ANNUAL REPORT
FOR THE HAMLET OF BAKER LAKE

YEAR BEING REPORTED: 2018

The following information is compiled pursuant to the requirements of Part B, Item 1 of Water License No. 3BM-BAK1526 issued to the Hamlet of Baker Lake.

i) - iii) tabular summaries of all data generated under the "Monitoring Program"; monthly and annual quantities in cubic metres of freshwater obtained from all sources; monthly and annual quantities in cubic metres of each and all wastes discharged;

Attached are quantities of water used as reported in our On Tap Water Delivery System and the estimated discharge of sewage waste based on quantities used.

Month Reported	Quantity of Water Obtained from all sources (m^3)	Quantity of Sewage Waste Discharged (Estimated, m^3)
January	6,403.735	Same
February	6,020.052	Same
March	6,198.240	Same
April	6,145.677	Same
May	6,362.395	Same
June	5,985.396	Same
July	6,433.381	Same
August	6,503.404	Same
September	6,219.471	Same
October	6,689.441	Same
November	6,364.230	Same
December	6,133.273	Same
ANNUAL TOTAL	**75,458.695**	**75,458.695**

Note: There is no meter existing at the end of the Sewage Truck discharge pipe. Therefore the monthly sewage discharge volume is considered as equal volume to the monthly water consumption.

iv. 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;

- Repair to the access road is planned for the fall of 2018. The road washed out in the spring during the melt. No update has been received to date.

- Agnico Eagle is replacing the culverts at Airplane Lake with larger culverts. This is planned for the fall of 2018. No action has been taken to date. Possibly to be completed in the summer of 2019.

- Batteries, old fuel drums, and other waste materials were collected and placed in sea cans which will be shipped out on empty AEM barges in the summer and fall of 2018.

July 19, 2018 – access road washout below sewage lagoon

v. a list of unauthorized discharges and summary of follow-up action taken;

Spill No.	Date	Site Description	Commodity	Quantity
2018041	2018-02-09	Baker Lake, NU	Wastewater	500 L
2018115	2018-02-20	N/A	Wastewater	N/A
2018053	2018-02-26	Baker Lake, NU	Wastewater	0 L
2018113	2018-04-04	N/A	Wastewater	N/A
2018114	2018-04-04	N/A	Wastewater	1,363 L
2018139	2018-04-25	N/A	Wastewater	250 L
2018128	2018-04-25	N/A	Wastewater	2,000 L
2018184	2018-05-19	N/A	Petroleum – fuel oil	N/A
2018200	2018-05-27	N/A	Petroleum – fuel oil	75 L
2018204	2018-05-30	N/A	Petroleum – fuel oil	45 L
2018206	2018-05-31	N/A	Petroleum – fuel oil	N/A
2018255	2018-06-27	N/A	Petroleum – fuel oil	N/A
2018254	2018-06-28	N/A	Petroleum – fuel oil	230 L
2018265	2018-07-05	N/A	Petroleum – fuel oil	2,000 L
2018291	2018-07-20	N/A	Petroleum – fuel oil	5 L
2018383	2018-09-17	N/A	Wastewater	N/A
2018415	2018-09-28	N/A	Petroleum – fuel oil	236 L
2018474	2018-12-07	N/A	N/A	100 L
2018486	2018-12-27	N/A	Wastewater	250 L

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

- No abandonment and restoration work was done in 2018.

vii. a summary of any studies requested by the Board that relate to waste disposal, water use or reclamation, and a brief description of any future studies planned;

- Alternate water source sampling and analysis occurred due to a fuel spill that potentially was going to reach the water intake pipe in Baker Lake.

viii. any other details on water use or waste disposal requested by the Board by November 1st of the year being reported; and

- none

ix. updates or revisions to the approved Operation and Maintenance Plans.
-none

ADDITIONAL INFORMATION THAT THE LICENSEE DEEMS USEFUL:

- The Hamlet is working with the Water Compliance Working Group to implement the Solid Waste Workplan goals.

FOLLOW-UP REGARDING INSPECTION/COMPLIANCE CONCERNS:

- The 3BM-BAK1526 INAC Inspection took place on July 19th, 2018. A copy of the inspection report can be found in Appendix H.

Appendix A: BAK-5 Effluent Quality Limits – 1 page
Appendix B: Weekly Inspections at Monitoring Program Stations, 1 page
Appendix C: Certificate of Analysis June 21, 2018 – 12 pages
Appendix D: Certificate of Analysis July 19, 2018 – 6 pages
Appendix E: Certificate of Analysis August 23, 2018 – 6 pages
Appendix F: Hazardous Materials Spill Database, Baker Lake 2018 – 2 pages
Appendix G: Baker Lake Sampling Results Summary 2018– 4 pages
Appendix H: INAC Inspection Report - 3 pages

Appendix A

Baker Lake Monitoring Stations and Sampling Parameters for Licence No. 3BM-BAK1623
Part D, Item 2; BAK-5 Effluent Quality Limits

Parameter	Maximum Concentration of any grab sample	BAK-5
		21-Jun-18
BOD	80 mg/L	10.9
Total Suspended Solids	100 mg/L	6.3
Fecal Coliforms	1 x 10^4 CFU/100mL	24200
Oil & Grease	no visible sheen	<5.0
pH	between 6 and 9	6.8

The annual sample taken at BAK-5, as per Part H, Item 1, was below maximum concentration for the effluent quality limits with the exception of Fecal Coliforms

Appendix B

Nunavut Water Board Licence No. 3BM-BAK1015

Baker Lake, NU

Part H: Weekly Inspections at Monitoring Program Stations, May to August

Week	Starting Date	BAK-2 Water Present (check)			BAK-3 Water Present (check)			BAK-4 Water Present (check)			BAK-5 Water Present (check)			Checked By
		Yes	No	Frozen	Yes	No	Frozen	Yes	No	Frozen	Yes	No	Frozen	
1	30-Apr-18													
2	07-May-18													
3	14-May-18													
4	21-May-18													
5	28-May-18													
6	04-Jun-18													
7	11-Jun-18													
8	18-Jun-18	✓			✓			✓			✓			Paul
9	25-Jun-18													
10	02-Jul-18													
11	09-Jul-18													
12	16-Jul-18													
13	23-Jul-18													
14	30-Jul-18													
15	06-Aug-18													
16	13-Aug-18													
17	20-Aug-18													
18	27-Aug-18													

Monitoring Program Station Locations:

BAK-2: Runoff from the Waste Disposal Facilities just prior to the inlet to Airplane Lake, prior to the culver

BAK-3: Outlet of Airplane Lake at water's edge

BAK-4: Runoff from the Solid Waste Disposal Facilities prior to Finger Lake

BAK-5: Finger Lake at outlet of Wetland

* Fax Sheets Weekly to Connor Faulkner at CGS- Rankin Inlet. Fax: (867) 645-8143

Appendix C

Hamlet of Baker Lake
ATTN: PAUL NARKYAGIK
Public Works Foreman - Wastewater
PO Box 149
Baker Lake NU X0C 0A0

Date Received: 22-JUN-18
Report Date: 18-JUL-18 13:19 (MT)
Version: FINAL

Client Phone: 867-793-2881

Certificate of Analysis

Lab Work Order #: L2117305

Project P.O. #: NOT SUBMITTED
Job Reference: HAMLET OF BAKER LAKE - WASTEWATER
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
L2117305-1 BAK-2							
Sampled By: Paul Narkyagik on 21-JUN-18 @ 12:00							
Matrix: WASTE WATER							
Miscellaneous Parameters							
Biochemical Oxygen Demand	<2.0		2.0	mg/L		22-JUN-18	R4103167
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	30.5		1.2	mg/L		27-JUN-18	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		27-JUN-18	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		27-JUN-18	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	25.0		1.0	mg/L		26-JUN-18	R4097988
Ammonia by colour							
Ammonia, Total (as N)	<0.010		0.010	mg/L		27-JUN-18	R4099627
Carbonaceous BOD							
BOD Carbonaceous	<2.0		2.0	mg/L		22-JUN-18	R4103167
Chloride in Water by IC							
Chloride (Cl)	4.06		0.50	mg/L		23-JUN-18	R4097564
Conductivity							
Conductivity	66.7		1.0	umhos/cm		26-JUN-18	R4097988
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	20		10	MPN/100mL		22-JUN-18	R4095712
Hardness Calculated							
Hardness (as CaCO3)	29.6	HTC	0.20	mg/L		28-JUN-18	
Mercury Total							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	25-JUN-18	26-JUN-18	R4098463
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		23-JUN-18	R4097564
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		27-JUN-18	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		23-JUN-18	R4097564
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		03-JUL-18	R4112496
Phenol (4AAP)							
Phenols (4AAP)	0.0013		0.0010	mg/L		27-JUN-18	R4101052
Phosphorus, Total							
Phosphorus (P)-Total	0.0192		0.0010	mg/L		03-JUL-18	R4110837
Sulfate in Water by IC							
Sulfate (SO4)	0.71		0.30	mg/L		23-JUN-18	R4097564
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0421		0.0030	mg/L	27-JUN-18	27-JUN-18	R4098959
Arsenic (As)-Total	0.00038		0.00010	mg/L	27-JUN-18	27-JUN-18	R4098959
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L	27-JUN-18	27-JUN-18	R4098959
Calcium (Ca)-Total	9.92		0.050	mg/L	27-JUN-18	27-JUN-18	R4098959
Chromium (Cr)-Total	0.00036		0.00010	mg/L	27-JUN-18	27-JUN-18	R4098959
Cobalt (Co)-Total	0.00019		0.00010	mg/L	27-JUN-18	27-JUN-18	R4098959
Copper (Cu)-Total	0.00155		0.00050	mg/L	27-JUN-18	27-JUN-18	R4098959
Iron (Fe)-Total	0.128		0.010	mg/L	27-JUN-18	27-JUN-18	R4098959
Lead (Pb)-Total	<0.000050		0.000050	mg/L	27-JUN-18	27-JUN-18	R4098959
Magnesium (Mg)-Total	1.17		0.0050	mg/L	27-JUN-18	27-JUN-18	R4098959
Manganese (Mn)-Total	0.0491		0.00010	mg/L	27-JUN-18	27-JUN-18	R4098959
Nickel (Ni)-Total	0.00088		0.00050	mg/L	27-JUN-18	27-JUN-18	R4098959
Potassium (K)-Total	0.765		0.050	mg/L	27-JUN-18	27-JUN-18	R4098959

* 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
L2117305-1 BAK-2							
Sampled By: Paul Narkyagik on 21-JUN-18 @ 12:00							
Matrix: WASTE WATER							
Total Metals in Water by CRC ICPMS							
Sodium (Na)-Total	1.02		0.050	mg/L	27-JUN-18	27-JUN-18	R4098959
Zinc (Zn)-Total	0.0031		0.0030	mg/L	27-JUN-18	27-JUN-18	R4098959
Total Organic Carbon by Combustion							
Total Organic Carbon	8.48		0.50	mg/L		13-JUL-18	R4126236
Total Suspended Solids							
Total Suspended Solids	<2.0		2.0	mg/L		28-JUN-18	R4104155
pH							
pH	7.05		0.10	pH units		26-JUN-18	R4097988
L2117305-2 BAK-3							
Sampled By: Paul Narkyagik on 21-JUN-18 @ 12:00							
Matrix: WASTE WATER							
Miscellaneous Parameters							
Biochemical Oxygen Demand	3.5		2.0	mg/L		22-JUN-18	R4103167
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	31.0		1.2	mg/L		27-JUN-18	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		27-JUN-18	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		27-JUN-18	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	25.4		1.0	mg/L		26-JUN-18	R4097988
Ammonia by colour							
Ammonia, Total (as N)	1.19		0.10	mg/L		27-JUN-18	R4099627
Carbonaceous BOD							
BOD Carbonaceous	<2.0		2.0	mg/L		22-JUN-18	R4103167
Chloride in Water by IC							
Chloride (Cl)	9.39		0.50	mg/L		23-JUN-18	R4097564
Conductivity							
Conductivity	92.9		1.0	umhos/cm		26-JUN-18	R4097988
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	190		10	MPN/100mL		22-JUN-18	R4095712
Hardness Calculated							
Hardness (as CaCO3)	25.8	HTC	0.20	mg/L		28-JUN-18	
Mercury Total							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	25-JUN-18	26-JUN-18	R4098463
Nitrate in Water by IC							
Nitrate (as N)	0.031		0.020	mg/L		23-JUN-18	R4097564
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		27-JUN-18	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		23-JUN-18	R4097564
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		03-JUL-18	R4112496
Phenol (4AAP)							
Phenols (4AAP)	<0.0010		0.0010	mg/L		27-JUN-18	R4101052
Phosphorus, Total							
Phosphorus (P)-Total	0.176		0.0010	mg/L		29-JUN-18	R4108927
Sulfate in Water by IC							
Sulfate (SO4)	4.47		0.30	mg/L		23-JUN-18	R4097564
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0908		0.0030	mg/L	27-JUN-18	27-JUN-18	R4098959

* 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
L2117305-2 BAK-3							
Sampled By: Paul Narkyagik on 21-JUN-18 @ 12:00							
Matrix: WASTE WATER							
Total Metals in Water by CRC ICPMS							
Arsenic (As)-Total	0.00042		0.00010	mg/L	27-JUN-18	27-JUN-18	R4098959
Cadmium (Cd)-Total	0.0000079		0.0000050	mg/L	27-JUN-18	27-JUN-18	R4098959
Calcium (Ca)-Total	7.84		0.050	mg/L	27-JUN-18	27-JUN-18	R4098959
Chromium (Cr)-Total	0.00022		0.00010	mg/L	27-JUN-18	27-JUN-18	R4098959
Cobalt (Co)-Total	0.00019		0.00010	mg/L	27-JUN-18	27-JUN-18	R4098959
Copper (Cu)-Total	0.00300		0.00050	mg/L	27-JUN-18	27-JUN-18	R4098959
Iron (Fe)-Total	0.383		0.010	mg/L	27-JUN-18	27-JUN-18	R4098959
Lead (Pb)-Total	0.000106		0.000050	mg/L	27-JUN-18	27-JUN-18	R4098959
Magnesium (Mg)-Total	1.50		0.0050	mg/L	27-JUN-18	27-JUN-18	R4098959
Manganese (Mn)-Total	0.0693		0.00010	mg/L	27-JUN-18	27-JUN-18	R4098959
Nickel (Ni)-Total	0.00079		0.00050	mg/L	27-JUN-18	27-JUN-18	R4098959
Potassium (K)-Total	1.84		0.050	mg/L	27-JUN-18	27-JUN-18	R4098959
Sodium (Na)-Total	5.77		0.050	mg/L	27-JUN-18	27-JUN-18	R4098959
Zinc (Zn)-Total	0.0039		0.0030	mg/L	27-JUN-18	27-JUN-18	R4098959
Total Organic Carbon by Combustion							
Total Organic Carbon	7.19		0.50	mg/L		13-JUL-18	R4126236
Total Suspended Solids							
Total Suspended Solids	3.9		2.0	mg/L		28-JUN-18	R4104155
pH							
pH	6.90		0.10	pH units		26-JUN-18	R4097988
L2117305-3 BAK-4							
Sampled By: Paul Narkyagik on 21-JUN-18 @ 12:00							
Matrix: WASTE WATER							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		26-JUN-18	R4097295
Toluene	<0.0010		0.0010	mg/L		26-JUN-18	R4097295
Ethyl benzene	<0.00050		0.00050	mg/L		26-JUN-18	R4097295
o-Xylene	<0.00050		0.00050	mg/L		26-JUN-18	R4097295
m+p-Xylenes	<0.00040		0.00040	mg/L		26-JUN-18	R4097295
F1 (C6-C10)	<0.10		0.10	mg/L		26-JUN-18	R4097295
Surrogate: 4-Bromofluorobenzene (SS)	89.0		70-130	%		26-JUN-18	R4097295
CCME PHC F2-F4 in Water							
F2 (C10-C16)	<0.10		0.10	mg/L	25-JUN-18	26-JUN-18	R4098084
F3 (C16-C34)	0.48		0.25	mg/L	25-JUN-18	26-JUN-18	R4098084
F4 (C34-C50)	<0.25		0.25	mg/L	25-JUN-18	26-JUN-18	R4098084
Surrogate: 2-Bromobenzotrifluoride	104.8		60-140	%	25-JUN-18	26-JUN-18	R4098084
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		04-JUL-18	
F2-Naphth	<0.10		0.10	mg/L		04-JUL-18	
F3-PAH	0.48		0.25	mg/L		04-JUL-18	
Total Hydrocarbons (C6-C50)	0.48		0.38	mg/L		04-JUL-18	
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.00064		0.00064	mg/L		27-JUN-18	
Miscellaneous Parameters							
Biochemical Oxygen Demand	10.5		2.0	mg/L		22-JUN-18	R4103167
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	<0.000020		0.000020	mg/L	25-JUN-18	29-JUN-18	R4098266
2-Methyl Naphthalene	<0.000020		0.000020	mg/L	25-JUN-18	29-JUN-18	R4098266
Acenaphthene	<0.000020		0.000020	mg/L	25-JUN-18	29-JUN-18	R4098266
Acenaphthylene	<0.000020		0.000020	mg/L	25-JUN-18	29-JUN-18	R4098266

* 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
L2117305-3 BAK-4							
Sampled By: Paul Narkyagik on 21-JUN-18 @ 12:00							
Matrix: WASTE WATER							
Polyaromatic Hydrocarbons (PAHs)							
Anthracene	<0.000010		0.000010	mg/L	25-JUN-18	29-JUN-18	R4098266
Acridine	<0.000020		0.000020	mg/L	25-JUN-18	29-JUN-18	R4098266
Benzo(a)anthracene	<0.000020	DLM	0.000020	mg/L	25-JUN-18	29-JUN-18	R4098266
Benzo(a)pyrene	<0.000020	DLM	0.000020	mg/L	25-JUN-18	29-JUN-18	R4098266
Benzo(b&j)fluoranthene	<0.000020	DLM	0.000020	mg/L	25-JUN-18	29-JUN-18	R4098266
Benzo(g,h,i)perylene	<0.000020	DLM	0.000020	mg/L	25-JUN-18	29-JUN-18	R4098266
Benzo(k)fluoranthene	<0.000010	DLM	0.000010	mg/L	25-JUN-18	29-JUN-18	R4098266
Chrysene	<0.000020		0.000020	mg/L	25-JUN-18	29-JUN-18	R4098266
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	25-JUN-18	29-JUN-18	R4098266
Fluoranthene	<0.000020		0.000020	mg/L	25-JUN-18	29-JUN-18	R4098266
Fluorene	<0.000020		0.000020	mg/L	25-JUN-18	29-JUN-18	R4098266
Indeno(1,2,3-cd)pyrene	<0.000020	DLM	0.000020	mg/L	25-JUN-18	29-JUN-18	R4098266
Naphthalene	<0.000050		0.000050	mg/L	25-JUN-18	29-JUN-18	R4098266
Phenanthrene	<0.000050		0.000050	mg/L	25-JUN-18	29-JUN-18	R4098266
Pyrene	<0.000010		0.000010	mg/L	25-JUN-18	29-JUN-18	R4098266
Quinoline	<0.000020		0.000020	mg/L	25-JUN-18	29-JUN-18	R4098266
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	25-JUN-18	29-JUN-18	R4098266
Surrogate: Acenaphthene d10	80.7		40-130	%	25-JUN-18	29-JUN-18	R4098266
Surrogate: Acridine d9	84.5		40-130	%	25-JUN-18	29-JUN-18	R4098266
Surrogate: Chrysene d12	96.9		40-130	%	25-JUN-18	29-JUN-18	R4098266
Surrogate: Naphthalene d8	84.4		40-130	%	25-JUN-18	29-JUN-18	R4098266
Surrogate: Phenanthrene d10	85.7		40-130	%	25-JUN-18	29-JUN-18	R4098266
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	52.1		1.2	mg/L		27-JUN-18	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		27-JUN-18	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		27-JUN-18	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	42.7		1.0	mg/L		26-JUN-18	R4097988
Ammonia by colour							
Ammonia, Total (as N)	4.68		0.10	mg/L		27-JUN-18	R4099627
Carbonaceous BOD							
BOD Carbonaceous	7.0		2.0	mg/L		22-JUN-18	R4103167
Chloride in Water by IC							
Chloride (Cl)	11.4		0.50	mg/L		23-JUN-18	R4097564
Conductivity							
Conductivity	149		1.0	umhos/cm		26-JUN-18	R4097988
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	>24200		10	MPN/100mL		22-JUN-18	R4095712
Hardness Calculated							
Hardness (as CaCO3)	30.1	HTC	0.20	mg/L		28-JUN-18	
Mercury Total							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	25-JUN-18	26-JUN-18	R4098463
Nitrate in Water by IC							
Nitrate (as N)	0.030		0.020	mg/L		23-JUN-18	R4097564
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		27-JUN-18	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		23-JUN-18	R4097564
Oil & Grease - Gravimetric							

* 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
L2117305-3 BAK-4							
Sampled By: Paul Narkyagik on 21-JUN-18 @ 12:00							
Matrix: WASTE WATER							
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		03-JUL-18	R4112496
Phenol (4AAP)							
Phenols (4AAP)	0.0080		0.0010	mg/L		27-JUN-18	R4101052
Phosphorus, Total							
Phosphorus (P)-Total	0.745		0.0010	mg/L		29-JUN-18	R4108927
Sulfate in Water by IC							
Sulfate (SO4)	9.14		0.30	mg/L		23-JUN-18	R4097564
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.289		0.0030	mg/L	27-JUN-18	27-JUN-18	R4098959
Arsenic (As)-Total	0.00055		0.00010	mg/L	27-JUN-18	27-JUN-18	R4098959
Cadmium (Cd)-Total	0.0000164		0.0000050	mg/L	27-JUN-18	27-JUN-18	R4098959
Calcium (Ca)-Total	8.96		0.050	mg/L	27-JUN-18	27-JUN-18	R4098959
Chromium (Cr)-Total	0.00041		0.00010	mg/L	27-JUN-18	27-JUN-18	R4098959
Cobalt (Co)-Total	0.00034		0.00010	mg/L	27-JUN-18	27-JUN-18	R4098959
Copper (Cu)-Total	0.00977		0.00050	mg/L	27-JUN-18	27-JUN-18	R4098959
Iron (Fe)-Total	0.608		0.010	mg/L	27-JUN-18	27-JUN-18	R4098959
Lead (Pb)-Total	0.000416		0.000050	mg/L	27-JUN-18	27-JUN-18	R4098959
Magnesium (Mg)-Total	1.87		0.0050	mg/L	27-JUN-18	27-JUN-18	R4098959
Manganese (Mn)-Total	0.0975		0.00010	mg/L	27-JUN-18	27-JUN-18	R4098959
Nickel (Ni)-Total	0.00101		0.00050	mg/L	27-JUN-18	27-JUN-18	R4098959
Potassium (K)-Total	3.42		0.050	mg/L	27-JUN-18	27-JUN-18	R4098959
Sodium (Na)-Total	8.03		0.050	mg/L	27-JUN-18	27-JUN-18	R4098959
Zinc (Zn)-Total	0.0117		0.0030	mg/L	27-JUN-18	27-JUN-18	R4098959
Total Organic Carbon by Combustion							
Total Organic Carbon	10.8		0.50	mg/L		13-JUL-18	R4126236
Total Suspended Solids							
Total Suspended Solids	12.0		2.0	mg/L		28-JUN-18	R4104155
pH							
pH	6.85		0.10	pH units		26-JUN-18	R4097988
L2117305-4 BAK-5							
Sampled By: Paul Narkyagik on 21-JUN-18 @ 12:00							
Matrix: WASTE WATER							
Miscellaneous Parameters							
Biochemical Oxygen Demand	10.9		2.0	mg/L		22-JUN-18	R4103167
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	38.1		1.2	mg/L		27-JUN-18	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		27-JUN-18	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		27-JUN-18	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	31.2		1.0	mg/L		26-JUN-18	R4097988
Ammonia by colour							
Ammonia, Total (as N)	4.29		0.10	mg/L		27-JUN-18	R4099627
Carbonaceous BOD							
BOD Carbonaceous	7.7		2.0	mg/L		22-JUN-18	R4103167
Chloride in Water by IC							
Chloride (Cl)	6.93		0.50	mg/L		23-JUN-18	R4097564
Conductivity							
Conductivity	95.2		1.0	umhos/cm		26-JUN-18	R4097988
Fecal coliforms, 1:10 dilution by QT97							

* 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
L2117305-4 BAK-5							
Sampled By: Paul Narkyagik on 21-JUN-18 @ 12:00							
Matrix: WASTE WATER							
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	24200		10	MPN/100mL		22-JUN-18	R4095712
Hardness Calculated							
Hardness (as CaCO3)	16.7	HTC	0.20	mg/L		28-JUN-18	
Mercury Total							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	25-JUN-18	26-JUN-18	R4098463
Nitrate in Water by IC							
Nitrate (as N)	0.030		0.020	mg/L		23-JUN-18	R4097564
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		27-JUN-18	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		23-JUN-18	R4097564
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		03-JUL-18	R4112496
Phenol (4AAP)							
Phenols (4AAP)	0.0111		0.0010	mg/L		27-JUN-18	R4101052
Phosphorus, Total							
Phosphorus (P)-Total	0.582		0.0010	mg/L		29-JUN-18	R4108927
Sulfate in Water by IC							
Sulfate (SO4)	2.55		0.30	mg/L		23-JUN-18	R4097564
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.104		0.0030	mg/L	27-JUN-18	27-JUN-18	R4098959
Arsenic (As)-Total	0.00035		0.00010	mg/L	27-JUN-18	27-JUN-18	R4098959
Cadmium (Cd)-Total	0.0000174		0.0000050	mg/L	27-JUN-18	27-JUN-18	R4098959
Calcium (Ca)-Total	5.00		0.050	mg/L	27-JUN-18	27-JUN-18	R4098959
Chromium (Cr)-Total	0.00021		0.00010	mg/L	27-JUN-18	27-JUN-18	R4098959
Cobalt (Co)-Total	0.00019		0.00010	mg/L	27-JUN-18	27-JUN-18	R4098959
Copper (Cu)-Total	0.0104		0.00050	mg/L	27-JUN-18	27-JUN-18	R4098959
Iron (Fe)-Total	0.223		0.010	mg/L	27-JUN-18	27-JUN-18	R4098959
Lead (Pb)-Total	0.000224		0.000050	mg/L	27-JUN-18	27-JUN-18	R4098959
Magnesium (Mg)-Total	1.02		0.0050	mg/L	27-JUN-18	27-JUN-18	R4098959
Manganese (Mn)-Total	0.0339		0.00010	mg/L	27-JUN-18	27-JUN-18	R4098959
Nickel (Ni)-Total	0.00076		0.00050	mg/L	27-JUN-18	27-JUN-18	R4098959
Potassium (K)-Total	2.23		0.050	mg/L	27-JUN-18	27-JUN-18	R4098959
Sodium (Na)-Total	5.21		0.050	mg/L	27-JUN-18	27-JUN-18	R4098959
Zinc (Zn)-Total	0.0105		0.0030	mg/L	27-JUN-18	27-JUN-18	R4098959
Total Organic Carbon by Combustion							
Total Organic Carbon	13.3		0.50	mg/L		17-JUL-18	R4131897
Total Suspended Solids							
Total Suspended Solids	6.3		2.0	mg/L		28-JUN-18	R4104155
pH							
pH	6.76		0.10	pH units		26-JUN-18	R4097988

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

Reference Information

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.
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.

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.

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.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

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°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-CVAF-WP	Water	Mercury Total	EPA245.7 V2.0

Mercury in filtered and unfiltered waters is oxidized with Bromine monochloride and analyzed by cold-vapour atomic fluorescence spectrometry.

MET-T-CCMS-WP	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (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-L-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 Phosphorous is determined colourimetrically after persulphate digestion of the sample.

PAH,PANH-WP	Water	Polyaromatic Hydrocarbons (PAHs)	EPA SW 846/8270-GC/MS

Water is spiked with a surrogate spike mix and extracted using solvent extraction techniques. Analysis is performed by GC/MS in the selected ion monitoring (SIM) mode.

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.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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:

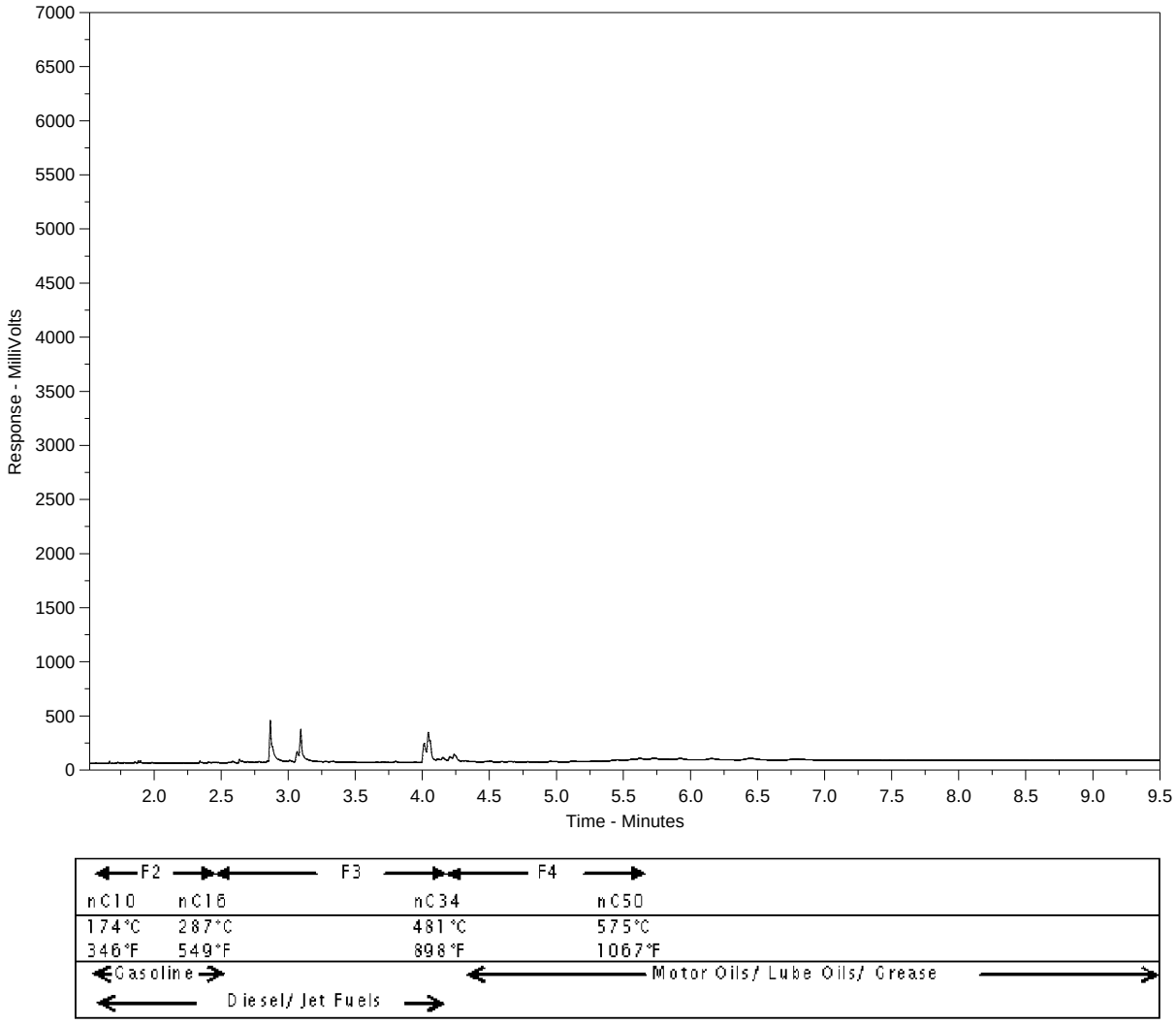
GLOSSARY OF REPORT TERMS

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: L2117305-3
Client Sample ID: BAK-4



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

L2117305-COFC

COC Number: 14 - 503464

Page 1 of 1

Report To	
Company:	Hamlet of Baker Lake
Contact:	Paul Narkyagik
Address:	P.O.Box 149 Hamlet of Baker Lake Nu X0C-0A0
Phone:	867-793-2881

Report Format / Distribution

Select Report Format: [X] 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: 867-793-2251
Email 2

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

- R [X] 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 [X] Yes [ ] No
Copy of Invoice with Report [ ] Yes [X] No
Company:
Contact:

Invoice Distribution

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

Project Information

ALS Quote #:
Job #:
PO / AFE:
LSD:

Oil and Gas Required Fields (client use)

Approver ID: Cost Center:
GL Account: Routing Code:
Activity Code:
Location:

ALS Lab Work Order # (lab use only)

ALS Contact: Sampler:

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD	Oil and Grease (P)	Routine	Nutrient (P)	Mercury (P)	Metals (P)	~~Ammonia~~ (P)	Coliforms	Phenols	F2-F4	BTEX, F1	PAH	Number of Containers
	BAK-2	-06-18		Waste Water	X	X	X	X	X	X	X	X	X				
	BAK-3	-06-18		〃	X	X	X	X	X	X	X	X	X				
	BAK-4	-06-18		〃	X	X	X	X	X	X	X	X	X	X	X	X	
	BAK-5	-06-18		〃	X	X	X	X	X	X	X	X					

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

Are samples taken from a Regulated DW System? [ ] Yes [X] No
Are samples for human drinking water use? [ ] Yes [X] No

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

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: | FINAL COOLER TEMPERATURES °C: 9

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Paul Narkyagik	Date: 06-21-18	Time: 11:45	Received by: [signature]	Date: June 22/18	Time: 12	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 D

Hamlet of Baker Lake
ATTN: PAUL NARKYAGIK
Public Works Foreman - Wastewater
PO Box 149
Baker Lake NU X0C 0A0

Date Received: 20-JUL-18
Report Date: 31-JUL-18 14:44 (MT)
Version: FINAL

Client Phone: 867-793-2881

Certificate of Analysis

Lab Work Order #: L2133356

Project P.O. #: NOT SUBMITTED
Job Reference:
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
L2133356-1 BAK-2							
Sampled By: CF on 19-JUL-18 @ 10:00							
Matrix: WW							
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	24.2		1.2	mg/L		25-JUL-18	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		25-JUL-18	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		25-JUL-18	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	19.8		1.0	mg/L		24-JUL-18	R4139684
Ammonia by colour							
Ammonia, Total (as N)	0.020		0.010	mg/L		26-JUL-18	R4144994
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	4.5		2.0	mg/L		21-JUL-18	R4145611
Carbonaceous BOD							
BOD Carbonaceous	<2.0		2.0	mg/L		21-JUL-18	R4145611
Chloride in Water by IC							
Chloride (Cl)	9.51		0.50	mg/L		21-JUL-18	R4141610
Conductivity							
Conductivity	75.8		1.0	umhos/cm		24-JUL-18	R4139684
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	10		10	MPN/100mL		20-JUL-18	R4137517
Hardness Calculated							
Hardness (as CaCO3)	23.4	HTC	0.20	mg/L		25-JUL-18	
Mercury Total							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	26-JUL-18	26-JUL-18	R4147887
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		21-JUL-18	R4141610
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		26-JUL-18	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		21-JUL-18	R4141610
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		30-JUL-18	R4151707
Phenol (4AAP)							
Phenols (4AAP)	<0.0010		0.0010	mg/L		25-JUL-18	R4140191
Phosphorus, Total							
Phosphorus (P)-Total	0.247		0.0010	mg/L		30-JUL-18	R4148148
Sulfate in Water by IC							
Sulfate (SO4)	4.42		0.30	mg/L		21-JUL-18	R4141610
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.0157		0.0030	mg/L	24-JUL-18	24-JUL-18	R4139757
Arsenic (As)-Total	0.00050		0.00010	mg/L	24-JUL-18	24-JUL-18	R4139757
Cadmium (Cd)-Total	0.0000051		0.0000050	mg/L	24-JUL-18	24-JUL-18	R4139757
Calcium (Ca)-Total	7.21		0.050	mg/L	24-JUL-18	24-JUL-18	R4139757
Chromium (Cr)-Total	0.00017		0.00010	mg/L	24-JUL-18	24-JUL-18	R4139757
Cobalt (Co)-Total	0.00012		0.00010	mg/L	24-JUL-18	24-JUL-18	R4139757
Copper (Cu)-Total	0.00202		0.00050	mg/L	24-JUL-18	24-JUL-18	R4139757
Iron (Fe)-Total	0.388		0.010	mg/L	24-JUL-18	24-JUL-18	R4139757
Lead (Pb)-Total	0.000062		0.000050	mg/L	24-JUL-18	24-JUL-18	R4139757
Magnesium (Mg)-Total	1.32		0.0050	mg/L	24-JUL-18	24-JUL-18	R4139757
Manganese (Mn)-Total	0.0214		0.00010	mg/L	24-JUL-18	24-JUL-18	R4139757
Nickel (Ni)-Total	0.00066		0.00050	mg/L	24-JUL-18	24-JUL-18	R4139757

* 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
L2133356-1 BAK-2							
Sampled By: CF on 19-JUL-18 @ 10:00							
Matrix: WW							
Total Metals in Water by CRC ICPMS							
Potassium (K)-Total	1.37		0.050	mg/L	24-JUL-18	24-JUL-18	R4139757
Sodium (Na)-Total	5.56		0.050	mg/L	24-JUL-18	24-JUL-18	R4139757
Zinc (Zn)-Total	0.0037		0.0030	mg/L	24-JUL-18	24-JUL-18	R4139757
Total Organic Carbon by Combustion							
Total Organic Carbon	8.20		0.50	mg/L		30-JUL-18	R4150367
Total Suspended Solids							
Total Suspended Solids	8.8		2.0	mg/L		26-JUL-18	R4144962
pH							
pH	7.29		0.10	pH units		24-JUL-18	R4139684

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

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
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.

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.

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.

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°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-CVAF-WP	Water	Mercury Total	EPA245.7 V2.0

Mercury in filtered and unfiltered waters is oxidized with Bromine monochloride and analyzed by cold-vapour atomic fluorescence spectrometry.

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

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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-L-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 Phosphorous is determined colourimetrically after persulphate digestion of the sample.			
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.			

** 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.

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2133356-COFC

COC Number: 14 - 450481

Page 1 of 1

Report To		Report Format / Distribution		Turnaround Time (TAT) is not available for all tests)	
Company:	Hamlet of Baker Lake	Select Report Format:	☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)	R ☑	Regular (Standard TAT if received by 3pm)
Contact:	Paul Narkyagik	Quality Control (QC) Report with Report	☐ Yes ☐ No	P ☐	Priority (2-4 business days if received by 3pm)
Address:	PO Box 149 Baker Lake, NU X0C 0A0 4th Ave	☐ Criteria on Report - provide details below if box checked		E ☐	Emergency (1-2 business days if received by 3pm)
		Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX	E2 ☐	Same day or weekend emergency if received by 10am – contact ALS for surcharge.
Phone:	867-793-2874 / 793-2881	Email 1 or Fax	cfaulkner@gov.nu.ca	Specify Date Required for E2,E or P:	
		Email 2	blsao@northwestel.net		

Invoice To			Invoice Distribution	
	Same as Report To	☑ Yes ☐ No	Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
	Copy of Invoice with Report	☑ Yes ☐ No		
Company:			Email 1 or Fax	
Contact:			Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:		Approver ID:	Cost Center:
Job #:		GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)		ALS Contact:	Sampler: Connor Faulkner

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	Routine + BOD (same bottle)	Bacteria	Nutrients	Phenols	Oil + grease	metals	Mercury	Number of Containers
	BAK-2	July 19/18	10 AM	WW	✓	P	P	P	P	P	P	8
					✓	BOD + ROUTINE SAMPLES IN SAME BOTTLE (ROUTINE + BOD ANALYSIS).						

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☒ No	Nunavut - WW - GRP 2
Are samples for human drinking water use? ☐ Yes ☒ No	

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			FINAL COOLER TEMPERATURES °C		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
	July 19/18	10:00 AM	JO	JUL 20/18	12:00			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

ALS-EM-0328e v08 Front03 October 2013

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

15.3

Appendix E

Hamlet of Baker Lake
ATTN: PAUL NARKYAGIK
Baker Lake Swimming Pool
PO Box 149
Baker Lake NU X0C 0A0

Date Received: 24-AUG-18
Report Date: 05-SEP-18 14:26 (MT)
Version: FINAL

Client Phone: 867-793-2881

Certificate of Analysis

Lab Work Order #: L2152807

Project P.O. #: NOT SUBMITTED
Job Reference: BAKER LAKE WASTE WATER
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
L2152807-1 BAK-2							
Sampled By: Paul Narkyagik							
Matrix: WASTE WATER							
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	50.6		1.2	mg/L		28-AUG-18	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		28-AUG-18	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		28-AUG-18	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	41.5		1.0	mg/L		27-AUG-18	R4187727
Ammonia by colour							
Ammonia, Total (as N)	0.171		0.010	mg/L		25-AUG-18	R4188107
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	<2.0		2.0	mg/L		25-AUG-18	R4195359
Carbonaceous BOD							
BOD Carbonaceous	<2.0		2.0	mg/L		25-AUG-18	R4195359
Chloride in Water by IC							
Chloride (Cl)	28.5		0.50	mg/L		26-AUG-18	R4195178
Conductivity							
Conductivity	254		1.0	umhos/cm		27-AUG-18	R4187727
Fecal coliforms, 1:10 dilution by QT97							
Fecal Coliforms	<10		10	MPN/100mL		24-AUG-18	R4182960
Hardness Calculated							
Hardness (as CaCO3)	66.9	HTC	0.20	mg/L		05-SEP-18	
Mercury Total							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L	27-AUG-18	28-AUG-18	R4190953
Nitrate in Water by IC							
Nitrate (as N)	1.58		0.020	mg/L		26-AUG-18	R4195178
Nitrate+Nitrite							
Nitrate and Nitrite as N	1.63		0.070	mg/L		31-AUG-18	
Nitrite in Water by IC							
Nitrite (as N)	0.051		0.010	mg/L		26-AUG-18	R4195178
Oil & Grease - Gravimetric							
Oil and Grease	<5.0		5.0	mg/L		05-SEP-18	R4203032
Phenol (4AAP)							
Phenols (4AAP)	<0.0010		0.0010	mg/L		31-AUG-18	R4197608
Phosphorus, Total							
Phosphorus (P)-Total	0.741		0.0010	mg/L		04-SEP-18	R4200955
Sulfate in Water by IC							
Sulfate (SO4)	30.7		0.30	mg/L		26-AUG-18	R4195178
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	0.121		0.0030	mg/L	04-SEP-18	04-SEP-18	R4201068
Arsenic (As)-Total	0.00103		0.00010	mg/L	04-SEP-18	04-SEP-18	R4201068
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L	04-SEP-18	04-SEP-18	R4201068
Calcium (Ca)-Total	20.0		0.050	mg/L	04-SEP-18	04-SEP-18	R4201068
Chromium (Cr)-Total	0.00047		0.00010	mg/L	04-SEP-18	04-SEP-18	R4201068
Cobalt (Co)-Total	0.00033		0.00010	mg/L	04-SEP-18	04-SEP-18	R4201068
Copper (Cu)-Total	0.00430		0.00050	mg/L	04-SEP-18	04-SEP-18	R4201068
Iron (Fe)-Total	0.836		0.010	mg/L	04-SEP-18	04-SEP-18	R4201068
Lead (Pb)-Total	0.000488		0.000050	mg/L	04-SEP-18	04-SEP-18	R4201068
Magnesium (Mg)-Total	4.11		0.0050	mg/L	04-SEP-18	04-SEP-18	R4201068
Manganese (Mn)-Total	0.0573		0.00010	mg/L	04-SEP-18	04-SEP-18	R4201068
Nickel (Ni)-Total	0.00170		0.00050	mg/L	04-SEP-18	04-SEP-18	R4201068

* 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
L2152807-1 BAK-2							
Sampled By: Paul Narkyagik							
Matrix: WASTE WATER							
Total Metals in Water by CRC ICPMS							
Potassium (K)-Total	5.26		0.050	mg/L	04-SEP-18	04-SEP-18	R4201068
Sodium (Na)-Total	18.6		0.050	mg/L	04-SEP-18	04-SEP-18	R4201068
Zinc (Zn)-Total	0.0055		0.0030	mg/L	04-SEP-18	04-SEP-18	R4201068
Total Organic Carbon by Combustion							
Total Organic Carbon	9.91		0.50	mg/L		29-AUG-18	R4194046
Total Suspended Solids							
Total Suspended Solids	3.5		2.0	mg/L		31-AUG-18	R4199048
pH							
pH	7.34		0.10	pH units		27-AUG-18	R4187727

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

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
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.

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.

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.

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°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 200.2/6020A (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.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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-L-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 Phosphorous is determined colourimetrically after persulphate digestion of the sample.			
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.			

** 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.

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2152807-COFC

COC Number: 14 - 450496

Page ____ of ____

Report To		Report Format / Distribution		Turnaround Time (TAT) Required
Company:	Hamlet of Baker Lake	Select Report Format:	☐ PDF ☐ EXCEL ☐ EDD (DIGITAL)	Regular (Rush Turnaround Time (TAT) is not available for all tests)
Contact:	Paul Narkyagik	Quality Control (QC) Report with Report	☐ Yes ☒ No	(Default if Rush TAT not requested)
Address:	P.O. Box 149 Hamlet of Baker Lake, NU X0C-0A0	☐ Criteria on Report - provide details below if box checked		P ☐ Priority (2-4 business days if received by 3pm)
		Select Distribution:	☐ EMAIL ☐ MAIL ☐ FAX	E ☐ Emergency (1-2 business days if received by 3pm)
Phone:	867-793-2881	Email 1 or Fax		E2 ☐ Same day or weekend emergency if received by 10am – contact ALS for surcharge.
		Email 2		Specify Date Required for E2, E or P:

Invoice To		Invoice Distribution	
	Same as Report To ☒ Yes ☐ No	Select Invoice Distribution:	☐ EMAIL ☐ MAIL ☐ FAX
	Copy of Invoice with Report ☐ Yes ☒ No	Email 1 or Fax	
Company:		Email 2	
Contact:			

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

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD	Oil and Grease	Routine Nutrient	Mercury	Metals	Coliforms	Phenols	Number of Containers
					P	P	P	P	P			
	BAK-2				X	X	X	X	X	X	X	

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☒ No	
Are samples for human drinking water use? ☐ Yes ☒ No	

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			FINAL COOLER TEMPERATURES °C		
					10°

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
Paul N	Aug.23/18	11:15		AUG 24 2018	12:10			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA-FM-0326a V08 Front/03 October 2013

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 F

Spills

Occurance Date

Start date

Jan | 1 | 2018

End date

Dec | 31 | 2018

Spill Region

- Any -

Spill Location

--Baker Lake

Spill Location Description

Report Number

Items per page

100

Go | Reset

Spill	Occurance Date	Spill Region	Location	Location Description	Product Spilled	Quantity	Spill Cause	Lead Agency
spill-2018486	December 27, 2018	Keewatin	Baker Lake, Community, Nunavut		Wastewater (sewage, mine tailings)	250.00		GN - Government of Nunavut
spill-2018474	December 7, 2018	Keewatin	Baker Lake, Community, Nunavut			100.00		GN - Government of Nunavut
spill-2018415	September 28, 2018	Keewatin	Baker Lake, Community, Nunavut		Petroleum - fuel oil (jet A, diesel, turbo A, heat)	236.00	Breakage	GN - Government of Nunavut
spill-2018383	September 17, 2018	Keewatin	Baker Lake, Community, Nunavut		Wastewater (sewage, mine tailings)	Unknown Quantity		GN - Government of Nunavut
spill-2018291	July 20, 2018	Keewatin	Baker Lake, Community, Nunavut		Petroleum - fuel oil (jet A, diesel, turbo A, heat)	5.00	Tank Leak	GN - Government of Nunavut

spill-2018265	July 5, 2018	Keewatin	Baker Lake, Community, Nunavut		Petroleum - fuel oil (jet A, diesel, turbo A, heat)	2000.00	Overflow Event	GN - Government of Nunavut
spill-2018254	June 28, 2018	Keewatin	Baker Lake, Community, Nunavut		Petroleum - fuel oil (jet A, diesel, turbo A, heat)	230.00		GN - Government of Nunavut
spill-2018255	June 27, 2018	Keewatin	Baker Lake, Community, Nunavut		Petroleum - fuel oil (jet A, diesel, turbo A, heat)	Unknown Quantity	Breakage	GN - Government of Nunavut
spill-2018206	May 31, 2018	Keewatin	Baker Lake, Community, Nunavut		Petroleum - fuel oil (jet A, diesel, turbo A, heat)	Unknown Quantity	Tank Leak	GN - Government of Nunavut
spill-2018204	May 30, 2018	Keewatin	Baker Lake, Community, Nunavut		Petroleum - fuel oil (jet A, diesel, turbo A, heat)	45.00	Tank Leak	GN - Government of Nunavut
spill-2018200	May 27, 2018	Keewatin	Baker Lake, Community, Nunavut		Petroleum - fuel oil (jet A, diesel, turbo A, heat)	75.00	Tank Leak	GN - Government of Nunavut
spill-2018184	May 19, 2018	Keewatin	Baker Lake, Community, Nunavut		Petroleum - fuel oil (jet A, diesel, turbo A, heat)	Unknown Quantity	Breakage	GN - Government of Nunavut
spill-2018128	April 25, 2018	Keewatin	Baker Lake, Community, Nunavut		Wastewater (sewage, mine tailings)	2000.00	Pipe Leaks	GN - Government of Nunavut
spill-2018139	April 25, 2018	Keewatin	Baker Lake, Community, Nunavut		Wastewater (sewage, mine tailings)	250.00	Breakage	GN - Government of Nunavut
spill-2018114	April 4, 2018	Keewatin	Baker Lake, Community, Nunavut		Wastewater (sewage, mine tailings)	1363.00	Overflow Event	GN - Government of Nunavut
spill-2018113	April 4, 2018	Keewatin	Baker Lake, Community, Nunavut		Wastewater (sewage, mine tailings)	Unknown Quantity	Deliberate Discharge	GN - Government of Nunavut
spill-2018053	February 26, 2018	Keewatin	Baker Lake	Baker Lake, NU	Wastewater (sewage, mine tailings)	0.00	Other	GN - Government of Nunavut
spill-2018115	February 20, 2018	Keewatin	Baker Lake, Community, Nunavut		Wastewater (sewage, mine tailings)	Unknown Quantity		GN - Government of Nunavut
spill-2018041	February 9, 2018	Keewatin	Baker Lake	Baker Lake, NU	Wastewater (sewage, mine tailings)	500.00	Fitting Leak	GN - Government of Nunavut

Displaying 1 - 19 of 19

Appendix G

Baker Lake
BAK-2

			2018			Statistics		
Parameter	**Unit**	**DL**	**21-Jun-18**	**19-Jul-18**	**23-Aug-18**	**Min**	**Max**	**Average**
Alkalinity								
Bicarbonate (HCO3)	mg/L	1.2	30.5	24.2	50.6	16.5	62.1	40.00
Carbonate (CO3)	mg/L	0.60	<0.60	<0.60	<0.60	0.6	12	2.88
Hydroxide (OH)	mg/L	0.34	<0.34	<0.34	<0.34	0.34	6.8	1.63
Total (as CaCO3)	mg/L	1.0	25.0	19.8	41.5	13.5	50.9	32.82
Ammonia by Colour								
Total (as N)	mg/L	0.20	<0.010	0.020	0.171	0.01	1.04	0.30
Biochemical Oxygen Demand (BOD)								
Biochemical Oxygen Demand	mg/L	6.0	<2.0	4.5	<2.0	2	9	3.99
Carbonaceous BOD								
BOD Carbonaceous	mg/L	6.0	<2.0	<2.0	<2.0	2	6	2.80
Chloride in Water by IC								
Chloride (Cl)	mg/L	10	4.06	9.51	28.5	4.21	31.1	17.14
Conductivity								
Conductivity	umhos/cm	1.0	66.7	75.8	254	63.8	279	177.79
Fecal Coliforms								
Fecal Coliforms	MPN/100mL	3	20	10	<10	4	2300	407.00
Hardness Calculated								
Hardness (as CaCO3)	mg/L	0.30	29.6	23.4	66.9	19.6	79.7	51.28
Mercury Total								
Mercury (Hg)	mg/L	0.00020	<0.0000050	<0.0000050	<0.0000050	0.000005	0.000058	0.00
Nitrate in Water by IC								
Nitrate (as N)	mg/L	0.40	<0.020	<0.020	1.58	0.349	1.63	0.91
Nitrate + Nitrite								
Nitrate and Nitrite as N	mg/L	0.45	<0.070	<0.070	1.630	0.349	1.66	0.96
Nitrite in Water by IC								
Nitrite (as N)	mg/L	0.20	<0.010	<0.010	0.051	0.01	0.198	0.05
Oil & Grease - Gravimetric								
Oil and Grease	mg/L	5.0	<5.0	<5.0	<5.0	2	19.3	5.23
Phenol								
Phenols	mg/L	0.0010	0.0013	<0.0010	<0.0010	0.001	0.026	0.00
Phosphorus, Total								
Phosphorus (P)	mg/L	0.010	0.0192	0.247	0.741	0.168	1.72	0.52
Sulfate in Water by IC								
Sulfate (SO4)	mg/L	6.0	0.71	4.42	30.7	6.71	35.3	19.89
Total Metals by ICP-MS								
Aluminium (Al)	mg/L	0.0050	0.0421	0.0157	0.121	0.0342	0.237	0.08
Arsenic (As)	mg/L	0.00020	0.00038	0.00050	0.00103	0.00027	0.00112	0.00
Cadmium (Cd)	mg/L	0.000010	<0.0000050	0.0000051	<0.0000050	0.0000092	0.000019	0.00
Calcium (Ca)	mg/L	0.10	9.92	7.21	20.00	6.15	24.8	15.64
Chromium (Cr)	mg/L	0.0010	0.00036	0.00017	0.00047	0.0002	0.0017	0.00
Cobalt (Co)	mg/L	0.00020	0.00019	0.00012	0.00033	0.0002	0.0037	0.00
Copper (Cu)	mg/L	0.00020	0.00155	0.00202	0.0043	0.00255	0.0049	0.00
Iron (Fe)	mg/L	0.010	0.128	0.388	0.836	0.224	1.18	0.57
Lead (Pb)	mg/L	0.000090	<0.00050	0.000062	0.000488	0.000072	0.000495	0.00
Magnesium (Mg)	mg/L	0.010	1.17	1.32	4.11	1.02	4.31	2.96
Manganese (Mn)	mg/L	0.00030	0.0491	0.0214	0.0573	0.021	0.141	0.07
Nickel (Ni)	mg/L	0.0020	0.00088	0.00066	0.0017	0.00104	0.002	0.00
Potassium (K)	mg/L	0.020	0.765	1.370	5.260	1.18	6.05	3.12
Sodium (Na)	mg/L	0.030	1.02	5.56	18.6	2.95	22.1	12.17
Zinc (Zn)	mg/L	0.0020	0.0031	0.0037	0.0055	0.0029	0.0117	0.01
Total Organic Carbon by Combustion								
Total Organic Carbon	mg/L	0.50	8.48	8.20	9.91	4.81	18.1	8.98
Total Suspended Solids								
Total Suspended Solids	mg/L	13	<2.0	8.8	3.5	5	13	9.00
pH								
pH	pH Units	0.10	7.05	7.29	7.34	6.98	7.66	7.32
Benzene	mg/L	0.00050	N/A	N/A	N/A	0	0	0.00
Toluene	mg/L	0.0010	N/A	N/A	N/A	0	0	0.00
Ethyl Benzene	mg/L	0.00050	N/A	N/A	N/A	0	0	0.00
o-Xylene	mg/L	0.00050	N/A	N/A	N/A	0	0	0.00
F1 (C6-C10)	mg/L	0.10	N/A	N/A	N/A	0	0	0.00
F2 (C10-C16)	mg/L	0.25	N/A	N/A	N/A	0	0	0.00
F3 (C16-C34)	mg/L	0.25	N/A	N/A	N/A	0	0	0.00
F4 (C34-C50)	mg/L	0.25	N/A	N/A	N/A	0	0	0.00
Total Hydrocarbons (C6-C50)	mg/L	0.44	N/A	N/A	N/A	0	0	0.00

Baker Lake
BAK-3

			2018	Statistics		
Parameter	**Unit**	**DL**	**21-Jun-18**	**Min**	**Max**	**Average**
Alkalinity						
Bicarbonate (HCO3)	mg/L	1.2	31.0	18.2	39	26.15
Carbonate (CO3)	mg/L	0.60	<0.60	0.60	12	3.45
Hydroxide (OH)	mg/L	0.34	<0.34	0.34	6.8	1.96
Total (as CaCO3)	mg/L	1.0	25.4	14.9	35	22.20
Ammonia by Colour						
Total (as N)	mg/L	0.20	1.19	0.01	0.247	0.12
Biochemical Oxygen Demand (BOD)						
Biochemical Oxygen Demand	mg/L	6.0	3.5	2	7.1	4.35
Carbonaceous BOD						
BOD Carbonaceous	mg/L	6.0	<2.0	2	6	3.48
Chloride in Water by IC						
Chloride (Cl)	mg/L	10	9.39	7.82	11.4	9.49
Conductivity						
Conductivity	umhos/cm	1.0	92.9	72.2	88	82.15
Fecal Coliforms						
Fecal Coliforms	MPN/100mL	3	190	3	150	41.50
Hardness Calculated						
Hardness (as CaCO3)	mg/L	0.30	25.8	21.3	24.6	23.18
Mercury Total						
Mercury (Hg)	mg/L	0.00020	<0.0000050	0.000005	0.00002	0.00
Nitrate in Water by IC						
Nitrate (as N)	mg/L	0.40	0.031	0.02	0.179	0.07
Nitrate + Nitrite						
Nitrate and Nitrite as N	mg/L	0.45	<0.070	0.07	0.179	0.10
Nitrite in Water by IC						
Nitrite (as N)	mg/L	0.20	<0.010	0.01	0.05	0.02
Oil & Grease - Gravimetric						
Oil and Grease	mg/L	5.0	<5.0	2	5	3.50
Phenol						
Phenols	mg/L	0.0010	<0.0010	0.001	0.0033	0.00
Phosphorus, Total						
Phosphorus (P)	mg/L	0.010	0.2	0.079	0.145	0.11
Sulfate in Water by IC						
Sulfate (SO4)	mg/L	6.0	4.47	3.24	6.09	4.36
Total Metals by ICP-MS						
Aluminium (Al)	mg/L	0.0050	0.0908	0.0198	0.0706	0.05
Arsenic (As)	mg/L	0.00020	0.00042	0.00029	0.00063	0.00
Cadmium (Cd)	mg/L	0.000010	0.0000079	0.00001	0.00001	0.00
Calcium (Ca)	mg/L	0.10	7.74	6.55	7.35	6.97
Chromium (Cr)	mg/L	0.0010	0.00022	0.001	0.001	0.00
Cobalt (Co)	mg/L	0.00020	0.00019	0.0002	0.00026	0.00
Copper (Cu)	mg/L	0.00020	0.00300	0.00142	0.00238	0.00
Iron (Fe)	mg/L	0.010	0.383	0.335	0.47	0.42
Lead (Pb)	mg/L	0.000090	0.000106	0.00009	0.00009	0.00
Magnesium (Mg)	mg/L	0.010	1.50	1.21	1.53	1.41
Manganese (Mn)	mg/L	0.00030	0.0693	0.0295	0.0811	0.05
Nickel (Ni)	mg/L	0.0020	0.00079	0.002	0.002	0.00
Potassium (K)	mg/L	0.020	1.84	1	1.54	1.33
Sodium (Na)	mg/L	0.030	5.77	4.07	6.89	5.66
Zinc (Zn)	mg/L	0.0020	0.0039	0.0024	0.0038	0.00
Total Organic Carbon by Combustion						
Total Organic Carbon	mg/L	0.50	7.19	5.51	13.9	8.08
Total Suspended Solids						
Total Suspended Solids	mg/L	13	3.9	7	15	9.75
pH						
pH	pH Units	0.10	6.9	7.16	8.46	7.54
Benzene	mg/L	0.00050	N/A	0	0	#DIV/0!
Toluene	mg/L	0.0010	N/A	0	0	#DIV/0!
Ethyl Benzene	mg/L	0.00050	N/A	0	0	#DIV/0!
o-Xylene	mg/L	0.00050	N/A	0	0	#DIV/0!
F1 (C6-C10)	mg/L	0.10	N/A	0	0	#DIV/0!
F2 (C10-C16)	mg/L	0.25	N/A	0	0	#DIV/0!
F3 (C16-C34)	mg/L	0.25	N/A	0	0	#DIV/0!
F4 (C34-C50)	mg/L	0.25	N/A	0	0	#DIV/0!
Total Hydrocarbons (C6-C50)	mg/L	0.44	N/A	0	0	#DIV/0!

Baker Lake
BAK-4

			2018		Statistics	
Parameter	**Unit**	**DL**	**21-Jun-18**	**Min**	**Max**	**Average**
Alkalinity						
Bicarbonate (HCO3)	mg/L	1.2	52.1	30.4	79	48.13
Carbonate (CO3)	mg/L	0.60	<0.60	0.6	12	3.45
Hydroxide (OH)	mg/L	0.34	<0.34	0.34	6.8	1.96
Total (as CaCO3)	mg/L	1.0	42.7	24.9	64	39.25
Ammonia by Colour						
Total (as N)	mg/L	0.20	4.68	0.95	3.9	2.59
Biochemical Oxygen Demand (BOD)						
Biochemical Oxygen Demand	mg/L	6.0	10.5	3	12.7	5.95
Carbonaceous BOD						
BOD Carbonaceous	mg/L	6.0	7.0	2.1	8.9	4.08
Chloride in Water by IC						
Chloride (Cl)	mg/L	10	11.4	3.87	38.3	16.83
Conductivity						
Conductivity	umhos/cm	1.0	149	69	317	162.55
Fecal Coliforms						
Fecal Coliforms	MPN/100mL	3	>24200	4	12000	5926.00
Hardness Calculated						
Hardness (as CaCO3)	mg/L	0.30	30.1	16.2	59.9	36.38
Mercury Total						
Mercury (Hg)	mg/L	0.00020	<0.0000050	0.000005	0.0002	0.00
Nitrate in Water by IC						
Nitrate (as N)	mg/L	0.40	0.030	0.044	0.4	0.19
Nitrate + Nitrite						
Nitrate and Nitrite as N	mg/L	0.45	<0.070	0.07	0.902	0.33
Nitrite in Water by IC						
Nitrite (as N)	mg/L	0.20	<0.010	0.01	0.502	0.14
Oil & Grease - Gravimetric						
Oil and Grease	mg/L	5.0	<5.0	2	5.1	3.60
Phenol						
Phenols	mg/L	0.0010	0.0080	0.001	0.0041	0.00
Phosphorus, Total						
Phosphorus (P)	mg/L	0.010	0.745	0.385	2.16	0.89
Sulfate in Water by IC						
Sulfate (SO4)	mg/L	6.0	9.14	1.42	21.9	10.78
Total Metals by ICP-MS						
Aluminium (Al)	mg/L	0.0050	0.289	0.0511	0.204	0.10
Arsenic (As)	mg/L	0.00020	0.00055	0.00029	0.00114	0.00
Cadmium (Cd)	mg/L	0.000010	0.0000164	0.00001	0.000017	0.00
Calcium (Ca)	mg/L	0.10	8.96	4.66	17	10.82
Chromium (Cr)	mg/L	0.0010	0.00041	0.001	0.001	0.00
Cobalt (Co)	mg/L	0.00020	0.00034	0.0002	0.00053	0.00
Copper (Cu)	mg/L	0.00020	0.00977	0.00371	0.00494	0.00
Iron (Fe)	mg/L	0.010	0.608	0.247	1.3	0.62
Lead (Pb)	mg/L	0.000090	0.000416	0.000129	0.000418	0.00
Magnesium (Mg)	mg/L	0.010	1.87	0.839	4.26	2.28
Manganese (Mn)	mg/L	0.00030	0.0975	0.0416	0.239	0.10
Nickel (Ni)	mg/L	0.0020	0.00101	0.002	0.002	0.00
Potassium (K)	mg/L	0.020	3.42	1.1	7.54	3.34
Sodium (Na)	mg/L	0.030	8.03	2.24	25.7	11.13
Zinc (Zn)	mg/L	0.0020	0.0117	0.0054	0.0106	0.01
Total Organic Carbon by Combustion						
Total Organic Carbon	mg/L	0.50	10.8	6.3	18.6	10.09
Total Suspended Solids						
Total Suspended Solids	mg/L	13	12.0	5	25	10.00
pH						
pH	pH Units	0.10	6.9	6.87	7.42	7.15
Benzene	mg/L	0.00050	<0.00050	0.0005	0.0005	0.00
Toluene	mg/L	0.0010	<0.0010	0.001	0.001	0.00
Ethyl Benzene	mg/L	0.00050	<0.00050	0.0005	0.0005	0.00
o-Xylene	mg/L	0.00050	<0.00050	0.0005	0.0005	0.00
F1 (C6-C10)	mg/L	0.10	<0.10	0.1	0.1	0.10
F2 (C10-C16)	mg/L	0.25	<0.10	0.1	0.25	0.18
F3 (C16-C34)	mg/L	0.25	0.48	0.27	0.42	0.35
F4 (C34-C50)	mg/L	0.25	<0.25	0.25	0.25	0.25
Total Hydrocarbons (C6-C50)	mg/L	0.44	0.48	0.38	0.44	0.41

Baker Lake
BAK-5

			2018	Statistics		
Parameter	**Unit**	**DL**	**21-Jun-18**	**Min**	**Max**	**Average**
Alkalinity						
Bicarbonate (HCO3)	mg/L	1.2	38.1	31.4	96	51.53
Carbonate (CO3)	mg/L	0.60	<0.60	0.6	12	3.45
Hydroxide (OH)	mg/L	0.34	<0.34	0.34	6.8	1.96
Total (as CaCO3)	mg/L	1.0	31.2	25.7	79	42.30
Ammonia by Colour						
Total (as N)	mg/L	0.20	4.29	2.63	6.3	3.86
Biochemical Oxygen Demand (BOD)						
Biochemical Oxygen Demand	mg/L	6.0	10.9	3.7	15.2	9.35
Carbonaceous BOD						
BOD Carbonaceous	mg/L	6.0	7.7	2.3	15.9	7.15
Chloride in Water by IC						
Chloride (Cl)	mg/L	10	6.93	4.24	47.8	19.54
Conductivity						
Conductivity	umhos/cm	1.0	95.2	67.3	357	167.03
Fecal Coliforms						
Fecal Coliforms	MPN/100mL	3	24200	930	19900	6357.50
Hardness Calculated						
Hardness (as CaCO3)	mg/L	0.30	16.7	14.1	43.7	26.03
Mercury Total						
Mercury (Hg)	mg/L	0.00020	<0.0000050	0.000005	0.0002	0.00005
Nitrate in Water by IC						
Nitrate (as N)	mg/L	0.40	0.030	0.035	0.672	0.31
Nitrate + Nitrite						
Nitrate and Nitrite as N	mg/L	0.45	<0.070	0.07	2.29	0.79
Nitrite in Water by IC						
Nitrite (as N)	mg/L	0.20	<0.010	0.01	1.62	0.47
Oil & Grease - Gravimetric						
Oil and Grease	mg/L	5.0	<5.0	2.0	5.0	3.50
Phenol						
Phenols	mg/L	0.0010	0.0111	0.001	0.005	0.0024
Phosphorus, Total						
Phosphorus (P)	mg/L	0.010	0.582	0.401	2.32	1.00
Sulfate in Water by IC						
Sulfate (SO4)	mg/L	6.0	2.55	1.36	3.5	2.52
Total Metals by ICP-MS						
Aluminium (Al)	mg/L	0.0050	0.104	0.049	0.0728	0.06
Arsenic (As)	mg/L	0.00020	0.00035	0.00023	0.00158	0.00074
Cadmium (Cd)	mg/L	0.000010	0.0000174	0.00001	0.00001	0.00001
Calcium (Ca)	mg/L	0.10	5.00	4.33	11.9	7.44
Chromium (Cr)	mg/L	0.0010	0.00021	0.001	0.001	0.00100
Cobalt (Co)	mg/L	0.00020	0.00019	0.0002	0.00061	0.00036
Copper (Cu)	mg/L	0.00020	0.0104	0.00455	0.00597	0.005
Iron (Fe)	mg/L	0.010	0.223	0.286	0.808	0.57
Lead (Pb)	mg/L	0.000090	0.000224	0.000132	0.00022	0.00017
Magnesium (Mg)	mg/L	0.010	1.02	0.8	3.37	1.81
Manganese (Mn)	mg/L	0.00030	0.0339	0.0276	0.166	0.084
Nickel (Ni)	mg/L	0.0020	0.00076	0.002	0.0022	0.0021
Potassium (K)	mg/L	0.020	2.23	1.25	9.43	3.90
Sodium (Na)	mg/L	0.030	5.21	2.82	32.9	13.28
Zinc (Zn)	mg/L	0.0020	0.0105	0.0049	0.0105	0.007
Total Organic Carbon by Combustion						
Total Organic Carbon	mg/L	0.50	13.3	6.45	25.6	13.04
Total Suspended Solids						
Total Suspended Solids	mg/L	13	6.3	5.0	28.0	12.25
pH						
pH	pH Units	0.10	6.8	6.73	7.67	7.11
Benzene	mg/L	0.00050	N/A	0	0	0.00
Toluene	mg/L	0.0010	N/A	0	0	0.00
Ethyl Benzene	mg/L	0.00050	N/A	0	0	0.00
o-Xylene	mg/L	0.00050	N/A	0	0	0.00
F1 (C6-C10)	mg/L	0.10	N/A	0	0	0.00
F2 (C10-C16)	mg/L	0.25	N/A	0	0	0.00
F3 (C16-C34)	mg/L	0.25	N/A	0	0	0.00
F4 (C34-C50)	mg/L	0.25	N/A	0	0	0.00
Total Hydrocarbons (C6-C50)	mg/L	0.44	N/A	0	0	0.00

Appendix H

WATER LICENCE INSPECTION FORM

☒ **Original**
☐ **Follow-Up Report**

Licensee	**Licensee Representative**
Hamlet of Baker Lake	Sheldon Dorey
Licence No. / Expiry	**Representative's Title**
3BM-BAK1526/ December 6, 2026	Senior Administrative Officer
Land / Other Authorizations	**Land / Other Authorizations**
--	--
Date of Inspection	**Inspector**
18/07/2018	Atuat Shouldice

Activities Inspected

☐ Camp ☐ Drilling ☐ Mining ☐ Construction ☐ Reclamation ☐ Fuel Storage
☐ Roads/Hauling ☒ Other: Waste Disposal Facility ☒ Other: Water Treatment Facility

Conditions: **A- Acceptable** **U-Unacceptable** **C-Concern** **NI-Not Inspected** **NA- Not applicable**

PART:	**Item No.***	**Condition**	**Observation No.***
A: SCOPE, DEFINITIONS AND ENFORCEMENT	--	A	--
B: GENERAL CONDITIONS	1,3,5	A,U,A	1,2,3
C: CONDITIONS APPLYING TO WATER USE	2	C	2
D: CONDITIONS APPLYING TO WASTE DISPOSAL	7,8	A,A	4,5
E: CONDITIONS APPLYING TO MODIFICATIONS AND CONSTRUCTION	--	--	--
F: CONDITIONS APPLYING TO OPERATION AND MAINTENANCE	2,3,4	U,U,U	6,7
G: CONDITIONS APPLYING TO ABANDONMENT AND RECLAMATION	2	U	8
H: CONDITIONS APPLYING TO MONITORING PROGRAM	1,3	A,C	9,2

**The item number corresponds with specific conditions within the licence and the observation number corresponds with specific comments provided below.*

Samples taken by Inspector:	Location(s): --
☐ Yes ☒ No	

SECTION 1 ☒ **Comments** (s._1_) ☐ **Non-Compliance with Act or Licence** (s.__) ☐ **Action Required** (s.__)

BACKGROUND

The Hamlet of Baker Lake is in the Kivalliq Region of Nunavut's mainland, located approximately 320 km West of Hudson Bay. The Hamlet is located at the mouth of the Thelon River on the North shore of Baker Lake. The population in 2016 was 2063.

Inspector's Statement

On July 18th, 2018, a water licence inspection was conducted of water licence no. 3BM-BAK1526 issued to the Hamlet of Baker Lake. Paul Naryarnik, Hamlet of Baker Lake and Connor Faulkner, Community and Government Services assisted with the inspection.

Observation

1. The Annual report is available for review on the Nunavut Water Board's FTP website.
2. The flow meter at the Water Treatment Plant (WTP) is not functioning properly to allow the inspector to record accurate water use. Water use is recorded by an on tap delivery system. The inspector requests clarity on how the utilidor water use is captured in the annual water use totals.
3. The WTP and Solid Waste Facility (SWF) are equipped with signage.
4. The Hamlet has reorganized the SWF and securing hazardous materials. Hazardous waste is being segregated and stored in sea cans.
5. With the assistances of Agnico Eagle Mine, the Hamlet is backhauling hazard waste this year on Agnico Eagle Mine's ships, to be properly treated and disposed of.
6. A revised *Operation and Maintenance for the Water, Sewage and Solid Waste Facility Plan* is not available for review on the Nunavut Water Board's FTP website.
7. An engineering report, as required by part F item 3 and 4 was not available for review.
8. A revised *Abandonment and Restoration for the Water, Sewage and Solid Waste Facility Plan* is not available for review on the Nunavut Water Board's FTP website.
9. The 2017 Monitoring Program results were submitted with the Annual report.

SECTION 2	☐ Comments	☒ Non-Compliance with Act or Licence	☐ Action Required

Concerns related to Water Licence no. 3BM-BAK1526;

Part B Item 3: The Licensee shall install a flow meter to measure water use.
The Licensee has failed to maintain the flow meter at the Water Treatment Plant. The Licensee will install an appropriate measuring device before the term of the next inspection.

Part C Item 2: The Licensee shall not exceed one hundred thousand (100,000) cubic meters annually.
The Licensee shall clarify to the inspector, how water use is metered to facilities on the utilidor system, no later than March 31st, 2019.

Part F Item 2: The Licensee shall submit a revised Operation and Maintenance for the Water, Sewage and Solid Waste Facility Plan.
The Licensee has failed to submit the Plan as required by this condition. The Licensee will submit a revised Plan as required, no later than March 31st, 2019 to the Nunavut Water Board.

Part F Item 3: The Licensee shall submit an Engineer's report annually.
The Licensee shall submit, to the Nunavut Water Board, the report as required by this condition, with the 2018 Annual report.

Part F Item 4: The Licensee shall submit a Geotechnical Engineer's report annually.
The Licensee shall submit, to the Nunavut Water Board, the report as required by this condition, with the 2018 Annual report.

Part G Item 2: The Licensee shall submit a revised Abandonment and Restoration for the Water, Sewage and Solid Waste Facility Plan.
The Licensee has failed to submit the Plan as required by this condition. The Licensee will submit a revised Plan as required, no later than March 31st, 2019 to the Nunavut Water Board.

Part H Item 3: The Licensee shall record the daily, monthly and annual water use quantities.
The Licensee has failed to maintain the flow meter at the Water Treatment Plant. The Licensee will install an appropriate measuring device before the term of the next inspection.

SECTION 3	☐ Comments	☐ Non-Compliance with Act or Licence	☒ Action Required

The Hamlet has made great changes to the management of the Solid Waste Facility in 2018. The Hamlet is in line to fulfill the goals outlined in the Water Licence Compliance Working Group.

Licensee or Representative	Inspector's Name
Sheldon Dorey	Atuat Shouldice
Signature	**Signature**
	Sent Electronically
Date	**Date**
	February 12th, 2018

CC: Licensing Department, NWB
Justin Hack, Manager of Field Operations, CIRNAC
Megan Lusty, Municipal Works, CGS