2016 FIRST QUARTER REPORT
FOR GN-CGS RANKIN INLET

QUARTER BEING REPORTED: **January – March 2016**

The following information is compiled pursuant to the requirements of Part B, Item 2 of Water Licence No. **3AM-GRA1624** issued to **Government of Nunavut, Department of Community and Government Services (GN-CGS)**.

a) Tabular summaries of all data generated under the Monitoring Program; and
b) Monthly quantities of fresh water obtained from all sources;

Below are results for Monitoring Program Stations GRA-1 and GRA-3.

Month Reported	Quantity of Water Obtained from all Sources (m^3)	Quantity of Sewage Waste Discharged (Estimated, m^3)
January	58,117.12	58,117.12
February	61,469.00	61,469.00
March	64,374.00	64,374.00
QUARTER TOTAL	**183,960.12**	**183,960.12**

As per Part H, Item 5 of the Licence, below is a summary of solids removed from the Sewage Treatment Facility at Monitoring Station Number GRA-4.

Month Reported	Solids Removed from the Sewage Treatment Facility (m^3)
January	4
February	4
March	4
QUARTER TOTAL	**12**

c) Quarterly sampling results from Monitoring Program Station GRA-3;

Refer to attached sampling results for GRA-3 (Appendix A).

d) The current estimated volume of Nipissar Lake based on water elevation determined at Monitoring Program Station GRA-5.

As per Part H, Item 6 of the Licence, the Licensee shall record water elevation monthly, during periods of open water at Monitoring Program Station GRA-5. There was **no open water** during the quarter being reported.

e) An executive summary of any studies conducted to date during the Calendar Quarter, pending completion.

The *Nipissar Lake and Lower Landing Lake Water Balance Assessment* was completed by Golder Associates in February 2016. Copies of the English and Inuktitut executive summary are included in Appendix C and D, respectively.

f) Other

The Memorandum of Understanding between CGS and the Hamlet of Rankin Inlet regarding the deposit of sewage screenings in the municipal solid waste site was renewed on April 25, 2016 and is valid until October 1, 2024.

List of Appendixes

Appendix A: Summary of GRA-3 Sampling Parameters

GN-CGS Rankin Inlet Monitoring Stations and Sampling Parameters for Licence No. 3AM-GRA1624

			GRA-3	
Parameters	**Unit**	**Detection Limit**	**03-Apr-16**	**CCME Guideline[1]**
BOD_5	mg/L	20	>160	N/G
cBOD	mg/L	20	>160	N/G
Fecal Coliforms	MPN/100mL	3	<110000	N/G
pH	pH units	0.10	6.41	7.0-8.7
Conductivity	umhos/cm	1.0	722	N/G
Total Suspended Solids	mg/L	5.0	180.0	N/G
Ammonia Nitrogen	mg/L	1.0	11.0	N/G
Nitrate-Nitrite	mg/L	0.070	<0.070	N/G
Oil and Grease	mg/L	2.0	43.5	N/G
Total Phenols	mg/L	0.0010	0.0321	N/G
Sulphate	mg/L	0.30	38.5	N/G
Sodium	mg/L	0.030	46.0	N/G
Potassium	mg/L	0.020	15.3	N/G
Magnesium	mg/L	0.010	9.30	N/G
Calcium	mg/L	0.10	41	N/G
Total Arsenic	mg/L	0.00020	0.00219	0.0125
Total Cadmium	mg/L	0.000010	0.000226	0.00012
Total Copper	mg/L	0.00020	0.160	0.004
Total Chromium	mg/L	0.0010	0.0050	0.0015
Total Iron	mg/L	0.010	1.57	N/G
Total Lead	mg/L	0.000090	0.00147	N/G
Total Mercury	mg/L	0.00002	<0.00020	0.000016
Total Nickel	mg/L	0.0020	0.0053	N/G
Total Zinc	mg/L	0.0020	0.0979	N/G
Total Hydrocarbons (C6-C50)	mg/L	0.44	38.7000	N/G
F1 (C6-C10)	mg/L	0.10	<0.10	N/G
F2 (C10-C16)	mg/L	0.10	0.67	N/G
F3 (C16-C34)	mg/L	0.25	10.6	N/G
F4 (C34-C50)	mg/L	0.25	27.4	N/G
Benzene	mg/L	0.00050	<0.00050	0.11
Toluene	mg/L	0.0010	<0.0010	0.215
Ethyl Benzene	mg/L	0.00050	<0.00050	0.025
Xylene	mg/L	0.00050	<0.00050	N/G

[1]Canadian Environmental Quality Guidelines - Water Quality Guidelines for the Protection of Aquatic Life, Marine
N/G - No Guideline

Appendix B: Certificate of Analysis, March 30, 2015

Nunavut - Community & Government Services - Rankin Inlet
ATTN: SIMON DOIRON
P.O. Box 490
Rankin Inlet NU X0C 0G0

Date Received: 04-APR-16
Report Date: 14-APR-16 12:16 (MT)
Version: FINAL

Client Phone: 867-645-8155

Certificate of Analysis

Lab Work Order #: L1751326
Project P.O. #: NOT SUBMITTED
Job Reference: 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
L1751326-1 WWTP EFFLUENT							
Sampled By: S Doiron on 03-APR-16 @ 09:30							
Matrix: Sewage/Waste Water							
BTEX plus F1-F4							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		06-APR-16	R3433333
Toluene	<0.0010		0.0010	mg/L		06-APR-16	R3433333
Ethyl benzene	<0.00050		0.00050	mg/L		06-APR-16	R3433333
o-Xylene	<0.00050		0.00050	mg/L		06-APR-16	R3433333
m+p-Xylenes	<0.00050		0.00050	mg/L		06-APR-16	R3433333
F1 (C6-C10)	<0.10		0.10	mg/L		06-APR-16	R3433333
Surrogate: 4-Bromofluorobenzene (SS)	101.9		70-130	%		06-APR-16	R3433333
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		12-APR-16	
F2-Naphth	0.67		0.10	mg/L		12-APR-16	
F3-PAH	10.6		0.25	mg/L		12-APR-16	
Total Hydrocarbons (C6-C50)	38.7		0.38	mg/L		12-APR-16	
F2-F4 PHC method							
F2 (C10-C16)	0.67		0.10	mg/L	05-APR-16	05-APR-16	R3431034
F3 (C16-C34)	10.6		0.25	mg/L	05-APR-16	05-APR-16	R3431034
F4 (C34-C50)	27.4		0.25	mg/L	05-APR-16	05-APR-16	R3431034
Surrogate: 2-Bromobenzotrifluoride	102.9		60-140	%	05-APR-16	05-APR-16	R3431034
Sum of Xylene Isomer Concentrations							
Xylenes (Total)	<0.0015		0.0015	mg/L		07-APR-16	
Miscellaneous Parameters							
Oil and Grease	43.5		5.0	mg/L		08-APR-16	R3436232
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	<0.00020	DLM	0.00020	mg/L	08-APR-16	12-APR-16	R3436743
2-Methyl Naphthalene	<0.00020	DLM	0.00020	mg/L	08-APR-16	12-APR-16	R3436743
Acenaphthene	<0.00020	DLM	0.00020	mg/L	08-APR-16	12-APR-16	R3436743
Acenaphthylene	<0.00020	DLM	0.00020	mg/L	08-APR-16	12-APR-16	R3436743
Anthracene	<0.00010	DLM	0.00010	mg/L	08-APR-16	12-APR-16	R3436743
Acridine	<0.00020	DLM	0.00020	mg/L	08-APR-16	12-APR-16	R3436743
Benzo(a)anthracene	<0.00010	DLM	0.00010	mg/L	08-APR-16	12-APR-16	R3436743
Benzo(a)pyrene	<0.00010	DLM	0.00010	mg/L	08-APR-16	12-APR-16	R3436743
Benzo(b&j)fluoranthene	<0.00010	DLM	0.00010	mg/L	08-APR-16	12-APR-16	R3436743
Benzo(g,h,i)perylene	<0.00020	DLM	0.00020	mg/L	08-APR-16	12-APR-16	R3436743
Benzo(k)fluoranthene	<0.00010	DLM	0.00010	mg/L	08-APR-16	12-APR-16	R3436743
Chrysene	<0.00020	DLM	0.00020	mg/L	08-APR-16	12-APR-16	R3436743
Dibenzo(a,h)anthracene	<0.000050	DLM	0.000050	mg/L	08-APR-16	12-APR-16	R3436743
Fluoranthene	<0.00020	DLM	0.00020	mg/L	08-APR-16	12-APR-16	R3436743
Fluorene	<0.00020	DLM	0.00020	mg/L	08-APR-16	12-APR-16	R3436743
Indeno(1,2,3-cd)pyrene	<0.00010	DLM	0.00010	mg/L	08-APR-16	12-APR-16	R3436743
Naphthalene	<0.00050	DLM	0.00050	mg/L	08-APR-16	12-APR-16	R3436743
Phenanthrene	<0.00050	DLM	0.00050	mg/L	08-APR-16	12-APR-16	R3436743
Pyrene	<0.00020	DLM	0.00020	mg/L	08-APR-16	12-APR-16	R3436743
Quinoline	<0.00020	DLM	0.00020	mg/L	08-APR-16	12-APR-16	R3436743
B(a)P Total Potency Equivalent	<0.000097		0.000097	mg/L	08-APR-16	12-APR-16	R3436743
Surrogate: Acenaphthene d10	53.4		40-130	%	08-APR-16	12-APR-16	R3436743
Surrogate: Acridine d9	63.0		40-130	%	08-APR-16	12-APR-16	R3436743
Surrogate: Chrysene d12	56.8		40-130	%	08-APR-16	12-APR-16	R3436743
Surrogate: Naphthalene d8	55.5		40-130	%	08-APR-16	12-APR-16	R3436743
Surrogate: Phenanthrene d10	55.7		40-130	%	08-APR-16	12-APR-16	R3436743
Nunavut WW Group 1							
Alkalinity, Bicarbonate							
Bicarbonate (HCO3)	192		1.2	mg/L		11-APR-16	

* 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
L1751326-1 WWTP EFFLUENT							
Sampled By: S Doiron on 03-APR-16 @ 09:30							
Matrix: Sewage/Waste Water							
Alkalinity, Carbonate							
Carbonate (CO3)	<0.60		0.60	mg/L		11-APR-16	
Alkalinity, Hydroxide							
Hydroxide (OH)	<0.34		0.34	mg/L		11-APR-16	
Alkalinity, Total (as CaCO3)							
Alkalinity, Total (as CaCO3)	158		1.0	mg/L		08-APR-16	R3435394
Ammonia by colour							
Ammonia, Total (as N)	11.0		1.0	mg/L		06-APR-16	R3434392
Biochemical Oxygen Demand (BOD)							
Biochemical Oxygen Demand	> 160		20	mg/L		04-APR-16	R3436630
Carbonaceous BOD							
BOD Carbonaceous	> 160		20	mg/L		04-APR-16	R3436630
Chloride in Water by IC							
Chloride (Cl)	79.0		0.50	mg/L		04-APR-16	R3430285
Conductivity							
Conductivity	722		1.0	umhos/cm		08-APR-16	R3435394
Fecal Coliform							
Fecal Coliforms	>110000		3	MPN/100mL		04-APR-16	R3433949
Hardness Calculated							
Hardness (as CaCO3)	141		0.30	mg/L		10-APR-16	
Mercury Total							
Mercury (Hg)-Total	<0.00020	DLM	0.00020	mg/L	07-APR-16	07-APR-16	R3433883
Nitrate in Water by IC							
Nitrate (as N)	<0.020		0.020	mg/L		04-APR-16	R3430285
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.070		0.070	mg/L		05-APR-16	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		04-APR-16	R3430285
Phenol (4AAP)							
Phenols (4AAP)	0.0321		0.0010	mg/L		05-APR-16	R3433891
Phosphorus, Total							
Phosphorus (P)-Total	7.45		0.050	mg/L		12-APR-16	R3436829
Sulfate in Water by IC							
Sulfate (SO4)	38.5		0.30	mg/L		04-APR-16	R3430285
Total Metals by ICP-MS							
Aluminum (Al)-Total	1.07		0.0050	mg/L	05-APR-16	09-APR-16	R3435011
Arsenic (As)-Total	0.00219		0.00020	mg/L	05-APR-16	09-APR-16	R3435011
Cadmium (Cd)-Total	0.000226		0.000010	mg/L	05-APR-16	09-APR-16	R3435011
Calcium (Ca)-Total	41.1		0.10	mg/L	05-APR-16	09-APR-16	R3435011
Chromium (Cr)-Total	0.0050		0.0010	mg/L	05-APR-16	09-APR-16	R3435011
Cobalt (Co)-Total	0.00116		0.00020	mg/L	05-APR-16	09-APR-16	R3435011
Copper (Cu)-Total	0.160		0.00020	mg/L	05-APR-16	09-APR-16	R3435011
Iron (Fe)-Total	1.57		0.010	mg/L	05-APR-16	09-APR-16	R3435011
Lead (Pb)-Total	0.00147		0.000090	mg/L	05-APR-16	09-APR-16	R3435011
Magnesium (Mg)-Total	9.30		0.010	mg/L	05-APR-16	09-APR-16	R3435011
Manganese (Mn)-Total	0.0587		0.00030	mg/L	05-APR-16	09-APR-16	R3435011
Nickel (Ni)-Total	0.0053		0.0020	mg/L	05-APR-16	09-APR-16	R3435011
Potassium (K)-Total	15.3		0.020	mg/L	05-APR-16	09-APR-16	R3435011
Sodium (Na)-Total	46.0		0.030	mg/L	05-APR-16	09-APR-16	R3435011
Zinc (Zn)-Total	0.0979		0.0020	mg/L	05-APR-16	09-APR-16	R3435011
Total Organic Carbon by Combustion							
Total Organic Carbon	208		5.0	mg/L		13-APR-16	R3437834
Total Suspended Solids							

* 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
L1751326-1 WWTP EFFLUENT							
Sampled By: S Doiron on 03-APR-16 @ 09:30							
Matrix: Sewage/Waste Water							
Total Suspended Solids							
Total Suspended Solids	180		5.0	mg/L		06-APR-16	R3433249
pH							
pH	6.41		0.10	pH units		08-APR-16	R3435394

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

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
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.

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.

ETL-HARDNESS-TOT-WP	Water	Hardness Calculated	HARDNESS CALCULATED
F1-F4-CALC-WP	Water	CCME Total Hydrocarbons	CCME CWS-PHC, Pub #1310, Dec 2001-L

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

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

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

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:
1. All extraction and analysis holding times were met.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

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	F2-F4 PHC method	CWS (CCME)

Petroleum Hydrocarbons (F2-F4) in Water Method is adapted from US EPA Method 3511: Organic Compounds in Water by Micro-extraction" (Nov 2002) with instrumental analysis as per the "Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil - Tier 1 Method" (CCMS, Dec 2000) Water samples (in their entirety) are extracted using hexane prior to capillary column gas chromatography with flame ionization detection (GC/FID).

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

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

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

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

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

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

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

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

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

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.

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.

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)

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

Total suspended solids in aquesous matrices is determined gravimetrically after drying the residue at 103 105°C.

ALS Test Code	Matrix	Test Description	Method Reference**
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

Chain of Custody Numbers:

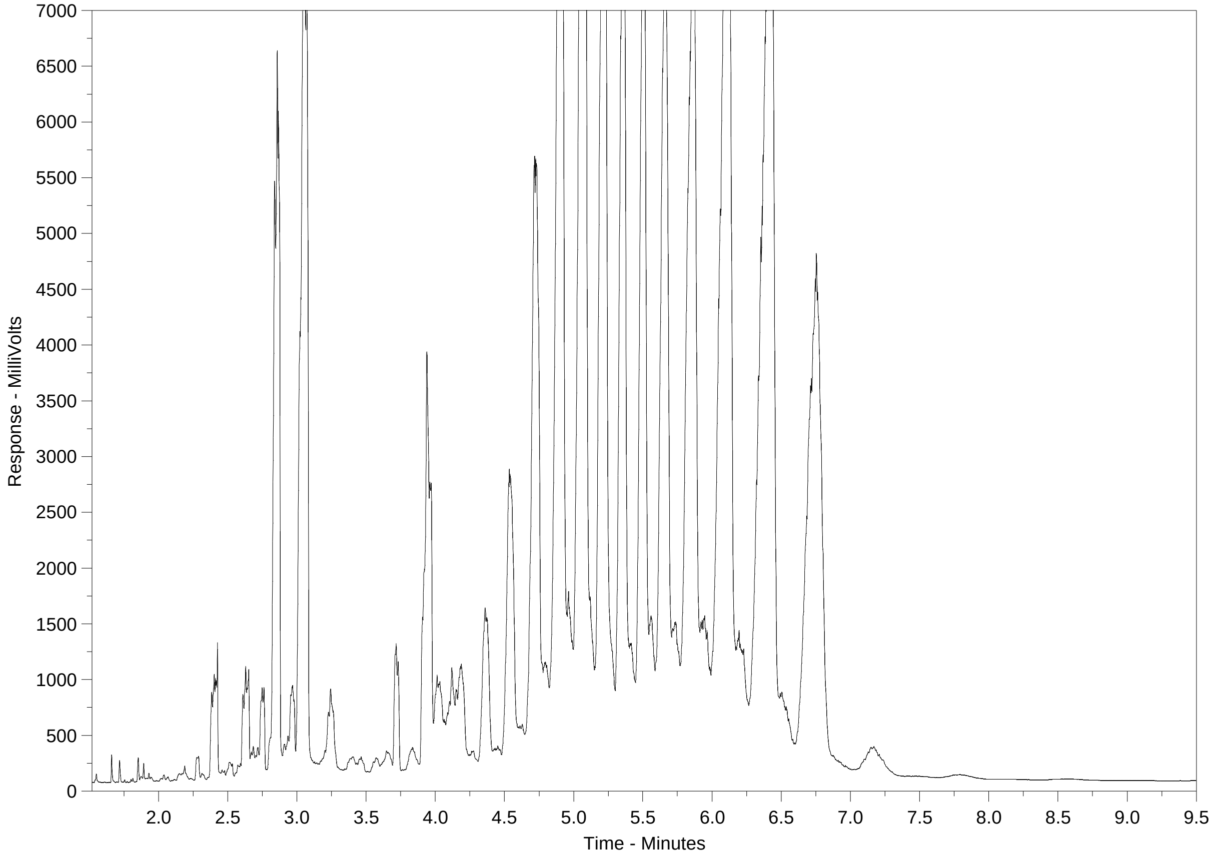
GLOSSARY OF REPORT TERMS

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: L1751326-1
Client Sample ID: WWTP EFFLUENT



←F2→	←	F3	→←	F4 →
nC10	nC16		nC34	nC50
174°C	287°C		481°C	575°C
346°F	549°F		898°F	1067°F
←Gasoline→			← Motor Oils/ Lube Oils/ Grease →	
←	Diesel/ Jet Fuels →			

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 Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

12 - 1329 Niakwa Rd. E.
Winnipeg, Manitoba R2J 3T4
Tel: (204) 255-9720
Fax: (204) 255-9721
Toll Free: 1 800 607 7555

Chain of Custody / Analytical Request Form

CHEMISTRY INFO: (204) 255 9739
MICRO INFO: (204) 255 9740 OR (204) 255 9737

Environmental Division

L1751326-COFC

FO... ...EAS)
San... ...LE ☐ NON ACCEPTABLE 10°C
☐ F... ...Leakage ☐ Incorrect Sample Container
COM...

WORK ORDER NO:
LAB NO.: L1751326
DATE RECEIVED: 04/04/16.
TIME RECEIVED: 9:30.
BY: OS

Date Sampled: Mar 31/16 Time: 9 : 30 A.M. ☑ P.M. ☐ Date Required:

Location: Rankin Inlet (Town, Community, City)

Submitter's Name Printed: S. Doiron

Sample Submitted By: S. Doiron

Community Code Number:

Rural Municipality/LGC/UVD:

SAMPLE TYPE

PLEASE PRINT & PRESS FIRMLY

DRINKING WATER
- ☐ Untreated Well
- ☐ Treated Well
- ☐ Treated Municipal
- ☐ Non-Treated Municipal
- ☐ Water-Surface-Raw
- ☐ Water-Surface-Treated

PURPOSE OF TEST
☐ Private ☐ Real Estate ☐ Water Main

NON-DRINKING WATER
- ☑ Sewage/Waste Water
- ☐ Lake/River
- ☐ Swimming Pool
- ☐ Whirl Pool
- ☐ Other

NOTES & CONDITIONS
1. Quote number must be provided to insure proper pricing.
2. Failure to properly complete all portions of this form may delay analysis.
3. ALS's liability limited to cost of analysis.

SERVICE REQUESTED
☑ **REGULAR** ☐ **PRIORITY** (50% SURCHARGE) ☐ **EMERGENCY** (100% SURCHARGE)

LAB NUMBER	SAMPLE IDENTIFICATION
	WWTP Effluent

ALS CUSTOMER #: W8133 QUOTE #:

REPORT TO BE SENT TO

NAME: S. Doiron
COMPANY: CGS Rankin
ADDRESS: Box 490
CITY/TOWN: Rankin Inlet / PROV.: Nu
POSTAL CODE: X0C 0G0
PHONE: 876-645-8155
BY: MAIL ☐ FAX ☐ (FAX NUMBER)
PICKUP ☐ E-MAIL ☑ sdoiron@gov.nu.ca (EMAIL ADDRESS)

CC
NAME:
ADDRESS:
CITY/TOWN: / PROV.:
POSTAL CODE:
PHONE:
BY: MAIL ☐ FAX ☐ (FAX NUMBER)
PICKUP ☐ E-MAIL ☐ (EMAIL ADDRESS)

Analyses required See Bottles

BILLING ADDRESS SAME AS REPORT TO ☑
NAME:
COMPANY:
ADDRESS:
CITY/TOWN: / PROV.:
POSTAL CODE:

PAYMENT PARTICULARS
- ☐ INVOICE NEEDED / CLIENT'S P.O. NO.
- ☐ INTERAC
- ☐ CASH Subtotal $
- ☐ CHEQUE G.S.T. $
- ☐ VISA / MASTERCARD Total $

* OUR POLICY IS NOT TO ACCEPT SAMPLES FROM THE PRIVATE CITIZEN WITHOUT PREPAYMENT

SAMPLING INSTRUCTIONS ON REVERSE SIDE

Manitoba Technology Centre Ltd.
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Phone: +1 204 255 9720 Fax: +1 204 255 9721 **www.alsglobal.com**
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OS

SUBMITTER COPY

ENTERED IN LIMS BY:

Appendix C: Nipissar Lake and Lower Landing Lake Water Balance Assessment, Executive Summary English

MEMORANDUM

TO Nicole Lanchuske' Community of Rankin Inlet **DATE** February 16, 2016

CC Julia Krizan (IMG-Golder Corporation); Project File

FROM Greg Rose (Golder Associates) **PROJECT No.** 1534002

NIPISSAR LAKE AND LOWER LANDING LAKE WATER BALANCE ASSESSMENT EXECUTIVE SUMMARY

The below Executive Summary has been prepared for the Community of Rankin Inlet (the Community) to provide a brief overview of the Nipissar Lake and Lower Landing Lake Water Balance Assessment, submitted to the Community by Golder Associates on February 16, 2016 in accordance with Proposal Number P1534002.

The Community of Rankin Inlet currently depends on Nipissar Lake to service its year-round municipal water supply requirements. Given that the Nipissar Lake watershed is frozen over for approximately seven to nine months a year, the raw water supplies within Nipissar Lake at the outset of winter need to be sufficient to service the community over the winter until snowmelt runoff replenishes the lake during the following freshet.

In addition to the seasonal restrictions limiting replenishment of the Community's raw water supply, work completed by FSC Architects & Engineers and Resource Management Strategies Inc. in 2009 concluded that increased water consumption associated with continued population growth was exceeding annual water yields within the Nipissar Lake basin.

A water supply pipeline from the nearby Char River to augment water supplies in Nipissar Lake was consequently constructed; however, concerns regarding the viability of this secondary supply source have been expressed in light of sustainable flow and water depth objectives imposed by the Nunavut Water Board (NWB) and Canada Department of Fisheries and Oceans (DFO).

While continued population growth in view of finite basin yields is cited as the primary water supply stressor, concerns regarding the Community's water supply have also been articulated in view of changing climate normals that may further decrease net basin yields to Nipissar Lake and the Char River.

Lower Landing Lake, immediately upstream of the Char River intake, was evaluated as a potential tertiary water supply alternative to ascertain its long-term viability for delivering sustainable water supplies to the Community. Although this source would open up an additional supply of water for the community, water takings from Lower Landing Lake need to be considered in the context of flow regime within the Char River. Based on DFO guidelines, water takings will need to be limited to within 10% of the flow in Char River. Two water taking options were considered in order to meet demand; firstly, a pump rate that matched 10% of the instantaneous flow within Char River until freshet ends; and secondly, a water taking configuration that would allow for continuous pumping throughout the open water season up to 10% of the total annual flow within Char River. Although the first option would technically meet the literal definition of DFO's water taking guideline, this option was dismissed due to the logistical complications of varying pump rates over several orders of magnitude. The second option, although minor reductions in the hydroperiod for Char River are anticipated, was considered optimal as it allowed for a constant pump rate to be applied over the full open water season while addressing the spirit of the DFO guideline. It is noteworthy that the Char River is not considered to provide permanent habitat for fish while there are no other known uses for water within the Char River.

Using field data collected during this and previous studies, as well as meteorological and bathymetric data available from government sources, Golder Associates (Golder) developed an integrated water balance model that allows supplementation needs and water supply availability to be estimated for prospective consumption rates and future climate scenarios.

In general terms, small increases in basin yields and shorter anticipated winter durations associated with climate change projections are estimated to marginally reduce over-winter supplementation needs. Similarly, projected longer summer periods will increase the available supplementation window.

In view of projected population growth, Lower Landing Lake is estimated to be able to provide sufficient supplementary water supplies to offset the water taking deficit from Nipissar Lake under low and moderate daily consumption rates (i.e., 1,600 m^3/day and 3,300 m^3/day, respectively). Under significantly increased population sizes, when consumption rates reach approximately 5,300 m^3/day, the annual deficit at Nipissar Lake will exceed 10% of the median outflow conditions of Lower Landing Lake. For context, this finding suggests that flows in Char River would likely decrease by more than 10% of baseline conditions once population growth has exceeded that projected for the year 2082 (7,800 people), even if the existing per capita consumption rate (0.68 m^3/person/day) is maintained.

While this report provides reasonable long-term context to the availability of water under future daily consumption rates and climate scenarios, the results should be used only for the purposes of long-term water supply planning rather than short-term water budgeting. A water supply forecasting tool will be provided under separate cover for shorter term budgeting.

N:\Active\2015\3 Proj\1534002 Gov of Nunavut_Water Balance & Water Supply Forecast_Rankin Inlet\06. Reporting\3. Exec Summ\Rankin Inlet Executive Summary.docx

Appendix D: Nipissar Lake and Lower Landing Lake Water Balance Assessment, Executive Summary Inuktitut

ᓂᐱᓴ ᑕᓯᐅᑉ ᐊᒻᒪ ᓘᕗ ᑑᓐᑎᖕ ᑕᓯᐅᑉ ᐃᒪᖏᓐᓂᑦ ᖃᐅᔨᓴᕐᓂᕐᒧᑦ ᐅᓂᒃᑳᓕᐊᖅ

ᐅᓇᓃᑦᑐᖅ ᐅᓂᒃᑳᓕᐊᖅ ᐋᖅᑭᒃᓱᖅᑕᐅᓯᒪᔪᖅ ᑲᖏᖅᖠᓂᕐᒧᑦ (ᓄᓇᓕᒃ) ᐅᓂᒃᑲᐅᓯᖅᑲᒐᑖᒍᒪᓪᓗᑎᒃ ᓂᐱᓴ ᑕᓯᐅᑉ ᐊᒻᒪ ᓘᕗ ᑑᓐᑎᖕ ᑕᓯᐅᑉ ᐃᒪᖏᓐᓂᑦ ᖃᐅᔨᓴᕐᓂᐅᔪᒥᑦ, ᑐᓐᓂᖅᑯᑕᐅᔪᖅ ᓄᓇᓕᖕᓄᑦ Golder Associates-ᑯᓐᓂᑦ ᓅᕝᕗᐊᓇ 16, 2016-ᒥᑦ ᒪᓕᒡᓗᒍᑦ ᑐᒃᓯᕋᐅᑕᐅᔫᑉ ᓈᓴᐅᑖ P1534002.

ᑲᖏᖅᖠᓂᖅ ᒫᓇᐅᔪᖅ ᑕᑎᖅᑲᖅᐳᖅ ᓂᐱᓴ ᑕᓯᕐᒥᑦ ᐊᕐᕌᒍᓕᒫᖅ ᐃᒪᖃᕈᑎᒋᓪᓗᓂᐅᒃ ᐱᔪᓇᐊᖅᑲᖅᑕᒥᖕᓂᑦ. ᐱᓪᓗᒍᑦ ᓂᐱᓴ ᑕᓯᐅᑉ ᐃᒪᕐᑯᑎᖕᒐᑦ ᖁᐊᖑᖅᑲᑦᑕᕐᓂᖕᒐᑦ ᑕᖅᑮᑦ 7-9 ᐊᕐᕋᒎᑉ ᐃᓗᐊᓂ, ᐃᒪᖅᑲᖅᕕᐅᔪᖅ ᓂᐱᓴ ᑕᓯᖅ ᐅᑭᐅᖑᓕᕚᖅᑎᓪᓗᒍᑦ ᓈᒻᒪᑭᐊᖅᑲᖅᑐᖅ ᐱᔾᑎᕋᕈᑕᐅᔪᖅ ᓄᓇᓕᖕᓄᑦ ᐅᑭᐅᓕᒫᕐᒧᑦ ᐊᐳᑦ ᐊᐅᓚᓱᐊᕐᓂᖕᒐᓂᑦ.

ᐃᓚᓕᐅᑎᓪᓗᒍᑦ ᑭᒡᓕᖅᑲᕈᑕᐅᔪᖅ ᓄᑖᙳᓇᐊᖅᓯᓂᕐᒥᑦ ᓄᓇᓕᖕᓄ ᐃᒪᕐᒥᑦ, ᐱᓕᕆᐊᖑᓚᐅᖅᑐᖅ FSC Architects & Engineers and Resource Management Strategies Inc.-ᑯᓐᓂᑦ 2009-ᖑᑎᓪᓗᒍᑦ ᓇᓗᓇᐃᖅᑐᑦ ᐃᒪᖅᑐᓕᒃᑲᓐᓂᕐᓂᖅ ᐊᒻᒪᓗ ᐃᓄᒋᐊᒃᓯᕙᓪᓕᐊᓂᖕᒐᑦ ᖄᖏᐅᑎᖅᑲᑦᑕᕐᓂᖕᒐᓂᑦ ᐊᕐᕋᒍᑕᒫᖅ ᐃᒪᒃᓴᓇᔾᔪᕙᒃᑐᒥᑦ ᓂᐱᓴ ᑕᓯᐅᑉ ᐃᒪᖕᒐᓂᑦ.

ᐃᒪᐅᑉ ᓱᓪᓗᖕᒐᓂᑦ ᖃᓂᑦᑐᒥᑦ ᐃᖃᓗᒃ ᑰᖕᒐᓂᑦ ᐃᒪᖅᑲᒃᑲᓐᓂᖅᑯᔭᐅᓪᓗᒍᑦ ᓂᐱᓴ ᑕᓯᖅ ᐋᖅᑭᒃᓯᐃᓚᐅᖅᑐᑦ; ᑭᓯᐊᓂᓕ, ᐃᓱᒫᓗᑎᓂᒃ ᖃᓄᖅ ᑲᔪᓯᔪᓐᓇᕐᓂᖕᒐᓂᑦ ᐃᒪᖅᑲᖅᕕᐅᑉ ᓇᓗᓇᐃᖅᑕᐅᓯᒪᓕᖅᑐᑦ ᖃᓄᖅ ᐃᒪᖅᑲᖅᕕᐅᖕᒋᓐᓇᕈᓐᓇᕐᒪᖔᑦ ᐃᒪᐅᓪᓗ ᐃᑎᓂᖕᒐᓄᑦ ᐱᔾᔪᑕᐅᔪᑦ ᓄᓇᕗᒻᒥ ᐃᒪᓕᕆᔨᖕᒋᑦᑕ ᑲᑎᒪᔨᖕᒋᓐᓂᑦ (NWB) ᑲᓇᑕᐅᓪᓗ ᐃᒪᕐᒥᐅᑕᓕᕆᔨᖕᒋᑦᑕ (DFO).

ᐃᓄᒋᐊᒃᓯᕙᓪᓕᐊᖕᒋᓇᕐᓂᖕᒐᑦ ᑕᑯᓪᓗᒍᑦ ᑭᒡᓕᓕᒃ ᐃᒪᖅᑲᖅᕕᐅᔪᖅ ᐊᒃᓯᕈᖕᓇᓛᖑᓂᖕᒐᓂᑦ, ᐃᓱᒫᓘᑕᐅᖕᒥᔪᖅ ᓄᓇᓕᐅᑉ ᐃᒪᖕᒐᑦ ᐅᖃᐅᓯᐅᓯᒪᖕᒥᔪᑦ ᑕᑯᓪᓗᒍᑦ ᓯᓚᐅᑉ ᐊᓯᔾᔨᖅᐸᓪᓕᐊᓂᖕᒐᑦ ᒥᑭᓕᒋᐊᕈᑕᐅᑐᐃᓐᓇᓇᐊᖅᑲᖅᓂᖕᒐᓂᑦ ᐃᒪᖅᑲᖅᕕᐅᕙᒃᑐᒥᑦ ᓂᐱᓴ ᑕᓯᖅ ᐊᒻᒪ ᐃᖃᓗᒃ ᑰᖕᒐᓂᑦ.

ᓘᕗ ᑑᓐᑎᖕ ᑕᓯᖅ, ᑰᒃᑐᖅ ᐃᖃᓗᒃ ᑰᖕᒐᓄᑦ, ᖃᒥᖅᑭᔭᐅᓚᐅᖅᑐᖅ ᐱᖕᒐᔪᖕᒐᓂᑦ ᐃᒪᖅᑲᖅᕕᐅᑐᐃᓐᓇᓇᐊᖅᑲᖅᓂᖕᒐᓂᑦ ᐋᖅᑮᔪᒪᓪᓗᑎᒃ ᐊᑯᓂᐅᔪᒧᑦ ᐃᒪᖅᑲᖅᑎᑦᑎᔪᓐᓇᖅᓂᖕᒧᑦ ᓄᓇᓕᖕᓄᑦ. ᑖᓐᓇ ᐃᒪᖅᑲᖅᕕᐅᒃᑲᓐᓂᓕᕋᔭᕋᓗᐊᖅᑎᓪᓗᓂ ᓄᓇᓕᖕᓄᑦ, ᐃᒪᑖᖅᕕᐅᔪᑦ ᓘᕗ ᑑᓐᑎᖕ ᑕᓯᕐᒥᑦ ᐃᓱᒪᒋᔭᐅᔭᓇᐊᓕᒃ ᐃᒻᒥᖅᓯᖅᑲᑦᑕᕐᓂᐅᔪᒥᑦ ᐃᖃᓗᒃ ᑰᖕᒥᑦ. ᒪᓕᒡᓗᒍᑦ ᐃᒪᕐᒥᐅᑕᓕᕆᔨᒃᑯᑦ ᐊᑐᐊᒐᖕᒋᑦ, ᐃᒪᖅᑖᖅᕕᐅᔪᑦ ᑭᒡᓕᖅᑲᖅᑎᑕᐅᔭᓇᐊᓕᒃ 10%-ᒥᑦ ᑰᒃᑎᒋᔭᖕᒐᓂᑦ ᐃᖃᓗᒃ ᑕᓯᐅᑉ. ᒪᕿᖕᓂᑦ ᐃᒪᖅᑲᖅᕕᖅᑲᕈᒪᔪᑦ ᑎᑭᐅᒪᔪᒪᓪᓗᑎᒃ ᐊᑐᖅᑕᐅᔪᒧᑦ; ᓯᕗᓪᓕᖅᐹᒥᑦ, ᐸᐸᑦᑐᑎ ᑎᑭᐅᒪᔪᖅ 10%-ᖕᒐᑦᑕ ᑰᖕᓂᓇᔭᖕᒐᓂᑦ ᐃᖃᓗᒃ ᑕᓯᐅᑉ ᐃᒻᒥᐊᓂᒐᓯᐊᕐᓂᖕᒐᓂᑦ; ᑐᓪᓕᖕᒐᓗ, ᐃᒻᒥᖅᓯᕙᓪᓕᐊᓂᖅ ᐸᐸᐃᓐᓇᖅᑯᓪᓗᒍᑦ ᐊᐅᒃᓯᒪᓐᓇᖅᑎᓪᓗᒍᑦ ᑎᑭᓪᓗᒍᑦ 10%-ᖕᒐᓂᑦ ᐊᕐᕋᒎᑉ ᐃᓗᐊᓂ ᑯᕕᓂᖓᕙᒃᑕᖕᒐᓂᑦ ᐃᖃᓗᒃ ᑰᑉ. ᓯᕗᓪᓕᖅᐹᖕᒐᑦ ᑎᑭᐅᒪᓇᔭᕋᓗᐊᖅᑐᓂᑦ ᐃᒪᕐᒥᐅᑕᓕᕆᔨᒃᑯᑦ ᓇᓗᓇᐃᔭᖅᓯᒪᔭᖕᒐᓂᑦ ᐃᒪᖅᑐᖅᓂᖕᒧᑦ ᐊᑐᐊᒐᖕᒐᓂᑦ, ᑖᓐᓇ ᓴᒃᑯᑕᐅᓚᐅᖅᑐᖅ ᐱᔾᔪᑎᖅᑲᖅᑐᑎᒃ ᓅᑎᔾᔪᑎᑦ ᐊᔪᖅᓇᖕᓂᕆᔭᖕᒐᓄᑦ ᖃᓄᑯᓘᔭᖅ ᐸᐸᑭᐊᖅᑲᖅᓂᖕᒧᑦ ᐊᖕᒋᓕᓅᑯᓘᔭᖅᑐᓂᑦ. ᑐᓪᓕᖕᒐᑦ, ᒥᑭᓕᒋᐊᖅᑎᑦᑎᒐᓛᖕᓂᐊᕋᓱᒋᔭᐅᒐᓗᐊᖅᑐᓂᑦ ᐃᒪᖅᓇᐅᔪᒥᑦ ᐃᖃᓗᒃ ᑰᕐᒥᑦ, ᐊᑲᐅᓛᓂᔭᐅᓚᐅᖅᑐᖅ ᐸᐸᐃᓐᓇᕈᓐᓇᖅᓯᕐᓂᖅ ᐊᐅᔭᓕᒫᖅ ᒪᓕᒻᒫᖅᓗᒍᑦ ᐃᒪᕐᒥᐅᑕᓕᕆᔨᒃᑯᑦ ᐊᑐᐊᒐᖕᒐᑦ. ᑐᓴᐅᒪᓗᒍᑦ ᐊᑲᐅᕗᖅ ᐃᖃᓗᒃ ᑰᕐᒥᑦ ᐃᓂᒋᔭᐅᖕᒋᓇᐅᔪᖕᒋᓇᕐᓂᖕᒐᓂᑦ ᐃᖃᓗᖕᓂᑦ ᐊᓯᐊᒍᓪᓗ ᖃᓄᖅ ᐊᑐᖅᑕᐅᖕᒪᖕᒋᑦ ᖃᐅᔨᒪᔭᐅᒐᓂ ᐃᖃᓗᒃ ᑰᒃ.

ᐊᑐᖅᓯᒪᓗᒍᑦ ᑎᑎᖅᑲᑦ ᑲᑎᖅᓱᖅᑕᐅᔪᑦ ᑕᒪᑐᒪᓂ ᑭᖑᓂᐊᓂᓗ ᖃᐅᔨᓴᕐᓂᐅᓚᐅᖅᑐᒥᑦ, ᐊᒻᒪᐃᓛᒃ ᓄᓇᓕᓐᓂᕐᒧᑦ ᐃᓕᓐᓂᕐᒧᓪᓗ ᑎᑎᖅᑲᐃᑦ ᐊᑐᐃᓐᓇᐅᔪᑦ ᐅᕙᒪᒥᑦ, Golder Associates-ᑯᑦ (Golder) ᓴᖅᑭᑦᑎᓯᒪᔪᑦ ᐃᓚᓕᐅᑎᓯᒪᔪᒥᒃ ᐃᒪᕐᒥᑦ ᐊᑐᑦᑎᐊᕐᓂᖕᒧᑦ ᒪᓕᒐᒃᓴᒥᑦ ᐱᔭᐅᔭᓇᐊᓕᖕᓄᑦ ᐊᑐᐃᓐᓇᐅᑎᑦᑎᓂᕐᒧᓪᓗ ᓇᓚᐅᑦᑖᖅᑕᐅᔫᒃᓴᐅᓗᓂᑦ ᐊᑐᖅᑕᐅᓂᐊᕋᓱᒋᔭᐅᔪᖅ ᓯᕗᓂᒃᓴᒥᓪᓗ ᓯᓚᐅᑉ ᖃᓄᐃᓐᓂᐊᕋᓱᒋᔭᐅᓂᖕᒐᑦ.

ᐅᖃᐅᓯᑎᒍᑦ, ᐊᖏᓕᒋᐊᕿᔾᔪᒃᐸᒡᓗᓂᑦ ᐃᒻᒥᖅᑕᐅᓂᖕᒐᑦ ᕿᓚᒻᒥᐅᕚᓪᓕᖅᑲᑦᑕᓂᐊᕋᓱᒋᔭᐅᓂᖕᒐᓗ ᐅᑭᐅᖅ ᐱᓪᓗᒍᑦ ᓯᓚᐅᑉ ᐊᓯᔾᔨᖅᐸᓪᓕᐊᓂᐊᕋᓱᒋᔭᐅᓂᖕᒐᑦ ᓇᓚᐅᑦᑖᖅᑐᑎᒃ ᒥᑭᓕᒋᐊᕿᔾᔪᖕᓂᐊᕋᓱᒋᔭᐅᓪᓗᓂᑦ ᐅᑭᐅᒃᑯᖅ

ᐱᔭᐅᔭᕆᐊᓕᖅᒥᑦ. ᐋᔾᔮᐸᓗᖅᑕᑦ, ᐊᐅᔭᐅᔅᓲᔭᖅᑲᑦᑕᕐᓂᐊᕋᓱᒋᔭᐅᓂᖅᑕᑦ ᐊᖏᒡᓕᒋᐊᖅᑎᑦᑎᓂᐊᖅᑐᖅ ᐃᒻᒥᖅᓯᔪᓐᓇᕐᓂᖅᒥᑦ.

ᑕᑯᓪᓗᒍᑦ ᖃᓄᖅ ᐃᓄᒋᐊᒃᓯᕙᓪᓕᐊᓂᐊᕋᓱᒋᔭᐅᓂᖅᑕᑦ, ᓘᕗ ᓛᓐᑎᖕ ᑕᓯᖅ ᓈᒪᔪᒥᑦ ᐃᒪᕐᑲᖅᑎᑦᑎᔪᓐᓇᕐᓂᐊᕋᓱᒋᔭᐅᕗᖅ ᑐᖕᒐᐅᑎᔾᔪᑕᐅᔪᒧᑦ ᓂᐱᕆ ᑕᓯᕐᒥᑦ ᐃᒪᖅᑐᕐᓂᑭᑎᓪᓗᒋᑦ ᓈᒪᔪᒥᒃᓗ ᐃᒪᖅᑐᖅᑎᓪᓗᒋᑦ ᐅᓪᓘᐸ ᐃᓗᐊᓂ (ᐆᒃᑑᑦ, 1,600 m^3/ᐅᓪᓗᖅ ᐊᒻᒪ 3,300 m^3/ᐅᓪᓗᖅ, ᐃᓛᒃᑯᑦ). ᐃᓄᒋᐊᒃᓯᑲᓪᓚᒃᑎᓪᓗᒍᑦ, ᐃᒪᖅᑐᖅᑎᒋᓂᖅᑕᑦ ᑎᑭᐅᑎᒍᓂᑦ 5,300 m^3/ᐅᓪᓗᖅ, ᐊᕐᕌᒍᒧᑦ ᑐᖕᒐᐅᑦᑎᓇᔭᖅᑐᑦ ᓂᐱᕆ ᑕᓯᕐᒥᑦ 10%-ᒥᑦ ᐃᒪᖅᑐᕐᕕᐅᑎᒋᔪᒥᑦ ᓘᕗ ᓛᓐᑎᖕ ᑕᓯᕐᒥᑦ. ᐃᓗᓕᖕᒐᓄᑦ, ᖃᐅᔮᓯᒪᔭᐅᔪᑦ ᓇᓗᓇᐃᖅᐳᖅ ᑰᖕᓂᕆᔭᖕᒐᑦ ᐃᖃᓗᒃ ᑰᖕᒐᑦ ᑰᒋᓗᐊᕈᓐᓃᕋᔭᕐᓂᖕᒐᓂᑦ 10%-ᒥᑦ ᐃᓄᒋᐊᒃᓯᕙᓪᓕᐊᓂᖕᒐᑦ ᖄᖏᐅᑎᒍᓂᑦ ᓇᓚᐅᑦᑖᖅᑕᐅᓯᒪᔪᒧᑦ 2082-ᒧᑦ (7,800 ᐃᓄᐃᑦ), ᒫᓇᐅᔪᖅ ᐊᑐᖅᑕᐅᑎᒋᓂᖕᒐᑦ (0.68 m^3/ᐃᓄᒃ/ᐅᓪᓗᖅ) ᓱᕋᙱᒃᑲᓗᐊᕈᓂᑦ.

ᑖᓇ ᐅᓂᒃᑳᖅ ᐊᑯᓂᐅᔪᒧᑦ ᐋᖅᑭᐅᒪᓪᓗᓂᑦ ᐃᒪᐅᑉ ᐊᑐᐃᓐᓇᐅᓂᖕᒐᓄᑦ ᓯᕗᓂᒃᓴᒥᑦ ᖃᐅᔾᑕᒫᖅ ᐊᑐᖅᑕᐅᔫᒃᓴᒥᑦ ᓯᓚᐅᓪᓗ ᖃᓄᐃᓐᓂᐊᕋᓱᒋᔭᐅᓂᖕᒐᓄᑦ, ᖃᐅᔮᒪᔭᐅᓕᖅᑐᑦ ᐊᑐᖅᑕᐊᖕᒑᑐᐃᓐᓇᕆᐊᓖᑦ ᐊᑯᓂᐅᔪᒧᑦ ᐃᒪᕐᑲᖅᑎᑦᑎᓂᕐᒧᑦ ᐸᕐᓇᐅᑎᒧᑐᐊᖅ ᕿᓚᒻᒥᐅᔪᒧᑦ ᐃᒪᓕᕆᓂᕐᑰᖏᑦᑐᖅ. ᐃᒪᕐᑲᖅᑎᑦᑎᓂᕐᒧᑦ ᓇᓚᐅᑦᑖᕈᑎᕐᑲᖅᑎᑦᑎᓂᐊᖅᑐᑦ ᐊᓯᖕᒐᑦᑎᒎᖕᒐᓗᓂ ᕿᓚᒻᒥᐅᔪᒧᑦ ᐃᒪᓕᕆᔾᔪᑎᒃᓴᒥᑦ.

Appendix E: Memorandum of Understanding between CGS and the Hamlet of Rankin Inlet Regarding Waste Disposal, April 25, 2016

This MEMORANDUM, OF agreement (the "Agreement") takes effect on the 25 day of April 2016

BETWEEN:

The Government of Nunavut (the "GN") as represented by:

The Minister of Community and Government Services
(The "Minister")

OF THE FIRST PART

- And -

The Municipal Corporation of Rankin Inlet as represented by its Council (the "Council")

OF THE SECOND PART

WHEREAS:

1. The Council has, by way of Motion #51-16 stated that it would enter into a Memorandum of Agreement as described in Appendix A.

2. The Parties wish to define their responsibilities relating to THE Hamlet's acceptance of waste sewage solids (sludge) at the Rankin Inlet solid waste site

THEREFORE, in consideration of the terms and conditions contained herein, the Parties agree as follows:

1. to the nature and scope of this agreement as outlined in Appendix A.
2. The Terms and Conditions of this Agreement may only be amended in writing and by the mutual consent of the Parties.
3. This Agreement shall be governed by and interpreted in accordance with the laws of Nunavut.
4. Whereas the Hamlet has been receiving sewage waste sludge for many years it is now required by Nunavut Water Board that this procedure be in a written agreement It is the intent of this agreement that no additional or new responsibilities will be required of the Hamlet of Rankin Inlet regarding the acceptance of sewage sludge at the solid waste site operated by the Hamlet of Rankin Inlet. This agreement is applicable to the existing solid waste site and the new solid waste site which is planned to be put into operation in the future.

APPENDIX LIST

The following Appendices "A" is part of this agreement

Appendix A: Details of the agreement between the Hamlet and Community and Government Services regarding acceptance of sewage waste (sludge) at the Rankin Inlet solid waste disposal site.

This Agreement will be in effect, unless terminated by either of the Parties, until October 1, 2024. The Minister or Deputy Minister and the Council or its designated representative may extend the Agreement, if agreement is reached in writing.

IN WITNESS WHEREOF the Parties hereto have executed this Agreement as of the date and year first above written.

Signed for the GN	Signed and sealed for the Council of the Municipal Corporation of Rankin Inlet
PER: A/Reg. Dir. I.F.	PER:
MINISTER, or designated representative DEPARTMENT OF COMMUNITY AND GOVERNMENT SERVICES	MAYOR
WITNESS	WITNESS

Appendix A

Re: Agreement between Community and Government Services, Government of Nunavut and the Hamlet of Rankin Inlet Regarding Waste Disposal

The Department of Community and Government Services (CGS) of the Government of Nunavut (GN), operates and maintains the Water Supply Facility and Sewage Treatment Facility, in the Hamlet of Rankin Inlet on behalf of the Corporation of the Hamlet of Rankin Inlet.

CGS-GN will use it resources to provide the following support activities for the delivery of the sewage waste to the solid waste site:

- CGS-GN will enlarge the sewage screenings disposal area from time to time as required to accommodate a protected and isolated location in the solid waste site for the sewage screenings.
- CGS- GN will responsible to clean up any emergency spills of the sewage waste that may occur in the process of delivering the sewage waste to the solid waste site.

In support of the services provided by CGS-GN in operating these facilities, the Hamlet of Rankin Inlet agrees to the following:

- Approval for CGS-GN to deposit sewage treatment plant screenings at the Hamlet Solid Waste Disposal Facility (SWS) at the location specified by the Hamlet. There will be no costs to CGS-GN to deposit the waste sewage screenings in the Hamlet's solid waste disposal site.

- Acceptance of all waste materials generated by the Water Supply Facility and Sewage Treatment Facility. The sewage waste material, from the Sewage Treatment Plant, will be transported to the Hamlet's solid waste site by CGS –GN. Once the waste is deposited in trenches the Hamlet of Rankin Inlet will cover the waste as per the operations and maintenance procedures for the solid waste disposal site.