ANNUAL REPORT
FOR THE HAMLET OF RANKIN INLET

YEAR BEING REPORTED: 2015

The following information is compiled pursuant to the requirements of Part B, Item 1 of Water Licence No. **3BM-RAN1520** issued to the **Hamlet of Rankin Inlet**.

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 results for Monitoring Station RAN-2.

Month Reported	Quantity of Water Obtained from all sources (m^3)	Quantity of Sewage Waste Discharged (Estimated)
January	none	none
February	none	none
March	none	none
April	none	none
May	none	none
June	none	none
July	none	none
August	none	none
September	none	none
October	none	none
November	none	none
December	none	none
ANNUAL TOTAL	none	none

Note: The purpose of this Licence is the deposit of waste; there is no authorized water use.

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;

- Segregation is improving at the Solid Waste Site with designated areas for bulky metals, woods, batteries, and propane bottles, outside of the household waste area. Signage has been installed identifying these areas.
- Battery boxes were built for collected batteries; these are being stored in a seacan on site.
- Barrels were palletized in groups of 4 and moved to one area.

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

Spills:

- 2015087, 2015-03-10, Johnston Cove Lift Station, Sewage, 100000 L
- 2015121, 2015-03-31, 109-23 Aivilik Street, P50 Diesel, 50 L
- 2015193, 2015-05-13, Unit 572A, Heating Diesel Fuel, 700 L
- 2015194, 2015-05-13, Unit 212-68th Street, Heating Diesel Fuel, 478 L
- 2015205, Rankin Inlet, Heating Diesel Fuel, 1200 L
- 2015214, 2015-05-22, Northern Store Manager's Residence, 100 L
- 2015222, 2015-05-25, Lot 431 #542A, Heating Diesel Fuel, 528 L
- 2015237, 2015-06-04, House 219-6th Street, Home Heating Fuel
- 2015239, 2015-06-04, House 103-22, Diesel, 100 L
- 2015266, 2015-06-22, 113-23 (Red Top), P50, 85 L
- 2015455, 2015-11-06, Gas Station, P-50 Diesel Fuel, 500 L
- 2015462, 2015-11-16, 11-12 Iglu Street, P50 Diesel Heating Fuel, 80 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 completed in 2014.
- The Abandonment and Restoration Plan for the landfarm will be submitted to the NWB a minimum of six (6) months prior to abandoning the facility.

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;

- none

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

- Renewed Water Licence 3BM-RAN1520 was issued December 21, 2015.
- The Hamlet of Rankin Inlet is following goals set-out by the Water Licence Compliance Working Group in the Solid Waste Workplan.

ix. Updates or revisions to the approved Operation and Maintenance Plans.

- The *Solid Waste Management Facility Operation and Maintenance (O&M) Plan* and *Environmental Emergency Contingency Plan, Hamlet of Rankin Inlet* were updated and submitted during the licence renewal.

ADDITIONAL INFORMATION THAT THE LICENSEE DEEMS USEFUL:

- No water was present at RAN-2 during May.
- No soil entered the landfarm in 2015 (to be recorded as per Part H, Item 4).
- No soil was removed from the landfarm in 2015 (to be recorded as per Part H, Item 6).

FOLLOW-UP REGARDING INSPECTION/COMPLIANCE CONCERNS:

- AANDC Inspection took place on June 18, 2015. Signage and palletization of barrels was completed.

List of Appendixes

Appendix A: Hazardous Materials Spill Database, Rankin Inlet 2015 – 1 page
Appendix B: AANDC Inspection Report, June 18, 2015 – 2 pages
Appendix C: Monitoring Program Sampling Parameters Summary – 1 page
Appendix D: Certificate of Analysis June 25, 2015 – 8 pages
Appendix E: Certificate of Analysis July 22, 2015 – 6 pages
Appendix F: Certificate of Analysis August 25, 2015 – 6 pages

Hazardous Materials Spill Database

Environment Division of ENR
Scotia 6, 5102-50th Avenue; Yellowknife, NT X1A 3S8
Phone: (867) 873-7654 Fax: (867) 873-0221

Sorted By: SpillNo for the year(s): 2015

Spill No.	Date	Ter	Region	Location	Site Description	Commodity	Quantity	Source	Agency
2015087	2015-03-10	NU	KEE	Rankin Inlet	Johnston Cove Lift Station	Sewage	100000 L	SL	INAC
2015121	2015-03-31	NU	KEE	Rankin Inlet	109-23 Aivilik Street Rankin Inlet	P50 Diesel	50 L	ST<	INAC
2015193	2015-05-13	NU	KEE	Rankin Inlet	Rankin Inlet, Unit 572A	Heating Diesel Fuel	700 L	PL	GN
2015194	2015-05-13	NU	KEE	Rankin Inlet	Rankin Inlet Unit 212-68, 68TH Street	Heating Diesel Fuel	478 L	PL	GN
2015205		NU	KEE	Rankin Inlet	Rankin Inlet	Heating Diesel Fuel	1200 L	ST<	GN
2015214	2015-05-22	NU	KEE	Rankin Inlet	Northern Store manager's residence, Rankin Inlet	Heating Oil	100 L	DRUM	GN
2015222	2015-05-25	NU	KEE	Rankin Inlet	Lot 431 #542A	Heating Disel Fuel	528 L	ST<	GN
2015237	2015-06-04	NU	KEE	Rankin Inlet	Rankin Inlet House 219, 67th St	Home Heating Fuel	L	ST<	GN
2015239	2015-06-04	NU	KEE	Rankin Inlet	House 103-22 Rankin Inlet	Diesel	100 L	ST<	GN
2015266	2015-06-22	NU	KEE	Rankin Inlet	113-23 (Red Top)	P50	85 L	PL	GN
2015455	2015-11-06	NU	KEE	Rankin Inlet	Rankin Intel Gas Station	P-50 diesel fuel	500 L	TRU	GN
2015462	2015-11-16	NU	KEE	Rankin Inlet	11-12 Iglu Street	P50 Diesel Heating Fuel	80 L	TRU	GN
2015468	2015-11-20	NU	KEE	Rankin Inlet	Coral Harbour, unit 880	Heating Fuel	20 L	ST<	GN

Total Spills on this Report: 13

This report contains information regarding spills that were reported to the NWT 24-Hour Spill Line. The absence of information on any particular location in no way guarantees that contamination has not occurred at that location.

LEGEND

Region:
BAF - Baffin
DEH - Deh Cho
INU - Inuvik
KEE - Keewatin
KIT - Kitikmeot
NSL - North Slave
SAH - Sahtu
SSL - South Slave

Source:
AIR - Aircraft
DRUM - Drum or Barrel
MV - Marine Vessel
NS - Natural Seepage
OTH - Other Transportation
PL - Pipe or Line
RT - Rail Train
SL - Sewage Lagoon
ST< - Storage Tank <4000 litres
ST> - Storage Tank >4000 litres
TP - Tailings Pond
TRU - Truck
UK - Unkown
WELL - Wet Wells, Flaring Boom

Agency:
CCG - Canadian Coast Guard
EP - Environment Canada
GN - Government of Nunavut
GNWT - Government of Northwest Territories
ILA - Inuvialiut Land Administration
INAC - Indian and Northern Affairs Canada
NEB - National Energy Board

Aboriginal Affairs and Northern Development Canada | Affaires autochtones et Développement du Nord Canada

WATER LICENCE INSPECTION FORM

☒ Original
☐ Follow-Up Report

Licensee	Licensee Representative
Hamlet of Rankin Inlet	Tom Ng
Licence No. / Expiry	**Representative's Title**
3BM-RAN1214	Senior Administrative Officer
Land / Other Authorizations	**Land / Other Authorizations**
Date of Inspection	**Inspector**
June 18th 2015	Atuat Shouldice

Activities Inspected

☐ Camp ☐ Drilling ☐ Mining ☐ Construction ☐ Reclamation ☐ Fuel Storage
☐ Roads/Hauling ☐ Other: Water Discharge ☒ Other: Deposit of Waste

Conditions: A - Acceptable C - Concern U - Unacceptable NA – Not Applicable NI – Not Inspected

Water Use	Condition	Comment	Site Conditions	Condition	Comment	Haz/Mat Management	Condition	Comment
Intake/Screen	NA		Water Management Structures	A		Storage	A	1
Flow Measure. Device	NA		Culverts / Bridges	NA		Spills	NI	
Source:	NA		Drainage	A		Spill Plan	NI	
Water Use:	NA		Erosion / Sediment	A				
Recirculation (y /n)	NA		Mitigation Measures	A	2	**Administrative**		
			Reclamation Activities	A		Records	NI	
			Materials Storage	A	3	Reports	NI	
Waste Disposal			Signage	A	4	Plans	NI	
Waste Water						Notifications	NI	
Solid Waste	C		**Monitoring**			**Other**		
Hazardous Waste	C		Sample Collection / Analysis					

**The number in the comments field will correspond with specific comments provided below.*

Samples taken by Inspector:	Location(s): Rankin Inlet Landfill
☐ Yes ☒ No	

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

A compliance inspection was conducted on June 18th 2015 of Municipal water licence for the Hamlet of Rankin Inlet 3BM-RAN1214. Inspector was accompanied by Joe Kaludjak (Hamlet forman) and Megan Lusty (CGS).

SECTION 2 ☒ Comments (s.__) ☐ Non-Compliance with Act or Licence (s.__) ☒ Action Required (s.__)

Items noted during time of inspection.

1. **Storage**
   Following a meeting where the Water Licence Compliance Working Group discussed its yearly goals, the Hamlet of Rankin Inlet committed to begin segregating hazardous material at the landfill. Discarded batteries have been collected and segregated from the landfill and stored in seacans (shipping container) until properly disposed of. AANDC encourages this practice.
2. **Mitigation measures**
   During the time of the inspection the inspector noted that measures need to be taken to segregate waste oil drums and oil tanks, to prevent the spreading of waste oil by capping opened drums and stacking drums on pallets. **Hamlet foreman Joe Kaludjak informed the inspector that drums could be palletized and capped by July 14th 2015 to mitigate issue.**
3. **Materials Storage**
   During the inspection, the hamlet foreman informed the inspector that measures were being taken to segregate material in the landfill. These measures will help prevent fires and the release of contaminants from the landfill.
4. **Signage**
   Pervious inspections noted lack of signage at landfill, item required to help direct general public in segregation of material. Hamlet foreman informed and showed inspector that proper signage was on site and needed to be installed, lack of running

SECTION 3	☐ Comments (s.__)	☐ Non-Compliance with Act or Licence, (s.__)	☐ Action Required (s.__)

During the writing of this inspection report all actions requested by inspector have all been addressed.

Yearly goals related to the deposit of waste in the Water licence compliance working group are being implemented.

Licensee or Representative	Inspector's Name
	Atuat Shouldice
Signature	**Signature**
	Atuat Shouldice
Date	**Date**
	10/5/2015

Office Use Only:	Follow-up report to be issued by Inspector	☐ Yes	☒ No

3BM-RAN1520 Rankin Inlet Monitoring Program Results 2015

		RAN-2			
Parameters	**Units**	**25-Jun-15**	**22-Jul-15**	**25-Aug-15**	**CCME Guideline[1]**
BOD_5	mg/L	6.7	26.9	53.0	n/g
Total Suspended Solids	mg/L	8	15	310	Based on Background TSS
Conductivity	umhos/cm	630	1310	1730	n/g
Oil&Grease	mg/L	<2.0	<2.0	<2.0	n/g
Magnesium	mg/L	9.93	25.4	35.0	n/g
Sodium	mg/L	37.3	104	128	n/g
Chloride	mg/L	51.2	123	162	120
Total Hardness	mg/L	234	483	654	n/g
Ammonia Nitrogen	mg/L	1.09	1.53	5.50	1.54
Total Cadmium	mg/L	0.000136	0.000416	0.000060	0.00009
Total Cobalt	mg/L	0.00400	0.0139	0.00270	n/g
Total Chromium	mg/L	<0.0010	0.0022	0.0034	0.001
Total Copper	mg/L	0.0109	0.0269	0.00876	0.002
Total Aluminum	mg/L	0.0196	0.0472	0.0447	n/g
Faecal Coliforms	MPN/100mL	4	230	4300	n/g
pH	pH Units	7.53	7.92	8.11	6.5-9.0
Nitrate-Nitrite	mg/L	0.167	<0.11	<0.11	n/g
Total Phenols	mg/L	0.0052	0.0029	<0.50	0.004
Calcium	mg/L	77.2	152	204	n/g
Potassium	mg/L	12.2	34	41	n/g
Sulphate	mg/L	122	238	151	n/g
Total Alkalinity	mg/L	123	279	599	n/g
Total Zinc	mg/L	0.114	0.194	0.043	0.03
Total Iron	mg/L	4.76	8.14	2.96	0.3
Total Lead	mg/L	0.00242	0.00208	0.00112	0.001
Total Manganese	mg/L	0.527	2.69	2.08	n/g
Total Nickel	mg/L	0.0106	0.024	0.0137	0.025
Total Arsenic	mg/L	0.00238	0.0047	0.00722	0.005

[1]Canadian Environmental Quality Guidelines - Water Quality Guidelines for the Protection of Aquatic Life

Hamlet of Rankin Inlet
ATTN: TOM NG
PO Box 310
Rankin Inlet NU X0C 0G0

Date Received: 27-JUN-15
Report Date: 27-JUL-15 07:32 (MT)
Version: FINAL

Client Phone: 867-645-2895

Certificate of Analysis

Lab Work Order #: L1634058

Project P.O. #: NOT SUBMITTED
Job Reference: HAMLET OF RANKIN INLET
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
L1634058-1 RAN #2							
Sampled By: J KALUDJAK on 25-JUN-15 @ 09:40							
Matrix: Wastewater							
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	150		1.2	mg/L		13-JUL-15	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		13-JUL-15	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		13-JUL-15	
Ammonia by colour							
Ammonia, Total (as N)	1.09	DLA	0.10	mg/L		30-JUN-15	R3218142
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	6.7		2.0	mg/L		27-JUN-15	R3225488
Chloride in Water by IC							
Chloride (Cl)	51.2		0.50	mg/L		29-JUN-15	R3218873
Conductivity							
Conductivity	630		1.0	umhos/cm		10-JUL-15	R3224269
Fecal Coliform							
Fecal Coliforms	4	PEHR	3	MPN/100mL		27-JUN-15	R3218196
Hardness Calculated							
Hardness (as CaCO3)	234		0.30	mg/L		08-JUL-15	
Mercury Total							
Mercury (Hg)-Total	<0.00020	DLM	0.00020	mg/L	07-JUL-15	07-JUL-15	R3221935
Nitrate in Water by IC							
Nitrate (as N)	0.138		0.020	mg/L		29-JUN-15	R3218873
Nitrate+Nitrite							
Nitrate and Nitrite as N	0.167		0.070	mg/L		03-JUL-15	
Nitrite in Water by IC							
Nitrite (as N)	0.030		0.010	mg/L		29-JUN-15	R3218873
Oil and Grease, Total							
Oil and Grease, Total	<2.0		2.0	mg/L	04-JUL-15	04-JUL-15	R3220636
Phenol (4AAP)							
Phenols (4AAP)	0.0052		0.0010	mg/L		09-JUL-15	R3222718
Phosphorus, Total							
Phosphorus (P)-Total	0.203		0.010	mg/L		06-JUL-15	R3220337
Sulfate in Water by IC							
Sulfate (SO4)	122		0.30	mg/L		29-JUN-15	R3218873
Total Alkalinity as CaCO3							
Alkalinity, Total (as CaCO3)	123		1.0	mg/L		10-JUL-15	R3224269
Total Metals by ICP-MS							
Aluminum (Al)-Total	0.0196		0.0050	mg/L	07-JUL-15	07-JUL-15	R3221453
Arsenic (As)-Total	0.00238		0.00020	mg/L	07-JUL-15	07-JUL-15	R3221453
Cadmium (Cd)-Total	0.000136		0.000010	mg/L	07-JUL-15	07-JUL-15	R3221453
Calcium (Ca)-Total	77.2		0.10	mg/L	07-JUL-15	07-JUL-15	R3221453
Chromium (Cr)-Total	<0.0010		0.0010	mg/L	07-JUL-15	07-JUL-15	R3221453
Cobalt (Co)-Total	0.00400		0.00020	mg/L	07-JUL-15	07-JUL-15	R3221453
Copper (Cu)-Total	0.0109		0.00020	mg/L	07-JUL-15	07-JUL-15	R3221453
Iron (Fe)-Total	4.76		0.10	mg/L	07-JUL-15	07-JUL-15	R3221453
Lead (Pb)-Total	0.00242		0.000090	mg/L	07-JUL-15	07-JUL-15	R3221453
Magnesium (Mg)-Total	9.93		0.010	mg/L	07-JUL-15	07-JUL-15	R3221453
Manganese (Mn)-Total	0.527		0.00030	mg/L	07-JUL-15	07-JUL-15	R3221453
Nickel (Ni)-Total	0.0106		0.0020	mg/L	07-JUL-15	07-JUL-15	R3221453
Potassium (K)-Total	12.2		0.020	mg/L	07-JUL-15	07-JUL-15	R3221453
Sodium (Na)-Total	37.3		0.030	mg/L	07-JUL-15	07-JUL-15	R3221453

* 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
L1634058-1 RAN #2							
Sampled By: J KALUDJAK on 25-JUN-15 @ 09:40							
Matrix: Wastewater							
Total Metals by ICP-MS							
Zinc (Zn)-Total	0.114		0.0020	mg/L	07-JUL-15	07-JUL-15	R3221453
Total Organic Carbon							
Total Organic Carbon	14.1		1.0	mg/L		24-JUL-15	R3232635
Total Suspended Solids							
Total Suspended Solids	8.0		5.0	mg/L		02-JUL-15	R3219144
pH							
pH	7.53		0.10	pH units		10-JUL-15	R3224269

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

Reference Information

Qualifiers for Sample Submission Listed:

Qualifier	Description
EHR	Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested

Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLM	Detection Limit Adjusted due to sample matrix effects.
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	Total Alkalinity 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-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-TOT-ORG-WP	Water	Total Organic Carbon	APHA 5310 B-INSTRUMENTAL-WP

This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.

The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC.
TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.

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.

ETL-HARDNESS-TOT-WP	Water	Hardness Calculated	HARDNESS CALCULATED
FC-MPN-WP	Water	Fecal Coliform	APHA 9221E

The Most Probable Number (MPN) method is based on the Multiple Tube Fermentation technique. The results of examination of replicate tubes and dilutions of a sample are reported after confirmations specific to total coliform, fecal coliform and E. coli are performed. Results are reported in MPN/100 mL for water and MPN/gram for food and solid samples.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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-L-MS-WP	Water	Total Metals by ICP-MS	APHA 3030E/EPA 6020A-TL
This analysis involves preliminary sample treatment by hotblock acid digestion (APHA 3030E). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).			
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.			
OGG-TOT-WT	Water	Oil and Grease, Total	APHA 5520 B
Sample is extracted with hexane, extract is then evaporated and the residue is weighed to determine total oil and grease.			
P-T-COL-WP	Water	Phosphorus, Total	APHA 4500 P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus 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
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA

Chain of Custody Numbers:

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

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.

10- 313188

ALS Environmental

L1634058-COFC

Page ____ of ____

Report To		Report		Service Request: (Rush subject to availability - Contact ALS to confirm TAT)
Company: Hamlet of Rankin Inlet		Standard:	Other (specify):	✓ Regular (Standard Turnaround Times - Business Days)
Contact: Tom NG.		Select: PDF ✓	Excel Digital Fax	Priority (2-4 Business Days)-50% surcharge - Contact ALS to confirm TAT
Address: P.O Box 310 Rankin Inlet		Email 1: works@rankininlet.ca		Emergency (1-2 Business Days)-100% Surcharge - Contact ALS to confirm TAT
Phone: 867 645 2895	Fax:	Email 2: sao@rankininlet.ca		Same Day or Weekend Emergency - Contact ALS to confirm TAT

Invoice To	Same as Report ? (circle) Yes or No (if No, provide details)	Client / Project Information
	Copy of Invoice with Report? (circle) Yes or No	Job #:
Company:	Accts	PO / AFE:
Contact:	Johtt Rankin Inlet Mounty Prog	LSD:
Address:		
Phone:	Fax:	Quote #:

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

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Analysis Request (Indicate Filtered or Preserved, F/P)												Number of Containers
					Routine	Bod	Total Metals	Total Nutrients	Oil & Grease	Bacteria	Total Metals						
	RAN #2	23/06/2015	10.00		✓	✓	P	P	P	P	P					7.	
					✓	✓	P	P	P	P	P						

Special Instructions / Regulation with water or land use (CCME- Freshwater Aquatic Life/BC CSR-Commercial/AB Tier 1-Natural/ETC) / Hazardous Details

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.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
			DTS	27JUN15	11:25	7.6 °C				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

GENF 18.01 Front

Field Log

L1634058-COFC

Name of Sampler(s): Kennedy Nupaqpak Nippivgiuk

Date of Sampling: Thurs 25, 2015

Time of Sampling: 9:40 am

Monitoring Station Number: RAN-2

GPS Coordinates: N ____ ° ____ ' ____ " W ____ ° ____ ' ____ "

Weather Conditions: Overcast

Samples:

- [X] 500 mL BOD
- [X] 1 L Routine
- [X] 250 mL Metals + Pres
- [X] 40 mL Glass Mercury Vial + Pres
- [X] 250 mL Amber Nutrients + Pres
- [X] 250 mL Amber Phenols + Pres
- [X] 125 mL Sterile Bacteria Bottle
- [X] **2 x** 500 mL Glass Oil & Grease + Pres
- [ ] 1 L Amber PAH + Pres
- [ ] **3 x** 40 mL BTEX, F1 Vials + Pres
- [ ] **2 x** 60 mL Amber F2-F4 Vials + Pres

Other:

- [ ] _____
- [ ] _____
- [ ] _____

Other Notes: (any unusual conditions, any deviation from standard procedures, etc.)

_____

_____

_____

_____

_____

Hamlet of Rankin Inlet
ATTN: MEGAN LUSTY
BAG 002
Rankin Inlet NU X0C 0G0

Date Received: 23-JUL-15
Report Date: 31-JUL-15 12:13 (MT)
Version: FINAL

Client Phone: 867-645-2895

Certificate of Analysis

Lab Work Order #: L1647069

Project P.O. #: NOT SUBMITTED
Job Reference: 3BM-RAN1214
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
L1647069-1 RAN-2 3BM-RAN1214							
Sampled By: Joe Kaludjak on 22-JUL-15 @ 09:45							
Matrix: WATER							
Miscellaneous Parameters							
Total Organic Carbon	48.6		1.0	mg/L		27-JUL-15	R3233565
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	341		1.2	mg/L		31-JUL-15	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		31-JUL-15	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		31-JUL-15	
Ammonia by colour							
Ammonia, Total (as N)	1.53	DLA	0.10	mg/L		23-JUL-15	R3231684
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	26.9	DLA	6.0	mg/L		24-JUL-15	R3235808
Carbonaceous BOD							
BOD Carbonaceous	22.5	DLA	6.0	mg/L		24-JUL-15	R3235808
Chloride in Water by IC							
Chloride (Cl)	123		2.5	mg/L		24-JUL-15	R3233242
Conductivity							
Conductivity	1310		1.0	umhos/cm		29-JUL-15	R3235920
Fecal Coliform							
Fecal Coliforms	230	MBHT	3	MPN/100mL		23-JUL-15	R3234479
Hardness Calculated							
Hardness (as CaCO3)	483		0.30	mg/L		29-JUL-15	
Mercury Total							
Mercury (Hg)-Total	<0.00020	DLM	0.00020	mg/L	28-JUL-15	28-JUL-15	R3234932
Nitrate in Water by IC							
Nitrate (as N)	<0.10	DLM	0.10	mg/L		24-JUL-15	R3233242
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.11		0.11	mg/L		27-JUL-15	
Nitrite in Water by IC							
Nitrite (as N)	<0.050	DLM	0.050	mg/L		24-JUL-15	R3233242
Oil and Grease, Total							
Oil and Grease, Total	<2.0		2.0	mg/L	27-JUL-15	27-JUL-15	R3233501
Phenol (4AAP)							
Phenols (4AAP)	0.0029		0.0010	mg/L		30-JUL-15	R3236288
Phosphorus, Total							
Phosphorus (P)-Total	0.370		0.010	mg/L		29-JUL-15	R3234756
Sulfate in Water by IC							
Sulfate (SO4)	238		1.5	mg/L		24-JUL-15	R3233242
Total Alkalinity as CaCO3							
Alkalinity, Total (as CaCO3)	279		1.0	mg/L		29-JUL-15	R3235920
Total Metals by ICP-MS							
Aluminum (Al)-Total	0.0472		0.0050	mg/L	27-JUL-15	27-JUL-15	R3233554
Arsenic (As)-Total	0.00470		0.00020	mg/L	27-JUL-15	27-JUL-15	R3233554
Cadmium (Cd)-Total	0.000416		0.000010	mg/L	27-JUL-15	27-JUL-15	R3233554
Calcium (Ca)-Total	152		0.10	mg/L	27-JUL-15	27-JUL-15	R3233554
Chromium (Cr)-Total	0.0022		0.0010	mg/L	27-JUL-15	27-JUL-15	R3233554
Cobalt (Co)-Total	0.0139		0.00020	mg/L	27-JUL-15	27-JUL-15	R3233554
Copper (Cu)-Total	0.0269		0.00020	mg/L	27-JUL-15	27-JUL-15	R3233554
Iron (Fe)-Total	8.14		0.10	mg/L	27-JUL-15	27-JUL-15	R3233554
Lead (Pb)-Total	0.00208		0.000090	mg/L	27-JUL-15	27-JUL-15	R3233554
Magnesium (Mg)-Total	25.4		0.010	mg/L	27-JUL-15	27-JUL-15	R3233554
Manganese (Mn)-Total	2.69	DLA	0.030	mg/L	27-JUL-15	28-JUL-15	R3234373

* 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
L1647069-1 RAN-2 3BM-RAN1214							
Sampled By: Joe Kaludjak on 22-JUL-15 @ 09:45							
Matrix: WATER							
Total Metals by ICP-MS							
Nickel (Ni)-Total	0.0240		0.0020	mg/L	27-JUL-15	27-JUL-15	R3233554
Potassium (K)-Total	34.0		0.020	mg/L	27-JUL-15	27-JUL-15	R3233554
Sodium (Na)-Total	104		0.030	mg/L	27-JUL-15	27-JUL-15	R3233554
Zinc (Zn)-Total	0.194		0.0020	mg/L	27-JUL-15	27-JUL-15	R3233554
Total Suspended Solids							
Total Suspended Solids	15.0		5.0	mg/L		27-JUL-15	R3234080
pH							
pH	7.92		0.10	pH units		29-JUL-15	R3235920

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

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLM	Detection Limit Adjusted due to sample matrix effects.
MBHT	The APHA 30 hour hold time was exceeded for microbiological testing. Samples processed within 48 hours from time of sampling may be valid in some cases (refer to Health Canada guidance).
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	Total Alkalinity 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.

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.

ETL-HARDNESS-TOT-WP	Water	Hardness Calculated	HARDNESS CALCULATED
FC-MPN-WP	Water	Fecal Coliform	APHA 9221E

The Most Probable Number (MPN) method is based on the Multiple Tube Fermentation technique. The results of examination of replicate tubes and dilutions of a sample are reported after confirmations specific to total coliform, fecal coliform and E. coli are performed. Results are reported in MPN/100 mL for water and MPN/gram for food and solid samples.

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-L-MS-WP	Water	Total Metals by ICP-MS	APHA 3030E/EPA 6020A-TL

This analysis involves preliminary sample treatment by hotblock acid digestion (APHA 3030E). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

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

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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.			
OGG-TOT-WT	Water	Oil and Grease, Total	APHA 5520 B
Sample is extracted with hexane, extract is then evaporated and the residue is weighed to determine total oil and grease.			
P-T-COL-WP	Water	Phosphorus, Total	APHA 4500 P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus 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.			
TOC-WT	Water	Total Organic Carbon	APHA 5310B
Sample is injected into a heated reaction chamber which is packed with an oxidative catalyst. The water is vaporized and the organic cabon is oxidized to carbon dioxide. The carbon dioxide is transported in a carrier gas and is measured by a non-dispersive infrared detector.			

** 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
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, 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

L1647069-COFC

COC # _____

Page ___ of ___

Report To			Service Requested (Rush for routine analysis subject to availability)
Company: H/Lamlet of Rankin Inlet			◉ Regular (Standard Turnaround Times - Business Days)
Contact:	☑ PDF ☐ Excel ☐ Digital ☐ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address: P.O. Box 310 Rankin Inlet, NU	Email 1: works@rankininlet.ca		○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Email 2: mlusty@gov.nu.ca		○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone: (867) 645-2895 Fax:	Email 3:		
Invoice To Same as Report ? ☑ Yes ☐ No	Client / Project Information		Analysis Request
Hardcopy of Invoice with Report? ☐ Yes ☐ No	Job #: 3BM-RAN1214		Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:	PO / AFE:		
Contact:	LSD:		
Address:			
Phone: Fax:	Quote #:		
Lab Work Order # (lab use only) [redacted]	ALS Contact: Craig Riddell	Sampler: Joe Kalvak	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD	Routine	250mL Metals	Mercury	Phenols	Nutrients	Bacteria	Oil + Grease					Number of Containers
RAN12[redacted]	BOD 3BM-RAN1214	22-July-15	09:45am		P	P	P	P	P	P	P	P					8
[redacted]	Routine																
[redacted]	250mL + Metals + Pres																
[redacted]	40 mL Mercury Vial + Pres																
[redacted]	250mL Nutrients + Pres																
[redacted]	125 mL Phenols																
[redacted]																	
[redacted]																	
[redacted]																	
[redacted]																	
[redacted]																	
[redacted]																	

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
			EE	7-23-15	11:26	13° °C				

GENF 20.00 Front

Hamlet of Rankin Inlet
ATTN: JOE KALUDJAK
PO Box 310
Rankin Inlet NU X0C 0G0

Date Received: 26- AUG- 15
Report Date: 04- SEP- 15 11:34 (MT)
Version: FINAL

Client Phone: 867- 645- 2895

Certificate of Analysis

Lab Work Order #: L1663597

Project P.O. #: NOT SUBMITTED
Job Reference: RANKIN INLET MONITORING PROGRAM
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
L1663597-1 RAN-2							
Sampled By: CLIENT on 25-AUG-15							
Matrix:							
Miscellaneous Parameters							
Total Organic Carbon	85.5	DLA	5.0	mg/L		01-SEP-15	R3258047
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	731		1.2	mg/L		03-SEP-15	
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		03-SEP-15	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		03-SEP-15	
Ammonia by colour							
Ammonia, Total (as N)	5.5	DLA	1.0	mg/L		28-AUG-15	R3256770
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	53	DLA	20	mg/L		27-AUG-15	R3258615
Carbonaceous BOD							
BOD Carbonaceous	54	DLA	20	mg/L		27-AUG-15	R3258615
Chloride in Water by IC							
Chloride (Cl)	162		2.5	mg/L		27-AUG-15	R3257569
Conductivity							
Conductivity	1730		1.0	umhos/cm		02-SEP-15	R3259217
Fecal Coliform							
Fecal Coliforms	4300	MBHT	3	MPN/100mL		26-AUG-15	R3257563
Hardness Calculated							
Hardness (as CaCO3)	654		0.30	mg/L		01-SEP-15	
Mercury Total							
Mercury (Hg)-Total	<0.00020	DLM	0.00020	mg/L	28-AUG-15	28-AUG-15	R3256847
Nitrate in Water by IC							
Nitrate (as N)	<0.10	DLM	0.10	mg/L		27-AUG-15	R3257569
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.11		0.11	mg/L		01-SEP-15	
Nitrite in Water by IC							
Nitrite (as N)	<0.050	DLM	0.050	mg/L		27-AUG-15	R3257569
Oil and Grease, Total							
Oil and Grease, Total	<2.0		2.0	mg/L	31-AUG-15	31-AUG-15	R3258884
Phenol (4AAP)							
Phenols (4AAP)	<0.50	DLM	0.50	mg/L		03-SEP-15	R3259975
Note: DLM: Diluted due to unknown interferences.							
Phosphorus, Total							
Phosphorus (P)-Total	0.904		0.010	mg/L		02-SEP-15	R3258555
Sulfate in Water by IC							
Sulfate (SO4)	151		1.5	mg/L		27-AUG-15	R3257569
Total Alkalinity as CaCO3							
Alkalinity, Total (as CaCO3)	599		1.0	mg/L		02-SEP-15	R3259217
Total Metals by ICP-MS							
Aluminum (Al)-Total	0.0447		0.0050	mg/L	28-AUG-15	28-AUG-15	R3256590
Arsenic (As)-Total	0.00722		0.00020	mg/L	28-AUG-15	28-AUG-15	R3256590
Cadmium (Cd)-Total	0.000060		0.000010	mg/L	28-AUG-15	28-AUG-15	R3256590
Calcium (Ca)-Total	204		0.10	mg/L	28-AUG-15	28-AUG-15	R3256590
Chromium (Cr)-Total	0.0034		0.0010	mg/L	28-AUG-15	28-AUG-15	R3256590
Cobalt (Co)-Total	0.00270		0.00020	mg/L	28-AUG-15	28-AUG-15	R3256590
Copper (Cu)-Total	0.00876		0.00020	mg/L	28-AUG-15	28-AUG-15	R3256590
Iron (Fe)-Total	2.96		0.10	mg/L	28-AUG-15	28-AUG-15	R3256590
Lead (Pb)-Total	0.00112		0.000090	mg/L	28-AUG-15	28-AUG-15	R3256590

* 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
L1663597-1 RAN-2							
Sampled By: CLIENT on 25-AUG-15							
Matrix:							
Total Metals by ICP-MS							
Magnesium (Mg)-Total	35.0		0.010	mg/L	28-AUG-15	28-AUG-15	R3256590
Manganese (Mn)-Total	2.08		0.030	mg/L	28-AUG-15	31-AUG-15	R3257288
Nickel (Ni)-Total	0.0137		0.0020	mg/L	28-AUG-15	28-AUG-15	R3256590
Potassium (K)-Total	40.7		0.020	mg/L	28-AUG-15	28-AUG-15	R3256590
Sodium (Na)-Total	128		0.030	mg/L	28-AUG-15	28-AUG-15	R3256590
Zinc (Zn)-Total	0.0429		0.0020	mg/L	28-AUG-15	28-AUG-15	R3256590
Total Suspended Solids							
Total Suspended Solids	310		5.0	mg/L		01-SEP-15	R3258791
pH							
pH	8.11		0.10	pH units		02-SEP-15	R3259217

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

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLM	Detection Limit Adjusted due to sample matrix effects.
MBHT	The APHA 30 hour hold time was exceeded for microbiological testing. Samples processed within 48 hours from time of sampling may be valid in some cases (refer to Health Canada guidance).
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	Total Alkalinity 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.			
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.			
ETL-HARDNESS-TOT-WP	Water	Hardness Calculated	HARDNESS CALCULATED
FC-MPN-WP	Water	Fecal Coliform	APHA 9221E
The Most Probable Number (MPN) method is based on the Multiple Tube Fermentation technique. The results of examination of replicate tubes and dilutions of a sample are reported after confirmations specific to total coliform, fecal coliform and E. coli are performed. Results are reported in MPN/100 mL for water and MPN/gram for food and solid samples.			
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-L-MS-WP	Water	Total Metals by ICP-MS	APHA 3030E/EPA 6020A-TL
This analysis involves preliminary sample treatment by hotblock acid digestion (APHA 3030E). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).			
NH3-COL-WP	Water	Ammonia by colour	APHA 4500 NH3 F

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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.			
OGG-TOT-WT	Water	Oil and Grease, Total	APHA 5520 B
Sample is extracted with hexane, extract is then evaporated and the residue is weighed to determine total oil and grease.			
P-T-COL-WP	Water	Phosphorus, Total	APHA 4500 P PHOSPHORUS
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus 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.			
TOC-WT	Water	Total Organic Carbon	APHA 5310B
Sample is injected into a heated reaction chamber which is packed with an oxidative catalyst. The water is vaporized and the organic cabon is oxidized to carbon dioxide. The carbon dioxide is transported in a carrier gas and is measured by a non-dispersive infrared detector.			

** 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.

contact: Joe. Kaludjak Foreman.
PH 867 645 2895.

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L1663597-COFC

COC Number: 14 - 454517

Page 1 of 1.

Report To		Report Format / Dis -	Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	Hamlet of Rankin Inlet	Select Report Format: ☐ PDF ☐ EXCEL ☐ EDD (DIGITAL)	R ☑ Regular (Standard TAT if received by 3pm) — Please Place Priority Top.
Contact:		Quality Control (QC) Report with Report ☐ Yes ☐ No	P ☐ Priority (2-4 business days if received by 3pm)
Address:	P.O box 310 1-4 Arnnngak 4TH St.	☐ 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:	Rankin Inlet, NU X0C 0G0	Email 1 or Fax * Jbarnes@gov.nu.ca	Specify Date Required for E2,E or P:
		Email 2	

Invoice To		Invoice Distribution	Analysis Request
	Same as Report To ☑ Yes ☐ No		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
	Copy of Invoice with Report ☑ Yes ☐ No	Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX	
Company:		Email 1 or Fax	
Contact:		Email 2	

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD	J Routine Metals	Nutrients	Phenols	Bacteria	Oil + Grease	Mercury	Nunavut - NWB CORI	Number of Containers
	RAU-3 "Two"	Aug 7 25/08/15	*		J	J	P	P	P	P	P	P	9.

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)	SAMPLE CONDITION AS RECEIVED (lab use only)
Are samples taken from a Regulated DW System? ☐ Yes ☐ No		Frozen ☐ SIF Observations Yes ☐ No ☐
Are samples for human drinking water use? ☐ Yes ☐ No		Ice packs Yes ☐ No ☐ Custody seal intact Yes ☐ No ☐
		Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C
6°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:
				26/08/16	12:30			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA-FM-0326a WB 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 any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.