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

L1634058-COFC

ALS Environmental

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Report To	**Report Format / Distribution**
Company: Hamlet of Rankin Inlet	Standard: Other (specify):
Contact: Tom N G.	Select: PDF ✓ Excel Digital Fax
Address: P.O Box 310 Rankin Inlet	Email 1: works@rankininlet.ca
	Email 2: sao@rankininlet.ca
Phone: 867 645 2895 Fax:	
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: Acct	PO / AFE:
Contact: Jobs Rankin Inlet Monarch Prog	LSD:
Address:	
Phone: Fax:	Quote #:
Lab Work Order # (lab use only)	**ALS Contact:** Sampler: J Kaludjak

Service Request: (Rush subject to availability - Contact ALS to confirm TAT)

- ✓ Regular (Standard Turnaround Times - Business Days)
- Priority(2-4 Business Days)-50% surcharge - Contact ALS to confirm TAT
- Emergency (1-2 Business Days)-100% Surcharge - Contact ALS to confirm TAT
- Same Day or Weekend Emergency - Contact ALS to confirm TAT

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

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Routine	BOD	Total Metals	Total Nutrients	Oil + Grease	Bacteria	Total Metals						Number of Containers
	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: DTS	Date: 27JUN15	Time: 11:25	Temperature: 7.6 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

Field Log

L1634058-COFC

Name of Sampler(s): Kennedy Nyaugok Nippivgjuk

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.)