



CERTIFICATE OF ANALYSIS

<p>Work Order : FC2402093</p> <p>Client : Regional Municipality of Wood Buffalo</p> <p>Contact : Water Treatment Plant</p> <p>Address : 1 Silin Forest Road Fort McMurray AB Canada T9H 5A1</p> <p>Telephone : 780-762-5863</p> <p>Project : Fort Chipewyan Imperial Release</p> <p>PO : 4500051416</p> <p>C-O-C number : ----</p> <p>Sampler : TSP</p> <p>Site : ----</p> <p>Quote number : Water Treatment Plant</p> <p>No. of samples received : 2</p> <p>No. of samples analysed : 2</p>	<p>Page : 1 of 8</p> <p>Laboratory : ALS Environmental - Fort McMurray</p> <p>Account Manager : Megan Trydal</p> <p>Address : #4, 340 Macalpine Crescent Fort McMurray AB Canada T9H 4A8</p> <p>Telephone : +1 780 791 1524</p> <p>Date Samples Received : 08-Aug-2024 16:15</p> <p>Date Analysis Commenced : 09-Aug-2024</p> <p>Issue Date : 19-Aug-2024 15:04</p>
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Alex Drake	Lab Analyst	Inorganics, Edmonton, Alberta
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Yan Zhang	Team Leader - Organics	Organics, Edmonton, Alberta



Analytical Results

Sub-Matrix: Water					Client sample ID	TREATED WATER	RAW WATER CHAMBER TAP	---	---	---
(Matrix: Water)					Client sampling date / time	08-Aug-2024 09:20	08-Aug-2024 09:05	---	---	---
Analyte	CAS Number	Method/Lab	LOR	Unit	FC2402093-001	FC2402093-002	-----	-----	-----	
					Result	Result	---	---	---	
Physical Tests										
Hardness (as CaCO3), dissolved	----	EC100/EO	0.50	mg/L	52.7	50.0	---	---	---	
Salinity	----	EC100S/VA	1.0	psu	<1.0	<1.0	---	---	---	
Conductivity	----	E100/EO	2.0	µS/cm	184	120	---	---	---	
pH	----	E108/EO	0.10	pH units	7.85	7.97	---	---	---	
Alkalinity, bicarbonate (as HCO3)	71-52-3	E290/EO	1.0	mg/L	62.0	58.9	---	---	---	
Alkalinity, carbonate (as CO3)	3812-32-6	E290/EO	1.0	mg/L	<1.0	<1.0	---	---	---	
Alkalinity, hydroxide (as OH)	14280-30-9	E290/EO	1.0	mg/L	<1.0	<1.0	---	---	---	
Alkalinity, total (as CaCO3)	----	E290/EO	2.0	mg/L	50.8	48.3	---	---	---	
Solids, total dissolved [TDS], calculated	----	EC103/EO	1.0	mg/L	102	72.3	---	---	---	
Anions and Nutrients										
Chloride	16887-00-6	E235.Cl/EO	0.50	mg/L	23.9	4.87	---	---	---	
Fluoride	16984-48-8	E235.F/EO	0.020	mg/L	0.020	0.069	---	---	---	
Nitrate (as N)	14797-55-8	E235.NO3/EO	0.020	mg/L	<0.020	<0.020	---	---	---	
Nitrite (as N)	14797-65-0	E235.NO2/EO	0.010	mg/L	<0.010	<0.010	---	---	---	
Sulfate (as SO4)	14808-79-8	E235.SO4/EO	0.30	mg/L	8.27	9.16	---	---	---	
Nitrate + Nitrite (as N)	----	EC235.N+N/E O	0.0500	mg/L	<0.0500	<0.0500	---	---	---	
Total Sulfides										
Sulfide, total (as S)	18496-25-8	E395/VA	0.0015	mg/L	<0.0015	<0.0015	---	---	---	
Sulfide, total (as H2S)	7783-06-4	E395/VA	0.0016	mg/L	<0.0016	<0.0016	---	---	---	
Ion Balance										
Anion sum	----	EC101/EO	0.10	meq/L	1.86	1.30	---	---	---	
Cation sum	----	EC101/EO	0.10	meq/L	1.78	1.29	---	---	---	
Ion balance (APHA)	----	EC101/EO	0.01	%	-2.20	-0.39	---	---	---	
Ion balance (cations/anions)	----	EC101/EO	0.010	%	95.7	99.2	---	---	---	
Total Metals										
Aluminum, total	7429-90-5	E420/EO	0.0030	mg/L	0.0214	0.153	---	---	---	
Antimony, total	7440-36-0	E420/EO	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
Arsenic, total	7440-38-2	E420/EO	0.00010	mg/L	0.00036	0.00054	---	---	---	



Analytical Results

Sub-Matrix: Water					Client sample ID	TREATED WATER	RAW WATER CHAMBER TAP	----	----	----
(Matrix: Water)					Client sampling date / time	08-Aug-2024 09:20	08-Aug-2024 09:05	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	FC2402093-001	FC2402093-002	-----	-----	-----	
					Result	Result	---	---	---	
Total Metals										
Barium, total	7440-39-3	E420/EO	0.00010	mg/L	0.0297	0.0296	---	---	---	
Beryllium, total	7440-41-7	E420/EO	0.000020	mg/L	<0.000020	<0.000020	---	---	---	
Bismuth, total	7440-69-9	E420/EO	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
Boron, total	7440-42-8	E420/EO	0.010	mg/L	0.018	0.017	---	---	---	
Cadmium, total	7440-43-9	E420/EO	0.0000050	mg/L	0.0000055	0.0000057	---	---	---	
Calcium, total	7440-70-2	E420/EO	0.050	mg/L	14.7	13.4	---	---	---	
Cesium, total	7440-46-2	E420/EO	0.000010	mg/L	<0.000010	0.000025	---	---	---	
Chromium, total	7440-47-3	E420/EO	0.00050	mg/L	<0.00050	<0.00050	---	---	---	
Cobalt, total	7440-48-4	E420/EO	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
Copper, total	7440-50-8	E420/EO	0.00050	mg/L	0.00262	0.00197	---	---	---	
Iron, total	7439-89-6	E420/EO	0.010	mg/L	<0.010	0.170	---	---	---	
Lead, total	7439-92-1	E420/EO	0.000050	mg/L	<0.000050	0.000092	---	---	---	
Lithium, total	7439-93-2	E420/EO	0.0010	mg/L	0.0040	0.0041	---	---	---	
Magnesium, total	7439-95-4	E420/EO	0.0050	mg/L	4.16	4.20	---	---	---	
Manganese, total	7439-96-5	E420/EO	0.00010	mg/L	0.00205	0.00887	---	---	---	
Molybdenum, total	7439-98-7	E420/EO	0.000050	mg/L	0.000277	0.000362	---	---	---	
Nickel, total	7440-02-0	E420/EO	0.00050	mg/L	0.00053	0.00072	---	---	---	
Phosphorus, total	7723-14-0	E420/EO	0.050	mg/L	<0.050	<0.050	---	---	---	
Potassium, total	7440-09-7	E420/EO	0.050	mg/L	1.06	1.10	---	---	---	
Rubidium, total	7440-17-7	E420/EO	0.00020	mg/L	0.00103	0.00131	---	---	---	
Selenium, total	7782-49-2	E420/EO	0.000050	mg/L	0.000066	0.000111	---	---	---	
Silicon, total	7440-21-3	E420/EO	0.10	mg/L	1.42	1.66	---	---	---	
Silver, total	7440-22-4	E420/EO	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
Sodium, total	7440-23-5	E420/EO	0.050	mg/L	16.8	5.39	---	---	---	
Strontium, total	7440-24-6	E420/EO	0.00020	mg/L	0.0877	0.0880	---	---	---	
Sulfur, total	7704-34-9	E420/EO	0.50	mg/L	2.71	2.83	---	---	---	
Tellurium, total	13494-80-9	E420/EO	0.00020	mg/L	<0.00020	<0.00020	---	---	---	
Thallium, total	7440-28-0	E420/EO	0.000010	mg/L	<0.000010	<0.000010	---	---	---	
Thorium, total	7440-29-1	E420/EO	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
Tin, total	7440-31-5	E420/EO	0.00010	mg/L	<0.00010	<0.00010	---	---	---	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	TREATED WATER	RAW WATER CHAMBER TAP	----	----	----
Client sampling date / time					08-Aug-2024 09:20	08-Aug-2024 09:05	----	----	----	
Analyte	CAS Number	Method/Lab	LOR	Unit	FC2402093-001	FC2402093-002	-----	-----	-----	
					Result	Result	----	----	----	
Total Metals										
Titanium, total	7440-32-6	E420/EO	0.00030	mg/L	<0.00030	0.00622	----	----	----	
Tungsten, total	7440-33-7	E420/EO	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
Uranium, total	7440-61-1	E420/EO	0.000010	mg/L	<0.000010	0.000132	----	----	----	
Vanadium, total	7440-62-2	E420/EO	0.00050	mg/L	0.00068	0.00109	----	----	----	
Zinc, total	7440-66-6	E420/EO	0.0030	mg/L	<0.0030	<0.0030	----	----	----	
Zirconium, total	7440-67-7	E420/EO	0.00020	mg/L	<0.00020	<0.00020	----	----	----	
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421/EO	0.0010	mg/L	0.0152	0.196	----	----	----	
Antimony, dissolved	7440-36-0	E421/EO	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
Arsenic, dissolved	7440-38-2	E421/EO	0.00010	mg/L	0.00028	0.00048	----	----	----	
Barium, dissolved	7440-39-3	E421/EO	0.00010	mg/L	0.0298	0.0311	----	----	----	
Beryllium, dissolved	7440-41-7	E421/EO	0.020	µg/L	<0.020	<0.020	----	----	----	
Bismuth, dissolved	7440-69-9	E421/EO	0.050	µg/L	<0.050	<0.050	----	----	----	
Boron, dissolved	7440-42-8	E421/EO	0.010	mg/L	0.016	0.016	----	----	----	
Cadmium, dissolved	7440-43-9	E421/EO	0.0050	µg/L	<0.0050	0.0062	----	----	----	
Calcium, dissolved	7440-70-2	E421/EO	0.050	mg/L	14.5	13.2	----	----	----	
Cesium, dissolved	7440-46-2	E421/EO	0.010	µg/L	<0.010	0.020	----	----	----	
Chromium, dissolved	7440-47-3	E421/EO	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
Cobalt, dissolved	7440-48-4	E421/EO	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
Copper, dissolved	7440-50-8	E421/EO	0.00020	mg/L	0.00245	0.00184	----	----	----	
Iron, dissolved	7439-89-6	E421/EO	0.010	mg/L	<0.010	0.162	----	----	----	
Lead, dissolved	7439-92-1	E421/EO	0.050	µg/L	<0.050	0.089	----	----	----	
Lithium, dissolved	7439-93-2	E421/EO	0.0010	mg/L	0.0041	0.0042	----	----	----	
Magnesium, dissolved	7439-95-4	E421/EO	0.0050	mg/L	4.01	4.13	----	----	----	
Manganese, dissolved	7439-96-5	E421/EO	0.00010	mg/L	0.00187	0.00885	----	----	----	
Molybdenum, dissolved	7439-98-7	E421/EO	0.050	µg/L	0.306	0.348	----	----	----	
Nickel, dissolved	7440-02-0	E421/EO	0.00050	mg/L	<0.00050	0.00072	----	----	----	
Phosphorus, dissolved	7723-14-0	E421/EO	0.050	mg/L	<0.050	<0.050	----	----	----	
Potassium, dissolved	7440-09-7	E421/EO	0.050	mg/L	1.06	1.12	----	----	----	
Rubidium, dissolved	7440-17-7	E421/EO	0.00020	mg/L	0.00110	0.00133	----	----	----	



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	TREATED WATER	RAW WATER CHAMBER TAP	----	----	----
Client sampling date / time					08-Aug-2024 09:20	08-Aug-2024 09:05	----	----	----	
Analyte	CAS Number	Method/Lab	LOR	Unit	FC2402093-001	FC2402093-002	-----	-----	-----	
					Result	Result	---	---	---	
Dissolved Metals										
Selenium, dissolved	7782-49-2	E421/EO	0.050	µg/L	0.060	0.089	---	---	---	
Silicon, dissolved	7440-21-3	E421/EO	0.050	mg/L	1.35	1.86	---	---	---	
Silver, dissolved	7440-22-4	E421/EO	0.010	µg/L	<0.010	<0.010	---	---	---	
Sodium, dissolved	7440-23-5	E421/EO	0.050	mg/L	16.0	5.37	---	---	---	
Strontium, dissolved	7440-24-6	E421/EO	0.00020	mg/L	0.0879	0.0869	---	---	---	
Sulfur, dissolved	7704-34-9	E421/EO	0.50	mg/L	2.86	2.72	---	---	---	
Tellurium, dissolved	13494-80-9	E421/EO	0.00020	mg/L	<0.00020	<0.00020	---	---	---	
Thallium, dissolved	7440-28-0	E421/EO	0.010	µg/L	<0.010	<0.010	---	---	---	
Thorium, dissolved	7440-29-1	E421/EO	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
Tin, dissolved	7440-31-5	E421/EO	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
Titanium, dissolved	7440-32-6	E421/EO	0.00030	mg/L	<0.00030	0.00568	---	---	---	
Tungsten, dissolved	7440-33-7	E421/EO	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
Uranium, dissolved	7440-61-1	E421/EO	0.010	µg/L	<0.010	0.128	---	---	---	
Vanadium, dissolved	7440-62-2	E421/EO	0.00050	mg/L	<0.00050	0.00075	---	---	---	
Zinc, dissolved	7440-66-6	E421/EO	0.0010	mg/L	0.0014	<0.0010	---	---	---	
Zirconium, dissolved	7440-67-7	E421/EO	0.00030	mg/L	<0.00030	<0.00030	---	---	---	
Dissolved metals filtration location	----	EP421/EO	-	-	Field	Field	---	---	---	
Aggregate Organics										
Naphthenic acids	----	E565-L/EO	0.10	mg/L	<0.10	<0.10	---	---	---	
Volatile Organic Compounds [BTEXS+MTBE]										
Benzene	71-43-2	E611A/EO	0.50	µg/L	<0.50	<0.50	---	---	---	
Ethylbenzene	100-41-4	E611A/EO	0.50	µg/L	<0.50	<0.50	---	---	---	
Toluene	108-88-3	E611A/EO	0.50	µg/L	<0.50	<0.50	---	---	---	
Xylene, m+p-	179601-23-1	E611A/EO	0.50	µg/L	<0.50	<0.50	---	---	---	
Xylene, o-	95-47-6	E611A/EO	0.50	µg/L	<0.50	<0.50	---	---	---	
Xylenes, total	1330-20-7	E611A/EO	0.75	µg/L	<0.75	<0.75	---	---	---	
BTEX, total	----	E611A/EO	1.2	µg/L	<1.2	<1.2	---	---	---	
Hydrocarbons										
F1 (C6-C10)	----	E581.F1/EO	100	µg/L	<100	<100	---	---	---	
F1-BTEX	----	EC580/EO	100	µg/L	<100	<100	---	---	---	



Analytical Results

Sub-Matrix: Water					Client sample ID	TREATED WATER	RAW WATER CHAMBER TAP	----	----	----
(Matrix: Water)					Client sampling date / time	08-Aug-2024 09:20	08-Aug-2024 09:05	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	FC2402093-001	FC2402093-002	-----	-----	-----	
					Result	Result	----	----	----	
Hydrocarbons										
F2 (C10-C16)	---	E601/EO	100	µg/L	<100	<100	----	----	----	
F3 (C16-C34)	---	E601/EO	250	µg/L	<250	<250	----	----	----	
F4 (C34-C50)	---	E601/EO	250	µg/L	<250	<250	----	----	----	
Hydrocarbons, total (C6-C50)	n/a	EC581/EO	400	µg/L	<400	<400	----	----	----	
Hydrocarbons Surrogates										
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	E601/EO	1.0	%	108	105	----	----	----	
Dichlorotoluene, 3,4-	95-75-0	E581.F1/EO	1.0	%	118	102	----	----	----	
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611A/EO	1.0	%	96.5	95.3	----	----	----	
Difluorobenzene, 1,4-	540-36-3	E611A/EO	1.0	%	91.2	91.1	----	----	----	
Polycyclic Aromatic Hydrocarbons										
Acenaphthene	83-32-9	E641A/EO	0.010	µg/L	<0.010	<0.010	----	----	----	
Acenaphthylene	208-96-8	E641A/EO	0.010	µg/L	<0.010	<0.010	----	----	----	
Acridine	260-94-6	E641A/EO	0.010	µg/L	<0.010	<0.010	----	----	----	
Anthracene	120-12-7	E641A/EO	0.010	µg/L	<0.010	<0.010	----	----	----	
Benz(a)anthracene	56-55-3	E641A/EO	0.010	µg/L	<0.010	<0.010	----	----	----	
Benzo(a)pyrene	50-32-8	E641A/EO	0.0050	µg/L	<0.0050	<0.0050	----	----	----	
Benzo(b+j)fluoranthene	n/a	E641A/EO	0.010	µg/L	<0.010	<0.010	----	----	----	
Benzo(b+j+k)fluoranthene	n/a	E641A/EO	0.015	µg/L	<0.015	<0.015	----	----	----	
Benzo(g,h,i)perylene	191-24-2	E641A/EO	0.010	µg/L	<0.010	<0.010	----	----	----	
Benzo(k)fluoranthene	207-08-9	E641A/EO	0.010	µg/L	<0.010	<0.010	----	----	----	
Chrysene	218-01-9	E641A/EO	0.010	µg/L	<0.010	<0.010	----	----	----	
Dibenz(a,h)anthracene	53-70-3	E641A/EO	0.0050	µg/L	<0.0050	<0.0050	----	----	----	
Fluoranthene	206-44-0	E641A/EO	0.010	µg/L	<0.010	<0.010	----	----	----	
Fluorene	86-73-7	E641A/EO	0.010	µg/L	<0.010	<0.010	----	----	----	
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A/EO	0.010	µg/L	<0.010	<0.010	----	----	----	
Methylnaphthalene, 1-	90-12-0	E641A/EO	0.010	µg/L	<0.010	<0.010	----	----	----	
Methylnaphthalene, 1+2-	---	E641A/EO	0.015	µg/L	<0.015	<0.015	----	----	----	
Methylnaphthalene, 2-	91-57-6	E641A/EO	0.010	µg/L	<0.010	<0.010	----	----	----	
Naphthalene	91-20-3	E641A/EO	0.050	µg/L	<0.050	<0.050	----	----	----	



Analytical Results

Sub-Matrix: Water					Client sample ID	TREATED WATER	RAW WATER CHAMBER TAP	----	----	----
(Matrix: Water)					Client sampling date / time	08-Aug-2024 09:20	08-Aug-2024 09:05	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	FC2402093-001	FC2402093-002	-----	-----	-----	
					Result	Result	----	----	----	
Polycyclic Aromatic Hydrocarbons										
Phenanthrene	85-01-8	E641A/EO	0.020	µg/L	<0.020	<0.020	----	----	----	
Pyrene	129-00-0	E641A/EO	0.010	µg/L	<0.010	<0.010	----	----	----	
Quinoline	91-22-5	E641A/EO	0.050	µg/L	<0.050	<0.050	----	----	----	
B(a)P total potency equivalents [B(a)P TPE]	----	E641A/EO	0.010	µg/L	<0.010	<0.010	----	----	----	
PAHs, high molecular weight (BC AWQ)	n/a	E641A/EO	0.030	µg/L	<0.030	<0.030	----	----	----	
PAHs, low molecular weight (BC AWQ)	n/a	E641A/EO	0.060	µg/L	<0.060	<0.060	----	----	----	
PAHs, total (CCME sewer 18)	n/a	E641A/EO	0.070	µg/L	<0.070	<0.070	----	----	----	
PAHs, total (EPA 16)	n/a	E641A/EO	0.065	µg/L	<0.065	<0.065	----	----	----	
Polycyclic Aromatic Hydrocarbons Surrogates										
Chrysene-d12	1719-03-5	E641A/EO	0.1	%	99.0	117	----	----	----	
Naphthalene-d8	1146-65-2	E641A/EO	0.1	%	114	126	----	----	----	
Phenanthrene-d10	1517-22-2	E641A/EO	0.1	%	99.8	102	----	----	----	

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.