ᑲᑐᑎᓪᓗᒍ ᓄᓇᕗᑦ ᐱᕈᖅᑕᕐᓂᖅᓴᓂᑦ ᑕᑯᓐᓇᕐᑎᐊᓂᓗᑦᑕ
Building Nunavut Together
Nunavu liuqatigiingniq
Bâtir le Nunavut ensemble

April 30, 2021

Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU X0B 1L0

Attention: Richard Dwyer, Manager of Licensing

Dear Richard,

The Hamlet of Naujaat is pleased to submit the 2020 Annual Report for water use and disposal of waste as required under the 3BM- REP-1520 water license from January 1-December 31, 2020. A new license 3BM NAU 2126 was issued on January 27, 2021.

The estimated water use in 2020 was 44,396 m^3 which is below the 60,000m^3 allowable limit and a 7.3% increase from last year (41,373 m^3). Sampling of sewage effluent was tested at the ALS Laboratory in Winnipeg. The effluent sampled at the wetland discharge point REP-6 was below the allowable limits for BOD and TSS.

Thank you for your consideration. Please do not hesitate to contact me with any questions or concerns.

Regards,

Sarah Collins, P. Eng.
Municipal Planning Engineer
Government of Nunavut
Community and Government Services
Phone: 867-975-5478
Email: scollins@gov.nu.ca

ANNUAL REPORT
FOR THE HAMLET OF NAUJAAT

YEAR BEING REPORTED: 2020

The following information is compiled pursuant to the requirements of Part B, Item 1 of Water Licence No. 3BM-REP1520 issued to the Hamlet of Naujaat.

a)- d) Tabular summaries of all data generated under the "Monitoring Program"; summary of modifications to the "Monitoring Program" in accordance with Part H, Item 16; the daily, monthly and annual quantities in cubic metres of freshwater obtained from all sources; the daily, monthly and annual quantities in cubic metres of sewage Waste discharged; and the monthly and yearly quantities of every type of Waste—re: landfill, bulky metal, hazardous, wood and soil—accepted at the Solid Waste Facilities; the total volume of sludge removed from the sewage lagoon and the disposal method;

Attached are results for Monitoring station REP-1 (water supply volume) and REP-3 (sewage discharge volume), as well as detailed chemical, physical and biological analysis required at REP-2, REP-4, REP-6 and REP-7.

Month Reported	Quantity of Water Obtained from all Sources (m^3)	Quantity of Sewage Waste Discharged (Estimated, m^3)
January	3,594.124	Same
February	3,449.250	Same
March	3,815.452	Same
April	3,601.613	Same
May	3,410.474	Same
June	3,160.053	Same
July	3,477.178	Same
August	3,854.290	Same
September	3,910.027	Same
October	4,191.016	Same
November	4,075.461	Same
December	3,857.292	Same
ANNUAL TOTAL	**44,396.236**	**Same**

Note: No meter exists to measure the sewage discharge volume, therefore water consumption volume is considered as equal volume to the Sewage discharge volume. The solid waste volumes were not provided to CGS for this submission.

e) a summary of modifications and/or major maintenance work carried out on the Water Supply and Waste Disposal Facilities, including all associated structures and facilities;

- The solid waste site has reached capacity. Segregation of hazardous wastes has occurred, but due to capacity being reached, sea cans and crates are full; waste is being stored outside of these structures. The Hamlet is working on locating a secondary site for a new Solid Waste Disposal facility.

f) a list of unauthorized discharges and summary of follow-up action taken;

Spill No.	Date	Site Description	Commodity	Quantity
2020432	08/29/2020	Repulse Bay on top of the landing beach	Petroleum-waste oil (slops, sludges)	85.00 L
2020363	09/24/2020	Naujaat, road to Water Lake	Petroleum - fuel oil (jet A, diesel, turbo A, heat)	140.00 L
2020295	11/10/2020	QEC Naujaat Power Plant EC-0000018	Petroleum - other (bunker, asphalt, propane)	130.00 L

g) a summary of any abandonment and restoration work completed during the year and an outline of any work anticipated for the next year;

- CIRNAC has stated that compliance point REP-5 no longer needs to be monitored as there is never any wastewater or spillage at/around this site. It is included in the new licence as a "Monthly and when run-off is observed".

- The design for the new sewage lagoon was included in the 2021 Licence Renewal/Amendment. The 100% design documents submitted by the consultant in 2019 were determined to not meet the project requirements. An updated design will be completed in 2021 and documents will be submitted to NWB once available.

h) Any updates or revisions for manuals and plans (Including Operations and Maintenance Plans, Spill Contingency, Abandonment and Restoration, QA/QC) as required by changes in operation and/or technology;

- New Operations and Maintenance Plans, Spill Contingency, and QA/QC Plans will be submitted as per the new amended Licence. A new Operations and Maintenance plan for the new Sewage lagoon will be submitted to NWB once commissioned.

i) a summary of any studies, reports and plans requested by the Board that relate to Waste disposal, Water use or reclamation, and a brief description of any future studies planned;

- The new sewage treatment facility design will be complete in 2021.

j) Summary of any inspections completed by federal or territorial authorities, geotechnical or municipal engineers, on undertakings related to Waste disposal, Water use or reclamation activities

- The Municipal Planning Engineer attended the Licenced sites on July 8, 2020. There were no items of concern noted beyond the assessment of the Solid Waste Site, described above.
- The 3BM-REP1520 CIRNAC Inspection took place on August 18th, 2020. A copy of the inspection report has not been received at the time of this submission.

k) any other details on Water use or Waste disposal requested by the Board by November 1st of the year being reported.

- None

ADDITIONAL INFORMATION THAT THE LICENSEE DEEMS USEFUL:

- The amendment/renewal application package was submitted on September 16th, 2020 by CGS to the Nunavut Water Board for municipal water licence 3BM-REP1520. The new 3BM-NAU2126 licence was approved on January 27, 2021.
- The 3BM-NAU2126 maintains the BOD/TSS and 80/70 mg/L effluent parameter limits for the REP-6 sampling point at the end of the wetland. The sampling results are meeting these limits however after spring thaw, since there is no effluent retention or water run-off diversion, this is likely due to the fact that the most concentrated effluent is diluted and rapidly washed-out during freshet. By the time samples are taken, a significant proportion of contaminants have left the wetland treatment area and entered the Hudson Bay. The new lagoon will be designed to hold 10-12 months of wastewater and with engineered water run-off diversion. The effluent will no longer be able to rely on dilution and quick passage through the wetland to meet its treatment objectives. As such, the Licensee intends to request that the effluent parameter limits be changed to BOD/TSS and 100/120 mg/L in the upcoming licence amendment. This is in line with the most comprehensive Nunavut wastewater research. CGS has met with members from ECCC on this matter and they have indicated through correspondence that they do not disagree with this rationale.

FOLLOW-UP REGARDING INSPECTION/COMPLIANCE CONCERNS:

- The 3BM-REP1520 CIRNAC Inspection took place on August 18th, 2020. A copy of the inspection report has not been received at the time of this submission.

LIST OF APPENDICES

Appendix A: REP-6 Effluent Quality Limits – 1 page
Appendix B: Laboratory Certificate of Analysis

- **Certificate of Analysis July 9, 2020 – 15 pages**
- **Certificate of Analysis August 20, 2020 – 13 pages**

Appendix C: Hazardous Materials Spill Database, Naujaat 2020 – 1 page
Appendix D: Naujaat 2020 Sampling Summary – 4 pages
Appendix E: CIRNAC Inspection Report – 1 pages

Appendix A: REP-6 Effluent Quality Limits

3BM-REP1520 Naujaat Monitoring Program Results 2020 for Effluent Quality

Parameter	Limit	REP-6	
		09-Jul-20	20-Aug-20
BOD_5	80 mg/L	30.4	16.2
Total Suspended Solids	70 mg/L	45.6	65.3
Fecal Coliforms	$1x10^6$ CFU/100mL	20	10
Oil + Grease	no visible sheen	5.0	31.9
pH	between 6 and 9	8.83	9.25

Appendix B: Laboratory Certificate of Analysis

Hamlet of Naujaat (Repulse Bay)
ATTN: KEVIN TEGUMIAR
PO Box 10
Naujaat NU X0C 0H0

Date Received: 13-JUL-20
Report Date: 21-JUL-20 10:42 (MT)
Version: FINAL

Client Phone: 867-462-9952

Certificate of Analysis

Lab Work Order #: L2473194

Project P.O. #: NOT SUBMITTED
Job Reference: HAMLET OF NAUJAAT (REPULSE BAY) WASTE WATER
C of C Numbers:
Legal Site Desc:

Comments: NOTE: No samples bottles were received for frac -3 REP-5 from Naujaat.

Hua Wo
Chemistry Laboratory Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2473194-1 REP - 2							
Sampled By: CLIENT on 09-JUL-20							
Matrix: WW							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		14-JUL-20	R5152396
Toluene	<0.0010		0.0010	mg/L		14-JUL-20	R5152396
Ethyl benzene	<0.00050		0.00050	mg/L		14-JUL-20	R5152396
o-Xylene	<0.00050		0.00050	mg/L		14-JUL-20	R5152396
m+p-Xylenes	<0.00040		0.00040	mg/L		14-JUL-20	R5152396
F1 (C6-C10)	<0.10		0.10	mg/L		14-JUL-20	R5152396
Surrogate: 4-Bromofluorobenzene (SS)	83.2		70-130	%		14-JUL-20	R5152396
CCME PHC F2-F4 in Water							
F2 (C10-C16)	<0.10		0.10	mg/L	14-JUL-20	14-JUL-20	R5153558
F3 (C16-C34)	<0.25		0.25	mg/L	14-JUL-20	14-JUL-20	R5153558
F4 (C34-C50)	<0.25		0.25	mg/L	14-JUL-20	14-JUL-20	R5153558
Surrogate: 2-Bromobenzotrifluoride	101.7		60-140	%	14-JUL-20	14-JUL-20	R5153558
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		16-JUL-20	
F2-Naphth	<0.10		0.10	mg/L		16-JUL-20	
F3-PAH	<0.25		0.25	mg/L		16-JUL-20	
Total Hydrocarbons (C6-C50)	<0.38		0.38	mg/L		16-JUL-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		15-JUL-20	
Total and E. coli, 1:10 dilution by QT97							
Total Coliforms	200	PEHR	10	MPN/100mL		13-JUL-20	R5152312
Escherichia Coli	10	PEHR	10	MPN/100mL		13-JUL-20	R5152312
CCME PAHs in mg/L							
1-Methyl Naphthalene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
2-Methyl Naphthalene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Acenaphthene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Acenaphthylene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Anthracene	<0.000010		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Acridine	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Benzo(a)anthracene	<0.000010		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Benzo(a)pyrene	<0.0000050		0.0000050	mg/L	14-JUL-20	15-JUL-20	R5153564
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Chrysene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	14-JUL-20	15-JUL-20	R5153564
Fluoranthene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Fluorene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Naphthalene	<0.000050		0.000050	mg/L	14-JUL-20	15-JUL-20	R5153564
Phenanthrene	<0.000050		0.000050	mg/L	14-JUL-20	15-JUL-20	R5153564
Pyrene	<0.000010		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Quinoline	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	14-JUL-20	15-JUL-20	R5153564
Surrogate: d8-Naphthalene	91.1		50-150	%	14-JUL-20	15-JUL-20	R5153564
Surrogate: d10-Phenanthrene	97.9		50-150	%	14-JUL-20	15-JUL-20	R5153564
Surrogate: d12-Chrysene	93.5		50-150	%	14-JUL-20	15-JUL-20	R5153564
Surrogate: d10-Acenaphthene	94.9		50-150	%	14-JUL-20	15-JUL-20	R5153564
Surrogate: d9-Acridine (SS)	99.9		50-150	%	14-JUL-20	15-JUL-20	R5153564
Nunavut WW Group 1							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2473194-1 REP - 2							
Sampled By: CLIENT on 09-JUL-20							
Matrix: WW							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	86.4		1.2	mg/L		14-JUL-20	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		14-JUL-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		14-JUL-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	70.8		1.0	mg/L		14-JUL-20	R5153003
Ammonia by colour							
Ammonia, Total (as N)	0.470		0.010	mg/L		15-JUL-20	R5154364
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	<2.0	BODQ	2.0	mg/L		13-JUL-20	R5158029
Carbonaceous BOD							
BOD Carbonaceous	<2.0		2.0	mg/L		13-JUL-20	R5158029
Chloride in Water by IC							
Chloride (Cl)	3.68		0.50	mg/L		13-JUL-20	R5153998
Conductivity							
Conductivity	144		1.0	umhos/cm		14-JUL-20	R5153003
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	10	PEHR	10	MPN/100mL		13-JUL-20	R5152300
Hardness Calculated							
Hardness (as CaCO3)	60.4	HTC	0.20	mg/L		17-JUL-20	
Mercury Total							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	16-JUL-20	16-JUL-20	R5156978
Nitrate in Water by IC							
Nitrate (as N)	0.032		0.020	mg/L		13-JUL-20	R5153998
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		17-JUL-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		13-JUL-20	R5153998
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		16-JUL-20	R5154766
Phenol (4AAP)							
Phenols (4AAP)	0.0012		0.0010	mg/L		15-JUL-20	R5154547
Phosphorus, Total							
Phosphorus (P)-Total	0.0408		0.0030	mg/L		16-JUL-20	R5154645
Sulfate in Water by IC							
Sulfate (SO4)	1.59		0.30	mg/L		13-JUL-20	R5153998
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0316		0.0030	mg/L	15-JUL-20	15-JUL-20	R5154985
Arsenic (As)-Total	0.00041		0.00010	mg/L	15-JUL-20	15-JUL-20	R5154985
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L	15-JUL-20	15-JUL-20	R5154985
Calcium (Ca)-Total	19.8		0.050	mg/L	15-JUL-20	15-JUL-20	R5154985
Chromium (Cr)-Total	0.00033		0.00010	mg/L	15-JUL-20	15-JUL-20	R5154985
Cobalt (Co)-Total	0.00014		0.00010	mg/L	15-JUL-20	15-JUL-20	R5154985
Copper (Cu)-Total	0.00107		0.00050	mg/L	15-JUL-20	15-JUL-20	R5154985
Iron (Fe)-Total	0.532		0.010	mg/L	15-JUL-20	15-JUL-20	R5154985
Lead (Pb)-Total	0.000182		0.000050	mg/L	15-JUL-20	15-JUL-20	R5154985
Magnesium (Mg)-Total	2.67		0.0050	mg/L	15-JUL-20	15-JUL-20	R5154985
Manganese (Mn)-Total	0.204		0.00010	mg/L	15-JUL-20	15-JUL-20	R5154985
Nickel (Ni)-Total	0.00082		0.00050	mg/L	15-JUL-20	15-JUL-20	R5154985
Potassium (K)-Total	1.84		0.050	mg/L	15-JUL-20	15-JUL-20	R5154985
Sodium (Na)-Total	5.52		0.050	mg/L	15-JUL-20	15-JUL-20	R5154985

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2473194-1 REP - 2							
Sampled By: CLIENT on 09-JUL-20							
Matrix: WW							
Total Metals in Water by CRC ICPMS							
Zinc (Zn)-Total	0.0035		0.0030	mg/L	15-JUL-20	15-JUL-20	R5154985
Total Organic Carbon by Combustion							
Total Organic Carbon	4.51		0.50	mg/L		17-JUL-20	R5158394
Total Suspended Solids							
Total Suspended Solids	<3.0		3.0	mg/L		16-JUL-20	R5159328
pH							
pH	7.80		0.10	pH units		14-JUL-20	R5153003
L2473194-2 REP - 2A							
Sampled By: CLIENT on 09-JUL-20							
Matrix: WW							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		14-JUL-20	R5152396
Toluene	<0.0010		0.0010	mg/L		14-JUL-20	R5152396
Ethyl benzene	<0.00050		0.00050	mg/L		14-JUL-20	R5152396
o-Xylene	<0.00050		0.00050	mg/L		14-JUL-20	R5152396
m+p-Xylenes	<0.00040		0.00040	mg/L		14-JUL-20	R5152396
F1 (C6-C10)	<0.10		0.10	mg/L		14-JUL-20	R5152396
Surrogate: 4-Bromofluorobenzene (SS)	83.7		70-130	%		14-JUL-20	R5152396
CCME PHC F2-F4 in Water							
F2 (C10-C16)	<0.10		0.10	mg/L	14-JUL-20	14-JUL-20	R5153558
F3 (C16-C34)	<0.25		0.25	mg/L	14-JUL-20	14-JUL-20	R5153558
F4 (C34-C50)	<0.25		0.25	mg/L	14-JUL-20	14-JUL-20	R5153558
Surrogate: 2-Bromobenzotrifluoride	102.9		60-140	%	14-JUL-20	14-JUL-20	R5153558
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		16-JUL-20	
F2-Naphth	<0.10		0.10	mg/L		16-JUL-20	
F3-PAH	<0.25		0.25	mg/L		16-JUL-20	
Total Hydrocarbons (C6-C50)	<0.38		0.38	mg/L		16-JUL-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		15-JUL-20	
Total and E. coli, 1:10 dilution by QT97							
Total Coliforms	280	PEHR	10	MPN/100mL		13-JUL-20	R5152312
Escherichia Coli	<10	PEHR	10	MPN/100mL		13-JUL-20	R5152312
CCME PAHs in mg/L							
1-Methyl Naphthalene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
2-Methyl Naphthalene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Acenaphthene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Acenaphthylene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Anthracene	<0.000010		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Acridine	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Benzo(a)anthracene	<0.000010		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Benzo(a)pyrene	<0.0000050		0.0000050	mg/L	14-JUL-20	15-JUL-20	R5153564
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Chrysene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	14-JUL-20	15-JUL-20	R5153564
Fluoranthene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Fluorene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2473194-2 REP - 2A							
Sampled By: CLIENT on 09-JUL-20							
Matrix: WW							
CCME PAHs in mg/L							
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Naphthalene	<0.000050		0.000050	mg/L	14-JUL-20	15-JUL-20	R5153564
Phenanthrene	<0.000050		0.000050	mg/L	14-JUL-20	15-JUL-20	R5153564
Pyrene	<0.000010		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Quinoline	0.000023		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	14-JUL-20	15-JUL-20	R5153564
Surrogate: d8-Naphthalene	98.0		50-150	%	14-JUL-20	15-JUL-20	R5153564
Surrogate: d10-Phenanthrene	102.8		50-150	%	14-JUL-20	15-JUL-20	R5153564
Surrogate: d12-Chrysene	93.1		50-150	%	14-JUL-20	15-JUL-20	R5153564
Surrogate: d10-Acenaphthene	99.7		50-150	%	14-JUL-20	15-JUL-20	R5153564
Surrogate: d9-Acridine (SS)	103.3		50-150	%	14-JUL-20	15-JUL-20	R5153564
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	154		1.2	mg/L		14-JUL-20	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		14-JUL-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		14-JUL-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	127		1.0	mg/L		14-JUL-20	R5153003
Ammonia by colour							
Ammonia, Total (as N)	0.180		0.010	mg/L		15-JUL-20	R5154364
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	<2.0	BODQ	2.0	mg/L		13-JUL-20	R5158029
Carbonaceous BOD							
BOD Carbonaceous	<2.0		2.0	mg/L		13-JUL-20	R5158029
Chloride in Water by IC							
Chloride (Cl)	7.05		0.50	mg/L		13-JUL-20	R5153998
Conductivity							
Conductivity	257		1.0	umhos/cm		14-JUL-20	R5153003
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	20	PEHR	10	MPN/100mL		13-JUL-20	R5152300
Hardness Calculated							
Hardness (as CaCO3)	106	HTC	0.20	mg/L		17-JUL-20	
Mercury Total							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	16-JUL-20	16-JUL-20	R5156978
Nitrate in Water by IC							
Nitrate (as N)	0.082		0.020	mg/L		13-JUL-20	R5153998
Nitrate+Nitrite							
Nitrate and Nitrite as N	0.082		0.070	mg/L		17-JUL-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		13-JUL-20	R5153998
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		16-JUL-20	R5154766
Phenol (4AAP)							
Phenols (4AAP)	<0.0010		0.0010	mg/L		15-JUL-20	R5154547
Phosphorus, Total							
Phosphorus (P)-Total	0.0324		0.0030	mg/L		16-JUL-20	R5154645
Sulfate in Water by IC							
Sulfate (SO4)	8.05		0.30	mg/L		13-JUL-20	R5153998
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0083		0.0030	mg/L	15-JUL-20	15-JUL-20	R5154985

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2473194-2 REP - 2A							
Sampled By: CLIENT on 09-JUL-20							
Matrix: WW							
Total Metals in Water by CRC ICPMS							
Arsenic (As)-Total	0.00038		0.00010	mg/L	15-JUL-20	15-JUL-20	R5154985
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L	15-JUL-20	15-JUL-20	R5154985
Calcium (Ca)-Total	35.5		0.050	mg/L	15-JUL-20	15-JUL-20	R5154985
Chromium (Cr)-Total	0.00033		0.00010	mg/L	15-JUL-20	15-JUL-20	R5154985
Cobalt (Co)-Total	0.00014		0.00010	mg/L	15-JUL-20	15-JUL-20	R5154985
Copper (Cu)-Total	0.00167		0.00050	mg/L	15-JUL-20	15-JUL-20	R5154985
Iron (Fe)-Total	0.176		0.010	mg/L	15-JUL-20	15-JUL-20	R5154985
Lead (Pb)-Total	0.000133		0.000050	mg/L	15-JUL-20	15-JUL-20	R5154985
Magnesium (Mg)-Total	4.23		0.0050	mg/L	15-JUL-20	15-JUL-20	R5154985
Manganese (Mn)-Total	0.0440		0.00010	mg/L	15-JUL-20	15-JUL-20	R5154985
Nickel (Ni)-Total	0.00106		0.00050	mg/L	15-JUL-20	15-JUL-20	R5154985
Potassium (K)-Total	2.63		0.050	mg/L	15-JUL-20	15-JUL-20	R5154985
Sodium (Na)-Total	11.2		0.050	mg/L	15-JUL-20	15-JUL-20	R5154985
Zinc (Zn)-Total	0.0055		0.0030	mg/L	15-JUL-20	15-JUL-20	R5154985
Total Organic Carbon by Combustion							
Total Organic Carbon	6.99		0.50	mg/L		17-JUL-20	R5158394
Total Suspended Solids							
Total Suspended Solids	<3.0		3.0	mg/L		16-JUL-20	R5159328
pH							
pH	8.10		0.10	pH units		14-JUL-20	R5153003
L2473194-4 REP - 6							
Sampled By: CLIENT on 09-JUL-20							
Matrix: WW							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		14-JUL-20	R5152396
Toluene	<0.0010		0.0010	mg/L		14-JUL-20	R5152396
Ethyl benzene	<0.00050		0.00050	mg/L		14-JUL-20	R5152396
o-Xylene	<0.00050		0.00050	mg/L		14-JUL-20	R5152396
m+p-Xylenes	<0.00040		0.00040	mg/L		14-JUL-20	R5152396
F1 (C6-C10)	<0.10		0.10	mg/L		14-JUL-20	R5152396
Surrogate: 4-Bromofluorobenzene (SS)	82.9		70-130	%		14-JUL-20	R5152396
CCME PHC F2-F4 in Water							
F2 (C10-C16)	<0.10		0.10	mg/L	14-JUL-20	14-JUL-20	R5153558
F3 (C16-C34)	0.63		0.25	mg/L	14-JUL-20	14-JUL-20	R5153558
F4 (C34-C50)	<0.25		0.25	mg/L	14-JUL-20	14-JUL-20	R5153558
Surrogate: 2-Bromobenzotrifluoride	115.7		60-140	%	14-JUL-20	14-JUL-20	R5153558
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		16-JUL-20	
F2-Naphth	<0.10		0.10	mg/L		16-JUL-20	
F3-PAH	0.63		0.25	mg/L		16-JUL-20	
Total Hydrocarbons (C6-C50)	0.63		0.38	mg/L		16-JUL-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		15-JUL-20	
Total and E. coli, 1:10 dilution by QT97							
Total Coliforms	2600	PEHR	10	MPN/100mL		13-JUL-20	R5152312
Escherichia Coli	20	PEHR	10	MPN/100mL		13-JUL-20	R5152312
CCME PAHs in mg/L							
1-Methyl Naphthalene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
2-Methyl Naphthalene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2473194-4 REP - 6							
Sampled By: CLIENT on 09-JUL-20							
Matrix: WW							
CCME PAHs in mg/L							
Acenaphthene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Acenaphthylene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Anthracene	<0.000010		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Acridine	0.000027		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Benzo(a)anthracene	<0.000010		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Benzo(a)pyrene	<0.0000050		0.0000050	mg/L	14-JUL-20	15-JUL-20	R5153564
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Chrysene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	14-JUL-20	15-JUL-20	R5153564
Fluoranthene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Fluorene	<0.000020		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Naphthalene	<0.000050		0.000050	mg/L	14-JUL-20	15-JUL-20	R5153564
Phenanthrene	<0.000050		0.000050	mg/L	14-JUL-20	15-JUL-20	R5153564
Pyrene	<0.000010		0.000010	mg/L	14-JUL-20	15-JUL-20	R5153564
Quinoline	0.000025		0.000020	mg/L	14-JUL-20	15-JUL-20	R5153564
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	14-JUL-20	15-JUL-20	R5153564
Surrogate: d8-Naphthalene	93.5		50-150	%	14-JUL-20	15-JUL-20	R5153564
Surrogate: d10-Phenanthrene	102.9		50-150	%	14-JUL-20	15-JUL-20	R5153564
Surrogate: d12-Chrysene	97.5		50-150	%	14-JUL-20	15-JUL-20	R5153564
Surrogate: d10-Acenaphthene	100.3		50-150	%	14-JUL-20	15-JUL-20	R5153564
Surrogate: d9-Acridine (SS)	101.3		50-150	%	14-JUL-20	15-JUL-20	R5153564
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	148		1.2	mg/L		14-JUL-20	
Alkalinity, Carbonate							
Carbonate (CO3)	17.4		0.60	mg/L		14-JUL-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		14-JUL-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	151		1.0	mg/L		14-JUL-20	R5153003
Ammonia by colour							
Ammonia, Total (as N)	13.5		1.0	mg/L		16-JUL-20	R5154364
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	30.4	BODQ	6.0	mg/L		13-JUL-20	R5158029
Carbonaceous BOD							
BOD Carbonaceous	15.1		2.0	mg/L		13-JUL-20	R5158029
Chloride in Water by IC							
Chloride (Cl)	23.8		0.50	mg/L		13-JUL-20	R5153998
Conductivity							
Conductivity	346		1.0	umhos/cm		14-JUL-20	R5153003
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	20	PEHR	10	MPN/100mL		13-JUL-20	R5152300
Hardness Calculated							
Hardness (as CaCO3)	88.5	HTC	0.20	mg/L		17-JUL-20	
Mercury Total							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	16-JUL-20	16-JUL-20	R5156978
Nitrate in Water by IC							
Nitrate (as N)	0.371		0.020	mg/L		13-JUL-20	R5153998
Nitrate+Nitrite							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2473194-4 REP - 6							
Sampled By: CLIENT on 09-JUL-20							
Matrix: WW							
Nitrate+Nitrite							
Nitrate and Nitrite as N	0.419		0.070	mg/L		17-JUL-20	
Nitrite in Water by IC							
Nitrite (as N)	0.048		0.010	mg/L		13-JUL-20	R5153998
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		16-JUL-20	R5154766
Phenol (4AAP)							
Phenols (4AAP)	0.0013		0.0010	mg/L		15-JUL-20	R5154547
Phosphorus, Total							
Phosphorus (P)-Total	2.98		0.030	mg/L		16-JUL-20	R5154645
Sulfate in Water by IC							
Sulfate (SO4)	4.62		0.30	mg/L		13-JUL-20	R5153998
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0300		0.0030	mg/L	15-JUL-20	15-JUL-20	R5154985
Arsenic (As)-Total	0.00044		0.00010	mg/L	15-JUL-20	15-JUL-20	R5154985
Cadmium (Cd)-Total	0.0000159		0.0000050	mg/L	15-JUL-20	15-JUL-20	R5154985
Calcium (Ca)-Total	26.0		0.050	mg/L	15-JUL-20	15-JUL-20	R5154985
Chromium (Cr)-Total	0.00051		0.00010	mg/L	15-JUL-20	15-JUL-20	R5154985
Cobalt (Co)-Total	0.00024		0.00010	mg/L	15-JUL-20	15-JUL-20	R5154985
Copper (Cu)-Total	0.0106		0.00050	mg/L	15-JUL-20	15-JUL-20	R5154985
Iron (Fe)-Total	0.865		0.010	mg/L	15-JUL-20	15-JUL-20	R5154985
Lead (Pb)-Total	0.000281		0.000050	mg/L	15-JUL-20	15-JUL-20	R5154985
Magnesium (Mg)-Total	5.76		0.0050	mg/L	15-JUL-20	15-JUL-20	R5154985
Manganese (Mn)-Total	0.0436		0.00010	mg/L	15-JUL-20	15-JUL-20	R5154985
Nickel (Ni)-Total	0.00170		0.00050	mg/L	15-JUL-20	15-JUL-20	R5154985
Potassium (K)-Total	8.21		0.050	mg/L	15-JUL-20	15-JUL-20	R5154985
Sodium (Na)-Total	20.5		0.050	mg/L	15-JUL-20	15-JUL-20	R5154985
Zinc (Zn)-Total	0.0128		0.0030	mg/L	15-JUL-20	15-JUL-20	R5154985
Total Organic Carbon by Combustion							
Total Organic Carbon	23.6		0.50	mg/L		17-JUL-20	R5158394
Total Suspended Solids							
Total Suspended Solids	45.6		3.0	mg/L		16-JUL-20	R5159328
pH							
pH	8.83		0.10	pH units		14-JUL-20	R5153003

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Qualifiers for Individual Samples Listed:

Lab Sample ID	Client Sample ID	Qualifier	Description
L2473194-1	REP - 2	PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.
L2473194-2	REP - 2A	PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.
L2473194-3	REP - 5 (SAMP NOT RECEIV	PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.
L2473194-4	REP - 6	PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.

Sample Parameter Qualifier Key:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
BODQ	BOD Qualification: Lab Control Sample outside standard 85-115% objective (see QC report). Sample(s) cannot be rerun due to hold time expiry.
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.
RRQC	Refer to report remarks for information regarding this QC result.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-CO3CO3-CALC-WP	Water	Alkalinity, Carbonate	CALCULATION
The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L.			
ALK-HCO3HCO3-CALC-WP	Water	Alkalinity, Bicarbonate	CALCULATION
The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L			
ALK-OHOH-CALC-WP	Water	Alkalinity, Hydroxide	CALCULATION
The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L.			
ALK-TITR-WP	Water	Alkalinity, Total (as CaCO3)	APHA 2320B
The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.			
BOD-CBOD-WP	Water	Carbonaceous BOD	APHA 5210 B
Samples are diluted and seeded, have TCMP added to inhibit nitrogenous demands, and then are incubated in airtight bottles at 20 C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO.			
BOD-WP	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B
Samples are diluted and seeded and then incubated in airtight bottles at 20 C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO.			
BTEXS+F1-HSMS-WP	Water	BTX plus F1 by GCMS	EPA 8260C / EPA 5021A
The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.			
C-TOC-HTC-WP	Water	Total Organic Carbon by Combustion	APHA 5310 B-WP
Sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.			
CL-IC-N-WP	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-WP	Water	Conductivity	APHA 2510B

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

Conductivity of an aqueous solution refers to its ability to carry an electric current. Conductance of a solution is measured between two spatially fixed and chemically inert electrodes.

F1-F4-CALC-WP	Water	CCME Total Hydrocarbons	CCME CWS-PHC, Pub #1310, Dec 2001-L

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F2-F4-FID-WP	Water	CCME PHC F2-F4 in Water	EPA 3511

Petroleum hydrocarbons in water are determined by liquid-liquid micro-scale solvent extraction using a reciprocal shaker extraction apparatus prior to capillary column gas chromatography with flame ionization detection (GC-FID) analysis.

FC10-QT97-WP	Water	Fecal coliforms, 1:10 dilution by QT97	APHA 9223B QT97

Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Substrate Coliform Test". Fecal (thermotolerant) coliform bacteria are determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 44.5 +/- 0.2 degrees C for 18 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.

HARDNESS-CALC-WP	Water	Hardness Calculated	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-T-CVAA-WP	Water	Mercury Total	EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

MET-T-CCMS-WP	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020B (mod.)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-COL-WP	Water	Ammonia by colour	APHA 4500 NH3 F

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

NO2+NO3-CALC-WP	Water	Nitrate+Nitrite	CALCULATION
NO2-IC-N-WP	Water	Nitrite in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-IC-N-WP	Water	Nitrate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OG-GRAV-WP	Water	Oil & Grease - Gravimetric	EPA 1664 (modified)

Water samples are acidified and extracted with hexane; the hexane extract is collected in a pre-weighed vial. The solvent is evaporated and Total Oil & Grease is determined from the weight of the residue in the vial.

P-T-COL-WP	Water	Phosphorus, Total	APHA 4500 P PHOSPHORUS-L

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
This analysis is carried out using procedures adapted from APHA METHOD 4500-P "Phosphorus". Total Phosphorus is determined colourmetrically after persulphate digestion of the sample.			
PAH-CCME-PPM-WT	Water	CCME PAHs in mg/L	EPA 3511/8270D (mod)
PAHs are extracted from water using a hexane micro-extraction technique, with analysis by GC/MS. Because the two isomers cannot be readily separated chromatographically, benzo(j)fluoranthene is reported as part of the benzo(b)fluoranthene parameter.			
PH-WP	Water	pH	APHA 4500H
The pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode.			
PHENOLS-4AAP-WT	Water	Phenol (4AAP)	EPA 9066
An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.			
SO4-IC-N-WP	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TOTSUS-WP	Water	Total Suspended Solids	APHA 2540 D (modified)
Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 105 C.			
TC,EC10-QT97-WP	Water	Total and E. coli, 1:10 dilution by QT97	APHA 9223B QT97
Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Susbtrate Coliform Test". Total coliforms and Eschericia coli bacteria are simultaneously determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 35.0 +/- 0.5 degrees C for 18 or 24 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.			
XYLENES-SUM-CALC-WP	Water	Sum of Xylene Isomer Concentrations	CALCULATED RESULT
Total xylenes represents the sum of o-xylene and m&p-xylene.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

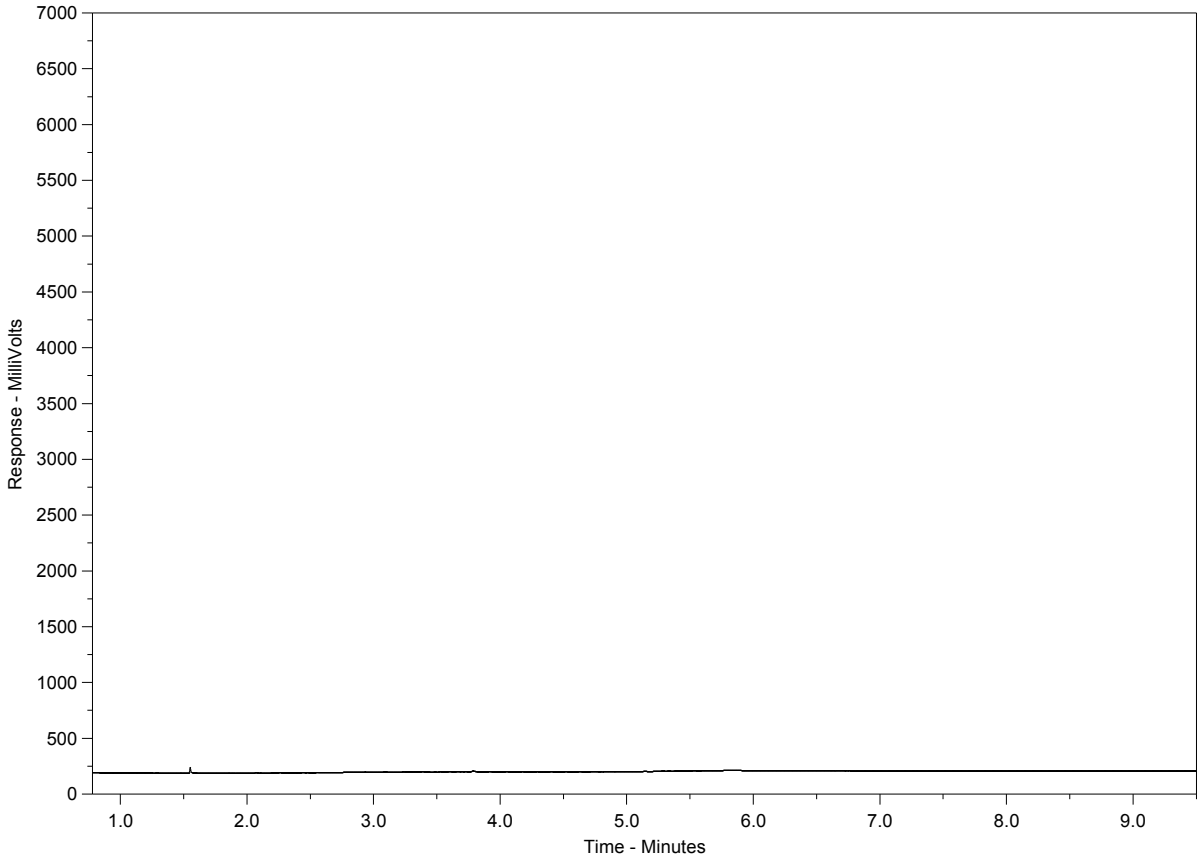
GLOSSARY OF REPORT TERMS

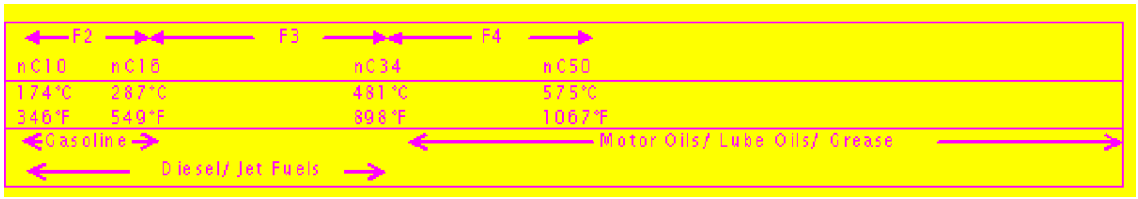
Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2473194-1
Client Sample ID: REP - 2





The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

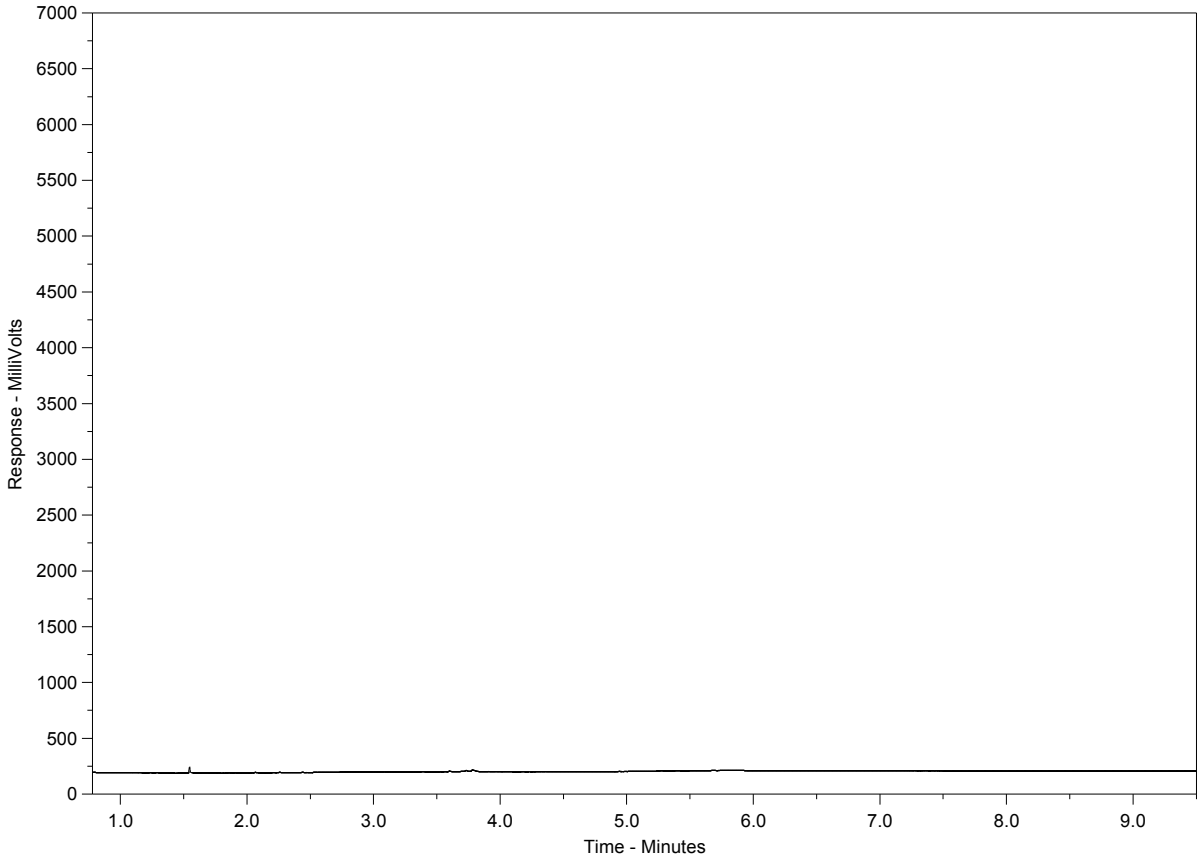
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

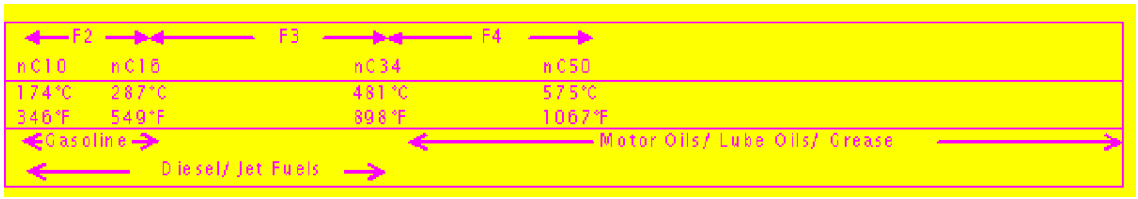
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2473194-2
Client Sample ID: REP - 2A





The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

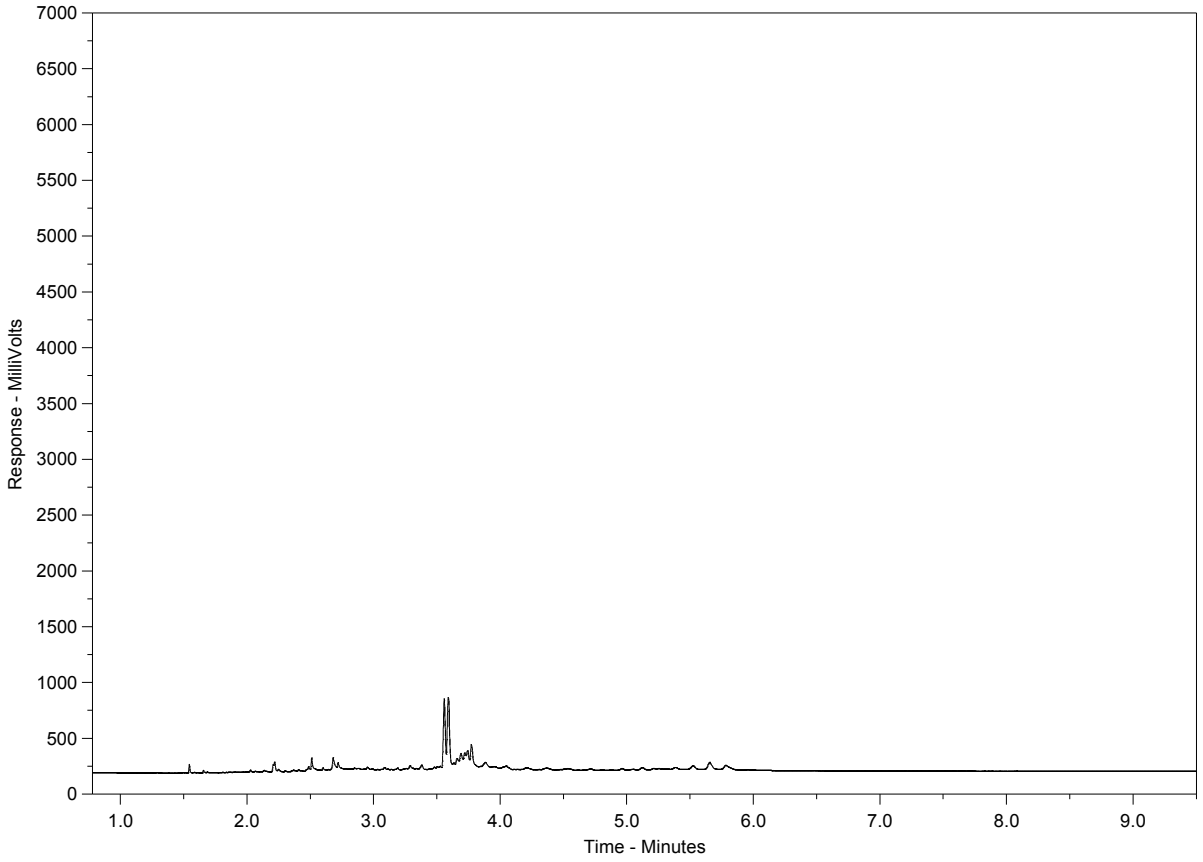
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

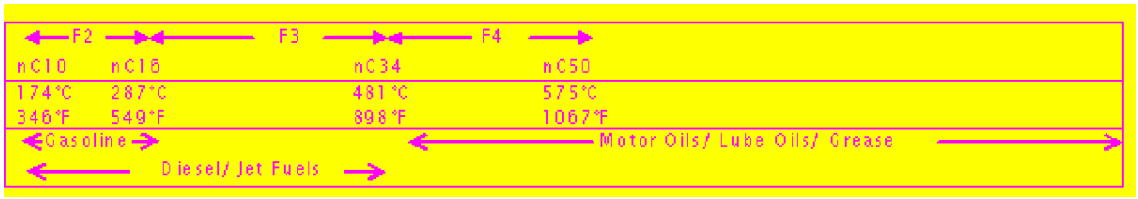
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2473194-4
Client Sample ID: REP - 6





The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

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

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

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2473194-COFC

COC Number: 17 - 781471

Page 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:	Hamlet of Naujaat	Select Report Format: ☑ PDF ☑ EXCEL | EDD (DIGITAL)	Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Kevin Tegumiar	Quality Control (QC) Report with Report ☐ YES ☐ NO	PRIORITY (Business Days): 4 day [P4-20%] ☐ / 3 day [P3-25%] ☐ / 2 day [P2-50%] ☐
Phone:	867-462 9952	☐ Compare Results to Criteria on Report - provide details below if box checked	EMERGENCY: 1 Business day [E - 100%] ☐ / Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐
	Company address below will appear on the final report	Select Distribution: ☑ EMAIL | MAIL ☐ FAX	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm
Street:		Email 1 or Fax: scollins@gov.nu.ca	For tests that can not be performed according to the service level selected, you will be contacted.
City/Province:	Naujaat, NU	Email 2: saonaujaat@qiniq.ca	
Postal Code:	X0C 0H0	Email 3: cfaulkner@gov.nu.ca	
Invoice To	Same as Report To ☑ YES ☐ NO	**Invoice Distribution**	
	Copy of Invoice with Report ☑ YES ☐ NO	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	
Company:	Hamlet of Naujaat	Email 1 or Fax: saonaujaat@qiniq.ca	
Contact:	Kevin Tegumiar	Email 2	

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	BOD	Routine	CBOD	Total Metals	Mercury	Total Nutrients	Phenols	Oil+Grease	Oil & Grease	BTEX-F1 (3)	F2-F4 (2)	PAH (2)	Bacteria *see note	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	REP-2	09-07-20		WW	16	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	REP-2a	09-07-20		WW	16	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	REP-5	09-07-20		WW	16	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	REP-6	09-07-20		WW	16	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		

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? ☐ YES ☐ NO	* Subsample Bacteria from 500mL Routine.
Are samples for human consumption/ use? | | YES | | NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐	SIF Observations	Yes ☐	No ☐		
Ice Packs ☐ Ice Cubes ☐	Custody seal intact	Yes ☐	No ☐		
Cooling Initiated ☐					
INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
13.4					

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Sarah	Date: July 9	Time: 1235	Received by: GE	Date: July 13, 2020	Time: 12:30 PM	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

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

Hamlet of Naujaat (Repulse Bay)
ATTN: KEVIN TEGUMIAR
PO Box 10
Naujaat NU X0C 0H0

Date Received: 24-AUG-20
Report Date: 02-SEP-20 14:15 (MT)
Version: FINAL

Client Phone: 867-462-9952

Certificate of Analysis

Lab Work Order #: L2492918

Project P.O. #: NOT SUBMITTED
Job Reference: HAMLET OF NAUJAAT - WASTE WATERS
C of C Numbers:
Legal Site Desc:

Hua Wo
Chemistry Laboratory Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2492918-1 REP-2A							
Sampled By: CLIENT on 20-AUG-20 @ 10:18							
Matrix: Waste Water							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		26-AUG-20	R5202503
Toluene	0.0013		0.0010	mg/L		26-AUG-20	R5202503
Ethyl benzene	<0.00050		0.00050	mg/L		26-AUG-20	R5202503
o-Xylene	<0.00050		0.00050	mg/L		26-AUG-20	R5202503
m+p-Xylenes	<0.00040		0.00040	mg/L		26-AUG-20	R5202503
F1 (C6-C10)	<0.10		0.10	mg/L		26-AUG-20	R5202503
Surrogate: 4-Bromofluorobenzene (SS)	88.8		70-130	%		26-AUG-20	R5202503
CCME PHC F2-F4 in Water							
F2 (C10-C16)	<0.10		0.10	mg/L	25-AUG-20	25-AUG-20	R5200578
F3 (C16-C34)	<0.25		0.25	mg/L	25-AUG-20	25-AUG-20	R5200578
F4 (C34-C50)	<0.25		0.25	mg/L	25-AUG-20	25-AUG-20	R5200578
Surrogate: 2-Bromobenzotrifluoride	101.0		60-140	%	25-AUG-20	25-AUG-20	R5200578
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		28-AUG-20	
F2-Naphth	<0.10		0.10	mg/L		28-AUG-20	
F3-PAH	<0.25		0.25	mg/L		28-AUG-20	
Total Hydrocarbons (C6-C50)	<0.38		0.38	mg/L		28-AUG-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		28-AUG-20	
CCME PAHs in mg/L							
1-Methyl Naphthalene	<0.000020		0.000020	mg/L	26-AUG-20	26-AUG-20	R5202769
2-Methyl Naphthalene	<0.000020		0.000020	mg/L	26-AUG-20	26-AUG-20	R5202769
Acenaphthene	<0.000020		0.000020	mg/L	26-AUG-20	26-AUG-20	R5202769
Acenaphthylene	<0.000020		0.000020	mg/L	26-AUG-20	26-AUG-20	R5202769
Anthracene	<0.000010		0.000010	mg/L	26-AUG-20	26-AUG-20	R5202769
Acridine	<0.000020		0.000020	mg/L	26-AUG-20	26-AUG-20	R5202769
Benzo(a)anthracene	<0.000010		0.000010	mg/L	26-AUG-20	26-AUG-20	R5202769
Benzo(a)pyrene	<0.0000050		0.0000050	mg/L	26-AUG-20	26-AUG-20	R5202769
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	26-AUG-20	26-AUG-20	R5202769
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	26-AUG-20	26-AUG-20	R5202769
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	26-AUG-20	26-AUG-20	R5202769
Chrysene	<0.000020		0.000020	mg/L	26-AUG-20	26-AUG-20	R5202769
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	26-AUG-20	26-AUG-20	R5202769
Fluoranthene	<0.000020		0.000020	mg/L	26-AUG-20	26-AUG-20	R5202769
Fluorene	<0.000020		0.000020	mg/L	26-AUG-20	26-AUG-20	R5202769
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	26-AUG-20	26-AUG-20	R5202769
Naphthalene	<0.000050		0.000050	mg/L	26-AUG-20	26-AUG-20	R5202769
Phenanthrene	<0.000050		0.000050	mg/L	26-AUG-20	26-AUG-20	R5202769
Pyrene	<0.000010		0.000010	mg/L	26-AUG-20	26-AUG-20	R5202769
Quinoline	0.000073		0.000020	mg/L	26-AUG-20	26-AUG-20	R5202769
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	26-AUG-20	26-AUG-20	R5202769
Surrogate: d8-Naphthalene	105.6		50-150	%	26-AUG-20	26-AUG-20	R5202769
Surrogate: d10-Phenanthrene	107.0		50-150	%	26-AUG-20	26-AUG-20	R5202769
Surrogate: d12-Chrysene	101.7		50-150	%	26-AUG-20	26-AUG-20	R5202769
Surrogate: d10-Acenaphthene	107.4		50-150	%	26-AUG-20	26-AUG-20	R5202769
Surrogate: d9-Acridine (SS)	94.4		50-150	%	26-AUG-20	26-AUG-20	R5202769
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	269		1.2	mg/L		26-AUG-20	
Alkalinity, Carbonate							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2492918-1 REP-2A							
Sampled By: CLIENT on 20-AUG-20 @ 10:18							
Matrix: Waste Water							
Alkalinity, Carbonate							
Carbonate (CO3)	6.84		0.60	mg/L		26-AUG-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		26-AUG-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	232		1.0	mg/L		25-AUG-20	R5202036
Ammonia by colour							
Ammonia, Total (as N)	1.70		0.10	mg/L		26-AUG-20	R5202504
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	<2.0		2.0	mg/L		24-AUG-20	R5204490
Carbonaceous BOD							
BOD Carbonaceous	<2.0		2.0	mg/L		24-AUG-20	R5204490
Chloride in Water by IC							
Chloride (Cl)	17.0		0.50	mg/L		24-AUG-20	R5201745
Conductivity							
Conductivity	457		1.0	umhos/cm		25-AUG-20	R5202036
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	<10	PEHR	10	MPN/100mL		24-AUG-20	R5199870
Hardness Calculated							
Hardness (as CaCO3)	184	HTC	0.20	mg/L		27-AUG-20	
Mercury Total							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	27-AUG-20	01-SEP-20	R5208814
Nitrate in Water by IC							
Nitrate (as N)	0.044		0.020	mg/L		24-AUG-20	R5201745
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		26-AUG-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		24-AUG-20	R5201745
Oil & Grease - Gravimetric							
Oil and Grease	22.3		5.0	mg/L		28-AUG-20	R5203246
Phenol (4AAP)							
Phenols (4AAP)	0.0012		0.0010	mg/L		26-AUG-20	R5202748
Phosphorus, Total							
Phosphorus (P)-Total	0.0336		0.0030	mg/L		27-AUG-20	R5202805
Sulfate in Water by IC							
Sulfate (SO4)	7.55		0.30	mg/L		24-AUG-20	R5201745
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0173		0.0030	mg/L	26-AUG-20	26-AUG-20	R5202770
Arsenic (As)-Total	0.00054		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202770
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L	26-AUG-20	26-AUG-20	R5202770
Calcium (Ca)-Total	55.6		0.050	mg/L	26-AUG-20	26-AUG-20	R5202770
Chromium (Cr)-Total	0.00037		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202770
Cobalt (Co)-Total	0.00022		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202770
Copper (Cu)-Total	0.00162		0.00050	mg/L	26-AUG-20	26-AUG-20	R5202770
Iron (Fe)-Total	0.370		0.010	mg/L	26-AUG-20	26-AUG-20	R5202770
Lead (Pb)-Total	0.000345		0.000050	mg/L	26-AUG-20	26-AUG-20	R5202770
Magnesium (Mg)-Total	10.9		0.0050	mg/L	26-AUG-20	26-AUG-20	R5202770
Manganese (Mn)-Total	0.104		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202770
Nickel (Ni)-Total	0.00174		0.00050	mg/L	26-AUG-20	26-AUG-20	R5202770
Potassium (K)-Total	5.45		0.050	mg/L	26-AUG-20	26-AUG-20	R5202770
Sodium (Na)-Total	22.0		0.050	mg/L	26-AUG-20	26-AUG-20	R5202770
Zinc (Zn)-Total	0.0032		0.0030	mg/L	26-AUG-20	26-AUG-20	R5202770
Total Organic Carbon by Combustion							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2492918-1 REP-2A							
Sampled By: CLIENT on 20-AUG-20 @ 10:18							
Matrix: Waste Water							
Total Organic Carbon by Combustion							
Total Organic Carbon	10.2		0.50	mg/L		26-AUG-20	R5202854
Total Suspended Solids							
Total Suspended Solids	<3.0		3.0	mg/L		25-AUG-20	R5201460
pH							
pH	8.42		0.10	pH units		25-AUG-20	R5202036
L2492918-2 REP-5							
Sampled By: CLIENT on 20-AUG-20 @ 10:05							
Matrix: Waste Water							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		26-AUG-20	R5202503
Toluene	<0.0010		0.0010	mg/L		26-AUG-20	R5202503
Ethyl benzene	<0.00050		0.00050	mg/L		26-AUG-20	R5202503
o-Xylene	<0.00050		0.00050	mg/L		26-AUG-20	R5202503
m+p-Xylenes	<0.00040		0.00040	mg/L		26-AUG-20	R5202503
F1 (C6-C10)	<0.10		0.10	mg/L		26-AUG-20	R5202503
Surrogate: 4-Bromofluorobenzene (SS)	89.2		70-130	%		26-AUG-20	R5202503
CCME PHC F2-F4 in Water							
F2 (C10-C16)	4.08		0.10	mg/L	25-AUG-20	25-AUG-20	R5200578
F3 (C16-C34)	2.22		0.25	mg/L	25-AUG-20	25-AUG-20	R5200578
F4 (C34-C50)	<0.25		0.25	mg/L	25-AUG-20	25-AUG-20	R5200578
Surrogate: 2-Bromobenzotrifluoride	98.2		60-140	%	25-AUG-20	25-AUG-20	R5200578
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		02-SEP-20	
F2-Naphth	4.08		0.10	mg/L		02-SEP-20	
F3-PAH	2.22		0.25	mg/L		02-SEP-20	
Total Hydrocarbons (C6-C50)	6.30		0.38	mg/L		02-SEP-20	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		28-AUG-20	
CCME PAHs in mg/L							
1-Methyl Naphthalene	0.00101		0.000020	mg/L	26-AUG-20	26-AUG-20	R5202769
2-Methyl Naphthalene	0.000547		0.000020	mg/L	26-AUG-20	26-AUG-20	R5202769
Acenaphthene	0.000280		0.000020	mg/L	26-AUG-20	26-AUG-20	R5202769
Acenaphthylene	<0.00060	DLM	0.00060	mg/L	26-AUG-20	26-AUG-20	R5202769
Anthracene	<0.000060	DLM	0.000060	mg/L	26-AUG-20	02-SEP-20	R5202769
Acridine	0.000100	DLM	0.000080	mg/L	26-AUG-20	02-SEP-20	R5202769
Benzo(a)anthracene	<0.000010		0.000010	mg/L	26-AUG-20	26-AUG-20	R5202769
Benzo(a)pyrene	<0.0000050		0.0000050	mg/L	26-AUG-20	26-AUG-20	R5202769
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	26-AUG-20	26-AUG-20	R5202769
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	26-AUG-20	26-AUG-20	R5202769
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	26-AUG-20	26-AUG-20	R5202769
Chrysene	<0.000020		0.000020	mg/L	26-AUG-20	26-AUG-20	R5202769
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	26-AUG-20	26-AUG-20	R5202769
Fluoranthene	<0.000021	DLM	0.000021	mg/L	26-AUG-20	26-AUG-20	R5202769
Fluorene	<0.000080	DLM	0.000080	mg/L	26-AUG-20	02-SEP-20	R5202769
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	26-AUG-20	26-AUG-20	R5202769
Naphthalene	<0.00027	DLM	0.00027	mg/L	26-AUG-20	26-AUG-20	R5202769
Phenanthrene	<0.00020	DLM	0.00020	mg/L	26-AUG-20	02-SEP-20	R5202769
Pyrene	0.000162		0.000010	mg/L	26-AUG-20	26-AUG-20	R5202769
Quinoline	<0.00087	DLM	0.00087	mg/L	26-AUG-20	26-AUG-20	R5202769

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2492918-2 REP-5							
Sampled By: CLIENT on 20-AUG-20 @ 10:05							
Matrix: Waste Water							
CCME PAHs in mg/L							
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	26-AUG-20	26-AUG-20	R5202769
Surrogate: d8-Naphthalene	74.0		50-150	%	26-AUG-20	26-AUG-20	R5202769
Surrogate: d10-Phenanthrene	71.6		50-150	%	26-AUG-20	02-SEP-20	R5202769
Surrogate: d12-Chrysene	106.1		50-150	%	26-AUG-20	26-AUG-20	R5202769
Surrogate: d10-Acenaphthene	77.7		50-150	%	26-AUG-20	26-AUG-20	R5202769
Surrogate: d9-Acridine (SS)	53.0		50-150	%	26-AUG-20	02-SEP-20	R5202769
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	385		1.2	mg/L		26-AUG-20	
Alkalinity, Carbonate							
Carbonate (CO3)	3.84		0.60	mg/L		26-AUG-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		26-AUG-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	322		1.0	mg/L		25-AUG-20	R5202036
Ammonia by colour							
Ammonia, Total (as N)	0.043		0.010	mg/L		26-AUG-20	R5202504
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	4.4		2.0	mg/L		24-AUG-20	R5204490
Carbonaceous BOD							
BOD Carbonaceous	<2.0		2.0	mg/L		24-AUG-20	R5204490
Chloride in Water by IC							
Chloride (Cl)	22.5		0.50	mg/L		24-AUG-20	R5201745
Conductivity							
Conductivity	709		1.0	umhos/cm		25-AUG-20	R5202036
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	20	PEHR	10	MPN/100mL		24-AUG-20	R5199870
Hardness Calculated							
Hardness (as CaCO3)	300	HTC	0.20	mg/L		27-AUG-20	
Mercury Total							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	27-AUG-20	01-SEP-20	R5208814
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		24-AUG-20	R5201745
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		26-AUG-20	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		24-AUG-20	R5201745
Oil & Grease - Gravimetric							
Oil and Grease	36.4		5.0	mg/L		28-AUG-20	R5203246
Phenol (4AAP)							
Phenols (4AAP)	0.0056		0.0010	mg/L		26-AUG-20	R5202748
Phosphorus, Total							
Phosphorus (P)-Total	0.0318		0.0030	mg/L		27-AUG-20	R5202805
Sulfate in Water by IC							
Sulfate (SO4)	63.3		0.30	mg/L		24-AUG-20	R5201745
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0080		0.0030	mg/L	26-AUG-20	26-AUG-20	R5202770
Arsenic (As)-Total	0.00085		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202770
Cadmium (Cd)-Total	0.0000296		0.0000050	mg/L	26-AUG-20	26-AUG-20	R5202770
Calcium (Ca)-Total	67.2		0.050	mg/L	26-AUG-20	26-AUG-20	R5202770
Chromium (Cr)-Total	0.00016		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202770
Cobalt (Co)-Total	0.00023		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202770

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2492918-2 REP-5							
Sampled By: CLIENT on 20-AUG-20 @ 10:05							
Matrix: Waste Water							
Total Metals in Water by CRC ICPMS							
Copper (Cu)-Total	0.00183		0.00050	mg/L	26-AUG-20	26-AUG-20	R5202770
Iron (Fe)-Total	2.25		0.010	mg/L	26-AUG-20	26-AUG-20	R5202770
Lead (Pb)-Total	0.000212		0.000050	mg/L	26-AUG-20	26-AUG-20	R5202770
Magnesium (Mg)-Total	32.1		0.0050	mg/L	26-AUG-20	26-AUG-20	R5202770
Manganese (Mn)-Total	0.0628		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202770
Nickel (Ni)-Total	0.00130		0.00050	mg/L	26-AUG-20	26-AUG-20	R5202770
Potassium (K)-Total	13.7		0.050	mg/L	26-AUG-20	26-AUG-20	R5202770
Sodium (Na)-Total	42.6		0.050	mg/L	26-AUG-20	26-AUG-20	R5202770
Zinc (Zn)-Total	0.0389		0.0030	mg/L	26-AUG-20	26-AUG-20	R5202770
Total Organic Carbon by Combustion							
Total Organic Carbon	33.0		0.50	mg/L		26-AUG-20	R5202854
Total Suspended Solids							
Total Suspended Solids	4.9		3.0	mg/L		25-AUG-20	R5201460
pH							
pH	8.31		0.10	pH units		25-AUG-20	R5202036
L2492918-3 REP-6							
Sampled By: CLIENT on 20-AUG-20 @ 09:43							
Matrix: Waste Water							
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	134		1.2	mg/L		26-AUG-20	
Alkalinity, Carbonate							
Carbonate (CO3)	30.0		0.60	mg/L		26-AUG-20	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		26-AUG-20	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	160		1.0	mg/L		25-AUG-20	R5202036
Ammonia by colour							
Ammonia, Total (as N)	2.23		0.10	mg/L		26-AUG-20	R5202504
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	16.2		2.0	mg/L		24-AUG-20	R5204490
Carbonaceous BOD							
BOD Carbonaceous	12.2		2.0	mg/L		24-AUG-20	R5204490
Chloride in Water by IC							
Chloride (Cl)	29.1		0.50	mg/L		24-AUG-20	R5201745
Conductivity							
Conductivity	365		1.0	umhos/cm		25-AUG-20	R5202036
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	<10	PEHR	10	MPN/100mL		24-AUG-20	R5199870
Hardness Calculated							
Hardness (as CaCO3)	133	HTC	0.20	mg/L		27-AUG-20	
Mercury Total							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	27-AUG-20	01-SEP-20	R5208814
Nitrate in Water by IC							
Nitrate (as N)	0.328		0.020	mg/L		24-AUG-20	R5201745
Nitrate+Nitrite							
Nitrate and Nitrite as N	0.463		0.070	mg/L		26-AUG-20	
Nitrite in Water by IC							
Nitrite (as N)	0.135		0.010	mg/L		24-AUG-20	R5201745
Oil & Grease - Gravimetric							
Oil and Grease	31.9		5.0	mg/L		28-AUG-20	R5203246

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2492918-3 REP-6							
Sampled By: CLIENT on 20-AUG-20 @ 09:43							
Matrix: Waste Water							
Phenol (4AAP)							
Phenols (4AAP)	<0.0010		0.0010	mg/L		26-AUG-20	R5202748
Phosphorus, Total							
Phosphorus (P)-Total	2.03		0.030	mg/L		27-AUG-20	R5202805
Sulfate in Water by IC							
Sulfate (SO4)	11.2		0.30	mg/L		24-AUG-20	R5201745
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0483		0.0030	mg/L	26-AUG-20	26-AUG-20	R5202770
Arsenic (As)-Total	0.00050		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202770
Cadmium (Cd)-Total	0.0000067		0.0000050	mg/L	26-AUG-20	26-AUG-20	R5202770
Calcium (Ca)-Total	39.4		0.050	mg/L	26-AUG-20	26-AUG-20	R5202770
Chromium (Cr)-Total	0.00024		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202770
Cobalt (Co)-Total	0.00025		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202770
Copper (Cu)-Total	0.00478		0.00050	mg/L	26-AUG-20	26-AUG-20	R5202770
Iron (Fe)-Total	0.257		0.010	mg/L	26-AUG-20	26-AUG-20	R5202770
Lead (Pb)-Total	0.000098		0.000050	mg/L	26-AUG-20	26-AUG-20	R5202770
Magnesium (Mg)-Total	8.51		0.0050	mg/L	26-AUG-20	26-AUG-20	R5202770
Manganese (Mn)-Total	0.0282		0.00010	mg/L	26-AUG-20	26-AUG-20	R5202770
Nickel (Ni)-Total	0.00130		0.00050	mg/L	26-AUG-20	26-AUG-20	R5202770
Potassium (K)-Total	7.63		0.050	mg/L	26-AUG-20	26-AUG-20	R5202770
Sodium (Na)-Total	25.8		0.050	mg/L	26-AUG-20	26-AUG-20	R5202770
Zinc (Zn)-Total	0.0063		0.0030	mg/L	26-AUG-20	26-AUG-20	R5202770
Total Organic Carbon by Combustion							
Total Organic Carbon	36.8		0.50	mg/L		26-AUG-20	R5202854
Total Suspended Solids							
Total Suspended Solids	65.3		3.0	mg/L		25-AUG-20	R5201460
pH							
pH	9.25		0.10	pH units		25-AUG-20	R5202036

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Qualifiers for Individual Samples Listed:

Lab Sample ID	Client Sample ID	Qualifier	Description
L2492918-1	REP-2A	UIC	Unreliable: Improper Container
		PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.
L2492918-2	REP-5	UIC	Unreliable: Improper Container
		PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.
L2492918-3	REP-6	PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.
		UIC	Unreliable: Improper Container

Sample Parameter Qualifier Key:

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-CO3CO3-CALC-WP	Water	Alkalinity, Carbonate	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by carbonate is calculated and reported as mg CO3 2-/L.

ALK-HCO3HCO3-CALC-WP	Water	Alkalinity, Bicarbonate	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by bicarbonate is calculated and reported as mg HCO3-/L

ALK-OHOH-CALC-WP	Water	Alkalinity, Hydroxide	CALCULATION

The Alkalinity of water is a measure of its acid neutralizing capacity.Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. The fraction of alkalinity contributed by hydroxide is calculated and reported as mg OH-/L.

ALK-TITR-WP	Water	Alkalinity, Total (as CaCO3)	APHA 2320B

The Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. Total alkalinity is determined by titration with a strong standard mineral acid to the successive HCO3- and H2CO3 endpoints indicated electrometrically.

BOD-CBOD-WP	Water	Carbonaceous BOD	APHA 5210 B

Samples are diluted and seeded, have TCMP added to inhibit nitrogenous demands, and then are incubated in airtight bottles at 20 C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO.

BOD-WP	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B

Samples are diluted and seeded and then incubated in airtight bottles at 20 C for 5 days. Dissolved oxygen is measured initially and after incubation, and results are computed from the difference between initial and final DO.

BTEXS+F1-HSMS-WP	Water	BTX plus F1 by GCMS	EPA 8260C / EPA 5021A

The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transfered into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.

C-TOC-HTC-WP	Water	Total Organic Carbon by Combustion	APHA 5310 B-WP

Sample is acidified and purged to remove inorganic carbon, then injected into a heated reaction chamber where organic carbon is oxidized to CO2 which is then transported in the carrier gas stream and measured via a non-dispersive infrared analyzer.

CL-IC-N-WP	Water	Chloride in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

EC-WP	Water	Conductivity	APHA 2510B

Conductivity of an aqueous solution refers to its ability to carry an electric current. Conductance of a solution is measured between two spatially fixed and chemically inert electrodes.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
F1-F4-CALC-WP	Water	CCME Total Hydrocarbons	CCME CWS-PHC, Pub #1310, Dec 2001-L

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:
1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F2-F4-FID-WP	Water	CCME PHC F2-F4 in Water	EPA 3511

Petroleum hydrocarbons in water are determined by liquid-liquid micro-scale solvent extraction using a reciprocal shaker extraction apparatus prior to capillary column gas chromatography with flame ionization detection (GC-FID) analysis.

FC10-QT97-WP	Water	Fecal coliforms, 1:10 dilution by QT97	APHA 9223B QT97

Analysis is carried out using procedures adapted from APHA 9223 "Enzyme Substrate Coliform Test". Fecal (thermotolerant) coliform bacteria are determined by mixing a 1:10 dilution of sample with a product containing hydrolyzable substrates and sealing in a 97-well packet. The packet is incubated at 44.5 +/- 0.2 degrees C for 18 hours and then the number of wells exhibiting positive responses are counted. The final results are obtained by comparing the number of positive responses to a probability table.

HARDNESS-CALC-WP	Water	Hardness Calculated	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-T-CVAA-WP	Water	Mercury Total	EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

MET-T-CCMS-WP	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020B (mod.)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-COL-WP	Water	Ammonia by colour	APHA 4500 NH3 F

Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.

NO2+NO3-CALC-WP	Water	Nitrate+Nitrite	CALCULATION
NO2-IC-N-WP	Water	Nitrite in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-IC-N-WP	Water	Nitrate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

OG-GRAV-WP	Water	Oil & Grease - Gravimetric	EPA 1664 (modified)

Water samples are acidified and extracted with hexane; the hexane extract is collected in a pre-weighed vial. The solvent is evaporated and Total Oil & Grease is determined from the weight of the residue in the vial.

P-T-COL-WP	Water	Phosphorus, Total	APHA 4500 P PHOSPHORUS-L

This analysis is carried out using procedures adapted from APHA METHOD 4500-P "Phosphorus". Total Phosphorus is determined colourmetrically after persulphate digestion of the sample.

PAH-CCME-PPM-WT	Water	CCME PAHs in mg/L	EPA 3511/8270D (mod)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
PAHs are extracted from water using a hexane micro-extraction technique, with analysis by GC/MS. Because the two isomers cannot be readily separated chromatographically, benzo(j)fluoranthene is reported as part of the benzo(b)fluoranthene parameter.			
PH-WP	Water	pH	APHA 4500H
The pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode.			
PHENOLS-4AAP-WT	Water	Phenol (4AAP)	EPA 9066
An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.			
SO4-IC-N-WP	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TOTSUS-WP	Water	Total Suspended Solids	APHA 2540 D (modified)
Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 105 C.			
XYLENES-SUM-CALC-WP	Water	Sum of Xylene Isomer Concentrations	CALCULATED RESULT
Total xylenes represents the sum of o-xylene and m&p-xylene.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

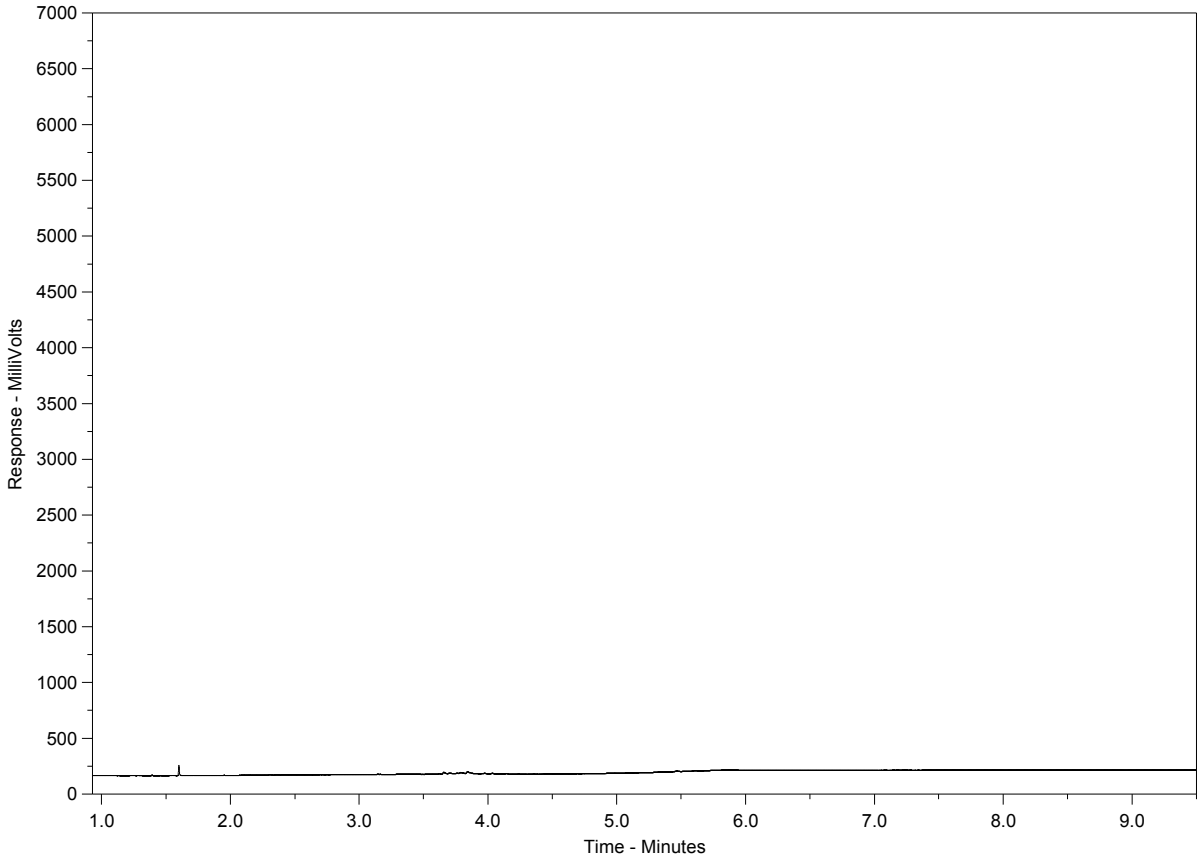
GLOSSARY OF REPORT TERMS

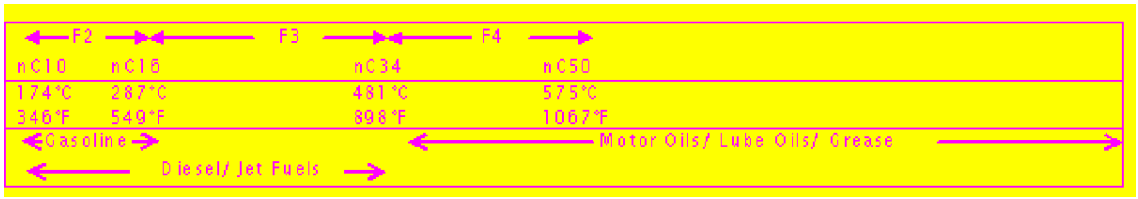
Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2492918-1
Client Sample ID: REP-2A





The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

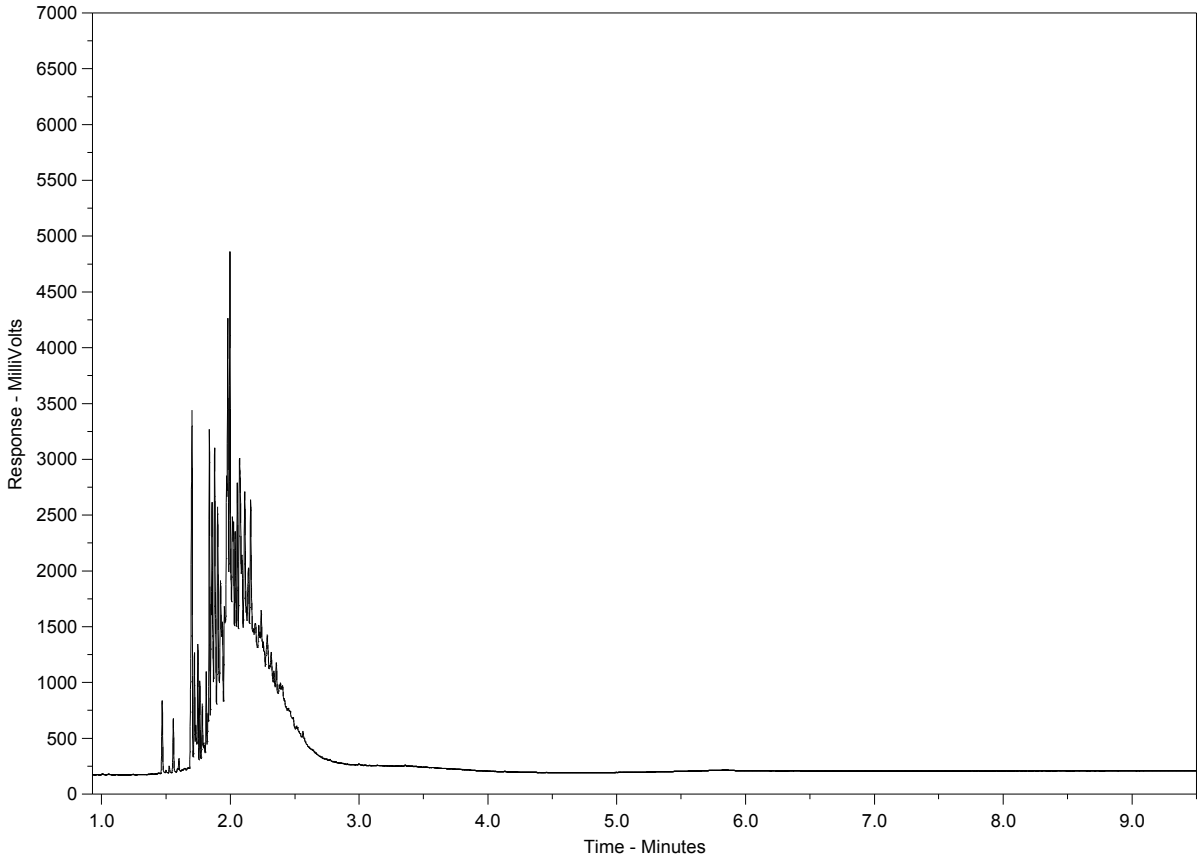
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

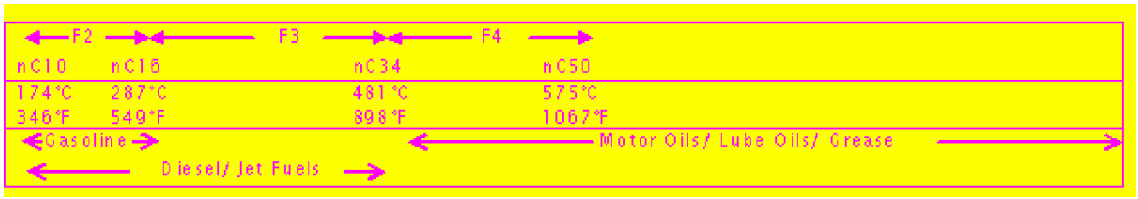
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2492918-2
Client Sample ID: REP-5





The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

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

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

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2492918-COFC

COC Number: 14 - 503153

Report To	
Company:	Hamlet of Naujaat
Contact:	Kevin Tegumiar
Address:	NAUJAAT, NU X0C 0H0
Phone:	867-462-9957

Report Format / Distribution

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)
Quality Control (QC) Report with Report ☐ Yes ☐ No
☐ Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: cfaulkner@gov.nu.ca
Email 2: saonaujaat@qiniq.ca

Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)

- R ☑ Regular (Standard TAT if received by 3pm)
- P ☐ Priority (2-4 business days if received by 3pm)
- E ☐ Emergency (1-2 business days if received by 3pm)
- E2 ☐ Same day or weekend emergency if received by 10am – contact ALS for surcharge.

Specify Date Required for E2,E or P:

Invoice To
Same as Report To ☑ Yes ☐ No
Copy of Invoice with Report ☑ Yes ☐ No
Company:
Contact:

Invoice Distribution
Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax
Email 2

Project Information

ALS Quote #:	WL 0624
Job #:	
PO / AFE:	
LSD:	
ALS Lab Work Order # (lab use only)	

Oil and Gas Required Fields (client use)

Approver ID:	Cost Center:
GL Account:	Routing Code:
Activity Code:	
Location:	
ALS Contact:	Sampler: Connor

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	BOD	Routine	CBOD	Metals	Mercury	Nutrients	Phenols	Oil + Grease X2	Bacteria (routine)	BTEX-F1 X3	F2-F4 X2	PAH X2		Number of Containers
	REP-2 (empty bottles)	Aug 20/20	[illegible]	WW	—	NO		WATER			@	SITE						
	REP-2A	Aug 20/20	10:48	WW	✓	✓	✓	P	P	P	P	P		P	P	P		16
	REP-5	Aug 20/20	10:05	WW	✓	✓	✓	P	P	P	P	P	See Note	P	P	P		16
	REP-6	Aug 20/20	9:43	WW	✓	✓	✓	P	P	P	P	P	See Note					9

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

Are samples taken from a Regulated DW System? ☐ Yes ☑ No
Are samples for human drinking water use? ☐ Yes ☑ No

Special Instructions / Specify Criteria to add on report (client Use)

Nunavut - WW - GRP4 - WP
BTEX-F1, F2-F4, PAH
*Subsample bacteria from routine *

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐
Ice packs Yes ☐ No ☐ Custody seal intact Yes ☐ No ☐
Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C: 18.8
FINAL COOLER TEMPERATURES °C:

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: [signature]	Date: Aug 20/20	Time: 10:29 am	Received by: [signature]	Date: Aug 24/20	Time: 1:40	Received by:	Date:	Time:

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

NA-FM-0326e v09 Front/04 January 2014

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

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

Appendix C : Hazardous Materials Spill Database

Spill	Occurance Date	Spill Region	Location	Location Description	Product Spilled	Quantity	Measurement	Spill Cause	Lead Agency
spill-2020432	November 10, 2020	Keewatin	Repulse Bay, Community, Nunavut	QEC Naujaat Power Plant EC-00000189	Petroleum - other (bunker, asphalt, propane)	130.00	Litres		GN - Government of Nunavut
spill-2020363	September 24, 2020	Keewatin	Repulse Bay, Community, Nunavut	Naujaat, road to Water Lake	Petroleum - fuel oil (jet A, diesel, turbo A, heat)	140.00	Litres	Vehicle Overturn	GN - Government of Nunavut
spill-2020295	August 29, 2020	Baffin	Repulse Bay, Community, Nunavut	Repulse Bay on top of the landing beach.	Petroleum - waste oil (slops, sludge)	85.00	Litres	Other	CIRNAC - Crown-Indigenous Relations and Northern Affairs Canada

Appendix D: Naujaat 2020 Sampling Summary

Naujaat
REP-2

			2020
Parameter	**Unit**	**DL**	**09-Jul-20**
Alkalinity			
Bicarbonate (HCO3)	mg/L	1.2	86.4
Carbonate (CO3)	mg/L	0.60	0.60
Hydroxide (OH)	mg/L	0.34	0.34
Total (as CaCO3)	mg/L	1.0	70.8
Ammonia by Colour			
Total (as N)	mg/L	0.20	0.470
Biochemical Oxygen Demand (BOD)			
Biochemical Oxygen Demand	mg/L	6.0	2.0
Carbonaceous BOD			
BOD Carbonaceous	mg/L	6.0	2
Chloride in Water by IC			
Chloride (Cl)	mg/L	10	3.68
Conductivity			
Conductivity	umhos/cm	1.0	144
Fecal Coliforms			
Fecal Coliforms	MPN/100mL	3	10
Hardness Calculated			
Hardness (as CaCO3)	mg/L	0.30	60.4
Mercury Total			
Mercury (Hg)	mg/L	0.00020	0.0000050
Nitrate in Water by IC			
Nitrate (as N)	mg/L	0.40	0.032
Nitrate + Nitrite			
Nitrate and Nitrite as N	mg/L	0.45	0.070
Nitrite in Water by IC			
Nitrite (as N)	mg/L	0.20	0.010
Oil & Grease - Gravimetric			
Oil and Grease	mg/L	5.0	5.0
Phenol			
Phenols	mg/L	0.0010	0.0012
Phosphorus, Total			
Phosphorus (P)	mg/L	0.010	0.0408
Sulfate in Water by IC			
Sulfate (SO4)	mg/L	6.0	1.6
Total Metals by ICP-MS			
Aluminium (Al)	mg/L	0.0050	0.0316
Arsenic (As)	mg/L	0.00020	0.00041
Cadmium (Cd)	mg/L	0.000010	0.0000050
Calcium (Ca)	mg/L	0.10	19.8
Chromium (Cr)	mg/L	0.0010	0.00033
Cobalt (Co)	mg/L	0.00020	0.00014
Copper (Cu)	mg/L	0.00020	0.000107
Iron (Fe)	mg/L	0.010	0.532
Lead (Pb)	mg/L	0.000090	0.000182
Magnesium (Mg)	mg/L	0.010	2.67
Manganese (Mn)	mg/L	0.00030	0.204
Nickel (Ni)	mg/L	0.0020	0.00082
Potassium (K)	mg/L	0.020	1.84
Sodium (Na)	mg/L	0.030	5.52
Zinc (Zn)	mg/L	0.0020	0.0035
Total Organic Carbon by Combustion			
Total Organic Carbon	mg/L	0.50	4.51
Total Suspended Solids			
Total Suspended Solids	mg/L	13	3
pH			
pH	pH Units	0.10	7.8
Benzene	mg/L	0.00050	0.00050
Toluene	mg/L	0.0010	0.0010
Ethyl Benzene	mg/L	0.00050	0.00050
o-Xylene	mg/L	0.00050	0.00050
F1 (C6-C10)	mg/L	0.10	0.10
F2 (C10-C16)	mg/L	0.25	0.10
F3 (C16-C34)	mg/L	0.25	0.25
F4 (C34-C50)	mg/L	0.25	0.25
Total Hydrocarbons (C6-C50)	mg/L	0.44	0.38

Naujaat
REP-2A

			2020	
Parameter	**Unit**	**DL**	**09-Jul-20**	**20-Aug-20**
Alkalinity				
Bicarbonate (HCO3)	mg/L	1.2	154	269
Carbonate (CO3)	mg/L	0.60	0.60	6.84
Hydroxide (OH)	mg/L	0.34	0.34	0.34
Total (as CaCO3)	mg/L	1.0	127	232
Ammonia by Colour				
Total (as N)	mg/L	0.20	0.180	1.70
Biochemical Oxygen Demand (BOD)				
Biochemical Oxygen Demand	mg/L	6.0	2	2
Carbonaceous BOD				
BOD Carbonaceous	mg/L	6.0	2	2
Chloride in Water by IC				
Chloride (Cl)	mg/L	10	7.05	17
Conductivity				
Conductivity	umhos/cm	1.0	257	457
Fecal Coliforms				
Fecal Coliforms	MPN/100mL	3	20	10
Hardness Calculated				
Hardness (as CaCO3)	mg/L	0.30	106	184
Mercury Total				
Mercury (Hg)	mg/L	0.00020	0.0000050	0.0000050
Nitrate in Water by IC				
Nitrate (as N)	mg/L	0.40	0.082	0.044
Nitrate + Nitrite				
Nitrate and Nitrite as N	mg/L	0.45	0.082	0.070
Nitrite in Water by IC				
Nitrite (as N)	mg/L	0.20	0.010	0.010
Oil & Grease - Gravimetric				
Oil and Grease	mg/L	5.0	5.0	22.3
Phenol				
Phenols	mg/L	0.0010	0.0010	0.0012
Phosphorus, Total				
Phosphorus (P)	mg/L	0.010	0.0324	0.0336
Sulfate in Water by IC				
Sulfate (SO4)	mg/L	6.0	8.05	7.55
Total Metals by ICP-MS				
Aluminium (Al)	mg/L	0.0050	0.0083	0.0173
Arsenic (As)	mg/L	0.00020	0.00038	0.00054
Cadmium (Cd)	mg/L	0.000010	0.0000050	0.0000050
Calcium (Ca)	mg/L	0.10	35.5	55.6
Chromium (Cr)	mg/L	0.0010	0.00033	0.00037
Cobalt (Co)	mg/L	0.00020	0.00014	0.00022
Copper (Cu)	mg/L	0.00020	0.00167	0.00162
Iron (Fe)	mg/L	0.010	0.176	0.370
Lead (Pb)	mg/L	0.000090	0.000133	0.000345
Magnesium (Mg)	mg/L	0.010	4.23	10.9
Manganese (Mn)	mg/L	0.00030	0.0440	0.104
Nickel (Ni)	mg/L	0.0020	0.00106	0.00174
Potassium (K)	mg/L	0.020	2.63	5.45
Sodium (Na)	mg/L	0.030	11.2	22
Zinc (Zn)	mg/L	0.0020	0.0055	0.0032
Total Organic Carbon by Combustion				
Total Organic Carbon	mg/L	0.50	6.99	10.2
Total Suspended Solids				
Total Suspended Solids	mg/L	13	3	3
pH				
pH	pH Units	0.10	8.10	8.42
Benzene	mg/L	0.00050	0.00050	0.00050
Toluene	mg/L	0.0010	0.0010	0.0013
Ethyl Benzene	mg/L	0.00050	0.00050	0.00050
o-Xylene	mg/L	0.00050	0.00050	0.00050
F1 (C6-C10)	mg/L	0.10	0.10	0.10
F2 (C10-C16)	mg/L	0.25	0.10	0.10
F3 (C16-C34)	mg/L	0.25	0.25	0.25
F4 (C34-C50)	mg/L	0.25	0.25	0.25
Total Hydrocarbons (C6-C50)	mg/L	0.44	0.38	0.38

Naujaat
REP-5

			2020
Parameter	**Unit**	**DL**	**20-Aug-20**
Alkalinity			
Bicarbonate (HCO3)	mg/L	1.2	385
Carbonate (CO3)	mg/L	0.60	3.84
Hydroxide (OH)	mg/L	0.34	0.34
Total (as CaCO3)	mg/L	1.0	322
Ammonia by Colour			
Total (as N)	mg/L	0.20	0.043
Biochemical Oxygen Demand (BOD)			
Biochemical Oxygen Demand	mg/L	6.0	4.4
Carbonaceous BOD			
BOD Carbonaceous	mg/L	6.0	2
Chloride in Water by IC			
Chloride (Cl)	mg/L	10	22.5
Conductivity			
Conductivity	umhos/cm	1.0	709
Fecal Coliforms			
Fecal Coliforms	MPN/100mL	3	20
Hardness Calculated			
Hardness (as CaCO3)	mg/L	0.30	300
Mercury Total			
Mercury (Hg)	mg/L	0.00020	0.0000050
Nitrate in Water by IC			
Nitrate (as N)	mg/L	0.40	0.020
Nitrate + Nitrite			
Nitrate and Nitrite as N	mg/L	0.45	0.070
Nitrite in Water by IC			
Nitrite (as N)	mg/L	0.20	0.010
Oil & Grease - Gravimetric			
Oil and Grease	mg/L	5.0	36.4
Phenol			
Phenols	mg/L	0.0010	0.0056
Phosphorus, Total			
Phosphorus (P)	mg/L	0.010	0.0318
Sulfate in Water by IC			
Sulfate (SO4)	mg/L	6.0	63.3
Total Metals by ICP-MS			
Aluminium (Al)	mg/L	0.0050	0.0080
Arsenic (As)	mg/L	0.00020	0.00085
Cadmium (Cd)	mg/L	0.000010	0.0000296
Calcium (Ca)	mg/L	0.10	67.2
Chromium (Cr)	mg/L	0.0010	0.00016
Cobalt (Co)	mg/L	0.00020	0.00023
Copper (Cu)	mg/L	0.00020	0.00183
Iron (Fe)	mg/L	0.010	2.25
Lead (Pb)	mg/L	0.000090	0.000212
Magnesium (Mg)	mg/L	0.010	32.1
Manganese (Mn)	mg/L	0.00030	0.0628
Nickel (Ni)	mg/L	0.0020	0.00130
Potassium (K)	mg/L	0.020	13.7
Sodium (Na)	mg/L	0.030	42.6
Zinc (Zn)	mg/L	0.0020	0.0389
Total Organic Carbon by Combustion			
Total Organic Carbon	mg/L	0.50	33
Total Suspended Solids			
Total Suspended Solids	mg/L	13	4.9
pH			
pH	pH Units	0.10	8.31
Benzene	mg/L	0.00050	0.00050
Toluene	mg/L	0.0010	0.0010
Ethyl Benzene	mg/L	0.00050	0.00050
o-Xylene	mg/L	0.00050	0.00050
F1 (C6-C10)	mg/L	0.10	0.10
F2 (C10-C16)	mg/L	0.25	4.08
F3 (C16-C34)	mg/L	0.25	2.22
F4 (C34-C50)	mg/L	0.25	0.25
Total Hydrocarbons (C6-C50)	mg/L	0.44	6.30

Naujaat
REP-6

			2020	
Parameter	**Unit**	**DL**	**09-Jul-20**	**20-Aug-20**
Alkalinity				
Bicarbonate (HCO3)	mg/L	1.2	148	134
Carbonate (CO3)	mg/L	0.60	17.4	30.0
Hydroxide (OH)	mg/L	0.34	0.34	0.34
Total (as CaCO3)	mg/L	1.0	151	160
Ammonia by Colour				
Total (as N)	mg/L	0.20	13.5	2.23
Biochemical Oxygen Demand (BOD)				
Biochemical Oxygen Demand	mg/L	6.0	30.4	16.2
Carbonaceous BOD				
BOD Carbonaceous	mg/L	6.0	15.1	12.2
Chloride in Water by IC				
Chloride (Cl)	mg/L	10	23.8	29.1
Conductivity				
Conductivity	umhos/cm	1.0	346	365
Fecal Coliforms				
Fecal Coliforms	MPN/100mL	3	20	10
Hardness Calculated				
Hardness (as CaCO3)	mg/L	0.30	88.5	133
Mercury Total				
Mercury (Hg)	mg/L	0.00020	0.0000050	0.0000050
Nitrate in Water by IC				
Nitrate (as N)	mg/L	0.40	0.371	0.328
Nitrate + Nitrite				
Nitrate and Nitrite as N	mg/L	0.45	0.419	0.463
Nitrite in Water by IC				
Nitrite (as N)	mg/L	0.20	0.048	0.135
Oil & Grease - Gravimetric				
Oil and Grease	mg/L	5.0	5.0	31.9
Phenol				
Phenols	mg/L	0.0010	0.0013	0.0010
Phosphorus, Total				
Phosphorus (P)	mg/L	0.010	2.98	2.03
Sulfate in Water by IC				
Sulfate (SO4)	mg/L	6.0	4.6	11.2
Total Metals by ICP-MS				
Aluminium (Al)	mg/L	0.0050	0.0300	0.0483
Arsenic (As)	mg/L	0.00020	0.00044	0.00050
Cadmium (Cd)	mg/L	0.000010	0.0000159	0.0000067
Calcium (Ca)	mg/L	0.10	26	39.4
Chromium (Cr)	mg/L	0.0010	0.00051	0.00024
Cobalt (Co)	mg/L	0.00020	0.00024	0.00025
Copper (Cu)	mg/L	0.00020	0.0106	0.00478
Iron (Fe)	mg/L	0.010	0.865	0.257
Lead (Pb)	mg/L	0.000090	0.000281	0.000098
Magnesium (Mg)	mg/L	0.010	5.76	8.51
Manganese (Mn)	mg/L	0.00030	0.0436	0.0282
Nickel (Ni)	mg/L	0.0020	0.00170	0.00130
Potassium (K)	mg/L	0.020	8.21	7.63
Sodium (Na)	mg/L	0.030	20.5	25.8
Zinc (Zn)	mg/L	0.0020	0.0128	0.0063
Total Organic Carbon by Combustion				
Total Organic Carbon	mg/L	0.50	23.6	36.8
Total Suspended Solids				
Total Suspended Solids	mg/L	13	45.6	65.3
pH				
pH	pH Units	0.10	8.83	9.25
Benzene	mg/L	0.00050	0.00050	N/A
Toluene	mg/L	0.0010	0.0010	N/A
Ethyl Benzene	mg/L	0.00050	0.00050	N/A
o-Xylene	mg/L	0.00050	0.00050	N/A
F1 (C6-C10)	mg/L	0.10	0.10	N/A
F2 (C10-C16)	mg/L	0.25	0.10	N/A
F3 (C16-C34)	mg/L	0.25	0.63	N/A
F4 (C34-C50)	mg/L	0.25	0.25	N/A
Total Hydrocarbons (C6-C50)	mg/L	0.44	0.63	N/A

Appendix E : CIRNAC Inspection Report

The CIRNAC inspection report was not received by CGS at the time of this submission.