

ANNUAL REPORT

FOR THE HAMLET OF BAKER LAKE

YEAR BEING REPORTED: 2006

The following information is compiled pursuant to the requirements of Part B, Item 1 of Water Licence (NWB3BAK9904) issued to the Hamlet of Baker Lake.

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

Water quantity results for monitoring station BAK-1 are not reported in the table below. The Hamlet of Baker Lake was unable to provide water quantity values as they have switched management programs (from *OnTap* to *Fluid Manager*) and are unable to access values before 2008 (R. Mautaritnaak, *pers. comm.*).

Samples for detailed chemical, physical and biological analyses were collected by Nunami Stantec Ltd. at the monitoring stations BAK-2, BAK-3 and BAK-4 in 2006 and results are attached.

Month Reported	Quantity of Water Obtained from all sources	Quantity of Sewage Waste Discharged
January	-	-
February	-	-
March	-	-
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-
ANNUAL TOTAL	-	-

Please indicate volumes in cubic metres - 1 cubic meter equals 1000 litres

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- 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;

NONE

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

The following spills were reported to the GNWT/GN Spill Line and Database and were the responsibility of the Hamlet of Baker Lake:

2006223 – On June 1, 2006, an unknown quantity of fuel was spilled from a return line leak at the Hamlet Garage; the ground was snow covered. The leftover fuel in the tank was pumped out and the ground was dug up. The leak was fixed and new gravel added.

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

NONE

- 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

NONE

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- ix. updates or revisions to the approved Operation and Maintenance Plans.

NONE

ADDITIONAL INFORMATION THAT THE LICENSEE DEEMS USEFUL:

Nunami Jacques Whitford was completing an Environmental Study and Evaluation of the Water and Sewage Systems in Baker Lake. The Study involved detailed sampling of the wastewater effluent within the sewage treatment wetland as well as drinking water quality sampling in Baker Lake within 2 km east and west of the drinking water intake. Results of the water quality sampling are attached and include an LC₅₀ rainbow trout bioassay test report.

FOLLOW-UP REGARDING INSPECTION/COMPLIANCE CONCERNS:

Table 1 Water Quality Results from the Sewage Treatment Wetland (Nunami Jacques Whitford Ltd.)
Baker Lake, NU
August 2006

Parameter	Unit	D.L. ^a	NWB ^b	CCME PAL ^c	Garbage Creek outlet at Baker Lake (STN-1)	Garbage Creek mouth at Airplane Lake (STN-2 / BAK-3)	Stream between Finger and Airplane lakes (STN-3)	South shore of Finger Lake (STN-4)		Stream outlet at Finger Lake (STN-5 / BAK-5)	South shore of Lagoon Lake (STN-6)
								Sample	Replicate		
Physicals											
Conductivity	µmhos/cm	0.4	-	-	52.8	48.5	106	114	114	160	178
Hardness (as CaCO ₃)	mg/L	0.2	-	-	15.3	-	-	-	-	-	-
pH	-	0.01	6 - 9	-	7.29	7.55	7.25	8.07	8.27	7.59	9.38
Total Suspended Solids	mg/L	5	100	-	<5	<5	6	<5	6	93	72
Total Dissolved Solids	mg/L	5	-	-	19	-	-	-	-	-	-
Turbidity	mg/L	0.05	-	-	1.3	-	-	-	-	-	-
Oxygen, Dissolved	mg/L	0.1	-	-	8.8	-	-	-	-	-	-
Major Ions											
Total Alkalinity (as CaCO ₃)	mg/L	-	-	-	16	-	-	-	-	-	-
Bicarbonate (HCO ₃)	mg/L	2	-	-	19	-	-	-	-	-	-
Carbonate (CO ₃)	mg/L	0.6	-	-	<0.6	-	-	-	-	-	-
Hydroxide (OH)	mg/L	0.4	-	-	<0.4	-	-	-	-	-	-
Chloride (Cl)	mg/L	9	-	-	<9	-	-	-	-	-	-
Fluoride (F)	mg/L	0.1	-	-	0.2	-	-	-	-	-	-
Sulphate (SO ₄)	mg/L	9	-	-	<9	<9	<9	<9	9	18	25
Nutrients & Organics											
Ammonia (NH ₃) - Soluble	mg/L	0.003	-	0.0152 ^d	0.04	0.024	0.049	0.999	0.258	2.78	4.84
Nitrate+Nitrite-N	mg/L	0.005	-	-	0.019	0.448	0.416	1.71	0.428	0.851	0.417
Phenols (4AAP)	mg/L	0.001	-	4.0	0.001	0.001	0.002	0.003	0.002	0.006	0.01
Total Oil and Grease	mg/L	1	NVS ^e	-	<1	<1	<1	-	<1	<1	1
Biological											
Biochemical Oxygen Demand	mg/L	1	80	-	54	6	8	8	8	17	59
<i>Escherichia coli</i> (<i>E. coli</i>)	CFU/100 mL	1	-	-	<1	-	-	-	-	-	-
Faecal Coliforms	CFU/100 mL	10	10,000	-	1	<10	<10	<10	<10	640	2000
Total Coliforms	CFU/100 mL	1	-	-	16	-	-	-	-	-	-
Total Metals											
Aluminum (Al)	mg/L	0.005	-	0.1 ^f	0.067	0.011	0.2	0.094	0.14	0.337	0.297
Cadmium (Cd)	mg/L	0.00002	-	0.0126 ^g	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00056	0.00003
Iron (Fe)	mg/L	0.02	-	0.30	0.16	0.09	1.17	1.22	1.5	1.02	0.84
Mercury (Hg)	mg/L	0.0001	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001
Arsenic (As)	mg/L	0.0005	-	0.005	0.0007	0.0007	0.0013	0.0013	0.0011	0.0014	0.0009
Boron (B)	mg/L	0.03	-	-	<0.03	<0.03	<0.03	<0.03	0.04	0.05	0.05
Barium (Ba)	mg/L	0.0003	-	-	0.0341	0.035	0.0304	0.0222	0.0262	0.0222	0.0172
Beryllium (Be)	mg/L	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bismuth (Bi)	mg/L	0.0002	-	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0008	<0.0002
Calcium (Ca)	mg/L	0.1	-	-	4.5	3.9	7.8	7.2	8.0	7.4	7.5
Cobalt (Co)	mg/L	0.0002	-	-	<0.0002	<0.0002	0.0004	0.0003	0.0005	0.0012	0.0006
Chromium (Cr)	mg/L	0.001	-	0.0089	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cesium (Cs)	mg/L	0.0001	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0006	<0.0001
Copper (Cu)	mg/L	0.001	-	0.002 ^h	0.002	0.002	0.004	0.004	0.004	0.014	0.016
Potassium (K)	mg/L	0.1	-	-	0.9	0.8	2.2	2.4	2.6	4.6	5.2
Magnesium (Mg)	mg/L	0.01	-	-	0.93	0.82	1.46	1.64	1.73	1.62	1.71
Manganese (Mn)	mg/L	0.0003	-	-	0.0253	0.007	0.0689	0.0723	0.0957	0.0519	0.0575
Molybdenum (Mo)	mg/L	0.0002	-	0.073	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0008	0.0003
Sodium (Na)	mg/L	0.03	-	-	2.78	2.61	8.34	9.99	10.5	19.4	21.5
Nickel (Ni)	mg/L	0.002	-	0.025 ⁱ	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.002
Phosphorus (P)	mg/L	0.05	-	-	<0.05	<0.05	0.6	0.76	0.88	1.86	2.08
Lead (Pb)	mg/L	0.0005	-	0.001 ^j	<0.0005	<0.0005	0.0007	<0.0005	<0.0005	0.0012	0.0006
Rubidium (Rb)	mg/L	0.0002	-	-	0.0008	0.0006	0.0022	0.0024	0.0026	0.0062	0.0062
Antimony (Sb)	mg/L	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001
Selenium (Se)	mg/L	0.001	-	0.001	0.001	0.001	0.002	0.001	<0.001	<0.001	<0.001
Tin (Sn)	mg/L	0.0006	-	-	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	0.001	<0.0006

Table 1 **Water Quality Results from the Sewage Treatment Wetland (Nunami Jacques Whitford Ltd.)**
Baker Lake, NU
August 2006

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								Sample	Replicate		
Strontium (Sr)	mg/L	0.0001	-	-	0.0174	0.0155	0.0306	0.0299	0.0315	0.0255	0.0249
Tellurium (Te)	mg/L	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium (Ti)	mg/L	0.0009	-	-	0.0026	<0.0009	0.0054	0.0024	0.0029	0.0068	0.0036
Thallium (Tl)	mg/L	0.0001	-	0.0008	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0006	<0.0001
Uranium (U)	mg/L	0.0001	-	-	<0.0001	<0.0001	0.0001	<0.0001	0.0001	0.0007	0.0001
Vanadium (V)	mg/L	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001
Tungsten (W)	mg/L	0.0002	-	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0005	<0.0002
Zinc (Zn)	mg/L	0.01	-	0.03	<0.01	<0.01	0.01	<0.01	<0.01	0.01	0.01
Zirconium (Zr)	mg/L	0.0004	-	-	<0.0004	<0.0004	0.0007	0.0005	0.0004	0.0014	0.0009
Silver (Ag)	mg/L	0.0001	-	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001

NOTES:

- a. D.L. = laboratory detection limit
- b. Nunavut Water Board License 3BM-BAK1015 Water Quality Criteria (no criteria listed in NWB3BAK9904)
- c. CCME PAL - Canadian Council of Ministers of the Environment Guidelines for Protection of Aquatic Life (Freshwater)
- d. CCME PAL Ammonia Guideline provided as a reference. Actual Guideline is temperature and pH dependent; see Ammonia factsheet for more information
- e. NVS = No Visible Sheen (qualitative)
- f. CCME PAL Total Aluminum guideline is 100 µg/L when pH > 6.5
- g. CCME PAL Total Cadmium guideline = $10^{(0.86(\text{Log}(\text{hardness})) - 3.2)}$
Average hardness = 32.4 (from October 2006)
Cadmium Guideline = 0.0126
- h. CCME PAL Total Copper guideline:
0.002 mg/L when [CaCO₃] is 0 - 120 mg/L
- i. CCME PAL Total Nickel guideline:
0.025 mg/L when [CaCO₃] is 0 - 60 mg/L
- j. CCME PAL Total Lead guideline:
0.001 mg/L when [CaCO₃] is 0 - 60 mg/L
- k. **Bolded** result implies a guideline exceedance

Table 2 Water Quality Results from Baker Lake (Nunami Jacques Whitford Ltd.)
Baker Lake, NU
August 2006

Parameter	Unit	D.L. ^a	CCME PAL ^b	GCDWQ ^c	BL-1 (2000 m SW of intake)	BL-2 (1500 m SW of intake)	BL-3 (1000 m SW of intake)	BL-4 (500 m SW of intake)	BL-5 (200 m W of intake)	BL-6 (water intake)	BL-6 (500 m E of intake)	BL-7 (200 m E of intake)	BL-8 (500 m E of intake)	BL-8 (1000 m E of intake)	BL-9 (1500 m E of intake)	STN-1 (2000 m E of intake)	Travel Blank
										0.5 m	3.0 m	5.0 m					
Physicals																	
Conductivity	µmhos/cm	0.4	-	-	25.6	24.4	32.3	67.9	136	144	144	144	32.8	30.7	30.8	26.8	<0.4
Hardness (as CaCO3)	mg/L	0.2	-	-	9.5	9.5	10.3	13.2	20	17.4	18.1	18.3	8.9	8.7	9.1	8.5	<0.2
pH	-	0.01	-	6.5 - 8.5 ^d	7.22	7.19	7.18	7.14	7.29	7.20	7.20	7.19	7.30	7.25	7.26	7.27	5.71
Total Suspended Solids	mg/L	5	-	-	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Total Dissolved Solids	mg/L	5	-	≤500 ^d	10	6	10	32	66	84	68	72	18	14	14	14	<5
Turbidity	mg/L	0.05	-	-	0.6	0.55	0.5	0.45	0.4	0.35	0.35	0.4	0.45	0.4	0.4	0.4	0.05
Oxygen, Dissolved	mg/L	0.1	-	-	11	11.5	11.5	11.9	12.1	13.2	13.2	13	11.8	11.9	11.9	11.5	-
Major Ions																	
Total Alkalinity (as CaCO3)	mg/L	1	-	-	9	9	9	10	10	10	10	10	9	9	9	9	2
Bicarbonate (HCO3)	mg/L	2	-	-	12	12	12	12	12	12	12	12	11	12	11	11	2
Carbonate (CO3)	mg/L	0.6	-	-	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Hydroxide (OH)	mg/L	0.4	-	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chloride (Cl)	mg/L	9	-	-	<9	<9	<9	13	29	32	32	32	<9	<9	<9	<9	<9
Fluoride (F)	mg/L	0.1	-	1.5 ^d	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	<0.1
Sulphate (SO4)	mg/L	9	-	≤500 ^d	<9	<9	<9	9	<9	<9	<9	<9	<9	<9	<9	<9	<9
Nutrients & Organics																	
Nitrate+Nitrite-N	mg/L	0.005	-	-	0.005	<0.005	0.005	0.011	0.023	0.03	0.029	0.028	0.007	0.007	0.006	0.01	<0.005
Total Oil and Grease	mg/L	1	-	-	-	-	-	-	<1	-	-	-	<1	-	-	-	-
Biological																	
<i>Escherichia coli</i> (E. coli)	CFU/100 mL	1	-	0	<1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1
Total Coliforms	CFU/100 mL	1	-	0	<1	<1	1	<1	<1	1	<1	<1	2	2	4	2	<1
Total Metals																	
Aluminum (Al)	mg/L	0.005	0.1 ^e	0.1 ^d	0.025	0.028	0.029	0.015	0.017	0.032	0.029	0.026	0.028	0.043	0.031	0.031	0.008
Cadmium (Cd)	mg/L	0.00002	0.0057 ^f	0.005 ^g	<0.00002	<0.00002	<0.00002	0.00079	0.00069	0.00079	0.00074	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Iron (Fe)	mg/L	0.02	0.30	≤0.30 ^d	0.07	0.06	0.08	0.1	0.09	0.1	0.13	0.04	0.05	0.04	0.04	0.05	0.16
Mercury (Hg)	mg/L	0.0001	-	0.001 ^g	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic (As)	mg/L	0.0005	0.005	0.01 ^g	<0.0005	<0.0005	<0.0005	0.001	0.0008	0.0011	0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Boron (B)	mg/L	0.03	-	5.0 ^h	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Barium (Ba)	mg/L	0.0003	-	1.0 ^g	0.0177	0.0172	0.0168	0.0164	0.0167	0.0176	0.0174	0.0166	0.0171	0.0168	0.0171	0.0168	0.0341
Beryllium (Be)	mg/L	0.001	-	-	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bismuth (Bi)	mg/L	0.0002	-	-	<0.0002	<0.0002	<0.0002	0.0012	0.0009	0.0009	0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Calcium (Ca)	mg/L	0.1	-	-	2.2	2.3	2.3	2.3	2.9	2.9	3.2	3.3	2.3	2.2	2.2	2.2	<0.1
Cobalt (Co)	mg/L	0.0002	-	-	<0.0002	<0.0002	<0.0002	0.0011	0.001	0.0011	0.0011	<0.0002	0.0003	0.0002	0.0002	0.0002	<0.0002
Chromium (Cr)	mg/L	0.001	0.0089	0.05 ^g	<0.001	<0.001	<0.001	0.002	0.003	<0.001	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cesium (Cs)	mg/L	0.0001	-	-	<0.0001	<0.0001	<0.0001	0.001	0.0009	0.0009	0.0008	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Copper (Cu)	mg/L	0.001	0.002 ^j	≤1.0 ^d	<0.001	<0.001	0.002	0.002	0.002	0.002	0.001	0.002	0.002	<0.001	<0.001	<0.001	<0.001
Potassium (K)	mg/L	0.1	-	-	0.4	0.3	0.4	0.8	1.2	1	1.1	1	0.5	0.4	0.4	0.4	<0.1
Magnesium (Mg)	mg/L	0.01	-	-	0.95	0.93	1.08	1.75	2.81	2.81	3.16	3.02	1.05	1.01	1	0.95	<0.01
Manganese (Mn)	mg/L	0.0003	-	≤0.05 ^d	0.0036	0.0033	0.0056	0.0094	0.0115	0.0115	0.0144	0.0122	0.005	0.0047	0.0047	0.0048	<0.0003
Molybdenum (Mo)	mg/L	0.0002	0.073	-	<0.0002	<0.0002	<0.0002	0.0012	0.001	0.001	0.0011	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sodium (Na)	mg/L	0.03	-	≤200 ^d	0.79	0.64	1.89	6.91	15.6	16.1	18	17.8	1.66	1.44	1.45	0.92	<0.03
Nickel (Ni)	mg/L	0.002	0.025 ^j	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Phosphorus (P)	mg/L	0.05	-	-	0.06	<0.05	0.06	0.07	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Lead (Pb)	mg/L	0.0005	0.001 ^k	0.01 ^g	<0.0005	<0.0005	<0.0005	0.0014	0.001	0.001	0.0009	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Rubidium (Rb)	mg/L	0.0002	-	-	0.0008	0.0008	0.0008	0.0018	0.0019	0.002	0.0018	0.001	0.0008	0.0008	0.0008	0.0008	<0.0002
Antimony (Sb)	mg/L	0.001	-	-	<0.001	<0.001	<0.001	0.002	0.001	0.002	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium (Se)	mg/L	0.001	0.001	0.01 ^d	<0.001	<0.001	<0.001	0.001	0.002	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Tin (Sn)	mg/L	0.0006	-	-	<0.0006	<0.0006	<0.0006	0.001	0.0008	0.0011	0.0028	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006
Strontium (Sr)	mg/L	0.0001	-	-	0.0156	0.0152	0.0162	0.0197	0.0264	0.0269	0.0285	0.0263	0.0161	0.0164	0.0157	0.0149	<0.0001
Tellurium (Te)	mg/L	0.001	-	-	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium (Ti)	mg/L	0.0009	-	-	<0.0009	0.0009	0.0012	<0.0009	0.0016	0.0013	0.0012	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009
Thallium (Tl)	mg/L	0.0001	0.0008	-	<0.0001	<0.0001	<0.0001	0.001	0.0008	0.0011	0.0009	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Uranium (U)	mg/L	0.0001	-	0.02 ^h	<0.0001	<0.0001	<0.0001	0.0011	0.0009	0.0009	0.0008	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Table 2
Water Quality Results from Baker Lake (Nunami Jacques Whittford Ltd.)
Baker Lake, NU
August 2006

Parameter	Unit	D.L. ^a	CCME PAL ^b	GCDWQ ^c	BL-1 (2000 m SW of intake)	BL-2 (1500 m SW of intake)	BL-3 (1000 m SW of intake)	BL-4 (500 m SW of intake)	BL-5 (200 m W of intake)	BL-6 (water intake)			BL-7 (200 m E of intake)	BL-8 (500 m E of intake)		BL-9 (1000 m E of intake)	BL-10 (1500 m E of intake)	STN-1 (2000 m E of intake)	Travel Blank
										0.5 m	3.0 m	5.0 m		Sample	Replicate				
Vanadium (V)	mg/L	0.001	-	-	<0.001	<0.001	<0.001	0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Tungsten (W)	mg/L	0.0002	-	-	<0.0002	<0.0002	<0.0002	0.0012	0.0011	0.0009	0.0011	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Zinc (Zn)	mg/L	0.01	0.03	≤5.0 ^d	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zirconium (Zr)	mg/L	0.0004	-	-	<0.0004	<0.0004	<0.0004	0.0012	0.0012	0.001	0.001	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Silver (Ag)	mg/L	0.0001	0.0001	-	<0.0001	<0.0001	<0.0001	0.0004	0.0005	0.0008	0.0007	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

NOTES:

- a. D.L. = laboratory detection limit
- b. CCME PAL - Canadian Council of Ministers of the Environment Guidelines for Protection of Aquatic Life (Freshwater)
- c. GCDWQ = Health Canada Federal-Provincial-Territorial Committee on Drinking Water Guidelines for Canadian Drinking Water Quality
- d. GCDWQ Aesthetic Objective
- e. CCME PAL Total Aluminum guideline is 100 µg/L when pH > 6.5
- f. CCME PAL Total Cadmium guideline = $10^{(0.86(\text{Log}(\text{hardness})) - 3.2)}$

Average hardness = 12.9
Cadmium Guideline = 0.0057
- g. GCDWQ Maximum Acceptable Concentration
- h. GCDWQ Interim Maximum Acceptable Concentration
- i. CCME PAL Total Copper guideline:

0.002 mg/L when [CaCO3] is 0 - 120 mg/L
- j. CCME PAL Total Nickel guideline:

0.025 mg/L when [CaCO3] is 0 - 60 mg/L
- k. CCME PAL Total Lead guideline:

0.001 mg/L when [CaCO3] is 0 - 60 mg/L
- l. **Bolded** result implies a guideline exceedance

Table 3

Water Quality Results from the Sewage Treatment Wetland (Nunami Jacques Whitford Ltd.)
Baker Lake, NU
October 2006

Parameter	Unit	D.L. ^a	NWB ^b	CCME PAL ^c	Garbage Creek outlet at Baker Lake (STN-1)	Garbage Creek mouth at Airplane Lake (STN-2 / BAK-3)	Stream prior to Airplane Lake (STN-7 / BAK-2)	Stream between Finger and Airplane lakes (STN-3)	South shore of Finger Lake (STN-4)	Stream outlet at Finger Lake (STN-5 / BAK-5)		South shore of Lagoon Lake (STN-6)
										Sample	Replicate	
Physicals												
Conductivity	µmhos/cm	0.4	-	-	65.9	55.6	181	181	205	419	417	446
Hardness (as CaCO ₃)	mg/L	0.3	-	-	22.7	<0.3	41.8	40.4	40.3	39.9	37.5	42.8
pH	-	0.01	6 - 9	-	7.39	7.56	7.56	7.64	7.45	7.47	7.45	7.51
Total Suspended Solids	mg/L	5	100	-	6	<5	<5	<5	<5	<5	<5	7
Total Dissolved Solids	mg/L	5	-	-	42	-	-	-	-	-	-	-
Turbidity	mg/L	0.05	-	-	4.2	-	-	-	-	-	-	-
Major Ions												
Total Alkalinity (as CaCO ₃)	mg/L	-	-	-	23	-	-	-	-	-	-	-
Bicarbonate (HCO ₃)	mg/L	2	-	-	28	-	-	-	-	-	-	-
Carbonate (CO ₃)	mg/L	0.6	-	-	<0.6	-	-	-	-	-	-	-
Hydroxide (OH)	mg/L	0.4	-	-	<0.4	-	-	-	-	-	-	-
Chloride (Cl)	mg/L	9	-	-	9	-	-	-	-	-	-	-
Fluoride (F)	mg/L	0.1	-	-	0.2	-	-	-	-	-	-	-
Sulphate (SO ₄)	mg/L	9	-	-	<9	<9	19	19	21	16	14	15
Nutrients & Organics												
Ammonia (NH ₃)	mg/L	0.003	-	0.0152 ^d	0.003	<0.003	0.065	0.066	1.63	20.4	20.3	22.4
Nitrate+Nitrite-N	mg/L	0.005	-	-	0.044	0.074	2.120	2.110	1.960	0.310	0.296	0.079
Nitrate (NO ₃)	mg/L	0.01	-	2.9	0.04	0.07	2.1	2.1	1.89	0.26	0.24	0.04
Nitrite-N	mg/L	0.01	-	0.06	<0.01	<0.01	0.02	0.01	0.06	0.05	0.06	0.04
Total Kjeldahl Nitrogen	mg/L	0.2	-	-	0.4	0.4	0.9	1.1	3	20.2	22.0	24.5
Total Phosphorous	mg/L	0.001	-	-	0.023	0.019	0.249	0.253	0.484	2.25	2.25	2.71
Total Dissolved Phosphorous	mg/L	0.001	-	-	0.008	0.008	0.21	0.236	0.461	2.11	2.13	2.47
Ortho Phosphorous Soluble As P	mg/L	0.001	-	-	0.003	0.002	0.101	0.119	0.305	2.06	2.02	2.41
Phenols (4AAP)	mg/L	0.001	-	4.0	<0.001	<0.001	<0.001	<0.001	0.001	0.003	0.003	0.002
Total Oil and Grease	mg/L	1	NVS ^e	-	<1	<1	<1	<1	<1	1	<1	2
Biological												
Biochemical Oxygen Demand	mg/L	1	80	-	6	<6	<6	<6	<6	<6	-	8
Fecal Coliform	mg/L	10	10,000	-	<10	<10	<10	<10	<10	460	-	2330
Total Metals												
Aluminum (Al)	mg/L	0.005	-	0.1 ^f	0.285	0.048	0.074	0.083	0.144	0.421	0.290	0.601
Cadmium (Cd)	mg/L	0.00002	-	0.0126 ^g	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Iron (Fe)	mg/L	0.02	-	0.30	0.24	0.12	0.64	0.65	0.98	1.66	1.56	1.91
Mercury (Hg)	mg/L	0.0001	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic (As)	mg/L	0.0005	-	0.005	<0.0005	<0.0005	<0.0005	0.0006	<0.0005	<0.0005	<0.0005	<0.0005
Boron (B)	mg/L	0.03	-	-	<0.03	<0.03	0.04	0.03	0.05	0.06	0.06	0.07
Barium (Ba)	mg/L	0.0003	-	-	0.047	<0.0003	0.0417	0.0407	0.0407	0.0288	0.0241	0.0333
Beryllium (Be)	mg/L	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bismuth (Bi)	mg/L	0.0002	-	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Calcium (Ca)	mg/L	0.1	-	-	6.8	<0.1	12.7	11.6	11.3	10.6	11.9	11.9
Cobalt (Co)	mg/L	0.0002	-	-	<0.0002	<0.0002	0.0003	0.0003	0.0004	0.0007	0.0007	0.0008
Chromium (Cr)	mg/L	0.001	-	0.0089	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	0.003
Cesium (Cs)	mg/L	0.0001	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Copper (Cu)	mg/L	0.001	-	0.002 ^h	0.002	<0.001	0.003	0.003	0.004	0.008	0.007	0.01
Potassium (K)	mg/L	0.1	-	-	1	<0.1	3.6	3.9	4	7.8	7.2	8.4
Magnesium (Mg)	mg/L	0.01	-	-	1.39	<0.01	2.42	2.32	2.74	2.86	2.67	3.16
Manganese (Mn)	mg/L	0.0003	-	-	0.0084	0.0011	0.0525	0.036	0.0517	0.125	0.112	0.141
Molybdenum (Mo)	mg/L	0.0002	-	0.073	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002
Sodium (Na)	mg/L	0.03	-	-	3.87	<0.03	16.4	15.6	19.4	34.2	31.8	36.6
Nickel (Ni)	mg/L	0.002	-	0.025 ⁱ	<0.002	<0.002	<0.002	<0.002	<0.002	0.003	0.002	0.003
Phosphorus (P)	mg/L	0.05	-	-	0.06	0.11	0.26	0.25	0.53	2.22	2.05	2.67
Lead (Pb)	mg/L	0.0005	-	0.001 ^j	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0006	0.0006	0.0008
Rubidium (Rb)	mg/L	0.0002	-	-	0.001	<0.0002	0.0026	0.003	0.0037	0.0094	0.0083	0.01
Antimony (Sb)	mg/L	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium (Se)	mg/L	0.001	-	0.001	0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001
Tin (Sn)	mg/L	0.0006	-	-	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	0.0007	<0.0006	<0.0006
Strontium (Sr)	mg/L	0.0001	-	-	0.0247	<0.0001	0.0464	0.0448	0.0461	0.0392	0.0348	0.0404
Tellurium (Te)	mg/L	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium (Ti)	mg/L	0.0009	-	-	0.0047	0.0011	<0.0009	0.0016	0.0023	0.0092	0.0092	0.0179
Thallium (Tl)	mg/L	0.0001	-	0.0008	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001

Table 3 **Water Quality Results from the Sewage Treatment Wetland (Nunami Jacques Whitford Ltd.)**
Baker Lake, NU
October 2006

Parameter	Unit	D.L. ^a	NWB ^b	CCME PAL ^c	Garbage Creek outlet at Baker Lake (STN-1)	Garbage Creek mouth at Airplane Lake (STN-2 / BAK-3)	Stream prior to Airplane Lake (STN-7 / BAK-2)	Stream between Finger and Airplane lakes (STN-3)	South shore of Finger Lake (STN-4)	Stream outlet at Finger Lake (STN-5 / BAK-5)		South shore of Lagoon Lake (STN-6)
										Sample	Replicate	
Uranium (U)	mg/L	0.0001	-	-	0.0001	<0.0001	0.0002	0.0002	0.0001	<0.0001	<0.0001	0.0001
Vanadium (V)	mg/L	0.001	-	-	<0.001	<0.001	0.001	<0.001	0.001	0.001	0.001	0.002
Tungsten (W)	mg/L	0.0002	-	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Zirconium (Zr)	mg/L	0.0004	-	-	<0.0004	<0.0004	<0.0004	<0.0004	0.0005	0.0013	0.0012	0.0018
Silver (Ag)	mg/L	0.0001	-	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001
Zinc (Zn)	mg/L	0.01	-	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	0.02

NOTES:

- a. D.L. = laboratory detection limit
- b. Nunavut Water Board License 3BM-BAK1015 Water Quality Criteria (no criteria listed in NWB3BAK9904)
- c. CCME PAL - Canadian Council of Ministers of the Environment Guidelines for Protection of Aquatic Life (Freshwater)
- d. CCME PAL Ammonia Guideline provided as a reference. Actual Guideline is temperature and pH dependent; see Ammonia factsheet for more information
- e. NVS = No Visible Sheen (qualitative)
- f. CCME PAL Total Aluminum guideline is 100 µg/L when pH > 6.5
- g. CCME PAL Total Cadmium guideline = $10^{(0.86(\text{Log}(\text{hardness})) - 3.2)}$
 Average hardness = 32.4
 Cadmium Guideline = 0.0126
- h. CCME PAL Total Copper guideline:
 0.002 mg/L when [CaCO₃] is 0 - 120 mg/L
- i. CCME PAL Total Nickel guideline:
 0.025 mg/L when [CaCO₃] is 0 - 60 mg/L
- j. CCME PAL Total Lead guideline:
 0.001 mg/L when [CaCO₃] is 0 - 60 mg/L
- k. **Bolded** result implies a guideline exceedance

Table 4 **Water Quality Results from Baker Lake (Nunami Jacques Whitford Ltd.)**
Baker Lake, NU
October 2006

Parameter	Unit	D.L. ^a	CCME PAL ^b	GCDWQ ^c	Thelon	BL-11 (1000 m W of intake)	BL-4 (500 m SW of intake)	0.5 m	BL-6 (water intake) 3.0 m	6.0 m	BL-9 (1000 m E of intake)
Physicals											
Conductivity	µmhos/cm	0.4	-	-	22.8	22.9	22.8	23.3	23.7	23.9	37.6
Hardness (as CaCO ₃)	mg/L	0.2	-	-	9.0	8.9	9.1	9.3	9.2	8.9	9.9
pH	-	0.01	-	6.5 - 8.5 ^u	7.14	7.17	7.12	7.14	7.13	7.14	7.14
Total Suspended Solids	mg/L	5	-	-	<5	<5	<5	<5	<5	<5	<5
Total Dissolved Solids	mg/L	5	-	≤500 ^u	10	12	18	14	10	16	20
Turbidity	mg/L	0.05	-	-	0.26	0.31	0.33	0.32	0.3	0.31	0.31
Major Ions											
Total Alkalinity (as CaCO ₃)	mg/L		-	-	9	9	9	9	9	9	9
Bicarbonate (HCO ₃)	mg/L	2	-	-	11	11	11	11	11	11	11
Carbonate (CO ₃)	mg/L	0.6	-	-	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Hydroxide (OH)	mg/L	0.4	-	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chloride (Cl)	mg/L	9	-	-	<9	<9	<9	<9	<9	<9	<9
Fluoride (F)	mg/L	0.1	-	1.5 ^u	0.1	0.2	0.1	0.1	0.1	0.1	<0.1
Sulphate (SO ₄)	mg/L	9	-	≤500 ^u	<9	<9	<9	<9	<9	<9	<9
Nutrients & Organics											
Nitrate+Nitrite-N	mg/L	0.005	-	-	0.011	0.01	0.011	0.013	0.008	0.01	0.011
Biological											
<i>Escherichia coli</i> (<i>E. coli</i>)	CFU/100 mL	1	-	0	<1	<1	<1	<1	<1	<1	<1
Total Coliforms	CFU/100 mL	1	-	0	<1	<1	<1	1	<1	<1	<1
Total Metals											
Aluminum (Al)	mg/L	0.005	0.1 ^u	0.1 ^u	0.022	0.02	0.015	0.019	0.027	0.032	0.015
Cadmium (Cd)	mg/L	0.00002	0.0042 ^j	0.005 ^y	0.00004	0.00004	0.00009	0.00012	0.00012	0.00098	0.00004
Iron (Fe)	mg/L	0.02	0.30	≤0.30 ^u	0.02	0.04	0.03	0.02	0.04	0.1	0.03
Mercury (Hg)	mg/L	0.0001	-	0.001 ^y	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001
Arsenic (As)	mg/L	0.0005	0.005	0.01 ^y	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0008	<0.0005
Boron (B)	mg/L	0.03	-	5.0 ^u	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Barium (Ba)	mg/L	0.0003	-	1.0 ^y	0.0147	0.015	0.0147	0.0147	0.0146	0.0158	0.015
Beryllium (Be)	mg/L	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bismuth (Bi)	mg/L	0.0002	-	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0009	<0.0002
Calcium (Ca)	mg/L	0.1	-	-	1.8	1.9	1.9	2.1	2	1.9	2.2
Cobalt (Co)	mg/L	0.0002	-	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.001	<0.0002
Chromium (Cr)	mg/L	0.001	0.0089	0.05 ^y	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001
Cesium (Cs)	mg/L	0.0001	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0009	<0.0001
Copper (Cu)	mg/L	0.001	0.002 ^j	≤1.0 ^u	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001
Potassium (K)	mg/L	0.1	-	-	<0.1	0.2	0.1	0.2	0.2	0.1	0.2
Magnesium (Mg)	mg/L	0.01	-	-	0.78	0.82	0.83	0.87	0.86	0.87	1.05
Manganese (Mn)	mg/L	0.0003	-	≤0.05 ^u	0.0021	0.0019	0.002	0.005	0.0017	0.0025	0.0022
Molybdenum (Mo)	mg/L	0.0002	0.073	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0009	<0.0002
Sodium (Na)	mg/L	0.03	-	≤200 ^u	0.42	0.46	0.46	0.53	0.55	0.58	2.17
Nickel (Ni)	mg/L	0.002	0.025 ^j	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Phosphorus (P)	mg/L	0.05	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Lead (Pb)	mg/L	0.0005	0.001 ^k	0.01 ^y	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0008	<0.0005

Table 4 **Water Quality Results from Baker Lake (Nunami Jacques Whitford Ltd.)**
Baker Lake, NU
October 2006

Parameter	Unit	D.L. ^a	CCME PAL ^b	GCDWQ ^c	Thelon	BL-11 (1000 m W of intake)	BL-4 (500 m SW of intake)	0.5 m	BL-6 (water intake) 3.0 m	6.0 m	BL-9 (1000 m E of intake)
Rubidium (Rb)	mg/L	0.0002	-	-	0.0004	0.0005	<0.0002	<0.0002	<0.0002	0.0013	0.0005
Antimony (Sb)	mg/L	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001
Selenium (Se)	mg/L	0.001	0.001	0.01 ^u	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001
Tin (Sn)	mg/L	0.0006	-	-	<0.0006	<0.0006	<0.0006	0.001	<0.0006	0.0009	<0.0006
Strontium (Sr)	mg/L	0.0001	-	-	0.0123	0.0127	0.0124	0.0132	0.0131	0.0133	0.0147
Tellurium (Te)	mg/L	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium (Ti)	mg/L	0.0009	-	-	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	0.0013	<0.0009
Thallium (Tl)	mg/L	0.0001	0.0008	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0008	<0.0001
Uranium (U)	mg/L	0.0001	-	0.02 ^v	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0009	<0.0001
Vanadium (V)	mg/L	0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Tungsten (W)	mg/L	0.0002	-	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0008	<0.0002
Zinc (Zn)	mg/L	0.01	0.03	≤5.0 ^u	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	0.0011	<0.0004
Zirconium (Zr)	mg/L	0.0004	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0009	<0.0001
Silver (Ag)	mg/L	0.0001	0.0001	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

NOTES:

- a. D.L. = laboratory detection limit
- b. CCME PAL - Canadian Council of Ministers of the Environment Guidelines for Protection of Aquatic Life (Freshwater)
- c. GCDWQ = Health Canada Federal-Provincial-Territorial Committee on Drinking Water Guidelines for Canadian Drinking Water Quality
- d. GCDWQ Aesthetic Objective
- e. CCME PAL Total Aluminum guideline is 100 µg/L when pH > 6.5
- f. CCME PAL Total Cadmium guideline = $10^{(0.86[\text{Log}(\text{hardness})] - 3.2)}$
 - Average hardness = 9.2
 - Cadmium Guideline = 0.0042
- g. GCDWQ Maximum Acceptable Concentration
- h. GCDWQ Interim Maximum Acceptable Concentration
- i. CCME PAL Total Copper guideline:
 - 0.002 mg/L when [CaCO₃] is 0 - 120 mg/L
- j. CCME PAL Total Nickel guideline:
 - 0.025 mg/L when [CaCO₃] is 0 - 60 mg/L
- k. CCME PAL Total Lead guideline:
 - 0.001 mg/L when [CaCO₃] is 0 - 60 mg/L
- l. **Bolded** result implies a guideline exceedance