected due to signal enhancement from volatile selenium species. Contact ALS if an alternative test to address this interference is needed.



Analytical Results

Sub-Matrix: Water					Client sample ID	MW06-34	---	---	---	---
(Matrix: Water)					Client sampling date / time	14-Jan-2021 11:45	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	VA21A0730-001	-----	-----	-----	-----	
					Result	---	---	---	---	
Physical Tests										
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	39.4	---	---	---	---	
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	40.1	---	---	---	---	
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.488	---	---	---	---	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00015	---	---	---	---	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.0158	---	---	---	---	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0320	---	---	---	---	
beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	---	---	---	---	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	---	---	---	---	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	---	---	---	---	
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000086	---	---	---	---	
calcium, total	7440-70-2	E420	0.050	mg/L	12.3	---	---	---	---	
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	---	---	---	---	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00688	---	---	---	---	
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00198	---	---	---	---	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00604	---	---	---	---	
iron, total	7439-89-6	E420	0.010	mg/L	25.4	---	---	---	---	
lead, total	7439-92-1	E420	0.000050	mg/L	0.00105	---	---	---	---	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0011	---	---	---	---	
magnesium, total	7439-95-4	E420	0.0050	mg/L	2.10	---	---	---	---	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.616	---	---	---	---	
mercury, total	7439-97-6	E508	0.0000050	mg/L	0.0000070	---	---	---	---	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000091	---	---	---	---	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00146	---	---	---	---	
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	---	---	---	---	
potassium, total	7440-09-7	E420	0.050	mg/L	2.12	---	---	---	---	
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00366	---	---	---	---	
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000052	---	---	---	---	
silicon, total	7440-21-3	E420	0.10	mg/L	7.43	---	---	---	---	
silver, total	7440-22-4	E420	0.000010	mg/L	0.000017	---	---	---	---	



Analytical Results

Sub-Matrix: Water					Client sample ID	MW06-34	----	----	----	----
(Matrix: Water)					Client sampling date / time	14-Jan-2021 11:45	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	VA21A0730-001	-----	-----	-----	-----	
					Result	---	---	---	---	
Total Metals										
sodium, total	17341-25-2	E420	0.050	mg/L	2.53	----	----	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.0870	----	----	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	----	----	----	----	
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	----	----	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	----	----	----	----	
thorium, total	7440-29-1	E420	0.00010	mg/L	0.00011	----	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00675	----	----	----	----	
tungsten, total	7440-33-7	E420	0.00010	mg/L	0.00011	----	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000121	----	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00320	----	----	----	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	----	----	----	----	
zirconium, total	7440-67-7	E420	0.00020	mg/L	0.00104	----	----	----	----	
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.451	----	----	----	----	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00013	----	----	----	----	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.0156	----	----	----	----	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0323	----	----	----	----	
beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	----	----	----	----	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	----	----	----	----	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	----	----	----	----	
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000067	----	----	----	----	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	12.8	----	----	----	----	
cesium, dissolved	7440-46-2	E421	0.000010	mg/L	<0.000010	----	----	----	----	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00642	----	----	----	----	
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00189	----	----	----	----	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00440	----	----	----	----	
iron, dissolved	7439-89-6	E421	0.010	mg/L	25.2	----	----	----	----	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000691	----	----	----	----	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	----	----	----	----	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	1.97	----	----	----	----	



Analytical Results

Sub-Matrix: Water					Client sample ID	MW06-34	----	----	----	----
(Matrix: Water)					Client sampling date / time	14-Jan-2021 11:45	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	VA21A0730-001	-----	-----	-----	-----	
					Result	---	---	---	---	
Dissolved Metals										
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.602	----	----	----	----	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	0.0000062	----	----	----	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000063	----	----	----	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00132	----	----	----	----	
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	----	----	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.18	----	----	----	----	
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00334	----	----	----	----	
selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.00320 ^{DTSE}	----	----	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	7.42	----	----	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	0.000012	----	----	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.31	----	----	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0839	----	----	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	1.94 ^{DTS}	----	----	----	----	
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	----	----	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	----	----	----	
thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	----	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	0.00635	----	----	----	----	
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	----	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000121	----	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00299	----	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	----	----	----	----	
zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	0.00143	----	----	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	----	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	
Volatile Organic Compounds										
chlorobenzene	108-90-7	E611C	0.50	µg/L	<0.50	----	----	----	----	
chloromethane	74-87-3	E611C	0.50	µg/L	<0.50	----	----	----	----	
dichlorobenzene, 1,2-	95-50-1	E611C	0.50	µg/L	<0.50	----	----	----	----	
dichlorobenzene, 1,3-	541-73-1	E611C	0.50	µg/L	<0.50	----	----	----	----	
dichlorobenzene, 1,4-	106-46-7	E611C	0.50	µg/L	<0.50	----	----	----	----	



Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					MW06-34	----	----	----	----
Client sampling date / time					14-Jan-2021 11:45	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	VA21A0730-001	-----	-----	-----	-----
					Result	---	---	---	---
Volatile Organic Compounds									
dichloropropane, 1,2-	78-87-5	E611C	0.50	µg/L	<0.50	----	----	----	----
dichloropropylene, cis+trans-1,3-	542-75-6	E611C	0.75	µg/L	<0.75	----	----	----	----
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.50	µg/L	<0.50	----	----	----	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.50	µg/L	<0.50	----	----	----	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.20	µg/L	<0.20	----	----	----	----
trichloroethane, 1,1,2-	79-00-5	E611C	0.50	µg/L	<0.50	----	----	----	----
trichlorofluoromethane	75-69-4	E611C	0.50	µg/L	<0.50	----	----	----	----
Volatile Organic Compounds [Drycleaning]									
carbon tetrachloride	56-23-5	E611C	0.50	µg/L	<0.50	----	----	----	----
chloroethane	75-00-3	E611C	0.50	µg/L	<0.50	----	----	----	----
dichloroethane, 1,1-	75-34-3	E611C	0.50	µg/L	<0.50	----	----	----	----
dichloroethane, 1,2-	107-06-2	E611C	0.50	µg/L	<0.50	----	----	----	----
dichloroethylene, 1,1-	75-35-4	E611C	0.50	µg/L	<0.50	----	----	----	----
dichloroethylene, cis-1,2-	156-59-4	E611C	0.50	µg/L	<0.50	----	----	----	----
dichloroethylene, trans-1,2-	156-60-5	E611C	0.50	µg/L	<0.50	----	----	----	----
dichloromethane	75-09-2	E611C	0.50	µg/L	<0.50	----	----	----	----
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.50	µg/L	<0.50	----	----	----	----
tetrachloroethylene	127-18-4	E611C	0.50	µg/L	<0.50	----	----	----	----
trichloroethane, 1,1,1-	71-55-6	E611C	0.50	µg/L	<0.50	----	----	----	----
trichloroethylene	79-01-6	E611C	0.50	µg/L	<0.50	----	----	----	----
vinyl chloride	75-01-4	E611C	0.40	µg/L	<0.40	----	----	----	----
Volatile Organic Compounds [Fuels]									
benzene	71-43-2	E611C	0.50	µg/L	<0.50	----	----	----	----
ethylbenzene	100-41-4	E611C	0.50	µg/L	<0.50	----	----	----	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.50	µg/L	<0.50	----	----	----	----
styrene	100-42-5	E611C	0.50	µg/L	<0.50	----	----	----	----
toluene	108-88-3	E611C	0.40	µg/L	0.60	----	----	----	----
xylene, m+p-	179601-23-1	E611C	0.40	µg/L	0.51	----	----	----	----
xylene, o-	95-47-6	E611C	0.30	µg/L	<0.30	----	----	----	----
xylenes, total	1330-20-7	E611C	0.50	µg/L	0.51	----	----	----	----
Volatile Organic Compounds Surrogates									



Analytical Results

Sub-Matrix: Water					Client sample ID	MW06-34	---	---	---	---
(Matrix: Water)					Client sampling date / time	14-Jan-2021 11:45	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	VA21A0730-001	-----	-----	-----	-----	
					Result	---	---	---	---	
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611C	0.50	%	82.5	---	---	---	---	
difluorobenzene, 1,4-	540-36-3	E611C	0.50	%	94.3	---	---	---	---	
Hydrocarbons										
EPH (C10-C19)	---	E601A	250	µg/L	510	---	---	---	---	
EPH (C19-C32)	---	E601A	250	µg/L	<250	---	---	---	---	
VHw (C6-C10)	---	E581.VH+F1	100	µg/L	<100	---	---	---	---	
VPHw	---	EC580A	100	µg/L	<100	---	---	---	---	
HEPHw	---	EC600A	250	µg/L	<250	---	---	---	---	
LEPHw	---	EC600A	250	µg/L	330	---	---	---	---	
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	50	%	93.8	---	---	---	---	
dichlorotoluene, 3,4-	97-75-0	E581.VH+F1	1.0	%	98.2	---	---	---	---	
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A	0.010	µg/L	85.5	---	---	---	---	
acenaphthylene	208-96-8	E641A	0.010	µg/L	0.475	---	---	---	---	
acridine	260-94-6	E641A	0.010	µg/L	<2.80 ^{DLCL}	---	---	---	---	
anthracene	120-12-7	E641A	0.010	µg/L	6.15	---	---	---	---	
benz(a)anthracene	56-55-3	E641A	0.010	µg/L	0.437	---	---	---	---	
benzo(a)pyrene	50-32-8	E641A	0.0050	µg/L	0.120	---	---	---	---	
benzo(b+j)fluoranthene	---	E641A	0.010	µg/L	0.176	---	---	---	---	
benzo(b+j+k)fluoranthene	---	E641A	0.015	µg/L	0.248	---	---	---	---	
benzo(g,h,i)perylene	191-24-2	E641A	0.010	µg/L	0.034	---	---	---	---	
benzo(k)fluoranthene	207-08-9	E641A	0.010	µg/L	0.072	---	---	---	---	
chrysene	218-01-9	E641A	0.010	µg/L	0.440	---	---	---	---	
dibenz(a,h)anthracene	53-70-3	E641A	0.0050	µg/L	0.0140	---	---	---	---	
fluoranthene	206-44-0	E641A	0.010	µg/L	10.6	---	---	---	---	
fluorene	86-73-7	E641A	0.010	µg/L	37.4	---	---	---	---	
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.010	µg/L	0.024	---	---	---	---	
methylnaphthalene, 1-	90-12-0	E641A	0.010	µg/L	8.73	---	---	---	---	
methylnaphthalene, 2-	91-57-6	E641A	0.010	µg/L	10.9	---	---	---	---	
naphthalene	91-20-3	E641A	0.050	µg/L	13.6	---	---	---	---	



Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					MW06-34	----	----	----	----
Client sampling date / time					14-Jan-2021 11:45	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	VA21A0730-001	-----	-----	-----	-----
					Result	---	---	---	---
Polycyclic Aromatic Hydrocarbons									
phenanthrene	85-01-8	E641A	0.020	µg/L	39.4	----	----	----	----
pyrene	129-00-0	E641A	0.010	µg/L	5.87	----	----	----	----
quinoline	6027-02-7	E641A	0.050	µg/L	<0.050	----	----	----	----
Polycyclic Aromatic Hydrocarbons Surrogates									
chrysene-d12	1719-03-5	E641A	0.010	%	92.2	----	----	----	----
naphthalene-d8	1146-65-2	E641A	0.010	%	101	----	----	----	----
phenanthrene-d10	1517-22-2	E641A	0.010	%	109	----	----	----	----
Volatile Organic Compounds [THMs]									
bromodichloromethane	75-27-4	E611C	0.50	µg/L	<0.50	----	----	----	----
bromoform	75-25-2	E611C	0.50	µg/L	<0.50	----	----	----	----
chloroform	67-66-3	E611C	0.50	µg/L	<0.50	----	----	----	----
dibromochloromethane	124-48-1	E611C	0.50	µg/L	<0.50	----	----	----	----

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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA21A0730	Page	: 1 of 8
Amendment	: 1		
Client	: CH2M Hill Canada Limited	Laboratory	: Vancouver - Environmental
Contact	: Jelena Sladojevic	Account Manager	: Edward Ngai
Address	: Metrotower II, Suite 2100 4720 Kingsway Burnaby BC Canada V5H 4N2	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: CE777000 TU.CP.H6	Date Samples Received	: 14-Jan-2021 16:10
PO	: 670014CH.B0.01.09	Issue Date	: 19-Jan-2021 10:15
C-O-C number	: 20-905295		
Sampler	: ----		
Site	: ----		
Quote number	: VA20-CHMH100-013		
No. of samples received	: 3		
No. of samples analysed	: 1		

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 Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



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: **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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)											
HDPE dissolved (nitric acid) MW06-34	E421.Cr-L	14-Jan-2021	14-Jan-2021	180 days	0 days	✓	14-Jan-2021	179 days	0 days	✓	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) MW06-34	E509	14-Jan-2021	15-Jan-2021	28 days	0 days	✓	15-Jan-2021	27 days	0 days	✓	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) MW06-34	E421	14-Jan-2021	14-Jan-2021	180 days	0 days	✓	14-Jan-2021	179 days	0 days	✓	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) MW06-34	E601A	14-Jan-2021	14-Jan-2021	14 days	0 days	✓	15-Jan-2021	40 days	0 days	✓	
Hydrocarbons : VH and F1 by Headspace GC-FID											
Glass vial (sodium bisulfate) MW06-34	E581.VH+F1	14-Jan-2021	18-Jan-2021	14 days	4 days	✓	19-Jan-2021	9 days	0 days	✓	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) MW06-34	E641A	14-Jan-2021	14-Jan-2021	14 days	0 days	✓	15-Jan-2021	40 days	0 days	✓	
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)											
HDPE total (nitric acid) MW06-34	E420.Cr-L	14-Jan-2021	----	----	----		15-Jan-2021	180 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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) MW06-34	E508	14-Jan-2021	----	----	----		15-Jan-2021	28 days	0 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) MW06-34	E420	14-Jan-2021	----	----	----		15-Jan-2021	180 days	0 days	✓
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW06-34	E611C	14-Jan-2021	14-Jan-2021	----	----		15-Jan-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW06-34	E611C	14-Jan-2021	14-Jan-2021	----	----		15-Jan-2021	----	----	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW06-34	E611C	14-Jan-2021	14-Jan-2021	14 days	0 days	✓	15-Jan-2021	13 days	0 days	✓
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW06-34	E611C	14-Jan-2021	14-Jan-2021	----	----		15-Jan-2021	----	----	

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: **Water** Evaluation: * = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
Analytical Methods							
Laboratory Duplicates (DUP)							
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	141022	1	1	100.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	141134	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	141021	1	1	100.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	141026	1	1	100.0	5.0	✓
Total Mercury in Water by CVAAS	E508	141131	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	141027	1	1	100.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	142213	1	10	10.0	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	141068	1	7	14.2	5.0	✓
Laboratory Control Samples (LCS)							
BC PHC - EPH by GC-FID	E601A	141051	1	5	20.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	141022	1	1	100.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	141134	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	141021	1	1	100.0	5.0	✓
PAHs by Hexane LVI GC-MS	E641A	141052	1	5	20.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	141026	1	1	100.0	5.0	✓
Total Mercury in Water by CVAAS	E508	141131	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	141027	1	1	100.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	142213	1	10	10.0	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	141068	1	7	14.2	5.0	✓
Method Blanks (MB)							
BC PHC - EPH by GC-FID	E601A	141051	1	5	20.0	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	141022	1	1	100.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	141134	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	141021	1	1	100.0	5.0	✓
PAHs by Hexane LVI GC-MS	E641A	141052	1	5	20.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	141026	1	1	100.0	5.0	✓
Total Mercury in Water by CVAAS	E508	141131	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	141027	1	1	100.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	142213	1	10	10.0	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	141068	1	7	14.2	5.0	✓
Matrix Spikes (MS)							
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	141022	1	1	100.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	141134	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	141021	1	1	100.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	141026	1	1	100.0	5.0	✓
Total Mercury in Water by CVAAS	E508	141131	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	141027	1	1	100.0	5.0	✓



Matrix: **Water** Evaluation: * = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
Matrix Spikes (MS) - Continued							
VH and F1 by Headspace GC-FID	E581.VH+F1	142213	1	10	10.0	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	141068	1	7	14.2	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
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
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
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
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 Vancouver - Environmental	Water	BC MOE Lab Manual	Extractable Petroleum Hydrocarbons (EPH) 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.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
PAHs by Hexane LVI GC-MS	E641A Vancouver - Environmental	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO ₃), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO ₃ 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.
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO ₃), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO ₃ 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. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.
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: VPH _w = Volatile Hydrocarbons (VH6-10) minus benzene, toluene, ethylbenzene, xylenes (BTEX) and styrene.
LEPH and HEPH: EPH-PAH	EC600A Vancouver - 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.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO ₃ .
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 Vancouver - Environmental	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.

QUALITY CONTROL REPORT

Work Order	: VA21A0730	Page	: 1 of 20
Amendment	: 1		
Client	: CH2M Hill Canada Limited	Laboratory	: Vancouver - Environmental
Contact	: Jelena Sladojevic	Account Manager	: Edward Ngai
Address	: Metrotower II, Suite 2100 4720 Kingsway Burnaby BC Canada V5H 4N2	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: CE777000 TU.CP.H6	Date Samples Received	: 14-Jan-2021 16:10
PO	: 670014CH.B0.01.09	Date Analysis Commenced	: 14-Jan-2021
C-O-C number	: 20-905295	Issue Date	: 19-Jan-2021 10:15
Sampler	: ----		
Site	: ----		
Quote number	: VA20-CHMH100-013		
No. of samples received	: 3		
No. of samples analysed	: 1		

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Annabelle Prasad	Analyst	Metals, Burnaby, British Columbia
Brieanna Allen	Department Manager - Organics	Organics, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia

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Work Order : VA21A0730 Amendment 1
Client : CH2M Hill Canada Limited
Project : CE777000 TU.CP.H6



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: 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
Total Metals (QC Lot: 141026)											
VA21A0730-001	MW06-34	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00688	0.00689	0.0510%	20%	----
Total Metals (QC Lot: 141027)											
VA21A0730-001	MW06-34	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.488	0.494	1.22%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00015	0.00016	0.000009	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.0158	0.0156	1.02%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0320	0.0321	0.276%	20%	----
		beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000086	0.0000082	0.0000004	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	12.3	12.4	0.132%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00198	0.00200	0.959%	20%	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00604	0.00593	1.82%	20%	----
		iron, total	7439-89-6	E420	0.010	mg/L	25.4	25.5	0.416%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.00105	0.00106	1.04%	20%	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0011	0.0011	0.00005	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	2.10	2.06	1.97%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.616	0.612	0.651%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000091	0.000096	0.000005	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00146	0.00149	0.00004	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	2.12	2.10	1.03%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00366	0.00358	2.02%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000052	0.000070	0.000018	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	7.43	7.29	1.90%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	0.000017	0.000015	0.000002	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	2.53	2.53	0.303%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.0870	0.0923	5.94%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	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
Total Metals (QC Lot: 141027) - continued											
VA21A0730-001	MW06-34	thorium, total	7440-29-1	E420	0.00010	mg/L	0.00011	<0.00010	0.00001	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00675	0.00672	0.460%	20%	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	0.00011	0.00011	0.00000001	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000121	0.000120	0.631%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00320	0.00319	0.000006	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		zirconium, total	7440-67-7	E420	0.00020	mg/L	0.00104	0.00115	0.00012	Diff <2x LOR	----
Total Metals (QC Lot: 141131)											
FJ2100016-001	Anonymous	mercury, total	7439-97-6	E508	0.0000500	mg/L	<0.0000500	<0.0000500	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 141021)											
VA21A0730-001	MW06-34	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.451	0.440	2.39%	20%	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00013	0.00013	0.000002	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.0156	0.0156	0.0636%	20%	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0323	0.0317	1.86%	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	0.0000067	<0.0000050	0.0000017	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	12.8	12.4	3.44%	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	0.00189	0.00185	1.73%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00440	0.00438	0.396%	20%	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	25.2	24.6	2.10%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000691	0.000671	2.95%	20%	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	1.97	1.91	2.86%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.602	0.621	3.04%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000063	0.000066	0.000004	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00132	0.00132	0.000003	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	2.18	2.13	2.29%	20%	----
		rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00334	0.00331	1.08%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.00320	0.00334	4.22%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	7.42	7.34	1.02%	20%	----



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: 141021) - continued											
VA21A0730-001	MW06-34	silver, dissolved	7440-22-4	E421	0.000010	mg/L	0.000012	0.000014	0.000002	Diff <2x LOR	----
		sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.31	2.41	4.10%	20%	----
		strontium, dissolved	7440-24-6	E421	0.000020	mg/L	0.0839	0.0858	2.14%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	1.94	2.22	0.28	Diff <2x LOR	----
		tellurium, dissolved	13494-80-9	E421	0.000020	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	0.000010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.000010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.000030	mg/L	0.00635	0.00597	6.23%	20%	----
		tungsten, dissolved	7440-33-7	E421	0.000010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000121	0.000120	1.42%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.000050	mg/L	0.00299	0.00292	0.00006	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	0.000020	mg/L	0.00143	0.00150	0.00007	Diff <2x LOR	----
Dissolved Metals (QC Lot: 141022)											
VA21A0730-001	MW06-34	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00642	0.00643	0.140%	20%	----
Dissolved Metals (QC Lot: 141134)											
FJ2100016-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000250	mg/L	<0.0000250	<0.0000250	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 141068)											
VA21A0699-001	Anonymous	benzene	71-43-2	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		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	----



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: 141068) - continued											
VA21A0699-001	Anonymous	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	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		xylene, o-	95-47-6	E611C	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 142213)											
VA21A0730-001	MW06-34	VHw (C6-C10)	----	E581.VH+F1	100	µg/L	<100	<100	0.00%	30%	----



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: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 141026)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 141027)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 141027) - continued						
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Total Metals (QCLot: 141131)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 141021)						
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	----
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	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 141021) - continued						
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: 141022)						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	---
Dissolved Metals (QCLot: 141134)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	---
Volatile Organic Compounds (QCLot: 141068)						
benzene	71-43-2	E611C	0.5	µg/L	<0.50	---
bromodichloromethane	75-27-4	E611C	0.5	µg/L	<0.50	---
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	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 141068) - continued						
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	0.4	µg/L	<0.40	---
xylene, o-	95-47-6	E611C	0.3	µg/L	<0.30	---
Hydrocarbons (QCLot: 141051)						
EPH (C10-C19)	---	E601A	250	µg/L	<250	---
EPH (C19-C32)	---	E601A	250	µg/L	<250	---
Hydrocarbons (QCLot: 142213)						
VHw (C6-C10)	---	E581.VH+F1	100	µg/L	<100	---
Polycyclic Aromatic Hydrocarbons (QCLot: 141052)						
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(b+j+k)fluoranthene	---	E641A	0.015	µg/L	<0.015	---
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	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
Polycyclic Aromatic Hydrocarbons (QCLot: 141052) - continued						
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	----



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: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Total Metals (QCLot: 141026)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
Total Metals (QCLot: 141027)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	101	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	99.8	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	99.3	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	97.2	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	106	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	92.5	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	101	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	100	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	98.2	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.3	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	99.0	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	107	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	96.2	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	98.8	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	99.7	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	97.6	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	102	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	97.0	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	106	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	94.5	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	96.7	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	105	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	87.3	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	101	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	108	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	105	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	97.9	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Total Metals (QCLot: 141027) - continued									
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	98.3	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	106	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	109	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	98.0	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	98.7	80.0	120	----
Total Metals (QCLot: 141131)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	104	80.0	120	----
Dissolved Metals (QCLot: 141021)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	103	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	109	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	100	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	100	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	111	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	110	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	104	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	98.1	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	99.3	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	113	70.0	130	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	101	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	101	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	107	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	106	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: 141021) - continued									
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	99.8	80.0	120	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	107	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	104	80.0	120	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	98.4	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	99.7	80.0	120	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	104	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	109	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	98.7	80.0	120	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	103	80.0	120	----
Dissolved Metals (QCLot: 141022)									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	103	80.0	120	----
Volatile Organic Compounds (QCLot: 141068)									
benzene	71-43-2	E611C	0.5	µg/L	100 µg/L	89.6	70.0	130	----
bromodichloromethane	75-27-4	E611C	0.5	µg/L	100 µg/L	101	70.0	130	----
bromoform	75-25-2	E611C	0.5	µg/L	100 µg/L	75.4	70.0	130	----
carbon tetrachloride	56-23-5	E611C	0.5	µg/L	100 µg/L	81.3	70.0	130	----
chlorobenzene	108-90-7	E611C	0.5	µg/L	100 µg/L	98.6	70.0	130	----
chloroethane	75-00-3	E611C	0.5	µg/L	100 µg/L	102	60.0	140	----
chloroform	67-66-3	E611C	0.5	µg/L	100 µg/L	111	70.0	130	----
chloromethane	74-87-3	E611C	0.5	µg/L	100 µg/L	128	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	84.5	70.0	130	----
dichlorobenzene, 1,3-	541-73-1	E611C	0.5	µg/L	100 µg/L	83.2	70.0	130	----
dichlorobenzene, 1,4-	106-46-7	E611C	0.5	µg/L	100 µg/L	84.3	70.0	130	----
dichloroethane, 1,1-	75-34-3	E611C	0.5	µg/L	100 µg/L	87.9	70.0	130	----
dichloroethane, 1,2-	107-06-2	E611C	0.5	µg/L	100 µg/L	87.3	70.0	130	----
dichloroethylene, 1,1-	75-35-4	E611C	0.5	µg/L	100 µg/L	102	70.0	130	----
dichloroethylene, cis-1,2-	156-59-4	E611C	0.5	µg/L	100 µg/L	82.9	70.0	130	----
dichloroethylene, trans-1,2-	156-60-5	E611C	0.5	µg/L	100 µg/L	94.1	70.0	130	----
dichloromethane	75-09-2	E611C	0.5	µg/L	100 µg/L	92.1	70.0	130	----
dichloropropane, 1,2-	78-87-5	E611C	0.5	µg/L	100 µg/L	89.5	70.0	130	----
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.5	µg/L	100 µg/L	94.3	70.0	130	----
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.5	µg/L	100 µg/L	71.0	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
Volatile Organic Compounds (QCLot: 141068) - continued									
ethylbenzene	100-41-4	E611C	0.5	µg/L	100 µg/L	120	70.0	130	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.5	µg/L	100 µg/L	103	70.0	130	----
styrene	100-42-5	E611C	0.5	µg/L	100 µg/L	89.6	70.0	130	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.5	µg/L	100 µg/L	79.1	70.0	130	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.2	µg/L	100 µg/L	85.4	70.0	130	----
tetrachloroethylene	127-18-4	E611C	0.5	µg/L	100 µg/L	77.1	70.0	130	----
toluene	108-88-3	E611C	0.4	µg/L	100 µg/L	90.5	70.0	130	----
trichloroethane, 1,1,1-	71-55-6	E611C	0.5	µg/L	100 µg/L	102	70.0	130	----
trichloroethane, 1,1,2-	79-00-5	E611C	0.5	µg/L	100 µg/L	86.7	70.0	130	----
trichloroethylene	79-01-6	E611C	0.5	µg/L	100 µg/L	80.4	70.0	130	----
trichlorofluoromethane	75-69-4	E611C	0.5	µg/L	100 µg/L	138	60.0	140	----
vinyl chloride	75-01-4	E611C	0.4	µg/L	100 µg/L	123	60.0	140	----
xylene, m+p-	179601-23-1	E611C	0.4	µg/L	200 µg/L	101	70.0	130	----
xylene, o-	95-47-6	E611C	0.3	µg/L	100 µg/L	90.6	70.0	130	----
Hydrocarbons (QCLot: 141051)									
EPH (C10-C19)	----	E601A	250	µg/L	6491 µg/L	106	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3363 µg/L	91.2	70.0	130	----
Hydrocarbons (QCLot: 142213)									
VHw (C6-C10)	----	E581.VH+F1	100	µg/L	6310 µg/L	96.7	70.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 141052)									
acenaphthene	83-32-9	E641A	0.01	µg/L	0.5 µg/L	89.6	60.0	130	----
acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5 µg/L	91.2	60.0	130	----
acridine	260-94-6	E641A	0.01	µg/L	0.5 µg/L	82.0	60.0	130	----
anthracene	120-12-7	E641A	0.01	µg/L	0.5 µg/L	90.4	60.0	130	----
benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5 µg/L	80.4	60.0	130	----
benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5 µg/L	88.0	60.0	130	----
benzo(b+j)fluoranthene	----	E641A	0.01	µg/L	0.5 µg/L	84.1	60.0	130	----
benzo(b+j+k)fluoranthene	----	E641A	0.015	µg/L	1 µg/L	89.3	60.0	130	----
benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	0.5 µg/L	95.3	60.0	130	----
benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5 µg/L	94.5	60.0	130	----
chrysene	218-01-9	E641A	0.01	µg/L	0.5 µg/L	88.3	60.0	130	----
dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5 µg/L	90.9	60.0	130	----
fluoranthene	206-44-0	E641A	0.01	µg/L	0.5 µg/L	93.6	60.0	130	----
fluorene	86-73-7	E641A	0.01	µg/L	0.5 µg/L	95.0	60.0	130	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5 µg/L	89.0	60.0	130	----
methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	0.5 µg/L	91.4	60.0	130	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 141052) - continued									
methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5 µg/L	86.1	60.0	130	----
naphthalene	91-20-3	E641A	0.05	µg/L	0.5 µg/L	90.6	50.0	130	----
phenanthrene	85-01-8	E641A	0.02	µg/L	0.5 µg/L	95.8	60.0	130	----
pyrene	129-00-0	E641A	0.01	µg/L	0.5 µg/L	96.6	60.0	130	----
quinoline	6027-02-7	E641A	0.05	µg/L	0.5 µg/L	125	60.0	130	----



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: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High	
Total Metals (QCLot: 141026)										
VA21A0730-001	MW06-34	chromium, total	7440-47-3	E420.Cr-L	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
Total Metals (QCLot: 141027)										
VA21A0730-001	MW06-34	aluminum, total	7429-90-5	E420	ND mg/L	0.2 mg/L	ND	70.0	130	----
		antimony, total	7440-36-0	E420	0.0199 mg/L	0.02 mg/L	99.7	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0194 mg/L	0.02 mg/L	97.1	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0392 mg/L	0.04 mg/L	98.0	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00966 mg/L	0.01 mg/L	96.6	70.0	130	----
		boron, total	7440-42-8	E420	0.093 mg/L	0.1 mg/L	93.2	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00393 mg/L	0.004 mg/L	98.2	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cesium, total	7440-46-2	E420	0.00981 mg/L	0.01 mg/L	98.1	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		copper, total	7440-50-8	E420	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		iron, total	7439-89-6	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		lead, total	7439-92-1	E420	0.0194 mg/L	0.02 mg/L	97.3	70.0	130	----
		lithium, total	7439-93-2	E420	0.0970 mg/L	0.1 mg/L	97.0	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	----
		nickel, total	7440-02-0	E420	0.0395 mg/L	0.04 mg/L	98.7	70.0	130	----
		phosphorus, total	7723-14-0	E420	9.88 mg/L	10 mg/L	98.8	70.0	130	----
		potassium, total	7440-09-7	E420	3.65 mg/L	4 mg/L	91.3	70.0	130	----
		rubidium, total	7440-17-7	E420	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		selenium, total	7782-49-2	E420	0.0392 mg/L	0.04 mg/L	98.0	70.0	130	----
		silicon, total	7440-21-3	E420	8.86 mg/L	10 mg/L	88.6	70.0	130	----
		silver, total	7440-22-4	E420	0.00405 mg/L	0.004 mg/L	101	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	20.6 mg/L	20 mg/L	103	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0395 mg/L	0.04 mg/L	98.8	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
Total Metals (QCLot: 141027) - continued										
VA21A0730-001	MW06-34	thallium, total	7440-28-0	E420	0.00389 mg/L	0.004 mg/L	97.2	70.0	130	----
		thorium, total	7440-29-1	E420	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----
		tin, total	7440-31-5	E420	0.0193 mg/L	0.02 mg/L	96.7	70.0	130	----
		titanium, total	7440-32-6	E420	0.0384 mg/L	0.04 mg/L	95.9	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----
		uranium, total	7440-61-1	E420	0.00396 mg/L	0.004 mg/L	99.1	70.0	130	----
		vanadium, total	7440-62-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, total	7440-66-6	E420	0.397 mg/L	0.4 mg/L	99.2	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0395 mg/L	0.04 mg/L	98.7	70.0	130	----
Total Metals (QCLot: 141131)										
FJ2100016-002	Anonymous	mercury, total	7439-97-6	E508	0.000931 mg/L	0.001 mg/L	93.1	70.0	130	----
Dissolved Metals (QCLot: 141021)										
VA21A0730-001	MW06-34	aluminum, dissolved	7429-90-5	E421	ND mg/L	0.2 mg/L	ND	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0211 mg/L	0.02 mg/L	105	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	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00972 mg/L	0.01 mg/L	97.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00417 mg/L	0.004 mg/L	104	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	0.0104 mg/L	0.01 mg/L	104	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		iron, dissolved	7439-89-6	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0200 mg/L	0.02 mg/L	99.8	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0998 mg/L	0.1 mg/L	99.8	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0193 mg/L	0.02 mg/L	96.4	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	11.2 mg/L	10 mg/L	112	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.94 mg/L	4 mg/L	98.4	70.0	130	----
		rubidium, dissolved	7440-17-7	E421	0.0198 mg/L	0.02 mg/L	99.3	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0462 mg/L	0.04 mg/L	116	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.98 mg/L	10 mg/L	89.8	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: 141021) - continued										
VA21A0730-001	MW06-34	silver, dissolved	7440-22-4	E421	0.00383 mg/L	0.004 mg/L	95.8	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	20.8 mg/L	20 mg/L	104	70.0	130	----
		tellurium, dissolved	13494-80-9	E421	0.0398 mg/L	0.04 mg/L	99.6	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00388 mg/L	0.004 mg/L	96.9	70.0	130	----
		thorium, dissolved	7440-29-1	E421	0.0200 mg/L	0.02 mg/L	99.8	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0383 mg/L	0.04 mg/L	95.8	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	0.00416 mg/L	0.004 mg/L	104	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.406 mg/L	0.4 mg/L	101	70.0	130	----
		zirconium, dissolved	7440-67-7	E421	0.0414 mg/L	0.04 mg/L	104	70.0	130	----
Dissolved Metals (QCLot: 141022)										
VA21A0730-001	MW06-34	chromium, dissolved	7440-47-3	E421.Cr-L	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
Dissolved Metals (QCLot: 141134)										
FJ2100016-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.000503 mg/L	0.0005 mg/L	101	70.0	130	----
Volatile Organic Compounds (QCLot: 141068)										
VA21A0699-002	Anonymous	benzene	71-43-2	E611C	96.6 µg/L	100 µg/L	96.6	60.0	140	----
		bromodichloromethane	75-27-4	E611C	111 µg/L	100 µg/L	111	60.0	140	----
		bromoform	75-25-2	E611C	77.3 µg/L	100 µg/L	77.3	60.0	140	----
		carbon tetrachloride	56-23-5	E611C	87.7 µg/L	100 µg/L	87.7	60.0	140	----
		chlorobenzene	108-90-7	E611C	103 µg/L	100 µg/L	103	60.0	140	----
		chloroethane	75-00-3	E611C	105 µg/L	100 µg/L	105	50.0	150	----
		chloroform	67-66-3	E611C	120 µg/L	100 µg/L	120	60.0	140	----
		chloromethane	74-87-3	E611C	125 µg/L	100 µg/L	125	50.0	150	----
		dibromochloromethane	124-48-1	E611C	106 µg/L	100 µg/L	106	60.0	140	----
		dichlorobenzene, 1,2-	95-50-1	E611C	87.2 µg/L	100 µg/L	87.2	60.0	140	----
		dichlorobenzene, 1,3-	541-73-1	E611C	85.2 µg/L	100 µg/L	85.2	60.0	140	----
		dichlorobenzene, 1,4-	106-46-7	E611C	86.8 µg/L	100 µg/L	86.8	60.0	140	----
		dichloroethane, 1,1-	75-34-3	E611C	98.4 µg/L	100 µg/L	98.4	60.0	140	----
		dichloroethane, 1,2-	107-06-2	E611C	96.0 µg/L	100 µg/L	96.0	60.0	140	----
		dichloroethylene, 1,1-	75-35-4	E611C	106 µg/L	100 µg/L	106	60.0	140	----
		dichloroethylene, cis-1,2-	156-59-4	E611C	90.4 µg/L	100 µg/L	90.4	60.0	140	----
		dichloroethylene, trans-1,2-	156-60-5	E611C	100 µg/L	100 µg/L	100	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: 141068) - continued										
VA21A0699-002	Anonymous	dichloromethane	75-09-2	E611C	99.2 µg/L	100 µg/L	99.2	60.0	140	----
		dichloropropane, 1,2-	78-87-5	E611C	97.8 µg/L	100 µg/L	97.8	60.0	140	----
		dichloropropylene, cis-1,3-	10061-01-5	E611C	104 µg/L	100 µg/L	104	60.0	140	----
		dichloropropylene, trans-1,3-	10061-02-6	E611C	78.3 µg/L	100 µg/L	78.3	60.0	140	----
		ethylbenzene	100-41-4	E611C	123 µg/L	100 µg/L	123	60.0	140	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	109 µg/L	100 µg/L	109	60.0	140	----
		styrene	100-42-5	E611C	92.9 µg/L	100 µg/L	92.9	60.0	140	----
		tetrachloroethane, 1,1,1,2-	630-20-6	E611C	82.0 µg/L	100 µg/L	82.0	60.0	140	----
		tetrachloroethane, 1,1,2,2-	79-34-5	E611C	87.7 µg/L	100 µg/L	87.7	60.0	140	----
		tetrachloroethylene	127-18-4	E611C	80.0 µg/L	100 µg/L	80.0	60.0	140	----
		toluene	108-88-3	E611C	92.2 µg/L	100 µg/L	92.2	60.0	140	----
		trichloroethane, 1,1,1-	71-55-6	E611C	110 µg/L	100 µg/L	110	60.0	140	----
		trichloroethane, 1,1,2-	79-00-5	E611C	91.5 µg/L	100 µg/L	91.5	60.0	140	----
		trichloroethylene	79-01-6	E611C	87.2 µg/L	100 µg/L	87.2	60.0	140	----
		trichlorofluoromethane	75-69-4	E611C	140 µg/L	100 µg/L	140	50.0	150	----
		vinyl chloride	75-01-4	E611C	120 µg/L	100 µg/L	120	50.0	150	----
		xylene, m+p-	179601-23-1	E611C	210 µg/L	200 µg/L	105	60.0	140	----
		xylene, o-	95-47-6	E611C	93.5 µg/L	100 µg/L	93.5	60.0	140	----
Hydrocarbons (QCLot: 142213)										
VA21A0730-001	MW06-34	VHw (C6-C10)	----	E581.VH+F1	5450 µg/L	6310 µg/L	86.4	60.0	140	----



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Report To Contact and company name below will appear on the final report		Reports / Recipients		Turnaround Time (TAT) Requested		AFFIX ALS BARCODE LABEL HERE (ALS use only)	
Company: 1211 HILL CANADA LTD (JACOBS)		Select Report Format: <input type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)		<input type="checkbox"/> Routine [R] if received by 3pm M-F - no surcharges apply <input type="checkbox"/> 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum <input type="checkbox"/> 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum <input type="checkbox"/> 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum <input checked="" type="checkbox"/> 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum <input type="checkbox"/> Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests			
Contact: CAAPINVOICES@JACOBS.COM		Merge QC/QCI Reports with COA <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A		Date and Time Required for all E&P TATs: dd-mm-yy hh:mm am/pm			
Phone:		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		For all tests with rush TATs requested, please contact your AM to confirm availability.			
Company address below will appear on the final report		Email 1 or Fax: TELENA.SLADJSEVIC@JACOBS.COM		Analysis Request		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below	
Street:		Email 2: LIZ.VAN.WARTERDAM@JACOBS.COM					
City/Province:		Email 3: JAY.BILK@JACOBS.COM		NUMBER OF CONTAINERS		SAMPLES ON HOLD	
Postal Code:		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX					
Invoice To		Same as Report To <input type="checkbox"/> YES <input type="checkbox"/> NO Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		EXTENDED STORAGE REQUIRED		SUSPECTED HAZARD (see notes)	
Company:		Project Information ALS Account # / Quote #: VA20-CHM100-013 Job #: CE77000-JULY-16 PO / AFE: LSD:					
Contact:		Oil and Gas Required Fields (client use) AFE/Cost Center: PO# Major/Minor Code: Routing Code: Requisitioner: Location:		NUMERICAL DATA		NUMERICAL DATA	
ALS Lab Work Order # (ALS use only): A0730 ALS Contact: Sampler:							
Sample Identification and/or Coordinates (This description will appear on the report)		Date (dd-mm-yy)		Time (hh:mm)		Sample Type	
Mw06-34		14-01-21		11:45		WATER	
Mw06-34-TOP		14-01-21		11:00		↓	
Mw06-34-BOT		14-01-21		11:50		↓	

Environmental Division
Vancouver
Work Order Reference
VA21A0730

Drinking Water (DW) Samples ¹ (client evaluation by selecting from drop-down below - Excel COC only)		Telephone: +1 804 253 4188	
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		Are samples for human consumption/ use? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
SHIPMENT RELEASE (client use) Released by: A. CANACI Date: 2020/01/14 Time: 1600		INITIAL SHIPMENT RECEPTION (ALS use only) Received by: _____ Date: _____ Time: _____	
SAMPLE RECEIPT DETAILS (ALS use only) Cooling Method: <input type="checkbox"/> NONE <input checked="" type="checkbox"/> ICE <input type="checkbox"/> ICE PACKS <input type="checkbox"/> FROZEN <input type="checkbox"/> COOLING INITIATED Submission Comments Identified on Sample Receipt Notification: <input type="checkbox"/> YES <input type="checkbox"/> NO Cooler Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A Sample Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A INITIAL COOLER TEMPERATURES °C: _____ FINAL COOLER TEMPERATURES °C: 5		FINAL SHIPMENT RECEPTION (ALS use only) Received by: TC Date: Jan 14 Time: 4:10	



CERTIFICATE OF ANALYSIS

Work Order : **VA21A4849**
Client : **Jacobs Consultancy Canada Inc.**
Contact : Jelena Sladojevic
Address : Metrotower II, Suite 2100 4720 Kingsway
Burnaby BC Canada V5H 4N2
Telephone : ----
Project : CE777000 R-LS.EV.TU.H6
PO : 670014CH.B0.01.09
C-O-C number : 20-907011/10
Sampler : A.CANALI
Site : ----
Quote number : VA20-CHMH100-013
No. of samples received : 16
No. of samples analysed : 16

Page : 1 of 22
Laboratory : Vancouver - Environmental
Account Manager : Edward Ngai
Address : 8081 Lougheed Highway
Burnaby BC Canada V5A 1W9
Telephone : +1 604 253 4188
Date Samples Received : 16-Mar-2021 12:10
Date Analysis Commenced : 17-Mar-2021
Issue Date : 25-Mar-2021 16:17

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Ophelia Chiu	Department Manager - Organics	Organics, Burnaby, British Columbia
Paul Cushing	Team Leader - Organics	Organics, Burnaby, British Columbia
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).

<i>Unit</i>	<i>Description</i>
-	No Unit
µg/L	micrograms per litre
mg/L	milligrams per litre

<: 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.

Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLCI	Detection Limit Raised: Chromatographic interference due to co-elution.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DLQ	Detection Limit raised due to co-eluting interference. GCMS qualifier ion ratio did not meet acceptance criteria.
DTMF	Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.



Analytical Results

Sub-Matrix: Water					Client sample ID	MW06-34	MW19-01	MW19-03	20MW-04D	20MW-04S
(Matrix: Water)					Client sampling date / time	15-Mar-2021 17:00	15-Mar-2021 15:30	15-Mar-2021 16:15	15-Mar-2021 15:45	15-Mar-2021 15:15
Analyte	CAS Number	Method	LOR	Unit	VA21A4849-001	VA21A4849-002	VA21A4849-003	VA21A4849-004	VA21A4849-005	
					Result	Result	Result	Result	Result	
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	36.6	83.8	64.6	87.6	52.5	
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	38.5	78.8	64.9	82.3	51.2	
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.457	0.0626	0.0410	0.378	0.174	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00015	<0.00010	<0.00010	<0.00010	0.00037	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.0200	0.00040	0.00013	0.00201	0.00050	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0329	0.0220	0.0337	0.0401	0.0178	
beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	0.019	0.024	0.013	<0.010	
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000133	<0.0000050	<0.0000050	0.0000159	<0.0000050	
calcium, total	7440-70-2	E420	0.050	mg/L	12.4	23.4	18.7	25.9	19.8	
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	0.000013	0.000036	0.000020	<0.000010	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00574	0.00050	0.00059	0.00156	0.00106	
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00190	0.00014	<0.00010	0.00066	0.00030	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00780	0.00132	<0.00050	0.00251	0.0165	
iron, total	7439-89-6	E420	0.010	mg/L	19.2	22.1	22.5	31.1	0.073	
lead, total	7439-92-1	E420	0.000050	mg/L	0.00135	0.000174	0.000053	0.000564	<0.000050	
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	0.0044	0.0024	0.0052	<0.0010	
magnesium, total	7439-95-4	E420	0.0050	mg/L	1.83	4.94	4.42	4.29	0.424	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.570	0.722	0.693	0.873	0.00377	
mercury, total	7439-97-6	E508	0.0000050	mg/L	0.0000099	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000144	0.000097	0.000088	0.000922	0.00160	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00128	<0.00050	<0.00050	0.00085	0.00095	
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	0.099	0.101	0.120	0.055	
potassium, total	7440-09-7	E420	0.050	mg/L	1.95	3.62	3.51	3.80	1.44	
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00347	0.00399	0.00483	0.00368	0.00160	
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000074	<0.000050	<0.000050	0.000052	0.000121	
silicon, total	7440-21-3	E420	0.10	mg/L	7.93	17.3	15.9	18.8	2.64	
silver, total	7440-22-4	E420	0.000010	mg/L	0.000019	<0.000010	<0.000010	<0.000010	<0.000010	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	MW06-34	MW19-01	MW19-03	20MW-04D	20MW-04S
Client sampling date / time					15-Mar-2021 17:00	15-Mar-2021 15:30	15-Mar-2021 16:15	15-Mar-2021 15:45	15-Mar-2021 15:15	
Analyte	CAS Number	Method	LOR	Unit	VA21A4849-001	VA21A4849-002	VA21A4849-003	VA21A4849-004	VA21A4849-005	
					Result	Result	Result	Result	Result	
Total Metals										
sodium, total	17341-25-2	E420	0.050	mg/L	2.15	7.73	5.65	7.30	4.02	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.0915	0.114	0.118	0.141	0.0959	
sulfur, total	7704-34-9	E420	0.50	mg/L	0.64	<0.50	<0.50	<0.50	0.69	
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	0.00037	<0.00010	
tin, total	7440-31-5	E420	0.00010	mg/L	0.00012	<0.00010	<0.00010	0.00071	<0.00010	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00739	0.00340	<0.00180 ^{DLM}	0.00827	0.00169	
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000128	0.000042	0.000010	0.000215	0.000077	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00431	0.00205	0.00387	0.00245	0.00132	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0.0040	0.0036	<0.0030	
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00080 ^{DLM}	0.00026	0.00030	0.00026	<0.00020	
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.330	0.0065	0.0096	0.0147	0.142	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00010	<0.00010	<0.00010	<0.00010	0.00037	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00827	0.00035	<0.00010	0.00167	0.00047	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0303	0.0218	0.0325	0.0371	0.0160	
beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	0.018	0.023	0.012	<0.010	
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	11.7	25.5	18.9	28.5	20.4	
cesium, dissolved	7440-46-2	E421	0.000010	mg/L	<0.000010	<0.000010	0.000035	0.000011	<0.000010	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00390	0.00046	0.00053	0.00059	0.00101	
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00177	0.00011	<0.00010	0.00041	0.00025	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00272	<0.00020	<0.00020	<0.00020	0.0160	
iron, dissolved	7439-89-6	E421	0.010	mg/L	12.3	20.1	20.6	26.7	0.028	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000476	<0.000050	<0.000050	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	0.0043	0.0023	0.0048	<0.0010	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	1.79	4.90	4.23	3.98	0.391	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	MW06-34	MW19-01	MW19-03	20MW-04D	20MW-04S
Client sampling date / time					15-Mar-2021 17:00	15-Mar-2021 15:30	15-Mar-2021 16:15	15-Mar-2021 15:45	15-Mar-2021 15:15	
Analyte	CAS Number	Method	LOR	Unit	VA21A4849-001	VA21A4849-002	VA21A4849-003	VA21A4849-004	VA21A4849-005	
					Result	Result	Result	Result	Result	
Dissolved Metals										
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.504	0.643	0.599	0.870	0.00224	
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	0.000056	<0.000050	<0.000050	<0.000050	<0.000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000054	0.000098	0.000082	0.000292	0.00154	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00094	<0.00050	<0.00050	<0.00050	0.00071	
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	0.126	0.112	0.136	0.059	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.85	3.63	3.46	3.55	1.40	
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00318	0.00378	0.00472	0.00336	0.00130	
selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000065	<0.000050	<0.000050	<0.000050	0.000120	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	7.36	16.3	15.2	16.9	2.36	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	1.87	8.64	6.13	7.36	3.65	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0967	0.121	0.126	0.142	0.106	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	0.73	<0.50	<0.50	<0.50	0.82	
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	0.00388	0.00036	0.00037	0.00070	<0.00030	
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000093	0.000033	<0.000010	0.000037	0.000072	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00194	0.00176	0.00360	0.00164	0.00116	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0017	<0.0010	<0.0010	<0.0010	<0.0010	
zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	0.00114 ^{DTMF}	0.00023	0.00027	0.00023	<0.00020	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	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	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	MW06-34	MW19-01	MW19-03	20MW-04D	20MW-04S
Client sampling date / time					15-Mar-2021 17:00	15-Mar-2021 15:30	15-Mar-2021 16:15	15-Mar-2021 15:45	15-Mar-2021 15:15	
Analyte	CAS Number	Method	LOR	Unit	VA21A4849-001	VA21A4849-002	VA21A4849-003	VA21A4849-004	VA21A4849-005	
					Result	Result	Result	Result	Result	
Volatile Organic Compounds										
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 [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	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
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 [Fuels]										
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	0.40	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40	
xylene, o-	95-47-6	E611C	0.30	µg/L	<0.30	<0.30	<0.30	<0.30	<0.30	
xylenes, total	1330-20-7	E611C	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	
Volatile Organic Compounds Surrogates										



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	MW06-34	MW19-01	MW19-03	20MW-04D	20MW-04S
Client sampling date / time					15-Mar-2021 17:00	15-Mar-2021 15:30	15-Mar-2021 16:15	15-Mar-2021 15:45	15-Mar-2021 15:15	
Analyte	CAS Number	Method	LOR	Unit	VA21A4849-001	VA21A4849-002	VA21A4849-003	VA21A4849-004	VA21A4849-005	
					Result	Result	Result	Result	Result	
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611C	0.50	%	113	115	111	109	109	
difluorobenzene, 1,4-	540-36-3	E611C	0.50	%	112	103	114	107	109	
Hydrocarbons										
EPH (C10-C19)	----	E601A	250	µg/L	580	<250	<250	<250	<250	
EPH (C19-C32)	----	E601A	250	µg/L	<250	<250	<250	<250	<250	
HEPHw	----	EC600A	250	µg/L	<250	<250	<250	<250	<250	
LEPHw	----	EC600A	250	µg/L	430	<250	<250	<250	<250	
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	50	%	102	98.2	92.5	98.0	101	
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A	0.010	µg/L	70.5	<0.010	<0.010	<0.010	<0.010	
acenaphthylene	208-96-8	E641A	0.010	µg/L	0.556	<0.010	<0.010	<0.010	<0.010	
acridine	260-94-6	E641A	0.010	µg/L	<2.00 ^{DLCL}	<0.010	<0.010	<0.010	<0.010	
anthracene	120-12-7	E641A	0.010	µg/L	4.58	<0.010	<0.010	<0.010	<0.010	
benz(a)anthracene	56-55-3	E641A	0.010	µg/L	0.978	<0.010	<0.010	<0.010	<0.010	
benzo(a)pyrene	50-32-8	E641A	0.0050	µg/L	0.194	<0.0050	<0.0050	<0.0050	<0.0050	
benzo(b+j)fluoranthene	----	E641A	0.010	µg/L	0.235	<0.010	<0.010	<0.010	<0.010	
benzo(b+j+k)fluoranthene	----	E641A	0.015	µg/L	0.319	<0.015	<0.015	<0.015	<0.015	
benzo(g,h,i)perylene	191-24-2	E641A	0.010	µg/L	0.037	<0.010	<0.010	<0.010	<0.010	
benzo(k)fluoranthene	207-08-9	E641A	0.010	µg/L	0.084	<0.010	<0.010	<0.010	<0.010	
chrysene	218-01-9	E641A	0.010	µg/L	1.09	<0.010	<0.010	<0.010	<0.010	
dibenz(a,h)anthracene	53-70-3	E641A	0.0050	µg/L	0.0199	<0.0050	<0.0050	<0.0050	<0.0050	
fluoranthene	206-44-0	E641A	0.010	µg/L	13.0	<0.010	<0.010	<0.010	<0.010	
fluorene	86-73-7	E641A	0.010	µg/L	32.9	<0.010	<0.010	<0.010	<0.010	
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.010	µg/L	0.039	<0.010	<0.010	<0.010	<0.010	
methylnaphthalene, 1-	90-12-0	E641A	0.010	µg/L	7.13	<0.010	<0.010	<0.010	<0.010	
methylnaphthalene, 2-	91-57-6	E641A	0.010	µg/L	6.84	<0.010	<0.010	<0.010	<0.010	
naphthalene	91-20-3	E641A	0.050	µg/L	7.03	<0.050	<0.050	<0.050	<0.050	
phenanthrene	85-01-8	E641A	0.020	µg/L	33.4	<0.020	<0.020	<0.020	<0.020	
pyrene	129-00-0	E641A	0.010	µg/L	7.37	<0.010	<0.010	<0.010	<0.010	
quinoline	6027-02-7	E641A	0.050	µg/L	<0.900 ^{DLCL}	<0.050	<0.050	<0.050	<0.050	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	MW06-34	MW19-01	MW19-03	20MW-04D	20MW-04S
Client sampling date / time					15-Mar-2021 17:00	15-Mar-2021 15:30	15-Mar-2021 16:15	15-Mar-2021 15:45	15-Mar-2021 15:15	
Analyte	CAS Number	Method	LOR	Unit	VA21A4849-001	VA21A4849-002	VA21A4849-003	VA21A4849-004	VA21A4849-005	
					Result	Result	Result	Result	Result	
Polycyclic Aromatic Hydrocarbons Surrogates										
chrysene-d12	1719-03-5	E641A	0.010	%	111	101	98.1	99.5	103	
naphthalene-d8	1146-65-2	E641A	0.010	%	111	104	96.3	105	106	
phenanthrene-d10	1517-22-2	E641A	0.010	%	104	102	97.6	104	105	
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	
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	

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



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-05	20MW-06	20MW-07	20MW-08	20MW-09
Client sampling date / time					15-Mar-2021 13:30	15-Mar-2021 13:45	15-Mar-2021 14:15	15-Mar-2021 14:35	15-Mar-2021 12:40	
Analyte	CAS Number	Method	LOR	Unit	VA21A4849-006	VA21A4849-007	VA21A4849-008	VA21A4849-009	VA21A4849-010	
					Result	Result	Result	Result	Result	
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	77.6	94.1	96.8	71.6	335	
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	78.9	87.4	91.6	72.4	299	
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.555	0.0314	0.267	0.185	0.362	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00118	0.00065	0.00113	0.00126	0.00105	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0491	0.0532	0.0667	0.0555	0.200	
beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, total	7440-42-8	E420	0.010	mg/L	0.013	0.027	0.027	0.046	0.043	
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000178	<0.0000050	0.0000195	0.0000071	0.000126	
calcium, total	7440-70-2	E420	0.050	mg/L	25.7	25.5	29.6	18.9	83.2	
cesium, total	7440-46-2	E420	0.000010	mg/L	0.000033	0.000027	0.000030	0.000088	0.000016	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00113	0.00096	0.00132	0.00147	0.00067	
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00043	0.00026	0.00048	0.00040	0.00288	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00379	<0.00050	0.00099	0.00091	0.00271	
iron, total	7439-89-6	E420	0.010	mg/L	22.1	18.5	21.8	36.7	1.09	
lead, total	7439-92-1	E420	0.000050	mg/L	0.00851	<0.000050	0.000531	0.000908	0.000620	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0030	0.0012	0.0011	<0.0010	<0.0010	
magnesium, total	7439-95-4	E420	0.0050	mg/L	3.57	5.77	4.30	6.11	22.1	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.576	0.576	0.761	0.919	1.47	
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000265	0.000128	0.000281	0.000786	0.000317	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00081	<0.00050	0.00076	<0.00050	0.00550	
phosphorus, total	7723-14-0	E420	0.050	mg/L	0.150	0.077	0.094	<0.050	<0.050	
potassium, total	7440-09-7	E420	0.050	mg/L	3.42	3.19	3.15	2.97	2.52	
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00386	0.00532	0.00636	0.00944	0.00313	
selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	<0.000050	0.000069	0.000097	<0.000050	
silicon, total	7440-21-3	E420	0.10	mg/L	17.5	14.5	14.7	11.8	14.4	
silver, total	7440-22-4	E420	0.000010	mg/L	0.000018	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, total	17341-25-2	E420	0.050	mg/L	9.34	7.04	7.22	9.63	5.96	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-05	20MW-06	20MW-07	20MW-08	20MW-09
Client sampling date / time					15-Mar-2021 13:30	15-Mar-2021 13:45	15-Mar-2021 14:15	15-Mar-2021 14:35	15-Mar-2021 12:40	
Analyte	CAS Number	Method	LOR	Unit	VA21A4849-006	VA21A4849-007	VA21A4849-008	VA21A4849-009	VA21A4849-010	
					Result	Result	Result	Result	Result	
Total Metals										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.133	0.133	0.162	0.143	0.265	
sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	<0.50	<0.50	3.56	
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
thallium, total	7440-28-0	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00019	
thorium, total	7440-29-1	E420	0.00010	mg/L	0.00065	<0.00010	<0.00010	<0.00010	<0.00010	
tin, total	7440-31-5	E420	0.00010	mg/L	0.00026	<0.00010	0.00014	<0.00010	<0.00010	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.0175	0.00114	0.0134	0.00641	<0.0177 ^{DLM}	
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
uranium, total	7440-61-1	E420	0.00010	mg/L	0.000196	0.000069	0.000075	0.000054	0.000145	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00410	0.00589	0.00442	0.00677	0.00140	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0046	0.0031	<0.0030	0.0054	0.0164	
zirconium, total	7440-67-7	E420	0.00020	mg/L	0.00037	0.00042	0.00036	0.00058	0.00022	
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0118	0.0135	0.0122	0.0163	0.0063	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00084	0.00062	0.00101	0.00119	0.00088	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0428	0.0521	0.0653	0.0553	0.199	
beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.012	0.025	0.027	0.043	0.040	
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	0.0000066	0.0000070	<0.0000050	0.0000979	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	25.6	28.6	31.8	18.9	94.3	
cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000013	0.000023	0.000021	0.000078	<0.000010	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00059	0.00084	0.00090	0.00120	0.00023	
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00029	0.00023	0.00033	0.00033	0.00264	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	0.00044	
iron, dissolved	7439-89-6	E421	0.010	mg/L	18.4	16.5	18.8	32.6	0.490	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000054	<0.000050	<0.000050	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0025	0.0010	<0.0010	<0.0010	<0.0010	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	3.31	5.52	4.23	5.94	24.1	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.482	0.500	0.741	0.938	1.42	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-05	20MW-06	20MW-07	20MW-08	20MW-09
Client sampling date / time					15-Mar-2021 13:30	15-Mar-2021 13:45	15-Mar-2021 14:15	15-Mar-2021 14:35	15-Mar-2021 12:40	
Analyte	CAS Number	Method	LOR	Unit	VA21A4849-006	VA21A4849-007	VA21A4849-008	VA21A4849-009	VA21A4849-010	
					Result	Result	Result	Result	Result	
Dissolved Metals										
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000168	0.000117	0.000229	0.000719	0.000297	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00478	
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	0.143	0.087	0.073	<0.050	<0.050	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.14	3.03	3.06	2.94	2.34	
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00339	0.00483	0.00615	0.00896	0.00278	
selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0.000063	0.000083	<0.000050	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	15.5	13.5	13.3	10.8	12.8	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	9.38	7.40	7.95	10.3	6.08	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.130	0.140	0.172	0.153	0.279	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	<0.50	<0.50	3.66	
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	0.000015	
thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	0.00034	0.00034	0.00061	<0.00030	
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000035	0.000060	0.000050	0.000047	0.000127	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00266	0.00533	0.00317	0.00571	<0.00050	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0014	0.0020	0.0015	0.0031	0.0119	
zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	0.00027	0.00037	0.00029	0.00046	<0.00020	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	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	



Analytical Results

Sub-Matrix: Water					Client sample ID	20MW-05	20MW-06	20MW-07	20MW-08	20MW-09
(Matrix: Water)										
Client sampling date / time					15-Mar-2021 13:30	15-Mar-2021 13:45	15-Mar-2021 14:15	15-Mar-2021 14:35	15-Mar-2021 12:40	
Analyte	CAS Number	Method	LOR	Unit	VA21A4849-006	VA21A4849-007	VA21A4849-008	VA21A4849-009	VA21A4849-010	
					Result	Result	Result	Result	Result	
Volatile Organic Compounds										
dichloropropylene, cis+trans-1,3-	542-75-6	E611C	0.75	µg/L	<0.75	<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	<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	<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	<0.20
trichloroethane, 1,1,2-	79-00-5	E611C	0.50	µg/L	<0.50	<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	<0.50
Volatile Organic Compounds [Drycleaning]										
carbon tetrachloride	56-23-5	E611C	0.50	µg/L	<0.50	<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	<0.50
dichloroethane, 1,1-	75-34-3	E611C	0.50	µg/L	<0.50	<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	<0.50
dichloroethylene, 1,1-	75-35-4	E611C	0.50	µg/L	<0.50	<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	<0.50
dichloroethylene, trans-1,2-	156-60-5	E611C	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
dichloromethane	75-09-2	E611C	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.50	µg/L	<0.50	<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	<0.50
trichloroethane, 1,1,1-	71-55-6	E611C	0.50	µg/L	<0.50	<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	<0.50
vinyl chloride	75-01-4	E611C	0.40	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Volatile Organic Compounds [Fuels]										
benzene	71-43-2	E611C	0.50	µg/L	<0.50	<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	<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	<0.50
styrene	100-42-5	E611C	0.50	µg/L	<0.50	<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	<0.40
xylene, m+p-	179601-23-1	E611C	0.40	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
xylene, o-	95-47-6	E611C	0.30	µg/L	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
xylenes, total	1330-20-7	E611C	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611C	0.50	%	103	109	107	112	109	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-05	20MW-06	20MW-07	20MW-08	20MW-09
Client sampling date / time					15-Mar-2021 13:30	15-Mar-2021 13:45	15-Mar-2021 14:15	15-Mar-2021 14:35	15-Mar-2021 12:40	
Analyte	CAS Number	Method	LOR	Unit	VA21A4849-006	VA21A4849-007	VA21A4849-008	VA21A4849-009	VA21A4849-010	
					Result	Result	Result	Result	Result	
Volatile Organic Compounds Surrogates										
difluorobenzene, 1,4-	540-36-3	E611C	0.50	%	111	110	109	105	106	
Hydrocarbons										
EPH (C10-C19)	----	E601A	250	µg/L	<250	<250	<250	<250	<250	
EPH (C19-C32)	----	E601A	250	µg/L	<250	<250	<250	<250	<250	
HEPHw	----	EC600A	250	µg/L	<250	<250	<250	<250	<250	
LEPHw	----	EC600A	250	µg/L	<250	<250	<250	<250	<250	
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	50	%	91.0	93.9	89.9	95.6	91.7	
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A	0.010	µg/L	<0.010	<0.010	<0.010	0.013	<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	<0.010	<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	0.012	
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	<0.010	<0.010	<0.015 ^{DLCI}	
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	<0.010	<0.010	0.022	
fluorene	86-73-7	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<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	<0.010	<0.010	<0.010	<0.010	<0.010	
methylnaphthalene, 2-	91-57-6	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	0.013	
naphthalene	91-20-3	E641A	0.050	µg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
phenanthrene	85-01-8	E641A	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
pyrene	129-00-0	E641A	0.010	µg/L	<0.010	<0.010	<0.010	0.012	0.020	
quinoline	6027-02-7	E641A	0.050	µg/L	<0.050	<0.050	<0.075 ^{DLCI}	<0.050	<0.050	
Polycyclic Aromatic Hydrocarbons Surrogates										



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-05	20MW-06	20MW-07	20MW-08	20MW-09
Client sampling date / time					15-Mar-2021 13:30	15-Mar-2021 13:45	15-Mar-2021 14:15	15-Mar-2021 14:35	15-Mar-2021 12:40	
Analyte	CAS Number	Method	LOR	Unit	VA21A4849-006	VA21A4849-007	VA21A4849-008	VA21A4849-009	VA21A4849-010	
					Result	Result	Result	Result	Result	
Polycyclic Aromatic Hydrocarbons Surrogates										
chrysene-d12	1719-03-5	E641A	0.010	%	95.7	98.9	95.5	97.7	91.6	
naphthalene-d8	1146-65-2	E641A	0.010	%	90.4	87.5	85.4	89.4	82.8	
phenanthrene-d10	1517-22-2	E641A	0.010	%	107	106	103	106	99.8	
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	
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	

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



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-10D	20MW-10S	20MW-11	QA3	QA4
Client sampling date / time					15-Mar-2021 11:40	15-Mar-2021 11:45	15-Mar-2021 12:45	15-Mar-2021	15-Mar-2021	
Analyte	CAS Number	Method	LOR	Unit	VA21A4849-011	VA21A4849-012	VA21A4849-013	VA21A4849-014	VA21A4849-015	
					Result	Result	Result	Result	Result	
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	63.1	154	107	63.3	37.6	
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	63.4	141	103	60.8	37.9	
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.323	0.0778	0.113	0.373	0.419	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00014	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00018	0.00109	0.00042	0.00023	0.0174	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0240	0.0632	0.0470	0.0257	0.0333	
beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, total	7440-42-8	E420	0.010	mg/L	0.013	0.046	0.024	0.012	<0.010	
cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	0.0000236	0.0000055	<0.0000050	0.0000128	
calcium, total	7440-70-2	E420	0.050	mg/L	14.1	39.2	27.6	13.8	12.3	
cesium, total	7440-46-2	E420	0.000010	mg/L	0.000034	0.000023	0.000028	0.000036	<0.000010	
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00201	0.00262	0.00082	0.00246	0.00550	
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00023	0.00058	0.00120	0.00024	0.00183	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00370	<0.00050	0.00093	0.00409	0.00733	
iron, total	7439-89-6	E420	0.010	mg/L	32.5	30.2	16.7	32.6	17.6	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000328	0.000055	0.000100	0.000404	0.00132	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0024	0.0010	<0.0010	0.0024	<0.0010	
magnesium, total	7439-95-4	E420	0.0050	mg/L	6.86	10.4	8.20	6.39	1.75	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.572	1.10	0.425	0.508	0.500	
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000096	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000500	0.000225	0.000630	0.000531	0.000153	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	0.00055	0.00104	<0.00050	0.00129	
phosphorus, total	7723-14-0	E420	0.050	mg/L	0.249	0.063	<0.050	0.361	0.051	
potassium, total	7440-09-7	E420	0.050	mg/L	3.00	3.33	2.86	3.07	1.86	
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00370	0.0108	0.00372	0.00409	0.00325	
selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	0.000080	
silicon, total	7440-21-3	E420	0.10	mg/L	15.8	11.1	9.58	15.2	7.51	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	0.000020	
sodium, total	17341-25-2	E420	0.050	mg/L	6.71	7.12	4.10	6.83	2.02	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-10D	20MW-10S	20MW-11	QA3	QA4
Client sampling date / time					15-Mar-2021 11:40	15-Mar-2021 11:45	15-Mar-2021 12:45	15-Mar-2021	15-Mar-2021	
Analyte	CAS Number	Method	LOR	Unit	VA21A4849-011	VA21A4849-012	VA21A4849-013	VA21A4849-014	VA21A4849-015	
					Result	Result	Result	Result	Result	
Total Metals										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.118	0.260	0.126	0.121	0.0994	
sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	1.70	5.78	<0.50	0.72	
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
thallium, total	7440-28-0	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
tin, total	7440-31-5	E420	0.00010	mg/L	0.00014	<0.00010	0.00010	0.00019	0.00012	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.0151	0.00396	0.00559	0.0184	0.00697	
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
uranium, total	7440-61-1	E420	0.00010	mg/L	0.000022	0.000059	0.000029	0.000027	0.000126	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00336	0.0137	0.00359	0.00385	0.00369	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0033	0.0053	0.0064	0.0039	<0.0030	
zirconium, total	7440-67-7	E420	0.00020	mg/L	0.00027	0.00064	0.00023	0.00034	0.00062	
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0106	0.0236	0.0076	0.0097	0.332	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00010	0.00080	0.00024	<0.00010	0.00871	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0205	0.0582	0.0420	0.0206	0.0305	
beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.012	0.044	0.022	0.012	<0.010	
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	0.0000057	<0.0000050	<0.0000050	<0.0000050	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	13.9	42.6	28.9	14.1	12.0	
cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000018	0.000022	0.000017	0.000020	<0.000010	
chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00095	0.00205	0.00052	0.00091	0.00380	
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	0.00050	0.00114	<0.00010	0.00183	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	0.00287	
iron, dissolved	7439-89-6	E421	0.010	mg/L	27.1	27.1	12.6	27.5	12.5	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	0.000476	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0020	<0.0010	<0.0010	0.0020	<0.0010	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	6.90	11.6	8.47	6.83	1.85	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.476	1.21	0.397	0.484	0.508	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-10D	20MW-10S	20MW-11	QA3	QA4
Client sampling date / time					15-Mar-2021 11:40	15-Mar-2021 11:45	15-Mar-2021 12:45	15-Mar-2021	15-Mar-2021	
Analyte	CAS Number	Method	LOR	Unit	VA21A4849-011	VA21A4849-012	VA21A4849-013	VA21A4849-014	VA21A4849-015	
					Result	Result	Result	Result	Result	
Dissolved Metals										
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000306	0.000176	0.000284	0.000323	0.000059	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0.00066	<0.00050	0.00098	
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	0.196	<0.050	<0.050	0.156	<0.050	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.76	3.31	2.71	2.84	1.90	
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00350	0.0100	0.00341	0.00363	0.00309	
selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	0.000070	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	14.0	10.9	9.16	14.0	7.42	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	6.82	7.27	4.02	6.99	1.92	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.118	0.269	0.120	0.119	0.0994	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	1.42	5.06	<0.50	0.52	
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	0.00083	<0.00030	0.00034	0.00407	
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	0.000049	0.000018	<0.000010	0.000094	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00183	0.0101	0.00252	0.00190	0.00204	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0015	0.0048	0.0064	0.0014	0.0016	
zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	<0.00020	0.00059	<0.00020	<0.00020	0.00115 ^{DTMF}	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	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	



Analytical Results

Sub-Matrix: Water					Client sample ID	20MW-10D	20MW-10S	20MW-11	QA3	QA4
(Matrix: Water)										
Client sampling date / time					15-Mar-2021 11:40	15-Mar-2021 11:45	15-Mar-2021 12:45	15-Mar-2021	15-Mar-2021	
Analyte	CAS Number	Method	LOR	Unit	VA21A4849-011	VA21A4849-012	VA21A4849-013	VA21A4849-014	VA21A4849-015	
					Result	Result	Result	Result	Result	
Volatile Organic Compounds										
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 [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	2.21	<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	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
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	0.53	0.75	<0.40	<0.40	
Volatile Organic Compounds [Fuels]										
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	0.40	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40	
xylene, o-	95-47-6	E611C	0.30	µg/L	<0.30	<0.30	<0.30	<0.30	<0.30	
xylenes, total	1330-20-7	E611C	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611C	0.50	%	106	110	107	108	111	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-10D	20MW-10S	20MW-11	QA3	QA4
Client sampling date / time					15-Mar-2021 11:40	15-Mar-2021 11:45	15-Mar-2021 12:45	15-Mar-2021	15-Mar-2021	
Analyte	CAS Number	Method	LOR	Unit	VA21A4849-011	VA21A4849-012	VA21A4849-013	VA21A4849-014	VA21A4849-015	
					Result	Result	Result	Result	Result	
Volatile Organic Compounds Surrogates										
difluorobenzene, 1,4-	540-36-3	E611C	0.50	%	108	112	113	107	113	
Hydrocarbons										
EPH (C10-C19)	----	E601A	250	µg/L	<250	<250	<250	<250	580	
EPH (C19-C32)	----	E601A	250	µg/L	<250	<250	<250	<250	<250	
HEPHw	----	EC600A	250	µg/L	<250	<250	<250	<250	<250	
LEPHw	----	EC600A	250	µg/L	<250	<250	<250	<250	420	
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	50	%	98.8	93.0	93.2	98.1	94.5	
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A	0.010	µg/L	0.066	<0.010	0.012	0.077	79.4	
acenaphthylene	208-96-8	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	0.523	
acridine	260-94-6	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	1.91	
anthracene	120-12-7	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	5.14	
benz(a)anthracene	56-55-3	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	0.902	
benzo(a)pyrene	50-32-8	E641A	0.0050	µg/L	<0.0050	<0.0050	<0.0050	<0.0050	0.164	
benzo(b+j)fluoranthene	----	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	0.230	
benzo(b+j+k)fluoranthene	----	E641A	0.015	µg/L	<0.015	<0.015	<0.015	<0.015	0.328	
benzo(g,h,i)perylene	191-24-2	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	0.040	
benzo(k)fluoranthene	207-08-9	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	0.098	
chrysene	218-01-9	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	0.928	
dibenz(a,h)anthracene	53-70-3	E641A	0.0050	µg/L	<0.0050	<0.0050	<0.0050	<0.0050	0.0159	
fluoranthene	206-44-0	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	13.0	
fluorene	86-73-7	E641A	0.010	µg/L	0.138	<0.010	0.032	0.160	32.9	
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	0.040	
methylnaphthalene, 1-	90-12-0	E641A	0.010	µg/L	0.096	<0.010	<0.010	0.108	6.03	
methylnaphthalene, 2-	91-57-6	E641A	0.010	µg/L	0.019	<0.010	<0.010	0.022	5.88	
naphthalene	91-20-3	E641A	0.050	µg/L	0.583	<0.050	<0.050	0.623	6.21	
phenanthrene	85-01-8	E641A	0.020	µg/L	0.058	<0.020	<0.020	0.068	35.7	
pyrene	129-00-0	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	6.92	
quinoline	6027-02-7	E641A	0.050	µg/L	<0.050	<0.050	<0.050	<0.050	<0.950 ^{DLO}	
Polycyclic Aromatic Hydrocarbons Surrogates										



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-10D	20MW-10S	20MW-11	QA3	QA4
Client sampling date / time					15-Mar-2021 11:40	15-Mar-2021 11:45	15-Mar-2021 12:45	15-Mar-2021	15-Mar-2021	
Analyte	CAS Number	Method	LOR	Unit	VA21A4849-011	VA21A4849-012	VA21A4849-013	VA21A4849-014	VA21A4849-015	
					Result	Result	Result	Result	Result	
Polycyclic Aromatic Hydrocarbons Surrogates										
chrysene-d12	1719-03-5	E641A	0.010	%	98.4	92.8	95.8	100.0	96.2	
naphthalene-d8	1146-65-2	E641A	0.010	%	90.7	86.8	94.7	93.9	91.4	
phenanthrene-d10	1517-22-2	E641A	0.010	%	106	102	107	109	104	
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	
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	

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



Analytical Results

Sub-Matrix: Water					Client sample ID	MW06-34-TOP	----	----	----	----
(Matrix: Water)					Client sampling date / time	15-Mar-2021 17:00	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	VA21A4849-016	-----	-----	-----	-----	
					Result	---	---	---	---	
Volatile Organic Compounds										
chlorobenzene	108-90-7	E611C	0.50	µg/L	<0.50	---	---	---	---	
chloromethane	74-87-3	E611C	0.50	µg/L	<0.50	---	---	---	---	
dichlorobenzene, 1,2-	95-50-1	E611C	0.50	µg/L	<0.50	---	---	---	---	
dichlorobenzene, 1,3-	541-73-1	E611C	0.50	µg/L	<0.50	---	---	---	---	
dichlorobenzene, 1,4-	106-46-7	E611C	0.50	µg/L	<0.50	---	---	---	---	
dichloropropane, 1,2-	78-87-5	E611C	0.50	µg/L	<0.50	---	---	---	---	
dichloropropylene, cis+trans-1,3-	542-75-6	E611C	0.75	µg/L	<0.75	---	---	---	---	
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.50	µg/L	<0.50	---	---	---	---	
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.50	µg/L	<0.50	---	---	---	---	
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.20	µg/L	<0.20	---	---	---	---	
trichloroethane, 1,1,2-	79-00-5	E611C	0.50	µg/L	<0.50	---	---	---	---	
trichlorofluoromethane	75-69-4	E611C	0.50	µg/L	<0.50	---	---	---	---	
Volatile Organic Compounds [Drycleaning]										
carbon tetrachloride	56-23-5	E611C	0.50	µg/L	<0.50	---	---	---	---	
chloroethane	75-00-3	E611C	0.50	µg/L	<0.50	---	---	---	---	
dichloroethane, 1,1-	75-34-3	E611C	0.50	µg/L	<0.50	---	---	---	---	
dichloroethane, 1,2-	107-06-2	E611C	0.50	µg/L	<0.50	---	---	---	---	
dichloroethylene, 1,1-	75-35-4	E611C	0.50	µg/L	<0.50	---	---	---	---	
dichloroethylene, cis-1,2-	156-59-4	E611C	0.50	µg/L	<0.50	---	---	---	---	
dichloroethylene, trans-1,2-	156-60-5	E611C	0.50	µg/L	<0.50	---	---	---	---	
dichloromethane	75-09-2	E611C	1.0	µg/L	<1.0	---	---	---	---	
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.50	µg/L	<0.50	---	---	---	---	
tetrachloroethylene	127-18-4	E611C	0.50	µg/L	<0.50	---	---	---	---	
trichloroethane, 1,1,1-	71-55-6	E611C	0.50	µg/L	<0.50	---	---	---	---	
trichloroethylene	79-01-6	E611C	0.50	µg/L	<0.50	---	---	---	---	
vinyl chloride	75-01-4	E611C	0.40	µg/L	<0.40	---	---	---	---	
Volatile Organic Compounds [Fuels]										
benzene	71-43-2	E611C	0.50	µg/L	<0.50	---	---	---	---	
ethylbenzene	100-41-4	E611C	0.50	µg/L	<0.50	---	---	---	---	
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.50	µg/L	<0.50	---	---	---	---	
styrene	100-42-5	E611C	0.50	µg/L	<0.50	---	---	---	---	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	MW06-34-TOP	----	----	----	----
Client sampling date / time					15-Mar-2021 17:00	----	----	----	----	
Analyte	CAS Number	Method	LOR	Unit	VA21A4849-016	-----	-----	-----	-----	
					Result	---	---	---	---	
Volatile Organic Compounds [Fuels]										
toluene	108-88-3	E611C	0.40	µg/L	<0.40	----	----	----	----	
xylene, m+p-	179601-23-1	E611C	0.40	µg/L	<0.40	----	----	----	----	
xylene, o-	95-47-6	E611C	0.30	µg/L	<0.30	----	----	----	----	
xylenes, total	1330-20-7	E611C	0.50	µg/L	<0.50	----	----	----	----	
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611C	0.50	%	114	----	----	----	----	
difluorobenzene, 1,4-	540-36-3	E611C	0.50	%	114	----	----	----	----	
Volatile Organic Compounds [THMs]										
bromodichloromethane	75-27-4	E611C	0.50	µg/L	<0.50	----	----	----	----	
bromoform	75-25-2	E611C	0.50	µg/L	<0.50	----	----	----	----	
chloroform	67-66-3	E611C	0.50	µg/L	<0.50	----	----	----	----	
dibromochloromethane	124-48-1	E611C	0.50	µg/L	<0.50	----	----	----	----	

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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA21A4849	Page	: 1 of 27
Client	: Jacobs Consultancy Canada Inc.	Laboratory	: Vancouver - Environmental
Contact	: Jelena Sladojevic	Account Manager	: Edward Ngai
Address	: Metrotower II, Suite 2100 4720 Kingsway Burnaby BC Canada V5H 4N2	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: CE777000 R-LS.EV.TU.H6	Date Samples Received	: 16-Mar-2021 12:10
PO	: 670014CH.B0.01.09	Issue Date	: 25-Mar-2021 16:18
C-O-C number	: 20-907011/10		
Sampler	: A.CANALI		
Site	: ----		
Quote number	: VA20-CHMH100-013		
No. of samples received	: 16		
No. of samples analysed	: 16		

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Laboratory Control Sample (LCS) Recoveries								
Dissolved Metals	QC-MRG2-1653540 02	----	iron, dissolved	7439-89-6	E421	79.3 % ^{MES}	80.0-120%	Recovery less than lower 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).



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: **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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)											
HDPE dissolved (nitric acid) 20MW-04D	E421.Cr-L	15-Mar-2021	18-Mar-2021	180 days	2 days	✓	18-Mar-2021	177 days	0 days	✓	
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)											
HDPE dissolved (nitric acid) 20MW-04S	E421.Cr-L	15-Mar-2021	18-Mar-2021	180 days	2 days	✓	18-Mar-2021	177 days	0 days	✓	
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)											
HDPE dissolved (nitric acid) 20MW-06	E421.Cr-L	15-Mar-2021	18-Mar-2021	180 days	2 days	✓	18-Mar-2021	177 days	0 days	✓	
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)											
HDPE dissolved (nitric acid) 20MW-07	E421.Cr-L	15-Mar-2021	18-Mar-2021	180 days	2 days	✓	18-Mar-2021	177 days	0 days	✓	
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)											
HDPE dissolved (nitric acid) 20MW-08	E421.Cr-L	15-Mar-2021	18-Mar-2021	180 days	2 days	✓	18-Mar-2021	177 days	0 days	✓	
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)											
HDPE dissolved (nitric acid) MW06-34	E421.Cr-L	15-Mar-2021	18-Mar-2021	180 days	2 days	✓	18-Mar-2021	177 days	0 days	✓	
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)											
HDPE dissolved (nitric acid) MW19-01	E421.Cr-L	15-Mar-2021	18-Mar-2021	180 days	2 days	✓	18-Mar-2021	177 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)											
HDPE dissolved (nitric acid) MW19-03	E421.Cr-L	15-Mar-2021	18-Mar-2021	180 days	2 days	✔	18-Mar-2021	177 days	0 days	✔	
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)											
HDPE dissolved (nitric acid) 20MW-05	E421.Cr-L	15-Mar-2021	18-Mar-2021	180 days	3 days	✔	18-Mar-2021	176 days	0 days	✔	
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)											
HDPE dissolved (nitric acid) 20MW-09	E421.Cr-L	15-Mar-2021	18-Mar-2021	180 days	3 days	✔	18-Mar-2021	176 days	0 days	✔	
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)											
HDPE dissolved (nitric acid) 20MW-10D	E421.Cr-L	15-Mar-2021	18-Mar-2021	180 days	3 days	✔	18-Mar-2021	176 days	0 days	✔	
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)											
HDPE dissolved (nitric acid) 20MW-10S	E421.Cr-L	15-Mar-2021	18-Mar-2021	180 days	3 days	✔	18-Mar-2021	176 days	0 days	✔	
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)											
HDPE dissolved (nitric acid) 20MW-11	E421.Cr-L	15-Mar-2021	18-Mar-2021	180 days	3 days	✔	18-Mar-2021	176 days	0 days	✔	
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)											
HDPE dissolved (nitric acid) QA3	E421.Cr-L	15-Mar-2021	18-Mar-2021	180 days	3 days	✔	18-Mar-2021	176 days	0 days	✔	
Dissolved Metals : Dissolved Chromium in Water by CRC ICPMS (Low Level)											
HDPE dissolved (nitric acid) QA4	E421.Cr-L	15-Mar-2021	18-Mar-2021	180 days	3 days	✔	18-Mar-2021	176 days	0 days	✔	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-04D	E509	15-Mar-2021	17-Mar-2021	28 days	1 days	✔	17-Mar-2021	26 days	0 days	✔	



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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-04S	E509	15-Mar-2021	17-Mar-2021	28 days	1 days	✔	17-Mar-2021	26 days	0 days	✔	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-05	E509	15-Mar-2021	17-Mar-2021	28 days	1 days	✔	17-Mar-2021	26 days	0 days	✔	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-06	E509	15-Mar-2021	17-Mar-2021	28 days	1 days	✔	17-Mar-2021	26 days	0 days	✔	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-07	E509	15-Mar-2021	17-Mar-2021	28 days	1 days	✔	17-Mar-2021	26 days	0 days	✔	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-08	E509	15-Mar-2021	17-Mar-2021	28 days	1 days	✔	17-Mar-2021	26 days	0 days	✔	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-09	E509	15-Mar-2021	17-Mar-2021	28 days	1 days	✔	17-Mar-2021	26 days	0 days	✔	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) MW06-34	E509	15-Mar-2021	17-Mar-2021	28 days	1 days	✔	17-Mar-2021	26 days	0 days	✔	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) MW19-01	E509	15-Mar-2021	17-Mar-2021	28 days	1 days	✔	17-Mar-2021	26 days	0 days	✔	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) MW19-03	E509	15-Mar-2021	17-Mar-2021	28 days	1 days	✔	17-Mar-2021	26 days	0 days	✔	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) QA3	E509	15-Mar-2021	17-Mar-2021	28 days	2 days	✔	17-Mar-2021	25 days	0 days	✔	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) QA4	E509	15-Mar-2021	17-Mar-2021	28 days	2 days	✔	17-Mar-2021	25 days	0 days	✔	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) 20MW-04D	E421	15-Mar-2021	18-Mar-2021	180 days	2 days	✔	18-Mar-2021	177 days	0 days	✔	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) 20MW-04S	E421	15-Mar-2021	18-Mar-2021	180 days	2 days	✔	18-Mar-2021	177 days	0 days	✔	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) 20MW-06	E421	15-Mar-2021	18-Mar-2021	180 days	2 days	✔	18-Mar-2021	177 days	0 days	✔	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) 20MW-07	E421	15-Mar-2021	18-Mar-2021	180 days	2 days	✔	18-Mar-2021	177 days	0 days	✔	



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			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) 20MW-08	E421	15-Mar-2021	18-Mar-2021	180 days	2 days	✓	18-Mar-2021	177 days	0 days	✓	
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HDPE dissolved (nitric acid) 20MW-11	E421	15-Mar-2021	18-Mar-2021	180 days	3 days	✓	18-Mar-2021	176 days	0 days	✓	



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			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) QA3	E421	15-Mar-2021	18-Mar-2021	180 days	3 days	✓	18-Mar-2021	176 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) QA4	E421	15-Mar-2021	18-Mar-2021	180 days	3 days	✓	18-Mar-2021	176 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-04D	E601A	15-Mar-2021	22-Mar-2021	14 days	7 days	✓	23-Mar-2021	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-04S	E601A	15-Mar-2021	22-Mar-2021	14 days	7 days	✓	23-Mar-2021	40 days	0 days	✓
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Hydrocarbons : BC PHC - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-07	E601A	15-Mar-2021	22-Mar-2021	14 days	7 days	✓	23-Mar-2021	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-08	E601A	15-Mar-2021	22-Mar-2021	14 days	7 days	✓	23-Mar-2021	40 days	0 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-09	E601A	15-Mar-2021	22-Mar-2021	14 days	7 days	✓	23-Mar-2021	40 days	0 days	✓



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Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) QA3	E601A	15-Mar-2021	22-Mar-2021	14 days	7 days	✓	23-Mar-2021	40 days	0 days	✓	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) QA4	E601A	15-Mar-2021	22-Mar-2021	14 days	7 days	✓	23-Mar-2021	40 days	0 days	✓	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-04D	E641A	15-Mar-2021	22-Mar-2021	14 days	7 days	✓	23-Mar-2021	40 days	0 days	✓	



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			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
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Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-07	E641A	15-Mar-2021	22-Mar-2021	14 days	7 days	✔	23-Mar-2021	40 days	0 days	✔	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-08	E641A	15-Mar-2021	22-Mar-2021	14 days	7 days	✔	23-Mar-2021	40 days	0 days	✔	
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Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-11	E641A	15-Mar-2021	22-Mar-2021	14 days	7 days	✔	23-Mar-2021	40 days	0 days	✔	



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Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)											
HDPE total (nitric acid) 20MW-04D	E420.Cr-L	15-Mar-2021	----	----	----		17-Mar-2021	180 days	2 days	✓	
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)											
HDPE total (nitric acid) 20MW-04S	E420.Cr-L	15-Mar-2021	----	----	----		17-Mar-2021	180 days	2 days	✓	
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)											
HDPE total (nitric acid) 20MW-05	E420.Cr-L	15-Mar-2021	----	----	----		17-Mar-2021	180 days	2 days	✓	
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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) 20MW-07	E420.Cr-L	15-Mar-2021	----	----	----		17-Mar-2021	180 days	2 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) 20MW-08	E420.Cr-L	15-Mar-2021	----	----	----		17-Mar-2021	180 days	2 days	✓
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HDPE total (nitric acid) 20MW-10S	E420.Cr-L	15-Mar-2021	----	----	----		18-Mar-2021	180 days	2 days	✓
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Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) MW19-01	E420.Cr-L	15-Mar-2021	----	----	----		17-Mar-2021	180 days	2 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) MW19-03	E420.Cr-L	15-Mar-2021	----	----	----		17-Mar-2021	180 days	2 days	✓



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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) QA3	E420.Cr-L	15-Mar-2021	----	----	----		18-Mar-2021	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) QA4	E420.Cr-L	15-Mar-2021	----	----	----		18-Mar-2021	180 days	3 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) 20MW-04D	E508	15-Mar-2021	----	----	----		18-Mar-2021	28 days	2 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) 20MW-04S	E508	15-Mar-2021	----	----	----		18-Mar-2021	28 days	2 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) 20MW-05	E508	15-Mar-2021	----	----	----		18-Mar-2021	28 days	2 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) 20MW-06	E508	15-Mar-2021	----	----	----		18-Mar-2021	28 days	2 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) 20MW-07	E508	15-Mar-2021	----	----	----		18-Mar-2021	28 days	2 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) 20MW-08	E508	15-Mar-2021	----	----	----		18-Mar-2021	28 days	2 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) 20MW-09	E508	15-Mar-2021	----	----	----		18-Mar-2021	28 days	2 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) 20MW-10D	E508	15-Mar-2021	----	----	----		18-Mar-2021	28 days	2 days	✓	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) 20MW-10S	E508	15-Mar-2021	----	----	----		18-Mar-2021	28 days	2 days	✓	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) 20MW-11	E508	15-Mar-2021	----	----	----		18-Mar-2021	28 days	2 days	✓	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) MW06-34	E508	15-Mar-2021	----	----	----		18-Mar-2021	28 days	2 days	✓	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) MW19-01	E508	15-Mar-2021	----	----	----		18-Mar-2021	28 days	2 days	✓	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) MW19-03	E508	15-Mar-2021	----	----	----		18-Mar-2021	28 days	2 days	✓	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) QA3	E508	15-Mar-2021	----	----	----		18-Mar-2021	28 days	3 days	✓	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) QA4	E508	15-Mar-2021	----	----	----		18-Mar-2021	28 days	3 days	✓	
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE total (nitric acid) 20MW-04D	E420	15-Mar-2021	----	----	----		17-Mar-2021	180 days	2 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE total (nitric acid) 20MW-04S	E420	15-Mar-2021	----	----	----		17-Mar-2021	180 days	2 days	✓	
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE total (nitric acid) 20MW-05	E420	15-Mar-2021	----	----	----		17-Mar-2021	180 days	2 days	✓	
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE total (nitric acid) 20MW-06	E420	15-Mar-2021	----	----	----		17-Mar-2021	180 days	2 days	✓	
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE total (nitric acid) 20MW-07	E420	15-Mar-2021	----	----	----		17-Mar-2021	180 days	2 days	✓	
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE total (nitric acid) 20MW-08	E420	15-Mar-2021	----	----	----		17-Mar-2021	180 days	2 days	✓	
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE total (nitric acid) 20MW-09	E420	15-Mar-2021	----	----	----		17-Mar-2021	180 days	2 days	✓	
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE total (nitric acid) 20MW-10D	E420	15-Mar-2021	----	----	----		17-Mar-2021	180 days	2 days	✓	
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE total (nitric acid) 20MW-10S	E420	15-Mar-2021	----	----	----		18-Mar-2021	180 days	2 days	✓	
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE total (nitric acid) 20MW-11	E420	15-Mar-2021	----	----	----		18-Mar-2021	180 days	2 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE total (nitric acid) MW06-34	E420	15-Mar-2021	----	----	----		17-Mar-2021	180 days	2 days	✓	
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE total (nitric acid) MW19-01	E420	15-Mar-2021	----	----	----		17-Mar-2021	180 days	2 days	✓	
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE total (nitric acid) MW19-03	E420	15-Mar-2021	----	----	----		17-Mar-2021	180 days	2 days	✓	
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE total (nitric acid) QA3	E420	15-Mar-2021	----	----	----		18-Mar-2021	180 days	3 days	✓	
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE total (nitric acid) QA4	E420	15-Mar-2021	----	----	----		18-Mar-2021	180 days	3 days	✓	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-04D	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----		
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-04S	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----		
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-05	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----		
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-06	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----		



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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-07	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-08	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-09	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-10D	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-10S	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-11	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW06-34	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW06-34-TOP	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW19-01	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	



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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW19-03	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) QA3	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) QA4	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-04D	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-04S	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-05	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-06	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-07	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-08	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	



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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-09	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-10D	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-10S	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-11	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW06-34	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW06-34-TOP	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW19-01	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW19-03	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) QA3	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	



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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) QA4	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----		
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-04D	E611C	15-Mar-2021	22-Mar-2021	14 days	6 days	✔	23-Mar-2021	7 days	0 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-04S	E611C	15-Mar-2021	22-Mar-2021	14 days	6 days	✔	23-Mar-2021	7 days	0 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-05	E611C	15-Mar-2021	22-Mar-2021	14 days	6 days	✔	23-Mar-2021	7 days	0 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-06	E611C	15-Mar-2021	22-Mar-2021	14 days	6 days	✔	23-Mar-2021	7 days	0 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-07	E611C	15-Mar-2021	22-Mar-2021	14 days	6 days	✔	23-Mar-2021	7 days	0 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-08	E611C	15-Mar-2021	22-Mar-2021	14 days	6 days	✔	23-Mar-2021	7 days	0 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) MW06-34	E611C	15-Mar-2021	22-Mar-2021	14 days	6 days	✔	23-Mar-2021	7 days	0 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) MW06-34-TOP	E611C	15-Mar-2021	22-Mar-2021	14 days	6 days	✔	23-Mar-2021	7 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) MW19-01	E611C	15-Mar-2021	22-Mar-2021	14 days	6 days	✔	23-Mar-2021	7 days	0 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) MW19-03	E611C	15-Mar-2021	22-Mar-2021	14 days	6 days	✔	23-Mar-2021	7 days	0 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-09	E611C	15-Mar-2021	22-Mar-2021	14 days	7 days	✔	23-Mar-2021	6 days	0 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-10D	E611C	15-Mar-2021	22-Mar-2021	14 days	7 days	✔	23-Mar-2021	6 days	0 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-10S	E611C	15-Mar-2021	22-Mar-2021	14 days	7 days	✔	23-Mar-2021	6 days	0 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-11	E611C	15-Mar-2021	22-Mar-2021	14 days	7 days	✔	23-Mar-2021	6 days	0 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) QA3	E611C	15-Mar-2021	22-Mar-2021	14 days	7 days	✔	23-Mar-2021	6 days	0 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) QA4	E611C	15-Mar-2021	22-Mar-2021	14 days	7 days	✔	23-Mar-2021	6 days	0 days	✔	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-04D	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----		



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		Eval	Analysis Date	Holding Times		
				Rec	Actual			Rec	Actual	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-04S	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-05	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-06	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-07	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-08	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-09	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-10D	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-10S	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-11	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	



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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW06-34	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW06-34-TOP	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW19-01	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW19-03	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) QA3	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) QA4	E611C	15-Mar-2021	22-Mar-2021	----	----		23-Mar-2021	----	----	

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: **Water** Evaluation: * = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
Analytical Methods							
Laboratory Duplicates (DUP)							
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	165355	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	164603	2	40	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	165354	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	164784	2	27	7.4	5.0	✓
Total Mercury in Water by CVAAS	E508	165125	2	40	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	164783	2	40	5.0	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	167270	1	19	5.2	5.0	✓
Laboratory Control Samples (LCS)							
BC PHC - EPH by GC-FID	E601A	167410	2	36	5.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	165355	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	164603	2	40	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	165354	1	20	5.0	5.0	✓
PAHs by Hexane LVI GC-MS	E641A	167411	2	33	6.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	164784	2	27	7.4	5.0	✓
Total Mercury in Water by CVAAS	E508	165125	2	40	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	164783	2	40	5.0	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	167270	1	19	5.2	5.0	✓
Method Blanks (MB)							
BC PHC - EPH by GC-FID	E601A	167410	2	36	5.5	5.0	✓
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	165355	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	164603	2	40	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	165354	1	20	5.0	5.0	✓
PAHs by Hexane LVI GC-MS	E641A	167411	2	33	6.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	164784	2	27	7.4	5.0	✓
Total Mercury in Water by CVAAS	E508	165125	2	40	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	164783	2	40	5.0	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	167270	1	19	5.2	5.0	✓
Matrix Spikes (MS)							
Dissolved Chromium in Water by CRC ICPMS (Low Level)	E421.Cr-L	165355	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	164603	2	40	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	165354	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	164784	2	27	7.4	5.0	✓
Total Mercury in Water by CVAAS	E508	165125	2	40	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	164783	2	40	5.0	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	167270	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
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
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
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
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.
BC PHC - EPH by GC-FID	E601A Vancouver - Environmental	Water	BC MOE Lab Manual	Extractable Petroleum Hydrocarbons (EPH) 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 Vancouver - Environmental	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO ₃), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO ₃ 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.
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO ₃), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO ₃ 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. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.
LEPH and HEPH: EPH-PAH	EC600A Vancouver - 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.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO ₃ .
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 Vancouver - Environmental	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.

QUALITY CONTROL REPORT

Work Order	: VA21A4849	Page	: 1 of 26
Client	: Jacobs Consultancy Canada Inc.	Laboratory	: Vancouver - Environmental
Contact	: Jelena Sladojevic	Account Manager	: Edward Ngai
Address	: Metrotower II, Suite 2100 4720 Kingsway Burnaby BC Canada V5H 4N2	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: CE777000 R-LS.EV.TU.H6	Date Samples Received	: 16-Mar-2021 12:10
PO	: 670014CH.B0.01.09	Date Analysis Commenced	: 17-Mar-2021
C-O-C number	: 20-907011/10	Issue Date	: 25-Mar-2021 16:18
Sampler	: A.CANALI		
Site	: ----		
Quote number	: VA20-CHMH100-013		
No. of samples received	: 16		
No. of samples analysed	: 16		

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Gloria Chan	Lab Analyst	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Monica Ko	Lab Assistant	Metals, Burnaby, British Columbia
Ophelia Chiu	Department Manager - Organics	Organics, Burnaby, British Columbia
Paul Cushing	Team Leader - Organics	Organics, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Shaneel Dayal	Analyst	Metals, Burnaby, British Columbia

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Work Order : VA21A4849
Client : Jacobs Consultancy Canada Inc.
Project : CE777000 R-LS.EV.TU.H6



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: **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
Total Metals (QC Lot: 164783)											
VA21A4849-001	MW06-34	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.457	0.453	0.914%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00015	0.00015	0.000002	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.0200	0.0200	0.162%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0329	0.0321	2.60%	20%	----
		beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000133	0.0000122	0.0000011	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	12.4	12.4	0.376%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00190	0.00189	0.645%	20%	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00780	0.00773	0.809%	20%	----
		iron, total	7439-89-6	E420	0.010	mg/L	19.2	19.6	1.78%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.00135	0.00132	2.57%	20%	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	1.83	1.82	0.494%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.570	0.579	1.52%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000144	0.000147	0.000003	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00128	0.00132	0.00004	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	1.95	1.94	0.646%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00347	0.00334	3.71%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000074	0.000077	0.000003	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	7.93	7.85	1.10%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	0.000019	0.000017	0.000002	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	2.15	2.19	1.75%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.0915	0.0913	0.150%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	0.64	0.62	0.02	Diff <2x LOR	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	0.00012	0.00012	0.000003	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
Total Metals (QC Lot: 164783) - continued											
VA21A4849-001	MW06-34	titanium, total	7440-32-6	E420	0.00030	mg/L	0.00739	0.00712	3.75%	20%	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000128	0.000127	0.645%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00431	0.00424	0.00007	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		zirconium, total	7440-67-7	E420	0.00080	mg/L	<0.00080	<0.00080	0	Diff <2x LOR	----
Total Metals (QC Lot: 164784)											
VA21A4849-001	MW06-34	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00574	0.00569	0.867%	20%	----
Total Metals (QC Lot: 165091)											
CG2100383-004	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0097	0.0107	0.0010	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00019	0.00019	0.0000010	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00129	0.00132	2.04%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0140	0.0134	4.95%	20%	----
		beryllium, total	7440-41-7	E420	0.020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.058	0.058	0.0003	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0050	mg/L	0.273 µg/L	0.000264	3.37%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	321	320	0.465%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	0.000107	0.000109	1.35%	20%	----
		cobalt, total	7440-48-4	E420	0.10	mg/L	26.6 µg/L	0.0270	1.17%	20%	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.844	0.870	3.06%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000118	0.000117	0.0000003	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.160	0.159	0.728%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	178	180	1.40%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.648	0.656	1.21%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0144	0.0145	0.521%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.0908	0.0920	1.22%	20%	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	7.40	7.48	1.10%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00794	0.00790	0.538%	20%	----
		selenium, total	7782-49-2	E420	0.050	mg/L	3.81 µg/L	0.00386	1.54%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	3.35	3.29	2.06%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	30.9	31.5	1.94%	20%	----



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
Total Metals (QC Lot: 165091) - continued											
CG2100383-004	Anonymous	strontium, total	7440-24-6	E420	0.00020	mg/L	0.612	0.611	0.0895%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	377	379	0.562%	20%	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.00010	mg/L	0.000119	0.000118	0.604%	20%	----
		thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.00010	mg/L	0.0170	0.0166	1.98%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0314	0.0318	1.10%	20%	----		
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----		
Total Metals (QC Lot: 165092)											
CG2100383-004	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
Total Metals (QC Lot: 165125)											
VA21A4809-004	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	0.0000198	0.0000201	0.0000003	Diff <2x LOR	----
Total Metals (QC Lot: 165126)											
VA21A4849-008	20MW-07	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 164603)											
CG2100352-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 164604)											
VA21A4849-003	MW19-03	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 165354)											
VA21A4849-001	MW06-34	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.330	0.328	0.571%	20%	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00010	0.00010	0.0000005	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00827	0.00840	1.58%	20%	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0303	0.0308	1.81%	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	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	11.7	12.0	1.97%	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	0.00177	0.00175	1.25%	20%	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00272	0.00281	3.16%	20%	----



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: 165354) - continued											
VA21A4849-001	MW06-34	iron, dissolved	7439-89-6	E421	0.010	mg/L	12.3	12.3	0.00197%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000476	0.000481	0.000005	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	1.79	1.77	0.987%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.504	0.502	0.416%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000054	0.000052	0.000002	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00094	0.00090	0.00004	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	1.85	1.87	0.996%	20%	----
		rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00318	0.00330	3.90%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000065	0.000054	0.000011	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	7.36	7.20	2.07%	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	1.87	1.90	1.26%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0967	0.0997	3.06%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	0.73	0.55	0.18	Diff <2x LOR	----
		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	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	0.00388	0.00375	3.48%	20%	----
		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	0.000093	0.000094	0.0000007	Diff <2x LOR	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00194	0.00201	0.00007	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0017	0.0011	0.0006	Diff <2x LOR	----
		zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	0.00114	0.00111	0.00003	Diff <2x LOR	----
Dissolved Metals (QC Lot: 165355)											
VA21A4849-001	MW06-34	chromium, dissolved	7440-47-3	E421.Cr-L	0.00010	mg/L	0.00390	0.00382	2.16%	20%	----
Volatile Organic Compounds (QC Lot: 167270)											
VA21A4849-001	MW06-34	benzene	71-43-2	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		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	----



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: 167270) - continued											
VA21A4849-001	MW06-34	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	1.0	µg/L	<1.0	<1.0	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	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		xylene, o-	95-47-6	E611C	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----



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: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 164783)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---
tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 164783) - continued						
tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Total Metals (QCLot: 164784)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 165091)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 165091) - continued						
tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	---
Total Metals (QCLot: 165092)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	---
Total Metals (QCLot: 165125)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	---
Total Metals (QCLot: 165126)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	---
Dissolved Metals (QCLot: 164603)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	---
Dissolved Metals (QCLot: 164604)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	---
Dissolved Metals (QCLot: 165354)						
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	---
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	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 165354) - continued						
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: 165355)						
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	<0.00010	----
Volatile Organic Compounds (QCLot: 167270)						
benzene	71-43-2	E611C	0.5	µg/L	<0.50	----
bromodichloromethane	75-27-4	E611C	0.5	µg/L	<0.50	----
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	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 167270) - continued						
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	1	µg/L	<1.0	----
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, 1,1,1,2,2-	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, 1,1,1,2-	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	0.4	µg/L	<0.40	----
xylene, o-	95-47-6	E611C	0.3	µg/L	<0.30	----
Hydrocarbons (QCLot: 167410)						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
Hydrocarbons (QCLot: 167432)						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
Polycyclic Aromatic Hydrocarbons (QCLot: 167411)						
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	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 167411) - continued						
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(b+j+k)fluoranthene	---	E641A	0.015	µg/L	<0.015	---
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	---
Polycyclic Aromatic Hydrocarbons (QCLot: 167431)						
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(b+j+k)fluoranthene	---	E641A	0.015	µg/L	<0.015	---
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	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
Polycyclic Aromatic Hydrocarbons (QCLot: 167431) - continued						
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	---



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: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 164783)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	101	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	98.0	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	97.6	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	98.8	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	104	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	96.3	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	99.1	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	97.6	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	97.7	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	99.8	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	96.9	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	99.0	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	100	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	100	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	99.8	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	97.3	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	100	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	97.8	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	99.2	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	97.7	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	99.1	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	92.5	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	96.2	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	103	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	99.1	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	98.7	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	97.9	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	99.6	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Total Metals (QCLot: 164783) - continued									
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	99.7	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	101	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	96.0	80.0	120	----
Total Metals (QCLot: 164784)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	97.7	80.0	120	----
Total Metals (QCLot: 165091)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	96.2	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	108	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	97.3	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	93.8	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	103	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	87.2	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	95.8	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	97.0	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	102	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	96.1	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	95.2	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	93.6	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	99.1	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	97.4	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	97.8	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	93.4	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	96.8	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	103	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	97.4	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	97.9	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	95.2	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	95.6	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	97.8	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	107	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	95.2	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	92.3	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	96.0	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Total Metals (QCLot: 165091) - continued									
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	93.9	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	95.3	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	91.6	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	94.4	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	97.4	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	97.6	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	94.3	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	98.5	80.0	120	----
Total Metals (QCLot: 165092)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	96.4	80.0	120	----
Total Metals (QCLot: 165125)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	97.2	80.0	120	----
Total Metals (QCLot: 165126)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	97.9	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	101	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	102	80.0	120	----
Dissolved Metals (QCLot: 165354)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	101	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	96.2	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	97.4	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	95.3	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	116	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	88.9	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	94.8	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	94.8	80.0	120	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	94.8	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.0	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.0	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	# 79.3	80.0	120	MES
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	98.6	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	94.6	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	99.2	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	94.9	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	96.5	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: 165354) - continued									
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	106	70.0	130	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	97.3	80.0	120	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	99.4	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	97.3	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	97.8	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	101	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	93.2	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	98.2	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	92.0	80.0	120	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	86.1	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	99.8	80.0	120	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	93.8	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	95.1	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	93.1	80.0	120	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	100	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	99.7	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	96.9	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	94.1	80.0	120	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	96.0	80.0	120	----
Dissolved Metals (QCLot: 165355)									
chromium, dissolved	7440-47-3	E421.Cr-L	0.0001	mg/L	0.25 mg/L	96.2	80.0	120	----
Volatile Organic Compounds (QCLot: 167270)									
benzene	71-43-2	E611C	0.5	µg/L	100 µg/L	103	70.0	130	----
bromodichloromethane	75-27-4	E611C	0.5	µg/L	100 µg/L	106	70.0	130	----
bromoform	75-25-2	E611C	0.5	µg/L	100 µg/L	118	70.0	130	----
carbon tetrachloride	56-23-5	E611C	0.5	µg/L	100 µg/L	117	70.0	130	----
chlorobenzene	108-90-7	E611C	0.5	µg/L	100 µg/L	115	70.0	130	----
chloroethane	75-00-3	E611C	0.5	µg/L	100 µg/L	85.6	60.0	140	----
chloroform	67-66-3	E611C	0.5	µg/L	100 µg/L	106	70.0	130	----
chloromethane	74-87-3	E611C	0.5	µg/L	100 µg/L	70.3	60.0	140	----
dibromochloromethane	124-48-1	E611C	0.5	µg/L	100 µg/L	124	70.0	130	----
dichlorobenzene, 1,2-	95-50-1	E611C	0.5	µg/L	100 µg/L	103	70.0	130	----
dichlorobenzene, 1,3-	541-73-1	E611C	0.5	µg/L	100 µg/L	87.7	70.0	130	----
dichlorobenzene, 1,4-	106-46-7	E611C	0.5	µg/L	100 µg/L	97.4	70.0	130	----
dichloroethane, 1,1-	75-34-3	E611C	0.5	µg/L	100 µg/L	108	70.0	130	----
dichloroethane, 1,2-	107-06-2	E611C	0.5	µg/L	100 µg/L	107	70.0	130	----
dichloroethylene, 1,1-	75-35-4	E611C	0.5	µg/L	100 µg/L	92.4	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
Volatile Organic Compounds (QCLot: 167270) - continued									
dichloroethylene, cis-1,2-	156-59-4	E611C	0.5	µg/L	100 µg/L	90.6	70.0	130	----
dichloroethylene, trans-1,2-	156-60-5	E611C	0.5	µg/L	100 µg/L	91.5	70.0	130	----
dichloromethane	75-09-2	E611C	1	µg/L	100 µg/L	105	70.0	130	----
dichloropropane, 1,2-	78-87-5	E611C	0.5	µg/L	100 µg/L	116	70.0	130	----
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.5	µg/L	100 µg/L	117	70.0	130	----
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.5	µg/L	100 µg/L	82.5	70.0	130	----
ethylbenzene	100-41-4	E611C	0.5	µg/L	100 µg/L	102	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	100	70.0	130	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.5	µg/L	100 µg/L	115	70.0	130	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.2	µg/L	100 µg/L	104	70.0	130	----
tetrachloroethylene	127-18-4	E611C	0.5	µg/L	100 µg/L	87.8	70.0	130	----
toluene	108-88-3	E611C	0.4	µg/L	100 µg/L	89.2	70.0	130	----
trichloroethane, 1,1,1-	71-55-6	E611C	0.5	µg/L	100 µg/L	92.8	70.0	130	----
trichloroethane, 1,1,2-	79-00-5	E611C	0.5	µg/L	100 µg/L	91.6	70.0	130	----
trichloroethylene	79-01-6	E611C	0.5	µg/L	100 µg/L	106	70.0	130	----
trichlorofluoromethane	75-69-4	E611C	0.5	µg/L	100 µg/L	82.4	60.0	140	----
vinyl chloride	75-01-4	E611C	0.4	µg/L	100 µg/L	73.2	60.0	140	----
xylene, m+p-	179601-23-1	E611C	0.4	µg/L	200 µg/L	96.9	70.0	130	----
xylene, o-	95-47-6	E611C	0.3	µg/L	100 µg/L	97.2	70.0	130	----
Hydrocarbons (QCLot: 167410)									
EPH (C10-C19)	----	E601A	250	µg/L	6491 µg/L	94.6	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3363 µg/L	91.4	70.0	130	----
Hydrocarbons (QCLot: 167432)									
EPH (C10-C19)	----	E601A	250	µg/L	6491 µg/L	102	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3363 µg/L	101	70.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 167411)									
acenaphthene	83-32-9	E641A	0.01	µg/L	0.5 µg/L	103	60.0	130	----
acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5 µg/L	102	60.0	130	----
acridine	260-94-6	E641A	0.01	µg/L	0.5 µg/L	96.5	60.0	130	----
anthracene	120-12-7	E641A	0.01	µg/L	0.5 µg/L	103	60.0	130	----
benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5 µg/L	105	60.0	130	----
benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5 µg/L	101	60.0	130	----
benzo(b+j)fluoranthene	----	E641A	0.01	µg/L	0.5 µg/L	94.0	60.0	130	----
benzo(b+j+k)fluoranthene	----	E641A	0.015	µg/L	1 µg/L	97.1	60.0	130	----
benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	0.5 µg/L	94.1	60.0	130	----



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 167411) - continued									
benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5 µg/L	100	60.0	130	----
chrysene	218-01-9	E641A	0.01	µg/L	0.5 µg/L	111	60.0	130	----
dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5 µg/L	108	60.0	130	----
fluoranthene	206-44-0	E641A	0.01	µg/L	0.5 µg/L	104	60.0	130	----
fluorene	86-73-7	E641A	0.01	µg/L	0.5 µg/L	105	60.0	130	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5 µg/L	104	60.0	130	----
methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	0.5 µg/L	95.1	60.0	130	----
methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5 µg/L	93.7	60.0	130	----
naphthalene	91-20-3	E641A	0.05	µg/L	0.5 µg/L	96.6	50.0	130	----
phenanthrene	85-01-8	E641A	0.02	µg/L	0.5 µg/L	105	60.0	130	----
pyrene	129-00-0	E641A	0.01	µg/L	0.5 µg/L	108	60.0	130	----
quinoline	6027-02-7	E641A	0.05	µg/L	0.5 µg/L	105	60.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 167431)									
acenaphthene	83-32-9	E641A	0.01	µg/L	0.5 µg/L	101	60.0	130	----
acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5 µg/L	101	60.0	130	----
acridine	260-94-6	E641A	0.01	µg/L	0.5 µg/L	111	60.0	130	----
anthracene	120-12-7	E641A	0.01	µg/L	0.5 µg/L	115	60.0	130	----
benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5 µg/L	114	60.0	130	----
benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5 µg/L	90.8	60.0	130	----
benzo(b+j)fluoranthene	----	E641A	0.01	µg/L	0.5 µg/L	84.8	60.0	130	----
benzo(b+j+k)fluoranthene	----	E641A	0.015	µg/L	1 µg/L	91.3	60.0	130	----
benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	0.5 µg/L	111	60.0	130	----
benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5 µg/L	97.8	60.0	130	----
chrysene	218-01-9	E641A	0.01	µg/L	0.5 µg/L	104	60.0	130	----
dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5 µg/L	100	60.0	130	----
fluoranthene	206-44-0	E641A	0.01	µg/L	0.5 µg/L	104	60.0	130	----
fluorene	86-73-7	E641A	0.01	µg/L	0.5 µg/L	105	60.0	130	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5 µg/L	115	60.0	130	----
methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	0.5 µg/L	98.1	60.0	130	----
methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5 µg/L	97.4	60.0	130	----
naphthalene	91-20-3	E641A	0.05	µg/L	0.5 µg/L	98.0	50.0	130	----
phenanthrene	85-01-8	E641A	0.02	µg/L	0.5 µg/L	109	60.0	130	----
pyrene	129-00-0	E641A	0.01	µg/L	0.5 µg/L	107	60.0	130	----
quinoline	6027-02-7	E641A	0.05	µg/L	0.5 µg/L	112	60.0	130	----

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Work Order : VA21A4849
Client : Jacobs Consultancy Canada Inc.
Project : CE777000 R-LS.EV.TU.H6



Qualifiers

<i>Qualifier</i>	<i>Description</i>
MES	<i>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).</i>



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 $\geq 1 \times$ spike level.

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High	
Total Metals (QCLot: 164783)										
VA21A4849-001	MW06-34	aluminum, total	7429-90-5	E420	ND mg/L	0.2 mg/L	ND	70.0	130	----
		antimony, total	7440-36-0	E420	0.0196 mg/L	0.02 mg/L	98.0	70.0	130	----
		arsenic, total	7440-38-2	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0395 mg/L	0.04 mg/L	98.6	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00978 mg/L	0.01 mg/L	97.8	70.0	130	----
		boron, total	7440-42-8	E420	0.095 mg/L	0.1 mg/L	95.1	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00396 mg/L	0.004 mg/L	99.0	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cesium, total	7440-46-2	E420	0.0103 mg/L	0.01 mg/L	103	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----
		copper, total	7440-50-8	E420	0.0193 mg/L	0.02 mg/L	96.3	70.0	130	----
		iron, total	7439-89-6	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		lead, total	7439-92-1	E420	0.0193 mg/L	0.02 mg/L	96.4	70.0	130	----
		lithium, total	7439-93-2	E420	0.0956 mg/L	0.1 mg/L	95.6	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		nickel, total	7440-02-0	E420	0.0394 mg/L	0.04 mg/L	98.4	70.0	130	----
		phosphorus, total	7723-14-0	E420	9.26 mg/L	10 mg/L	92.6	70.0	130	----
		potassium, total	7440-09-7	E420	3.91 mg/L	4 mg/L	97.7	70.0	130	----
		rubidium, total	7440-17-7	E420	0.0198 mg/L	0.02 mg/L	98.9	70.0	130	----
		selenium, total	7782-49-2	E420	0.0419 mg/L	0.04 mg/L	105	70.0	130	----
		silicon, total	7440-21-3	E420	9.38 mg/L	10 mg/L	93.8	70.0	130	----
		silver, total	7440-22-4	E420	0.00390 mg/L	0.004 mg/L	97.6	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	19.2 mg/L	20 mg/L	96.0	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0395 mg/L	0.04 mg/L	98.7	70.0	130	----
		thallium, total	7440-28-0	E420	0.00374 mg/L	0.004 mg/L	93.4	70.0	130	----
		thorium, total	7440-29-1	E420	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		tin, total	7440-31-5	E420	0.0195 mg/L	0.02 mg/L	97.5	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
Total Metals (QCLot: 164783) - continued										
VA21A4849-001	MW06-34	titanium, total	7440-32-6	E420	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0188 mg/L	0.02 mg/L	94.2	70.0	130	----
		uranium, total	7440-61-1	E420	0.00380 mg/L	0.004 mg/L	95.0	70.0	130	----
		vanadium, total	7440-62-2	E420	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		zinc, total	7440-66-6	E420	0.401 mg/L	0.4 mg/L	100	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
Total Metals (QCLot: 164784)										
VA21A4849-001	MW06-34	chromium, total	7440-47-3	E420.Cr-L	0.0393 mg/L	0.04 mg/L	98.2	70.0	130	----
Total Metals (QCLot: 165091)										
CG2100383-004	Anonymous	aluminum, total	7429-90-5	E420	0.220 mg/L	0.2 mg/L	110	70.0	130	----
		antimony, total	7440-36-0	E420	0.0209 mg/L	0.02 mg/L	104	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0222 mg/L	0.02 mg/L	111	70.0	130	----
		barium, total	7440-39-3	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0421 mg/L	0.04 mg/L	105	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00849 mg/L	0.01 mg/L	84.9	70.0	130	----
		boron, total	7440-42-8	E420	0.094 mg/L	0.1 mg/L	93.7	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00385 mg/L	0.004 mg/L	96.3	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cesium, total	7440-46-2	E420	0.0108 mg/L	0.01 mg/L	108	70.0	130	----
		cobalt, total	7440-48-4	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		copper, total	7440-50-8	E420	0.0181 mg/L	0.02 mg/L	90.6	70.0	130	----
		iron, total	7439-89-6	E420	2.11 mg/L	2 mg/L	106	70.0	130	----
		lead, total	7439-92-1	E420	0.0170 mg/L	0.02 mg/L	84.8	70.0	130	----
		lithium, total	7439-93-2	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0224 mg/L	0.02 mg/L	112	70.0	130	----
		nickel, total	7440-02-0	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		phosphorus, total	7723-14-0	E420	12.8 mg/L	10 mg/L	128	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		rubidium, total	7440-17-7	E420	0.0225 mg/L	0.02 mg/L	112	70.0	130	----
		selenium, total	7782-49-2	E420	0.0508 mg/L	0.04 mg/L	127	70.0	130	----
		silicon, total	7440-21-3	E420	10.8 mg/L	10 mg/L	108	70.0	130	----
		silver, total	7440-22-4	E420	0.00372 mg/L	0.004 mg/L	92.9	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	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
Total Metals (QCLot: 165091) - continued										
CG2100383-004	Anonymous	sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0374 mg/L	0.04 mg/L	93.6	70.0	130	----
		thallium, total	7440-28-0	E420	0.00345 mg/L	0.004 mg/L	86.2	70.0	130	----
		thorium, total	7440-29-1	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		tin, total	7440-31-5	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		titanium, total	7440-32-6	E420	0.0470 mg/L	0.04 mg/L	117	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0189 mg/L	0.02 mg/L	94.7	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.116 mg/L	0.1 mg/L	116	70.0	130	----
		zinc, total	7440-66-6	E420	0.365 mg/L	0.4 mg/L	91.2	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0456 mg/L	0.04 mg/L	114	70.0	130	----
Total Metals (QCLot: 165092)										
CG2100383-004	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0443 mg/L	0.04 mg/L	111	70.0	130	----
Total Metals (QCLot: 165125)										
VA21A4809-005	Anonymous	mercury, total	7439-97-6	E508	0.0000973 mg/L	0.0001 mg/L	97.3	70.0	130	----
Total Metals (QCLot: 165126)										
VA21A4849-009	20MW-08	mercury, total	7439-97-6	E508	0.0000961 mg/L	0.0001 mg/L	96.1	70.0	130	----
Dissolved Metals (QCLot: 164603)										
VA21A4762-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000970 mg/L	0.0001 mg/L	97.0	70.0	130	----
Dissolved Metals (QCLot: 164604)										
VA21A4849-004	20MW-04D	mercury, dissolved	7439-97-6	E509	0.0000990 mg/L	0.0001 mg/L	99.0	70.0	130	----
Dissolved Metals (QCLot: 165354)										
VA21A4849-001	MW06-34	aluminum, dissolved	7429-90-5	E421	ND mg/L	0.2 mg/L	ND	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0213 mg/L	0.02 mg/L	106	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0184 mg/L	0.02 mg/L	92.1	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	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00942 mg/L	0.01 mg/L	94.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.096 mg/L	0.1 mg/L	96.1	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00377 mg/L	0.004 mg/L	94.2	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	0.0103 mg/L	0.01 mg/L	103	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0188 mg/L	0.02 mg/L	94.2	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0185 mg/L	0.02 mg/L	92.6	70.0	130	----
		iron, dissolved	7439-89-6	E421	ND mg/L	2 mg/L	ND	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: 165354) - continued										
VA21A4849-001	MW06-34	lead, dissolved	7439-92-1	E421	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0207 mg/L	0.02 mg/L	103	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0386 mg/L	0.04 mg/L	96.4	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	10.5 mg/L	10 mg/L	105	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.75 mg/L	4 mg/L	93.8	70.0	130	----
		rubidium, dissolved	7440-17-7	E421	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0416 mg/L	0.04 mg/L	104	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.93 mg/L	10 mg/L	89.3	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00416 mg/L	0.004 mg/L	104	70.0	130	----
		sodium, dissolved	17341-25-2	E421	1.79 mg/L	2 mg/L	89.6	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	20.6 mg/L	20 mg/L	103	70.0	130	----
		tellurium, dissolved	13494-80-9	E421	0.0400 mg/L	0.04 mg/L	100	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00409 mg/L	0.004 mg/L	102	70.0	130	----
		thorium, dissolved	7440-29-1	E421	0.0242 mg/L	0.02 mg/L	121	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0187 mg/L	0.02 mg/L	93.4	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0375 mg/L	0.04 mg/L	93.8	70.0	130	----
		tungsten, dissolved	7440-33-7	E421	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00420 mg/L	0.004 mg/L	105	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0957 mg/L	0.1 mg/L	95.7	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.390 mg/L	0.4 mg/L	97.4	70.0	130	----
		zirconium, dissolved	7440-67-7	E421	0.0465 mg/L	0.04 mg/L	116	70.0	130	----
Dissolved Metals (QCLot: 165355)										
VA21A4849-001	MW06-34	chromium, dissolved	7440-47-3	E421.Cr-L	0.0378 mg/L	0.04 mg/L	94.6	70.0	130	----
Volatile Organic Compounds (QCLot: 167270)										
VA21A4849-002	MW19-01	benzene	71-43-2	E611C	101 µg/L	100 µg/L	101	60.0	140	----
		bromodichloromethane	75-27-4	E611C	98.4 µg/L	100 µg/L	98.4	60.0	140	----
		bromoform	75-25-2	E611C	116 µg/L	100 µg/L	116	60.0	140	----
		carbon tetrachloride	56-23-5	E611C	115 µg/L	100 µg/L	115	60.0	140	----
		chlorobenzene	108-90-7	E611C	119 µg/L	100 µg/L	119	60.0	140	----
		chloroethane	75-00-3	E611C	82.7 µg/L	100 µg/L	82.7	50.0	150	----
		chloroform	67-66-3	E611C	104 µg/L	100 µg/L	104	60.0	140	----
		chloromethane	74-87-3	E611C	64.4 µg/L	100 µg/L	64.4	50.0	150	----



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: 167270) - continued										
VA21A4849-002	MW19-01	dibromochloromethane	124-48-1	E611C	123 µg/L	100 µg/L	123	60.0	140	----
		dichlorobenzene, 1,2-	95-50-1	E611C	102 µg/L	100 µg/L	102	60.0	140	----
		dichlorobenzene, 1,3-	541-73-1	E611C	91.9 µg/L	100 µg/L	91.9	60.0	140	----
		dichlorobenzene, 1,4-	106-46-7	E611C	100 µg/L	100 µg/L	100	60.0	140	----
		dichloroethane, 1,1-	75-34-3	E611C	110 µg/L	100 µg/L	110	60.0	140	----
		dichloroethane, 1,2-	107-06-2	E611C	102 µg/L	100 µg/L	102	60.0	140	----
		dichloroethylene, 1,1-	75-35-4	E611C	90.4 µg/L	100 µg/L	90.4	60.0	140	----
		dichloroethylene, cis-1,2-	156-59-4	E611C	87.0 µg/L	100 µg/L	87.0	60.0	140	----
		dichloroethylene, trans-1,2-	156-60-5	E611C	89.4 µg/L	100 µg/L	89.4	60.0	140	----
		dichloromethane	75-09-2	E611C	103 µg/L	100 µg/L	103	60.0	140	----
		dichloropropane, 1,2-	78-87-5	E611C	117 µg/L	100 µg/L	117	60.0	140	----
		dichloropropylene, cis-1,3-	10061-01-5	E611C	106 µg/L	100 µg/L	106	60.0	140	----
		dichloropropylene, trans-1,3-	10061-02-6	E611C	82.5 µg/L	100 µg/L	82.5	60.0	140	----
		ethylbenzene	100-41-4	E611C	106 µg/L	100 µg/L	106	60.0	140	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	108 µg/L	100 µg/L	108	60.0	140	----
		styrene	100-42-5	E611C	99.9 µg/L	100 µg/L	99.9	60.0	140	----
		tetrachloroethane, 1,1,1,2-	630-20-6	E611C	115 µg/L	100 µg/L	115	60.0	140	----
		tetrachloroethane, 1,1,2,2-	79-34-5	E611C	96.5 µg/L	100 µg/L	96.5	60.0	140	----
		tetrachloroethylene	127-18-4	E611C	94.9 µg/L	100 µg/L	94.9	60.0	140	----
		toluene	108-88-3	E611C	85.1 µg/L	100 µg/L	85.1	60.0	140	----
		trichloroethane, 1,1,1-	71-55-6	E611C	91.2 µg/L	100 µg/L	91.2	60.0	140	----
		trichloroethane, 1,1,2-	79-00-5	E611C	90.2 µg/L	100 µg/L	90.2	60.0	140	----
		trichloroethylene	79-01-6	E611C	104 µg/L	100 µg/L	104	60.0	140	----
		trichlorofluoromethane	75-69-4	E611C	98.4 µg/L	100 µg/L	98.4	50.0	150	----
		vinyl chloride	75-01-4	E611C	70.6 µg/L	100 µg/L	70.6	50.0	150	----
		xylene, m+p-	179601-23-1	E611C	204 µg/L	200 µg/L	102	60.0	140	----
		xylene, o-	95-47-6	E611C	100 µg/L	100 µg/L	100	60.0	140	----



Chain of Custody (COC) / Analytical Request Form

COC Number: 20 - 907011

Canada Toll Free: 1 800 668 9878

Page 1 of 2

Report To Contact and company name below will appear on the final report Company: LHM LILL (CANADA LTD) (SALOPS) Contact: CAAP INVOICES@SALOPS.COM Phone: _____ Company address below will appear on the final report Street: _____ City/Province: _____ Postal Code: _____		Reports / Recipients Select Report Format: <input type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL) Merge QC/QCI Reports with COA <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A <input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: TELENA.SLADUJEVIC@SALOPS.COM Email 2: LIZ.VANWARBERG@SALOPS.COM Email 3: _____		Turnaround Time (TAT) Requested <input checked="" type="checkbox"/> Routine [R] If received by 3pm M-F - no surcharges apply <input type="checkbox"/> 4 day [P4] If received by 3pm M-F - 20% rush surcharge minimum <input type="checkbox"/> 3 day [P3] If received by 3pm M-F - 25% rush surcharge minimum <input type="checkbox"/> 2 day [P2] If received by 3pm M-F - 50% rush surcharge minimum <input type="checkbox"/> 1 day [E] If received by 3pm M-F - 100% rush surcharge minimum <input type="checkbox"/> Same day [E] If received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests		AFFIX ALS BARCODE LABEL HERE (ALS use only)																														
Invoice To Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Recipients Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: TELENA.SLADUJEVIC@SALOPS.COM Email 2: _____		Date and Time Required for all E&P TATs: _____ dd-mmm-yy hh:mm am/pm For all tests with rush TATs requested, please contact your AM to confirm availability.																																
Project Information ALS Account # / Quote #: VA20-LHM100-013 Job #: LE777000 R-LS.EV-TL-H6 PO / AFE: _____ LSD: _____		Oil and Gas Required Fields (client use) AFE/Cost Center: _____ PO#: _____ Major/Minor Code: _____ Routing Code: _____ Requisitioner: _____ Location: _____ ALS Contact: EV.N641 Sampler: A. IANALI		Analysis Request Indicate Filtered (F), Preserved (P) or Filtered and Preserved (FIP) below <table border="1"> <tr> <th rowspan="2">NUMBER OF CONTAINERS</th> <th rowspan="2">VOL/BTIX</th> <th rowspan="2">LEAD/HEP/PAH</th> <th rowspan="2">TOTAL METALS + Hg</th> <th rowspan="2">DISSOLVED METALS + Hg</th> <th colspan="12">SAMPLES ON HOLD</th> <th rowspan="2">EXTENDED STORAGE REQUIRED</th> <th rowspan="2">SUSPECTED HAZARD (see notes)</th> </tr> <tr> <th colspan="12">[Grid for sample details]</th> </tr> </table>		NUMBER OF CONTAINERS	VOL/BTIX	LEAD/HEP/PAH	TOTAL METALS + Hg	DISSOLVED METALS + Hg	SAMPLES ON HOLD												EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)	[Grid for sample details]											
NUMBER OF CONTAINERS	VOL/BTIX	LEAD/HEP/PAH	TOTAL METALS + Hg	DISSOLVED METALS + Hg	SAMPLES ON HOLD												EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)																		
					[Grid for sample details]																															
ALS Lab Work Order # (ALS use only): _____																																				
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type																																
	MWD1-24	15-03-21	17:00	WATER	8	X	X	X	X																											
	MW19-01		15:30		8	X	X	X	X																											
	MW19-03		16:15		8	X	X	X	X																											
	20 MW-040		15:45		8	X	X	X	X																											
	20 MW-045		15:15		8	X	X	X	X																											
	20 MW-05		13:30		8	X	X	X	X																											
	20 MW-06		13:45		8	X	X	X	X																											
	20 MW-07		14:15		8	X	X	X	X																											
	20 MW-08		14:35		8	X	X	X	X																											
	20 MW-09		12:40		8	X	X	X	X																											
	20 MW-101		11:40		8	X	X	X	X																											
	20 MW-105		11:45		8	X	X	X	X																											
Drinking Water (DW) Samples (client use) Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO Are samples for human consumption/ use? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)		SAMPLE RECEIPT DETAILS (ALS use only) Cooling Method: <input type="checkbox"/> NONE <input type="checkbox"/> ICE <input type="checkbox"/> ICE PACKS <input type="checkbox"/> FROZEN <input checked="" type="checkbox"/> COOLING INITIATED Submission Comments identified on Sample Receipt Notification: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO Cooler Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Sample Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A INITIAL COOLER TEMPERATURES °C _____ FINAL COOLER TEMPERATURES °C 6 (CAN 93)																																
SHIPMENT RELEASE (client use) Released by: ANDREW CANALI Date: MARCH 16, 2021 Time: 2:00		INITIAL SHIPMENT RECEPTION (ALS use only) Received by: _____ Date: _____ Time: _____		FINAL SHIPMENT RECEPTION (ALS use only) Received by: MB Date: MAR 16 Time: 12:10 PM																																

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION
 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.



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Chain of Custody (COC) / Analytical Request Form

COC Number: 20 - 907010

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Page 2 of 2

Report To Contact and company name below will appear on the final report		Reports / Recipients			Turnaround Time (TAT) Requested				AFFIX ALS BARCODE LABEL HERE (ALS use only)							
Company:		Select Report Format: <input type="checkbox"/> PDF <input type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)			<input checked="" type="checkbox"/> Routine [R] if received by 3pm M-F - no surcharges apply											
Contact:		Merge QC/QCI Reports with COA <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A			<input type="checkbox"/> 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum											
Phone:		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			<input type="checkbox"/> 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum											
Company address below will appear on the final report					Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX											
Street:		Email 1 or Fax:			Date and Time Required for all E&P TATs:				dd-mm-yy hh:mm am/pm							
City/Province:		Email 2:			For all tests with rush TATs requested, please contact your AM to confirm availability.											
Postal Code:		Email 3:			Analysis Request											
Invoice To		Invoice Recipients			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below											
Same as Report To <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX														
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Email 1 or Fax:														
Company:		Email 2:														
Contact:		Email 3:														
Project Information					Oil and Gas Required Fields (client use)											
ALS Account # / Quote #:					AFE/Cost Center:		PO#:									
Job #:					Major/Minor Code:		Routing Code:									
PO / AFE:					Requisitioner:											
LSD:					Location:											
ALS Lab Work Order # (ALS use only):					ALS Contact:		Sampler:									
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)				Date (dd-mm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS					SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)	
	2011W-11				15-03-21	12:45	WATER	8	X	X	X	X				
	RA3				↓	=	↓	8	X	X	X	X				
	RA4				↓	=	↓	7	X	X	X	X				
	MD06-34-TOP				↓	17:00	↓	1								X
Drinking Water (DW) Samples¹ (client use)					Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)							SAMPLE RECEIPT DETAILS (ALS use only)				
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input type="checkbox"/> NO												Cooling Method: <input type="checkbox"/> NONE <input type="checkbox"/> ICE <input type="checkbox"/> ICE PACKS <input type="checkbox"/> FROZEN <input type="checkbox"/> COOLING INITIATED				
Are samples for human consumption/ use? <input type="checkbox"/> YES <input type="checkbox"/> NO												Submission Comments identified on Sample Receipt Notification: <input type="checkbox"/> YES <input type="checkbox"/> NO				
												Cooler Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A Sample Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A				
					INITIAL COOLER TEMPERATURES °C					FINAL COOLER TEMPERATURES °C						
SHIPMENT RELEASE (client use)					INITIAL SHIPMENT RECEPTION (ALS use only)					FINAL SHIPMENT RECEPTION (ALS use only)						
Released by:		Date:	Time:	Received by:		Date:	Time:	Received by:		Date:	Time:					

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2003 FRONT

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



CERTIFICATE OF ANALYSIS

Work Order : **VA21B2503**
Client : **Jacobs Consultancy Canada Inc.**
Contact : Amy Casey
Address : Metrotower II, Suite 2100 4720 Kingsway
 Burnaby BC Canada V5H 4N2
Telephone : 519 579 3500
Project : CE777000
PO : 670014CH.B0.01.09
C-O-C number : 20-921340
Sampler : AC, SM
Site : ----
Quote number : VA20-CHMH100-013
No. of samples received : 13
No. of samples analysed : 13

Page : 1 of 20
Laboratory : Vancouver - Environmental
Account Manager : Ashton Ostrander
Address : 8081 Lougheed Highway
 Burnaby BC Canada V5A 1W9
Telephone : +1 604 253 4188
Date Samples Received : 21-Jun-2021 18:30
Date Analysis Commenced : 22-Jun-2021
Issue Date : 06-Jul-2021 16:57

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Harsha Attanayake	Laboratory Analyst	Organics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Ophelia Chiu	Department Manager - Organics	Organics, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Saron Kim	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).

<i>Unit</i>	<i>Description</i>
-	No Unit
µg/L	micrograms per litre
mg/L	milligrams per litre

<: 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.

Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLCI	Detection Limit Raised: Chromatographic interference due to co-elution.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DLQ	Detection Limit raised due to co-eluting interference. GCMS qualifier ion ratio did not meet acceptance criteria.
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.



Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					20MW-04S-062 1	20MW-04D-062 1	MW19-03-0621	MW19-01-0621	MW06-34-0621
Client sampling date / time					21-Jun-2021 10:10	21-Jun-2021 10:10	21-Jun-2021 11:30	21-Jun-2021 11:30	21-Jun-2021 12:30
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-001 Result	VA21B2503-002 Result	VA21B2503-003 Result	VA21B2503-004 Result	VA21B2503-005 Result
Physical Tests									
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	96.3	91.4	102	84.9	64.6
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	94.7	90.6	104	84.4	64.3
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0350	0.162	0.290	0.0670	0.0724
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00045	<0.00010	0.00014	0.00028	<0.00010
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00030	0.00311	0.0122	0.00020	0.00012
barium, total	7440-39-3	E420	0.00010	mg/L	0.0520	0.0510	0.111	0.0334	0.0338
beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	0.014	0.012	0.020	0.020
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000218	0.0000065	0.0000074	0.0000102	<0.0000050
calcium, total	7440-70-2	E420	0.050	mg/L	35.3	29.3	34.0	28.2	18.7
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	0.000011	0.000080	<0.000010	0.000042
chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	0.00111	0.00414	<0.00050	0.00063
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00019	0.00064	0.0134	0.00019	<0.00010
copper, total	7440-50-8	E420	0.00050	mg/L	0.00291	0.00248	0.00434	0.00182	<0.00050
iron, total	7439-89-6	E420	0.010	mg/L	0.034	27.8	71.8	2.10	22.8
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	0.000228	0.000402	0.000092	0.000062
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	0.0071	<0.0010	0.0037	0.0024
magnesium, total	7439-95-4	E420	0.0050	mg/L	1.59	4.24	4.59	3.41	4.27
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0426	0.937	3.39	0.373	0.649
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000358	0.000554	0.00123	0.000621	0.000079
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	0.00115	0.00251	<0.00050	<0.00050
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	0.120	0.051	<0.050	0.112
potassium, total	7440-09-7	E420	0.050	mg/L	2.20	3.97	4.53	3.82	3.78
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00244	0.00329	0.0106	0.00275	0.00508
selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	<0.000050	0.000254	0.000062	<0.000050
silicon, total	7440-21-3	E420	0.10	mg/L	4.65	18.4	7.93	11.9	16.4
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0.000015	<0.000010	<0.000010



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-04S-062 1	20MW-04D-062 1	MW19-03-0621	MW19-01-0621	MW06-34-0621
Client sampling date / time					21-Jun-2021 10:10	21-Jun-2021 10:10	21-Jun-2021 11:30	21-Jun-2021 11:30	21-Jun-2021 12:30	
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-001 Result	VA21B2503-002 Result	VA21B2503-003 Result	VA21B2503-004 Result	VA21B2503-005 Result	
Total Metals										
sodium, total	17341-25-2	E420	0.050	mg/L	2.62	11.5	4.21	16.2	5.77	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.0869	0.133	0.249	0.120	0.114	
sulfur, total	7704-34-9	E420	0.50	mg/L	1.30	1.26	6.84	1.84	<0.50	
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000012	<0.000010	<0.000010	<0.000010	<0.000010	
thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	0.00011	0.00011	<0.00010	<0.00010	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	0.00017	<0.00010	0.00011	<0.00010	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00095	0.00640	0.00504	0.00126	0.00327	
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000170	0.000104	0.000172	0.000389	0.000016	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00085	0.00165	0.00671	<0.00050	0.00383	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0095	0.273	0.0119	4.31	0.0056	
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	0.00021	0.00213	<0.00020	0.00031	
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0125	0.0066	0.220	0.0018	0.0091	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00042	<0.00010	0.00013	0.00027	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00030	0.00162	0.00898	<0.00010	0.00011	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0534	0.0485	0.120	0.0334	0.0340	
beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	0.014	0.012	0.019	0.019	
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000220	<0.0000050	<0.0000050	0.0000088	<0.0000050	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	35.9	29.0	33.1	28.0	18.5	
cesium, dissolved	7440-46-2	E421	0.000010	mg/L	<0.000010	<0.000010	0.000075	<0.000010	0.000035	
chromium, dissolved	7440-47-3	E421	0.00050	mg/L	0.0108 ^{DTC}	<0.00050	0.00325	<0.00050	0.00050	
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00022	0.00052	0.0125	0.00018	<0.00010	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00321	0.00074	0.00159	0.00352 ^{DTC}	0.00089 ^{DTC}	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.039	26.6	64.4	0.040	22.6	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000056	<0.000050	0.000138	0.000086	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	0.0064	<0.0010	0.0034	0.0022	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	1.62	4.60	4.73	3.63	4.47	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-04S-062 1	20MW-04D-062 1	MW19-03-0621	MW19-01-0621	MW06-34-0621
Client sampling date / time					21-Jun-2021 10:10	21-Jun-2021 10:10	21-Jun-2021 11:30	21-Jun-2021 11:30	21-Jun-2021 12:30	
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-001 Result	VA21B2503-002 Result	VA21B2503-003 Result	VA21B2503-004 Result	VA21B2503-005 Result	
Dissolved Metals										
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0419	0.963	3.48	0.358	0.672	
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00108 ^{DTC}	0.000485	0.00108	0.000617	0.000074	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00436 ^{DTC}	0.00084	0.00246	0.00061	<0.00050	
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	0.054	<0.050	<0.050	0.093	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.11	3.75	4.24	3.64	3.63	
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00246	0.00324	0.0108	0.00293	0.00516	
selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0.000219	<0.000050	<0.000050	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.72	17.8	7.86	11.4	16.2	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.71	11.7	4.15	17.1	5.90	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0877	0.140	0.250	0.122	0.117	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	1.45	1.49	6.35	1.98	<0.50	
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000011	<0.000010	<0.000010	<0.000010	<0.000010	
thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0.00271	<0.00030	0.00033	
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000175	0.000063	0.000148	0.000352	<0.000010	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00082	0.00119	0.00518	<0.00050	0.00347	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0093	0.132	0.0159	4.90	0.0032	
zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	<0.00020	<0.00020	0.00223	<0.00020	0.00028	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	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	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-04S-062 1	20MW-04D-062 1	MW19-03-0621	MW19-01-0621	MW06-34-0621
Client sampling date / time					21-Jun-2021 10:10	21-Jun-2021 10:10	21-Jun-2021 11:30	21-Jun-2021 11:30	21-Jun-2021 12:30	
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-001 Result	VA21B2503-002 Result	VA21B2503-003 Result	VA21B2503-004 Result	VA21B2503-005 Result	
Volatil Organic Compounds										
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	
Volatil 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	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
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	
Volatil Organic Compounds [Fuels]										
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	0.40	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40	
xylene, o-	95-47-6	E611C	0.30	µg/L	<0.30	<0.30	<0.30	<0.30	<0.30	
xylenes, total	1330-20-7	E611C	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	
Volatil Organic Compounds Surrogates										



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-04S-062 1	20MW-04D-062 1	MW19-03-0621	MW19-01-0621	MW06-34-0621
Client sampling date / time					21-Jun-2021 10:10	21-Jun-2021 10:10	21-Jun-2021 11:30	21-Jun-2021 11:30	21-Jun-2021 12:30	
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-001 Result	VA21B2503-002 Result	VA21B2503-003 Result	VA21B2503-004 Result	VA21B2503-005 Result	
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611C	1.0	%	97.1	94.7	98.3	97.5	94.0	
difluorobenzene, 1,4-	540-36-3	E611C	1.0	%	124	123	123	102	104	
Hydrocarbons										
EPH (C10-C19)	----	E601A	250	µg/L	<250	<250	380	<250	<250	
EPH (C19-C32)	----	E601A	250	µg/L	<250	<250	<250	<250	<250	
HEPHw	----	EC600A	250	µg/L	<250	<250	<250	<250	<250	
LEPHw	----	EC600A	250	µg/L	<250	<250	310	<250	<250	
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	1.0	%	88.9	89.8	90.6	90.4	93.0	
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A	0.010	µg/L	<0.010	<0.010	34.9	0.012	0.208	
acenaphthylene	208-96-8	E641A	0.010	µg/L	<0.010	<0.010	0.190	<0.010	<0.010	
acridine	260-94-6	E641A	0.010	µg/L	<0.010	<0.010	2.56	<0.015 ^{DLO}	<0.010	
anthracene	120-12-7	E641A	0.010	µg/L	<0.010	<0.010	2.47	<0.010	<0.020 ^{DLO}	
benz(a)anthracene	56-55-3	E641A	0.010	µg/L	<0.010	<0.010	0.456	<0.012 ^{DLO}	<0.010	
benzo(a)pyrene	50-32-8	E641A	0.0050	µg/L	<0.0050	<0.0050	0.0552	<0.0050	<0.0050	
benzo(b+j)fluoranthene	----	E641A	0.010	µg/L	<0.010	<0.010	0.069	<0.010	<0.010	
benzo(b+j+k)fluoranthene	----	E641A	0.015	µg/L	<0.015	<0.015	0.098	<0.015	<0.015	
benzo(g,h,i)perylene	191-24-2	E641A	0.010	µg/L	<0.010	<0.010	0.011	<0.010	<0.010	
benzo(k)fluoranthene	207-08-9	E641A	0.010	µg/L	<0.010	<0.010	0.029	<0.010	<0.010	
chrysene	218-01-9	E641A	0.010	µg/L	<0.010	<0.010	<0.290 ^{DLO}	<0.010	<0.010	
dibenz(a,h)anthracene	53-70-3	E641A	0.0050	µg/L	<0.0050	<0.0050	<0.0057 ^{DLO}	<0.0050	<0.0050	
fluoranthene	206-44-0	E641A	0.010	µg/L	<0.010	<0.010	6.84	0.022	0.047	
fluorene	86-73-7	E641A	0.010	µg/L	<0.010	<0.010	14.5	<0.010	0.108	
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.010	µg/L	<0.010	<0.010	0.015	<0.010	<0.010	
methylnaphthalene, 1-	90-12-0	E641A	0.010	µg/L	<0.010	<0.010	2.91	<0.010	0.021	
methylnaphthalene, 2-	91-57-6	E641A	0.010	µg/L	<0.010	<0.010	2.70	<0.010	0.024	
naphthalene	91-20-3	E641A	0.050	µg/L	<0.050	<0.050	3.66	<0.050	<0.050	
phenanthrene	85-01-8	E641A	0.020	µg/L	<0.020	<0.020	14.6	<0.020	0.112	
pyrene	129-00-0	E641A	0.010	µg/L	<0.010	<0.010	3.97	0.020	0.024	
quinoline	6027-02-7	E641A	0.050	µg/L	<0.050	<0.050	<0.440 ^{DLO}	<0.050	<0.050	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-04S-062 1	20MW-04D-062 1	MW19-03-0621	MW19-01-0621	MW06-34-0621
Client sampling date / time					21-Jun-2021 10:10	21-Jun-2021 10:10	21-Jun-2021 11:30	21-Jun-2021 11:30	21-Jun-2021 12:30	
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-001	VA21B2503-002	VA21B2503-003	VA21B2503-004	VA21B2503-005	
					Result	Result	Result	Result	Result	
Polycyclic Aromatic Hydrocarbons Surrogates										
chrysene-d12	1719-03-5	E641A	0.1	%	88.3	89.4	91.8	75.7	83.4	
naphthalene-d8	1146-65-2	E641A	0.1	%	78.8	85.3	90.6	76.6	83.8	
phenanthrene-d10	1517-22-2	E641A	0.1	%	95.0	105	90.1	88.8	95.4	
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	
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	

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



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-09-0621	20MW-11-0621	20MW-10D-062 1	20MW-10S-062 1	20MW-03-Prod uct
Client sampling date / time					21-Jun-2021 12:35	21-Jun-2021 13:30	21-Jun-2021 13:40	21-Jun-2021 14:15	21-Jun-2021 11:00	
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-006	VA21B2503-007	VA21B2503-008	VA21B2503-009	VA21B2503-010	
					Result	Result	Result	Result	Result	
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	276	63.6	46.5	121	----	
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	261	60.2	45.5	119	----	
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.148	0.190	0.0784	1.17	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00122	0.00061	0.00025	0.00198	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.179	0.0252	0.0183	0.0607	----	
beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	<0.000100	<0.000100	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.029	0.023	0.012	0.045	----	
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.000104	0.0000058	<0.0000050	0.000514	----	
calcium, total	7440-70-2	E420	0.050	mg/L	72.3	15.7	12.2	32.0	----	
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	0.000031	0.000028	0.000060	----	
chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	0.00111	0.00098	0.00631	----	
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00850	0.00064	0.00012	0.00107	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00126	0.00184	0.00055	0.00379	----	
iron, total	7439-89-6	E420	0.010	mg/L	4.71	11.8	29.2	33.1	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000304	0.000157	0.000068	0.000979	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0.0025	0.0016	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	19.5	5.11	3.66	9.41	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.968	0.221	0.514	0.981	----	
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000289	0.000625	0.000361	0.000268	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00880	<0.00050	<0.00050	0.00096	----	
phosphorus, total	7723-14-0	E420	0.050	mg/L	0.091	0.128	0.142	0.258	----	
potassium, total	7440-09-7	E420	0.050	mg/L	2.59	2.47	3.36	2.98	----	
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00373	0.00281	0.00378	0.0100	----	
selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	0.000056	----	
silicon, total	7440-21-3	E420	0.10	mg/L	12.2	10.6	16.4	12.6	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
sodium, total	17341-25-2	E420	0.050	mg/L	5.26	3.52	7.71	4.98	----	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-09-0621	20MW-11-0621	20MW-10D-0621	20MW-10S-0621	20MW-03-Product
							1	1	uct	
Client sampling date / time					21-Jun-2021 12:35	21-Jun-2021 13:30	21-Jun-2021 13:40	21-Jun-2021 14:15	21-Jun-2021 11:00	
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-006	VA21B2503-007	VA21B2503-008	VA21B2503-009	VA21B2503-010	
					Result	Result	Result	Result	Result	
Total Metals										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.280	0.0648	0.103	0.203	---	
sulfur, total	7704-34-9	E420	0.50	mg/L	3.10	<0.50	<0.50	<0.50	---	
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	---	
thallium, total	7440-28-0	E420	0.00010	mg/L	0.000022	<0.00010	<0.00010	<0.00010	---	
thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	0.00038	---	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	0.00025	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00683	<0.00870 ^{DLM}	0.00275	0.0561	---	
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	---	
uranium, total	7440-61-1	E420	0.00010	mg/L	0.000079	0.000033	<0.00010	0.000169	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00084	0.00375	0.00336	0.0455	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0367	0.0119	0.0146	0.0960	---	
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	0.00053	0.00033	0.00074	---	
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0090	0.0118	0.0099	0.0379	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00111	0.00042	0.00021	0.00068	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.195	0.0250	0.0172	0.0464	---	
beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	<0.000100	<0.000100	<0.000100	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.030	0.023	0.011	0.041	---	
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000968	<0.0000050	<0.0000050	<0.0000050	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	74.5	16.1	12.1	32.2	---	
cesium, dissolved	7440-46-2	E421	0.000010	mg/L	<0.000010	0.000015	0.000024	0.000022	---	
chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	0.00076	0.00060	0.00300	---	
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00823	0.00053	<0.00010	0.00053	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00077	<0.00020	0.00026	<0.00020	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	4.13	10.9	27.0	24.5	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	0.0023	<0.0010	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	21.8	5.67	3.96	9.82	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	1.06	0.222	0.549	0.990	---	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-09-0621	20MW-11-0621	20MW-10D-062 1	20MW-10S-062 1	20MW-03-Prod uct
Client sampling date / time					21-Jun-2021 12:35	21-Jun-2021 13:30	21-Jun-2021 13:40	21-Jun-2021 14:15	21-Jun-2021 11:00	
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-006 Result	VA21B2503-007 Result	VA21B2503-008 Result	VA21B2503-009 Result	VA21B2503-010 Result	
Dissolved Metals										
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000267	0.000536	0.000295	0.000141	----	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00860	<0.00050	<0.00050	<0.00050	----	
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	0.056	<0.050	0.078	<0.050	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.56	2.41	3.30	2.75	----	
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00396	0.00295	0.00394	0.00967	----	
selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	12.1	10.2	15.6	10.8	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	5.38	3.84	8.11	5.07	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.289	0.0681	0.106	0.208	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	3.16	<0.50	<0.50	<0.50	----	
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000020	<0.000010	<0.000010	<0.000010	----	
thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0.00031	<0.00150 ^{DLM}	----	
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000074	0.000021	<0.000010	0.000049	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	0.00328	0.00294	0.0152	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0346	0.0076	0.0118	0.0332	----	
zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	<0.00020	<0.00020	0.00027	0.00085	----	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	----	
dissolved metals filtration location	----	EP421	-	-	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	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-09-0621	20MW-11-0621	20MW-10D-062 1	20MW-10S-062 1	20MW-03-Prod uct
Client sampling date / time					21-Jun-2021 12:35	21-Jun-2021 13:30	21-Jun-2021 13:40	21-Jun-2021 14:15	21-Jun-2021 11:00	
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-006	VA21B2503-007	VA21B2503-008	VA21B2503-009	VA21B2503-010	
					Result	Result	Result	Result	Result	
Volatile Organic Compounds										
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 [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	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
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 [Fuels]										
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	0.40	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40	
xylene, o-	95-47-6	E611C	0.30	µg/L	<0.30	<0.30	<0.30	<0.30	<0.30	
xylenes, total	1330-20-7	E611C	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611C	1.0	%	98.4	96.1	99.3	91.7	88.8	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-09-0621	20MW-11-0621	20MW-10D-0621 1	20MW-10S-0621 1	20MW-03-Prod uct
Client sampling date / time					21-Jun-2021 12:35	21-Jun-2021 13:30	21-Jun-2021 13:40	21-Jun-2021 14:15	21-Jun-2021 11:00	
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-006	VA21B2503-007	VA21B2503-008	VA21B2503-009	VA21B2503-010	
					Result	Result	Result	Result	Result	
Volatile Organic Compounds Surrogates										
difluorobenzene, 1,4-	540-36-3	E611C	1.0	%	104	125	111	124	103	
Hydrocarbons										
EPH (C10-C19)	----	E601A	250	µg/L	<250	<250	<250	<250	610	
EPH (C19-C32)	----	E601A	250	µg/L	<250	<250	<250	270	620	
HEPHw	----	EC600A	250	µg/L	<250	<250	<250	270	550	
LEPHw	----	EC600A	250	µg/L	<250	<250	<250	<250	440	
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	1.0	%	84.4	90.9	90.8	94.7	89.7	
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A	0.010	µg/L	<0.010	0.015	0.021	<0.010	82.1	
acenaphthylene	208-96-8	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	0.245	
acridine	260-94-6	E641A	0.010	µg/L	<0.010	<0.050 ^{DLCI}	<0.022 ^{DLCI}	<0.023 ^{DLCI}	9.02	
anthracene	120-12-7	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	4.33	
benz(a)anthracene	56-55-3	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.024 ^{DLCI}	3.77	
benzo(a)pyrene	50-32-8	E641A	0.0050	µg/L	<0.0050	<0.0050	<0.0050	0.0239	0.920	
benzo(b+j)fluoranthene	----	E641A	0.010	µg/L	<0.010	<0.010	<0.010	0.037	1.12	
benzo(b+j+k)fluoranthene	----	E641A	0.015	µg/L	<0.015	<0.015	<0.015	0.048	1.55	
benzo(g,h,i)perylene	191-24-2	E641A	0.010	µg/L	<0.010	<0.010	<0.010	0.033	0.169	
benzo(k)fluoranthene	207-08-9	E641A	0.010	µg/L	<0.010	<0.010	<0.010	0.011	0.428	
chrysene	218-01-9	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.034 ^{DLCI}	4.05	
dibenz(a,h)anthracene	53-70-3	E641A	0.0050	µg/L	<0.0050	<0.0050	<0.0050	<0.0110 ^{DLCI}	0.0718	
fluoranthene	206-44-0	E641A	0.010	µg/L	0.010	<0.010	<0.010	0.053	36.8	
fluorene	86-73-7	E641A	0.010	µg/L	<0.010	0.040	0.063	<0.010	28.9	
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.010	µg/L	<0.010	<0.010	<0.010	0.024	0.170	
methylnaphthalene, 1-	90-12-0	E641A	0.010	µg/L	<0.010	<0.010	0.015	<0.010	7.51	
methylnaphthalene, 2-	91-57-6	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	7.28	
naphthalene	91-20-3	E641A	0.050	µg/L	<0.050	<0.050	<0.050	<0.050	11.2	
phenanthrene	85-01-8	E641A	0.020	µg/L	<0.020	<0.020	0.029	0.026	33.9	
pyrene	129-00-0	E641A	0.010	µg/L	<0.010	<0.010	<0.010	0.070	25.1	
quinoline	6027-02-7	E641A	0.050	µg/L	<0.050	<0.050	<0.050	<0.050	<1.10 ^{DLCI}	
Polycyclic Aromatic Hydrocarbons Surrogates										



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-09-0621	20MW-11-0621	20MW-10D-062 1	20MW-10S-062 1	20MW-03-Prod uct
Client sampling date / time					21-Jun-2021 12:35	21-Jun-2021 13:30	21-Jun-2021 13:40	21-Jun-2021 14:15	21-Jun-2021 11:00	
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-006	VA21B2503-007	VA21B2503-008	VA21B2503-009	VA21B2503-010	
					Result	Result	Result	Result	Result	
Polycyclic Aromatic Hydrocarbons Surrogates										
chrysene-d12	1719-03-5	E641A	0.1	%	78.1	79.9	87.9	91.8	66.8	
naphthalene-d8	1146-65-2	E641A	0.1	%	79.3	85.5	87.2	92.6	96.9	
phenanthrene-d10	1517-22-2	E641A	0.1	%	90.7	95.6	99.7	101	107	
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	
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	

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



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Dup1	Trip Blank	20MW-06-0621	----	----
Client sampling date / time					21-Jun-2021	21-Jun-2021	21-Jun-2021	----	----	
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-011	VA21B2503-012	VA21B2503-013	-----	-----	
					Result	Result	Result	---	---	
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	64.8	----	90.1	----	----	
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	61.9	----	87.3	----	----	
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.193	----	0.162	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	----	<0.00010	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00062	----	0.00057	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0262	----	0.0516	----	----	
beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	----	<0.000100	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	<0.000050	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.025	----	0.028	----	----	
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000096	----	0.0000138	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	16.1	----	25.5	----	----	
cesium, total	7440-46-2	E420	0.000010	mg/L	0.000031	----	0.000036	----	----	
chromium, total	7440-47-3	E420	0.00050	mg/L	0.00124	----	0.00116	----	----	
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00066	----	0.00024	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00197	----	0.00084	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	12.0	----	19.4	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000164	----	0.000193	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	----	0.0011	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	5.27	----	5.73	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.228	----	0.542	----	----	
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	----	<0.0000050	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000654	----	0.000103	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	----	0.00098	----	----	
phosphorus, total	7723-14-0	E420	0.050	mg/L	0.126	----	0.083	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	2.57	----	3.20	----	----	
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00290	----	0.00522	----	----	
selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	----	0.000055	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	11.0	----	13.9	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	----	<0.000010	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	3.60	----	6.60	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.0664	----	0.135	----	----	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Dup1	Trip Blank	20MW-06-0621	----	----
Client sampling date / time					21-Jun-2021	21-Jun-2021	21-Jun-2021	----	----	
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-011	VA21B2503-012	VA21B2503-013	-----	-----	
					Result	Result	Result	---	---	
Total Metals										
sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	---	<0.50	---	---	
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	---	<0.00020	---	---	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	---	<0.000010	---	---	
thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	---	<0.00010	---	---	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	---	<0.00010	---	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00889	---	0.00661	---	---	
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	---	<0.00010	---	---	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000038	---	0.000062	---	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00384	---	0.00637	---	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0115	---	0.0270	---	---	
zirconium, total	7440-67-7	E420	0.00020	mg/L	0.00024	---	0.00045	---	---	
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0123	---	0.0134	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	---	<0.00010	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00042	---	0.00055	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0251	---	0.0513	---	---	
beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	---	<0.000100	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	---	<0.000050	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.023	---	0.026	---	---	
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	---	<0.0000050	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	16.5	---	26.2	---	---	
cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000015	---	0.000028	---	---	
chromium, dissolved	7440-47-3	E421	0.00050	mg/L	0.00077	---	0.00081	---	---	
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00054	---	0.00018	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	---	<0.00020	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	10.9	---	19.0	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	---	<0.000050	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	---	<0.0010	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	5.74	---	6.00	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.221	---	0.563	---	---	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	---	<0.0000050	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000550	---	0.000081	---	---	



Analytical Results

Sub-Matrix: Water					Client sample ID	Dup1	Trip Blank	20MW-06-0621	----	----
(Matrix: Water)					Client sampling date / time	21-Jun-2021	21-Jun-2021	21-Jun-2021	----	----
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-011	VA21B2503-012	VA21B2503-013	-----	-----	
					Result	Result	Result	---	---	
Dissolved Metals										
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	----	<0.00050	----	----	
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	----	0.082	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.40	----	3.15	----	----	
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00281	----	0.00528	----	----	
selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	----	<0.000050	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	10.3	----	13.7	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	3.80	----	6.83	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0688	----	0.133	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	----	<0.50	----	----	
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	----	<0.00020	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	<0.000010	----	----	
thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	----	<0.00010	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	0.00057	----	----	
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	----	<0.00010	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000021	----	0.000040	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00328	----	0.00578	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0069	----	0.0141	----	----	
zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	<0.00020	----	0.00039	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	----	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	----	Field	----	----	
Volatile Organic Compounds										
chlorobenzene	108-90-7	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
chloromethane	74-87-3	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
dichlorobenzene, 1,2-	95-50-1	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
dichlorobenzene, 1,3-	541-73-1	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
dichlorobenzene, 1,4-	106-46-7	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
dichloropropane, 1,2-	78-87-5	E611C	0.50	µg/L	<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	----	----	
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.50	µg/L	<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	----	----	



Analytical Results

Sub-Matrix: Water					Client sample ID	Dup1	Trip Blank	20MW-06-0621	----	----
(Matrix: Water)					Client sampling date / time	21-Jun-2021	21-Jun-2021	21-Jun-2021	----	----
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-011	VA21B2503-012	VA21B2503-013	-----	-----	
					Result	Result	Result	---	---	
Volatile Organic Compounds										
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.20	µg/L	<0.20	<0.20	<0.20	----	----	
trichloroethane, 1,1,2-	79-00-5	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
trichlorofluoromethane	75-69-4	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
Volatile Organic Compounds [Drycleaning]										
carbon tetrachloride	56-23-5	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
chloroethane	75-00-3	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
dichloroethane, 1,1-	75-34-3	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
dichloroethane, 1,2-	107-06-2	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
dichloroethylene, 1,1-	75-35-4	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
dichloroethylene, cis-1,2-	156-59-4	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
dichloroethylene, trans-1,2-	156-60-5	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
dichloromethane	75-09-2	E611C	1.0	µg/L	<1.0	<1.0	<1.0	----	----	
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
tetrachloroethylene	127-18-4	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
trichloroethane, 1,1,1-	71-55-6	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
trichloroethylene	79-01-6	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
vinyl chloride	75-01-4	E611C	0.40	µg/L	<0.40	<0.40	<0.40	----	----	
Volatile Organic Compounds [Fuels]										
benzene	71-43-2	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
ethylbenzene	100-41-4	E611C	0.50	µg/L	<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	----	----	
styrene	100-42-5	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
toluene	108-88-3	E611C	0.40	µg/L	<0.40	<0.40	<0.40	----	----	
xylene, m+p-	179601-23-1	E611C	0.40	µg/L	<0.40	<0.40	<0.40	----	----	
xylene, o-	95-47-6	E611C	0.30	µg/L	<0.30	<0.30	<0.30	----	----	
xylenes, total	1330-20-7	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611C	1.0	%	95.8	96.0	97.6	----	----	
difluorobenzene, 1,4-	540-36-3	E611C	1.0	%	112	111	109	----	----	
Hydrocarbons										
EPH (C10-C19)	----	E601A	250	µg/L	<250	----	<250	----	----	
EPH (C19-C32)	----	E601A	250	µg/L	<250	----	<250	----	----	



Analytical Results

Sub-Matrix: Water					Client sample ID	Dup1	Trip Blank	20MW-06-0621	----	----
(Matrix: Water)					Client sampling date / time	21-Jun-2021	21-Jun-2021	21-Jun-2021	----	----
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-011	VA21B2503-012	VA21B2503-013	-----	-----	
					Result	Result	Result	---	---	
Hydrocarbons										
HEPHw	----	EC600A	250	µg/L	<250	---	<250	---	---	
LEPHw	----	EC600A	250	µg/L	<250	---	<250	---	---	
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	1.0	%	98.8	---	81.4	---	---	
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A	0.010	µg/L	0.014	---	<0.010	---	---	
acenaphthylene	208-96-8	E641A	0.010	µg/L	<0.010	---	<0.010	---	---	
acridine	260-94-6	E641A	0.010	µg/L	<0.034 ^{DLCL}	---	<0.010	---	---	
anthracene	120-12-7	E641A	0.010	µg/L	<0.010	---	<0.010	---	---	
benz(a)anthracene	56-55-3	E641A	0.010	µg/L	<0.010	---	<0.010	---	---	
benzo(a)pyrene	50-32-8	E641A	0.0050	µg/L	<0.0050	---	<0.0050	---	---	
benzo(b+j)fluoranthene	----	E641A	0.010	µg/L	<0.010	---	<0.010	---	---	
benzo(b+j+k)fluoranthene	----	E641A	0.015	µg/L	<0.015	---	<0.015	---	---	
benzo(g,h,i)perylene	191-24-2	E641A	0.010	µg/L	<0.010	---	<0.010	---	---	
benzo(k)fluoranthene	207-08-9	E641A	0.010	µg/L	<0.010	---	<0.010	---	---	
chrysene	218-01-9	E641A	0.010	µg/L	<0.010	---	<0.010	---	---	
dibenz(a,h)anthracene	53-70-3	E641A	0.0050	µg/L	<0.0050	---	<0.0050	---	---	
fluoranthene	206-44-0	E641A	0.010	µg/L	<0.010	---	<0.010	---	---	
fluorene	86-73-7	E641A	0.010	µg/L	0.038	---	<0.010	---	---	
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.010	µg/L	<0.010	---	<0.010	---	---	
methylnaphthalene, 1-	90-12-0	E641A	0.010	µg/L	<0.010	---	<0.010	---	---	
methylnaphthalene, 2-	91-57-6	E641A	0.010	µg/L	<0.010	---	<0.010	---	---	
naphthalene	91-20-3	E641A	0.050	µg/L	<0.050	---	<0.050	---	---	
phenanthrene	85-01-8	E641A	0.020	µg/L	<0.020	---	<0.020	---	---	
pyrene	129-00-0	E641A	0.010	µg/L	<0.010	---	<0.010	---	---	
quinoline	6027-02-7	E641A	0.050	µg/L	<0.050	---	<0.050	---	---	
Polycyclic Aromatic Hydrocarbons Surrogates										
chrysene-d12	1719-03-5	E641A	0.1	%	94.4	---	77.0	---	---	
naphthalene-d8	1146-65-2	E641A	0.1	%	93.8	---	84.8	---	---	
phenanthrene-d10	1517-22-2	E641A	0.1	%	108	---	93.7	---	---	
Volatile Organic Compounds [THMs]										
bromodichloromethane	75-27-4	E611C	0.50	µg/L	<0.50	<0.50	<0.50	---	---	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Dup1	Trip Blank	20MW-06-0621	----	----
Client sampling date / time					21-Jun-2021	21-Jun-2021	21-Jun-2021	----	----	----
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-011	VA21B2503-012	VA21B2503-013	-----	-----	-----
Volatile Organic Compounds [THMs]					Result	Result	Result	---	---	---
bromoform	75-25-2	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	----
chloroform	67-66-3	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	----
dibromochloromethane	124-48-1	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	----

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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA21B2503	Page	: 1 of 19
Client	: Jacobs Consultancy Canada Inc.	Laboratory	: Vancouver - Environmental
Contact	: Amy Casey	Account Manager	: Ashton Ostrander
Address	: Metrotower II, Suite 2100 4720 Kingsway Burnaby BC Canada V5H 4N2	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 519 579 3500	Telephone	: +1 604 253 4188
Project	: CE777000	Date Samples Received	: 21-Jun-2021 18:30
PO	: 670014CH.B0.01.09	Issue Date	: 06-Jul-2021 16:57
C-O-C number	: 20-921340		
Sampler	: AC, SM		
Site	: ----		
Quote number	: VA20-CHMH100-013		
No. of samples received	: 13		
No. of samples analysed	: 13		

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Duplicate (DUP) RPDs								
Dissolved Metals	VA21B2503-001	20MW-04S-0621	chromium, dissolved	7440-47-3	E421	26.8 % DUP-H	20%	Duplicate RPD does not meet the DQO for this test.
Dissolved Metals	VA21B2503-001	20MW-04S-0621	molybdenum, dissolved	7439-98-7	E421	26.5 % DUP-H	20%	Duplicate RPD does not meet the DQO for this test.
Dissolved Metals	VA21B2503-001	20MW-04S-0621	nickel, dissolved	7440-02-0	E421	0.00125 % DUP-H	Diff <2x LOR	Low Level DUP DQO exceeded (difference > 2 LOR).

Result Qualifiers

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



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 00:00 is used for calculation purposes.

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

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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-04D-0621	E509	21-Jun-2021	24-Jun-2021	----	----		24-Jun-2021	28 days	3 days	✓	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-04S-0621	E509	21-Jun-2021	24-Jun-2021	----	----		24-Jun-2021	28 days	3 days	✓	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-06-0621	E509	21-Jun-2021	24-Jun-2021	----	----		24-Jun-2021	28 days	3 days	✓	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-09-0621	E509	21-Jun-2021	24-Jun-2021	----	----		24-Jun-2021	28 days	3 days	✓	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-10D-0621	E509	21-Jun-2021	24-Jun-2021	----	----		24-Jun-2021	28 days	3 days	✓	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-10S-0621	E509	21-Jun-2021	24-Jun-2021	----	----		24-Jun-2021	28 days	3 days	✓	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-11-0621	E509	21-Jun-2021	24-Jun-2021	----	----		24-Jun-2021	28 days	3 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		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) Dup1	E509	21-Jun-2021	24-Jun-2021	----	----		24-Jun-2021	28 days	3 days	✓	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) MW06-34-0621	E509	21-Jun-2021	24-Jun-2021	----	----		24-Jun-2021	28 days	3 days	✓	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) MW19-01-0621	E509	21-Jun-2021	24-Jun-2021	----	----		24-Jun-2021	28 days	3 days	✓	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) MW19-03-0621	E509	21-Jun-2021	24-Jun-2021	----	----		24-Jun-2021	28 days	3 days	✓	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) 20MW-04D-0621	E421	21-Jun-2021	22-Jun-2021	----	----		27-Jun-2021	180 days	6 days	✓	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) 20MW-04S-0621	E421	21-Jun-2021	22-Jun-2021	----	----		27-Jun-2021	180 days	6 days	✓	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) 20MW-09-0621	E421	21-Jun-2021	22-Jun-2021	----	----		27-Jun-2021	180 days	6 days	✓	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) 20MW-10D-0621	E421	21-Jun-2021	22-Jun-2021	----	----		27-Jun-2021	180 days	6 days	✓	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) 20MW-10S-0621	E421	21-Jun-2021	22-Jun-2021	----	----		27-Jun-2021	180 days	6 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 Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 20MW-11-0621	E421	21-Jun-2021	22-Jun-2021	----	----		27-Jun-2021	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) Dup1	E421	21-Jun-2021	22-Jun-2021	----	----		27-Jun-2021	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW06-34-0621	E421	21-Jun-2021	22-Jun-2021	----	----		27-Jun-2021	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW19-01-0621	E421	21-Jun-2021	22-Jun-2021	----	----		27-Jun-2021	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW19-03-0621	E421	21-Jun-2021	22-Jun-2021	----	----		27-Jun-2021	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 20MW-06-0621	E421	21-Jun-2021	22-Jun-2021	----	----		27-Jun-2021	180 days	7 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-03-Product	E601A	21-Jun-2021	01-Jul-2021	14 days	10 days	✓	05-Jul-2021	40 days	4 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-04D-0621	E601A	21-Jun-2021	24-Jun-2021	14 days	3 days	✓	25-Jun-2021	40 days	1 days	✓
Hydrocarbons : BC PHC - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-06-0621	E601A	21-Jun-2021	24-Jun-2021	14 days	3 days	✓	25-Jun-2021	40 days	1 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-09-0621	E601A	21-Jun-2021	24-Jun-2021	14 days	3 days	✓	25-Jun-2021	40 days	1 days	✓	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-11-0621	E601A	21-Jun-2021	24-Jun-2021	14 days	3 days	✓	25-Jun-2021	40 days	1 days	✓	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) MW19-01-0621	E601A	21-Jun-2021	24-Jun-2021	14 days	3 days	✓	25-Jun-2021	40 days	1 days	✓	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) MW19-03-0621	E601A	21-Jun-2021	24-Jun-2021	14 days	3 days	✓	25-Jun-2021	40 days	1 days	✓	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-04S-0621	E601A	21-Jun-2021	29-Jun-2021	14 days	8 days	✓	30-Jun-2021	40 days	1 days	✓	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-10D-0621	E601A	21-Jun-2021	29-Jun-2021	14 days	8 days	✓	30-Jun-2021	40 days	1 days	✓	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-10S-0621	E601A	21-Jun-2021	29-Jun-2021	14 days	8 days	✓	30-Jun-2021	40 days	1 days	✓	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) Dup1	E601A	21-Jun-2021	29-Jun-2021	14 days	8 days	✓	30-Jun-2021	40 days	1 days	✓	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) MW06-34-0621	E601A	21-Jun-2021	29-Jun-2021	14 days	8 days	✓	30-Jun-2021	40 days	1 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-03-Product	E641A	21-Jun-2021	01-Jul-2021	14 days	10 days	✔	02-Jul-2021	40 days	1 days	✔	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-04D-0621	E641A	21-Jun-2021	24-Jun-2021	14 days	3 days	✔	25-Jun-2021	40 days	1 days	✔	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-06-0621	E641A	21-Jun-2021	24-Jun-2021	14 days	3 days	✔	25-Jun-2021	40 days	1 days	✔	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-09-0621	E641A	21-Jun-2021	24-Jun-2021	14 days	3 days	✔	25-Jun-2021	40 days	1 days	✔	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-11-0621	E641A	21-Jun-2021	24-Jun-2021	14 days	3 days	✔	25-Jun-2021	40 days	1 days	✔	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) MW19-01-0621	E641A	21-Jun-2021	24-Jun-2021	14 days	3 days	✔	25-Jun-2021	40 days	1 days	✔	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) MW19-03-0621	E641A	21-Jun-2021	24-Jun-2021	14 days	3 days	✔	25-Jun-2021	40 days	1 days	✔	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-04S-0621	E641A	21-Jun-2021	29-Jun-2021	14 days	8 days	✔	29-Jun-2021	40 days	1 days	✔	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-10D-0621	E641A	21-Jun-2021	29-Jun-2021	14 days	8 days	✔	29-Jun-2021	40 days	1 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-10S-0621	E641A	21-Jun-2021	29-Jun-2021	14 days	8 days	✓	29-Jun-2021	40 days	1 days	✓	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) Dup1	E641A	21-Jun-2021	29-Jun-2021	14 days	8 days	✓	29-Jun-2021	40 days	1 days	✓	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) MW06-34-0621	E641A	21-Jun-2021	29-Jun-2021	14 days	8 days	✓	29-Jun-2021	40 days	1 days	✓	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) 20MW-04D-0621	E508	21-Jun-2021	----	----	----		24-Jun-2021	28 days	3 days	✓	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) 20MW-04S-0621	E508	21-Jun-2021	----	----	----		24-Jun-2021	28 days	3 days	✓	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) 20MW-09-0621	E508	21-Jun-2021	----	----	----		24-Jun-2021	28 days	3 days	✓	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) 20MW-10D-0621	E508	21-Jun-2021	----	----	----		24-Jun-2021	28 days	3 days	✓	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) 20MW-10S-0621	E508	21-Jun-2021	----	----	----		24-Jun-2021	28 days	3 days	✓	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) 20MW-11-0621	E508	21-Jun-2021	----	----	----		24-Jun-2021	28 days	3 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		Eval	Analysis Date	Holding Times		Eval	
Rec	Actual	Rec		Actual							
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) Dup1	E508	21-Jun-2021	----	----	----		24-Jun-2021	28 days	3 days	✓	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) MW06-34-0621	E508	21-Jun-2021	----	----	----		24-Jun-2021	28 days	3 days	✓	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) MW19-01-0621	E508	21-Jun-2021	----	----	----		24-Jun-2021	28 days	3 days	✓	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) MW19-03-0621	E508	21-Jun-2021	----	----	----		24-Jun-2021	28 days	3 days	✓	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) 20MW-06-0621	E508	21-Jun-2021	----	----	----		24-Jun-2021	28 days	4 days	✓	
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE total (nitric acid) 20MW-04D-0621	E420	21-Jun-2021	----	----	----		25-Jun-2021	180 days	4 days	✓	
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE total (nitric acid) 20MW-04S-0621	E420	21-Jun-2021	----	----	----		25-Jun-2021	180 days	4 days	✓	
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE total (nitric acid) 20MW-09-0621	E420	21-Jun-2021	----	----	----		25-Jun-2021	180 days	4 days	✓	
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE total (nitric acid) 20MW-10D-0621	E420	21-Jun-2021	----	----	----		25-Jun-2021	180 days	4 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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) 20MW-10S-0621	E420	21-Jun-2021	----	----	----		25-Jun-2021	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) 20MW-11-0621	E420	21-Jun-2021	----	----	----		25-Jun-2021	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) Dup1	E420	21-Jun-2021	----	----	----		25-Jun-2021	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) MW06-34-0621	E420	21-Jun-2021	----	----	----		25-Jun-2021	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) MW19-01-0621	E420	21-Jun-2021	----	----	----		25-Jun-2021	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) MW19-03-0621	E420	21-Jun-2021	----	----	----		25-Jun-2021	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) 20MW-06-0621	E420	21-Jun-2021	----	----	----		25-Jun-2021	180 days	5 days	✓
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-03-Product	E611C	21-Jun-2021	02-Jul-2021	----	----		03-Jul-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-04D-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	



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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-04S-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-06-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-09-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-10D-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-10S-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-11-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) Dup1	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW06-34-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW19-01-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	



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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW19-03-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) Trip Blank	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-03-Product	E611C	21-Jun-2021	02-Jul-2021	----	----		03-Jul-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-04D-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-04S-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-06-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-09-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-10D-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-10S-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	



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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-11-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) Dup1	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW06-34-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW19-01-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW19-03-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) Trip Blank	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-03-Product	E611C	21-Jun-2021	02-Jul-2021	----	----		03-Jul-2021	14 days	11 days	✔
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-09-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	14 days	7 days	✔
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-10D-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	14 days	7 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-10S-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	14 days	7 days	✓	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-11-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	14 days	7 days	✓	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) Dup1	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	14 days	7 days	✓	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) MW06-34-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	14 days	7 days	✓	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-04D-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	14 days	8 days	✓	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-04S-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	14 days	8 days	✓	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-06-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	14 days	8 days	✓	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) MW19-01-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	14 days	8 days	✓	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) MW19-03-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	14 days	8 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) Trip Blank	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	14 days	8 days	✔	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-03-Product	E611C	21-Jun-2021	02-Jul-2021	----	----		03-Jul-2021	----	----		
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-04D-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----		
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-04S-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----		
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-06-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----		
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-09-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----		
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-10D-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----		
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-10S-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----		
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-11-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----		



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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) Dup1	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW06-34-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW19-01-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW19-03-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) Trip Blank	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	

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: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
Analytical Methods							
Laboratory Duplicates (DUP)							
Dissolved Mercury in Water by CVAAS	E509	228949	1	16	6.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	227248	1	20	5.0	5.0	✔
Total Mercury in Water by CVAAS	E508	229389	2	40	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	227882	2	40	5.0	5.0	✔
VOCs (BC List) by Headspace GC-MS	E611C	232145	2	23	8.7	5.0	✔
Laboratory Control Samples (LCS)							
BC PHC - EPH by GC-FID	E601A	228894	3	30	10.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	228949	1	16	6.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	227248	1	20	5.0	5.0	✔
PAHs by Hexane LVI GC-MS	E641A	228895	3	51	5.8	5.0	✔
Total Mercury in Water by CVAAS	E508	229389	2	40	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	227882	2	40	5.0	5.0	✔
VOCs (BC List) by Headspace GC-MS	E611C	232145	2	23	8.7	5.0	✔
Method Blanks (MB)							
BC PHC - EPH by GC-FID	E601A	228894	3	30	10.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	228949	1	16	6.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	227248	1	20	5.0	5.0	✔
PAHs by Hexane LVI GC-MS	E641A	228895	3	51	5.8	5.0	✔
Total Mercury in Water by CVAAS	E508	229389	2	40	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	227882	2	40	5.0	5.0	✔
VOCs (BC List) by Headspace GC-MS	E611C	232145	2	23	8.7	5.0	✔
Matrix Spikes (MS)							
Dissolved Mercury in Water by CVAAS	E509	228949	1	16	6.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	227248	1	20	5.0	5.0	✔
Total Mercury in Water by CVAAS	E508	229389	2	40	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	227882	2	40	5.0	5.0	✔
VOCs (BC List) by Headspace GC-MS	E611C	232145	2	23	8.7	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
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
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.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
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.
BC PHC - EPH by GC-FID	E601A Vancouver - Environmental	Water	BC MOE Lab Manual	Extractable Petroleum Hydrocarbons (EPH) 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 Vancouver - Environmental	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO ₃), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO ₃ 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.
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO ₃), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO ₃ 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. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.



<i>Analytical Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
LEPH and HEPH: EPH-PAH	EC600A Vancouver - 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.
<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO ₃ .
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 Vancouver - Environmental	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.

QUALITY CONTROL REPORT

Work Order	: VA21B2503	Page	: 1 of 30
Client	: Jacobs Consultancy Canada Inc.	Laboratory	: Vancouver - Environmental
Contact	: Amy Casey	Account Manager	: Ashton Ostrander
Address	: Metrotower II, Suite 2100 4720 Kingsway Burnaby BC Canada V5H 4N2	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 519 579 3500	Telephone	: +1 604 253 4188
Project	: CE777000	Date Samples Received	: 21-Jun-2021 18:30
PO	: 670014CH.B0.01.09	Date Analysis Commenced	: 22-Jun-2021
C-O-C number	: 20-921340	Issue Date	: 06-Jul-2021 16:57
Sampler	: AC, SM		
Site	: ----		
Quote number	: VA20-CHMH100-013		
No. of samples received	: 13		
No. of samples analysed	: 13		

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Harsha Attanayake	Laboratory Analyst	Organics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Ophelia Chiu	Department Manager - Organics	Organics, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Saron Kim	Analyst	Metals, Burnaby, British Columbia

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Work Order : VA21B2503
Client : Jacobs Consultancy Canada Inc.
Project : CE777000



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: **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
Total Metals (QC Lot: 227882)											
FJ2100449-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0231	0.0186	0.0044	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00148	0.00142	4.31%	20%	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00032	0.00033	0.000006	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0747	0.0726	2.81%	20%	----
		beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.167	0.165	1.09%	20%	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000519	0.0000518	0.163%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	270	259	4.12%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	0.000017	0.000015	0.000002	Diff <2x LOR	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00013	0.00011	0.00001	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00055	0.00055	0.000004	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.026	0.025	0.0009	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.346	0.329	4.87%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	114	112	1.12%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00578	0.00569	1.62%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00352	0.00337	4.50%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.0456	0.0448	1.77%	20%	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	4.11	4.05	1.50%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00252	0.00246	2.11%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.144	0.140	2.25%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	0.73	0.68	0.04	Diff <2x LOR	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	225	220	2.12%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.406	0.383	5.80%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	367	367	0.190%	20%	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000035	0.000033	0.000001	Diff <2x LOR	----
		thorium, total	7440-29-1	E420	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
Total Metals (QC Lot: 227882) - continued											
FJ2100449-001	Anonymous	tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00115	0.00152	0.00037	Diff <2x LOR	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.0236	0.0221	6.64%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00051	0.00056	0.00006	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0070	0.0070	0.00009	Diff <2x LOR	----
		zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Total Metals (QC Lot: 228492)											
KS2101943-001	Anonymous	aluminum, total	7429-90-5	E420	0.0100	mg/L	0.202	0.196	3.30%	20%	----
		antimony, total	7440-36-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00153	0.00148	3.60%	20%	----
		barium, total	7440-39-3	E420	0.0200	mg/L	<0.0200	<0.0200	0	Diff <2x LOR	----
		beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.000200	mg/L	<0.000200	<0.000200	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.100	mg/L	1.45	1.47	1.40%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	0.000014	0.000015	0.0000005	Diff <2x LOR	----
		chromium, total	7440-47-3	E420	0.00200	mg/L	<0.00200	<0.00200	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00027	0.00026	0.0000005	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00100	mg/L	0.00220	0.00219	0.000002	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.030	mg/L	0.457	0.423	7.78%	20%	----
		lead, total	7439-92-1	E420	0.000500	mg/L	<0.000500	<0.000500	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0010	0.0011	0.00003	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.100	mg/L	0.431	0.429	0.0016	Diff <2x LOR	----
		manganese, total	7439-96-5	E420	0.00200	mg/L	0.00664	0.00650	0.00014	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00910	0.00925	1.62%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00113	0.00110	0.00003	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	0.080	0.093	0.013	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.100	mg/L	0.350	0.352	0.002	Diff <2x LOR	----
		rubidium, total	7440-17-7	E420	0.000020	mg/L	0.00051	0.00051	0.000002	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	12.8	12.9	0.314%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	0.000015	0.000012	0.000002	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	2.00	mg/L	74.5	75.2	1.00%	20%	----



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
Total Metals (QC Lot: 228492) - continued											
KS2101943-001	Anonymous	strontium, total	7440-24-6	E420	0.00020	mg/L	0.00574	0.00591	2.90%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	7.35	7.41	0.838%	20%	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00744	0.00695	6.74%	20%	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	0.00110	0.00111	0.259%	20%	----
		uranium, total	7440-61-1	E420	0.000100	mg/L	0.000338	0.000339	0.000005	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00167	0.00166	0.00001	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0500	mg/L	0.293	0.294	0.0008	Diff <2x LOR	----
zirconium, total	7440-67-7	E420	0.00020	mg/L	0.00035	0.00033	0.00002	Diff <2x LOR	----		
Total Metals (QC Lot: 229389)											
CG2102090-001	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 229390)											
VA21B2503-005	MW06-34-0621	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 227248)											
VA21B2503-001	20MW-04S-0621	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0125	0.0137	9.24%	20%	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00042	0.00041	0.00001	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00030	0.00030	0.000008	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0534	0.0522	2.31%	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	0.0000220	0.0000218	0.0000002	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	35.9	35.7	0.449%	20%	----
		cesium, dissolved	7440-46-2	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		chromium, dissolved	7440-47-3	E421	0.00050	mg/L	0.0108	0.0142	26.8%	20%	DUP-H
		cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00022	0.00022	0.000002	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00321	0.00329	2.43%	20%	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.039	0.040	0.0005	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000056	0.000052	0.000003	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	1.62	1.63	0.489%	20%	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0419	0.0416	0.711%	20%	----		



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: 227248) - continued											
VA21B2503-001	20MW-04S-0621	molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00108	0.00141	26.5%	20%	DUP-H
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00436	# 0.00561	0.00125	Diff <2x LOR	DUP-H
		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	2.11	2.10	0.815%	20%	----
		rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00246	0.00245	0.247%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.72	4.70	0.352%	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	2.71	2.70	0.358%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0877	0.0880	0.325%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	1.45	1.36	0.09	Diff <2x LOR	----
		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	0.000011	0.000011	0.0000006	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	<0.00010	<0.00010	0	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	0.000175	0.000174	0.452%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00082	0.00080	0.00002	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0093	0.0089	0.0004	Diff <2x LOR	----
		zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 228949)											
VA21B2455-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 232145)											
FJ2100452-001	Anonymous	benzene	71-43-2	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		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	----



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: 232145) - continued											
FJ2100452-001	Anonymous	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	1.0	µg/L	<1.0	<1.0	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	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		xylene, o-	95-47-6	E611C	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 235093)											
FJ2100471-001	Anonymous	benzene	71-43-2	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		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	----



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: 235093) - continued											
FJ2100471-001	Anonymous	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	1.0	µg/L	<1.0	<1.0	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	0.40	µg/L	<0.40	0.69	0.29	Diff <2x LOR	----
		xylene, o-	95-47-6	E611C	0.30	µg/L	<0.30	<0.30	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: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 227882)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 227882) - continued						
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Total Metals (QCLot: 228492)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 228492) - continued						
tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	---
Total Metals (QCLot: 229389)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	---
Total Metals (QCLot: 229390)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	---
Dissolved Metals (QCLot: 227248)						
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	---
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
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	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 227248) - continued						
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: 228949)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Volatile Organic Compounds (QCLot: 232145)						
benzene	71-43-2	E611C	0.5	µg/L	<0.50	----
bromodichloromethane	75-27-4	E611C	0.5	µg/L	<0.50	----
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	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 232145) - continued						
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	1	µg/L	<1.0	----
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, 1,1,1,2,2-	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	0.4	µg/L	<0.40	----
xylene, o-	95-47-6	E611C	0.3	µg/L	<0.30	----
Volatile Organic Compounds (QCLot: 235093)						
benzene	71-43-2	E611C	0.5	µg/L	<0.50	----
bromodichloromethane	75-27-4	E611C	0.5	µg/L	<0.50	----
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	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 235093) - continued						
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	1	µg/L	<1.0	----
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	0.4	µg/L	<0.40	----
xylene, o-	95-47-6	E611C	0.3	µg/L	<0.30	----
Hydrocarbons (QCLot: 228894)						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
Hydrocarbons (QCLot: 232149)						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
Hydrocarbons (QCLot: 233625)						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
Polycyclic Aromatic Hydrocarbons (QCLot: 228895)						
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	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 228895) - continued						
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	---
Polycyclic Aromatic Hydrocarbons (QCLot: 232150)						
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	---
Polycyclic Aromatic Hydrocarbons (QCLot: 233626)						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 233626) - continued						
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	---



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: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Total Metals (QCLot: 227882)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	106	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	103	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	101	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	99.7	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	103	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	103	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	100	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	109	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	100	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	112	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	110	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	106	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	104	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	107	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	105	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	108	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	106	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	96.5	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	103	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Total Metals (QCLot: 227882) - continued									
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	97.6	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	96.3	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	102	80.0	120	----
Total Metals (QCLot: 228492)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	104	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	103	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	99.9	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	98.6	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	97.6	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	98.6	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	102	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	101	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	104	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	99.0	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	99.7	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	112	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	107	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	108	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	98.3	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	99.4	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	95.4	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	109	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Total Metals (QCLot: 228492) - continued									
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	94.8	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	99.8	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	94.0	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	102	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	100	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	100	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	95.4	80.0	120	----
Total Metals (QCLot: 229389)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	101	80.0	120	----
Total Metals (QCLot: 229390)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	98.6	80.0	120	----
Dissolved Metals (QCLot: 227248)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	100	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	104	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	97.5	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.2	80.0	120	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	96.4	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	99.8	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.9	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	97.4	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	109	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	98.3	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	100	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	100	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	98.9	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	104	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	109	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Dissolved Metals (QCLot: 227248) - continued									
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	103	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	101	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	104	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	94.8	80.0	120	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	106	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	110	80.0	120	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	101	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.2	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.6	80.0	120	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	102	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	101	80.0	120	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	97.5	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	99.9	80.0	120	----
Volatile Organic Compounds (QCLot: 232145)									
benzene	71-43-2	E611C	0.5	µg/L	100 µg/L	101	70.0	130	----
bromodichloromethane	75-27-4	E611C	0.5	µg/L	100 µg/L	116	70.0	130	----
bromoform	75-25-2	E611C	0.5	µg/L	100 µg/L	70.6	70.0	130	----
carbon tetrachloride	56-23-5	E611C	0.5	µg/L	100 µg/L	113	70.0	130	----
chlorobenzene	108-90-7	E611C	0.5	µg/L	100 µg/L	91.4	70.0	130	----
chloroethane	75-00-3	E611C	0.5	µg/L	100 µg/L	95.8	60.0	140	----
chloroform	67-66-3	E611C	0.5	µg/L	100 µg/L	97.4	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	111	70.0	130	----
dichlorobenzene, 1,2-	95-50-1	E611C	0.5	µg/L	100 µg/L	92.6	70.0	130	----
dichlorobenzene, 1,3-	541-73-1	E611C	0.5	µg/L	100 µg/L	87.9	70.0	130	----
dichlorobenzene, 1,4-	106-46-7	E611C	0.5	µg/L	100 µg/L	100	70.0	130	----
dichloroethane, 1,1-	75-34-3	E611C	0.5	µg/L	100 µg/L	97.2	70.0	130	----
dichloroethane, 1,2-	107-06-2	E611C	0.5	µg/L	100 µg/L	107	70.0	130	----
dichloroethylene, 1,1-	75-35-4	E611C	0.5	µg/L	100 µg/L	99.6	70.0	130	----
dichloroethylene, cis-1,2-	156-59-4	E611C	0.5	µg/L	100 µg/L	92.6	70.0	130	----
dichloroethylene, trans-1,2-	156-60-5	E611C	0.5	µg/L	100 µg/L	99.3	70.0	130	----
dichloromethane	75-09-2	E611C	1	µg/L	100 µg/L	104	70.0	130	----
dichloropropane, 1,2-	78-87-5	E611C	0.5	µg/L	100 µg/L	101	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
Volatile Organic Compounds (QCLot: 232145) - continued									
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.5	µg/L	100 µg/L	98.5	70.0	130	----
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.5	µg/L	100 µg/L	110	70.0	130	----
ethylbenzene	100-41-4	E611C	0.5	µg/L	100 µg/L	84.7	70.0	130	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.5	µg/L	100 µg/L	123	70.0	130	----
styrene	100-42-5	E611C	0.5	µg/L	100 µg/L	88.0	70.0	130	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.5	µg/L	100 µg/L	95.9	70.0	130	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.2	µg/L	100 µg/L	106	70.0	130	----
tetrachloroethylene	127-18-4	E611C	0.5	µg/L	100 µg/L	92.0	70.0	130	----
toluene	108-88-3	E611C	0.4	µg/L	100 µg/L	82.0	70.0	130	----
trichloroethane, 1,1,1-	71-55-6	E611C	0.5	µg/L	100 µg/L	96.3	70.0	130	----
trichloroethane, 1,1,2-	79-00-5	E611C	0.5	µg/L	100 µg/L	91.0	70.0	130	----
trichloroethylene	79-01-6	E611C	0.5	µg/L	100 µg/L	104	70.0	130	----
trichlorofluoromethane	75-69-4	E611C	0.5	µg/L	100 µg/L	106	60.0	140	----
vinyl chloride	75-01-4	E611C	0.4	µg/L	100 µg/L	94.6	60.0	140	----
xylene, m+p-	179601-23-1	E611C	0.4	µg/L	200 µg/L	92.1	70.0	130	----
xylene, o-	95-47-6	E611C	0.3	µg/L	100 µg/L	86.1	70.0	130	----
Volatile Organic Compounds (QCLot: 235093)									
benzene	71-43-2	E611C	0.5	µg/L	100 µg/L	118	70.0	130	----
bromodichloromethane	75-27-4	E611C	0.5	µg/L	100 µg/L	129	70.0	130	----
bromoform	75-25-2	E611C	0.5	µg/L	100 µg/L	90.4	70.0	130	----
carbon tetrachloride	56-23-5	E611C	0.5	µg/L	100 µg/L	107	70.0	130	----
chlorobenzene	108-90-7	E611C	0.5	µg/L	100 µg/L	109	70.0	130	----
chloroethane	75-00-3	E611C	0.5	µg/L	100 µg/L	96.9	60.0	140	----
chloroform	67-66-3	E611C	0.5	µg/L	100 µg/L	116	70.0	130	----
chloromethane	74-87-3	E611C	0.5	µg/L	100 µg/L	110	60.0	140	----
dibromochloromethane	124-48-1	E611C	0.5	µg/L	100 µg/L	101	70.0	130	----
dichlorobenzene, 1,2-	95-50-1	E611C	0.5	µg/L	100 µg/L	110	70.0	130	----
dichlorobenzene, 1,3-	541-73-1	E611C	0.5	µg/L	100 µg/L	108	70.0	130	----
dichlorobenzene, 1,4-	106-46-7	E611C	0.5	µg/L	100 µg/L	109	70.0	130	----
dichloroethane, 1,1-	75-34-3	E611C	0.5	µg/L	100 µg/L	122	70.0	130	----
dichloroethane, 1,2-	107-06-2	E611C	0.5	µg/L	100 µg/L	116	70.0	130	----
dichloroethylene, 1,1-	75-35-4	E611C	0.5	µg/L	100 µg/L	121	70.0	130	----
dichloroethylene, cis-1,2-	156-59-4	E611C	0.5	µg/L	100 µg/L	113	70.0	130	----
dichloroethylene, trans-1,2-	156-60-5	E611C	0.5	µg/L	100 µg/L	108	70.0	130	----
dichloromethane	75-09-2	E611C	1	µg/L	100 µg/L	127	70.0	130	----
dichloropropane, 1,2-	78-87-5	E611C	0.5	µg/L	100 µg/L	124	70.0	130	----
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.5	µg/L	100 µg/L	124	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
Volatile Organic Compounds (QCLot: 235093) - continued									
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.5	µg/L	100 µg/L	105	70.0	130	----
ethylbenzene	100-41-4	E611C	0.5	µg/L	100 µg/L	107	70.0	130	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.5	µg/L	100 µg/L	113	70.0	130	----
styrene	100-42-5	E611C	0.5	µg/L	100 µg/L	109	70.0	130	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.5	µg/L	100 µg/L	100	70.0	130	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.2	µg/L	100 µg/L	122	70.0	130	----
tetrachloroethylene	127-18-4	E611C	0.5	µg/L	100 µg/L	111	70.0	130	----
toluene	108-88-3	E611C	0.4	µg/L	100 µg/L	110	70.0	130	----
trichloroethane, 1,1,1-	71-55-6	E611C	0.5	µg/L	100 µg/L	129	70.0	130	----
trichloroethane, 1,1,2-	79-00-5	E611C	0.5	µg/L	100 µg/L	105	70.0	130	----
trichloroethylene	79-01-6	E611C	0.5	µg/L	100 µg/L	117	70.0	130	----
trichlorofluoromethane	75-69-4	E611C	0.5	µg/L	100 µg/L	119	60.0	140	----
vinyl chloride	75-01-4	E611C	0.4	µg/L	100 µg/L	114	60.0	140	----
xylene, m+p-	179601-23-1	E611C	0.4	µg/L	200 µg/L	112	70.0	130	----
xylene, o-	95-47-6	E611C	0.3	µg/L	100 µg/L	109	70.0	130	----
Hydrocarbons (QCLot: 228894)									
EPH (C10-C19)	----	E601A	250	µg/L	6491 µg/L	113	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3363 µg/L	109	70.0	130	----
Hydrocarbons (QCLot: 232149)									
EPH (C10-C19)	----	E601A	250	µg/L	6491 µg/L	118	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3363 µg/L	117	70.0	130	----
Hydrocarbons (QCLot: 233625)									
EPH (C10-C19)	----	E601A	250	µg/L	6491 µg/L	100	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3363 µg/L	98.8	70.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 228895)									
acenaphthene	83-32-9	E641A	0.01	µg/L	0.5 µg/L	91.0	60.0	130	----
acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5 µg/L	95.4	60.0	130	----
acridine	260-94-6	E641A	0.01	µg/L	0.5 µg/L	101	60.0	130	----
anthracene	120-12-7	E641A	0.01	µg/L	0.5 µg/L	118	60.0	130	----
benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5 µg/L	129	60.0	130	----
benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5 µg/L	98.1	60.0	130	----
benzo(b+j)fluoranthene	----	E641A	0.01	µg/L	0.5 µg/L	84.3	60.0	130	----
benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	0.5 µg/L	105	60.0	130	----
benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5 µg/L	86.6	60.0	130	----
chrysene	218-01-9	E641A	0.01	µg/L	0.5 µg/L	116	60.0	130	----



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 228895) - continued									
dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5 µg/L	104	60.0	130	----
fluoranthene	206-44-0	E641A	0.01	µg/L	0.5 µg/L	113	60.0	130	----
fluorene	86-73-7	E641A	0.01	µg/L	0.5 µg/L	101	60.0	130	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5 µg/L	118	60.0	130	----
methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	0.5 µg/L	95.4	60.0	130	----
methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5 µg/L	89.6	60.0	130	----
naphthalene	91-20-3	E641A	0.05	µg/L	0.5 µg/L	89.2	50.0	130	----
phenanthrene	85-01-8	E641A	0.02	µg/L	0.5 µg/L	114	60.0	130	----
pyrene	129-00-0	E641A	0.01	µg/L	0.5 µg/L	116	60.0	130	----
quinoline	6027-02-7	E641A	0.05	µg/L	0.5 µg/L	120	60.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 232150)									
acenaphthene	83-32-9	E641A	0.01	µg/L	0.5 µg/L	100	60.0	130	----
acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5 µg/L	109	60.0	130	----
acridine	260-94-6	E641A	0.01	µg/L	0.5 µg/L	112	60.0	130	----
anthracene	120-12-7	E641A	0.01	µg/L	0.5 µg/L	122	60.0	130	----
benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5 µg/L	124	60.0	130	----
benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5 µg/L	110	60.0	130	----
benzo(b+j)fluoranthene	----	E641A	0.01	µg/L	0.5 µg/L	89.5	60.0	130	----
benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	0.5 µg/L	114	60.0	130	----
benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5 µg/L	98.6	60.0	130	----
chrysene	218-01-9	E641A	0.01	µg/L	0.5 µg/L	121	60.0	130	----
dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5 µg/L	117	60.0	130	----
fluoranthene	206-44-0	E641A	0.01	µg/L	0.5 µg/L	112	60.0	130	----
fluorene	86-73-7	E641A	0.01	µg/L	0.5 µg/L	115	60.0	130	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5 µg/L	126	60.0	130	----
methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	0.5 µg/L	98.9	60.0	130	----
methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5 µg/L	100	60.0	130	----
naphthalene	91-20-3	E641A	0.05	µg/L	0.5 µg/L	95.8	50.0	130	----
phenanthrene	85-01-8	E641A	0.02	µg/L	0.5 µg/L	113	60.0	130	----
pyrene	129-00-0	E641A	0.01	µg/L	0.5 µg/L	117	60.0	130	----
quinoline	6027-02-7	E641A	0.05	µg/L	0.5 µg/L	111	60.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 233626)									
acenaphthene	83-32-9	E641A	0.01	µg/L	0.5 µg/L	89.3	60.0	130	----
acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5 µg/L	102	60.0	130	----
acridine	260-94-6	E641A	0.01	µg/L	0.5 µg/L	99.7	60.0	130	----
anthracene	120-12-7	E641A	0.01	µg/L	0.5 µg/L	116	60.0	130	----
benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5 µg/L	119	60.0	130	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Polycyclic Aromatic Hydrocarbons (QCLot: 233626) - continued									
benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5 µg/L	105	60.0	130	----
benzo(b+j)fluoranthene	----	E641A	0.01	µg/L	0.5 µg/L	85.4	60.0	130	----
benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	0.5 µg/L	93.3	60.0	130	----
benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5 µg/L	95.0	60.0	130	----
chrysene	218-01-9	E641A	0.01	µg/L	0.5 µg/L	122	60.0	130	----
dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5 µg/L	98.9	60.0	130	----
fluoranthene	206-44-0	E641A	0.01	µg/L	0.5 µg/L	109	60.0	130	----
fluorene	86-73-7	E641A	0.01	µg/L	0.5 µg/L	104	60.0	130	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5 µg/L	106	60.0	130	----
methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	0.5 µg/L	85.2	60.0	130	----
methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5 µg/L	83.2	60.0	130	----
naphthalene	91-20-3	E641A	0.05	µg/L	0.5 µg/L	86.9	50.0	130	----
phenanthrene	85-01-8	E641A	0.02	µg/L	0.5 µg/L	107	60.0	130	----
pyrene	129-00-0	E641A	0.01	µg/L	0.5 µg/L	114	60.0	130	----
quinoline	6027-02-7	E641A	0.05	µg/L	0.5 µg/L	107	60.0	130	----



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: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High	
Total Metals (QCLot: 227882)										
FJ2100449-001	Anonymous	aluminum, total	7429-90-5	E420	0.200 mg/L	0.2 mg/L	99.9	70.0	130	----
		antimony, total	7440-36-0	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0211 mg/L	0.02 mg/L	106	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0413 mg/L	0.04 mg/L	103	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00936 mg/L	0.01 mg/L	93.6	70.0	130	----
		boron, total	7440-42-8	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00388 mg/L	0.004 mg/L	96.9	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cesium, total	7440-46-2	E420	0.0104 mg/L	0.01 mg/L	104	70.0	130	----
		chromium, total	7440-47-3	E420	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	----
		copper, total	7440-50-8	E420	0.0189 mg/L	0.02 mg/L	94.7	70.0	130	----
		iron, total	7439-89-6	E420	2.02 mg/L	2 mg/L	101	70.0	130	----
		lead, total	7439-92-1	E420	0.0186 mg/L	0.02 mg/L	93.0	70.0	130	----
		lithium, total	7439-93-2	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0207 mg/L	0.02 mg/L	103	70.0	130	----
		nickel, total	7440-02-0	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		phosphorus, total	7723-14-0	E420	11.9 mg/L	10 mg/L	119	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		rubidium, total	7440-17-7	E420	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	9.93 mg/L	10 mg/L	99.3	70.0	130	----
		silver, total	7440-22-4	E420	0.00396 mg/L	0.004 mg/L	99.1	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0417 mg/L	0.04 mg/L	104	70.0	130	----
		thallium, total	7440-28-0	E420	0.00367 mg/L	0.004 mg/L	91.8	70.0	130	----
		thorium, total	7440-29-1	E420	0.0200 mg/L	0.02 mg/L	100	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
Total Metals (QCLot: 227882) - continued										
FJ2100449-001	Anonymous	tin, total	7440-31-5	E420	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		titanium, total	7440-32-6	E420	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0192 mg/L	0.02 mg/L	96.1	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.108 mg/L	0.1 mg/L	108	70.0	130	----
		zinc, total	7440-66-6	E420	0.361 mg/L	0.4 mg/L	90.2	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0423 mg/L	0.04 mg/L	106	70.0	130	----
Total Metals (QCLot: 228492)										
KS2101943-001	Anonymous	aluminum, total	7429-90-5	E420	ND mg/L	0.2 mg/L	ND	70.0	130	----
		antimony, total	7440-36-0	E420	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0193 mg/L	0.02 mg/L	96.4	70.0	130	----
		barium, total	7440-39-3	E420	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0389 mg/L	0.04 mg/L	97.2	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00996 mg/L	0.01 mg/L	99.6	70.0	130	----
		boron, total	7440-42-8	E420	0.097 mg/L	0.1 mg/L	97.3	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00397 mg/L	0.004 mg/L	99.3	70.0	130	----
		calcium, total	7440-70-2	E420	3.86 mg/L	4 mg/L	96.4	70.0	130	----
		cesium, total	7440-46-2	E420	0.0102 mg/L	0.01 mg/L	102	70.0	130	----
		chromium, total	7440-47-3	E420	0.0391 mg/L	0.04 mg/L	97.7	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----
		copper, total	7440-50-8	E420	0.0196 mg/L	0.02 mg/L	98.1	70.0	130	----
		iron, total	7439-89-6	E420	1.91 mg/L	2 mg/L	95.7	70.0	130	----
		lead, total	7439-92-1	E420	0.0191 mg/L	0.02 mg/L	95.7	70.0	130	----
		lithium, total	7439-93-2	E420	0.0936 mg/L	0.1 mg/L	93.6	70.0	130	----
		magnesium, total	7439-95-4	E420	0.939 mg/L	1 mg/L	93.9	70.0	130	----
		manganese, total	7439-96-5	E420	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0193 mg/L	0.02 mg/L	96.7	70.0	130	----
		nickel, total	7440-02-0	E420	0.0394 mg/L	0.04 mg/L	98.4	70.0	130	----
		phosphorus, total	7723-14-0	E420	10.2 mg/L	10 mg/L	102	70.0	130	----
		potassium, total	7440-09-7	E420	3.92 mg/L	4 mg/L	98.0	70.0	130	----
		rubidium, total	7440-17-7	E420	0.0199 mg/L	0.02 mg/L	99.3	70.0	130	----
		selenium, total	7782-49-2	E420	0.0393 mg/L	0.04 mg/L	98.2	70.0	130	----
		silicon, total	7440-21-3	E420	ND mg/L	10 mg/L	ND	70.0	130	----
		silver, total	7440-22-4	E420	0.00394 mg/L	0.004 mg/L	98.5	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	0.0198 mg/L	0.02 mg/L	99.2	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
Total Metals (QCLot: 228492) - continued										
KS2101943-001	Anonymous	sulfur, total	7704-34-9	E420	20.1 mg/L	20 mg/L	101	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0385 mg/L	0.04 mg/L	96.4	70.0	130	----
		thallium, total	7440-28-0	E420	0.00377 mg/L	0.004 mg/L	94.2	70.0	130	----
		thorium, total	7440-29-1	E420	0.0203 mg/L	0.02 mg/L	101	70.0	130	----
		tin, total	7440-31-5	E420	0.0194 mg/L	0.02 mg/L	97.1	70.0	130	----
		titanium, total	7440-32-6	E420	0.0360 mg/L	0.04 mg/L	89.9	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0193 mg/L	0.02 mg/L	96.4	70.0	130	----
		uranium, total	7440-61-1	E420	0.00399 mg/L	0.004 mg/L	99.7	70.0	130	----
		vanadium, total	7440-62-2	E420	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, total	7440-66-6	E420	0.371 mg/L	0.4 mg/L	92.8	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0386 mg/L	0.04 mg/L	96.4	70.0	130	----
Total Metals (QCLot: 229389)										
CG2102090-002	Anonymous	mercury, total	7439-97-6	E508	0.000101 mg/L	0.0001 mg/L	101	70.0	130	----
Total Metals (QCLot: 229390)										
VA21B2503-006	20MW-09-0621	mercury, total	7439-97-6	E508	0.000100 mg/L	0.0001 mg/L	100	70.0	130	----
Dissolved Metals (QCLot: 227248)										
VA21B2503-001	20MW-04S-0621	aluminum, dissolved	7429-90-5	E421	0.208 mg/L	0.2 mg/L	104	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0211 mg/L	0.02 mg/L	106	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	0.0423 mg/L	0.04 mg/L	106	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0104 mg/L	0.01 mg/L	104	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.107 mg/L	0.1 mg/L	107	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00446 mg/L	0.004 mg/L	111	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	0.0110 mg/L	0.01 mg/L	110	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0388 mg/L	0.04 mg/L	96.9	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0203 mg/L	0.02 mg/L	101	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.97 mg/L	2 mg/L	98.5	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0193 mg/L	0.02 mg/L	96.5	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0371 mg/L	0.04 mg/L	92.8	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: 227248) - continued										
VA21B2503-001	20MW-04S-0621	phosphorus, dissolved	7723-14-0	E421	11.6 mg/L	10 mg/L	116	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.14 mg/L	4 mg/L	104	70.0	130	----
		rubidium, dissolved	7440-17-7	E421	0.0213 mg/L	0.02 mg/L	106	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0433 mg/L	0.04 mg/L	108	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.16 mg/L	10 mg/L	91.6	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00416 mg/L	0.004 mg/L	104	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	20.8 mg/L	20 mg/L	104	70.0	130	----
		tellurium, dissolved	13494-80-9	E421	0.0430 mg/L	0.04 mg/L	107	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00407 mg/L	0.004 mg/L	102	70.0	130	----
		thorium, dissolved	7440-29-1	E421	0.0221 mg/L	0.02 mg/L	111	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		tungsten, dissolved	7440-33-7	E421	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00426 mg/L	0.004 mg/L	106	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.106 mg/L	0.1 mg/L	106	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.432 mg/L	0.4 mg/L	108	70.0	130	----
		zirconium, dissolved	7440-67-7	E421	0.0430 mg/L	0.04 mg/L	108	70.0	130	----
Dissolved Metals (QCLot: 228949)										
VA21B2455-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000993 mg/L	0.0001 mg/L	99.3	70.0	130	----
Volatile Organic Compounds (QCLot: 232145)										
FJ2100452-001	Anonymous	benzene	71-43-2	E611C	108 µg/L	100 µg/L	108	60.0	140	----
		bromodichloromethane	75-27-4	E611C	126 µg/L	100 µg/L	126	60.0	140	----
		bromoform	75-25-2	E611C	140 µg/L	100 µg/L	140	60.0	140	----
		carbon tetrachloride	56-23-5	E611C	124 µg/L	100 µg/L	124	60.0	140	----
		chlorobenzene	108-90-7	E611C	90.6 µg/L	100 µg/L	90.6	60.0	140	----
		chloroethane	75-00-3	E611C	105 µg/L	100 µg/L	105	50.0	150	----
		chloroform	67-66-3	E611C	107 µg/L	100 µg/L	107	60.0	140	----
		chloromethane	74-87-3	E611C	109 µg/L	100 µg/L	109	50.0	150	----
		dibromochloromethane	124-48-1	E611C	116 µg/L	100 µg/L	116	60.0	140	----
		dichlorobenzene, 1,2-	95-50-1	E611C	91.1 µg/L	100 µg/L	91.1	60.0	140	----
		dichlorobenzene, 1,3-	541-73-1	E611C	83.7 µg/L	100 µg/L	83.7	60.0	140	----
		dichlorobenzene, 1,4-	106-46-7	E611C	95.4 µg/L	100 µg/L	95.4	60.0	140	----
		dichloroethane, 1,1-	75-34-3	E611C	104 µg/L	100 µg/L	104	60.0	140	----
		dichloroethane, 1,2-	107-06-2	E611C	117 µg/L	100 µg/L	117	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: 232145) - continued										
FJ2100452-001	Anonymous	dichloroethylene, 1,1-	75-35-4	E611C	106 µg/L	100 µg/L	106	60.0	140	----
		dichloroethylene, cis-1,2-	156-59-4	E611C	99.7 µg/L	100 µg/L	99.7	60.0	140	----
		dichloroethylene, trans-1,2-	156-60-5	E611C	105 µg/L	100 µg/L	105	60.0	140	----
		dichloromethane	75-09-2	E611C	114 µg/L	100 µg/L	114	60.0	140	----
		dichloropropane, 1,2-	78-87-5	E611C	108 µg/L	100 µg/L	108	60.0	140	----
		dichloropropylene, cis-1,3-	10061-01-5	E611C	99.3 µg/L	100 µg/L	99.3	60.0	140	----
		dichloropropylene, trans-1,3-	10061-02-6	E611C	105 µg/L	100 µg/L	105	60.0	140	----
		ethylbenzene	100-41-4	E611C	82.2 µg/L	100 µg/L	82.2	60.0	140	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	120 µg/L	100 µg/L	120	60.0	140	----
		styrene	100-42-5	E611C	84.9 µg/L	100 µg/L	84.9	60.0	140	----
		tetrachloroethane, 1,1,1,2-	630-20-6	E611C	100 µg/L	100 µg/L	100	60.0	140	----
		tetrachloroethane, 1,1,2,2-	79-34-5	E611C	110 µg/L	100 µg/L	110	60.0	140	----
		tetrachloroethylene	127-18-4	E611C	93.2 µg/L	100 µg/L	93.2	60.0	140	----
		toluene	108-88-3	E611C	81.2 µg/L	100 µg/L	81.2	60.0	140	----
		trichloroethane, 1,1,1-	71-55-6	E611C	106 µg/L	100 µg/L	106	60.0	140	----
		trichloroethane, 1,1,2-	79-00-5	E611C	94.5 µg/L	100 µg/L	94.5	60.0	140	----
		trichloroethylene	79-01-6	E611C	111 µg/L	100 µg/L	111	60.0	140	----
		trichlorofluoromethane	75-69-4	E611C	116 µg/L	100 µg/L	116	50.0	150	----
		vinyl chloride	75-01-4	E611C	101 µg/L	100 µg/L	101	50.0	150	----
		xylene, m+p-	179601-23-1	E611C	181 µg/L	200 µg/L	90.6	60.0	140	----
		xylene, o-	95-47-6	E611C	84.1 µg/L	100 µg/L	84.1	60.0	140	----
Volatile Organic Compounds (QCLot: 235093)										
FJ2100471-001	Anonymous	benzene	71-43-2	E611C	107 µg/L	100 µg/L	107	60.0	140	----
		bromodichloromethane	75-27-4	E611C	121 µg/L	100 µg/L	121	60.0	140	----
		bromoform	75-25-2	E611C	83.5 µg/L	100 µg/L	83.5	60.0	140	----
		carbon tetrachloride	56-23-5	E611C	91.9 µg/L	100 µg/L	91.9	60.0	140	----
		chlorobenzene	108-90-7	E611C	94.6 µg/L	100 µg/L	94.6	60.0	140	----
		chloroethane	75-00-3	E611C	73.9 µg/L	100 µg/L	73.9	50.0	150	----
		chloroform	67-66-3	E611C	105 µg/L	100 µg/L	105	60.0	140	----
		chloromethane	74-87-3	E611C	75.2 µg/L	100 µg/L	75.2	50.0	150	----
		dibromochloromethane	124-48-1	E611C	88.9 µg/L	100 µg/L	88.9	60.0	140	----
		dichlorobenzene, 1,2-	95-50-1	E611C	98.1 µg/L	100 µg/L	98.1	60.0	140	----
		dichlorobenzene, 1,3-	541-73-1	E611C	100 µg/L	100 µg/L	100	60.0	140	----
		dichlorobenzene, 1,4-	106-46-7	E611C	100 µg/L	100 µg/L	100	60.0	140	----
		dichloroethane, 1,1-	75-34-3	E611C	109 µg/L	100 µg/L	109	60.0	140	----
		dichloroethane, 1,2-	107-06-2	E611C	117 µg/L	100 µg/L	117	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: 235093) - continued										
FJ2100471-001	Anonymous	dichloroethylene, 1,1-	75-35-4	E611C	95.7 µg/L	100 µg/L	95.7	60.0	140	----
		dichloroethylene, cis-1,2-	156-59-4	E611C	107 µg/L	100 µg/L	107	60.0	140	----
		dichloroethylene, trans-1,2-	156-60-5	E611C	114 µg/L	100 µg/L	114	60.0	140	----
		dichloromethane	75-09-2	E611C	119 µg/L	100 µg/L	119	60.0	140	----
		dichloropropane, 1,2-	78-87-5	E611C	116 µg/L	100 µg/L	116	60.0	140	----
		dichloropropylene, cis-1,3-	10061-01-5	E611C	116 µg/L	100 µg/L	116	60.0	140	----
		dichloropropylene, trans-1,3-	10061-02-6	E611C	93.8 µg/L	100 µg/L	93.8	60.0	140	----
		ethylbenzene	100-41-4	E611C	89.0 µg/L	100 µg/L	89.0	60.0	140	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	94.9 µg/L	100 µg/L	94.9	60.0	140	----
		styrene	100-42-5	E611C	90.1 µg/L	100 µg/L	90.1	60.0	140	----
		tetrachloroethane, 1,1,1,2-	630-20-6	E611C	84.5 µg/L	100 µg/L	84.5	60.0	140	----
		tetrachloroethane, 1,1,2,2-	79-34-5	E611C	111 µg/L	100 µg/L	111	60.0	140	----
		tetrachloroethylene	127-18-4	E611C	95.6 µg/L	100 µg/L	95.6	60.0	140	----
		toluene	108-88-3	E611C	95.9 µg/L	100 µg/L	95.9	60.0	140	----
		trichloroethane, 1,1,1-	71-55-6	E611C	112 µg/L	100 µg/L	112	60.0	140	----
		trichloroethane, 1,1,2-	79-00-5	E611C	96.1 µg/L	100 µg/L	96.1	60.0	140	----
		trichloroethylene	79-01-6	E611C	104 µg/L	100 µg/L	104	60.0	140	----
		trichlorofluoromethane	75-69-4	E611C	87.7 µg/L	100 µg/L	87.7	50.0	150	----
		vinyl chloride	75-01-4	E611C	79.2 µg/L	100 µg/L	79.2	50.0	150	----
		xylene, m+p-	179601-23-1	E611C	192 µg/L	200 µg/L	96.3	60.0	140	----
		xylene, o-	95-47-6	E611C	92.1 µg/L	100 µg/L	92.1	60.0	140	----



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Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 20 - 921340

Page 1 of 1

Report To Contact and company name below will appear on the final report		Reports / Recipients			Turnaround Time (TAT) Requested				AFFIX ALS BARCODE LABEL HERE (ALS use only)																																																																																																																																											
Company: <u>Jacobs</u>		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			<input checked="" type="checkbox"/> Routine [R] if received by 3pm M-F - no surcharges apply																																																																																																																																															
Contact: <u>Amy Casey</u>		Merge QC/QCI Reports with COA <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A			<input type="checkbox"/> 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum																																																																																																																																															
Phone: <u>519-803-2283</u>		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			<input type="checkbox"/> 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum																																																																																																																																															
Street: <u>4770 Burnaby, BC.</u>		Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			<input type="checkbox"/> 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum				Date and Time Required for all E&P TATs: dd-mm-yy hh:mm am/pm																																																																																																																																											
City/Province: <u>V5H 4N2</u>		Email 1 or Fax: <u>amy.casey@jacobs.com</u>			<input type="checkbox"/> 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum																																																																																																																																															
Postal Code:		Email 2: <u>jelena.slodjevic@jacobs.com</u>			<input type="checkbox"/> Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests				For all tests with rush TATs requested, please contact your AM to confirm availability.																																																																																																																																											
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Recipients			Analysis Request																																																																																																																																															
Copy of Invoice with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below				ON HOLD EXTENDED STORAGE REQUIRED SUSPECTED HAZARD (see notes)																																																																																																																																											
Company:		Email 1 or Fax: <u>Same as Report To</u>			<table border="1"> <thead> <tr> <th rowspan="2">NUMBER OF CONTAINERS</th> <th rowspan="2">BTEx</th> <th rowspan="2">LEPH/HEPH/PAH</th> <th rowspan="2">VOCs</th> <th rowspan="2">Total Metals</th> <th rowspan="2">Dissolved Metals</th> <th colspan="2">P</th> <th colspan="2">F</th> <th colspan="2">F/P</th> </tr> <tr> <th></th><th></th><th></th><th></th><th></th><th></th> </tr> </thead> <tbody> <tr><td>8</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>8</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>8</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>8</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>8</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>8</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>8</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>8</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>4</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>8</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table>						NUMBER OF CONTAINERS	BTEx	LEPH/HEPH/PAH	VOCs	Total Metals	Dissolved Metals	P		F		F/P								8	X	X	X	X	X							8	X	X	X	X	X							8	X	X	X	X	X							8	X	X	X	X	X							8	X	X	X	X	X							8	X	X	X	X	X							8	X	X	X	X	X							8	X	X	X	X	X							4	X	X	X	X	X							8	X	X	X	X	X						
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Drinking Water (DW) Samples (client use)		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)			SAMPLER RECEIPT DETAILS (ALS use only)																																																																																																																																															
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO					Cooling Method: <input type="checkbox"/> NONE <input checked="" type="checkbox"/> ICE <input type="checkbox"/> ICE PACKS <input type="checkbox"/> FROZEN <input type="checkbox"/> COOLING INITIATED																																																																																																																																															
Are samples for human consumption/ use? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO					Submission Comments identified on Sample Receipt Notification: <input type="checkbox"/> YES <input type="checkbox"/> NO																																																																																																																																															
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)																																																																																																																																															
Released by: <u>A Casey</u> Date: <u>June 21, 2021</u> Time: <u>18:30</u>		Received by: <u>[Signature]</u> Date: <u>6/21</u> Time: <u>18:30</u>			Received by: <u>[Signature]</u> Date: <u>6/21</u> Time: <u>18:30</u>																																																																																																																																															

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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.

AUG 2020 RENT



CERTIFICATE OF ANALYSIS

Work Order : **VA21B2503**
Amendment : **1**
Client : **Jacobs Consultancy Canada Inc.**
Contact : Amy Casey
Address : Metrotower II, Suite 2100 4720 Kingsway
Burnaby BC Canada V5H 4N2
Telephone : 519 579 3500
Project : CE777000
PO : 670014CH.B0.01.09
C-O-C number : 20-921340
Sampler : AC, SM
Site : ----
Quote number : VA20-CHMH100-013
No. of samples received : 13
No. of samples analysed : 13

Page : 1 of 20
Laboratory : Vancouver - Environmental
Account Manager : Ashton Ostrander
Address : 8081 Lougheed Highway
Burnaby BC Canada V5A 1W9
Telephone : +1 604 253 4188
Date Samples Received : 21-Jun-2021 18:30
Date Analysis Commenced : 22-Jun-2021
Issue Date : 07-Jul-2021 09:53

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Harsha Attanayake	Laboratory Analyst	Organics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Ophelia Chiu	Department Manager - Organics	Organics, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Saron Kim	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).

<i>Unit</i>	<i>Description</i>
-	No Unit
µg/L	micrograms per litre
mg/L	milligrams per litre

<: 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.

Workorder Comments

report re-issued with '20MW-03-Product' sample ID renamed as 'MW06-34-prod'

Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLCI	Detection Limit Raised: Chromatographic interference due to co-elution.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DLQ	Detection Limit raised due to co-eluting interference. GCMS qualifier ion ratio did not meet acceptance criteria.
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.



Analytical Results

Sub-Matrix: Water					Client sample ID	20MW-04S-062 1	20MW-04D-062 1	MW19-03-0621	MW19-01-0621	MW06-34-0621
(Matrix: Water)					Client sampling date / time	21-Jun-2021 10:10	21-Jun-2021 10:10	21-Jun-2021 11:30	21-Jun-2021 11:30	21-Jun-2021 12:30
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-001 Result	VA21B2503-002 Result	VA21B2503-003 Result	VA21B2503-004 Result	VA21B2503-005 Result	
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	96.3	91.4	102	84.9	64.6	
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	94.7	90.6	104	84.4	64.3	
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0350	0.162	0.290	0.0670	0.0724	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00045	<0.00010	0.00014	0.00028	<0.00010	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00030	0.00311	0.0122	0.00020	0.00012	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0520	0.0510	0.111	0.0334	0.0338	
beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	0.014	0.012	0.020	0.020	
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000218	0.0000065	0.0000074	0.0000102	<0.0000050	
calcium, total	7440-70-2	E420	0.050	mg/L	35.3	29.3	34.0	28.2	18.7	
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	0.000011	0.000080	<0.000010	0.000042	
chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	0.00111	0.00414	<0.00050	0.00063	
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00019	0.00064	0.0134	0.00019	<0.00010	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00291	0.00248	0.00434	0.00182	<0.00050	
iron, total	7439-89-6	E420	0.010	mg/L	0.034	27.8	71.8	2.10	22.8	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	0.000228	0.000402	0.000092	0.000062	
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	0.0071	<0.0010	0.0037	0.0024	
magnesium, total	7439-95-4	E420	0.0050	mg/L	1.59	4.24	4.59	3.41	4.27	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0426	0.937	3.39	0.373	0.649	
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000358	0.000554	0.00123	0.000621	0.000079	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	0.00115	0.00251	<0.00050	<0.00050	
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	0.120	0.051	<0.050	0.112	
potassium, total	7440-09-7	E420	0.050	mg/L	2.20	3.97	4.53	3.82	3.78	
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00244	0.00329	0.0106	0.00275	0.00508	
selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	<0.000050	0.000254	0.000062	<0.000050	
silicon, total	7440-21-3	E420	0.10	mg/L	4.65	18.4	7.93	11.9	16.4	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0.000015	<0.000010	<0.000010	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-04S-062 1	20MW-04D-062 1	MW19-03-0621	MW19-01-0621	MW06-34-0621
Client sampling date / time					21-Jun-2021 10:10	21-Jun-2021 10:10	21-Jun-2021 11:30	21-Jun-2021 11:30	21-Jun-2021 12:30	
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-001 Result	VA21B2503-002 Result	VA21B2503-003 Result	VA21B2503-004 Result	VA21B2503-005 Result	
Total Metals										
sodium, total	17341-25-2	E420	0.050	mg/L	2.62	11.5	4.21	16.2	5.77	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.0869	0.133	0.249	0.120	0.114	
sulfur, total	7704-34-9	E420	0.50	mg/L	1.30	1.26	6.84	1.84	<0.50	
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000012	<0.000010	<0.000010	<0.000010	<0.000010	
thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	0.00011	0.00011	<0.00010	<0.00010	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	0.00017	<0.00010	0.00011	<0.00010	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00095	0.00640	0.00504	0.00126	0.00327	
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000170	0.000104	0.000172	0.000389	0.000016	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00085	0.00165	0.00671	<0.00050	0.00383	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0095	0.273	0.0119	4.31	0.0056	
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	0.00021	0.00213	<0.00020	0.00031	
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0125	0.0066	0.220	0.0018	0.0091	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00042	<0.00010	0.00013	0.00027	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00030	0.00162	0.00898	<0.00010	0.00011	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0534	0.0485	0.120	0.0334	0.0340	
beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	0.014	0.012	0.019	0.019	
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000220	<0.0000050	<0.0000050	0.0000088	<0.0000050	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	35.9	29.0	33.1	28.0	18.5	
cesium, dissolved	7440-46-2	E421	0.000010	mg/L	<0.000010	<0.000010	0.000075	<0.000010	0.000035	
chromium, dissolved	7440-47-3	E421	0.00050	mg/L	0.0108 ^{DTC}	<0.00050	0.00325	<0.00050	0.00050	
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00022	0.00052	0.0125	0.00018	<0.00010	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00321	0.00074	0.00159	0.00352 ^{DTC}	0.00089 ^{DTC}	
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.039	26.6	64.4	0.040	22.6	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000056	<0.000050	0.000138	0.000086	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	0.0064	<0.0010	0.0034	0.0022	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	1.62	4.60	4.73	3.63	4.47	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-04S-062 1	20MW-04D-062 1	MW19-03-0621	MW19-01-0621	MW06-34-0621
Client sampling date / time					21-Jun-2021 10:10	21-Jun-2021 10:10	21-Jun-2021 11:30	21-Jun-2021 11:30	21-Jun-2021 12:30	
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-001 Result	VA21B2503-002 Result	VA21B2503-003 Result	VA21B2503-004 Result	VA21B2503-005 Result	
Dissolved Metals										
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0419	0.963	3.48	0.358	0.672	
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00108 ^{DTC}	0.000485	0.00108	0.000617	0.000074	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00436 ^{DTC}	0.00084	0.00246	0.00061	<0.00050	
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	0.054	<0.050	<0.050	0.093	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.11	3.75	4.24	3.64	3.63	
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00246	0.00324	0.0108	0.00293	0.00516	
selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0.000219	<0.000050	<0.000050	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.72	17.8	7.86	11.4	16.2	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	2.71	11.7	4.15	17.1	5.90	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0877	0.140	0.250	0.122	0.117	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	1.45	1.49	6.35	1.98	<0.50	
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000011	<0.000010	<0.000010	<0.000010	<0.000010	
thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0.00271	<0.00030	0.00033	
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000175	0.000063	0.000148	0.000352	<0.000010	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00082	0.00119	0.00518	<0.00050	0.00347	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0093	0.132	0.0159	4.90	0.0032	
zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	<0.00020	<0.00020	0.00223	<0.00020	0.00028	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	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	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-04S-062 1	20MW-04D-062 1	MW19-03-0621	MW19-01-0621	MW06-34-0621
Client sampling date / time					21-Jun-2021 10:10	21-Jun-2021 10:10	21-Jun-2021 11:30	21-Jun-2021 11:30	21-Jun-2021 12:30	
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-001 Result	VA21B2503-002 Result	VA21B2503-003 Result	VA21B2503-004 Result	VA21B2503-005 Result	
Volatile Organic Compounds										
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 [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	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
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 [Fuels]										
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	0.40	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40	
xylene, o-	95-47-6	E611C	0.30	µg/L	<0.30	<0.30	<0.30	<0.30	<0.30	
xylenes, total	1330-20-7	E611C	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	
Volatile Organic Compounds Surrogates										



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-04S-062 1	20MW-04D-062 1	MW19-03-0621	MW19-01-0621	MW06-34-0621
Client sampling date / time					21-Jun-2021 10:10	21-Jun-2021 10:10	21-Jun-2021 11:30	21-Jun-2021 11:30	21-Jun-2021 12:30	
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-001 Result	VA21B2503-002 Result	VA21B2503-003 Result	VA21B2503-004 Result	VA21B2503-005 Result	
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611C	1.0	%	97.1	94.7	98.3	97.5	94.0	
difluorobenzene, 1,4-	540-36-3	E611C	1.0	%	124	123	123	102	104	
Hydrocarbons										
EPH (C10-C19)	----	E601A	250	µg/L	<250	<250	380	<250	<250	
EPH (C19-C32)	----	E601A	250	µg/L	<250	<250	<250	<250	<250	
HEPHw	----	EC600A	250	µg/L	<250	<250	<250	<250	<250	
LEPHw	----	EC600A	250	µg/L	<250	<250	310	<250	<250	
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	1.0	%	88.9	89.8	90.6	90.4	93.0	
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A	0.010	µg/L	<0.010	<0.010	34.9	0.012	0.208	
acenaphthylene	208-96-8	E641A	0.010	µg/L	<0.010	<0.010	0.190	<0.010	<0.010	
acridine	260-94-6	E641A	0.010	µg/L	<0.010	<0.010	2.56	<0.015 ^{DLO}	<0.010	
anthracene	120-12-7	E641A	0.010	µg/L	<0.010	<0.010	2.47	<0.010	<0.020 ^{DLO}	
benz(a)anthracene	56-55-3	E641A	0.010	µg/L	<0.010	<0.010	0.456	<0.012 ^{DLO}	<0.010	
benzo(a)pyrene	50-32-8	E641A	0.0050	µg/L	<0.0050	<0.0050	0.0552	<0.0050	<0.0050	
benzo(b+j)fluoranthene	----	E641A	0.010	µg/L	<0.010	<0.010	0.069	<0.010	<0.010	
benzo(b+j+k)fluoranthene	----	E641A	0.015	µg/L	<0.015	<0.015	0.098	<0.015	<0.015	
benzo(g,h,i)perylene	191-24-2	E641A	0.010	µg/L	<0.010	<0.010	0.011	<0.010	<0.010	
benzo(k)fluoranthene	207-08-9	E641A	0.010	µg/L	<0.010	<0.010	0.029	<0.010	<0.010	
chrysene	218-01-9	E641A	0.010	µg/L	<0.010	<0.010	<0.290 ^{DLO}	<0.010	<0.010	
dibenz(a,h)anthracene	53-70-3	E641A	0.0050	µg/L	<0.0050	<0.0050	<0.0057 ^{DLO}	<0.0050	<0.0050	
fluoranthene	206-44-0	E641A	0.010	µg/L	<0.010	<0.010	6.84	0.022	0.047	
fluorene	86-73-7	E641A	0.010	µg/L	<0.010	<0.010	14.5	<0.010	0.108	
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.010	µg/L	<0.010	<0.010	0.015	<0.010	<0.010	
methylnaphthalene, 1-	90-12-0	E641A	0.010	µg/L	<0.010	<0.010	2.91	<0.010	0.021	
methylnaphthalene, 2-	91-57-6	E641A	0.010	µg/L	<0.010	<0.010	2.70	<0.010	0.024	
naphthalene	91-20-3	E641A	0.050	µg/L	<0.050	<0.050	3.66	<0.050	<0.050	
phenanthrene	85-01-8	E641A	0.020	µg/L	<0.020	<0.020	14.6	<0.020	0.112	
pyrene	129-00-0	E641A	0.010	µg/L	<0.010	<0.010	3.97	0.020	0.024	
quinoline	6027-02-7	E641A	0.050	µg/L	<0.050	<0.050	<0.440 ^{DLO}	<0.050	<0.050	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-04S-062 1	20MW-04D-062 1	MW19-03-0621	MW19-01-0621	MW06-34-0621
Client sampling date / time					21-Jun-2021 10:10	21-Jun-2021 10:10	21-Jun-2021 11:30	21-Jun-2021 11:30	21-Jun-2021 12:30	
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-001	VA21B2503-002	VA21B2503-003	VA21B2503-004	VA21B2503-005	
					Result	Result	Result	Result	Result	
Polycyclic Aromatic Hydrocarbons Surrogates										
chrysene-d12	1719-03-5	E641A	0.1	%	88.3	89.4	91.8	75.7	83.4	
naphthalene-d8	1146-65-2	E641A	0.1	%	78.8	85.3	90.6	76.6	83.8	
phenanthrene-d10	1517-22-2	E641A	0.1	%	95.0	105	90.1	88.8	95.4	
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	
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	

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



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-09-0621	20MW-11-0621	20MW-10D-062 1	20MW-10S-062 1	MW06-34-Prod 1
Client sampling date / time					21-Jun-2021 12:35	21-Jun-2021 13:30	21-Jun-2021 13:40	21-Jun-2021 14:15	21-Jun-2021 11:00	
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-006	VA21B2503-007	VA21B2503-008	VA21B2503-009	VA21B2503-010	
					Result	Result	Result	Result	Result	
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	276	63.6	46.5	121	----	
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	261	60.2	45.5	119	----	
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.148	0.190	0.0784	1.17	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00122	0.00061	0.00025	0.00198	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.179	0.0252	0.0183	0.0607	----	
beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	<0.000100	<0.000100	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.029	0.023	0.012	0.045	----	
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.000104	0.0000058	<0.0000050	0.000514	----	
calcium, total	7440-70-2	E420	0.050	mg/L	72.3	15.7	12.2	32.0	----	
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	0.000031	0.000028	0.000060	----	
chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	0.00111	0.00098	0.00631	----	
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00850	0.00064	0.00012	0.00107	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00126	0.00184	0.00055	0.00379	----	
iron, total	7439-89-6	E420	0.010	mg/L	4.71	11.8	29.2	33.1	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000304	0.000157	0.000068	0.000979	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0.0025	0.0016	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	19.5	5.11	3.66	9.41	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.968	0.221	0.514	0.981	----	
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000289	0.000625	0.000361	0.000268	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00880	<0.00050	<0.00050	0.00096	----	
phosphorus, total	7723-14-0	E420	0.050	mg/L	0.091	0.128	0.142	0.258	----	
potassium, total	7440-09-7	E420	0.050	mg/L	2.59	2.47	3.36	2.98	----	
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00373	0.00281	0.00378	0.0100	----	
selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	0.000056	----	
silicon, total	7440-21-3	E420	0.10	mg/L	12.2	10.6	16.4	12.6	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
sodium, total	17341-25-2	E420	0.050	mg/L	5.26	3.52	7.71	4.98	----	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-09-0621	20MW-11-0621	20MW-10D-062 1	20MW-10S-062 1	MW06-34-Prod 1
Client sampling date / time					21-Jun-2021 12:35	21-Jun-2021 13:30	21-Jun-2021 13:40	21-Jun-2021 14:15	21-Jun-2021 11:00	
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-006 Result	VA21B2503-007 Result	VA21B2503-008 Result	VA21B2503-009 Result	VA21B2503-010 Result	
Total Metals										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.280	0.0648	0.103	0.203	---	
sulfur, total	7704-34-9	E420	0.50	mg/L	3.10	<0.50	<0.50	<0.50	---	
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	---	
thallium, total	7440-28-0	E420	0.00010	mg/L	0.000022	<0.00010	<0.00010	<0.00010	---	
thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	0.00038	---	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	0.00025	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00683	<0.00870 ^{DLM}	0.00275	0.0561	---	
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	---	
uranium, total	7440-61-1	E420	0.00010	mg/L	0.000079	0.000033	<0.00010	0.000169	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00084	0.00375	0.00336	0.0455	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0367	0.0119	0.0146	0.0960	---	
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	0.00053	0.00033	0.00074	---	
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0090	0.0118	0.0099	0.0379	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00111	0.00042	0.00021	0.00068	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.195	0.0250	0.0172	0.0464	---	
beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	<0.000100	<0.000100	<0.000100	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.030	0.023	0.011	0.041	---	
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000968	<0.0000050	<0.0000050	<0.0000050	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	74.5	16.1	12.1	32.2	---	
cesium, dissolved	7440-46-2	E421	0.000010	mg/L	<0.000010	0.000015	0.000024	0.000022	---	
chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	0.00076	0.00060	0.00300	---	
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00823	0.00053	<0.00010	0.00053	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00077	<0.00020	0.00026	<0.00020	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	4.13	10.9	27.0	24.5	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	0.0023	<0.0010	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	21.8	5.67	3.96	9.82	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	1.06	0.222	0.549	0.990	---	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-09-0621	20MW-11-0621	20MW-10D-062 1	20MW-10S-062 1	MW06-34-Prod
Client sampling date / time					21-Jun-2021 12:35	21-Jun-2021 13:30	21-Jun-2021 13:40	21-Jun-2021 14:15	21-Jun-2021 11:00	
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-006	VA21B2503-007	VA21B2503-008	VA21B2503-009	VA21B2503-010	
					Result	Result	Result	Result	Result	
Volatile Organic Compounds										
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 [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	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
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 [Fuels]										
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	0.40	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40	
xylene, o-	95-47-6	E611C	0.30	µg/L	<0.30	<0.30	<0.30	<0.30	<0.30	
xylenes, total	1330-20-7	E611C	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611C	1.0	%	98.4	96.1	99.3	91.7	88.8	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-09-0621	20MW-11-0621	20MW-10D-062 1	20MW-10S-062 1	MW06-34-Prod 1
Client sampling date / time					21-Jun-2021 12:35	21-Jun-2021 13:30	21-Jun-2021 13:40	21-Jun-2021 14:15	21-Jun-2021 11:00	
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-006	VA21B2503-007	VA21B2503-008	VA21B2503-009	VA21B2503-010	
					Result	Result	Result	Result	Result	
Volatile Organic Compounds Surrogates										
difluorobenzene, 1,4-	540-36-3	E611C	1.0	%	104	125	111	124	103	
Hydrocarbons										
EPH (C10-C19)	----	E601A	250	µg/L	<250	<250	<250	<250	610	
EPH (C19-C32)	----	E601A	250	µg/L	<250	<250	<250	270	620	
HEPHw	----	EC600A	250	µg/L	<250	<250	<250	270	550	
LEPHw	----	EC600A	250	µg/L	<250	<250	<250	<250	440	
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	1.0	%	84.4	90.9	90.8	94.7	89.7	
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A	0.010	µg/L	<0.010	0.015	0.021	<0.010	82.1	
acenaphthylene	208-96-8	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	0.245	
acridine	260-94-6	E641A	0.010	µg/L	<0.010	<0.050 ^{DLCI}	<0.022 ^{DLCI}	<0.023 ^{DLCI}	9.02	
anthracene	120-12-7	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	4.33	
benz(a)anthracene	56-55-3	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.024 ^{DLCI}	3.77	
benzo(a)pyrene	50-32-8	E641A	0.0050	µg/L	<0.0050	<0.0050	<0.0050	0.0239	0.920	
benzo(b+j)fluoranthene	----	E641A	0.010	µg/L	<0.010	<0.010	<0.010	0.037	1.12	
benzo(b+j+k)fluoranthene	----	E641A	0.015	µg/L	<0.015	<0.015	<0.015	0.048	1.55	
benzo(g,h,i)perylene	191-24-2	E641A	0.010	µg/L	<0.010	<0.010	<0.010	0.033	0.169	
benzo(k)fluoranthene	207-08-9	E641A	0.010	µg/L	<0.010	<0.010	<0.010	0.011	0.428	
chrysene	218-01-9	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.034 ^{DLCI}	4.05	
dibenz(a,h)anthracene	53-70-3	E641A	0.0050	µg/L	<0.0050	<0.0050	<0.0050	<0.0110 ^{DLCI}	0.0718	
fluoranthene	206-44-0	E641A	0.010	µg/L	0.010	<0.010	<0.010	0.053	36.8	
fluorene	86-73-7	E641A	0.010	µg/L	<0.010	0.040	0.063	<0.010	28.9	
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.010	µg/L	<0.010	<0.010	<0.010	0.024	0.170	
methylnaphthalene, 1-	90-12-0	E641A	0.010	µg/L	<0.010	<0.010	0.015	<0.010	7.51	
methylnaphthalene, 2-	91-57-6	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	7.28	
naphthalene	91-20-3	E641A	0.050	µg/L	<0.050	<0.050	<0.050	<0.050	11.2	
phenanthrene	85-01-8	E641A	0.020	µg/L	<0.020	<0.020	0.029	0.026	33.9	
pyrene	129-00-0	E641A	0.010	µg/L	<0.010	<0.010	<0.010	0.070	25.1	
quinoline	6027-02-7	E641A	0.050	µg/L	<0.050	<0.050	<0.050	<0.050	<1.10 ^{DLCI}	
Polycyclic Aromatic Hydrocarbons Surrogates										



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-09-0621	20MW-11-0621	20MW-10D-062 1	20MW-10S-062 1	MW06-34-Prod
Client sampling date / time					21-Jun-2021 12:35	21-Jun-2021 13:30	21-Jun-2021 13:40	21-Jun-2021 14:15	21-Jun-2021 11:00	
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-006	VA21B2503-007	VA21B2503-008	VA21B2503-009	VA21B2503-010	
					Result	Result	Result	Result	Result	
Polycyclic Aromatic Hydrocarbons Surrogates										
chrysene-d12	1719-03-5	E641A	0.1	%	78.1	79.9	87.9	91.8	66.8	
naphthalene-d8	1146-65-2	E641A	0.1	%	79.3	85.5	87.2	92.6	96.9	
phenanthrene-d10	1517-22-2	E641A	0.1	%	90.7	95.6	99.7	101	107	
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	
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	

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



Analytical Results

Sub-Matrix: Water					Client sample ID	Dup1	Trip Blank	20MW-06-0621	----	----
(Matrix: Water)					Client sampling date / time	21-Jun-2021	21-Jun-2021	21-Jun-2021	----	----
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-011	VA21B2503-012	VA21B2503-013	-----	-----	
					Result	Result	Result	---	---	
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	64.8	----	90.1	----	----	
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	61.9	----	87.3	----	----	
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.193	----	0.162	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	----	<0.00010	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00062	----	0.00057	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0262	----	0.0516	----	----	
beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	----	<0.000100	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	<0.000050	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	0.025	----	0.028	----	----	
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000096	----	0.0000138	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	16.1	----	25.5	----	----	
cesium, total	7440-46-2	E420	0.000010	mg/L	0.000031	----	0.000036	----	----	
chromium, total	7440-47-3	E420	0.00050	mg/L	0.00124	----	0.00116	----	----	
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00066	----	0.00024	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00197	----	0.00084	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	12.0	----	19.4	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000164	----	0.000193	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	----	0.0011	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	5.27	----	5.73	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.228	----	0.542	----	----	
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	----	<0.0000050	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000654	----	0.000103	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	----	0.00098	----	----	
phosphorus, total	7723-14-0	E420	0.050	mg/L	0.126	----	0.083	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	2.57	----	3.20	----	----	
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00290	----	0.00522	----	----	
selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	----	0.000055	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	11.0	----	13.9	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	----	<0.000010	----	----	
sodium, total	17341-25-2	E420	0.050	mg/L	3.60	----	6.60	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.0664	----	0.135	----	----	



Analytical Results

Sub-Matrix: Water					Client sample ID	Dup1	Trip Blank	20MW-06-0621	----	----
(Matrix: Water)					Client sampling date / time	21-Jun-2021	21-Jun-2021	21-Jun-2021	----	----
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-011	VA21B2503-012	VA21B2503-013	-----	-----	
					Result	Result	Result	---	---	
Total Metals										
sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	---	<0.50	---	---	
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	---	<0.00020	---	---	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	---	<0.000010	---	---	
thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	---	<0.00010	---	---	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	---	<0.00010	---	---	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00889	---	0.00661	---	---	
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	---	<0.00010	---	---	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000038	---	0.000062	---	---	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00384	---	0.00637	---	---	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0115	---	0.0270	---	---	
zirconium, total	7440-67-7	E420	0.00020	mg/L	0.00024	---	0.00045	---	---	
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0123	---	0.0134	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	---	<0.00010	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00042	---	0.00055	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0251	---	0.0513	---	---	
beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	---	<0.000100	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	---	<0.000050	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.023	---	0.026	---	---	
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	---	<0.0000050	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	16.5	---	26.2	---	---	
cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000015	---	0.000028	---	---	
chromium, dissolved	7440-47-3	E421	0.00050	mg/L	0.00077	---	0.00081	---	---	
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00054	---	0.00018	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	---	<0.00020	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	10.9	---	19.0	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	---	<0.000050	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	---	<0.0010	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	5.74	---	6.00	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.221	---	0.563	---	---	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	---	<0.0000050	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000550	---	0.000081	---	---	



Analytical Results

Sub-Matrix: Water					Client sample ID	Dup1	Trip Blank	20MW-06-0621	----	----
(Matrix: Water)					Client sampling date / time	21-Jun-2021	21-Jun-2021	21-Jun-2021	----	----
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-011	VA21B2503-012	VA21B2503-013	-----	-----	
					Result	Result	Result	---	---	
Dissolved Metals										
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	----	<0.00050	----	----	
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	----	0.082	----	----	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.40	----	3.15	----	----	
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00281	----	0.00528	----	----	
selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	----	<0.000050	----	----	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	10.3	----	13.7	----	----	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	----	<0.000010	----	----	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	3.80	----	6.83	----	----	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0688	----	0.133	----	----	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	----	<0.50	----	----	
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	----	<0.00020	----	----	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	----	<0.000010	----	----	
thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	----	<0.00010	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	<0.00010	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	0.00057	----	----	
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	----	<0.00010	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000021	----	0.000040	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00328	----	0.00578	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0069	----	0.0141	----	----	
zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	<0.00020	----	0.00039	----	----	
dissolved mercury filtration location	----	EP509	-	-	Field	----	Field	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	----	Field	----	----	
Volatile Organic Compounds										
chlorobenzene	108-90-7	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
chloromethane	74-87-3	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
dichlorobenzene, 1,2-	95-50-1	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
dichlorobenzene, 1,3-	541-73-1	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
dichlorobenzene, 1,4-	106-46-7	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
dichloropropane, 1,2-	78-87-5	E611C	0.50	µg/L	<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	----	----	
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.50	µg/L	<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	----	----	



Analytical Results

Sub-Matrix: Water					Client sample ID	Dup1	Trip Blank	20MW-06-0621	----	----
(Matrix: Water)					Client sampling date / time	21-Jun-2021	21-Jun-2021	21-Jun-2021	----	----
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-011	VA21B2503-012	VA21B2503-013	-----	-----	
					Result	Result	Result	---	---	
Volatile Organic Compounds										
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.20	µg/L	<0.20	<0.20	<0.20	----	----	
trichloroethane, 1,1,2-	79-00-5	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
trichlorofluoromethane	75-69-4	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
Volatile Organic Compounds [Drycleaning]										
carbon tetrachloride	56-23-5	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
chloroethane	75-00-3	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
dichloroethane, 1,1-	75-34-3	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
dichloroethane, 1,2-	107-06-2	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
dichloroethylene, 1,1-	75-35-4	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
dichloroethylene, cis-1,2-	156-59-4	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
dichloroethylene, trans-1,2-	156-60-5	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
dichloromethane	75-09-2	E611C	1.0	µg/L	<1.0	<1.0	<1.0	----	----	
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
tetrachloroethylene	127-18-4	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
trichloroethane, 1,1,1-	71-55-6	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
trichloroethylene	79-01-6	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
vinyl chloride	75-01-4	E611C	0.40	µg/L	<0.40	<0.40	<0.40	----	----	
Volatile Organic Compounds [Fuels]										
benzene	71-43-2	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
ethylbenzene	100-41-4	E611C	0.50	µg/L	<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	----	----	
styrene	100-42-5	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
toluene	108-88-3	E611C	0.40	µg/L	<0.40	<0.40	<0.40	----	----	
xylene, m+p-	179601-23-1	E611C	0.40	µg/L	<0.40	<0.40	<0.40	----	----	
xylene, o-	95-47-6	E611C	0.30	µg/L	<0.30	<0.30	<0.30	----	----	
xylenes, total	1330-20-7	E611C	0.50	µg/L	<0.50	<0.50	<0.50	----	----	
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611C	1.0	%	95.8	96.0	97.6	----	----	
difluorobenzene, 1,4-	540-36-3	E611C	1.0	%	112	111	109	----	----	
Hydrocarbons										
EPH (C10-C19)	----	E601A	250	µg/L	<250	----	<250	----	----	
EPH (C19-C32)	----	E601A	250	µg/L	<250	----	<250	----	----	



Analytical Results

Sub-Matrix: Water					Client sample ID	Dup1	Trip Blank	20MW-06-0621	----	----
(Matrix: Water)					Client sampling date / time	21-Jun-2021	21-Jun-2021	21-Jun-2021	----	----
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-011	VA21B2503-012	VA21B2503-013	-----	-----	
					Result	Result	Result	---	---	
Hydrocarbons										
HEPHw	----	EC600A	250	µg/L	<250	---	<250	---	---	
LEPHw	----	EC600A	250	µg/L	<250	---	<250	---	---	
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	1.0	%	98.8	---	81.4	---	---	
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A	0.010	µg/L	0.014	---	<0.010	---	---	
acenaphthylene	208-96-8	E641A	0.010	µg/L	<0.010	---	<0.010	---	---	
acridine	260-94-6	E641A	0.010	µg/L	<0.034 ^{DLCL}	---	<0.010	---	---	
anthracene	120-12-7	E641A	0.010	µg/L	<0.010	---	<0.010	---	---	
benz(a)anthracene	56-55-3	E641A	0.010	µg/L	<0.010	---	<0.010	---	---	
benzo(a)pyrene	50-32-8	E641A	0.0050	µg/L	<0.0050	---	<0.0050	---	---	
benzo(b+j)fluoranthene	----	E641A	0.010	µg/L	<0.010	---	<0.010	---	---	
benzo(b+j+k)fluoranthene	----	E641A	0.015	µg/L	<0.015	---	<0.015	---	---	
benzo(g,h,i)perylene	191-24-2	E641A	0.010	µg/L	<0.010	---	<0.010	---	---	
benzo(k)fluoranthene	207-08-9	E641A	0.010	µg/L	<0.010	---	<0.010	---	---	
chrysene	218-01-9	E641A	0.010	µg/L	<0.010	---	<0.010	---	---	
dibenz(a,h)anthracene	53-70-3	E641A	0.0050	µg/L	<0.0050	---	<0.0050	---	---	
fluoranthene	206-44-0	E641A	0.010	µg/L	<0.010	---	<0.010	---	---	
fluorene	86-73-7	E641A	0.010	µg/L	0.038	---	<0.010	---	---	
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.010	µg/L	<0.010	---	<0.010	---	---	
methylnaphthalene, 1-	90-12-0	E641A	0.010	µg/L	<0.010	---	<0.010	---	---	
methylnaphthalene, 2-	91-57-6	E641A	0.010	µg/L	<0.010	---	<0.010	---	---	
naphthalene	91-20-3	E641A	0.050	µg/L	<0.050	---	<0.050	---	---	
phenanthrene	85-01-8	E641A	0.020	µg/L	<0.020	---	<0.020	---	---	
pyrene	129-00-0	E641A	0.010	µg/L	<0.010	---	<0.010	---	---	
quinoline	6027-02-7	E641A	0.050	µg/L	<0.050	---	<0.050	---	---	
Polycyclic Aromatic Hydrocarbons Surrogates										
chrysene-d12	1719-03-5	E641A	0.1	%	94.4	---	77.0	---	---	
naphthalene-d8	1146-65-2	E641A	0.1	%	93.8	---	84.8	---	---	
phenanthrene-d10	1517-22-2	E641A	0.1	%	108	---	93.7	---	---	
Volatile Organic Compounds [THMs]										
bromodichloromethane	75-27-4	E611C	0.50	µg/L	<0.50	<0.50	<0.50	---	---	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Dup1	Trip Blank	20MW-06-0621	----	----
Client sampling date / time					21-Jun-2021	21-Jun-2021	21-Jun-2021	----	----	----
Analyte	CAS Number	Method	LOR	Unit	VA21B2503-011	VA21B2503-012	VA21B2503-013	-----	-----	-----
Volatile Organic Compounds [THMs]					Result	Result	Result	---	---	---
bromoform	75-25-2	E611C	0.50	µg/L	<0.50	<0.50	<0.50	---	---	---
chloroform	67-66-3	E611C	0.50	µg/L	<0.50	<0.50	<0.50	---	---	---
dibromochloromethane	124-48-1	E611C	0.50	µg/L	<0.50	<0.50	<0.50	---	---	---

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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA21B2503	Page	: 1 of 19
Amendment	: 1		
Client	: Jacobs Consultancy Canada Inc.	Laboratory	: Vancouver - Environmental
Contact	: Amy Casey	Account Manager	: Ashton Ostrander
Address	: Metrotower II, Suite 2100 4720 Kingsway Burnaby BC Canada V5H 4N2	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 519 579 3500	Telephone	: +1 604 253 4188
Project	: CE777000	Date Samples Received	: 21-Jun-2021 18:30
PO	: 670014CH.B0.01.09	Issue Date	: 07-Jul-2021 09:54
C-O-C number	: 20-921340		
Sampler	: AC, SM		
Site	: ----		
Quote number	: VA20-CHMH100-013		
No. of samples received	: 13		
No. of samples analysed	: 13		

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Duplicate (DUP) RPDs								
Dissolved Metals	VA21B2503-001	20MW-04S-0621	chromium, dissolved	7440-47-3	E421	26.8 % DUP-H	20%	Duplicate RPD does not meet the DQO for this test.
Dissolved Metals	VA21B2503-001	20MW-04S-0621	molybdenum, dissolved	7439-98-7	E421	26.5 % DUP-H	20%	Duplicate RPD does not meet the DQO for this test.
Dissolved Metals	VA21B2503-001	20MW-04S-0621	nickel, dissolved	7440-02-0	E421	0.00125 % DUP-H	Diff <2x LOR	Low Level DUP DQO exceeded (difference > 2 LOR).

Result Qualifiers

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



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 00:00 is used for calculation purposes.

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

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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-04D-0621	E509	21-Jun-2021	24-Jun-2021	----	----		24-Jun-2021	28 days	3 days	✓	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-04S-0621	E509	21-Jun-2021	24-Jun-2021	----	----		24-Jun-2021	28 days	3 days	✓	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-06-0621	E509	21-Jun-2021	24-Jun-2021	----	----		24-Jun-2021	28 days	3 days	✓	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-09-0621	E509	21-Jun-2021	24-Jun-2021	----	----		24-Jun-2021	28 days	3 days	✓	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-10D-0621	E509	21-Jun-2021	24-Jun-2021	----	----		24-Jun-2021	28 days	3 days	✓	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-10S-0621	E509	21-Jun-2021	24-Jun-2021	----	----		24-Jun-2021	28 days	3 days	✓	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-11-0621	E509	21-Jun-2021	24-Jun-2021	----	----		24-Jun-2021	28 days	3 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) Dup1	E509	21-Jun-2021	24-Jun-2021	----	----		24-Jun-2021	28 days	3 days	✓	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) MW06-34-0621	E509	21-Jun-2021	24-Jun-2021	----	----		24-Jun-2021	28 days	3 days	✓	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) MW19-01-0621	E509	21-Jun-2021	24-Jun-2021	----	----		24-Jun-2021	28 days	3 days	✓	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) MW19-03-0621	E509	21-Jun-2021	24-Jun-2021	----	----		24-Jun-2021	28 days	3 days	✓	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) 20MW-04D-0621	E421	21-Jun-2021	22-Jun-2021	----	----		27-Jun-2021	180 days	6 days	✓	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) 20MW-04S-0621	E421	21-Jun-2021	22-Jun-2021	----	----		27-Jun-2021	180 days	6 days	✓	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) 20MW-09-0621	E421	21-Jun-2021	22-Jun-2021	----	----		27-Jun-2021	180 days	6 days	✓	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) 20MW-10D-0621	E421	21-Jun-2021	22-Jun-2021	----	----		27-Jun-2021	180 days	6 days	✓	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) 20MW-10S-0621	E421	21-Jun-2021	22-Jun-2021	----	----		27-Jun-2021	180 days	6 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) 20MW-11-0621	E421	21-Jun-2021	22-Jun-2021	----	----		27-Jun-2021	180 days	6 days	✓	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) Dup1	E421	21-Jun-2021	22-Jun-2021	----	----		27-Jun-2021	180 days	6 days	✓	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) MW06-34-0621	E421	21-Jun-2021	22-Jun-2021	----	----		27-Jun-2021	180 days	6 days	✓	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) MW19-01-0621	E421	21-Jun-2021	22-Jun-2021	----	----		27-Jun-2021	180 days	6 days	✓	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) MW19-03-0621	E421	21-Jun-2021	22-Jun-2021	----	----		27-Jun-2021	180 days	6 days	✓	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) 20MW-06-0621	E421	21-Jun-2021	22-Jun-2021	----	----		27-Jun-2021	180 days	7 days	✓	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) MW06-34-Prod	E601A	21-Jun-2021	01-Jul-2021	14 days	10 days	✓	05-Jul-2021	40 days	4 days	✓	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-04D-0621	E601A	21-Jun-2021	24-Jun-2021	14 days	3 days	✓	25-Jun-2021	40 days	1 days	✓	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-06-0621	E601A	21-Jun-2021	24-Jun-2021	14 days	3 days	✓	25-Jun-2021	40 days	1 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-09-0621	E601A	21-Jun-2021	24-Jun-2021	14 days	3 days	✓	25-Jun-2021	40 days	1 days	✓	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-11-0621	E601A	21-Jun-2021	24-Jun-2021	14 days	3 days	✓	25-Jun-2021	40 days	1 days	✓	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) MW19-01-0621	E601A	21-Jun-2021	24-Jun-2021	14 days	3 days	✓	25-Jun-2021	40 days	1 days	✓	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) MW19-03-0621	E601A	21-Jun-2021	24-Jun-2021	14 days	3 days	✓	25-Jun-2021	40 days	1 days	✓	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-04S-0621	E601A	21-Jun-2021	29-Jun-2021	14 days	8 days	✓	30-Jun-2021	40 days	1 days	✓	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-10D-0621	E601A	21-Jun-2021	29-Jun-2021	14 days	8 days	✓	30-Jun-2021	40 days	1 days	✓	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-10S-0621	E601A	21-Jun-2021	29-Jun-2021	14 days	8 days	✓	30-Jun-2021	40 days	1 days	✓	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) Dup1	E601A	21-Jun-2021	29-Jun-2021	14 days	8 days	✓	30-Jun-2021	40 days	1 days	✓	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) MW06-34-0621	E601A	21-Jun-2021	29-Jun-2021	14 days	8 days	✓	30-Jun-2021	40 days	1 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) MW06-34-Prod	E641A	21-Jun-2021	01-Jul-2021	14 days	10 days	✔	02-Jul-2021	40 days	1 days	✔	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-04D-0621	E641A	21-Jun-2021	24-Jun-2021	14 days	3 days	✔	25-Jun-2021	40 days	1 days	✔	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-06-0621	E641A	21-Jun-2021	24-Jun-2021	14 days	3 days	✔	25-Jun-2021	40 days	1 days	✔	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-09-0621	E641A	21-Jun-2021	24-Jun-2021	14 days	3 days	✔	25-Jun-2021	40 days	1 days	✔	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-11-0621	E641A	21-Jun-2021	24-Jun-2021	14 days	3 days	✔	25-Jun-2021	40 days	1 days	✔	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) MW19-01-0621	E641A	21-Jun-2021	24-Jun-2021	14 days	3 days	✔	25-Jun-2021	40 days	1 days	✔	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) MW19-03-0621	E641A	21-Jun-2021	24-Jun-2021	14 days	3 days	✔	25-Jun-2021	40 days	1 days	✔	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-04S-0621	E641A	21-Jun-2021	29-Jun-2021	14 days	8 days	✔	29-Jun-2021	40 days	1 days	✔	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-10D-0621	E641A	21-Jun-2021	29-Jun-2021	14 days	8 days	✔	29-Jun-2021	40 days	1 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-10S-0621	E641A	21-Jun-2021	29-Jun-2021	14 days	8 days	✓	29-Jun-2021	40 days	1 days	✓	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) Dup1	E641A	21-Jun-2021	29-Jun-2021	14 days	8 days	✓	29-Jun-2021	40 days	1 days	✓	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) MW06-34-0621	E641A	21-Jun-2021	29-Jun-2021	14 days	8 days	✓	29-Jun-2021	40 days	1 days	✓	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) 20MW-04D-0621	E508	21-Jun-2021	----	----	----		24-Jun-2021	28 days	3 days	✓	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) 20MW-04S-0621	E508	21-Jun-2021	----	----	----		24-Jun-2021	28 days	3 days	✓	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) 20MW-09-0621	E508	21-Jun-2021	----	----	----		24-Jun-2021	28 days	3 days	✓	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) 20MW-10D-0621	E508	21-Jun-2021	----	----	----		24-Jun-2021	28 days	3 days	✓	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) 20MW-10S-0621	E508	21-Jun-2021	----	----	----		24-Jun-2021	28 days	3 days	✓	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) 20MW-11-0621	E508	21-Jun-2021	----	----	----		24-Jun-2021	28 days	3 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) Dup1	E508	21-Jun-2021	----	----	----		24-Jun-2021	28 days	3 days	✓	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) MW06-34-0621	E508	21-Jun-2021	----	----	----		24-Jun-2021	28 days	3 days	✓	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) MW19-01-0621	E508	21-Jun-2021	----	----	----		24-Jun-2021	28 days	3 days	✓	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) MW19-03-0621	E508	21-Jun-2021	----	----	----		24-Jun-2021	28 days	3 days	✓	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) 20MW-06-0621	E508	21-Jun-2021	----	----	----		24-Jun-2021	28 days	4 days	✓	
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE total (nitric acid) 20MW-04D-0621	E420	21-Jun-2021	----	----	----		25-Jun-2021	180 days	4 days	✓	
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE total (nitric acid) 20MW-04S-0621	E420	21-Jun-2021	----	----	----		25-Jun-2021	180 days	4 days	✓	
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE total (nitric acid) 20MW-09-0621	E420	21-Jun-2021	----	----	----		25-Jun-2021	180 days	4 days	✓	
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE total (nitric acid) 20MW-10D-0621	E420	21-Jun-2021	----	----	----		25-Jun-2021	180 days	4 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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) 20MW-10S-0621	E420	21-Jun-2021	----	----	----		25-Jun-2021	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) 20MW-11-0621	E420	21-Jun-2021	----	----	----		25-Jun-2021	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) Dup1	E420	21-Jun-2021	----	----	----		25-Jun-2021	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) MW06-34-0621	E420	21-Jun-2021	----	----	----		25-Jun-2021	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) MW19-01-0621	E420	21-Jun-2021	----	----	----		25-Jun-2021	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) MW19-03-0621	E420	21-Jun-2021	----	----	----		25-Jun-2021	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) 20MW-06-0621	E420	21-Jun-2021	----	----	----		25-Jun-2021	180 days	5 days	✓
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-04D-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-04S-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	



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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-06-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-09-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-10D-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-10S-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-11-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) Dup1	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW06-34-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW06-34-Prod	E611C	21-Jun-2021	02-Jul-2021	----	----		03-Jul-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW19-01-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	



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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW19-03-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) Trip Blank	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-04D-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-04S-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-06-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-09-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-10D-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-10S-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-11-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	



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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) Dup1	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW06-34-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW06-34-Prod	E611C	21-Jun-2021	02-Jul-2021	----	----		03-Jul-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW19-01-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW19-03-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) Trip Blank	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW06-34-Prod	E611C	21-Jun-2021	02-Jul-2021	----	----		03-Jul-2021	14 days	11 days	✔
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-09-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	14 days	7 days	✔
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-10D-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	14 days	7 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-10S-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	14 days	7 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-11-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	14 days	7 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) Dup1	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	14 days	7 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) MW06-34-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	14 days	7 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-04D-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	14 days	8 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-04S-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	14 days	8 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-06-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	14 days	8 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) MW19-01-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	14 days	8 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) MW19-03-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	14 days	8 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) Trip Blank	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	14 days	8 days	✔	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-04D-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----		
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-04S-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----		
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-06-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----		
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-09-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----		
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-10D-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----		
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-10S-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----		
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-11-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----		
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) Dup1	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----		



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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW06-34-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW06-34-Prod	E611C	21-Jun-2021	02-Jul-2021	----	----		03-Jul-2021	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW19-01-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW19-03-0621	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) Trip Blank	E611C	21-Jun-2021	29-Jun-2021	----	----		29-Jun-2021	----	----	

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: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
Analytical Methods							
Laboratory Duplicates (DUP)							
Dissolved Mercury in Water by CVAAS	E509	228949	1	16	6.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	227248	1	20	5.0	5.0	✔
Total Mercury in Water by CVAAS	E508	229389	2	40	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	227882	2	40	5.0	5.0	✔
VOCs (BC List) by Headspace GC-MS	E611C	232145	2	23	8.7	5.0	✔
Laboratory Control Samples (LCS)							
BC PHC - EPH by GC-FID	E601A	228894	3	30	10.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	228949	1	16	6.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	227248	1	20	5.0	5.0	✔
PAHs by Hexane LVI GC-MS	E641A	228895	3	51	5.8	5.0	✔
Total Mercury in Water by CVAAS	E508	229389	2	40	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	227882	2	40	5.0	5.0	✔
VOCs (BC List) by Headspace GC-MS	E611C	232145	2	23	8.7	5.0	✔
Method Blanks (MB)							
BC PHC - EPH by GC-FID	E601A	228894	3	30	10.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	228949	1	16	6.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	227248	1	20	5.0	5.0	✔
PAHs by Hexane LVI GC-MS	E641A	228895	3	51	5.8	5.0	✔
Total Mercury in Water by CVAAS	E508	229389	2	40	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	227882	2	40	5.0	5.0	✔
VOCs (BC List) by Headspace GC-MS	E611C	232145	2	23	8.7	5.0	✔
Matrix Spikes (MS)							
Dissolved Mercury in Water by CVAAS	E509	228949	1	16	6.2	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	227248	1	20	5.0	5.0	✔
Total Mercury in Water by CVAAS	E508	229389	2	40	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	227882	2	40	5.0	5.0	✔
VOCs (BC List) by Headspace GC-MS	E611C	232145	2	23	8.7	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
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
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.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
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.
BC PHC - EPH by GC-FID	E601A Vancouver - Environmental	Water	BC MOE Lab Manual	Extractable Petroleum Hydrocarbons (EPH) 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 Vancouver - Environmental	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO ₃), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO ₃ 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.
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO ₃), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO ₃ 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. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.



<i>Analytical Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
LEPH and HEPH: EPH-PAH	EC600A Vancouver - 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.
<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO ₃ .
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 Vancouver - Environmental	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.

QUALITY CONTROL REPORT

Work Order : **VA21B2503**

Page : 1 of 30

Amendment : **1**

Client : Jacobs Consultancy Canada Inc.
Contact : Amy Casey
Address : Metrotower II, Suite 2100 4720 Kingsway
 Burnaby BC Canada V5H 4N2
Telephone : 519 579 3500
Project : CE777000
PO : 670014CH.B0.01.09
C-O-C number : 20-921340
Sampler : AC, SM
Site : ----
Quote number : VA20-CHMH100-013
No. of samples received : 13
No. of samples analysed : 13

Laboratory : Vancouver - Environmental
Account Manager : Ashton Ostrander
Address : 8081 Lougheed Highway
 Burnaby, British Columbia Canada V5A 1W9
Telephone : +1 604 253 4188
Date Samples Received : 21-Jun-2021 18:30
Date Analysis Commenced : 22-Jun-2021
Issue Date : 07-Jul-2021 09:54

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Harsha Attanayake	Laboratory Analyst	Organics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Ophelia Chiu	Department Manager - Organics	Organics, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Saron Kim	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: 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
Total Metals (QC Lot: 227882)											
FJ2100449-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0231	0.0186	0.0044	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00148	0.00142	4.31%	20%	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00032	0.00033	0.000006	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0747	0.0726	2.81%	20%	----
		beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.167	0.165	1.09%	20%	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000519	0.0000518	0.163%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	270	259	4.12%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	0.000017	0.000015	0.000002	Diff <2x LOR	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00013	0.00011	0.00001	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00055	0.00055	0.000004	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.026	0.025	0.0009	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.346	0.329	4.87%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	114	112	1.12%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00578	0.00569	1.62%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00352	0.00337	4.50%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.0456	0.0448	1.77%	20%	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	4.11	4.05	1.50%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00252	0.00246	2.11%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.144	0.140	2.25%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	0.73	0.68	0.04	Diff <2x LOR	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	225	220	2.12%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.406	0.383	5.80%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	367	367	0.190%	20%	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000035	0.000033	0.000001	Diff <2x LOR	----
		thorium, total	7440-29-1	E420	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
Total Metals (QC Lot: 227882) - continued											
FJ2100449-001	Anonymous	tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00115	0.00152	0.00037	Diff <2x LOR	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.0236	0.0221	6.64%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00051	0.00056	0.00006	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0070	0.0070	0.00009	Diff <2x LOR	----
		zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Total Metals (QC Lot: 228492)											
KS2101943-001	Anonymous	aluminum, total	7429-90-5	E420	0.0100	mg/L	0.202	0.196	3.30%	20%	----
		antimony, total	7440-36-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00153	0.00148	3.60%	20%	----
		barium, total	7440-39-3	E420	0.0200	mg/L	<0.0200	<0.0200	0	Diff <2x LOR	----
		beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.000200	mg/L	<0.000200	<0.000200	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.100	mg/L	1.45	1.47	1.40%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	0.000014	0.000015	0.0000005	Diff <2x LOR	----
		chromium, total	7440-47-3	E420	0.00200	mg/L	<0.00200	<0.00200	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00027	0.00026	0.0000005	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00100	mg/L	0.00220	0.00219	0.000002	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.030	mg/L	0.457	0.423	7.78%	20%	----
		lead, total	7439-92-1	E420	0.000500	mg/L	<0.000500	<0.000500	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0010	0.0011	0.00003	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.100	mg/L	0.431	0.429	0.0016	Diff <2x LOR	----
		manganese, total	7439-96-5	E420	0.00200	mg/L	0.00664	0.00650	0.00014	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00910	0.00925	1.62%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00113	0.00110	0.00003	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	0.080	0.093	0.013	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.100	mg/L	0.350	0.352	0.002	Diff <2x LOR	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00051	0.00051	0.000002	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	12.8	12.9	0.314%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	0.000015	0.000012	0.000002	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	2.00	mg/L	74.5	75.2	1.00%	20%	----



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
Total Metals (QC Lot: 228492) - continued											
KS2101943-001	Anonymous	strontium, total	7440-24-6	E420	0.00020	mg/L	0.00574	0.00591	2.90%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	7.35	7.41	0.838%	20%	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00744	0.00695	6.74%	20%	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	0.00110	0.00111	0.259%	20%	----
		uranium, total	7440-61-1	E420	0.000100	mg/L	0.000338	0.000339	0.000005	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00167	0.00166	0.00001	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0500	mg/L	0.293	0.294	0.0008	Diff <2x LOR	----
zirconium, total	7440-67-7	E420	0.00020	mg/L	0.00035	0.00033	0.00002	Diff <2x LOR	----		
Total Metals (QC Lot: 229389)											
CG2102090-001	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 229390)											
VA21B2503-005	MW06-34-0621	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 227248)											
VA21B2503-001	20MW-04S-0621	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0125	0.0137	9.24%	20%	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00042	0.00041	0.00001	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00030	0.00030	0.000008	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0534	0.0522	2.31%	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	0.0000220	0.0000218	0.0000002	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	35.9	35.7	0.449%	20%	----
		cesium, dissolved	7440-46-2	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		chromium, dissolved	7440-47-3	E421	0.00050	mg/L	0.0108	0.0142	26.8%	20%	DUP-H
		cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00022	0.00022	0.000002	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00321	0.00329	2.43%	20%	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.039	0.040	0.0005	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000056	0.000052	0.000003	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	1.62	1.63	0.489%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0419	0.0416	0.711%	20%	----



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: 227248) - continued											
VA21B2503-001	20MW-04S-0621	molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00108	0.00141	26.5%	20%	DUP-H
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00436	# 0.00561	0.00125	Diff <2x LOR	DUP-H
		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	2.11	2.10	0.815%	20%	----
		rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00246	0.00245	0.247%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.72	4.70	0.352%	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	2.71	2.70	0.358%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0877	0.0880	0.325%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	1.45	1.36	0.09	Diff <2x LOR	----
		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	0.000011	0.000011	0.0000006	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	<0.00010	<0.00010	0	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	0.000175	0.000174	0.452%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00082	0.00080	0.00002	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0093	0.0089	0.0004	Diff <2x LOR	----
		zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 228949)											
VA21B2455-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 232145)											
FJ2100452-001	Anonymous	benzene	71-43-2	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		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	----



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: 232145) - continued											
FJ2100452-001	Anonymous	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	1.0	µg/L	<1.0	<1.0	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	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		xylene, o-	95-47-6	E611C	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 235093)											
FJ2100471-001	Anonymous	benzene	71-43-2	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		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	----



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: 235093) - continued											
FJ2100471-001	Anonymous	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	1.0	µg/L	<1.0	<1.0	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	0.40	µg/L	<0.40	0.69	0.29	Diff <2x LOR	----
		xylene, o-	95-47-6	E611C	0.30	µg/L	<0.30	<0.30	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: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 227882)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 227882) - continued						
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	---
Total Metals (QCLot: 228492)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	---
chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 228492) - continued						
tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	---
Total Metals (QCLot: 229389)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	---
Total Metals (QCLot: 229390)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	---
Dissolved Metals (QCLot: 227248)						
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	---
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
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	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 227248) - continued						
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: 228949)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Volatile Organic Compounds (QCLot: 232145)						
benzene	71-43-2	E611C	0.5	µg/L	<0.50	----
bromodichloromethane	75-27-4	E611C	0.5	µg/L	<0.50	----
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	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 232145) - continued						
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	1	µg/L	<1.0	----
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, 1,1,1,2,2-	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	0.4	µg/L	<0.40	----
xylene, o-	95-47-6	E611C	0.3	µg/L	<0.30	----
Volatile Organic Compounds (QCLot: 235093)						
benzene	71-43-2	E611C	0.5	µg/L	<0.50	----
bromodichloromethane	75-27-4	E611C	0.5	µg/L	<0.50	----
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	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 235093) - continued						
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	1	µg/L	<1.0	----
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	0.4	µg/L	<0.40	----
xylene, o-	95-47-6	E611C	0.3	µg/L	<0.30	----
Hydrocarbons (QCLot: 228894)						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
Hydrocarbons (QCLot: 232149)						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
Hydrocarbons (QCLot: 233625)						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
Polycyclic Aromatic Hydrocarbons (QCLot: 228895)						
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	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 228895) - continued						
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	---
Polycyclic Aromatic Hydrocarbons (QCLot: 232150)						
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	---
Polycyclic Aromatic Hydrocarbons (QCLot: 233626)						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 233626) - continued						
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	---



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: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Total Metals (QCLot: 227882)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	106	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	103	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	101	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	99.7	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	103	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	103	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	100	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	109	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	100	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	112	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	110	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	106	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	104	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	107	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	105	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	108	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	106	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	96.5	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	103	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Total Metals (QCLot: 227882) - continued									
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	97.6	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	96.3	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	102	80.0	120	----
Total Metals (QCLot: 228492)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	104	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	103	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	99.9	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	98.6	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	97.6	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	98.6	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	102	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	101	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	104	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	99.0	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	99.7	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	112	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	107	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	108	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	98.3	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	99.4	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	95.4	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	109	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Total Metals (QCLot: 228492) - continued									
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	94.8	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	99.8	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	94.0	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	102	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	100	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	100	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	95.4	80.0	120	----
Total Metals (QCLot: 229389)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	101	80.0	120	----
Total Metals (QCLot: 229390)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	98.6	80.0	120	----
Dissolved Metals (QCLot: 227248)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	100	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	104	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	97.5	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.2	80.0	120	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	96.4	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	99.8	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.9	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	97.4	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	109	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	98.3	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	100	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	100	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	98.9	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	104	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	109	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: 227248) - continued									
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	103	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	101	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	104	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	94.8	80.0	120	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	106	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	110	80.0	120	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	101	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.2	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.6	80.0	120	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	102	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	101	80.0	120	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	97.5	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	99.9	80.0	120	----
Volatile Organic Compounds (QCLot: 232145)									
benzene	71-43-2	E611C	0.5	µg/L	100 µg/L	101	70.0	130	----
bromodichloromethane	75-27-4	E611C	0.5	µg/L	100 µg/L	116	70.0	130	----
bromoform	75-25-2	E611C	0.5	µg/L	100 µg/L	70.6	70.0	130	----
carbon tetrachloride	56-23-5	E611C	0.5	µg/L	100 µg/L	113	70.0	130	----
chlorobenzene	108-90-7	E611C	0.5	µg/L	100 µg/L	91.4	70.0	130	----
chloroethane	75-00-3	E611C	0.5	µg/L	100 µg/L	95.8	60.0	140	----
chloroform	67-66-3	E611C	0.5	µg/L	100 µg/L	97.4	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	111	70.0	130	----
dichlorobenzene, 1,2-	95-50-1	E611C	0.5	µg/L	100 µg/L	92.6	70.0	130	----
dichlorobenzene, 1,3-	541-73-1	E611C	0.5	µg/L	100 µg/L	87.9	70.0	130	----
dichlorobenzene, 1,4-	106-46-7	E611C	0.5	µg/L	100 µg/L	100	70.0	130	----
dichloroethane, 1,1-	75-34-3	E611C	0.5	µg/L	100 µg/L	97.2	70.0	130	----
dichloroethane, 1,2-	107-06-2	E611C	0.5	µg/L	100 µg/L	107	70.0	130	----
dichloroethylene, 1,1-	75-35-4	E611C	0.5	µg/L	100 µg/L	99.6	70.0	130	----
dichloroethylene, cis-1,2-	156-59-4	E611C	0.5	µg/L	100 µg/L	92.6	70.0	130	----
dichloroethylene, trans-1,2-	156-60-5	E611C	0.5	µg/L	100 µg/L	99.3	70.0	130	----
dichloromethane	75-09-2	E611C	1	µg/L	100 µg/L	104	70.0	130	----
dichloropropane, 1,2-	78-87-5	E611C	0.5	µg/L	100 µg/L	101	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
Volatile Organic Compounds (QCLot: 232145) - continued									
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.5	µg/L	100 µg/L	98.5	70.0	130	----
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.5	µg/L	100 µg/L	110	70.0	130	----
ethylbenzene	100-41-4	E611C	0.5	µg/L	100 µg/L	84.7	70.0	130	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.5	µg/L	100 µg/L	123	70.0	130	----
styrene	100-42-5	E611C	0.5	µg/L	100 µg/L	88.0	70.0	130	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.5	µg/L	100 µg/L	95.9	70.0	130	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.2	µg/L	100 µg/L	106	70.0	130	----
tetrachloroethylene	127-18-4	E611C	0.5	µg/L	100 µg/L	92.0	70.0	130	----
toluene	108-88-3	E611C	0.4	µg/L	100 µg/L	82.0	70.0	130	----
trichloroethane, 1,1,1-	71-55-6	E611C	0.5	µg/L	100 µg/L	96.3	70.0	130	----
trichloroethane, 1,1,2-	79-00-5	E611C	0.5	µg/L	100 µg/L	91.0	70.0	130	----
trichloroethylene	79-01-6	E611C	0.5	µg/L	100 µg/L	104	70.0	130	----
trichlorofluoromethane	75-69-4	E611C	0.5	µg/L	100 µg/L	106	60.0	140	----
vinyl chloride	75-01-4	E611C	0.4	µg/L	100 µg/L	94.6	60.0	140	----
xylene, m+p-	179601-23-1	E611C	0.4	µg/L	200 µg/L	92.1	70.0	130	----
xylene, o-	95-47-6	E611C	0.3	µg/L	100 µg/L	86.1	70.0	130	----
Volatile Organic Compounds (QCLot: 235093)									
benzene	71-43-2	E611C	0.5	µg/L	100 µg/L	118	70.0	130	----
bromodichloromethane	75-27-4	E611C	0.5	µg/L	100 µg/L	129	70.0	130	----
bromoform	75-25-2	E611C	0.5	µg/L	100 µg/L	90.4	70.0	130	----
carbon tetrachloride	56-23-5	E611C	0.5	µg/L	100 µg/L	107	70.0	130	----
chlorobenzene	108-90-7	E611C	0.5	µg/L	100 µg/L	109	70.0	130	----
chloroethane	75-00-3	E611C	0.5	µg/L	100 µg/L	96.9	60.0	140	----
chloroform	67-66-3	E611C	0.5	µg/L	100 µg/L	116	70.0	130	----
chloromethane	74-87-3	E611C	0.5	µg/L	100 µg/L	110	60.0	140	----
dibromochloromethane	124-48-1	E611C	0.5	µg/L	100 µg/L	101	70.0	130	----
dichlorobenzene, 1,2-	95-50-1	E611C	0.5	µg/L	100 µg/L	110	70.0	130	----
dichlorobenzene, 1,3-	541-73-1	E611C	0.5	µg/L	100 µg/L	108	70.0	130	----
dichlorobenzene, 1,4-	106-46-7	E611C	0.5	µg/L	100 µg/L	109	70.0	130	----
dichloroethane, 1,1-	75-34-3	E611C	0.5	µg/L	100 µg/L	122	70.0	130	----
dichloroethane, 1,2-	107-06-2	E611C	0.5	µg/L	100 µg/L	116	70.0	130	----
dichloroethylene, 1,1-	75-35-4	E611C	0.5	µg/L	100 µg/L	121	70.0	130	----
dichloroethylene, cis-1,2-	156-59-4	E611C	0.5	µg/L	100 µg/L	113	70.0	130	----
dichloroethylene, trans-1,2-	156-60-5	E611C	0.5	µg/L	100 µg/L	108	70.0	130	----
dichloromethane	75-09-2	E611C	1	µg/L	100 µg/L	127	70.0	130	----
dichloropropane, 1,2-	78-87-5	E611C	0.5	µg/L	100 µg/L	124	70.0	130	----
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.5	µg/L	100 µg/L	124	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
Volatile Organic Compounds (QCLot: 235093) - continued									
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.5	µg/L	100 µg/L	105	70.0	130	----
ethylbenzene	100-41-4	E611C	0.5	µg/L	100 µg/L	107	70.0	130	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.5	µg/L	100 µg/L	113	70.0	130	----
styrene	100-42-5	E611C	0.5	µg/L	100 µg/L	109	70.0	130	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.5	µg/L	100 µg/L	100	70.0	130	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.2	µg/L	100 µg/L	122	70.0	130	----
tetrachloroethylene	127-18-4	E611C	0.5	µg/L	100 µg/L	111	70.0	130	----
toluene	108-88-3	E611C	0.4	µg/L	100 µg/L	110	70.0	130	----
trichloroethane, 1,1,1-	71-55-6	E611C	0.5	µg/L	100 µg/L	129	70.0	130	----
trichloroethane, 1,1,2-	79-00-5	E611C	0.5	µg/L	100 µg/L	105	70.0	130	----
trichloroethylene	79-01-6	E611C	0.5	µg/L	100 µg/L	117	70.0	130	----
trichlorofluoromethane	75-69-4	E611C	0.5	µg/L	100 µg/L	119	60.0	140	----
vinyl chloride	75-01-4	E611C	0.4	µg/L	100 µg/L	114	60.0	140	----
xylene, m+p-	179601-23-1	E611C	0.4	µg/L	200 µg/L	112	70.0	130	----
xylene, o-	95-47-6	E611C	0.3	µg/L	100 µg/L	109	70.0	130	----
Hydrocarbons (QCLot: 228894)									
EPH (C10-C19)	----	E601A	250	µg/L	6491 µg/L	113	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3363 µg/L	109	70.0	130	----
Hydrocarbons (QCLot: 232149)									
EPH (C10-C19)	----	E601A	250	µg/L	6491 µg/L	118	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3363 µg/L	117	70.0	130	----
Hydrocarbons (QCLot: 233625)									
EPH (C10-C19)	----	E601A	250	µg/L	6491 µg/L	100	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3363 µg/L	98.8	70.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 228895)									
acenaphthene	83-32-9	E641A	0.01	µg/L	0.5 µg/L	91.0	60.0	130	----
acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5 µg/L	95.4	60.0	130	----
acridine	260-94-6	E641A	0.01	µg/L	0.5 µg/L	101	60.0	130	----
anthracene	120-12-7	E641A	0.01	µg/L	0.5 µg/L	118	60.0	130	----
benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5 µg/L	129	60.0	130	----
benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5 µg/L	98.1	60.0	130	----
benzo(b+j)fluoranthene	----	E641A	0.01	µg/L	0.5 µg/L	84.3	60.0	130	----
benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	0.5 µg/L	105	60.0	130	----
benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5 µg/L	86.6	60.0	130	----
chrysene	218-01-9	E641A	0.01	µg/L	0.5 µg/L	116	60.0	130	----



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 228895) - continued									
dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5 µg/L	104	60.0	130	----
fluoranthene	206-44-0	E641A	0.01	µg/L	0.5 µg/L	113	60.0	130	----
fluorene	86-73-7	E641A	0.01	µg/L	0.5 µg/L	101	60.0	130	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5 µg/L	118	60.0	130	----
methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	0.5 µg/L	95.4	60.0	130	----
methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5 µg/L	89.6	60.0	130	----
naphthalene	91-20-3	E641A	0.05	µg/L	0.5 µg/L	89.2	50.0	130	----
phenanthrene	85-01-8	E641A	0.02	µg/L	0.5 µg/L	114	60.0	130	----
pyrene	129-00-0	E641A	0.01	µg/L	0.5 µg/L	116	60.0	130	----
quinoline	6027-02-7	E641A	0.05	µg/L	0.5 µg/L	120	60.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 232150)									
acenaphthene	83-32-9	E641A	0.01	µg/L	0.5 µg/L	100	60.0	130	----
acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5 µg/L	109	60.0	130	----
acridine	260-94-6	E641A	0.01	µg/L	0.5 µg/L	112	60.0	130	----
anthracene	120-12-7	E641A	0.01	µg/L	0.5 µg/L	122	60.0	130	----
benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5 µg/L	124	60.0	130	----
benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5 µg/L	110	60.0	130	----
benzo(b+j)fluoranthene	----	E641A	0.01	µg/L	0.5 µg/L	89.5	60.0	130	----
benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	0.5 µg/L	114	60.0	130	----
benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5 µg/L	98.6	60.0	130	----
chrysene	218-01-9	E641A	0.01	µg/L	0.5 µg/L	121	60.0	130	----
dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5 µg/L	117	60.0	130	----
fluoranthene	206-44-0	E641A	0.01	µg/L	0.5 µg/L	112	60.0	130	----
fluorene	86-73-7	E641A	0.01	µg/L	0.5 µg/L	115	60.0	130	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5 µg/L	126	60.0	130	----
methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	0.5 µg/L	98.9	60.0	130	----
methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5 µg/L	100	60.0	130	----
naphthalene	91-20-3	E641A	0.05	µg/L	0.5 µg/L	95.8	50.0	130	----
phenanthrene	85-01-8	E641A	0.02	µg/L	0.5 µg/L	113	60.0	130	----
pyrene	129-00-0	E641A	0.01	µg/L	0.5 µg/L	117	60.0	130	----
quinoline	6027-02-7	E641A	0.05	µg/L	0.5 µg/L	111	60.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 233626)									
acenaphthene	83-32-9	E641A	0.01	µg/L	0.5 µg/L	89.3	60.0	130	----
acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5 µg/L	102	60.0	130	----
acridine	260-94-6	E641A	0.01	µg/L	0.5 µg/L	99.7	60.0	130	----
anthracene	120-12-7	E641A	0.01	µg/L	0.5 µg/L	116	60.0	130	----
benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5 µg/L	119	60.0	130	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Polycyclic Aromatic Hydrocarbons (QCLot: 233626) - continued									
benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5 µg/L	105	60.0	130	----
benzo(b+j)fluoranthene	----	E641A	0.01	µg/L	0.5 µg/L	85.4	60.0	130	----
benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	0.5 µg/L	93.3	60.0	130	----
benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5 µg/L	95.0	60.0	130	----
chrysene	218-01-9	E641A	0.01	µg/L	0.5 µg/L	122	60.0	130	----
dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5 µg/L	98.9	60.0	130	----
fluoranthene	206-44-0	E641A	0.01	µg/L	0.5 µg/L	109	60.0	130	----
fluorene	86-73-7	E641A	0.01	µg/L	0.5 µg/L	104	60.0	130	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5 µg/L	106	60.0	130	----
methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	0.5 µg/L	85.2	60.0	130	----
methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5 µg/L	83.2	60.0	130	----
naphthalene	91-20-3	E641A	0.05	µg/L	0.5 µg/L	86.9	50.0	130	----
phenanthrene	85-01-8	E641A	0.02	µg/L	0.5 µg/L	107	60.0	130	----
pyrene	129-00-0	E641A	0.01	µg/L	0.5 µg/L	114	60.0	130	----
quinoline	6027-02-7	E641A	0.05	µg/L	0.5 µg/L	107	60.0	130	----



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: **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
Total Metals (QCLot: 227882)										
FJ2100449-001	Anonymous	aluminum, total	7429-90-5	E420	0.200 mg/L	0.2 mg/L	99.9	70.0	130	----
		antimony, total	7440-36-0	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0211 mg/L	0.02 mg/L	106	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0413 mg/L	0.04 mg/L	103	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00936 mg/L	0.01 mg/L	93.6	70.0	130	----
		boron, total	7440-42-8	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00388 mg/L	0.004 mg/L	96.9	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cesium, total	7440-46-2	E420	0.0104 mg/L	0.01 mg/L	104	70.0	130	----
		chromium, total	7440-47-3	E420	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	----
		copper, total	7440-50-8	E420	0.0189 mg/L	0.02 mg/L	94.7	70.0	130	----
		iron, total	7439-89-6	E420	2.02 mg/L	2 mg/L	101	70.0	130	----
		lead, total	7439-92-1	E420	0.0186 mg/L	0.02 mg/L	93.0	70.0	130	----
		lithium, total	7439-93-2	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0207 mg/L	0.02 mg/L	103	70.0	130	----
		nickel, total	7440-02-0	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		phosphorus, total	7723-14-0	E420	11.9 mg/L	10 mg/L	119	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		rubidium, total	7440-17-7	E420	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	9.93 mg/L	10 mg/L	99.3	70.0	130	----
		silver, total	7440-22-4	E420	0.00396 mg/L	0.004 mg/L	99.1	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0417 mg/L	0.04 mg/L	104	70.0	130	----
		thallium, total	7440-28-0	E420	0.00367 mg/L	0.004 mg/L	91.8	70.0	130	----
		thorium, total	7440-29-1	E420	0.0200 mg/L	0.02 mg/L	100	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
Total Metals (QCLot: 227882) - continued										
FJ2100449-001	Anonymous	tin, total	7440-31-5	E420	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		titanium, total	7440-32-6	E420	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0192 mg/L	0.02 mg/L	96.1	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.108 mg/L	0.1 mg/L	108	70.0	130	----
		zinc, total	7440-66-6	E420	0.361 mg/L	0.4 mg/L	90.2	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0423 mg/L	0.04 mg/L	106	70.0	130	----
Total Metals (QCLot: 228492)										
KS2101943-001	Anonymous	aluminum, total	7429-90-5	E420	ND mg/L	0.2 mg/L	ND	70.0	130	----
		antimony, total	7440-36-0	E420	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0193 mg/L	0.02 mg/L	96.4	70.0	130	----
		barium, total	7440-39-3	E420	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0389 mg/L	0.04 mg/L	97.2	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00996 mg/L	0.01 mg/L	99.6	70.0	130	----
		boron, total	7440-42-8	E420	0.097 mg/L	0.1 mg/L	97.3	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00397 mg/L	0.004 mg/L	99.3	70.0	130	----
		calcium, total	7440-70-2	E420	3.86 mg/L	4 mg/L	96.4	70.0	130	----
		cesium, total	7440-46-2	E420	0.0102 mg/L	0.01 mg/L	102	70.0	130	----
		chromium, total	7440-47-3	E420	0.0391 mg/L	0.04 mg/L	97.7	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----
		copper, total	7440-50-8	E420	0.0196 mg/L	0.02 mg/L	98.1	70.0	130	----
		iron, total	7439-89-6	E420	1.91 mg/L	2 mg/L	95.7	70.0	130	----
		lead, total	7439-92-1	E420	0.0191 mg/L	0.02 mg/L	95.7	70.0	130	----
		lithium, total	7439-93-2	E420	0.0936 mg/L	0.1 mg/L	93.6	70.0	130	----
		magnesium, total	7439-95-4	E420	0.939 mg/L	1 mg/L	93.9	70.0	130	----
		manganese, total	7439-96-5	E420	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0193 mg/L	0.02 mg/L	96.7	70.0	130	----
		nickel, total	7440-02-0	E420	0.0394 mg/L	0.04 mg/L	98.4	70.0	130	----
		phosphorus, total	7723-14-0	E420	10.2 mg/L	10 mg/L	102	70.0	130	----
		potassium, total	7440-09-7	E420	3.92 mg/L	4 mg/L	98.0	70.0	130	----
		rubidium, total	7440-17-7	E420	0.0199 mg/L	0.02 mg/L	99.3	70.0	130	----
		selenium, total	7782-49-2	E420	0.0393 mg/L	0.04 mg/L	98.2	70.0	130	----
		silicon, total	7440-21-3	E420	ND mg/L	10 mg/L	ND	70.0	130	----
		silver, total	7440-22-4	E420	0.00394 mg/L	0.004 mg/L	98.5	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	0.0198 mg/L	0.02 mg/L	99.2	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
Total Metals (QCLot: 228492) - continued										
KS2101943-001	Anonymous	sulfur, total	7704-34-9	E420	20.1 mg/L	20 mg/L	101	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0385 mg/L	0.04 mg/L	96.4	70.0	130	----
		thallium, total	7440-28-0	E420	0.00377 mg/L	0.004 mg/L	94.2	70.0	130	----
		thorium, total	7440-29-1	E420	0.0203 mg/L	0.02 mg/L	101	70.0	130	----
		tin, total	7440-31-5	E420	0.0194 mg/L	0.02 mg/L	97.1	70.0	130	----
		titanium, total	7440-32-6	E420	0.0360 mg/L	0.04 mg/L	89.9	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0193 mg/L	0.02 mg/L	96.4	70.0	130	----
		uranium, total	7440-61-1	E420	0.00399 mg/L	0.004 mg/L	99.7	70.0	130	----
		vanadium, total	7440-62-2	E420	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, total	7440-66-6	E420	0.371 mg/L	0.4 mg/L	92.8	70.0	130	----
zirconium, total	7440-67-7	E420	0.0386 mg/L	0.04 mg/L	96.4	70.0	130	----		
Total Metals (QCLot: 229389)										
CG2102090-002	Anonymous	mercury, total	7439-97-6	E508	0.000101 mg/L	0.0001 mg/L	101	70.0	130	----
Total Metals (QCLot: 229390)										
VA21B2503-006	20MW-09-0621	mercury, total	7439-97-6	E508	0.000100 mg/L	0.0001 mg/L	100	70.0	130	----
Dissolved Metals (QCLot: 227248)										
VA21B2503-001	20MW-04S-0621	aluminum, dissolved	7429-90-5	E421	0.208 mg/L	0.2 mg/L	104	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0211 mg/L	0.02 mg/L	106	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	0.0423 mg/L	0.04 mg/L	106	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0104 mg/L	0.01 mg/L	104	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.107 mg/L	0.1 mg/L	107	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00446 mg/L	0.004 mg/L	111	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	0.0110 mg/L	0.01 mg/L	110	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0388 mg/L	0.04 mg/L	96.9	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0203 mg/L	0.02 mg/L	101	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.97 mg/L	2 mg/L	98.5	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
molybdenum, dissolved	7439-98-7	E421	0.0193 mg/L	0.02 mg/L	96.5	70.0	130	----		
nickel, dissolved	7440-02-0	E421	0.0371 mg/L	0.04 mg/L	92.8	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: 227248) - continued										
VA21B2503-001	20MW-04S-0621	phosphorus, dissolved	7723-14-0	E421	11.6 mg/L	10 mg/L	116	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.14 mg/L	4 mg/L	104	70.0	130	----
		rubidium, dissolved	7440-17-7	E421	0.0213 mg/L	0.02 mg/L	106	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0433 mg/L	0.04 mg/L	108	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.16 mg/L	10 mg/L	91.6	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00416 mg/L	0.004 mg/L	104	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	20.8 mg/L	20 mg/L	104	70.0	130	----
		tellurium, dissolved	13494-80-9	E421	0.0430 mg/L	0.04 mg/L	107	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00407 mg/L	0.004 mg/L	102	70.0	130	----
		thorium, dissolved	7440-29-1	E421	0.0221 mg/L	0.02 mg/L	111	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		tungsten, dissolved	7440-33-7	E421	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00426 mg/L	0.004 mg/L	106	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.106 mg/L	0.1 mg/L	106	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.432 mg/L	0.4 mg/L	108	70.0	130	----
		zirconium, dissolved	7440-67-7	E421	0.0430 mg/L	0.04 mg/L	108	70.0	130	----
Dissolved Metals (QCLot: 228949)										
VA21B2455-002	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000993 mg/L	0.0001 mg/L	99.3	70.0	130	----
Volatile Organic Compounds (QCLot: 232145)										
FJ2100452-001	Anonymous	benzene	71-43-2	E611C	108 µg/L	100 µg/L	108	60.0	140	----
		bromodichloromethane	75-27-4	E611C	126 µg/L	100 µg/L	126	60.0	140	----
		bromoform	75-25-2	E611C	140 µg/L	100 µg/L	140	60.0	140	----
		carbon tetrachloride	56-23-5	E611C	124 µg/L	100 µg/L	124	60.0	140	----
		chlorobenzene	108-90-7	E611C	90.6 µg/L	100 µg/L	90.6	60.0	140	----
		chloroethane	75-00-3	E611C	105 µg/L	100 µg/L	105	50.0	150	----
		chloroform	67-66-3	E611C	107 µg/L	100 µg/L	107	60.0	140	----
		chloromethane	74-87-3	E611C	109 µg/L	100 µg/L	109	50.0	150	----
		dibromochloromethane	124-48-1	E611C	116 µg/L	100 µg/L	116	60.0	140	----
		dichlorobenzene, 1,2-	95-50-1	E611C	91.1 µg/L	100 µg/L	91.1	60.0	140	----
		dichlorobenzene, 1,3-	541-73-1	E611C	83.7 µg/L	100 µg/L	83.7	60.0	140	----
		dichlorobenzene, 1,4-	106-46-7	E611C	95.4 µg/L	100 µg/L	95.4	60.0	140	----
		dichloroethane, 1,1-	75-34-3	E611C	104 µg/L	100 µg/L	104	60.0	140	----
		dichloroethane, 1,2-	107-06-2	E611C	117 µg/L	100 µg/L	117	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: 232145) - continued										
FJ2100452-001	Anonymous	dichloroethylene, 1,1-	75-35-4	E611C	106 µg/L	100 µg/L	106	60.0	140	----
		dichloroethylene, cis-1,2-	156-59-4	E611C	99.7 µg/L	100 µg/L	99.7	60.0	140	----
		dichloroethylene, trans-1,2-	156-60-5	E611C	105 µg/L	100 µg/L	105	60.0	140	----
		dichloromethane	75-09-2	E611C	114 µg/L	100 µg/L	114	60.0	140	----
		dichloropropane, 1,2-	78-87-5	E611C	108 µg/L	100 µg/L	108	60.0	140	----
		dichloropropylene, cis-1,3-	10061-01-5	E611C	99.3 µg/L	100 µg/L	99.3	60.0	140	----
		dichloropropylene, trans-1,3-	10061-02-6	E611C	105 µg/L	100 µg/L	105	60.0	140	----
		ethylbenzene	100-41-4	E611C	82.2 µg/L	100 µg/L	82.2	60.0	140	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	120 µg/L	100 µg/L	120	60.0	140	----
		styrene	100-42-5	E611C	84.9 µg/L	100 µg/L	84.9	60.0	140	----
		tetrachloroethane, 1,1,1,2-	630-20-6	E611C	100 µg/L	100 µg/L	100	60.0	140	----
		tetrachloroethane, 1,1,2,2-	79-34-5	E611C	110 µg/L	100 µg/L	110	60.0	140	----
		tetrachloroethylene	127-18-4	E611C	93.2 µg/L	100 µg/L	93.2	60.0	140	----
		toluene	108-88-3	E611C	81.2 µg/L	100 µg/L	81.2	60.0	140	----
		trichloroethane, 1,1,1-	71-55-6	E611C	106 µg/L	100 µg/L	106	60.0	140	----
		trichloroethane, 1,1,2-	79-00-5	E611C	94.5 µg/L	100 µg/L	94.5	60.0	140	----
		trichloroethylene	79-01-6	E611C	111 µg/L	100 µg/L	111	60.0	140	----
		trichlorofluoromethane	75-69-4	E611C	116 µg/L	100 µg/L	116	50.0	150	----
		vinyl chloride	75-01-4	E611C	101 µg/L	100 µg/L	101	50.0	150	----
		xylene, m+p-	179601-23-1	E611C	181 µg/L	200 µg/L	90.6	60.0	140	----
		xylene, o-	95-47-6	E611C	84.1 µg/L	100 µg/L	84.1	60.0	140	----
Volatile Organic Compounds (QCLot: 235093)										
FJ2100471-001	Anonymous	benzene	71-43-2	E611C	107 µg/L	100 µg/L	107	60.0	140	----
		bromodichloromethane	75-27-4	E611C	121 µg/L	100 µg/L	121	60.0	140	----
		bromoform	75-25-2	E611C	83.5 µg/L	100 µg/L	83.5	60.0	140	----
		carbon tetrachloride	56-23-5	E611C	91.9 µg/L	100 µg/L	91.9	60.0	140	----
		chlorobenzene	108-90-7	E611C	94.6 µg/L	100 µg/L	94.6	60.0	140	----
		chloroethane	75-00-3	E611C	73.9 µg/L	100 µg/L	73.9	50.0	150	----
		chloroform	67-66-3	E611C	105 µg/L	100 µg/L	105	60.0	140	----
		chloromethane	74-87-3	E611C	75.2 µg/L	100 µg/L	75.2	50.0	150	----
		dibromochloromethane	124-48-1	E611C	88.9 µg/L	100 µg/L	88.9	60.0	140	----
		dichlorobenzene, 1,2-	95-50-1	E611C	98.1 µg/L	100 µg/L	98.1	60.0	140	----
		dichlorobenzene, 1,3-	541-73-1	E611C	100 µg/L	100 µg/L	100	60.0	140	----
		dichlorobenzene, 1,4-	106-46-7	E611C	100 µg/L	100 µg/L	100	60.0	140	----
		dichloroethane, 1,1-	75-34-3	E611C	109 µg/L	100 µg/L	109	60.0	140	----
		dichloroethane, 1,2-	107-06-2	E611C	117 µg/L	100 µg/L	117	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: 235093) - continued										
FJ2100471-001	Anonymous	dichloroethylene, 1,1-	75-35-4	E611C	95.7 µg/L	100 µg/L	95.7	60.0	140	----
		dichloroethylene, cis-1,2-	156-59-4	E611C	107 µg/L	100 µg/L	107	60.0	140	----
		dichloroethylene, trans-1,2-	156-60-5	E611C	114 µg/L	100 µg/L	114	60.0	140	----
		dichloromethane	75-09-2	E611C	119 µg/L	100 µg/L	119	60.0	140	----
		dichloropropane, 1,2-	78-87-5	E611C	116 µg/L	100 µg/L	116	60.0	140	----
		dichloropropylene, cis-1,3-	10061-01-5	E611C	116 µg/L	100 µg/L	116	60.0	140	----
		dichloropropylene, trans-1,3-	10061-02-6	E611C	93.8 µg/L	100 µg/L	93.8	60.0	140	----
		ethylbenzene	100-41-4	E611C	89.0 µg/L	100 µg/L	89.0	60.0	140	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	94.9 µg/L	100 µg/L	94.9	60.0	140	----
		styrene	100-42-5	E611C	90.1 µg/L	100 µg/L	90.1	60.0	140	----
		tetrachloroethane, 1,1,1,2-	630-20-6	E611C	84.5 µg/L	100 µg/L	84.5	60.0	140	----
		tetrachloroethane, 1,1,2,2-	79-34-5	E611C	111 µg/L	100 µg/L	111	60.0	140	----
		tetrachloroethylene	127-18-4	E611C	95.6 µg/L	100 µg/L	95.6	60.0	140	----
		toluene	108-88-3	E611C	95.9 µg/L	100 µg/L	95.9	60.0	140	----
		trichloroethane, 1,1,1-	71-55-6	E611C	112 µg/L	100 µg/L	112	60.0	140	----
		trichloroethane, 1,1,2-	79-00-5	E611C	96.1 µg/L	100 µg/L	96.1	60.0	140	----
		trichloroethylene	79-01-6	E611C	104 µg/L	100 µg/L	104	60.0	140	----
		trichlorofluoromethane	75-69-4	E611C	87.7 µg/L	100 µg/L	87.7	50.0	150	----
		vinyl chloride	75-01-4	E611C	79.2 µg/L	100 µg/L	79.2	50.0	150	----
		xylene, m+p-	179601-23-1	E611C	192 µg/L	200 µg/L	96.3	60.0	140	----
		xylene, o-	95-47-6	E611C	92.1 µg/L	100 µg/L	92.1	60.0	140	----



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Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 20 - 921340

Page 1 of 1

Report To Contact and company name below will appear on the final report		Reports / Recipients			Turnaround Time (TAT) Requested			AFFIX ALS BARCODE LABEL HERE (ALS use only)											
Company: <u>Jacobs</u>		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			<input checked="" type="checkbox"/> Routine [R] if received by 3pm M-F - no surcharges apply														
Contact: <u>Amy Casey</u>		Merge QC/QCI Reports with COA <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A			<input type="checkbox"/> 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum														
Phone: <u>519-803-2283</u>		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			<input type="checkbox"/> 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum														
Company address below will appear on the final report		Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			<input type="checkbox"/> 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum														
Street: <u>4770 Burnaby, BC.</u>		Email 1 or Fax: <u>amy.casey@jacobs.com</u>			<input type="checkbox"/> 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum														
City/Province: <u>V5H 4N2</u>		Email 2: <u>jelena.slodjevic@jacobs.com</u>			<input type="checkbox"/> Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests														
Postal Code:		Email 3:			Date and Time Required for all E&P TATs:														
Invoice To		Invoice Recipients			For all tests with rush TATs requested, please contact your AM to confirm availability.														
Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			Analysis Request														
Copy of Invoice with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Email 1 or Fax: <u>Same as Report To</u>			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below														
Company:		Email 2:			<table border="1"> <tr> <th rowspan="2">NUMBER OF CONTAINERS</th> <th rowspan="2">BTEx</th> <th rowspan="2">LEPH/HEPH/PAH</th> <th rowspan="2">VOCs</th> <th rowspan="2">Total Metals</th> <th rowspan="2">Dissolved Metals</th> <th colspan="2">ON HOLD</th> <th rowspan="2">EXTENDED STORAGE REQUIRED</th> <th rowspan="2">SUSPECTED HAZARD (see notes)</th> </tr> <tr> <th></th> <th></th> </tr> </table>			NUMBER OF CONTAINERS	BTEx	LEPH/HEPH/PAH	VOCs	Total Metals	Dissolved Metals	ON HOLD		EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)		
NUMBER OF CONTAINERS	BTEx	LEPH/HEPH/PAH	VOCs	Total Metals										Dissolved Metals	ON HOLD			EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
Contact:		Email 3:																	
Project Information		Oil and Gas Required Fields (client use)																	
ALS Account # / Quote #:		AFE/Cost Center:			PO#														
Job #: <u>00777000</u>		Major/Minor Code:			Routing Code:														
PO / AFE:		Requisitioner:																	
LSD:		Location:																	
ALS Lab Work Order # (ALS use only):		ALS Contact: <u>Ashton O.</u>			Sampler: <u>AC/SM</u>														
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type															
	<u>20mw-045-0621</u>	<u>21-006-21</u>	<u>10:10</u>	<u>Water</u>	<u>8</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>									
	<u>20mw-040-0621</u>		<u>10:10</u>		<u>8</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>									
	<u>20mw-03-0621</u>		<u>11:30</u>		<u>8</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>									
	<u>mw19-01-0621</u>		<u>11:30</u>		<u>8</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>									
	<u>mw00-34-0621</u>		<u>12:30</u>		<u>8</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>									
	<u>20mw-09-0621</u>		<u>12:35</u>		<u>8</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>									
	<u>20mw-11-0621</u>		<u>13:30</u>		<u>8</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>									
	<u>20mw-10-0621</u>		<u>13:40</u>		<u>8</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>									
	<u>20 MW 108-0621</u>		<u>14:15</u>		<u>8</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>									
	<u>20mw-03-Product</u>		<u>11:00</u>		<u>4</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>Hold</u>	<u>H</u>							
	<u>DUP1</u>				<u>8</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>									
	<u>TRIP BLANK</u>																		
Drinking Water (DW) Samples (client use)		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)			SAMPLE RECEIPT DETAILS (ALS use only)														
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO					Cooling Method: <input type="checkbox"/> NONE <input checked="" type="checkbox"/> ICE <input type="checkbox"/> ICE PACKS <input type="checkbox"/> FROZEN <input type="checkbox"/> COOLING INITIATED														
Are samples for human consumption/ use? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO					Submission Comments identified on Sample Receipt Notification: <input type="checkbox"/> YES <input type="checkbox"/> NO														
					Cooler Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A Sample Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A														
					INITIAL COOLER TEMPERATURES °C: <u>18</u> FINAL COOLER TEMPERATURES °C:														
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)														
Released by: <u>A Casey</u>	Date: <u>June 21, 2021</u>	Time: <u>18:30</u>	Received by:	Date:	Time:	Received by: <u>Z</u>	Date: <u>6/21</u>	Time: <u>03:00</u>											

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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.



CERTIFICATE OF ANALYSIS

Work Order : **VA21C0813**
Amendment : **1**
Client : **Jacobs Consultancy Canada Inc.**
Contact : Jelena Sladojevic
Address : Metrotower II, Suite 2100 4720 Kingsway
 Burnaby BC Canada V5H 4N2
Telephone : ----
Project : CE777000
PO : 670014CH.B0.01.09
C-O-C number : 20-936858/857
Sampler : A C, R C
Site : ----
Quote number : Payment Terms for Finance
No. of samples received : 16
No. of samples analysed : 16

Page : 1 of 26
Laboratory : Vancouver - Environmental
Account Manager : Ashton Ostrander
Address : 8081 Lougheed Highway
 Burnaby BC Canada V5A 1W9
Telephone : +1 604 253 4188
Date Samples Received : 22-Sep-2021 18:03
Date Analysis Commenced : 27-Sep-2021
Issue Date : 18-Oct-2021 11:01

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Ken Chan	Supervisor - Metals Prep & Mercury	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Ophelia Chiu	Department Manager - Organics	Organics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Woochan Song	Lab 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
µg/L	micrograms per litre
mg/L	milligrams per litre

<: 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.

Sample Comments

Sample	Client Id	Comment
VA21C0813-001	MW19-03-0921	Sample 1: Water sample for total mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.

Qualifiers

Qualifier	Description
DLA	Detection Limit adjusted for required dilution.
DLCI	Detection Limit Raised: Chromatographic interference due to co-elution.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DLQ	Detection Limit raised due to co-eluting interference. GCMS qualifier ion ratio did not meet acceptance criteria.



Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					MW19-03-0921	MW06-34-0921	20MW-04S-0921	MW06-34-0921-B	MW19-01-0921
Client sampling date / time					22-Sep-2021 15:00	22-Sep-2021 13:00	22-Sep-2021 10:00	22-Sep-2021 12:00	22-Sep-2021 11:00
Analyte	CAS Number	Method	LOR	Unit	VA21C0813-001	VA21C0813-002	VA21C0813-003	VA21C0813-004	VA21C0813-005
					Result	Result	Result	Result	Result
Physical Tests									
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	57.4	61.1	96.9	50.4	52.4
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	61.7	62.0	98.1	113	52.2
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.475	0.514	0.0313	14.6	0.0489
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	0.00012	0.00042	0.00021	<0.00010
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00017	0.0202	0.00036	0.137	0.00034
barium, total	7440-39-3	E420	0.00010	mg/L	0.0333	0.0642	0.0522	0.346	0.0148
beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	<0.000100	0.000748	<0.000100
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000100 ^{DLA}	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L	0.018	0.017	<0.010	0.023	0.016
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000215	0.0000152	0.0000284	0.000210	<0.0000050
calcium, total	7440-70-2	E420	0.050	mg/L	17.6	20.2	35.6	38.7	15.0
cesium, total	7440-46-2	E420	0.000010	mg/L	0.000054	0.000023	<0.000010	0.000070	0.000017
chromium, total	7440-47-3	E420	0.00050	mg/L	0.00091	0.00536	<0.00050	0.0643	0.00052
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00019	0.00250	0.00046	0.00991	<0.00010
copper, total	7440-50-8	E420	0.00050	mg/L	0.00193	0.00890	0.00316	0.0835	0.00054
iron, total	7439-89-6	E420	0.010	mg/L	20.8	40.7	0.046	393	17.7
lead, total	7439-92-1	E420	0.000050	mg/L	0.000477	0.00115	<0.000050	0.0270	0.000092
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0024	0.0022	<0.0010	0.0022	0.0032
magnesium, total	7439-95-4	E420	0.0050	mg/L	4.32	2.80	2.23	3.90	3.57
manganese, total	7439-96-5	E420	0.00010	mg/L	0.616	0.870	0.0868	1.74	0.503
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	0.0000130	<0.0000050	<0.000100 ^{DLM}	<0.0000050
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000081	0.000136	0.000441	<0.000100 ^{DLA}	0.000061
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	0.00157	0.00061	0.00974	<0.00050
phosphorus, total	7723-14-0	E420	0.050	mg/L	0.127	0.069	<0.050	<0.100 ^{DLA}	0.153
potassium, total	7440-09-7	E420	0.050	mg/L	3.56	3.00	3.12	3.48	3.11
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00495	0.00593	0.00275	0.00731	0.00347
selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	0.000096	0.000061	0.000247	<0.000050
silicon, total	7440-21-3	E420	0.10	mg/L	17.4	14.2	5.08	20.8	16.8
silver, total	7440-22-4	E420	0.000010	mg/L	0.000012	0.000032	<0.000010	0.000130	<0.000010



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	MW19-03-0921	MW06-34-0921	20MW-04S-092 1	MW06-34-0921- B	MW19-01-0921
Client sampling date / time					22-Sep-2021 15:00	22-Sep-2021 13:00	22-Sep-2021 10:00	22-Sep-2021 12:00	22-Sep-2021 11:00	
Analyte	CAS Number	Method	LOR	Unit	VA21C0813-001	VA21C0813-002	VA21C0813-003	VA21C0813-004	VA21C0813-005	
					Result	Result	Result	Result	Result	
Total Metals										
sodium, total	17341-25-2	E420	0.050	mg/L	5.77	3.11	2.66	3.18	5.79	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.116	0.163	0.110	0.334	0.0876	
sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	5.09	2.07	6.59	<0.50	
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00040 ^{DLA}	<0.00020	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0.000016	0.000021	<0.000010	
thorium, total	7440-29-1	E420	0.00010	mg/L	0.00029	<0.00010	<0.00010	0.00025	<0.00010	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	0.00032	<0.00010	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.0129	0.00874	0.00105	0.0623	0.00154	
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00020 ^{DLA}	<0.00010	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000086	0.000142	0.000136	0.00244	0.000049	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00472	0.00835	0.00090	0.0844	0.00242	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0184	0.0046	0.0061	0.520	0.123	
zirconium, total	7440-67-7	E420	0.00020	mg/L	0.00034	0.00128	<0.00020	0.00636	<0.00020	
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0086	0.407	0.0151	0.0791	0.0038	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	0.00010	0.00045	<0.00010	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00011	0.0121	0.00036	0.00485	0.00016	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0304	0.0604	0.0573	0.0432	0.0140	
beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.017	0.017	0.010	0.017	0.017	
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	<0.0000050	0.0000258	<0.0000050	<0.0000050	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	16.3	19.8	35.0	16.2	14.9	
cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000034	0.000016	<0.000010	0.000019	0.000015	
chromium, dissolved	7440-47-3	E421	0.00050	mg/L	0.00051	0.00451	<0.00050	0.00198	<0.00050	
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	0.00249	0.00045	0.00173	<0.00010	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00131	0.00320	0.00122	0.00030	
iron, dissolved	7439-89-6	E421	0.010	mg/L	20.5	37.9	0.025	11.8	15.1	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	0.000179	<0.000050	0.000061	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0023	0.0014	<0.0010	0.0012	0.0035	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	4.05	2.83	2.32	2.41	3.70	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	MW19-03-0921	MW06-34-0921	20MW-04S-092 1	MW06-34-0921- B	MW19-01-0921
Client sampling date / time					22-Sep-2021 15:00	22-Sep-2021 13:00	22-Sep-2021 10:00	22-Sep-2021 12:00	22-Sep-2021 11:00	
Analyte	CAS Number	Method	LOR	Unit	VA21C0813-001	VA21C0813-002	VA21C0813-003	VA21C0813-004	VA21C0813-005	
					Result	Result	Result	Result	Result	
Dissolved Metals										
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.613	0.906	0.0921	0.761	0.502	
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	0.000051	<0.000050	<0.000050	<0.000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000080	0.000061	0.000496	<0.000050	0.000060	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00112	0.00059	0.00074	<0.00050	
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	0.089	<0.050	<0.050	<0.050	0.068	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.56	3.09	3.47	3.05	3.23	
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00467	0.00603	0.00313	0.00616	0.00348	
selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	0.000194	0.000070	<0.000050	<0.000050	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	15.9	13.9	5.27	13.6	16.5	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000020 ^{DLM}	<0.000010	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	5.60	3.07	2.85	2.97	5.80	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.109	0.158	0.109	0.124	0.0841	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	6.46	2.10	15.1	<0.50	
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0.000012	<0.000010	<0.000010	
thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	0.00035	0.00608	<0.00030	0.00075	<0.00030	
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	0.000129	0.000144	0.000031	0.000017	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00356	0.00628	0.00090	0.00079	0.00106	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	0.0028	0.0035	0.0127	0.0810	
zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	0.00022	0.00170	<0.00020	0.00068	<0.00020	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Laboratory	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Laboratory	Field	
Speciated Metals										
chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L	<0.00050	<0.00050	<0.00050	0.00130	<0.00050	
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	5.0	µg/L	<5.0	<5.0	<5.0	<5.0	<5.0	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	MW19-03-0921	MW06-34-0921	20MW-04S-092 1	MW06-34-0921- B	MW19-01-0921
Client sampling date / time					22-Sep-2021 15:00	22-Sep-2021 13:00	22-Sep-2021 10:00	22-Sep-2021 12:00	22-Sep-2021 11:00	
Analyte	CAS Number	Method	LOR	Unit	VA21C0813-001	VA21C0813-002	VA21C0813-003	VA21C0813-004	VA21C0813-005	
					Result	Result	Result	Result	Result	
Volatile Organic Compounds										
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 [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-	156-59-2	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	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
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 [Fuels]										
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	0.40	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	MW19-03-0921	MW06-34-0921	20MW-04S-092 1	MW06-34-0921- B	MW19-01-0921
Client sampling date / time					22-Sep-2021 15:00	22-Sep-2021 13:00	22-Sep-2021 10:00	22-Sep-2021 12:00	22-Sep-2021 11:00	
Analyte	CAS Number	Method	LOR	Unit	VA21C0813-001	VA21C0813-002	VA21C0813-003	VA21C0813-004	VA21C0813-005	
					Result	Result	Result	Result	Result	
Volatile Organic Compounds [Fuels]										
xylene, o-	95-47-6	E611C	0.30	µg/L	<0.30	<0.30	<0.30	<0.30	<0.30	
xylenes, total	1330-20-7	E611C	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	
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	
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	
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611C	1.0	%	100	96.4	96.3	99.6	98.7	
difluorobenzene, 1,4-	540-36-3	E611C	1.0	%	98.9	97.9	98.9	98.5	99.6	
Hydrocarbons										
EPH (C10-C19)	----	E601A	250	µg/L	<250	420	<250	1430	<250	
EPH (C19-C32)	----	E601A	250	µg/L	<250	<250	<250	2080	<250	
HEPHw	----	EC600A	250	µg/L	<250	<250	<250	1840	<250	
LEPHw	----	EC600A	250	µg/L	<250	280	<250	1040	<250	
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	1.0	%	82.5	85.4	83.0	91.0	80.7	
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A	0.010	µg/L	<0.010	82.9	<0.010	170	<0.010	
acenaphthylene	208-96-8	E641A	0.010	µg/L	<0.010	0.224	<0.010	0.364	<0.010	
acridine	260-94-6	E641A	0.010	µg/L	<0.010	2.30	<0.010	<10.5 ^{DLCL}	<0.010	
anthracene	120-12-7	E641A	0.010	µg/L	<0.010	2.49	<0.010	18.9	<0.010	
benz(a)anthracene	56-55-3	E641A	0.010	µg/L	<0.010	0.694	<0.010	<17.7 ^{DLQ}	<0.010	
benzo(a)pyrene	50-32-8	E641A	0.0050	µg/L	<0.0050	0.165	<0.0050	3.33	<0.0050	
benzo(b+j)fluoranthene	----	E641A	0.010	µg/L	<0.010	0.196	<0.010	4.41	<0.010	
benzo(b+j+k)fluoranthene	----	E641A	0.015	µg/L	<0.015	0.286	<0.015	5.89	<0.015	
benzo(g,h,i)perylene	191-24-2	E641A	0.010	µg/L	<0.010	0.023	<0.010	0.482	<0.010	
benzo(k)fluoranthene	207-08-9	E641A	0.010	µg/L	<0.010	0.090	<0.010	1.48	<0.010	
chrysene	218-01-9	E641A	0.010	µg/L	<0.010	<0.580 ^{DLCL}	<0.010	<15.2 ^{DLCL}	<0.010	
dibenz(a,h)anthracene	53-70-3	E641A	0.0050	µg/L	<0.0050	0.0126	<0.0050	0.216	<0.0050	
fluoranthene	206-44-0	E641A	0.010	µg/L	<0.010	6.29	<0.010	132	<0.010	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	MW19-03-0921	MW06-34-0921	20MW-04S-092 1	MW06-34-0921- B	MW19-01-0921
Client sampling date / time					22-Sep-2021 15:00	22-Sep-2021 13:00	22-Sep-2021 10:00	22-Sep-2021 12:00	22-Sep-2021 11:00	
Analyte	CAS Number	Method	LOR	Unit	VA21C0813-001	VA21C0813-002	VA21C0813-003	VA21C0813-004	VA21C0813-005	
					Result	Result	Result	Result	Result	
Polycyclic Aromatic Hydrocarbons										
fluorene	86-73-7	E641A	0.010	µg/L	<0.010	25.9	<0.010	66.3	<0.010	
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.010	µg/L	<0.010	0.027	<0.010	0.483	<0.010	
methylnaphthalene, 1-	90-12-0	E641A	0.010	µg/L	<0.010	7.95	<0.010	15.1	<0.010	
methylnaphthalene, 1+2-	----	E641A	0.015	µg/L	<0.015	18.6	<0.015	30.7	<0.015	
methylnaphthalene, 2-	91-57-6	E641A	0.010	µg/L	<0.010	10.6	<0.010	15.6	<0.010	
naphthalene	91-20-3	E641A	0.050	µg/L	<0.050	12.5	<0.050	19.1	<0.050	
phenanthrene	85-01-8	E641A	0.020	µg/L	<0.020	15.2	<0.020	117	<0.020	
pyrene	129-00-0	E641A	0.010	µg/L	<0.010	4.56	<0.010	99.3	<0.010	
quinoline	91-22-5	E641A	0.050	µg/L	<0.050	<2.30 ^{DLO}	<0.050	<1.41 ^{DLO}	<0.050	
B(a)P total potency equivalents [B(a)P TPE]	----	E641A	0.010	µg/L	<0.010	0.281	<0.010	5.15	<0.010	
PAHs, high molecular weight (BC AWQ)	----	E641A	0.030	µg/L	<0.030	12.0	<0.030	242	<0.030	
PAHs, low molecular weight (BC AWQ)	----	E641A	0.060	µg/L	<0.060	139	<0.060	392	<0.060	
PAHs, total (EPA 16)	----	E641A	0.065	µg/L	<0.065	151	<0.065	633	<0.065	
Polycyclic Aromatic Hydrocarbons Surrogates										
chrysene-d12	1719-03-5	E641A	0.1	%	89.4	103	83.4	74.6	88.9	
naphthalene-d8	1146-65-2	E641A	0.1	%	96.3	92.0	92.9	102	81.8	
phenanthrene-d10	1517-22-2	E641A	0.1	%	115	113	93.4	94.7	109	

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



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Dup-2-0921	20MW-08-0921	TB	20MW-05-0921	20MW-10D-0921 1
Client sampling date / time					22-Sep-2021	22-Sep-2021	22-Sep-2021	22-Sep-2021 13:00	21-Sep-2021 11:50	
Analyte	CAS Number	Method	LOR	Unit	VA21C0813-006	VA21C0813-007	VA21C0813-008	VA21C0813-009	VA21C0813-010	
					Result	Result	Result	Result	Result	
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	63.9	64.4	----	73.5	43.2	
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	62.5	63.7	<0.60	71.8	45.4	
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0309	0.0295	<0.0030	0.0136	0.0202	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00113	0.00115	<0.00010	0.00061	0.00014	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0506	0.0506	<0.00010	0.0414	0.0150	
beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, total	7440-42-8	E420	0.010	mg/L	0.032	0.031	<0.010	0.013	0.011	
cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
calcium, total	7440-70-2	E420	0.050	mg/L	15.8	16.0	<0.050	22.7	12.2	
cesium, total	7440-46-2	E420	0.000010	mg/L	0.000079	0.000083	<0.000010	0.000019	0.000028	
chromium, total	7440-47-3	E420	0.00050	mg/L	0.00138	0.00142	<0.00050	0.00058	0.00065	
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00026	0.00027	<0.00010	0.00020	<0.00010	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
iron, total	7439-89-6	E420	0.010	mg/L	31.9	32.0	<0.010	20.3	21.6	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000108	0.000110	<0.000050	0.000404	<0.000050	
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	<0.0010	0.0023	0.0025	
magnesium, total	7439-95-4	E420	0.0050	mg/L	5.59	5.77	<0.0050	3.66	3.64	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.739	0.764	<0.00010	0.512	0.484	
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00101	0.00100	<0.000050	0.000143	0.000196	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
phosphorus, total	7723-14-0	E420	0.050	mg/L	0.059	0.059	<0.050	0.145	0.117	
potassium, total	7440-09-7	E420	0.050	mg/L	2.87	2.90	<0.050	3.15	3.20	
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00867	0.00881	<0.00020	0.00356	0.00370	
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000070	0.000067	<0.000050	<0.000050	<0.000050	
silicon, total	7440-21-3	E420	0.10	mg/L	11.6	11.8	<0.10	15.5	16.0	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, total	17341-25-2	E420	0.050	mg/L	9.14	9.08	<0.050	8.09	8.26	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Dup-2-0921	20MW-08-0921	TB	20MW-05-0921	20MW-10D-0921 1
Client sampling date / time					22-Sep-2021	22-Sep-2021	22-Sep-2021	22-Sep-2021 13:00	21-Sep-2021 11:50	
Analyte	CAS Number	Method	LOR	Unit	VA21C0813-006	VA21C0813-007	VA21C0813-008	VA21C0813-009	VA21C0813-010	
					Result	Result	Result	Result	Result	
Total Metals										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.137	0.140	<0.00020	0.136	0.111	
sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
thallium, total	7440-28-0	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00133	0.00118	<0.00030	<0.00060 ^{DLM}	0.00071	
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
uranium, total	7440-61-1	E420	0.00010	mg/L	0.000025	0.000024	<0.00010	0.000020	<0.00010	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00883	0.00891	<0.00050	0.00315	0.00333	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0034	0.0034	<0.0030	0.0223	<0.0030	
zirconium, total	7440-67-7	E420	0.00020	mg/L	0.00065	0.00064	<0.00020	0.00028	0.00026	
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0227	0.0194	----	0.0093	0.0128	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	----	<0.00010	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00110	0.00116	----	0.00063	0.00014	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0542	0.0555	----	0.0447	0.0154	
beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	<0.000100	----	<0.000100	<0.000100	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	----	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.031	0.032	----	0.014	0.011	
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	<0.0000050	----	<0.0000050	<0.0000050	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	15.7	15.6	----	23.3	11.6	
cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000081	0.000081	----	0.000019	0.000030	
chromium, dissolved	7440-47-3	E421	0.00050	mg/L	0.00133	0.00139	----	0.00058	0.00054	
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00024	0.00026	----	0.00019	<0.00010	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	----	0.00046	<0.00020	
iron, dissolved	7439-89-6	E421	0.010	mg/L	32.2	33.4	----	20.8	21.2	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	----	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	----	0.0026	0.0027	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	6.00	6.17	----	3.73	3.47	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.769	0.782	----	0.533	0.479	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Dup-2-0921	20MW-08-0921	TB	20MW-05-0921	20MW-10D-0921 1
Client sampling date / time					22-Sep-2021	22-Sep-2021	22-Sep-2021	22-Sep-2021 13:00	21-Sep-2021 11:50	
Analyte	CAS Number	Method	LOR	Unit	VA21C0813-006	VA21C0813-007	VA21C0813-008	VA21C0813-009	VA21C0813-010	
					Result	Result	Result	Result	Result	
Dissolved Metals										
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	<0.000050	----	<0.000050	<0.000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000941	0.000952	----	0.000141	0.000172	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	----	<0.00050	<0.00050	
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	0.059	0.056	----	0.165	0.086	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.09	3.18	----	3.46	3.30	
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00913	0.00909	----	0.00378	0.00360	
selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000076	0.000067	----	<0.000050	<0.000050	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	12.0	12.0	----	15.5	15.7	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	----	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	9.15	9.43	----	8.33	8.30	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.138	0.137	----	0.130	0.108	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	----	<0.50	<0.50	
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	----	<0.00020	<0.00020	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	----	<0.000010	<0.000010	
thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	----	<0.00010	<0.00010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	----	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	0.00078	0.00086	----	<0.00030	0.00037	
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	----	<0.00010	<0.00010	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000017	0.000019	----	0.000021	<0.000010	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00878	0.00904	----	0.00302	0.00322	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0021	0.0019	----	0.0187	0.0017	
zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	0.00059	0.00059	----	0.00026	0.00023	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	----	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	----	Field	Field	
Speciated Metals										
chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.00050	mg/L	<0.00050	<0.00050	----	<0.00050	<0.00050	
chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
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	5.0	µg/L	<5.0	<5.0	<5.0	<5.0	<5.0	
dichlorobenzene, 1,2-	95-50-1	E611C	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Dup-2-0921	20MW-08-0921	TB	20MW-05-0921	20MW-10D-0921 1
Client sampling date / time					22-Sep-2021	22-Sep-2021	22-Sep-2021	22-Sep-2021 13:00	21-Sep-2021 11:50	
Analyte	CAS Number	Method	LOR	Unit	VA21C0813-006	VA21C0813-007	VA21C0813-008	VA21C0813-009	VA21C0813-010	
					Result	Result	Result	Result	Result	
Volatile Organic Compounds										
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 [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-	156-59-2	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	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
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 [Fuels]										
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	0.40	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40	
xylene, o-	95-47-6	E611C	0.30	µg/L	<0.30	<0.30	<0.30	<0.30	<0.30	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Dup-2-0921	20MW-08-0921	TB	20MW-05-0921	20MW-10D-0921 1
Client sampling date / time					22-Sep-2021	22-Sep-2021	22-Sep-2021	22-Sep-2021 13:00	21-Sep-2021 11:50	
Analyte	CAS Number	Method	LOR	Unit	VA21C0813-006	VA21C0813-007	VA21C0813-008	VA21C0813-009	VA21C0813-010	
					Result	Result	Result	Result	Result	
Volatile Organic Compounds [Fuels]										
xylenes, total	1330-20-7	E611C	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	
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	
chloroform	67-66-3	E611C	0.50	µg/L	<0.50	<0.50	3.32	<0.50	<0.50	
dibromochloromethane	124-48-1	E611C	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611C	1.0	%	93.7	95.4	97.7	100	96.6	
difluorobenzene, 1,4-	540-36-3	E611C	1.0	%	98.9	99.6	100	99.2	97.6	
Hydrocarbons										
EPH (C10-C19)	----	E601A	250	µg/L	<250	<250	<250	<250	<250	
EPH (C19-C32)	----	E601A	250	µg/L	<250	<250	<250	<250	<250	
HEPHw	----	EC600A	250	µg/L	<250	<250	<250	<250	<250	
LEPHw	----	EC600A	250	µg/L	<250	<250	<250	<250	<250	
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	1.0	%	78.2	87.1	86.4	83.4	80.4	
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A	0.010	µg/L	0.011	0.013	<0.010	<0.010	0.011	
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	<0.010	<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	<0.010	<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	<0.010	<0.010	<0.010	
fluorene	86-73-7	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	0.028	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Dup-2-0921	20MW-08-0921	TB	20MW-05-0921	20MW-10D-0921 1
Client sampling date / time					22-Sep-2021	22-Sep-2021	22-Sep-2021	22-Sep-2021 13:00	21-Sep-2021 11:50	
Analyte	CAS Number	Method	LOR	Unit	VA21C0813-006	VA21C0813-007	VA21C0813-008	VA21C0813-009	VA21C0813-010	
					Result	Result	Result	Result	Result	
Polycyclic Aromatic Hydrocarbons										
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	<0.010	<0.010	<0.010	<0.010	<0.010	
methylnaphthalene, 1+2-	----	E641A	0.015	µg/L	<0.015	<0.015	<0.015	<0.015	<0.015	
methylnaphthalene, 2-	91-57-6	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	
naphthalene	91-20-3	E641A	0.050	µg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
phenanthrene	85-01-8	E641A	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
pyrene	129-00-0	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	
quinoline	91-22-5	E641A	0.050	µg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
B(a)P total potency equivalents [B(a)P TPE]	----	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	
PAHs, high molecular weight (BC AWQ)	----	E641A	0.030	µg/L	<0.030	<0.030	<0.030	<0.030	<0.030	
PAHs, low molecular weight (BC AWQ)	----	E641A	0.060	µg/L	<0.060	<0.060	<0.060	<0.060	<0.060	
PAHs, total (EPA 16)	----	E641A	0.065	µg/L	<0.065	<0.065	<0.065	<0.065	<0.065	
Polycyclic Aromatic Hydrocarbons Surrogates										
chrysene-d12	1719-03-5	E641A	0.1	%	81.7	85.8	88.8	79.9	88.4	
naphthalene-d8	1146-65-2	E641A	0.1	%	80.4	96.6	84.7	75.5	96.6	
phenanthrene-d10	1517-22-2	E641A	0.1	%	101	106	112	106	104	

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



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-10S-092 1	20MW-09-0921	20MW-06-0921	20MW-04D-092 1	20MW-11-0921
Client sampling date / time					21-Sep-2021	21-Sep-2021 12:00	21-Sep-2021 16:00	21-Sep-2021 18:00	21-Sep-2021 14:00	
Analyte	CAS Number	Method	LOR	Unit	VA21C0813-011	VA21C0813-012	VA21C0813-013	VA21C0813-014	VA21C0813-015	
					Result	Result	Result	Result	Result	
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	113	294	71.0	89.8	58.2	
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	113	293	74.9	90.1	59.5	
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0302	0.626	0.103	0.0110	0.424	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00060	0.00148	0.00047	0.00113	0.00044	
barium, total	7440-39-3	E420	0.00010	mg/L	0.0465	0.222	0.0468	0.0347	0.0286	
beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, total	7440-42-8	E420	0.010	mg/L	0.043	0.030	0.022	0.012	0.027	
cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	0.000154	0.0000102	<0.0000050	0.0000204	
calcium, total	7440-70-2	E420	0.050	mg/L	29.1	77.8	21.0	29.0	14.7	
cesium, total	7440-46-2	E420	0.000010	mg/L	0.000025	0.000033	0.000036	<0.000010	0.000057	
chromium, total	7440-47-3	E420	0.00050	mg/L	0.00230	0.00100	0.00097	<0.00050	0.00125	
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00043	0.00569	0.00019	0.00030	0.00069	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	0.00531	0.00052	<0.00050	0.00349	
iron, total	7439-89-6	E420	0.010	mg/L	30.7	2.68	18.1	26.4	12.0	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	0.00142	0.000126	<0.000050	0.000322	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0010	0.0119	0.0010	0.0053	0.0012	
magnesium, total	7439-95-4	E420	0.0050	mg/L	9.80	23.9	5.45	4.29	5.53	
manganese, total	7439-96-5	E420	0.00010	mg/L	1.10	0.622	0.514	0.814	0.216	
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000116	0.000284	0.000064	0.000220	0.000391	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	0.00775	<0.00050	0.00053	0.00090	
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	0.149	0.087	0.116	0.094	
potassium, total	7440-09-7	E420	0.050	mg/L	3.03	2.52	3.13	3.64	2.87	
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00984	0.00488	0.00522	0.00338	0.00392	
selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	0.000055	<0.000050	<0.000050	<0.000050	
silicon, total	7440-21-3	E420	0.10	mg/L	10.4	12.4	14.0	17.8	12.5	
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	0.000028	<0.000010	<0.000010	<0.000010	
sodium, total	17341-25-2	E420	0.050	mg/L	4.90	5.20	6.92	7.78	4.55	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-10S-092 1	20MW-09-0921	20MW-06-0921	20MW-04D-092 1	20MW-11-0921
Client sampling date / time					21-Sep-2021	21-Sep-2021 12:00	21-Sep-2021 16:00	21-Sep-2021 18:00	21-Sep-2021 14:00	
Analyte	CAS Number	Method	LOR	Unit	VA21C0813-011 Result	VA21C0813-012 Result	VA21C0813-013 Result	VA21C0813-014 Result	VA21C0813-015 Result	
Total Metals										
strontium, total	7440-24-6	E420	0.00020	mg/L	0.228	0.290	0.135	0.141	0.0738	
sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	2.38	<0.50	<0.50	<0.50	
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
thallium, total	7440-28-0	E420	0.00010	mg/L	<0.00010	0.000024	<0.00010	<0.00010	<0.00010	
thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00105	0.0326	0.00460	0.00051	0.0259	
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
uranium, total	7440-61-1	E420	0.00010	mg/L	0.000030	0.000123	0.000043	0.000042	0.000040	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.0126	0.00212	0.00633	0.00137	0.00475	
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	0.0348	0.0065	0.0492	0.0204	
zirconium, total	7440-67-7	E420	0.00020	mg/L	0.00067	0.00021	0.00039	<0.00020	0.00023	
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0296	0.0068	0.0136	0.0075	0.0139	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00054	0.00128	0.00040	0.00112	0.00027	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0491	0.225	0.0461	0.0376	0.0246	
beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.044	0.030	0.022	0.013	0.027	
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	0.000107	<0.0000050	<0.0000050	0.0000072	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	28.5	77.3	19.6	29.0	14.2	
cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000025	<0.000010	0.000034	<0.000010	0.000020	
chromium, dissolved	7440-47-3	E421	0.00050	mg/L	0.00211	<0.00050	0.00079	<0.00050	0.00057	
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00041	0.00559	0.00013	0.00030	0.00047	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	0.00021	<0.00020	<0.00020	<0.00020	
iron, dissolved	7439-89-6	E421	0.010	mg/L	30.3	1.97	17.7	26.3	9.81	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0012	<0.0010	0.0012	0.0058	0.0011	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	10.2	24.6	5.37	4.23	5.52	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	1.14	0.610	0.502	0.834	0.208	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-10S-092 1	20MW-09-0921	20MW-06-0921	20MW-04D-092 1	20MW-11-0921
Client sampling date / time					21-Sep-2021	21-Sep-2021 12:00	21-Sep-2021 16:00	21-Sep-2021 18:00	21-Sep-2021 14:00	
Analyte	CAS Number	Method	LOR	Unit	VA21C0813-011	VA21C0813-012	VA21C0813-013	VA21C0813-014	VA21C0813-015	
					Result	Result	Result	Result	Result	
Dissolved Metals										
mercury, dissolved	7439-97-6	E509	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000110	0.000315	0.000055	0.000214	0.000414	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	0.00764	<0.00050	<0.00050	0.00059	
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	0.089	0.091	<0.050	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.16	2.53	3.20	3.79	2.87	
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.0102	0.00449	0.00526	0.00350	0.00344	
selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	0.000057	<0.000050	<0.000050	<0.000050	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	10.6	11.4	13.9	18.1	11.9	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	4.81	5.11	7.07	7.79	4.68	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.214	0.275	0.126	0.134	0.0677	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	2.34	<0.50	<0.50	<0.50	
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	0.000018	<0.000010	<0.000010	<0.000010	
thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00120 ^{DLM}	<0.00030	0.00037	0.00033	0.00046	
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000033	0.000093	0.000024	0.000048	0.000017	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.0119	0.00059	0.00562	0.00129	0.00246	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0011	0.0245	0.0022	<0.0010	0.0077	
zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	0.00060	<0.00020	0.00034	<0.00020	<0.00020	
dissolved mercury filtration location	----	EP509	-	-	Field	Field	Field	Field	Field	
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	
Speciated Metals										
chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
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	5.0	µg/L	<5.0	<5.0	<5.0	<5.0	<5.0	
dichlorobenzene, 1,2-	95-50-1	E611C	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-10S-092 1	20MW-09-0921	20MW-06-0921	20MW-04D-092 1	20MW-11-0921
Client sampling date / time					21-Sep-2021	21-Sep-2021 12:00	21-Sep-2021 16:00	21-Sep-2021 18:00	21-Sep-2021 14:00	
Analyte	CAS Number	Method	LOR	Unit	VA21C0813-011	VA21C0813-012	VA21C0813-013	VA21C0813-014	VA21C0813-015	
					Result	Result	Result	Result	Result	
Volatile Organic Compounds										
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 [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-	156-59-2	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	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	
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 [Fuels]										
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	0.40	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40	
xylene, o-	95-47-6	E611C	0.30	µg/L	<0.30	<0.30	<0.30	<0.30	<0.30	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-10S-092 1	20MW-09-0921	20MW-06-0921	20MW-04D-092 1	20MW-11-0921
Client sampling date / time					21-Sep-2021	21-Sep-2021 12:00	21-Sep-2021 16:00	21-Sep-2021 18:00	21-Sep-2021 14:00	
Analyte	CAS Number	Method	LOR	Unit	VA21C0813-011	VA21C0813-012	VA21C0813-013	VA21C0813-014	VA21C0813-015	
					Result	Result	Result	Result	Result	
Volatile Organic Compounds [Fuels]										
xylenes, total	1330-20-7	E611C	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	<0.50	
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	
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	
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611C	1.0	%	99.9	99.0	101	95.5	100	
difluorobenzene, 1,4-	540-36-3	E611C	1.0	%	99.5	98.9	98.6	99.2	98.4	
Hydrocarbons										
EPH (C10-C19)	----	E601A	250	µg/L	<250	<250	<250	<250	<250	
EPH (C19-C32)	----	E601A	250	µg/L	<250	<250	<250	<250	<250	
HEPHw	----	EC600A	250	µg/L	<250	<250	<250	<250	<250	
LEPHw	----	EC600A	250	µg/L	<250	<250	<250	<250	<250	
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	1.0	%	92.1	82.8	89.4	85.2	84.6	
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	<0.034 ^{DLC}	
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	<0.010	<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	<0.010	<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	0.025	<0.010	<0.010	<0.010	
fluorene	86-73-7	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	0.028	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	20MW-10S-092 1	20MW-09-0921	20MW-06-0921	20MW-04D-092 1	20MW-11-0921
Client sampling date / time					21-Sep-2021	21-Sep-2021 12:00	21-Sep-2021 16:00	21-Sep-2021 18:00	21-Sep-2021 14:00	
Analyte	CAS Number	Method	LOR	Unit	VA21C0813-011 Result	VA21C0813-012 Result	VA21C0813-013 Result	VA21C0813-014 Result	VA21C0813-015 Result	
Polycyclic Aromatic Hydrocarbons										
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	<0.010	<0.010	<0.010	<0.010	<0.010	
methylnaphthalene, 1+2-	----	E641A	0.015	µg/L	<0.015	<0.015	<0.015	<0.015	<0.015	
methylnaphthalene, 2-	91-57-6	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	
naphthalene	91-20-3	E641A	0.050	µg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
phenanthrene	85-01-8	E641A	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	
pyrene	129-00-0	E641A	0.010	µg/L	<0.010	0.017	<0.010	<0.010	<0.010	
quinoline	91-22-5	E641A	0.050	µg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
B(a)P total potency equivalents [B(a)P TPE]	----	E641A	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	
PAHs, high molecular weight (BC AWQ)	----	E641A	0.030	µg/L	<0.030	0.042	<0.030	<0.030	<0.030	
PAHs, low molecular weight (BC AWQ)	----	E641A	0.060	µg/L	<0.060	<0.060	<0.060	<0.060	<0.060	
PAHs, total (EPA 16)	----	E641A	0.065	µg/L	<0.065	<0.065	<0.065	<0.065	<0.065	
Polycyclic Aromatic Hydrocarbons Surrogates										
chrysene-d12	1719-03-5	E641A	0.1	%	90.7	87.2	88.9	88.9	82.1	
naphthalene-d8	1146-65-2	E641A	0.1	%	86.2	88.7	111	111	76.7	
phenanthrene-d10	1517-22-2	E641A	0.1	%	116	113	113	113	107	

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



Analytical Results

Sub-Matrix: Water					Client sample ID	Dup-1-0921	----	----	----	----
(Matrix: Water)					Client sampling date / time	21-Sep-2021	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	VA21C0813-016	-----	-----	-----	-----	
					Result	---	---	---	---	
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.60	mg/L	69.6	---	---	---	---	
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0152	---	---	---	---	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	---	---	---	---	
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00039	---	---	---	---	
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0465	---	---	---	---	
beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	---	---	---	---	
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	---	---	---	---	
boron, dissolved	7440-42-8	E421	0.010	mg/L	0.022	---	---	---	---	
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	---	---	---	---	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	19.0	---	---	---	---	
cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000035	---	---	---	---	
chromium, dissolved	7440-47-3	E421	0.00050	mg/L	0.00081	---	---	---	---	
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00018	---	---	---	---	
copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	---	---	---	---	
iron, dissolved	7439-89-6	E421	0.010	mg/L	18.0	---	---	---	---	
lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	---	---	---	---	
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0012	---	---	---	---	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	5.38	---	---	---	---	
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.509	---	---	---	---	
mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	---	---	---	---	
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000050	---	---	---	---	
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	---	---	---	---	
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	0.087	---	---	---	---	
potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.24	---	---	---	---	
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00519	---	---	---	---	
selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	---	---	---	---	
silicon, dissolved	7440-21-3	E421	0.050	mg/L	13.8	---	---	---	---	
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	---	---	---	---	
sodium, dissolved	17341-25-2	E421	0.050	mg/L	6.96	---	---	---	---	
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.126	---	---	---	---	
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	---	---	---	---	



Analytical Results

Sub-Matrix: Water					Client sample ID	Dup-1-0921	----	----	----	----
(Matrix: Water)					Client sampling date / time	21-Sep-2021	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	VA21C0813-016	-----	-----	-----	-----	-----
					Result	---	---	---	---	---
Dissolved Metals										
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	---	---	---	---	---
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	---	---	---	---	---
thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	---	---	---	---	---
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	---	---	---	---	---
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	0.00042	---	---	---	---	---
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	---	---	---	---	---
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000023	---	---	---	---	---
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00577	---	---	---	---	---
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0023	---	---	---	---	---
zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	0.00036	---	---	---	---	---
dissolved mercury filtration location	---	EP509	-	-	Field	---	---	---	---	---
dissolved metals filtration location	---	EP421	-	-	Field	---	---	---	---	---
Speciated Metals										
chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.00050	mg/L	<0.00050	---	---	---	---	---
Volatile Organic Compounds										
chlorobenzene	108-90-7	E611C	0.50	µg/L	<0.50	---	---	---	---	---
chloromethane	74-87-3	E611C	5.0	µg/L	<5.0	---	---	---	---	---
dichlorobenzene, 1,2-	95-50-1	E611C	0.50	µg/L	<0.50	---	---	---	---	---
dichlorobenzene, 1,3-	541-73-1	E611C	0.50	µg/L	<0.50	---	---	---	---	---
dichlorobenzene, 1,4-	106-46-7	E611C	0.50	µg/L	<0.50	---	---	---	---	---
dichloropropane, 1,2-	78-87-5	E611C	0.50	µg/L	<0.50	---	---	---	---	---
dichloropropylene, cis+trans-1,3-	542-75-6	E611C	0.75	µg/L	<0.75	---	---	---	---	---
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.50	µg/L	<0.50	---	---	---	---	---
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.50	µg/L	<0.50	---	---	---	---	---
tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.20	µg/L	<0.20	---	---	---	---	---
trichloroethane, 1,1,2-	79-00-5	E611C	0.50	µg/L	<0.50	---	---	---	---	---
trichlorofluoromethane	75-69-4	E611C	0.50	µg/L	<0.50	---	---	---	---	---
Volatile Organic Compounds [Drycleaning]										
carbon tetrachloride	56-23-5	E611C	0.50	µg/L	<0.50	---	---	---	---	---
chloroethane	75-00-3	E611C	0.50	µg/L	<0.50	---	---	---	---	---
dichloroethane, 1,1-	75-34-3	E611C	0.50	µg/L	<0.50	---	---	---	---	---
dichloroethane, 1,2-	107-06-2	E611C	0.50	µg/L	<0.50	---	---	---	---	---



Analytical Results

Sub-Matrix: Water					Client sample ID	Dup-1-0921	----	----	----	----
(Matrix: Water)					Client sampling date / time	21-Sep-2021	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	VA21C0813-016	-----	-----	-----	-----	
					Result	---	---	---	---	
Volatile Organic Compounds [Drycleaning]										
dichloroethylene, 1,1-	75-35-4	E611C	0.50	µg/L	<0.50	---	---	---	---	
dichloroethylene, cis-1,2-	156-59-2	E611C	0.50	µg/L	<0.50	---	---	---	---	
dichloroethylene, trans-1,2-	156-60-5	E611C	0.50	µg/L	<0.50	---	---	---	---	
dichloromethane	75-09-2	E611C	1.0	µg/L	<1.0	---	---	---	---	
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.50	µg/L	<0.50	---	---	---	---	
tetrachloroethylene	127-18-4	E611C	0.50	µg/L	<0.50	---	---	---	---	
trichloroethane, 1,1,1-	71-55-6	E611C	0.50	µg/L	<0.50	---	---	---	---	
trichloroethylene	79-01-6	E611C	0.50	µg/L	<0.50	---	---	---	---	
vinyl chloride	75-01-4	E611C	0.40	µg/L	<0.40	---	---	---	---	
Volatile Organic Compounds [Fuels]										
benzene	71-43-2	E611C	0.50	µg/L	<0.50	---	---	---	---	
ethylbenzene	100-41-4	E611C	0.50	µg/L	<0.50	---	---	---	---	
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.50	µg/L	<0.50	---	---	---	---	
styrene	100-42-5	E611C	0.50	µg/L	<0.50	---	---	---	---	
toluene	108-88-3	E611C	0.40	µg/L	<0.40	---	---	---	---	
xylene, m+p-	179601-23-1	E611C	0.40	µg/L	<0.40	---	---	---	---	
xylene, o-	95-47-6	E611C	0.30	µg/L	<0.30	---	---	---	---	
xylenes, total	1330-20-7	E611C	0.50	µg/L	<0.50	---	---	---	---	
Volatile Organic Compounds [THMs]										
bromodichloromethane	75-27-4	E611C	0.50	µg/L	<0.50	---	---	---	---	
bromoform	75-25-2	E611C	0.50	µg/L	<0.50	---	---	---	---	
chloroform	67-66-3	E611C	0.50	µg/L	<0.50	---	---	---	---	
dibromochloromethane	124-48-1	E611C	0.50	µg/L	<0.50	---	---	---	---	
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611C	1.0	%	101	---	---	---	---	
difluorobenzene, 1,4-	540-36-3	E611C	1.0	%	98.4	---	---	---	---	
Hydrocarbons										
EPH (C10-C19)	----	E601A	250	µg/L	<250	---	---	---	---	
EPH (C19-C32)	----	E601A	250	µg/L	<250	---	---	---	---	
HEPHw	----	EC600A	250	µg/L	<250	---	---	---	---	
LEPHw	----	EC600A	250	µg/L	<250	---	---	---	---	
Hydrocarbons Surrogates										



Analytical Results

Sub-Matrix: Water					Client sample ID	Dup-1-0921	----	----	----	----
(Matrix: Water)					Client sampling date / time	21-Sep-2021	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	VA21C0813-016	-----	-----	-----	-----	
					Result	---	---	---	---	
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (EPH surr)	392-83-6	E601A	1.0	%	82.0	---	---	---	---	
Polycyclic Aromatic Hydrocarbons										
acenaphthene	83-32-9	E641A	0.010	µg/L	<0.010	---	---	---	---	
acenaphthylene	208-96-8	E641A	0.010	µg/L	<0.010	---	---	---	---	
acridine	260-94-6	E641A	0.010	µg/L	<0.010	---	---	---	---	
anthracene	120-12-7	E641A	0.010	µg/L	<0.010	---	---	---	---	
benz(a)anthracene	56-55-3	E641A	0.010	µg/L	<0.010	---	---	---	---	
benzo(a)pyrene	50-32-8	E641A	0.0050	µg/L	<0.0050	---	---	---	---	
benzo(b+j)fluoranthene	----	E641A	0.010	µg/L	<0.010	---	---	---	---	
benzo(b+j+k)fluoranthene	----	E641A	0.015	µg/L	<0.015	---	---	---	---	
benzo(g,h,i)perylene	191-24-2	E641A	0.010	µg/L	<0.010	---	---	---	---	
benzo(k)fluoranthene	207-08-9	E641A	0.010	µg/L	<0.010	---	---	---	---	
chrysene	218-01-9	E641A	0.010	µg/L	<0.010	---	---	---	---	
dibenz(a,h)anthracene	53-70-3	E641A	0.0050	µg/L	<0.0050	---	---	---	---	
fluoranthene	206-44-0	E641A	0.010	µg/L	<0.010	---	---	---	---	
fluorene	86-73-7	E641A	0.010	µg/L	<0.010	---	---	---	---	
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.010	µg/L	<0.010	---	---	---	---	
methylnaphthalene, 1-	90-12-0	E641A	0.010	µg/L	<0.010	---	---	---	---	
methylnaphthalene, 1+2-	----	E641A	0.015	µg/L	<0.015	---	---	---	---	
methylnaphthalene, 2-	91-57-6	E641A	0.010	µg/L	<0.010	---	---	---	---	
naphthalene	91-20-3	E641A	0.050	µg/L	<0.050	---	---	---	---	
phenanthrene	85-01-8	E641A	0.020	µg/L	<0.020	---	---	---	---	
pyrene	129-00-0	E641A	0.010	µg/L	<0.010	---	---	---	---	
quinoline	91-22-5	E641A	0.050	µg/L	<0.050	---	---	---	---	
B(a)P total potency equivalents [B(a)P TPE]	----	E641A	0.010	µg/L	<0.010	---	---	---	---	
PAHs, high molecular weight (BC AWQ)	----	E641A	0.030	µg/L	<0.030	---	---	---	---	
PAHs, low molecular weight (BC AWQ)	----	E641A	0.060	µg/L	<0.060	---	---	---	---	
PAHs, total (EPA 16)	----	E641A	0.065	µg/L	<0.065	---	---	---	---	
Polycyclic Aromatic Hydrocarbons Surrogates										
chrysene-d12	1719-03-5	E641A	0.1	%	81.7	---	---	---	---	
naphthalene-d8	1146-65-2	E641A	0.1	%	81.8	---	---	---	---	
phenanthrene-d10	1517-22-2	E641A	0.1	%	107	---	---	---	---	



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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA21C0813	Page	: 1 of 25
Amendment	: 1		
Client	: Jacobs Consultancy Canada Inc.	Laboratory	: Vancouver - Environmental
Contact	: Jelena Sladojevic	Account Manager	: Ashton Ostrander
Address	: Metrotower II, Suite 2100 4720 Kingsway Burnaby BC Canada V5H 4N2	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: CE777000	Date Samples Received	: 22-Sep-2021 18:03
PO	: 670014CH.B0.01.09	Issue Date	: 18-Oct-2021 11:01
C-O-C number	: 20-936858/857		
Sampler	: A C, R C		
Site	: ----		
Quote number	: Payment Terms for Finance		
No. of samples received	: 16		
No. of samples analysed	: 16		

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 Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



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 00:00 is used for calculation purposes.

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

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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-04S-0921	E509	22-Sep-2021	03-Oct-2021	----	----		03-Oct-2021	28 days	11 days	✓	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-05-0921	E509	22-Sep-2021	03-Oct-2021	----	----		03-Oct-2021	28 days	11 days	✓	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-08-0921	E509	22-Sep-2021	03-Oct-2021	----	----		03-Oct-2021	28 days	11 days	✓	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) MW06-34-0921	E509	22-Sep-2021	03-Oct-2021	----	----		03-Oct-2021	28 days	11 days	✓	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) MW19-01-0921	E509	22-Sep-2021	03-Oct-2021	----	----		03-Oct-2021	28 days	11 days	✓	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) MW19-03-0921	E509	22-Sep-2021	03-Oct-2021	----	----		03-Oct-2021	28 days	11 days	✓	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-04D-0921	E509	21-Sep-2021	03-Oct-2021	----	----		03-Oct-2021	28 days	12 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-06-0921	E509	21-Sep-2021	03-Oct-2021	----	----		03-Oct-2021	28 days	12 days	✔	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-09-0921	E509	21-Sep-2021	03-Oct-2021	----	----		03-Oct-2021	28 days	12 days	✔	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-10D-0921	E509	21-Sep-2021	03-Oct-2021	----	----		03-Oct-2021	28 days	12 days	✔	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-10S-0921	E509	21-Sep-2021	03-Oct-2021	----	----		03-Oct-2021	28 days	12 days	✔	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) 20MW-11-0921	E509	21-Sep-2021	03-Oct-2021	----	----		03-Oct-2021	28 days	12 days	✔	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) Dup-1-0921	E509	21-Sep-2021	03-Oct-2021	----	----		03-Oct-2021	28 days	12 days	✔	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial dissolved (hydrochloric acid) Dup-2-0921	E509	22-Sep-2021	05-Oct-2021	----	----		05-Oct-2021	28 days	13 days	✔	
Dissolved Metals : Dissolved Mercury in Water by CVAAS											
Glass vial - dissolved (lab preserved) MW06-34-0921-B	E509	22-Sep-2021	05-Oct-2021	----	----		05-Oct-2021	28 days	13 days	✔	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE - dissolved (lab preserved) MW06-34-0921-B	E421	22-Sep-2021	05-Oct-2021	----	----		05-Oct-2021	180 days	13 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) 20MW-04S-0921	E421	22-Sep-2021	28-Sep-2021	----	----		29-Sep-2021	180 days	7 days	✓	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) 20MW-05-0921	E421	22-Sep-2021	28-Sep-2021	----	----		29-Sep-2021	180 days	7 days	✓	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) 20MW-08-0921	E421	22-Sep-2021	28-Sep-2021	----	----		29-Sep-2021	180 days	7 days	✓	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) Dup-2-0921	E421	22-Sep-2021	28-Sep-2021	----	----		29-Sep-2021	180 days	7 days	✓	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) MW06-34-0921	E421	22-Sep-2021	28-Sep-2021	----	----		29-Sep-2021	180 days	7 days	✓	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) MW19-01-0921	E421	22-Sep-2021	28-Sep-2021	----	----		29-Sep-2021	180 days	7 days	✓	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) MW19-03-0921	E421	22-Sep-2021	28-Sep-2021	----	----		29-Sep-2021	180 days	7 days	✓	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) 20MW-04D-0921	E421	21-Sep-2021	28-Sep-2021	----	----		29-Sep-2021	180 days	8 days	✓	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE dissolved (nitric acid) 20MW-06-0921	E421	21-Sep-2021	28-Sep-2021	----	----		29-Sep-2021	180 days	8 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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 20MW-09-0921	E421	21-Sep-2021	28-Sep-2021	----	----		29-Sep-2021	180 days	8 days	✔
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 20MW-10D-0921	E421	21-Sep-2021	28-Sep-2021	----	----		29-Sep-2021	180 days	8 days	✔
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HDPE dissolved (nitric acid) 20MW-10S-0921	E421	21-Sep-2021	28-Sep-2021	----	----		29-Sep-2021	180 days	8 days	✔
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 20MW-11-0921	E421	21-Sep-2021	28-Sep-2021	----	----		29-Sep-2021	180 days	8 days	✔
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) Dup-1-0921	E421	21-Sep-2021	28-Sep-2021	----	----		29-Sep-2021	180 days	8 days	✔
Hydrocarbons : BC PHC - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-04D-0921	E601A	21-Sep-2021	01-Oct-2021	14 days	10 days	✔	07-Oct-2021	40 days	6 days	✔
Hydrocarbons : BC PHC - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-06-0921	E601A	21-Sep-2021	01-Oct-2021	14 days	10 days	✔	07-Oct-2021	40 days	6 days	✔
Hydrocarbons : BC PHC - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-09-0921	E601A	21-Sep-2021	01-Oct-2021	14 days	10 days	✔	07-Oct-2021	40 days	6 days	✔
Hydrocarbons : BC PHC - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-10D-0921	E601A	21-Sep-2021	01-Oct-2021	14 days	10 days	✔	07-Oct-2021	40 days	6 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-10S-0921	E601A	21-Sep-2021	01-Oct-2021	14 days	10 days	✔	07-Oct-2021	40 days	6 days	✔	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-11-0921	E601A	21-Sep-2021	01-Oct-2021	14 days	10 days	✔	07-Oct-2021	40 days	6 days	✔	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) Dup-1-0921	E601A	21-Sep-2021	01-Oct-2021	14 days	10 days	✔	07-Oct-2021	40 days	6 days	✔	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-04S-0921	E601A	22-Sep-2021	01-Oct-2021	14 days	9 days	✔	07-Oct-2021	40 days	6 days	✔	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-05-0921	E601A	22-Sep-2021	01-Oct-2021	14 days	9 days	✔	07-Oct-2021	40 days	6 days	✔	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-08-0921	E601A	22-Sep-2021	01-Oct-2021	14 days	9 days	✔	07-Oct-2021	40 days	6 days	✔	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) Dup-2-0921	E601A	22-Sep-2021	01-Oct-2021	14 days	9 days	✔	07-Oct-2021	40 days	6 days	✔	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) MW06-34-0921	E601A	22-Sep-2021	01-Oct-2021	14 days	9 days	✔	07-Oct-2021	40 days	6 days	✔	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) MW06-34-0921-B	E601A	22-Sep-2021	01-Oct-2021	14 days	9 days	✔	07-Oct-2021	40 days	6 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) MW19-01-0921	E601A	22-Sep-2021	01-Oct-2021	14 days	9 days	✔	07-Oct-2021	40 days	6 days	✔	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) MW19-03-0921	E601A	22-Sep-2021	01-Oct-2021	14 days	9 days	✔	07-Oct-2021	40 days	6 days	✔	
Hydrocarbons : BC PHC - EPH by GC-FID											
Amber glass/Teflon lined cap (sodium bisulfate) TB	E601A	22-Sep-2021	01-Oct-2021	14 days	9 days	✔	07-Oct-2021	40 days	6 days	✔	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-04D-0921	E641A	21-Sep-2021	01-Oct-2021	14 days	10 days	✔	01-Oct-2021	40 days	0 days	✔	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-06-0921	E641A	21-Sep-2021	01-Oct-2021	14 days	10 days	✔	01-Oct-2021	40 days	0 days	✔	
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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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) Dup-1-0921	E641A	21-Sep-2021	01-Oct-2021	14 days	10 days	✔	01-Oct-2021	40 days	0 days	✔	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-04S-0921	E641A	22-Sep-2021	01-Oct-2021	14 days	9 days	✔	01-Oct-2021	40 days	0 days	✔	
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Amber glass/Teflon lined cap (sodium bisulfate) 20MW-05-0921	E641A	22-Sep-2021	01-Oct-2021	14 days	9 days	✔	01-Oct-2021	40 days	0 days	✔	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) 20MW-08-0921	E641A	22-Sep-2021	01-Oct-2021	14 days	9 days	✔	01-Oct-2021	40 days	0 days	✔	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) Dup-2-0921	E641A	22-Sep-2021	01-Oct-2021	14 days	9 days	✔	01-Oct-2021	40 days	0 days	✔	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) MW06-34-0921	E641A	22-Sep-2021	01-Oct-2021	14 days	9 days	✔	01-Oct-2021	40 days	0 days	✔	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) MW06-34-0921-B	E641A	22-Sep-2021	01-Oct-2021	14 days	9 days	✔	01-Oct-2021	40 days	0 days	✔	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) MW19-01-0921	E641A	22-Sep-2021	01-Oct-2021	14 days	9 days	✔	01-Oct-2021	40 days	0 days	✔	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) MW19-03-0921	E641A	22-Sep-2021	01-Oct-2021	14 days	9 days	✔	01-Oct-2021	40 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS											
Amber glass/Teflon lined cap (sodium bisulfate) TB	E641A	22-Sep-2021	01-Oct-2021	14 days	9 days	✔	01-Oct-2021	40 days	0 days	✔	
Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC											
HDPE - dissolved (sodium hydroxide) 20MW-04S-0921	E532A	22-Sep-2021	----	----	----		30-Sep-2021	28 days	8 days	✔	
Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC											
HDPE - dissolved (sodium hydroxide) 20MW-05-0921	E532A	22-Sep-2021	----	----	----		30-Sep-2021	28 days	8 days	✔	
Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC											
HDPE - dissolved (sodium hydroxide) 20MW-08-0921	E532A	22-Sep-2021	----	----	----		30-Sep-2021	28 days	8 days	✔	
Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC											
HDPE - dissolved (sodium hydroxide) Dup-2-0921	E532A	22-Sep-2021	----	----	----		30-Sep-2021	28 days	8 days	✔	
Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC											
HDPE - dissolved (sodium hydroxide) MW06-34-0921	E532A	22-Sep-2021	----	----	----		30-Sep-2021	28 days	8 days	✔	
Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC											
HDPE - dissolved (sodium hydroxide) MW06-34-0921-B	E532A	22-Sep-2021	----	----	----		30-Sep-2021	28 days	8 days	✔	
Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC											
HDPE - dissolved (sodium hydroxide) MW19-01-0921	E532A	22-Sep-2021	----	----	----		30-Sep-2021	28 days	8 days	✔	
Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC											
HDPE - dissolved (sodium hydroxide) MW19-03-0921	E532A	22-Sep-2021	----	----	----		30-Sep-2021	28 days	8 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 Actual		Eval	Analysis Date	Holding Times Rec Actual		Eval
Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC										
HDPE - dissolved (sodium hydroxide) 20MW-04D-0921	E532A	21-Sep-2021	----	----	----		30-Sep-2021	28 days	9 days	✓
Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC										
HDPE - dissolved (sodium hydroxide) 20MW-06-0921	E532A	21-Sep-2021	----	----	----		30-Sep-2021	28 days	9 days	✓
Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC										
HDPE - dissolved (sodium hydroxide) 20MW-09-0921	E532A	21-Sep-2021	----	----	----		30-Sep-2021	28 days	9 days	✓
Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC										
HDPE - dissolved (sodium hydroxide) 20MW-10D-0921	E532A	21-Sep-2021	----	----	----		30-Sep-2021	28 days	9 days	✓
Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC										
HDPE - dissolved (sodium hydroxide) 20MW-10S-0921	E532A	21-Sep-2021	----	----	----		30-Sep-2021	28 days	9 days	✓
Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC										
HDPE - dissolved (sodium hydroxide) 20MW-11-0921	E532A	21-Sep-2021	----	----	----		30-Sep-2021	28 days	9 days	✓
Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC										
HDPE - dissolved (sodium hydroxide) Dup-1-0921	E532A	21-Sep-2021	----	----	----		30-Sep-2021	28 days	9 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) 20MW-04S-0921	E532	22-Sep-2021	----	----	----		29-Sep-2021	28 days	7 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) 20MW-05-0921	E532	22-Sep-2021	----	----	----		29-Sep-2021	28 days	7 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC											
HDPE - total (sodium hydroxide) 20MW-08-0921	E532	22-Sep-2021	----	----	----		29-Sep-2021	28 days	7 days	✓	
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC											
HDPE - total (sodium hydroxide) Dup-2-0921	E532	22-Sep-2021	----	----	----		29-Sep-2021	28 days	7 days	✓	
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC											
HDPE - total (sodium hydroxide) MW06-34-0921	E532	22-Sep-2021	----	----	----		29-Sep-2021	28 days	7 days	✓	
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC											
HDPE - total (sodium hydroxide) MW06-34-0921-B	E532	22-Sep-2021	----	----	----		29-Sep-2021	28 days	7 days	✓	
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC											
HDPE - total (sodium hydroxide) MW19-01-0921	E532	22-Sep-2021	----	----	----		29-Sep-2021	28 days	7 days	✓	
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC											
HDPE - total (sodium hydroxide) MW19-03-0921	E532	22-Sep-2021	----	----	----		29-Sep-2021	28 days	7 days	✓	
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC											
HDPE - total (sodium hydroxide) TB	E532	22-Sep-2021	----	----	----		29-Sep-2021	28 days	7 days	✓	
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC											
HDPE - total (sodium hydroxide) 20MW-10D-0921	E532	21-Sep-2021	----	----	----		29-Sep-2021	28 days	8 days	✓	
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC											
HDPE - total (sodium hydroxide) 20MW-04D-0921	E532	21-Sep-2021	----	----	----		30-Sep-2021	28 days	9 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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) 20MW-06-0921	E532	21-Sep-2021	----	----	----		30-Sep-2021	28 days	9 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) 20MW-09-0921	E532	21-Sep-2021	----	----	----		30-Sep-2021	28 days	9 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) 20MW-10S-0921	E532	21-Sep-2021	----	----	----		30-Sep-2021	28 days	9 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
HDPE - total (sodium hydroxide) 20MW-11-0921	E532	21-Sep-2021	----	----	----		30-Sep-2021	28 days	9 days	✓
Total Metals : Total Mercury in Water by CVAAS										
HDPE total (nitric acid) MW19-03-0921	E508	22-Sep-2021	----	----	----		05-Oct-2021	----	13 days	
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) 20MW-04S-0921	E508	22-Sep-2021	----	----	----		27-Sep-2021	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) 20MW-05-0921	E508	22-Sep-2021	----	----	----		27-Sep-2021	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) 20MW-08-0921	E508	22-Sep-2021	----	----	----		27-Sep-2021	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) Dup-2-0921	E508	22-Sep-2021	----	----	----		27-Sep-2021	28 days	5 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) MW06-34-0921	E508	22-Sep-2021	----	----	----		27-Sep-2021	28 days	5 days	✔	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) MW06-34-0921-B	E508	22-Sep-2021	----	----	----		27-Sep-2021	28 days	5 days	✔	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) MW19-01-0921	E508	22-Sep-2021	----	----	----		27-Sep-2021	28 days	5 days	✔	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) TB	E508	22-Sep-2021	----	----	----		27-Sep-2021	28 days	5 days	✔	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) 20MW-04D-0921	E508	21-Sep-2021	----	----	----		27-Sep-2021	28 days	6 days	✔	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) 20MW-06-0921	E508	21-Sep-2021	----	----	----		27-Sep-2021	28 days	6 days	✔	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) 20MW-09-0921	E508	21-Sep-2021	----	----	----		27-Sep-2021	28 days	6 days	✔	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) 20MW-10D-0921	E508	21-Sep-2021	----	----	----		27-Sep-2021	28 days	6 days	✔	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial total (hydrochloric acid) 20MW-10S-0921	E508	21-Sep-2021	----	----	----		27-Sep-2021	28 days	6 days	✔	



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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) 20MW-11-0921	E508	21-Sep-2021	----	----	----		27-Sep-2021	28 days	6 days	✔
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) 20MW-04S-0921	E420	22-Sep-2021	----	----	----		04-Oct-2021	180 days	12 days	✔
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) 20MW-05-0921	E420	22-Sep-2021	----	----	----		04-Oct-2021	180 days	12 days	✔
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) 20MW-08-0921	E420	22-Sep-2021	----	----	----		04-Oct-2021	180 days	12 days	✔
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) Dup-2-0921	E420	22-Sep-2021	----	----	----		04-Oct-2021	180 days	12 days	✔
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) MW06-34-0921	E420	22-Sep-2021	----	----	----		04-Oct-2021	180 days	12 days	✔
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) MW06-34-0921-B	E420	22-Sep-2021	----	----	----		04-Oct-2021	180 days	12 days	✔
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) MW19-01-0921	E420	22-Sep-2021	----	----	----		04-Oct-2021	180 days	12 days	✔
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) MW19-03-0921	E420	22-Sep-2021	----	----	----		04-Oct-2021	180 days	12 days	✔



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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) TB	E420	22-Sep-2021	----	----	----		04-Oct-2021	180 days	12 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) 20MW-04D-0921	E420	21-Sep-2021	----	----	----		04-Oct-2021	180 days	13 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) 20MW-06-0921	E420	21-Sep-2021	----	----	----		04-Oct-2021	180 days	13 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) 20MW-09-0921	E420	21-Sep-2021	----	----	----		04-Oct-2021	180 days	13 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) 20MW-10D-0921	E420	21-Sep-2021	----	----	----		04-Oct-2021	180 days	13 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) 20MW-10S-0921	E420	21-Sep-2021	----	----	----		04-Oct-2021	180 days	13 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) 20MW-11-0921	E420	21-Sep-2021	----	----	----		04-Oct-2021	180 days	13 days	✓
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-04D-0921	E611C	21-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-04S-0921	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	



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Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-05-0921	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-06-0921	E611C	21-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-08-0921	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-09-0921	E611C	21-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-10D-0921	E611C	21-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-10S-0921	E611C	21-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-11-0921	E611C	21-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) Dup-1-0921	E611C	21-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) Dup-2-0921	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	



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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW06-34-0921	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW06-34-0921-B	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW19-01-0921	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW19-03-0921	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) TB	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-04D-0921	E611C	21-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-04S-0921	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-05-0921	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-06-0921	E611C	21-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	



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		Eval	Analysis Date	Holding Times		
				Rec	Actual			Rec	Actual	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-08-0921	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-09-0921	E611C	21-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-10D-0921	E611C	21-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-10S-0921	E611C	21-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-11-0921	E611C	21-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) Dup-1-0921	E611C	21-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) Dup-2-0921	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW06-34-0921	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW06-34-0921-B	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	



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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) MW19-01-0921	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----		
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) MW19-03-0921	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----		
Volatile Organic Compounds [Drycleaning] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) TB	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----		
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-04S-0921	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	14 days	11 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-05-0921	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	14 days	11 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-08-0921	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	14 days	11 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) Dup-2-0921	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	14 days	11 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) MW06-34-0921	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	14 days	11 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) MW06-34-0921-B	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	14 days	11 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) MW19-01-0921	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	14 days	11 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) MW19-03-0921	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	14 days	11 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) TB	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	14 days	11 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-04D-0921	E611C	21-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	14 days	12 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-06-0921	E611C	21-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	14 days	12 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-09-0921	E611C	21-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	14 days	12 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-10D-0921	E611C	21-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	14 days	12 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-10S-0921	E611C	21-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	14 days	12 days	✔	
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-11-0921	E611C	21-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	14 days	12 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Volatile Organic Compounds [Fuels] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) Dup-1-0921	E611C	21-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	14 days	12 days	✔	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-04D-0921	E611C	21-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----		
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-04S-0921	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----		
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-05-0921	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----		
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-06-0921	E611C	21-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----		
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-08-0921	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----		
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-09-0921	E611C	21-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----		
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-10D-0921	E611C	21-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----		
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS											
Glass vial (sodium bisulfate) 20MW-10S-0921	E611C	21-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----		



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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 20MW-11-0921	E611C	21-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) Dup-1-0921	E611C	21-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) Dup-2-0921	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW06-34-0921	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW06-34-0921-B	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW19-01-0921	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW19-03-0921	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	
Volatile Organic Compounds [THMs] : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) TB	E611C	22-Sep-2021	02-Oct-2021	----	----		03-Oct-2021	----	----	

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: **Water** Evaluation: * = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
Analytical Methods							
Laboratory Duplicates (DUP)							
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	306886	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	309877	3	43	6.9	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	304861	3	21	14.2	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	305694	2	25	8.0	5.0	✓
Total Mercury in Water by CVAAS	E508	303794	3	56	5.3	5.0	✓
Total Metals in Water by CRC ICPMS	E420	308870	1	20	5.0	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	309107	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
BC PHC - EPH by GC-FID	E601A	313269	1	16	6.2	5.0	✓
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	306886	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	309877	3	43	6.9	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	304861	2	21	9.5	5.0	✓
PAHs by Hexane LVI GC-MS	E641A	308497	1	16	6.2	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	305694	2	25	8.0	5.0	✓
Total Mercury in Water by CVAAS	E508	303794	3	56	5.3	5.0	✓
Total Metals in Water by CRC ICPMS	E420	308870	1	20	5.0	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	309107	1	20	5.0	5.0	✓
Method Blanks (MB)							
BC PHC - EPH by GC-FID	E601A	313269	1	16	6.2	5.0	✓
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	306886	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	309877	3	43	6.9	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	304861	3	21	14.2	5.0	✓
PAHs by Hexane LVI GC-MS	E641A	308497	1	16	6.2	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	305694	2	25	8.0	5.0	✓
Total Mercury in Water by CVAAS	E508	303794	3	56	5.3	5.0	✓
Total Metals in Water by CRC ICPMS	E420	308870	1	20	5.0	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	309107	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	306886	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	309877	3	43	6.9	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	304861	2	21	9.5	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	305694	2	25	8.0	5.0	✓
Total Mercury in Water by CVAAS	E508	303794	3	56	5.3	5.0	✓
Total Metals in Water by CRC ICPMS	E420	308870	1	20	5.0	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	309107	1	20	5.0	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
Total Metals in Water by CRC ICPMS	E420 Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
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.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
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.
Total Hexavalent Chromium (Cr VI) by IC	E532 Vancouver - Environmental	Water	APHA 3500-Cr C (Ion Chromatography)	Hexavalent Chromium is measured by Ion chromatography-Post column reaction and UV detection. Results are based on an un-filtered, field-preserved sample.
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A Vancouver - Environmental	Water	APHA 3500-Cr C (Ion Chromatography)	Hexavalent Chromium is measured by Ion chromatography-Post column reaction and UV detection. sample pretreatment involved field or lab filtration following by sample preservation.
BC PHC - EPH by GC-FID	E601A Vancouver - Environmental	Water	BC MOE Lab Manual	Extractable Petroleum Hydrocarbons (EPH) 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 Vancouver - Environmental	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO ₃), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO ₃ 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.
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO ₃), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO ₃ 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. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.
LEPH and HEPH: EPH-PAH	EC600A Vancouver - 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.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO ₃ .
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 Vancouver - Environmental	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.

QUALITY CONTROL REPORT

Work Order : **VA21C0813**

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Amendment : **1**

Client : Jacobs Consultancy Canada Inc.
Contact : Jelena Sladojevic
Address : Metrotower II, Suite 2100 4720 Kingsway
 Burnaby BC Canada V5H 4N2
Telephone : ----
Project : CE777000
PO : 670014CH.B0.01.09
C-O-C number : 20-936858/857
Sampler : A C, R C
Site : ----
Quote number : Payment Terms for Finance
No. of samples received : 16
No. of samples analysed : 16

Laboratory : Vancouver - Environmental
Account Manager : Ashton Ostrander
Address : 8081 Lougheed Highway
 Burnaby, British Columbia Canada V5A 1W9
Telephone : +1 604 253 4188
Date Samples Received : 22-Sep-2021 18:03
Date Analysis Commenced : 27-Sep-2021
Issue Date : 18-Oct-2021 11:01

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Caleb Deroche	Lab Analyst	Metals, Burnaby, British Columbia
Ilnaz Badbezanchi	Team Leader - Metals preparation	Metals, Burnaby, British Columbia
Jay Jang	Lab Assistant	Metals, Burnaby, British Columbia
Ken Chan	Supervisor - Metals Prep & Mercury	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Ophelia Chiu	Department Manager - Organics	Organics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Saron Kim	Analyst	Metals, Burnaby, British Columbia
Woochan Song	Lab Analyst	Metals, Burnaby, British Columbia

Page : 2 of 26
Work Order : VA21C0813 Amendment 1
Client : Jacobs Consultancy Canada Inc.
Project : CE777000



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: 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
Total Metals (QC Lot: 303794)											
VA21C0762-007	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 303795)											
VA21C0813-015	20MW-11-0921	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 308870)											
VA21C0811-001	Anonymous	aluminum, total	7429-90-5	E420	0.600	mg/L	<0.600	<0.600	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.0200	mg/L	<0.0200	<0.0200	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.0200	mg/L	<0.0200	<0.0200	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.0200	mg/L	12.7	13.0	2.81%	20%	----
		beryllium, total	7440-41-7	E420	0.00400	mg/L	<0.00400	<0.00400	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.0100	mg/L	<0.0100	<0.0100	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	2.00	mg/L	178	186	4.39%	20%	----
		cadmium, total	7440-43-9	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	10.0	mg/L	33600	34400	2.59%	20%	----
		cesium, total	7440-46-2	E420	0.00200	mg/L	5.17	5.31	2.65%	20%	----
		chromium, total	7440-47-3	E420	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.0200	mg/L	<0.0200	<0.0200	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	2.00	mg/L	5.48	5.53	0.048	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.0100	mg/L	<0.0100	<0.0100	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.200	mg/L	188	194	3.26%	20%	----
		magnesium, total	7439-95-4	E420	1.00	mg/L	2630	2680	1.93%	20%	----
		manganese, total	7439-96-5	E420	0.0200	mg/L	11.8	11.9	0.976%	20%	----
		molybdenum, total	7439-98-7	E420	0.0100	mg/L	<0.0100	<0.0100	0	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	10.0	mg/L	<10.0	<10.0	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	10.0	mg/L	2420	2460	1.84%	20%	----
		rubidium, total	7440-17-7	E420	0.0400	mg/L	10.0	10.2	1.18%	20%	----
		selenium, total	7782-49-2	E420	0.0100	mg/L	<0.0100	<0.0100	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	20.0	mg/L	<20.0	<20.0	0	Diff <2x LOR	----
		silver, total	7440-22-4	E420	0.00200	mg/L	<0.00200	<0.00200	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	10.0	mg/L	64600	66200	2.54%	20%	----



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
Total Metals (QC Lot: 308870) - continued											
VA21C0811-001	Anonymous	strontium, total	7440-24-6	E420	0.0400	mg/L	2080	2130	2.35%	20%	----
		sulfur, total	7704-34-9	E420	100	mg/L	<100	112	11.9	Diff <2x LOR	----
		tellurium, total	13494-80-9	E420	0.0400	mg/L	0.217	0.199	0.0179	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.00200	mg/L	0.347	0.358	3.36%	20%	----
		thorium, total	7440-29-1	E420	0.0200	mg/L	<0.0200	<0.0200	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.0200	mg/L	<0.0200	<0.0200	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.0600	mg/L	<0.0600	<0.0600	0	Diff <2x LOR	----
		tungsten, total	7440-33-7	E420	0.0200	mg/L	<0.0200	<0.0200	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.00200	mg/L	<0.00200	<0.00200	0	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.600	mg/L	<0.600	<0.600	0	Diff <2x LOR	----
		zirconium, total	7440-67-7	E420	0.0400	mg/L	<0.0400	<0.0400	0	Diff <2x LOR	----
Total Metals (QC Lot: 310864)											
FJ2100959-001	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 304861)											
VA21C0813-001	MW19-03-0921	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0086	0.0093	0.0007	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	0.00011	0.00010	0.00001	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0304	0.0311	2.48%	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	0.017	0.017	0.0004	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	16.3	17.0	3.82%	20%	----
		cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000034	0.000033	0.0000008	Diff <2x LOR	----
		chromium, dissolved	7440-47-3	E421	0.00050	mg/L	0.00051	0.00052	0.00002	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	20.5	20.8	1.50%	20%	----
		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	0.0023	0.0024	0.00008	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	4.05	4.14	2.19%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.613	0.619	0.966%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000080	0.000068	0.000012	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	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: 304861) - continued											
VA21C0813-001	MW19-03-0921	phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	0.089	0.094	0.006	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.56	3.66	2.66%	20%	----
		rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00467	0.00480	2.62%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	15.9	15.7	1.34%	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	5.60	5.56	0.817%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.109	0.110	1.05%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		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	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	0.00035	0.00034	0.000010	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	<0.000010	<0.000010	0	Diff <2x LOR	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00356	0.00354	0.00002	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	0.00020	mg/L	0.00022	0.00022	0.000008	Diff <2x LOR	----
Dissolved Metals (QC Lot: 309877)											
VA21C0813-001	MW19-03-0921	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 310856)											
CG2104503-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 310889)											
VA21C0813-004	MW06-34-0921-B	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 311447)											
YL2101442-001	Anonymous	copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00113	0.00111	0.00003	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.055	0.050	0.004	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0169	0.0168	1.01%	20%	----
YL2101442-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0157	0.0187	17.3%	20%	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00010	<0.00010	0.000001	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00027	0.00026	0.000004	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.252	0.251	0.541%	20%	----



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: 311447) - continued											
YL2101442-001	Anonymous	beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	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	1.01	1.01	0.389%	20%	----
		cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.000178	0.000174	2.22%	20%	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	109	106	2.57%	20%	----
		cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000084	0.000082	0.000002	Diff <2x LOR	----
		chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00486	0.00484	0.538%	20%	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0109	0.0108	0.233%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	37.9	37.9	0.0576%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.633	0.647	2.14%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00649	0.00668	2.92%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0158	0.0157	0.672%	20%	----
		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	28.7	29.1	1.18%	20%	----
		rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.0269	0.0270	0.427%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000102	0.000138	0.000036	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.74	4.78	0.888%	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	73.3	73.6	0.402%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	1.16	1.18	2.54%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	20.5	20.6	0.271%	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	0.000077	0.000078	0.000001	Diff <2x LOR	----
		thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	0	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	0.000821	0.000820	0.160%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
Speciated Metals (QC Lot: 305694)											
VA21C0813-001	MW19-03-0921	chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
Speciated Metals (QC Lot: 306885)											
VA21C0813-011	20MW-10S-0921	chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
Speciated Metals (QC Lot: 306886)											



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
Speciated Metals (QC Lot: 306886) - continued											
VA21C0813-001	MW19-03-0921	chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 309107)											
FJ2101001-001	Anonymous	benzene	71-43-2	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		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	5.0	µg/L	<5.0	<5.0	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-	156-59-2	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	1.0	µg/L	<1.0	<1.0	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	----

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 Work Order : VA21C0813 Amendment 1
 Client : Jacobs Consultancy Canada Inc.
 Project : CE777000



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
Volatile Organic Compounds (QC Lot: 309107) - continued											
FJ2101001-001	Anonymous	xylylene, m+p-	179601-23-1	E611C	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		xylylene, o-	95-47-6	E611C	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----



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: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 303794)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 303795)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 308870)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	17341-25-2	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 308870) - continued						
tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	---
tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	---
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	---
Total Metals (QCLot: 310864)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	---
Dissolved Metals (QCLot: 304861)						
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	---
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	---
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	---
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	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 304861) - continued						
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: 309877)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 310856)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 310889)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 311447)						
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	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	MBRR



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 311447) - continued						
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	MBRR
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	MBRR
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	MBRR
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----
Speciated Metals (QCLot: 305694)						
chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	<0.00050	----
Speciated Metals (QCLot: 306885)						
chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	<0.00050	----
Speciated Metals (QCLot: 306886)						
chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.0005	mg/L	<0.00050	----
Volatile Organic Compounds (QCLot: 309107)						
benzene	71-43-2	E611C	0.5	µg/L	<0.50	----
bromodichloromethane	75-27-4	E611C	0.5	µg/L	<0.50	----
bromoform	75-25-2	E611C	0.5	µg/L	<0.50	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 309107) - continued						
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	5	µg/L	<5.0	---
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-	156-59-2	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	1	µg/L	<1.0	---
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	0.4	µg/L	<0.40	---
xylene, o-	95-47-6	E611C	0.3	µg/L	<0.30	---
Hydrocarbons (QCLot: 313269)						
EPH (C10-C19)	---	E601A	250	µg/L	<250	---
EPH (C19-C32)	---	E601A	250	µg/L	<250	---
Polycyclic Aromatic Hydrocarbons (QCLot: 308497)						



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 308497) - continued						
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	91-22-5	E641A	0.05	µg/L	<0.050	---

Qualifiers

Qualifier	Description
MBRR	Initial MB for this submission had positive results for flagged analyte (data not shown). Low level samples were repeated with new QC (2nd MB results shown). High level results (>5x initial MB level) and non-detect results were reported and are defensible



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: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Total Metals (QCLot: 303794)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	99.2	80.0	120	----
Total Metals (QCLot: 303795)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	102	80.0	120	----
Total Metals (QCLot: 308870)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	104	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	103	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	98.3	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	105	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	98.2	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	98.4	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	97.5	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	99.6	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	97.9	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	99.2	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	98.7	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	96.8	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	96.6	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	104	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	103	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	99.4	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	99.6	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	97.7	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	104	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	102	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	97.9	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	101	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	98.9	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	110	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	102	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	103	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Total Metals (QCLot: 308870) - continued									
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	89.4	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	93.6	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	100	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	96.8	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	95.9	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	98.9	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	95.7	80.0	120	----
Total Metals (QCLot: 310864)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	97.5	80.0	120	----
Dissolved Metals (QCLot: 304861)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.6	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	99.7	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	96.6	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	96.3	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	98.4	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	87.3	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	95.0	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	96.7	80.0	120	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	98.9	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	94.8	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.3	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	94.9	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	97.6	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	94.1	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	94.0	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	94.9	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	97.1	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	95.2	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	99.5	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	103	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	96.9	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: 304861) - continued									
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	99.3	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	96.1	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	97.0	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	96.5	80.0	120	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	95.6	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	98.1	80.0	120	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	93.9	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	92.3	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	97.6	80.0	120	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	94.6	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	99.6	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.2	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	102	80.0	120	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	94.5	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	94.1	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	96.0	80.0	120	----
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	96.6	80.0	120	----
Dissolved Metals (QCLot: 311447)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	100	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	91.6	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	91.7	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	98.4	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	97.0	80.0	120	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	95.7	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	99.4	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.0	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	95.9	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	99.2	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	97.2	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	97.4	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	99.3	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	96.9	80.0	120	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Dissolved Metals (QCLot: 311447) - continued									
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.00005	mg/L	0.5 mg/L	96.3	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	110	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	101	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	100	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	103	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	96.9	80.0	120	----
sodium, dissolved	17341-25-2	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	97.9	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	90.7	80.0	120	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	107	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	98.1	80.0	120	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	84.9	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.1	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.2	80.0	120	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	91.5	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	94.6	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.9	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	97.0	80.0	120	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	94.6	80.0	120	----
Speciated Metals (QCLot: 305694)									
chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	0.25 mg/L	100	90.0	110	----
Speciated Metals (QCLot: 306885)									
chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	0.25 mg/L	100	90.0	110	----
Speciated Metals (QCLot: 306886)									
chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.0005	mg/L	0.25 mg/L	99.1	80.0	120	----
Volatile Organic Compounds (QCLot: 309107)									
benzene	71-43-2	E611C	0.5	µg/L	100 µg/L	101	70.0	130	----
bromodichloromethane	75-27-4	E611C	0.5	µg/L	100 µg/L	83.2	70.0	130	----
bromoform	75-25-2	E611C	0.5	µg/L	100 µg/L	110	70.0	130	----
carbon tetrachloride	56-23-5	E611C	0.5	µg/L	100 µg/L	83.3	70.0	130	----
chlorobenzene	108-90-7	E611C	0.5	µg/L	100 µg/L	102	70.0	130	----
chloroethane	75-00-3	E611C	0.5	µg/L	100 µg/L	101	60.0	140	----
chloroform	67-66-3	E611C	0.5	µg/L	100 µg/L	99.5	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
Volatile Organic Compounds (QCLot: 309107) - continued									
chloromethane	74-87-3	E611C	5	µg/L	100 µg/L	99.1	60.0	140	----
dibromochloromethane	124-48-1	E611C	0.5	µg/L	100 µg/L	109	70.0	130	----
dichlorobenzene, 1,2-	95-50-1	E611C	0.5	µg/L	100 µg/L	102	70.0	130	----
dichlorobenzene, 1,3-	541-73-1	E611C	0.5	µg/L	100 µg/L	104	70.0	130	----
dichlorobenzene, 1,4-	106-46-7	E611C	0.5	µg/L	100 µg/L	103	70.0	130	----
dichloroethane, 1,1-	75-34-3	E611C	0.5	µg/L	100 µg/L	103	70.0	130	----
dichloroethane, 1,2-	107-06-2	E611C	0.5	µg/L	100 µg/L	97.2	70.0	130	----
dichloroethylene, 1,1-	75-35-4	E611C	0.5	µg/L	100 µg/L	99.0	70.0	130	----
dichloroethylene, cis-1,2-	156-59-2	E611C	0.5	µg/L	100 µg/L	101	70.0	130	----
dichloroethylene, trans-1,2-	156-60-5	E611C	0.5	µg/L	100 µg/L	94.4	70.0	130	----
dichloromethane	75-09-2	E611C	1	µg/L	100 µg/L	108	70.0	130	----
dichloropropane, 1,2-	78-87-5	E611C	0.5	µg/L	100 µg/L	94.4	70.0	130	----
dichloropropylene, cis-1,3-	10061-01-5	E611C	0.5	µg/L	100 µg/L	71.6	70.0	130	----
dichloropropylene, trans-1,3-	10061-02-6	E611C	0.5	µg/L	100 µg/L	91.7	70.0	130	----
ethylbenzene	100-41-4	E611C	0.5	µg/L	100 µg/L	100	70.0	130	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.5	µg/L	100 µg/L	97.5	70.0	130	----
styrene	100-42-5	E611C	0.5	µg/L	100 µg/L	99.8	70.0	130	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.5	µg/L	100 µg/L	109	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	99.3	70.0	130	----
toluene	108-88-3	E611C	0.4	µg/L	100 µg/L	103	70.0	130	----
trichloroethane, 1,1,1-	71-55-6	E611C	0.5	µg/L	100 µg/L	78.1	70.0	130	----
trichloroethane, 1,1,2-	79-00-5	E611C	0.5	µg/L	100 µg/L	100	70.0	130	----
trichloroethylene	79-01-6	E611C	0.5	µg/L	100 µg/L	106	70.0	130	----
trichlorofluoromethane	75-69-4	E611C	0.5	µg/L	100 µg/L	98.9	60.0	140	----
vinyl chloride	75-01-4	E611C	0.4	µg/L	100 µg/L	99.5	60.0	140	----
xylene, m+p-	179601-23-1	E611C	0.4	µg/L	200 µg/L	99.9	70.0	130	----
xylene, o-	95-47-6	E611C	0.3	µg/L	100 µg/L	101	70.0	130	----
Hydrocarbons (QCLot: 313269)									
EPH (C10-C19)	----	E601A	250	µg/L	6491 µg/L	94.1	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3363 µg/L	92.9	70.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 308497)									
acenaphthene	83-32-9	E641A	0.01	µg/L	0.5 µg/L	117	60.0	130	----
acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5 µg/L	116	60.0	130	----
acridine	260-94-6	E641A	0.01	µg/L	0.5 µg/L	112	60.0	130	----
anthracene	120-12-7	E641A	0.01	µg/L	0.5 µg/L	124	60.0	130	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 308497) - continued									
benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5 µg/L	130	60.0	130	----
benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5 µg/L	116	60.0	130	----
benzo(b+j)fluoranthene	----	E641A	0.01	µg/L	0.5 µg/L	102	60.0	130	----
benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	0.5 µg/L	104	60.0	130	----
benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5 µg/L	109	60.0	130	----
chrysene	218-01-9	E641A	0.01	µg/L	0.5 µg/L	126	60.0	130	----
dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5 µg/L	121	60.0	130	----
fluoranthene	206-44-0	E641A	0.01	µg/L	0.5 µg/L	118	60.0	130	----
fluorene	86-73-7	E641A	0.01	µg/L	0.5 µg/L	121	60.0	130	----
indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5 µg/L	127	60.0	130	----
methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	0.5 µg/L	104	60.0	130	----
methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5 µg/L	102	60.0	130	----
naphthalene	91-20-3	E641A	0.05	µg/L	0.5 µg/L	86.4	50.0	130	----
phenanthrene	85-01-8	E641A	0.02	µg/L	0.5 µg/L	127	60.0	130	----
pyrene	129-00-0	E641A	0.01	µg/L	0.5 µg/L	123	60.0	130	----
quinoline	91-22-5	E641A	0.05	µg/L	0.5 µg/L	119	60.0	130	----



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 $\geq 1 \times$ spike level.

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High	
Total Metals (QCLot: 303794)										
VA21C0763-001	Anonymous	mercury, total	7439-97-6	E508	0.0000981 mg/L	0.0001 mg/L	98.1	70.0	130	----
Total Metals (QCLot: 303795)										
VA21C0855-001	Anonymous	mercury, total	7439-97-6	E508	0.0000992 mg/L	0.0001 mg/L	99.2	70.0	130	----
Total Metals (QCLot: 308870)										
VA21C0811-002	Anonymous	aluminum, total	7429-90-5	E420	41.1 mg/L	40 mg/L	103	70.0	130	----
		antimony, total	7440-36-0	E420	3.71 mg/L	4 mg/L	92.7	70.0	130	----
		arsenic, total	7440-38-2	E420	3.85 mg/L	4 mg/L	96.3	70.0	130	----
		barium, total	7440-39-3	E420	3.71 mg/L	4 mg/L	92.9	70.0	130	----
		beryllium, total	7440-41-7	E420	8.19 mg/L	8 mg/L	102	70.0	130	----
		bismuth, total	7440-69-9	E420	1.66 mg/L	2 mg/L	83.1	70.0	130	----
		boron, total	7440-42-8	E420	19.9 mg/L	20 mg/L	99.5	70.0	130	----
		cadmium, total	7440-43-9	E420	0.704 mg/L	0.8 mg/L	88.0	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	800 mg/L	ND	70.0	130	----
		cesium, total	7440-46-2	E420	1.98 mg/L	2 mg/L	98.8	70.0	130	----
		chromium, total	7440-47-3	E420	7.78 mg/L	8 mg/L	97.2	70.0	130	----
		cobalt, total	7440-48-4	E420	3.67 mg/L	4 mg/L	91.7	70.0	130	----
		copper, total	7440-50-8	E420	3.45 mg/L	4 mg/L	86.2	70.0	130	----
		iron, total	7439-89-6	E420	374 mg/L	400 mg/L	93.5	70.0	130	----
		lead, total	7439-92-1	E420	3.27 mg/L	4 mg/L	81.8	70.0	130	----
		lithium, total	7439-93-2	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	200 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	3.80 mg/L	4 mg/L	95.1	70.0	130	----
		molybdenum, total	7439-98-7	E420	3.88 mg/L	4 mg/L	97.0	70.0	130	----
		nickel, total	7440-02-0	E420	7.11 mg/L	8 mg/L	88.9	70.0	130	----
		phosphorus, total	7723-14-0	E420	2210 mg/L	2000 mg/L	111	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	800 mg/L	ND	70.0	130	----
		rubidium, total	7440-17-7	E420	3.84 mg/L	4 mg/L	96.0	70.0	130	----
		selenium, total	7782-49-2	E420	7.37 mg/L	8 mg/L	92.1	70.0	130	----
		silicon, total	7440-21-3	E420	2010 mg/L	2000 mg/L	100	70.0	130	----
		silver, total	7440-22-4	E420	0.711 mg/L	0.8 mg/L	88.9	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	400 mg/L	ND	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
Total Metals (QCLot: 308870) - continued										
VA21C0811-002	Anonymous	strontium, total	7440-24-6	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	4480 mg/L	4000 mg/L	112	70.0	130	----
		tellurium, total	13494-80-9	E420	6.91 mg/L	8 mg/L	86.4	70.0	130	----
		thallium, total	7440-28-0	E420	0.634 mg/L	0.8 mg/L	79.2	70.0	130	----
		thorium, total	7440-29-1	E420	3.58 mg/L	4 mg/L	89.6	70.0	130	----
		tin, total	7440-31-5	E420	3.53 mg/L	4 mg/L	88.4	70.0	130	----
		titanium, total	7440-32-6	E420	8.39 mg/L	8 mg/L	105	70.0	130	----
		tungsten, total	7440-33-7	E420	3.53 mg/L	4 mg/L	88.3	70.0	130	----
		uranium, total	7440-61-1	E420	0.693 mg/L	0.8 mg/L	86.6	70.0	130	----
		vanadium, total	7440-62-2	E420	20.4 mg/L	20 mg/L	102	70.0	130	----
		zinc, total	7440-66-6	E420	71.8 mg/L	80 mg/L	89.7	70.0	130	----
		zirconium, total	7440-67-7	E420	7.95 mg/L	8 mg/L	99.4	70.0	130	----
Total Metals (QCLot: 310864)										
FJ2100959-002	Anonymous	mercury, total	7439-97-6	E508	0.0000946 mg/L	0.0001 mg/L	94.6	70.0	130	----
Dissolved Metals (QCLot: 304861)										
VA21C0813-002	MW06-34-0921	aluminum, dissolved	7429-90-5	E421	ND mg/L	0.2 mg/L	ND	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0217 mg/L	0.02 mg/L	108	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	0.0430 mg/L	0.04 mg/L	107	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00933 mg/L	0.01 mg/L	93.3	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.096 mg/L	0.1 mg/L	96.5	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00447 mg/L	0.004 mg/L	112	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	0.0105 mg/L	0.01 mg/L	105	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0436 mg/L	0.04 mg/L	109	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0218 mg/L	0.02 mg/L	109	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0213 mg/L	0.02 mg/L	106	70.0	130	----
		iron, dissolved	7439-89-6	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0198 mg/L	0.02 mg/L	99.1	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0192 mg/L	0.02 mg/L	96.1	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0442 mg/L	0.04 mg/L	110	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	11.7 mg/L	10 mg/L	117	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: 304861) - continued										
VA21C0813-002	MW06-34-0921	potassium, dissolved	7440-09-7	E421	4.64 mg/L	4 mg/L	116	70.0	130	----
		rubidium, dissolved	7440-17-7	E421	0.0225 mg/L	0.02 mg/L	112	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0360 mg/L	0.04 mg/L	89.9	70.0	130	----
		silicon, dissolved	7440-21-3	E421	ND mg/L	10 mg/L	ND	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00639 mg/L	0.008 mg/L	79.9	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	20.5 mg/L	20 mg/L	103	70.0	130	----
		tellurium, dissolved	13494-80-9	E421	0.0299 mg/L	0.04 mg/L	74.9	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00390 mg/L	0.004 mg/L	97.4	70.0	130	----
		thorium, dissolved	7440-29-1	E421	0.0214 mg/L	0.02 mg/L	107	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0192 mg/L	0.02 mg/L	95.9	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0442 mg/L	0.04 mg/L	110	70.0	130	----
		tungsten, dissolved	7440-33-7	E421	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00427 mg/L	0.004 mg/L	107	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.113 mg/L	0.1 mg/L	113	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.434 mg/L	0.4 mg/L	108	70.0	130	----
		zirconium, dissolved	7440-67-7	E421	0.0416 mg/L	0.04 mg/L	104	70.0	130	----
Dissolved Metals (QCLot: 309877)										
VA21C0813-002	MW06-34-0921	mercury, dissolved	7439-97-6	E509	0.0000955 mg/L	0.0001 mg/L	95.5	70.0	130	----
Dissolved Metals (QCLot: 310856)										
FJ2100959-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000968 mg/L	0.0001 mg/L	96.8	70.0	130	----
Dissolved Metals (QCLot: 310889)										
VA21C1537-001	Anonymous	mercury, dissolved	7439-97-6	E509	0.000100 mg/L	0.0001 mg/L	100	70.0	130	----
Dissolved Metals (QCLot: 311447)										
YL2101442-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.201 mg/L	0.2 mg/L	101	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0195 mg/L	0.02 mg/L	97.5	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0199 mg/L	0.02 mg/L	99.7	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	0.0392 mg/L	0.04 mg/L	98.1	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00821 mg/L	0.01 mg/L	82.1	70.0	130	----
		boron, dissolved	7440-42-8	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00378 mg/L	0.004 mg/L	94.5	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	0.00968 mg/L	0.01 mg/L	96.8	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: 311447) - continued										
YL2101442-001	Anonymous	chromium, dissolved	7440-47-3	E421	0.0384 mg/L	0.04 mg/L	95.9	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0182 mg/L	0.02 mg/L	91.0	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0184 mg/L	0.02 mg/L	91.9	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.93 mg/L	2 mg/L	96.4	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0180 mg/L	0.02 mg/L	90.2	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0969 mg/L	0.1 mg/L	96.9	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0356 mg/L	0.04 mg/L	88.9	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	10.5 mg/L	10 mg/L	105	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		rubidium, dissolved	7440-17-7	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0388 mg/L	0.04 mg/L	97.1	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.78 mg/L	10 mg/L	87.8	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00300 mg/L	0.004 mg/L	75.0	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	ND mg/L	20 mg/L	ND	70.0	130	----
		tellurium, dissolved	13494-80-9	E421	0.0397 mg/L	0.04 mg/L	99.2	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00350 mg/L	0.004 mg/L	87.5	70.0	130	----
		thorium, dissolved	7440-29-1	E421	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0196 mg/L	0.02 mg/L	98.1	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0399 mg/L	0.04 mg/L	99.8	70.0	130	----
		tungsten, dissolved	7440-33-7	E421	0.0184 mg/L	0.02 mg/L	92.1	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00377 mg/L	0.004 mg/L	94.2	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.0999 mg/L	0.1 mg/L	99.9	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.378 mg/L	0.4 mg/L	94.5	70.0	130	----
		zirconium, dissolved	7440-67-7	E421	0.0411 mg/L	0.04 mg/L	103	70.0	130	----
Speciated Metals (QCLot: 305694)										
VA21C0813-002	MW06-34-0921	chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.257 mg/L	0.25 mg/L	103	85.0	115	----
Speciated Metals (QCLot: 306885)										
VA21C0813-012	20MW-09-0921	chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.258 mg/L	0.25 mg/L	103	85.0	115	----
Speciated Metals (QCLot: 306886)										
VA21C0813-002	MW06-34-0921	chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.254 mg/L	0.25 mg/L	102	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
Volatile Organic Compounds (QCLot: 309107)										
FJ2101001-002	Anonymous	benzene	71-43-2	E611C	100 µg/L	100 µg/L	100	60.0	140	----
		bromodichloromethane	75-27-4	E611C	68.9 µg/L	100 µg/L	68.9	60.0	140	----
		bromoform	75-25-2	E611C	109 µg/L	100 µg/L	109	60.0	140	----
		carbon tetrachloride	56-23-5	E611C	60.1 µg/L	100 µg/L	60.1	60.0	140	----
		chlorobenzene	108-90-7	E611C	100 µg/L	100 µg/L	100	60.0	140	----
		chloroethane	75-00-3	E611C	99.8 µg/L	100 µg/L	99.8	50.0	150	----
		chloroform	67-66-3	E611C	99.0 µg/L	100 µg/L	99.0	60.0	140	----
		chloromethane	74-87-3	E611C	94.1 µg/L	100 µg/L	94.1	50.0	150	----
		dibromochloromethane	124-48-1	E611C	92.0 µg/L	100 µg/L	92.0	60.0	140	----
		dichlorobenzene, 1,2-	95-50-1	E611C	100 µg/L	100 µg/L	100	60.0	140	----
		dichlorobenzene, 1,3-	541-73-1	E611C	99.5 µg/L	100 µg/L	99.5	60.0	140	----
		dichlorobenzene, 1,4-	106-46-7	E611C	99.8 µg/L	100 µg/L	99.8	60.0	140	----
		dichloroethane, 1,1-	75-34-3	E611C	102 µg/L	100 µg/L	102	60.0	140	----
		dichloroethane, 1,2-	107-06-2	E611C	93.0 µg/L	100 µg/L	93.0	60.0	140	----
		dichloroethylene, 1,1-	75-35-4	E611C	98.2 µg/L	100 µg/L	98.2	60.0	140	----
		dichloroethylene, cis-1,2-	156-59-2	E611C	98.9 µg/L	100 µg/L	98.9	60.0	140	----
		dichloroethylene, trans-1,2-	156-60-5	E611C	94.5 µg/L	100 µg/L	94.5	60.0	140	----
		dichloromethane	75-09-2	E611C	105 µg/L	100 µg/L	105	60.0	140	----
		dichloropropane, 1,2-	78-87-5	E611C	94.2 µg/L	100 µg/L	94.2	60.0	140	----
		dichloropropylene, cis-1,3-	10061-01-5	E611C	62.3 µg/L	100 µg/L	62.3	60.0	140	----
		dichloropropylene, trans-1,3-	10061-02-6	E611C	74.9 µg/L	100 µg/L	74.9	60.0	140	----
		ethylbenzene	100-41-4	E611C	100 µg/L	100 µg/L	100	60.0	140	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	97.3 µg/L	100 µg/L	97.3	60.0	140	----
		styrene	100-42-5	E611C	97.6 µg/L	100 µg/L	97.6	60.0	140	----
		tetrachloroethane, 1,1,1,2-	630-20-6	E611C	84.7 µg/L	100 µg/L	84.7	60.0	140	----
		tetrachloroethane, 1,1,2,2-	79-34-5	E611C	99.2 µg/L	100 µg/L	99.2	60.0	140	----
		tetrachloroethylene	127-18-4	E611C	102 µg/L	100 µg/L	102	60.0	140	----
		toluene	108-88-3	E611C	102 µg/L	100 µg/L	102	60.0	140	----
		trichloroethane, 1,1,1-	71-55-6	E611C	68.1 µg/L	100 µg/L	68.1	60.0	140	----
		trichloroethane, 1,1,2-	79-00-5	E611C	98.7 µg/L	100 µg/L	98.7	60.0	140	----
		trichloroethylene	79-01-6	E611C	108 µg/L	100 µg/L	108	60.0	140	----
		trichlorofluoromethane	75-69-4	E611C	104 µg/L	100 µg/L	104	50.0	150	----
		vinyl chloride	75-01-4	E611C	95.7 µg/L	100 µg/L	95.7	50.0	150	----
		xylene, m+p-	179601-23-1	E611C	200 µg/L	200 µg/L	100	60.0	140	----
		xylene, o-	95-47-6	E611C	100 µg/L	100 µg/L	100	60.0	140	----





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Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 20 - 936858

Page of

Environmental Division
Vancouver

Work Order Reference
VA21C0813



Telephone: - 1 604 253 4188

Report To Contact and company name below will appear on the final report		Reports / Recipients		Turnaround Time (TAT) Requested	
Company: <u>Jacobs</u>		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EXD (DIGITAL)		<input type="checkbox"/> Routine [R] if received by 3pm M-F - no surcharges apply	
Contact: <u>Jelena Stadojevic</u>		Merge QC/QCI Reports with COA <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A		<input type="checkbox"/> 4 day [P4] if received by 3pm M-F - 20% rush surcharge min/r	
Phone:		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		<input type="checkbox"/> 3 day [P3] if received by 3pm M-F - 25% rush surcharge min/r	
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		<input type="checkbox"/> 2 day [P2] if received by 3pm M-F - 50% rush surcharge min/r	
Street:		Email 1 or Fax: <u>Jelena.Stadojevic@Jacobs.com</u>		<input type="checkbox"/> 1 day [E] if received by 3pm M-F - 100% rush surcharge min/r	
City/Province:		Email 2: <u>Amy.Lasen@Jacobs.com</u>		<input type="checkbox"/> Same day [E2] if received by 10am M-S - 200% rush surcharge. AC may apply to rush requests on weekends, statutory holidays and non	
Postal Code:		Email 3: <u>Reid.Cai@Jacobs.com</u>		Date and Time Required for all E&P TATs:	
Invoice To		Invoice Recipients		For all tests with rush TATs requested, please	
Same as Report To <input type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		Analysis F	
Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		Email 1 or Fax: <u>Jelena.Stadojevic@Jacobs.com</u>		Indicate Filtered (F), Preserved (P) or Filtered	
Company: <u>Jacobs</u>		Email 2:		NUMBER OF CONTAINERS	
Contact: <u>Jelena Stadojevic</u>		Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:		AFE/Cost Center:		PO#	
Job #: <u>CE777000</u>		Major/Minor Code:		Routing Code:	
PO / AFE:		Requisitioner:		Location:	
LSD:		ALS Lab Work Order # (ALS use only):		ALS Contact: <u>Ashoton</u>	
				Sampler: <u>AC/RC</u>	

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Total Metal	Total Cr 6+	Total Mercury	Dissolve Metal	Dissolve Cr 6+	Dissolve Mercury	PAH	VOC	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARDOUS (see no)
	MW19-03-0921	22/sep/21	15:00	GW												
	MW06-34-0921		13:00													
	20 MW-045-0921		10:00													
	MW06-34-0921 - B		12:00													
	MW19-01-0921		11:00													
	MW06-34-0921															
	DUP-2-0921															
	20 MW-08-0921															
	TB															

Drinking Water (DW) Samples¹ (client use)		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)		SAMPLE RECEIPT DETAILS (ALS use only)			
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input type="checkbox"/> NO		For MW06-34-0921 - B samples, Dissolve Metal, Hg are no filter / no preserved, Lab filter required. Dissolve Cr 6+ is filtered		Cooling Method: <input type="checkbox"/> NONE <input checked="" type="checkbox"/> ICE <input type="checkbox"/> ICE PACKS <input type="checkbox"/> FROZEN <input type="checkbox"/> COOLING INITIATED			
Are samples for human consumption/ use? <input type="checkbox"/> YES <input type="checkbox"/> NO				Submission Comments identified on Sample Receipt Notification: <input type="checkbox"/> YES <input type="checkbox"/> NO			
				Cooler Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A Sample Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A			
				INITIAL COOLER TEMPERATURES °C		FINAL COOLER TEMPERATURES °C	
				4		15	
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (ALS use only)		FINAL SHIPMENT RECEPTION (ALS use only)			
Released by: <u>Reid Cai</u>	Date: <u>09/22/21</u>	Time: <u>18:00</u>	Received by:	Date:	Time:	Received by: <u>(Signature)</u>	Date: <u>SEP 22 2021</u>
							Time: <u>18:03</u>



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Chain of Custody (COC) / Analytical Request Form

COC Number: 20 - 936857

Canada Toll Free: 1 800 668 9878

Page of

Report To Contact and company name below will appear on the final report		Reports / Recipients			Turnaround Time (TAT) Requested			AFFIX ALS BARCODE LABEL HERE (ALS use only)		
Company:	<i>jeobs</i>	Select Report Format:	<input type="checkbox"/> PDF <input type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)	<input type="checkbox"/> Routine [R] if received by 3pm M-F - no surcharges apply						
Contact:	<i>Jelena Stadojevic</i>	Merge QC/QCI Reports with COA	<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A	<input type="checkbox"/> 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum						
Phone:		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		<input type="checkbox"/> 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum						
Company address below will appear on the final report		Select Distribution:	<input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX	<input type="checkbox"/> 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum						
Street:		Email 1 or Fax	<i>Same</i>	<input type="checkbox"/> 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum						
City/Province:		Email 2		<input type="checkbox"/> Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests						
Postal Code:		Email 3		Date and Time Required for all E&P TATs:			dd-mmm-yy hh:mm am/pm			
Invoice To	Same as Report To <input type="checkbox"/> YES <input type="checkbox"/> NO	Invoice Recipients			For all tests with rush TATs requested, please contact your AM to confirm availability.					
	Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO	Select Invoice Distribution:	<input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX	Analysis Request						
Company:		Email 1 or Fax		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below						
Contact:		Email 2		NUMBER OF CONTAINERS <i>Same</i>				SAMPLES ON HOLD		
Project Information		Oil and Gas Required Fields (client use)								
ALS Account # / Quote #		AFE/Cost Center:	PO#							
Job #:	<i>CE 777000</i>	Major/Minor Code:	Routing Code:							
PO / AFE:		Requisitioner:								
LSD:		Location:		EXTENDED STORAGE REQUIRED				SUSPECTED HAZARD (see notes)		
ALS Lab Work Order # (ALS use only):		ALS Contact:	<i>Ashoton</i>						Sampler:	<i>AC/RC</i>
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)						Sample Type	
	<i>20 MW-05-0921</i>	<i>20/sep/21</i>	<i>13:00</i>						<i>GW</i>	
	<i>20 MW-10D-0921</i>	<i>21/sep/21</i>	<i>11:50</i>							
	<i>20 MW-10S-0921</i>									
	<i>20 MW-09-0921</i>		<i>12:00</i>							
	<i>20 MW-06-0921</i>		<i>16:00</i>							
	<i>20 MW-04D-0921</i>		<i>18:00</i>							
	<i>20 MW-11-0921</i>		<i>14:00</i>							
	<i>Dup-1-0921 - only dissolved no total</i>									
Drinking Water (DW) Samples¹ (client use)		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)			SAMPLE RECEIPT DETAILS (ALS use only)					
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input type="checkbox"/> NO					Cooling Method: <input type="checkbox"/> NONE <input checked="" type="checkbox"/> ICE <input type="checkbox"/> ICE PACKS <input type="checkbox"/> FROZEN <input type="checkbox"/> COOLING INITIATED					
Are samples for human consumption/ use? <input type="checkbox"/> YES <input type="checkbox"/> NO					Submission Comments identified on Sample Receipt Notification: <input type="checkbox"/> YES <input type="checkbox"/> NO					
					Cooler Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A Sample Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A					
					INITIAL COOLER TEMPERATURES °C					
					*FINAL COOLER TEMPERATURES °C					
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)					
Released by:	<i>Reid Cai</i>	Date:	<i>09/22/21</i>	Time:	<i>1:00</i>	Received by:	<i>Z</i>			
		Date:		Date:		Date:	<i>SEP 22 2021</i>			
						Time:	<i>6:07</i>			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FORM

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.

Appendix B

Data Quality Evaluation

Suite 800, 10010 – 106 Street NW
Edmonton, AB T5J 3L8
Canada
T +1.780.409.9298
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Subject Data Quality Evaluation Report

Project Name Eagle Mountain - Woodfibre Gas Pipeline Project

Prepared For FortisBC Energy Inc. (FortisBC)

Prepared By Jay Bilyk/Jacobs Consultancy Canada Inc. (Jacobs)

Date October 22, 2021

Project Number CE777000

1. Introduction

The objective of this data quality evaluation (DQE) report is to assess the quality of analytical results for groundwater samples collected at the FortisBC Eagle Mountain - Woodfibre Gas Pipeline Project (the Project) site in British Columbia (BC). Jacobs collected samples between December 12, 2020 and September 22, 2021.

Individual method requirements, the U.S. Environmental Protection Agency (USEPA) Contract Laboratory National Functional Guidelines for Organic Data Review (USEPA 2017a), and the USEPA Contract Laboratory National Functional Guidelines for Inorganic Data Review (USEPA 2017b) were used in this assessment.

The analytical results were evaluated using the criteria of precision, accuracy, representativeness, comparability, and completeness (PARCC). This report is intended as a general DQE designed to summarize data issues.

2. Analytical Data

This DQE report covers 52 normal (N) ground water samples, 7 groundwater field duplicate (FD) samples, 2 trip blank (TB) water samples, as well as associated field quality control (QC) samples. Samples were reported in eight Certificates of Analysis (CoAs) listed as: VA20C3657, VA20C3659, VA20C3660, VA20C4120, VA21A0730, VA21A4849, VA21B2503, and VA21C0813.

Samples were collected and delivered to ALS Environmental Canada Ltd. in Burnaby, BC, for analysis. Selected samples were analyzed for one or more of the methods listed in Table 1.

Data Quality Evaluation Report

Table 1. Analytical Parameters

Parameters	Literature Reference
Total Metals in Water by CRC ICPMS	EPA 200.2/6020B
Dissolved Metals in Water by CRC ICPMS	APHA 3030B/EPA 6020B
Total Mercury in Water by CVAAS	EPA 1631E
Dissolved Mercury in Water by CVAAS	APHA 3030B/EPA 1631E
Total/Dissolved Hexavalent Chromium (Cr VI) by IC	APHA 3500-Cr-C (IC)
BC PHC - EPH by GC-FID	BC MOE Lab Manual
VOCs (BC List) by Headspace GC-MS	EPA 8260D
PAHs by Hexane LVI GC-MS	EPA 8270E
Dissolved Hardness (Calculated)	APHA 2340B
Hardness (Calculated) from Total Ca/Mg	APHA 2340B
LEPH and HEPH: EPH-PAH	BC MOE Lab Manual (LEPH and HEPH)
Dissolved Metals Water Filtration	APHA 3030B
Dissolved Mercury Water Filtration	APHA 3030B

Notes:

APHA = American Public Health Association

BC MOE = British Columbia Ministry of Environment and Climate Change Strategy

Cr = chromium

CRC ICPMS = collision/reaction cell inductively-coupled plasma mass spectrophotometry

CVAAS = cold vapor-atomic absorption spectrophotometry

EPA = United States Environmental Protection Agency

EPH = extractable petroleum hydrocarbons

GC-FID = gas chromatography/flame ionization detector

HEPH = heavy extractable petroleum hydrocarbons

IC = ion chromatograph

LEPH = light extractable petroleum hydrocarbons

PHC = petroleum hydrocarbon

VOC = volatile organic compounds

The assessment of data includes a review of the following: chain-of-custody documentation; holding-time compliance; required QC samples at the specified frequencies; method blank (MB) samples; matrix spike (MS) samples; laboratory control samples (LCS); laboratory duplicates (LD); surrogate recoveries; field QC samples; and laboratory general comments.

Data flags are assigned according to the data validation outcomes. Multiple flags are routinely applied to specific sample method, matrix, and analyte combinations, but there will be only one final flag. A final flag is applied to the data and is the most conservative of the applied validation flags. The final flag also includes blank sample impacts.

The data flags are defined as follows:

- J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- R = The sample result was rejected because of deficiencies in the ability to analyze the sample and meet the QC criteria. The presence or absence of the analyte could not be verified. Data flagged "R" were not used in the decision-making process.
- U = The analyte was analyzed for, but was not detected above, the reported sample quantitation limit; or a detection in the samples was changed to a non-detected result and flagged "U" due to blank contamination or other QC issues.
- UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

3. Findings

The overall summaries of the data validation are contained in the following sections. Qualified data are listed in Table 2.

Table 2. Analytical Parameters

CoA	Sample ID	Analyte	Final Result	Units	Final Flag	Reason
VA21A4849	20MW-10D_031521	Total Phosphorus	0.249	mg/L	J	FD>RPD
VA21A4849	QA3_031521	Total Phosphorus	0.361	mg/L	J	FD>RPD
VA21A4849	20MW-04D_031521	Dissolved Iron	26.7	mg/L	J	LCS<LCL
VA21A4849	20MW-04S_031521	Dissolved Iron	0.028	mg/L	J	LCS<LCL
VA21A4849	20MW-05_031521	Dissolved Iron	18.4	mg/L	J	LCS<LCL
VA21A4849	20MW-06_031521	Dissolved Iron	16.5	mg/L	J	LCS<LCL
VA21A4849	20MW-07_031521	Dissolved Iron	18.8	mg/L	J	LCS<LCL
VA21A4849	20MW-08_031521	Dissolved Iron	32.6	mg/L	J	LCS<LCL
VA21A4849	20MW-09_031521	Dissolved Iron	0.49	mg/L	J	LCS<LCL
VA21A4849	20MW-10D_031521	Dissolved Iron	27.1	mg/L	J	LCS<LCL
VA21A4849	20MW-10S_031521	Dissolved Iron	27.1	mg/L	J	LCS<LCL
VA21A4849	20MW-11_031521	Dissolved Iron	12.6	mg/L	J	LCS<LCL
VA21A4849	MW06-34_031521	Dissolved Iron	12.3	mg/L	J	LCS<LCL
VA21A4849	MW19-01_031521	Dissolved Iron	20.1	mg/L	J	LCS<LCL
VA21A4849	MW19-03_031521	Dissolved Iron	20.6	mg/L	J	LCS<LCL
VA21A4849	QA3_031521	Dissolved Iron	27.5	mg/L	J	LCS<LCL
VA21A4849	QA4_031521	Dissolved Iron	12.5	mg/L	J	LCS<LCL

Table 2. Analytical Parameters

CoA	Sample ID	Analyte	Final Result	Units	Final Flag	Reason
VA21B2503	20MW-04S-0621	Dissolved Chromium	0.0108	mg/L	J	LD>RPD
VA21B2503	20MW-04S-0621	Dissolved Molybdenum	0.00108	mg/L	J	LD>RPD
VA21B2503	20MW-04S-0621	Dissolved Nickel	0.00436	mg/L	J	LD>RPD

Validation Reasons:

FD>RPD = Field duplicate precision exceeded criteria.

LD>RPD = Laboratory duplicate precision exceeded criteria.

LCS<LCL = Laboratory control sample recovery was less than the lower control limit.

Final Flag Descriptions:

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

Notes:

mg/L = milligram(s) per litre

3.1 Chain-of-Custody

No discrepancies were noted.

3.2 Holding Times

All method-prescribed holding-time criteria were met.

3.3 Method Blanks

Method blanks were analyzed at the required frequency. All results were reported below the reportable detection limit or within acceptable values.

3.4 Matrix Spike Samples

MS were performed as required by the analytical methods. In some cases, other Project samples were used to fulfill the laboratory's QC batch requirements. When samples from this site were used, all accuracy criteria were met.

3.5 Laboratory Control Samples

LCS were analyzed as required. Accuracy and precision criteria were met, with the following exception:

- In CoA VA21A4849, the LCS recovery for dissolved iron was less than the lower control limit. All detected results were flagged "J" and are considered estimates.

3.6 Laboratory Duplicates

Laboratory duplicates were analyzed as required. All results met the applicable control limits, with the following exception:

- In CoA VA21B2503, the relative percent differences (RPDs) in the LD for dissolved chromium, dissolved molybdenum, and dissolved nickel exceeded the control limit. The associated results in the parent sample (20MW-04S-0621) were flagged "J" and should be considered estimates.

3.7 Surrogates

Surrogates were used as directed by analytical method requirements. All surrogate recoveries met the applicable control limits.

3.8 Field Duplicates

FDs were collected and analyzed as required. Precision was generally acceptable, with the following exception:

- In CoA VA21A4849, the RPD was greater than the control limit for total phosphorous in one FD pair. The associated detected results in both samples were qualified as estimated and flagged "J".

3.9 Trip Blanks

Trip blanks were analyzed at the required frequency. All results were reported below the associated detection limits.

4. Overall Assessment

The final activity in the DQE is an assessment of whether the data meet the data quality objectives. The goal of this assessment is to demonstrate that a sufficient number of representative samples were collected, and that the resulting analytical data can be used to support the decision-making process. The following summary highlights the data evaluation findings for the previously defined events:

- Precision of the data was verified through the review of the laboratory data quality indicators that include the following: LCS, MS, FD, and LD RPDs. Precision was generally acceptable, with the exception of two total phosphorous results and three dissolved metals results. Two VOC results were qualified as estimated due to FD or LD precision exceedances. The overall precision was acceptable, taking into consideration the qualifiers applied to the data.
- Accuracy of the data was verified through the review of the LCS and MS recoveries, as well as the evaluation of the TB and MB results. All TB and MB results were acceptable. One dissolved iron LCS recovery was reported as less than the lower control limit, requiring the qualification of fifteen results. Overall, accuracy of the data was acceptable.
- Representativeness of the data was verified through the sample's collection and storage, and the verification of holding-time compliance. The laboratory did not note any issues related to sample collection or storage of the samples. All data were reported within the USEPA recommended holding-time. The representativeness was acceptable.
- Comparability of the data was verified through the use of standard USEPA analytical procedures and standard units for reporting. Results obtained are comparable to industry standards, in that the collection and analytical techniques followed approved, documented procedures. The comparability was acceptable.

- Completeness is a measure of the number of valid measurements obtained in relation to the total number of measurements planned. Completeness is expressed as the percentage of valid or usable measurements compared to planned measurements. Valid data are defined as all data that are not rejected for Project use. The completeness goal of 95 percent was met for analytes and methods.

5. References

U.S. Environmental Protection Agency (USEPA). 2017a. *Contract Laboratory National Functional Guidelines for Organic Data Review*. January.

U.S. Environmental Protection Agency (USEPA). 2017b. *Contract Laboratory National Functional Guidelines for Inorganic Data Review*. January.