Eagle Mountain - Woodfibre Gas Pipeline Project

BCER Waste Discharge Permit Weekly Report

Contents

Preamble

This weekly report for the British Columbia Energy Regulator (BCER) Waste Discharge Permit (BCER number PE-110163) for the FortisBC Eagle Mountain – Woodfibre Gas Pipeline (EGP) Project includes the results of water quality monitoring and sampling of the receiving environments (upstream and downstream) and points of discharge.

FortisBC has retained Triton Environmental Consultants Ltd. as the Qualified Professional to implement and oversee the monitoring and sampling program in the receiving environments. The data represented below, including laboratory reported exceedances, represent background conditions from the receiving environment sampling as shown on the Waste Discharge Permit.

Introduction

The results provided in this document are submitted to BC Energy Regulator (BCER) by FortisBC as per the requirements listed in the Waste Discharge Permit PE-110163 Section 4.2:

> The Permittee shall summarize the results of the discharge and receiving environment compliance sampling and monitoring program in a report that shall be submitted weekly over the term of this permit. The sampling and monitoring results shall be suitably tabulated and include comparison to the respective British Columbia Approved and Working Water Quality Guidelines for Freshwater & Marine Aquatic Life, as published by the Ministry of Environment & Climate Change Strategy. Any exceedance of regulatory guidelines shall be clearly highlighted, and any missed sampling events/missing data shall be identified with an explanation provided. Reporting frequency may be reduced upon a history of compliance and by written confirmation from the BCER. These reports shall be submitted to Waste.Management@bc-er.ca. A copy of the reports shall be provided to each First Nation consulted with regarding the subject permit, and also made publicly available on the FortisBC Eagle Mountain-Woodfibre Gas Pipeline Project | Talking Energy webpage.

Sampling Methodology

The monitoring and sampling has been carried out in accordance with the procedures described in the most recent edition of the “British Columbia Field Sampling Manual” using field equipment and lab samples to meet daily and real time requirements for the Waste Discharge Permit.

At the receiving environments, real time and daily readings are being monitored at the same time with one piece of equipment, allowing all the daily readings real time. Visible sheen will be monitored with visual inspections during times of discharge or sampling.
At the point of discharge from the WTP, the parameters are being monitored using field equipment and sondes/real time meters. Table 1 and Table 2 below show how each parameter is being monitored.

Table 1. Monitor Details for the Point of Discharge from the Water Treatment System-BC Rail and Woodfibre

Permit Frequency	Parameters	Details
Daily	Visible Sheen	In field inspection
Daily (or per batch)	DO	Monitoring using YSI ProDSS
	ORP	Monitoring using YSI ProDSS
	Salinity	Monitoring using YSI ProDSS
Real Time (or per batch)	pH	Monitoring using GF Dryloc pH Series NPT
	Temperature	Monitoring using LevelPro PT100 Temperature and Signet 2350 Temp sensor
	NTU	Monitoring using Observator NEP9504GPI
	Electrical Conductivity	Monitoring using ProCon C450
Weekly (or per batch) Lab Samples	List prescribed in permit	Lab samples

Table 2. Monitor Details for the Receiving Environment (upstream and downstream)-BC Rail and Woodfibre

Permit Frequency	Parameters	Details
Daily	Visible Sheen	In field inspection
Daily	DO	Monitoring using Sonde- AquaTROLL 600 datalogger
	ORP	Monitoring using Sonde- AquaTROLL 600 datalogger
	Salinity	Monitoring using Sonde- AquaTROLL 600 datalogger
Real Time	pH	Monitoring using Sonde- AquaTROLL 600 datalogger
	Temperature	Monitoring using Sonde- AquaTROLL 600 datalogger
	NTU	Monitoring using Sonde- AquaTROLL 600 datalogger
	Electrical Conductivity	Monitoring using Sonde- AquaTROLL 600 datalogger
Weekly Lab Samples	List prescribed in permit	Lab samples

*Note that Woodfibre receiving environment downstream sonde is not in place due to dry conditions

Summary-BC Rail Site

Site Activities

- One batch (414.3 m^3) was discharged from 2024-10-18 to 2024-10-21.
- Water produced by the water treatment plant is being recirculated for tunneling and to create grout for tunneling.

Point of Discharge from Water Treatment System Monitoring

Table 3 below includes information on water quality and lab sampling during discharges. Appendix A includes a full set of lab results with real time/field samples from discharges.

Table 3: Discharge from Water Treatment System Information

Location	Date of Discharge	Date of Lab Sample (for the discharge)	Real Time Monitored	Field Samples Taken	Discharge Rate (batch)	Discharge Volume (batch)	Results
BC Rail	2024-10-18 to 2024-10-21	2024-10-15	No	Yes- for Batch	260-350 GPM	404.3 m^3	Yes, Lab Results

*Max discharge is 515 m3/day

Exceedances

No exceedances this reporting period.

Receiving Environment Monitoring

The receiving environment is being monitored as outlined in the permit.

Table 4: Upstream Monitoring Information

Location	Date of Lab Sample	Real Time Monitored	Results
Squamish River Upstream	2024-10-15	Yes *	Full set of lab sample results, photo and documentation are provided in Appendix B.

Table 5: Downstream Monitoring Information

	Date of Lab Sample	Real Time Monitored	Results
Squamish River Downstream	2023-10-15	Yes *	Full set of lab sample results, photo and documentation are provided in Appendix B.

***** Sondes set up to log temperature, specific conductivity, salinity (in PSU), pH, ORP, DO (mg/L), and turbidity (NTU) at 10-minute intervals.

Receiving Environment Monitoring Details

- Visual sheen checks conducted for days of discharge.
- All receiving environment lab results are in Appendix B.
- Any recorded exceedances in the laboratory and field samples collected from the receiving environment (upstream and downstream) are indicative of the existing background water quality in the Squamish River, and are not related to the EGP Project activities.

Summary-Woodfibre

Site Activities

- In collaboration with the QP, it was determined the flow in East Creak had increased enough for the sonde to be moved to the original permitted location close to the discharge point on October 2nd. On October 11th, in collaboration with the QP, the sonde was moved again to a more representative location approximately 65m from the discharge point.
- On October 3rd, 2024, the Permittee entered the 3.1 Maintenance of Works and Emergency Procedures clause as outlined in the Permit for emergency discharge from the Woodfibre water treatment. Notification was sent to BCER on October 3rd as required in the permit. The emergency discharge was complete by October 14th as sample results were assessed to be within guidelines.

Point of Discharge from Water Treatment System Monitoring

Table 3 below includes information on the discharge water. Appendix C includes real time/field samples from the discharge.

Table 3: Discharges from Water Treatment System

Location	Date of Discharge	Real Time Monitored and Daily Monitoring	Discharge Volume
Woodfibre	2024-10-14	Yes-Appendix C	226m^3
Woodfibre	2024-10-15	Yes-Appendix C	288m^3
Woodfibre	2024-10-16	Yes-Appendix C	308 m^3
Woodfibre	2024-10-17	Yes-Appendix C	351m^3
Woodfibre	2024-10-18	Yes-Appendix C	255m^3
Woodfibre	2024-10-19	Yes-Appendix C	416m^3
Woodfibre	2024-10-20	Yes-Appendix C	234m^3

*Max discharge is 1500m^3/day

Exceedances

See above.

Receiving Environment Monitoring

The receiving environment is being monitored as outlined in the permit with additional oversight by the QP.

Table 4: Upstream Monitoring Information

Location	Date of Lab Sample	Real Time Monitored	Results
Woodfibre Upstream	2024-10-16	Yes *	Full set of lab sample results, photo and documentation are provided in Appendix D.

Table 5: Downstream Monitoring Information

	Date of Lab Sample	Real Time Monitored	Results
Woodfibre Downstream	2024-10-16	Yes *	In collaboration with the QP, it was determined the flow in East Creak had increased enough for the sonde to be moved to the original permitted location close to the discharge point on October 2nd. On October 11th, in collaboration with the QP, the sonde was moved again to a more representative location approximately 65m from the discharge point.

***** Sondes set up to log temperature, specific conductivity, salinity (in PSU), pH, ORP, DO (mg/L), and turbidity (NTU) at 10-minute intervals.

Receiving Environment Monitoring Details

- Visual sheen checks are conducted during discharges.
- Recorded exceedances in the laboratory and field samples collected from the receiving environment (upstream and downstream) may be indicative of the existing background water quality in the East Creek and are not related to the EGP Project activities.

Appendix A: BCR Site Point of Discharge from Water Treatment Plant Documentation

BCR Site Batch Sample Analysis

FRONTIER-KEMPER MICHELS® joint venture	Eagle Mountain- Woodfibre Gas Pipeline Project- Tunnel Scope		
Title	**BC Rail Batch Water Discharge Report**	**Revision:**	**0**
Data	**October 18th**	**Prepared by:** **Date:**	**SD** **October 29th**

Table of Contents:

Executive Summary and Field Notes:

On October 18th, FKM initiated a new batch discharge at the BC Rail site. The discharge began at 11:50 AM and concluded on October 21st at 20:54. Total volume of discharge water was 404.3 m3, with an average flow rate ranging between 200 to 350 GPM.

Table 1: Discharge details

Date	Time	Flow Rate (GPM)	Volume (m3)	Duration
18-Oct-2024	11:50 AM	330	77.38	1 hour and 50 minutes
19-Oct-2024	02:58 PM	350	96.14	1 hour and 53 minutes
20-Oct-2024	03:15 PM	260	59.72	1 hour 43 minutes
20-Oct-2024	10:03 PM	350	80.66	1hours 25 minutes
21-Oct-2024	07:19 PM	320	90.4	1 hour 35 minutes

FRONTIER-KEMPER MICHELS® joint venture		Eagle Mountain- Woodfibre Gas Pipeline Project- Tunnel Scope	
Title	**BC Rail Batch Water Discharge Report**	**Revision:**	**0**
Data	**October 18th**	**Prepared by:** **Date:**	**SD** **October 29th**

Discharge Sample results:

Table 2: Lab Sample

Client Sample ID		BCR WTP
Date Sampled		15-Oct-2024
Time Sampled		08:50
ALS Sample ID		VA24C7463-001
Analyte	Units	Sub-Matrix: Water
Field Tests (Matrix: Water)		
Temperature, field	°C	15.2
pH, field	pH units	7.30
Physical Tests (Matrix: Water)		
Conductivity	µS/cm	1290
Alkalinity, bicarbonate (as CaCO3)	mg/L	182
Alkalinity, carbonate (as CaCO3)	mg/L	<2.0
Alkalinity, hydroxide (as CaCO3)	mg/L	<2.0
Alkalinity, phenolphthalein (as CaCO3)	mg/L	<2.0
Alkalinity, total (as CaCO3)	mg/L	182
Hardness (as CaCO3), dissolved	mg/L	<0.60
Hardness (as CaCO3), from total Ca/Mg	mg/L	<0.60
Oxidation-reduction potential [ORP]	mV	162
Solids, total dissolved [TDS]	mg/L	788
Solids, total suspended [TSS]	mg/L	<3.0
Turbidity	NTU	0.83
pH	pH units	8.09
Anions and Nutrients (Matrix: Water)		
Ammonia, total (as N)	mg/L	0.314
Bromide	mg/L	<0.250
Chloride	mg/L	198
Fluoride	mg/L	0.198
Nitrate (as N)	mg/L	0.119
Nitrite (as N)	mg/L	0.0204

Nitrogen, total	mg/L	1.95
Phosphorus, total	mg/L	0.0267
Sulfate (as SO4)	mg/L	148
Ammonium (as NH4), field	mg/L	0.402
Organic / Inorganic Carbon (Matrix: Water)		
Carbon, dissolved organic [DOC]	mg/L	6.87
Carbon, total organic [TOC]	mg/L	7.57
Total Metals (Matrix: Water)		
Aluminum, total	mg/L	0.0076
Antimony, total	mg/L	0.00234
Arsenic, total	mg/L	0.00224
Barium, total	mg/L	0.00017
Beryllium, total	mg/L	<0.000100
Bismuth, total	mg/L	<0.000050
Boron, total	mg/L	0.423
Cadmium, total	mg/L	<0.0000200
Calcium, total	mg/L	0.056
Cesium, total	mg/L	0.000098
Chromium, total	mg/L	<0.00050
Cobalt, total	mg/L	0.00016
Copper, total	mg/L	0.00129
Iron, total	mg/L	0.055
Lead, total	mg/L	0.000125
Lithium, total	mg/L	0.0059
Magnesium, total	mg/L	0.0130
Manganese, total	mg/L	0.00036
Mercury, total	mg/L	<0.0000050
Molybdenum, total	mg/L	0.105
Nickel, total	mg/L	0.00263
Phosphorus, total	mg/L	<0.050
Potassium, total	mg/L	7.29
Rubidium, total	mg/L	0.00755
Selenium, total	mg/L	0.000579
Silicon, total	mg/L	14.9
Silver, total	mg/L	<0.000010

Sodium, total	mg/L	291
Strontium, total	mg/L	<0.00020
Sulfur, total	mg/L	56.6
Tellurium, total	mg/L	<0.00020
Thallium, total	mg/L	<0.000010
Thorium, total	mg/L	<0.00010
Tin, total	mg/L	<0.00010
Titanium, total	mg/L	<0.00060
Tungsten, total	mg/L	0.00311
Uranium, total	mg/L	<0.000010
Vanadium, total	mg/L	<0.00050
Zinc, total	mg/L	0.0041
Zirconium, total	mg/L	<0.00020
Dissolved Metals (Matrix: Water)		
Aluminum, dissolved	mg/L	0.0027
Antimony, dissolved	mg/L	0.00205
Arsenic, dissolved	mg/L	0.00219
Barium, dissolved	mg/L	0.00016
Beryllium, dissolved	mg/L	<0.000100
Bismuth, dissolved	mg/L	<0.000050
Boron, dissolved	mg/L	0.395
Cadmium, dissolved	mg/L	<0.0000300
Calcium, dissolved	mg/L	0.054
Cesium, dissolved	mg/L	0.000092
Chromium, dissolved	mg/L	<0.00050
Cobalt, dissolved	mg/L	0.00015
Copper, dissolved	mg/L	0.00101
Iron, dissolved	mg/L	0.022
Lead, dissolved	mg/L	0.000064
Lithium, dissolved	mg/L	0.0059
Magnesium, dissolved	mg/L	0.0092
Manganese, dissolved	mg/L	0.00022
Mercury, dissolved	mg/L	<0.0000050
Molybdenum, dissolved	mg/L	0.0967
Nickel, dissolved	mg/L	0.00233
Phosphorus, dissolved	mg/L	<0.050

Potassium, dissolved	mg/L	7.08
Rubidium, dissolved	mg/L	0.00749
Selenium, dissolved	mg/L	0.000731
Silicon, dissolved	mg/L	14.8
Silver, dissolved	mg/L	<0.000010
Sodium, dissolved	mg/L	287
Strontium, dissolved	mg/L	<0.00020
Sulfur, dissolved	mg/L	55.7
Tellurium, dissolved	mg/L	<0.00020
Thallium, dissolved	mg/L	<0.000010
Thorium, dissolved	mg/L	<0.00010
Tin, dissolved	mg/L	<0.00010
Titanium, dissolved	mg/L	<0.00030
Tungsten, dissolved	mg/L	0.00282
Uranium, dissolved	mg/L	<0.000010
Vanadium, dissolved	mg/L	<0.00050
Zinc, dissolved	mg/L	0.0031
Zirconium, dissolved	mg/L	<0.00020
Dissolved mercury filtration location		Laboratory
Dissolved metals filtration location		Laboratory
Aggregate Organics (Matrix: Water)		
Phenols, total (4AAP)	mg/L	<0.0010
Volatile Organic Compounds (Matrix: Water)		
Chlorobenzene	µg/L	<0.50
Chloromethane	µg/L	<5.0
Dichlorobenzene, 1,2-	µg/L	<0.50
Dichlorobenzene, 1,3-	µg/L	<0.50
Dichlorobenzene, 1,4-	µg/L	<0.50
Dichloropropane, 1,2-	µg/L	<0.50
Dichloropropylene, cis+trans-1,3-	µg/L	<0.75
Dichloropropylene, cis-1,3-	µg/L	<0.50
Tetrachloroethane, 1,1,1,2-	µg/L	<0.50
Tetrachloroethane, 1,1,2,2-	µg/L	<0.20
Trichloroethane, 1,1,2-	µg/L	<0.50
Trichlorofluoromethane	µg/L	<0.50

Volatile Organic Compounds [Drycleaning] (Matrix: Water)		
Carbon tetrachloride	µg/L	<0.50
Chloroethane	µg/L	<0.50
Dichloroethane, 1,1-	µg/L	<0.50
Dichloroethane, 1,2-	µg/L	<0.50
Dichloroethylene, 1,1-	µg/L	<0.50
Dichloroethylene, cis-1,2-	µg/L	<0.50
Dichloroethylene, trans-1,2-	µg/L	<0.50
Dichloromethane	µg/L	<1.0
Dichloropropylene, trans-1,3-	µg/L	<0.50
Tetrachloroethylene	µg/L	<0.50
Trichloroethane, 1,1,1-	µg/L	<0.50
Trichloroethylene	µg/L	<0.50
Vinyl chloride	µg/L	<0.40
Volatile Organic Compounds [Fuels] (Matrix: Water)		
Benzene	µg/L	<0.50
Ethylbenzene	µg/L	<0.50
Methyl-tert-butyl ether [MTBE]	µg/L	<0.50
Styrene	µg/L	<0.50
Toluene	µg/L	<0.40
Xylene, m+p-	µg/L	<0.40
Xylene, o-	µg/L	<0.30
Xylenes, total	µg/L	<0.50
Volatile Organic Compounds [THMs] (Matrix: Water)		
Bromodichloromethane	µg/L	<0.50
Bromoform	µg/L	<0.50
Chloroform	µg/L	<0.50
Dibromochloromethane	µg/L	<0.50
Hydrocarbons (Matrix: Water)		
EPH (C10-C19)	µg/L	<250
EPH (C19-C32)	µg/L	<250
LEPHw	µg/L	<250

HEPHw	µg/L	<250
Hydrocarbons Surrogates (Matrix: Water)		
Bromobenzotrifluoride, 2- (EPH surrogate)	%	72.6
Volatile Organic Compounds Surrogates (Matrix: Water)		
Bromofluorobenzene, 4-	%	102
Difluorobenzene, 1,4-	%	99.7
Polycyclic Aromatic Hydrocarbons (Matrix: Water)		
Acenaphthene	µg/L	<0.010
Acenaphthylene	µg/L	<0.010
Acridine	µg/L	<0.010
Anthracene	µg/L	<0.010
Benz(a)anthracene	µg/L	<0.010
Benzo(a)pyrene	µg/L	<0.0050
Benzo(b+j)fluoranthene	µg/L	<0.010
Benzo(b+j+k)fluoranthene	µg/L	<0.015
Benzo(g,h,i)perylene	µg/L	<0.010
Benzo(k)fluoranthene	µg/L	<0.010
Chrysene	µg/L	<0.010
Dibenz(a,h)anthracene	µg/L	<0.0050
Fluoranthene	µg/L	<0.010
Fluorene	µg/L	<0.010
Indeno(1,2,3-c,d)pyrene	µg/L	<0.010
Methylnaphthalene, 1-	µg/L	<0.010
Methylnaphthalene, 2-	µg/L	<0.010
Naphthalene	µg/L	<0.050
Phenanthrene	µg/L	<0.020
Pyrene	µg/L	<0.010
Quinoline	µg/L	<0.050
Polycyclic Aromatic Hydrocarbons Surrogates (Matrix: Water)		
Chrysene-d12	%	110
Naphthalene-d8	%	102
Phenanthrene-d10	%	107

Glycols (Matrix: Water)		
Diethylene glycol	mg/L	<5.0
Ethylene glycol	mg/L	<5.0
Propylene glycol, 1,2-	mg/L	<5.0
Triethylene glycol	mg/L	<5.0
Glycols, total (EG+DEG+PG)	mg/L	<10
Glycols Surrogates (Matrix: Water)		
Propanediol, 1,3-	%	83.1

Table 3: In-Situ Sample

Date	Time	pH	Temperature (°C)	DO (mg/L)	NTU	Conductivity (µS/cm)	ORP (mV)	Salinity (ppt)	Visible sheen
10/18/2024	11:39:03 AM	7.60	12.3	9.53	0.25	1212	183.1	0.61	No
10/19/2024	02:58:52 PM	7.12	11.2	10.30	0.20	729	188.4	0.61	No
10/20/2024	03:09:52 PM	7.72	12.1	10.11	0.40	283.3	180.8	0.14	No
10/20/2024	10:03:28 PM	6.84	10.6	10.41	0.52	159.0	222.5	0.08	No
10/21/2024	07:22:36 PM	6.6	10.5	10.18	0.56	164.3	207.5	0.08	No

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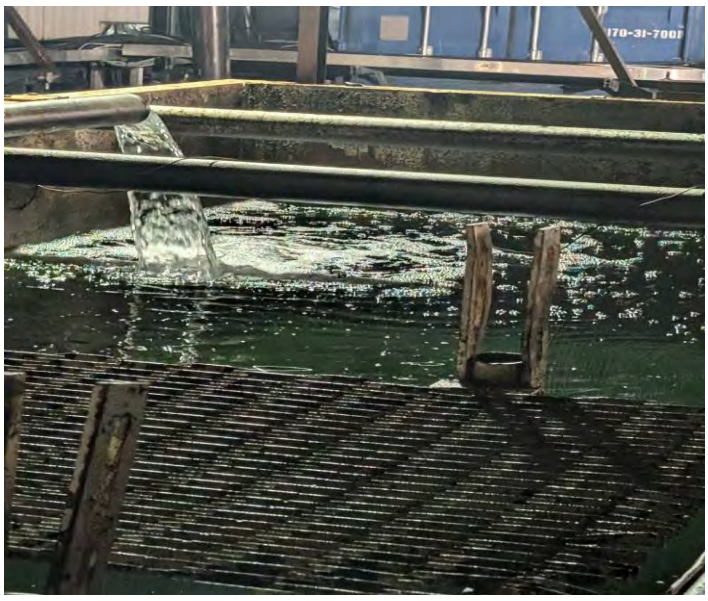
Photos:

Photo 1: No visible sheen observed in the WTP water, October 18th

Photo 2: No visible sheen observed in the WTP water, October 19th


Photo 3: No visible sheen observed in the WTP water, October 20th

Photo 4: No visible sheen observed in the WTP water, October 21st


BCR Site Batch Sample Lab Documentation

CERTIFICATE OF ANALYSIS

Work Order	:	**VA24C7463**		
Client	:	**Frontier-Kemper Michels Joint Venture**	Laboratory	: ALS Environmental - Vancouver
Contact	:	Sara Derakhshi	Account Manager	: Thomas Chang
Address	:	404-850 Harbourside Drive North Vancouver British Columbia Canada V7P 0A3	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	:	----	Telephone	: +1 604 253 4188
Project	:	----	Date Samples Received	: 15-Oct-2024 15:00
PO	:	----	Date Analysis Commenced	: 15-Oct-2024
C-O-C number	:	20-969592	Issue Date	: 17-Oct-2024 11:40
Sampler	:	----		
Site	:	BC Rail		
Quote number	:	WTP Discharge		
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*
Brooke Miller	Laboratory Analyst	Inorganics, Edmonton, Alberta
Daniela Ruiz	Account Manager Assistant	Administration, Burnaby, British Columbia
Janice Leung	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Kate Dimitrova	Supervisor - Inorganic	Inorganics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Owen Cheng		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*
mg/L	milligrams per litre
µg/L	micrograms per litre
pH units	pH units
°C	degrees celsius
µS/cm	microsiemens per centimetre
NTU	nephelometric turbidity units
mV	millivolts
-	no 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.

Sample Comments

Sample	*Client Id*	*Comment*
VA24C7463-001	BCR WTP	***Sample(s) VA24C7463-1: Water sample for VOC analysis contained > 5% headspace. Results may be biased low.***
VA24C7463-001	BCR WTP	Water sample for total mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
VA24C7463-001	BCR WTP	Water sample for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.

Qualifiers

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	BCR WTP	----	----	----	----
					Client sampling date / time	15-Oct-2024 08:50	----	----	----	----
						VA24C7463-001	----	----	----	----
						Result	----	----	----	----
Field Tests										
pH, field	----	EF001/VA	0.10	pH units		7.30	----	----	----	----
Temperature, field	----	EF001/VA	0.10	°C		15.2	----	----	----	----
Physical Tests										
Alkalinity, bicarbonate (as CaCO3)	----	E290/VA	2.0	mg/L		182	----	----	----	----
Alkalinity, carbonate (as CaCO3)	----	E290/VA	2.0	mg/L		<2.0	----	----	----	----
Alkalinity, hydroxide (as CaCO3)	----	E290/VA	2.0	mg/L		<2.0	----	----	----	----
Alkalinity, phenolphthalein (as CaCO3)	----	E290/VA	2.0	mg/L		<2.0	----	----	----	----
Alkalinity, total (as CaCO3)	----	E290/VA	2.0	mg/L		182	----	----	----	----
Conductivity	----	E100/VA	2.0	µS/cm		1290	----	----	----	----
Hardness (as CaCO3), dissolved	----	EC100/VA	0.60	mg/L		<0.60	----	----	----	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.60	mg/L		<0.60	----	----	----	----
Oxidation-reduction potential [ORP]	----	E125/VA	0.10	mV		162	----	----	----	----
pH	----	E108/VA	0.10	pH units		8.09	----	----	----	----
Solids, total dissolved [TDS]	----	E162/VA	10	mg/L		788	----	----	----	----
Solids, total suspended [TSS]	----	E160/VA	3.0	mg/L		<3.0	----	----	----	----
Turbidity	----	E121/VA	0.10	NTU		0.83	----	----	----	----
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E298/VA	0.0050	mg/L		0.314	----	----	----	----
Ammonium (as NH4), field	14798-03-9	EC298A/VA	0.0010	mg/L		0.402	----	----	----	----
Bromide	24959-67-9	E235.Br-L/VA	0.050	mg/L		<0.250 DLDS	----	----	----	----
Chloride	16887-00-6	E235.Cl/VA	0.50	mg/L		198	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	BCR WTP	----	----	----	----
					Client sampling date / time	15-Oct-2024 08:50	----	----	----	----
						VA24C7463-001	----	----	----	----
						Result	----	----	----	----
Anions and Nutrients										
Fluoride	16984-48-8	E235.F/VA	0.020	mg/L		0.198	----	----	----	----
Nitrate (as N)	14797-55-8	E235.NO3-L/VA	0.0050	mg/L		0.119	----	----	----	----
Nitrite (as N)	14797-65-0	E235.NO2-L/VA	0.0010	mg/L		0.0204	----	----	----	----
Nitrogen, total	7727-37-9	E366/VA	0.030	mg/L		1.95	----	----	----	----
Phosphorus, total	7723-14-0	E372-U/VA	0.0020	mg/L		0.0267	----	----	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/VA	0.30	mg/L		148	----	----	----	----
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L/VA	0.50	mg/L		6.87	----	----	----	----
Carbon, total organic [TOC]	----	E355-L/VA	0.50	mg/L		7.57	----	----	----	----
Total Metals										
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L		0.0076	----	----	----	----
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L		0.00234	----	----	----	----
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L		0.00224	----	----	----	----
Barium, total	7440-39-3	E420/VA	0.00010	mg/L		0.00017	----	----	----	----
Beryllium, total	7440-41-7	E420/VA	0.000100	mg/L		<0.000100	----	----	----	----
Bismuth, total	7440-69-9	E420/VA	0.000050	mg/L		<0.000050	----	----	----	----
Boron, total	7440-42-8	E420/VA	0.010	mg/L		0.423	----	----	----	----
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L		<0.0000200 DLM	----	----	----	----
Calcium, total	7440-70-2	E420/VA	0.050	mg/L		0.056	----	----	----	----
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L		0.000098	----	----	----	----
Chromium, total	7440-47-3	E420/VA	0.00050	mg/L		<0.00050	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	BCR WTP	----	----	----	----
					Client sampling date / time	15-Oct-2024 08:50	----	----	----	----
						VA24C7463-001	----	----	----	----
						Result	----	----	----	----
Total Metals										
Cobalt, total	7440-48-4	E420/VA	0.00010	mg/L		0.00016	----	----	----	----
Copper, total	7440-50-8	E420/VA	0.00050	mg/L		0.00129	----	----	----	----
Iron, total	7439-89-6	E420/VA	0.010	mg/L		0.055	----	----	----	----
Lead, total	7439-92-1	E420/VA	0.000050	mg/L		0.000125	----	----	----	----
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L		0.0059	----	----	----	----
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L		0.0130	----	----	----	----
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L		0.00036	----	----	----	----
Mercury, total	7439-97-6	E508/VA	0.0000050	mg/L		<0.0000050	----	----	----	----
Molybdenum, total	7439-98-7	E420/VA	0.000050	mg/L		0.105	----	----	----	----
Nickel, total	7440-02-0	E420/VA	0.00050	mg/L		0.00263	----	----	----	----
Phosphorus, total	7723-14-0	E420/VA	0.050	mg/L		<0.050	----	----	----	----
Potassium, total	7440-09-7	E420/VA	0.050	mg/L		7.29	----	----	----	----
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L		0.00755	----	----	----	----
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L		0.000579	----	----	----	----
Silicon, total	7440-21-3	E420/VA	0.10	mg/L		14.9	----	----	----	----
Silver, total	7440-22-4	E420/VA	0.000010	mg/L		<0.000010	----	----	----	----
Sodium, total	7440-23-5	E420/VA	0.050	mg/L		291	----	----	----	----
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L		<0.00020	----	----	----	----
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L		56.6	----	----	----	----
Tellurium, total	13494-80-9	E420/VA	0.00020	mg/L		<0.00020	----	----	----	----
Thallium, total	7440-28-0	E420/VA	0.000010	mg/L		<0.000010	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	BCR WTP	----	----	----	----
					Client sampling date / time	15-Oct-2024 08:50	----	----	----	----
						VA24C7463-001	----	----	----	----
						Result	----	----	----	----
Total Metals										
Thorium, total	7440-29-1	E420/VA	0.00010	mg/L		<0.00010	----	----	----	----
Tin, total	7440-31-5	E420/VA	0.00010	mg/L		<0.00010	----	----	----	----
Titanium, total	7440-32-6	E420/VA	0.00030	mg/L		<0.00060 DLM	----	----	----	----
Tungsten, total	7440-33-7	E420/VA	0.00010	mg/L		0.00311	----	----	----	----
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L		<0.000010	----	----	----	----
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L		<0.00050	----	----	----	----
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L		0.0041	----	----	----	----
Zirconium, total	7440-67-7	E420/VA	0.00020	mg/L		<0.00020	----	----	----	----
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421/VA	0.0010	mg/L		0.0027	----	----	----	----
Antimony, dissolved	7440-36-0	E421/VA	0.00010	mg/L		0.00205	----	----	----	----
Arsenic, dissolved	7440-38-2	E421/VA	0.00010	mg/L		0.00219	----	----	----	----
Barium, dissolved	7440-39-3	E421/VA	0.00010	mg/L		0.00016	----	----	----	----
Beryllium, dissolved	7440-41-7	E421/VA	0.000100	mg/L		<0.000100	----	----	----	----
Bismuth, dissolved	7440-69-9	E421/VA	0.000050	mg/L		<0.000050	----	----	----	----
Boron, dissolved	7440-42-8	E421/VA	0.010	mg/L		0.395	----	----	----	----
Cadmium, dissolved	7440-43-9	E421/VA	0.0000050	mg/L		<0.0000300 DLM	----	----	----	----
Calcium, dissolved	7440-70-2	E421/VA	0.050	mg/L		0.054	----	----	----	----
Cesium, dissolved	7440-46-2	E421/VA	0.000010	mg/L		0.000092	----	----	----	----
Chromium, dissolved	7440-47-3	E421/VA	0.00050	mg/L		<0.00050	----	----	----	----
Cobalt, dissolved	7440-48-4	E421/VA	0.00010	mg/L		0.00015	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	BCR WTP	----	----	----	----
					Client sampling date / time	15-Oct-2024 08:50	----	----	----	----
						VA24C7463-001	----	----	----	----
						Result	----	----	----	----
Dissolved Metals										
Copper, dissolved	7440-50-8	E421/VA	0.00020	mg/L		0.00101	----	----	----	----
Iron, dissolved	7439-89-6	E421/VA	0.010	mg/L		0.022	----	----	----	----
Lead, dissolved	7439-92-1	E421/VA	0.000050	mg/L		0.000064	----	----	----	----
Lithium, dissolved	7439-93-2	E421/VA	0.0010	mg/L		0.0059	----	----	----	----
Magnesium, dissolved	7439-95-4	E421/VA	0.0050	mg/L		0.0092	----	----	----	----
Manganese, dissolved	7439-96-5	E421/VA	0.00010	mg/L		0.00022	----	----	----	----
Mercury, dissolved	7439-97-6	E509/VA	0.0000050	mg/L		<0.0000050	----	----	----	----
Molybdenum, dissolved	7439-98-7	E421/VA	0.000050	mg/L		0.0967	----	----	----	----
Nickel, dissolved	7440-02-0	E421/VA	0.00050	mg/L		0.00233	----	----	----	----
Phosphorus, dissolved	7723-14-0	E421/VA	0.050	mg/L		<0.050	----	----	----	----
Potassium, dissolved	7440-09-7	E421/VA	0.050	mg/L		7.08	----	----	----	----
Rubidium, dissolved	7440-17-7	E421/VA	0.00020	mg/L		0.00749	----	----	----	----
Selenium, dissolved	7782-49-2	E421/VA	0.000050	mg/L		0.000731	----	----	----	----
Silicon, dissolved	7440-21-3	E421/VA	0.050	mg/L		14.8	----	----	----	----
Silver, dissolved	7440-22-4	E421/VA	0.000010	mg/L		<0.000010	----	----	----	----
Sodium, dissolved	7440-23-5	E421/VA	0.050	mg/L		287	----	----	----	----
Strontium, dissolved	7440-24-6	E421/VA	0.00020	mg/L		<0.00020	----	----	----	----
Sulfur, dissolved	7704-34-9	E421/VA	0.50	mg/L		55.7	----	----	----	----
Tellurium, dissolved	13494-80-9	E421/VA	0.00020	mg/L		<0.00020	----	----	----	----
Thallium, dissolved	7440-28-0	E421/VA	0.000010	mg/L		<0.000010	----	----	----	----
Thorium, dissolved	7440-29-1	E421/VA	0.00010	mg/L		<0.00010	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	BCR WTP	----	----	----	----
					Client sampling date / time	15-Oct-2024 08:50	----	----	----	----
						VA24C7463-001	----	----	----	----
						Result	----	----	----	----
Dissolved Metals										
Tin, dissolved	7440-31-5	E421/VA	0.00010	mg/L		<0.00010	----	----	----	----
Titanium, dissolved	7440-32-6	E421/VA	0.00030	mg/L		<0.00030	----	----	----	----
Tungsten, dissolved	7440-33-7	E421/VA	0.00010	mg/L		0.00282	----	----	----	----
Uranium, dissolved	7440-61-1	E421/VA	0.000010	mg/L		<0.000010	----	----	----	----
Vanadium, dissolved	7440-62-2	E421/VA	0.00050	mg/L		<0.00050	----	----	----	----
Zinc, dissolved	7440-66-6	E421/VA	0.0010	mg/L		0.0031	----	----	----	----
Zirconium, dissolved	7440-67-7	E421/VA	0.00020	mg/L		<0.00020	----	----	----	----
Dissolved mercury filtration location	----	EP509/VA	-	-		Laboratory	----	----	----	----
Dissolved metals filtration location	----	EP421/VA	-	-		Laboratory	----	----	----	----
Aggregate Organics										
Phenols, total (4AAP)	----	E562/EO	0.0010	mg/L		<0.0010	----	----	----	----
Volatile Organic Compounds										
Chlorobenzene	108-90-7	E611C/VA	0.50	µg/L		<0.50	----	----	----	----
Chloromethane	74-87-3	E611C/VA	5.0	µg/L		<5.0	----	----	----	----
Dichlorobenzene, 1,2-	95-50-1	E611C/VA	0.50	µg/L		<0.50	----	----	----	----
Dichlorobenzene, 1,3-	541-73-1	E611C/VA	0.50	µg/L		<0.50	----	----	----	----
Dichlorobenzene, 1,4-	106-46-7	E611C/VA	0.50	µg/L		<0.50	----	----	----	----
Dichloropropane, 1,2-	78-87-5	E611C/VA	0.50	µg/L		<0.50	----	----	----	----
Dichloropropylene, cis-1,3-	10061-01-5	E611C/VA	0.50	µg/L		<0.50	----	----	----	----
Dichloropropylene, cis+trans-1,3-	542-75-6	E611C/VA	0.75	µg/L		<0.75	----	----	----	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611C/VA	0.50	µg/L		<0.50	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	BCR WTP	----	----	----	----
					Client sampling date / time	15-Oct-2024 08:50	----	----	----	----
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit		VA24C7463-001	----	----	----	----
						Result	----	----	----	----
Volatile Organic Compounds										
Tetrachloroethane, 1,1,2,2-	79-34-5	E611C/VA	0.20	µg/L		<0.20	----	----	----	----
Trichloroethane, 1,1,2-	79-00-5	E611C/VA	0.50	µg/L		<0.50	----	----	----	----
Trichlorofluoromethane	75-69-4	E611C/VA	0.50	µg/L		<0.50	----	----	----	----
Volatile Organic Compounds [Drycleaning]										
Carbon tetrachloride	56-23-5	E611C/VA	0.50	µg/L		<0.50	----	----	----	----
Chloroethane	75-00-3	E611C/VA	0.50	µg/L		<0.50	----	----	----	----
Dichloroethane, 1,1-	75-34-3	E611C/VA	0.50	µg/L		<0.50	----	----	----	----
Dichloroethane, 1,2-	107-06-2	E611C/VA	0.50	µg/L		<0.50	----	----	----	----
Dichloroethylene, 1,1-	75-35-4	E611C/VA	0.50	µg/L		<0.50	----	----	----	----
Dichloroethylene, cis-1,2-	156-59-2	E611C/VA	0.50	µg/L		<0.50	----	----	----	----
Dichloroethylene, trans-1,2-	156-60-5	E611C/VA	0.50	µg/L		<0.50	----	----	----	----
Dichloromethane	75-09-2	E611C/VA	1.0	µg/L		<1.0	----	----	----	----
Dichloropropylene, trans-1,3-	10061-02-6	E611C/VA	0.50	µg/L		<0.50	----	----	----	----
Tetrachloroethylene	127-18-4	E611C/VA	0.50	µg/L		<0.50	----	----	----	----
Trichloroethane, 1,1,1-	71-55-6	E611C/VA	0.50	µg/L		<0.50	----	----	----	----
Trichloroethylene	79-01-6	E611C/VA	0.50	µg/L		<0.50	----	----	----	----
Vinyl chloride	75-01-4	E611C/VA	0.40	µg/L		<0.40	----	----	----	----
Volatile Organic Compounds [Fuels]										
Benzene	71-43-2	E611C/VA	0.50	µg/L		<0.50	----	----	----	----
Ethylbenzene	100-41-4	E611C/VA	0.50	µg/L		<0.50	----	----	----	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611C/VA	0.50	µg/L		<0.50	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	BCR WTP	----	----	----	----
					Client sampling date / time	15-Oct-2024 08:50	----	----	----	----
						VA24C7463-001	----	----	----	----
						Result	----	----	----	----
Volatile Organic Compounds [Fuels]										
Styrene	100-42-5	E611C/VA	0.50	µg/L		<0.50	----	----	----	----
Toluene	108-88-3	E611C/VA	0.40	µg/L		<0.40	----	----	----	----
Xylene, m+p-	179601-23-1	E611C/VA	0.40	µg/L		<0.40	----	----	----	----
Xylene, o-	95-47-6	E611C/VA	0.30	µg/L		<0.30	----	----	----	----
Xylenes, total	1330-20-7	E611C/VA	0.50	µg/L		<0.50	----	----	----	----
Volatile Organic Compounds [THMs]										
Bromodichloromethane	75-27-4	E611C/VA	0.50	µg/L		<0.50	----	----	----	----
Bromoform	75-25-2	E611C/VA	0.50	µg/L		<0.50	----	----	----	----
Chloroform	67-66-3	E611C/VA	0.50	µg/L		<0.50	----	----	----	----
Dibromochloromethane	124-48-1	E611C/VA	0.50	µg/L		<0.50	----	----	----	----
Hydrocarbons										
EPH (C10-C19)	----	E601A/VA	250	µg/L		<250	----	----	----	----
EPH (C19-C32)	----	E601A/VA	250	µg/L		<250	----	----	----	----
HEPHw	----	EC600A/VA	250	µg/L		<250	----	----	----	----
LEPHw	----	EC600A/VA	250	µg/L		<250	----	----	----	----
Hydrocarbons Surrogates										
Bromobenzotrifluoride, 2- (EPH surrogate)	392-83-6	E601A/VA	1.0	%		72.6	----	----	----	----
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611C/VA	1.0	%		102	----	----	----	----
Difluorobenzene, 1,4-	540-36-3	E611C/VA	1.0	%		99.7	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	BCR WTP	----	----	----	----
					Client sampling date / time	15-Oct-2024 08:50	----	----	----	----
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit		VA24C7463-001	----	----	----	----
						Result	----	----	----	----
Polycyclic Aromatic Hydrocarbons										
Acenaphthene	83-32-9	E641A/VA	0.010	µg/L		<0.010	----	----	----	----
Acenaphthylene	208-96-8	E641A/VA	0.010	µg/L		<0.010	----	----	----	----
Acridine	260-94-6	E641A/VA	0.010	µg/L		<0.010	----	----	----	----
Anthracene	120-12-7	E641A/VA	0.010	µg/L		<0.010	----	----	----	----
Benz(a)anthracene	56-55-3	E641A/VA	0.010	µg/L		<0.010	----	----	----	----
Benzo(a)pyrene	50-32-8	E641A/VA	0.0050	µg/L		<0.0050	----	----	----	----
Benzo(b+j)fluoranthene	n/a	E641A/VA	0.010	µg/L		<0.010	----	----	----	----
Benzo(b+j+k)fluoranthene	n/a	E641A/VA	0.015	µg/L		<0.015	----	----	----	----
Benzo(g,h,i)perylene	191-24-2	E641A/VA	0.010	µg/L		<0.010	----	----	----	----
Benzo(k)fluoranthene	207-08-9	E641A/VA	0.010	µg/L		<0.010	----	----	----	----
Chrysene	218-01-9	E641A/VA	0.010	µg/L		<0.010	----	----	----	----
Dibenz(a,h)anthracene	53-70-3	E641A/VA	0.0050	µg/L		<0.0050	----	----	----	----
Fluoranthene	206-44-0	E641A/VA	0.010	µg/L		<0.010	----	----	----	----
Fluorene	86-73-7	E641A/VA	0.010	µg/L		<0.010	----	----	----	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A/VA	0.010	µg/L		<0.010	----	----	----	----
Methylnaphthalene, 1-	90-12-0	E641A/VA	0.010	µg/L		<0.010	----	----	----	----
Methylnaphthalene, 2-	91-57-6	E641A/VA	0.010	µg/L		<0.010	----	----	----	----
Naphthalene	91-20-3	E641A/VA	0.050	µg/L		<0.050	----	----	----	----
Phenanthrene	85-01-8	E641A/VA	0.020	µg/L		<0.020	----	----	----	----
Pyrene	129-00-0	E641A/VA	0.010	µg/L		<0.010	----	----	----	----
Quinoline	91-22-5	E641A/VA	0.050	µg/L		<0.050	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	BCR WTP	----	----	----	----
					Client sampling date / time	15-Oct-2024 08:50	----	----	----	----
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit		VA24C7463-001	----	----	----	----
						Result	----	----	----	----
Polycyclic Aromatic Hydrocarbons Surrogates										
Chrysene-d12	1719-03-5	E641A/VA	0.1	%		110	----	----	----	----
Naphthalene-d8	1146-65-2	E641A/VA	0.1	%		102	----	----	----	----
Phenanthrene-d10	1517-22-2	E641A/VA	0.1	%		107	----	----	----	----
Glycols										
Diethylene glycol	111-46-6	E680E/VA	5.0	mg/L		<5.0	----	----	----	----
Ethylene glycol	107-21-1	E680E/VA	5.0	mg/L		<5.0	----	----	----	----
Propylene glycol, 1,2-	57-55-6	E680E/VA	5.0	mg/L		<5.0	----	----	----	----
Triethylene glycol	112-27-6	E680E/VA	5.0	mg/L		<5.0	----	----	----	----
Glycols, total (EG+DEG+PG)	----	E680E/VA	10	mg/L		<10	----	----	----	----
Glycols Surrogates										
Propanediol, 1,3-	504-63-2	E680E/VA	1.0	%		83.1	----	----	----	----

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **VA24C7463**	Page	: 1 of 22
Client	: Frontier-Kemper Michels Joint Venture	Laboratory	: ALS Environmental - Vancouver
Contact	: Sara Derakhshi	Account Manager	: Thomas Chang
Address	: 404-850 Harbourside Drive North Vancouver BC Canada V7P 0A3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: ----	Date Samples Received	: 15-Oct-2024 15:00
PO	: ----	Date Analysis Commenced	: 15-Oct-2024
C-O-C number	: 20-969592	Issue Date	: 17-Oct-2024 11:39
Sampler	: ----		
Site	: BC Rail		
Quote number	: WTP Discharge		
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 Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Reference Material (RM) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

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*
Brooke Miller	Laboratory Analyst	Edmonton Inorganics, Edmonton, Alberta
Daniela Ruiz	Account Manager Assistant	Vancouver Administration, Burnaby, British Columbia
Janice Leung	Supervisor - Organics Instrumentation	Vancouver Organics, Burnaby, British Columbia
Kate Dimitrova	Supervisor - Inorganic	Vancouver Inorganics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Owen Cheng		Vancouver 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 Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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
Physical Tests (QC Lot: 1709834)											
VA24C7463-001	BCR WTP	pH	----	E108	0.10	pH units	8.09	7.92	2.12%	4%	----
Physical Tests (QC Lot: 1709836)											
VA24C7463-001	BCR WTP	Conductivity	----	E100	2.0	µS/cm	1290	1310	1.23%	10%	----
Physical Tests (QC Lot: 1710210)											
VA24C7463-001	BCR WTP	Solids, total dissolved [TDS]	----	E162	10	mg/L	788	783	0.636%	20%	----
Physical Tests (QC Lot: 1710211)											
VA24C7463-001	BCR WTP	Solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 1710755)											
FJ2403126-001	Anonymous	Turbidity	----	E121	0.10	NTU	1.37	1.49	8.39%	15%	----
Physical Tests (QC Lot: 1710759)											
VA24C7463-001	BCR WTP	Oxidation-reduction potential [ORP]	----	E125	0.10	mV	162	165	2.14%	10%	----
Anions and Nutrients (QC Lot: 1709828)											
VA24C7463-001	BCR WTP	Chloride	16887-00-6	E235.Cl	2.50	mg/L	198	197	0.587%	20%	----
Anions and Nutrients (QC Lot: 1709829)											
VA24C7463-001	BCR WTP	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.119	0.135	0.0156	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1709830)											
VA24C7463-001	BCR WTP	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0204	0.0205	0.00005	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1709831)											
VA24C7463-001	BCR WTP	Fluoride	16984-48-8	E235.F	0.100	mg/L	0.198	0.193	0.005	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1709832)											
VA24C7463-001	BCR WTP	Bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1709833)											
VA24C7463-001	BCR WTP	Sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	148	147	0.543%	20%	----
Anions and Nutrients (QC Lot: 1709912)											
VA24C7463-001	BCR WTP	Nitrogen, total	7727-37-9	E366	0.300	mg/L	1.95	1.91	0.038	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1709913)											
VA24C7463-001	BCR WTP	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0267	0.0270	1.30%	20%	----
Anions and Nutrients (QC Lot: 1709914)											
VA24C7463-001	BCR WTP	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.314	0.313	0.318%	20%	----
Organic / Inorganic Carbon (QC Lot: 1709910)											

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*
Organic / Inorganic Carbon (QC Lot: 1709910) - continued											
VA24C7463-001	BCR WTP	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	6.87	7.30	6.03%	20%	----
Organic / Inorganic Carbon (QC Lot: 1709911)											
VA24C7463-001	BCR WTP	Carbon, total organic [TOC]	----	E355-L	0.50	mg/L	7.57	8.00	5.59%	20%	----
Total Metals (QC Lot: 1710213)											
VA24C6418-005	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 1710840)											
VA24C7463-001	BCR WTP	Aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0076	0.0076	0.0000003	Diff <2x LOR	----
		Antimony, total	7440-36-0	E420	0.00010	mg/L	0.00234	0.00238	1.32%	20%	----
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00224	0.00220	1.75%	20%	----
		Barium, total	7440-39-3	E420	0.00010	mg/L	0.00017	0.00019	0.00002	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	----
		Boron, total	7440-42-8	E420	0.010	mg/L	0.423	0.407	3.73%	20%	----
		Cadmium, total	7440-43-9	E420	0.0000250	mg/L	<0.0000200	<0.0000250	0.0000050	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.050	mg/L	0.056	0.058	0.002	Diff <2x LOR	----
		Cesium, total	7440-46-2	E420	0.000010	mg/L	0.000098	0.000099	0.0000006	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	0.00016	0.00016	0.000007	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00050	mg/L	0.00129	0.00128	0.000003	Diff <2x LOR	----
		Iron, total	7439-89-6	E420	0.010	mg/L	0.055	0.053	0.002	Diff <2x LOR	----
		Lead, total	7439-92-1	E420	0.000050	mg/L	0.000125	0.000120	0.000005	Diff <2x LOR	----
		Lithium, total	7439-93-2	E420	0.0010	mg/L	0.0059	0.0058	0.00005	Diff <2x LOR	----
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	0.0130	0.0123	0.0007	Diff <2x LOR	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	0.00036	0.00032	0.00005	Diff <2x LOR	----
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.105	0.109	3.23%	20%	----
		Nickel, total	7440-02-0	E420	0.00050	mg/L	0.00263	0.00261	0.00002	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	7.29	7.12	2.39%	20%	----
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00755	0.00757	0.208%	20%	----
		Selenium, total	7782-49-2	E420	0.000050	mg/L	0.000579	0.000555	4.30%	20%	----
		Silicon, total	7440-21-3	E420	0.10	mg/L	14.9	14.6	1.57%	20%	----
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	0.050	mg/L	291	284	2.61%	20%	----
		Strontium, total	7440-24-6	E420	0.00020	mg/L	<0.00020	<0.00020	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: 1710840) - continued											
VA24C7463-001	BCR WTP	Sulfur, total	7704-34-9	E420	0.50	mg/L	56.6	55.3	2.38%	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	<0.000010	<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	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		Tungsten, total	7440-33-7	E420	0.00010	mg/L	0.00311	0.00307	1.43%	20%	----
		Uranium, total	7440-61-1	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		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	0.0041	0.0041	0.00003	Diff <2x LOR	----
		Zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1710063)											
VA24C7463-001	BCR WTP	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0027	0.0026	0.00008	Diff <2x LOR	----
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00205	0.00213	3.67%	20%	----
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00219	0.00223	1.68%	20%	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00016	0.00015	0.00001	Diff <2x LOR	----
		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	0.395	0.424	7.15%	20%	----
		Cadmium, dissolved	7440-43-9	E421	0.0000300	mg/L	<0.0000300	<0.0000300	0	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	0.054	0.053	0.001	Diff <2x LOR	----
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000092	0.000091	0.0000006	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	0.00015	0.00015	0.000004	Diff <2x LOR	----
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00101	0.00099	0.00002	Diff <2x LOR	----
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	0.022	0.023	0.0002	Diff <2x LOR	----
		Lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000064	0.000063	0.0000007	Diff <2x LOR	----
		Lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0059	0.0060	0.0001	Diff <2x LOR	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	0.0092	0.0095	0.0003	Diff <2x LOR	----
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00022	0.00022	0.000006	Diff <2x LOR	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0967	0.100	3.92%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00233	0.00239	0.00006	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	7.08	7.03	0.718%	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: 1710063) - continued											
VA24C7463-001	BCR WTP	Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00749	0.00749	0.0472%	20%	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000731	0.000744	1.76%	20%	----
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	14.8	14.8	0.0828%	20%	----
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	287	286	0.222%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	55.7	55.7	0.0513%	20%	----
		Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<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	0.00282	0.00286	1.54%	20%	----
		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	<0.00050	<0.00050	0	Diff <2x LOR	----
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0031	0.0035	0.0003	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: 1710251)											
VA24C7463-001	BCR WTP	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 1710140)											
VA24C7463-001	BCR WTP	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	----

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: 1710140) - continued											
VA24C7463-001	BCR WTP	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	----
		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	----
Glycols (QC Lot: 1709855)											
VA24C7463-001	BCR WTP	Diethylene glycol	111-46-6	E680E	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR	----
		Ethylene glycol	107-21-1	E680E	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR	----
		Propylene glycol, 1,2-	57-55-6	E680E	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR	----
		Triethylene glycol	112-27-6	E680E	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR	----

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
Physical Tests (QCLot: 1709835)						
Alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
Alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
Alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
Alkalinity, phenolphthalein (as CaCO3)	----	E290	1	mg/L	<1.0	----
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 1709836)						
Conductivity	----	E100	1	µS/cm	1.1	----
Physical Tests (QCLot: 1710210)						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 1710211)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 1710755)						
Turbidity	----	E121	0.1	NTU	<0.10	----
Anions and Nutrients (QCLot: 1709828)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 1709829)						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1709830)						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 1709831)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 1709832)						
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 1709833)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 1709912)						
Nitrogen, total	7727-37-9	E366	0.03	mg/L	<0.030	----
Anions and Nutrients (QCLot: 1709913)						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 1709914)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Organic / Inorganic Carbon (QCLot: 1709910)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Organic / Inorganic Carbon (QCLot: 1709910) - continued						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 1709911)						
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 1710213)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 1710840)						
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	7440-23-5	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: 1710840) - 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	----
Dissolved Metals (QCLot: 1710063)						
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	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 1710063) - continued						
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	7440-23-5	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: 1710251)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Aggregate Organics (QCLot: 1711362)						
Phenols, total (4AAP)	----	E562	0.001	mg/L	<0.0010	----
Volatile Organic Compounds (QCLot: 1710140)						
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	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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 1710140) - continued						
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: 1710218)						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1710219)						
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	n/a	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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1710219) - continued						
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	----
Glycols (QCLot: 1709855)						
Diethylene glycol	111-46-6	E680E	5	mg/L	<5.0	----
Ethylene glycol	107-21-1	E680E	5	mg/L	<5.0	----
Propylene glycol, 1,2-	57-55-6	E680E	5	mg/L	<5.0	----
Triethylene glycol	112-27-6	E680E	5	mg/L	<5.0	----

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1709834)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 1709835)									
Alkalinity, phenolphthalein (as CaCO3)	----	E290	1	mg/L	229 mg/L	91.1	75.0	125	----
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	103	85.0	115	----
Physical Tests (QCLot: 1709836)									
Conductivity	----	E100	1	µS/cm	147 µS/cm	101	90.0	110	----
Physical Tests (QCLot: 1710210)									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	103	85.0	115	----
Physical Tests (QCLot: 1710211)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	94.3	85.0	115	----
Physical Tests (QCLot: 1710755)									
Turbidity	----	E121	0.1	NTU	200 NTU	97.0	85.0	115	----
Anions and Nutrients (QCLot: 1709828)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	99.9	90.0	110	----
Anions and Nutrients (QCLot: 1709829)									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.8	90.0	110	----
Anions and Nutrients (QCLot: 1709830)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	99.1	90.0	110	----
Anions and Nutrients (QCLot: 1709831)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.2	90.0	110	----
Anions and Nutrients (QCLot: 1709832)									
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	98.4	85.0	115	----
Anions and Nutrients (QCLot: 1709833)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 1709912)									
Nitrogen, total	7727-37-9	E366	0.03	mg/L	0.5 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 1709913)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	92.9	80.0	120	----
Anions and Nutrients (QCLot: 1709914)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Organic / Inorganic Carbon (QCLot: 1709910)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	99.2	80.0	120	----
Organic / Inorganic Carbon (QCLot: 1709911)									
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	104	80.0	120	----
Total Metals (QCLot: 1710213)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0 mg/L	99.8	80.0	120	----
Total Metals (QCLot: 1710840)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	98.9	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	111	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	102	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	109	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	105	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	106	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	99.8	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	99.7	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	97.2	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	100	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	95.4	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	103	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	103	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	100.0	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	105	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	97.9	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	111	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	92.4	80.0	120	----
Sodium, total	7440-23-5	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	102	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	106	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 1710840) - continued									
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	98.5	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	98.8	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	102	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	97.4	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	100	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	99.1	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	98.3	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	97.7	80.0	120	----
Dissolved Metals (QCLot: 1710063)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	97.4	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	95.0	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	97.6	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	96.3	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	99.1	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	99.1	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	96.9	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	96.6	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.6	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	94.2	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	96.4	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	93.3	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	93.8	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	97.3	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	96.6	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	99.3	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	95.5	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	94.3	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	97.3	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	92.6	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	91.7	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	99.8	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	91.6	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	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 (%)		
					Target Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 1710063) - 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	89.5	80.0	120	----
Sodium, dissolved	7440-23-5	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	94.3	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	81.7	80.0	120	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	94.9	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	94.8	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	96.2	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	94.8	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	94.9	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	90.6	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	97.5	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.0	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	94.3	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	92.8	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0 mg/L	98.5	80.0	120	----
Aggregate Organics (QCLot: 1711362)									
Phenols, total (4AAP)	----	E562	0.001	mg/L	0.02 mg/L	97.5	85.0	115	----
Volatile Organic Compounds (QCLot: 1710140)									
Benzene	71-43-2	E611C	0.5	µg/L	100 µg/L	91.7	70.0	130	----
Bromodichloromethane	75-27-4	E611C	0.5	µg/L	100 µg/L	97.6	70.0	130	----
Bromoform	75-25-2	E611C	0.5	µg/L	100 µg/L	99.7	70.0	130	----
Carbon tetrachloride	56-23-5	E611C	0.5	µg/L	100 µg/L	88.4	70.0	130	----
Chlorobenzene	108-90-7	E611C	0.5	µg/L	100 µg/L	95.3	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	101	70.0	130	----
Chloromethane	74-87-3	E611C	5	µg/L	100 µg/L	93.3	60.0	140	----
Dibromochloromethane	124-48-1	E611C	0.5	µg/L	100 µg/L	108	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611C	0.5	µg/L	100 µg/L	95.6	70.0	130	----
Dichlorobenzene, 1,3-	541-73-1	E611C	0.5	µg/L	100 µg/L	94.2	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	94.1	70.0	130	----
Dichloroethane, 1,2-	107-06-2	E611C	0.5	µg/L	100 µg/L	110	70.0	130	----
Dichloroethylene, 1,1-	75-35-4	E611C	0.5	µg/L	100 µg/L	88.1	70.0	130	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 1710140) - continued									
Dichloroethylene, cis-1,2-	156-59-2	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	121	70.0	130	----
Dichloromethane	75-09-2	E611C	1	µg/L	100 µg/L	106	70.0	130	----
Dichloropropane, 1,2-	78-87-5	E611C	0.5	µg/L	100 µg/L	97.9	70.0	130	----
Dichloropropylene, cis-1,3-	10061-01-5	E611C	0.5	µg/L	100 µg/L	112	70.0	130	----
Dichloropropylene, trans-1,3-	10061-02-6	E611C	0.5	µg/L	100 µg/L	119	70.0	130	----
Ethylbenzene	100-41-4	E611C	0.5	µg/L	100 µg/L	89.0	70.0	130	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.5	µg/L	100 µg/L	92.4	70.0	130	----
Styrene	100-42-5	E611C	0.5	µg/L	100 µg/L	94.9	70.0	130	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.5	µg/L	100 µg/L	93.2	70.0	130	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.2	µg/L	100 µg/L	96.4	70.0	130	----
Tetrachloroethylene	127-18-4	E611C	0.5	µg/L	100 µg/L	95.2	70.0	130	----
Toluene	108-88-3	E611C	0.4	µg/L	100 µg/L	87.3	70.0	130	----
Trichloroethane, 1,1,1-	71-55-6	E611C	0.5	µg/L	100 µg/L	90.1	70.0	130	----
Trichloroethane, 1,1,2-	79-00-5	E611C	0.5	µg/L	100 µg/L	100.0	70.0	130	----
Trichloroethylene	79-01-6	E611C	0.5	µg/L	100 µg/L	98.6	70.0	130	----
Trichlorofluoromethane	75-69-4	E611C	0.5	µg/L	100 µg/L	86.7	60.0	140	----
Vinyl chloride	75-01-4	E611C	0.4	µg/L	100 µg/L	91.7	60.0	140	----
Xylene, m+p-	179601-23-1	E611C	0.4	µg/L	200 µg/L	89.9	70.0	130	----
Xylene, o-	95-47-6	E611C	0.3	µg/L	100 µg/L	88.4	70.0	130	----
Hydrocarbons (QCLot: 1710218)									
EPH (C10-C19)	----	E601A	250	µg/L	6490 µg/L	98.2	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3360 µg/L	86.5	70.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1710219)									
Acenaphthene	83-32-9	E641A	0.01	µg/L	0.5 µg/L	107	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	106	60.0	130	----
Anthracene	120-12-7	E641A	0.01	µg/L	0.5 µg/L	114	60.0	130	----
Benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5 µg/L	103	60.0	130	----
Benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5 µg/L	104	60.0	130	----
Benzo(b+j)fluoranthene	n/a	E641A	0.01	µg/L	0.5 µg/L	98.9	60.0	130	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	0.5 µg/L	121	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	117	60.0	130	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1710219) - continued									
Dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5 µg/L	113	60.0	130	----
Fluoranthene	206-44-0	E641A	0.01	µg/L	0.5 µg/L	108	60.0	130	----
Fluorene	86-73-7	E641A	0.01	µg/L	0.5 µg/L	106	60.0	130	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5 µg/L	111	60.0	130	----
Methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	0.5 µg/L	101	60.0	130	----
Methylnaphthalene, 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	104	50.0	130	----
Phenanthrene	85-01-8	E641A	0.02	µg/L	0.5 µg/L	111	60.0	130	----
Pyrene	129-00-0	E641A	0.01	µg/L	0.5 µg/L	107	60.0	130	----
Quinoline	91-22-5	E641A	0.05	µg/L	0.5 µg/L	111	60.0	130	----
Glycols (QCLot: 1709855)									
Diethylene glycol	111-46-6	E680E	5	mg/L	25 mg/L	91.3	70.0	130	----
Ethylene glycol	107-21-1	E680E	5	mg/L	25 mg/L	92.7	70.0	130	----
Propylene glycol, 1,2-	57-55-6	E680E	5	mg/L	25 mg/L	92.6	70.0	130	----
Triethylene glycol	112-27-6	E680E	5	mg/L	25 mg/L	90.1	70.0	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
Anions and Nutrients (QCLot: 1709828)										
VA24C7463-001	BCR WTP	Chloride	16887-00-6	E235.Cl	490 mg/L	500 mg/L	97.9	75.0	125	----
Anions and Nutrients (QCLot: 1709829)										
VA24C7463-001	BCR WTP	Nitrate (as N)	14797-55-8	E235.NO3-L	12.3 mg/L	12.5 mg/L	98.6	75.0	125	----
Anions and Nutrients (QCLot: 1709830)										
VA24C7463-001	BCR WTP	Nitrite (as N)	14797-65-0	E235.NO2-L	2.47 mg/L	2.5 mg/L	99.0	75.0	125	----
Organic / Inorganic Carbon (QCLot: 1709910)										
VA24C7475-001	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	ND mg/L	----	ND	70.0	130	----
Total Metals (QCLot: 1710213)										
VA24C6418-006	Anonymous	Mercury, total	7439-97-6	E508	0.0000982 mg/L	0 mg/L	98.2	70.0	130	----
Dissolved Metals (QCLot: 1710063)										
VA24C7475-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	ND mg/L	----	ND	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	0.0192 mg/L	0.02 mg/L	96.3	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	0.0226 mg/L	0.02 mg/L	113	70.0	130	----
		Barium, dissolved	7440-39-3	E421	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		Beryllium, dissolved	7440-41-7	E421	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		Bismuth, dissolved	7440-69-9	E421	0.00886 mg/L	0.01 mg/L	88.6	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00394 mg/L	0.004 mg/L	98.6	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	----	ND	70.0	130	----
		Cesium, dissolved	7440-46-2	E421	0.00939 mg/L	0.01 mg/L	93.9	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.0385 mg/L	0.04 mg/L	96.4	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	0.0187 mg/L	0.02 mg/L	93.6	70.0	130	----
		Copper, dissolved	7440-50-8	E421	0.0182 mg/L	0.02 mg/L	91.2	70.0	130	----
		Iron, dissolved	7439-89-6	E421	1.92 mg/L	2 mg/L	95.8	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0179 mg/L	0.02 mg/L	89.7	70.0	130	----
		Lithium, dissolved	7439-93-2	E421	0.0965 mg/L	0.1 mg/L	96.5	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	0.988 mg/L	1 mg/L	98.8	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	0.0191 mg/L	0.02 mg/L	95.4	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	ND mg/L	----	ND	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.0365 mg/L	0.04 mg/L	91.3	70.0	130	----
		Phosphorus, dissolved	7723-14-0	E421	10.7 mg/L	10 mg/L	107	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	ND mg/L	----	ND	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	ND mg/L	----	ND	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.0496 mg/L	0.04 mg/L	124	70.0	130	----
		Silicon, dissolved	7440-21-3	E421	ND mg/L	----	ND	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00362 mg/L	0.004 mg/L	90.6	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	ND 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: 1710063) - continued										
VA24C7475-001	Anonymous	Strontium, dissolved	7440-24-6	E421	ND mg/L	----	ND	70.0	130	----
		Sulfur, dissolved	7704-34-9	E421	21.6 mg/L	20 mg/L	108	70.0	130	----
		Tellurium, dissolved	13494-80-9	E421	0.0428 mg/L	0.04 mg/L	107	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.00343 mg/L	0.004 mg/L	85.7	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.0196 mg/L	0.02 mg/L	98.0	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0190 mg/L	0.02 mg/L	94.8	70.0	130	----
		Titanium, dissolved	7440-32-6	E421	0.0396 mg/L	0.04 mg/L	99.1	70.0	130	----
		Tungsten, dissolved	7440-33-7	E421	0.0180 mg/L	0.02 mg/L	90.3	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	0.00386 mg/L	0.004 mg/L	96.6	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	0.391 mg/L	0.4 mg/L	97.7	70.0	130	----
		Zirconium, dissolved	7440-67-7	E421	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
Dissolved Metals (QCLot: 1710251)										
YL2401700-002	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000881 mg/L	0 mg/L	88.1	70.0	130	----
Volatile Organic Compounds (QCLot: 1710140)										
VA24C7463-001	BCR WTP	Benzene	71-43-2	E611C	86.8 µg/L	100 µg/L	86.8	60.0	140	----
		Bromodichloromethane	75-27-4	E611C	90.7 µg/L	100 µg/L	90.7	60.0	140	----
		Bromoform	75-25-2	E611C	92.6 µg/L	100 µg/L	92.6	60.0	140	----
		Carbon tetrachloride	56-23-5	E611C	83.7 µg/L	100 µg/L	83.7	60.0	140	----
		Chlorobenzene	108-90-7	E611C	90.8 µg/L	100 µg/L	90.8	60.0	140	----
		Chloroethane	75-00-3	E611C	90.2 µg/L	100 µg/L	90.2	50.0	150	----
		Chloroform	67-66-3	E611C	94.8 µg/L	100 µg/L	94.8	60.0	140	----
		Chloromethane	74-87-3	E611C	79.2 µg/L	100 µg/L	79.2	50.0	150	----
		Dibromochloromethane	124-48-1	E611C	102 µg/L	100 µg/L	102	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	89.8 µg/L	100 µg/L	89.8	60.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611C	93.4 µg/L	100 µg/L	93.4	60.0	140	----
		Dichloroethane, 1,1-	75-34-3	E611C	89.4 µg/L	100 µg/L	89.4	60.0	140	----
		Dichloroethane, 1,2-	107-06-2	E611C	101 µg/L	100 µg/L	101	60.0	140	----
		Dichloroethylene, 1,1-	75-35-4	E611C	83.6 µg/L	100 µg/L	83.6	60.0	140	----
		Dichloroethylene, cis-1,2-	156-59-2	E611C	90.6 µg/L	100 µg/L	90.6	60.0	140	----
		Dichloroethylene, trans-1,2-	156-60-5	E611C	116 µg/L	100 µg/L	116	60.0	140	----
		Dichloromethane	75-09-2	E611C	99.5 µg/L	100 µg/L	99.5	60.0	140	----
		Dichloropropane, 1,2-	78-87-5	E611C	91.2 µg/L	100 µg/L	91.2	60.0	140	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611C	103 µg/L	100 µg/L	103	60.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611C	111 µg/L	100 µg/L	111	60.0	140	----
		Ethylbenzene	100-41-4	E611C	86.8 µg/L	100 µg/L	86.8	60.0	140	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	88.9 µg/L	100 µg/L	88.9	60.0	140	----
		Styrene	100-42-5	E611C	90.7 µg/L	100 µg/L	90.7	60.0	140	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611C	88.1 µg/L	100 µg/L	88.1	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	92.2 µg/L	100 µg/L	92.2	60.0	140	----
		Toluene	108-88-3	E611C	84.5 µg/L	100 µg/L	84.5	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: 1710140) - continued										
VA24C7463-001	BCR WTP	Trichloroethane, 1,1,1-	71-55-6	E611C	85.4 µg/L	100 µg/L	85.4	60.0	140	----
		Trichloroethane, 1,1,2-	79-00-5	E611C	92.5 µg/L	100 µg/L	92.5	60.0	140	----
		Trichloroethylene	79-01-6	E611C	93.4 µg/L	100 µg/L	93.4	60.0	140	----
		Trichlorofluoromethane	75-69-4	E611C	81.8 µg/L	100 µg/L	81.8	50.0	150	----
		Vinyl chloride	75-01-4	E611C	80.7 µg/L	100 µg/L	80.7	50.0	150	----
		Xylene, m+p-	179601-23-1	E611C	174 µg/L	200 µg/L	87.0	60.0	140	----
		Xylene, o-	95-47-6	E611C	85.2 µg/L	100 µg/L	85.2	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:

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Physical Tests (QCLot: 1710759)									
QC-1710759-001	RM	Oxidation-reduction potential [ORP]	----	E125	220 mV	100	95.0	105	----

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA24C7463**	Page	: 1 of 14
Client	: **Frontier-Kemper Michels Joint Venture**	Laboratory	: ALS Environmental - Vancouver
Contact	: Sara Derakhshi	Account Manager	: Thomas Chang
Address	: 404-850 Harbourside Drive North Vancouver BC Canada V7P 0A3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: ----	Date Samples Received	: 15-Oct-2024 15:00
PO	: ----	Issue Date	: 17-Oct-2024 11:39
C-O-C number	: 20-969592		
Sampler	: ----		
Site	: BC Rail		
Quote number	: WTP Discharge		
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 Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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)

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

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 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 : Analytical Method / 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
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid) BCR WTP	E562	15-Oct-2024	16-Oct-2024	28 days	1 days	✓	16-Oct-2024	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) BCR WTP	E298	15-Oct-2024	15-Oct-2024	28 days	0 days	✓	15-Oct-2024	28 days	0 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE BCR WTP	E235.Br-L	15-Oct-2024	15-Oct-2024	28 days	0 days	✓	15-Oct-2024	28 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE BCR WTP	E235.Cl	15-Oct-2024	15-Oct-2024	28 days	0 days	✓	15-Oct-2024	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE BCR WTP	E235.F	15-Oct-2024	15-Oct-2024	28 days	0 days	✓	15-Oct-2024	28 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE BCR WTP	E235.NO3-L	15-Oct-2024	15-Oct-2024	3 days	0 days	✓	15-Oct-2024	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE BCR WTP	E235.NO2-L	15-Oct-2024	15-Oct-2024	3 days	0 days	✓	15-Oct-2024	3 days	0 days	✓

Matrix: **Water**

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

Analyte Group : Analytical Method / 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
Anions and Nutrients : Sulfate in Water by IC										
HDPE BCR WTP	E235.SO4	15-Oct-2024	15-Oct-2024	28 days	0 days	✓	15-Oct-2024	28 days	0 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) BCR WTP	E366	15-Oct-2024	15-Oct-2024	28 days	1 days	✓	16-Oct-2024	28 days	1 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) BCR WTP	E372-U	15-Oct-2024	15-Oct-2024	28 days	1 days	✓	16-Oct-2024	28 days	1 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE BCR WTP	E509	15-Oct-2024	16-Oct-2024	0 hrs	16 hrs	× UCP	16-Oct-2024	0 hrs	16 hrs	× UCP
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) BCR WTP	E421	15-Oct-2024	15-Oct-2024	180 days	0 days	✓	16-Oct-2024	180 days	1 days	✓
Field Tests : Field pH,EC,Salinity, TDS, Cl2,ClO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine										
Amber glass total (sulfuric acid) BCR WTP	EF001	15-Oct-2024	----	----	----		16-Oct-2024	----	1 days	
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial (sodium bisulfate) BCR WTP	E680E	15-Oct-2024	15-Oct-2024	14 days	0 days	✓	16-Oct-2024	40 days	1 days	✓
Hydrocarbons : BC PHCs - EPH by GC-FID										
Glass vial (sodium bisulfate) BCR WTP	E601A	15-Oct-2024	16-Oct-2024	14 days	1 days	✓	16-Oct-2024	40 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) BCR WTP	E358-L	15-Oct-2024	15-Oct-2024	3 days	1 days	✓	15-Oct-2024	28 days	0 days	✓

Matrix: **Water**

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

Analyte Group : Analytical Method / 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	
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) BCR WTP	E355-L	15-Oct-2024	15-Oct-2024	28 days	1 days	✓	15-Oct-2024	28 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE BCR WTP	E290	15-Oct-2024	15-Oct-2024	14 days	0 days	✓	15-Oct-2024	14 days	0 days	✓
Physical Tests : Conductivity in Water										
HDPE BCR WTP	E100	15-Oct-2024	15-Oct-2024	28 days	0 days	✓	15-Oct-2024	28 days	0 days	✓
Physical Tests : ORP by Electrode										
HDPE BCR WTP	E125	15-Oct-2024	----	----	----		16-Oct-2024	0.25 hrs	23 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE BCR WTP	E108	15-Oct-2024	15-Oct-2024	0.25 hrs	7 hrs	× EHTR-FM	15-Oct-2024	0.25 hrs	9 hrs	× EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE BCR WTP	E162	15-Oct-2024	----	----	----		15-Oct-2024	7 days	1 days	✓
Physical Tests : TSS by Gravimetry										
HDPE BCR WTP	E160	15-Oct-2024	----	----	----		16-Oct-2024	7 days	1 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE BCR WTP	E121	15-Oct-2024	----	----	----		16-Oct-2024	3 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs in Water by Hexane LVI GC-MS										
Glass vial (sodium bisulfate) BCR WTP	E641A	15-Oct-2024	16-Oct-2024	14 days	1 days	✓	16-Oct-2024	40 days	0 days	✓

Matrix: **Water**

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

Analyte Group : Analytical Method / 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										
HDPE										
BCR WTP	E508	15-Oct-2024	15-Oct-2024	0 hrs	15 hrs	× UCP	15-Oct-2024	0 hrs	15 hrs	× UCP
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
BCR WTP	E420	15-Oct-2024	16-Oct-2024	180 days	1 days	✓	16-Oct-2024	180 days	1 days	✓
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
BCR WTP	E611C	15-Oct-2024	15-Oct-2024	14 days	1 days	✓	16-Oct-2024	14 days	1 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

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

UCP: Unsuitable Container and/or Preservative used (invalidates standard hold time). Maximum hold time of zero applied. Test results may be biased low / unreliable, and may not meet regulatory requirements.

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			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	1709835	0	1	0.0	5.0	✗
Ammonia by Fluorescence	E298	1709914	1	1	100.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1709832	1	1	100.0	5.0	✓
Chloride in Water by IC	E235.Cl	1709828	1	3	33.3	5.0	✓
Conductivity in Water	E100	1709836	1	1	100.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1710251	1	5	20.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1710063	1	3	33.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1709910	1	3	33.3	5.0	✓
Fluoride in Water by IC	E235.F	1709831	1	1	100.0	5.0	✓
Glycols (4 analytes) by GC-FID	E680E	1709855	1	1	100.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1709829	1	3	33.3	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1709830	1	3	33.3	5.0	✓
ORP by Electrode	E125	1710759	1	1	100.0	5.0	✓
pH by Meter	E108	1709834	1	4	25.0	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1711362	0	17	0.0	5.0	✗
Sulfate in Water by IC	E235.SO4	1709833	1	1	100.0	5.0	✓
TDS by Gravimetry	E162	1710210	1	1	100.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1710213	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1710840	1	1	100.0	5.0	✓
Total Nitrogen by Colourimetry	E366	1709912	1	1	100.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1709911	1	1	100.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1709913	1	1	100.0	5.0	✓
TSS by Gravimetry	E160	1710211	1	1	100.0	5.0	✓
Turbidity by Nephelometry	E121	1710755	1	15	6.6	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	1710140	1	1	100.0	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	1709835	1	1	100.0	5.0	✓
Ammonia by Fluorescence	E298	1709914	1	1	100.0	5.0	✓
BC PHCs - EPH by GC-FID	E601A	1710218	1	2	50.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1709832	1	1	100.0	5.0	✓
Chloride in Water by IC	E235.Cl	1709828	1	3	33.3	5.0	✓
Conductivity in Water	E100	1709836	1	1	100.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1710251	1	5	20.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1710063	1	3	33.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1709910	1	3	33.3	5.0	✓
Fluoride in Water by IC	E235.F	1709831	1	1	100.0	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Glycols (4 analytes) by GC-FID	E680E	1709855	1	1	100.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1709829	1	3	33.3	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1709830	1	3	33.3	5.0	✓
ORP by Electrode	E125	1710759	1	1	100.0	5.0	✓
PAHs in Water by Hexane LVI GC-MS	E641A	1710219	1	2	50.0	5.0	✓
pH by Meter	E108	1709834	1	4	25.0	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1711362	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	1709833	1	1	100.0	5.0	✓
TDS by Gravimetry	E162	1710210	1	1	100.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1710213	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1710840	1	1	100.0	5.0	✓
Total Nitrogen by Colourimetry	E366	1709912	1	1	100.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1709911	1	1	100.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1709913	1	1	100.0	5.0	✓
TSS by Gravimetry	E160	1710211	1	1	100.0	5.0	✓
Turbidity by Nephelometry	E121	1710755	1	15	6.6	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	1710140	1	1	100.0	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	1709835	1	1	100.0	5.0	✓
Ammonia by Fluorescence	E298	1709914	1	1	100.0	5.0	✓
BC PHCs - EPH by GC-FID	E601A	1710218	1	2	50.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1709832	1	1	100.0	5.0	✓
Chloride in Water by IC	E235.Cl	1709828	1	3	33.3	5.0	✓
Conductivity in Water	E100	1709836	1	1	100.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1710251	1	5	20.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1710063	1	3	33.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1709910	1	3	33.3	5.0	✓
Fluoride in Water by IC	E235.F	1709831	1	1	100.0	5.0	✓
Glycols (4 analytes) by GC-FID	E680E	1709855	1	1	100.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1709829	1	3	33.3	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1709830	1	3	33.3	5.0	✓
PAHs in Water by Hexane LVI GC-MS	E641A	1710219	1	2	50.0	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1711362	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	1709833	1	1	100.0	5.0	✓
TDS by Gravimetry	E162	1710210	1	1	100.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1710213	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1710840	1	1	100.0	5.0	✓
Total Nitrogen by Colourimetry	E366	1709912	1	1	100.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1709911	1	1	100.0	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Method Blanks (MB) - Continued							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1709913	1	1	100.0	5.0	✓
TSS by Gravimetry	E160	1710211	1	1	100.0	5.0	✓
Turbidity by Nephelometry	E121	1710755	1	15	6.6	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	1710140	1	1	100.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	1709914	0	1	0.0	5.0	✗
Bromide in Water by IC (Low Level)	E235.Br-L	1709832	0	1	0.0	5.0	✗
Chloride in Water by IC	E235.Cl	1709828	1	3	33.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1710251	1	5	20.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1710063	1	3	33.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1709910	1	3	33.3	5.0	✓
Fluoride in Water by IC	E235.F	1709831	0	1	0.0	5.0	✗
Nitrate in Water by IC (Low Level)	E235.NO3-L	1709829	1	3	33.3	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1709830	1	3	33.3	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1711362	0	17	0.0	5.0	✗
Sulfate in Water by IC	E235.SO4	1709833	0	1	0.0	5.0	✗
Total Mercury in Water by CVAAS	E508	1710213	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1710840	0	1	0.0	5.0	✗
Total Nitrogen by Colourimetry	E366	1709912	0	1	0.0	5.0	✗
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1709911	0	1	0.0	5.0	✗
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1709913	0	1	0.0	5.0	✗
VOCs (BC List) by Headspace GC-MS	E611C	1710140	1	1	100.0	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
Conductivity in Water	E100 ALS Environmental - Vancouver	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 ALS Environmental - Vancouver	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 ALS Environmental - Vancouver	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 ALS Environmental - Vancouver	Water	ASTM D1498 (mod)	Oxidation redution potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry	E160 ALS Environmental - Vancouver	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 ALS Environmental - Vancouver	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Nitrite in Water by IC (Low Level)	E235.NO2-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 ALS Environmental - Vancouver	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 ALS Environmental - Vancouver	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Nitrogen by Colourimetry	E366 ALS Environmental - Vancouver	Water	Chinchilla Scientific Nitrate Method, 2011	Following digestion, total nitrogen is is determined colourimetrically using a discrete analyzer utilizing the vanadium chloride reduction method. This method of analysis is approved under US EPA 40 CFR Part 136 (May 2021).
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Vancouver	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 ALS Environmental - Vancouver	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 ALS Environmental - Vancouver	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 ALS Environmental - Vancouver	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.
Phenols (4AAP) in Water by Colorimetry	E562 ALS Environmental - Edmonton	Water	EPA 9066	This automated method is based on the distillation of phenol and subsequent reaction of the distillate with alkaline ferricyanide (K3Fe(CN)6) and 4-amino-antipyrine (4-AAP) to form a red complex which is measured colorimetrically.
BC PHCs - EPH by GC-FID	E601A ALS Environmental - Vancouver	Water	BC MOE Lab Manual	Sample extracts are analyzed by GC-FID for BC hydrocarbon fractions.
VOCs (BC List) by Headspace GC-MS	E611C ALS Environmental - Vancouver	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. Total Xylenes is the sum of m,p-Xylene & o-Xylene. Total BTEX is the sum of Benzene, Toluene, Ethylbenzene, & Total Xylenes. Total BTEX+Styrene is the sum of Total BTEX & Styrene. Total Trihalomethanes [THMs] is the sum of Bromodichloromethane, Bromoform, Chloroform, & Dibromochloromethane.
PAHs in Water by Hexane LVI GC-MS	E641A ALS Environmental - Vancouver	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.
Glycols (4 analytes) by GC-FID	E680E ALS Environmental - Vancouver	Water	EPA 8015D (mod)	Derivatized glycols are analyzed by GC-FID.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100 ALS Environmental - Vancouver	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Hardness (Calculated) from Total Ca/Mg	EC100A ALS Environmental - Vancouver	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.
Un-ionized and Ionized Ammonia (Calculation) (Field Temperature and pH)	EC298A ALS Environmental - Vancouver	Water	CCME CWQG Ammonia	Un-ionized ammonia is calculated from test results for total ammonia, field temperature and pH, and is expressed in units of mg/L "as N".
LEPH and HEPH: EPH-PAH	EC600A ALS Environmental - Vancouver	Water	BC MOE Lab Manual (LEPH and HEPH)	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.
Field pH,EC,Salinity, TDS, Cl2,ClO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine	EF001 ALS Environmental - Vancouver	Water	Field Measurement (Client Supplied)	Field pH,EC,Salinity, TDS, Cl2,ClO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3 or Chloramine measurements provided by client and recorded on ALS report may affect the validity of results.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Vancouver	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Preparation for Total Organic Carbon by Combustion	EP355 ALS Environmental - Vancouver	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Nitrogen in water	EP366 ALS Environmental - Vancouver	Water	APHA 4500-P J (mod)	Samples for total nitrogen analysis are digested using a heated persulfate digestion. Nitrogen compounds are converted to nitrate in this digestion.
Digestion for Total Phosphorus in water	EP372	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
	ALS Environmental - Vancouver			
Dissolved Metals Water Filtration	EP421 ALS Environmental - Vancouver	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
Dissolved Mercury Water Filtration	EP509 ALS Environmental - Vancouver	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
VOCs Preparation for Headspace Analysis	EP581 ALS Environmental - Vancouver	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 a GC-MS-FID.
PHCs and PAHs Hexane Extraction	EP601 ALS Environmental - Vancouver	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
Glycols Extraction and Derivatization (BC Only)	EP680E ALS Environmental - Vancouver	Water	EPA 8015D (mod)	Aqueous sample is derivatized and extracted with orgaic solvent.

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 - 969592

ALS www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Page of

Report To	Contact and company name below will appear on the final report
Company:	FKM
Contact:	Sara Derakhshi
Phone:	514 891 9993
Company address below will appear on the final report	
Street:	
City/Province:	
Postal Code:	

Reports / Recipients

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

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

Select Distribution: ☐ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: SaraDerakhshi@Michelscanada.com

Email 2:

Email 3:

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 [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

AFFIX ALS BARCODE LABEL HERE (ALS use only)

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.

Invoice To	Same as Report To ☐ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☐ NO
Company:	
Contact:	

Invoice Recipients

Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax:

Email 2:

Project Information

ALS Account # / Quote #:	EGP 150
Job #:	
PO / AFE:	
LSD:	BCR mill
ALS Lab Work Order # (ALS use only):	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#:
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	
ALS Contact:	Sampler:

Analysis Request

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

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	NUMBER OF CONTAINERS	physical test	Total metals	dissolved metals	Organics	PAH, vph, EPH	VOC	Anions Nutrients	Hydrocarbons	Glycols	Phenols	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	BCR WTP	15/10/24	8:50	water		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			

Environmental Division
Vancouver
Work Order Reference
VA24C7463
Telephone : +1 604 253 4188

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

Are samples taken from a Regulated DW System? ☐ YES ☐ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

pH: 7.3 Temp: 15.2

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☑ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

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			
				19.2			

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
SaraDerakhshi	15 oct 2024	

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:

FINAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:
	15 OCT	3 pm

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

ALS 2020 FRONT

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.**

BCR Site WTP Discharge Field Notes and Logs (Included in previous section BCR Site Batch Sample Analysis)

Appendix B: BCR Site Receiving Environment Documentation

BCR Site Receiving Environment Sample Analysis

TRITON	Sample ID	Reviewed and signed off by:			Farshad Shafiei Ph.D., R.P.Bio.	SQU US1 (Upstream)	SQU DS1 (Downstream)	Sample or value notes	BCWQ FAL - Short Term	BCWQ FAL - Long Term	BCWQ MAL - Short Term	BCWQ MAL - Long Term
	LAB ID					VA24C7513-001	VA24C7513-002					
	Date Sampled					15-Oct-2024	15-Oct-2024					
	Time Sampled					09:15	09:42					
Analyte	**Units**	**FAL-ST** [1,2]	**FAL-LT** [1,2]	**MAL-ST** [1]	**MAL-LT** [1,2]	Water	Water					
						N/A	N/A		Guideline notes			
In Situ Parameters												
pH (field)	pH units	6.5-9.0	6.5-9.0	7.0-8.7	7.0-8.7	7.33	7.41		If natural pH < 6.5, no statisticaly significant decrease from background. No restriction in increase except in areas with unique flora or fauna. Unrestricted change permitted within range of 6.5 to 9.0. If natural pH > 9.0, no statistically significant increase from background. Refer to BC Water Quality Guidelines for more information.		Unrestricted change within this range (for protection of mollusc embryo development).	
Temperature (field)	°C	Max +/- from BKG 1°C [4]	-	Max +/- from BKG 1°C [4]	-	10.4	10.3		Guideline is species-dependent. Short-term daily temperature guideline is 19°C for streams with unknown fish distribution. Refer to footnote 4 for background temperature range for the Squamish River. Refer to BC Water Quality Guidelines for more information Hourly rate of change not to exceed 1°C. Calculation: US value +/- 1 = guideline range		Guideline for marine waters are based on natural ambient conditions. Max and min. 1°C change from natural condition. Natural temperature cycle characteristic of the site should not be altered in amplitude or frequency by human activities. Max rate of any human-induced temperature change not to exceed 0.5°C hourly. treams with unknown fish distribution. Refer to footnote 4 for background temperature range for the Squamish River. Calculation: US value +/- 1 = guideline range	
Conductivity (field)	µS/cm	-	-	-	-	56	54					
Turbidity (field)	NTU	Varies with background, see note Guideline = 312.4	Varies with background, see note Guideline = 135.9 5-week discrete sampling average = 125.3 (DS)	Varies with background, see note Guideline = 312.4	Varies with background, see note Guideline = 135.9 5-week discrete sampling average = 125.3 (DS)	284.0	256.0		Change from background of 8 NTU at any one time for a duration of 24 h in all waters during clear flows or in clear waters. Calculation: US value + 8 = DS guideline Change from background of 5 NTU at any time when background is 8 - 50 NTU during high flows or in turbid waters. Calculation: US value + 5 = DS guideline Change from background of 10% when background is > 50 NTU at any time during high flows or in turbid waters. Calculation: US value + (US value*0.1) = DS guideline	Change from background of 2 NTU at any one time for 30 days in clear flows. Note that a rolling average of US values over a 30-day period is required to properly calculate this guideline. Guideline calculated in this spreadsheet using US concentration at the time of sampling.	Change from background of 8 NTU at any one time for a duration of 24 h in all waters during clear flows or in clear waters. Calculation: US value + 8 = DS guideline Change from background of 5 NTU at any time when background is 8 - 50 NTU during high flows or in turbid waters. Calculation: US value + 5 = DS guideline Change from background of 10% when background is > 50 NTU at any time during high flows or in turbid waters. Calculation: US value + (US value*0.1) = DS guideline	Change from background of 2 NTU at any one time for 30 days in clear flows. Note that a rolling average of US values over a 30-day period is required to properly calculate this guideline. Guideline calculated in this spreadsheet using US concentration at the time of sampling.
Dissolved Oxygen (field)	mg/L	Varies with life stage, see note	Varies with life stage, see note	Varies with life stage, see note	Varies with life stage, see note	10.87	10.63		Buried embryo/alevin minimum 9 mg/L, all other life stages 5 mg/L. Refer to BC Water Quality Guidelines for more information.	Buried embryo/alevin minimum 11 mg/L, all other life stages 8 mg/L. Refer to BC Water Quality Guidelines for more information.	Buried embryo/alevin minimum 9 mg/L, all other life stages 5 mg/L. Refer to BC Water Quality Guidelines for more information.	Buried embryo/alevin minimum 11 mg/L, all other life stages 8 mg/L. Refer to BC Water Quality Guidelines for more information.
General Parameters												
Hardness (as $CaCO_3$) (total)	mg/L	-	-	-	-	35	35.3					
Total Dissolved Solids	mg/L	-	-	-	-	59	59					
Total Suspended Solids	mg/L	Varies with background, see note Guideline = 255.2	Varies with background, see note Guideline = 117.3 5-week discrete sampling average = 115.04 (DS)	Varies with background, see note Guideline = 255.2	Varies with background, see note Guideline = 117.3 5-week discrete sampling average = 115.04 (DS)	232	273		Change from background of 25 mg/L at any one time for duration of 24 h in all waters during clear flows or in clear waters. Calculation: US value + 25 = DS guideline Change from background of 10 mg/L at any one time when background 25-100 mg/L during high flows or turbid waters. Calculation: US value + 10 = DS guideline Change from background of 10% when background is > 100 mg/L at any time during high flows or turbid waters.	Change from background of 5 mg/L @ one time for a druation of 30 days in clear flow. Note that a rolling average of US values over a 30-day period is required to properly calculate this guideline. Guideline calculated in this spreadsheet using US concentration at the time of sampling.	Change from background of 25 mg/L at any one time for duration of 24 h in all waters during clear flows or in clear waters. Calculation: US value + 25 = DS guideline Change from background of 10 mg/L at any one time when background 25-100 mg/L during high flows or turbid waters. Calculation: US value + 10 = DS guideline Change from background of 10% when background is > 100	Change from background of 5 mg/L @ one time for a druation of 30 days in clear flow. Note that a rolling average of US values over a 30-day period is required to properly calculate this guideline. Guideline calculated in this spreadsheet using US concentration at the time of sampling.
Dissolved Organic Carbon (DOC)	mg/L	-	-	-	-	1.54	1.78			Long-term (30-day) median within 20% of background median [3]		
Total Alkalinity ($CaCO_3$)	mg/L	-	Categorical	-	-	10.2	9.7	The upstream and downstream locations have moderate sensitivity to acid inputs (i.e. medium buffering capacity).		Guideline is for alkalinity (as CaCO3) and categorizes the sensitivity of a water body to acid inputs. Alkalinity < 10 mg/L is considered highly sensitive to acid inputs; 10 - 20 mg/L is considered moderately sensitive to acid inputs; > 20 mg/L is considered low sensitivity.		
Total Sulfide (as S)	mg/L	-	-	-	-	< 0.0015	0.0018					
Total Sulfide (un-ionized as H_2S)	mg/L	-	0.002	-	-	< 0.0015	< 0.0015			Working guideline		
Total Sulfide (as H_2S)	mg/L	-	-	-	-	< 0.0016	0.0019					
Anions and Nutrients												
Ammonia	mg/L ammonia-N	Varies with pH and temperature. See note. Guideline = 16	Varies with pH and temperature. See note. Guideline = 1.85	Varies with pH, temperature and salinity. See note. Guideline = 52	Varies with pH, temperature and salinity. See note. Guideline = 12	0.0518	0.0472		Guideline for ammonia as N and is pH and temperature dependent. Refer to Table 27D in BC WQG for guideline values.	Guideline for ammonia as N and is pH and temperature dependent. Refer to Table 27C in BC WQG for guideline values.	Guideline for ammonia as N. Guideline is pH, temperature and salinity dependent. Refer to Table 27F in BC WQG for guideline values.	Guideline for ammonia as N. Guideline is pH, temperature and salinity dependent. Refer to Table 27E in BC WQG for guideline values.
Bromide	mg/L	-	-	-	-	< 0.050	< 0.050					
Chloride	mg/L	600	150	+/- 10% from BKG	+/- 10% from BKG	0.92	0.91				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.	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.
Fluoride	mg/L	Varies with hardness Guideline = 0.912	-	1.5	-	< 0.020	< 0.020		Guideline has interim status. Guideline is calculated with the following equation: Guideline = [-51.73 + 92.57 log10 (hardness)] * 0.01			
Nitrate (as N)	mg/L	32.8	3	-	3.7	0.0335	0.0356					
Nitrite (as N)	mg/L	Varies with chloride. See note. Guideline = 0.06	Varies with chloride. See note. Guideline = 0.02	-	-	< 0.001	< 0.001		Varies with chloride. Refer to Table 27B in BC WQG for guideline values.	Varies with chloride. Refer to Table 27B in BC WQG for guideline values.		
Total Nitrogen	mg/L	-	-	-	-	0.198	0.167					
Total Phosphorous	mg/L	-	0.005 to 0.015	-	-	0.347	0.418			Guideline is for lakes, refer to BCWQ guideline for nutrients and algae for more information. Guideline does not apply to site.		
Sulfate (as SO_4)	mg/L	-	Varies with hardness. See note. Guideline = 128	-	-	3.26	3.01			Guidelines for hardness ranges below: Hardness 0 - 30: 128 Hardness 31 - 75: 218 Hardness 76 - 180: 309 Hardness 181 - 250: 429		
Total Metals												
Aluminum (Al)-Total	mg/L	-	Varies with pH, DOC, hardness Guideline = 0.051 5-week field average = **4.34** (US), **4.18** (DS)	-	-	***9.65***	***9.75***	**Total Al exceeds the long-term BCWQG for FAL at both upstream and downstream locations.** However, this should not be deemed a reportable exceedance. This is likely due to the local geology or other sources, not the the Project.		Guideline varies with pH, hardness and Dissolved Organic Carbon (DOC). Guideline is calculated with the following equation: Guideline = (EXP((0.645 * LN(DOC)) + (2.255 * LN(hardness)) + (1.995 * pH) + (-0.284 * (LN(hardness) * pH))-9.898)/3/1000) If hardness or DOC is below the hardness or DOC range, the minimum hardness or DOC will be applied in the calculation.		
Antimony (Sb)-Total	mg/L	0.25	0.074	-	-	< 0.00010	< 0.00010					
Arsenic (As)-Total	mg/L	-	0.005	-	0.0125	0.00104	0.0011					Interim guideline status
Barium (Ba)-Total	mg/L	-	1	-	-	0.136	0.142			Working guideline status		
Beryllium (Be)-Total	mg/L	-	0.00013	-	0.100	0.000108	0.000107			Working guideline status		Working guideline status
Bismuth (Bi)-Total	mg/L	-	-	-	-	< 0.00005	< 0.00005					
Boron (B)-Total	mg/L	-	1.2	-	1.2	< 0.010	< 0.010					
Cadmium (Cd)-Total	mg/L	-	-	-	0.00012	0.0000344	0.0000367					Working guideline status
Calcium (Ca)-Total	mg/L	-	-	-	-	7.22	7.23					
Cesium (Cs)-Total	mg/L	-	-	-	-	0.000462	0.000479					
Chromium (Cr) - Total	mg/L	-	-	-	-	0.00464	0.00489					
Chromium (Cr(III))-Total	mg/L	-	0.0089	-	0.056	0.00464	0.00489			Working guideline status		Working guideline status
Chromium (Cr(VI))-Total	mg/L	-	0.0025	-	0.0015	< 0.00050	< 0.00050			Working guideline status		Working guideline status
Cobalt (Co)-Total	mg/L	0.11	0.004	-	-	0.00392	0.00418					
Copper (Cu)-Total	mg/L	-	-	0.003	0.002 5-week field average = **0.00744** (US), **0.0074** (DS)	0.018	0.018	**Total Cu exceeds the short-term and long-term BCWQG for MAL at both upstream and downstream locations.** However, this should not be deemed a reportable exceedance. This is likely due to the local geology or other sources, not the the Project.				
Iron (Fe)-Total	mg/L	1	-	-	-	**7.65**	**8.06**	**Total Fe exceeds the short-term BCWQG for FAL at both the upstream and downstream locations.** However, this should not be deemed a reportable exceedance. This is likely due to the local geology or other sources, not the the Project.				
Lead (Pb)-Total	mg/L	-	-	0.14	0.002 5-week field average = 0.00063 (US), 0.00055 (DS)	0.00155	0.00129					
Lithium (Li)-Total	mg/L	-	-	-	-	0.0046	0.0051					
Magnesium (Mg)-Total	mg/L	-	-	-	-	4.12	4.18					
Manganese (Mn)-Total	mg/L	Varies with hardness Guideline = 0.926	Varies with hardness Guideline = 0.768	-	-	0.211	0.225		Guideline varies with hardness. The guideline is calculated using the following equation: Guideline = (0.0044 * hardness + 0.605) Guideline applies to samples with hardness 25-259 mg/L. Lowest value for guideline is 0.77 mg/L. If hardness is below the hardness range, the minimum hardness will be applied in the calculation.	Guideline varies with hardness, refer to BC Water Quality Guidelines for more information. The guideline is calculated using the following formula: Guideline = (0.01102 * hardness + 0.54) Guideline applies to samples with hardness 37-450 mg/L. Lowest value for guideline is 0.81 mg/L. If hardness is below the hardness range, the minimum hardness will be applied in the calculation.		
Mercury (Hg)-Total	mg/L	-	Varies with methyl mercury Guideline = N/A	-	-	< 0.0000050	< 0.0000050			When MeHg ≤ 0.5% of total Hg, guideline is equal to 0.02 mg/L Guideline = 0.1/[MeHg/totalHg]. When MeHg ≤ 0.5% of total Hg, guideline is equal to 0.02 mg/L		
Molybdenum (Mo)-Total	mg/L	46	7.6	-	-	0.000507	0.00048					
Nickel (Ni)-Total	mg/L	-	-	-	0.0083	0.00416	0.0043					Working guideline status
Phosphorus (P)-Total	mg/L	-	0.005 to 0.015	-	-	0.347	0.362			Guideline only applies to lakes with salmonid species being the dominant fish species. Guideline is for reference only and does not apply to site.		
Potassium (K)-Total	mg/L	-	-	-	-	3.13	3.22					
Rubidium (Rb)-Total	mg/L	-	-	-	-	0.0115	0.0122					
Selenium (Se)-Total	mg/L	-	0.002	-	0.002	< 0.00005	0.000052			Guideline for freshwater aquatic life (water column). Alert concentration is 0.001 mg/L, with separate guidelens for sediment, invertebrate and fish tissue. Refer to BC Water Quality Guidelines for more information on guideliens and sampling guidance.		Guideline for marine aquatic life (water column). Alert concentration is 0.001 mg/L, with separate guideliens for sediment, invertebrate and fish tissue. Refer to BC Water Quality Guidelines for more information on guideliens and sampling guidance.
Silicon (Si)-Total	mg/L	-	-	-	-	18.2	16.8					
Silver (Ag)-Total	mg/L	Varies with hardness, see note Guideline = 0.0001	Varies with hardness, see note Guideline = 0.00005	0.003	0.0015	0.00003	0.000029		Varies with hardness Guideline ranges: Hardness ≤ 100: 0.0001 Hardness > 100: 0.003	Varies with hardness Guideline ranges: Hardness ≤ 100: 0.00005 Hardness > 100: 0.0015		Guideline applies to open coast and estuaries. Guideline is applicable to the EGP site.
Sodium (Na)-Total	mg/L	-	-	-	-	2.97	2.77					
Strontium (Sr)-Total	mg/L	-	-	-	-	0.0841	0.0816					
Sulfur (S)-Total	mg/L	-	-	-	-	0.88	0.75					
Tellurium (Te)-Total	mg/L	-	-	-	-	< 0.00020	< 0.00020					
Thallium (Tl)-Total	mg/L	-	0.00003 5-week field average = 0.000029 (US), 0.000031 (DS)	-	-	0.000077	0.000083			30-day average, site-specific objective for the lower Columbia River, BC. Guideline is for reference only and does not apply to tnhe EGP site.		
Thorium (Th)-Total	mg/L	-	-	-	-	0.00044	0.00055					
Tin (Sn)-Total	mg/L	-	-	-	-	< 0.00010	< 0.00010					
Titanium (Ti)-Total	mg/L	-	-	-	-	0.495	0.53					
Tungsten (W)-Total	mg/L	-	-	-	-	< 0.00010	< 0.00010					
Uranium (U)-Total	mg/L	0.0165	0.0075	-	-	0.000361	0.000401			Working guideline status		
Vanadium (V)-Total	mg/L	-	0.06	-	0.005 5-week field average = **0.008** (US), **0.008** (DS)	*0.019*	*0.020*	**Total V at both locations exceed the long-term BCWQG for MAL.** However, this should not be deemed a reportable exceedance. This is likely due to the local geology or other sources, not the the Project.				Working guideline status
Zinc (Zn)-Total	mg/L	-	-	0.055	Guideline = 0.010 5-week field average = 0.00998 (US), **0.01124** (DS)	0.0238	*0.0263*	**Total Zn at the downstream location exceeds the long-term BCWQG for MAL.** However, this should not be deemed a reportable exceedance. This is likely due to the local geology or other sources, not the the Project.				
Zirconium (Zr)-Total	mg/L	-	-	-	-	0.00059	0.00051					
Dissolved Metals												
Aluminum (Al)-Dissolved	mg/L	-	-	-	-	0.147	0.146					
Antimony (Sb)-Dissolved	mg/L	-	-	-	-	< 0.00010	< 0.00010					
Arsenic (As)-Dissolved	mg/L	-	-	-	-	0.00022	0.00021					
Barium (Ba)-Dissolved	mg/L	-	-	-	-	0.00742	0.00741					
Beryllium (Be)-Dissolved	mg/L	-	-	-	-	< 0.000100	< 0.000100					
Bismuth (Bi)-Dissolved	mg/L	-	-	-	-	< 0.000050	< 0.000050					
Boron (B)-Dissolved	mg/L	-	-	-	-	< 0.010	< 0.010					
Cadmium (Cd)-Dissolved	mg/L	Varies with hardness, see note Guideline = 0.000199	Varies with hardness, see note Guideline = 0.000071	-	-	0.0000052	0.0000051		Guideline is hardness dependent. Guideline is appilcable to water hardness between 7.0 and 455 mg/L. Guideline is calculated with the following formula: Guideline = (EXP(1.03 * (LN(hardness)) - 5.274)/1000) Lowest value for guideline is 0.000018 mg/L. If hardness is below the hardness range, the minimum hardness will be applied in the calculation.	Guideline is hardness dependent. Guideline is applicable to hardness between 3.4 and 285 mg/L. Guideline is calculated with the following formula: Guideline = (EXP(0.736 * (LN(hardness)) - 4.943)/1000) Lowest value for guiedeline is 0.00004. If hardness is below the hardness range, the minimum hardness will be applied in the calculation.		
Calcium (Ca)-Dissolved	mg/L	-	Categorical, see note	-	-	3.68	3.46	The upstream and downstream locations have high sensitivity to acid inputs (i.e. medium buffering capacity).		Guideline categorizes the sensitivity of a water body to acid inputs (i.e. buffering capacity). Standard is 4 mg/L dissolved Ca for the most sensitive waterbodies,5 - 8 mg/L for waterbodies with moderate sensitivity to acid inputs. Waterbodies with dissolved calcium > 8mg/L are considered to have low sensitivity to acid inputs.		
Cesium (Cs)-Dissolved	mg/L	-	-	-	-	0.000013	0.00001					
Chromium (Cr)-Dissolved	mg/L	-	-	-	-	< 0.00050	< 0.00050					
Chromium (Cr(III))-Dissolved	mg/L	-	-	-	-	-	-					
Chromium (Cr(VI))-Dissolved	mg/L	-	-	-	-	-	-					
Cobalt (Co)-Dissolved	mg/L	-	-	-	-	< 0.00010	< 0.00010					
Copper (Cu)-Dissolved	mg/L	Guideline varies with other parameters, see note Guideline = 0.0021	Guideline varies with other parameters, see note Guideline = 0.0002 5-week field average = **0.0007** (US), **0.0007** (DS)	-	-	***0.0013***	***0.0013***	**Dissolved Cu exceeds the long-term BCWQG for FAL at both locations.** However, this should not be deemed a reportable exceedance. This is likely due to the local geology or other sources, not the the Project.	Guideline varies with other parameters and is calculated using BC BLM software. Simplified model: Temperature, pH, DOC and hardness Detailed model: Temperature, pH, DOC, humic acid content, total calcium, total magnesium, total sodium, total potassium, sulphate, chloride, and alkalinity Guideline calculated using values for parameters above taken at the specific site on each sampling date	Guideline varies with other parameters and is calculated using BC BLM software. Simplified model: Temperature, pH, DOC and hardness Detailed model: Temperature, pH, DOC, humic acid content, total calcium, total magnesium, total sodium, total potassium, sulphate, chloride, and alkalinity Guideline calculated using values for parameters above taken at the specific site on each sampling date		
Iron (Fe)-Dissolved	mg/L	0.35	-	-	-	0.102	0.101					
Lead (Pb)-Dissolved	mg/L	-	Guideline varies with DOC and hardness Guideline = 0.00138 5-week field average = 0.00005 (US), 0.00005 (DS)	-	-	< 0.000050	< 0.000050			Guideline varies with DOC and hardness, refer to BC Water Quality Guidelines for more information. Guideline uses equation (EXP((0.514*LN(DOC))+(0.214*(LN(Hardness)))+0.4354))/2/1000 where DOC range is 0.5-31.5 mg/L and hardness range is 4.7-511 mg/L		
Lithium (Li)-Dissolved	mg/L	-	-	-	-	< 0.0010	< 0.0010					
Magnesium (Mg)-Dissolved	mg/L	-	-	-	-	0.435	0.415					
Manganese (Mn)-Dissolved	mg/L	-	-	-	-	0.011	0.0112					
Mercury (Hg)-Dissolved	mg/L	-	-	-	-	< 0.0000050	< 0.0000050					
Molybdenum (Mo)-Dissolved	mg/L	-	-	-	-	0.000446	0.000405					
Nickel (Ni)-Dissolved	mg/L	Guideline varies with other parameters, see note Guideline = 0.0180	Guideline varies with other parameters, see note Guideline = 0.000975 5-week field average = 0.0005 (US), 0.0005 (DS)	-	-	< 0.00050	< 0.00050		Guideline varies with other parameters and is calculated using BC BLM software. Simplified model: Temperature, pH, DOC and hardness Detailed model: Temperature, pH, DOC, humic acid content, total calcium, total magnesium, total sodium, total potassium, sulphate, chloride, and alkalinity Guideline calculated using values for parameters above taken at the specific site on each sampling date	Guideline varies with other parameters and is calculated using BC BLM software. Simplified model: Temperature, pH, DOC and hardness Detailed model: Temperature, pH, DOC, humic acid content, total calcium, total magnesium, total sodium, total potassium, sulphate, chloride, and alkalinity Guideline calculated using values for parameters above taken at the specific site on each sampling date		
Phosphorus (P)-Dissolved	mg/L	-	-	-	-	< 0.050	< 0.050					
Potassium (K)-Dissolved	mg/L	-	-	-	-	0.64	0.659					
Rubidium (Rb)-Dissolved	mg/L	-	-	-	-	0.00119	0.00117					
Selenium (Se)-Dissolved	mg/L	-	-	-	-	< 0.000050	< 0.000050					
Silicon (Si)-Dissolved	mg/L	-	-	-	-	2.95	2.67					
Silver (Ag)-Dissolved	mg/L	-	-	-	-	< 0.000010	< 0.000010					
Sodium (Na)-Dissolved	mg/L	-	-	-	-	1.22	1.16					
Strontium (Sr)-Dissolved	mg/L	-	-	-	-	0.0248	0.0225					
Sulfur (S)-Dissolved	mg/L	-	-	-	-	0.95	0.75					
Tellurium (Te)-Dissolved	mg/L	-	-	-	-	< 0.00020	< 0.00020					
Thallium (Tl)-Dissolved	mg/L	-	-	-	-	< 0.000010	< 0.000010					
Thorium (Th)-Dissolved	mg/L	-	-	-	-	< 0.00010	< 0.00010					
Tin (Sn)-Dissolved	mg/L	-	-	-	-	< 0.00010	< 0.00010					
Titanium (Ti)-Dissolved	mg/L	-	-	-	-	0.00651	0.00678					
Tungsten (W)-Dissolved	mg/L	-	-	-	-	< 0.00010	< 0.00010					
Uranium (U)-Dissolved	mg/L	-	-	-	-	0.000052	0.000054					
Vanadium (V)-Dissolved	mg/L	-	-	-	-	0.00118	0.00112					
Zinc (Zn)-Dissolved	mg/L	Varies with DOC and hardness Guideline = 0.018	Varies with pH, DOC, hardness Guideline = 0.0027 5-week field average = **0.0034** (US), 0.0017 (DS)	-	-	***< 0.001***	< 0.001	**Dissolved Zn exceeds the long-term BCWQG for FAL at the upstream location.** However, this should not be deemed a reportable exceedance. This is likely due to the local geology or other sources, not the the Project.	Guideline varies with DOC and hardness. Guideline is calculated using the following formula: Guideline = (EXP((0.833 * (LN(hardness))) + (0.24 * (LN(DOC))) + 0.526)/2/1000) If hardness or DOC is below the hardness or DOC range, the minimum hardness or DOC will be applied in the calculation.	Guideline varies with pH, hardness and Dissolved Organic Carbon (DOC). Guideline is calculated using the following formula: Guideline = (EXP((0.974 * (LN(hardness))) - (0.815 * pH) + (0.398 * (LN(DOC))) + 4.625)/2/1000) Guideline only applies to water with pH between 6.5 and 8.13, DOC between 0.3 and 22.9 mg/L, anmd hardness between 23.4 and 399 mg/L. If hardness or DOC is below the hardness or DOC range, the minimum hardness or DOC will be applied in the calculation.		
Zirconium (Zr)-Dissolved	mg/L	-	-	-	-	< 0.00020	< 0.00020					
Applied Guideline:		British Columbia Approved and Working Water Quality Guidelines (NOV 2023) - BCAWWQG - Freshwater Aquatic Life British Columbia Approved and Working Water Quality Guidelines (NOV 2023) - BCAWWQG - Marine Aquatic Life										
Color Key:	Exceeds both FAL and MAL Guidelines	Exceeds FAL Short term Guideline	*Exceeds FAL Long term Guideline*	Exceeds MAL Short term Guideline	*Exceeds MAL Long term Guideline*							
Color Key:		Exceeds Short and Long-Term Guideline		Exceeds MAL Short and Long-term Guidelines								

[1]BC MOECCS. 2023. BC Water Quality Guidelines for the Protection of Aquatic Life. Wildlife & Agriculture. Accessed from:
wqg_summary_aquaticlife_wildlife_agri.pdf (gov.bc.ca)
[2]BC MOECCS. 2021. BC Working Water Quality Guidelines for the Protection of Aquatic Life. Widlife & Agriculture. Accessed from:
bc_env_working_water_quality_guidelines.pdf (gov.bc.ca)
[3]Note that long-term guidelines apply to averaged data to account for chronic impacts to aquatic life. Ideally, five samples collected at evenly spaced intervals over 30 days is considered to be the minimum number needed to calculate the long-term average of any parameter, though this may vary by parameter and site conditions. Long-term guidelines applied here are for reference only and may not indicate chronic impacts to aquatic life if exceedances occur in the short term.
[4]Background temperature ranges: Dec-Feb: 2.0-4.0C; Mar-Apr: 4.0-6.0C; May-June: 6.0-12.0C; Jul-Sept: 9.0-12.0C; Oct-Nov: 3.0-5.0
Reference: Triton Environmental Consulants Ltd. 2023. Memo - Background water quality values for the BC Rail Discharge to Squamish River
For guidelines dependent on other parameters, when hardness, pH or DOC are below the range stated in the guideline, the lowest value in the range is used to calculate the guideline.

Parameters Used to Calculate Guidelines

Analyte	Units	FAL-ST [1,2]	FAL-LT [1,2]	MAL-ST [1]	MAL-LT [1,2]	Values: SQU US1 (Upstream)	Values: SQU DS1 (Downstream)
pH (field)	pH units	Field pH taken using handheld meters during sampling used in calculations				7.33	7.41
Temperature (field)	°C	Field temperature taken using handheld meters during sampling used in calculations				10.4	10.3
Turbidity (field)	NTU	Field turbidity taken using handheld meters during sampling used in calculations				284.00	256.00
Hardness (as CaCO3) (total)	mg/L	Laboratory tested total hardness taken at each respective sample site on the day of sampling used in guideline calculations				35	35.3
Dissolved Organic Carbon (DOC)	mg/L	Laboratory tested dissolved organic carbon tested at the lab used in guideline calculations				1.54	1.78
Total Alkalinity ($CaCO_3$)	mg/L	Laboratory tested total alkalinity used in calculations				10.2	9.7
Chloride	mg/L	Laboratory tested chloride taken at each respective sample site on the day of sampling used in guideline calculations				0.92	0.91

BCR Site Receiving Environment Lab Documentation

CERTIFICATE OF ANALYSIS

Work Order	:	**VA24C7513**		
Client	:	**Triton Environmental Consultants Ltd.**	Laboratory	: ALS Environmental - Vancouver
Contact	:		Account Manager	:
Address	:		Address	:
Telephone	:		Telephone	:
Project	:	11964	Date Samples Received	: 15-Oct-2024 11:25
PO	:	11964 - Task 20 - Phase 3C - 4C	Date Analysis Commenced	: 16-Oct-2024
C-O-C number	:	----	Issue Date	: 23-Oct-2024 17:09
Sampler	:	----		
Site	:	Water Analysis		
Quote number	:	VA23-TRIT100-012		
No. of samples received	:	3		
No. of samples analysed	:	3		

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

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*
		Inorganics, Calgary, Alberta
		Metals, Burnaby, British Columbia
		Metals, Waterloo, Ontario
		Inorganics, Burnaby, British Columbia
		Inorganics, Burnaby, British Columbia
		Metals, Waterloo, Ontario
		Inorganics, Waterloo, Ontario
		Metals, Burnaby, British Columbia
		Administration, 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*
mg/L	milligrams per litre
µS/cm	microsiemens per centimetre
°C	degrees celsius
pH units	pH units
-	no 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

Sub-Matrix: Water (Matrix: Water)			Client sample ID		SQU US 1	SQU DS1	Triple Blank	----	----
			Client sampling date / time		15-Oct-2024 09:15	15-Oct-2024 09:42	15-Oct-2024 09:15	----	----
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	VA24C7513-001	VA24C7513-002	VA24C7513-003	----	----
					Result	Result	Result	----	----
Field Tests									
Conductivity, field	----	EF001/VA	0.10	µS/cm	56.000	54.000	----	----	----
pH, field	----	EF001/VA	0.10	pH units	7.33	7.41	----	----	----
Temperature, field	----	EF001/VA	0.10	°C	10.4	10.3	----	----	----
Physical Tests									
Hardness (as CaCO3), dissolved	----	EC100/WT	0.60	mg/L	11.0	10.3	----	----	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/WT	0.60	mg/L	35.0	35.3	<0.60	----	----
Solids, total dissolved [TDS]	----	E162/VA	10	mg/L	59	59	<10	----	----
Solids, total suspended [TSS]	----	E160/VA	3.0	mg/L	232	273	<3.0	----	----
Alkalinity, total (as CaCO3)	----	E290/VA	2.0	mg/L	10.2	9.7	<2.0	----	----
Anions and Nutrients									
Ammonia, total (as N)	7664-41-7	E298/VA	0.0050	mg/L	0.0518	0.0472	<0.0050	----	----
Bromide	24959-67-9	E235.Br-L/VA	0.050	mg/L	<0.050	<0.050	<0.050	----	----
Chloride	16887-00-6	E235.Cl/VA	0.50	mg/L	0.92	0.91	<0.50	----	----
Fluoride	16984-48-8	E235.F/VA	0.020	mg/L	<0.020	<0.020	<0.020	----	----
Nitrate (as N)	14797-55-8	E235.NO3-L/VA	0.0050	mg/L	0.0335	0.0356	<0.0050	----	----
Nitrite (as N)	14797-65-0	E235.NO2-L/VA	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----
Nitrogen, total	7727-37-9	E366/VA	0.030	mg/L	0.198	0.167	<0.030	----	----
Phosphorus, total	7723-14-0	E372-U/VA	0.0020	mg/L	0.347	0.418	<0.0020	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/VA	0.30	mg/L	3.26	3.01	<0.30	----	----
Organic / Inorganic Carbon									
Carbon, dissolved organic [DOC]	----	E358-L/CG	0.50	mg/L	1.54	1.78	<0.50	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	SQU US 1	SQU DS1	Triple Blank	----	----
					Client sampling date / time	15-Oct-2024 09:15	15-Oct-2024 09:42	15-Oct-2024 09:15	----	----
						VA24C7513-001	VA24C7513-002	VA24C7513-003	----	----
						Result	Result	Result	----	----
Total Sulfides										
Sulfide, total (as S)	18496-25-8	E395/VA	0.0015	mg/L		<0.0015	0.0018	<0.0015	----	----
Sulfide, un-ionized (as H2S), from total	7783-06-4	EC395/VA	0.0015	mg/L		<0.0015	<0.0015	----	----	----
Sulfide, total (as H2S)	7783-06-4	E395/VA	0.0016	mg/L		<0.0016	0.0019	<0.0016	----	----
Total Metals										
Aluminum, total	7429-90-5	E420/WT	0.0030	mg/L		9.65	9.75	0.111	----	----
Antimony, total	7440-36-0	E420/WT	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Arsenic, total	7440-38-2	E420/WT	0.00010	mg/L		0.00104	0.00110	<0.00010	----	----
Barium, total	7440-39-3	E420/WT	0.00010	mg/L		0.136	0.142	<0.00010	----	----
Beryllium, total	7440-41-7	E420/WT	0.000100	mg/L		0.000108	0.000107	<0.000100	----	----
Bismuth, total	7440-69-9	E420/WT	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
Boron, total	7440-42-8	E420/WT	0.010	mg/L		<0.010	<0.010	<0.010	----	----
Cadmium, total	7440-43-9	E420/WT	0.0000050	mg/L		0.0000344	0.0000367	<0.0000050	----	----
Calcium, total	7440-70-2	E420/WT	0.050	mg/L		7.22	7.23	<0.050	----	----
Cesium, total	7440-46-2	E420/WT	0.000010	mg/L		0.000462	0.000479	<0.000010	----	----
Chromium, total	7440-47-3	E420/WT	0.00050	mg/L		0.00464	0.00489	<0.00050	----	----
Cobalt, total	7440-48-4	E420/WT	0.00010	mg/L		0.00392	0.00418	<0.00010	----	----
Copper, total	7440-50-8	E420/WT	0.00050	mg/L		0.0179	0.0180	<0.00050	----	----
Iron, total	7439-89-6	E420/WT	0.010	mg/L		7.65	8.06	<0.010	----	----
Lead, total	7439-92-1	E420/WT	0.000050	mg/L		0.00155	0.00129	<0.000050	----	----
Lithium, total	7439-93-2	E420/WT	0.0010	mg/L		0.0046	0.0051	<0.0010	----	----
Magnesium, total	7439-95-4	E420/WT	0.0050	mg/L		4.12	4.18	<0.0050	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	SQU US 1	SQU DS1	Triple Blank	----	----
					Client sampling date / time	15-Oct-2024 09:15	15-Oct-2024 09:42	15-Oct-2024 09:15	----	----
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit		VA24C7513-001	VA24C7513-002	VA24C7513-003	----	----
						Result	Result	Result	----	----
Total Metals										
Manganese, total	7439-96-5	E420/WT	0.00010	mg/L		0.211	0.225	0.00011	----	----
Mercury, total	7439-97-6	E508/VA	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
Molybdenum, total	7439-98-7	E420/WT	0.000050	mg/L		0.000507	0.000480	<0.000050	----	----
Nickel, total	7440-02-0	E420/WT	0.00050	mg/L		0.00416	0.00430	<0.00050	----	----
Phosphorus, total	7723-14-0	E420/WT	0.050	mg/L		0.347	0.362	<0.050	----	----
Potassium, total	7440-09-7	E420/WT	0.050	mg/L		3.13	3.22	<0.050	----	----
Rubidium, total	7440-17-7	E420/WT	0.00020	mg/L		0.0115	0.0122	<0.00020	----	----
Selenium, total	7782-49-2	E420/WT	0.000050	mg/L		<0.000050	0.000052	<0.000050	----	----
Silicon, total	7440-21-3	E420/WT	0.10	mg/L		18.2	16.8	<0.10	----	----
Silver, total	7440-22-4	E420/WT	0.000010	mg/L		0.000030	0.000029	<0.000010	----	----
Sodium, total	7440-23-5	E420/WT	0.050	mg/L		2.97	2.77	<0.050	----	----
Strontium, total	7440-24-6	E420/WT	0.00020	mg/L		0.0841	0.0816	<0.00020	----	----
Sulfur, total	7704-34-9	E420/WT	0.50	mg/L		0.88	0.75	<0.50	----	----
Tellurium, total	13494-80-9	E420/WT	0.00020	mg/L		<0.00020	<0.00020	<0.00020	----	----
Thallium, total	7440-28-0	E420/WT	0.000010	mg/L		0.000077	0.000083	<0.000010	----	----
Thorium, total	7440-29-1	E420/WT	0.00010	mg/L		0.00044	0.00055	<0.00010	----	----
Tin, total	7440-31-5	E420/WT	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Titanium, total	7440-32-6	E420/WT	0.00030	mg/L		0.495	0.530	<0.00030	----	----
Tungsten, total	7440-33-7	E420/WT	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Uranium, total	7440-61-1	E420/WT	0.000010	mg/L		0.000361	0.000401	<0.000010	----	----
Vanadium, total	7440-62-2	E420/WT	0.00050	mg/L		0.0190	0.0199	<0.00050	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	SQU US 1	SQU DS1	Triple Blank	----	----
					Client sampling date / time	15-Oct-2024 09:15	15-Oct-2024 09:42	15-Oct-2024 09:15	----	----
						VA24C7513-001	VA24C7513-002	VA24C7513-003	----	----
						Result	Result	Result	----	----
Total Metals										
Zinc, total	7440-66-6	E420/WT	0.0030	mg/L		0.0238	0.0263	<0.0030	----	----
Zirconium, total	7440-67-7	E420/WT	0.00020	mg/L		0.00059	0.00051	<0.00020	----	----
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421/WT	0.0010	mg/L		0.147	0.146	----	----	----
Antimony, dissolved	7440-36-0	E421/WT	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Arsenic, dissolved	7440-38-2	E421/WT	0.00010	mg/L		0.00022	0.00021	----	----	----
Barium, dissolved	7440-39-3	E421/WT	0.00010	mg/L		0.00742	0.00741	----	----	----
Beryllium, dissolved	7440-41-7	E421/WT	0.000100	mg/L		<0.000100	<0.000100	----	----	----
Bismuth, dissolved	7440-69-9	E421/WT	0.000050	mg/L		<0.000050	<0.000050	----	----	----
Boron, dissolved	7440-42-8	E421/WT	0.010	mg/L		<0.010	<0.010	----	----	----
Cadmium, dissolved	7440-43-9	E421/WT	0.0000050	mg/L		0.0000052	0.0000051	----	----	----
Calcium, dissolved	7440-70-2	E421/WT	0.050	mg/L		3.68	3.46	----	----	----
Cesium, dissolved	7440-46-2	E421/WT	0.000010	mg/L		0.000013	0.000010	----	----	----
Chromium, dissolved	7440-47-3	E421/WT	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Cobalt, dissolved	7440-48-4	E421/WT	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Copper, dissolved	7440-50-8	E421/WT	0.00020	mg/L		0.00130	0.00132	----	----	----
Iron, dissolved	7439-89-6	E421/WT	0.010	mg/L		0.102	0.101	----	----	----
Lead, dissolved	7439-92-1	E421/WT	0.000050	mg/L		<0.000050	<0.000050	----	----	----
Lithium, dissolved	7439-93-2	E421/WT	0.0010	mg/L		<0.0010	<0.0010	----	----	----
Magnesium, dissolved	7439-95-4	E421/WT	0.0050	mg/L		0.435	0.415	----	----	----
Manganese, dissolved	7439-96-5	E421/WT	0.00010	mg/L		0.0110	0.0112	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	SQU US 1	SQU DS1	Triple Blank	----	----
					Client sampling date / time	15-Oct-2024 09:15	15-Oct-2024 09:42	15-Oct-2024 09:15	----	----
						VA24C7513-001	VA24C7513-002	VA24C7513-003	----	----
						Result	Result	Result	----	----
Dissolved Metals										
Mercury, dissolved	7439-97-6	E509/VA	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
Molybdenum, dissolved	7439-98-7	E421/WT	0.000050	mg/L		0.000446	0.000405	----	----	----
Nickel, dissolved	7440-02-0	E421/WT	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Phosphorus, dissolved	7723-14-0	E421/WT	0.050	mg/L		<0.050	<0.050	----	----	----
Potassium, dissolved	7440-09-7	E421/WT	0.050	mg/L		0.640	0.659	----	----	----
Rubidium, dissolved	7440-17-7	E421/WT	0.00020	mg/L		0.00119	0.00117	----	----	----
Selenium, dissolved	7782-49-2	E421/WT	0.000050	mg/L		<0.000050	<0.000050	----	----	----
Silicon, dissolved	7440-21-3	E421/WT	0.050	mg/L		2.95	2.67	----	----	----
Silver, dissolved	7440-22-4	E421/WT	0.000010	mg/L		<0.000010	<0.000010	----	----	----
Sodium, dissolved	7440-23-5	E421/WT	0.050	mg/L		1.22	1.16	----	----	----
Strontium, dissolved	7440-24-6	E421/WT	0.00020	mg/L		0.0248	0.0225	----	----	----
Sulfur, dissolved	7704-34-9	E421/WT	0.50	mg/L		0.95	0.75	----	----	----
Tellurium, dissolved	13494-80-9	E421/WT	0.00020	mg/L		<0.00020	<0.00020	----	----	----
Thallium, dissolved	7440-28-0	E421/WT	0.000010	mg/L		<0.000010	<0.000010	----	----	----
Thorium, dissolved	7440-29-1	E421/WT	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Tin, dissolved	7440-31-5	E421/WT	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Titanium, dissolved	7440-32-6	E421/WT	0.00030	mg/L		0.00651	0.00678	----	----	----
Tungsten, dissolved	7440-33-7	E421/WT	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Uranium, dissolved	7440-61-1	E421/WT	0.000010	mg/L		0.000052	0.000054	----	----	----
Vanadium, dissolved	7440-62-2	E421/WT	0.00050	mg/L		0.00118	0.00112	----	----	----
Zinc, dissolved	7440-66-6	E421/WT	0.0010	mg/L		<0.0010	<0.0010	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)			Client sample ID		SQU US 1	SQU DS1	Triple Blank	----	----
			Client sampling date / time		15-Oct-2024 09:15	15-Oct-2024 09:42	15-Oct-2024 09:15	----	----
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	VA24C7513-001	VA24C7513-002	VA24C7513-003	----	----
					Result	Result	Result	----	----
Dissolved Metals									
Zirconium, dissolved	7440-67-7	E421/WT	0.00020	mg/L	<0.00020	<0.00020	----	----	----
Dissolved mercury filtration location	----	EP509/VA	-	-	Laboratory	Laboratory	----	----	----
Dissolved metals filtration location	----	EP421/WT	-	-	Laboratory	Laboratory	----	----	----
Speciated Metals									
Chromium, hexavalent [Cr VI], total	18540-29-9	E532/WT	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----
Chromium, trivalent [Cr III], total	16065-83-1	EC535/WT	0.00050	mg/L	0.00464	0.00489	<0.00050	----	----

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA24C7513**	Page	: 1 of 16
Client	: **Triton Environmental Consultants Ltd.**	Laboratory	: ALS Environmental - Vancouver
Contact		Account Manager	:
Address		Address	:
Telephone	: ----	Telephone	:
Project	: 11964	Date Samples Received	: 15-Oct-2024 11:25
PO	: 11964 - Task 20 - Phase 3C - 4C	Issue Date	: 23-Oct-2024 17:09
C-O-C number	: ----		
Sampler	: ----		
Site	: Water Analysis		
Quote number	: VA23-TRIT100-012 _V2		
No. of samples received	: 3		
No. of samples analysed	: 3		

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 Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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 : Analytical Method / 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
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) SQU DS1	E298	15-Oct-2024	19-Oct-2024	28 days	4 days	✓	19-Oct-2024	28 days	4 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) SQU US 1	E298	15-Oct-2024	19-Oct-2024	28 days	4 days	✓	19-Oct-2024	28 days	4 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (lab preserved) Triple Blank	E298	15-Oct-2024	16-Oct-2024	3 days	1 days	✓	18-Oct-2024	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE SQU DS1	E235.Br-L	15-Oct-2024	17-Oct-2024	28 days	2 days	✓	17-Oct-2024	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE SQU US 1	E235.Br-L	15-Oct-2024	17-Oct-2024	28 days	2 days	✓	17-Oct-2024	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE Triple Blank	E235.Br-L	15-Oct-2024	17-Oct-2024	28 days	2 days	✓	17-Oct-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE SQU DS1	E235.Cl	15-Oct-2024	17-Oct-2024	28 days	2 days	✓	17-Oct-2024	28 days	2 days	✓

Matrix: **Water**

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

Analyte Group : Analytical Method / 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
Anions and Nutrients : Chloride in Water by IC										
HDPE SQU US 1	E235.Cl	15-Oct-2024	17-Oct-2024	28 days	2 days	✓	17-Oct-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE Triple Blank	E235.Cl	15-Oct-2024	17-Oct-2024	28 days	2 days	✓	17-Oct-2024	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE SQU DS1	E235.F	15-Oct-2024	17-Oct-2024	28 days	2 days	✓	17-Oct-2024	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE SQU US 1	E235.F	15-Oct-2024	17-Oct-2024	28 days	2 days	✓	17-Oct-2024	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE Triple Blank	E235.F	15-Oct-2024	17-Oct-2024	28 days	2 days	✓	17-Oct-2024	28 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE SQU DS1	E235.NO3-L	15-Oct-2024	17-Oct-2024	3 days	2 days	✓	17-Oct-2024	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE SQU US 1	E235.NO3-L	15-Oct-2024	17-Oct-2024	3 days	2 days	✓	17-Oct-2024	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Triple Blank	E235.NO3-L	15-Oct-2024	17-Oct-2024	3 days	2 days	✓	17-Oct-2024	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE SQU DS1	E235.NO2-L	15-Oct-2024	17-Oct-2024	3 days	2 days	✓	17-Oct-2024	3 days	2 days	✓

Matrix: **Water**

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

Analyte Group : Analytical Method / 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
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE SQU US 1	E235.NO2-L	15-Oct-2024	17-Oct-2024	3 days	2 days	✓	17-Oct-2024	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Triple Blank	E235.NO2-L	15-Oct-2024	17-Oct-2024	3 days	2 days	✓	17-Oct-2024	3 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE SQU DS1	E235.SO4	15-Oct-2024	17-Oct-2024	28 days	2 days	✓	17-Oct-2024	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE SQU US 1	E235.SO4	15-Oct-2024	17-Oct-2024	28 days	2 days	✓	17-Oct-2024	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE Triple Blank	E235.SO4	15-Oct-2024	17-Oct-2024	28 days	2 days	✓	17-Oct-2024	28 days	2 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) SQU DS1	E366	15-Oct-2024	19-Oct-2024	28 days	4 days	✓	20-Oct-2024	28 days	5 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) SQU US 1	E366	15-Oct-2024	19-Oct-2024	28 days	4 days	✓	20-Oct-2024	28 days	5 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (lab preserved) Triple Blank	E366	15-Oct-2024	16-Oct-2024	3 days	1 days	✓	17-Oct-2024	28 days	1 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) SQU DS1	E372-U	15-Oct-2024	19-Oct-2024	28 days	4 days	✓	21-Oct-2024	28 days	6 days	✓

Matrix: **Water**

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

Analyte Group : Analytical Method / 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*	
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
SQU US 1	E372-U	15-Oct-2024	19-Oct-2024	28 days	4 days	✓	21-Oct-2024	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (lab preserved)										
Triple Blank	E372-U	15-Oct-2024	16-Oct-2024	3 days	1 days	✓	18-Oct-2024	28 days	1 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
SQU DS1	E509	15-Oct-2024	22-Oct-2024	28 days	7 days	✓	22-Oct-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
SQU US 1	E509	15-Oct-2024	22-Oct-2024	28 days	7 days	✓	22-Oct-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
SQU DS1	E421	15-Oct-2024	18-Oct-2024	180 days	3 days	✓	18-Oct-2024	180 days	3 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
SQU US 1	E421	15-Oct-2024	18-Oct-2024	180 days	3 days	✓	18-Oct-2024	180 days	3 days	✓
Field Tests : Field pH,EC,Salinity, TDS, Cl2,ClO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine										
Glass vial - total (lab preserved)										
SQU DS1	EF001	15-Oct-2024	----	----	----		17-Oct-2024	----	2 days	
Field Tests : Field pH,EC,Salinity, TDS, Cl2,ClO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine										
Glass vial - total (lab preserved)										
SQU US 1	EF001	15-Oct-2024	----	----	----		17-Oct-2024	----	2 days	
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
SQU DS1	E358-L	15-Oct-2024	21-Oct-2024	28 days	6 days	✓	22-Oct-2024	28 days	7 days	✓

Matrix: **Water**

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

Analyte Group : Analytical Method / 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
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) SQU US 1	E358-L	15-Oct-2024	21-Oct-2024	28 days	6 days	✓	22-Oct-2024	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) Triple Blank	E358-L	15-Oct-2024	16-Oct-2024	3 days	1 days	✓	16-Oct-2024	28 days	0 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE SQU DS1	E290	15-Oct-2024	17-Oct-2024	14 days	2 days	✓	17-Oct-2024	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE SQU US 1	E290	15-Oct-2024	17-Oct-2024	14 days	2 days	✓	17-Oct-2024	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Triple Blank	E290	15-Oct-2024	17-Oct-2024	14 days	2 days	✓	17-Oct-2024	14 days	2 days	✓
Physical Tests : TDS by Gravimetry										
HDPE SQU DS1	E162	15-Oct-2024	----	----	----		21-Oct-2024	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE SQU US 1	E162	15-Oct-2024	----	----	----		21-Oct-2024	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE Triple Blank	E162	15-Oct-2024	----	----	----		21-Oct-2024	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE SQU DS1	E160	15-Oct-2024	----	----	----		21-Oct-2024	7 days	7 days	✓

Matrix: **Water**

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

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry										
HDPE										
SQU US 1	E160	15-Oct-2024	----	----	----		21-Oct-2024	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE										
Triple Blank	E160	15-Oct-2024	----	----	----		21-Oct-2024	7 days	7 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
UV-inhibited HDPE - total (sodium hydroxide)										
SQU DS1	E532	15-Oct-2024	----	----	----		17-Oct-2024	28 days	2 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
UV-inhibited HDPE - total (sodium hydroxide)										
SQU US 1	E532	15-Oct-2024	----	----	----		17-Oct-2024	28 days	2 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
UV-inhibited HDPE - total (sodium hydroxide)										
Triple Blank	E532	15-Oct-2024	----	----	----		17-Oct-2024	28 days	2 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
SQU DS1	E508	15-Oct-2024	23-Oct-2024	28 days	8 days	✓	23-Oct-2024	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
SQU US 1	E508	15-Oct-2024	23-Oct-2024	28 days	8 days	✓	23-Oct-2024	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
Triple Blank	E508	15-Oct-2024	23-Oct-2024	28 days	8 days	✓	23-Oct-2024	28 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
SQU DS1	E420	15-Oct-2024	18-Oct-2024	180 days	3 days	✓	18-Oct-2024	180 days	3 days	✓

Matrix: **Water**

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

Analyte Group : Analytical Method / 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
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SQU US 1	E420	15-Oct-2024	18-Oct-2024	180 days	3 days	✓	18-Oct-2024	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Triple Blank	E420	15-Oct-2024	18-Oct-2024	180 days	3 days	✓	18-Oct-2024	180 days	3 days	✓
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE total (zinc acetate+sodium hydroxide) SQU DS1	E395	15-Oct-2024	----	----	----		17-Oct-2024	7 days	2 days	✓
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE total (zinc acetate+sodium hydroxide) SQU US 1	E395	15-Oct-2024	----	----	----		17-Oct-2024	7 days	2 days	✓
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE total (zinc acetate+sodium hydroxide) Triple Blank	E395	15-Oct-2024	----	----	----		17-Oct-2024	7 days	2 days	✓

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			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	1714549	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	1711915	2	30	6.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1714555	1	14	7.1	5.0	✓
Chloride in Water by IC	E235.Cl	1714551	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1722209	1	12	8.3	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1716890	1	15	6.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1711918	1	5	20.0	5.0	✓
Fluoride in Water by IC	E235.F	1714554	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1714552	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1714553	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1714550	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	1722043	1	20	5.0	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	1714124	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1725243	1	6	16.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1715730	1	20	5.0	5.0	✓
Total Nitrogen by Colourimetry	E366	1711913	2	11	18.1	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1711914	2	21	9.5	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	1713345	1	13	7.6	5.0	✓
TSS by Gravimetry	E160	1722040	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	1714549	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	1711915	2	30	6.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1714555	1	14	7.1	5.0	✓
Chloride in Water by IC	E235.Cl	1714551	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1722209	1	12	8.3	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1716890	1	15	6.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1711918	1	5	20.0	5.0	✓
Fluoride in Water by IC	E235.F	1714554	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1714552	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1714553	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1714550	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	1722043	1	20	5.0	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	1714124	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1725243	1	6	16.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1715730	1	20	5.0	5.0	✓
Total Nitrogen by Colourimetry	E366	1711913	2	11	18.1	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1711914	2	21	9.5	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	1713345	1	13	7.6	5.0	✓
TSS by Gravimetry	E160	1722040	1	20	5.0	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	1714549	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	1711915	2	30	6.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1714555	1	14	7.1	5.0	✓
Chloride in Water by IC	E235.Cl	1714551	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1722209	1	12	8.3	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1716890	1	15	6.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1711918	1	5	20.0	5.0	✓
Fluoride in Water by IC	E235.F	1714554	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1714552	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1714553	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1714550	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	1722043	1	20	5.0	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	1714124	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1725243	1	6	16.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1715730	1	20	5.0	5.0	✓
Total Nitrogen by Colourimetry	E366	1711913	2	11	18.1	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1711914	2	21	9.5	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	1713345	1	13	7.6	5.0	✓
TSS by Gravimetry	E160	1722040	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	1711915	2	30	6.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1714555	1	14	7.1	5.0	✓
Chloride in Water by IC	E235.Cl	1714551	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1722209	1	12	8.3	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1716890	1	15	6.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1711918	1	5	20.0	5.0	✓
Fluoride in Water by IC	E235.F	1714554	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1714552	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1714553	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1714550	1	20	5.0	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	1714124	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1725243	1	6	16.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1715730	1	20	5.0	5.0	✓
Total Nitrogen by Colourimetry	E366	1711913	2	11	18.1	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1711914	2	21	9.5	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS) - Continued							
Total Sulfide by Colourimetry (Automated Flow)	E395	1713345	1	13	7.6	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
TSS by Gravimetry	E160 ALS Environmental - Vancouver	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 ALS Environmental - Vancouver	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 ALS Environmental - Vancouver	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Ammonia by Fluorescence	E298 ALS Environmental - Vancouver	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Dissolved Organic Carbon by Combustion (Low Level)	E358-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Nitrogen by Colourimetry	E366 ALS Environmental - Vancouver	Water	Chinchilla Scientific Nitrate Method, 2011	Following digestion, total nitrogen is is determined colourimetrically using a discrete analyzer utilizing the vanadium chloride reduction method. This method of analysis is approved under US EPA 40 CFR Part 136 (May 2021).
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Sulfide by Colourimetry (Automated Flow)	E395 ALS Environmental - Vancouver	Water	APHA 4500 -S E-Auto-Colorimetry	Sulfide is determined using the gas dialysis automated methlyene blue colourimetric method. Results expressed "as H2S" if reported represent the maximum possible H2S concentration based on the total sulfide concentration in the sample. The H2S calculation converts Total Sulphide as (S2-) and reports it as Total Sulphide as (H2S)
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Waterloo	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 ALS Environmental - Waterloo	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 ALS Environmental - Vancouver	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 ALS Environmental - Vancouver	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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Hexavalent Chromium (Cr VI) by IC	E532 ALS Environmental - Waterloo	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 Hardness (Calculated)	EC100 ALS Environmental - Waterloo	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Hardness (Calculated) from Total Ca/Mg	EC100A ALS Environmental - Waterloo	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.
Un-ionized Total Hydrogen Sulfide (calculated)	EC395 ALS Environmental - Vancouver	Water	APHA 4500 -S H	Un-ionized sulfide is calculated using results from total sulfide analysis, pH, temperature, and ionic strength of the sample. Calculation of un-ionized sulfide using total sulfide concentrations may be biased high due to particulate forms of sulfide measured during total sulfide testing.
Total Trivalent Chromium (Cr III) by Calculation	EC535 ALS Environmental - Waterloo	Water	APHA 3030B/6020A/EPA 7196A (mod)	Chromium (III)-Total is calculated as the difference between the total chromium and the total hexavalent chromium (Cr(VI)) results.The Limit of Reporting for Chromium (III) varies as a function of the test results.
Field pH,EC,Salinity, TDS, Cl2,ClO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine	EF001 ALS Environmental - Vancouver	Water	Field Measurement (Client Supplied)	Field pH,EC,Salinity, TDS, Cl2,ClO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3 or Chloramine measurements provided by client and recorded on ALS report may affect the validity of results.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Vancouver	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Preparation for Dissolved Organic Carbon for Combustion	EP358 ALS Environmental - Calgary	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Nitrogen in water	EP366 ALS Environmental - Vancouver	Water	APHA 4500-P J (mod)	Samples for total nitrogen analysis are digested using a heated persulfate digestion. Nitrogen compounds are converted to nitrate in this digestion.
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals Water Filtration	EP421 ALS Environmental - Waterloo	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
Dissolved Mercury Water Filtration	EP509 ALS Environmental - Vancouver	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **VA24C7513**	Page	: 1 of 18
Client	: Triton Environmental Consultants Ltd.	Laboratory	: ALS Environmental - Vancouver
Contact		Account Manager	
Address		Address	
Telephone	: ----	Telephone	
Project	: 11964	Date Samples Received	: 15-Oct-2024 11:25
PO	: 11964 - Task 20 - Phase 3C - 4C	Date Analysis Commenced	: 16-Oct-2024
C-O-C number	: ----	Issue Date	: 23-Oct-2024 17:09
Sampler	: ----		
Site	: Water Analysis		
Quote number	: VA23-TRIT100-012 _V2		
No. of samples received	: 3		
No. of samples analysed	: 3		

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 Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

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*
		Calgary Inorganics, Calgary, Alberta
		Vancouver Metals, Burnaby, British Columbia
		Waterloo Metals, Waterloo, Ontario
		Vancouver Inorganics, Burnaby, British Columbia
		Vancouver Inorganics, Burnaby, British Columbia
		Waterloo Inorganics, Waterloo, Ontario
		Waterloo Metals, Waterloo, Ontario
		Vancouver Metals, Burnaby, British Columbia
		Vancouver Administration, 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 Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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
Physical Tests (QC Lot: 1714549)											
KS2404264-001	Anonymous	Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	40.0	39.7	0.753%	20%	----
Physical Tests (QC Lot: 1722040)											
FJ2403151-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 1722043)											
FJ2403151-001	Anonymous	Solids, total dissolved [TDS]	----	E162	10	mg/L	223	227	2.00%	20%	----
Anions and Nutrients (QC Lot: 1711913)											
VA24C7510-002	Anonymous	Nitrogen, total	7727-37-9	E366	0.030	mg/L	<0.030	<0.030	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1711914)											
VA24C7146-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0333	0.0335	0.509%	20%	----
Anions and Nutrients (QC Lot: 1711915)											
VA24C7115-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0070	0.0071	0.00007	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1714550)											
VA24C7513-001	SQU US 1	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	3.26	3.26	0.0699%	20%	----
Anions and Nutrients (QC Lot: 1714551)											
VA24C7513-001	SQU US 1	Chloride	16887-00-6	E235.Cl	0.50	mg/L	0.92	0.93	0.008	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1714552)											
VA24C7513-001	SQU US 1	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0335	0.0327	0.0008	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1714553)											
VA24C7513-001	SQU US 1	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1714554)											
VA24C7513-001	SQU US 1	Fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1714555)											
VA24C7513-001	SQU US 1	Bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1718202)											
VA24C7342-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.500	mg/L	16.8	17.2	1.98%	20%	----
Anions and Nutrients (QC Lot: 1718203)											
VA24C7342-001	Anonymous	Nitrogen, total	7727-37-9	E366	3.00	mg/L	104	106	1.17%	20%	----
Anions and Nutrients (QC Lot: 1718204)											
VA24C7342-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0131	0.0137	0.0006	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 1711918)											

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*
Organic / Inorganic Carbon (QC Lot: 1711918) - continued											
VA24C7484-005	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 1721790)											
VA24C7464-005	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	11.0	11.1	0.692%	20%	----
Total Sulfides (QC Lot: 1713345)											
TY2411654-001	Anonymous	Sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015	<0.0015	0	Diff <2x LOR	----
Total Metals (QC Lot: 1715730)											
FJ2403126-006	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		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	<0.00010	<0.00010	0	Diff <2x LOR	----
		Barium, total	7440-39-3	E420	0.00010	mg/L	<0.00010	<0.00010	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	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	<0.00010	<0.00010	0	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	<0.010	<0.010	0	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	<0.0010	<0.0010	0	Diff <2x LOR	----
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	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	<0.050	<0.050	0	Diff <2x LOR	----
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		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	<0.10	<0.10	0	Diff <2x LOR	----
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Strontium, total	7440-24-6	E420	0.00020	mg/L	<0.00020	<0.00020	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: 1715730) - continued											
FJ2403126-006	Anonymous	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	<0.00010	<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	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		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	<0.0030	<0.0030	0	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: 1725243)											
VA24C7513-001	SQU US 1	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1716890)											
HA2402595-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0116	0.0099	16.1%	20%	----
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00016	0.00016	0.000002	Diff <2x LOR	----
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00049	0.00049	0.000007	Diff <2x LOR	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0248	0.0248	0.0576%	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	0.0000700	mg/L	<0.0000700	<0.0000700	0	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	43.5	44.6	2.47%	20%	----
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000115	0.000115	0.347%	20%	----
		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	0.00046	0.00046	0.000006	Diff <2x LOR	----
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00030	0.00030	0.000003	Diff <2x LOR	----
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	0.014	0.011	0.003	Diff <2x LOR	----
		Lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000051	<0.000050	0.0000007	Diff <2x LOR	----
		Lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0037	0.0038	0.00006	Diff <2x LOR	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	2.45	2.38	2.86%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	1.60	1.59	0.623%	20%	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000434	0.000418	0.000016	Diff <2x LOR	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00152	0.00149	0.00003	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: 1716890) - continued											
HA2402595-001	Anonymous	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	2.07	2.06	0.649%	20%	----
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00992	0.00965	2.76%	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	2.84	2.85	0.155%	20%	----
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	7.78	7.77	0.147%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0939	0.0945	0.641%	20%	----
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	0.78	0.82	0.04	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	0.000018	0.000017	0.000001	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	0.00140	0.00124	0.00016	Diff <2x LOR	----
		Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	0.00063	0.00068	0.00004	Diff <2x LOR	----
		Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000734	0.000743	1.19%	20%	----
		Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00059	0.00058	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	<0.00020	<0.00020	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1722209)											
VA24C7264-001	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Speciated Metals (QC Lot: 1714124)											
VA24C7513-001	SQU US 1	Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L	<0.00050	<0.00050	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
Physical Tests (QCLot: 1714549)						
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	1.6	----
Physical Tests (QCLot: 1722040)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 1722043)						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 1711913)						
Nitrogen, total	7727-37-9	E366	0.03	mg/L	<0.030	----
Anions and Nutrients (QCLot: 1711914)						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 1711915)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1714550)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 1714551)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 1714552)						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1714553)						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 1714554)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 1714555)						
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 1718202)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1718203)						
Nitrogen, total	7727-37-9	E366	0.03	mg/L	<0.030	----
Anions and Nutrients (QCLot: 1718204)						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Organic / Inorganic Carbon (QCLot: 1711918)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 1721790)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Organic / Inorganic Carbon (QCLot: 1721790) - continued						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Total Sulfides (QCLot: 1713345)						
Sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015	----
Total Metals (QCLot: 1715730)						
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	7440-23-5	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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1715730) - continued						
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: 1725243)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 1716890)						
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	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 1716890) - continued						
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	7440-23-5	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: 1722209)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Speciated Metals (QCLot: 1714124)						
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	<0.00050	----

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	Target Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1714549)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	106	85.0	115	----
Physical Tests (QCLot: 1722040)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	94.2	85.0	115	----
Physical Tests (QCLot: 1722043)									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	104	85.0	115	----
Anions and Nutrients (QCLot: 1711913)									
Nitrogen, total	7727-37-9	E366	0.03	mg/L	0.5 mg/L	100	75.0	125	----
Anions and Nutrients (QCLot: 1711914)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	96.1	80.0	120	----
Anions and Nutrients (QCLot: 1711915)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	----
Anions and Nutrients (QCLot: 1714550)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 1714551)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	98.6	90.0	110	----
Anions and Nutrients (QCLot: 1714552)									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	98.8	90.0	110	----
Anions and Nutrients (QCLot: 1714553)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	95.4	90.0	110	----
Anions and Nutrients (QCLot: 1714554)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	95.4	90.0	110	----
Anions and Nutrients (QCLot: 1714555)									
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	----
Anions and Nutrients (QCLot: 1718202)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	99.0	85.0	115	----
Anions and Nutrients (QCLot: 1718203)									
Nitrogen, total	7727-37-9	E366	0.03	mg/L	0.5 mg/L	96.5	75.0	125	----
Anions and Nutrients (QCLot: 1718204)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	92.4	80.0	120	----
Organic / Inorganic Carbon (QCLot: 1711918)									

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Target Concentration	LCS	Low	High	Qualifier
Organic / Inorganic Carbon (QCLot: 1711918) - continued									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	97.6	80.0	120	----
Organic / Inorganic Carbon (QCLot: 1721790)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	101	80.0	120	----
Total Sulfides (QCLot: 1713345)									
Sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	0.08 mg/L	98.2	80.0	120	----
Total Metals (QCLot: 1715730)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	0.1 mg/L	95.0	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	0.05 mg/L	104	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	0.05 mg/L	106	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.012 mg/L	103	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.005 mg/L	98.0	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	0.05 mg/L	100	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	0.05 mg/L	98.7	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.005 mg/L	100	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	2.5 mg/L	99.8	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.002 mg/L	101	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.012 mg/L	101	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.012 mg/L	100.0	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.012 mg/L	99.3	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	0.05 mg/L	99.5	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.025 mg/L	102	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.012 mg/L	99.8	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	2.5 mg/L	109	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.012 mg/L	100	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.012 mg/L	102	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.025 mg/L	100	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	0.5 mg/L	101	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	2.5 mg/L	98.0	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.005 mg/L	101	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	0.05 mg/L	100	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	0.5 mg/L	103	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.005 mg/L	93.4	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	2.5 mg/L	104	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.012 mg/L	104	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Target Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 1715730) - continued									
Sulfur, total	7704-34-9	E420	0.5	mg/L	2.5 mg/L	94.1	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.005 mg/L	103	80.0	120	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	0.05 mg/L	103	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.005 mg/L	99.4	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.025 mg/L	99.5	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.012 mg/L	96.3	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.005 mg/L	100	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0 mg/L	104	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.025 mg/L	102	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.025 mg/L	99.8	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.005 mg/L	99.4	80.0	120	----
Total Metals (QCLot: 1725243)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0 mg/L	84.6	80.0	120	----
Dissolved Metals (QCLot: 1716890)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	0.1 mg/L	94.5	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	0.05 mg/L	101	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	0.05 mg/L	104	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.012 mg/L	101	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.005 mg/L	90.5	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	0.05 mg/L	100	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	0.05 mg/L	88.6	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.005 mg/L	99.5	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	2.5 mg/L	93.9	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.002 mg/L	101	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.012 mg/L	98.5	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.012 mg/L	96.5	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.012 mg/L	96.5	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	0.05 mg/L	95.9	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.025 mg/L	100	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.012 mg/L	86.4	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	2.5 mg/L	98.7	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.012 mg/L	99.4	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.012 mg/L	99.5	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.025 mg/L	96.9	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	0.5 mg/L	104	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 1716890) - continued									
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	2.5 mg/L	96.6	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.005 mg/L	103	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	0.05 mg/L	98.6	80.0	120	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	0.5 mg/L	105	60.0	140	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.005 mg/L	90.6	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	2.5 mg/L	102	80.0	120	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.012 mg/L	102	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	2.5 mg/L	96.3	80.0	120	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.005 mg/L	96.2	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	0.05 mg/L	99.9	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.005 mg/L	98.9	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.025 mg/L	96.6	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.012 mg/L	92.4	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.005 mg/L	99.3	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0 mg/L	103	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.025 mg/L	99.2	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.025 mg/L	97.8	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.005 mg/L	95.3	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0 mg/L	95.9	80.0	120	----
Speciated Metals (QCLot: 1714124)									
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	0.025 mg/L	102	80.0	120	----

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
Anions and Nutrients (QCLot: 1711913)										
VA24C7513-003	Triple Blank	Nitrogen, total	7727-37-9	E366	0.385 mg/L	0.4 mg/L	96.3	70.0	130	----
Anions and Nutrients (QCLot: 1711914)										
VA24C7146-002	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0503 mg/L	0.05 mg/L	101	70.0	130	----
Anions and Nutrients (QCLot: 1711915)										
VA24C7115-002	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.104 mg/L	0.1 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 1714550)										
VA24C7513-002	SQU DS1	Sulfate (as SO4)	14808-79-8	E235.SO4	101 mg/L	100 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 1714551)										
VA24C7513-002	SQU DS1	Chloride	16887-00-6	E235.Cl	99.3 mg/L	100 mg/L	99.3	75.0	125	----
Anions and Nutrients (QCLot: 1714552)										
VA24C7513-002	SQU DS1	Nitrate (as N)	14797-55-8	E235.NO3-L	2.48 mg/L	2.5 mg/L	99.2	75.0	125	----
Anions and Nutrients (QCLot: 1714553)										
VA24C7513-002	SQU DS1	Nitrite (as N)	14797-65-0	E235.NO2-L	0.478 mg/L	0.5 mg/L	95.5	75.0	125	----
Anions and Nutrients (QCLot: 1714554)										
VA24C7513-002	SQU DS1	Fluoride	16984-48-8	E235.F	0.956 mg/L	1 mg/L	95.6	75.0	125	----
Anions and Nutrients (QCLot: 1714555)										
VA24C7513-002	SQU DS1	Bromide	24959-67-9	E235.Br-L	0.515 mg/L	0.5 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 1718202)										
VA24C7375-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	ND mg/L	----	ND	75.0	125	----
Anions and Nutrients (QCLot: 1718203)										
VA24C7423-001	Anonymous	Nitrogen, total	7727-37-9	E366	ND mg/L	----	ND	70.0	130	----
Anions and Nutrients (QCLot: 1718204)										
VA24C7393-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0476 mg/L	0.05 mg/L	95.3	70.0	130	----
Organic / Inorganic Carbon (QCLot: 1711918)										
VA24C7513-003	Triple Blank	Carbon, dissolved organic [DOC]	----	E358-L	4.67 mg/L	5 mg/L	93.4	70.0	130	----
Organic / Inorganic Carbon (QCLot: 1721790)										
VA24C7464-005	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	ND mg/L	----	ND	70.0	130	----
Total Sulfides (QCLot: 1713345)										
TY2411654-002	Anonymous	Sulfide, total (as S)	18496-25-8	E395	0.210 mg/L	0.2 mg/L	105	75.0	125	----
Total Metals (QCLot: 1715730)										

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: 1715730) - continued										
VA24C7105-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0918 mg/L	0.1 mg/L	91.8	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0529 mg/L	0.05 mg/L	106	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0529 mg/L	0.05 mg/L	106	70.0	130	----
		Barium, total	7440-39-3	E420	ND mg/L	----	ND	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.00460 mg/L	0.005 mg/L	92.1	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.0468 mg/L	0.05 mg/L	93.6	70.0	130	----
		Boron, total	7440-42-8	E420	0.046 mg/L	0.05 mg/L	92.2	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00488 mg/L	0.005 mg/L	97.6	70.0	130	----
		Calcium, total	7440-70-2	E420	ND mg/L	----	ND	70.0	130	----
		Cesium, total	7440-46-2	E420	0.00255 mg/L	0.002 mg/L	102	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0124 mg/L	0.012 mg/L	99.1	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.0119 mg/L	0.012 mg/L	95.2	70.0	130	----
		Copper, total	7440-50-8	E420	0.0116 mg/L	0.012 mg/L	93.0	70.0	130	----
		Iron, total	7439-89-6	E420	ND mg/L	----	ND	70.0	130	----
		Lead, total	7439-92-1	E420	0.0240 mg/L	0.025 mg/L	96.0	70.0	130	----
		Lithium, total	7439-93-2	E420	0.0110 mg/L	0.012 mg/L	88.1	70.0	130	----
		Magnesium, total	7439-95-4	E420	ND mg/L	----	ND	70.0	130	----
		Manganese, total	7439-96-5	E420	ND mg/L	----	ND	70.0	130	----
		Molybdenum, total	7439-98-7	E420	0.0126 mg/L	0.012 mg/L	101	70.0	130	----
		Nickel, total	7440-02-0	E420	0.0236 mg/L	0.025 mg/L	94.6	70.0	130	----
		Phosphorus, total	7723-14-0	E420	0.500 mg/L	0.5 mg/L	99.9	70.0	130	----
		Potassium, total	7440-09-7	E420	ND mg/L	----	ND	70.0	130	----
		Rubidium, total	7440-17-7	E420	0.00511 mg/L	0.005 mg/L	102	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0512 mg/L	0.05 mg/L	102	70.0	130	----
		Silicon, total	7440-21-3	E420	ND mg/L	----	ND	70.0	130	----
		Silver, total	7440-22-4	E420	0.00442 mg/L	0.005 mg/L	88.5	70.0	130	----
		Sodium, total	7440-23-5	E420	ND mg/L	----	ND	70.0	130	----
		Strontium, total	7440-24-6	E420	ND mg/L	----	ND	70.0	130	----
		Sulfur, total	7704-34-9	E420	ND mg/L	----	ND	70.0	130	----
		Tellurium, total	13494-80-9	E420	0.00491 mg/L	0.005 mg/L	98.2	70.0	130	----
		Thallium, total	7440-28-0	E420	0.0479 mg/L	0.05 mg/L	95.7	70.0	130	----
		Thorium, total	7440-29-1	E420	0.00501 mg/L	0.005 mg/L	100	70.0	130	----
		Tin, total	7440-31-5	E420	0.0247 mg/L	0.025 mg/L	98.7	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0125 mg/L	0.012 mg/L	100	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.00500 mg/L	0.005 mg/L	99.9	70.0	130	----
		Uranium, total	7440-61-1	E420	ND mg/L	----	ND	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.0253 mg/L	0.025 mg/L	101	70.0	130	----
		Zinc, total	7440-66-6	E420	ND mg/L	----	ND	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.00493 mg/L	0.005 mg/L	98.5	70.0	130	----
Total Metals (QCLot: 1725243)										
VA24C7513-002	SQU DS1	Mercury, total	7439-97-6	E508	0.0000854 mg/L	0 mg/L	85.4	70.0	130	----
Dissolved Metals (QCLot: 1716890)										
HA2402595-002	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0910 mg/L	0.1 mg/L	91.0	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: 1716890) - continued										
HA2402595-002	Anonymous	Antimony, dissolved	7440-36-0	E421	0.0516 mg/L	0.05 mg/L	103	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	0.0544 mg/L	0.05 mg/L	109	70.0	130	----
		Barium, dissolved	7440-39-3	E421	ND mg/L	----	ND	70.0	130	----
		Beryllium, dissolved	7440-41-7	E421	0.00469 mg/L	0.005 mg/L	93.7	70.0	130	----
		Bismuth, dissolved	7440-69-9	E421	0.0481 mg/L	0.05 mg/L	96.2	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.044 mg/L	0.05 mg/L	88.6	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00506 mg/L	0.005 mg/L	101	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	----	ND	70.0	130	----
		Cesium, dissolved	7440-46-2	E421	0.00253 mg/L	0.002 mg/L	101	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.0123 mg/L	0.012 mg/L	98.6	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	0.0120 mg/L	0.012 mg/L	96.3	70.0	130	----
		Copper, dissolved	7440-50-8	E421	0.0119 mg/L	0.012 mg/L	95.3	70.0	130	----
		Iron, dissolved	7439-89-6	E421	0.046 mg/L	0.05 mg/L	93.0	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0246 mg/L	0.025 mg/L	98.4	70.0	130	----
		Lithium, dissolved	7439-93-2	E421	0.0110 mg/L	0.012 mg/L	87.9	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	----	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	ND mg/L	----	ND	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	0.0123 mg/L	0.012 mg/L	98.1	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.0236 mg/L	0.025 mg/L	94.4	70.0	130	----
		Phosphorus, dissolved	7723-14-0	E421	0.509 mg/L	0.5 mg/L	102	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	2.35 mg/L	2.5 mg/L	94.2	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	0.00473 mg/L	0.005 mg/L	94.6	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.0542 mg/L	0.05 mg/L	108	70.0	130	----
		Silicon, dissolved	7440-21-3	E421	ND mg/L	----	ND	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00439 mg/L	0.005 mg/L	87.8	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	ND mg/L	----	ND	70.0	130	----
		Strontium, dissolved	7440-24-6	E421	ND mg/L	----	ND	70.0	130	----
		Sulfur, dissolved	7704-34-9	E421	2.52 mg/L	2.5 mg/L	101	70.0	130	----
		Tellurium, dissolved	13494-80-9	E421	0.00516 mg/L	0.005 mg/L	103	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.0496 mg/L	0.05 mg/L	99.2	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.00490 mg/L	0.005 mg/L	98.0	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0242 mg/L	0.025 mg/L	96.6	70.0	130	----
		Titanium, dissolved	7440-32-6	E421	0.0116 mg/L	0.012 mg/L	92.9	70.0	130	----
		Tungsten, dissolved	7440-33-7	E421	0.00496 mg/L	0.005 mg/L	99.3	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	ND mg/L	----	ND	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.0248 mg/L	0.025 mg/L	99.2	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.0245 mg/L	0.025 mg/L	98.0	70.0	130	----
		Zirconium, dissolved	7440-67-7	E421	0.00474 mg/L	0.005 mg/L	94.8	70.0	130	----
Dissolved Metals (QCLot: 1722209)										
VA24C7264-002	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000964 mg/L	0 mg/L	96.4	70.0	130	----
Speciated Metals (QCLot: 1714124)										
VA24C7513-001	SQU US 1	Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0393 mg/L	0.04 mg/L	98.2	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 17 -

Page 1 of

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)
Company:	Triton Environmental	Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)	Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:		Quality Control (QC) Report with Report ☑ ☐ NO	PRIORITY (Business Days): 4 day [P4-20%] ☐ / 3 day [P3-25%] ☐ / 2 day [P2-50%] ☐
Phone:		☑ Compare Results to Criteria on Report - provide details below if box checked	EMERGENCY: 1 Business day [E1 - 100%] ☐ / Same Day, Weekend or Statutory holiday [E2 - 200% (Laboratory opening fees may apply)] ☐
		Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	
Street:		Email 1 or Fax	Date and Time Required for all E&P TATs: 23-mmm-yy hh:mm 2024
City/Province:		Email 2	For tests that can not be performed according to the service level selected, you will be contacted.
Postal Code:		Email 3	
Invoice To	Same as Report To ☐ YES ☑ NO		
	Copy of Invoice with Report ☐ YES ☑ NO	Select Invoice D	
Company:		Email 1 or Fax	
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	VA23-TRIT100-012	AFE/Cost Center:	PO#
Job #:	11964	Major/Minor Code:	Routing Code:
PO / AFE:	11964 - Task 20 - Phase 3C-4C	Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):	C7513	ALS Contact:	Sampler:

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Total metals + mercury	Dissolved metals + mercury	Total hexavalent chromium	Total trivalent chromium	TSS	TDS	Nutrients (ammonia, ammonium, total nitrogen, total phosphorus)	Total sulfide (low) (as H2S), Unionized Sulfide (low)	Anions scan (Br, Cl, F, NO2, NO3, SO4)	General parameters (alkalinity)	DOC				SAMPLES ON HOLD	Sample is hazardous (please provide further details	NUMBER OF CONTAINERS
						F					P	P			F/P						
	SQU US 1			Water	R	R	R	R	R	R	R	R	R	R	R					N	9
	pH: 7.33 cond: 56 temp: 10.4	15-Oct-24	09:15																		
	SQU DS 1			Water	R	R	R	R	R	R	R	R	R	R	R					N	9
	pH: 7.41 cond: 54 temp: 10.3	15-Oct-24	09:42																		
	Triple Blank	15-Oct-24	09:15	Water	R		R	R	R	R	R	R	R	R	R					N	7

Notes: US_1 ~~filtered~~ dissolved metal not field filtered / not preserved

DS_1 dissolved metals and dissolved mercury not filtered not preserved

Environmental Division Vancouver
Work Order Reference
VA24C7513

Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client use)	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? ☐ ☑ NO	
Are samples for human consumption/ use? ☐ ☑ NO	Triton Project # 11964

SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)		FINAL SHIPMENT RECEPTION (lab use only)	
Released by:	Date: 15 Oct 24 Time: 11:18	Received by:	Date:	Time:	Date: Oct 15th Time: 11:25

Frozen ☐ Yes ☐ No
Ice Packs ☐ Yes ☐ No
Cooling Initiated ☐

FINAL COOLER TEMPERATURES °C

°C

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

SEPT 2017 FRONT

...TIONS AND SAMPLING INFORMATION

...y 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**.

BCR Site Receiving Environment Field Notes and Logs

FortisBC Eagle Mountain-Woodfibre Gas Pipeline

Water Discharge Authorization Water Quality Monitoring

2024-10-15-Chycoski-39FCA

Project Component:	Tunnel	**Site Name:**	Receiving Environment - Downstream of Discharge
Inspection Date:	10/15/2024	**Location:**	BC Rail Site
Triton QP:	Lily Chycoski	**Latitude/Longitude:**	49.725227 -123.165215
Temperature(c):	Low 8 High 14	**Permit:**	AE 111824
Weather Conditions:	Overcast	**Ground Conditions:**	Damp

Observations

Time: 09:46:18 **Flow Volume (visual):** moderate

Notes: Turbidity taken in FNRU due to being overrange for NTU.
Dissolved metals and mercury not filtered due to high turbidity.

Odour Detected?:	No	**Notes:**	
Unusual Colour?	No	**Notes:**	Grey, turbid water
Unusual Observations?	No	**Notes:**	
Sheen on Water?	No	**Notes:**	

Samples Collected - Parameters

Total Metals + Mercury	Yes	**General Parameters (Alkalinity)**	Yes	**Other Sample:**	
Dissolved Metals + Mercury	Yes	**Total Sulfide, Unionized Sulfide**	Yes		
TSS	Yes	**Anions**	Yes		
TDS	Yes	**Total Trivalent Chromium**	Yes	**QA Samples:**	No
Nutrients	Yes	**VOC/VPH**	No		
DOC	Yes	**EPH, PAH, LEPH/HEPH**	No		
		Trout LC50	No		

Logger Maintenance

Logger Maintenance Performed?	Yes	**Photo of COC with Lab Signature?**	Yes

Describe Logger Maintenance

Cleaned sonde.

Photos

Photo: 1

Location: SQU DS 1

Description: US view

Photo: 2

Location: SQU DS 1

Description: Across view

Photos

Photo: 3

Location: SQU DS 1

Description: DS view

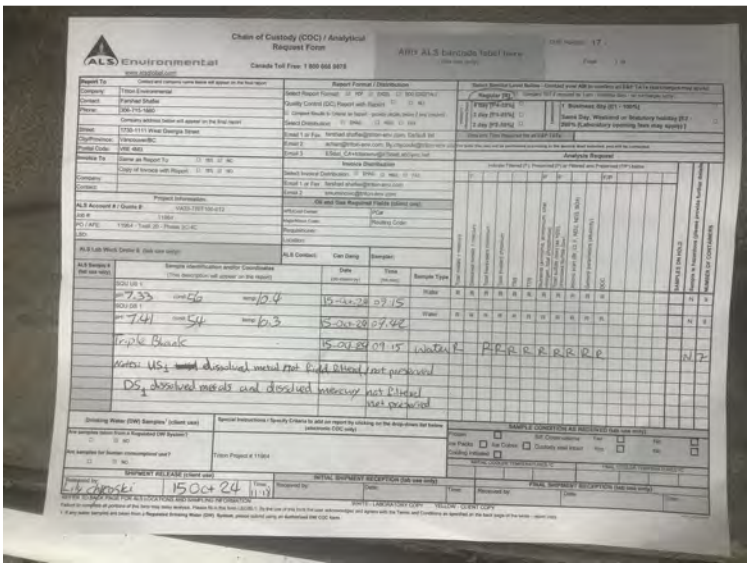


Photo: 4

Location: SQU DS 1

Description: Lab COC

Sign Off

Report Prepared By:	Lily Chycoski	**Report Reviewed:**	Yes
Report Reviewer:		**Professional(s) of Record:**	
Name:			
Designation:			
Designation Number:			

FortisBC Eagle Mountain-Woodfibre Gas Pipeline

Water Discharge Authorization Water Quality Monitoring

2024-10-15-Chycoski-382D2

Project Component:	Tunnel	**Site Name:**	Receiving Environment - Upstream of Discharge
Inspection Date:	10/15/2024	**Location:**	BC Rail Site
Triton QP:	Lily Chycoski	**Latitude/Longitude:**	49.726866 -123.163912
Temperature(c):	Low 8 High 14	**Permit:**	AE 111824
Weather Conditions:	Overcast	**Ground Conditions:**	Damp

Observations

Time: 09:15:00 **Flow Volume (visual):** moderate

Notes: Turbidity is in FNRU due to turbidity being over range in NTU and FNU.
Dissolved metals not filtered due to high turbidity.

Odour Detected?:	No	**Notes:**	
Unusual Colour?	No	**Notes:**	Grey, turbid water.
Unusual Observations?	No	**Notes:**	
Sheen on Water?	No	**Notes:**	

Samples Collected - Parameters

Total Metals + Mercury	Yes	**General Parameters (Alkalinity)**	Yes	**Other Sample:**	
Dissolved Metals + Mercury	Yes	**Total Sulfide, Unionized Sulfide**	Yes		
TSS	Yes	**Anions**	Yes		
TDS	Yes	**Total Trivalent Chromium**	Yes	**QA Samples:**	Yes
Nutrients	Yes	**VOC/VPH**	No		
DOC	Yes	**EPH, PAH, LEPH/HEPH**	No		
		Trout LC50	No		

Logger Maintenance

Logger Maintenance Performed?	No	**Photo of COC with Lab Signature?**	Yes

Describe Logger Maintenance

Photos

Photo: 1

Location: SQU US 1

Description: US view

Photo: 2

Location: SQU US 1

Description: Across view

Photos

Photo: 3

Location: SQU US 1

Description: DS view

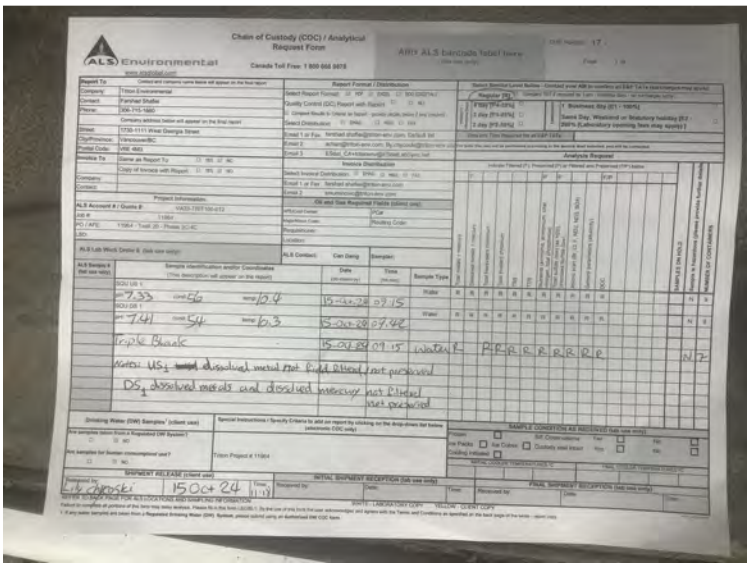


Photo: 4

Location: SQU US 1

Description: Lab COC

Sign Off

Report Prepared By:	Lily Chycoski	**Report Reviewed:**	Yes
Report Reviewer:		**Professional(s) of Record:**	
Name:			
Designation:			
Designation Number:			

BCR US 2024-10-14 to 2024-10-20

Date Time	Time	Turbidity (NTU)	pH (pH)	ORP (mV)	DO (mg/L)	Temperature (C)	Specific Conductivity (µS/cm)	Salinity (psu)
10/14/2024	12:00:00 AM	44.84671	6.967259	312.2645	10.79481	9.769989	64.22341919	0.029147
10/14/2024	1:00:00 AM	46.70514	6.959113	312.0666	10.80968	9.747223	63.24632645	0.028675
10/14/2024	2:00:00 AM	44.35051	6.938767	313.8548	10.79966	9.727448	62.88193893	0.028499
10/14/2024	3:00:00 AM	43.83379	6.892994	315.6167	10.76529	9.715942	62.7184639	0.02842
10/14/2024	4:00:00 AM	46.43595	6.875684	317.1974	10.73485	9.705109	63.29587936	0.028697
10/14/2024	5:00:00 AM	47.10498	6.889482	316.4416	10.7655	9.694275	63.19469833	0.028648
10/14/2024	6:00:00 AM	42.40087	6.868362	318.5325	10.74859	9.688965	62.94038391	0.028525
10/14/2024	7:00:00 AM	45.97977	6.875878	317.5073	10.7464	9.703461	62.9312706	0.028521
10/14/2024	8:00:00 AM	38.07871	6.877189	318.1582	10.74821	9.701019	63.05150223	0.028579
10/14/2024	9:00:00 AM	41.67819	6.881744	316.3343	10.76396	9.708862	63.08430862	0.028595
10/14/2024	10:00:00 AM	31.07935	6.8756	317.288	10.73443	9.719269	62.99316406	0.028552
10/14/2024	11:00:00 AM	30.98948	6.87748	316.3939	10.7491	9.729919	62.63370514	0.02838
10/14/2024	12:00:00 PM	26.50615	6.866245	317.4191	10.73717	9.725647	62.69401169	0.028408
10/14/2024	1:00:00 PM	28.51196	6.889098	320.6521	10.72834	9.742615	62.75239944	0.028437
10/14/2024	2:00:00 PM	32.72779	6.879536	316.9828	10.75166	9.743042	62.39444351	0.028265
10/14/2024	3:00:00 PM	27.88056	6.877255	315.6548	10.74343	9.756378	62.5406189	0.028336
10/14/2024	4:00:00 PM	27.5118	6.902362	315.383	10.76844	9.75882	62.51517487	0.028324
10/14/2024	5:00:00 PM	32.04447	6.923454	312.5673	10.76679	9.765564	62.40876007	0.028273
10/14/2024	6:00:00 PM	29.70248	6.92599	313.8047	10.77774	9.757904	62.23479462	0.028189
10/14/2024	7:00:00 PM	25.82236	6.932454	313.0656	10.79416	9.771454	61.66867828	0.027917
10/14/2024	8:00:00 PM	23.77522	6.93251	313.6521	10.80043	9.76767	61.6322403	0.0279
10/14/2024	9:00:00 PM	30.53332	6.948754	313.3875	10.81511	9.769165	60.59851074	0.027402
10/14/2024	10:00:00 PM	28.45088	6.951352	315.3973	10.83817	9.760345	60.07925797	0.027151
10/14/2024	11:00:00 PM	24.09734	6.954846	314.8204	10.83126	9.75116	60.52947998	0.027368
10/14/2024	12:00:00 AM	26.98608	6.960176	314.4651	10.80674	9.75824	61.11154938	0.027648
10/14/2024	1:00:00 AM	23.29699	6.964419	313.8047	10.81379	9.7612	60.79535675	0.027496
10/14/2024	2:00:00 AM	26.7128	6.964508	314.2577	10.81298	9.769348	61.23291016	0.027707
10/14/2024	3:00:00 AM	29.75879	6.966648	313.8166	10.79522	9.773834	61.2743454	0.027728
10/14/2024	4:00:00 AM	23.14002	6.960892	311.7114	10.71685	9.808868	64.65816498	0.029359
10/14/2024	5:00:00 AM	25.60128	6.957437	310.8245	10.69588	9.832245	65.00266266	0.029526
10/14/2024	6:00:00 AM	22.2557	6.955878	311.6971	10.69637	9.839813	64.13323212	0.029108
10/14/2024	7:00:00 AM	28.41742	6.955507	311.7758	10.73075	9.808319	63.5045929	0.028803
10/14/2024	8:00:00 AM	23.41529	6.951317	311.2417	10.68172	9.846588	65.24640656	0.029644
10/14/2024	9:00:00 AM	27.29249	6.946101	310.35	10.68693	9.837769	64.85565186	0.029455
10/14/2024	10:00:00 AM	26.45514	6.938837	310.7982	10.68796	9.843567	64.697258	0.02938
10/14/2024	11:00:00 AM	21.71574	6.930547	312.4052	10.71934	9.844269	62.41743851	0.028282
10/14/2024	12:00:00 PM	18.3448	6.925795	314.3197	10.71947	9.835693	62.36548233	0.028256
10/14/2024	1:00:00 PM	23.66017	6.91453	314.3769	10.70784	9.839386	61.68480682	0.027929
10/14/2024	2:00:00 PM	18.86743	6.904663	316.6443	10.72225	9.829071	61.06168365	0.027628
10/14/2024	3:00:00 PM	20.97786	6.864838	318.8067	10.70225	9.831726	60.89489365	0.027548
10/14/2024	4:00:00 PM	22.54966	6.861539	319.1858	10.69907	9.83374	60.81591797	0.02751
10/14/2024	5:00:00 PM	19.73984	6.860675	318.3609	10.71388	9.820374	60.83984756	0.027521
10/14/2024	6:00:00 PM	28.69498	6.859951	319.8939	10.70417	9.81485	60.48417282	0.027349
10/14/2024	7:00:00 PM	21.67267	6.832891	320.8452	10.69412	9.809845	60.2558403	0.027239

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10/14/2024	8:00:00 PM	18.04526	6.872914	319.9511	10.73071	9.791199	60.0309906	0.02713
10/14/2024	9:00:00 PM	21.6424	6.878844	319.131	10.7234	9.783661	59.88253403	0.027058
10/14/2024	10:00:00 PM	24.05583	6.86153	320.7665	10.72125	9.771423	60.04088974	0.027134
10/14/2024	11:00:00 PM	21.67633	6.876573	319.4194	10.72707	9.765106	60.01028442	0.027119
10/14/2024	12:00:00 AM	25.26776	6.897489	319.4504	10.76199	9.75528	59.6954155	0.026966
10/14/2024	1:00:00 AM	28.68341	6.900925	317.7291	10.76068	9.749939	59.67844772	0.026958
10/14/2024	2:00:00 AM	27.78564	6.902248	318.1534	10.75872	9.752319	59.80574036	0.027019
10/14/2024	3:00:00 AM	39.54159	6.905772	317.9961	10.76513	9.749542	59.5066452	0.026875
10/14/2024	4:00:00 AM	42.62474	6.898088	318.7066	10.76946	9.749329	59.36982727	0.026809
10/14/2024	5:00:00 AM	43.08182	6.909796	318.0295	10.79133	9.747437	59.33047485	0.02679
10/14/2024	6:00:00 AM	47.76975	6.906417	318.8592	10.77958	9.751831	59.36701965	0.026808
10/14/2024	7:00:00 AM	47.55455	6.919271	317.9484	10.7957	9.752838	59.20775223	0.026731
10/14/2024	8:00:00 AM	49.5882	6.920046	318.0152	10.80049	9.760651	59.22700882	0.026741
10/14/2024	9:00:00 AM	52.95122	6.926179	315.8193	10.80852	9.767914	59.49297333	0.02687
10/14/2024	10:00:00 AM	44.02388	6.919483	316.3605	10.77954	9.786713	60.04191589	0.027135
10/14/2024	11:00:00 AM	59.50333	6.922495	315.7454	10.78101	9.809479	60.59999466	0.027405
10/14/2024	12:00:00 PM	60.13286	6.927299	315.693	10.77965	9.826019	60.52840042	0.027371
10/14/2024	1:00:00 PM	59.3085	6.931254	314.4484	10.78183	9.848083	60.85414886	0.027529
10/14/2024	2:00:00 PM	57.11675	6.93538	314.5176	10.78866	9.861633	61.03228378	0.027616
10/14/2024	3:00:00 PM	58.22055	6.942047	313.13	10.79749	9.881195	60.94849777	0.027577
10/14/2024	4:00:00 PM	51.04331	6.932748	314.2172	10.7915	9.898163	60.9712677	0.027588
10/14/2024	5:00:00 PM	54.31084	6.946609	312.1429	10.81684	9.924774	61.52717972	0.027858
10/14/2024	6:00:00 PM	47.10988	6.955544	312.82	10.82656	9.954163	61.45949554	0.027827
10/14/2024	7:00:00 PM	64.51321	6.963586	311.6756	10.84318	9.986298	61.81904221	0.028002
10/14/2024	8:00:00 PM	52.21562	6.97304	311.6303	10.867	10.01474	61.58516693	0.02789
10/14/2024	9:00:00 PM	52.44933	6.989969	310.0758	10.8798	10.03427	61.41366196	0.027809
10/14/2024	10:00:00 PM	68.57568	6.998747	310.4549	10.87911	10.05402	61.41574097	0.027811
10/14/2024	11:00:00 PM	51.46418	7.006547	311.2775	10.89648	10.06552	60.18994904	0.027221
10/14/2024	12:00:00 AM	50.07478	7.017792	312.7437	10.91187	10.09296	59.59964752	0.026938
10/14/2024	1:00:00 AM	66.9123	7.027293	310.3476	10.91273	10.13425	60.56113815	0.027403
10/14/2024	2:00:00 AM	53.30464	7.038753	312.1739	10.96455	10.13928	58.04683685	0.026192
10/14/2024	3:00:00 AM	72.0617	7.048697	314.3101	11.01212	10.14627	56.52064514	0.025457
10/14/2024	4:00:00 AM	68.96378	7.068335	318.0175	11.06618	10.15445	56.27816391	0.02534
10/14/2024	5:00:00 AM	73.07974	7.100033	318.9521	11.1125	10.17236	57.0321846	0.025705
10/14/2024	6:00:00 AM	91.03419	7.124207	316.2938	11.14528	10.20187	58.24533463	0.026291
10/14/2024	7:00:00 AM	93.56992	7.137526	312.224	11.10374	10.24463	60.15718079	0.027214
10/14/2024	8:00:00 AM	96.71426	7.140203	311.7328	11.11217	10.26035	60.45302963	0.027358
10/14/2024	9:00:00 AM	89.40317	7.135634	311.4491	11.1015	10.24359	59.30301666	0.026803
10/14/2024	10:00:00 AM	95.61671	7.143456	311.8997	11.10536	10.22086	59.88832092	0.027084
10/15/2024	11:00:00 AM	108.4331	7.151449	310.3428	11.06088	10.22482	61.44771194	0.027835
10/15/2024	12:00:00 PM	150.3334	7.147928	313.8071	11.04702	10.19547	59.29704285	0.026797
10/15/2024	1:00:00 PM	118.847	7.12774	313.633	11.01807	10.19571	57.36964417	0.025868
10/15/2024	2:00:00 PM	122.4858	7.114375	315.6906	11.0108	10.19614	56.25896072	0.025333
10/15/2024	3:00:00 PM	131.1029	7.102501	316.7468	10.99448	10.18805	54.65195465	0.024558
10/15/2024	4:00:00 PM	108.8448	7.091515	316.8088	10.99884	10.1828	53.90769577	0.024199
10/15/2024	5:00:00 PM	117.5235	7.074965	315.5165	10.99414	10.16983	51.93227386	0.023246
10/15/2024	6:00:00 PM	148.3385	7.060208	317.2713	11.01346	10.13696	49.04763794	0.021855

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10/15/2024	7:00:00 PM	192.754	7.077821	322.3711	11.02452	10.10907	46.9291954	0.020833
10/15/2024	8:00:00 PM	268.3726	7.043749	319.0833	11.04552	10.10696	46.46827316	0.020611
10/15/2024	9:00:00 PM	345.9207	7.044509	317.0186	11.05719	10.09079	46.11524582	0.02044
10/15/2024	10:00:00 PM	418.8116	7.05097	318.4395	11.06838	10.06531	45.65844345	0.020219
10/15/2024	11:00:00 PM	485.121	7.052135	318.2655	11.09994	10.04492	46.07636261	0.02042
10/15/2024	12:00:00 AM	463.2119	7.054173	316.2652	11.08321	10.05844	46.64770126	0.020695
10/15/2024	1:00:00 AM	509.208	7.075084	314.0169	11.13646	10.00439	47.47482681	0.021092
10/15/2024	2:00:00 AM	628.9672	7.081792	313.8571	11.15089	9.990631	49.35198593	0.021995
10/15/2024	3:00:00 AM	547.9416	7.068851	314.961	11.1391	10.04227	45.78027725	0.020277
10/15/2024	4:00:00 AM	551.3922	7.052851	314.5652	11.14095	10.07535	45.30635071	0.02005
10/15/2024	5:00:00 AM	508.447	7.036949	314.1266	11.13206	10.116	44.4726944	0.01965
10/15/2024	6:00:00 AM	536.9391	7.023787	315.5189	11.12289	10.12509	44.33060455	0.019582
10/15/2024	7:00:00 AM	477.9701	7.015066	315.4569	11.09944	10.14056	42.59037018	0.018744
10/15/2024	8:00:00 AM	506.7558	7.004293	314.6559	11.08302	10.14603	42.50040436	0.018701
10/15/2024	9:00:00 AM	527.5631	6.991184	314.6272	11.05311	10.12961	44.72567749	0.019772
10/15/2024	10:00:00 AM	512.8785	6.986091	316.0744	11.05973	10.10489	43.96330643	0.019404
10/15/2024	11:00:00 AM	521.2116	6.985497	316.9685	11.06667	10.0965	44.0615921	0.019451
10/15/2024	12:00:00 PM	498.1669	6.988295	317.977	11.11297	10.0578	41.91557693	0.018417
10/15/2024	1:00:00 PM	516.3196	6.984201	318.4944	11.1273	10.05356	40.30362701	0.017641
10/15/2024	2:00:00 PM	464.2188	6.965415	321.8966	11.1412	10.02509	39.68038177	0.01734
10/15/2024	3:00:00 PM	439.9675	6.957504	323.4082	11.16031	10.00668	38.5931282	0.016817
10/15/2024	4:00:00 PM	437.7115	6.960204	324.226	11.18829	9.98819	36.47986603	0.015801
10/15/2024	5:00:00 PM	530.0933	6.958099	325.1653	11.17886	9.961945	38.09770584	0.016577
10/15/2024	6:00:00 PM	396.2536	6.960814	325.9521	11.1813	9.959259	36.79924393	0.015953
10/15/2024	7:00:00 PM	429.1232	6.951314	329.2423	11.19891	9.930786	36.87576675	0.015989
10/15/2024	8:00:00 PM	417.4732	6.950511	330.196	11.19316	9.924957	36.28735733	0.015706
10/15/2024	9:00:00 PM	388.4131	6.943481	330.5035	11.21009	9.912598	35.77287674	0.015459
10/15/2024	10:00:00 PM	372.4686	6.942049	332.2893	11.19944	9.909149	35.37334061	0.015267
10/15/2024	11:00:00 PM	348.9786	6.935588	332.9473	11.19472	9.895691	35.88871765	0.015514
10/15/2024	12:00:00 AM	331.9153	6.934341	333.9463	11.19556	9.882599	35.50967789	0.015332
10/15/2024	1:00:00 AM	338.1158	6.934031	333.7699	11.18557	9.872284	35.22666168	0.015196
10/15/2024	2:00:00 AM	362.2685	6.931778	334.7402	11.20678	9.855591	35.59130859	0.01537
10/15/2024	3:00:00 AM	332.4734	6.930672	335.0502	11.20077	9.841644	35.76703644	0.015454
10/15/2024	4:00:00 AM	347.7827	6.927856	335.9872	11.19673	9.831268	36.05755615	0.015593
10/15/2024	5:00:00 AM	293.4913	6.930938	335.2814	11.20708	9.81842	36.10879135	0.015617
10/15/2024	6:00:00 AM	292.5912	6.930161	335.8632	11.19384	9.807953	36.670784	0.015887
10/15/2024	7:00:00 AM	289.032	6.935336	335.6295	11.19583	9.797089	36.52202225	0.015815
10/15/2024	8:00:00 AM	302.6922	6.931463	337.0505	11.19228	9.797699	36.48586273	0.015798
10/15/2024	9:00:00 AM	236.1922	6.935618	336.6619	11.19941	9.786835	36.97082901	0.01603
10/15/2024	10:00:00 AM	239.5258	6.935244	337.3271	11.19403	9.780762	36.84516525	0.01597
10/15/2024	11:00:00 AM	256.2072	6.934488	336.6833	11.18371	9.760437	37.79354858	0.016425
10/15/2024	12:00:00 PM	247.7317	6.934881	337.4272	11.18428	9.748535	37.20196915	0.01614
10/15/2024	1:00:00 PM	305.1835	6.93391	335.2051	11.1775	9.7453	37.41833115	0.016244
10/15/2024	2:00:00 PM	282.7646	6.93018	336.0611	11.16728	9.733582	38.08940125	0.016566
10/15/2024	3:00:00 PM	258.9279	6.927915	335.1527	11.16438	9.734528	37.68804932	0.016373
10/15/2024	4:00:00 PM	202.9582	6.923599	336.4354	11.16501	9.724945	37.81838608	0.016436
10/15/2024	5:00:00 PM	223.7926	6.922462	336.7644	11.16216	9.713074	38.05926514	0.016551

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10/15/2024	6:00:00 PM	279.0713	6.920047	337.4248	11.17104	9.70697	37.80072403	0.016426
10/15/2024	7:00:00 PM	225.1293	6.919602	336.1493	11.16403	9.711121	37.27413559	0.016174
10/15/2024	8:00:00 PM	269.5327	6.917924	337.01	11.15504	9.695587	37.43665314	0.016251
10/15/2024	9:00:00 PM	235.5566	6.916164	335.651	11.16957	9.685547	37.79289627	0.016422
10/15/2024	10:00:00 PM	260.7744	6.920003	336.4187	11.15776	9.68454	36.95144272	0.016018
10/15/2024	11:00:00 PM	243.8887	6.916492	336.1588	11.15896	9.677917	36.86385345	0.015976
10/15/2024	12:00:00 AM	241.626	6.913793	336.6833	11.16082	9.668091	37.61919785	0.016338
10/15/2024	1:00:00 AM	210.975	6.916025	334.7617	11.14352	9.666534	37.83132172	0.01644
10/15/2024	2:00:00 AM	203.892	6.916737	335.6987	11.15259	9.661621	37.43177414	0.016248
10/15/2024	3:00:00 AM	244.4911	6.918467	335.9132	11.16367	9.659546	37.99723816	0.016519
10/15/2024	4:00:00 AM	220.5828	6.926472	336.731	11.16785	9.652771	38.10018539	0.016569
10/15/2024	5:00:00 AM	218.1646	6.925265	334.8523	11.177	9.65387	37.98292923	0.016512
10/15/2024	6:00:00 AM	202.1056	6.928152	336.0968	11.17048	9.654114	38.57538986	0.016797
10/15/2024	7:00:00 AM	217.9248	6.92971	335.3672	11.17792	9.654968	38.43409348	0.016729
10/15/2024	8:00:00 AM	195.2503	6.931905	335.1169	11.17581	9.664398	38.78595352	0.016898
10/15/2024	9:00:00 AM	210.0064	6.936499	333.0308	11.18727	9.680908	38.88246918	0.016945
10/15/2024	10:00:00 AM	176.4843	6.93878	333.777	11.19848	9.690155	38.48522568	0.016755
10/15/2024	11:00:00 AM	185.1449	6.940855	332.2559	11.19755	9.70462	39.39872742	0.017194
10/15/2024	12:00:00 PM	208.3225	6.947185	332.151	11.19622	9.710236	39.16072083	0.01708
10/15/2024	1:00:00 PM	195.311	6.95078	330.6633	11.20284	9.72522	39.41300583	0.017202
10/15/2024	2:00:00 PM	213.5971	6.952798	330.7753	11.18683	9.746246	40.2494812	0.017605
10/15/2024	3:00:00 PM	216.8549	6.956368	328.9037	11.20638	9.765625	39.98535919	0.017478
10/15/2024	4:00:00 PM	199.0458	6.965425	328.2863	11.20175	9.776093	39.86799622	0.017422
10/15/2024	5:00:00 PM	181.8066	6.970571	326.3527	11.1996	9.783997	39.97669601	0.017475
10/15/2024	6:00:00 PM	190.6215	6.974218	326.8104	11.18393	9.792664	40.6531868	0.0178
10/15/2024	7:00:00 PM	185.4171	6.981634	325.1558	11.18217	9.799225	41.01876068	0.017976
10/15/2024	8:00:00 PM	185.0724	6.986726	326.1882	11.18389	9.7995	40.69964981	0.017823
10/15/2024	9:00:00 PM	179.1998	6.990161	324.7529	11.17784	9.816467	41.38299561	0.018152
10/15/2024	10:00:00 PM	191.5667	6.995372	325.8019	11.19298	9.825562	41.39282608	0.018157
10/15/2024	11:00:00 PM	181.3842	7.00248	324.6933	11.1854	9.835541	41.24497223	0.018086
10/15/2024	12:00:00 AM	160.3571	7.004818	325.5039	11.19025	9.849152	41.63020325	0.018272
10/15/2024	1:00:00 AM	189.2568	7.006889	323.1054	11.18679	9.858032	42.14528275	0.01852
10/15/2024	2:00:00 AM	169.892	7.013984	325.3895	11.19884	9.843964	41.51663589	0.018217
10/15/2024	3:00:00 AM	203.6552	7.007508	326.603	11.19194	9.839874	41.42675018	0.018174
10/15/2024	4:00:00 AM	239.5337	7.00463	327.2324	11.18931	9.839233	41.5759201	0.018246
10/15/2024	5:00:00 AM	250.3852	7.003689	326.1595	11.1924	9.831421	42.09174347	0.018494
10/15/2024	6:00:00 AM	217.5627	7.008204	326.7031	11.18482	9.825012	42.01446533	0.018456
10/15/2024	7:00:00 AM	202.2986	7.005395	325.6088	11.18181	9.819885	42.35969543	0.018622
10/15/2024	8:00:00 AM	215.6528	7.010935	325.635	11.19448	9.82135	42.38713455	0.018635
10/15/2024	9:00:00 AM	250.9225	7.01725	324.2951	11.19195	9.816589	42.53027725	0.018704
10/15/2024	10:00:00 AM	224.8958	7.022118	324.493	11.18417	9.820374	43.5202446	0.019181
10/16/2024	11:00:00 AM	278.8123	7.021933	323.6657	11.18312	9.807617	43.25433731	0.019052
10/16/2024	12:00:00 PM	244.4134	7.026872	324.0996	11.17906	9.792969	43.65908432	0.019246
10/16/2024	1:00:00 PM	297.8635	7.029403	321.7393	11.15889	9.788605	44.47526169	0.019639
10/16/2024	2:00:00 PM	190.8073	7.027335	323.3009	11.14977	9.776733	45.29680252	0.020034
10/16/2024	3:00:00 PM	208.0069	7.025557	322.7072	11.10101	9.792877	47.68144608	0.021183
10/16/2024	4:00:00 PM	298.3532	7.017414	323.556	11.04335	9.803192	48.39719391	0.021528

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10/16/2024	5:00:00 PM	268.883	7.010035	322.8765	11.03255	9.788757	48.28394699	0.021473
10/16/2024	6:00:00 PM	271.7262	7.006333	324.0805	10.99749	9.786438	49.92073822	0.022261
10/16/2024	7:00:00 PM	224.1206	7.006629	323.2389	10.96947	9.772736	50.10575485	0.022349
10/16/2024	8:00:00 PM	211.9765	7.006592	323.9899	10.96248	9.753021	50.31484985	0.022449
10/16/2024	9:00:00 PM	195.0184	7.005986	321.0884	10.9759	9.726105	49.9642334	0.022279
10/16/2024	10:00:00 PM	194.1921	7.012049	321.8275	10.97685	9.713074	50.13574982	0.022361
10/16/2024	11:00:00 PM	229.7531	7.006298	321.9109	10.96007	9.700287	50.12369537	0.022355
10/16/2024	12:00:00 AM	217.1921	6.992614	325.0414	10.96475	9.67572	48.91653061	0.021772
10/16/2024	1:00:00 AM	282.9471	6.993979	323.8707	10.95489	9.664246	48.66552734	0.021651
10/16/2024	2:00:00 AM	259.9879	6.987355	325.3179	10.96492	9.644562	48.09041214	0.021373
10/16/2024	3:00:00 AM	204.2438	6.979971	325.3561	10.96502	9.627289	48.12837982	0.021391
10/16/2024	4:00:00 AM	179.5961	6.977862	325.8329	10.95595	9.615112	47.75561905	0.021211
10/16/2024	5:00:00 AM	203.1458	6.974621	324.9961	10.97028	9.599213	47.54774475	0.02111
10/16/2024	6:00:00 AM	186.5896	6.969497	326.4814	10.94938	9.60083	48.08904648	0.021371
10/16/2024	7:00:00 AM	193.6915	6.971104	325.8329	10.964	9.59021	47.34122849	0.02101
10/16/2024	8:00:00 AM	189.9832	6.97101	326.5672	10.9662	9.585175	47.27920532	0.02098
10/16/2024	9:00:00 AM	311.101	6.972303	325.5397	10.99223	9.57843	46.62426376	0.020665
10/16/2024	10:00:00 AM	289.0906	6.972398	326.0666	10.96594	9.580536	46.95425797	0.020824
10/16/2024	11:00:00 AM	212.173	6.972752	325.6541	10.98699	9.571289	46.6767807	0.02069
10/16/2024	12:00:00 PM	172.2574	6.972751	325.9068	10.96535	9.57135	46.82765198	0.020762
10/16/2024	1:00:00 PM	173.5991	6.969959	325.1606	10.96831	9.570496	47.01499557	0.020853
10/16/2024	2:00:00 PM	224.3161	6.971041	326.4218	10.97432	9.569183	46.95241547	0.020822
10/16/2024	3:00:00 PM	143.1611	6.97134	325.8496	10.98159	9.557983	46.9068718	0.0208
10/16/2024	4:00:00 PM	198.4731	6.97267	325.8115	10.96432	9.559967	47.36322784	0.02102
10/16/2024	5:00:00 PM	190.739	6.973965	324.3261	10.98447	9.553101	46.81048203	0.020753
10/16/2024	6:00:00 PM	185.9243	6.971619	325.2345	10.96964	9.556396	47.08081055	0.020884
10/16/2024	7:00:00 PM	189.5531	6.970203	324.6671	10.9587	9.560028	47.24987411	0.020965
10/16/2024	8:00:00 PM	160.153	6.973826	325.0604	10.9458	9.573273	47.67858505	0.021172
10/16/2024	9:00:00 PM	250.6067	6.971551	324.0471	10.97109	9.588715	47.1609726	0.020924
10/16/2024	10:00:00 PM	149.619	6.973528	325.3418	10.94429	9.612335	47.7399559	0.021203
10/16/2024	11:00:00 PM	145.085	6.978099	324.5884	10.93513	9.632996	47.71660614	0.021193
10/16/2024	12:00:00 AM	114.72	6.977675	325.2154	10.92443	9.652405	48.37005234	0.021508
10/16/2024	1:00:00 AM	155.5843	6.98297	323.3772	10.91835	9.667328	48.57709503	0.021609
10/16/2024	2:00:00 AM	184.5824	6.988936	324.4644	10.93624	9.671692	48.7624054	0.021698
10/16/2024	3:00:00 AM	168.6824	6.988471	323.5822	10.93363	9.679932	48.93905258	0.021783
10/16/2024	4:00:00 AM	160.6912	6.99192	323.8588	10.93412	9.679382	49.10943222	0.021865
10/16/2024	5:00:00 AM	112.1716	6.988472	323.8135	10.93524	9.679871	49.78175354	0.022189
10/16/2024	6:00:00 AM	109.0212	6.994792	323.5703	10.9388	9.674957	49.61098099	0.022107
10/16/2024	7:00:00 AM	117.4015	6.995464	323.4106	10.94411	9.667175	49.92789459	0.022259
10/16/2024	8:00:00 AM	139.8186	7.004304	323.5775	10.93333	9.655884	50.34817505	0.022461
10/16/2024	9:00:00 AM	142.7766	7.003409	323.4034	10.94927	9.642181	50.01824188	0.022301
10/16/2024	10:00:00 AM	114.5926	7.003156	324.5479	10.95553	9.628296	49.74256897	0.022168
10/16/2024	11:00:00 AM	145.8436	7.004332	324.2474	10.95803	9.615387	49.54689026	0.022073
10/16/2024	12:00:00 PM	120.0352	7.004748	323.4344	10.93789	9.613129	50.64183044	0.0226
10/16/2024	1:00:00 PM	136.3968	7.005573	321.2195	10.92911	9.606506	51.11491394	0.022828
10/16/2024	2:00:00 PM	112.1851	7.008947	322.1374	10.93152	9.591583	51.06588745	0.022803
10/16/2024	3:00:00 PM	142.9923	7.008537	321.1671	10.90793	9.58786	51.59762573	0.023059

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10/16/2024	4:00:00 PM	84.82858	7.009895	321.3459	10.90716	9.587921	51.83614731	0.023174
10/16/2024	5:00:00 PM	100.1978	7.024858	319.8486	10.90524	9.584991	51.76837158	0.023141
10/16/2024	6:00:00 PM	127.2941	7.014621	320.5591	10.90045	9.584686	52.21888733	0.023358
10/16/2024	7:00:00 PM	98.17751	7.011116	320.1133	10.88472	9.591492	52.8994751	0.023686
10/16/2024	8:00:00 PM	132.2664	7.004575	320.7975	10.88644	9.588531	52.90591812	0.023689
10/16/2024	9:00:00 PM	98.24763	6.998893	318.4229	10.87457	9.598755	53.04302216	0.023755
10/16/2024	10:00:00 PM	110.6698	6.98925	320.2205	10.85758	9.606812	53.13495255	0.0238
10/16/2024	11:00:00 PM	88.93027	6.978329	320.0727	10.83193	9.606842	53.13739777	0.023801
10/16/2024	12:00:00 AM	101.0875	6.96548	321.6057	10.8492	9.596649	52.32378387	0.023409
10/16/2024	1:00:00 AM	103.2314	6.959861	319.6888	10.84529	9.580597	52.05357361	0.023278
10/16/2024	2:00:00 AM	150.5735	6.952813	321.0621	10.86263	9.568939	51.65708542	0.023087
10/16/2024	3:00:00 AM	92.12067	6.956718	320.3898	10.868	9.560822	52.10551071	0.023302
10/16/2024	4:00:00 AM	100.2867	6.95894	321.4436	10.88856	9.554535	51.81558609	0.023162
10/16/2024	5:00:00 AM	144.7767	6.961318	321.4079	10.8959	9.549011	51.86863327	0.023188
10/16/2024	6:00:00 AM	114.421	6.964742	322.8598	10.93466	9.569763	51.68451309	0.0231
10/16/2024	7:00:00 AM	109.4644	6.968862	322.6595	10.962	9.606262	51.02895737	0.022786
10/16/2024	8:00:00 AM	139.3402	6.985973	322.1899	11.00128	9.648773	50.98309708	0.022766
10/16/2024	9:00:00 AM	78.62276	6.995956	321.1599	11.03974	9.66272	50.63025284	0.022597
10/16/2024	10:00:00 AM	102.1249	7.005485	321.3745	11.0464	9.656464	50.48396683	0.022526
10/16/2024	11:00:00 AM	88.24424	7.023299	320.8047	11.0762	9.658447	49.66571808	0.022132
10/16/2024	12:00:00 PM	112.0974	7.034429	320.6592	11.09921	9.716248	49.79730606	0.022198
10/16/2024	1:00:00 PM	128.8044	7.047012	319.2955	11.12805	9.764832	49.89374542	0.022247
10/16/2024	2:00:00 PM	108.6106	7.064732	320.3373	11.16566	9.756073	49.47394562	0.022044
10/16/2024	3:00:00 PM	131.8989	7.076261	320.0131	11.15854	9.750854	49.34169006	0.02198
10/16/2024	4:00:00 PM	81.09739	7.085225	320.5233	11.18112	9.746613	48.95747375	0.021795
10/16/2024	5:00:00 PM	85.6524	7.090266	319.7389	11.18792	9.766418	48.89259338	0.021765
10/16/2024	6:00:00 PM	96.45293	7.090775	320.9596	11.17209	9.777313	48.63473129	0.021641
10/16/2024	7:00:00 PM	122.5675	7.09636	321.992	11.18966	9.801819	48.88018799	0.02176
10/16/2024	8:00:00 PM	113.92	7.12394	325.5277	11.19293	9.865387	49.01862335	0.021774
10/16/2024	9:00:00 PM	103.045	7.105287	315.6143	11.18916	9.921356	48.89899063	0.021774
10/16/2024	10:00:00 PM	94.29009	7.106794	317.5073	11.18342	10.02258	49.25242615	0.021949
10/16/2024	11:00:00 PM	90.55842	7.113975	317.2332	11.19307	10.11371	49.41079712	0.022029
10/16/2024	12:00:00 AM	80.21803	7.116944	318.163	11.17727	10.20261	49.65213394	0.022149
10/16/2024	1:00:00 AM	73.1526	7.130851	316.5513	11.18499	10.23773	49.69198227	0.02217
10/16/2024	2:00:00 AM	95.99346	7.138627	318.0771	11.19097	10.24197	49.56387711	0.022108
10/16/2024	3:00:00 AM	71.31372	7.147317	318.2989	11.20355	10.22873	49.76486969	0.022204
10/16/2024	4:00:00 AM	81.63639	7.153491	319.1286	11.19547	10.21637	49.64858627	0.022148
10/16/2024	5:00:00 AM	66.76636	7.157409	318.1582	11.18553	10.20465	49.54218674	0.022096
10/16/2024	6:00:00 AM	73.75828	7.160715	319.1405	11.20358	10.19141	49.19954681	0.02193
10/16/2024	7:00:00 AM	78.64331	7.162899	318.7495	11.19717	10.16339	49.19243622	0.021926
10/16/2024	8:00:00 AM	116.0272	7.163001	318.8663	11.18897	10.12494	49.42829132	0.022038
10/16/2024	9:00:00 AM	88.64212	7.159516	318.3633	11.17537	10.08536	49.15974426	0.021907
10/16/2024	10:00:00 AM	123.0137	7.153838	318.9521	11.16125	10.03949	49.31610107	0.02198
10/17/2024	11:00:00 AM	82.84248	7.148631	318.6684	11.16616	9.987885	49.39493942	0.022016
10/17/2024	12:00:00 PM	100.4489	7.150303	319.8271	11.15971	9.922607	49.37612534	0.022004
10/17/2024	1:00:00 PM	106.3302	7.151018	320.3135	11.14713	9.864166	49.31819916	0.021974
10/17/2024	2:00:00 PM	91.42382	7.145886	321.2958	11.13901	9.820984	49.53157043	0.022075

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10/17/2024	3:00:00 PM	96.61431	7.137675	319.2907	11.12428	9.79245	49.70749664	0.022158
10/17/2024	4:00:00 PM	95.3583	7.130922	319.1786	11.12412	9.757599	50.62306595	0.022598
10/17/2024	5:00:00 PM	93.8596	7.130238	318.008	11.11242	9.728394	50.997509	0.022777
10/17/2024	6:00:00 PM	82.62031	7.119146	320.006	11.07942	9.726013	50.94372559	0.022751
10/17/2024	7:00:00 PM	88.16933	7.101057	320.4041	11.0622	9.731018	51.80276871	0.023164
10/17/2024	8:00:00 PM	80.60001	7.088882	319.8319	11.00448	9.751648	52.25963974	0.023385
10/17/2024	9:00:00 PM	83.07201	7.079141	318.8544	10.98889	9.747253	52.88022614	0.023684
10/17/2024	10:00:00 PM	92.2178	7.073022	320.0298	10.96938	9.761078	52.80715942	0.02365
10/17/2024	11:00:00 PM	132.7807	7.071396	320.3946	10.9825	9.737244	51.90431976	0.023214
10/17/2024	12:00:00 AM	106.6306	7.067533	320.8452	10.96668	9.750793	52.04591751	0.023282
10/17/2024	1:00:00 AM	98.16743	7.113182	318.9235	10.96474	9.754089	51.85177612	0.023189
10/17/2024	2:00:00 AM	106.002	7.108011	318.9021	10.95887	9.750641	52.22598267	0.023369
10/17/2024	3:00:00 AM	104.0239	7.102334	315.1756	10.9624	9.747101	51.40642929	0.022974
10/17/2024	4:00:00 AM	80.5285	7.097293	315.7359	10.97271	9.735382	50.83416748	0.022698
10/17/2024	5:00:00 AM	109.8756	7.091086	316.7349	10.9666	9.719452	50.8938446	0.022726
10/17/2024	6:00:00 AM	73.15554	7.086349	319.2621	10.97544	9.715485	51.17884445	0.022863
10/17/2024	7:00:00 AM	74.21783	7.079438	318.6756	10.95736	9.706451	50.79267502	0.022677
10/17/2024	8:00:00 AM	107.9329	7.078432	320.2086	10.96729	9.68927	50.84024429	0.022699
10/17/2024	9:00:00 AM	64.59604	7.056192	329.0444	10.97718	9.668488	50.7372551	0.022649
10/17/2024	10:00:00 AM	70.35918	7.085832	317.0019	10.96994	9.651306	50.98765945	0.022768
10/17/2024	11:00:00 AM	73.82571	7.056831	312.2836	10.96476	9.633179	51.37257004	0.022953
10/17/2024	12:00:00 PM	82.77342	7.090778	315.6429	10.97532	9.61557	51.10064697	0.022821
10/17/2024	1:00:00 PM	88.566	7.093119	326.1357	10.97699	9.603363	51.39331436	0.022961
10/17/2024	2:00:00 PM	87.45012	7.062062	307.3388	10.99099	9.572388	51.18121338	0.022858
10/17/2024	3:00:00 PM	92.31522	7.063004	307.9134	10.97756	9.545197	50.8772316	0.02271
10/17/2024	4:00:00 PM	58.10091	7.059513	311.1702	10.99647	9.526398	50.88759613	0.022714
10/17/2024	5:00:00 PM	104.8347	7.084737	316.8422	11.00034	9.509003	50.82323074	0.022683
10/17/2024	6:00:00 PM	75.13898	7.056525	311.7972	11.00291	9.497131	50.78044128	0.022661
10/17/2024	7:00:00 PM	58.37939	7.054	312.9536	11.00097	9.473663	50.77528381	0.022658
10/17/2024	8:00:00 PM	77.65763	7.053404	315.2686	11.00397	9.454559	50.6823616	0.022612
10/17/2024	9:00:00 PM		7.083015	327.8094	11.00773	9.433258	50.45360565	0.022501
10/17/2024	10:00:00 PM	70.51682	7.070039	309.2056	11.00592	9.404053	50.95317459	0.02274
10/17/2024	11:00:00 PM	77.98585	7.045065	305.6389	11.0161	9.375427	50.94714737	0.022736
10/17/2024	12:00:00 AM	93.61014	7.042557	310.1235	11.01731	9.347961	50.83537674	0.022681
10/17/2024	1:00:00 AM	77.21539	7.070343	316.866	11.01848	9.325378	51.14336395	0.022828
10/17/2024	2:00:00 AM	86.6453	7.039848	310.8435	11.02422	9.303192	50.91134644	0.022715
10/17/2024	3:00:00 AM	72.66253	7.038184	311.9093	11.02731	9.278839	51.23489761	0.02287
10/17/2024	4:00:00 AM	72.51791	7.037228	314.8919	11.03416	9.239014	51.02853012	0.022769
10/17/2024	5:00:00 AM	63.54326	7.034585	314.6654	11.0414	9.209106	51.07507324	0.02279
10/17/2024	6:00:00 AM	70.05156	7.03539	316.2008	11.03496	9.189606	51.391922	0.022941
10/17/2024	7:00:00 AM	89.25635	7.03613	318.7829	11.04955	9.16156	51.30775833	0.022899
10/17/2024	8:00:00 AM	65.49802	7.04282	316.5084	11.06729	9.13089	50.61271286	0.022563
10/17/2024	9:00:00 AM	79.55451	7.066718	319.0094	11.08156	9.107941	50.43617249	0.022477
10/17/2024	10:00:00 AM	65.24375	7.055287	317.5908	11.10293	9.082031	49.98038101	0.022257
10/17/2024	11:00:00 AM	73.23164	7.060169	317.8244	11.10124	9.061035	50.13302612	0.022329
10/17/2024	12:00:00 PM	68.47593	7.062816	320.6211	11.11423	9.055206	49.5414238	0.022045
10/17/2024	1:00:00 PM	71.79176	7.059774	320.6092	11.11863	9.039948	49.84782791	0.022191

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10/17/2024	2:00:00 PM	54.93945	7.058122	321.4722	11.11321	9.003967	50.72951126	0.022613
10/17/2024	3:00:00 PM	62.28598	7.057609	319.8891	11.11545	8.982239	50.82991028	0.02266
10/17/2024	4:00:00 PM	56.35182	7.056817	321.1552	11.12819	8.948334	50.85803604	0.022672
10/17/2024	5:00:00 PM	65.79425	7.057951	319.7413	11.12852	8.90564	51.24580383	0.022856
10/17/2024	6:00:00 PM	68.81034	7.057865	320.5948	11.1162	8.85376	52.07992935	0.023255
10/17/2024	7:00:00 PM	78.58038	7.050058	318.7662	11.11131	8.810638	52.2325058	0.023326
10/17/2024	8:00:00 PM	66.33335	7.047086	319.2526	11.13861	8.774353	51.85665131	0.023143
10/17/2024	9:00:00 PM	59.34092	7.046704	317.9198	11.14581	8.724915	52.23838425	0.023324
10/17/2024	10:00:00 PM	61.70138	7.043532	319.4218	11.15682	8.695892	52.45351791	0.023426
10/17/2024	11:00:00 PM	61.90327	7.038604	318.1797	11.1297	8.678314	53.6660614	0.024007
10/17/2024	12:00:00 AM	61.17633	7.040021	320.2277	11.16011	8.642059	52.49758148	0.023444
10/17/2024	1:00:00 AM	63.85796	7.033222	317.7601	11.15258	8.638275	52.63332367	0.023509
10/17/2024	2:00:00 AM	59.72015	7.052195	332.0604	11.15913	8.62973	51.93847656	0.023175
10/17/2024	3:00:00 AM	58.8434	7.018394	310.7744	11.16828	8.615051	51.43963242	0.022934
10/17/2024	4:00:00 AM	58.13523	7.036024	318.6875	11.18514	8.605652	51.28740311	0.022861
10/17/2024	5:00:00 AM	54.71578	7.040627	328.0192	11.19875	8.60611	51.10741806	0.022774
10/17/2024	6:00:00 AM	65.64112	7.035219	332.1796	11.22548	8.616272	50.51506042	0.02249
10/17/2024	7:00:00 AM	82.98832	6.991551	298.9178	11.24357	8.630157	50.1398201	0.022311
10/17/2024	8:00:00 AM	74.59055	6.991027	308.5667	11.24937	8.658752	50.20466232	0.022344
10/17/2024	9:00:00 AM	67.76957	6.992268	311.461	11.29548	8.700073	50.23833084	0.022362
10/17/2024	10:00:00 AM	71.77966	7.003184	314.9062	11.30803	8.752441	49.89533234	0.0222
10/17/2024	11:00:00 AM	65.01688	7.003914	315.5094	11.33127	8.812897	50.3951416	0.022443
10/17/2024	12:00:00 PM	79.63674	7.01426	316.3772	11.35599	8.876953	50.55703354	0.022524
10/17/2024	1:00:00 PM	67.14688	7.006516	315.9814	11.33045	8.926117	50.76754379	0.022628
10/17/2024	2:00:00 PM	54.07835	7.005722	318.2321	11.34018	8.94165	51.07110977	0.022774
10/17/2024	3:00:00 PM	54.26293	7.00882	318.7662	11.34238	8.981049	51.03098679	0.022757
10/17/2024	4:00:00 PM	48.98052	7.008032	319.7485	11.35124	9.062622	51.2694397	0.022876
10/17/2024	5:00:00 PM	54.65582	7.005796	318.2202	11.33139	9.149658	51.63909912	0.023058
10/17/2024	6:00:00 PM	55.53791	7.0081	319.4576	11.34882	9.193573	51.56586456	0.023025
10/17/2024	7:00:00 PM	80.4651	7.012882	318.6494	11.34643	9.228455	51.64995956	0.023067
10/17/2024	8:00:00 PM	52.57983	7.013901	318.821	11.34094	9.278229	51.85969543	0.02317
10/17/2024	9:00:00 PM	59.3807	7.017279	317.6623	11.33817	9.348816	51.88868713	0.023188
10/17/2024	10:00:00 PM	46.35518	7.023306	318.8282	11.3425	9.36615	51.97987366	0.023232
10/17/2024	11:00:00 PM	40.27288	7.029844	317.6051	11.3432	9.364166	51.91061401	0.023199
10/17/2024	12:00:00 AM	49.75567	7.033217	318.1367	11.35475	9.346802	52.16378403	0.02332
10/17/2024	1:00:00 AM	38.27488	7.038045	317.3285	11.34536	9.334442	51.98752975	0.023235
10/17/2024	2:00:00 AM	44.23243	7.042212	318.8091	11.36594	9.304413	51.78778458	0.023137
10/17/2024	3:00:00 AM	38.58657	7.053939	317.0758	11.35264	9.291595	51.86299133	0.023173
10/17/2024	4:00:00 AM	41.14932	7.063666	317.5908	11.36517	9.284424	51.62774658	0.023059
10/17/2024	5:00:00 AM	56.21082	7.07182	315.7669	11.37126	9.290771	51.61090088	0.023051
10/17/2024	6:00:00 AM	52.80508	7.083914	317.0925	11.38834	9.287292	51.18587112	0.022847
10/17/2024	7:00:00 AM	34.2984	7.098214	317.0519	11.40443	9.259857	50.59102249	0.022559
10/17/2024	8:00:00 AM	44.34872	7.104074	318.9665	11.41231	9.209259	50.12233353	0.022331
10/17/2024	9:00:00 AM	47.92975	7.111977	318.945	11.42819	9.177612	49.9578743	0.022251
10/17/2024	10:00:00 AM	42.71595	7.113479	320.0322	11.41961	9.157959	49.91671371	0.02223
10/18/2024	11:00:00 AM	37.41648	7.120402	319.2049	11.44061	9.121185	50.73178101	0.02262
10/18/2024	12:00:00 PM	39.15659	7.126022	318.8282	11.43708	9.096863	51.24819565	0.022867

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10/18/2024	1:00:00 PM	39.09089	7.129371	317.1807	11.43244	9.070953	52.26350403	0.023354
10/18/2024	2:00:00 PM	43.4458	7.126123	317.6241	11.40845	9.05014	52.61199188	0.023521
10/18/2024	3:00:00 PM	40.32402	7.1335	316.3391	11.435	8.993073	54.56247711	0.024455
10/18/2024	4:00:00 PM	42.98306	7.134987	316.2675	11.40146	8.953033	55.02624893	0.024676
10/18/2024	5:00:00 PM	36.31557	7.126866	315.3115	11.36157	8.927917	56.77653122	0.025516
10/18/2024	6:00:00 PM	33.70007	7.123928	316.0387	11.34129	8.884766	57.583992	0.025902
10/18/2024	7:00:00 PM	44.7196	7.115103	316.0005	11.31214	8.877136	60.05743408	0.02709
10/18/2024	8:00:00 PM	34.76227	7.091472	316.7491	11.24963	8.876221	60.28667068	0.0272
10/18/2024	9:00:00 PM	34.87281	7.066373	314.0359	11.18243	8.898285	61.59008026	0.027828
10/18/2024	10:00:00 PM	29.05679	7.058585	315.476	11.19519	8.854065	60.27579498	0.027194
10/18/2024	11:00:00 PM		7.041354	313.8595	11.13817	8.890839	62.14683914	0.028095
10/18/2024	12:00:00 AM	40.56615	7.038652	316.3295	11.11187	8.919403	61.28540039	0.027683
10/18/2024	1:00:00 AM	35.18912	7.029286	316.8135	11.11726	8.909515	59.4211235	0.026786
10/18/2024	2:00:00 AM	41.49861	7.020401	317.9079	11.12085	8.887573	57.30184174	0.025766
10/18/2024	3:00:00 AM	45.82007	7.003377	317.5717	11.11419	8.875427	56.78567505	0.025518
10/18/2024	4:00:00 AM	46.7574	6.986184	318.7829	11.10522	8.865784	56.58174133	0.025419
10/18/2024	5:00:00 AM	35.75217	6.970779	318.5802	11.10373	8.850616	56.22042084	0.025244
10/18/2024	6:00:00 AM	38.93564	6.96546	319.7771	11.11391	8.833496	55.40688324	0.024853
10/18/2024	7:00:00 AM	33.51155	6.965491	320.056	11.11987	8.817474	55.31849289	0.024809
10/18/2024	8:00:00 AM	29.3337	6.964972	321.117	11.12813	8.798462	55.29486847	0.024797
10/18/2024	9:00:00 AM	49.50104	6.963549	320.0775	11.13362	8.785645	55.06058502	0.024683
10/18/2024	10:00:00 AM	40.74971	6.967023	321.136	11.14604	8.781342	55.08939362	0.024697
10/18/2024	11:00:00 AM	36.9935	6.96574	320.5019	11.1337	8.770538	55.03377151	0.02467
10/18/2024	12:00:00 PM	36.57144	6.967007	321.2457	11.13984	8.765686	55.08462524	0.024694
10/18/2024	1:00:00 PM	30.22494	6.966745	320.6211	11.13298	8.766052	55.31152725	0.024803
10/18/2024	2:00:00 PM	40.69494	6.967944	321.9276	11.14033	8.76297	55.01684952	0.024661
10/18/2024	3:00:00 PM	36.2692	6.965303	320.9239	11.13644	8.762817	54.93132782	0.02462
10/18/2024	4:00:00 PM	47.07287	6.969737	321.5914	11.14161	8.757172	55.07303238	0.024688
10/18/2024	5:00:00 PM	36.35115	6.974874	319.8844	11.14485	8.758575	54.84603119	0.024579
10/18/2024	6:00:00 PM	33.24324	6.967241	321.1194	11.14537	8.750336	55.01271057	0.024658
10/18/2024	7:00:00 PM	36.73729	6.969187	320.3111	11.12939	8.742981	55.02138519	0.024662
10/18/2024	8:00:00 PM	35.83512	6.970329	321.1885	11.13226	8.737946	55.03984833	0.024671
10/18/2024	9:00:00 PM	31.21662	6.967906	321.0789	11.14002	8.729187	54.87058258	0.024589
10/18/2024	10:00:00 PM	48.03922	6.966396	322.4569	11.1397	8.730377	54.87646866	0.024592
10/18/2024	11:00:00 PM	37.76634	6.969329	321.7274	11.14944	8.716949	54.93553925	0.024619
10/18/2024	12:00:00 AM	30.62857	6.968678	322.5427	11.14801	8.70932	54.86190796	0.024584
10/18/2024	1:00:00 AM	31.57671	6.974334	320.3159	11.1549	8.704681	54.84108734	0.024573
10/18/2024	2:00:00 AM	28.57949	6.970198	321.7941	11.15296	8.696411	54.98059845	0.02464
10/18/2024	3:00:00 AM	30.23601	6.969677	320.8905	11.1583	8.691467	54.98322296	0.024641
10/18/2024	4:00:00 AM	31.76835	6.973218	321.9133	11.16465	8.682922	54.87800598	0.02459
10/18/2024	5:00:00 AM	32.22224	6.97504	321.1241	11.17086	8.669678	55.06856537	0.024681
10/18/2024	6:00:00 AM	24.25492	6.965741	322.9075	11.17048	8.661652	55.10007095	0.024695
10/18/2024	7:00:00 AM	29.48293	6.969416	321.9062	11.16355	8.649933	54.84002304	0.02457
10/18/2024	8:00:00 AM	24.42728	6.963325	323.0267	11.1741	8.63562	54.90445328	0.0246
10/18/2024	9:00:00 AM	25.4121	6.970188	321.4985	11.19903	8.621796	54.82596588	0.024561
10/18/2024	10:00:00 AM	30.0116	6.973074	322.2137	11.19636	8.608765	54.81792068	0.024557
10/18/2024	11:00:00 AM	26.34292	6.970641	321.558	11.1947	8.59491	54.61255264	0.024457

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10/18/2024	12:00:00 PM	28.10435	6.979577	321.5819	11.21791	8.576782	54.41853714	0.024363
10/18/2024	1:00:00 PM	42.74452	6.989632	319.6698	11.23179	8.558044	53.93697739	0.024131
10/18/2024	2:00:00 PM	33.62615	7.000712	321.0669	11.26816	8.530975	53.33249664	0.023839
10/18/2024	3:00:00 PM	26.35874	7.00567	322.1279	11.29938	8.519318	52.58782959	0.023481
10/18/2024	4:00:00 PM	32.6543	7.009756	326.0594	11.30597	8.50061	52.74783325	0.023556
10/18/2024	5:00:00 PM	30.42523	7.015678	324.3142	11.31124	8.473511	53.11594009	0.023732
10/18/2024	6:00:00 PM	27.94034	7.021046	324.3309	11.3269	8.451996	53.54780579	0.023938
10/18/2024	7:00:00 PM	29.89153	7.020256	323.9423	11.31765	8.456116	53.03717804	0.023693
10/18/2024	8:00:00 PM	26.57644	7.023457	324.8459	11.32729	8.425842	53.66201019	0.023991
10/18/2024	9:00:00 PM	28.23347	7.020836	320.8547	11.30391	8.396698	55.75910568	0.024996
10/18/2024	10:00:00 PM	30.55776	7.015119	319.15	11.26538	8.380035	57.24147415	0.025707
10/18/2024	11:00:00 PM	25.09933	7.019821	317.1688	11.27962	8.374023	57.37088013	0.025769
10/18/2024	12:00:00 AM	28.08813	7.015301	317.4763	11.25159	8.382019	58.12784576	0.026133
10/18/2024	1:00:00 AM	27.4494	7.017062	315.2376	11.25336	8.381317	59.32371902	0.026707
10/18/2024	2:00:00 AM	31.67861	7.019407	316.9971	11.24251	8.378693	59.37118149	0.026729
10/18/2024	3:00:00 AM	27.25983	7.018878	316.7277	11.23595	8.385284	59.24173355	0.026667
10/18/2024	4:00:00 AM	29.31687	7.017709	318.3847	11.24289	8.39743	59.06689072	0.026584
10/18/2024	5:00:00 AM	24.3062	7.040887	330.2866	11.25874	8.417328	58.22478485	0.026181
10/18/2024	6:00:00 AM	28.38305	7.032334	313.0489	11.24332	8.42572	58.9540863	0.026532
10/18/2024	7:00:00 AM	34.04923	7.030822	313.087	11.23671	8.453888	58.74813843	0.026435
10/18/2024	8:00:00 AM	26.50374	6.998545	308.6525	11.25416	8.46402	58.25693893	0.0262
10/18/2024	9:00:00 AM	29.97418	6.987501	310.8125	11.24458	8.477386	57.94817352	0.026052
10/18/2024	10:00:00 AM	26.70231	6.978909	314.7989	11.2567	8.483978	56.97457504	0.025585
10/18/2024	11:00:00 AM	30.48493	6.96272	314.2601	11.26242	8.493713	56.8848381	0.025543
10/18/2024	12:00:00 PM	31.40702	6.958931	314.9443	11.26639	8.504333	56.35907364	0.025291
10/18/2024	1:00:00 PM	26.77482	6.961699	314.6248	11.28821	8.510223	56.05202103	0.025144
10/18/2024	2:00:00 PM	28.10136	6.965648	316.4988	11.31226	8.519867	55.80134964	0.025024
10/18/2024	3:00:00 PM	26.65883	6.981093	316.0411	11.33416	8.514069	55.67920303	0.024965
10/18/2024	4:00:00 PM	34.55365	6.986208	317.0424	11.33588	8.517181	55.86444855	0.025054
10/18/2024	5:00:00 PM	26.62065	6.988461	315.5404	11.35066	8.528778	55.73006821	0.02499
10/18/2024	6:00:00 PM	32.00459	6.991125	317.1259	11.35596	8.535828	55.68276978	0.024968
10/18/2024	7:00:00 PM	33.59143	6.998795	315.867	11.36502	8.544678	55.9161911	0.025081
10/18/2024	8:00:00 PM	26.94254	7.000655	316.7134	11.3594	8.556854	55.95934677	0.025102
10/18/2024	9:00:00 PM	33.50037	7.008554	315.4903	11.36387	8.561829	55.88812256	0.025068
10/18/2024	10:00:00 PM	33.01624	7.003864	317.0543	11.36006	8.561676	55.85702515	0.025053
10/18/2024	11:00:00 PM	35.82563	7.008361	315.8217	11.38225	8.55777	55.76519394	0.025009
10/18/2024	12:00:00 AM	39.80902	7.00858	316.9304	11.36281	8.557373	55.83743668	0.025043
10/18/2024	1:00:00 AM	26.04276	7.01317	314.9968	11.37489	8.558411	56.0634079	0.025152
10/18/2024	2:00:00 AM	26.06356	7.017271	316.1483	11.37334	8.555298	56.25598526	0.025244
10/18/2024	3:00:00 AM	30.88236	7.018476	315.8432	11.36219	8.554565	56.29644775	0.025264
10/18/2024	4:00:00 AM	28.06697	7.023132	316.6323	11.36973	8.554108	56.44964218	0.025337
10/18/2024	5:00:00 AM	29.93846	7.0414	316.0554	11.38936	8.531433	55.88007736	0.025062
10/18/2024	6:00:00 AM	32.94944	7.048664	317.4978	11.40918	8.505981	55.55026627	0.024903
10/18/2024	7:00:00 AM	23.77551	7.084193	332.759	11.42782	8.495605	55.29950714	0.024782
10/18/2024	8:00:00 AM	26.2648	7.056409	308.5166	11.42703	8.482666	54.87229919	0.024576
10/18/2024	9:00:00 AM	30.04109	7.057949	311.1654	11.44526	8.476929	54.25053787	0.024277
10/18/2024	10:00:00 AM	29.12528	7.057946	315.5833	11.42273	8.482574	53.64485168	0.023986

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10/19/2024	11:00:00 AM	28.3209	7.069501	316.7444	11.43332	8.444916	54.14483643	0.024224
10/19/2024	12:00:00 PM	26.94947	7.086373	318.0104	11.44673	8.424774	54.33972168	0.024317
10/19/2024	1:00:00 PM	21.97068	7.090272	316.1793	11.44297	8.402069	54.99688339	0.024631
10/19/2024	2:00:00 PM	25.51556	7.090113	315.6047	11.41423	8.382355	56.16740417	0.025191
10/19/2024	3:00:00 PM	27.01491	7.09362	312.2335	11.39054	8.379181	58.46397781	0.026294
10/19/2024	4:00:00 PM	26.72754	7.102572	312.8439	11.41758	8.328491	59.03089523	0.026563
10/19/2024	5:00:00 PM	23.51708	7.104195	311.8163	11.40352	8.306854	59.10301208	0.026596
10/19/2024	6:00:00 PM	21.39388	7.111523	312.4076	11.42017	8.251068	60.37910461	0.027204
10/19/2024	7:00:00 PM	23.85824	7.120746	310.8817	11.39928	8.221497	62.46203232	0.028202
10/19/2024	8:00:00 PM	25.42387	7.118947	312.162	11.38121	8.208344	63.93178558	0.028906
10/19/2024	9:00:00 PM	18.72208	7.105896	311.3776	11.34289	8.220764	65.61745453	0.029715
10/19/2024	10:00:00 PM	22.10158	7.061797	310.3142	11.24217	8.255371	68.4360733	0.03107
10/19/2024	11:00:00 PM	20.79893	7.04184	306.4137	11.2157	8.267395	66.82989502	0.0303
10/19/2024	12:00:00 AM	23.09463	7.044538	307.4222	11.23329	8.269653	65.87680817	0.029843
10/19/2024	1:00:00 AM	25.1833	7.054885	306.9096	11.23313	8.265961	67.32050323	0.030535
10/19/2024	2:00:00 AM	21.97568	7.091063	331.1902	11.21014	8.300293	67.27886963	0.030518
10/19/2024	3:00:00 AM	22.64951	7.056954	323.0244	11.28792	8.223663	61.69112015	0.027832
10/19/2024	4:00:00 AM	28.90672	6.990723	269.8069	11.29979	8.193085	61.15675354	0.027574
10/19/2024	5:00:00 AM	23.61393	7.003037	287.2568	11.30909	8.167236	60.40541077	0.027211
10/19/2024	6:00:00 AM	32.0295	7.012306	294.9243	11.34719	8.145111	59.70148087	0.026872
10/19/2024	7:00:00 AM	26.60138	7.016773	298.4219	11.34576	8.129761	58.94768906	0.02651
10/19/2024	8:00:00 AM	32.79168	7.015322	302.3511	11.33918	8.121429	58.89102936	0.026482
10/19/2024	9:00:00 AM	36.86841	7.020375	304.3395	11.3638	8.109589	58.50325012	0.026295
10/19/2024	10:00:00 AM	30.66453	7.02453	306.707	11.37224	8.097839	58.45885086	0.026273
10/19/2024	11:00:00 AM	31.88939	7.020413	307.6344	11.37849	8.087799	58.42371368	0.026256
10/19/2024	12:00:00 PM	37.96998	7.03099	309.7015	11.39506	8.069794	58.04259872	0.026072
10/19/2024	1:00:00 PM	34.27249	7.038603	309.6586	11.42469	8.05011	57.79091263	0.02595
10/19/2024	2:00:00 PM	36.39481	7.045422	311.2798	11.43698	8.037598	58.04613876	0.026071
10/19/2024	3:00:00 PM	37.05546	7.051283	310.4167	11.45486	8.023468	58.21374893	0.026151
10/19/2024	4:00:00 PM	56.37115	7.052637	312.4481	11.47429	8.013397	58.19507599	0.026141
10/19/2024	5:00:00 PM	43.46697	7.058456	312.2335	11.48051	8.0047	58.13422394	0.026111
10/19/2024	6:00:00 PM	44.80267	7.069146	313.335	11.49116	7.990692	57.85414505	0.025976
10/19/2024	7:00:00 PM	55.78435	7.065434	313.0799	11.48705	7.984955	57.88302612	0.025989
10/19/2024	8:00:00 PM	60.43686	7.073909	314.4389	11.49112	7.975952	57.86607361	0.025981
10/19/2024	9:00:00 PM	40.00163	7.07565	314.7202	11.5011	7.968414	57.5356102	0.025822
10/19/2024	10:00:00 PM	57.51865	7.081453	315.445	11.51323	7.955536	57.39894867	0.025755
10/19/2024	11:00:00 PM	63.43071	7.085971	312.9798	11.51829	7.950928	57.55911636	0.025832
10/19/2024	12:00:00 AM		7.129228	345.6288	11.51114	7.934723		
10/19/2024	1:00:00 AM	67.10285	7.127288	329.1111	11.53575	7.921295		0.025522
10/19/2024	2:00:00 AM	65.39148	7.112742	320.478	11.55985	7.892548	56.43529129	0.025289
10/19/2024	3:00:00 AM	59.0602	7.058929	294.19	11.55489	7.876434	55.89628601	0.02503
10/19/2024	4:00:00 AM	61.50134	6.989206	264.2327	11.56193	7.855896	55.83656311	0.025
10/19/2024	5:00:00 AM	63.31802		317.9079	11.57252	7.842682	55.04841232	0.024621
10/19/2024	6:00:00 AM	77.81837	6.936072	253.1725	11.59544	7.826813	54.76285934	0.024483
10/19/2024	7:00:00 AM	62.37891	6.987455	282.2333	11.58833	7.814178	54.30429077	0.024263
10/19/2024	8:00:00 AM	54.56943	7.012465	293.6011	11.59305	7.811951	53.99475861	0.024114
10/19/2024	9:00:00 AM	64.70754	7.026633	298.9965	11.60326	7.802856	53.34679031	0.023803

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10/19/2024	10:00:00 AM	64.41654	7.05406	317.9317	11.5821	7.804749	53.20411301	0.023735
10/19/2024	11:00:00 AM	71.99954	7.049803	316.1817	11.58786	7.803528	52.85424042	0.023567
10/19/2024	12:00:00 PM	62.81307	7.006246	284.5841	11.59945	7.801239	52.3016777	0.023302
10/19/2024	1:00:00 PM	77.87017	7.016694	295.6014	11.59688	7.803955	51.67564392	0.023002
10/19/2024	2:00:00 PM	73.79706	7.023383	301.4856	11.60662	7.813873	51.35385132	0.022848
10/19/2024	3:00:00 PM	71.9325	7.025747	303.0377	11.59149	7.824097	51.45180511	0.022896
10/19/2024	4:00:00 PM	72.08718	7.027591	306.0179	11.60447	7.826569	51.16614151	0.022759
10/19/2024	5:00:00 PM	79.81188	7.040947	308.0684	11.63518	7.811981	49.9606781	0.02218
10/19/2024	6:00:00 PM	101.078	7.0507	310.226	11.65026	7.803589	49.81830597	0.022112
10/19/2024	7:00:00 PM	97.074	7.055184	309.8875	11.6602	7.814941	49.68442154	0.022048
10/19/2024	8:00:00 PM	90.06881	7.057298	311.5731	11.67678	7.8302	49.34592819	0.021887
10/19/2024	9:00:00 PM	123.258	7.068126	312.5745	11.71086	7.848663	48.2405014	0.021358
10/19/2024	10:00:00 PM	125.1531	7.070011	313.6926	11.72371	7.862091	48.62008667	0.021541
10/19/2024	11:00:00 PM	172.78	7.070631	313.6426	11.77861	7.882507	48.15797043	0.02132
10/19/2024	12:00:00 AM	214.1587	7.06302	313.0775	11.80887	7.923462	47.30332565	0.020913
10/19/2024	1:00:00 AM	362.5834	7.044019	311.8044	11.85249	7.960419	48.13039017	0.021311
10/19/2024	2:00:00 AM	591.2139	7.03011	312.0547	11.92572	7.994476	49.13558197	0.021795
10/19/2024	3:00:00 AM	993.7809	7.018969	309.723	12.07785	8.03775	49.61573029	0.022028
10/19/2024	4:00:00 AM	1242.792	7.006729	310.505	12.157	8.077606	48.47702789	0.021484
10/19/2024	5:00:00 AM	1208.481	6.990465	310.6337	12.23104	8.079407	46.12599564	0.020356
10/19/2024	6:00:00 AM	1265.685	6.98194	312.7819	12.30634	8.078125	42.78694916	0.018756
10/19/2024	7:00:00 AM	1297.501	6.971853	312.0142	12.38264	8.092285	41.48542023	0.018133
10/19/2024	8:00:00 AM	1419.759	6.96095	312.7247	12.4534	8.078918	38.91500854	0.016901
10/19/2024	9:00:00 AM	1635.608	6.943363	310.3596	12.49116	8.072235	37.8380127	0.016386
10/19/2024	10:00:00 AM	1353.782	6.936846	306.8095	12.54609	8.07373	36.4600029	0.015727
10/19/2024	11:00:00 AM	347.0371	6.913674	299.6855	12.54784	8.091614	34.89658356	0.01498
10/19/2024	12:00:00 PM	0.282221	6.889046	288.7087	12.56194	8.107086	33.49656296	0.014312
10/19/2024	1:00:00 PM	1294.36	6.868123	298.2956	12.55587	8.126373	33.81618881	0.014465
10/19/2024	2:00:00 PM	1403.825	6.847331	296.5337	12.55718	8.160065	33.75617981	0.014438
10/19/2024	3:00:00 PM	1323.386	6.840364	301.3068	12.5638	8.168945	32.57395554	0.013874
10/19/2024	4:00:00 PM	1376.231	6.817706	304.1773	12.58409	8.173279	31.14116478	0.01319
10/19/2024	5:00:00 PM	1382.5	6.815437	304.4778	12.59628	8.193817	30.78805923	0.013023
10/19/2024	6:00:00 PM	1479.929	6.799785	304.0939	12.61404	8.212677	29.60520363	0.01246
10/19/2024	7:00:00 PM	1525.042	6.778608	300.9539	12.58084	8.247375	29.43001747	0.012378
10/19/2024	8:00:00 PM	982.32	6.768587	296.145	12.59017	8.281525	28.70611191	0.012034
10/19/2024	9:00:00 PM	1186.318	6.758543	295.1985	12.56071	8.323273	28.65063477	0.012009
10/19/2024	10:00:00 PM	1005.379	6.745205	298.3242	12.57468	8.356995	28.36617851	0.011874
10/19/2024	11:00:00 PM	1877.217	6.747213	301.8003	12.55067	8.39505	28.62331772	0.011998
10/19/2024	12:00:00 AM	1226.526	6.741838	301.6716	12.54655	8.421387	28.46832085	0.011925
10/19/2024	1:00:00 AM	924.3281	6.739463	300.7537	12.53942	8.458679	28.42203712	0.011904
10/19/2024	2:00:00 AM	417.8426	6.739247	298.5364	12.5298	8.497101	27.98867607	0.011699
10/19/2024	3:00:00 AM	13.38114	6.732684	294.7646	12.50416	8.537903	27.96081352	0.011686
10/19/2024	4:00:00 AM	4.846603	6.72482	290.6781	12.49763	8.559631	28.00162888	0.011706
10/19/2024	5:00:00 AM	2.235228	6.713216	290.4301	12.48152	8.568695	27.50612831	0.011471
10/19/2024	6:00:00 AM	1.418906	6.702421	290.1417	12.47912	8.592773	27.56242561	0.011498
10/19/2024	7:00:00 AM	0.421431	6.699898	290.2561	12.47666	8.608154	27.15014839	0.011303
10/19/2024	8:00:00 AM	0.378822	6.703759	289.4908	12.46249	8.63031	26.85067558	0.011161

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10/20/2024	9:00:00 AM	0.608033	6.7075	290.7091	12.4376	8.657776	26.86758804	0.01117
10/20/2024	10:00:00 AM	0.916459	6.704612	289.66	12.424	8.695648	26.65743065	0.011071
10/20/2024	11:00:00 AM	38.67759	6.711447	290.0654	12.4049	8.721344	27.89665031	0.011661
10/20/2024	12:00:00 PM	16.12603	6.714551	288.5872	12.40151	8.730804	28.30158997	0.011853
10/20/2024	1:00:00 PM	11.40179	6.714913	287.9339	12.38496	8.723358	28.78780746	0.012085
10/20/2024	2:00:00 PM	9.606433	6.717899	285.9312	12.36513	8.729187	29.00909424	0.01219
10/20/2024	3:00:00 PM	10.84053	6.715603	288.1461	12.33846	8.755432	28.91257668	0.012145
10/20/2024	4:00:00 PM	6.971441	6.715405	287.3593	12.27878	8.775055	28.68642044	0.012038
10/20/2024	5:00:00 PM	5.983598	6.713078	288.611	12.24261	8.803558	28.51864815	0.011959
10/20/2024	6:00:00 PM	5.50446	6.717005	285.6785	12.24234	8.806091	28.62307549	0.012008
10/20/2024	7:00:00 PM	146.8174	6.720082	284.9632	12.25258	8.826172	28.80518723	0.012096
10/20/2024	8:00:00 PM	223.9974	6.72014	284.4768	12.26658	8.831024	28.78312874	0.012085
10/20/2024	9:00:00 PM	96.3432	6.715066	284.7367	12.25659	8.849091	29.1856575	0.012278
10/20/2024	10:00:00 PM	4.960698	6.726401	285.0538	12.24459	8.846039	28.9641304	0.012172
10/20/2024	11:00:00 PM	3.598734	6.719597	284.6795	12.26451	8.859894	28.87542915	0.01213
10/20/2024	12:00:00 AM	5.181857	6.718062	284.9107	12.25881	8.880615	29.01405334	0.012197
10/20/2024	1:00:00 AM	7.012291	6.718609	284.1597	12.25931	8.890076	29.16653252	0.01227
10/20/2024	2:00:00 AM	27.31935	6.710595	282.8437	12.25606	8.88147	28.84029961	0.012114
10/20/2024	3:00:00 AM	290.8635	6.70748	285.0371	12.21241	8.860992	26.88838387	0.011184
10/20/2024	4:00:00 AM	2055.805	6.707361	284.8249	12.18648	8.878265	27.10374641	0.011287
10/20/2024	5:00:00 AM	1035.861	6.705482	285.5211	12.19656	8.896362	27.02125359	0.011248
10/20/2024	6:00:00 AM	679.9151	6.719535	285.0729	12.15114	8.878967	27.47023964	0.011462
10/20/2024	7:00:00 AM	734.1042	6.711763	288.4989	12.13431	8.880249	29.17243576	0.012272
10/20/2024	8:00:00 AM	670.8526	6.712188	288.6778	12.09788	8.907013	29.30806923	0.012337
10/20/2024	9:00:00 AM	1952.533	6.718424	289.0974	12.07551	8.899933	29.46268654	0.012411
10/20/2024	10:00:00 AM	1417.268	6.722047	290.7353	12.06784	8.899841	29.51754761	0.012437
10/20/2024	11:00:00 AM	1605.655	6.725998	290.8665	12.02685	8.924194	29.13684654	0.012256
10/20/2024	12:00:00 PM	1081.005	6.73117	291.751	12.01221	8.928925	29.33898163	0.012353
10/20/2024	1:00:00 PM	431.5891	6.738258	294.7479	11.99403	8.921753	29.57360649	0.012464
10/20/2024	2:00:00 PM	260.1488	6.742007	296.2404	11.96052	8.907043	29.59874344	0.012476
10/20/2024	3:00:00 PM	254.0851	6.741091	297.1774	11.94603	8.917419	30.37726593	0.012848
10/20/2024	4:00:00 PM	224.9132	6.748172	296.6886	11.92023	8.899078	30.73873901	0.01302
10/20/2024	5:00:00 PM	211.3563	6.748861	299.0299	11.89285	8.904449	30.73037148	0.013016
10/20/2024	6:00:00 PM	199.9514	6.751141	301.4904	11.8891	8.929382	31.00171089	0.013146
10/20/2024	7:00:00 PM	203.2389	6.759485	305.0404	11.85654	8.947266	31.21603775	0.013249
10/20/2024	8:00:00 PM	196.7403	6.765218	306.4757	11.8431	8.957214	31.25486755	0.013268
10/20/2024	9:00:00 PM	202.5213	6.770322	307.241	11.83899	8.972351	31.37697411	0.013327
10/20/2024	10:00:00 PM	151.8763	6.772696	307.9014	11.83155	8.996429	31.61318016	0.01344
10/20/2024	11:00:00 PM	176.535	6.777879	309.2414	11.80909	8.991486	31.74859619	0.013505
10/20/2024	12:00:00 AM	154.9956	6.779939	309.9995	11.79828	9.010834	31.93154335	0.013593
10/20/2024	1:00:00 AM	168.015	6.782715	311.802	11.80464	9.018982	32.10359573	0.013675
10/20/2024	2:00:00 AM	149.3117	6.786526	311.3633	11.79086	9.020508	32.09990311	0.013673
10/20/2024	3:00:00 AM	120.3599	6.789951	310.9198	11.77396	9.019196	32.23881531	0.01374
10/20/2024	4:00:00 AM	140.0256	6.792619	311.9832	11.77962	9.028961	32.33110428	0.013784
10/20/2024	5:00:00 AM	125.5313	6.796347	311.8187	11.76299	9.033173	32.49577332	0.013863
10/20/2024	6:00:00 AM	157.243	6.794582	313.6974	11.76605	9.028595	32.35512543	0.013796
10/20/2024	7:00:00 AM	132.3532	6.796184	313.9835	11.75186	9.003662	32.40442657	0.013819

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10/20/2024	8:00:00 AM	104.8156	6.801613	312.9011	11.74707	9.002228	32.39523315	0.013814
10/20/2024	9:00:00 AM	107.1099	6.805142	314.5605	11.74552	9.022827	32.8552475	0.014035
10/20/2024	10:00:00 AM	86.31364	6.810037	313.0465	11.73276	8.997009	32.59926987	0.013911
10/20/2024	11:00:00 AM	107.992	6.815334	314.8323	11.72816	9.02475	32.76522446	0.013992
10/20/2024	12:00:00 PM	99.21552	6.816641	313.9907	11.73528	9.048737	33.07312775	0.01414
10/20/2024	1:00:00 PM	85.61852	6.824965	314.2219	11.71399	9.044495	33.03129196	0.01412
10/20/2024	2:00:00 PM	90.69802	6.820868	311.4586	11.70269	8.993073	32.67499161	0.013948
10/20/2024	3:00:00 PM	92.9155	6.819616	312.9988	11.69591	9.014465	33.31297684	0.014253
10/20/2024	4:00:00 PM	88.90253	6.830955	310.8054	11.69485	9.036743	33.44802094	0.014319
10/20/2024	5:00:00 PM	86.61157	6.837982	314.2219	11.69353	9.045258	33.40867615	0.0143
10/20/2024	6:00:00 PM	91.92191	6.835548	313.2492	11.69773	9.016937	33.42868423	0.014309
10/20/2024	7:00:00 PM	101.1782	6.836914	315.1446	11.69464	9.008118	33.37158585	0.014281
10/20/2024	8:00:00 PM	92.95437	6.841361	313.5353	11.6693	9.024139	34.01511383	0.01459
10/20/2024	9:00:00 PM	79.68992	6.837564	314.6368	11.69358	9.010223	33.63780212	0.014409
10/20/2024	10:00:00 PM	81.37768	6.84365	311.4181	11.68466	9.00473	33.69601059	0.014436
10/20/2024	11:00:00 PM	106.121	6.845107	313.0227	11.68725	8.992645	33.48711395	0.014336
10/20/2024	12:00:00 AM	98.27634	6.855614	312.5435	11.67867	9.010651	34.1779747	0.014667
10/20/2024	1:00:00 AM	82.42044	6.854982	315.9552	11.66484	8.992981	33.63174438	0.014405
10/20/2024	2:00:00 AM	78.61107	6.858665	315.321	11.67549	8.985901	33.96320343	0.014564
10/20/2024	3:00:00 AM	78.97993	6.863651	315.1661	11.67214	8.997101	34.13652039	0.014647
10/20/2024	4:00:00 AM	86.53056	6.867706	314.7321	11.68348	9.005035	34.40320206	0.014775
10/20/2024	5:00:00 AM	83.2103	6.867846	314.7035	11.67422	9.004211	34.82204819	0.014975
10/20/2024	6:00:00 AM	77.15292	6.870202	313.8905	11.68997	9.006195	34.96237564	0.015043
10/20/2024	7:00:00 AM	74.04385	6.870432	313.6044	11.67503	9.019287	35.87700272	0.015481
10/20/2024	8:00:00 AM	75.45157	6.876774	314.1361	11.68427	8.98819	34.42949295	0.014787
10/20/2024	9:00:00 AM	83.28915	6.878685	313.9334	11.67099	9.002747	34.88510513	0.015006
10/20/2024	10:00:00 AM	95.16637	6.878743	312.8701	11.66774	9.004547	35.0450592	0.015082
10/20/2024	11:00:00 AM	81.2738	6.882788	312.1477	11.66684	9.010315	35.26337051	0.015187
10/20/2024	12:00:00 PM	88.6366	6.882854	312.8558	11.68206	9.00592	34.69562912	0.014915
10/20/2024	1:00:00 PM	122.9698	6.883512	312.2574	11.66838	9.021637	35.52898026	0.015315
10/20/2024	2:00:00 PM	81.1252	6.890385	312.2288	11.68157	9.031891	35.1567688	0.015137
10/20/2024	3:00:00 PM	115.9802	6.892024	313.2277	11.72508	9.039001	35.27846146	0.015195
10/20/2024	4:00:00 PM	125.7451	6.89755	312.0786	11.74196	9.050964	35.04526901	0.015084
10/20/2024	5:00:00 PM	103.1852	6.900095	312.6341	11.7851	9.062958	34.9691658	0.015048
10/20/2024	6:00:00 PM	172.3958	6.913965	311.7137	11.82405	9.086151	34.52627563	0.014836
10/20/2024	7:00:00 PM	183.858	6.91361	311.5516	11.90146	9.118256	34.74646759	0.014943
10/20/2024	8:00:00 PM	189.3011	6.918612	310.3047	11.99202	9.164703	34.53475952	0.014843
10/20/2024	9:00:00 PM	216.1219	6.920166	309.7706	12.04735	9.216888	33.64328766	0.014418
10/20/2024	10:00:00 PM	306.4615	6.914151	307.3316	12.09358	9.282806	33.34899521	0.014279
10/20/2024	11:00:00 PM	361.1821	6.905781	306.8619	12.12047	9.364105	31.89868736	0.013587
10/20/2024	12:00:00 AM	496.3076	6.890257	304.6184	12.1105	9.455017	31.11344528	0.013214
10/20/2024	1:00:00 AM	817.8346	6.878095	303.8078	12.10288	9.52356	30.17856789	0.012769
10/20/2024	2:00:00 AM	1303.152	6.86444	300.7393	12.10363	9.58136	29.4452343	0.01242
10/20/2024	3:00:00 AM	1292.282	6.85633	298.4386	12.10132	9.62384	27.93112564	0.011698
10/20/2024	4:00:00 AM	694.4714	6.829868	297.4229	12.09509	9.660522	27.26197052	0.01138
10/20/2024	5:00:00 AM	650.532	6.811304	298.6365	12.08071	9.697968	26.7992363	0.01116
10/20/2024	6:00:00 AM	337.7905	6.795237	300.7918	12.09767	9.739258	26.6007576	0.011067

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10/20/2024	7:00:00 AM	1521.888	6.777352	302.7969	12.07901	9.777405	27.31331444	0.011407
10/20/2024	8:00:00 AM	2583.337	6.770223	302.6133	12.0818	9.806274	26.96845818	0.011243
10/21/2024	9:00:00 AM	2593.591	6.765024	303.3214	12.10711	9.819183	25.94954109	0.010758
10/21/2024	10:00:00 AM	1301.3	6.763838	301.4928	12.09262	9.839508	26.05187607	0.010807
10/21/2024	11:00:00 AM	2046.443	6.757156	304.4682	12.09206	9.849335	25.16392708	0.010385
10/21/2024	12:00:00 PM	2123.337	6.75345	305.4576	12.07816	9.861969	25.69262886	0.010637
10/21/2024	1:00:00 PM	2264.6	6.759479	307.3293	12.06394	9.873718	25.93556023	0.010753
10/21/2024	2:00:00 PM	1524.341	6.757643	308.1852	12.06162	9.87442	25.4954071	0.010543
10/21/2024	3:00:00 PM	1559.019	6.765976	309.1555	12.04858	9.879456	26.05377007	0.010809
10/21/2024	4:00:00 PM	1694.849	6.774039	307.1528	12.05705	9.879578	26.43291855	0.01099
10/21/2024	5:00:00 PM	1734.861	6.770855	306.4376	12.05087	9.876709	26.41894722	0.010983
10/21/2024	6:00:00 PM	1214.787	6.771604	303.424	12.04322	9.871979	26.55986786	0.01105
10/21/2024	7:00:00 PM	954.0938	6.774865	306.6187	12.02377	9.85788	26.51580429	0.011029
10/21/2024	8:00:00 PM	866.9255	6.776855	308.3354	12.01513	9.840729	26.65997505	0.011097
10/21/2024	9:00:00 PM	968.8973	6.782578	304.6065	12.03078	9.832581	26.72258949	0.011127
10/21/2024	10:00:00 PM	1829.745	6.782171	298.8964	12.05189	9.816864	26.72706413	0.011128
10/21/2024	11:00:00 PM	1718.753	6.772748	298.5483	12.02596	9.793243	27.2346611	0.01137
10/21/2024	12:00:00 AM	1337.079	6.779005	300.3674	12.01276	9.765991	27.0691433	0.01129

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Date Time	Time	Turbidity (NTU)	pH (pH)	ORP (mV)	DO (mg/L)	Temperature (C)	Specific Conductivity (µS/cm)	Salinity (psu)
10/14/2024	12:00:00 AM	35.83158	7.380758	530.2163	10.36591	8.746173	39.90979	0.020058
10/14/2024	1:00:00 AM	32.18104	7.365429	530.6121	10.37763	8.75398	39.87406	0.020038
10/14/2024	2:00:00 AM	34.61296	7.367141	530.4833	10.37931	8.770155	39.63935	0.019909
10/14/2024	3:00:00 AM	32.00455	7.318339	533.0558	10.36404	8.78316	39.72539	0.019956
10/14/2024	4:00:00 AM	39.63945	7.373585	529.7418	10.35785	8.790825	39.83126	0.020014
10/14/2024	5:00:00 AM	30.04393	7.372463	529.3437	10.35692	8.806074	39.77944	0.019985
10/14/2024	6:00:00 AM	30.07738	7.338728	530.9435	10.35958	8.818499	39.63383	0.019905
10/14/2024	7:00:00 AM	29.60027	7.332367	531.3226	10.36057	8.830335	39.51637	0.01984
10/14/2024	8:00:00 AM	30.16316	7.342763	530.965	10.35209	8.837847	39.69954	0.01994
10/14/2024	9:00:00 AM	28.59001	7.370578	529.6202	10.36178	8.851627	39.52036	0.019842
10/14/2024	10:00:00 AM	35.71428	7.362657	530.1901	10.33155	8.859449	39.64705	0.019911
10/14/2024	11:00:00 AM	26.17954	7.383474	529.0219	10.34609	8.85501	39.79703	0.019993
10/14/2024	12:00:00 PM	27.3709	7.392761	528.7381	10.35388	8.867702	39.48564	0.019823
10/14/2024	1:00:00 PM	25.60847	7.300206	533.8522	10.35048	8.87475	39.2816	0.019711
10/14/2024	2:00:00 PM	23.92517	7.371019	529.8754	10.35269	8.868657	39.31425	0.019729
10/14/2024	3:00:00 PM	30.85628	7.387912	529.3365	10.36926	8.857272	38.98367	0.019548
10/14/2024	4:00:00 PM	22.97772	7.369216	530.6598	10.37433	8.857068	38.89846	0.019502
10/14/2024	5:00:00 PM	23.55495	7.364831	530.9601	10.37075	8.847339	39.0208	0.019569
10/14/2024	6:00:00 PM	25.93136	7.427885	527.8393	10.35151	8.857217	39.20746	0.019671
10/14/2024	7:00:00 PM	23.03636	7.394962	529.9564	10.34461	8.866405	39.05454	0.019587
10/14/2024	8:00:00 PM	25.54086	7.417014	529.2841	10.34732	8.857672	39.42582	0.01979
10/14/2024	9:00:00 PM	21.21348	7.36489	531.8638	10.33193	8.865939	39.96268	0.020083
10/14/2024	10:00:00 PM	24.60389	7.354833	532.4884	10.28649	8.888938	41.15527	0.020735
10/14/2024	11:00:00 PM	24.71595	7.354869	532.5051	10.29089	8.893571	40.88997	0.02059
10/14/2024	12:00:00 AM	21.73323	7.413033	529.5773	10.30839	8.887402	40.16268	0.020192
10/14/2024	1:00:00 AM	22.65738	7.390464	530.9554	10.28479	8.876411	40.74202	0.020509
10/14/2024	2:00:00 AM	24.99017	7.372191	532.076	10.27521	8.906006	40.88924	0.020589
10/14/2024	3:00:00 AM	23.38632	7.37139	532.0306	10.27352	8.904644	40.84173	0.020563
10/14/2024	4:00:00 AM	21.29209	7.353679	532.9104	10.27371	8.897705	40.37292	0.020307
10/14/2024	5:00:00 AM	22.95735	7.338965	533.6948	10.29699	8.894696	39.38417	0.019766
10/14/2024	6:00:00 AM	23.46408	7.358848	532.6577	10.28779	8.89168	39.63655	0.019904
10/14/2024	7:00:00 AM	20.83172	7.319562	534.7367	10.29879	8.887345	38.86264	0.019481
10/14/2024	8:00:00 AM	21.24896	7.361713	531.8661	10.30863	8.86912	38.99548	0.019555
10/14/2024	9:00:00 AM	22.42582	7.319796	533.8498	10.30462	8.869324	38.64309	0.019362
10/14/2024	10:00:00 AM	21.36081	7.375392	530.5906	10.30522	8.8571	38.65619	0.019369
10/14/2024	11:00:00 AM	23.17065	7.286619	535.4448	10.31392	8.846426	38.39119	0.019225
10/14/2024	12:00:00 PM	25.2142	7.363041	531.2582	10.30949	8.826913	38.58133	0.019329
10/14/2024	1:00:00 PM	24.1541	7.361994	531.2129	10.32556	8.819386	38.18727	0.019114
10/14/2024	2:00:00 PM	19.3052	7.349826	531.654	10.33159	8.807612	38.03575	0.019032
10/14/2024	3:00:00 PM	25.54945	7.302805	534.3052	10.33509	8.788224	38.02396	0.019026
10/14/2024	4:00:00 PM	22.57467	7.366878	530.7098	10.33634	8.776519	38.02085	0.019024
10/14/2024	5:00:00 PM	26.01131	7.341298	532.219	10.33573	8.762581	37.98186	0.019004
10/14/2024	6:00:00 PM	27.15613	7.360396	531.2629	10.34825	8.752216	37.95792	0.018991

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10/14/2024	7:00:00 PM	29.40887	7.286181	535.2326	10.35616	8.747798	37.83332	0.018923
10/14/2024	8:00:00 PM	32.3286	7.328379	532.9653	10.36431	8.740457	37.8296	0.018921
10/14/2024	9:00:00 PM	38.96244	7.33536	532.4908	10.3552	8.741708	37.82031	0.018916
10/14/2024	10:00:00 PM	33.64912	7.339458	531.8733	10.36278	8.745972	37.72935	0.018866
10/14/2024	11:00:00 PM	39.48043	7.385758	529.4415	10.36904	8.741591	37.51886	0.018751
10/14/2024	12:00:00 AM	44.8013	7.329492	532.6052	10.37971	8.730313	37.51324	0.018748
10/14/2024	1:00:00 AM	43.37195	7.380399	529.7943	10.39305	8.731625	37.39347	0.018683
10/14/2024	2:00:00 AM	42.23289	7.349277	531.5204	10.38437	8.745027	37.34445	0.018656
10/14/2024	3:00:00 AM	51.45566	7.380869	529.6083	10.38445	8.756992	37.6221	0.018807
10/14/2024	4:00:00 AM	46.03933	7.355927	530.7861	10.35585	8.770694	37.57383	0.01878
10/14/2024	5:00:00 AM	50.9926	7.366507	530.202	10.37146	8.769997	37.91967	0.018969
10/14/2024	6:00:00 AM	53.1402	7.254587	536.1076	10.37566	8.774306	37.92494	0.018972
10/14/2024	7:00:00 AM	57.22227	7.321294	532.25	10.37909	8.78822	38.01358	0.01902
10/14/2024	8:00:00 AM	53.29702	7.29775	533.2132	10.39291	8.80527	37.88656	0.01895
10/14/2024	9:00:00 AM	65.88822	7.301541	533.2037	10.40844	8.819391	37.99695	0.01901
10/14/2024	10:00:00 AM	47.68738	7.394196	527.7797	10.42636	8.842237	37.8713	0.018941
10/14/2024	11:00:00 AM	48.67538	7.358581	529.8348	10.42937	8.870194	37.97304	0.018996
10/14/2024	12:00:00 PM	55.50407	7.40418	527.8702	10.44463	8.895879	38.13153	0.019082
10/14/2024	1:00:00 PM	53.22385	7.384891	529.0933	10.44207	8.926332	38.06477	0.019044
10/14/2024	2:00:00 PM	53.16153	7.386335	529.1911	10.45688	8.950448	38.17897	0.019106
10/14/2024	3:00:00 PM	50.75007	7.430409	527.7582	10.4623	8.967957	37.87709	0.018941
10/14/2024	4:00:00 PM	55.79432	7.450416	527.7153	10.46153	8.988997	37.83608	0.018918
10/14/2024	5:00:00 PM	64.9315	7.436553	529.1482	10.45584	9.010839	37.76177	0.018876
10/14/2024	6:00:00 PM	55.13031	7.475852	527.4053	10.46565	9.044622	37.85589	0.018927
10/14/2024	7:00:00 PM	58.91977	7.496473	526.8594	10.45801	9.070437	37.8751	0.018937
10/14/2024	8:00:00 PM	63.42892	7.490156	527.8798	10.49415	9.080827	36.67925	0.018283
10/14/2024	9:00:00 PM	65.3736	7.458098	530.3999	10.53841	9.092774	36.20135	0.018022
10/14/2024	10:00:00 PM	61.43556	7.480172	530.0923	10.56357	9.109471	36.33638	0.018095
10/14/2024	11:00:00 PM	83.12197	7.510967	529.2722	10.60694	9.138284	36.95625	0.018433
10/14/2024	12:00:00 AM	83.59885	7.55476	527.2146	10.61899	9.171695	37.7894	0.018887
10/14/2024	1:00:00 AM	99.54898	7.556513	527.248	10.61732	9.202044	38.22241	0.019123
10/14/2024	2:00:00 AM	99.63327	7.559799	527.4745	10.60874	9.206338	37.99178	0.018997
10/14/2024	3:00:00 AM	85.74485	7.545979	528.1087	10.60019	9.188684	37.51735	0.018738
10/15/2024	4:00:00 AM	113.1651	7.573811	526.9786	10.5913	9.173814	38.47521	0.019262
10/15/2024	5:00:00 AM	115.0458	7.553892	528.0825	10.58119	9.162207	38.02066	0.019014
10/15/2024	6:00:00 AM	95.97141	7.556599	527.8297	10.55455	9.160784	36.82581	0.018361
10/15/2024	7:00:00 AM	137.3175	7.516541	529.9135	10.53503	9.161821	35.63187	0.017709
10/15/2024	8:00:00 AM	107.0758	7.503026	530.7194	10.5253	9.158621	34.5174	0.017101
10/15/2024	9:00:00 AM	133.235	7.516174	529.5201	10.51872	9.155091	33.6484	0.016627
10/15/2024	10:00:00 AM	124.1671	7.480993	531.3512	10.53419	9.145422	32.18123	0.015827
10/15/2024	11:00:00 AM	135.4113	7.466795	532.064	10.53758	9.121847	30.84458	0.015099
10/15/2024	12:00:00 PM	194.3008	7.459754	532.3716	10.56654	9.08884	29.22448	0.014218
10/15/2024	1:00:00 PM	231.251	7.405109	535.5378	10.5814	9.086866	28.19515	0.013658
10/15/2024	2:00:00 PM	315.8157	7.478791	530.767	10.59496	9.078516	27.80703	0.013447
10/15/2024	3:00:00 PM	467.2949	7.421625	531.828	10.6078	9.066514	27.55074	0.013308
10/15/2024	4:00:00 PM	435.2184	7.427938	530.2115	10.6334	9.057068	27.1448	0.013088
10/15/2024	5:00:00 PM	497.5367	7.473564	525.7269	10.63049	9.071033	27.78047	0.013433

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10/15/2024	6:00:00 PM	561.2021	7.343505	532.6982	10.64223	9.041437	28.4626	0.013804
10/15/2024	7:00:00 PM	585.7317	7.485253	523.0876	10.66407	9.035012	28.66711	0.013916
10/15/2024	8:00:00 PM	687.1447	7.425564	523.574	10.6578	9.061535	27.9244	0.013511
10/15/2024	9:00:00 PM	603.5562	7.463983	518.2167	10.65651	9.087257	26.8578	0.012931
10/15/2024	10:00:00 PM	568.0736	7.392546	520.856	10.65083	9.121372	26.40411	0.012684
10/15/2024	11:00:00 PM	607.0622	7.277384	524.2344	10.66251	9.125927	25.17344	0.012017
10/15/2024	12:00:00 AM	532.9508	7.395653	517.275	10.65374	9.134774	24.53558	0.011671
10/15/2024	1:00:00 AM	551.6669	7.396403	517.325	10.62181	9.141768	25.16348	0.012011
10/15/2024	2:00:00 AM	540.8192	7.41042	515.823	10.62089	9.122728	25.14835	0.012003
10/15/2024	3:00:00 AM	555.2148	7.378712	517.1248	10.62774	9.103363	24.27762	0.011532
10/15/2024	4:00:00 AM	585.549	7.402182	515.7037	10.63613	9.093553	24.43652	0.011618
10/15/2024	5:00:00 AM	485.4984	7.264222	522.327	10.66697	9.065395	23.84998	0.011301
10/15/2024	6:00:00 AM	513.7823	7.305121	520.4602	10.67955	9.043095	22.55696	0.010603
10/15/2024	7:00:00 AM	500.7931	7.291876	521.3376	10.69753	9.019177	21.94063	0.010271
10/15/2024	8:00:00 AM	494.0624	7.298315	521.5188	10.72164	9.008158	21.37552	0.009966
10/15/2024	9:00:00 AM	487.0617	7.229806	526.342	10.71501	8.984586	21.1127	0.009825
10/15/2024	10:00:00 AM	551.0684	7.372023	518.1809	10.72959	8.964436	20.84278	0.00968
10/15/2024	11:00:00 AM	519.3008	7.345093	521.0563	10.72993	8.961226	20.51842	0.009506
10/15/2024	12:00:00 PM	485.1314	7.300764	524.9758	10.73058	8.939364	19.99688	0.009226
10/15/2024	1:00:00 PM	479.2809	7.208292	531.1366	10.75094	8.927807	19.89988	0.009174
10/15/2024	2:00:00 PM	443.6844	7.258929	528.9336	10.73821	8.911145	19.80548	0.009123
10/15/2024	3:00:00 PM	454.3576	7.269469	528.6141	10.74404	8.902623	19.62849	0.009028
10/15/2024	4:00:00 PM	446.5836	7.269696	528.061	10.75106	8.887912	19.6616	0.009047
10/15/2024	5:00:00 PM	420.0349	7.250132	530.3307	10.73797	8.870236	19.61482	0.009022
10/15/2024	6:00:00 PM	403.6152	7.298112	527.2957	10.74771	8.856972	19.79619	0.009119
10/15/2024	7:00:00 PM	401.8255	7.279552	527.9585	10.75482	8.849041	19.44748	0.008932
10/15/2024	8:00:00 PM	379.8107	7.332734	525.6005	10.75498	8.840545	19.39281	0.008903
10/15/2024	9:00:00 PM	366.5416	7.283511	528.6284	10.75436	8.826654	19.55056	0.008988
10/15/2024	10:00:00 PM	333.5016	7.281406	529.0266	10.76192	8.816946	19.69335	0.009065
10/15/2024	11:00:00 PM	353.2183	7.294451	528.2422	10.74805	8.804765	19.95456	0.009205
10/15/2024	12:00:00 AM	310.586	7.286299	528.9527	10.755	8.793221	20.15052	0.009311
10/15/2024	1:00:00 AM	346.6326	7.30348	528.2184	10.7536	8.78949	20.08927	0.009278
10/15/2024	2:00:00 AM	345.0106	7.297222	528.7691	10.75005	8.786464	20.02668	0.009244
10/15/2024	3:00:00 AM	436.4727	7.252809	531.7708	10.74943	8.775076	20.22599	0.009352
10/15/2024	4:00:00 AM	278.1063	7.3036	529.1172	10.73861	8.760151	20.527	0.009514
10/15/2024	5:00:00 AM	302.4246	7.238117	532.4336	10.74258	8.741528	20.71925	0.009618
10/15/2024	6:00:00 AM	311.5443	7.269605	530.9745	10.73353	8.737249	20.75837	0.009639
10/15/2024	7:00:00 AM	275.5331	7.206469	535.3614	10.73001	8.736167	20.70192	0.009608
10/15/2024	8:00:00 AM	273.4781	7.111092	540.0797	10.72707	8.725253	21.03534	0.009788
10/15/2024	9:00:00 AM	268.8429	7.2579	532.5218	10.72721	8.720507	20.88178	0.009705
10/15/2024	10:00:00 AM	329.3317	7.290746	530.7456	10.73297	8.715486	20.82637	0.009676
10/15/2024	11:00:00 AM	279.7927	7.16697	537.3808	10.73107	8.701115	20.95695	0.009746
10/15/2024	12:00:00 PM	261.4131	7.285686	531.2939	10.72289	8.699082	20.99185	0.009765
10/15/2024	1:00:00 PM	307.6559	7.274398	531.983	10.7277	8.687796	21.06132	0.009803
10/15/2024	2:00:00 PM	270.7521	7.265989	532.5599	10.72994	8.675058	21.1514	0.009851
10/15/2024	3:00:00 PM	273.2278	7.176807	538.4036	10.7139	8.675794	21.07339	0.009809
10/15/2024	4:00:00 PM	263.6887	7.258932	532.8151	10.73255	8.664638	21.06925	0.009807

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10/15/2024	5:00:00 PM	307.0585	7.329891	529.2078	10.72044	8.650851	21.27984	0.009921
10/15/2024	6:00:00 PM	334.7289	7.31258	529.6989	10.72548	8.649149	21.52608	0.010054
10/15/2024	7:00:00 PM	204.42	7.298959	531.0126	10.72004	8.641867	21.48468	0.010032
10/15/2024	8:00:00 PM	337.4019	7.287496	531.4847	10.72654	8.633886	21.54726	0.010066
10/15/2024	9:00:00 PM	289.0375	7.29195	531.4299	10.71361	8.625885	21.58399	0.010086
10/15/2024	10:00:00 PM	253.6863	7.285219	531.7017	10.73207	8.625655	21.71321	0.010155
10/15/2024	11:00:00 PM		8.241538	543.5296	10.66157	9.027732	0.197549	0
10/15/2024	12:00:00 AM	270.7607	7.275958	421.9623	10.72926	8.617135	21.95443	0.010286
10/15/2024	1:00:00 AM	392.9476	7.338519	427.8251	10.73644	8.624377	21.93193	0.010273
10/15/2024	2:00:00 AM	239.6577	7.240634	452.3488	10.73826	8.633091	22.13775	0.010384
10/15/2024	3:00:00 AM	290.5754	7.331212	461.2275	10.7448	8.644467	22.36485	0.010507
10/15/2024	4:00:00 AM	236.9162	7.35969	473.1818	10.75689	8.652184	22.46906	0.010563
10/15/2024	5:00:00 AM	289.8797	7.246704	489.225	10.75636	8.659328	22.52937	0.010595
10/15/2024	6:00:00 AM	247.7448	7.396829	488.8531	10.7583	8.669277	22.56657	0.010615
10/15/2024	7:00:00 AM	323.5361	7.23601	503.9712	10.75308	8.687732	22.75621	0.010717
10/15/2024	8:00:00 AM	201.7972	7.363256	501.6585	10.75373	8.704486	22.6087	0.010637
10/15/2024	9:00:00 AM	289.8284	7.237084	512.1465	10.74747	8.714838	22.95501	0.010824
10/15/2024	10:00:00 AM	360.5034	7.274828	512.7593	10.75786	8.720454	22.88228	0.010785
10/15/2024	11:00:00 AM	248.6759	7.363139	510.0938	10.75104	8.727503	23.21578	0.010965
10/15/2024	12:00:00 PM	252.5642	7.382808	511.2954	10.73298	8.733386	23.36754	0.011047
10/15/2024	1:00:00 PM	294.5707	7.364401	513.6176	10.75002	8.732484	23.31544	0.011019
10/15/2024	2:00:00 PM	255.1974	7.350932	516.0042	10.74278	8.74152	23.60009	0.011172
10/15/2024	3:00:00 PM	245.2825	7.263072	521.5331	10.73422	8.752671	23.71731	0.011236
10/15/2024	4:00:00 PM	259.1763	7.357717	517.4609	10.73613	8.762149	23.94236	0.011357
10/15/2024	5:00:00 PM	227.3895	7.259244	523.3546	10.74607	8.770934	23.89351	0.011331
10/15/2024	6:00:00 PM	309.5334	7.407999	516.0352	10.74954	8.779772	24.10373	0.011444
10/15/2024	7:00:00 PM	237.5001	7.322837	521.2708	10.753	8.772814	23.84588	0.011305
10/15/2024	8:00:00 PM	197.5122	7.354748	519.8928	10.7585	8.76671	23.82615	0.011294
10/15/2024	9:00:00 PM	377.8111	7.430446	515.8635	10.74193	8.766315	24.00138	0.011389
10/15/2024	10:00:00 PM	289.7155	7.25409	526.3396	10.73752	8.763224	24.19145	0.011492
10/15/2024	11:00:00 PM	334.8409	7.352096	521.0515	10.73811	8.756767	24.2616	0.01153
10/15/2024	12:00:00 AM	428.4679	7.421917	517.418	10.74011	8.75493	24.43336	0.011623
10/15/2024	1:00:00 AM	323.2385	7.402882	518.8509	10.73441	8.75092	24.59469	0.011711
10/15/2024	2:00:00 AM	322.485	7.376054	520.7272	10.73049	8.751356	24.57064	0.011698
10/15/2024	3:00:00 AM	378.0601	7.403051	519.3373	10.74009	8.750741	24.9634	0.01191
10/16/2024	4:00:00 AM	422.7298	7.415963	518.9081	10.74126	8.747266	25.31107	0.012099
10/16/2024	5:00:00 AM	290.906	7.38302	520.8751	10.73422	8.733352	25.35932	0.012125
10/16/2024	6:00:00 AM	258.5944	7.314735	524.6898	10.72898	8.720963	25.88111	0.012409
10/16/2024	7:00:00 AM	340.2232	7.397616	520.5365	10.7248	8.70813	25.92505	0.012433
10/16/2024	8:00:00 AM	282.6185	7.448953	517.7422	10.68636	8.707614	27.16836	0.013108
10/16/2024	9:00:00 AM	262.5728	7.385345	521.4854	10.66561	8.706437	27.77705	0.013439
10/16/2024	10:00:00 AM	271.5404	7.384809	521.6523	10.65359	8.69743	27.90501	0.013509
10/16/2024	11:00:00 AM	266.6372	7.41393	520.2742	10.61995	8.695462	28.47053	0.013816
10/16/2024	12:00:00 PM	369.182	7.412804	520.546	10.61102	8.684916	28.69022	0.013936
10/16/2024	1:00:00 PM	222.856	7.404746	521.7405	10.59705	8.668346	29.18932	0.014208
10/16/2024	2:00:00 PM	267.0862	7.342885	525.9534	10.59169	8.651473	29.03379	0.014124
10/16/2024	3:00:00 PM	210.3344	7.411057	522.7657	10.59224	8.638739	28.90206	0.014052

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10/16/2024	4:00:00 PM	234.6663	7.386649	524.9091	10.59736	8.627192	28.31581	0.013734
10/16/2024	5:00:00 PM	222.2845	7.280873	527.8846	10.59661	8.612785	28.32478	0.013739
10/16/2024	6:00:00 PM	246.4682	7.258739	532.8365	10.57625	8.606244	28.00335	0.013564
10/16/2024	7:00:00 PM	232.7059	7.419172	523.8529	10.58649	8.593644	28.07879	0.013605
10/16/2024	8:00:00 PM	347.4813	7.349374	527.9323	10.60086	8.580555	27.52637	0.013305
10/16/2024	9:00:00 PM	303.2409	7.404089	525.1356	10.57627	8.573142	27.81402	0.013462
10/16/2024	10:00:00 PM	300.4511	7.387215	526.6543	10.5803	8.559702	27.49634	0.013289
10/16/2024	11:00:00 PM	323.4787	7.312018	531.0436	10.57851	8.555717	27.36401	0.013218
10/16/2024	12:00:00 AM	157.8576	7.361484	528.3781	10.57352	8.550398	27.45959	0.01327
10/16/2024	1:00:00 AM	298.0367	7.398839	526.3444	10.57973	8.545715	27.35763	0.013214
10/16/2024	2:00:00 AM	217.0654	7.398251	526.5995	10.58853	8.54289	27.13551	0.013094
10/16/2024	3:00:00 AM	192.3049	7.317668	531.5872	10.59443	8.540985	26.93494	0.012985
10/16/2024	4:00:00 AM	255.192	7.348974	530.2044	10.59204	8.532174	27.13882	0.013096
10/16/2024	5:00:00 AM	191.9739	7.332079	531.2916	10.58516	8.530902	26.95128	0.012994
10/16/2024	6:00:00 AM	206.2681	7.405682	527.3815	10.58406	8.529346	27.16982	0.013113
10/16/2024	7:00:00 AM	272.9653	7.411536	527.093	10.59023	8.523394	27.30288	0.013185
10/16/2024	8:00:00 AM	236.9295	7.356871	530.767	10.59347	8.517608	27.14673	0.0131
10/16/2024	9:00:00 AM	297.7953	7.378769	529.5082	10.58848	8.515524	27.0038	0.013023
10/16/2024	10:00:00 AM	196.7792	7.310511	533.7139	10.57898	8.506964	27.29006	0.013178
10/16/2024	11:00:00 AM	189.8384	7.380482	529.7633	10.58727	8.502741	27.39472	0.013235
10/16/2024	12:00:00 PM	217.1345	7.407578	528.1969	10.57933	8.508801	27.29299	0.01318
10/16/2024	1:00:00 PM	205.6664	7.417004	527.5103	10.57332	8.520368	27.7404	0.013423
10/16/2024	2:00:00 PM	200.0641	7.290482	534.248	10.5586	8.540439	27.72687	0.013415
10/16/2024	3:00:00 PM	343.0119	7.387668	529.0385	10.54526	8.568363	28.07879	0.013606
10/16/2024	4:00:00 PM	211.9796	7.377174	529.8062	10.53856	8.592565	28.3658	0.013762
10/16/2024	5:00:00 PM	163.7135	7.350095	531.325	10.53055	8.610447	28.84517	0.014022
10/16/2024	6:00:00 PM	208.3278	7.34516	531.3607	10.52776	8.628827	29.0074	0.01411
10/16/2024	7:00:00 PM	225.3511	7.432514	526.6186	10.53645	8.641658	28.98773	0.014099
10/16/2024	8:00:00 PM	191.5234	7.427135	526.8904	10.52068	8.643723	29.44102	0.014346
10/16/2024	9:00:00 PM	147.1809	7.446607	525.746	10.52359	8.643624	29.8036	0.014543
10/16/2024	10:00:00 PM	190.9885	7.45042	525.7722	10.52897	8.641563	30.10203	0.014706
10/16/2024	11:00:00 PM	167.8829	7.326938	532.92	10.52657	8.643473	30.34673	0.014839
10/16/2024	12:00:00 AM	229.8881	7.370243	530.1686	10.53472	8.64302	30.52725	0.014937
10/16/2024	1:00:00 AM	337.5621	7.412261	527.8011	10.54035	8.626819	30.74702	0.015058
10/16/2024	2:00:00 AM	215.6663	7.410809	528.7691	10.54285	8.608233	30.79468	0.015084
10/16/2024	3:00:00 AM	190.2059	7.348257	532.9247	10.5383	8.592319	30.62013	0.014989
10/16/2024	4:00:00 AM	160.6626	7.262621	537.5477	10.55291	8.578116	30.2362	0.01478
10/16/2024	5:00:00 AM	103.3441	7.417217	528.1826	10.54236	8.572227	30.6804	0.015022
10/16/2024	6:00:00 AM	110.6439	7.356934	531.2797	10.52081	8.563689	31.00227	0.015198
10/16/2024	7:00:00 AM	160.1365	7.390613	529.1696	10.52018	8.552788	30.86069	0.015121
10/16/2024	8:00:00 AM	178.4014	7.36755	530.2473	10.52279	8.542466	31.0879	0.015245
10/16/2024	9:00:00 AM	104.1886	7.401341	527.8345	10.51414	8.543336	31.30653	0.015364
10/16/2024	10:00:00 AM	105.4489	7.409672	527.1788	10.52021	8.550263	31.29765	0.015359
10/16/2024	11:00:00 AM	126.4092	7.428856	526.0869	10.50702	8.549094	31.56823	0.015507
10/16/2024	12:00:00 PM	111.0629	7.420146	526.3587	10.50706	8.541335	31.64413	0.015549
10/16/2024	1:00:00 PM	104.9484	7.360944	529.5392	10.5047	8.542336	31.74473	0.015603
10/16/2024	2:00:00 PM	119.6288	7.407345	527.0883	10.49443	8.54913	31.83389	0.015652

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10/16/2024	3:00:00 PM	145.132	7.443459	525.5409	10.48212	8.552849	32.12054	0.015808
10/16/2024	4:00:00 PM	100.7088	7.400993	528.03	10.47612	8.548877	31.98816	0.015736
10/16/2024	5:00:00 PM	159.0046	7.430944	525.9009	10.47462	8.541577	31.67095	0.015563
10/16/2024	6:00:00 PM	138.3917	7.396368	527.5484	10.49476	8.527867	31.3139	0.015369
10/16/2024	7:00:00 PM	116.1358	7.408123	525.9009	10.48484	8.539198	31.0188	0.015208
10/16/2024	8:00:00 PM	173.1487	7.41317	525.4575	10.49607	8.507535	30.84984	0.015116
10/16/2024	9:00:00 PM	117.4455	7.377916	527.1454	10.51832	8.490645	31.10105	0.015254
10/16/2024	10:00:00 PM	115.7667	7.377215	527.1025	10.53856	8.477818	31.15737	0.015285
10/16/2024	11:00:00 PM	150.6974	7.388466	526.4064	10.55035	8.48788	30.73884	0.015056
10/16/2024	12:00:00 AM	95.05182	7.40401	525.2572	10.56689	8.515055	30.76785	0.015071
10/16/2024	1:00:00 AM	139.7426	7.444525	522.5798	10.59068	8.548546	30.72414	0.015047
10/16/2024	2:00:00 AM	96.08547	7.385559	525.5981	10.61226	8.562782	30.35261	0.014844
10/16/2024	3:00:00 AM	185.8318	7.447432	522.0815	10.63125	8.557655	30.2406	0.014783
10/16/2024	4:00:00 AM	98.0108	7.462966	521.0944	10.64348	8.560733	30.01559	0.01466
10/16/2024	5:00:00 AM	151.866	7.439906	522.6775	10.67011	8.600913	29.93366	0.014615
10/16/2024	6:00:00 AM	116.6223	7.28322	530.767	10.68823	8.634343	29.98508	0.014642
10/16/2024	7:00:00 AM	124.1009	7.437444	522.2292	10.70857	8.630305	29.81186	0.014548
10/16/2024	8:00:00 AM	152.307	7.42396	521.9384	10.726	8.61748	29.78112	0.014531
10/16/2024	9:00:00 AM	138.209	7.346875	525.9891	10.72322	8.61241	29.7312	0.014504
10/16/2024	10:00:00 AM	146.6139	7.427631	521.3996	10.72769	8.62516	29.58916	0.014427
10/16/2024	11:00:00 AM	149.2618	7.541943	515.1959	10.73104	8.640733	29.52407	0.014391
10/16/2024	12:00:00 PM	150.7327	7.462868	519.373	10.72931	8.664145	29.52935	0.014393
10/16/2024	1:00:00 PM	134.3867	7.43322	521.0134	10.72769	8.726509	29.45772	0.014353
10/16/2024	2:00:00 PM	128.6788	7.505819	516.7599	10.72819	8.802937	29.74761	0.014509
10/16/2024	3:00:00 PM	120.6179	7.529589	515.339	10.72919	8.912092	30.14639	0.014724
10/16/2024	4:00:00 PM	167.3744	7.422683	521.638	10.70562	9.013228	30.20046	0.014751
10/16/2024	5:00:00 PM	122.7906	7.495825	516.6407	10.72014	9.10077	30.51436	0.01492
10/16/2024	6:00:00 PM	168.6784	7.538498	514.464	10.70104	9.147981	30.69331	0.015016
10/16/2024	7:00:00 PM	195.0045	7.513842	515.8087	10.70869	9.159122	30.80719	0.015078
10/16/2024	8:00:00 PM	88.0133	7.555105	513.5699	10.71458	9.14787	30.96916	0.015166
10/16/2024	9:00:00 PM	84.86395	7.54304	514.1111	10.70542	9.137923	30.94517	0.015153
10/16/2024	10:00:00 PM	93.2771	7.569434	512.59	10.71317	9.126238	30.89817	0.015128
10/16/2024	11:00:00 PM	96.1645	7.563148	512.7831	10.71146	9.121347	30.77953	0.015064
10/16/2024	12:00:00 AM	93.77486	7.562162	512.6043	10.71225	9.107676	30.71596	0.015029
10/16/2024	1:00:00 AM	97.56552	7.472449	517.3489	10.71365	9.079663	30.7757	0.015063
10/16/2024	2:00:00 AM	103.9304	7.511434	514.681	10.69372	9.049844	30.63292	0.014985
10/16/2024	3:00:00 AM	92.715	7.541602	512.3278	10.68745	9.014676	30.67596	0.01501
10/17/2024	4:00:00 AM	105.9722	7.564976	510.5396	10.68356	8.976581	30.72543	0.015038
10/17/2024	5:00:00 AM	94.15638	7.486934	514.6738	10.68342	8.926383	30.81429	0.015087
10/17/2024	6:00:00 AM	117.8331	7.523718	512.6043	10.68573	8.865601	30.88346	0.015126
10/17/2024	7:00:00 AM	105.8236	7.548557	511.1166	10.69033	8.819466	30.95349	0.015166
10/17/2024	8:00:00 AM	116.5448	7.528993	512.4827	10.67797	8.786988	31.30145	0.015356
10/17/2024	9:00:00 AM	102.9575	7.486793	514.8979	10.6686	8.750866	31.46722	0.015447
10/17/2024	10:00:00 AM	109.1558	7.449022	517.5468	10.65929	8.716322	31.62526	0.015534
10/17/2024	11:00:00 AM	124.3044	7.536273	513.0049	10.63839	8.702019	32.07681	0.015781
10/17/2024	12:00:00 PM	116.418	7.520569	514.1851	10.62607	8.703465	32.22787	0.015863
10/17/2024	1:00:00 PM	110.8874	7.46367	517.2701	10.60797	8.713405	32.42012	0.015968

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10/17/2024	2:00:00 PM	137.6338	7.496584	515.575	10.58275	8.719341	32.4967	0.016009
10/17/2024	3:00:00 PM	83.82622	7.490487	516.1687	10.56557	8.743853	32.56046	0.016044
10/17/2024	4:00:00 PM	119.5619	7.443614	519.3373	10.57242	8.736477	32.1623	0.015827
10/17/2024	5:00:00 PM	106.6926	7.482147	517.8829	10.56921	8.746169	31.94487	0.015708
10/17/2024	6:00:00 PM	141.4859	7.477335	518.5481	10.55249	8.762679	32.17519	0.015833
10/17/2024	7:00:00 PM	110.9589	7.49853	517.8185	10.54131	8.764666	31.85856	0.01566
10/17/2024	8:00:00 PM	126.4052	7.497552	517.6063	10.54775	8.767077	31.7184	0.015584
10/17/2024	9:00:00 PM	133.177	7.470642	519.7593	10.54284	8.767017	31.43371	0.015429
10/17/2024	10:00:00 PM	97.01334	7.505774	517.9854	10.55149	8.760331	31.25033	0.015329
10/17/2024	11:00:00 PM	136.0606	7.471142	520.1193	10.5553	8.747761	31.32773	0.015371
10/17/2024	12:00:00 AM	104.3271	7.512884	518.1666	10.55627	8.737779	31.23067	0.015319
10/17/2024	1:00:00 AM	125.2455	7.510344	518.6506	10.55489	8.716511	31.34599	0.015382
10/17/2024	2:00:00 AM	86.71494	7.428142	523.7671	10.55947	8.700924	30.92516	0.015153
10/17/2024	3:00:00 AM	104.8642	7.396308	525.1141	10.55367	8.677725	31.12841	0.015264
10/17/2024	4:00:00 AM	117.9327	7.356765	528.1874	10.56187	8.654786	31.19086	0.015299
10/17/2024	5:00:00 AM	101.1717	7.432909	524.0746	10.57039	8.633489	31.27183	0.015343
10/17/2024	6:00:00 AM	136.0952	7.424651	524.6111	10.56788	8.609428	31.21393	0.015312
10/17/2024	7:00:00 AM	91.42896	7.455212	523.121	10.55923	8.588196	31.37029	0.015398
10/17/2024	8:00:00 AM	84.01218	7.469484	522.5154	10.57784	8.562647	31.15734	0.015283
10/17/2024	9:00:00 AM	83.7784	7.488031	521.4973	10.57876	8.539351	31.19319	0.015303
10/17/2024	10:00:00 AM	74.03927	7.503308	521.0706	10.58922	8.522082	31.11281	0.015259
10/17/2024	11:00:00 AM	94.77631	7.478652	522.482	10.59377	8.504078	31.22305	0.01532
10/17/2024	12:00:00 PM	84.26894	7.429762	525.4003	10.59629	8.487576	31.09057	0.015248
10/17/2024	1:00:00 PM	89.76809	7.438865	525.0497	10.59597	8.464355	31.10197	0.015255
10/17/2024	2:00:00 PM	77.96102	7.449951	524.9663	10.59425	8.446561	31.07087	0.015238
10/17/2024	3:00:00 PM	68.87391	7.409797	527.2003	10.60196	8.417468	31.10815	0.015259
10/17/2024	4:00:00 PM	89.47543	7.365556	530.1495	10.60641	8.395865	31.0701	0.015239
10/17/2024	5:00:00 PM	85.64732	7.457982	524.6945	10.61113	8.359991	31.298	0.015364
10/17/2024	6:00:00 PM	106.4456	7.416529	527.3529	10.61444	8.34035	31.18805	0.015304
10/17/2024	7:00:00 PM	64.4174	7.466734	524.6707	10.61881	8.322834	31.18513	0.015303
10/17/2024	8:00:00 PM	92.83018	7.404228	528.6666	10.61139	8.293539	31.35144	0.015395
10/17/2024	9:00:00 PM	61.8172	7.423063	527.4673	10.61664	8.257269	31.42031	0.015433
10/17/2024	10:00:00 PM	78.48934	7.487973	524.1676	10.63016	8.228066	31.47377	0.015463
10/17/2024	11:00:00 PM	74.47598	7.451296	526.3563	10.63635	8.207044	31.41671	0.015432
10/17/2024	12:00:00 AM	68.55566	7.384524	530.3284	10.6354	8.176565	31.58137	0.015523
10/17/2024	1:00:00 AM	80.02964	7.350081	532.8174	10.64979	8.155207	31.28012	0.015359
10/17/2024	2:00:00 AM	82.77496	7.437981	528.4186	10.65759	8.133044	31.1805	0.015305
10/17/2024	3:00:00 AM	89.03148	7.264385	538.2391	10.66867	8.112144	31.00168	0.015208
10/17/2024	4:00:00 AM	81.6844	7.33902	533.6495	10.67602	8.086632	30.96747	0.01519
10/17/2024	5:00:00 AM	60.99638	7.368087	532.8604	10.69124	8.077744	30.93477	0.015172
10/17/2024	6:00:00 AM	86.41761	7.436785	528.8883	10.6865	8.061846	30.92076	0.015165
10/17/2024	7:00:00 AM	64.91227	7.41087	530.438	10.68054	8.033538	31.16567	0.015299
10/17/2024	8:00:00 AM	88.30255	7.398271	531.0698	10.68339	8.006021	31.27462	0.015359
10/17/2024	9:00:00 AM	55.05328	7.365513	532.8461	10.69547	7.978712	31.34561	0.015398
10/17/2024	10:00:00 AM	72.91618	7.391216	531.2177	10.67903	7.92921	31.67805	0.015581
10/17/2024	11:00:00 AM	65.40894	7.437314	528.9885	10.69308	7.873085	31.94469	0.015728
10/17/2024	12:00:00 PM	62.00703	7.423428	529.8444	10.69394	7.824849	32.13485	0.015832

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10/17/2024	1:00:00 PM	60.77631	7.424349	529.7323	10.7167	7.780807	31.96844	0.015743
10/17/2024	2:00:00 PM	62.47033	7.467981	527.3243	10.73414	7.742813	31.91732	0.015716
10/17/2024	3:00:00 PM	96.47863	7.473872	527.0286	10.73462	7.70259	32.18366	0.015862
10/17/2024	4:00:00 PM	50.2632	7.43187	529.4462	10.7347	7.675248	32.48774	0.016028
10/17/2024	5:00:00 PM	45.98799	7.450477	528.5426	10.73084	7.649393	32.0127	0.01577
10/17/2024	6:00:00 PM	58.93001	7.452965	528.5521	10.73621	7.635036	32.14569	0.015843
10/17/2024	7:00:00 PM	82.38634	7.374989	532.9438	10.74763	7.619904	31.68382	0.015591
10/17/2024	8:00:00 PM	73.71804	7.334848	534.9537	10.74702	7.613626	31.4206	0.015447
10/17/2024	9:00:00 PM	75.07941	7.415684	530.2568	10.77097	7.596701	31.29893	0.015381
10/17/2024	10:00:00 PM	64.28834	7.370812	532.5695	10.78681	7.599534	31.00805	0.015222
10/17/2024	11:00:00 PM	57.49968	7.40778	530.345	10.79271	7.59751	30.94837	0.01519
10/17/2024	12:00:00 AM	103.0153	7.392709	530.8004	10.79954	7.616934	30.87291	0.015148
10/17/2024	1:00:00 AM	64.69982	7.40264	530.0971	10.82998	7.65104	30.65133	0.015027
10/17/2024	2:00:00 AM	75.18979	7.387506	530.4309	10.83598	7.686725	30.62455	0.015011
10/17/2024	3:00:00 AM	53.72033	7.337447	532.7006	10.85266	7.736304	30.57755	0.014985
10/17/2024	4:00:00 AM	53.17154	7.436478	526.826	10.87181	7.789556	30.55857	0.014973
10/17/2024	5:00:00 AM	69.07685	7.442884	526.1202	10.8788	7.842246	30.74983	0.015076
10/17/2024	6:00:00 AM	56.32135	7.428587	526.5923	10.8877	7.888357	30.78966	0.015097
10/17/2024	7:00:00 AM	66.18633	7.397449	528.0872	10.86986	7.905637	30.92385	0.01517
10/17/2024	8:00:00 AM	47.44547	7.45284	525.1666	10.88706	7.951835	30.78983	0.015096
10/17/2024	9:00:00 AM	67.20695	7.433798	526.2824	10.88608	8.021511	31.04529	0.015234
10/17/2024	10:00:00 AM	46.23304	7.375918	529.8134	10.88494	8.088692	31.34135	0.015394
10/17/2024	11:00:00 AM	56.49173	7.311102	533.5446	10.90091	8.128422	31.48158	0.015469
10/17/2024	12:00:00 PM	66.83274	7.436874	526.2395	10.87619	8.160758	31.25833	0.015347
10/17/2024	1:00:00 PM	66.34339	7.401611	527.6128	10.89563	8.204818	31.54033	0.0155
10/17/2024	2:00:00 PM	57.14053	7.389685	527.8202	10.88257	8.269358	31.44649	0.015447
10/17/2024	3:00:00 PM	53.87146	7.439406	524.6731	10.89237	8.268877	31.36579	0.015403
10/17/2024	4:00:00 PM	45.5966	7.405295	526.075	10.88809	8.26181	31.57672	0.015518
10/17/2024	5:00:00 PM	47.38834	7.482861	521.4282	10.8923	8.241388	31.74979	0.015613
10/17/2024	6:00:00 PM	45.22942	7.407922	525.6244	10.89707	8.23571	31.79476	0.015638
10/17/2024	7:00:00 PM	45.88446	7.470697	521.8574	10.888	8.216386	31.82053	0.015652
10/17/2024	8:00:00 PM	53.68036	7.45751	522.9803	10.8811	8.217735	31.66747	0.015569
10/17/2024	9:00:00 PM	54.62574	7.404465	526.2728	10.89843	8.223606	31.80032	0.015641
10/17/2024	10:00:00 PM	47.06487	7.465073	523.2974	10.89149	8.2325	31.93478	0.015714
10/17/2024	11:00:00 PM	46.09925	7.381427	528.5378	10.88269	8.235682	31.89313	0.015691
10/17/2024	12:00:00 AM	41.13395	7.475978	524.2892	10.90255	8.226706	31.48002	0.015466
10/17/2024	1:00:00 AM	33.95929	7.515231	522.4796	10.91122	8.184953	31.17114	0.015299
10/17/2024	2:00:00 AM	46.21868	7.511486	523.264	10.91581	8.148628	31.10347	0.015263
10/17/2024	3:00:00 AM	53.397	7.507523	523.5764	10.91085	8.136632	31.01331	0.015214
10/18/2024	4:00:00 AM	43.22277	7.524269	522.9421	10.92152	8.117451	31.04085	0.015229
10/18/2024	5:00:00 AM	38.78824	7.486831	525.8103	10.93201	8.089413	31.76384	0.015624
10/18/2024	6:00:00 AM	57.31337	7.532977	523.7122	10.93283	8.068664	31.99788	0.015752
10/18/2024	7:00:00 AM	44.39797	7.490845	526.5017	10.91819	8.051889	32.5231	0.016039
10/18/2024	8:00:00 AM	42.45518	7.497751	526.2896	10.92371	8.011835	32.6266	0.016097
10/18/2024	9:00:00 AM	38.72223	7.543082	524.4418	10.91479	7.98141	34.17266	0.016942
10/18/2024	10:00:00 AM	42.04607	7.492974	527.4459	10.91481	7.934527	34.01856	0.016859
10/18/2024	11:00:00 AM	39.55994	7.502438	527.1812	10.89151	7.912491	35.1163	0.017459

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10/18/2024	12:00:00 PM	43.87344	7.522309	526.2728	10.87026	7.886327	36.03121	0.01796
10/18/2024	1:00:00 PM	38.16284	7.514841	526.5804	10.83751	7.885321	36.97041	0.018473
10/18/2024	2:00:00 PM	32.85203	7.477733	528.2517	10.80071	7.89132	37.70676	0.018876
10/18/2024	3:00:00 PM	37.45215	7.471703	527.7701	10.77104	7.893077	36.70512	0.018328
10/18/2024	4:00:00 PM	31.97428	7.474381	527.7606	10.75164	7.890666	36.8211	0.018391
10/18/2024	5:00:00 PM	53.86252	7.454748	528.5307	10.71247	7.928965	37.34337	0.018676
10/18/2024	6:00:00 PM	42.01512	7.452119	528.5236	10.71872	7.927147	36.18924	0.018045
10/18/2024	7:00:00 PM	30.39106	7.417145	530.3188	10.72202	7.930215	35.45617	0.017644
10/18/2024	8:00:00 PM	23.57121	7.457993	527.7678	10.71227	7.9176	34.85511	0.017316
10/18/2024	9:00:00 PM	47.32862	7.403031	530.7432	10.71388	7.918463	34.26731	0.016995
10/18/2024	10:00:00 PM	63.70845	7.36289	532.8389	10.7035	7.913206	34.10463	0.016906
10/18/2024	11:00:00 PM	44.86769	7.413973	529.9588	10.7145	7.896644	33.66043	0.016664
10/18/2024	12:00:00 AM	44.94579	7.38455	531.5323	10.72077	7.8747	33.77391	0.016726
10/18/2024	1:00:00 AM	27.9702	7.41501	529.7037	10.72474	7.858693	33.76605	0.016722
10/18/2024	2:00:00 AM	56.17471	7.361066	532.5909	10.72267	7.852099	33.46933	0.016561
10/18/2024	3:00:00 AM	29.18091	7.339086	533.9213	10.72254	7.845366	33.52399	0.016591
10/18/2024	4:00:00 AM	28.4936	7.325131	534.5483	10.72718	7.835845	33.45631	0.016554
10/18/2024	5:00:00 AM	23.93407	7.361653	532.5862	10.72972	7.827069	33.69268	0.016683
10/18/2024	6:00:00 AM	24.77997	7.407065	529.9946	10.72879	7.836189	33.40337	0.016525
10/18/2024	7:00:00 AM	38.45422	7.323536	534.4506	10.72494	7.82169	33.69264	0.016683
10/18/2024	8:00:00 AM	33.93415	7.346714	533.3062	10.72504	7.823307	33.55072	0.016606
10/18/2024	9:00:00 AM	32.62175	7.365582	532.1808	10.72689	7.81071	33.87163	0.016781
10/18/2024	10:00:00 AM	37.25449	7.241659	538.2867	10.7212	7.803395	33.87168	0.016781
10/18/2024	11:00:00 AM	34.32936	7.286626	536.5964	10.71527	7.799143	33.81585	0.016751
10/18/2024	12:00:00 PM	28.78616	7.408062	529.5249	10.72692	7.796108	33.64272	0.016656
10/18/2024	1:00:00 PM	26.21664	7.37828	531.4704	10.72925	7.779745	33.85142	0.016771
10/18/2024	2:00:00 PM	52.93488	7.359227	532.4717	10.73677	7.770848	33.73353	0.016707
10/18/2024	3:00:00 PM	28.58656	7.360337	532.5242	10.7285	7.76686	33.80312	0.016745
10/18/2024	4:00:00 PM	22.99854	7.335294	533.9189	10.73855	7.759231	33.76055	0.016722
10/18/2024	5:00:00 PM	22.10766	7.355605	532.4956	10.74187	7.749574	33.70697	0.016693
10/18/2024	6:00:00 PM	19.46867	7.322139	534.4387	10.73327	7.752047	33.53498	0.016599
10/18/2024	7:00:00 PM	29.6933	7.339579	533.373	10.73291	7.730013	33.95071	0.016826
10/18/2024	8:00:00 PM	25.96968	7.368257	532.0855	10.74163	7.722079	33.87379	0.016784
10/18/2024	9:00:00 PM	26.30207	7.427053	528.8931	10.7536	7.710969	33.9253	0.016813
10/18/2024	10:00:00 PM	25.05886	7.366464	532.2214	10.75742	7.698396	33.89517	0.016797
10/18/2024	11:00:00 PM	31.44662	7.340915	533.4469	10.76441	7.683465	33.91807	0.016809
10/18/2024	12:00:00 AM	30.92626	7.348575	532.8747	10.75945	7.673318	33.86744	0.016782
10/18/2024	1:00:00 AM	29.57497	7.391455	530.4929	10.77299	7.659644	33.69037	0.016686
10/18/2024	2:00:00 AM	24.47742	7.358382	532.4265	10.77765	7.646195	33.65973	0.016669
10/18/2024	3:00:00 AM	24.66889	7.251947	537.6788	10.78299	7.62372	33.86208	0.01678
10/18/2024	4:00:00 AM	25.42184	7.40866	530.1066	10.78484	7.605175	33.92423	0.016815
10/18/2024	5:00:00 AM	26.57299	7.232954	540.6948	10.79606	7.5814	33.92422	0.016815
10/18/2024	6:00:00 AM	28.07008	7.404348	531.3058	10.80719	7.56425	33.81763	0.016757
10/18/2024	7:00:00 AM	25.52491	7.359082	534.4506	10.83136	7.540769	33.53511	0.016603
10/18/2024	8:00:00 AM	29.44669	7.267469	539.9628	10.83972	7.530491	33.02584	0.016325
10/18/2024	9:00:00 AM	20.06164	7.396708	532.7793	10.84763	7.50308	33.2445	0.016445
10/18/2024	10:00:00 AM	23.92742	7.445283	530.6073	10.87424	7.481686	33.37971	0.01652

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10/18/2024	11:00:00 AM	24.52968	7.434772	531.5133	10.85369	7.463695	33.56297	0.01662
10/18/2024	12:00:00 PM	36.23659	7.42599	532.2357	10.86851	7.453012	33.53493	0.016605
10/18/2024	1:00:00 PM	26.83075	7.41262	533.3634	10.86679	7.440011	33.53921	0.016608
10/18/2024	2:00:00 PM	31.71123	7.415303	533.6353	10.87031	7.410045	34.19643	0.016968
10/18/2024	3:00:00 PM	27.9779	7.42441	533.2704	10.86099	7.379307	35.25438	0.017547
10/18/2024	4:00:00 PM	25.46501	7.429867	532.9462	10.84856	7.370482	35.81641	0.017854
10/18/2024	5:00:00 PM	30.97498	7.433136	532.7745	10.84664	7.373391	35.8577	0.017877
10/18/2024	6:00:00 PM	25.44759	7.404881	534.4911	10.82674	7.386623	35.83611	0.017865
10/18/2024	7:00:00 PM	24.29933	7.319235	539.25	10.8358	7.360096	36.64175	0.018306
10/18/2024	8:00:00 PM	31.37439	7.353926	537.0112	10.8287	7.367022	36.86169	0.018426
10/18/2024	9:00:00 PM	21.88076	7.400308	534.4053	10.83289	7.374289	36.72339	0.01835
10/18/2024	10:00:00 PM	28.67571	7.391402	534.7534	10.83866	7.386615	36.33135	0.018135
10/18/2024	11:00:00 PM	21.88802	7.344724	537.3093	10.8408	7.410449	35.9124	0.017906
10/18/2024	12:00:00 AM	20.12173	7.457155	530.8553	10.83355	7.425853	36.45353	0.018201
10/18/2024	1:00:00 AM	34.32642	7.327301	538.2153	10.83041	7.436847	36.073	0.017993
10/18/2024	2:00:00 AM	22.19897	7.437806	531.9329	10.84055	7.454016	35.93922	0.017919
10/18/2024	3:00:00 AM	22.37192	7.438421	531.5848	10.83241	7.467302	35.46771	0.017661
10/18/2024	4:00:00 AM	30.72989	7.393642	533.597	10.85294	7.479021	35.14174	0.017483
10/18/2024	5:00:00 AM	31.62683	7.400517	532.7626	10.85566	7.485919	34.92228	0.017363
10/18/2024	6:00:00 AM	28.04113	7.398971	532.2214	10.85883	7.496542	34.82637	0.01731
10/18/2024	7:00:00 AM	25.41971	7.395172	531.9401	10.87246	7.506978	34.72109	0.017252
10/18/2024	8:00:00 AM	23.539	7.408978	531.0722	10.89281	7.511538	34.55929	0.017164
10/18/2024	9:00:00 AM	23.05849	7.408308	530.5501	10.87836	7.532468	35.94019	0.017918
10/18/2024	10:00:00 AM	28.66914	7.415183	529.9779	10.8962	7.538484	37.79365	0.018932
10/18/2024	11:00:00 AM	24.9467	7.336983	533.6448	10.89503	7.541605	36.49741	0.018223
10/18/2024	12:00:00 PM	22.31952	7.35627	532.97	10.90014	7.546211	35.24881	0.01754
10/18/2024	1:00:00 PM	37.23617	7.298085	536.3818	10.89903	7.552536	34.78691	0.017287
10/18/2024	2:00:00 PM	24.00934	7.434438	528.5331	10.89616	7.561675	34.73891	0.017261
10/18/2024	3:00:00 PM	26.82715	7.446552	527.5627	10.91559	7.559808	36.15562	0.018035
10/18/2024	4:00:00 PM	26.97058	7.416806	529.2817	10.9114	7.559315	35.39827	0.017621
10/18/2024	5:00:00 PM	30.00493	7.347578	532.9891	10.90835	7.562761	35.05499	0.017434
10/18/2024	6:00:00 PM	23.04842	7.417442	529.0767	10.91744	7.560584	35.02651	0.017418
10/18/2024	7:00:00 PM	36.85499	7.374558	531.6039	10.90765	7.565171	34.96728	0.017386
10/18/2024	8:00:00 PM	30.10966	7.45544	527.5103	10.91586	7.555852	35.14528	0.017483
10/18/2024	9:00:00 PM	29.37017	7.327062	534.8321	10.91601	7.556589	35.31146	0.017574
10/18/2024	10:00:00 PM	26.1957	7.469182	526.9357	10.92638	7.546638	35.02965	0.01742
10/18/2024	11:00:00 PM	23.33916	7.480687	526.3921	10.94245	7.530078	34.73751	0.017261
10/18/2024	12:00:00 AM	30.26105	7.492962	526.2919	10.95407	7.511425	34.724	0.017254
10/18/2024	1:00:00 AM	35.22679	7.460121	528.7357	10.9602	7.504024	34.68129	0.017231
10/18/2024	2:00:00 AM	23.31305	7.493822	526.9595	10.94999	7.50619	34.27468	0.017008
10/18/2024	3:00:00 AM	25.91616	7.492136	527.2957	10.94627	7.498534	34.13489	0.016932
10/19/2024	4:00:00 AM	26.94843	7.491228	527.6342	10.94525	7.484288	34.14231	0.016936
10/19/2024	5:00:00 AM	24.9135	7.44242	530.9268	10.94292	7.465234	34.31506	0.017031
10/19/2024	6:00:00 AM	24.75236	7.475101	529.5845	10.94883	7.446352	34.43896	0.017099
10/19/2024	7:00:00 AM	22.54891	7.506879	528.0324	10.94567	7.435492	34.71468	0.01725
10/19/2024	8:00:00 AM	19.15316	7.505538	528.7333	10.93952	7.40309	35.60414	0.017737
10/19/2024	9:00:00 AM	23.40011	7.514771	528.4353	10.94045	7.37807	36.31206	0.018125

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10/19/2024	10:00:00 AM	18.86368	7.490839	530.1663	10.93575	7.351017	37.06647	0.018538
10/19/2024	11:00:00 AM	18.61887	7.507629	529.4366	10.94469	7.311293	37.43665	0.018742
10/19/2024	12:00:00 PM	21.98904	7.493741	530.8958	10.94539	7.255461	38.54717	0.019351
10/19/2024	1:00:00 PM	14.54881	7.553955	527.5198	10.94831	7.225924	39.05909	0.019632
10/19/2024	2:00:00 PM	16.62606	7.524021	529.0099	10.94142	7.216951	40.03847	0.020168
10/19/2024	3:00:00 PM	21.91738	7.474698	531.1509	10.90668	7.223593	41.55857	0.021
10/19/2024	4:00:00 PM	15.58592	7.485012	529.7991	10.85863	7.259756	42.47598	0.021502
10/19/2024	5:00:00 PM	19.83105	7.491055	529.0242	10.87248	7.258558	41.07681	0.020736
10/19/2024	6:00:00 PM	18.0147	7.454997	531.0818	10.86322	7.249591	40.75404	0.020559
10/19/2024	7:00:00 PM	21.87112	7.430602	532.2047	10.84822	7.260791	41.05896	0.020726
10/19/2024	8:00:00 PM	16.25905	7.460247	530.3355	10.85723	7.26392	40.60608	0.020478
10/19/2024	9:00:00 PM	20.67595	7.433229	531.8256	10.87834	7.241482	38.89964	0.019544
10/19/2024	10:00:00 PM	20.76671	7.449362	531.0651	10.89424	7.211234	38.30655	0.01922
10/19/2024	11:00:00 PM	32.21786	7.469332	529.7514	10.91975	7.20298	37.91771	0.019008
10/19/2024	12:00:00 AM	29.87222	7.496428	528.0562	10.91662	7.18389	37.32592	0.018684
10/19/2024	1:00:00 AM	30.24479	7.425364	531.6206	10.9209	7.160588	37.35798	0.018702
10/19/2024	2:00:00 AM	21.63093	7.327153	537.2925	10.93019	7.155509	36.72469	0.018356
10/19/2024	3:00:00 AM	32.9518	7.369468	534.3457	10.94284	7.145209	36.61717	0.018297
10/19/2024	4:00:00 AM	30.30343	7.481418	528.5831	10.94272	7.132223	36.50159	0.018234
10/19/2024	5:00:00 AM	24.27426	7.493912	528.0801	10.95611	7.119224	36.49695	0.018232
10/19/2024	6:00:00 AM	26.78072	7.456052	530.2497	10.96774	7.108226	36.41402	0.018187
10/19/2024	7:00:00 AM	22.22248	7.499988	527.9919	10.97804	7.08032	36.54138	0.018257
10/19/2024	8:00:00 AM	24.00288	7.455229	530.4642	10.98776	7.068037	36.43973	0.018202
10/19/2024	9:00:00 AM	35.40459	7.47203	529.3389	11.01698	7.051657	36.46453	0.018216
10/19/2024	10:00:00 AM	39.29093	7.482795	528.8311	11.04111	7.031895	36.52446	0.018249
10/19/2024	11:00:00 AM	34.84108	7.437136	531.5133	11.0493	7.018159	36.61944	0.018301
10/19/2024	12:00:00 PM	43.36028	7.466894	529.8611	11.04902	7.019438	36.36921	0.018164
10/19/2024	1:00:00 PM	44.9655	7.492223	528.3805	11.06197	6.998998	36.54768	0.018262
10/19/2024	2:00:00 PM	41.12374	7.407589	533.2681	11.05461	6.990007	36.39531	0.018179
10/19/2024	3:00:00 PM	52.40273	7.491752	528.4424	11.06055	6.977821	36.52359	0.01825
10/19/2024	4:00:00 PM	66.16404	7.504179	527.9251	11.06838	6.981283	36.11997	0.018029
10/19/2024	5:00:00 PM	53.78633	7.466544	530.0685	11.08069	6.953324	36.44751	0.018209
10/19/2024	6:00:00 PM	54.80098	7.539293	526.2037	11.07151	6.947748	36.44861	0.018209
10/19/2024	7:00:00 PM	64.62553	7.499506	528.626	11.08485	6.931041	36.17915	0.018062
10/19/2024	8:00:00 PM	73.90017	7.505324	528.1206	11.08893	6.917466	36.06765	0.018002
10/19/2024	9:00:00 PM	66.63336	7.396376	534.1836	11.10632	6.888385	35.82159	0.017868
10/19/2024	10:00:00 PM	75.38528	7.533567	526.4993	11.12068	6.873154	35.29501	0.01758
10/19/2024	11:00:00 PM	56.25451	7.506293	527.751	11.12675	6.856833	34.93684	0.017384
10/19/2024	12:00:00 AM	60.88205	7.453416	530.6288	11.12805	6.837465	34.56978	0.017184
10/19/2024	1:00:00 AM	59.96716	7.437541	531.4633	11.12959	6.828207	34.3975	0.01709
10/19/2024	2:00:00 AM	58.62904	7.479366	529.017	11.15032	6.811909	34.05859	0.016905
10/19/2024	3:00:00 AM	62.63555	7.448573	530.9864	11.14324	6.804738	33.94662	0.016844
10/19/2024	4:00:00 AM	47.57381	7.403894	533.3801	11.16134	6.793131	33.47198	0.016585
10/19/2024	5:00:00 AM	80.86761	7.444135	531.2582	11.15203	6.783928	33.30369	0.016493
10/19/2024	6:00:00 AM	57.67445	7.473463	529.9326	11.16138	6.778048	33.11959	0.016392
10/19/2024	7:00:00 AM	64.68176	7.494136	529.0504	11.16291	6.775059	33.09135	0.016377
10/19/2024	8:00:00 AM	76.54803	7.363259	536.4438	11.15273	6.782136	32.48385	0.016045

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10/19/2024	9:00:00 AM	67.08957	7.385154	535.4854	11.16074	6.78766	32.47158	0.016038
10/19/2024	10:00:00 AM	70.2943	7.416311	532.4121	11.17218	6.782638	32.24028	0.015912
10/19/2024	11:00:00 AM	66.74158	7.442222	532.4336	11.16668	6.781485	32.04035	0.015803
10/19/2024	12:00:00 PM	77.83338	7.381629	536.0027	11.18278	6.779802	31.55486	0.015537
10/19/2024	1:00:00 PM	101.7401	7.455987	531.9353	11.21102	6.756322	31.25642	0.015375
10/19/2024	2:00:00 PM	111.3677	7.499103	529.5201	11.21899	6.762399	31.28612	0.015391
10/19/2024	3:00:00 PM	114.3553	7.443299	532.6052	11.22224	6.774549	31.07144	0.015274
10/19/2024	4:00:00 PM	114.63	7.509261	528.6642	11.2465	6.798213	30.55105	0.014989
10/19/2024	5:00:00 PM	112.3791	7.498732	529.1577	11.28331	6.800499	30.54668	0.014987
10/19/2024	6:00:00 PM	188.7928	7.421541	533.1775	11.30326	6.816097	30.01548	0.014697
10/19/2024	7:00:00 PM	208.9261	7.428361	531.8209	11.35327	6.839787	29.99437	0.014685
10/19/2024	8:00:00 PM	349.9641	7.475091	528.278	11.40733	6.867129	29.90604	0.014636
10/19/2024	9:00:00 PM	574.7222	7.427559	529.6322	11.52481	6.887074	29.73113	0.01454
10/19/2024	10:00:00 PM	992.5495	7.475012	525.5457	11.64342	6.933772	30.10969	0.014746
10/19/2024	11:00:00 PM	1428.905	7.362906	528.8573	11.73404	6.970781	29.82377	0.014589
10/19/2024	12:00:00 AM	1574.157	7.372784	524.9592	11.79803	6.972167	27.4109	0.013274
10/19/2024	1:00:00 AM	1374.336	7.414076	519.733	11.86538	6.981128	25.80657	0.012401
10/19/2024	2:00:00 AM	1735.067	7.32536	522.4462	11.9095	6.99435	24.61009	0.011751
10/19/2024	3:00:00 AM	1700.703	7.326177	520.2719	11.97825	6.988255	23.35464	0.011071
10/19/2024	4:00:00 AM	1723.043	7.271265	521.3519	12.03351	6.971963	22.19105	0.010442
10/19/2024	5:00:00 AM	1693.563	7.288713	518.8175	12.06593	6.981596	21.70624	0.010179
10/19/2024	6:00:00 AM	1615.845	7.235214	520.6057	12.09727	6.997585	20.92327	0.009757
10/19/2024	7:00:00 AM	1587.366	7.242479	518.9725	12.10216	7.01458	20.06347	0.009293
10/19/2024	8:00:00 AM	1501.707	7.191034	520.9776	12.11952	7.028275	19.20655	0.008832
10/19/2024	9:00:00 AM	1693.911	7.213021	520.5055	12.12219	7.05676	18.90302	0.008669
10/19/2024	10:00:00 AM	1554.073	7.202369	520.5985	12.15538	7.066935	18.46923	0.008436
10/19/2024	11:00:00 AM	1455.283	7.152902	522.5583	12.16209	7.069975	17.44002	0.007885
10/19/2024	12:00:00 PM	1405.233	7.142923	524.2368	12.1553	7.097702	17.39211	0.007859
10/19/2024	1:00:00 PM	1312.078	7.086223	526.8784	12.16114	7.108591	16.56517	0.007417
10/19/2024	2:00:00 PM	1161.803	7.057864	527.9251	12.14849	7.144693	16.32591	0.007289
10/19/2024	3:00:00 PM	1229.494	7.088189	526.7115	12.15305	7.18731	16.0512	0.007143
10/19/2024	4:00:00 PM	1158.088	7.132163	524.294	12.13146	7.227219	16.10347	0.00717
10/19/2024	5:00:00 PM	1023.989	7.069568	527.2671	12.10908	7.257172	15.97125	0.007099
10/19/2024	6:00:00 PM	985.4952	7.072828	527.062	12.11829	7.298445	15.93465	0.007079
10/19/2024	7:00:00 PM	910.8615	7.052706	528.2565	12.09344	7.309048	15.85306	0.007036
10/19/2024	8:00:00 PM	1023.472	7.094197	526.5685	12.07806	7.353313	15.85352	0.007035
10/19/2024	9:00:00 PM	812.3016	7.061481	526.8856	12.06016	7.394276	16.00162	0.007113
10/19/2024	10:00:00 PM	875.2897	7.120687	524.6277	12.0504	7.43787	15.92225	0.007071
10/19/2024	11:00:00 PM	809.5504	7.129604	523.7527	12.04384	7.454877	16.25192	0.007246
10/19/2024	12:00:00 AM	797.0159	7.098398	524.8853	12.01463	7.463998	16.22359	0.00723
10/19/2024	1:00:00 AM	858.2535	7.131327	522.5416	12.01452	7.489075	16.20762	0.007222
10/19/2024	2:00:00 AM	668.4521	7.112618	524.1366	11.98735	7.50175	16.25397	0.007246
10/19/2024	3:00:00 AM	595.8947	7.136546	523.0089	11.95912	7.504405	16.25438	0.007246
10/20/2024	4:00:00 AM	520.2607	7.134908	522.3652	11.94222	7.54267	16.2967	0.007268
10/20/2024	5:00:00 AM	527.7977	7.043404	526.0368	11.93906	7.570144	16.28699	0.007263
10/20/2024	6:00:00 AM	517.2266	7.085505	525.8151	11.91028	7.590666	16.36704	0.007305
10/20/2024	7:00:00 AM	477.471	7.051982	528.6642	11.91355	7.587537	16.42735	0.007337

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10/20/2024	8:00:00 AM	476.1523	7.112548	525.3573	11.89106	7.555254	16.5115	0.007382
10/20/2024	9:00:00 AM	593.6571	7.087553	526.9643	11.89706	7.572227	16.62461	0.007442
10/20/2024	10:00:00 AM	531.1529	7.139383	524.6659	11.83851	7.590317	16.60513	0.007432
10/20/2024	11:00:00 AM	516.6414	7.146229	524.5109	11.78971	7.582958	16.63566	0.007448
10/20/2024	12:00:00 PM	559.3359	7.095098	527.1788	11.76533	7.614445	16.53614	0.007395
10/20/2024	1:00:00 PM	458.0477	7.12832	526.1823	11.76703	7.617152	16.66984	0.007466
10/20/2024	2:00:00 PM	429.608	7.100313	527.8202	11.7765	7.63649	16.70632	0.007485
10/20/2024	3:00:00 PM	489.2212	7.147557	525.5314	11.76717	7.631019	16.59705	0.007427
10/20/2024	4:00:00 PM	431.5277	7.106217	528.3757	11.77391	7.6374	16.58501	0.00742
10/20/2024	5:00:00 PM	399.0322	7.117308	527.1574	11.76051	7.633323	16.79	0.00753
10/20/2024	6:00:00 PM	403.4373	7.085489	529.8491	11.76236	7.630777	16.58112	0.007418
10/20/2024	7:00:00 PM	400.6413	7.104424	529.017	11.77865	7.656766	16.4925	0.007371
10/20/2024	8:00:00 PM	357.6887	7.10781	530.1353	11.7741	7.680781	16.60238	0.007429
10/20/2024	9:00:00 PM	366.3656	7.130671	528.8644	11.76298	7.66573	16.56322	0.007408
10/20/2024	10:00:00 PM	379.1378	7.153613	527.3696	11.73818	7.660213	16.45776	0.007352
10/20/2024	11:00:00 PM	334.675	7.060504	533.6591	11.72531	7.643004	16.47405	0.007361
10/20/2024	12:00:00 AM	382.755	7.132072	530.0161	11.71157	7.666473	16.49644	0.007373
10/20/2024	1:00:00 AM	361.3719	7.110807	530.9101	11.67501	7.63412	16.63289	0.007446
10/20/2024	2:00:00 AM	355.7869	7.073287	533.485	11.65231	7.652053	16.75397	0.00751
10/20/2024	3:00:00 AM	380.0218	7.187045	527.4911	11.62432	7.658638	16.6576	0.007459
10/20/2024	4:00:00 AM	354.3474	7.140875	530.5501	11.61133	7.650808	16.78234	0.007525
10/20/2024	5:00:00 AM	322.2419	7.093977	533.9785	11.58731	7.648129	16.74458	0.007505
10/20/2024	6:00:00 AM	272.5135	7.094677	534.0906	11.56694	7.696527	16.98931	0.007635
10/20/2024	7:00:00 AM	330.1123	7.117083	531.9472	11.53435	7.655377	16.94905	0.007614
10/20/2024	8:00:00 AM	266.3963	7.11321	533.125	11.50365	7.669484	17.0933	0.007691
10/20/2024	9:00:00 AM	301.2823	7.14996	531.0031	11.48841	7.659983	17.08591	0.007687
10/20/2024	10:00:00 AM	259.5757	7.11688	531.9711	11.48622	7.638292	17.15188	0.007723
10/20/2024	11:00:00 AM	221.3576	7.154789	530.9911	11.46214	7.67942	17.60707	0.007965
10/20/2024	12:00:00 PM	260.6381	7.143806	531.704	11.45563	7.650256	17.41762	0.007864
10/20/2024	1:00:00 PM	237.5186	7.125728	532.9009	11.43483	7.692194	17.61516	0.007969
10/20/2024	2:00:00 PM	235.8488	7.166792	530.7265	11.40117	7.704398	17.7454	0.008039
10/20/2024	3:00:00 PM	210.7393	7.094077	534.8535	11.39368	7.708644	17.7916	0.008063
10/20/2024	4:00:00 PM	219.2247	7.012254	540.175	11.37725	7.736067	17.94509	0.008145
10/20/2024	5:00:00 PM	214.7553	7.018841	539.2285	11.36692	7.757971	18.10196	0.008229
10/20/2024	6:00:00 PM	198.8096	7.162303	530.9006	11.36597	7.746678	18.1828	0.008272
10/20/2024	7:00:00 PM	182.7201	7.155217	531.5323	11.35122	7.738357	18.11931	0.008238
10/20/2024	8:00:00 PM	197.686	7.146076	532.436	11.3538	7.754761	18.15893	0.008259
10/20/2024	9:00:00 PM	174.976	7.125267	533.5899	11.31632	7.755805	18.30441	0.008337
10/20/2024	10:00:00 PM	170.8313	7.119587	534.3052	11.32547	7.736757	18.35824	0.008366
10/20/2024	11:00:00 PM	165.6175	7.17497	531.3058	11.32535	7.729877	18.26737	0.008318
10/20/2024	12:00:00 AM	147.5321	7.111418	535.3972	11.30928	7.766307	18.69259	0.008545
10/20/2024	1:00:00 AM	144.5098	7.142347	533.4993	11.31637	7.741537	18.31066	0.008341
10/20/2024	2:00:00 AM	146.358	7.159436	532.7173	11.30365	7.716784	18.24835	0.008308
10/20/2024	3:00:00 AM	138.6935	7.152622	533.528	11.28499	7.743976	18.45066	0.008416
10/20/2024	4:00:00 AM	158.6646	7.16513	533.3444	11.3064	7.71259	18.34129	0.008358
10/20/2024	5:00:00 AM	143.9688	7.186798	532.5099	11.27754	7.811338	18.81344	0.008609
10/20/2024	6:00:00 AM	135.8159	7.172195	533.4373	11.27446	7.807543	18.84129	0.008624

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10/20/2024	7:00:00 AM	142.1908	7.076164	539.9796	11.27436	7.790333	18.71591	0.008557
10/20/2024	8:00:00 AM	128.9005	7.189258	532.25	11.25871	7.814058	18.99523	0.008707
10/20/2024	9:00:00 AM	144.2331	7.127849	536.3103	11.25187	7.771538	18.74207	0.008571
10/20/2024	10:00:00 AM	151.8473	7.12055	536.4438	11.26603	7.761775	18.76692	0.008585
10/20/2024	11:00:00 AM	116.9318	7.141912	536.2841	11.24412	7.826728	19.44135	0.008946
10/20/2024	12:00:00 PM	116.6492	7.204435	532.9486	11.24631	7.839686	19.28744	0.008863
10/20/2024	1:00:00 PM	105.8807	7.211074	532.188	11.23607	7.820687	19.32315	0.008882
10/20/2024	2:00:00 PM	105.2065	7.176095	534.8702	11.23916	7.815145	19.14638	0.008788
10/20/2024	3:00:00 PM	104.2519	7.200208	533.9642	11.2367	7.818758	19.50729	0.008981
10/20/2024	4:00:00 PM	130.6931	7.072003	540.8975	11.22093	7.791516	19.26812	0.008853
10/20/2024	5:00:00 PM	96.2067	7.179924	535.3185	11.23022	7.804662	19.5185	0.008988
10/20/2024	6:00:00 PM	100.7595	7.264411	531.2439	11.23131	7.808021	19.4002	0.008924
10/20/2024	7:00:00 PM	94.73288	7.237186	532.9677	11.22646	7.81846	19.76119	0.009118
10/20/2024	8:00:00 PM	98.25714	7.226497	533.485	11.21203	7.808906	19.39666	0.008922
10/20/2024	9:00:00 PM	96.09431	7.209761	534.6271	11.20884	7.817909	19.7248	0.009098
10/20/2024	10:00:00 PM	87.0816	7.220315	534.0143	11.20333	7.837328	20.09306	0.009296
10/20/2024	11:00:00 PM	84.69935	7.127973	539.4121	11.21777	7.850138	20.00531	0.009249
10/20/2024	12:00:00 AM	96.81084	7.228637	532.9915	11.22406	7.835319	20.20084	0.009354
10/20/2024	1:00:00 AM	88.22012	7.145804	536.4629	11.21089	7.846451	20.3195	0.009418
10/20/2024	2:00:00 AM	91.33225	7.159542	535.0419	11.21538	7.87095	20.4947	0.009512
10/20/2024	3:00:00 AM	105.0159	7.279284	528.7357	11.21628	7.835286	20.12584	0.009314
10/20/2024	4:00:00 AM	78.88168	7.1871	532.3502	11.20629	7.857725	20.35453	0.009436
10/20/2024	5:00:00 AM	86.16223	7.233193	530.1066	11.19752	7.866017	20.54961	0.009541
10/20/2024	6:00:00 AM	90.8831	7.20109	530.028	11.20809	7.880259	20.73221	0.009639
10/20/2024	7:00:00 AM	89.51485	7.259536	525.9438	11.21747	7.882411	20.35935	0.009439
10/20/2024	8:00:00 AM	118.5009	7.252574	524.9496	11.21252	7.882608	20.52678	0.009529
10/20/2024	9:00:00 AM	96.54935	7.196111	526.9571	11.20873	7.896466	20.50928	0.009519
10/20/2024	10:00:00 AM	139.4163	7.23455	522.9374	11.24764	7.91121	20.34854	0.009432
10/20/2024	11:00:00 AM	126.0208	7.251003	522.7848	11.27914	7.925156	20.07207	0.009283
10/20/2024	12:00:00 PM	130.0365	7.252429	522.6799	11.30455	7.941958	20.13467	0.009317
10/20/2024	1:00:00 PM	157.2063	7.21836	525.5671	11.34014	7.980857	20.42262	0.009471
10/20/2024	2:00:00 PM	177.6161	7.291646	521.7787	11.44797	8.011087	19.9101	0.009195
10/20/2024	3:00:00 PM	232.7771	7.294479	521.4139	11.54276	8.054806	19.71049	0.009087
10/20/2024	4:00:00 PM	302.6462	7.250974	524.3464	11.60656	8.121211	19.46645	0.008955
10/20/2024	5:00:00 PM	356.6644	7.19875	526.9547	11.63159	8.194271	19.01623	0.008712
10/20/2024	6:00:00 PM	405.2031	7.297519	520.9156	11.6691	8.282624	18.165	0.008254
10/20/2024	7:00:00 PM	449.4735	7.231136	524.5777	11.66387	8.380859	17.60327	0.007952
10/20/2024	8:00:00 PM	569.5181	7.228527	524.7613	11.6589	8.452284	16.77275	0.007508
10/20/2024	9:00:00 PM	677.8469	7.209749	526.0344	11.65117	8.515429	16.56334	0.007396
10/20/2024	10:00:00 PM	834.1673	7.220085	525.5219	11.63878	8.559896	16.16026	0.007181
10/20/2024	11:00:00 PM	998.3542	7.204722	526.5065	11.63945	8.599809	15.72992	0.006952
10/20/2024	12:00:00 AM	934.9833	7.199988	525.9557	11.62587	8.641575	15.50356	0.006831
10/20/2024	1:00:00 AM	1069.883	7.187851	527.0167	11.61473	8.679577	15.3973	0.006774
10/20/2024	2:00:00 AM	991.6038	7.172798	527.9156	11.62345	8.717893	15.03163	0.00658
10/20/2024	3:00:00 AM	947.7741	7.200408	526.5876	11.62829	8.747075	14.93764	0.00653
10/21/2024	4:00:00 AM	1038.518	7.192779	527.1264	11.65396	8.762581	14.51012	0.006304
10/21/2024	5:00:00 AM	1191.28	7.144827	529.8586	11.63754	8.779544	14.66303	0.006385

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10/21/2024	6:00:00 AM	1094.828	7.187384	527.4816	11.62723	8.789367	14.30305	0.006195
10/21/2024	7:00:00 AM	1184.584	7.138976	530.1305	11.60468	8.799535	14.40914	0.00625
10/21/2024	8:00:00 AM	1373.961	7.173794	528.278	11.59757	8.801556	14.68508	0.006396
10/21/2024	9:00:00 AM	1161.285	7.1828	527.7654	11.59913	8.808113	14.36256	0.006226
10/21/2024	10:00:00 AM	1116.83	7.177592	528.1945	11.58276	8.813984	14.72236	0.006415
10/21/2024	11:00:00 AM	1069.585	7.142402	530.0518	11.57105	8.801461	14.83332	0.006474
10/21/2024	12:00:00 PM	1085.046	7.19525	527.2623	11.57223	8.79384	14.68874	0.006398
10/21/2024	1:00:00 PM	1096.521	7.157889	529.153	11.58162	8.798176	14.78826	0.00645
10/21/2024	2:00:00 PM	917.9822	7.147074	530.0303	11.55527	8.77266	14.88549	0.006502
10/21/2024	3:00:00 PM	857.21	7.187241	528.0729	11.55089	8.75606	14.9642	0.006544
10/21/2024	4:00:00 PM	832.6592	7.180862	527.8726	11.55945	8.742058	15.05707	0.006593
10/21/2024	5:00:00 PM	803.8068	7.191783	527.3458	11.56833	8.737884	15.1039	0.006618
10/21/2024	6:00:00 PM	826.3008	7.114833	529.2126	11.544	8.691623	15.23557	0.006689
10/21/2024	7:00:00 PM	765.5079	7.213802	525.7269	11.54164	8.674004	15.29388	0.00672
10/21/2024	8:00:00 PM	747.2694	7.157281	529.4629	11.53239	8.634038	15.33562	0.006742
10/21/2024	9:00:00 PM	776.6833	7.165814	529.0504	11.54439	8.600409	15.42339	0.006789
10/21/2024	10:00:00 PM	761.5614	7.181535	527.9084	11.55664	8.582581	15.50349	0.006832
10/21/2024	11:00:00 PM	819.5123	7.233179	525.1284	11.55535	8.54937	15.39841	0.006777
10/21/2024	12:00:00 AM	729.8643	7.085324	532.6577	11.56882	8.51517	15.66943	0.006921

Appendix C: Woodfibre Site Point of Discharge from Water Treatment Plant Documentation

Woodfibre Site Sample Analysis

TRITON Environmental Consultants	Sample ID	Reviewed and signed off by:	COLLEGE OF APPLIED BIOLOGISTS Farshad Shafiei RPBio 3781 CAB		Farshad Shafiei Ph.D., R.P.Bio.	WLNG EOP	Sample or value notes	BCWQ FAL - Short Term	BCWQ FAL - Long Term	BCWQ MAL - Short Term	BCWQ MAL - Long Term
	LAB ID					VA24C7648-001					
	Date Sampled					16-Oct-2024					
	Time Sampled					11:14					
Analyte	Units	FAL-ST [1,2]	FAL-LT [1,2]	MAL-ST [1]	MAL-LT [1,2]	Water					
						N/A		Guideline notes			
In Situ Parameters											
pH (field)	pH units	6.5-9.0	6.5-9.0	7.0-8.7	7.0-8.7	7.15		If natural pH < 6.5, no statisticaly significant decrease from background. No restriction in increase except in areas with unique flora or fauna. Unrestricted change permitted within range of 6.5 to 9.0. If natural pH > 9.0, no statistically significant increase from background. Refer to BC Water Quality Guidelines for more information.		Unrestricted change within this range (for protection of mollusc embryo development).	
Temperature (field)	°C	Multiple guidelines dependent on water use and species, see notes: Short-term daily temperature = 15°C, or Max +/- 1°C from optimum temperature range for most sensitive salmonid species present, or Short-term daily temperature is 19°C, or Max +/- from BKG 1°C	-	Max +/- from BKG 1°C	-	12.6		Guideline is species-dependent. Short-term daily temperature is 15°C for streams with Bull Trout &/or Dolly Varden, Max +/- 1°C from the optimum range as shown in Table 43B of the BCWG for aquatic life for each life history phase of the most sensitive salmoind species present, Mean Weekly Max Temperature guideline is18°C, Short-term daily temperature guideline is 19°C for streams with unknown fish distribution, or Max +/- 1°C from background. Refer to footnote 4 for background temperature range for East Creek.		Guideline for marine waters are based on natural ambient conditions. Refer to footnote 4 for background temperature range for East Creek. Calculation: US value +/- 1 = guideline range	
Conductivity (field)	µS/cm	-	-	-	-	121	Water treatment process has been increasing the Conductivity levels based on the levels seen at US1 site. Although this is not causing harm, the treatment facility should be informed and asked to keep the levels like that of observed at US1.				
Turbidity (field)	NTU	Varies with background, see note US1 (background) guideline = 8.0	Varies with background, see note US1 (background) guideline = 2.33 5-week discrete sampling average = **4.3** (EOP)	Varies with background, see note US1 (background) guideline = 8.0	Varies with background, see note US1 (background) guideline = 2.33 5-week discrete sampling average = **4.3** (EOP)	4.64		Change from background of 8 NTU at any one time for a duration of 24 h in all waters during clear flows or in clear waters. Calculation: US value + 8 = DS guideline Change from background of 5 NTU at any time when background is 8 - 50 NTU during high flows or in turbid waters. Calculation: US value + 5 = DS guideline Change from background of 10% when background is > 50 NTU at any time during high flows or in turbid waters. Calculation: US value + (US value*0.1) = DS guideline	Change from background of 2 NTU at any one time for 30 days in clear flows. Note that a rolling average of US values over a 30-day period is required to properly calculate this guideline. Guideline calculated in this spreadsheet using US concentration at the time of sampling.	Change from background of 8 NTU at any one time for a duration of 24 h in all waters during clear flows or in clear waters. Calculation: US value + 8 = DS guideline Change from background of 5 NTU at any time when background is 8 - 50 NTU during high flows or in turbid waters. Calculation: US value + 5 = DS guideline Change from background of 10% when background is > 50 NTU at any time during high flows or in turbid waters. Calculation: US value + (US value*0.1) = DS guideline	Change from background of 2 NTU at any one time for 30 days in clear flows. Note that a rolling average of US values over a 30-day period is required to properly calculate this guideline. Guideline calculated in this spreadsheet using US concentration at the time of sampling.
Dissolved Oxygen (field)	mg/L	Varies with life stage, see note	Varies with life stage, see note	Varies with life stage, see note	Varies with life stage, see note	-		Buried embryo/alevin minimum 9 mg/L, all other life stages 5 mg/L. Refer to BC Water Quality Guidelines for more information.	Buried embryo/alevin minimum 11 mg/L, all other life stages 8 mg/L. Refer to BC Water Quality Guidelines for more information.	Buried embryo/alevin minimum 9 mg/L, all other life stages 5 mg/L. Refer to BC Water Quality Guidelines for more information.	Buried embryo/alevin minimum 11 mg/L, all other life stages 8 mg/L. Refer to BC Water Quality Guidelines for more information.
General Parameters											
Hardness (as $CaCO_3$) (total)	mg/L	-	-	-	-	5.25					
Total Dissolved Solids	mg/L	-	-	-	-	73					
Total Suspended Solids	mg/L	Varies with background, see note US1 (background) guideline = 28	Varies with background, see note US1 (background) guideline = 8.00 5-week discrete sampling average = <3.0 (EOP)	Varies with background, see note US1 (background) guideline = 28	Varies with background, see note US1 (background) guideline = 8.00 5-week discrete sampling average = <3.0 (EOP)	< 3.0		Change from background of 25 mg/L at any one time for duration of 24 h in all waters during clear flows or in clear waters. Calculation: US value + 25 = DS guideline Change from background of 10 mg/L at any one time when background 25-100 mg/L during high flows or turbid waters. Calculation: US value + 10 = DS guideline Change from background of 10% when background is > 100 mg/L at any time during high flows or turbid waters. Calculation: US value + (US value*0.1) = DS guideline	Change from background of 5 mg/L @ one time for a druation of 30 days in clear flow. Note that a rolling average of US values over a 30-day period is required to properly calculate this guideline. Guideline calculated in this spreadsheet using US concentration at the time of sampling.	Change from background of 25 mg/L at any one time for duration of 24 h in all waters during clear flows or in clear waters. Calculation: US value + 25 = DS guideline Change from background of 10 mg/L at any one time when background 25-100 mg/L during high flows or turbid waters. Calculation: US value + 10 = DS guideline Change from background of 10% when background is > 100 mg/L at any time during high flows or turbid waters. Calculation: US value + (US value*0.1) = DS guideline	Change from background of 5 mg/L @ one time for a druation of 30 days in clear flow. Note that a rolling average of US values over a 30-day period is required to properly calculate this guideline. Guideline calculated in this spreadsheet using US concentration at the time of sampling.
Dissolved Organic Carbon (DOC)	mg/L	-	-	-	-	< 0.50			Long-term (30-day) median within 20% of background median [3]		
Total Phenols	mg/L	0.05	-	-	-	< 0.0010		Interim guideline		Interim guideline	
Total Alkalinity ($CaCO_3$)	mg/L	-	Categorical	-	-	45.5	Water treatment process has been increasing the total Alkalinity levels based on the levels seen at US1 site. Although this is not causing harm, the treatment facility should be informed and asked to keep the levels like that of observed at US1. The WLNG EOP sample has low sensitivity to acid inputs (i.e. high buffering capacity).		Guideline is for alkalinity (as CaCO3) and categorizes the sensitivity of a water body to acid inputs. Alkalinity < 10 mg/L is considered highly sensitive to acid inputs; 10 - 20 mg/L is considered moderately sensitive to acid inputs; > 20 mg/L is considered low sensitivity.		
Total Sulfide (as S)	mg/L	-	-	-	-	< 0.0015					
Total Sulfide (un-ionized as H_2S)	mg/L	-	0.002	-	-	< 0.0015			Working guideline		
Total Sulfide (as H_2S)	mg/L	-	-	-	-	< 0.0016					
Anions and Nutrients											
Ammonia	mg/L ammonia-N	Varies with pH and temperature. See note. US1 (background) guideline = 22.3	Varies with pH and temperature. See note. US1 (background) guideline = 1.79	Varies with pH and temperature. See note. US1 (background) guideline = 92	Varies with pH, temperature and salinity. See note. US1 (background) guideline = 14	0.0063		Guideline for ammonia as N and is pH and temperature dependent. Refer to Table 27D in BC WQG for guideline values.	Guideline for ammonia as N and is pH and temperature dependent. Refer to Table 27C in BC WQG for guideline values.	Guideline for ammonia as N. Guideline is pH, temperature and salinity dependent. Refer to Table 27F in BC WQG for guideline values.	Guideline for ammonia as N. Guideline is pH, temperature and salinity dependent. Refer to Table 27E in BC WQG for guideline values.
Bromide	mg/L	-	-	-	-	< 0.050					
Chloride	mg/L	600	150	+/- 10% from BKG	+/- 10% from BKG	1.01				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.	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
Fluoride	mg/L	Varies with hardness US1 (background) guideline = 0.605	-	1.5	-	0.188		Guideline has interim status. Guideline is calculated with the following equation: Guideline = [-51.73 + 92.57 log10 (hardness)] * 0.01			
Nitrate (as N)	mg/L	32.8	3	-	3.7	0.0257					
Nitrite (as N)	mg/L	Varies with chloride. Table 27B, see note. US1 (background) guideline = 0.06	Varies with chloride. Table 27B, see note. US1 (background) guideline = 0.02	-	-	< 0.0010		Varies with chloride. Refer to Table 27B in BC WQG for guideline values.	Varies with chloride. Refer to Table 27B in BC WQG for guideline values.		
Total Nitrogen	mg/L	-	-	-	-	0.101					
Total Phosphorous	mg/L	-	0.005 to 0.015	-	-	0.0054			Guideline is for lakes, refer to BCWQ guideline for nutrients and algae for more information. Guideline does not apply to site.		
Sulfate (as SO_4)	mg/L	-	Varies with hardness. See note. US1 (background) guideline = 128	-	-	5.49			Guidelines for hardness ranges below: Hardness 0 - 30: 128 Hardness 31 - 75: 218 Hardness 76 - 180: 309 Hardness 181 - 250: 429		
Total Metals											
Aluminum (Al)-Total	mg/L	-	Varies with pH, DOC, hardness US1 (background) guideline = 0.078 5-week discrete sampling averages = 0.012 (EOP), 0.056 (US), **0.216** (DS)	-	-	0.0146			Guideline varies with pH, hardness and Dissolved Organic Carbon (DOC). Guideline is calculated with the following equation: Guideline = (EXP((0.645 * LN(DOC)) + (2.255 * LN(hardness)) + (1.995 * pH) + (-0.284 * (LN(hardness) * pH))-9.898)/3/1000) If hardness or DOC is below the hardness range, the minimum hardness or DOC will be applied in the calculation.		
Antimony (Sb)-Total	mg/L	0.25	0.074	-	-	0.00019					
Arsenic (As)-Total	mg/L	-	0.005	-	0.0125	0.0023					Interim guideline status
Barium (Ba)-Total	mg/L	-	1	-	-	0.00129			Working guideline status		
Beryllium (Be)-Total	mg/L	-	0.00013	-	0.100	< 0.000100			Working guideline status		Working guideline status
Bismuth (Bi)-Total	mg/L	-	-	-	-	< 0.00005					
Boron (B)-Total	mg/L	-	1.2	-	1.2	0.014					
Cadmium (Cd)-Total	mg/L	-	-	-	0.00012	< 0.0000100					Working guideline status
Calcium (Ca)-Total	mg/L	-	-	-	-	1.63					
Cesium (Cs)-Total	mg/L	-	-	-	-	0.000022					
Chromium (Cr) - Total	mg/L	-	-	-	-	< 0.00050					
Chromium (Cr(III))-Total	mg/L	-	0.0089	-	0.056	< 0.00050			Working guideline status		Working guideline status
Chromium (Cr(VI))-Total	mg/L	-	0.0025	-	0.0015	< 0.00050			Working guideline status		Working guideline status
Cobalt (Co)-Total	mg/L	0.11	0.004	-	-	< 0.00010					
Copper (Cu)-Total	mg/L	-	-	0.003	0.002 5-week discrete sampling averages = 0.0005 (EOP), 0.00067 (US), 0.00079 (DS)	< 0.00050					
Iron (Fe)-Total	mg/L	1	-	-	-	0.023					
Lead (Pb)-Total	mg/L			0.14	0.002 5-week discrete sampling averages = 0.00005 (EOP), 0.00005 (US), 0.00023 (DS)	< 0.00005					
Lithium (Li)-Total	mg/L	-	-	-	-	0.0021					
Magnesium (Mg)-Total	mg/L	-	-	-	-	0.286					
Manganese (Mn)-Total	mg/L	Varies with hardness US1 (background) guideline = 0.82	Varies with hardness US1 (background) guideline = 0.77 5-week discrete sampling averages = 0.0034 (EOP), 0.0021 (US), 0.0084 (DS)	-	-	0.00076		Guideline varies with hardness. The guideline is calculated using the following equation: Guideline = (0.0044 * hardness + 0.605) Guideline applies to samples with hardness 25-259 mg/L. Lowest value for guideline is 0.77 mg/L. If hardness is below the hardness range, the minimum hardness will be applied in the calculation.	Guideline varies with hardness, refer to BC Water Quality Guidelines for more information. The guideline is calculated using the following formula: Guideline = (0.01102 * hardness + 0.54) Guideline applies to samples with hardness 37-450 mg/L. Lowest value for guideline is 0.81 mg/L. If hardness is below the hardness range, the minimum hardness will be applied in the calculation.		
Mercury (Hg)-Total	mg/L	-	Varies with methyl mercury US1 (background) guideline = N/A	-	-	< 0.0000050			When MeHg ≤ 0.5% of total Hg, guideline is equal to 0.02 mg/L Guideline = 0.1/[MeHg/totalHg]. When MeHg ≤ 0.5% of total Hg, guideline is equal to 0.02 mg/L		
Molybdenum (Mo)-Total	mg/L	46	7.6	-	-	0.0156					
Nickel (Ni)-Total	mg/L	-		-	0.008	< 0.00050					Working guideline status
Phosphorus (P)-Total	mg/L	-	0.005 to 0.015	-	-	< 0.050			Guideline only applies to lakes with salmonid species being the dominant fish species. Guideline is for reference only and does not apply to site.		
Potassium (K)-Total	mg/L	-	-	-	-	0.908					
Rubidium (Rb)-Total	mg/L	-	-	-	-	0.00158					
Selenium (Se)-Total	mg/L	-	0.002	-	0.002	0.000065			Guideline for freshwater aquatic life (water column). Alert concentration is 0.001 mg/L, with separate guidelines for sediment, invertebrate and fish tissue. Refer to BC Water Quality Guidelines for more information on guideliens and sampling guidance.		Guideline for marine aquatic life (water column). Alert concentration is 0.001 mg/L, with separate guidelines for sediment, invertebrate and fish tissue. Refer to BC Water Quality Guidelines for more information on guideliens and sampling guidance.
Silicon (Si)-Total	mg/L	-	-	-	-	6.6					
Silver (Ag)-Total	mg/L	Varies with hardness, see note US1 (background) guideline = 0.0001	Varies with hardness, see note US1 (background) guideline = 0.00005	0.003	0.0015	< 0.000010		Varies with hardness Guideline ranges: Hardness ≤ 100: 0.0001 Hardness > 100: 0.003	Varies with hardness Guideline ranges: Hardness ≤ 100: 0.00005 Hardness > 100: 0.0015		Guideline applies to open coast and estuaries. Guideline is applicable to the EGP site.
Sodium (Na)-Total	mg/L	-	-	-	-	21.2					
Strontium (Sr)-Total	mg/L	-	-	-	-	0.00496					
Sulfur (S)-Total	mg/L	-	-	-	-	1.59					
Tellurium (Te)-Total	mg/L	-	-	-	-	< 0.00020					
Thallium (Tl)-Total	mg/L	-	0.00003 5-week discrete sampling averages = 0.000011 (EOP), 0.000010 (US), **0.00005** (DS)	-	-	< 0.000010			30-day average, site-specific objective for the lower Columbia River, BC. Guideline is for reference only and does not apply to the EGP site.		
Thorium (Th)-Total	mg/L	-	-	-	-	< 0.00010					
Tin (Sn)-Total	mg/L	-	-	-	-	< 0.00010					
Titanium (Ti)-Total	mg/L	-	-	-	-	0.00041					
Tungsten (W)-Total	mg/L	-	-	-	-	0.00034					
Uranium (U)-Total	mg/L	0.0165	0.0075	-	-	0.000015			Working guideline status		
Vanadium (V)-Total	mg/L	-	0.06	-	0.005	< 0.00050					Working guideline status
Zinc (Zn)-Total	mg/L	-	-	0.055	0.010 5-week discrete sampling averages = 0.0099 (EOP), 0.003 (US), 0.0063 (DS)	< 0.0030					
Zirconium (Zr)-Total	mg/L	-	-	-	-	< 0.00020					
Dissolved Metals											
Aluminum (Al)-Dissolved	mg/L	-	-	-	-	0.0019					
Antimony (Sb)-Dissolved	mg/L	-	-	-	-	< 0.00018					
Arsenic (As)-Dissolved	mg/L	-	-	-	-	0.00219					
Barium (Ba)-Dissolved	mg/L	-	-	-	-	0.00108					
Beryllium (Be)-Dissolved	mg/L	-	-	-	-	< 0.000100					
Bismuth (Bi)-Dissolved	mg/L	-	-	-	-	< 0.000050					
Boron (B)-Dissolved	mg/L	-	-	-	-	0.014					
Cadmium (Cd)-Dissolved	mg/L	Varies with hardness, see note US1 (background) guideline = 0.000091	Varies with hardness, see note US1 (background) guideline = 0.000043 5-week discrete sampling averages = 0.000008 (EOP), 0.0000055 (US), 0.0000108 (DS)	-	-	< 0.0000050		Guideline is hardness dependent. Guideline is applicable to water hardness between 7.0 and 455 mg/L. Guideline is calculated with the following formula: Guideline = (EXP(1.03 * (LN(hardness)) - 5.274)/1000) Lowest value for guideline is 0.000018 mg/L. If hardness is below the hardness range, the minimum hardness will be applied in the calculation.	Guideline is hardness dependent. Guideline is applicable to hardness between 3.4 and 285 mg/L. Guideline is calculated with the following formula: Guideline = (EXP(0.736 * (LN(hardness)) - 4.943)/1000) Lowest value for guedeline is 0.00004. If hardness is below the hardness range, the minimum hardness will be applied in the calculation.		
Calcium (Ca)-Dissolved	mg/L	-	Categorical, see note	-	-	1.91	Water treatment process has been increasing the Ca levels based on the levels seen at US1 site. Although this is not causing harm, the treatment facility should be informed and asked to keep the levels like that of observed at US1. The WLNG EOP sample had high sensitivity to acid inputs (i.e. low buffering capacity).		Guideline categorizes the sensitivity of a water body to acid inputs (i.e. buffering capacity). Standard is 4 mg/L dissolved Ca for the most sensitive waterbodies,5 - 8 mg/L for waterbodies with moderate sensitivity to acid inputs. Waterbodies with dissolved calcium > 8mg/L are considered to have low sensitivity to acid inputs.		
Cesium (Cs)-Dissolved	mg/L	-	-	-	-	0.00002					
Chromium (Cr)-Dissolved	mg/L	-	-	-	-	< 0.00050					
Chromium (Cr(III))-Dissolved	mg/L	-	-	-	-	-					
Chromium (Cr(VI))-Dissolved	mg/L	-	-	-	-	-					
Cobalt (Co)-Dissolved	mg/L	-	-	-	-	< 0.00010					
Copper (Cu)-Dissolved	mg/L	Guideline varies with other parameters, see note US1 (background) guideline = 0.0016	Guideline varies with other parameters, see note US1 (background) guideline = 0.0004 5-week discrete sampling averages = 0.00022 (EOP), **0.00061** (US), 0.00039 (DS)	-	-	< 0.00020		Guideline varies with other parameters and is calculated using BC BLM software. Simplified model: Temperature, pH, DOC and hardness Detailed model: Temperature, pH, DOC, humic acid content, total calcium, total magnesium, total sodium, total potassium, sulphate, chloride, and alkalinity Guideline calculated using values for parameters above taken at the specific site on each sampling date	Guideline varies with other parameters and is calculated using BC BLM software. Simplified model: Temperature, pH, DOC and hardness Detailed model: Temperature, pH, DOC, humic acid content, total calcium, total magnesium, total sodium, total potassium, sulphate, chloride, and alkalinity Guideline calculated using values for parameters above taken at the specific site on each sampling date		
Iron (Fe)-Dissolved	mg/L	0.35	-	-	-	< 0.010					
Lead (Pb)-Dissolved	mg/L	-	Guideline varies with DOC and hardness Guideline: 0.00202 5-week discrete sampling averages = < 0.00005 (EOP), 0.00005 (US),	-	-	< 0.000050			Guideline varies with DOC and hardness, refer to BC Water Quality Guidelines for more information. Guideline uses equation (EXP((0.514*LN(DOC))+(0.214*(LN(Hardness)))+0.4354))/2/1000 where DOC range is 0.5-31.5 mg/L and hardness range is 4.7-511 mg/L.		
Lithium (Li)-Dissolved	mg/L	-	-	-	-	0.0021					
Magnesium (Mg)-Dissolved	mg/L	-	-	-	-	0.352					
Manganese (Mn)-Dissolved	mg/L	-	-	-	-	0.00041					
Mercury (Hg)-Dissolved	mg/L	-	-	-	-	< 0.0000050					
Molybdenum (Mo)-Dissolved	mg/L	-	-	-	-	0.0142					
Nickel (Ni)-Dissolved	mg/L	Guideline varies with pH, temperature, DOC, and hardness US1 (background) guideline: 0.0172	Guideline varies with pH, temperature, DOC, and hardness US1 (background) guideline: 0.00115 5-week discrete sampling averages = < 0.0005 (EOP), 0.00051 (US), 0.00050 (DS)	-	-	< 0.00050		Guideline varies with other parameters and is calculated using BC BLM software. Simplified model: Temperature, pH, DOC and hardness Detailed model: Temperature, pH, DOC, humic acid content, total calcium, total magnesium, total sodium, total potassium, sulphate, chloride, and alkalinity Guideline calculated using values for parameters above taken at the specific site on each sampling date	Guideline varies with other parameters and is calculated using BC BLM software. Simplified model: Temperature, pH, DOC and hardness Detailed model: Temperature, pH, DOC, humic acid content, total calcium, total magnesium, total sodium, total potassium, sulphate, chloride, and alkalinity Guideline calculated using values for parameters above taken at the specific site on each sampling date		
Phosphorus (P)-Dissolved	mg/L	-	-	-	-	< 0.050					
Potassium (K)-Dissolved	mg/L	-	-	-	-	0.915					
Rubidium (Rb)-Dissolved	mg/L	-	-	-	-	0.0015					
Selenium (Se)-Dissolved	mg/L	-	-	-	-	< 0.000050					
Silicon (Si)-Dissolved	mg/L	-	-	-	-	5.87					
Silver (Ag)-Dissolved	mg/L	-	-	-	-	< 0.000010					
Sodium (Na)-Dissolved	mg/L	-	-	-	-	20.8					
Strontium (Sr)-Dissolved	mg/L	-	-	-	-	0.00605					
Sulfur (S)-Dissolved	mg/L	-	-	-	-	1.46					
Tellurium (Te)-Dissolved	mg/L	-	-	-	-	< 0.00020					
Thallium (Tl)-Dissolved	mg/L	-	-	-	-	< 0.000010					
Thorium (Th)-Dissolved	mg/L	-	-	-	-	< 0.00010					
Tin (Sn)-Dissolved	mg/L	-	-	-	-	< 0.00010					
Titanium (Ti)-Dissolved	mg/L	-	-	-	-	< 0.00030					
Tungsten (W)-Dissolved	mg/L	-	-	-	-	0.0003					
Uranium (U)-Dissolved	mg/L	-	-	-	-	< 0.000010					
Vanadium (V)-Dissolved	mg/L	-	-	-	-	< 0.00050					
Zinc (Zn)-Dissolved	mg/L	Varies with DOC and hardness US1 (background) guideline = 0.011	Varies with pH, DOC, hardness US1 (background) guideline = 0.0042 5-week discrete sampling average = **0.0090** (EOP), 0.0011 (US), 0.0042 (DS)	-	-	***< 0.0010***	**Dissolved zinc exceeds long-term BCWQG for FAL.**	Guideline varies with DOC and hardness. Guideline is calculated using the following formula: Guideline = (EXP((0.833 * (LN(hardness))) + (0.24 * (LN(DOC))) + 0.526)/2/1000) If hardness or DOC is below the hardness or DOC range, the minimum hardness or DOC will be applied in the calculation.	Guideline varies with pH, hardness and Dissolved Organic Carbon (DOC). Guideline is calculated using the following formula: Guideline = (EXP((0.974 * (LN(hardness))) - (0.815 * pH) + (0.398 * (LN(DOC))) + 4.625)/2/1000) Guideline only applies to water with pH between 6.5 and 8.13, DOC between 0.3 and 22.9 mg/L, anmd hardness between 23.4 and 399 mg/L. If hardness or DOC is below the hardness or DOC range, the minimum hardness or DOC will be applied in the calculation.		
Zirconium (Zr)-Dissolved	mg/L	-	-	-	-	< 0.00020					
Volatile Organic Compounds											
Chlorobenzene	µg/L	-	-	-	-	< 0.50					
Chloromethane	µg/L	-	-	-	-	< 5.0					
Dichlorobenzene, 1,2-	µg/L	-	0.7	-	42	< 0.50			Working guideline status		Working guideline status
Dichlorobenzene, 1,3-	µg/L	-	150	-	-	< 0.50			Working guideline status		
Dichlorobenzene, 1,4-	µg/L	-	26	-	-	< 0.50			Working guideline status		
Dichloropropane, 1,2-	µg/L	-	-	-	-	< 0.50					
Dichloropropylene, cis+trans-1,3-	µg/L	-	-	-	-	< 0.75					
Dichloropropylene, cis-1,3-	µg/L	-	-	-	-	< 0.50					
Tetrachloroethane, 1,1,1,2-	µg/L	-	-	-	-	< 0.50					
Tetrachloroethane, 1,1,2,2-	µg/L	-	-	-	-	<0.20					
Trichloroethane, 1,1,2-	µg/L	-	-	-	-	< 0.50					
Trichlorofluoromethane	µg/L	-	-	-	-	< 0.50					
Carbon tetrachloride	µg/L	-	-	-	-	< 0.50					
Chloroethane	µg/L	-	-	-	-	< 0.50					
Dichloroethane, 1,1-	µg/L	-	-	-	-	< 0.50					
Dichloroethane, 1,2-	µg/L	-	100	-	-	< 0.50			Working guideline status		
Dichloroethylene, 1,1-	µg/L	-	-	-	-	< 0.50					
Dichloroethylene, cis-1,2-	µg/L	-	-	-	-	< 0.50					
Dichloroethylene, trans-1,2-	µg/L	-	-	-	-	< 0.50					
Dichloromethane	µg/L	-	98.1	-	-	< 1.0			Working guideline status		
Dichloropropylene, trans-1,3-	µg/L	-	-	-	-	< 0.50					
Tetrachloroethylene	µg/L	-	110	-	-	< 0.50			Working guideline status		
Trichloroethane, 1,1,1-	µg/L	-	-	-	-	< 0.50					
Trichloroethylene	µg/L	-	21	-	-	< 0.50			Working guideline status		
Vinyl chloride	µg/L	-	-	-	-	< 0.40					
Benzene	µg/L	-	40	-	110	< 0.50			Interim guideline status		Interim guideline status
Ethylbenzene	µg/L	-	200	-	250	< 0.50			Interim guideline status		Interim guideline status
Methyl-tert-butyl ether [MTBE]	µg/L	3400	-	440	-	< 0.50					
Styrene	µg/L	-	72	-	-	< 0.50			Working guideline status		
Toluene	µg/L	-	0.5	-	-	< 0.40					
Xylene, m+p-	µg/L	-	-	-	-	< 0.40					
Xylene, o-	µg/L	-	-	-	-	< 0.30					
Xylenes, total	µg/L	-	30	-	-	< 0.50					
Bromodichloromethane	µg/L	-	-	-	-	< 0.50					
Bromoform	µg/L	-	-	-	-	< 0.50					
Chloroform	µg/L	-	1.8	-	-	< 0.50			Working guideline status		
Dibromochloromethane	µg/L	-	-	-	-	< 0.50					
Hydrocarbons											
EPH (C10-C19)	µg/L	-	-	-	-	< 250					
EPH (C19-C32)	µg/L	-	-	-	-	< 250					
VHw (C6-C10)	µg/L	-	-	-	-	< 100					
VPHw	µg/L	-	-	-	-	< 100					
Polycyclic Aromatic Hydrocarbons											
Acenaphthene	µg/L	-	6	-	6	< 0.010					
Acenaphthylene	µg/L	-	-	-	-	< 0.010					
Acridine	µg/L	-	-	-	-	< 0.010					
Anthracene	µg/L	0.1	4	-	-	< 0.010					
Benz(a)anthracene	µg/L	0.1	0.1	-	-	< 0.010					
Benzo(a)pyrene	µg/L	-	0.01	-	0.01	< 0.0050					
Benzo(b+j)fluoranthene	µg/L	-	-	-	-	< 0.010					
Benzo(b+j+k)fluoranthene	µg/L	-	-	-	-	< 0.015					
Benzo(g,h,i)perylene	µg/L	-	-	-	-	< 0.010					
Benzo(k)fluoranthene	µg/L	-	-	-	-	< 0.010					
Chrysene	µg/L	-	-	-	0.1	< 0.010					
Dibenz(a,h)anthracene	µg/L	-	-	-	-	< 0.0050					
Fluoranthene	µg/L	0.2	4	-	-	< 0.010		Guideline is for phototoxic effects			
Fluorene	µg/L	-	12	-	-	< 0.010					
Indeno(1,2,3-c,d)pyrene	µg/L	-	-	-	-	< 0.010					
Methylnaphthalene, 1-	µg/L	-	-	-	1	< 0.010					Guideline is for total methylated napthalene and is presented here for reference.
Methylnaphthalene, 2-	µg/L	-	-	-	1	< 0.010					Guideline is for total methylated napthalene and is presented here for reference.
Naphthalene	µg/L	-	1	-	1	< 0.050					
Phenanthrene	µg/L	-	0.3	-	-	< 0.020					
Pyrene	µg/L	0.02	-	-	-	< 0.010					
Quinoline	µg/L	-	3.4	-	-	< 0.050		Working guideline status			
Glycols											
Ethylene glycol	mg/L	-	192	-	-	< 5.0					
Propylene glycol, 1,2-	mg/L	-	500	-	-	< 5.0					
Applied Guideline:		**British Columbia Approved and Working Water Quality Guidelines (NOV 2023) - BCAWWQG - Freshwater Aquatic Life** **British Columbia Approved and Working Water Quality Guidelines (NOV 2023) - BCAWWQG - Marine Aquatic Life**									
Color Key:	**Exceeds both FAL and MAL Guidelines**	**Exceeds FAL Short term Guideline**	***Exceeds FAL Long term Guideline***	**Exceeds MAL Short term Guideline**	***Exceeds MAL Long term Guideline***						
Color Key:		**Exceeds FAL Short and Long-Term Guideline**		**Exceeds MAL Short and Long-term Guidelines**							

[1]BC MOECCS. 2023. BC Water Qualtiy Guidelines for the Protection of Aquatic Life, Wildlife & Agriculture. Accessed from:
wqg_summary_aquaticlife_wildlife_agri.pdf (gov.bc.ca)
[2]BC MOECCS. 2021. BC Working Water Qualtiy Guidelines for the Protection of Aquatic Life, Widlife & Agriculture. Accessed from:
bc_env_working_water_quality_guidelines.pdf (gov.bc.ca)
[3]Note that long-term guidelines apply to averaged data to account for chronic impacts to aquatic life. Ideally, five samples collected at evenly spaced intervals over 30 days is considered to be the minimum number needed to calculate the long-term average of any parameter, though this may vary by parameter and site conditions. Long-term guidelines applied here are for reference only and may not indicate chronic impacts to aquatic life if exceedances occur in the short term.
[4]Background temperature ranges: Dec-Feb: 0.3-8.0C; Mar-Apr: 3.0-10.2C; May-June: 6.8-15.1C; Jul-present: 12.9-18.2C
Reference: AquaTROLL In-Situ Data Logger - Background water quality readings collected from Dec.-present.
For guidelines dependent on other parameters, when hardness, pH or DOC are below the range stated in the guideline, the lowest value in the range is used to calculate the guideline.

Parameters Used to Calculate Guidelines

Analyte	Units	Measurement method	Values	
			WLNG EOP	WLNG US 07-Oct-2024
pH (field)	pH units	Field pH taken using handheld meters during sampling used in calculations	7.15	6.83
Temperature (field)	°C	Field temperature taken using handheld meters during sampling used in calculations	12.6	13.2
Turbidity (field)	NTU	Field turbidity taken using handheld meters during sampling used in calculations	4.64	0.02
Hardness (as CaCO3) (total)	mg/L	Laboratory tested total hardness taken at each respective sample site on the day of sampling used in guideline calculations	5.25	16.3
Dissolved Organic Carbon (DOC)	mg/L	Laboratory tested dissolved organic carbon tested at the lab used in guideline calculations	0.5	2.81
Total Alkalinity ($CaCO_3$)	mg/L	Laboratory tested total alkalinity used in calculations	45.5	8.6
Chloride	mg/L	Laboratory tested chloride taken at each respective sample site on the day of sampling used in guideline calculations	1.01	1.69
Total Suspended Solids	mg/L	Laboratory tested total suspended solids tested at the lab used in guideline calculations	3	< 3.0

Woodfibre Site Sample Lab Documentation

CERTIFICATE OF ANALYSIS

Work Order	: **VA24C7648**		
Client	: **Triton Environmental Consultants Ltd.**	Laboratory	: ALS Environmental - Vancouver
Contact		Account Manager	
Address		Address	
Telephone		Telephone	
Project	: 11964	Date Samples Received	: 16-Oct-2024 16:45
PO	: 11964-Task 30 Phase 3C-4C	Date Analysis Commenced	: 17-Oct-2024
C-O-C number	: ----	Issue Date	: 23-Oct-2024 09:05
Sampler	: ----		
Site	: Water Analysis		
Quote number	: VA23-TRIT100-012		
No. of samples received	: 2		
No. of samples analysed	: 2		

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*
		Inorganics, Edmonton, Alberta
		Metals, Burnaby, British Columbia
		Metals, Burnaby, British Columbia
		Organics, Burnaby, British Columbia
		Inorganics, Burnaby, British Columbia
		Metals, Burnaby, British Columbia
		Metals, Burnaby, British Columbia
		Inorganics, Burnaby, British Columbia
		Metals, Burnaby, British Columbia
		Administration, 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*
mg/L	milligrams per litre
µg/L	micrograms per litre
µS/cm	microsiemens per centimetre
pH units	pH units
°C	degrees celsius
-	no 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.

Sample Comments

Sample	*Client Id*	*Comment*
VA24C7648-002	Trip Blank	**Trip Blank :Dissolved Nutrient bottle not recevied for DOC analyses but requested on Chain of Custody / analytical request form; subsample cannot be obtained from other containers to meet request. The requested analysis cannot be performed. Total Phenols requested on Chain of Custody / analytical request form; subsample cannot be obtained from other containers to meet request. The requested analysis cannot be performed.**

Qualifiers

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).

Analytical Results

Sub-Matrix: Water (Matrix: Water)			Client sample ID		WLNG EOP	Trip Blank	----	----	----
			Client sampling date / time		16-Oct-2024 11:14	16-Oct-2024 11:14	----	----	----
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	VA24C7648-001	VA24C7648-002	----	----	----
					Result	Result	----	----	----
Field Tests									
Conductivity, field	----	EF001/VA	0.10	µS/cm	121.00	----	----	----	----
pH, field	----	EF001/VA	0.10	pH units	7.15	----	----	----	----
Temperature, field	----	EF001/VA	0.10	°C	12.6	----	----	----	----
Physical Tests									
Hardness (as CaCO3), dissolved	----	EC100/VA	0.60	mg/L	6.22	----	----	----	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.60	mg/L	5.25	<0.60	----	----	----
Solids, total dissolved [TDS]	----	E162/VA	10	mg/L	73	<10	----	----	----
Solids, total suspended [TSS]	----	E160/VA	3.0	mg/L	<3.0	<3.0	----	----	----
Alkalinity, total (as CaCO3)	----	E290/VA	2.0	mg/L	45.5	<2.0	----	----	----
Anions and Nutrients									
Ammonia, total (as N)	7664-41-7	E298/VA	0.0050	mg/L	0.0063	<0.0050	----	----	----
Bromide	24959-67-9	E235.Br-L/VA	0.050	mg/L	<0.050	<0.050	----	----	----
Chloride	16887-00-6	E235.Cl/VA	0.50	mg/L	1.01	<0.50	----	----	----
Fluoride	16984-48-8	E235.F/VA	0.020	mg/L	0.188	<0.020	----	----	----
Nitrate (as N)	14797-55-8	E235.NO3-L/VA	0.0050	mg/L	0.0257	<0.0050	----	----	----
Nitrite (as N)	14797-65-0	E235.NO2-L/VA	0.0010	mg/L	<0.0010	<0.0010	----	----	----
Nitrogen, total	7727-37-9	E366/VA	0.030	mg/L	0.101	<0.030	----	----	----
Phosphorus, total	7723-14-0	E372-U/VA	0.0020	mg/L	0.0054	<0.0020	----	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/VA	0.30	mg/L	5.49	<0.30	----	----	----
Organic / Inorganic Carbon									
Carbon, dissolved organic [DOC]	----	E358-L/VA	0.50	mg/L	<0.50	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID: WLNG EOP	Trip Blank	----	----	----
Client sampling date / time					16-Oct-2024 11:14	16-Oct-2024 11:14	----	----	----
					VA24C7648-001	VA24C7648-002	----	----	----
					Result	Result	----	----	----
Total Sulfides									
Sulfide, total (as S)	18496-25-8	E395/VA	0.0015	mg/L	<0.0015	<0.0015	----	----	----
Sulfide, un-ionized (as H2S), from total	7783-06-4	EC395/VA	0.0015	mg/L	<0.0015	----	----	----	----
Sulfide, total (as H2S)	7783-06-4	E395/VA	0.0016	mg/L	<0.0016	<0.0016	----	----	----
Total Metals									
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L	0.0146	<0.0030	----	----	----
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L	0.00019	<0.00010	----	----	----
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L	0.00230	<0.00010	----	----	----
Barium, total	7440-39-3	E420/VA	0.00010	mg/L	0.00129	<0.00010	----	----	----
Beryllium, total	7440-41-7	E420/VA	0.000100	mg/L	<0.000100	<0.000100	----	----	----
Bismuth, total	7440-69-9	E420/VA	0.000050	mg/L	<0.000050	<0.000050	----	----	----
Boron, total	7440-42-8	E420/VA	0.010	mg/L	0.014	<0.010	----	----	----
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L	<0.0000100 DLM	<0.0000050	----	----	----
Calcium, total	7440-70-2	E420/VA	0.050	mg/L	1.63	<0.050	----	----	----
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L	0.000022	<0.000010	----	----	----
Chromium, total	7440-47-3	E420/VA	0.00050	mg/L	<0.00050	<0.00050	----	----	----
Cobalt, total	7440-48-4	E420/VA	0.00010	mg/L	<0.00010	<0.00010	----	----	----
Copper, total	7440-50-8	E420/VA	0.00050	mg/L	<0.00050	<0.00050	----	----	----
Iron, total	7439-89-6	E420/VA	0.010	mg/L	0.023	<0.010	----	----	----
Lead, total	7439-92-1	E420/VA	0.000050	mg/L	<0.000050	<0.000050	----	----	----
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L	0.0021	<0.0010	----	----	----
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L	0.286	<0.0050	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	WLNG EOP	Trip Blank	----	----	----
					Client sampling date / time	16-Oct-2024 11:14	16-Oct-2024 11:14	----	----	----
						VA24C7648-001	VA24C7648-002	----	----	----
						Result	Result	----	----	----
Total Metals										
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L		0.00076	<0.00010	----	----	----
Mercury, total	7439-97-6	E508/VA	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
Molybdenum, total	7439-98-7	E420/VA	0.000050	mg/L		0.0156	<0.000050	----	----	----
Nickel, total	7440-02-0	E420/VA	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Phosphorus, total	7723-14-0	E420/VA	0.050	mg/L		<0.050	<0.050	----	----	----
Potassium, total	7440-09-7	E420/VA	0.050	mg/L		0.908	<0.050	----	----	----
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L		0.00158	<0.00020	----	----	----
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L		0.000065	<0.000050	----	----	----
Silicon, total	7440-21-3	E420/VA	0.10	mg/L		6.60	<0.10	----	----	----
Silver, total	7440-22-4	E420/VA	0.000010	mg/L		<0.000010	<0.000010	----	----	----
Sodium, total	7440-23-5	E420/VA	0.050	mg/L		21.2	<0.050	----	----	----
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L		0.00496	<0.00020	----	----	----
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L		1.59	<0.50	----	----	----
Tellurium, total	13494-80-9	E420/VA	0.00020	mg/L		<0.00020	<0.00020	----	----	----
Thallium, total	7440-28-0	E420/VA	0.000010	mg/L		<0.000010	<0.000010	----	----	----
Thorium, total	7440-29-1	E420/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Tin, total	7440-31-5	E420/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Titanium, total	7440-32-6	E420/VA	0.00030	mg/L		0.00041	<0.00030	----	----	----
Tungsten, total	7440-33-7	E420/VA	0.00010	mg/L		0.00034	<0.00010	----	----	----
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L		0.000015	<0.000010	----	----	----
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L		<0.00050	<0.00050	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	WLNG EOP	Trip Blank	----	----	----
					Client sampling date / time	16-Oct-2024 11:14	16-Oct-2024 11:14	----	----	----
						VA24C7648-001	VA24C7648-002	----	----	----
						Result	Result	----	----	----
Total Metals										
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L		<0.0030	<0.0030	----	----	----
Zirconium, total	7440-67-7	E420/VA	0.00020	mg/L		<0.00020	<0.00020	----	----	----
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421/VA	0.0010	mg/L		0.0019	----	----	----	----
Antimony, dissolved	7440-36-0	E421/VA	0.00010	mg/L		0.00018	----	----	----	----
Arsenic, dissolved	7440-38-2	E421/VA	0.00010	mg/L		0.00219	----	----	----	----
Barium, dissolved	7440-39-3	E421/VA	0.00010	mg/L		0.00108	----	----	----	----
Beryllium, dissolved	7440-41-7	E421/VA	0.000100	mg/L		<0.000100	----	----	----	----
Bismuth, dissolved	7440-69-9	E421/VA	0.000050	mg/L		<0.000050	----	----	----	----
Boron, dissolved	7440-42-8	E421/VA	0.010	mg/L		0.014	----	----	----	----
Cadmium, dissolved	7440-43-9	E421/VA	0.0000050	mg/L		<0.0000050	----	----	----	----
Calcium, dissolved	7440-70-2	E421/VA	0.050	mg/L		1.91	----	----	----	----
Cesium, dissolved	7440-46-2	E421/VA	0.000010	mg/L		0.000020	----	----	----	----
Chromium, dissolved	7440-47-3	E421/VA	0.00050	mg/L		<0.00050	----	----	----	----
Cobalt, dissolved	7440-48-4	E421/VA	0.00010	mg/L		<0.00010	----	----	----	----
Copper, dissolved	7440-50-8	E421/VA	0.00020	mg/L		<0.00020	----	----	----	----
Iron, dissolved	7439-89-6	E421/VA	0.010	mg/L		<0.010	----	----	----	----
Lead, dissolved	7439-92-1	E421/VA	0.000050	mg/L		<0.000050	----	----	----	----
Lithium, dissolved	7439-93-2	E421/VA	0.0010	mg/L		0.0021	----	----	----	----
Magnesium, dissolved	7439-95-4	E421/VA	0.0050	mg/L		0.352	----	----	----	----
Manganese, dissolved	7439-96-5	E421/VA	0.00010	mg/L		0.00041	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	WLNG EOP	Trip Blank	----	----	----
					Client sampling date / time	16-Oct-2024 11:14	16-Oct-2024 11:14	----	----	----
						VA24C7648-001	VA24C7648-002	----	----	----
						Result	Result	----	----	----
Dissolved Metals										
Mercury, dissolved	7439-97-6	E509/VA	0.0000050	mg/L		<0.0000050	----	----	----	----
Molybdenum, dissolved	7439-98-7	E421/VA	0.000050	mg/L		0.0142	----	----	----	----
Nickel, dissolved	7440-02-0	E421/VA	0.00050	mg/L		<0.00050	----	----	----	----
Phosphorus, dissolved	7723-14-0	E421/VA	0.050	mg/L		<0.050	----	----	----	----
Potassium, dissolved	7440-09-7	E421/VA	0.050	mg/L		0.915	----	----	----	----
Rubidium, dissolved	7440-17-7	E421/VA	0.00020	mg/L		0.00150	----	----	----	----
Selenium, dissolved	7782-49-2	E421/VA	0.000050	mg/L		<0.000050	----	----	----	----
Silicon, dissolved	7440-21-3	E421/VA	0.050	mg/L		5.87	----	----	----	----
Silver, dissolved	7440-22-4	E421/VA	0.000010	mg/L		<0.000010	----	----	----	----
Sodium, dissolved	7440-23-5	E421/VA	0.050	mg/L		20.8	----	----	----	----
Strontium, dissolved	7440-24-6	E421/VA	0.00020	mg/L		0.00605	----	----	----	----
Sulfur, dissolved	7704-34-9	E421/VA	0.50	mg/L		1.46	----	----	----	----
Tellurium, dissolved	13494-80-9	E421/VA	0.00020	mg/L		<0.00020	----	----	----	----
Thallium, dissolved	7440-28-0	E421/VA	0.000010	mg/L		<0.000010	----	----	----	----
Thorium, dissolved	7440-29-1	E421/VA	0.00010	mg/L		<0.00010	----	----	----	----
Tin, dissolved	7440-31-5	E421/VA	0.00010	mg/L		<0.00010	----	----	----	----
Titanium, dissolved	7440-32-6	E421/VA	0.00030	mg/L		<0.00030	----	----	----	----
Tungsten, dissolved	7440-33-7	E421/VA	0.00010	mg/L		0.00030	----	----	----	----
Uranium, dissolved	7440-61-1	E421/VA	0.000010	mg/L		<0.000010	----	----	----	----
Vanadium, dissolved	7440-62-2	E421/VA	0.00050	mg/L		<0.00050	----	----	----	----
Zinc, dissolved	7440-66-6	E421/VA	0.0010	mg/L		<0.0010	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	WLNG EOP	Trip Blank	----	----	----
					Client sampling date / time	16-Oct-2024 11:14	16-Oct-2024 11:14	----	----	----
						VA24C7648-001	VA24C7648-002	----	----	----
						Result	Result	----	----	----
Dissolved Metals										
Zirconium, dissolved	7440-67-7	E421/VA	0.00020	mg/L		<0.00020	----	----	----	----
Dissolved mercury filtration location	----	EP509/VA	-	-		Field	----	----	----	----
Dissolved metals filtration location	----	EP421/VA	-	-		Field	----	----	----	----
Speciated Metals										
Chromium, hexavalent [Cr VI], total	18540-29-9	E532/VA	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Chromium, trivalent [Cr III], total	16065-83-1	EC535/VA	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Aggregate Organics										
Phenols, total (4AAP)	----	E562/EO	0.0010	mg/L		<0.0010	----	----	----	----
Volatile Organic Compounds										
Chlorobenzene	108-90-7	E611C/VA	0.50	µg/L		<0.50	<0.50	----	----	----
Chloromethane	74-87-3	E611C/VA	5.0	µg/L		<5.0	<5.0	----	----	----
Dichlorobenzene, 1,2-	95-50-1	E611C/VA	0.50	µg/L		<0.50	<0.50	----	----	----
Dichlorobenzene, 1,3-	541-73-1	E611C/VA	0.50	µg/L		<0.50	<0.50	----	----	----
Dichlorobenzene, 1,4-	106-46-7	E611C/VA	0.50	µg/L		<0.50	<0.50	----	----	----
Dichloropropane, 1,2-	78-87-5	E611C/VA	0.50	µg/L		<0.50	<0.50	----	----	----
Dichloropropylene, cis-1,3-	10061-01-5	E611C/VA	0.50	µg/L		<0.50	<0.50	----	----	----
Dichloropropylene, cis+trans-1,3-	542-75-6	E611C/VA	0.75	µg/L		<0.75	<0.75	----	----	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611C/VA	0.50	µg/L		<0.50	<0.50	----	----	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611C/VA	0.20	µg/L		<0.20	<0.20	----	----	----
Trichloroethane, 1,1,2-	79-00-5	E611C/VA	0.50	µg/L		<0.50	<0.50	----	----	----
Trichlorofluoromethane	75-69-4	E611C/VA	0.50	µg/L		<0.50	<0.50	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	WLNG EOP	Trip Blank	----	----	----
					Client sampling date / time	16-Oct-2024 11:14	16-Oct-2024 11:14	----	----	----
						VA24C7648-001	VA24C7648-002	----	----	----
						Result	Result	----	----	----
Volatile Organic Compounds [Drycleaning]										
Carbon tetrachloride	56-23-5	E611C/VA	0.50	µg/L		<0.50	<0.50	----	----	----
Chloroethane	75-00-3	E611C/VA	0.50	µg/L		<0.50	<0.50	----	----	----
Dichloroethane, 1,1-	75-34-3	E611C/VA	0.50	µg/L		<0.50	<0.50	----	----	----
Dichloroethane, 1,2-	107-06-2	E611C/VA	0.50	µg/L		<0.50	<0.50	----	----	----
Dichloroethylene, 1,1-	75-35-4	E611C/VA	0.50	µg/L		<0.50	<0.50	----	----	----
Dichloroethylene, cis-1,2-	156-59-2	E611C/VA	0.50	µg/L		<0.50	<0.50	----	----	----
Dichloroethylene, trans-1,2-	156-60-5	E611C/VA	0.50	µg/L		<0.50	<0.50	----	----	----
Dichloromethane	75-09-2	E611C/VA	1.0	µg/L		<1.0	<1.0	----	----	----
Dichloropropylene, trans-1,3-	10061-02-6	E611C/VA	0.50	µg/L		<0.50	<0.50	----	----	----
Tetrachloroethylene	127-18-4	E611C/VA	0.50	µg/L		<0.50	<0.50	----	----	----
Trichloroethane, 1,1,1-	71-55-6	E611C/VA	0.50	µg/L		<0.50	<0.50	----	----	----
Trichloroethylene	79-01-6	E611C/VA	0.50	µg/L		<0.50	<0.50	----	----	----
Vinyl chloride	75-01-4	E611C/VA	0.40	µg/L		<0.40	<0.40	----	----	----
Volatile Organic Compounds [Fuels]										
Benzene	71-43-2	E611C/VA	0.50	µg/L		<0.50	<0.50	----	----	----
Ethylbenzene	100-41-4	E611C/VA	0.50	µg/L		<0.50	<0.50	----	----	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611C/VA	0.50	µg/L		<0.50	<0.50	----	----	----
Styrene	100-42-5	E611C/VA	0.50	µg/L		<0.50	<0.50	----	----	----
Toluene	108-88-3	E611C/VA	0.40	µg/L		<0.40	<0.40	----	----	----
Xylene, m+p-	179601-23-1	E611C/VA	0.40	µg/L		<0.40	<0.40	----	----	----
Xylene, o-	95-47-6	E611C/VA	0.30	µg/L		<0.30	<0.30	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	WLNG EOP	Trip Blank	----	----	----
					Client sampling date / time	16-Oct-2024 11:14	16-Oct-2024 11:14	----	----	----
						VA24C7648-001	VA24C7648-002	----	----	----
						Result	Result	----	----	----
Volatile Organic Compounds [Fuels]										
Xylenes, total	1330-20-7	E611C/VA	0.50	µg/L		<0.50	<0.50	----	----	----
Volatile Organic Compounds [THMs]										
Bromodichloromethane	75-27-4	E611C/VA	0.50	µg/L		<0.50	<0.50	----	----	----
Bromoform	75-25-2	E611C/VA	0.50	µg/L		<0.50	<0.50	----	----	----
Chloroform	67-66-3	E611C/VA	0.50	µg/L		<0.50	<0.50	----	----	----
Dibromochloromethane	124-48-1	E611C/VA	0.50	µg/L		<0.50	<0.50	----	----	----
Hydrocarbons										
EPH (C10-C19)	----	E601A/VA	250	µg/L		<250	<250	----	----	----
EPH (C19-C32)	----	E601A/VA	250	µg/L		<250	<250	----	----	----
VHw (C6-C10)	----	E581.VH+F1/VA	100	µg/L		<100	<100	----	----	----
HEPHw	----	EC600A/VA	250	µg/L		<250	<250	----	----	----
LEPHw	----	EC600A/VA	250	µg/L		<250	<250	----	----	----
VPHw	----	EC580A/VA	100	µg/L		<100	<100	----	----	----
Hydrocarbons Surrogates										
Bromobenzotrifluoride, 2- (EPH surrogate)	392-83-6	E601A/VA	1.0	%		80.9	78.9	----	----	----
Dichlorotoluene, 3,4-	95-75-0	E581.VH+F1/VA	1.0	%		118	121	----	----	----
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611C/VA	1.0	%		106	107	----	----	----
Difluorobenzene, 1,4-	540-36-3	E611C/VA	1.0	%		102	103	----	----	----
Polycyclic Aromatic Hydrocarbons										
Acenaphthene	83-32-9	E641A/VA	0.010	µg/L		<0.010	<0.010	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

					Client sample ID	WLNG EOP	Trip Blank	----	----	----
					Client sampling date / time	16-Oct-2024 11:14	16-Oct-2024 11:14	----	----	----
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit		VA24C7648-001	VA24C7648-002	----	----	----
						Result	Result	----	----	----
Polycyclic Aromatic Hydrocarbons										
Acenaphthylene	208-96-8	E641A/VA	0.010	µg/L		<0.010	<0.010	----	----	----
Acridine	260-94-6	E641A/VA	0.010	µg/L		<0.010	<0.010	----	----	----
Anthracene	120-12-7	E641A/VA	0.010	µg/L		<0.010	<0.010	----	----	----
Benz(a)anthracene	56-55-3	E641A/VA	0.010	µg/L		<0.010	<0.010	----	----	----
Benzo(a)pyrene	50-32-8	E641A/VA	0.0050	µg/L		<0.0050	<0.0050	----	----	----
Benzo(b+j)fluoranthene	n/a	E641A/VA	0.010	µg/L		<0.010	<0.010	----	----	----
Benzo(b+j+k)fluoranthene	n/a	E641A/VA	0.015	µg/L		<0.015	<0.015	----	----	----
Benzo(g,h,i)perylene	191-24-2	E641A/VA	0.010	µg/L		<0.010	<0.010	----	----	----
Benzo(k)fluoranthene	207-08-9	E641A/VA	0.010	µg/L		<0.010	<0.010	----	----	----
Chrysene	218-01-9	E641A/VA	0.010	µg/L		<0.010	<0.010	----	----	----
Dibenz(a,h)anthracene	53-70-3	E641A/VA	0.0050	µg/L		<0.0050	<0.0050	----	----	----
Fluoranthene	206-44-0	E641A/VA	0.010	µg/L		<0.010	<0.010	----	----	----
Fluorene	86-73-7	E641A/VA	0.010	µg/L		<0.010	<0.010	----	----	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A/VA	0.010	µg/L		<0.010	<0.010	----	----	----
Methylnaphthalene, 1-	90-12-0	E641A/VA	0.010	µg/L		<0.010	<0.010	----	----	----
Methylnaphthalene, 2-	91-57-6	E641A/VA	0.010	µg/L		<0.010	<0.010	----	----	----
Naphthalene	91-20-3	E641A/VA	0.050	µg/L		<0.050	<0.050	----	----	----
Phenanthrene	85-01-8	E641A/VA	0.020	µg/L		<0.020	<0.020	----	----	----
Pyrene	129-00-0	E641A/VA	0.010	µg/L		<0.010	<0.010	----	----	----
Quinoline	91-22-5	E641A/VA	0.050	µg/L		<0.050	<0.050	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	WLNG EOP	Trip Blank	----	----	----
					Client sampling date / time	16-Oct-2024 11:14	16-Oct-2024 11:14	----	----	----
						VA24C7648-001	VA24C7648-002	----	----	----
						Result	Result	----	----	----
Polycyclic Aromatic Hydrocarbons Surrogates										
Chrysene-d12	1719-03-5	E641A/VA	0.1	%		94.8	99.4	----	----	----
Naphthalene-d8	1146-65-2	E641A/VA	0.1	%		96.8	100	----	----	----
Phenanthrene-d10	1517-22-2	E641A/VA	0.1	%		96.5	99.8	----	----	----
Glycols										
Diethylene glycol	111-46-6	E680E/VA	5.0	mg/L		<5.0	<5.0	----	----	----
Ethylene glycol	107-21-1	E680E/VA	5.0	mg/L		<5.0	<5.0	----	----	----
Propylene glycol, 1,2-	57-55-6	E680E/VA	5.0	mg/L		<5.0	<5.0	----	----	----
Triethylene glycol	112-27-6	E680E/VA	5.0	mg/L		<5.0	<5.0	----	----	----
Glycols, total (EG+DEG+PG)	----	E680E/VA	10	mg/L		<10	<10	----	----	----
Glycols Surrogates										
Propanediol, 1,3-	504-63-2	E680E/VA	1.0	%		97.1	96.5	----	----	----

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA24C7648**	Page	: 1 of 16
Client	: **Triton Environmental Consultants Ltd.**	Laboratory	: ALS Environmental - Vancouver
Contact		Account Manager	
Address		Address	
Telephone		Telephone	
Project	: 11964	Date Samples Received	: 16-Oct-2024 16:45
PO	: 11964-Task 30 Phase 3C-4C	Issue Date	: 23-Oct-2024 09:05
C-O-C number	: ----		
Sampler	: ----		
Site	: Water Analysis		
Quote number	: VA23-TRIT100-012 _V2		
No. of samples received	: 2		
No. of samples analysed	: 2		

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 Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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 : Analytical Method / 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
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid) WLNG EOP	E562	16-Oct-2024	21-Oct-2024	28 days	5 days	✓	21-Oct-2024	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) WLNG EOP	E298	16-Oct-2024	17-Oct-2024	28 days	1 days	✓	17-Oct-2024	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (lab preserved) Trip Blank	E298	16-Oct-2024	17-Oct-2024	3 days	1 days	✓	17-Oct-2024	28 days	0 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE Trip Blank	E235.Br-L	16-Oct-2024	17-Oct-2024	28 days	1 days	✓	17-Oct-2024	28 days	1 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE WLNG EOP	E235.Br-L	16-Oct-2024	17-Oct-2024	28 days	1 days	✓	17-Oct-2024	28 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE Trip Blank	E235.Cl	16-Oct-2024	17-Oct-2024	28 days	1 days	✓	17-Oct-2024	28 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE WLNG EOP	E235.Cl	16-Oct-2024	17-Oct-2024	28 days	1 days	✓	17-Oct-2024	28 days	1 days	✓

Matrix: **Water**

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

Analyte Group : Analytical Method / 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
Anions and Nutrients : Fluoride in Water by IC										
HDPE Trip Blank	E235.F	16-Oct-2024	17-Oct-2024	28 days	1 days	✓	17-Oct-2024	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE WLNG EOP	E235.F	16-Oct-2024	17-Oct-2024	28 days	1 days	✓	17-Oct-2024	28 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Trip Blank	E235.NO3-L	16-Oct-2024	17-Oct-2024	3 days	1 days	✓	17-Oct-2024	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE WLNG EOP	E235.NO3-L	16-Oct-2024	17-Oct-2024	3 days	1 days	✓	17-Oct-2024	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Trip Blank	E235.NO2-L	16-Oct-2024	17-Oct-2024	3 days	1 days	✓	17-Oct-2024	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE WLNG EOP	E235.NO2-L	16-Oct-2024	17-Oct-2024	3 days	1 days	✓	17-Oct-2024	3 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE Trip Blank	E235.SO4	16-Oct-2024	17-Oct-2024	28 days	1 days	✓	17-Oct-2024	28 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE WLNG EOP	E235.SO4	16-Oct-2024	17-Oct-2024	28 days	1 days	✓	17-Oct-2024	28 days	1 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) WLNG EOP	E366	16-Oct-2024	17-Oct-2024	28 days	1 days	✓	19-Oct-2024	28 days	3 days	✓

Matrix: **Water**

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

Analyte Group : Analytical Method / 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
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (lab preserved)										
Trip Blank	E366	16-Oct-2024	18-Oct-2024	3 days	2 days	✓	20-Oct-2024	28 days	3 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
WLNG EOP	E372-U	16-Oct-2024	17-Oct-2024	28 days	1 days	✓	18-Oct-2024	28 days	2 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (lab preserved)										
Trip Blank	E372-U	16-Oct-2024	18-Oct-2024	3 days	2 days	✓	19-Oct-2024	28 days	0 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid)										
WLNG EOP	E509	16-Oct-2024	18-Oct-2024	28 days	2 days	✓	18-Oct-2024	28 days	2 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
WLNG EOP	E421	16-Oct-2024	17-Oct-2024	180 days	1 days	✓	18-Oct-2024	180 days	2 days	✓
Field Tests : Field pH,EC,Salinity, TDS, Cl2,ClO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine										
Glass vial dissolved (hydrochloric acid)										
WLNG EOP	EF001	16-Oct-2024	----	----	----		17-Oct-2024	----	1 days	
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial										
Trip Blank	E680E	16-Oct-2024	17-Oct-2024	7 days	1 days	✓	17-Oct-2024	40 days	0 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial										
WLNG EOP	E680E	16-Oct-2024	17-Oct-2024	7 days	1 days	✓	17-Oct-2024	40 days	0 days	✓
Hydrocarbons : BC PHCs - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
Trip Blank	E601A	16-Oct-2024	17-Oct-2024	14 days	1 days	✓	17-Oct-2024	40 days	0 days	✓

Matrix: **Water**

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

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : BC PHCs - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
WLNG EOP	E601A	16-Oct-2024	17-Oct-2024	14 days	1 days	✓	17-Oct-2024	40 days	0 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate)										
Trip Blank	E581.VH+F1	16-Oct-2024	17-Oct-2024	14 days	1 days	✓	18-Oct-2024	14 days	2 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate)										
WLNG EOP	E581.VH+F1	16-Oct-2024	17-Oct-2024	14 days	1 days	✓	18-Oct-2024	14 days	2 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
WLNG EOP	E358-L	16-Oct-2024	17-Oct-2024	28 days	1 days	✓	17-Oct-2024	28 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
Trip Blank	E290	16-Oct-2024	17-Oct-2024	14 days	1 days	✓	17-Oct-2024	14 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
WLNG EOP	E290	16-Oct-2024	17-Oct-2024	14 days	1 days	✓	17-Oct-2024	14 days	1 days	✓
Physical Tests : TDS by Gravimetry										
HDPE										
Trip Blank	E162	16-Oct-2024	----	----	----		20-Oct-2024	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE										
WLNG EOP	E162	16-Oct-2024	----	----	----		20-Oct-2024	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE										
Trip Blank	E160	16-Oct-2024	----	----	----		20-Oct-2024	7 days	4 days	✓

Matrix: **Water**

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

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : TSS by Gravimetry										
HDPE										
WLNG EOP	E160	16-Oct-2024	----	----	----		20-Oct-2024	7 days	4 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs in Water by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate)										
Trip Blank	E641A	16-Oct-2024	17-Oct-2024	14 days	1 days	✓	17-Oct-2024	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs in Water by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate)										
WLNG EOP	E641A	16-Oct-2024	17-Oct-2024	14 days	1 days	✓	17-Oct-2024	40 days	0 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
UV-inhibited HDPE - total (sodium hydroxide)										
Trip Blank	E532	16-Oct-2024	----	----	----		16-Oct-2024	28 days	0 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
UV-inhibited HDPE - total (sodium hydroxide)										
WLNG EOP	E532	16-Oct-2024	----	----	----		16-Oct-2024	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
WLNG EOP	E508	16-Oct-2024	18-Oct-2024	28 days	2 days	✓	18-Oct-2024	28 days	2 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
Trip Blank	E508	16-Oct-2024	23-Oct-2024	28 days	7 days	✓	23-Oct-2024	28 days	7 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
Trip Blank	E420	16-Oct-2024	18-Oct-2024	180 days	2 days	✓	18-Oct-2024	180 days	2 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
WLNG EOP	E420	16-Oct-2024	18-Oct-2024	180 days	2 days	✓	18-Oct-2024	180 days	2 days	✓

Matrix: **Water**

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

Analyte Group : Analytical Method / 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
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE total (zinc acetate+sodium hydroxide)										
Trip Blank	E395	16-Oct-2024	----	----	----		17-Oct-2024	7 days	1 days	✓
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE total (zinc acetate+sodium hydroxide)										
WLNG EOP	E395	16-Oct-2024	----	----	----		17-Oct-2024	7 days	1 days	✓
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
Trip Blank	E611C	16-Oct-2024	17-Oct-2024	14 days	1 days	✓	18-Oct-2024	14 days	2 days	✓
Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate)										
WLNG EOP	E611C	16-Oct-2024	17-Oct-2024	14 days	1 days	✓	18-Oct-2024	14 days	2 days	✓

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			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	1712863	1	8	12.5	5.0	✓
Ammonia by Fluorescence	E298	1713075	1	10	10.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1712867	1	12	8.3	5.0	✓
Chloride in Water by IC	E235.Cl	1712866	1	12	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1716475	1	11	9.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1713848	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1713076	1	8	12.5	5.0	✓
Fluoride in Water by IC	E235.F	1712865	1	12	8.3	5.0	✓
Glycols (4 analytes) by GC-FID	E680E	1713093	1	11	9.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1712868	1	12	8.3	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1712869	1	12	8.3	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1720350	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1712870	1	12	8.3	5.0	✓
TDS by Gravimetry	E162	1719450	1	20	5.0	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	1712769	1	4	25.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1717897	2	40	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1713845	1	19	5.2	5.0	✓
Total Nitrogen by Colourimetry	E366	1715182	2	21	9.5	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1715181	2	25	8.0	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	1713343	1	4	25.0	5.0	✓
TSS by Gravimetry	E160	1719426	1	20	5.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1713096	1	6	16.6	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	1713095	1	18	5.5	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	1712863	1	8	12.5	5.0	✓
Ammonia by Fluorescence	E298	1713075	1	10	10.0	5.0	✓
BC PHCs - EPH by GC-FID	E601A	1712819	1	7	14.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1712867	1	12	8.3	5.0	✓
Chloride in Water by IC	E235.Cl	1712866	1	12	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1716475	1	11	9.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1713848	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1713076	1	8	12.5	5.0	✓
Fluoride in Water by IC	E235.F	1712865	1	12	8.3	5.0	✓
Glycols (4 analytes) by GC-FID	E680E	1713093	1	11	9.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1712868	1	12	8.3	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1712869	1	12	8.3	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
PAHs in Water by Hexane LVI GC-MS	E641A	1712818	1	15	6.6	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1720350	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1712870	1	12	8.3	5.0	✓
TDS by Gravimetry	E162	1719450	1	20	5.0	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	1712769	1	4	25.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1717897	2	40	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1713845	1	19	5.2	5.0	✓
Total Nitrogen by Colourimetry	E366	1715182	2	21	9.5	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1715181	2	25	8.0	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	1713343	1	4	25.0	5.0	✓
TSS by Gravimetry	E160	1719426	1	20	5.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1713096	1	6	16.6	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	1713095	1	18	5.5	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	1712863	1	8	12.5	5.0	✓
Ammonia by Fluorescence	E298	1713075	1	10	10.0	5.0	✓
BC PHCs - EPH by GC-FID	E601A	1712819	1	7	14.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1712867	1	12	8.3	5.0	✓
Chloride in Water by IC	E235.Cl	1712866	1	12	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1716475	1	11	9.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1713848	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1713076	1	8	12.5	5.0	✓
Fluoride in Water by IC	E235.F	1712865	1	12	8.3	5.0	✓
Glycols (4 analytes) by GC-FID	E680E	1713093	1	11	9.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1712868	1	12	8.3	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1712869	1	12	8.3	5.0	✓
PAHs in Water by Hexane LVI GC-MS	E641A	1712818	1	15	6.6	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1720350	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1712870	1	12	8.3	5.0	✓
TDS by Gravimetry	E162	1719450	1	20	5.0	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	1712769	1	4	25.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1717897	2	40	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1713845	1	19	5.2	5.0	✓
Total Nitrogen by Colourimetry	E366	1715182	2	21	9.5	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1715181	2	25	8.0	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	1713343	1	4	25.0	5.0	✓
TSS by Gravimetry	E160	1719426	1	20	5.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1713096	1	6	16.6	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	1713095	1	18	5.5	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	1713075	1	10	10.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1712867	1	12	8.3	5.0	✓
Chloride in Water by IC	E235.Cl	1712866	1	12	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1716475	1	11	9.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1713848	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1713076	1	8	12.5	5.0	✓
Fluoride in Water by IC	E235.F	1712865	1	12	8.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1712868	1	12	8.3	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1712869	1	12	8.3	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1720350	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1712870	1	12	8.3	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	1712769	1	4	25.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1717897	2	40	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1713845	1	19	5.2	5.0	✓
Total Nitrogen by Colourimetry	E366	1715182	2	21	9.5	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1715181	2	25	8.0	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	1713343	1	4	25.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1713096	1	6	16.6	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	1713095	1	18	5.5	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
TSS by Gravimetry	E160 ALS Environmental - Vancouver	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 ALS Environmental - Vancouver	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 ALS Environmental - Vancouver	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Ammonia by Fluorescence	E298 ALS Environmental - Vancouver	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Dissolved Organic Carbon by Combustion (Low Level)	E358-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Nitrogen by Colourimetry	E366 ALS Environmental - Vancouver	Water	Chinchilla Scientific Nitrate Method, 2011	Following digestion, total nitrogen is is determined colourimetrically using a discrete analyzer utilizing the vanadium chloride reduction method. This method of analysis is approved under US EPA 40 CFR Part 136 (May 2021).
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Sulfide by Colourimetry (Automated Flow)	E395 ALS Environmental - Vancouver	Water	APHA 4500 -S E-Auto-Colorimetry	Sulfide is determined using the gas dialysis automated methlyene blue colourimetric method. Results expressed "as H2S" if reported represent the maximum possible H2S concentration based on the total sulfide concentration in the sample. The H2S calculation converts Total Sulphide as (S2-) and reports it as Total Sulphide as (H2S)
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Vancouver	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 ALS Environmental - Vancouver	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 ALS Environmental - Vancouver	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 ALS Environmental - Vancouver	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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Hexavalent Chromium (Cr VI) by IC	E532 ALS Environmental - Vancouver	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.
Phenols (4AAP) in Water by Colorimetry	E562 ALS Environmental - Edmonton	Water	EPA 9066	This automated method is based on the distillation of phenol and subsequent reaction of the distillate with alkaline ferricyanide ($K_3Fe(CN)_6$) and 4-amino-antipyrine (4-AAP) to form a red complex which is measured colorimetrically.
VH and F1 by Headspace GC-FID	E581.VH+F1 ALS Environmental - Vancouver	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. Analytical methods for CCME Petroleum Hydrocarbons (PHCs) are validated to comply fully with the Reference Method for the Canada-Wide Standard for PHC. Unless qualified, all required quality control criteria of the CCME PHC method have been met, including response factor and linearity requirements.
BC PHCs - EPH by GC-FID	E601A ALS Environmental - Vancouver	Water	BC MOE Lab Manual	Sample extracts are analyzed by GC-FID for BC hydrocarbon fractions.
VOCs (BC List) by Headspace GC-MS	E611C ALS Environmental - Vancouver	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. Total Xylenes is the sum of m,p-Xylene & o-Xylene. Total BTEX is the sum of Benzene, Toluene, Ethylbenzene, & Total Xylenes. Total BTEX+Styrene is the sum of Total BTEX & Styrene. Total Trihalomethanes [THMs] is the sum of Bromodichloromethane, Bromoform, Chloroform, & Dibromochloromethane.
PAHs in Water by Hexane LVI GC-MS	E641A ALS Environmental - Vancouver	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.
Glycols (4 analytes) by GC-FID	E680E ALS Environmental - Vancouver	Water	EPA 8015D (mod)	Derivatized glycols are analyzed by GC-FID.
Dissolved Hardness (Calculated)	EC100 ALS Environmental - Vancouver	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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A ALS Environmental - Vancouver	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.
Un-ionized Total Hydrogen Sulfide (calculated)	EC395 ALS Environmental - Vancouver	Water	APHA 4500 -S H	Un-ionized sulfide is calculated using results from total sulfide analysis, pH, temperature, and ionic strength of the sample. Calculation of un-ionized sulfide using total sulfide concentrations may be biased high due to particulate forms of sulfide measured during total sulfide testing.
Total Trivalent Chromium (Cr III) by Calculation	EC535 ALS Environmental - Vancouver	Water	APHA 3030B/6020A/EPA 7196A (mod)	Chromium (III)-Total is calculated as the difference between the total chromium and the total hexavalent chromium (Cr(VI)) results.The Limit of Reporting for Chromium (III) varies as a function of the test results.
VPH: VH-BTEX-Styrene	EC580A ALS Environmental - Vancouver	Water	BC MOE Lab Manual (VPH in Water and Solids) (mod)	Volatile Petroleum Hydrocarbons (VPH) is calculated as follows: VPHw = Volatile Hydrocarbons (VH C6-C10) minus benzene, toluene, ethylbenzene, xylenes (BTEX) and styrene.
LEPH and HEPH: EPH-PAH	EC600A ALS Environmental - Vancouver	Water	BC MOE Lab Manual (LEPH and HEPH)	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.
Field pH,EC,Salinity, TDS, Cl2,ClO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine	EF001 ALS Environmental - Vancouver	Water	Field Measurement (Client Supplied)	Field pH,EC,Salinity, TDS, Cl2,ClO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3 or Chloramine measurements provided by client and recorded on ALS report may affect the validity of results.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Vancouver	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Preparation for Dissolved Organic Carbon for Combustion	EP358 ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Nitrogen in water	EP366 ALS Environmental - Vancouver	Water	APHA 4500-P J (mod)	Samples for total nitrogen analysis are digested using a heated persulfate digestion. Nitrogen compounds are converted to nitrate in this digestion.
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals Water Filtration	EP421 ALS Environmental - Vancouver	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
Dissolved Mercury Water Filtration	EP509 ALS Environmental - Vancouver	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
VOCs Preparation for Headspace Analysis	EP581 ALS Environmental - Vancouver	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 a GC-MS-FID.
PHCs and PAHs Hexane Extraction	EP601 ALS Environmental - Vancouver	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
Glycols Extraction and Derivatization (BC Only)	EP680E ALS Environmental - Vancouver	Water	EPA 8015D (mod)	Aqueous sample is derivatized and extracted with orgaic solvent.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **VA24C7648**	Page	: 1 of 23
Client	: Triton Environmental Consultants Ltd.	Laboratory	: ALS Environmental - Vancouver
Contact		Account Manager	
Address		Address	
Telephone	: ----	Telephone	
Project	: 11964	Date Samples Received	: 16-Oct-2024 16:45
PO	: 11964-Task 30 Phase 3C-4C	Date Analysis Commenced	: 16-Oct-2024
C-O-C number	: ----	Issue Date	: 23-Oct-2024 09:05
Sampler	: ----		
Site	: Water Analysis		
Quote number	: VA23-TRIT100-012 _V2		
No. of samples received	: 2		
No. of samples analysed	: 2		

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 Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

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*
		Edmonton Inorganics, Edmonton, Alberta
		Vancouver Metals, Burnaby, British Columbia
		Vancouver Metals, Burnaby, British Columbia
		Vancouver Organics, Burnaby, British Columbia
		Vancouver Inorganics, Burnaby, British Columbia
		Vancouver Metals, Burnaby, British Columbia
		Vancouver Metals, Burnaby, British Columbia
		Vancouver Inorganics, Burnaby, British Columbia
		Vancouver Metals, Burnaby, British Columbia
		Vancouver Administration, 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 Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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
Physical Tests (QC Lot: 1712863)											
FJ2403145-002	Anonymous	Alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	292	291	0.378%	20%	----
Physical Tests (QC Lot: 1719426)											
FJ2403156-017	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 1719450)											
FJ2403156-017	Anonymous	Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1712865)											
FJ2403144-001	Anonymous	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.065	0.063	0.002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1712866)											
FJ2403144-001	Anonymous	Chloride	16887-00-6	E235.Cl	0.50	mg/L	1.96	1.95	0.01	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1712867)											
FJ2403144-001	Anonymous	Bromide	24959-67-9	E235.Br-L	0.050	mg/L	0.115	0.116	0.0010	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1712868)											
FJ2403144-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0791	0.0787	0.461%	20%	----
Anions and Nutrients (QC Lot: 1712869)											
FJ2403144-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0166	0.0166	0.0783%	20%	----
Anions and Nutrients (QC Lot: 1712870)											
FJ2403144-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	26.8	26.8	0.112%	20%	----
Anions and Nutrients (QC Lot: 1713075)											
FJ2403144-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0122	0.0126	0.0003	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1715181)											
VA24C7169-002	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0154	0.0146	0.0008	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1715182)											
VA24C5848-009	Anonymous	Nitrogen, total	7727-37-9	E366	0.030	mg/L	0.107	0.114	0.007	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1717161)											
VA24C7593-004	Anonymous	Nitrogen, total	7727-37-9	E366	0.030	mg/L	<0.030	<0.030	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1717168)											
VA24C7593-004	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 1713076)											
FJ2403144-001	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.69	2.79	0.09	Diff <2x LOR	----
Total Sulfides (QC Lot: 1713343)											

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 Sulfides (QC Lot: 1713343) - continued											
VA24C7644-001	Anonymous	Sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015	<0.0015	0	Diff <2x LOR	----
Total Metals (QC Lot: 1713845)											
FJ2403119-005	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		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	<0.00010	<0.00010	0	Diff <2x LOR	----
		Barium, total	7440-39-3	E420	0.00010	mg/L	<0.00010	<0.00010	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	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	<0.00010	<0.00010	0	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	<0.010	<0.010	0	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	<0.0010	<0.0010	0	Diff <2x LOR	----
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	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	<0.050	<0.050	0	Diff <2x LOR	----
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		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	<0.10	<0.10	0	Diff <2x LOR	----
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Strontium, total	7440-24-6	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		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	----

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: 1713845) - continued											
FJ2403119-005	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	<0.00030	<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	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		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	<0.0030	<0.0030	0	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: 1717897)											
FJ2403144-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 1724780)											
FJ2403194-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1713848)											
FJ2403114-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0017	0.0014	0.0003	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	0.00278	0.00273	1.77%	20%	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.317	0.309	2.59%	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	0.018	0.018	0.00009	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	82.4	84.2	2.25%	20%	----
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000028	0.000030	0.000001	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	0.00041	0.00040	0.000008	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	2.12	2.13	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	0.0056	0.0056	0.000004	Diff <2x LOR	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	14.6	14.2	2.45%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0365	0.0362	0.818%	20%	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00301	0.00294	2.34%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00267	0.00268	0.000004	Diff <2x LOR	----
		Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	0.075	0.068	0.006	Diff <2x LOR	----
		Potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.719	0.728	1.21%	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: 1713848) - continued											
FJ2403114-001	Anonymous	Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00121	0.00116	0.00006	Diff <2x LOR	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000058	<0.000050	0.000008	Diff <2x LOR	----
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.88	2.98	3.36%	20%	----
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	0.693	0.699	0.950%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.115	0.115	0.0240%	20%	----
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	3.38	3.65	0.27	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	<0.00010	<0.00010	0	Diff <2x LOR	----
		Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000181	0.000171	5.66%	20%	----
		Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00072	0.00068	0.00004	Diff <2x LOR	----
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0028	0.0026	0.0003	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: 1716475)											
VA24C7542-001	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	0.0000307	0.0000308	0.00000009	Diff <2x LOR	----
Speciated Metals (QC Lot: 1712769)											
VA24C7644-001	Anonymous	Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
Aggregate Organics (QC Lot: 1720350)											
VA24C7020-008	Anonymous	Phenols, total (4AAP)	----	E562	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 1713095)											
KS2404231-001	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	----

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: 1713095) - continued											
KS2404231-001	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	1.78	1.78	0.0004	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	0.51	0.52	0.01	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: 1713096)											
VA24C7105-001	Anonymous	VHw (C6-C10)	----	E581.VH+F1	100	µg/L	<100	<100	0.0%	30%	----
Glycols (QC Lot: 1713093)											
VA24C7408-001	Anonymous	Diethylene glycol	111-46-6	E680E	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR	----
		Ethylene glycol	107-21-1	E680E	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR	----
		Propylene glycol, 1,2-	57-55-6	E680E	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR	----
		Triethylene glycol	112-27-6	E680E	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR	----

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
Physical Tests (QCLot: 1712863)						
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	1.0	----
Physical Tests (QCLot: 1719426)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 1719450)						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 1712865)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 1712866)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 1712867)						
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 1712868)						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1712869)						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 1712870)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 1713075)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1715181)						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 1715182)						
Nitrogen, total	7727-37-9	E366	0.03	mg/L	<0.030	----
Anions and Nutrients (QCLot: 1717161)						
Nitrogen, total	7727-37-9	E366	0.03	mg/L	<0.030	----
Anions and Nutrients (QCLot: 1717168)						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Organic / Inorganic Carbon (QCLot: 1713076)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Total Sulfides (QCLot: 1713343)						
Sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1713845)						
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	7440-23-5	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	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1713845) - continued						
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: 1717897)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 1724780)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 1713848)						
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	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 1713848) - continued						
Sodium, dissolved	7440-23-5	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: 1716475)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Speciated Metals (QCLot: 1712769)						
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	<0.00050	----
Aggregate Organics (QCLot: 1720350)						
Phenols, total (4AAP)	----	E562	0.001	mg/L	<0.0010	----
Volatile Organic Compounds (QCLot: 1713095)						
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	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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 1713095) - continued						
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: 1712819)						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
Hydrocarbons (QCLot: 1713096)						
VHw (C6-C10)	----	E581.VH+F1	100	µg/L	<100	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1712818)						
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	n/a	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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1712818) - continued						
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	----
Glycols (QCLot: 1713093)						
Diethylene glycol	111-46-6	E680E	5	mg/L	<5.0	----
Ethylene glycol	107-21-1	E680E	5	mg/L	<5.0	----
Propylene glycol, 1,2-	57-55-6	E680E	5	mg/L	<5.0	----
Triethylene glycol	112-27-6	E680E	5	mg/L	<5.0	----

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1712863)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	106	85.0	115	----
Physical Tests (QCLot: 1719426)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	104	85.0	115	----
Physical Tests (QCLot: 1719450)									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	98.8	85.0	115	----
Anions and Nutrients (QCLot: 1712865)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.0	90.0	110	----
Anions and Nutrients (QCLot: 1712866)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 1712867)									
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	99.9	85.0	115	----
Anions and Nutrients (QCLot: 1712868)									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 1712869)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.5	90.0	110	----
Anions and Nutrients (QCLot: 1712870)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 1713075)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	103	85.0	115	----
Anions and Nutrients (QCLot: 1715181)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	95.3	80.0	120	----
Anions and Nutrients (QCLot: 1715182)									
Nitrogen, total	7727-37-9	E366	0.03	mg/L	0.5 mg/L	100	75.0	125	----
Anions and Nutrients (QCLot: 1717161)									
Nitrogen, total	7727-37-9	E366	0.03	mg/L	0.5 mg/L	99.9	75.0	125	----
Anions and Nutrients (QCLot: 1717168)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	92.9	80.0	120	----
Organic / Inorganic Carbon (QCLot: 1713076)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	101	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Total Sulfides (QCLot: 1713343)									
Sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	0.08 mg/L	103	80.0	120	----
Total Metals (QCLot: 1713845)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	98.2	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	104	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	104	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	94.7	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	86.5	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	99.2	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	95.4	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	102	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	99.6	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	102	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	103	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	94.7	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	99.1	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	101	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	101	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	100	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	102	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	112	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	94.7	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	97.6	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	94.5	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	100	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	100	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Target Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 1713845) - continued									
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	96.0	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	102	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	99.7	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	96.7	80.0	120	----
Total Metals (QCLot: 1717897)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0 mg/L	94.5	80.0	120	----
Total Metals (QCLot: 1724780)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0 mg/L	102	80.0	120	----
Dissolved Metals (QCLot: 1713848)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	97.3	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	90.2	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	97.5	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	97.8	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	93.2	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	95.8	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	101	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	95.1	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	97.0	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	95.6	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	94.9	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	95.6	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	91.4	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	94.8	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	93.4	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	100.0	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	94.8	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	93.3	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	93.4	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	94.8	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	92.6	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	90.4	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 1713848) - continued									
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	95.6	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	89.4	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	97.6	80.0	120	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	91.0	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	102	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	93.6	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	97.1	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.4	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.4	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	96.2	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	99.9	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	96.6	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	96.5	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	94.4	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0 mg/L	96.2	80.0	120	----
Speciated Metals (QCLot: 1712769)									
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	0.25 mg/L	100	80.0	120	----
Aggregate Organics (QCLot: 1720350)									
Phenols, total (4AAP)	----	E562	0.001	mg/L	0.02 mg/L	103	85.0	115	----
Volatile Organic Compounds (QCLot: 1713095)									
Benzene	71-43-2	E611C	0.5	µg/L	100 µg/L	88.9	70.0	130	----
Bromodichloromethane	75-27-4	E611C	0.5	µg/L	100 µg/L	96.5	70.0	130	----
Bromoform	75-25-2	E611C	0.5	µg/L	100 µg/L	87.3	70.0	130	----
Carbon tetrachloride	56-23-5	E611C	0.5	µg/L	100 µg/L	97.5	70.0	130	----
Chlorobenzene	108-90-7	E611C	0.5	µg/L	100 µg/L	96.9	70.0	130	----
Chloroethane	75-00-3	E611C	0.5	µg/L	100 µg/L	98.2	60.0	140	----
Chloroform	67-66-3	E611C	0.5	µg/L	100 µg/L	103	70.0	130	----
Chloromethane	74-87-3	E611C	5	µg/L	100 µg/L	93.2	60.0	140	----
Dibromochloromethane	124-48-1	E611C	0.5	µg/L	100 µg/L	104	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611C	0.5	µg/L	100 µg/L	97.2	70.0	130	----
Dichlorobenzene, 1,3-	541-73-1	E611C	0.5	µg/L	100 µg/L	101	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611C	0.5	µg/L	100 µg/L	104	70.0	130	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Target Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 1713095) - continued									
Dichloroethane, 1,1-	75-34-3	E611C	0.5	µg/L	100 µg/L	91.2	70.0	130	----
Dichloroethane, 1,2-	107-06-2	E611C	0.5	µg/L	100 µg/L	105	70.0	130	----
Dichloroethylene, 1,1-	75-35-4	E611C	0.5	µg/L	100 µg/L	88.0	70.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611C	0.5	µg/L	100 µg/L	93.9	70.0	130	----
Dichloroethylene, trans-1,2-	156-60-5	E611C	0.5	µg/L	100 µg/L	113	70.0	130	----
Dichloromethane	75-09-2	E611C	1	µg/L	100 µg/L	103	70.0	130	----
Dichloropropane, 1,2-	78-87-5	E611C	0.5	µg/L	100 µg/L	91.9	70.0	130	----
Dichloropropylene, cis-1,3-	10061-01-5	E611C	0.5	µg/L	100 µg/L	99.1	70.0	130	----
Dichloropropylene, trans-1,3-	10061-02-6	E611C	0.5	µg/L	100 µg/L	108	70.0	130	----
Ethylbenzene	100-41-4	E611C	0.5	µg/L	100 µg/L	91.4	70.0	130	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.5	µg/L	100 µg/L	94.4	70.0	130	----
Styrene	100-42-5	E611C	0.5	µg/L	100 µg/L	92.2	70.0	130	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.5	µg/L	100 µg/L	96.2	70.0	130	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.2	µg/L	100 µg/L	86.0	70.0	130	----
Tetrachloroethylene	127-18-4	E611C	0.5	µg/L	100 µg/L	108	70.0	130	----
Toluene	108-88-3	E611C	0.4	µg/L	100 µg/L	88.4	70.0	130	----
Trichloroethane, 1,1,1-	71-55-6	E611C	0.5	µg/L	100 µg/L	96.4	70.0	130	----
Trichloroethane, 1,1,2-	79-00-5	E611C	0.5	µg/L	100 µg/L	96.1	70.0	130	----
Trichloroethylene	79-01-6	E611C	0.5	µg/L	100 µg/L	107	70.0	130	----
Trichlorofluoromethane	75-69-4	E611C	0.5	µg/L	100 µg/L	96.4	60.0	140	----
Vinyl chloride	75-01-4	E611C	0.4	µg/L	100 µg/L	94.3	60.0	140	----
Xylene, m+p-	179601-23-1	E611C	0.4	µg/L	200 µg/L	94.0	70.0	130	----
Xylene, o-	95-47-6	E611C	0.3	µg/L	100 µg/L	88.8	70.0	130	----
Hydrocarbons (QCLot: 1712819)									
EPH (C10-C19)	----	E601A	250	µg/L	6490 µg/L	110	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3360 µg/L	96.2	70.0	130	----
Hydrocarbons (QCLot: 1713096)									
VHw (C6-C10)	----	E581.VH+F1	100	µg/L	6310 µg/L	82.3	70.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1712818)									
Acenaphthene	83-32-9	E641A	0.01	µg/L	0.5 µg/L	109	60.0	130	----
Acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5 µg/L	118	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	116	60.0	130	----
Benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5 µg/L	102	60.0	130	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1712818) - continued									
Benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5 µg/L	104	60.0	130	----
Benzo(b+j)fluoranthene	n/a	E641A	0.01	µg/L	0.5 µg/L	100	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	108	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	105	60.0	130	----
Fluoranthene	206-44-0	E641A	0.01	µg/L	0.5 µg/L	108	60.0	130	----
Fluorene	86-73-7	E641A	0.01	µg/L	0.5 µg/L	107	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	108	60.0	130	----
Methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5 µg/L	118	60.0	130	----
Naphthalene	91-20-3	E641A	0.05	µg/L	0.5 µg/L	113	50.0	130	----
Phenanthrene	85-01-8	E641A	0.02	µg/L	0.5 µg/L	112	60.0	130	----
Pyrene	129-00-0	E641A	0.01	µg/L	0.5 µg/L	109	60.0	130	----
Quinoline	91-22-5	E641A	0.05	µg/L	0.5 µg/L	116	60.0	130	----
Glycols (QCLot: 1713093)									
Diethylene glycol	111-46-6	E680E	5	mg/L	25 mg/L	93.0	70.0	130	----
Ethylene glycol	107-21-1	E680E	5	mg/L	25 mg/L	92.6	70.0	130	----
Propylene glycol, 1,2-	57-55-6	E680E	5	mg/L	25 mg/L	90.2	70.0	130	----
Triethylene glycol	112-27-6	E680E	5	mg/L	25 mg/L	90.7	70.0	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
Anions and Nutrients (QCLot: 1712865)										
FJ2403145-001	Anonymous	Fluoride	16984-48-8	E235.F	4.91 mg/L	5 mg/L	98.2	75.0	125	----
Anions and Nutrients (QCLot: 1712866)										
FJ2403145-001	Anonymous	Chloride	16887-00-6	E235.Cl	493 mg/L	500 mg/L	98.7	75.0	125	----
Anions and Nutrients (QCLot: 1712867)										
FJ2403145-001	Anonymous	Bromide	24959-67-9	E235.Br-L	2.45 mg/L	2.5 mg/L	98.1	75.0	125	----
Anions and Nutrients (QCLot: 1712868)										
FJ2403145-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	12.3 mg/L	12.5 mg/L	98.3	75.0	125	----
Anions and Nutrients (QCLot: 1712869)										
FJ2403145-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	2.42 mg/L	2.5 mg/L	96.8	75.0	125	----
Anions and Nutrients (QCLot: 1712870)										
FJ2403145-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	492 mg/L	500 mg/L	98.4	75.0	125	----
Anions and Nutrients (QCLot: 1713075)										
FJ2403145-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.101 mg/L	0.1 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 1715181)										
VA24C7219-002	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0466 mg/L	0.05 mg/L	93.3	70.0	130	----
Anions and Nutrients (QCLot: 1715182)										
VA24C7169-002	Anonymous	Nitrogen, total	7727-37-9	E366	ND mg/L	----	ND	70.0	130	----
Anions and Nutrients (QCLot: 1717161)										
VA24C7644-001	Anonymous	Nitrogen, total	7727-37-9	E366	0.391 mg/L	0.4 mg/L	97.8	70.0	130	----
Anions and Nutrients (QCLot: 1717168)										
VA24C7599-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0627 mg/L	0.05 mg/L	125	70.0	130	----
Organic / Inorganic Carbon (QCLot: 1713076)										
FJ2403145-001	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	4.79 mg/L	5 mg/L	95.9	70.0	130	----
Total Sulfides (QCLot: 1713343)										
VA24C7645-001	Anonymous	Sulfide, total (as S)	18496-25-8	E395	0.221 mg/L	0.2 mg/L	110	75.0	125	----
Total Metals (QCLot: 1713845)										
FJ2403120-006	Anonymous	Aluminum, total	7429-90-5	E420	0.186 mg/L	0.2 mg/L	93.1	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0194 mg/L	0.02 mg/L	97.2	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0199 mg/L	0.02 mg/L	99.7	70.0	130	----
		Barium, total	7440-39-3	E420	0.0197 mg/L	0.02 mg/L	98.3	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.0398 mg/L	0.04 mg/L	99.6	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: 1713845) - continued										
FJ2403120-006	Anonymous	Bismuth, total	7440-69-9	E420	0.0103 mg/L	0.01 mg/L	103	70.0	130	----
		Boron, total	7440-42-8	E420	0.097 mg/L	0.1 mg/L	97.1	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00386 mg/L	0.004 mg/L	96.5	70.0	130	----
		Calcium, total	7440-70-2	E420	4.02 mg/L	4 mg/L	100	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	0.0399 mg/L	0.04 mg/L	99.8	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	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		Iron, total	7439-89-6	E420	1.95 mg/L	2 mg/L	97.6	70.0	130	----
		Lead, total	7439-92-1	E420	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		Lithium, total	7439-93-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		Magnesium, total	7439-95-4	E420	0.966 mg/L	1 mg/L	96.6	70.0	130	----
		Manganese, total	7439-96-5	E420	0.0196 mg/L	0.02 mg/L	98.2	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	0.0400 mg/L	0.04 mg/L	100.0	70.0	130	----
		Phosphorus, total	7723-14-0	E420	9.49 mg/L	10 mg/L	94.9	70.0	130	----
		Potassium, total	7440-09-7	E420	3.85 mg/L	4 mg/L	96.3	70.0	130	----
		Rubidium, total	7440-17-7	E420	0.0192 mg/L	0.02 mg/L	96.2	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0409 mg/L	0.04 mg/L	102	70.0	130	----
		Silicon, total	7440-21-3	E420	10.2 mg/L	10 mg/L	102	70.0	130	----
		Silver, total	7440-22-4	E420	0.00410 mg/L	0.004 mg/L	102	70.0	130	----
		Sodium, total	7440-23-5	E420	1.99 mg/L	2 mg/L	99.3	70.0	130	----
		Strontium, total	7440-24-6	E420	0.0196 mg/L	0.02 mg/L	98.0	70.0	130	----
		Sulfur, total	7704-34-9	E420	19.7 mg/L	20 mg/L	98.6	70.0	130	----
		Tellurium, total	13494-80-9	E420	0.0415 mg/L	0.04 mg/L	104	70.0	130	----
		Thallium, total	7440-28-0	E420	0.00394 mg/L	0.004 mg/L	98.6	70.0	130	----
		Thorium, total	7440-29-1	E420	0.0207 mg/L	0.02 mg/L	103	70.0	130	----
		Tin, total	7440-31-5	E420	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0393 mg/L	0.04 mg/L	98.2	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.0189 mg/L	0.02 mg/L	94.6	70.0	130	----
		Uranium, total	7440-61-1	E420	0.00401 mg/L	0.004 mg/L	100	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.0988 mg/L	0.1 mg/L	98.8	70.0	130	----
		Zinc, total	7440-66-6	E420	0.385 mg/L	0.4 mg/L	96.2	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.0396 mg/L	0.04 mg/L	98.9	70.0	130	----
Total Metals (QCLot: 1717897)										
FJ2403145-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000852 mg/L	0 mg/L	85.2	70.0	130	----
Total Metals (QCLot: 1724780)										
FJ2403194-002	Anonymous	Mercury, total	7439-97-6	E508	0.0000992 mg/L	0 mg/L	99.2	70.0	130	----
Dissolved Metals (QCLot: 1713848)										
FJ2403114-002	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.198 mg/L	0.2 mg/L	98.9	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	0.0183 mg/L	0.02 mg/L	91.6	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	ND mg/L	----	ND	70.0	130	----
		Barium, dissolved	7440-39-3	E421	ND 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: 1713848) - continued										
FJ2403114-002	Anonymous	Beryllium, dissolved	7440-41-7	E421	0.0398 mg/L	0.04 mg/L	99.5	70.0	130	----
		Bismuth, dissolved	7440-69-9	E421	0.00896 mg/L	0.01 mg/L	89.6	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.086 mg/L	0.1 mg/L	86.1	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00402 mg/L	0.004 mg/L	100	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	----	ND	70.0	130	----
		Cesium, dissolved	7440-46-2	E421	0.0101 mg/L	0.01 mg/L	101	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.0380 mg/L	0.04 mg/L	95.1	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	0.0185 mg/L	0.02 mg/L	92.7	70.0	130	----
		Copper, dissolved	7440-50-8	E421	0.0184 mg/L	0.02 mg/L	91.8	70.0	130	----
		Iron, dissolved	7439-89-6	E421	ND mg/L	----	ND	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0185 mg/L	0.02 mg/L	92.4	70.0	130	----
		Lithium, dissolved	7439-93-2	E421	0.0938 mg/L	0.1 mg/L	93.8	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	----	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	ND mg/L	----	ND	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	0.0198 mg/L	0.02 mg/L	98.9	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.0369 mg/L	0.04 mg/L	92.3	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	3.86 mg/L	4 mg/L	96.4	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	0.0194 mg/L	0.02 mg/L	97.2	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.0374 mg/L	0.04 mg/L	93.6	70.0	130	----
		Silicon, dissolved	7440-21-3	E421	9.75 mg/L	10 mg/L	97.5	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00329 mg/L	0.004 mg/L	82.2	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	ND mg/L	----	ND	70.0	130	----
		Strontium, dissolved	7440-24-6	E421	ND mg/L	----	ND	70.0	130	----
		Sulfur, dissolved	7704-34-9	E421	19.0 mg/L	20 mg/L	95.2	70.0	130	----
		Tellurium, dissolved	13494-80-9	E421	0.0398 mg/L	0.04 mg/L	99.4	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.00362 mg/L	0.004 mg/L	90.4	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0198 mg/L	0.02 mg/L	98.8	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	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	0.00399 mg/L	0.004 mg/L	99.6	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.0982 mg/L	0.1 mg/L	98.2	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.398 mg/L	0.4 mg/L	99.5	70.0	130	----
		Zirconium, dissolved	7440-67-7	E421	0.0393 mg/L	0.04 mg/L	98.4	70.0	130	----
Dissolved Metals (QCLot: 1716475)										
VA24C7569-001	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000960 mg/L	0 mg/L	96.0	70.0	130	----
Speciated Metals (QCLot: 1712769)										
VA24C7645-001	Anonymous	Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.256 mg/L	0.25 mg/L	102	70.0	130	----
Aggregate Organics (QCLot: 1720350)										
VA24C7644-001	Anonymous	Phenols, total (4AAP)	----	E562	0.0205 mg/L	0.02 mg/L	103	75.0	125	----
Volatile Organic Compounds (QCLot: 1713095)										

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: 1713095) - continued										
KS2404231-002	Anonymous	Benzene	71-43-2	E611C	84.6 µg/L	100 µg/L	84.6	60.0	140	----
		Bromodichloromethane	75-27-4	E611C	91.0 µg/L	100 µg/L	91.0	60.0	140	----
		Bromoform	75-25-2	E611C	81.9 µg/L	100 µg/L	81.9	60.0	140	----
		Carbon tetrachloride	56-23-5	E611C	91.6 µg/L	100 µg/L	91.6	60.0	140	----
		Chlorobenzene	108-90-7	E611C	91.6 µg/L	100 µg/L	91.6	60.0	140	----
		Chloroethane	75-00-3	E611C	91.0 µg/L	100 µg/L	91.0	50.0	150	----
		Chloroform	67-66-3	E611C	98.8 µg/L	100 µg/L	98.8	60.0	140	----
		Chloromethane	74-87-3	E611C	79.5 µg/L	100 µg/L	79.5	50.0	150	----
		Dibromochloromethane	124-48-1	E611C	96.8 µg/L	100 µg/L	96.8	60.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611C	91.5 µg/L	100 µg/L	91.5	60.0	140	----
		Dichlorobenzene, 1,3-	541-73-1	E611C	97.3 µg/L	100 µg/L	97.3	60.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611C	98.8 µg/L	100 µg/L	98.8	60.0	140	----
		Dichloroethane, 1,1-	75-34-3	E611C	86.7 µg/L	100 µg/L	86.7	60.0	140	----
		Dichloroethane, 1,2-	107-06-2	E611C	101 µg/L	100 µg/L	101	60.0	140	----
		Dichloroethylene, 1,1-	75-35-4	E611C	81.6 µg/L	100 µg/L	81.6	60.0	140	----
		Dichloroethylene, cis-1,2-	156-59-2	E611C	89.5 µg/L	100 µg/L	89.5	60.0	140	----
		Dichloroethylene, trans-1,2-	156-60-5	E611C	115 µg/L	100 µg/L	115	60.0	140	----
		Dichloromethane	75-09-2	E611C	98.5 µg/L	100 µg/L	98.5	60.0	140	----
		Dichloropropane, 1,2-	78-87-5	E611C	88.0 µg/L	100 µg/L	88.0	60.0	140	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611C	94.6 µg/L	100 µg/L	94.6	60.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611C	103 µg/L	100 µg/L	103	60.0	140	----
		Ethylbenzene	100-41-4	E611C	86.3 µg/L	100 µg/L	86.3	60.0	140	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	89.4 µg/L	100 µg/L	89.4	60.0	140	----
		Styrene	100-42-5	E611C	85.2 µg/L	100 µg/L	85.2	60.0	140	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611C	89.7 µg/L	100 µg/L	89.7	60.0	140	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611C	77.2 µg/L	100 µg/L	77.2	60.0	140	----
		Tetrachloroethylene	127-18-4	E611C	104 µg/L	100 µg/L	104	60.0	140	----
		Toluene	108-88-3	E611C	84.7 µg/L	100 µg/L	84.7	60.0	140	----
		Trichloroethane, 1,1,1-	71-55-6	E611C	91.1 µg/L	100 µg/L	91.1	60.0	140	----
		Trichloroethane, 1,1,2-	79-00-5	E611C	90.6 µg/L	100 µg/L	90.6	60.0	140	----
		Trichloroethylene	79-01-6	E611C	101 µg/L	100 µg/L	101	60.0	140	----
		Trichlorofluoromethane	75-69-4	E611C	89.1 µg/L	100 µg/L	89.1	50.0	150	----
		Vinyl chloride	75-01-4	E611C	82.7 µg/L	100 µg/L	82.7	50.0	150	----
		Xylene, m+p-	179601-23-1	E611C	178 µg/L	200 µg/L	89.0	60.0	140	----
		Xylene, o-	95-47-6	E611C	83.9 µg/L	100 µg/L	83.9	60.0	140	----
Hydrocarbons (QCLot: 1713096)										
VA24C7105-002	Anonymous	VHw (C6-C10)	----	E581.VH+F1	5050 µg/L	6310 µg/L	80.1	60.0	140	----

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 -

Page of

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Environmental Division
Vancouver
Work Order Reference
VA24C7648

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:	Triton Environmental	Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)	~~☑ Routine [R]~~ if received by 3pm M-F - no surcharges ap
Contact:		Merge QC/QCI Reports with COA ☑ YES ☐ NO ☐ N/A	☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharg
Phone:		☐ Compare Results to Criteria on Report - provide details below if box checked	☐ 3 day [P3] if received by 3pm M-F - 25% rush surchar
		Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	☑ 2 day [P2] if received by 3pm M-F - 50% rush surchar
Street:		Email 1 or Fax	☐ 1 day [E] if received by 3pm M-F - 100% rush surchar
City/Province:		Email 2	☐ Same day [E2] if received by 10am M-S - 200% rush s
Postal Code:		Email 3	Additional fees may apply to rush requests on
Invoice To	Same as Report To ☐ YES ☑ NO		Date and Time Required for all E&P TATs:
	Copy of Invoice with Report ☐ YES ☑ NO	Select Invoice	For all tests with rush TATs requested,
Company:		Email 1 or Fax	Analys
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	VA23-TRIT100-012	AFE/Cost Center:	PO#
Job #:	11964	Major/Minor Code:	Routing Code:
PO / AFE:	11964 - Task 30 - Phase 3C-4C	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-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below: Total metals + mercury	Dissolved metals + mercury	Total hexavalent chromium	Total trivalent chromium	TSS, TDS, T-Alkalinity,Anions scan (Br, Cl, F, NO2, NO3, SO4)	Total sulfide (low) (as H2S), Unionized Sulfide (low)	Nutrients (ammonia, ammonium, total nitrogen, total phosphorus, phenols)	VOC/VPH	EPH, PAH, LEPH/HEPH	DOC	Glycols	General parameters (alkalinity)	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
						F					P	P	P	P	F/P					
	WLNG EOP	16-OCT-24	11:14	Water	15	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~			
	pH: 7.15 cond: 121 µS/cm temp: 12.6°C					P2	P2	P2	P2	P2	P2	P2	P2	P2	P2	R0	P2			
	~~Duplicate~~ TRIPLE BLANK	16-OCT-24	~~11:00~~ 11:14	Water	~~13~~ 13			P2	P2	P2	P2	P2	P2	P2	P2	P2	P2			

Drinking Water (DW) Samples[1] (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO	2 day TAT for both samples.
Are samples for human consumption/ use? ☐ YES ☑ NO	ESDAT EDD to ESdat_CA+tritonenv@ESdatLabSync.net

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☑ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

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
	12

RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
	Date: 16 OCT 24	Time: 16:50	Received by:	Date:	Time:	Received by: RJ	Date: OCT-16	Time: 16:45

ATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

ay 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.

Woodfibre Site WTP Discharge Field Notes and Logs

FortisBC Eagle Mountain-Woodfibre Gas Pipeline

Water Discharge Authorization Water Quality Monitoring

2024-10-16-Chycoski-1A35A

Project Component:	Tunnel	**Site Name:**	WLNG Treatment Discharge
Inspection Date:	10/16/2024	**Location:**	WLNG
Triton QP:	Lily Chycoski	**Latitude/Longitude:**	49.669526 -123.248904
Temperature(c):	Low 8 High 14	**Permit:**	PE 110136
Weather Conditions:	Overcast	**Ground Conditions:**	Wet

Observations

Time: 11:14:00 **Flow Volume (visual):** N/A

Notes:

Odour Detected?:	No	**Notes:**	
Unusual Colour?	No	**Notes:**	
Unusual Observations?	No	**Notes:**	
Sheen on Water?	No	**Notes:**	

Samples Collected - Parameters

Total Metals + Mercury	Yes	**General Parameters (Alkalinity)**	Yes	**Other Sample:**	
Dissolved Metals + Mercury	Yes	**Total Sulfide, Unionized Sulfide**	Yes		
TSS	Yes	**Anions**	Yes		
TDS	Yes	**Total Trivalent Chromium**	Yes	**QA Samples:**	Yes
Nutrients	Yes	**VOC/VPH**	Yes		
DOC	Yes	**EPH, PAH, LEPH/HEPH**	Yes		
		Trout LC50	No		

Logger Maintenance

Logger Maintenance Performed?	No	**Photo of COC with Lab Signature?**	Yes

Describe Logger Maintenance

Photos

Photo: 1

Location: WLNG EOP

Description: US view

Photo: 2

Location: WLNG EOP

Description: Across view

Photos

Photo: 3

Location: WLNG EOP

Description: DS view

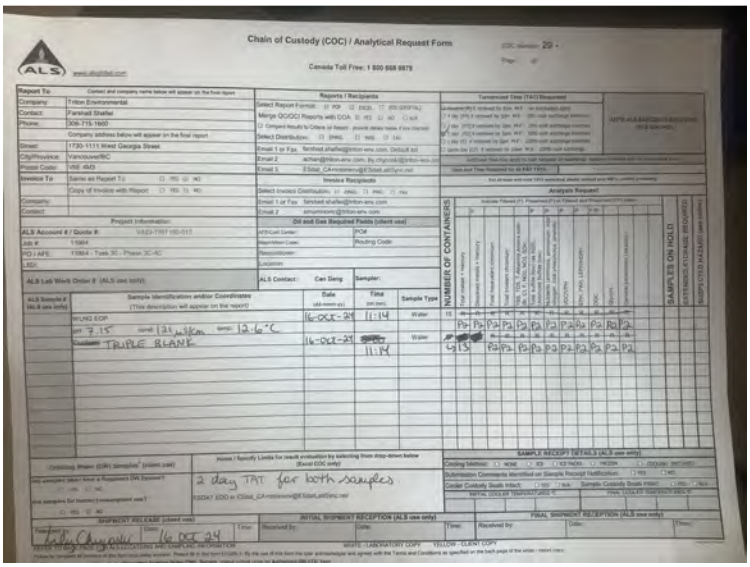

Photo: 4

Location: WLNG EOP

Description: Lab COC

Sign Off

Report Prepared By:	Lily Chycoski	**Report Reviewed:**	Yes
Report Reviewer:		**Professional(s) of Record:**	
Name:			
Designation:			
Designation Number:			

Appendix D: Woodfibre Site Receiving Environment Documentation

Woodfibre Site Receiving Environment Sample Analysis

TRITON Environmental Consultants	Sample ID	Reviewed and signed off by:		Farshad Shafiei Ph.D., R.P.Bio.	WLNG US1 (Upstream)	WLNG DS 1 (Downstream)	Sample or value notes	BCWQ FAL - Short Term	BCWQ FAL - Long Term	BCWQ MAL - Short Term	BCWQ MAL - Long Term
	LAB ID				VA24C7749-001	VA24C7749-002					
	Date Sampled				16-Oct-2024	16-Oct-2024					
	Time Sampled				13:12	11:34					
Analyte	**Units**	**FAL-ST [1,2]**	**FAL-LT [1,2]**	**MAL-ST [1]**	**MAL-LT [1,2]**	Water	Water		**Guideline notes**			
						N/A	N/A					
In Situ Parameters											
pH (field)	pH units	6.5-9.0	6.5-9.0	7.0-8.7	7.0-8.7	6.94	7.37	**The pH for the upstream location is below the short-term BCWQG for MAL.** However, this is due to natural variability.	If natural pH < 6.5, no statisticaly significant decrease from background. No restriction in increase except in areas with unique flora or fauna. Unrestricted change permitted within range of 6.5 to 9.0. If natural pH > 9.0, no statistically significant increase from background. Refer to BC Water Quality Guidelines for more information.		Unrestricted change within this range (for protection of mollusc embryo development).	
Temperature (field)	°C	Short-term daily temperature guideline is 19°C for streams with unknown fish distribution Max +/- from BKG 1°C [4] 5 week averages: US: 13.4 DS: 13.7	-	Short-term daily temperature guideline is 19°C for streams with unknown fish distribution Max +/- from BKG 1°C [4] 5 week averages: US: 13.4 DS: 13.7	-	12.1	11.9		Guideline is species-dependent. Short-term daily temperature guideline is 19°C for streams with unknown fish distribution. Refer to footnote 4 for background temperature range for East Creek. Refer to BC Water Quality Guidelines for more information Hourly rate of change not to exceed 1°C. Calculation: US value +/- 1 = guideline range		Guideline for marine waters are based on natural ambient conditions. Max and min. 1°C change from natural condition. Natural temperature cycle characteristic of the site should not be altered in amplitude or frequency by human activities. Max rate of any human-induced temperature change not to exceed 0.5°C hourly. treams with unknown fish distribution. Refer to footnote 4 for background temperature range for East Creek. Calculation: US value +/- 1 = guideline range	
Conductivity (field)	µS/cm	-	-	-	-	245	166					
Turbidity (field)	NTU	Varies with background, see note Guideline = 11.5	Varies with background, see note Guideline = 3.02 5-week discrete sampling average = 5.42 (DS)	Varies with background, see note Guideline = 11.5	Varies with background, see note Guideline = 3.02 5-week discrete sampling average = 5.42 (DS)	3.48	1.75		Change from background of 8 NTU at any one time for a duration of 24 h in all waters during clear flows or in clear waters. Calculation: US value + 8 = DS guideline Change from background of 5 NTU at any time when background is 8 - 50 NTU during high flows or in turbid waters. Calculation: US value + 5 = DS guideline Change from background of 10% when background is > 50 NTU at any time during high flows or in turbid waters. Calculation: US value + (US value*0.1) = DS guideline	Change from background of 2 NTU at any one time for 30 days in clear flows. Note that a rolling average of US values over a 30-day period is required to properly calculate this guideline. Guideline calculated in this spreadsheet using US concentration at the time of sampling.	Change from background of 8 NTU at any one time for a duration of 24 h in all waters during clear flows or in clear waters. Calculation: US value + 8 = DS guideline Change from background of 5 NTU at any time when background is 8 - 50 NTU during high flows or in turbid waters. Calculation: US value + 5 = DS guideline Change from background of 10% when background is > 50 NTU at any time during high flows or in turbid waters. Calculation: US value + (US value*0.1) = DS guideline	Change from background of 2 NTU at any one time for 30 days in clear flows. Note that a rolling average of US values over a 30-day period is required to properly calculate this guideline. Guideline calculated in this spreadsheet using US concentration at the time of sampling.
Dissolved Oxygen (field)	mg/L	Varies with life stage, see note	Varies with life stage, see note	Varies with life stage, see note	Varies with life stage, see note	9.54	9.96		Buried embryo/alevin minimum 9 mg/L, all other life stages 5 mg/L. Refer to BC Water Quality Guidelines for more information.	Buried embryo/alevin minimum 11 mg/L, all other life stages 8 mg/L. Refer to BC Water Quality Guidelines for more information.	Buried embryo/alevin minimum 9 mg/L, all other life stages 5 mg/L. Refer to BC Water Quality Guidelines for more information.	Buried embryo/alevin minimum 11 mg/L, all other life stages 8 mg/L. Refer to BC Water Quality Guidelines for more information.
General Parameters												
Hardness (as $CaCO_3$) (total)	mg/L	-	-	-	-	78.2	39.6					
Total Dissolved Solids	mg/L	-	-	-	-	171	102					
Total Suspended Solids	mg/L	Varies with background, see note Guideline = 28	Varies with background, see note Guideline = 8.00 5-week discrete sampling average = 5.26 (DS)	Varies with background, see note Guideline = 28	Varies with background, see note Guideline = 8.00 5-week discrete sampling average = 5.26 (DS)	< 3.0	< 3.0		Change from background of 25 mg/L at any one time for duration of 24 h in all waters during clear flows or in clear waters. Calculation: US value + 25 = DS guideline Change from background of 10 mg/L at any one time when background 25-100 mg/L during high flows or turbid waters. Calculation: US value + 10 = DS guideline Change from background of 10% when background is > 100 mg/L at any time during high flows or turbid waters. Calculation: US value + (US value*0.1) = DS guideline	Change from background of 5 mg/L @ one time for a druation of 30 days in clear flow. Note that a rolling average of US values over a 30-day period is required to properly calculate this guideline. Guideline calculated in this spreadsheet using US concentration at the time of sampling.	Change from background of 25 mg/L at any one time for duration of 24 h in all waters during clear flows or in clear waters. Calculation: US value + 25 = DS guideline Change from background of 10 mg/L at any one time when background 25-100 mg/L during high flows or turbid waters. Calculation: US value + 10 = DS guideline Change from background of 10% when background is > 100 mg/L at any time during high flows or turbid waters. Calculation: US value + (US value*0.1) = DS guideline	Change from background of 5 mg/L @ one time for a druation of 30 days in clear flow. Note that a rolling average of US values over a 30-day period is required to properly calculate this guideline. Guideline calculated in this spreadsheet using US concentration at the time of sampling.
Dissolved Organic Carbon (DOC)	mg/L	-	-	-	-	9.1	6.82			Long-term (30-day) median within 20% of background median [3]		
Total Alkalinity ($CaCO_3$)	mg/L	-	Categorical	-	-	16.2	28.8	The upstream location has moderate sensitivity to acid inputs (i.e. moderate buffering capacity), while the downstream and East Creek locations have low sensitivity to acid inputs (i.e., high buffering capacity).		Guideline is for alkalinity (as CaCO3) and categorizes the sensitivity of a water body to acid inputs. Alkalinity < 10 mg/L is considered highly sensitive to acid inputs; 10 - 20 mg/L is considered moderately sensitive to acid inputs; > 20 mg/L is considered low sensitivity.		
Total Sulfide (as S)	mg/L	-	-	-	-	0.0026	0.003					
Total Sulfide (un-ionized as H_2S)	mg/L	-	0.002	-	-	0.0017	< 0.0015			Working guideline		
Total Sulfide (as H_2S)	mg/L	-	-	-	-	0.0028	0.0032					
Anions and Nutrients												
Ammonia	mg/L ammonia-N	Varies with pH and temperature. See note. Guideline = 21.4	Varies with pH and temperature. See note. Guideline = 1.80	Varies with pH and temperature. See note. Guideline = 92	Varies with pH, temperature and salinity. See note. Guideline = 8.7	0.0099	0.0062		Guideline for ammonia as N and is pH and temperature dependent. Refer to Table 27D in BC WQG for guideline values.	Guideline for ammonia as N and is pH and temperature dependent. Refer to Table 27C in BC WQG for guideline values.	Guideline for ammonia as N. Guideline is pH, temperature and salinity dependent. Refer to Table 27F in BC WQG for guideline values.	Guideline for ammonia as N. Guideline is pH, temperature and salinity dependent. Refer to Table 27E in BC WQG for guideline values.
Bromide	mg/L	-	-	-	-	< 0.050	< 0.050					
Chloride	mg/L	600	150	> 110% of background	< 90% of background	6.24	3.35				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.	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
Fluoride	mg/L	Varies with hardness Guideline =1.235	-	1.5	-	0.023	0.09		Guideline has interim status. Guideline is calculated with the following equation: Guideline = [-51.73 + 92.57 log10 (hardness)] * 0.01			
Nitrate (as N)	mg/L	32.8	3	-	3.7	0.652	0.303					
Nitrite (as N)	mg/L	Varies with chloride. Table 27B, see note. Guideline = 0.06	Varies with chloride. Table 27B, see note. Guideline = 0.02	-	-	< 0.0010	< 0.0010		Varies with chloride. Refer to Table 27B in BC WQG for guideline values.	Varies with chloride. Refer to Table 27B in BC WQG for guideline values.		
Total Nitrogen	mg/L	-	-	-	-	1.23	0.581					
Total Phosphorous	mg/L	-	0.005 to 0.015	-	-	0.191	0.0946			Guideline is for lakes, refer to BCWQ guideline for nutrients and algae for more information. Guideline does not apply to site.		
Sulfate (as SO_4)	mg/L	-	Varies with hardness. See note. Guideline = 128	-	-	68.4	33			Guidelines for hardness ranges below: Hardness 0 - 30: 128 Hardness 31 - 75: 218 Hardness 76 - 180: 309 Hardness 181 - 250: 429		
Total Metals												
Aluminum (Al)-Total	mg/L	-	Varies with pH, DOC, hardness Guideline = 0.121 5-week field average = 0.065 (US), **0.221** (DS)	-	-	0.0991	***0.0663***	**Total aluminum exceeds the long-term BCWQG for FAL at the downstream location.**		Guideline varies with pH, hardness and Dissolved Organic Carbon (DOC). Guideline is calculated with the following equation: Guideline = (EXP((0.645 * LN(DOC)) + (2.255 * LN(hardness)) + (1.995 * pH) + (-0.284 * (LN(hardness) * pH))-9.898)/3/1000) If hardness or DOC is below the hardness range, the minimum hardness or DOC will be applied in the calculation.		
Antimony (Sb)-Total	mg/L	0.25	0.074	-	-	0.00014	0.00012					
Arsenic (As)-Total	mg/L	-	0.005	-	0.0125	0.00088	0.00119					Interim guideline status
Barium (Ba)-Total	mg/L	-	1	-	-	0.00878	0.00682			Working guideline status		
Beryllium (Be)-Total	mg/L	-	0.00013	-	0.100	< 0.000100	< 0.000100			Working guideline status		Working guideline status
Bismuth (Bi)-Total	mg/L	-	-	-	-	< 0.000050	< 0.000050					
Boron (B)-Total	mg/L	-	1.2	-	1.2	0.017	0.013					
Cadmium (Cd)-Total	mg/L	-	-	-	0.00012	0.0000016	0.0000108					Working guideline status
Calcium (Ca)-Total	mg/L	-	-	-	-	19.3	10.3					
Cesium (Cs)-Total	mg/L	-	-	-	-	0.000013	0.000019					
Chromium (Cr) - Total	mg/L	-	-	-	-	< 0.00050	< 0.00050					
Chromium (Cr(III))-Total	mg/L	-	0.0089	-	0.056	< 0.00050	< 0.00050			Working guideline status		Working guideline status
Chromium (Cr(VI))-Total	mg/L	-	0.0025	-	0.0015	< 0.00050	< 0.00050			Working guideline status		Working guideline status
Cobalt (Co)-Total	mg/L	0.11	0.004	-	-	0.00035	0.00016					
Copper (Cu)-Total	mg/L	-	-	0.003	0.002 5-week field averages = 0.0014 (US), 0.0011 (DS)	**0.0043**	0.002	**Total copper at the upstream location exceeds short-term BCWQG.** This is the background site and naturally occurring, and not due to project activities.				
Iron (Fe)-Total	mg/L	1	-	-	-	0.084	0.05					
Lead (Pb)-Total	mg/L	-	-	0.14	0.002 5-week field averages = 0.00005 (US), 0.00023 (DS)	< 0.000050	< 0.000050		Guideline varies with hardness, refer to BC Water Quality Guidelines for more information. Guideline is 0.003 where hardness ≤8mg/L. Guideline uses equation EXP[1.273*on(hardness)-1.460] where hardness is 8-360 mg/L. Lowest value for guideline is 0.003 mg/L.	Guideline varies with hardness, refer to BC Water Quality Guidelines for more information. Guideline equation EXP[1.273*on(hardness)-4.704] applies to samples with hardness 8-360 mg/L.		
Lithium (Li)-Total	mg/L	-	-	-	-	< 0.0010	< 0.0010					
Magnesium (Mg)-Total	mg/L	-	-	-	-	7.29	3.37					
Manganese (Mn)-Total	mg/L	Varies with hardness Guideline = 0.82	Varies with hardness Guideline = 0.77	-	-	0.00534	0.0031		Guideline varies with hardness. The guideline is calculated using the following equation: Guideline = (0.0044 * hardness + 0.805) Guideline applies to samples with hardness 25-259 mg/L. Lowest value for guideline is 0.77 mg/L. If hardness is below the hardness range, the minimum hardness will be applied in the calculation.	Guideline varies with hardness, refer to BC Water Quality Guidelines for more information. The guideline is calculated using the following formula: Guideline = (0.01102 * hardness + 0.54) Guideline applies to samples with hardness 37-450 mg/L. Lowest value for guideline is 0.81 mg/L. If hardness is below the hardness range, the minimum hardness will be applied in the calculation.		
Mercury (Hg)-Total	mg/L	-	Varies with methyl mercury Guideline = N/A	-	-	< 0.0000050	< 0.0000050			When MeHg ≤ 0.5% of total Hg, guideline is equal to 0.02 mg/L Guideline = 0.1/[MeHg/totalHg]. When MeHg ≤ 0.5% of total Hg, guideline is equal to 0.02 mg/L		
Molybdenum (Mo)-Total	mg/L	46	7.6	-	-	0.00131	0.00643					
Nickel (Ni)-Total	mg/L	-	-	-	0.0083	0.00357	0.00168			Working guideline status. Guideline varies with hardness. Refer to BC Water Quality Guidelines for more information. Hardness 0 ≤ 60: 0.025 Hardness > 60 ≤ 180: Guideline = (EXP((0.76 * (LN(hardness)) + 1.06))/1000) Hardness ≥ 180: 0.15		Working guideline status
Phosphorus (P)-Total	mg/L	-	0.005 to 0.015	-	-	0.205	0.099			Guideline only applies to lakes with salmonid species being the dominant fish species. Guideline is for reference only and does not apply to site.		
Potassium (K)-Total	mg/L	-	-	-	-	2.78	1.68					
Rubidium (Rb)-Total	mg/L	-	-	-	-	0.00128	0.00134					
Selenium (Se)-Total	mg/L	-	0.002	-	0.002	0.000113	0.000088			Guideline for freshwater aquatic life (water column). Alert concentration is 0.001 mg/L, with separate guidelienes for sediment, invertebrate and fish tissue. Refer to BC Water Quality Guidelines for more information on guideliens and sampling guidance.		Guideline for marine aquatic life (water column). Alert concentration is 0.001 mg/L, with separate guidelienes for sediment, invertebrate and fish tissue. Refer to BC Water Quality Guidelines for more information on guideliens and sampling guidance.
Silicon (Si)-Total	mg/L	-	-	-	-	5.2	5.36					
Silver (Ag)-Total	mg/L	Varies with hardness, see note Guideline = 0.0001	Varies with hardness, see note Guideline = 0.00005	0.003	0.0015	< 0.000010	< 0.000010		Varies with hardness Guideline ranges: Hardness ≤ 100: 0.0001 Hardness > 100: 0.003	Varies with hardness Guideline ranges: Hardness ≤ 100: 0.00005 Hardness > 100: 0.0015		Guideline applies to open coast and estuaries. Guideline is applicable to the EGP site.
Sodium (Na)-Total	mg/L	-	-	-	-	9.4	12.2					
Strontium (Sr)-Total	mg/L	-	-	-	-	0.053	0.0309					
Sulfur (S)-Total	mg/L	-	-	-	-	22.7	10.9					
Tellurium (Te)-Total	mg/L	-	-	-	-	< 0.00020	< 0.00020					
Thallium (Tl)-Total	mg/L	-	0.00003 5-week field average = < 0.000010 (US), **0.000050** (DS)	-	-	< 0.000010	***0.000010***	**Total thallium exceeds the long-term BCWQG for FAL at the downstream location.**		30-day average, site-specific objective for the lower Columbia River, BC. Guideline is for reference only and does not apply to the EGP site.		
Thorium (Th)-Total	mg/L	-	-	-	-	< 0.00010	< 0.00010					
Tin (Sn)-Total	mg/L	-	-	-	-	< 0.00010	< 0.00010					
Titanium (Ti)-Total	mg/L	-	-	-	-	< 0.00200	< 0.00200					
Tungsten (W)-Total	mg/L	-	-	-	-	< 0.00010	0.00012					
Uranium (U)-Total	mg/L	0.0165	0.0075	-	-	0.000259	0.00018			Working guideline status		
Vanadium (V)-Total	mg/L	-	0.06	-	0.005	0.00066	< 0.00050					Working guideline status
Zinc (Zn)-Total	mg/L	-	-	0.055	0.010 5-week field average = 0.003 (US), 0.0063 (DS)	< 0.0030	< 0.0030					
Zirconium (Zr)-Total	mg/L	-	-	-	-	< 0.00020	< 0.00020					
Dissolved Metals												
Aluminum (Al)-Dissolved	mg/L	-	-	-	-	0.0674	0.0715					
Antimony (Sb)-Dissolved	mg/L	-	-	-	-	0.00015	0.00012					
Arsenic (As)-Dissolved	mg/L	-	-	-	-	0.00087	0.00087					
Barium (Ba)-Dissolved	mg/L	-	-	-	-	0.00906	0.00869					
Beryllium (Be)-Dissolved	mg/L	-	-	-	-	< 0.000100	< 0.000100					
Bismuth (Bi)-Dissolved	mg/L	-	-	-	-	< 0.000050	< 0.000050					
Boron (B)-Dissolved	mg/L	-	-	-	-	0.015	0.012					
Cadmium (Cd)-Dissolved	mg/L	Varies with hardness, see note Guideline = 0.000457	Varies with hardness, see note Guideline = 0.000076	-	-	0.000013	0.000011		Guideline is hardness dependent. Guideline is appilcable to water hardness between 7.0 and 455 mg/L. Guideline is calculated with the following formula: Guideline = (EXP(1.03 * (LN(hardness)) - 5.274)/1000) Lowest value for guideline is 0.000018 mg/L. If hardness is below the hardness range, the minimum hardness will be applied in the calculation.	Guideline is hardness dependent. Guideline is applicable to hardness between 3.4 and 285 mg/L. Guideline is calculated with the following formula: Guideline = (EXP(0.736 * (LN(hardness)) - 4.943)/1000) Lowest value for guiedeline is 0.00004. If hardness is below the hardness range, the minimum hardness will be applied in the calculation.		
Calcium (Ca)-Dissolved	mg/L	-	Categorical, see note	-	-	18.5	13.4	The upstream and downstream locations have low sensitivity (i.e., high buffering capacity).		Guideline categorizes the sensitivity of a water body to acid inputs (i.e. buffering capacity). Standard is 4 mg/L dissolved Ca for the most sensitive waterbodies.5 - 8 mg/L for waterbodies with moderate sensitivity to acid inputs. Waterbodies with dissolved calcium > 8mg/L are considered to have low sensitivity to acid inputs.		
Cesium (Cs)-Dissolved	mg/L	-	-	-	-	0.000013	0.000014					
Chromium (Cr)-Dissolved	mg/L	-	-	-	-	< 0.00050	< 0.00050					
Cobalt (Co)-Dissolved	mg/L	-	-	-	-	0.00033	0.00022					
Copper (Cu)-Dissolved	mg/L	Guideline varies with other parameters, see note Guideline = 0.0096	Guideline varies with other parameters, see note Guideline = 0.0006 5-week field average = **0.00136** (US), **0.00086** (DS)	-	-	***0.00426***	***0.00268***	**Dissolved copper at the upstream and downstream location exceeds long-term BCWQG for FAL.** The upstream location is the background site and naturally occurring, thus exceedance not due to project activities.	Guideline varies with other parameters and is calculated using BC BLM software. Simplified model: Temperature, pH, DOC and hardness Detailed model: Temperature, pH, DOC, humic acid content, total calcium, total magnesium, total sodium, total potassium, sulphate, chloride, and alkalinity Guideline calculated using values for parameters above taken at the specific site on each sampling date	Guideline varies with other parameters and is calculated using BC BLM software. Simplified model: Temperature, pH, DOC and hardness Detailed model: Temperature, pH, DOC, humic acid content, total calcium, total magnesium, total sodium, total potassium, sulphate, chloride, and alkalinity Guideline calculated using values for parameters above taken at the specific site on each sampling date		
Iron (Fe)-Dissolved	mg/L	0.35	-	-	-	0.04	0.039					
Lead (Pb)-Dissolved	mg/L	-	Guideline varies with DOC and hardness Guideline: 0.00302 5-week field average = 0.00005 (US), 0.00005 (DS)	-	-	< 0.000050	< 0.000050			Guideline varies with DOC and hardness, refer to BC Water Quality Guidelines for more information. Guideline uses equation (EXP((0.514*LN(DOC))+(0.214*(LN(Hardness)))+0.4354))/2/1000 where DOC range is 0.5-31.5 mg/L and hardness range is 4.7-511 mg/L.		
Lithium (Li)-Dissolved	mg/L	-	-	-	-	< 0.0010	< 0.0010					
Magnesium (Mg)-Dissolved	mg/L	-	-	-	-	7.01	4.34					
Manganese (Mn)-Dissolved	mg/L	-	-	-	-	0.00316	0.0036					
Mercury (Hg)-Dissolved	mg/L	-	-	-	-	< 0.0000050	< 0.0000050					
Molybdenum (Mo)-Dissolved	mg/L	-	-	-	-	0.00125	0.00289					
Nickel (Ni)-Dissolved	mg/L	Guideline varies with pH, temperature, DOC, and hardness Guideline: 0.048	Guideline varies with pH, temperature, DOC, and hardness Guideline: 0.00139 5-week field average = 0.00112 (US), 0.00087 (DS)	-	-	0.00356	0.00235		Guideline varies with other parameters and is calculated using BC BLM software. Simplified model: Temperature, pH, DOC and hardness Detailed model: Temperature, pH, DOC, humic acid content, total calcium, total magnesium, total sodium, total potassium, sulphate, chloride, and alkalinity Guideline calculated using values for parameters above taken at the specific site on each sampling date	Guideline varies with other parameters and is calculated using BC BLM software. Simplified model: Temperature, pH, DOC and hardness Detailed model: Temperature, pH, DOC, humic acid content, total calcium, total magnesium, total sodium, total potassium, sulphate, chloride, and alkalinity Guideline calculated using values for parameters above taken at the specific site on each sampling date		
Phosphorus (P)-Dissolved	mg/L	-	-	-	-	0.194	0.13					
Potassium (K)-Dissolved	mg/L	-	-	-	-	2.98	1.92					
Rubidium (Rb)-Dissolved	mg/L	-	-	-	-	0.00141	0.00134					
Selenium (Se)-Dissolved	mg/L	-	-	-	-	0.000124	0.000097					
Silicon (Si)-Dissolved	mg/L	-	-	-	-	5.22	5.27					
Silver (Ag)-Dissolved	mg/L	-	-	-	-	< 0.000010	< 0.000010					
Sodium (Na)-Dissolved	mg/L	-	-	-	-	9.1	8.48					
Strontium (Sr)-Dissolved	mg/L	-	-	-	-	0.0539	0.0386					
Sulfur (S)-Dissolved	mg/L	-	-	-	-	23.4	14.8					
Tellurium (Te)-Dissolved	mg/L	-	-	-	-	< 0.00020	< 0.00020					
Thallium (Tl)-Dissolved	mg/L	-	-	-	-	< 0.000010	< 0.000010					
Thorium (Th)-Dissolved	mg/L	-	-	-	-	< 0.00010	< 0.00010					
Tin (Sn)-Dissolved	mg/L	-	-	-	-	< 0.00010	< 0.00010					
Titanium (Ti)-Dissolved	mg/L	-	-	-	-	< 0.00050	0.00076					
Tungsten (W)-Dissolved	mg/L	-	-	-	-	< 0.00010	< 0.00010					
Uranium (U)-Dissolved	mg/L	-	-	-	-	0.000219	0.000189					
Vanadium (V)-Dissolved	mg/L	-	-	-	-	0.00062	< 0.00050					
Zinc (Zn)-Dissolved	mg/L	Varies with DOC and hardness Guideline = 0.054	Varies with pH, DOC, hardness Guideline = 0.0055 5-week field average = 0.0014 (US), 0.0044 (DS)	-	-	0.0026	0.0032		Guideline varies with DOC and hardness. Guideline is calculated using the following formula: Guideline = (EXP((0.833 * (LN(hardness))) + (0.24 * (LN(DOC))) + 0.526)/2/1000) If hardness or DOC is below the hardness or DOC range, the minimum hardness or DOC will be applied in the calculation.	Guideline varies with pH, hardness and Dissolved Organic Carbon (DOC). Guideline is calculated using the following formula: Guideline = (EXP((0.974 * (LN(hardness))) - (0.815 * pH) + (0.398 * (LN(DOC))) + 4.625)/2/1000) Guideline only applies to water with pH between 6.5 and 8.13, DOC between 0.3 and 22.9 mg/L, anmd hardness between 23.4 and 399 mg/L. If hardness or DOC is below the hardness or DOC range, the minimum hardness or DOC will be applied in the calculation.		
Zirconium (Zr)-Dissolved	mg/L	-	-	-	-	< 0.00020	< 0.00020					
Applied Guideline:		**British Columbia Approved and Working Water Quality Guidelines (NOV 2023) - BCAWWQG - Freshwater Aquatic Life** **British Columbia Approved and Working Water Quality Guidelines (NOV 2023) - BCAWWQG - Marine Aquatic Life**										
Color Key:	**Exceeds both FAL and MAL Guidelines**	**Exceeds FAL Short term Guideline**	***Exceeds FAL Long term Guideline***	**Exceeds MAL Short term Guideline**	***Exceeds MAL Long term Guideline***							
Color Key:		**Exceeds FAL Short and Long-Term Guideline**		**Exceeds MAL Short and Long-term Guidelines**								

[1] BC MOECCS. 2023. BC Water Qualtiy Guidelines for the Protection of Aquatic Life, Wildlife & Agriculture. Accessed from:
wqg_summary_aquaticlife_wildlife_agri.pdf (gov.bc.ca)

[2] BC MOECCS. 2021. BC Working Water Qualtiy Guidelines for the Protection of Aquatic Life, Widlife & Agriculture. Accessed from:
bc_env_working_water_quality_guidelines.pdf (gov.bc.ca)

[3] Note that long-term guidelines apply to averaged data to account for chronic impacts to aquatic life. Ideally, five samples collected at evenly spaced intervals over 30 days is considered to be the minimum number needed to calculate the long-term average of any parameter, though this may vary by parameter and site conditions. Long-term guidelines applied here are for reference only and may not indicate chronic impacts to aquatic life if exceedances occur in the short term.

[4] Background temperature ranges: Dec-Feb: 0.3-8.0C; Mar-Apr: 3.0-10.2C; May-June: 6.8-15.1C; Jul-present: 12.9-18.2C
Reference: AquaTROLL In-Situ Data Logger - Background water quality readings collected from Dec.-present.
For guidelines dependent on other parameters, when hardness, pH or DOC are below the range stated in the guideline, the lowest value in the range is used to calculate the

Parameters Used to Calculate Guidelines

Analyte	Units	FAL-ST [1,2]	FAL-LT [1,2]	MAL-ST [1]	MAL-LT [1,2]	Values: WLNG US1 (Upstream)	Values: WLNG DS 1 (Downstream)
pH (field)	pH units	Field pH taken using handheld meters during sampling used in calculations				6.94	7.37
Temperature (field)	°C	Field temperature taken using handheld meters during sampling used in calculations				12.1	11.9
Turbidity (field)	NTU	Field turbidity taken using handheld meters during sampling used in calculations				3.48	1.75
Hardness (as CaCO3) (total)	mg/L	Laboratory tested total hardness taken at each respective sample site on the day of sampling used in guideline calculations				78.2	39.6
Dissolved Organic Carbon (DOC)	mg/L	Laboratory tested dissolved organic carbon tested at the lab used in guideline calculations				9.1	6.82
Total Alkalinity ($CaCO_3$)	mg/L	Laboratory tested total alkalinity used in calculations				16.2	28.8
Chloride	mg/L	Laboratory tested chloride taken at each respective sample site on the day of sampling used in guideline calculations				6.24	3.35

Woodfibre Site Receiving Environment Lab Documentation

CERTIFICATE OF ANALYSIS

Work Order	:	**VA24C7749**		
Client	:	**Triton Environmental Consultants Ltd.**	Laboratory	: ALS Environmental - Vancouver
Contact	:		Account Manager	
Address	:		Address	
Telephone	:		Telephone	
Project	:	11964	Date Samples Received	: 16-Oct-2024 16:45
PO	:	11964-Task 20-Phase 3C-4C	Date Analysis Commenced	: 18-Oct-2024
C-O-C number	:	----	Issue Date	: 25-Oct-2024 22:16
Sampler	:	----		
Site	:	Water Analysis		
Quote number	:	VA23-TRIT100-012		
No. of samples received	:	2		
No. of samples analysed	:	2		

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

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*
		Metals, Burnaby, British Columbia
		Inorganics, Calgary, Alberta
		Metals, Burnaby, British Columbia
		Administration, Burnaby, British Columbia
		Metals, Burnaby, British Columbia
		Inorganics, Burnaby, British Columbia
		Metals, Waterloo, Ontario
		Inorganics, Waterloo, Ontario
		Inorganics, 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*
mg/L	milligrams per litre
µS/cm	microsiemens per centimetre
pH units	pH units
°C	degrees celsius
-	no 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.

Qualifiers

Qualifier	Description
DLUI	Detection Limit Raised: Unknown interference generated an apparent false positive test result.
DTS	Dissolved Sulfur concentration exceeds total. Negative bias on Total Sulfur suspected due to presence of volatile sulfur species lost during digestion.

Analytical Results

Sub-Matrix: Water (Matrix: Water)			Client sample ID		WLNG US-1	WLNG DS-1	----	----	----
			Client sampling date / time		16-Oct-2024 13:12	16-Oct-2024 11:34	----	----	----
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	VA24C7749-001	VA24C7749-002	----	----	----
					Result	Result	----	----	----
Field Tests									
Conductivity, field	----	EF001/VA	0.10	µS/cm	245.00	166.00	----	----	----
pH, field	----	EF001/VA	0.10	pH units	6.94	7.37	----	----	----
Temperature, field	----	EF001/VA	0.10	°C	12.1	11.9	----	----	----
Physical Tests									
Hardness (as CaCO3), dissolved	----	EC100/WT	0.60	mg/L	75.1	51.3	----	----	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/WT	0.60	mg/L	78.2	39.6	----	----	----
Solids, total dissolved [TDS]	----	E162/VA	10	mg/L	171	102	----	----	----
Solids, total suspended [TSS]	----	E160/VA	3.0	mg/L	<3.0	<3.0	----	----	----
Alkalinity, total (as CaCO3)	----	E290/VA	2.0	mg/L	16.2	28.8	----	----	----
Anions and Nutrients									
Ammonia, total (as N)	7664-41-7	E298/VA	0.0050	mg/L	0.0099	0.0062	----	----	----
Bromide	24959-67-9	E235.Br-L/VA	0.050	mg/L	<0.050	<0.050	----	----	----
Chloride	16887-00-6	E235.Cl/VA	0.50	mg/L	6.24	3.35	----	----	----
Fluoride	16984-48-8	E235.F/VA	0.020	mg/L	0.023	0.090	----	----	----
Nitrate (as N)	14797-55-8	E235.NO3-L/VA	0.0050	mg/L	0.652	0.303	----	----	----
Nitrite (as N)	14797-65-0	E235.NO2-L/VA	0.0010	mg/L	<0.0010	<0.0010	----	----	----
Nitrogen, total	7727-37-9	E366/VA	0.030	mg/L	1.23	0.581	----	----	----
Phosphorus, total	7723-14-0	E372-U/VA	0.0020	mg/L	0.191	0.0946	----	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/VA	0.30	mg/L	68.4	33.0	----	----	----
Organic / Inorganic Carbon									
Carbon, dissolved organic [DOC]	----	E358-L/CG	0.50	mg/L	9.10	6.82	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	WLNG US-1	WLNG DS-1	----	----	----
					Client sampling date / time	16-Oct-2024 13:12	16-Oct-2024 11:34	----	----	----
						VA24C7749-001	VA24C7749-002	----	----	----
						Result	Result	----	----	----
Total Sulfides										
Sulfide, total (as S)	18496-25-8	E395/VA	0.0015	mg/L		0.0026	0.0030	----	----	----
Sulfide, un-ionized (as H2S), from total	7783-06-4	EC395/VA	0.0015	mg/L		0.0017	<0.0015	----	----	----
Sulfide, total (as H2S)	7783-06-4	E395/VA	0.0016	mg/L		0.0028	0.0032	----	----	----
Total Metals										
Aluminum, total	7429-90-5	E420/WT	0.0030	mg/L		0.0991	0.0663	----	----	----
Antimony, total	7440-36-0	E420/WT	0.00010	mg/L		0.00014	0.00012	----	----	----
Arsenic, total	7440-38-2	E420/WT	0.00010	mg/L		0.00088	0.00119	----	----	----
Barium, total	7440-39-3	E420/WT	0.00010	mg/L		0.00878	0.00682	----	----	----
Beryllium, total	7440-41-7	E420/WT	0.000100	mg/L		<0.000100	<0.000100	----	----	----
Bismuth, total	7440-69-9	E420/WT	0.000050	mg/L		<0.000050	<0.000050	----	----	----
Boron, total	7440-42-8	E420/WT	0.010	mg/L		0.017	0.013	----	----	----
Cadmium, total	7440-43-9	E420/WT	0.0000050	mg/L		0.0000160	0.0000108	----	----	----
Calcium, total	7440-70-2	E420/WT	0.050	mg/L		19.3	10.3	----	----	----
Cesium, total	7440-46-2	E420/WT	0.000010	mg/L		0.000013	0.000019	----	----	----
Chromium, total	7440-47-3	E420/WT	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Cobalt, total	7440-48-4	E420/WT	0.00010	mg/L		0.00035	0.00016	----	----	----
Copper, total	7440-50-8	E420/WT	0.00050	mg/L		0.00434	0.00200	----	----	----
Iron, total	7439-89-6	E420/WT	0.010	mg/L		0.084	0.050	----	----	----
Lead, total	7439-92-1	E420/WT	0.000050	mg/L		<0.000050	<0.000050	----	----	----
Lithium, total	7439-93-2	E420/WT	0.0010	mg/L		<0.0010	<0.0010	----	----	----
Magnesium, total	7439-95-4	E420/WT	0.0050	mg/L		7.29	3.37	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	WLNG US-1	WLNG DS-1	----	----	----
				Client sampling date / time	16-Oct-2024 13:12	16-Oct-2024 11:34	----	----	----
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	VA24C7749-001	VA24C7749-002	----	----	----
					Result	Result	----	----	----
Total Metals									
Manganese, total	7439-96-5	E420/WT	0.00010	mg/L	0.00534	0.00310	----	----	----
Mercury, total	7439-97-6	E508/VA	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----
Molybdenum, total	7439-98-7	E420/WT	0.000050	mg/L	0.00131	0.00643	----	----	----
Nickel, total	7440-02-0	E420/WT	0.00050	mg/L	0.00357	0.00168	----	----	----
Phosphorus, total	7723-14-0	E420/WT	0.050	mg/L	0.205	0.099	----	----	----
Potassium, total	7440-09-7	E420/WT	0.050	mg/L	2.78	1.68	----	----	----
Rubidium, total	7440-17-7	E420/WT	0.00020	mg/L	0.00128	0.00134	----	----	----
Selenium, total	7782-49-2	E420/WT	0.000050	mg/L	0.000113	0.000088	----	----	----
Silicon, total	7440-21-3	E420/WT	0.10	mg/L	5.20	5.36	----	----	----
Silver, total	7440-22-4	E420/WT	0.000010	mg/L	<0.000010	<0.000010	----	----	----
Sodium, total	7440-23-5	E420/WT	0.050	mg/L	9.40	12.2	----	----	----
Strontium, total	7440-24-6	E420/WT	0.00020	mg/L	0.0530	0.0309	----	----	----
Sulfur, total	7704-34-9	E420/WT	0.50	mg/L	22.7	10.9	----	----	----
Tellurium, total	13494-80-9	E420/WT	0.00020	mg/L	<0.00020	<0.00020	----	----	----
Thallium, total	7440-28-0	E420/WT	0.000010	mg/L	<0.000010	<0.000010	----	----	----
Thorium, total	7440-29-1	E420/WT	0.00010	mg/L	<0.00010	<0.00010	----	----	----
Tin, total	7440-31-5	E420/WT	0.00010	mg/L	<0.00010	<0.00010	----	----	----
Titanium, total	7440-32-6	E420/WT	0.00030	mg/L	<0.00200 DLUI	<0.00200 DLUI	----	----	----
Tungsten, total	7440-33-7	E420/WT	0.00010	mg/L	<0.00010	0.00012	----	----	----
Uranium, total	7440-61-1	E420/WT	0.000010	mg/L	0.000259	0.000180	----	----	----
Vanadium, total	7440-62-2	E420/WT	0.00050	mg/L	0.00066	<0.00050	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)			Client sample ID		WLNG US-1	WLNG DS-1	----	----	----
			Client sampling date / time		16-Oct-2024 13:12	16-Oct-2024 11:34	----	----	----
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	VA24C7749-001	VA24C7749-002	----	----	----
					Result	Result	----	----	----
Total Metals									
Zinc, total	7440-66-6	E420/WT	0.0030	mg/L	<0.0030	<0.0030	----	----	----
Zirconium, total	7440-67-7	E420/WT	0.00020	mg/L	<0.00020	<0.00020	----	----	----
Dissolved Metals									
Aluminum, dissolved	7429-90-5	E421/WT	0.0010	mg/L	0.0674	0.0715	----	----	----
Antimony, dissolved	7440-36-0	E421/WT	0.00010	mg/L	0.00015	0.00012	----	----	----
Arsenic, dissolved	7440-38-2	E421/WT	0.00010	mg/L	0.00087	0.00087	----	----	----
Barium, dissolved	7440-39-3	E421/WT	0.00010	mg/L	0.00906	0.00869	----	----	----
Beryllium, dissolved	7440-41-7	E421/WT	0.000100	mg/L	<0.000100	<0.000100	----	----	----
Bismuth, dissolved	7440-69-9	E421/WT	0.000050	mg/L	<0.000050	<0.000050	----	----	----
Boron, dissolved	7440-42-8	E421/WT	0.010	mg/L	0.015	0.012	----	----	----
Cadmium, dissolved	7440-43-9	E421/WT	0.0000050	mg/L	0.0000130	0.0000110	----	----	----
Calcium, dissolved	7440-70-2	E421/WT	0.050	mg/L	18.5	13.4	----	----	----
Cesium, dissolved	7440-46-2	E421/WT	0.000010	mg/L	0.000013	0.000014	----	----	----
Chromium, dissolved	7440-47-3	E421/WT	0.00050	mg/L	<0.00050	<0.00050	----	----	----
Cobalt, dissolved	7440-48-4	E421/WT	0.00010	mg/L	0.00033	0.00022	----	----	----
Copper, dissolved	7440-50-8	E421/WT	0.00020	mg/L	0.00426	0.00268	----	----	----
Iron, dissolved	7439-89-6	E421/WT	0.010	mg/L	0.040	0.039	----	----	----
Lead, dissolved	7439-92-1	E421/WT	0.000050	mg/L	<0.000050	<0.000050	----	----	----
Lithium, dissolved	7439-93-2	E421/WT	0.0010	mg/L	<0.0010	<0.0010	----	----	----
Magnesium, dissolved	7439-95-4	E421/WT	0.0050	mg/L	7.01	4.34	----	----	----
Manganese, dissolved	7439-96-5	E421/WT	0.00010	mg/L	0.00316	0.00360	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	WLNG US-1	WLNG DS-1	----	----	----
				Client sampling date / time	16-Oct-2024 13:12	16-Oct-2024 11:34	----	----	----
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	VA24C7749-001	VA24C7749-002	----	----	----
					Result	Result	----	----	----
Dissolved Metals									
Mercury, dissolved	7439-97-6	E509/VA	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----
Molybdenum, dissolved	7439-98-7	E421/WT	0.000050	mg/L	0.00125	0.00289	----	----	----
Nickel, dissolved	7440-02-0	E421/WT	0.00050	mg/L	0.00356	0.00235	----	----	----
Phosphorus, dissolved	7723-14-0	E421/WT	0.050	mg/L	0.194	0.130	----	----	----
Potassium, dissolved	7440-09-7	E421/WT	0.050	mg/L	2.98	1.92	----	----	----
Rubidium, dissolved	7440-17-7	E421/WT	0.00020	mg/L	0.00141	0.00134	----	----	----
Selenium, dissolved	7782-49-2	E421/WT	0.000050	mg/L	0.000124	0.000097	----	----	----
Silicon, dissolved	7440-21-3	E421/WT	0.050	mg/L	5.22	5.27	----	----	----
Silver, dissolved	7440-22-4	E421/WT	0.000010	mg/L	<0.000010	<0.000010	----	----	----
Sodium, dissolved	7440-23-5	E421/WT	0.050	mg/L	9.10	8.48	----	----	----
Strontium, dissolved	7440-24-6	E421/WT	0.00020	mg/L	0.0539	0.0386	----	----	----
Sulfur, dissolved	7704-34-9	E421/WT	0.50	mg/L	23.4	14.8 DTS	----	----	----
Tellurium, dissolved	13494-80-9	E421/WT	0.00020	mg/L	<0.00020	<0.00020	----	----	----
Thallium, dissolved	7440-28-0	E421/WT	0.000010	mg/L	<0.000010	<0.000010	----	----	----
Thorium, dissolved	7440-29-1	E421/WT	0.00010	mg/L	<0.00010	<0.00010	----	----	----
Tin, dissolved	7440-31-5	E421/WT	0.00010	mg/L	<0.00010	<0.00010	----	----	----
Titanium, dissolved	7440-32-6	E421/WT	0.00030	mg/L	<0.00050 DLUI	0.00076	----	----	----
Tungsten, dissolved	7440-33-7	E421/WT	0.00010	mg/L	<0.00010	<0.00010	----	----	----
Uranium, dissolved	7440-61-1	E421/WT	0.000010	mg/L	0.000219	0.000189	----	----	----
Vanadium, dissolved	7440-62-2	E421/WT	0.00050	mg/L	0.00062	<0.00050	----	----	----
Zinc, dissolved	7440-66-6	E421/WT	0.0010	mg/L	0.0026	0.0032	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)			Client sample ID		WLNG US-1	WLNG DS-1	----	----	----
			Client sampling date / time		16-Oct-2024 13:12	16-Oct-2024 11:34	----	----	----
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	VA24C7749-001	VA24C7749-002	----	----	----
					Result	Result	----	----	----
Dissolved Metals									
Zirconium, dissolved	7440-67-7	E421/WT	0.00020	mg/L	<0.00020	<0.00020	----	----	----
Dissolved mercury filtration location	----	EP509/VA	-	-	Field	Field	----	----	----
Dissolved metals filtration location	----	EP421/WT	-	-	Field	Field	----	----	----
Speciated Metals									
Chromium, hexavalent [Cr VI], total	18540-29-9	E532/WT	0.00050	mg/L	<0.00050	<0.00050	----	----	----
Chromium, trivalent [Cr III], total	16065-83-1	EC535/WT	0.00050	mg/L	<0.00050	<0.00050	----	----	----

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA24C7749**	Page	: 1 of 14
Client	: **Triton Environmental Consultants Ltd.**	Laboratory	: ALS Environmental - Vancouver
Contact		Account Manager	
Address		Address	
Telephone	: ----	Telephone	
Project	: 11964	Date Samples Received	: 16-Oct-2024 16:45
PO	: 11964-Task 20-Phase 3C-4C	Issue Date	: 25-Oct-2024 22:15
C-O-C number	: ----		
Sampler	: ----		
Site	: Water Analysis		
Quote number	: VA23-TRIT100-012 _V2		
No. of samples received	: 2		
No. of samples analysed	: 2		

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 Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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 : Analytical Method / 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
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) WLNG DS-1	E298	16-Oct-2024	20-Oct-2024	28 days	4 days	✓	22-Oct-2024	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) WLNG US-1	E298	16-Oct-2024	20-Oct-2024	28 days	4 days	✓	22-Oct-2024	28 days	6 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE WLNG DS-1	E235.Br-L	16-Oct-2024	18-Oct-2024	28 days	2 days	✓	18-Oct-2024	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE WLNG US-1	E235.Br-L	16-Oct-2024	18-Oct-2024	28 days	2 days	✓	18-Oct-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE WLNG DS-1	E235.Cl	16-Oct-2024	18-Oct-2024	28 days	2 days	✓	18-Oct-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE WLNG US-1	E235.Cl	16-Oct-2024	18-Oct-2024	28 days	2 days	✓	18-Oct-2024	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE WLNG DS-1	E235.F	16-Oct-2024	18-Oct-2024	28 days	2 days	✓	18-Oct-2024	28 days	2 days	✓

Matrix: **Water**

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

Analyte Group : Analytical Method / 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
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
WLNG US-1	E235.F	16-Oct-2024	18-Oct-2024	28 days	2 days	✓	18-Oct-2024	28 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
WLNG DS-1	E235.NO3-L	16-Oct-2024	18-Oct-2024	3 days	2 days	✓	18-Oct-2024	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
WLNG US-1	E235.NO3-L	16-Oct-2024	18-Oct-2024	3 days	2 days	✓	18-Oct-2024	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
WLNG DS-1	E235.NO2-L	16-Oct-2024	18-Oct-2024	3 days	2 days	✓	18-Oct-2024	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
WLNG US-1	E235.NO2-L	16-Oct-2024	18-Oct-2024	3 days	2 days	✓	18-Oct-2024	3 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
WLNG DS-1	E235.SO4	16-Oct-2024	18-Oct-2024	28 days	2 days	✓	18-Oct-2024	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
WLNG US-1	E235.SO4	16-Oct-2024	18-Oct-2024	28 days	2 days	✓	18-Oct-2024	28 days	2 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
WLNG DS-1	E366	16-Oct-2024	20-Oct-2024	28 days	4 days	✓	21-Oct-2024	28 days	5 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
WLNG US-1	E366	16-Oct-2024	20-Oct-2024	28 days	4 days	✓	21-Oct-2024	28 days	5 days	✓

Matrix: **Water**

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

Analyte Group : Analytical Method / 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
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
WLNG US-1	E372-U	16-Oct-2024	20-Oct-2024	28 days	4 days	✓	21-Oct-2024	28 days	5 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
WLNG DS-1	E372-U	16-Oct-2024	20-Oct-2024	28 days	4 days	✓	21-Oct-2024	28 days	6 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid)										
WLNG DS-1	E509	16-Oct-2024	23-Oct-2024	28 days	7 days	✓	23-Oct-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid)										
WLNG US-1	E509	16-Oct-2024	23-Oct-2024	28 days	7 days	✓	23-Oct-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
WLNG DS-1	E421	16-Oct-2024	25-Oct-2024	180 days	9 days	✓	25-Oct-2024	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
WLNG US-1	E421	16-Oct-2024	25-Oct-2024	180 days	9 days	✓	25-Oct-2024	180 days	9 days	✓
Field Tests : Field pH,EC,Salinity, TDS, Cl2,ClO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine										
Glass vial dissolved (hydrochloric acid)										
WLNG DS-1	EF001	16-Oct-2024	----	----	----		23-Oct-2024	----	7 days	
Field Tests : Field pH,EC,Salinity, TDS, Cl2,ClO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine										
Glass vial dissolved (hydrochloric acid)										
WLNG US-1	EF001	16-Oct-2024	----	----	----		23-Oct-2024	----	7 days	
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
WLNG DS-1	E358-L	16-Oct-2024	21-Oct-2024	28 days	5 days	✓	22-Oct-2024	28 days	6 days	✓

Matrix: **Water**

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

Analyte Group : Analytical Method / 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
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
WLNG US-1	E358-L	16-Oct-2024	21-Oct-2024	28 days	5 days	✓	22-Oct-2024	28 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
WLNG DS-1	E290	16-Oct-2024	18-Oct-2024	14 days	2 days	✓	18-Oct-2024	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
WLNG US-1	E290	16-Oct-2024	18-Oct-2024	14 days	2 days	✓	18-Oct-2024	14 days	2 days	✓
Physical Tests : TDS by Gravimetry										
HDPE										
WLNG DS-1	E162	16-Oct-2024	----	----	----		22-Oct-2024	7 days	6 days	✓
Physical Tests : TDS by Gravimetry										
HDPE										
WLNG US-1	E162	16-Oct-2024	----	----	----		22-Oct-2024	7 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE										
WLNG DS-1	E160	16-Oct-2024	----	----	----		22-Oct-2024	7 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE										
WLNG US-1	E160	16-Oct-2024	----	----	----		22-Oct-2024	7 days	6 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
UV-inhibited HDPE - total (sodium hydroxide)										
WLNG DS-1	E532	16-Oct-2024	----	----	----		22-Oct-2024	28 days	6 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
UV-inhibited HDPE - total (sodium hydroxide)										
WLNG US-1	E532	16-Oct-2024	----	----	----		22-Oct-2024	28 days	6 days	✓

Matrix: **Water**

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

Analyte Group : Analytical Method / 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
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
WLNG DS-1	E508	16-Oct-2024	23-Oct-2024	28 days	7 days	✓	23-Oct-2024	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
WLNG US-1	E508	16-Oct-2024	23-Oct-2024	28 days	7 days	✓	23-Oct-2024	28 days	7 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
WLNG DS-1	E420	16-Oct-2024	22-Oct-2024	180 days	6 days	✓	22-Oct-2024	180 days	6 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
WLNG US-1	E420	16-Oct-2024	22-Oct-2024	180 days	6 days	✓	22-Oct-2024	180 days	6 days	✓
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE total (zinc acetate+sodium hydroxide)										
WLNG DS-1	E395	16-Oct-2024	----	----	----		18-Oct-2024	7 days	2 days	✓
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE total (zinc acetate+sodium hydroxide)										
WLNG US-1	E395	16-Oct-2024	----	----	----		18-Oct-2024	7 days	2 days	✓

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			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	1715673	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	1719484	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1715677	1	18	5.5	5.0	✓
Chloride in Water by IC	E235.Cl	1715676	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1725788	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1732520	1	2	50.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1721791	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	1715675	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1715678	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1715679	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1715680	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	1724693	1	10	10.0	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	1722621	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1725243	1	6	16.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1722259	1	20	5.0	5.0	✓
Total Nitrogen by Colourimetry	E366	1719485	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1719495	1	15	6.6	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	1716111	1	4	25.0	5.0	✓
TSS by Gravimetry	E160	1724697	1	7	14.2	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	1715673	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	1719484	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1715677	1	18	5.5	5.0	✓
Chloride in Water by IC	E235.Cl	1715676	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1725788	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1732520	1	2	50.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1721791	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	1715675	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1715678	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1715679	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1715680	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	1724693	1	10	10.0	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	1722621	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1725243	1	6	16.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1722259	1	20	5.0	5.0	✓
Total Nitrogen by Colourimetry	E366	1719485	1	16	6.2	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1719495	1	15	6.6	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	1716111	1	4	25.0	5.0	✓
TSS by Gravimetry	E160	1724697	1	7	14.2	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	1715673	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	1719484	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1715677	1	18	5.5	5.0	✓
Chloride in Water by IC	E235.Cl	1715676	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1725788	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1732520	1	2	50.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1721791	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	1715675	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1715678	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1715679	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1715680	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	1724693	1	10	10.0	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	1722621	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1725243	1	6	16.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1722259	1	20	5.0	5.0	✓
Total Nitrogen by Colourimetry	E366	1719485	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1719495	1	15	6.6	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	1716111	1	4	25.0	5.0	✓
TSS by Gravimetry	E160	1724697	1	7	14.2	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	1719484	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1715677	1	18	5.5	5.0	✓
Chloride in Water by IC	E235.Cl	1715676	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1725788	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1732520	1	2	50.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1721791	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	1715675	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1715678	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1715679	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1715680	1	20	5.0	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	1722621	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1725243	1	6	16.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1722259	1	20	5.0	5.0	✓
Total Nitrogen by Colourimetry	E366	1719485	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1719495	1	15	6.6	5.0	✓

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS) - Continued							
Total Sulfide by Colourimetry (Automated Flow)	E395	1716111	1	4	25.0	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
TSS by Gravimetry	E160 ALS Environmental - Vancouver	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 ALS Environmental - Vancouver	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 ALS Environmental - Vancouver	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Ammonia by Fluorescence	E298 ALS Environmental - Vancouver	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Dissolved Organic Carbon by Combustion (Low Level)	E358-L ALS Environmental - Calgary	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Nitrogen by Colourimetry	E366 ALS Environmental - Vancouver	Water	Chinchilla Scientific Nitrate Method, 2011	Following digestion, total nitrogen is is determined colourimetrically using a discrete analyzer utilizing the vanadium chloride reduction method. This method of analysis is approved under US EPA 40 CFR Part 136 (May 2021).
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Sulfide by Colourimetry (Automated Flow)	E395 ALS Environmental - Vancouver	Water	APHA 4500 -S E-Auto-Colorimetry	Sulfide is determined using the gas dialysis automated methlyene blue colourimetric method. Results expressed "as H2S" if reported represent the maximum possible H2S concentration based on the total sulfide concentration in the sample. The H2S calculation converts Total Sulphide as (S2-) and reports it as Total Sulphide as (H2S)
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Waterloo	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 ALS Environmental - Waterloo	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 ALS Environmental - Vancouver	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 ALS Environmental - Vancouver	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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Hexavalent Chromium (Cr VI) by IC	E532 ALS Environmental - Waterloo	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 Hardness (Calculated)	EC100 ALS Environmental - Waterloo	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Hardness (Calculated) from Total Ca/Mg	EC100A ALS Environmental - Waterloo	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.
Un-ionized Total Hydrogen Sulfide (calculated)	EC395 ALS Environmental - Vancouver	Water	APHA 4500 -S H	Un-ionized sulfide is calculated using results from total sulfide analysis, pH, temperature, and ionic strength of the sample. Calculation of un-ionized sulfide using total sulfide concentrations may be biased high due to particulate forms of sulfide measured during total sulfide testing.
Total Trivalent Chromium (Cr III) by Calculation	EC535 ALS Environmental - Waterloo	Water	APHA 3030B/6020A/EPA 7196A (mod)	Chromium (III)-Total is calculated as the difference between the total chromium and the total hexavalent chromium (Cr(VI)) results.The Limit of Reporting for Chromium (III) varies as a function of the test results.
Field pH,EC,Salinity, TDS, Cl2,ClO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine	EF001 ALS Environmental - Vancouver	Water	Field Measurement (Client Supplied)	Field pH,EC,Salinity, TDS, Cl2,ClO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3 or Chloramine measurements provided by client and recorded on ALS report may affect the validity of results.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Vancouver	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Preparation for Dissolved Organic Carbon for Combustion	EP358 ALS Environmental - Calgary	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Nitrogen in water	EP366 ALS Environmental - Vancouver	Water	APHA 4500-P J (mod)	Samples for total nitrogen analysis are digested using a heated persulfate digestion. Nitrogen compounds are converted to nitrate in this digestion.
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals Water Filtration	EP421 ALS Environmental - Waterloo	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
Dissolved Mercury Water Filtration	EP509 ALS Environmental - Vancouver	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **VA24C7749**	Page	: 1 of 17
Client	: Triton Environmental Consultants Ltd.	Laboratory	: ALS Environmental - Vancouver
Contact		Account Manager	
Address		Address	
Telephone	: ----	Telephone	
Project	: 11964	Date Samples Received	: 16-Oct-2024 16:45
PO	: 11964-Task 20-Phase 3C-4C	Date Analysis Commenced	: 18-Oct-2024
C-O-C number	: ----	Issue Date	: 25-Oct-2024 22:16
Sampler	: ----		
Site	: Water Analysis		
Quote number	: VA23-TRIT100-012 _V2		
No. of samples received	: 2		
No. of samples analysed	: 2		

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 Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

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*
		Vancouver Metals, Burnaby, British Columbia
		Calgary Inorganics, Calgary, Alberta
		Vancouver Metals, Burnaby, British Columbia
		Vancouver Administration, Burnaby, British Columbia
		Vancouver Metals, Burnaby, British Columbia
		Vancouver Inorganics, Burnaby, British Columbia
		Waterloo Inorganics, Waterloo, Ontario
		Waterloo Metals, Waterloo, Ontario
		Vancouver Inorganics, 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 Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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*
Physical Tests (QC Lot: 1715673)											
VA24C7420-006	Anonymous	Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	53.2	53.1	0.190%	20%	----
Physical Tests (QC Lot: 1724693)											
VA24C7749-001	WLNG US-1	Solids, total dissolved [TDS]	----	E162	20	mg/L	171	162	10	Diff <2x LOR	----
Physical Tests (QC Lot: 1724697)											
VA24C7749-001	WLNG US-1	Solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1715675)											
VA24C7418-001	Anonymous	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.108	0.109	0.001	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1715676)											
VA24C7418-001	Anonymous	Chloride	16887-00-6	E235.Cl	0.50	mg/L	2.83	2.81	0.01	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1715677)											
VA24C7418-001	Anonymous	Bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1715678)											
VA24C7418-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.755	0.751	0.498%	20%	----
Anions and Nutrients (QC Lot: 1715679)											
VA24C7418-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0044	0.0044	0.00005	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1715680)											
VA24C7418-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	130	130	0.361%	20%	----
Anions and Nutrients (QC Lot: 1719484)											
KS2404349-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1719485)											
KS2404349-001	Anonymous	Nitrogen, total	7727-37-9	E366	0.030	mg/L	0.141	0.134	0.007	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1719495)											
VA24C7550-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 1721791)											
VA24C7582-016	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.00	2.05	0.05	Diff <2x LOR	----
Total Sulfides (QC Lot: 1716111)											
VA24C7630-001	Anonymous	Sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	0.0023	<0.0015	0.0008	Diff <2x LOR	----
Total Metals (QC Lot: 1722259)											
VA24C7594-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0170	0.0181	0.0011	Diff <2x LOR	----
		Antimony, total	7440-36-0	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: 1722259) - continued											
VA24C7594-001	Anonymous	Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00011	0.00011	0.000002	Diff <2x LOR	----
		Barium, total	7440-39-3	E420	0.00010	mg/L	0.00334	0.00341	1.99%	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	<0.010	<0.010	0	Diff <2x LOR	----
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000176	0.0000129	0.0000047	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.050	mg/L	8.48	8.08	4.89%	20%	----
		Cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	<0.00010	<0.00010	0	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00050	mg/L	0.331	0.336	1.45%	20%	----
		Iron, total	7439-89-6	E420	0.010	mg/L	0.019	0.019	0.0003	Diff <2x LOR	----
		Lead, total	7439-92-1	E420	0.000050	mg/L	0.000870	0.000838	3.76%	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	0.288	0.288	0.154%	20%	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	0.0121	0.0123	1.78%	20%	----
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000226	0.000234	0.000008	Diff <2x LOR	----
		Nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	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	0.246	0.244	0.002	Diff <2x LOR	----
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00047	0.00044	0.00003	Diff <2x LOR	----
		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	1.84	1.83	0.639%	20%	----
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	0.050	mg/L	2.68	2.63	2.02%	20%	----
		Strontium, total	7440-24-6	E420	0.00020	mg/L	0.0155	0.0153	1.74%	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	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	0.00034	0.00004	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	0.000014	0.000014	0.0000004	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: 1722259) - continued											
VA24C7594-001	Anonymous	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	0.0680	0.0670	1.44%	20%	----
		Zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Total Metals (QC Lot: 1725243)											
VA24C7513-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1725788)											
VA24C7582-023	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1732520)											
VA24C7749-001	WLNG US-1	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0674	0.0674	0.0310%	20%	----
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00015	0.00014	0.000004	Diff <2x LOR	----
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00087	0.00090	0.00003	Diff <2x LOR	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00906	0.00913	0.782%	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	0.015	0.016	0.0006	Diff <2x LOR	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000130	0.0000163	0.0000033	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	18.5	19.1	3.25%	20%	----
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000013	0.000013	0.0000002	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	0.00033	0.00033	0.000004	Diff <2x LOR	----
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00426	0.00425	0.209%	20%	----
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	0.040	0.040	0.0003	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	<0.0010	<0.0010	0	Diff <2x LOR	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	7.01	6.90	1.52%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00316	0.00327	3.46%	20%	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00125	0.00126	1.08%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00356	0.00354	0.00001	Diff <2x LOR	----
		Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	0.194	0.205	0.011	Diff <2x LOR	----
		Potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.98	2.87	3.64%	20%	----
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00141	0.00135	0.00006	Diff <2x LOR	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000124	0.000118	0.000006	Diff <2x LOR	----
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.22	5.21	0.136%	20%	----
		Silver, dissolved	7440-22-4	E421	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*
Dissolved Metals (QC Lot: 1732520) - continued											
VA24C7749-001	WLNG US-1	Sodium, dissolved	7440-23-5	E421	0.050	mg/L	9.10	9.01	0.983%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0539	0.0542	0.488%	20%	----
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	23.4	23.7	1.21%	20%	----
		Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, dissolved	7440-32-6	E421	0.00050	mg/L	<0.00050	<0.00050	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	0.000219	0.000217	1.15%	20%	----
		Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00062	0.00064	0.00002	Diff <2x LOR	----
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0026	0.0028	0.0002	Diff <2x LOR	----
		Zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Speciated Metals (QC Lot: 1722621)											
VA24C7582-001	Anonymous	Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L	<0.00050	<0.00050	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
Physical Tests (QCLot: 1715673)						
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 1724693)						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 1724697)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Anions and Nutrients (QCLot: 1715675)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 1715676)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 1715677)						
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 1715678)						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1715679)						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 1715680)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 1719484)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1719485)						
Nitrogen, total	7727-37-9	E366	0.03	mg/L	<0.030	----
Anions and Nutrients (QCLot: 1719495)						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Organic / Inorganic Carbon (QCLot: 1721791)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Total Sulfides (QCLot: 1716111)						
Sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015	----
Total Metals (QCLot: 1722259)						
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1722259) - continued						
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	7440-23-5	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	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1725243)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 1725788)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 1732520)						
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	----
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	7440-23-5	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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 1732520) - continued						
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	----
Speciated Metals (QCLot: 1722621)						
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	<0.00050	----

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	Target Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1715673)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	106	85.0	115	----
Physical Tests (QCLot: 1724693)									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	105	85.0	115	----
Physical Tests (QCLot: 1724697)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	97.2	85.0	115	----
Anions and Nutrients (QCLot: 1715675)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.4	90.0	110	----
Anions and Nutrients (QCLot: 1715676)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	99.3	90.0	110	----
Anions and Nutrients (QCLot: 1715677)									
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	109	85.0	115	----
Anions and Nutrients (QCLot: 1715678)									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	98.9	90.0	110	----
Anions and Nutrients (QCLot: 1715679)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	97.7	90.0	110	----
Anions and Nutrients (QCLot: 1715680)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 1719484)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	102	85.0	115	----
Anions and Nutrients (QCLot: 1719485)									
Nitrogen, total	7727-37-9	E366	0.03	mg/L	0.5 mg/L	98.6	75.0	125	----
Anions and Nutrients (QCLot: 1719495)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	95.1	80.0	120	----
Organic / Inorganic Carbon (QCLot: 1721791)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	101	80.0	120	----
Total Sulfides (QCLot: 1716111)									
Sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	0.08 mg/L	96.3	80.0	120	----
Total Metals (QCLot: 1722259)									

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 1722259) - continued									
Aluminum, total	7429-90-5	E420	0.003	mg/L	0.1 mg/L	98.1	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	0.05 mg/L	107	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	0.05 mg/L	110	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.012 mg/L	102	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.005 mg/L	97.0	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	0.05 mg/L	101	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	0.05 mg/L	96.7	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.005 mg/L	98.5	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	2.5 mg/L	99.8	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.002 mg/L	104	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.012 mg/L	105	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.012 mg/L	103	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.012 mg/L	102	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	0.05 mg/L	106	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.025 mg/L	99.5	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.012 mg/L	90.6	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	2.5 mg/L	104	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.012 mg/L	105	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.012 mg/L	105	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.025 mg/L	102	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	0.5 mg/L	105	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	2.5 mg/L	104	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.005 mg/L	103	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	0.05 mg/L	105	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	0.5 mg/L	104	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.005 mg/L	92.9	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	2.5 mg/L	111	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.012 mg/L	106	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	2.5 mg/L	95.0	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.005 mg/L	98.7	80.0	120	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	0.05 mg/L	103	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.005 mg/L	99.1	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.025 mg/L	99.0	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.012 mg/L	99.5	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.005 mg/L	96.3	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0 mg/L	104	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 1722259) - continued									
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.025 mg/L	106	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.025 mg/L	102	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.005 mg/L	97.4	80.0	120	----
Total Metals (QCLot: 1725243)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0 mg/L	84.6	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0 mg/L	94.8	80.0	120	----
Dissolved Metals (QCLot: 1732520)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	0.1 mg/L	97.4	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	0.05 mg/L	106	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	0.05 mg/L	108	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.012 mg/L	105	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.005 mg/L	92.0	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	0.05 mg/L	104	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	0.05 mg/L	89.6	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.005 mg/L	99.9	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	2.5 mg/L	94.9	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.002 mg/L	103	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.012 mg/L	104	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.012 mg/L	103	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.012 mg/L	102	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	0.05 mg/L	100	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.025 mg/L	102	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.012 mg/L	83.3	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	2.5 mg/L	110	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.012 mg/L	104	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.012 mg/L	104	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.025 mg/L	104	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	0.5 mg/L	104	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	2.5 mg/L	104	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.005 mg/L	107	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	0.05 mg/L	103	80.0	120	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	0.5 mg/L	103	60.0	140	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.005 mg/L	94.4	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	2.5 mg/L	103	80.0	120	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.012 mg/L	102	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Target Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 1732520) - continued									
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	2.5 mg/L	100	80.0	120	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.005 mg/L	106	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	0.05 mg/L	102	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.005 mg/L	100	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.025 mg/L	103	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.012 mg/L	99.6	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.005 mg/L	99.1	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0 mg/L	101	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.025 mg/L	106	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.025 mg/L	101	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.005 mg/L	100	80.0	120	----
Speciated Metals (QCLot: 1722621)									
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	0.025 mg/L	99.0	80.0	120	----

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
Anions and Nutrients (QCLot: 1715675)										
VA24C7418-005	Anonymous	Fluoride	16984-48-8	E235.F	4.76 mg/L	5 mg/L	95.2	75.0	125	----
Anions and Nutrients (QCLot: 1715676)										
VA24C7418-005	Anonymous	Chloride	16887-00-6	E235.Cl	498 mg/L	500 mg/L	99.6	75.0	125	----
Anions and Nutrients (QCLot: 1715677)										
VA24C7418-005	Anonymous	Bromide	24959-67-9	E235.Br-L	2.65 mg/L	2.5 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 1715678)										
VA24C7418-005	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	ND mg/L	----	ND	75.0	125	----
Anions and Nutrients (QCLot: 1715679)										
VA24C7418-005	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	2.45 mg/L	2.5 mg/L	97.9	75.0	125	----
Anions and Nutrients (QCLot: 1715680)										
VA24C7418-005	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	493 mg/L	500 mg/L	98.7	75.0	125	----
Anions and Nutrients (QCLot: 1719484)										
VA24C7497-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.103 mg/L	0.1 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 1719485)										
VA24C7497-001	Anonymous	Nitrogen, total	7727-37-9	E366	ND mg/L	----	ND	70.0	130	----
Anions and Nutrients (QCLot: 1719495)										
VA24C7550-002	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0487 mg/L	0.05 mg/L	97.4	70.0	130	----
Organic / Inorganic Carbon (QCLot: 1721791)										
VA24C7582-016	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	5.87 mg/L	5 mg/L	117	70.0	130	----
Total Sulfides (QCLot: 1716111)										
VA24C7715-001	Anonymous	Sulfide, total (as S)	18496-25-8	E395	0.172 mg/L	0.2 mg/L	86.2	75.0	125	----
Total Metals (QCLot: 1722259)										
VA24C7594-004	Anonymous	Aluminum, total	7429-90-5	E420	0.0928 mg/L	0.1 mg/L	92.8	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0542 mg/L	0.05 mg/L	108	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0534 mg/L	0.05 mg/L	107	70.0	130	----
		Barium, total	7440-39-3	E420	0.0125 mg/L	0.012 mg/L	99.7	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.00460 mg/L	0.005 mg/L	92.1	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.0514 mg/L	0.05 mg/L	103	70.0	130	----
		Boron, total	7440-42-8	E420	0.047 mg/L	0.05 mg/L	93.4	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00506 mg/L	0.005 mg/L	101	70.0	130	----
		Calcium, total	7440-70-2	E420	ND mg/L	----	ND	70.0	130	----
		Cesium, total	7440-46-2	E420	0.00262 mg/L	0.002 mg/L	105	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0128 mg/L	0.012 mg/L	103	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: 1722259) - continued										
VA24C7594-004	Anonymous	Cobalt, total	7440-48-4	E420	0.0126 mg/L	0.012 mg/L	101	70.0	130	----
		Copper, total	7440-50-8	E420	ND mg/L	----	ND	70.0	130	----
		Iron, total	7439-89-6	E420	0.050 mg/L	0.05 mg/L	99.9	70.0	130	----
		Lead, total	7439-92-1	E420	0.0253 mg/L	0.025 mg/L	101	70.0	130	----
		Lithium, total	7439-93-2	E420	0.0113 mg/L	0.012 mg/L	90.4	70.0	130	----
		Magnesium, total	7439-95-4	E420	2.50 mg/L	2.5 mg/L	100.0	70.0	130	----
		Manganese, total	7439-96-5	E420	0.0120 mg/L	0.012 mg/L	96.2	70.0	130	----
		Molybdenum, total	7439-98-7	E420	0.0132 mg/L	0.012 mg/L	105	70.0	130	----
		Nickel, total	7440-02-0	E420	0.0252 mg/L	0.025 mg/L	101	70.0	130	----
		Phosphorus, total	7723-14-0	E420	0.547 mg/L	0.5 mg/L	109	70.0	130	----
		Potassium, total	7440-09-7	E420	2.45 mg/L	2.5 mg/L	98.1	70.0	130	----
		Rubidium, total	7440-17-7	E420	0.00511 mg/L	0.005 mg/L	102	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0521 mg/L	0.05 mg/L	104	70.0	130	----
		Silicon, total	7440-21-3	E420	ND mg/L	----	ND	70.0	130	----
		Silver, total	7440-22-4	E420	0.00468 mg/L	0.005 mg/L	93.6	70.0	130	----
		Sodium, total	7440-23-5	E420	ND mg/L	----	ND	70.0	130	----
		Strontium, total	7440-24-6	E420	ND mg/L	----	ND	70.0	130	----
		Sulfur, total	7704-34-9	E420	2.40 mg/L	2.5 mg/L	96.2	70.0	130	----
		Tellurium, total	13494-80-9	E420	0.00508 mg/L	0.005 mg/L	102	70.0	130	----
		Thallium, total	7440-28-0	E420	0.0512 mg/L	0.05 mg/L	102	70.0	130	----
		Thorium, total	7440-29-1	E420	0.00521 mg/L	0.005 mg/L	104	70.0	130	----
		Tin, total	7440-31-5	E420	0.0250 mg/L	0.025 mg/L	100	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0118 mg/L	0.012 mg/L	94.1	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.00497 mg/L	0.005 mg/L	99.5	70.0	130	----
		Uranium, total	7440-61-1	E420	0.000266 mg/L	0 mg/L	106	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.0256 mg/L	0.025 mg/L	102	70.0	130	----
		Zinc, total	7440-66-6	E420	0.0239 mg/L	0.025 mg/L	95.7	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.00495 mg/L	0.005 mg/L	98.9	70.0	130	----
Total Metals (QCLot: 1725243)										
VA24C7513-002	Anonymous	Mercury, total	7439-97-6	E508	0.0000854 mg/L	0 mg/L	85.4	70.0	130	----
Dissolved Metals (QCLot: 1725788)										
VA24C7582-024	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000958 mg/L	0 mg/L	95.8	70.0	130	----
Dissolved Metals (QCLot: 1732520)										
VA24C7749-002	WLNG DS-1	Aluminum, dissolved	7429-90-5	E421	0.0945 mg/L	0.1 mg/L	94.5	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	0.0516 mg/L	0.05 mg/L	103	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	0.0578 mg/L	0.05 mg/L	116	70.0	130	----
		Barium, dissolved	7440-39-3	E421	0.0126 mg/L	0.012 mg/L	101	70.0	130	----
		Beryllium, dissolved	7440-41-7	E421	0.00502 mg/L	0.005 mg/L	100	70.0	130	----
		Bismuth, dissolved	7440-69-9	E421	0.0461 mg/L	0.05 mg/L	92.3	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.045 mg/L	0.05 mg/L	90.1	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00533 mg/L	0.005 mg/L	106	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	----	ND	70.0	130	----
		Cesium, dissolved	7440-46-2	E421	0.00261 mg/L	0.002 mg/L	104	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: 1732520) - continued										
VA24C7749-002	WLNG DS-1	Chromium, dissolved	7440-47-3	E421	0.0134 mg/L	0.012 mg/L	107	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	0.0133 mg/L	0.012 mg/L	106	70.0	130	----
		Copper, dissolved	7440-50-8	E421	0.0130 mg/L	0.012 mg/L	104	70.0	130	----
		Iron, dissolved	7439-89-6	E421	0.048 mg/L	0.05 mg/L	95.5	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0251 mg/L	0.025 mg/L	100	70.0	130	----
		Lithium, dissolved	7439-93-2	E421	0.0119 mg/L	0.012 mg/L	95.0	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	----	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	0.0127 mg/L	0.012 mg/L	102	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	0.0130 mg/L	0.012 mg/L	104	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.0260 mg/L	0.025 mg/L	104	70.0	130	----
		Phosphorus, dissolved	7723-14-0	E421	0.553 mg/L	0.5 mg/L	111	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	2.73 mg/L	2.5 mg/L	109	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	0.00524 mg/L	0.005 mg/L	105	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.0593 mg/L	0.05 mg/L	119	70.0	130	----
		Silicon, dissolved	7440-21-3	E421	ND mg/L	----	ND	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00463 mg/L	0.005 mg/L	92.6	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	ND mg/L	----	ND	70.0	130	----
		Strontium, dissolved	7440-24-6	E421	ND mg/L	----	ND	70.0	130	----
		Sulfur, dissolved	7704-34-9	E421	ND mg/L	----	ND	70.0	130	----
		Tellurium, dissolved	13494-80-9	E421	0.00549 mg/L	0.005 mg/L	110	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.0506 mg/L	0.05 mg/L	101	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.00438 mg/L	0.005 mg/L	87.5	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0255 mg/L	0.025 mg/L	102	70.0	130	----
		Titanium, dissolved	7440-32-6	E421	0.0131 mg/L	0.012 mg/L	105	70.0	130	----
		Tungsten, dissolved	7440-33-7	E421	0.00496 mg/L	0.005 mg/L	99.1	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	0.000243 mg/L	0 mg/L	97.2	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.0271 mg/L	0.025 mg/L	108	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.0268 mg/L	0.025 mg/L	107	70.0	130	----
		Zirconium, dissolved	7440-67-7	E421	0.00502 mg/L	0.005 mg/L	100	70.0	130	----
Speciated Metals (QCLot: 1722621)										
VA24C7582-001	Anonymous	Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0395 mg/L	0.04 mg/L	98.7	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 17 -

Page 1 of

Report To	Contact and company name below will appear on the final report
Company:	Triton Environmental
Contact:	
Phone:	
	nal report
Street:	
City/Province:	
Postal Code:	
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: ☑ ☑ 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
Email 1 or Fax
Email 2

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

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

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

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

Date and Time Required for all E&P TATs: 24-OCT-2024

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

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	VA23-TRIT100-012	AFE/Cost Center:	PO#
Job #:	11964	Major/Minor Code:	Routing Code:
PO / AFE:	11964 - Task 20 - Phase 3C-4C	Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):		ALS Contact:	Sampler:

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Total metals + mercury	Dissolved metals + mercury	Total hexavalent chromium	Total trivalent chromium	TSS	TDS	Nutrients (ammonia, ammonium, total nitrogen, total phosphorus)	Total sulfide (low) (as H2S), Unionized Sulfide (low)	Anions scan (Br, Cl, F, NO2, NO3, SO4)	General parameters (alkalinity)	DOC					SAMPLES ON HOLD	Sample is hazardous (please provide further detail	NUMBER OF CONTAINERS
						F					P	P			F/P							
	WLNG US 1	16-OCT-24	13:12	Water	R	R	R	R	R	R	R	R	R	R	R						N	9
	pH: 6.94 cond: 245 µS/cm temp: 12.1 °C																					
	WLNG DS 1	16-OCT-24	11:34	Water	R	R	R	R	R	R	R	R	R	R	R						N	9
	pH: 7.37 cond: 166 µS/cm temp: 11.9 °C																					

Environmental Division
Vancouver
Work Order Reference
VA24C7749

Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria
Are samples taken from a Regulated DW System? ☐ ☑ NO	Triton project # 11964
Are samples for human consumption/ use? ☐ ☑ 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			
				13			

SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
	Time:	Received by:	Date:	Time:	Received by: RJ	Date: OCT-16	Time: 1645
16-OCT-24	16:50						

ONS AND SAMPLING INFORMATION — WHITE - LABORATORY COPY — YELLOW - CLIENT COPY — SEPT 2017 FRONT

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.**

Woodfibre Site Receiving Environment Field Notes and Logs

FortisBC Eagle Mountain-Woodfibre Gas Pipeline

Water Discharge Authorization Water Quality Monitoring

2024-10-16-Chycoski-C447F

Project Component:	Tunnel	**Site Name:**	Receiving Environment - Downstream of Discharge
Inspection Date:	10/16/2024	**Location:**	WLNG
Triton QP:	Lily Chycoski	**Latitude/Longitude:**	49.669091 -123.248094
Temperature(c):	Low 8 High 14	**Permit:**	PE 110136
Weather Conditions:	Overcast	**Ground Conditions:**	Wet

Observations

Time: 11:34:00 **Flow Volume (visual):** moderate

Notes: New sonde location further downstream from the EOP discharge.

Odour Detected?:	No	**Notes:**	
Unusual Colour?	No	**Notes:**	
Unusual Observations?	No	**Notes:**	
Sheen on Water?	No	**Notes:**	

Samples Collected - Parameters

Total Metals + Mercury	Yes	**General Parameters (Alkalinity)**	Yes	**Other Sample:**	
Dissolved Metals + Mercury	Yes	**Total Sulfide, Unionized Sulfide**	Yes		
TSS	Yes	**Anions**	Yes		
TDS	Yes	**Total Trivalent Chromium**	Yes	**QA Samples:**	No
Nutrients	Yes	**VOC/VPH**	No		
DOC	Yes	**EPH, PAH, LEPH/HEPH**	No		
		Trout LC50	No		

Logger Maintenance

Logger Maintenance Performed?	Yes	**Photo of COC with Lab Signature?**	Yes

Describe Logger Maintenance

Cleaned sonde sensors

Photos

Photo: 1

Location: EAS DS 1

Description: US view

Photo: 2

Location: EAS DS 1

Description: Across view

Photos

Photo: 3

Location: EAS DS 1

Description: DS view

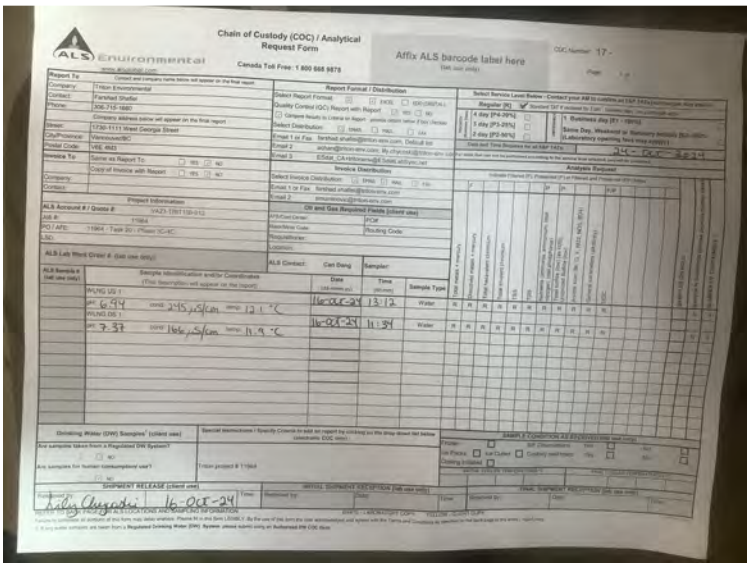

Photo: 4

Location: EAS DS 1

Description: Lab COC

Sign Off

Report Prepared By:	Lily Chycoski	**Report Reviewed:**	Yes
Report Reviewer:		**Professional(s) of Record:**	
Name:			
Designation:			
Designation Number:			

FortisBC Eagle Mountain-Woodfibre Gas Pipeline

Water Discharge Authorization Water Quality Monitoring

2024-10-16-Chycoski-EE26F

Project Component:	Tunnel	**Site Name:**	Receiving Environment - Upstream of Discharge
Inspection Date:	10/16/2024	**Location:**	WLNG
Triton QP:	Lily Chycoski	**Latitude/Longitude:**	49.669455 -123.25087
Temperature(c):	Low 8 High 14	**Permit:**	PE 110136
Weather Conditions:	Overcast	**Ground Conditions:**	Wet

Observations

Time: 13:12:00 **Flow Volume (visual):** moderate

Notes: The sample was delayed due to bear in the area. It had rained briefly before this sample was taken, possibly increasing conductivity and turbidity from sediment flushed into the creek from the rain.

Odour Detected?:	No	**Notes:**	
Unusual Colour?	No	**Notes:**	
Unusual Observations?	No	**Notes:**	
Sheen on Water?	No	**Notes:**	

Samples Collected - Parameters

Total Metals + Mercury	Yes	**General Parameters (Alkalinity)**	Yes	**Other Sample:**	
Dissolved Metals + Mercury	Yes	**Total Sulfide, Unionized Sulfide**	Yes		
TSS	Yes	**Anions**	Yes		
TDS	Yes	**Total Trivalent Chromium**	Yes	**QA Samples:**	No
Nutrients	Yes	**VOC/VPH**	No		
DOC	Yes	**EPH, PAH, LEPH/HEPH**	No		
		Trout LC50	No		

Logger Maintenance

Logger Maintenance Performed?	Yes	**Photo of COC with Lab Signature?**	Yes

Describe Logger Maintenance

Cleaned sonde.

Photos

Photo: 1

Location: EAS US 1

Description: US view

Photo: 2

Location: EAS US 1

Description: Across view

Photos

Photo: 3

Location: EAS US 1

Description: DS view

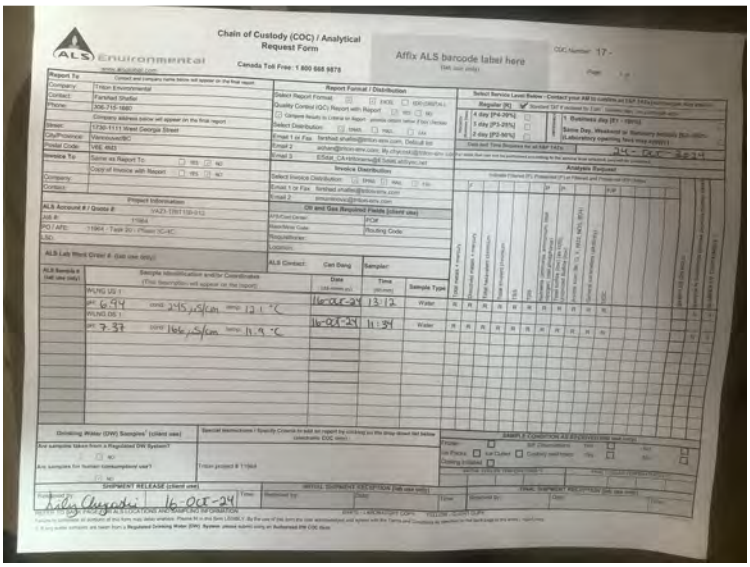

Photo: 4

Location: EAS US 1

Description: Lab COC

Sign Off

Report Prepared By:	Lily Chycoski	**Report Reviewed:**	Yes
Report Reviewer:		**Professional(s) of Record:**	
Name:			
Designation:			
Designation Number:			

	EAS DS1						EAS US1 (Background)					
Date	Temperature (c)	Specific Conductivity (µS/cm)	Salinity PSU	pH	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Temperature (c)	Specific Conductivity (µS/cm)	Salinity PSU	pH	Dissolved Oxygen (mg/L)	Turbidity (NTU)
10/14/2024 0:00	12.02	131.59	0.06	8.03	9.89	10.15	11.91	22.51	0.01	7.13	9.31	0.35
10/14/2024 0:10	12.02	116.16	0.05	7.95	9.87	8.56	11.9	22.39	0.01	6.96	9.18	0.28
10/14/2024 0:20	11.95	91.63	0.04	7.82	9.85	5.18	11.89	22.4	0.01	6.99	9.34	0.27
10/14/2024 0:30	11.9	88.62	0.04	7.8	9.87	4.17	11.88	22.44	0.01	6.96	9.35	0.28
10/14/2024 0:40	11.9	118.56	0.06	7.94	9.91	7.82	11.87	22.25	0.01	7.02	9.34	0.27
10/14/2024 0:50	11.97	130.69	0.06	8.03	9.9	8.01	11.86	22.41	0.01	6.96	9.34	0.25
10/14/2024 1:00	11.97	131.36	0.06	8.02	9.89	9.24	11.85	22.26	0.01	7.02	9.35	0.26
10/14/2024 1:10	11.96	128.08	0.06	7.99	9.89	7.44	11.84	22.33	0.01	6.97	9.36	0.26
10/14/2024 1:20	11.92	96.15	0.04	7.83	9.85	4.95	11.83	22.38	0.01	7.02	9.35	0.27
10/14/2024 1:30	11.87	89.46	0.04	7.81	9.87	4.7	11.83	22.33	0.01	6.97	9.32	0.28
10/14/2024 1:40	11.84	88.39	0.04	7.79	9.87	5.03	11.83	22.18	0.01	7.04	9.36	0.25
10/14/2024 1:50	11.95	130.21	0.06	8.01	9.89	8.86	11.82	22.34	0.01	6.97	9.26	0.25
10/14/2024 2:00	11.94	131.49	0.06	8	9.88	9.76	11.82	22.29	0.01	7	9.31	0.28
10/14/2024 2:10	11.94	130.27	0.06	8	9.89	9.51	11.82	22.39	0.01	6.97	9.32	0.3
10/14/2024 2:20	11.9	99.93	0.05	7.87	9.86	5.23	11.82	22.08	0.01	7.04	9.36	0.25
10/14/2024 2:30	11.85	90.39	0.04	7.81	9.87	4.75	11.82	22.41	0.01	6.96	9.33	0.28
10/14/2024 2:40	11.84	88.14	0.04	7.79	9.87	4.27	11.81	22.22	0.01	7	9.35	0.26
10/14/2024 2:50	11.91	129.54	0.06	7.99	9.91	7.86	11.81	22.42	0.01	6.97	9.35	0.24
10/14/2024 3:00	11.92	131.19	0.06	8.01	9.9	9.71	11.8	22.3	0.01	6.97	9.3	0.25
10/14/2024 3:10	11.93	131.4	0.06	8.02	9.91	10	11.8	22.32	0.01	6.97	9.36	0.28
10/14/2024 3:20	11.91	105.37	0.05	7.92	9.86	6.7	11.8	22.33	0.01	7.01	9.34	0.26
10/14/2024 3:30	11.86	90.91	0.04	7.81	9.87	4.91	11.8	22.38	0.01	6.97	9.35	0.27
10/14/2024 3:40	11.83	88.32	0.04	7.8	9.87	4.53	11.79	22.47	0.01	6.99	9.35	0.25
10/14/2024 3:50	11.88	127.35	0.06	7.98	9.9	9.1	11.79	22.36	0.01	6.97	9.26	0.26
10/14/2024 4:00	11.91	131.02	0.06	8	9.9	9.54	11.79	22.35	0.01	6.99	9.35	0.25
10/14/2024 4:10	11.9	131.37	0.06	8.01	9.9	10.86	11.79	22.37	0.01	6.97	9.37	0.27
10/14/2024 4:20	11.91	119.54	0.06	7.96	9.87	8.17	11.79	22.13	0.01	7.03	9.34	0.28
10/14/2024 4:30	11.87	93.05	0.04	7.84	9.87	5.98	11.8	22.4	0.01	6.96	9.33	0.25
10/14/2024 4:40	11.82	88.76	0.04	7.8	9.87	5.43	11.8	22.21	0.01	7.02	9.33	0.26
10/14/2024 4:50	11.81	119.22	0.06	7.94	9.92	8.7	11.8	22.41	0.01	6.97	9.3	0.28
10/14/2024 5:00	11.87	130.86	0.06	8.01	9.91	9.42	11.8	22.36	0.01	7	9.32	0.28
10/14/2024 5:10	11.86	131.54	0.06	8.02	9.91	11.09	11.8	22.41	0.01	6.97	9.35	0.41
10/14/2024 5:20	11.86	127.9	0.06	8	9.91	9.21	11.81	22.18	0.01	7.01	9.35	0.26
10/14/2024 5:30	11.84	97.8	0.05	7.86	9.87	5.35	11.81	22.39	0.01	6.97	9.34	0.29
10/14/2024 5:40	11.8	89.48	0.04	7.82	9.89	4.93	11.82	22.28	0.01	7	9.37	0.22
10/14/2024 5:50	11.77	88.19	0.04	7.8	9.89	5.58	11.82	22.44	0.01	6.98	9.35	0.27
10/14/2024 6:00	11.81	130.37	0.06	8	9.93	9.08	11.82	22.43	0.01	7.01	9.37	0.29
10/14/2024 6:10	11.8	130.78	0.06	8.01	9.93	9.59	11.82	22.41	0.01	6.97	9.36	0.27
10/14/2024 6:20	11.81	131.15	0.06	8.01	9.93	10.61	11.82	22.28	0.01	6.99	9.34	0.51
10/14/2024 6:30	11.81	103.8	0.05	7.9	9.89	6.84	11.83	22.52	0.01	6.96	9.37	0.26
10/14/2024 6:40	11.78	90.35	0.04	7.82	9.89	5.14	11.83	22.16	0.01	6.99	9.35	0.27
10/14/2024 6:50	11.84	88	0.04	7.81	9.86	5.39	11.84	22.59	0.01	6.97	9.32	0.29
10/14/2024 7:00	11.83	128.72	0.06	8.01	9.93	8.96	11.84	22.63	0.01	6.97	9.31	0.29
10/14/2024 7:10	11.84	131.21	0.06	8.02	9.93	10.3	11.85	22.69	0.01	6.96	9.31	0.25
10/14/2024 7:20	11.84	131.4	0.06	8.02	9.91	7.88	11.86	22.64	0.01	6.99	9.24	0.28
10/14/2024 7:30	11.84	112.96	0.05	7.94	9.88	6.1	11.86	22.68	0.01	6.97	9.31	0.27
10/14/2024 7:40	11.87	91.66	0.04	7.84	9.87	4.06	11.87	22.54	0.01	7.06	9.31	0.28
10/14/2024 7:50	11.81	88.07	0.04	7.82	9.88	4.52	11.87	22.61	0.01	6.97	9.31	0.26
10/14/2024 8:00	11.83	126.16	0.06	8	9.93	8.51	11.88	22.73	0.01	6.99	9.29	0.3
10/14/2024 8:10	11.86	131.05	0.06	8.03	9.92	7.23	11.89	22.72	0.01	6.98	9.32	0.28
10/14/2024 8:20	11.88	131.45	0.06	8.04	9.91	7.06	11.9	22.64	0.01	6.96	9.3	0.29
10/14/2024 8:30	11.98	124.18	0.06	8	9.86	7.49	11.91	22.72	0.01	6.98	9.27	0.28
10/14/2024 8:40	11.88	93.32	0.04	7.87	9.88	4.81	11.93	22.71	0.01	7.01	9.31	0.28
10/14/2024 8:50	11.84	87.6	0.04	7.82	9.89	6.75	11.94	22.93	0.01	6.98	9.31	0.33
10/14/2024 9:00	11.87	106.93	0.05	7.9	9.92	21.83	11.94	23.1	0.01	7.02	9.31	0.31
10/14/2024 9:10	11.91	127.53	0.06	8.02	9.93	8.24	11.96	23.25	0.01	6.96	9.3	0.36
10/14/2024 9:20	11.91	128.02	0.06	8.03	9.93	10.5	11.97	23.27	0.01	6.99	9.31	0.42
10/14/2024 9:30	11.91	115.07	0.05	7.98	9.9	9.85	11.98	23.45	0.01	6.95	9.28	0.79
10/14/2024 9:40	11.88	82.4	0.04	7.8	9.92	11.78	12	23.04	0.01	6.96	9.29	0.41
10/14/2024 9:50	11.89	76.52	0.04	7.76	9.92	9.39	12.01	23.4	0.01	6.96	9.29	0.46
10/14/2024 10:00	11.87	75.19	0.03	7.74	9.94	10.41	12.02	23.25	0.01	7	9.36	0.77
10/14/2024 10:10	11.89	118.55	0.06	7.98	9.94	14.77	12.02	54.55	0.03	7	9.4	2.21
10/14/2024 10:20	11.89	113.29	0.05	7.95	9.95	22.82	12.04	216.39	0.12	7.18	9.43	1.31
10/14/2024 10:30	11.87	64.79	0.03	7.67	9.96	20.71	12.04	216.39	0.12	7.18	9.43	1.31
10/14/2024 10:40	11.88	55.53	0.03	7.56	9.98	23.64	12.09	374.02	0.2	7.38	9.47	4.7
10/14/2024 10:50	11.88	56.9	0.03	7.5	9.95	15.73	12.17	455.98	0.25	7.52	9.48	12.55
10/14/2024 11:00	11.91	139.24	0.07	7.8	9.93	10.14	12.28	413.39	0.22	7.59	9.46	19.21
10/14/2024 11:10	11.9	196.07	0.09	7.81	9.92	10.83	12.34	423.51	0.23	7.61	9.48	22.6
10/14/2024 11:20	11.91	307.94	0.15	7.6	9.92	15.49	12.37	382.45	0.21	7.61	9.46	28.17
10/14/2024 11:30	11.92	333.72	0.16	7.61	9.93	21.2	12.39	338.11	0.18	7.58	9.44	19.59
10/14/2024 11:40	11.96	314	0.15	7.63	9.94	20.33	12.39	312.56	0.17	7.55	9.46	20.15
10/14/2024 11:50	11.99	217.13	0.1	7.86	9.92	12.3	12.38	289.01	0.16	7.53	9.44	12.13
10/14/2024 12:00	12	195.11	0.09	7.86	9.9	13.93	12.38	272.99	0.15	7.52	9.46	12.71
10/14/2024 12:10	12.03	234.3	0.11	7.64	9.91	14.57	12.39	266.83	0.14	7.53	9.51	12.58
10/14/2024 12:20	12.05	230.41	0.11	7.59	9.9	26.59	12.41	270.98	0.15	7.55	9.49	16.57
10/14/2024 12:30	12.06	226.53	0.11	7.58	9.91	44.62	12.45	279.77	0.15	7.55	9.49	18.24
10/14/2024 12:40	12.07	197.79	0.09	7.76	9.88	18.76	12.48	288.85	0.16	7.56	9.5	12.04
10/14/2024 12:50	12.21	196.33	0.09	7.7	9.81	13.28	12.51	307.97	0.17	7.58	9.49	28.93
10/14/2024 13:00	12.22	207.59	0.1	7.72	9.94	32.11	12.55	289.3	0.16	7.6	9.49	7.65
10/14/2024 13:10	12.17	240.81	0.11	7.55	9.97	44.3	12.57	326.88	0.18	7.6	9.47	7.15
10/14/2024 13:20	12.17	253.7	0.12	7.55	9.97	113.16	12.6	348.85	0.19	7.62	9.48	7.49
10/14/2024 13:30	12.18	223.97	0.11	7.76	9.97	136.22	12.65	366.05	0.2	7.63	9.47	7.43
10/14/2024 13:40	12.19	237.17	0.11	7.76	9.98	190.21	12.69	384.58	0.21	7.65	9.48	8.37
10/14/2024 13:50	12.24	304.32	0.15	7.58	9.95	113.97	12.75	408.51	0.22	7.68	9.46	9.46
10/14/2024 14:00	12.3	325.86	0.16	7.58	9.93	203.56	12.78	404	0.22	7.71	9.46	7.46

10/14/2024 14:10	12.32	283.74	0.14	7.76	9.93	70.09	12.77	383.19	0.21	7.7	9.47	8.93
10/14/2024 14:20	12.36	278.97	0.13	7.77	9.92	155.37	12.77	382.07	0.21	7.71	9.48	6.21
10/14/2024 14:30	12.39	326.14	0.16	7.6	9.91	92.64	12.78	370.28	0.2	7.7	9.47	5.72
10/14/2024 14:40	12.43	328.57	0.16	7.57	9.91	80.96	12.79	367.02	0.2	7.71	9.48	7.45
10/14/2024 14:50	12.45	324.5	0.16	7.55	9.9	101.39	12.79	353.08	0.19	7.69	9.5	10.02
10/14/2024 15:00	12.49	318.74	0.15	7.57	9.89	103.83	12.8	342.77	0.19	7.69	9.51	3.81
10/14/2024 15:10	12.51	293.46	0.14	7.61	9.9	83.53	12.81	331.52	0.18	7.69	9.49	4.58
10/14/2024 15:20	12.51	253.19	0.12	7.76	9.89	103.02	12.83	325.01	0.18	7.68	9.51	3.03
10/14/2024 15:30	12.52	252.86	0.12	7.74	9.88	153.47	12.84	285.74	0.15	7.69	9.49	2.68
10/14/2024 15:40	12.52	281.62	0.13	7.57	9.88	62.29	12.86	313.7	0.17	7.67	9.48	3.52
10/14/2024 15:50	12.5	280.39	0.13	7.54	9.89	50.65	12.87	307.38	0.17	7.64	9.47	1.38
10/14/2024 16:00	12.51	278.28	0.13	7.53	9.88	45.06	12.87	303.93	0.16	7.63	9.47	1.42
10/14/2024 16:10	12.39	265.63	0.13	7.58	9.95	31.82	12.88	299.84	0.16	7.63	9.48	1.05
10/14/2024 16:20	12.46	233.88	0.11	7.73	9.95	65.97	12.89	297.65	0.16	7.63	9.49	2.19
10/14/2024 16:30	12.48	232.05	0.11	7.74	9.92	65.33	12.89	290.76	0.16	7.61	9.48	1.97
10/14/2024 16:40	12.63	226.92	0.11	7.71	9.87	72.54	12.89	286.06	0.15	7.6	9.47	0.88
10/14/2024 16:50	12.64	223.94	0.11	7.74	9.86	73.48	12.89	281.09	0.15	7.58	9.46	1.35
10/14/2024 17:00	12.56	246.79	0.12	7.57	9.87	36.32	12.88	274.65	0.15	7.58	9.43	1.58
10/14/2024 17:10	12.54	251.3	0.12	7.51	9.88	39.08	12.87	267.23	0.14	7.57	9.44	0.89
10/14/2024 17:20	12.61	214.2	0.1	7.72	9.86	55.34	12.86	264.61	0.14	7.56	9.45	1.49
10/14/2024 17:30	12.59	209.05	0.1	7.73	9.88	51.69	12.84	258.53	0.14	7.55	9.46	1.36
10/14/2024 17:40	12.59	205.85	0.1	7.74	9.86	34	12.82	256.14	0.14	7.54	9.46	0.91
10/14/2024 17:50	12.31	204.28	0.1	7.73	9.95	20.75	12.81	250.28	0.13	7.52	9.45	0.72
10/14/2024 18:00	12.28	229.6	0.11	7.52	9.98	19.78	12.79	249.35	0.13	7.52	9.43	0.7
10/14/2024 18:10	12.53	227.1	0.11	7.47	9.88	26.71	12.77	243.21	0.13	7.5	9.43	0.79
10/14/2024 18:20	12.5	228.03	0.11	7.45	9.9	45.62	12.76	241.43	0.13	7.51	9.45	0.55
10/14/2024 18:30	10.82	232.82	0.11	7.41	10.52	39.4	12.74	237.08	0.13	7.5	9.45	0.59
10/14/2024 18:40	9.03	241.16	0.11	7.44	11.25	29.91	12.72	237.13	0.13	7.5	9.45	1.19
10/14/2024 18:50	11.27	225.16	0.11	7.45	10.34	35.41	12.7	232.5	0.12	7.49	9.45	0.51
10/14/2024 19:00	7.94	241.8	0.11	7.48	11.73	43.29	12.67	232.67	0.12	7.49	9.43	0.68
10/14/2024 19:10	-5	343.16	0.15	7.8	21.21	20.89	12.65	227.76	0.12	7.48	9.44	0.57
10/14/2024 19:20	-1.76	286.48	0.13	7.78	17.72	23.05	12.63	228.69	0.12	7.48	9.46	0.71
10/14/2024 19:30	4.19	231.14	0.11	7.76	13.58	10.84	12.61	221.85	0.12	7.48	9.46	0.47
10/14/2024 19:40	1.98	246.22	0.11	7.77	14.87	10.72	12.59	224.73	0.12	7.48	9.46	0.67
10/14/2024 19:50	-9.23	345.52	0.14	7.85	23.91	9.51	12.57	220.91	0.12	7.47	9.44	0.55
10/14/2024 20:00	-16.67	663.31	0.22	7.89	0	7.95	12.55	221.91	0.12	7.47	9.47	0.49
10/14/2024 20:10	-12.06	468.16	0.18	7.86	20.84	7.48	12.53	218.38	0.12	7.46	9.46	0.44
10/14/2024 20:20	-13.15	537.78	0.2	7.72	17.82	8.59	12.5	217.28	0.12	7.46	9.45	10.44
10/14/2024 20:30	-12.7	532.91	0.21	7.6	19.26	6.28	12.49	212.8	0.11	7.46	9.47	1.39
10/14/2024 20:40	-14.28	597.45	0.22	7.59	13.13	9.7	12.47	211.71	0.11	7.45	9.48	0.42
10/14/2024 20:50	-9.89	444.1	0.18	7.54	23.71	12.42	12.44	204.51	0.11	7.45	9.46	1.3
10/14/2024 21:00	-10.69	435.31	0.18	7.69	23.05	16.91	12.42	205.2	0.11	7.44	9.47	0.62
10/14/2024 21:10	-2.79	306.76	0.14	7.54	18.73	8.69	12.4	199.13	0.11	7.42	9.49	1.92
10/14/2024 21:20	-18.15	813.18	0.25	7.56	16.05	9.98	12.38	199.1	0.11	7.42	9.51	0.84
10/14/2024 21:30	-18.45	638.11	0.19	7.57	16.43	9.3	12.36	195.89	0.1	7.4	9.48	0.51
10/14/2024 21:40	-19.33	626.91	0.18	7.8	18.15	7.69	12.35	192.75	0.1	7.4	9.49	3.1
10/14/2024 21:50	-18.36	504.99	0.15	7.83	16.25	5.82	12.33	189.6	0.1	7.39	9.49	0.87
10/14/2024 22:00	-20	615.17	0.17	7.84	20.33	5.59	12.33	187.02	0.1	7.39	9.5	0.4
10/14/2024 22:10	-16.74	592.93	0.2	7.79	0	22.23	12.31	182.54	0.1	7.38	9.48	0.36
10/14/2024 22:20	-17.69	505.37	0.16	7.81	15.59	4.93	12.3	180.38	0.1	7.37	9.52	0.41
10/14/2024 22:30	-17.43	444.11	0.14	7.81	15.53	4.85	12.29	177.16	0.09	7.36	9.49	0.69
10/14/2024 22:40	-16.27	431.08	0.15	7.81	0.12	6.41	12.28	174.82	0.09	7.36	9.5	0.49
10/14/2024 22:50	-14.49	369.01	0.13	7.78	12.01	4.9	12.27	170.16	0.09	7.35	9.5	0.37
10/14/2024 23:00	-13.02	449.46	0.17	7.56	18.14	4.06	12.27	169.37	0.09	7.35	9.53	0.32
10/14/2024 23:10	-11.76	409.98	0.16	7.47	21.41	5.73	12.26	166.47	0.09	7.34	9.52	0.47
10/14/2024 23:20	-14.61	497.16	0.18	7.47	11.4	3.38	12.25	164.48	0.09	7.34	9.52	0.35
10/14/2024 23:30	-2.77	255.74	0.11	7.4	18.62	5.81	12.23	161.3	0.09	7.33	9.52	0.42
10/14/2024 23:40	-12.97	431.48	0.16	7.44	18.35	4.25	12.22	161.11	0.09	7.33	9.54	0.55
10/14/2024 23:50	-0.69	230.03	0.1	7.39	16.62	5.23	12.2	156.01	0.08	7.32	9.53	0.32
10/15/2024 0:00	-5.79	265.99	0.12	7.67	21.91	6.27	12.19	156.19	0.08	7.32	9.53	0.53
10/15/2024 0:10	-7.09	277.26	0.12	7.76	22.98	5.51	12.17	154.26	0.08	7.31	9.52	0.34
10/15/2024 0:20	-8.14	292.57	0.12	7.76	23.58	4.48	12.15	152.86	0.08	7.31	9.55	0.37
10/15/2024 0:30	-8.51	294.35	0.12	7.76	23.69	4.25	12.14	148.85	0.08	7.3	9.54	0.35
10/15/2024 0:40	-20	750.4	0.2	7.82	20.32	4.73	12.13	149.17	0.08	7.3	9.53	1.46
10/15/2024 0:50	-7.58	277.34	0.12	7.77	23.32	3.93	12.12	147	0.08	7.29	9.56	0.54
10/15/2024 1:00	-8.46	286.85	0.12	7.76	23.65	4.49	12.11	145.49	0.08	7.29	9.55	0.36
10/15/2024 1:10	-6.32	255.6	0.11	7.76	22.35	5	12.1	143.64	0.08	7.28	9.57	0.35
10/15/2024 1:20	-15.28	440.7	0.16	7.81	7.41	6.11	12.1	142.19	0.08	7.28	9.54	0.44
10/15/2024 1:30	-14.11	397.58	0.15	7.8	13.86	4.07	12.1	140.15	0.07	7.27	9.55	0.37
10/15/2024 1:40	-14.98	434.12	0.15	7.49	9.23	4.77	12.09	139.5	0.07	7.28	9.55	0.43
10/15/2024 1:50	-13.93	396.38	0.15	7.43	14.66	4.1	12.09	136.94	0.07	7.27	9.56	0.43
10/15/2024 2:00	-16.15	471.48	0.16	7.44	1.07	3.74	12.08	136.96	0.07	7.27	9.55	0.34
10/15/2024 2:10	-3.12	215.06	0.1	7.37	18.95	3.64	12.08	135.11	0.07	7.26	9.54	0.32
10/15/2024 2:20	-18.1	556.89	0.17	7.43	15.88	3.68	12.07	134.42	0.07	7.26	9.56	0.61
10/15/2024 2:30	-20	694.48	0.19	7.44	20.27	3.3	12.07	133.15	0.07	7.26	9.56	0.32
10/15/2024 2:40	-20	694.16	0.19	7.83	20.23	4.67	12.07	131.85	0.07	7.25	9.55	0.35
10/15/2024 2:50	-20	690.32	0.19	7.88	20.26	4.23	12.06	128.17	0.07	7.25	9.56	0.39
10/15/2024 3:00	-20	685.65	0.18	7.86	20.23	3.69	12.05	130.22	0.07	7.25	9.56	0.33
10/15/2024 3:10	-20	679.01	0.18	7.83	20.21	3.99	12.04	128.39	0.07	7.24	9.57	0.32
10/15/2024 3:20	-20	671.13	0.18	7.83	20.2	3.78	12.03	127.87	0.07	7.24	9.56	0.34
10/15/2024 3:30	-20	668.68	0.18	7.84	20.2	3.64	12.02	124.36	0.07	7.24	9.57	0.35
10/15/2024 3:40	-20	664.35	0.18	7.86	20.2	3.51	12.02	124.36	0.07	7.24	9.57	0.35
10/15/2024 3:50	-39.04	-417.14	0.96	8.01	64.49	4.1	12.01	125.35	0.07	7.24	9.56	1.41
10/15/2024 4:00	-20	658.95	0.18	7.85	20.2	3.78	11.99	124.07	0.07	7.23	9.54	1.85
10/15/2024 4:10	-20	656.06	0.18	7.88	20.18	4.13	11.99	123.5	0.07	7.23	9.55	0.58
10/15/2024 4:20	-20	424.62	0.11	7.73	20.2	4.41	11.98	122.62	0.06	7.22	9.55	0.41
10/15/2024 4:30	-40.17	-236.33	0.74	7.59	70.64	4.29	11.98	122.06	0.06	7.22	9.52	0.35
10/15/2024 4:40	-43.33	-186.68	1.67	7.59	89.45	4.37	11.96	118.9	0.06	7.22	9.53	1.17
10/15/2024 4:50	10.39	85.83	0.04	7.32	10.54	4.72	11.96	120.22	0.06	7.22	9.55	0.33
10/15/2024 5:00	-46.92	-163.82	0	7.58	123.18	4.82	11.95	119.41	0.06	7.2	9.54	0.34

10/15/2024 5:10	-20	432.17	0.12	7.47	20.23	4.01	11.94	118.6	0.06	7.21	9.54	0.32
10/15/2024 5:20	-20	432.4	0.12	7.49	20.24	4.21	11.94	117.23	0.06	7.23	9.57	0.32
10/15/2024 5:30	-42.77	-217.08	1.55	8.01	85.62	5.36	11.93	117.68	0.06	7.2	9.56	0.34
10/15/2024 5:40	-20	457.79	0.12	7.91	20.19	4.49	11.92	115.82	0.06	7.22	9.54	0.39
10/15/2024 5:50	-20	418.36	0.11	7.92	20.15	5.26	11.91	115.99	0.06	7.21	9.56	0.34
10/15/2024 6:00	-41.16	-242.36	1	8.09	75.85	5.77	11.9	115.33	0.06	7.22	9.55	0.44
10/15/2024 6:10	-20	452.7	0.12	7.93	20.17	6.48	11.9	115.26	0.06	7.21	9.58	0.34
10/15/2024 6:20	-42.96	-192.71	1.48	8.08	86.77	5.58	11.9	112.31	0.06	7.18	9.56	0.33
10/15/2024 6:30	-43.79	-182.54	2.02	8.09	92.1	6.42	11.89	113.36	0.06	7.2	9.55	0.42
10/15/2024 6:40	-20	425.42	0.11	7.9	20.14	5.47	11.89	112.02	0.06	7.21	9.58	0.57
10/15/2024 6:50	-20	422.98	0.11	7.89	20.17	6.96	11.89	112.08	0.06	7.19	9.57	0.27
10/15/2024 7:00	-37.87	-282.5	0.49	8.02	59.11	6.33	11.88	111	0.06	7.17	9.57	0.4
10/15/2024 7:10	-20	404.01	0.11	7.89	20.14	5.97	11.87	110.41	0.06	7.18	9.57	0.34
10/15/2024 7:20	-20	403.28	0.11	7.53	20.14	3.37	11.86	109.41	0.06	7.2	9.57	0.62
10/15/2024 7:30	-20	398.99	0.11	7.45	20.2	3.58	11.86	108.83	0.06	7.17	9.56	0.33
10/15/2024 7:40	-20	367.78	0.1	7.42	20.18	3.39	11.86	108.61	0.06	7.18	9.55	0.59
10/15/2024 7:50	-16.72	379.16	0.13	7.4	0	3.22	11.86	108.04	0.06	7.17	9.58	0.31
10/15/2024 8:00	-15.35	334.72	0.12	7.4	6.92	3.35	11.85	105.41	0.06	7.19	9.56	0.45
10/15/2024 8:10	-14.8	321.99	0.11	7.45	10.24	3.46	11.84	106.69	0.06	7.17	9.57	0.31
10/15/2024 8:20	-12.88	297.68	0.11	7.36	18.35	6.77	11.83	104.06	0.05	7.17	9.56	0.38
10/15/2024 8:30	-13.22	317.57	0.12	7.77	17.41	9.94	11.83	105.38	0.06	7.17	9.56	0.32
10/15/2024 8:40	-10.03	257.16	0.1	7.75	23.37	7.94	11.82	103.16	0.05	7.17	9.56	0.35
10/15/2024 8:50	-14.97	363.42	0.13	7.78	9.31	16.26	11.82	103.94	0.05	7.16	9.56	0.3
10/15/2024 9:00	-16.01	398.37	0.14	7.81	2.18	19.39	11.82	102.67	0.05	7.16	9.56	0.29
10/15/2024 9:10	-20	611.39	0.16	7.81	20.27	25.83	11.83	102.6	0.05	7.16	9.59	0.3
10/15/2024 9:20	-12.46	297.48	0.11	7.79	19.74	16.39	11.83	99.81	0.05	7.16	9.6	0.35
10/15/2024 9:30	-20	607.05	0.16	7.82	20.23	15.87	11.83	101.52	0.05	7.16	9.6	0.29
10/15/2024 9:40	-20	601.08	0.16	7.81	20.25	17.61	11.84	98.3	0.05	7.16	9.6	0.29
10/15/2024 9:50	-20	590.87	0.16	7.81	20.27	22.41	11.85	100.36	0.05	7.16	9.59	0.29
10/15/2024 10:00	-20	395.71	0.11	7.83	20.33	17.36	11.85	99.78	0.05	7.17	9.6	0.32
10/15/2024 10:10	-20	407.98	0.11	7.83	20.3	25.17	11.86	100.13	0.05	7.16	9.6	0.31
10/15/2024 10:20	-20	413.02	0.11	7.82	20.33	29.82	11.87	99.04	0.05	7.16	9.63	0.97
10/15/2024 10:30	-20	573.91	0.15	7.82	20.37	24.71	11.89	99.39	0.05	7.16	9.63	0.31
10/15/2024 10:40	-16.47	405.62	0.14	7.8	0	33.31	11.92	98.74	0.05	7.16	9.65	0.29
10/15/2024 10:50	-17.81	464.76	0.15	7.78	15.73	38.66	11.93	98.97	0.05	7.17	9.64	0.53
10/15/2024 11:00	-16.61	377.57	0.13	7.51	0	4.12	11.94	99.3	0.05	7.16	9.62	1.36
10/15/2024 11:10	-17.04	366.07	0.12	7.43	15.39	3.42	11.95	98.55	0.05	7.16	9.64	1.41
10/15/2024 11:20	11.53	96.19	0.04	7.3	10.1	3.54	11.95	97.9	0.05	7.15	9.61	0.3
10/15/2024 11:30	11.61	95.45	0.04	7.28	10.09	4.22	11.97	98.1	0.05	7.16	9.61	0.32
10/15/2024 11:40	11.67	95.28	0.04	7.3	10.06	4.34	11.99	97.64	0.05	7.17	9.61	1.93
10/15/2024 11:50	11.75	95.9	0.04	7.34	10.04	5.1	12	97.33	0.05	7.16	9.62	0.37
10/15/2024 12:00	12.05	108.11	0.05	7.64	9.97	7.68	12.03	95.42	0.05	7.16	9.63	0.31
10/15/2024 12:10	12.13	108.28	0.05	7.62	9.94	8.5	12.05	95.29	0.05	7.16	9.63	0.31
10/15/2024 12:20	12.13	108.42	0.05	7.63	9.93	6.76	12.06	93.99	0.05	7.18	9.61	0.47
10/15/2024 12:30	12.12	108.83	0.05	7.62	9.94	6.08	12.07	93.54	0.05	7.15	9.58	0.36
10/15/2024 12:40	12.14	109.19	0.05	7.65	9.94	5.71	12.07	92.6	0.05	7.15	9.57	0.3
10/15/2024 12:50	12.14	107.74	0.05	7.63	9.94	7.28	12.07	92.5	0.05	7.14	9.57	0.33
10/15/2024 13:00	12.19	107.2	0.05	7.64	9.92	4.39	12.08	91.72	0.05	7.14	9.55	0.31
10/15/2024 13:10	12.21	106.86	0.05	7.65	9.92	4.6	12.09	91.23	0.05	7.14	9.55	0.37
10/15/2024 13:20	12.24	106.94	0.05	7.64	9.93	4.66	12.11	89.85	0.05	7.13	9.56	0.31
10/15/2024 13:30	12.26	106.71	0.05	7.64	9.91	4.02	12.13	89.19	0.05	7.14	9.55	0.3
10/15/2024 13:40	12.29	107.29	0.05	7.64	9.9	3.85	12.15	88.08	0.05	7.13	9.57	0.42
10/15/2024 13:50	12.31	106.92	0.05	7.64	9.9	3.81	12.17	87.66	0.05	7.15	9.55	0.32
10/15/2024 14:00	12.28	97.83	0.05	7.56	9.88	3.85	12.19	87.06	0.05	7.14	9.57	5.33
10/15/2024 14:10	12.24	88.55	0.04	7.35	9.88	3.35	12.21	87.23	0.05	7.15	9.57	2.23
10/15/2024 14:20	12.23	86.69	0.04	7.32	9.89	4.23	12.23	86.73	0.05	7.14	9.56	0.37
10/15/2024 14:30	12.23	85.84	0.04	7.31	9.89	5.37	12.24	86.71	0.05	7.15	9.53	0.53
10/15/2024 14:40	12.24	87.43	0.04	7.35	9.9	4.7	12.24	86.02	0.05	7.13	9.53	1.03
10/15/2024 14:50	12.26	88.02	0.04	7.36	9.89	5.92	12.25	86.42	0.05	7.14	9.52	0.86
10/15/2024 15:00	12.39	103.19	0.05	7.61	9.88	3.87	12.25	84.81	0.04	7.13	9.51	0.77
10/15/2024 15:10	12.4	105.78	0.05	7.6	9.87	4.5	12.25	86.03	0.05	7.13	9.5	0.35
10/15/2024 15:20	12.38	107.82	0.05	7.62	9.87	4.12	12.25	83.84	0.04	7.12	9.5	0.36
10/15/2024 15:30	12.36	107.11	0.05	7.62	9.87	4.59	12.25	85.46	0.04	7.12	9.48	0.31
10/15/2024 15:40	12.37	107.04	0.05	7.62	9.86	4.7	12.25	84.75	0.04	7.11	9.49	0.35
10/15/2024 15:50	12.37	108.02	0.05	7.62	9.87	3.73	12.25	84.63	0.04	7.12	9.48	0.34
10/15/2024 16:00	12.34	108.13	0.05	7.64	9.87	4.25	12.25	83.48	0.04	7.11	9.48	0.38
10/15/2024 16:10	12.34	106.97	0.05	7.62	9.88	3.53	12.25	84.05	0.04	7.12	9.51	1.04
10/15/2024 16:20	12.3	106.72	0.05	7.65	9.88	3.86	12.25	81.97	0.04	7.15	9.5	0.45
10/15/2024 16:30	12.23	86.18	0.04	7.37	9.86	3.79	12.26	83.51	0.04	7.12	9.51	0.54
10/15/2024 16:40	12.15	85.94	0.04	7.36	9.9	3.41	12.25	82.65	0.04	7.12	9.49	0.32
10/15/2024 16:50	12.21	85.43	0.04	7.36	9.87	3.97	12.25	83.05	0.04	7.11	9.47	0.31
10/15/2024 17:00	12.33	102.28	0.05	7.58	9.87	5.27	12.25	83.11	0.04	7.1	9.46	0.31
10/15/2024 17:10	12.33	104.38	0.05	7.61	9.88	4.28	12.24	83.07	0.04	7.1	9.45	0.31
10/15/2024 17:20	12.32	104.73	0.05	7.61	9.87	5.67	12.23	83.19	0.04	7.1	9.45	1.16
10/15/2024 17:30	12.31	104.21	0.05	7.59	9.85	5.49	12.23	83.81	0.04	7.1	9.43	0.83
10/15/2024 17:40	12.29	104.32	0.05	7.62	9.85	8.67	12.22	83.11	0.04	7.1	9.41	0.35
10/15/2024 17:50	12.26	103.61	0.05	7.6	9.87	6.5	12.21	84.08	0.04	7.1	9.4	0.54
10/15/2024 18:00	12.23	103.67	0.05	7.61	9.87	4.46	12.2	83.27	0.04	7.08	9.43	0.29
10/15/2024 18:10	12.21	101.82	0.05	7.6	9.88	3.9	12.2	83.52	0.04	7.09	9.44	0.29
10/15/2024 18:20	12.19	101.53	0.05	7.62	9.88	9.28	12.19	83.83	0.04	7.08	9.41	0.31
10/15/2024 18:30	12.18	101.14	0.05	7.62	9.89	6.56	12.18	84.84	0.04	7.1	9.41	0.34
10/15/2024 18:40	12.17	100.94	0.05	7.62	9.87	5.59	12.17	83.73	0.04	7.09	9.41	0.84
10/15/2024 18:50	12.15	100.92	0.05	7.62	9.88	6.74	12.17	85.06	0.04	7.09	9.4	0.47
10/15/2024 19:00	12.11	100.91	0.05	7.62	9.89	6.49	12.16	84.8	0.04	7.09	9.4	4.13
10/15/2024 19:10	12.12	100.69	0.05	7.59	9.88	5.67	12.15	85.2	0.04	7.09	9.39	0.66
10/15/2024 19:20	12.06	87.97	0.04	7.45	9.86	4.76	12.14	84.94	0.04	7.1	9.41	0.27
10/15/2024 19:30	12.01	83.29	0.04	7.34	9.89	5.43	12.13	85.18	0.04	7.09	9.41	1.9
10/15/2024 19:40	11.97	82.71	0.04	7.32	9.91	4.58	12.11	84.48	0.04	7.08	9.43	0.28
10/15/2024 19:50	11.94	82.21	0.04	7.3	9.9	4.68	12.1	85.59	0.04	7.09	9.42	0.34
10/15/2024 20:00	11.93	82.02	0.04	7.3	9.91	5.97	12.09	84.02	0.04	7.09	9.41	0.35

10/15/2024 20:10	11.91	82.22	0.04	7.28	9.92	7.21	12.08	86.15	0.05	7.09	9.42	0.29
10/15/2024 20:20	11.89	83.64	0.04	7.35	9.9	5.62	12.07	85.91	0.04	7.09	9.42	0.33
10/15/2024 20:30	11.86	84.61	0.04	7.34	9.93	4.85	12.05	86.37	0.05	7.1	9.42	0.58
10/15/2024 20:40	11.92	95.76	0.04	7.55	9.94	4.1	12.04	86.12	0.05	7.09	9.4	0.28
10/15/2024 20:50	11.93	97.03	0.05	7.56	9.92	3.27	12.02	86.61	0.05	7.09	9.43	0.42
10/15/2024 21:00	11.91	97.03	0.05	7.57	9.93	3.06	12	86.59	0.05	7.09	9.43	0.3
10/15/2024 21:10	11.88	97.73	0.05	7.59	9.92	3.13	11.99	86.6	0.05	7.09	9.43	0.34
10/15/2024 21:20	11.82	97.87	0.05	7.6	9.94	3.47	11.97	86.11	0.05	7.1	9.43	0.36
10/15/2024 21:30	11.77	97.74	0.05	7.59	9.95	3.23	11.96	86.69	0.05	7.1	9.43	0.3
10/15/2024 21:40	11.76	97.81	0.05	7.61	9.96	3.01	11.93	84.83	0.04	7.09	9.44	0.31
10/15/2024 21:50	11.79	98.1	0.05	7.6	9.94	2.84	11.92	86.48	0.05	7.09	9.46	0.28
10/15/2024 22:00	11.77	98.23	0.05	7.62	9.94	4.4	11.89	86.13	0.05	7.11	9.43	0.27
10/15/2024 22:10	11.75	98.19	0.05	7.61	9.95	3.23	11.88	85.73	0.04	7.09	9.45	0.3
10/15/2024 22:20	11.73	98.3	0.05	7.61	9.96	3.06	11.86	85.59	0.04	7.1	9.45	0.27
10/15/2024 22:30	11.74	98.53	0.05	7.61	9.95	3.57	11.84	85.39	0.04	7.09	9.47	0.27
10/15/2024 22:40	11.73	98.32	0.05	7.6	9.95	3.07	11.82	84.47	0.04	7.08	9.46	0.27
10/15/2024 22:50	11.73	96.5	0.04	7.61	9.94	3.09	11.8	84.8	0.04	7.09	9.45	0.61
10/15/2024 23:00	11.59	83.61	0.04	7.35	9.98	3.94	11.79	84.42	0.04	7.09	9.48	0.32
10/15/2024 23:10	11.59	83.52	0.04	7.35	10	3.98	11.79	84.76	0.04	7.08	9.48	0.28
10/15/2024 23:20	11.62	81.87	0.04	7.3	9.97	3.96	11.77	84.55	0.04	7.09	9.47	0.33
10/15/2024 23:20	11.62	81.87	0.04	7.3	9.97	3.96	11.78	83.51	0.04	7.09	9.45	0.32
10/15/2024 23:30	11.63	81.04	0.04	7.29	9.98	4.24	11.77	84.28	0.04	7.08	9.49	0.32
10/15/2024 23:40	11.61	80.67	0.04	7.27	9.98	3.85	11.77	84.35	0.04	7.09	9.47	0.3
10/15/2024 23:50	11.62	80.65	0.04	7.26	9.97	3.55	11.77	83.56	0.04	7.08	9.48	0.3
10/16/2024 0:00	11.59	81.85	0.04	7.33	9.98	3.58	11.77	83.97	0.04	7.08	9.46	0.3
10/16/2024 0:10	11.59	81.43	0.04	7.33	9.98	3.06	11.76	83.53	0.04	7.09	9.46	0.37
10/16/2024 0:20	11.64	93.15	0.04	7.56	9.99	3.4	11.75	83.94	0.04	7.08	9.47	0.28
10/16/2024 0:30	11.7	94.69	0.04	7.58	9.97	2.94	11.75	83.22	0.04	7.08	9.48	0.27
10/16/2024 0:40	11.67	95.43	0.04	7.6	9.97	2.97	11.75	83.84	0.04	7.08	9.47	0.29
10/16/2024 0:50	11.66	95.68	0.04	7.59	9.97	4.82	11.74	82.91	0.04	7.11	9.47	0.32
10/16/2024 1:00	11.65	96.6	0.04	7.6	9.98	3.98	11.73	83.45	0.04	7.08	9.48	0.31
10/16/2024 1:10	11.64	95.83	0.04	7.6	9.99	3.52	11.72	82.15	0.04	7.09	9.44	0.41
10/16/2024 1:20	11.62	97.69	0.05	7.62	10	3.64	11.71	82.39	0.04	7.09	9.46	0.33
10/16/2024 1:30	11.63	99.23	0.05	7.62	10	3.38	11.7	81.45	0.04	7.08	9.45	0.29
10/16/2024 1:40	11.66	105.67	0.05	7.66	9.99	4.74	11.68	81.64	0.04	7.09	9.48	0.32
10/16/2024 1:50	11.67	107.24	0.05	7.65	9.99	5.13	11.67	83.47	0.04	7.09	9.49	0.33
10/16/2024 2:00	11.64	107.45	0.05	7.65	10	3.41	11.65	98.07	0.05	7.12	9.5	0.32
10/16/2024 2:10	11.63	107.03	0.05	7.64	10	3.81	11.65	136.89	0.07	7.18	9.51	0.57
10/16/2024 2:20	11.64	105.41	0.05	7.63	9.99	4.11	11.64	172.44	0.09	7.24	9.5	0.39
10/16/2024 2:30	11.56	85.76	0.04	7.41	9.98	4.09	11.63	199.05	0.11	7.3	9.49	0.58
10/16/2024 2:40	11.48	87.61	0.04	7.32	10.01	3.71	11.63	215.33	0.12	7.34	9.49	0.46
10/16/2024 2:50	11.44	101.68	0.05	7.3	10.04	4.69	11.62	225.33	0.12	7.37	9.51	0.54
10/16/2024 3:00	11.46	123.2	0.06	7.31	10.02	3.36	11.62	251.09	0.14	7.41	9.51	0.62
10/16/2024 3:10	11.42	144.37	0.07	7.32	10.04	3.52	11.61	274.29	0.15	7.45	9.52	0.86
10/16/2024 3:20	11.44	157.45	0.07	7.36	10.02	3.62	11.61	287.72	0.16	7.47	9.52	0.77
10/16/2024 3:30	11.47	159.19	0.07	7.51	10.01	3.85	11.6	277.2	0.15	7.47	9.52	1.33
10/16/2024 3:40	11.41	175.14	0.08	7.43	10.02	3.81	11.59	268.49	0.14	7.47	9.5	0.73
10/16/2024 3:50	11.41	165.91	0.08	7.54	10.02	5.2	11.58	257.8	0.14	7.46	9.51	3.09
10/16/2024 4:00	11.53	155.13	0.07	7.62	9.97	3.65	11.56	249.6	0.13	7.46	9.52	0.44
10/16/2024 4:10	11.52	153.97	0.07	7.63	9.97	3.53	11.56	240.01	0.13	7.45	9.51	0.39
10/16/2024 4:20	11.5	154.72	0.07	7.63	9.97	3.98	11.55	244.8	0.13	7.46	9.53	0.43
10/16/2024 4:30	11.5	153.16	0.07	7.64	10	3.4	11.55	260.64	0.14	7.48	9.53	0.51
10/16/2024 4:40	11.47	150.48	0.07	7.63	9.99	4.17	11.54	275.42	0.15	7.5	9.54	0.5
10/16/2024 4:50	11.46	149.15	0.07	7.62	10.04	3.96	11.53	269.16	0.14	7.5	9.53	0.52
10/16/2024 5:00	11.45	151.02	0.07	7.62	9.98	3.84	11.52	261.24	0.14	7.49	9.54	0.42
10/16/2024 5:10	11.47	152.27	0.07	7.62	10.02	4.77	11.51	250.8	0.13	7.49	9.55	0.45
10/16/2024 5:20	11.44	174.19	0.08	7.55	10	4.12	11.5	254.29	0.14	7.49	9.55	0.57
10/16/2024 5:30	11.39	199.19	0.09	7.44	10.02	3.7	11.5	271.75	0.15	7.52	9.57	0.76
10/16/2024 5:40	11.35	199.57	0.09	7.43	10.04	4.07	11.49	298.12	0.16	7.55	9.58	0.85
10/16/2024 5:50	11.33	197.74	0.09	7.43	10.06	7.68	11.48	307.42	0.17	7.57	9.57	0.78
10/16/2024 6:00	11.31	204.63	0.1	7.42	10.06	9.9	11.47	321.79	0.17	7.59	9.6	0.92
10/16/2024 6:10	11.3	212.03	0.1	7.42	10.08	8.99	11.46	317.3	0.17	7.6	9.6	1.04
10/16/2024 6:20	11.19	224.13	0.11	7.44	10.1	18.48	11.44	319.47	0.17	7.61	9.61	1.07
10/16/2024 6:30	11.27	238.45	0.11	7.45	10.07	20.27	11.43	343.08	0.19	7.65	9.62	3.94
10/16/2024 6:40	11.32	252.47	0.12	7.46	10.02	13.88	11.42	349.16	0.19	7.72	9.66	6.81
10/16/2024 6:50	11.34	228.53	0.11	7.57	10.03	17.32	11.41	399.35	0.22	7.74	9.68	9.12
10/16/2024 7:00	11.38	238.85	0.11	7.59	10	18.47	11.42	404.89	0.22	7.75	9.66	7.58
10/16/2024 7:10	11.33	251.88	0.12	7.57	10.03	31.52	11.45	412.14	0.22	7.75	9.65	4.97
10/16/2024 7:20	11.39	241.69	0.11	7.59	10.01	12.73	11.49	418.89	0.23	7.75	9.65	3.01
10/16/2024 7:30	11.38	255.42	0.12	7.6	9.99	9.04	11.52	410.56	0.22	7.74	9.64	3.33
10/16/2024 7:40	11.37	260.94	0.12	7.59	10.01	10.77	11.55	410.6	0.22	7.73	9.64	5.73
10/16/2024 7:50	11.4	237.85	0.11	7.61	9.98	17.5	11.56	382.57	0.21	7.72	9.63	1.85
10/16/2024 8:00	11.41	253.73	0.12	7.58	9.99	14.8	11.57	364.34	0.2	7.71	9.65	1.96
10/16/2024 8:10	11.38	289.05	0.14	7.54	10.01	7.74	11.57	342.96	0.19	7.68	9.66	3.77
10/16/2024 8:20	11.37	286.32	0.14	7.5	9.98	5.61	11.57	325.74	0.18	7.67	9.66	1.17
10/16/2024 8:30	11.36	281.94	0.13	7.47	9.98	6.04	11.56	305.38	0.16	7.65	9.66	1.96
10/16/2024 8:40	11.33	268.36	0.13	7.47	10.01	5.27	11.54	300.06	0.16	7.65	9.67	1.49
10/16/2024 8:50	11.35	262.3	0.12	7.46	10.01	7.55	11.52	294.06	0.16	7.64	9.69	2.73
10/16/2024 9:00	11.36	246.87	0.12	7.43	10	7.89	11.51	291.62	0.16	7.63	9.68	1.46
10/16/2024 9:10	11.36	247.13	0.12	7.44	9.98	4.45	11.5	284.92	0.15	7.62	9.71	1.16
10/16/2024 9:20	11.34	236.48	0.11	7.45	10.01	5.62	11.5	279.05	0.15	7.62	9.71	0.73
10/16/2024 9:30	11.39	230.14	0.11	7.47	10.01	4.2	11.5	269.88	0.15	7.61	9.74	1.26
10/16/2024 9:40	11.44	192.38	0.09	7.52	9.99	5.44	11.52	268.89	0.14	7.61	9.74	0.73
10/16/2024 9:50	11.49	204.74	0.1	7.5	10	6.28	11.55	260.4	0.14	7.6	9.72	0.57
10/16/2024 10:00	11.51	182.16	0.09	7.51	9.98	6.81	11.61	259.02	0.14	7.59	9.74	0.52
10/16/2024 10:10	11.5	185.6	0.09	7.51	9.98	6.48	11.63	252.07	0.14	7.58	9.75	0.54
10/16/2024 10:20	11.56	176.31	0.08	7.5	9.96	7.22	11.63	246.29	0.13	7.57	9.73	0.51
10/16/2024 10:30	11.57	179.9	0.08	7.51	9.95	4.63	11.65	240.93	0.13	7.56	9.73	0.52
10/16/2024 10:40	11.56	186.82	0.09	7.49	9.94	4.87	11.67	235.94	0.13	7.55	9.7	1.6
10/16/2024 10:50	11.57	203.48	0.1	7.38	9.94	4.23	11.69	228.01	0.12	7.53	9.69	0.47

10/16/2024 11:00	11.56	201.84	0.1	7.36	9.96	3.54	11.7	223.38	0.12	7.52	9.69	0.43
10/16/2024 11:10	11.61	199.08	0.09	7.36	10	5.1	11.72	217.26	0.12	7.52	9.69	0.65
10/16/2024 11:20	11.68	161.35	0.08	7.48	9.92	4.54	11.79	214.52	0.11	7.51	9.71	0.39
10/16/2024 11:30	11.68	161.14	0.08	7.5	9.94	5.28	11.81	208.03	0.11	7.49	9.69	0.8
10/16/2024 11:40	11.62	0.07	0	7.27	10.13	44.47	11.79	206.02	0.11	7.49	9.66	0.76
10/16/2024 11:50	11.65	177.01	0.08	7.29	10.03	4.55	11.79	200.86	0.11	7.47	9.66	0.55
10/16/2024 12:00	11.57	178.24	0.08	7.27	10.07	6.14	11.82	198.3	0.11	7.47	9.67	0.37
10/16/2024 12:10	11.55	173.38	0.08	7.26	10.07	5.77	11.83	192.18	0.1	7.45	9.68	0.43
10/16/2024 12:20	11.64	168.41	0.08	7.27	10.03	5.3	11.84	190.57	0.1	7.44	9.68	1
10/16/2024 12:30	11.59	165.89	0.08	7.3	10.06	8.99	11.83	185.35	0.1	7.44	9.68	0.44
10/16/2024 12:40	11.63	146.93	0.07	7.47	10.05	5.15	11.84	184.37	0.1	7.44	9.66	0.35
10/16/2024 12:50	11.81	145.94	0.07	7.5	9.97	5.62	11.85	178.54	0.1	7.42	9.67	0.36
10/16/2024 13:00	11.83	143.54	0.07	7.49	9.95	3.85	11.89	179.33	0.1	7.42	9.67	0.42
10/16/2024 13:10	11.86	142.6	0.07	7.52	9.96	3.7	11.89	175.56	0.09	7.41	9.66	0.31
10/16/2024 13:20	11.87	141.68	0.07	7.52	9.94	3.78	11.83	0.07	0	7.32	9.74	1.41
10/16/2024 13:30	11.83	139.73	0.07	7.5	9.94	6.78	11.94	170.7	0.09	7.4	9.62	0.75
10/16/2024 13:40	11.86	149.02	0.07	7.26	9.95	3.77	11.97	166.08	0.09	7.38	9.63	0.33
10/16/2024 13:40	11.86	149.02	0.07	7.26	9.95	3.77	11.94	170.09	0.09	7.38	9.62	0.65
10/16/2024 13:50	11.79	146.35	0.07	7.24	9.96	4.01	11.93	165.07	0.09	7.38	9.63	0.54
10/16/2024 14:00	11.76	146.63	0.07	7.22	9.97	5.74	11.94	159.75	0.09	7.37	9.62	0.32
10/16/2024 14:10	11.71	144.93	0.07	7.22	9.99	4.08	11.94	158.98	0.08	7.36	9.6	0.59
10/16/2024 14:20	11.74	142.65	0.07	7.23	9.98	3.62	11.92	154.41	0.08	7.35	9.62	0.32
10/16/2024 14:30	11.73	140.92	0.07	7.23	9.97	3.47	11.91	153.07	0.08	7.34	9.61	0.34
10/16/2024 14:40	11.75	138.16	0.06	7.22	9.97	4.76	11.91	149.78	0.08	7.34	9.61	0.47
10/16/2024 14:50	11.74	134.02	0.06	7.21	9.96	3.35	11.91	148.48	0.08	7.33	9.62	0.44
10/16/2024 15:00	11.77	132.05	0.06	7.24	9.97	3.96	11.91	144.89	0.08	7.32	9.63	0.33
10/16/2024 15:10	11.93	126.03	0.06	7.48	9.89	5.27	11.91	144.98	0.08	7.33	9.62	0.37
10/16/2024 15:20	11.9	127.06	0.06	7.49	9.89	4.2	11.9	140.94	0.07	7.31	9.61	0.31
10/16/2024 15:30	11.87	126.81	0.06	7.5	9.88	4.94	11.89	140.17	0.07	7.31	9.6	0.36
10/16/2024 15:40	11.88	126.06	0.06	7.48	9.87	4.61	11.87	136.88	0.07	7.29	9.58	0.28
10/16/2024 15:50	11.86	125.06	0.06	7.47	9.86	3.41	11.85	136.59	0.07	7.29	9.58	1.53
10/16/2024 16:00	11.78	123.95	0.06	7.47	9.89	3.82	11.82	133.66	0.07	7.28	9.58	0.31
10/16/2024 16:10	11.75	120.87	0.06	7.42	9.89	3.66	11.8	132.51	0.07	7.28	9.59	0.32
10/16/2024 16:20	11.58	120.66	0.06	7.26	9.96	4.85	11.78	128.13	0.07	7.28	9.58	1.41
10/16/2024 16:30	11.6	118.08	0.06	7.22	9.97	3.69	11.76	129.48	0.07	7.27	9.58	0.35
10/16/2024 16:40	11.56	118.47	0.06	7.21	9.96	3.35	11.75	128.17	0.07	7.27	9.59	0.29
10/16/2024 16:50	11.52	116.11	0.05	7.21	9.96	4.32	11.74	131.42	0.07	7.28	9.59	0.31
10/16/2024 17:00	11.53	114.05	0.05	7.21	9.97	3.63	11.73	129.52	0.07	7.28	9.59	0.29
10/16/2024 17:10	11.52	114.41	0.05	7.21	9.97	3.26	11.72	128.52	0.07	7.26	9.6	0.32
10/16/2024 17:20	11.51	114.3	0.05	7.24	9.96	3.53	11.7	126.05	0.07	7.26	9.6	0.33
10/16/2024 17:30	11.51	115.11	0.05	7.25	9.95	3.51	11.69	125.42	0.07	7.26	9.59	1.09
10/16/2024 17:40	11.63	116.62	0.05	7.44	9.91	4.49	11.68	121.58	0.06	7.24	9.59	0.27
10/16/2024 17:50	11.58	113.11	0.05	7.38	9.92	3.96	11.66	121.82	0.06	7.25	9.6	0.34
10/16/2024 18:00	11.63	113.8	0.05	7.46	9.91	5.83	11.63	120.2	0.06	7.24	9.58	0.31
10/16/2024 18:10	11.59	112.88	0.05	7.46	9.91	5.01	11.6	118.98	0.06	7.25	9.6	0.36
10/16/2024 18:20	11.53	112.02	0.05	7.46	9.94	4.08	11.56	117.23	0.06	7.25	9.61	1.26
10/16/2024 18:30	11.54	110.81	0.05	7.46	9.93	3.59	11.54	117.15	0.06	7.25	9.63	0.32
10/16/2024 18:40	11.5	111.1	0.05	7.47	9.93	4.27	11.5	114.21	0.06	7.23	9.61	0.37
10/16/2024 18:50	11.44	108.93	0.05	7.47	9.95	3.43	11.48	116.81	0.06	7.24	9.62	0.53
10/16/2024 19:00	11.46	108.94	0.05	7.46	9.94	3.64	11.44	116.22	0.06	7.24	9.64	0.3
10/16/2024 19:10	11.4	108.01	0.05	7.46	9.96	3.44	11.42	117.81	0.06	7.25	9.63	0.29
10/16/2024 19:20	11.36	105.63	0.05	7.41	9.95	4.09	11.4	117.16	0.06	7.24	9.63	0.24
10/16/2024 19:30	11.21	103.75	0.05	7.25	10	3.15	11.38	118.9	0.06	7.25	9.64	0.26
10/16/2024 19:40	11.21	104.02	0.05	7.22	10.02	3.23	11.36	115.43	0.06	7.25	9.63	0.32
10/16/2024 19:50	11.2	103.52	0.05	7.23	10.01	3.13	11.34	115.76	0.06	7.26	9.65	0.32
10/16/2024 20:00	11.19	103.23	0.05	7.25	10.01	3.67	11.31	113.59	0.06	7.25	9.66	0.3
10/16/2024 20:10	11.22	107.86	0.05	7.43	10	3.73	11.29	112.28	0.06	7.25	9.66	0.29
10/16/2024 20:20	11.27	105.6	0.05	7.45	9.98	3.18	11.27	110.52	0.06	7.24	9.67	0.33
10/16/2024 20:30	11.24	105.26	0.05	7.46	10	3.4	11.25	109.33	0.06	7.24	9.66	0.31
10/16/2024 20:40	11.26	104.83	0.05	7.47	9.98	4.94	11.23	107.1	0.06	7.22	9.68	0.29
10/16/2024 20:50	11.24	103.8	0.05	7.46	9.99	3.47	11.22	106.56	0.06	7.24	9.66	0.29
10/16/2024 21:00	11.22	102.99	0.05	7.47	10.01	3.31	11.21	105.01	0.06	7.22	9.68	0.29
10/16/2024 21:10	11.2	103.35	0.05	7.47	9.99	3.17	11.19	104.11	0.05	7.23	9.67	0.29
10/16/2024 21:20	11.21	101.44	0.05	7.43	10	3.31	11.18	101.98	0.05	7.21	9.68	0.28
10/16/2024 21:30	11.19	100.87	0.05	7.43	10	5.87	11.17	102.69	0.05	7.23	9.66	0.31
10/16/2024 21:40	11.19	101.93	0.05	7.47	10.01	3.04	11.16	101.23	0.05	7.21	9.67	0.32
10/16/2024 21:50	11.17	100.81	0.05	7.49	10.01	3.39	11.15	101.34	0.05	7.21	9.68	0.27
10/16/2024 22:00	11.16	100.93	0.05	7.47	10.02	3.06	11.14	99.18	0.05	7.2	9.7	0.34
10/16/2024 22:10	11.02	92.7	0.04	7.27	10.06	3.39	11.13	99.78	0.05	7.22	9.71	0.28
10/16/2024 22:20	10.98	91.4	0.04	7.25	10.08	3.1	11.12	98.68	0.05	7.21	9.68	0.31
10/16/2024 22:30	10.96	90.76	0.04	7.22	10.09	3.35	11.11	98.68	0.05	7.21	9.69	0.75
10/16/2024 22:40	10.94	89.34	0.04	7.23	10.1	3.31	11.1	96.59	0.05	7.2	9.68	0.28
10/16/2024 22:50	10.93	89.64	0.04	7.22	10.09	3.29	11.1	96.84	0.05	7.21	9.69	0.28
10/16/2024 23:00	10.92	88.81	0.04	7.21	10.1	3.36	11.08	95.64	0.05	7.2	9.69	0.27
10/16/2024 23:10	10.9	88.86	0.04	7.22	10.1	3.18	11.07	95.83	0.05	7.21	9.69	0.89
10/16/2024 23:20	10.85	88.25	0.04	7.24	10.13	3.35	11.07	93.61	0.05	7.2	9.68	0.3
10/16/2024 23:30	10.96	91.69	0.04	7.42	10.07	3.37	11.06	94.6	0.05	7.2	9.7	0.25
10/16/2024 23:40	10.91	87.47	0.04	7.26	10.09	3.45	11.05	93.34	0.05	7.19	9.7	0.3
10/16/2024 23:50	10.91	88.75	0.04	7.25	10.08	3.56	11.05	93.71	0.05	7.2	9.7	0.27
10/17/2024 0:00	10.91	91.1	0.04	7.31	10.09	3.15	11.04	92.33	0.05	7.19	9.7	0.3
10/17/2024 0:10	11.01	95.69	0.04	7.46	10.06	3.25	11.03	92.1	0.05	7.19	9.69	0.28
10/17/2024 0:20	10.99	95.99	0.04	7.48	10.06	3.04	11.02	91.29	0.05	7.21	9.71	0.25
10/17/2024 0:30	10.99	95.47	0.04	7.5	10.06	3.27	11	91.26	0.05	7.19	9.72	0.64
10/17/2024 0:40	10.97	95.37	0.04	7.47	10.06	2.95	10.99	89.55	0.05	7.18	9.71	0.26
10/17/2024 0:50	10.97	94.9	0.04	7.48	10.07	2.94	10.97	91.24	0.05	7.19	9.7	0.25
10/17/2024 1:00	10.94	94.54	0.04	7.49	10.06	3.2	10.95	90.33	0.05	7.18	9.73	0.24
10/17/2024 1:10	10.84	86.62	0.04	7.38	10.1	3.04	10.94	91.59	0.05	7.19	9.71	0.23
10/17/2024 1:20	10.75	83.35	0.04	7.27	10.15	3.09	10.92	89	0.05	7.18	9.72	0.26
10/17/2024 1:30	10.71	82.61	0.04	7.25	10.15	3.12	10.9	90.04	0.05	7.18	9.72	0.25
10/17/2024 1:40	10.7	82.5	0.04	7.24	10.16	3.14	10.89	88.76	0.05	7.18	9.73	0.26

10/17/2024 1:50	10.67	82.13	0.04	7.23	10.16	3.84	10.88	88.3	0.05	7.18	9.74	0.25
10/17/2024 2:00	10.65	81.88	0.04	7.24	10.17	3.68	10.86	87.01	0.05	7.18	9.74	0.26
10/17/2024 2:10	10.62	81.21	0.04	7.23	10.19	3.26	10.84	86.57	0.05	7.17	9.76	0.22
10/17/2024 2:20	10.58	82.47	0.04	7.31	10.17	2.96	10.81	85.3	0.04	7.19	9.74	0.24
10/17/2024 2:30	10.56	80.68	0.04	7.25	10.19	3.43	10.8	85.01	0.04	7.17	9.74	0.29
10/17/2024 2:40	10.55	81.01	0.04	7.28	10.19	3.17	10.77	83.18	0.04	7.16	9.73	0.28
10/17/2024 2:50	10.53	80.51	0.04	7.28	10.2	3.09	10.75	83.15	0.04	7.16	9.75	0.24
10/17/2024 3:00	10.59	90.32	0.04	7.45	10.15	3.27	10.73	82.22	0.04	7.14	9.77	0.22
10/17/2024 3:10	10.66	90.87	0.04	7.46	10.14	4.5	10.71	82.01	0.04	7.16	9.76	0.29
10/17/2024 3:20	10.63	91.53	0.04	7.46	10.15	3.04	10.68	81.09	0.04	7.14	9.78	0.24
10/17/2024 3:30	10.65	90.76	0.04	7.48	10.13	3.12	10.66	80.95	0.04	7.16	9.76	0.29
10/17/2024 3:40	10.64	90.76	0.04	7.48	10.14	3.79	10.64	79.22	0.04	7.14	9.76	0.24
10/17/2024 3:50	10.62	90.73	0.04	7.47	10.14	2.97	10.62	79.61	0.04	7.15	9.78	0.21
10/17/2024 4:00	10.61	90.48	0.04	7.44	10.16	3.57	10.6	78.36	0.04	7.14	9.81	0.22
10/17/2024 4:10	10.52	82.97	0.04	7.42	10.17	3.16	10.57	78.24	0.04	7.15	9.8	0.22
10/17/2024 4:20	10.38	76.26	0.03	7.27	10.24	3.2	10.55	77.22	0.04	7.12	9.82	0.24
10/17/2024 4:30	10.34	74.81	0.03	7.24	10.24	3.51	10.52	77.42	0.04	7.14	9.81	0.24
10/17/2024 4:40	10.31	73.85	0.03	7.22	10.26	3.01	10.5	76.59	0.04	7.12	9.81	0.24
10/17/2024 4:50	10.27	73.46	0.03	7.2	10.26	3.36	10.47	76.33	0.04	7.14	9.83	0.23
10/17/2024 5:00	10.23	73.02	0.03	7.23	10.28	3.03	10.45	75.08	0.04	7.13	9.83	0.2
10/17/2024 5:10	10.2	72.35	0.03	7.22	10.29	3.15	10.42	75.32	0.04	7.13	9.83	0.22
10/17/2024 5:20	10.3	86.68	0.04	7.42	10.24	3.49	10.4	74.45	0.04	7.11	9.86	0.2
10/17/2024 5:30	10.39	87.52	0.04	7.46	10.22	3.24	10.38	74.54	0.04	7.13	9.85	0.2
10/17/2024 5:40	10.38	87.43	0.04	7.46	10.21	3.03	10.37	74.09	0.04	7.13	9.87	0.18
10/17/2024 5:50	10.37	87.48	0.04	7.46	10.23	2.98	10.35	73.68	0.04	7.12	9.84	0.24
10/17/2024 6:00	10.39	87.34	0.04	7.46	10.22	3.1	10.33	72.73	0.04	7.14	9.86	0.21
10/17/2024 6:10	10.4	87.23	0.04	7.47	10.2	3.08	10.31	72.85	0.04	7.1	9.86	0.23
10/17/2024 6:20	10.38	87.82	0.04	7.46	10.23	3.09	10.29	72.05	0.04	7.11	9.89	0.22
10/17/2024 6:30	10.36	87.33	0.04	7.48	10.23	3.25	10.28	72.26	0.04	7.12	9.89	0.24
10/17/2024 6:40	10.35	87.3	0.04	7.46	10.24	37.86	10.25	71.72	0.04	7.11	9.9	0.19
10/17/2024 6:50	10.33	86.86	0.04	7.48	10.24	3.32	10.23	71.88	0.04	7.1	9.89	0.21
10/17/2024 7:00	10.3	87.06	0.04	7.47	10.25	3.65	10.22	71.17	0.04	7.1	9.9	0.22
10/17/2024 7:10	10.28	86.61	0.04	7.47	10.25	2.99	10.2	70.89	0.04	7.11	9.9	0.26
10/17/2024 7:20	10.25	86.94	0.04	7.47	10.26	3.52	10.18	70.22	0.04	7.09	9.89	0.22
10/17/2024 7:30	10.25	86.94	0.04	7.47	10.27	3.64	10.17	70.01	0.04	7.11	9.91	0.2
10/17/2024 7:40	10.12	75.99	0.03	7.4	10.3	3.22	10.16	68.18	0.04	7.12	9.92	0.26
10/17/2024 7:50	9.99	69.67	0.03	7.25	10.34	4.3	10.14	68.94	0.04	7.1	9.9	0.18
10/17/2024 8:00	9.89	68.22	0.03	7.22	10.38	3.06	10.13	67.12	0.03	7.1	9.92	0.2
10/17/2024 8:10	9.95	67.76	0.03	7.21	10.37	3.38	10.13	68.06	0.04	7.09	9.91	0.2
10/17/2024 8:20	9.93	66.83	0.03	7.21	10.36	3.37	10.11	66.31	0.03	7.09	9.93	0.18
10/17/2024 8:30	9.9	66.37	0.03	7.2	10.37	4.05	10.1	67.26	0.03	7.1	9.95	0.2
10/17/2024 8:40	9.88	65.97	0.03	7.19	10.39	3.18	10.08	65.82	0.03	7.08	9.97	0.19
10/17/2024 8:50	9.87	78.04	0.04	7.35	10.4	3.66	10.09	66.82	0.03	7.09	9.99	0.19
10/17/2024 9:00	10.1	83.33	0.04	7.44	10.33	3.72	10.13	66.32	0.03	7.09	9.98	0.31
10/17/2024 9:10	10.17	83.85	0.04	7.46	10.3	3.03	10.16	66.49	0.03	7.11	10.02	0.2
10/17/2024 9:20	10.2	84.46	0.04	7.46	10.3	2.89	10.19	65.93	0.03	7.09	10.04	0.2
10/17/2024 9:30	10.2	82.68	0.04	7.44	10.3	2.92	10.23	65.95	0.03	7.11	10.03	0.29
10/17/2024 9:40	10.2	78.76	0.04	7.4	10.31	3.08	10.27	65.02	0.03	7.1	10.02	0.21
10/17/2024 9:50	10.28	83.85	0.04	7.45	10.27	3.04	10.3	65.59	0.03	7.11	10	0.47
10/17/2024 10:00	10.32	83.31	0.04	7.45	10.28	3.04	10.33	64.06	0.03	7.11	10.01	0.2
10/17/2024 10:10	10.35	83.44	0.04	7.48	10.26	3.03	10.36	65.16	0.03	7.11	10.01	0.21
10/17/2024 10:20	10.37	84.33	0.04	7.49	10.27	2.81	10.39	64.46	0.03	7.1	10.01	0.23
10/17/2024 10:30	10.2	66.25	0.03	7.29	10.31	4.14	10.39	64.46	0.03	7.1	10.01	0.23
10/17/2024 10:40	10.45	82.61	0.04	7.48	10.26	3	10.42	65.16	0.03	7.11	10.02	0.23
10/17/2024 10:50	10.53	82.98	0.04	7.48	10.24	3.09	10.45	63.68	0.03	7.11	10.01	0.22
10/17/2024 11:00	10.58	83.06	0.04	7.47	10.23	4.31	10.51	64.87	0.03	7.12	10.01	0.22
10/17/2024 11:10	10.63	83.8	0.04	7.51	10.21	3.1	10.56	63.98	0.03	7.11	10.02	0.23
10/17/2024 11:20	10.7	83.68	0.04	7.5	10.21	3.08	10.6	64.7	0.03	7.11	10	0.21
10/17/2024 11:30	10.73	83.07	0.04	7.5	10.2	2.99	10.54	64.21	0.03	7.09	9.99	0.22
10/17/2024 11:40	10.74	82.98	0.04	7.48	10.21	2.84	10.52	64.21	0.03	7.11	9.98	0.22
10/17/2024 11:50	10.67	69.26	0.03	7.39	10.24	3.04	10.52	63.46	0.03	7.09	9.99	0.21
10/17/2024 12:00	10.81	80.83	0.04	7.53	10.2	3.2	10.58	63.34	0.03	7.11	9.97	0.19
10/17/2024 12:10	10.79	64.41	0.03	7.29	10.22	5.51	10.73	62.69	0.03	7.12	9.99	0.2
10/17/2024 12:20	10.79	62.78	0.03	7.25	10.22	3.32	10.78	62.41	0.03	7.12	9.98	0.25
10/17/2024 12:30	10.77	62.03	0.03	7.25	10.22	4.74	10.77	61.34	0.03	7.13	9.98	0.22
10/17/2024 12:40	10.81	61.61	0.03	7.22	10.2	3.2	10.74	60.91	0.03	7.08	9.94	0.23
10/17/2024 12:50	10.83	61.06	0.03	7.24	10.21	3.3	10.75	59.83	0.03	7.09	9.95	0.24
10/17/2024 13:00	10.84	60.73	0.03	7.23	10.19	3.51	10.81	59.95	0.03	7.1	9.94	0.25
10/17/2024 13:10	10.85	60.25	0.03	7.23	10.19	3.91	10.85	59.56	0.03	7.08	9.93	0.27
10/17/2024 13:20	10.92	59.84	0.03	7.24	10.19	4.17	10.91	59.35	0.03	7.08	9.91	0.26
10/17/2024 13:30	10.95	59.48	0.03	7.23	10.17	3.12	10.97	58.65	0.03	7.09	9.92	0.25
10/17/2024 13:40	10.93	58.8	0.03	7.21	10.16	3.5	10.98	58.49	0.03	7.07	9.89	0.29
10/17/2024 13:50	10.9	58.79	0.03	7.23	10.17	3.67	10.93	57.68	0.03	7.07	9.87	0.24
10/17/2024 14:00	10.9	58.47	0.03	7.23	10.18	3.91	10.92	57.36	0.03	7.09	9.84	0.23
10/17/2024 14:10	10.86	58.14	0.03	7.21	10.18	4.46	10.95	56.57	0.03	7.06	9.83	0.24
10/17/2024 14:20	11.19	81.13	0.04	7.47	10.1	3.36	10.91	56.34	0.03	7.06	9.86	0.19
10/17/2024 14:30	11.19	85.12	0.04	7.44	10.08	3.28	10.88	55.81	0.03	7.06	9.85	0.21
10/17/2024 14:40	11.18	86.1	0.04	7.47	10.08	5.49	10.87	55.83	0.03	7.06	9.86	0.24
10/17/2024 14:50	10.88	62.06	0.03	7.29	10.15	3.24	10.86	55.2	0.03	7.07	9.83	0.25
10/17/2024 15:00	11.04	81.17	0.04	7.39	10.15	11.15	10.85	55.18	0.03	7.06	9.83	0.22
10/17/2024 15:10	11.15	86.78	0.04	7.46	10.11	10.27	10.84	54.6	0.03	7.05	9.84	0.23
10/17/2024 15:20	10.95	67.55	0.03	7.39	10.14	5.45	10.83	54.88	0.03	7.05	9.81	0.23
10/17/2024 15:30	11.16	85.39	0.04	7.46	10.1	11.82	10.83	54.24	0.03	7.02	9.82	0.2
10/17/2024 15:40	11.23	87.78	0.04	7.49	10.1	11.3	10.84	54.3	0.03	7.05	9.84	0.22
10/17/2024 15:50	11.26	88.47	0.04	7.48	10.07	13.15	10.85	53.87	0.03	7.03	9.83	0.29
10/17/2024 16:00	11.27	88.7	0.04	7.47	10.08	14.14	10.87	54.11	0.03	7.05	9.84	0.24
10/17/2024 16:10	11.26	88.52	0.04	7.49	10.09	14.65	10.87	53.89	0.03	7.04	9.82	0.24
10/17/2024 16:20	11.26	88.68	0.04	7.5	10.07	18.76	10.89	54.21	0.03	7.03	9.81	0.24
10/17/2024 16:30	11.28	88.56	0.04	7.51	10.08	16.64	10.91	54.02	0.03	7.06	9.83	0.25
10/17/2024 16:40	11.25	88.36	0.04	7.51	10.07	18.39	10.92	54.5	0.03	7.04	9.82	0.23

10/17/2024 16:50	11.23	86.61	0.04	7.48	10.08	29.83	10.92	54.47	0.03	7.02	9.81	0.21
10/17/2024 17:00	11.23	87.14	0.04	7.5	10.08	17.75	10.92	54.61	0.03	7.05	9.8	0.25
10/17/2024 17:10	11.19	86.25	0.04	7.55	10.09	14.81	10.92	54.28	0.03	7.02	9.77	0.22
10/17/2024 17:20	11.08	76.18	0.03	7.52	10.1	12.65	10.92	54.66	0.03	7.03	9.77	0.36
10/17/2024 17:30	10.84	59.64	0.03	7.29	10.17	5.21	10.91	54.13	0.03	7.03	9.79	0.25
10/17/2024 17:40	11.01	78.73	0.04	7.45	10.14	22.81	10.91	54.76	0.03	7.02	9.77	0.23
10/17/2024 17:50	10.84	58.77	0.03	7.3	10.16	7.52	10.9	54.68	0.03	7.02	9.76	0.22
10/17/2024 18:00	10.77	57.16	0.03	7.27	10.19	5.42	10.89	54.84	0.03	7.03	9.77	0.21
10/17/2024 18:10	10.74	56.51	0.03	7.27	10.19	5.62	10.89	54.21	0.03	7.01	9.76	0.23
10/17/2024 18:20	10.71	56.29	0.03	7.26	10.2	3.85	10.88	55.05	0.03	7.02	9.76	0.23
10/17/2024 18:30	10.7	59.1	0.03	7.26	10.21	10.86	10.87	54.83	0.03	7.01	9.76	0.25
10/17/2024 18:40	11.03	81.68	0.04	7.51	10.11	10.66	10.86	54.91	0.03	7.02	9.74	0.25
10/17/2024 18:50	11.02	81.82	0.04	7.49	10.13	7.87	10.84	54.4	0.03	7	9.74	0.22
10/17/2024 19:00	10.99	81.47	0.04	7.47	10.13	7.06	10.83	54.66	0.03	7.02	9.78	0.21
10/17/2024 19:10	10.97	81.56	0.04	7.5	10.14	8.6	10.81	54.56	0.03	7.02	9.78	0.23
10/17/2024 19:20	10.95	81.51	0.04	7.49	10.15	7.31	10.8	54.62	0.03	7.03	9.77	0.2
10/17/2024 19:30	10.91	81.54	0.04	7.56	10.14	8	10.78	54.27	0.03	7	9.78	0.21
10/17/2024 19:40	10.65	59.26	0.03	7.3	10.22	4.11	10.77	54.68	0.03	6.99	9.78	0.28
10/17/2024 19:50	10.58	57.35	0.03	7.25	10.24	4.19	10.76	54.38	0.03	7.01	9.79	0.22
10/17/2024 20:00	10.55	56.41	0.03	7.24	10.26	3.48	10.74	55.02	0.03	7.02	9.78	0.2
10/17/2024 20:10	10.53	55.96	0.03	7.23	10.26	3.87	10.73	54.7	0.03	7	9.78	0.25
10/17/2024 20:20	10.5	55.84	0.03	7.25	10.27	3.72	10.72	55.16	0.03	7.02	9.78	0.23
10/17/2024 20:30	10.48	55.69	0.03	7.25	10.28	3.34	10.71	54.9	0.03	7.04	9.79	0.22
10/17/2024 20:40	10.47	55.64	0.03	7.26	10.27	3.22	10.7	55.01	0.03	7.01	9.77	0.21
10/17/2024 20:50	10.45	56.74	0.03	7.26	10.28	3.74	10.68	54.71	0.03	7.01	9.82	0.21
10/17/2024 21:00	10.44	58.39	0.03	7.29	10.27	3.63	10.67	54.98	0.03	7.01	9.8	0.22
10/17/2024 21:10	10.44	60.8	0.03	7.32	10.28	4.08	10.65	54.27	0.03	7.01	9.81	0.21
10/17/2024 21:20	10.44	61.97	0.03	7.36	10.28	4.7	10.64	54.95	0.03	7	9.8	0.22
10/17/2024 21:30	10.58	76.12	0.03	7.49	10.26	20.31	10.62	54.63	0.03	6.99	9.82	0.23
10/17/2024 21:40	10.75	83.3	0.04	7.48	10.2	8.63	10.61	54.73	0.03	7.01	9.81	0.26
10/17/2024 21:50	10.79	84.69	0.04	7.5	10.2	8.41	10.6	54.53	0.03	7	9.81	0.24
10/17/2024 22:00	10.8	84.67	0.04	7.51	10.19	7.31	10.58	54.73	0.03	7	9.83	0.31
10/17/2024 22:10	10.73	81.43	0.04	7.46	10.21	10.41	10.56	54.07	0.03	7	9.83	0.2
10/17/2024 22:20	10.72	81.56	0.04	7.47	10.21	9.6	10.55	54.41	0.03	6.98	9.83	0.22
10/17/2024 22:30	10.78	85.38	0.04	7.5	10.2	6.73	10.54	53.99	0.03	7.01	9.83	0.19
10/17/2024 22:40	10.79	85.02	0.04	7.47	10.19	6.57	10.54	54.05	0.03	6.99	9.85	0.23
10/17/2024 22:50	10.78	84.95	0.04	7.45	10.19	6.62	10.52	53.55	0.03	7	9.84	0.22
10/17/2024 23:00	10.79	84.76	0.04	7.48	10.19	7.23	10.52	53.73	0.03	7.01	9.86	0.21
10/17/2024 23:10	10.79	84.89	0.04	7.49	10.2	6.05	10.52	53	0.03	6.99	9.85	0.23
10/17/2024 23:20	10.79	84.56	0.04	7.5	10.21	6.16	10.52	53.49	0.03	7.01	9.86	0.2
10/17/2024 23:30	10.79	84.26	0.04	7.47	10.2	5.82	10.52	52.87	0.03	7.04	9.86	0.2
10/17/2024 23:40	10.59	64.89	0.03	7.37	10.23	4.87	10.52	53.14	0.03	6.99	9.85	0.23
10/17/2024 23:50	10.5	66.54	0.03	7.29	10.28	5.02	10.52	52.43	0.03	7.02	9.84	0.18
10/18/2024 0:00	10.42	57.42	0.03	7.25	10.29	4.69	10.51	52.61	0.03	7	9.83	0.25
10/18/2024 0:10	10.38	56.07	0.03	7.22	10.3	3.62	10.51	52.44	0.03	7	9.85	0.22
10/18/2024 0:20	10.37	57.11	0.03	7.25	10.31	3.5	10.51	52.56	0.03	7.01	9.85	0.21
10/18/2024 0:30	10.43	69.3	0.03	7.33	10.31	10.05	10.51	51.68	0.03	7.02	9.84	0.24
10/18/2024 0:40	10.68	83.06	0.04	7.47	10.23	6.48	10.51	52.2	0.03	6.96	9.86	0.2
10/18/2024 0:50	10.74	84.08	0.04	7.49	10.2	5.2	10.51	51.3	0.03	6.99	9.84	0.2
10/18/2024 1:00	10.75	84.43	0.04	7.5	10.21	4.88	10.51	51.84	0.03	7	9.85	0.21
10/18/2024 1:10	10.75	85.06	0.04	7.48	10.19	4.7	10.51	51.35	0.03	6.98	9.84	0.22
10/18/2024 1:20	10.76	85.56	0.04	7.51	10.2	4.67	10.51	51.26	0.03	6.99	9.86	0.21
10/18/2024 1:30	10.76	86.29	0.04	7.49	10.2	6.17	10.5	50.65	0.03	7	9.85	0.21
10/18/2024 1:40	10.77	86.46	0.04	7.5	10.19	4.66	10.51	50.56	0.03	6.98	9.86	0.2
10/18/2024 1:50	10.77	87.12	0.04	7.48	10.2	4.42	10.51	49.94	0.03	6.99	9.84	0.19
10/18/2024 2:00	10.77	88.56	0.04	7.49	10.2	5.85	10.51	49.75	0.03	6.98	9.86	0.36
10/18/2024 2:10	10.78	91.41	0.04	7.5	10.2	5.02	10.51	49.42	0.03	7	9.85	0.23
10/18/2024 2:20	10.8	94.98	0.04	7.5	10.19	5.42	10.51	49.3	0.03	6.97	9.85	0.2
10/18/2024 2:30	10.81	99.57	0.05	7.49	10.21	6.31	10.51	48.74	0.02	7.03	9.84	0.2
10/18/2024 2:40	10.56	63.28	0.03	7.35	10.25	4.75	10.51	48.68	0.02	6.97	9.85	0.19
10/18/2024 2:50	10.45	56.3	0.03	7.28	10.27	4.47	10.5	48.3	0.02	7.01	9.85	0.2
10/18/2024 3:00	10.41	54.3	0.02	7.28	10.3	4.03	10.5	48.35	0.02	6.99	9.86	0.21
10/18/2024 3:10	10.38	53.71	0.02	7.26	10.3	4.07	10.5	47.93	0.02	6.98	9.84	0.21
10/18/2024 3:20	10.36	53.18	0.02	7.25	10.31	3.9	10.5	47.86	0.02	6.97	9.86	0.22
10/18/2024 3:30	10.41	59.04	0.03	7.34	10.28	4.46	10.5	47.36	0.02	6.98	9.86	0.25
10/18/2024 3:40	10.37	57.26	0.03	7.31	10.29	4.44	10.5	47.52	0.02	6.97	9.85	0.22
10/18/2024 3:50	10.68	90.34	0.04	7.47	10.24	9.46	10.5	47.15	0.02	6.99	9.84	0.32
10/18/2024 4:00	10.72	89.97	0.04	7.5	10.23	8.99	10.5	47.46	0.02	6.98	9.85	0.2
10/18/2024 4:10	10.71	89.79	0.04	7.49	10.23	7.12	10.49	47.04	0.02	6.99	9.83	0.21
10/18/2024 4:20	10.72	89.86	0.04	7.51	10.23	8.34	10.49	47.21	0.02	6.96	9.85	0.22
10/18/2024 4:30	10.72	89.73	0.04	7.52	10.24	6.87	10.48	46.76	0.02	6.98	9.84	0.2
10/18/2024 4:40	10.7	89.35	0.04	7.52	10.22	6.78	10.48	46.68	0.02	6.98	9.84	0.23
10/18/2024 4:50	10.71	88.37	0.04	7.54	10.21	7.45	10.47	45.91	0.02	7.02	9.86	0.21
10/18/2024 5:00	10.71	87.83	0.04	7.53	10.21	7.09	10.47	46.39	0.02	6.97	9.86	0.22
10/18/2024 5:10	10.68	86.65	0.04	7.55	10.21	7.44	10.47	45.99	0.02	6.97	9.85	0.2
10/18/2024 5:20	10.67	85.5	0.04	7.55	10.21	7.81	10.47	45.66	0.02	6.98	9.87	0.19
10/18/2024 5:30	10.59	73.91	0.03	7.54	10.22	7.59	10.46	45.22	0.02	6.99	9.84	0.2
10/18/2024 5:40	10.61	82.68	0.04	7.54	10.24	11.73	10.45	45.18	0.02	6.97	9.86	0.24
10/18/2024 5:50	10.39	55.99	0.03	7.33	10.27	4.74	10.44	44.59	0.02	6.97	9.83	0.23
10/18/2024 6:00	10.31	52.91	0.02	7.28	10.3	4.22	10.44	44.54	0.02	6.96	9.85	0.2
10/18/2024 6:10	10.27	51.72	0.02	7.26	10.3	4.51	10.43	44.13	0.02	6.98	9.84	0.21
10/18/2024 6:20	10.26	50.91	0.02	7.25	10.33	4.22	10.43	44.03	0.02	6.97	9.86	0.2
10/18/2024 6:30	10.24	50.55	0.02	7.24	10.31	4.36	10.42	43.51	0.02	6.99	9.86	0.2
10/18/2024 6:40	10.41	75.97	0.03	7.47	10.29	15.99	10.41	43.65	0.02	6.96	9.85	0.2
10/18/2024 6:50	10.43	69.34	0.03	7.49	10.24	8.66	10.41	43.26	0.02	7.04	9.87	0.2
10/18/2024 7:00	10.26	52.65	0.02	7.3	10.3	4.11	10.41	43.36	0.02	6.97	9.85	0.21
10/18/2024 7:10	10.24	51.85	0.02	7.26	10.3	4.55	10.41	42.99	0.02	6.96	9.87	0.2
10/18/2024 7:20	10.22	51.36	0.02	7.26	10.31	4.49	10.41	42.89	0.02	6.97	9.88	0.21
10/18/2024 7:30	10.22	52.52	0.02	7.27	10.32	5.15	10.4	42.33	0.02	7.02	9.86	0.19
10/18/2024 7:40	10.2	49.13	0.02	7.24	10.33	3.69	10.39	42.4	0.02	6.97	9.85	0.18

10/18/2024 7:50	10.19	48.64	0.02	7.24	10.33	3.96	10.39	41.58	0.02	6.98	9.87	0.21
10/18/2024 8:00	10.18	48.31	0.02	7.25	10.34	4.27	10.39	42.04	0.02	6.96	9.87	0.22
10/18/2024 8:10	10.19	58.62	0.03	7.37	10.32	4.67	10.38	41.12	0.02	6.98	9.85	0.19
10/18/2024 8:20	10.45	95.76	0.04	7.48	10.29	13.43	10.38	41.64	0.02	6.95	9.87	0.2
10/18/2024 8:30	10.41	77.13	0.04	7.45	10.29	7.98	10.39	41.13	0.02	7.01	9.88	0.19
10/18/2024 8:40	10.55	95.26	0.04	7.52	10.26	9.56	10.39	41.32	0.02	6.95	9.86	0.22
10/18/2024 8:50	10.6	94.73	0.04	7.52	10.23	5.53	10.39	40.84	0.02	6.96	9.87	0.19
10/18/2024 9:00	10.59	92.61	0.04	7.51	10.23	5.17	10.38	40.95	0.02	6.94	9.87	0.23
10/18/2024 9:10	10.58	91.93	0.04	7.51	10.24	6.59	10.38	40.5	0.02	6.98	9.87	0.24
10/18/2024 9:20	10.58	90.39	0.04	7.49	10.24	6.91	10.37	40.55	0.02	6.96	9.88	0.23
10/18/2024 9:30	10.55	89.9	0.04	7.48	10.25	5.39	10.35	40.08	0.02	6.94	9.87	0.31
10/18/2024 9:40	10.54	88.25	0.04	7.49	10.24	6.33	10.33	40.34	0.02	6.95	9.88	0.56
10/18/2024 9:50	10.53	86.69	0.04	7.45	10.24	4.83	10.32	40.33	0.02	6.96	9.9	0.39
10/18/2024 10:00	10.5	85.46	0.04	7.47	10.25	5.04	10.3	43.13	0.02	6.98	9.91	0.37
10/18/2024 10:10	10.49	82.93	0.04	7.48	10.26	5.39	10.28	62.86	0.03	7.02	9.92	0.33
10/18/2024 10:20	10.48	80.55	0.04	7.45	10.26	6.95	10.26	112.47	0.06	7.13	9.94	0.35
10/18/2024 10:30	10.46	78.33	0.04	7.45	10.27	7.08	10.24	148.35	0.08	7.22	9.94	0.39
10/18/2024 10:40	10.22	55.58	0.03	7.29	10.33	8.03	10.21	184.83	0.1	7.32	9.95	0.41
10/18/2024 10:50	10.13	63.85	0.03	7.23	10.37	7.93	10.17	213.59	0.11	7.4	9.99	0.85
10/18/2024 11:00	10.12	88.18	0.04	7.21	10.38	10.9	10.13	238.38	0.13	7.46	10.02	1.01
10/18/2024 11:10	10.31	108.45	0.05	7.38	10.31	7.48	10.08	248.66	0.13	7.5	10.01	2.42
10/18/2024 11:20	10.33	120.16	0.06	7.41	10.31	8.72	10.04	256.15	0.14	7.54	10.06	2.59
10/18/2024 11:30	10.3	132.99	0.06	7.42	10.33	11.28	10	255.77	0.14	7.65	10.07	3.66
10/18/2024 11:40	10.27	144.75	0.07	7.42	10.33	8.77	9.96	259.21	0.14	7.59	10.08	5.33
10/18/2024 11:50	10.2	159.96	0.08	7.45	10.33	6.79	9.91	258.39	0.14	7.61	10.12	5.68
10/18/2024 12:00	10.18	163.63	0.08	7.43	10.35	162.31	9.87	266.76	0.14	7.63	10.14	7.28
10/18/2024 12:10	9.98	194.4	0.09	7.43	10.4	12.22	9.82	266.89	0.14	7.64	10.14	6.54
10/18/2024 12:20	9.92	197.69	0.09	7.44	10.42	8.62	9.8	274.01	0.15	7.65	10.17	6.17
10/18/2024 12:30	9.88	202.37	0.1	7.44	10.43	20.34	9.78	285.98	0.15	7.66	10.16	7.31
10/18/2024 12:40	9.86	205.95	0.1	7.46	10.43	10.38	9.76	302.6	0.16	7.69	10.17	7.25
10/18/2024 12:50	9.84	213.69	0.1	7.44	10.45	9.78	9.75	298.72	0.16	7.7	10.19	5.87
10/18/2024 13:00	9.82	224.56	0.11	7.43	10.43	11.11	9.73	301.41	0.16	7.7	10.19	6.86
10/18/2024 13:10	9.8	214	0.1	7.44	10.45	82.74	9.72	299.22	0.16	7.7	10.19	7.49
10/18/2024 13:20	9.76	231.75	0.11	7.44	10.46	10.61	9.7	300.59	0.16	7.71	10.21	5.26
10/18/2024 13:30	9.75	231.83	0.11	7.43	10.46	9.78	9.69	299.53	0.16	7.71	10.22	5.59
10/18/2024 13:40	9.72	238.12	0.11	7.44	10.46	12.17	9.66	294.95	0.16	7.73	10.22	7.71
10/18/2024 13:50	9.71	241.94	0.11	7.44	10.46	11.03	9.61	275.72	0.15	7.71	10.25	7.27
10/18/2024 14:00	9.7	239.06	0.11	7.43	10.48	10.74	9.58	279.73	0.15	7.72	10.26	6.21
10/18/2024 14:10	9.68	235.12	0.11	7.43	10.47	11.38	9.56	293.06	0.16	7.74	10.27	4.82
10/18/2024 14:20	9.64	239.77	0.11	7.44	10.49	13.87	9.54	297.08	0.16	7.75	10.3	7.46
10/18/2024 14:30	9.62	248.96	0.12	7.44	10.48	8.98	9.54	293.82	0.16	7.75	10.29	7.04
10/18/2024 14:40	9.72	220.79	0.1	7.43	10.47	54.24	9.54	298.11	0.16	7.76	10.27	6.99
10/18/2024 14:50	9.78	220.74	0.1	7.42	10.45	20.74	9.55	295.94	0.16	7.76	10.29	6.02
10/18/2024 15:00	9.79	221.47	0.1	7.43	10.45	15.93	9.57	297.9	0.16	7.76	10.25	6.72
10/18/2024 15:10	9.79	222.77	0.11	7.45	10.45	11.74	9.59	291.62	0.16	7.75	10.27	5.91
10/18/2024 15:20	9.78	223.31	0.11	7.43	10.45	13.47	9.6	287.5	0.16	7.76	10.25	5.78
10/18/2024 15:30	9.78	223.58	0.11	7.43	10.45	14.25	9.63	278.74	0.15	7.74	10.26	6.24
10/18/2024 15:40	9.77	221.84	0.1	7.42	10.44	12.45	9.67	275.34	0.15	7.74	10.25	8.04
10/18/2024 15:50	9.77	219.93	0.1	7.42	10.44	12.71	9.69	268.41	0.14	7.73	10.23	7.3
10/18/2024 16:00	9.7	234.11	0.11	7.43	10.46	15.14	9.72	265.04	0.14	7.73	10.22	8.32
10/18/2024 16:10	9.67	236.18	0.11	7.44	10.48	13.43	9.74	264.83	0.14	7.73	10.24	6.13
10/18/2024 16:20	9.66	235.02	0.11	7.43	10.49	11.32	9.76	259.57	0.14	7.73	10.23	6.37
10/18/2024 16:30	9.76	219.7	0.1	7.42	10.45	31.23	9.78	255.96	0.14	7.73	10.23	7.2
10/18/2024 16:40	9.71	226.84	0.11	7.41	10.46	12.5	9.79	250.84	0.14	7.73	10.21	11.03
10/18/2024 16:50	9.68	225.38	0.11	7.44	10.48	15.28	9.8	246.4	0.13	7.72	10.23	10.71
10/18/2024 17:00	9.68	223.03	0.11	7.42	10.49	19.82	9.81	243.95	0.13	7.73	10.23	13.52
10/18/2024 17:10	9.75	208.35	0.1	7.42	10.46	35.86	9.82	238.03	0.13	7.72	10.23	11.7
10/18/2024 17:20	9.79	204.04	0.1	7.39	10.45	29.56	9.83	233.55	0.13	7.71	10.23	27.37
10/18/2024 17:30	9.8	202.66	0.1	7.36	10.45	37.16	9.85	226.97	0.12	7.71	10.24	10.61
10/18/2024 17:40	9.81	198.31	0.09	7.36	10.44	33.14	9.88	222.92	0.12	7.68	10.24	13.46
10/18/2024 17:50	9.82	194.67	0.09	7.36	10.45	35.71	9.91	213.03	0.11	7.69	10.24	12.5
10/18/2024 18:00	9.82	189.96	0.09	7.33	10.44	43.68	9.92	207.83	0.11	7.69	10.23	15.82
10/18/2024 18:10	9.81	186.72	0.09	7.32	10.47	48.66	9.89	199.9	0.11	7.66	10.22	20.64
10/18/2024 18:20	9.8	178.71	0.08	7.32	10.47	44.29	9.87	193.5	0.1	7.66	10.25	20.01
10/18/2024 18:30	9.81	175.75	0.08	7.29	10.48	50.42	9.87	186.1	0.1	7.65	10.26	39.61
10/18/2024 18:40	9.77	167.3	0.08	7.29	10.49	52.78	9.91	178.41	0.1	7.63	10.26	29.71
10/18/2024 18:50	9.8	162.22	0.08	7.3	10.48	47.91	9.94	165.99	0.09	7.6	10.25	20.22
10/18/2024 19:00	9.82	153.58	0.07	7.25	10.51	43.82	9.97	159.86	0.09	7.57	10.22	18.91
10/18/2024 19:10	9.88	143.4	0.07	7.22	10.45	36.56	10.01	149.11	0.08	7.54	10.23	14.26
10/18/2024 19:20	9.92	136.11	0.06	7.22	10.43	37.33	10.07	143.52	0.08	7.53	10.22	29.14
10/18/2024 19:30	9.97	128.17	0.06	7.19	10.42	37.1	10.13	133.87	0.07	7.46	10.21	10.7
10/18/2024 19:40	9.98	120.84	0.06	7.19	10.43	24.48	10.18	125.47	0.07	7.45	10.18	14.48
10/18/2024 19:50	10	114.43	0.05	7.16	10.4	30.99	10.23	119.2	0.06	7.43	10.16	8.86
10/18/2024 20:00	10.02	108.44	0.05	7.14	10.41	30.78	10.26	113.92	0.06	7.4	10.16	9.79
10/18/2024 20:10	10.05	106.37	0.05	7.13	10.4	65.97	10.28	109.48	0.06	7.39	10.16	16.63
10/18/2024 20:20	10.09	104.2	0.05	7.11	10.39	35.16	10.28	109.48	0.06	7.39	10.16	16.63
10/18/2024 20:30	10.12	102.24	0.05	7.1	10.38	39.93	10.32	110.37	0.06	7.39	10.16	10.43
10/18/2024 20:40	10.14	99.18	0.05	7.1	10.38	53.27	10.35	108.01	0.06	7.34	10.15	8.24
10/18/2024 20:50	10.17	98.34	0.05	7.09	10.37	49.33	10.37	105.63	0.06	7.36	10.13	14.4
10/18/2024 21:00	10.18	95.5	0.04	7.08	10.38	43.6	10.4	100.88	0.05	7.34	10.08	9.36
10/18/2024 21:10	10.2	91.12	0.04	7.08	10.38	39.74	10.44	99.39	0.05	7.35	10.1	16.48
10/18/2024 21:20	0	0	0	7.12	10.78	35.88	10.45	96.87	0.05	7.34	10.11	17
10/18/2024 21:30	10.24	86.96	0.04	7.08	10.4	52.2	10.48	94.08	0.05	7.33	10.13	16.28
10/18/2024 21:40	10.27	83.51	0.04	7.06	10.36	38.77	10.5	82.45	0.04	7.26	10.13	12.81
10/18/2024 21:50	10.28	80.73	0.04	7.07	10.4	46.3	10.53	87.75	0.05	7.26	10.11	19.45
10/18/2024 22:00	10.3	76.68	0.04	7.03	10.39	27.34	10.55	84.67	0.04	7.26	10.11	10.12
10/18/2024 22:10	10.31	73.68	0.03	7.04	10.35	27.64	10.57	80.75	0.04	7.26	10.11	11.22
10/18/2024 22:20	10.33	69.85	0.03	6.98	10.35	25.31	10.59	77.3	0.04	7.23	10.09	11.38
10/18/2024 22:30	10.33	66.84	0.03	6.98	10.37	29.98	10.61	74.82	0.04	7.22	10.03	10.74
10/18/2024 22:40	10.34	64.19	0.03	6.94	10.35	52.14	10.62	72.46	0.04	7.2	10.03	9.28

10/18/2024 22:50	10.35	63.93	0.03	6.96	10.35	38.18	10.63	65.56	0.03	7.2	10.1	8.63
10/18/2024 23:00	10.35	63.1	0.03	6.97	10.36	31.13	10.64	68.58	0.04	7.19	10.1	3.88
10/18/2024 23:10	10.37	61.95	0.03	6.92	10.35	38.78	10.64	61.6	0.03	7.19	10.07	10.49
10/18/2024 23:20	10.36	61.8	0.03	6.97	10.35	27.33	10.65	59.72	0.03	7.2	10.1	13.41
10/18/2024 23:30	10.39	61.82	0.03	7.03	10.35	31.08	10.66	64.38	0.03	7.18	10.05	11.49
10/18/2024 23:40	10.4	59.29	0.03	6.97	10.37	35.4	10.67	65.52	0.03	7.18	10.1	9.02
10/18/2024 23:50	10.4	58.07	0.03	6.94	10.34	65.48	10.68	58.61	0.03	7.16	10.08	13.48
10/19/2024 0:00	10.4	58.01	0.03	7	10.34	21.97	10.68	57.48	0.03	7.16	10.08	9
10/19/2024 0:10	10.41	58.65	0.03	6.95	10.34	23.6	10.68	58.45	0.03	7.15	10.06	11.43
10/19/2024 0:20	10.41	55.88	0.03	6.98	10.33	21.99	10.68	56.48	0.03	7.13	10.07	8.41
10/19/2024 0:30	10.41	54.54	0.02	6.95	10.33	66.27	10.69	59.17	0.03	7.13	10.08	15.53
10/19/2024 0:40	10.41	53.73	0.02	6.98	10.32	28.08	10.69	60.71	0.03	7.09	10.07	8.53
10/19/2024 0:50	10.42	52.5	0.02	6.97	10.33	22.45	10.7	56.13	0.03	7.09	10.07	10.46
10/19/2024 1:00	10.42	52.15	0.02	6.98	10.31	28.65	10.7	57.38	0.03	7.07	10.08	3.99
10/19/2024 1:10	10.42	48.77	0.02	6.95	10.31	13.11	10.69	54.32	0.03	7.1	10.07	10.03
10/19/2024 1:20	10.42	49.12	0.02	6.96	10.31	30.81	10.69	56.33	0.03	7.05	10.06	10.17
10/19/2024 1:30	10.41	50.24	0.02	6.97	10.33	14.12	10.68	53.09	0.03	7.07	10.04	20.8
10/19/2024 1:40	10.42	49.38	0.02	6.97	10.31	11.89	10.69	49.71	0.03	7.07	10.01	7.06
10/19/2024 1:50	10.42	48.61	0.02	6.96	10.33	9.58	10.69	44.55	0.02	7.06	10.03	40.7
10/19/2024 2:00	10.42	48.29	0.02	6.98	10.3	14.47	10.68	44.85	0.02	7.03	10.04	6.54
10/19/2024 2:10	10.42	47.13	0.02	6.96	10.3	14.58	10.68	45.56	0.02	7.04	10	5.7
10/19/2024 2:20	10.41	47.56	0.02	7	10.32	10.91	10.68	44.53	0.02	7.03	10.06	6.19
10/19/2024 2:30	10.41	47.97	0.02	7	10.3	10.8	10.67	42.51	0.02	7.05	10.07	19.69
10/19/2024 2:40	10.42	48.15	0.02	7.01	10.3	11.64	10.66	45.1	0.02	7.03	10.07	3.74
10/19/2024 2:50	10.42	47.99	0.02	6.97	10.29	11.44	10.66	45.18	0.02	7.02	10.05	9.98
10/19/2024 3:00	10.42	48.37	0.02	6.98	10.29	10.65	10.66	44.2	0.02	6.98	10.06	6.35
10/19/2024 3:10	10.39	47.81	0.02	7.01	10.3	11.46	10.65	41.32	0.02	7.03	10.04	6.8
10/19/2024 3:20	10.37	42.09	0.02	6.88	10.32	12.06	10.64	45.21	0.02	7.08	10.06	10.3
10/19/2024 3:30	10.34	45.76	0.02	6.87	10.32	12.13	10.62	46.22	0.02	7.08	10.05	2.16
10/19/2024 3:40	10.31	49.41	0.02	6.91	10.36	14.54	10.59	50.43	0.03	7.13	10.07	6.84
10/19/2024 3:50	10.29	55.84	0.03	6.93	10.37	15.23	10.54	55.73	0.03	7.17	10.09	3.91
10/19/2024 4:00	10.28	67.77	0.03	7.06	10.38	22.48	10.49	59.97	0.03	7.23	10.13	6.62
10/19/2024 4:10	10.27	74.01	0.03	7.07	10.36	78.12	10.45	75.11	0.04	7.29	10.12	9.58
10/19/2024 4:20	10.28	75.74	0.03	7.08	10.35	24.65	10.45	75.61	0.04	7.34	10.13	6.38
10/19/2024 4:30	10.3	77.88	0.04	7.06	10.35	28.97	10.46	83.03	0.04	7.32	10.12	13.38
10/19/2024 4:40	10.31	74.08	0.03	7.02	10.35	33.13	10.45	77.67	0.04	7.34	10.12	10.91
10/19/2024 4:50	10.31	70.62	0.03	6.97	10.36	31.8	10.47	78.21	0.04	7.31	10.12	9.63
10/19/2024 5:00	10.32	70.19	0.03	6.98	10.38	43.84	10.5	72.75	0.04	7.31	10.09	7.68
10/19/2024 5:10	10.33	72.17	0.03	7.03	10.35	59.49	10.5	68.84	0.04	7.31	10.1	14.35
10/19/2024 5:20	10.35	69.53	0.03	7.03	10.33	63.43	10.49	66.85	0.03	7.3	10.13	19.71
10/19/2024 5:30	10.37	65.37	0.03	7	10.33	48.89	10.5	64.06	0.03	7.29	10.11	22.53
10/19/2024 5:40	10.38	59.6	0.03	6.95	10.32	51.45	10.53	65.95	0.03	7.27	10.1	10.24
10/19/2024 5:50	10.39	58.5	0.03	6.99	10.32	27.5	10.54	58.11	0.03	7.23	10.11	9.61
10/19/2024 5:50	10.39	58.5	0.03	6.99	10.32	27.5	10.54	56.25	0.03	7.25	10.1	11.7
10/19/2024 6:00	10.39	56.73	0.03	6.97	10.31	61.98	10.54	59.76	0.03	7.28	10.11	8.49
10/19/2024 6:10	10.4	55.59	0.03	6.94	10.3	27.78	10.55	58.19	0.03	7.2	10.1	7.37
10/19/2024 6:20	10.4	55.31	0.02	6.95	10.31	41.54	10.56	53.37	0.03	7.18	9.99	34.91
10/19/2024 6:30	10.41	51.21	0.02	6.91	10.3	49.24	10.56	54.39	0.03	7.21	10.01	11.11
10/19/2024 6:40	10.4	51.2	0.02	6.89	10.32	30.1	10.56	52.54	0.03	7.22	10.1	9.39
10/19/2024 6:50	10.4	48.86	0.02	6.84	10.33	31.2	10.57	55.43	0.03	7.22	10.1	15.57
10/19/2024 7:00	10.4	50.61	0.02	6.85	10.32	45.1	10.56	54.63	0.03	7.17	10.1	9.33
10/19/2024 7:10	10.39	31.16	0.01	6.84	10.34	39.63	10.55	53.22	0.03	7.19	10.07	23.9
10/19/2024 7:20	10.4	52.09	0.02	6.88	10.32	733.43	10.53	57.2	0.03	7.18	10.13	20.06
10/19/2024 7:20	10.4	52.09	0.02	6.88	10.32	733.43	10.54	55.88	0.03	7.2	10.01	44.99
10/19/2024 7:30	10.39	30.08	0.01	6.86	10.33	58.87	10.52	55.37	0.03	7.18	10.01	19.86
10/19/2024 7:40	10.39	37.98	0.02	6.88	10.33	46.9	10.52	56.54	0.03	7.19	10.11	22.55
10/19/2024 7:50	10.4	30.47	0.01	6.88	10.32	52.93	10.52	53.89	0.03	7.17	10.06	18.39
10/19/2024 8:00	10.41	49.37	0.02	6.87	10.32	52.03	10.53	51.63	0.03	7.14	10.01	19.74
10/19/2024 8:10	10.43	28.64	0.01	6.81	10.32	202.28	10.56	50.92	0.03	7.12	9.94	78.12
10/19/2024 8:20	10.44	40.05	0.02	6.77	10.31	61.42	10.56	52.19	0.03	7.08	10.13	19.94
10/19/2024 8:30	10.45	39.34	0.02	6.74	10.33	73.6	10.54	49.08	0.03	7.14	10.01	23.83
10/19/2024 8:40	10.45	29.6	0.01	6.77	10.32	0	10.55	47.65	0.02	7.13	10.09	27.27
10/19/2024 8:50	10.48	37.3	0.02	6.74	10.31	268.82	10.58	48.93	0.02	7.1	10.02	29.92
10/19/2024 9:00	10.48	30.23	0.01	6.75	10.31	753.31	10.59	47.27	0.02	7.11	10.06	49.81
10/19/2024 9:10	10.48	38.14	0.02	6.74	10.31	397.72	10.58	45.52	0.02	7.09	10	112.34
10/19/2024 9:20	10.48	25.61	0.01	6.68	10.32	0	10.58	44.68	0.02	7.12	9.94	85.19
10/19/2024 9:30	10.48	34.86	0.02	6.76	10.32	538.81	10.58	44.67	0.02	7.12	9.68	33.44
10/19/2024 9:40	10.52	24.81	0.01	6.7	10.31	1045.59	10.61	42.13	0.02	7.12	9.89	193.53
10/19/2024 9:50	10.54	35.21	0.02	6.69	10.29	143.94	10.63	41.74	0.02	7.09	9.97	623.26
10/19/2024 10:00	10.54	21.54	0.01	6.71	10.29	450.72	10.63	42.68	0.02	7.01	9.45	77.05
10/19/2024 10:10	10.55	32.65	0.01	6.68	10.3	51.71	10.63	43.48	0.02	7.06	10.01	135.5
10/19/2024 10:20	10.54	29.42	0.01	6.73	10.32	0	10.63	41.74	0.02	7.04	9.98	1075.82
10/19/2024 10:30	10.53	27.09	0.01	6.7	10.31	0	10.62	42.24	0.02	7.05	10.05	109.57
10/19/2024 10:40	10.53	30.51	0.01	6.68	10.31	508.5	10.59	42.72	0.02	7.04	10.09	118.74
10/19/2024 10:50	10.54	30.16	0.01	6.71	10.3	817.43	10.6	42.05	0.02	7.01	9.98	97.03
10/19/2024 11:00	10.54	28.13	0.01	6.69	10.3	729.25	10.61	40.3	0.02	7.1	10	1200.9
10/19/2024 11:10	10.55	29.56	0.01	6.73	10.29	718.23	10.63	40.1	0.02	7.07	10.1	515.97
10/19/2024 11:20	10.57	28.9	0.01	6.71	10.3	168.89	10.64	39.19	0.02	7.08	9.98	420.23
10/19/2024 11:30	10.58	29.57	0.01	6.83	10.29	732.13	10.65	41.38	0.02	7.19	9.94	815.47
10/19/2024 11:40	10.6	34.62	0.01	6.79	10.29	880.89	10.65	39.5	0.02	7.09	10.08	912.44
10/19/2024 11:50	10.62	32.22	0.01	6.79	10.28	1028.44	10.68	40.13	0.02	7.07	9.89	711.89
10/19/2024 12:00	10.65	33.29	0.01	6.77	10.27	233.56	10.71	38.58	0.02	7.1	9.93	409.1
10/19/2024 12:10	10.68	34.29	0.01	6.78	10.26	0	10.72	37.41	0.02	7.11	9.9	532.25
10/19/2024 12:20	10.69	27.76	0.01	6.8	10.26	807.33	10.73	37.29	0.02	7.13	9.95	501.04
10/19/2024 12:30	10.72	34.78	0.02	6.75	10.24	446.21	10.74	39.12	0.02	7.1	9.95	644.59
10/19/2024 12:40	10.77	24.32	0.01	6.78	10.23	41.7	10.8	37.72	0.02	7.15	10.02	629.04
10/19/2024 12:50	10.8	29.77	0.01	6.75	10.23	160.75	10.82	37.93	0.02	7.09	10.03	923.74
10/19/2024 13:00	10.8	31.28	0.01	6.74	10.22	95.65	10.8	36.61	0.02	7.14	9.86	1014.26
10/19/2024 13:10	10.79	32.03	0.01	6.79	10.23	47.76	10.79	36.71	0.02	7.12	9.83	1047.31
10/19/2024 13:20	10.8	32.06	0.01	6.74	10.22	26.96	10.8	35.54	0.02	7.13	9.85	670.96

10/19/2024 13:30	10.82	31.28	0.01	6.79	10.22	275.59	10.82	35.9	0.02	7.06	9.47	858.76
10/19/2024 13:40	10.82	34.06	0.01	6.76	10.21	49.94	10.81	38.24	0.02	7.11	9.87	1096.21
10/19/2024 13:50	10.81	33.65	0.01	6.78	10.22	68.43	10.8	39.14	0.02	7.12	9.87	1106.53
10/19/2024 14:00	10.82	36.03	0.02	6.75	10.21	33.65	10.8	40.54	0.02	7.16	9.93	1154.91
10/19/2024 14:10	10.82	27.95	0.01	6.82	10.21	48.53	10.8	40.66	0.02	7.09	9.09	1093.06
10/19/2024 14:20	10.83	33.74	0.01	6.75	10.2	22.68	10.81	40.7	0.02	7.13	9.47	1197.89
10/19/2024 14:30	10.85	32.61	0.01	6.8	10.2	21.3	10.81	40.96	0.02	7.11	9.67	1313.96
10/19/2024 14:40	10.85	33.41	0.01	6.7	10.2	18.24	10.82	40.74	0.02	7.11	9.81	1328.2
10/19/2024 14:50	10.86	30.59	0.01	6.75	10.21	17.68	10.82	38.3	0.02	7.09	9.9	1014.83
10/19/2024 15:00	10.88	32.42	0.01	6.71	10.19	17.79	10.83	39.13	0.02	7.09	9.98	1219.86
10/19/2024 15:10	10.93	31.89	0.01	6.74	10.18	23.44	10.87	37.41	0.02	7.05	9.87	953.6
10/19/2024 15:20	10.98	31.71	0.01	6.71	10.17	17.51	10.93	37.67	0.02	7.09	9.77	1089.99
10/19/2024 15:30	10.98	32.57	0.01	6.78	10.16	18.66	10.94	38.41	0.02	7.12	9.89	1358.9
10/19/2024 15:40	10.98	34.25	0.01	6.8	10.17	16.98	10.93	34.64	0.02	7.13	9.49	760.36
10/19/2024 15:50	10.96	32.53	0.01	6.77	10.16	14.83	10.91	40.61	0.02	7.16	9.6	680.84
10/19/2024 16:00	10.96	36.01	0.02	6.79	10.18	15.69	10.9	42.48	0.02	7.16	9.67	797.04
10/19/2024 16:10	10.96	37.01	0.02	6.83	10.18	16.69	10.89	38.16	0.02	7.1	9.53	637.04
10/19/2024 16:20	10.97	37.41	0.02	6.83	10.17	13.29	10.89	41.91	0.02	7.12	9.66	773.34
10/19/2024 16:30	11	37.64	0.02	6.86	10.16	26.65	10.91	41.8	0.02	7.18	9.91	639.13
10/19/2024 16:40	11.04	41.16	0.02	6.82	10.15	18.28	10.95	42.55	0.02	7.19	9.77	597.54
10/19/2024 16:50	11.08	38.3	0.02	6.85	10.14	33.22	10.99	46.7	0.02	7.13	9.54	746.9
10/19/2024 17:00	11.11	39.25	0.02	6.79	10.13	12.5	11.02	46.07	0.02	7.17	9.85	538.75
10/19/2024 17:10	11.13	37.59	0.02	6.84	10.14	15.8	11.04	44.93	0.02	7.22	9.9	502.28
10/19/2024 17:20	11.14	36.17	0.02	6.8	10.13	14.27	11.03	44.24	0.02	7.19	9.79	482.44
10/19/2024 17:30	11.15	36.9	0.02	6.81	10.13	18.17	11.04	43.27	0.02	7.18	9.59	481.73
10/19/2024 17:40	11.17	35.77	0.02	6.78	10.12	18.29	11.06	44.15	0.02	7.14	9.63	547.59
10/19/2024 17:50	11.19	37.42	0.02	6.85	10.11	45.54	11.08	42.4	0.02	7.1	9.57	536.31
10/19/2024 18:00	11.21	36.87	0.02	6.81	10.11	16.9	11.1	42.66	0.02	7.15	9.1	590.01
10/19/2024 18:10	11.23	34.99	0.02	6.86	10.11	16.74	11.12	40.93	0.02	7.09	9.88	557.37
10/19/2024 18:20	11.23	35.79	0.02	6.83	10.1	11.05	11.13	41.88	0.02	7.1	9.54	602.1
10/19/2024 18:30	11.24	33.31	0.01	6.85	10.1	26.95	11.15	39.72	0.02	7.09	9.78	540.6
10/19/2024 18:40	11.26	35.06	0.02	6.81	10.11	9.71	11.14	37.83	0.02	7.02	9.68	499.8
10/19/2024 18:50	11.28	33.57	0.01	6.84	10.1	7.99	11.15	39.81	0.02	7.11	9.29	539.88
10/19/2024 19:00	11.27	34.63	0.01	6.81	10.1	9.77	11.16	39.09	0.02	7.05	9.81	511.51
10/19/2024 19:10	11.2	33.29	0.01	6.84	10.13	8.29	11.16	40.62	0.02	7.1	9.54	532.51
10/19/2024 19:20	11.2	34.55	0.01	6.82	10.13	10.39	11.16	38.56	0.02	7	9.66	515.38
10/19/2024 19:30	11.21	33.22	0.01	6.83	10.12	10.2	11.17	40.13	0.02	7.09	9.69	534
10/19/2024 19:40	11.23	30.09	0.01	6.73	10.13	7.78	11.18	40.69	0.02	7.09	9.76	542.96
10/19/2024 19:50	11.25	28.77	0.01	6.74	10.11	10.69	11.19	38.21	0.02	7.02	9.73	518.35
10/19/2024 20:00	11.26	29.6	0.01	6.74	10.1	8.63	11.2	39.4	0.02	6.99	9.79	533.67
10/19/2024 20:10	11.27	31.28	0.01	6.81	10.11	7.58	11.21	39.76	0.02	7.06	9.82	550.18
10/19/2024 20:20	11.27	32.9	0.01	6.82	10.11	11.21	11.21	40.57	0.02	6.98	9.91	616.29
10/19/2024 20:30	11.27	33.45	0.01	6.82	10.12	11.97	11.21	39.55	0.02	6.97	9.78	564.25
10/19/2024 20:40	11.27	33.65	0.01	6.81	10.11	11.59	11.21	39.77	0.02	6.97	9.7	565.98
10/19/2024 20:50	11.28	33.34	0.01	6.85	10.11	8.72	11.21	38.38	0.02	7.04	9.73	538.14
10/19/2024 21:00	11.29	34.5	0.01	6.85	10.12	8.12	11.22	40.13	0.02	7	9.57	548.49
10/19/2024 21:10	11.31	33.49	0.01	6.87	10.1	10.2	11.23	37.24	0.02	7.07	9.89	542.68
10/19/2024 21:20	11.32	35.08	0.02	6.82	10.1	12.14	11.24	39.94	0.02	7.05	9.51	551.27
10/19/2024 21:30	11.32	29.38	0.01	6.78	10.1	77.91	11.24	37.35	0.02	7.05	9.58	536.7
10/19/2024 21:40	11.33	29.53	0.01	6.75	10.09	6.48	11.25	39.2	0.02	7.02	9.53	547
10/19/2024 21:50	11.35	28.36	0.01	6.72	10.1	13.84	11.25	37.05	0.02	7.06	9.69	540.11
10/19/2024 22:00	11.37	29.64	0.01	6.73	10.1	11.08	11.27	39.57	0.02	7.13	8.66	547.27
10/19/2024 22:10	11.39	29.48	0.01	6.75	10.08	16.34	11.29	38.39	0.02	7.09	9.62	496.71
10/19/2024 22:20	11.41	31.23	0.01	6.79	10.08	9.67	11.31	40.5	0.02	7.16	8.15	526.85
10/19/2024 22:30	11.43	35.5	0.02	6.86	10.07	10.53	11.33	41.11	0.02	7.15	9.7	522.23
10/19/2024 22:40	11.42	37.2	0.02	6.9	10.06	12.57	11.33	38.46	0.02	7.13	9.85	475.35
10/19/2024 22:50	11.42	36.09	0.02	6.87	10.06	9.15	11.33	41.39	0.02	7.13	8.3	494
10/19/2024 23:00	11.42	37.41	0.02	6.88	10.07	28.81	11.32	39.33	0.02	7.14	9.61	491.91
10/19/2024 23:10	11.42	36.49	0.02	6.9	10.07	20.52	11.32	41.79	0.02	7.14	8.78	501.12
10/19/2024 23:20	11.48	38.08	0.02	6.88	10.05	10.07	11.31	40	0.02	7.1	9.64	496.51
10/19/2024 23:30	11.48	36.6	0.02	6.9	10.06	14.37	11.31	42.03	0.02	7.14	8.71	505.7
10/19/2024 23:40	11.48	37.39	0.02	6.89	10.05	17.37	11.31	40.88	0.02	7.04	9.82	493.49
10/19/2024 23:50	11.48	37.13	0.02	6.91	10.05	11.3	11.3	40.41	0.02	7.04	8.57	484.22
10/20/2024 0:00	11.47	37.86	0.02	6.9	10.04	10.92	11.3	40.54	0.02	7.13	8.7	478.74
10/20/2024 0:10	11.45	31.42	0.01	6.76	10.05	27.75	11.29	43.5	0.02	7.13	7.88	490.79
10/20/2024 0:20	11.45	31.95	0.01	6.77	10.05	8.85	11.28	42.09	0.02	7.12	9.38	485.75
10/20/2024 0:30	11.45	32.94	0.01	6.76	10.04	8.16	11.28	41.52	0.02	7.1	9.06	472.59
10/20/2024 0:40	11.44	32.16	0.01	6.74	10.05	11.26	11.28	41.14	0.02	7.11	8.68	445.08
10/20/2024 0:50	11.45	37.79	0.02	6.95	10.05	9.2	11.27	43.91	0.02	7.12	8.9	459.89
10/20/2024 1:00	11.45	39.06	0.02	6.93	10.04	12.37	11.26	44.82	0.02	7.1	9.71	467.82
10/20/2024 1:10	11.43	34.52	0.01	6.88	10.05	8.18	11.25	45.34	0.02	7.12	9.8	471.33
10/20/2024 1:20	11.44	39.8	0.02	6.95	10.05	8.48	11.25	43.36	0.02	7.14	9.53	453.28
10/20/2024 1:30	11.44	38.28	0.02	6.95	10.04	26.98	11.25	42.29	0.02	7.09	7.98	448
10/20/2024 1:40	11.41	33.32	0.01	6.82	10.06	15.12	11.24	44.43	0.02	7.15	8.4	461.19
10/20/2024 1:50	11.39	31.34	0.01	6.82	10.05	15.05	11.23	42.2	0.02	7.18	9.66	437.68
10/20/2024 2:00	11.38	32.56	0.01	6.79	10.05	8.24	11.22	43.93	0.02	7.18	8.85	464.96
10/20/2024 2:10	11.36	32.05	0.01	6.84	10.06	8.01	11.2	42.18	0.02	7.17	9.78	444.71
10/20/2024 2:20	11.34	33.17	0.01	6.83	10.05	6.83	11.19	44.28	0.02	7.19	8.1	458.74
10/20/2024 2:30	11.33	32.21	0.01	6.82	10.06	9.22	11.16	33.29	0.02	7.09	9.89	3.09
10/20/2024 2:40	11.36	40.58	0.02	6.94	10.05	17.23	11.15	36.74	0.02	7.13	9.93	0.57
10/20/2024 2:50	11.35	40.02	0.02	7.01	10.06	8.6	11.15	36.92	0.02	7.15	9.93	0.48
10/20/2024 3:00	11.35	41.03	0.02	6.99	10.04	10.38	11.14	36.35	0.02	7.11	9.92	0.51
10/20/2024 3:10	11.35	40.02	0.02	7	10.05	10.44	11.13	36.6	0.02	7.06	9.92	0.5
10/20/2024 3:20	11.34	42.36	0.02	7.01	10.04	9.7	11.13	36.57	0.02	7.1	9.92	0.45
10/20/2024 3:30	11.34	41.69	0.02	7.01	10.05	11.4	11.12	36.56	0.02	7.11	9.94	0.5
10/20/2024 3:40	11.33	43.17	0.02	7.02	10.05	7.49	11.12	36.45	0.02	7.12	9.92	0.45
10/20/2024 3:50	11.32	41.66	0.02	7.03	10.06	8.3	11.11	36.67	0.02	7.02	9.92	0.67
10/20/2024 4:00	11.31	43.13	0.02	6.98	10.05	7.13	11.11	36.56	0.02	7.13	9.91	1.04
10/20/2024 4:10	11.26	33.09	0.01	6.89	10.06	7.88	11.1	36.71	0.02	7.11	9.93	0.94
10/20/2024 4:20	11.25	34.43	0.01	6.87	10.06	5.1	11.09	36.18	0.02	7.08	9.91	0.81

10/20/2024 4:30	11.24	32.7	0.01	6.86	10.07	5.5	11.08	36.8	0.02	7.04	9.91	0.47
10/20/2024 4:40	11.23	34.41	0.01	6.89	10.07	4.69	11.08	36.42	0.02	7.07	9.92	0.52
10/20/2024 4:50	11.22	33.36	0.01	6.9	10.06	4.34	11.08	37.6	0.02	7.15	9.92	0.61
10/20/2024 5:00	11.22	34.51	0.01	6.88	10.07	4.72	11.07	37.46	0.02	7.06	9.95	0.56
10/20/2024 5:10	11.24	42.78	0.02	7.05	10.05	10.82	11.07	37.86	0.02	7.14	9.91	1.28
10/20/2024 5:20	11.24	43.12	0.02	7.06	10.06	6.69	11.06	38.37	0.02	7.1	9.92	0.57
10/20/2024 5:30	11.23	41.96	0.02	7.05	10.04	8.12	11.05	39.21	0.02	7.14	9.92	0.61
10/20/2024 5:40	11.22	43.91	0.02	7.06	10.05	6.16	11.04	39.61	0.02	7.14	9.91	1.06
10/20/2024 5:50	11.18	36.14	0.02	6.89	10.06	5.97	11.04	39.82	0.02	7.17	9.93	0.73
10/20/2024 6:00	11.17	37.77	0.02	6.88	10.06	6.22	11.03	47.12	0.02	7.2	9.93	1.31
10/20/2024 6:10	11.16	38.85	0.02	6.93	10.06	7.98	11.03	49.31	0.03	7.23	9.93	0.78
10/20/2024 6:20	11.15	42.18	0.02	6.91	10.07	6.4	11.02	50.56	0.03	7.23	9.93	1.28
10/20/2024 6:30	11.15	41.4	0.02	6.93	10.06	9.69	11.02	53.37	0.03	7.24	9.93	1.49
10/20/2024 6:40	11.14	44.2	0.02	6.9	10.07	8.09	11.02	56.52	0.03	7.27	9.93	0.8
10/20/2024 6:50	11.13	44.4	0.02	6.96	10.07	8.03	11.02	59.64	0.03	7.3	9.91	1.58
10/20/2024 7:00	11.13	46.77	0.02	6.95	10.07	15.56	11.01	63.52	0.03	7.32	9.92	0.89
10/20/2024 7:10	11.11	50.64	0.02	6.98	10.07	9.28	11	66.51	0.03	7.33	9.92	0.77
10/20/2024 7:20	11.11	53.71	0.02	6.98	10.07	19.62	10.99	68.17	0.04	7.36	9.94	0.99
10/20/2024 7:30	11.09	53.44	0.02	7.01	10.07	6.18	10.99	70.7	0.04	7.37	9.93	0.92
10/20/2024 7:40	11.13	61.81	0.03	7.11	10.06	13.32	10.98	71.54	0.04	7.38	9.94	1.37
10/20/2024 7:50	11.12	60.87	0.03	7.1	10.06	20.93	10.97	73.6	0.04	7.33	9.94	0.83
10/20/2024 8:00	11.11	65.17	0.03	7.13	10.06	11.26	10.96	73.82	0.04	7.39	9.92	0.9
10/20/2024 8:10	11.1	63.22	0.03	7.12	10.07	7.3	10.96	75.17	0.04	7.39	9.94	1.32
10/20/2024 8:20	11.09	63.83	0.03	7.11	10.06	17.22	10.95	76.51	0.04	7.41	9.93	1.38
10/20/2024 8:30	11.08	64.26	0.03	7.1	10.06	16.71	10.95	79.05	0.04	7.39	9.95	1.41
10/20/2024 8:40	11.07	67.13	0.03	7.1	10.08	14.48	10.94	82.64	0.04	7.44	9.94	1.22
10/20/2024 8:50	11.06	67.46	0.03	7.1	10.08	18.48	10.94	80.76	0.04	7.42	9.95	2.32
10/20/2024 9:00	11.05	71.54	0.03	7.11	10.08	16.11	10.94	82.76	0.04	7.49	9.94	2.4
10/20/2024 9:10	11.04	74.38	0.03	7.12	10.07	37.98	10.94	82.81	0.04	7.48	9.95	2.39
10/20/2024 9:20	11.02	72.74	0.03	7.13	10.08	43.03	10.94	82.55	0.04	7.45	9.92	2.89
10/20/2024 9:30	11.01	73.7	0.03	7.13	10.1	24.76	10.93	81.58	0.04	7.48	9.94	2.87
10/20/2024 9:40	10.97	73.24	0.03	7.06	10.1	28.68	10.93	79.91	0.04	7.44	9.95	3.89
10/20/2024 9:50	10.95	71.03	0.03	7.09	10.1	21.26	10.92	78.37	0.04	7.47	9.96	5.85
10/20/2024 10:00	10.94	72.98	0.03	7.1	10.11	20.64	10.92	74.98	0.04	7.42	9.98	10.44
10/20/2024 10:10	10.92	70	0.03	7.09	10.11	27.7	10.9	72.51	0.04	7.43	9.94	8.59
10/20/2024 10:20	10.91	66.64	0.03	7.06	10.12	37.08	10.89	67.81	0.04	7.39	9.96	9.98
10/20/2024 10:30	10.9	61.11	0.03	7.04	10.11	27.26	10.88	62.33	0.03	7.28	9.95	6.99
10/20/2024 10:40	10.9	58.12	0.03	7.05	10.12	40.81	10.87	57.05	0.03	7.35	9.98	10.73
10/20/2024 10:50	10.88	53.7	0.02	6.97	10.13	38.26	10.85	49.92	0.03	7.25	9.99	17.3
10/20/2024 11:00	10.88	52.42	0.02	6.95	10.13	47.86	10.85	39.43	0.02	7.24	10	12.8
10/20/2024 11:10	10.87	46.67	0.02	6.95	10.13	58.62	10.84	28.68	0.01	7.22	10	20.52
10/20/2024 11:20	10.86	40.69	0.02	6.9	10.14	46.92	10.85	33.76	0.02	7.18	10.02	16.56
10/20/2024 11:30	10.87	25.32	0.01	6.85	10.14	38.82	10.86	33.64	0.02	7.16	10.03	18.7
10/20/2024 11:40	10.86	21.01	0.01	6.82	10.15	1105.54	10.85	38.18	0.02	7.08	10	28.75
10/20/2024 11:50	10.86	19.23	0.01	6.78	10.14	303.4	10.86	34.74	0.02	7.16	9.98	25.53
10/20/2024 12:00	10.87	26.39	0.01	6.79	10.15	0	10.87	25.6	0.01	7.17	10.03	32.62
10/20/2024 12:10	10.88	28.65	0.01	6.79	10.14	310.12	10.88	24.32	0.01	7.14	9.96	22.47
10/20/2024 12:20	10.88	22.57	0.01	6.73	10.14	902.64	10.88	19.24	0.01	6.95	9.93	21.3
10/20/2024 12:30	10.9	19.98	0.01	6.73	10.14	734.68	10.9	18.45	0.01	7.01	9.97	60.47
10/20/2024 12:40	10.92	27.05	0.01	6.69	10.12	1459.64	10.92	18.05	0.01	7.11	9.95	552.35
10/20/2024 12:50	10.95	18.05	0.01	6.72	10.12	2729.53	10.94	17.89	0.01	7.02	9.9	463.03
10/20/2024 13:00	10.98	15.96	0.01	6.74	10.1	0	10.96	17.89	0.01	7.01	9.84	468.12
10/20/2024 13:10	10.98	15.94	0.01	6.72	10.12	0	10.97	17.75	0.01	7.06	9.85	469.39
10/20/2024 13:20	11	24.38	0.01	6.71	10.09	0	10.99	17.66	0.01	7.04	9.83	482.62
10/20/2024 13:30	11.02	20.06	0.01	6.73	10.1	0	11	17.94	0.01	7.02	9.79	477.09
10/20/2024 13:40	11.03	22.96	0.01	6.73	10.08	1390.94	11	17.83	0.01	7.07	9.78	452.94
10/20/2024 13:50	11.04	22.56	0.01	6.72	10.07	945.32	11.01	17.59	0.01	7.09	9.71	443.77
10/20/2024 14:00	11.05	22.8	0.01	6.73	10.08	0	11.01	17.36	0.01	7.05	9.81	441.04
10/20/2024 14:10	11.06	19.53	0.01	6.76	10.07	0	11.01	17.25	0.01	7.03	9.68	439.62
10/20/2024 14:20	11.09	19.28	0.01	6.68	10.07	1595.7	11.03	16.97	0.01	7.01	9.6	440.26
10/20/2024 14:30	11.09	21	0.01	6.75	10.06	0	11.04	17.05	0.01	6.97	9.73	442.68
10/20/2024 14:40	11.08	23.62	0.01	6.73	10.06	111.37	11.02	17.09	0.01	6.99	9.82	441.33
10/20/2024 14:50	11.08	24.54	0.01	6.75	10.07	46.99	11.02	17.28	0.01	7	9.79	445.61
10/20/2024 15:00	11.09	26.44	0.01	6.76	10.06	234.89	11.02	17.34	0.01	7.04	9.63	447.31
10/20/2024 15:10	11.12	29.81	0.01	6.76	10.06	26.6	11.03	17.37	0.01	7.03	9.65	443.43
10/20/2024 15:20	11.14	26.68	0.01	6.78	10.06	36.17	11.05	17.46	0.01	7.02	9.74	447.75
10/20/2024 15:30	11.17	23.92	0.01	6.79	10.06	16.14	11.07	17.6	0.01	7.03	9.75	588.65
10/20/2024 15:40	11.17	29.17	0.01	6.78	10.05	24.5	11.09	17.87	0.01	7.02	9.75	588.55
10/20/2024 15:50	11.17	32.26	0.01	6.8	10.05	36.45	11.1	18.47	0.01	7.02	9.76	590.63
10/20/2024 16:00	11.16	31.15	0.01	6.77	10.05	24.37	11.09	18.65	0.01	7.03	9.74	593.82
10/20/2024 16:10	11.15	31.21	0.01	6.79	10.06	20.54	11.07	18.66	0.01	7	9.74	598.72
10/20/2024 16:20	11.14	30.99	0.01	6.8	10.06	44.31	11.06	18.57	0.01	7.02	9.76	602.11
10/20/2024 16:30	11.14	31.16	0.01	6.8	10.08	25.61	11.06	18.45	0.01	7.02	9.75	596.79
10/20/2024 16:40	11.15	31.66	0.01	6.81	10.06	48.87	11.06	18.18	0.01	7.03	9.77	611.81
10/20/2024 16:50	11.16	28.49	0.01	6.75	10.06	14.35	11.07	18.01	0.01	7.03	9.75	567.53
10/20/2024 17:00	11.18	30.68	0.01	6.78	10.06	31.94	11.08	17.68	0.01	7.04	9.73	568.54
10/20/2024 17:10	11.18	29.59	0.01	6.78	10.07	18.98	11.09	17.39	0.01	7.05	9.73	569.43
10/20/2024 17:20	11.18	26.64	0.01	6.72	10.06	13.7	11.1	17.1	0.01	7.05	9.72	565.02
10/20/2024 17:30	11.18	27.23	0.01	6.73	10.07	14.1	11.09	16.83	0.01	7.05	9.74	558.41
10/20/2024 17:40	11.17	26.07	0.01	6.67	10.06	10.19	11.09	16.54	0.01	7.05	9.7	587.59
10/20/2024 17:50	11.15	26.61	0.01	6.72	10.08	8.55	11.07	16.37	0.01	7.09	9.59	588.73
10/20/2024 18:00	11.14	26.44	0.01	6.71	10.08	12.23	11.06	16.17	0.01	7.06	9.59	592.59
10/20/2024 18:10	11.13	24.27	0.01	6.71	10.08	13.93	11.04	16.02	0.01	7.06	9.59	595.38
10/20/2024 18:20	11.12	25.74	0.01	6.7	10.09	7.27	11.03	15.89	0.01	7.07	9.66	596.25
10/20/2024 18:30	11.11	24.67	0.01	6.71	10.08	30.96	11.02	15.78	0.01	7.08	9.63	593.48
10/20/2024 18:40	11.11	27.83	0.01	6.79	10.08	17.21	11.02	15.66	0.01	7.08	9.6	606.12
10/20/2024 18:50	11.1	25.33	0.01	6.7	10.09	21.67	11.01	15.6	0.01	7.07	9.59	604.49
10/20/2024 19:00	11.09	28.73	0.01	6.75	10.09	12.56	11	15.54	0.01	7.07	9.53	591.21
10/20/2024 19:10	11.08	24.59	0.01	6.69	10.1	13.26	10.99	15.47	0.01	7.04	9.55	589.34
10/20/2024 19:20	11.08	28.7	0.01	6.76	10.1	16.97	10.98	15.41	0.01	7.06	9.58	590.38

10/20/2024 19:30	11.07	27.81	0.01	6.79	10.1	19.91	10.96	15.37	0.01	7.07	9.65	588.16
10/20/2024 19:40	11.06	28.59	0.01	6.77	10.11	19.1	10.94	15.24	0.01	7.03	9.66	594.66
10/20/2024 19:50	11.04	27.94	0.01	6.77	10.11	24.49	10.93	15.17	0.01	7.05	9.82	589.78
10/20/2024 20:00	11.04	27.88	0.01	6.79	10.11	21.27	10.92	15.17	0.01	7.03	9.91	592.72
10/20/2024 20:10	11.03	27.94	0.01	6.8	10.11	16.47	10.91	15.2	0.01	7.05	9.9	583.63
10/20/2024 20:20	11.02	28.88	0.01	6.78	10.11	11.86	10.9	15.16	0.01	7.01	9.91	611.31
10/20/2024 20:30	11	24.4	0.01	6.69	10.12	10.02	10.89	15.16	0.01	6.99	9.9	491.01
10/20/2024 20:40	10.98	25.57	0.01	6.7	10.12	10.47	10.87	15.01	0.01	6.96	9.94	514.79
10/20/2024 20:50	10.96	23.87	0.01	6.7	10.12	16.24	10.86	15.01	0.01	6.98	9.94	536.93
10/20/2024 21:00	10.95	24.71	0.01	6.69	10.14	20.14	10.84	14.93	0.01	7.01	9.93	557.04
10/20/2024 21:10	10.94	23.85	0.01	6.73	10.15	8.76	10.83	14.95	0.01	6.93	9.96	560.5
10/20/2024 21:20	10.92	24.98	0.01	6.71	10.15	8.95	10.82	14.91	0.01	6.97	9.96	561.43
10/20/2024 21:30	10.91	24.08	0.01	6.66	10.14	24.34	10.81	14.87	0.01	6.95	9.96	595.68
10/20/2024 21:40	10.9	25	0.01	6.67	10.15	12.53	10.79	14.79	0.01	6.99	9.96	490.23
10/20/2024 21:50	10.88	24.88	0.01	6.73	10.15	8	10.78	14.8	0.01	6.97	9.93	492.73
10/20/2024 22:00	10.89	29.79	0.01	6.82	10.15	13.38	10.76	14.79	0.01	6.98	9.94	488.97
10/20/2024 22:10	10.85	24.24	0.01	6.63	10.17	15.09	10.74	14.86	0.01	7.01	9.94	496.81
10/20/2024 22:20	10.83	25.12	0.01	6.73	10.18	8.84	10.72	14.83	0.01	7.01	9.94	483.45
10/20/2024 22:30	10.85	29.14	0.01	6.85	10.18	26.26	10.71	14.88	0.01	7.04	9.94	486.38
10/20/2024 22:40	10.81	25.06	0.01	6.71	10.18	5.86	10.7	14.85	0.01	7.02	9.96	481.76
10/20/2024 22:50	10.8	24.62	0.01	6.7	10.18	6.87	10.69	14.86	0.01	7.02	9.97	470.03
10/20/2024 23:00	10.83	30.35	0.01	6.86	10.17	6.66	10.68	14.86	0.01	7.03	9.96	452.19
10/20/2024 23:10	10.82	30.15	0.01	6.91	10.18	10.45	10.67	14.83	0.01	7.01	9.95	455.77
10/20/2024 23:20	10.83	29.82	0.01	6.87	10.17	11.17	10.67	14.76	0.01	7.02	9.98	448.85
10/20/2024 23:30	10.83	29.97	0.01	6.88	10.17	6.15	10.67	14.82	0.01	7.02	9.99	512.72
10/20/2024 23:40	10.84	31.16	0.01	6.91	10.17	7.6	10.67	13.21	0.01	7.18	10.03	2.13
10/20/2024 23:50	10.83	30.02	0.01	6.89	10.18	7.34	10.68	13.71	0.01	7.11	10.04	1.59