ANNUAL REPORT
FOR THE HAMLET OF IGLOOLIK, 2021

YEAR BEING REPORTED: 2021

The following information is compiled pursuant to the requirements of Part A, Item 1 of Water Licence # 3AM–IGL2131 issued to the Hamlet of Igloolik.

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

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

Month Reported	Quantity of Water Obtained from all sources (m^3)	Quantity of Sewage Waste Discharged (Estimated)
January	4,844.1211	Same
February	4,829.2353	Same
March	5,403.4652	Same
April	5,003.0913	Same
May	4,524.5989	Same
June	4,735.2021	Same
July	5,375.9732	Same
August	5,769.7957	Same
September	5,322.7507	Same
October	5,245.1934	Same
November	4,618.3981	Same
December	5,141.5895	Same
ANNUAL TOTAL	**60,803.4145**	**Same**

Note: The water consumption volume is considered equal to the sewage discharge volume because there is no meter at the end of the discharge pipe.

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;

A new flow meter and a new Fish screen are available now in the community to fix with the intake pipe which is used to extract water from the South Lake to fill the storage reservoir in every summer.

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

Spill report 2021-372 was filed for leaking sewage lagoon cell 1. This sewage spill drained directly into the sewage wetlands area, which is incorporated as part of the sewage treatment design. Emergency decanting occurred with samples taken on August 30, 2021. Appendix A summarizes effluent quality limits, well below BOD/TSS maximum concentrations, including during the emergency decant. No further remedial action is needed in the sewage wetlands area.

No other unauthorized discharges for the infrastructure under licence 3AM–IGL2131 occurred in 2021.

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 works were conducted during this reporting period.

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;

The initial planning study for a new solid was site was completed in Fiscal Year 2020/21. The cost estimates have indicated that the current funding cannot support the construction of a new state-of-the-art 20-year landfill. The focus of the project will shift to making improvements to the current site. A second planning contract to assess and prioritize the improvements to the current site with the available is expected to begin in 2022.

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

None

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

None

x. ADDITIONAL INFORMATION THAT THE LICENSEE DEEMS USEFUL:

CGS will work with the Municipality during summer 2022 to ensure all sampling requirements under the water licence are met.

xi. FOLLOW-UP REGARDING INSPECTION/COMPLIANCE CONCERNS:

Spill report 2021-372 was filed for leaking sewage lagoon cell 1. This sewage spill drained directly into the sewage wetlands area, which is incorporated as part of the sewage treatment design. Emergency decanting occurred with samples taken on August 30, 2021. No leakage was observed once water level inside the lagoon was dropped. Appendix A summarizes effluent quality limits, well below BOD/TSS maximum concentrations, including during the emergency decant. No further remedial action is needed in the sewage wetlands area. Further investigation of the cell 1 berm will be completed in summer 2022.

Appendix A: Effluent Quality Limits

Appendix B: Certificate of Analysis

Appendix C: Hazardous Materials Spill Database, Igloolik 2021

Appendix D: Igloolik 2021 CIRNAC Inspection Report

Appendix A

3AM-IGL2031 Igloolik Monitoring Program Results 2021
IGL-4 Effluent Quality limits

Parameter	Maximum Concentration of any Grab Sample	Sampling Results IGL-2 11-Aug-21	Sampling Results IGL-3 11-Aug-21	Sampling Results IGL-3-1 Emergency Decant 30-Aug-21
BOD_5	100 mg/L	35 mg/L	87 mg/L	30 mg/L
Total Suspended Solids	120 mg/L	50 mg/L	26 mg/L	96 mg/L
Fecal Coliform	$1x10^6$ CFU/100 mL	<1000 CFU/100 mL	11,000 CFU/100 mL	1920 CFU/100 mL
Oil and Grease	No visible sheen	3.9 mg/L	6.0 mg/L	<1.0 mg/L
pH	Between 6 and 9	7.89	7.9	7.86

No IGL-4 or IGL-5 Effluent Quality Limit values were received by CGS, please see IGL-2 and IGL-3 results for comparison.

Appendix B

CADUCEON™ ENVIRONMENTAL LABORATORIES
Client committed. Quality assured.

CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: ---

REPORT No. B21-25652

Report To:

Municipality of Igloolik
PO Box 30,
Igloolik NU X0A 0L0 Canada
Attention: Gregory Morash

Caduceon Environmental Laboratories
2378 Holly Lane
Ottawa Ontario K1V 7P1
Tel: 613-526-0123
Fax: 613-526-1244

DATE RECEIVED: 13-Aug-21
DATE REPORTED: 24-Aug-21
SAMPLE MATRIX: Waste Water

JOB/PROJECT NO.: Waste Water
P.O. NUMBER:
WATERWORKS NO.

			Client I.D.		Sewage Lagoon IGK-2	Sewage Lagoon IGK-3		
			Sample I.D.		B21-25652-1	B21-25652-2		
			Date Collected		11-Aug-21	11-Aug-21		
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Hardness (as CaCO3)	mg/L	1	SM 3120	17-Aug-21/O	162	210		
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	13-Aug-21/O	356	468		
pH @25°C	pH Units		SM 4500H	13-Aug-21/O	7.89	7.90		
Conductivity @25°C	µmho/cm	1	SM 2510B	13-Aug-21/O	1480	1720		
Total Suspended Solids	mg/L	3	SM2540D	17-Aug-21/K	50	26		
Chloride	mg/L	0.5	SM4110C	16-Aug-21/O	201	232		
Nitrite (N)	mg/L	0.1	SM4110C	16-Aug-21/O	< 0.1	< 1		
Nitrate (N)	mg/L	0.1	SM4110C	16-Aug-21/O	< 0.1	< 1		
Sulphate	mg/L	1	SM4110C	16-Aug-21/O	44	21		
Aluminum	mg/L	0.01	SM 3120	17-Aug-21/O	0.05	0.06		
Arsenic	mg/L	0.0005	EPA 200.8	17-Aug-21/O	0.0014	0.0016		
Cadmium	mg/L	0.005	SM 3120	17-Aug-21/O	< 0.005	< 0.005		
Calcium	mg/L	0.02	SM 3120	17-Aug-21/O	31.5	44.2		
Chromium	mg/L	0.002	SM 3120	17-Aug-21/O	< 0.002	< 0.002		
Cobalt	mg/L	0.005	SM 3120	17-Aug-21/O	< 0.005	< 0.005		
Copper	mg/L	0.002	SM 3120	17-Aug-21/O	0.028	0.033		
Iron	mg/L	0.005	SM 3120	17-Aug-21/O	0.214	0.256		
Lead	mg/L	0.02	SM 3120	17-Aug-21/O	< 0.02	< 0.02		
Magnesium	mg/L	0.02	SM 3120	17-Aug-21/O	20.2	24.3		
Manganese	mg/L	0.001	SM 3120	17-Aug-21/O	0.024	0.034		
Mercury	mg/L	0.00002	SM 3112 B	18-Aug-21/O	< 0.00002	0.00002		
Nickel	mg/L	0.01	SM 3120	17-Aug-21/O	< 0.01	< 0.01		
Potassium	mg/L	0.1	SM 3120	17-Aug-21/O	28.3	31.9		
Sodium	mg/L	0.2	SM 3120	17-Aug-21/O	139	147		
Zinc	mg/L	0.005	SM 3120	17-Aug-21/O	0.027	0.038		

NOTE: Fecal Coliform passed acceptable holding time of 48 hrs upon arrival at Lab.

Greg Clarkin , BSc., C. Chem
Lab Manager - Ottawa District

R.L. = Reporting Limit
Test methods may be modified from specified reference method unless indicated by an *
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

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Igloolik NU X0A 0L0 Canada
Attention: Gregory Morash

Caduceon Environmental Laboratories
2378 Holly Lane
Ottawa Ontario K1V 7P1
Tel: 613-526-0123
Fax: 613-526-1244

DATE RECEIVED: 13-Aug-21
DATE REPORTED: 24-Aug-21
SAMPLE MATRIX: Waste Water

JOB/PROJECT NO.: Waste Water
P.O. NUMBER:
WATERWORKS NO.

			Client I.D.		Sewage Lagoon IGK-2	Sewage Lagoon IGK-3		
			Sample I.D.		B21-25652-1	B21-25652-2		
			Date Collected		11-Aug-21	11-Aug-21		
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Ammonia (N)-Total	mg/L	0.01	SM4500-NH3-H	17-Aug-21/K	80.4	83.6		
Phenolics	mg/L	0.002	MOEE 3179	24-Aug-21/K	0.059	0.622		
BOD(5 day)	mg/L	3	SM 5210B	16-Aug-21/K	35	87		
Total Organic Carbon	mg/L	0.2	EPA 415.2	17-Aug-21/O	13.3	17.7		
Oil & Grease-Total	mg/L	1.0	SM 5520	18-Aug-21/K	3.9	6.0		
Fecal Coliform	cfu/100mL	1	MOE E3371	13-Aug-21/O	< 1000	11000		

NOTE: Fecal Coliform passed acceptable holding time of 48 hrs upon arrival at Lab.

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Lab Manager - Ottawa District

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C.O.C.: G096134 **REPORT No. B21-28016**

Report To:

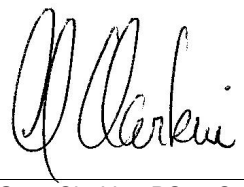
Municipality of Igloolik
PO Box 30,
Igloolik NU X0A 0L0 Canada
Attention: Gregory Morash

Caduceon Environmental Laboratories
2378 Holly Lane
Ottawa Ontario K1V 7P1
Tel: 613-526-0123
Fax: 613-526-1244

DATE RECEIVED: 01-Sep-21
DATE REPORTED: 13-Sep-21
SAMPLE MATRIX: Waste Water

JOB/PROJECT NO.: Waste Water
P.O. NUMBER:
WATERWORKS NO.

			Client I.D.		IGL-3-1 Emergency Decant			
			Sample I.D.		B21-28016-1			
			Date Collected		30-Aug-21			
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Hardness (as CaCO3)	mg/L	1	SM 3120	07-Sep-21/O	166			
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	01-Sep-21/O	186			
pH @25°C	pH Units		SM 4500H	01-Sep-21/O	7.86			
Conductivity @25°C	µmho/cm	1	SM 2510B	01-Sep-21/O	1000			
Total Suspended Solids	mg/L	3	SM2540D	03-Sep-21/K	96			
Chloride	mg/L	0.5	SM4110C	02-Sep-21/O	180			
Nitrite (N)	mg/L	0.1	SM4110C	02-Sep-21/O	< 0.1			
Nitrate (N)	mg/L	0.1	SM4110C	02-Sep-21/O	< 0.1			
Sulphate	mg/L	1	SM4110C	02-Sep-21/O	32			
Aluminum	mg/L	0.01	SM 3120	07-Sep-21/O	0.12			
Arsenic	mg/L	0.0005	EPA 200.8	07-Sep-21/O	0.0020			
Cadmium	mg/L	0.005	SM 3120	07-Sep-21/O	< 0.005			
Calcium	mg/L	0.02	SM 3120	07-Sep-21/O	34.2			
Chromium	mg/L	0.002	SM 3120	07-Sep-21/O	< 0.002			
Cobalt	mg/L	0.005	SM 3120	07-Sep-21/O	< 0.005			
Copper	mg/L	0.002	SM 3120	07-Sep-21/O	0.021			
Iron	mg/L	0.005	SM 3120	07-Sep-21/O	0.265			
Lead	mg/L	0.02	SM 3120	07-Sep-21/O	< 0.02			
Magnesium	mg/L	0.02	SM 3120	07-Sep-21/O	19.7			
Manganese	mg/L	0.001	SM 3120	07-Sep-21/O	0.030			
Mercury	mg/L	0.00002	SM 3112 B	07-Sep-21/O	< 0.00002			
Nickel	mg/L	0.01	SM 3120	07-Sep-21/O	< 0.01			
Potassium	mg/L	0.1	SM 3120	07-Sep-21/O	19.8			
Sodium	mg/L	0.2	SM 3120	07-Sep-21/O	117			
Zinc	mg/L	0.005	SM 3120	07-Sep-21/O	0.035			



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			Sample I.D.		B21-28016-1			
			Date Collected		30-Aug-21			
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Ammonia (N)-Total	mg/L	0.01	SM4500-NH3-H	08-Sep-21/K	14.5			
Phenolics	mg/L	0.002	MOEE 3179	08-Sep-21/K	< 0.002			
BOD(5 day)	mg/L	3	SM 5210B	03-Sep-21/K	30			
CBOD5	mg/L	3	SM 5210B	03-Sep-21/K	27			
Total Organic Carbon	mg/L	0.2	EPA 415.2	01-Sep-21/O	19.0			
Oil & Grease-Total	mg/L	1.0	SM 5520	09-Sep-21/K	< 1.0			
Fecal Coliform	cfu/100mL	1	MOE E3371	01-Sep-21/O	1920			

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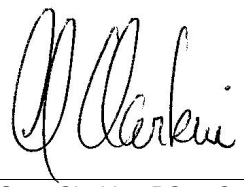
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Hardness (as CaCO3)	mg/L	1	SM 3120	07-Sep-21/O	166			
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	01-Sep-21/O	186			
pH @25°C	pH Units		SM 4500H	01-Sep-21/O	7.86			
Conductivity @25°C	µmho/cm	1	SM 2510B	01-Sep-21/O	1000			
Total Suspended Solids	mg/L	3	SM2540D	03-Sep-21/K	96			
Chloride	mg/L	0.5	SM4110C	02-Sep-21/O	180			
Nitrite (N)	mg/L	0.1	SM4110C	02-Sep-21/O	< 0.1			
Nitrate (N)	mg/L	0.1	SM4110C	02-Sep-21/O	< 0.1			
Sulphate	mg/L	1	SM4110C	02-Sep-21/O	32			
Aluminum	mg/L	0.01	SM 3120	07-Sep-21/O	0.12			
Arsenic	mg/L	0.0005	EPA 200.8	07-Sep-21/O	0.0020			
Cadmium	mg/L	0.005	SM 3120	07-Sep-21/O	< 0.005			
Calcium	mg/L	0.02	SM 3120	07-Sep-21/O	34.2			
Chromium	mg/L	0.002	SM 3120	07-Sep-21/O	< 0.002			
Cobalt	mg/L	0.005	SM 3120	07-Sep-21/O	< 0.005			
Copper	mg/L	0.002	SM 3120	07-Sep-21/O	0.021			
Iron	mg/L	0.005	SM 3120	07-Sep-21/O	0.265			
Lead	mg/L	0.02	SM 3120	07-Sep-21/O	< 0.02			
Magnesium	mg/L	0.02	SM 3120	07-Sep-21/O	19.7			
Manganese	mg/L	0.001	SM 3120	07-Sep-21/O	0.030			
Mercury	mg/L	0.00002	SM 3112 B	07-Sep-21/O	< 0.00002			
Nickel	mg/L	0.01	SM 3120	07-Sep-21/O	< 0.01			
Potassium	mg/L	0.1	SM 3120	07-Sep-21/O	19.8			
Sodium	mg/L	0.2	SM 3120	07-Sep-21/O	117			
Zinc	mg/L	0.005	SM 3120	07-Sep-21/O	0.035			



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			Sample I.D.		B21-28016-1			
			Date Collected		30-Aug-21			
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Ammonia (N)-Total	mg/L	0.01	SM4500-NH3-H	08-Sep-21/K	14.5			
Phenolics	mg/L	0.002	MOEE 3179	08-Sep-21/K	< 0.002			
BOD(5 day)	mg/L	3	SM 5210B	03-Sep-21/K	30			
CBOD5	mg/L	3	SM 5210B	03-Sep-21/K	27			
Total Organic Carbon	mg/L	0.2	EPA 415.2	01-Sep-21/O	19.0			
Oil & Grease-Total	mg/L	1.0	SM 5520	09-Sep-21/K	< 1.0			
Fecal Coliform	cfu/100mL	1	MOE E3371	01-Sep-21/O	1920			

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Appendix C

List of spills reported to the NT-NU Spill Report Line and are listed on the Hazardous Materials Spills Database of Igloolik in 2021

Spill	Occurrence Date	Location Description	Product Spilled	Quantity
2021417	26-September-2021	Municipality of Igloolik	Petroleum - fuel oil (jet A, diesel, turbo A, heat)	3.00 L
2021372	27-August-2021	Municipality of Igloolik	Wastewater (sewage, mine tailings)	Unknown
2021019	20-January-2021	Igloolik CO-OP Store	Petroleum - fuel oil (jet A, diesel, turbo A, heat)	Unknown

Appendix D

WATER LICENCE INSPECTION FORM

☒ Original
☐ Follow-Up Report

Licensee	Licensee Representative
Hamlet of Igloolik	Bhabesh Roy
Licence No. / Expiry	**Representative's Title**
3AM-ILG2131	Regional Engineer
Land / Other Authorizations	**Land / Other Authorizations**
Date of Inspection	**Inspector**
October 26, 2021	Joseph Monteith

Activities Inspected

☐ Camp ☐ Drilling ☐ Mining ☐ Construction ☐ Reclamation ☐ Fuel Storage

☐ Roads/Hauling ☒ Other: Potable Water Source, Solid Waste Facility, Sewage Disposal Facility ☐ Other:

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

PART:	Condition	Observation No.*
A: SCOPE, DEFINITIONS AND ENFORCEMENT	A	
B: GENERAL CONDITIONS	C	
C: CONDITIONS APPLYING TO SECURITY	NI	
D: CONDITIONS APPLYING TO WATER USE	A	1-12
E: CONDITIONS APPLYING TO WASTE DISPOSAL AND MANAGEMENT	A	13-22
F: CONDITIONS APPLYING TO MODIFICATIONS	NA	
G: CONDITIONS APPLYING TO CONSTRUCTION	A	
H: CONDITIONS APPLYING TO EMERGENCY RESPONSE AND CONTINGENCY PLANNING	C	24
I: CONDITIONS APPLYING TO ABANDONMENT, RECLAMATION AND CLOSURE PLANNING	NI	
J: CONDITIONS APPLYING TO MONITORING	A	
SCHEDULES	A	

**The observation number corresponds with specific comments provided below.*

Samples taken by Inspector:	Location(s): Latitude: 69°23'N and Longitude: 81°46'W
☐ Yes ☒ No	

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

BACKGROUND

On February 19, 2021 the Nunavut Water Board (NWB) approved a class "A" Water License titled 3AM-IGL2131 for the Hamlet of Igloolik. The new license authorizes the use of 102,800m^3 per annum at a maximum rate of 299 m^3 per day.

Relevant infrastructure for the Water Use and Waste Disposal Facilities include a freshwater intake pump, reservoir, truck fill station, and a three cell sewage exfiltration lagoon system with a wetland, an older fourth sewage cell constructed prior to the three cell lagoon systems, domestic landfill, and metallic waste landfill.

Inspector Statement

A Water Licence Inspection was conducted on October 26,2021 by Water Resources Officer (WRO) Joseph Monteith of the Crown Indigenous Relations and Northern Affairs Canada in the Hamlet of Igloolik, Nunavut, The purpose of the inspection was to verify compliance with Water Licence 3AM-IGL2131. Sites inspected included the freshwater lake (South Lake), Water Treatment Plant, Water Storage Reservoir, Sewage Lagoons, Hazardous Materials Storage Areas and the Solid Waste Disposal Facility.

General Condition

On July 29, 2021 Richard Dwyer, Nunavut Water Board (NWB), Manager of Licencing emailed Water Resource Officer(WRO) Monteith a copy of the Hamlet of Igloolik's 2020 Annual Report Technical Review and the comments from Environment and Climate Change Canada(ECCC), and Crown Indigenous Relations and Northern Affairs Canada(CIRNAC)of the 2020 Annual Report, and a copy of the 2020 inspection report.

On February 8, 2021 Robert Ikkutisluk, Administrative Coordinator, NWB, acknowledged receipt of Igloolik 2021

Annual report.

Water Use and Related Structures

South Lake Pump House (photo1)

1. A hose with a fish mesh screen is attached to the fresh water intake pump location at South Lake with a water pump during transfer to the Water Storage Facility (photo 1).
2. Trucks recharge at the South Lake pump house. Trucks drive to the Water Storage Reservoir at the Water Treatment Facility. It takes 1 month to fill the man-made reservoir. (Photo 5).
3. A new pipe that meanders inland from South Lake to the water storage facility has the capability to attach a water pump to the pipe, and transfers water to the Water Storage Facility. At the time of the inspection it was in commission, and recharging the water storage facility (photo 2).
4. Bypass hose at Global Position System (GPS) Coordinates: Latitude 69° 21.248'N, Longitude 81° 50.439'W that leads to a water course, which eventually leads to the ocean. The bypass is used to release any left over water in the pipes, so they don't freeze and break the pipe(photo 3).

Water Treatment Facility & Water Storage Reservoir (photo 4 & 6)

5. At the time of the inspection, the Water Treatment Facility was operational. A photo of the water meter Photo 10).
6. The Water Treatment Facility has two intake pipes that extend 9 metres into the Water Storage Reservoir (photo 4).
7. The Water Treatment Facility has an auto-chlorine injector, and 3 types of filters of various sizes(photo 8), and a strainer (photo 7). The filters tend to clog up and cost the hamlet a lot of money to replace. (photo 9).
8. Water is dispersed to the public by trucked service from the Water Treatment Facility (Photo 6).
9. The chlorine injection requires 20 minutes in the truck to properly treat the water, as per Health Regulations
10. The Water Storage Reservoir goes to a depth of 10 metres, and can contain a total of 100,000 cubic metres of freshwater (See photo 6). Concerns have been raised by the hamlet council in regards to the water quality. They suspect that the high turbidity is a result of high water pressure, and high drop from the pipes. At the time of the inspection, the reservoir was almost filled, and the amount of pressure from the recharge wasn't hitting the bottom.
11. The fencing appears to have collapsed on multiple parts of the top (Photo 4).
12. The daily monitoring Report dated September 9, 2021, reads Before Filter: 254886.9m³ and 311473.2m³ after filter during first truck fill. Another set of flow meter readings shows before filter reading of 254882.0m³ before filter and 311466.8m³(photo 9).

Solid Waste Facility (See photo 14)

13. The Solid Waste Facility manages their waste by segregating the Bulk Metals, Woods, Open Pit Burning and Capping, and Hazardous Waste storage spread out between 3 locations. The site doesn't have any fencing. One section of the Bulk Metal and Hazardous Waste section are merged together and not segregated.
14. Open Pit Burning at the Solid Waste Facility has no fencing. Does not appear to do any capping of the ash, but has created a berm using a mix of gravel and the ash from the burning of garbage. (Photo's 11 &12).
15. Hazardous Waste Facility has a couple of sea cans, full, open, and numerous amounts of hazardous waste such as batteries, paint cans, waste oil drums exposed to the elements laying across the landscape outside (Photo's 14,15,16,17. A new site has been identified as the Hamlet Garage as storage for hazardous waste (Photo's 18,19,20). Bulk Metal Storage Facility (Photo's 21 &22).
16. Hazardous Waste and contaminated soils path of migration downgrade of historic Hazardous Waste Storage Facility (Photo 15).
17. Windblown garbage has migrated off site into a fresh water pond. (photo).

Sewage Disposal Facility (Photo 24)

18. The Sewage Disposal Facility is a 3 cell facility, Cells 1, 2, & 3 each have an HDPE Liner. Fencing appears to be in good condition (Photo 25).
19. Cell #1 Decanting at the time of inspection. High power water pump, with separate fuel storage tank. Possible structural compromised as signs of slumping has been identified (photo 29).
20. Freeboard 3-4 metres, spill way, and fencing appear to be in good condition (Photo 25).
21. Newly built sewage lagoon observed in 2020 with no sign of leak (Photo 26).
22. On October 3, a telephone notification from the Igloolik foreman of a decant that would be occurring over the long weekend. WRO Monteith requested that in future all decant notification be notified by way of email. 10 days in advance of decant as required by the license.

Spill Report 2021-372

23. On August 28, 2021 an email from officemanager@igloolik.ca indicated a breach lagoon 1, and interior walls were shifting. Estimated amount "seeping was 1 cubic metre per day". A request to decant was submitted, with sample results, but the Hamlet of Igloolik didn't provide the right sample analysis. Due to the unauthorized

discharge a spill report was required as it was suspected the walls would breach into a greater spill than what was observed(photo 25, 27, 28, &29).

Water Consumption Report

24. On August 8, 2021 Phillip Avingaq, Accounts Receivable, Hamlet of Igloolik, NU emailed the inspector a copy of January 1, to October 31, 2021 Quantity of Water Obtained from all sources in litres, Annual Total is 51, 053, 4427.00 Litres withdrawn equals 510534.43 m^3 (photo 31)

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

The following information is a summary of the Actions Required by the licensee to promote and ensure compliance:

-Maintain fencing at Water Storage Reservoir;

-Segregate the Bulk Metals, and Hazardous Waste;

-Consolidate all Hazardous Waste and store in such a way as to protect water from mixing with the hazardous waste;

-Provide the inspector with a copy of or the location(s) of the modified Solid Waste Disposal Facility.

-Submit an update to the spill line as per Part H:5(c). on spill report 2021-372.

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

PART B: GENERAL CONDITIONS

1. The Licensee shall file an Annual Report on the Appurtenant Undertaking with the Board no later than March 31 of the year following the calendar year being reported, containing the following information:

a. an executive summary as required by Part B, Item 8;

b. tabular summaries of all data generated under the "Monitoring Program";

c. **the daily, monthly and annual quantities in cubic metres of fresh water obtained at the Water Supply Facilities;**

Part C:Conditions Applying to Water Use

2. The annual quantity of water used for all purposes shall not exceed 81,208 cubic metres annually or a daily quantity of water for all purposes shall not exceed 299 cubic metres.

5. The Licensee shall not cause erosion to the banks of any body of water and shall provide necessary controls to prevent such erosion.

6. Sediment and erosion control measures shall be implemented prior to and maintained during the operation to prevent entry of sediment into water.

Part D: Conditions Applying to Waste Disposal

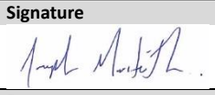
7. The Licensee shall segregate and store all hazardous materials and/or hazardous waste within the Modified Solid Waste Disposal Facilities in such a manner as to prevent the deposit of deleterious substances into any water, until such a time that the materials have been removed for proper disposal at an approved facility.

Part E: Conditions Applying to Modification and Construction

6. The Licensee shall implement and maintain sediment and erosion control measures prior to and during activities carried out under this Part, to prevent the release of sediment and minimize erosion.

Part H:Conditions Applying to Spill Contingency Planning

5.c. for each occurrence, submit to the Inspector, within thirty (30) days after initially reporting the event, a detailed report that provides the necessary information on the location (including the GPS coordinates), initial response action, remediation/clean up, status of response (ongoing, complete), proposed disposal options for dealing with contaminated materials and any preventative measures to be implemented.

Licensee or Representative	Inspector's Name
Bhabesh Roy	Joseph Monteith
Signature	**Signature**
	
Date	**Date**
	November 8, 2021

CC: Licensing Department, NWB
Justin Hack, Manager of Field Operations, INAC

PHOTO LOG

Date	Camera	Inspector	
October 26, 2021	Nikon Coolpix	Joseph Monteith	

Photo Log #1	Location
Photo 1	Igloolik, NU South Lake Water Source

Description: South Lake Water Source. Water pump pipe end submerged held up by buoy. No indication of fish mesh screen. The 909 Litre storage tank, connected in non engineered secondary containment as well as the high pressure water pump.

Photo Log #	Location
Photo 2	Igloolik, NU

Description: Second water pump (mobile), connects half way from water source to water reservoir to aid in the recharging of the water reservoir. A berm was installed to house the fuel tank when operating.

Photo Log #	Location	
Photo 3	N69° 21.248'	W81° 50.439'

Description: The bypass hose installed at the low point, to bleed out any still water from freezing when not in use. GPS Coordinates: Latitude 69° 21.248'N, Longitude 81° 50.439'W.

Photo Log #	Location	
Photo 4	N69° 21.248',	W81° 50.439'

Description: Water Reservoir, recharge pipe in the foreground. Old pump house (left) in the background, decommissioned, but still operational in case of emergency. New Water Treatment/Pump Station/(right). Water Reservoir recharging at the time of inspection.

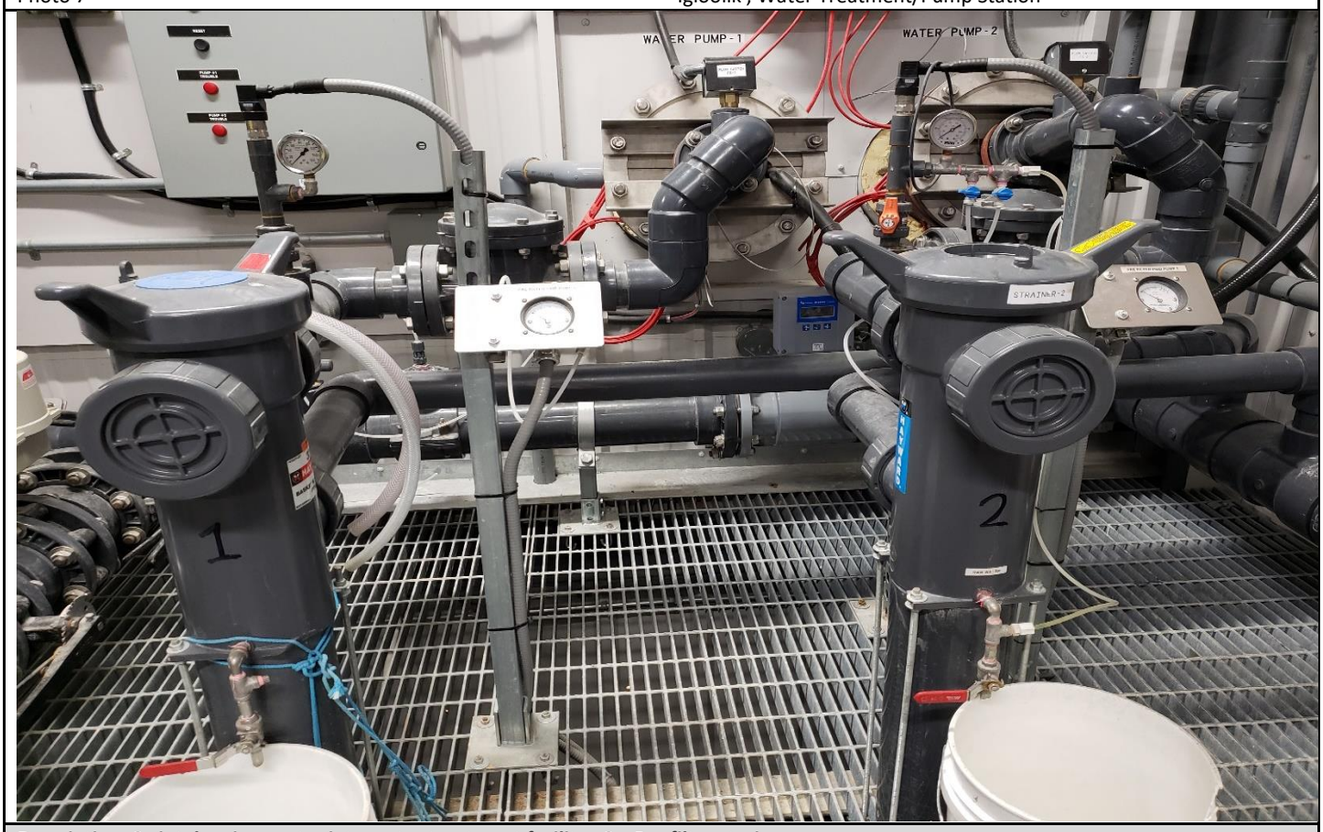
Photo Log #	Location
Photo 5	Igloolik , NU, Water Reservoir

Description: High Water Pressure during the recharge of the Igloolik Water Reservoir is suspected by the hamlet of causing high turbidity. Water level very high in the reservoir.

Photo Log #	Location
Photo 6	Igloolik, Water Treatment/Pump Station

Description: Truck Refill station, and Water Treatment Facility. Truck being refilled at the time of inspection.

Photo Log #	Location
Photo 7	Igloolik , Water Treatment/Pump Station

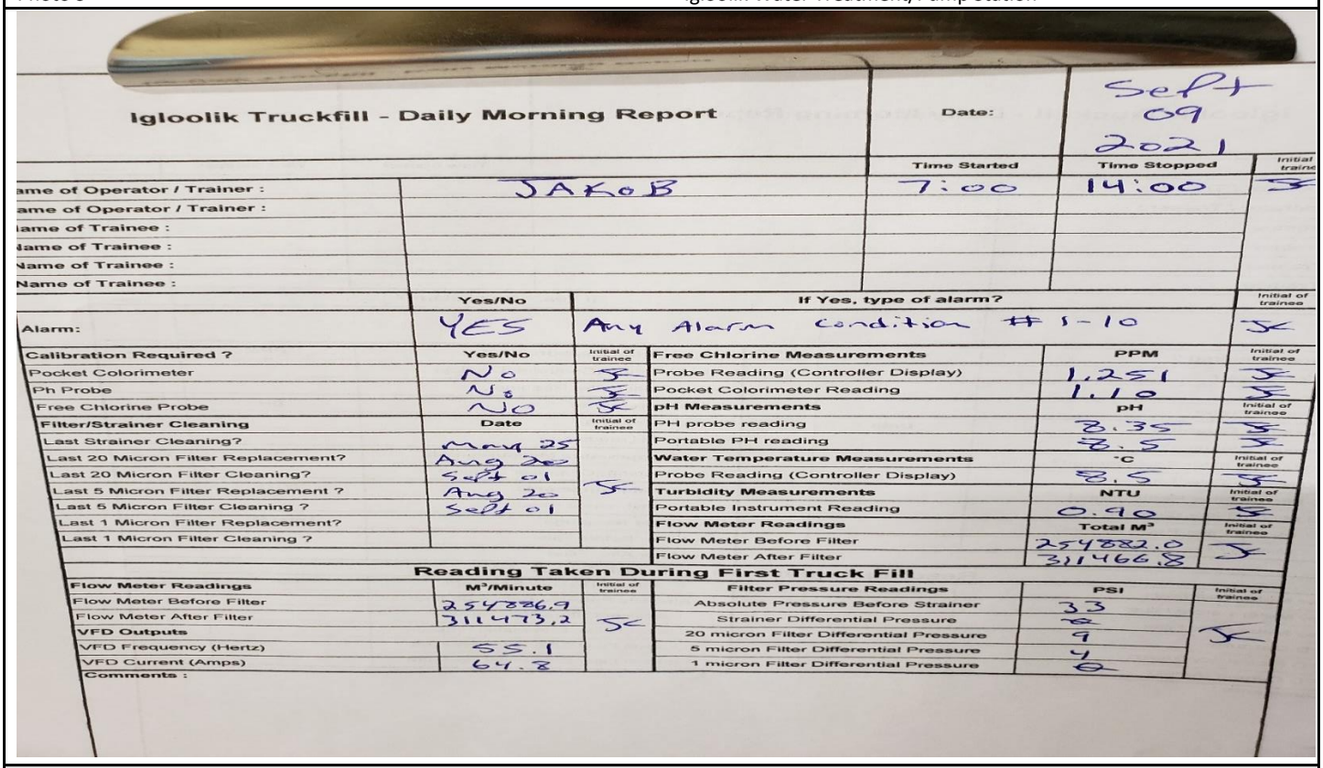


Description: 2x intake pipes entry into water treatment facility. 2 x Pre filter strainer

Photo Log #	Location
Photo 8	Igloolik Water Treatment/Pump Station

Description: 3 x water filters. Liquid Chlorine injector after the filtration. Water Meter in the background against the wall pipe.

Photo Log #	Location
Photo 9	Igloolik Water Treatment/Pump Station



Igloolik Truckfill - Daily Morning Report

Date: Sept 09 2021

	Time Started	Time Stopped	Initial trainee
Name of Operator / Trainer :	JAKOB	7:00	14:00	JK
Name of Operator / Trainer :				
Name of Trainee :				
Name of Trainee :				
Name of Trainee :				

	Yes/No	If Yes, type of alarm?	Initial of trainee
Alarm:	YES	Any Alarm Condition # 1-10	JK

Calibration Required ?	Yes/No	Initial of trainee
Pocket Colorimeter	No	JK
Ph Probe	No	JK
Free Chlorine Probe	NO	JK
Filter/Strainer Cleaning	**Date**	Initial of trainee
Last Strainer Cleaning?	May 25	
Last 20 Micron Filter Replacement?	Aug 20	
Last 20 Micron Filter Cleaning?	Sept 01	
Last 5 Micron Filter Replacement ?	Aug 20	JK
Last 5 Micron Filter Cleaning ?	Sept 01	
Last 1 Micron Filter Replacement?		
Last 1 Micron Filter Cleaning ?		

Free Chlorine Measurements	PPM	Initial of trainee
Probe Reading (Controller Display)	1.251	JK
Pocket Colorimeter Reading	1.10	JK
pH Measurements	**pH**	Initial of trainee
PH probe reading	8.35	JK
Portable PH reading	8.5	JK
Water Temperature Measurements	**°C**	Initial of trainee
Probe Reading (Controller Display)	8.5	JK
Turbidity Measurements	**NTU**	Initial of trainee
Portable Instrument Reading	0.90	JK
Flow Meter Readings	**Total M³**	Initial of trainee
Flow Meter Before Filter	254882.0	JK
Flow Meter After Filter	311466.8	

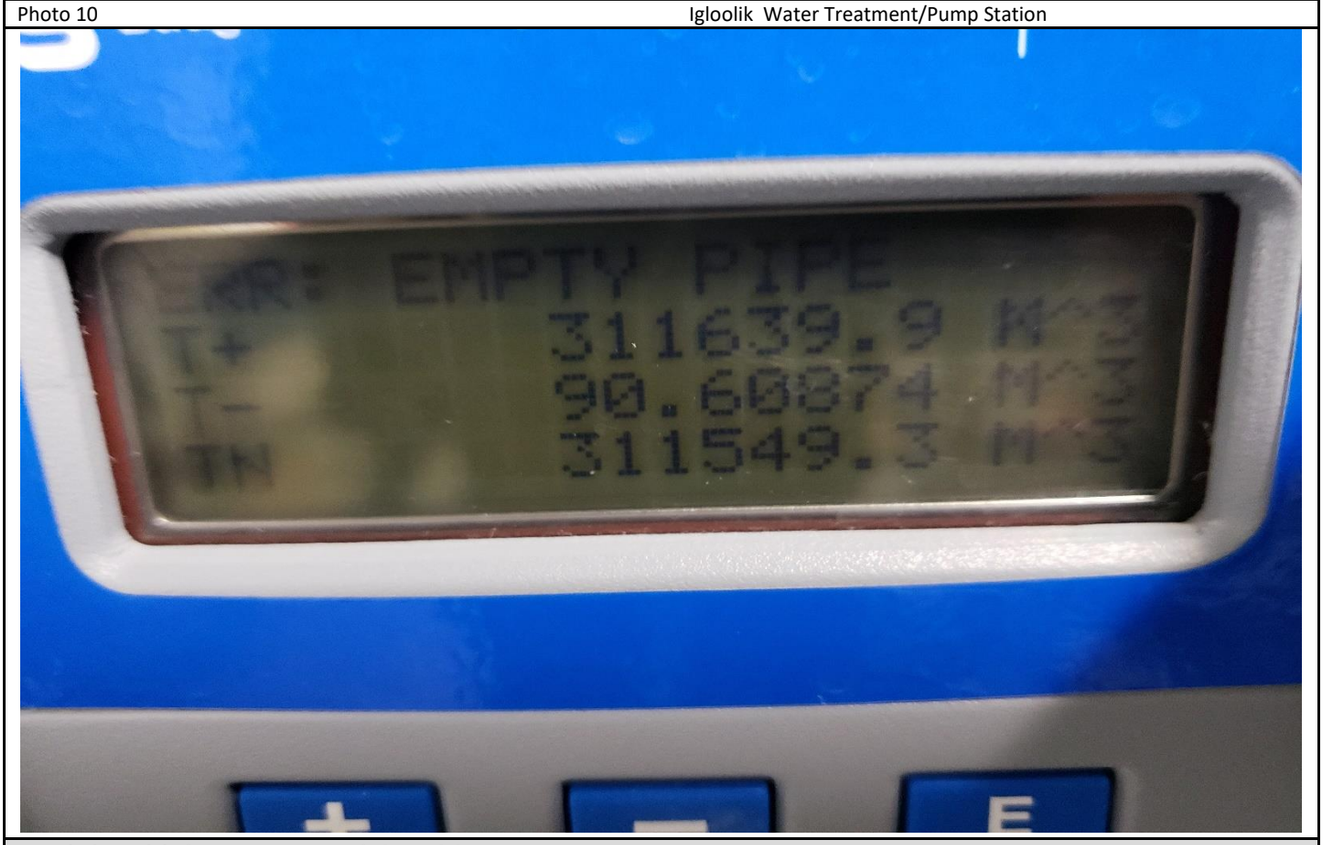
Reading Taken During First Truck Fill

Flow Meter Readings	M³/Minute	Initial of trainee
Flow Meter Before Filter	254886.9	JK
Flow Meter After Filter	311473.2	
VFD Outputs		
VFD Frequency (Hertz)	55.1	
VFD Current (Amps)	64.8	
Comments :		

Filter Pressure Readings	PSI	Initial of trainee
Absolute Pressure Before Strainer	33	JK
Strainer Differential Pressure	8	
20 micron Filter Differential Pressure	9	
5 micron Filter Differential Pressure	4	
1 micron Filter Differential Pressure	0	

Description: Water meter recording listed in Igloolik – Daily Morning Report. Reads Before Filter: 254886.9m³ and 311473.2m³ after filter during first truck fill. Another set of flow meter readings shows before filter reading of 254882.0m³ before filter and 311466.8m³.

Photo Log #	Location
Photo 10	Igloolik Water Treatment/Pump Station



Description: Digital Water Meter Reads 311549.3m³

Photo Log #	Location
Photo 11	Igloolik

Description: The back side of the open pit burning. Non engineered walls. Fresh Gravel laid over migrating sludge first observed in 2020 inspection report.

Photo Log #	Location
Photo 12	Igloolik

Description: Back side of open pit burning. No walls to contain waste. Ocean visible downgrade from exposed wall of burn and cap. Fresh gravel was place down on top to mitigate the spread of any windblown debris.

Photo Log #	Location
Photo 13	Igloolik

Description: Hazardous Waste Area #1, Old Waste Oil Drums within a bermed area – berm is full. Wall was taken down to allow for access. Drums being deposited there are being deposited further and further away from the bermed area. Water puddles litter the area, and the natural contours of the areas allow for migration into the hazardous waste area, then drains to a small pond downgrade of this site before reaching the ocean visible in the background of photo..

Photo Log #	Location
Photo 14	Igloolik

Description: signs of Water around the hazardous waste disposal area. Surface water migrates from background of photo to within hazardous waste storage facility.

Photo Log #1	Location
Photo 15	Igloolik

Description: Fresh Water pond downgrade of Historic Hazardous Waste Disposal Facility. Wind Blown Garbage also litter the pond.

Photo Log #	Location
Photo 16	Igloolik

Description: Hazardous Waste Disposal Area #2. 3 x Sea cans overloaded with hazardous waste.

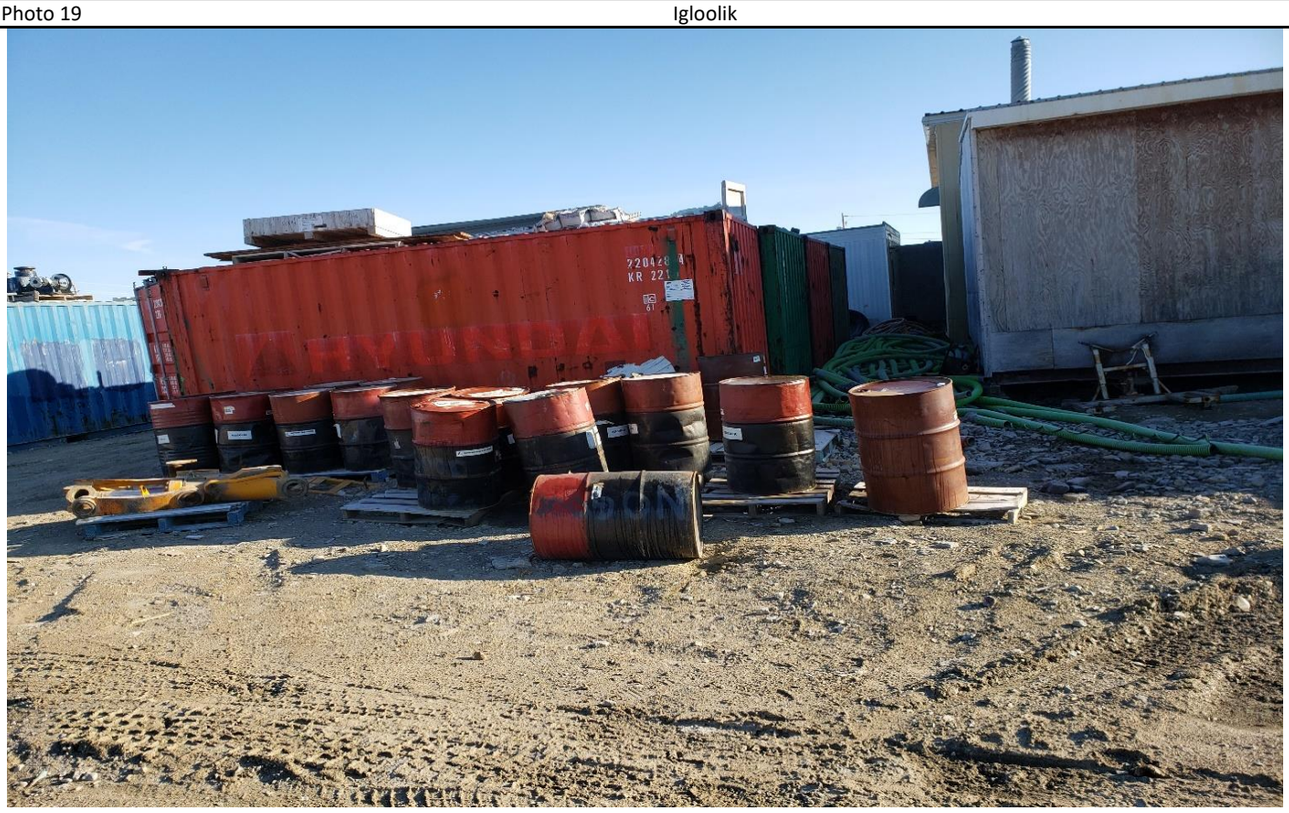
Photo Log #	Location
Photo 17	

Description: Hazardous Waste Seacan # 1 – Overfilled Paint Cans exposed to the outside elements

Photo Log #	Location
Photo 18	Igloolik

Description: Hazardous Waste Sea can #2 Batteries exposed to the outside elements, this year covered with domestic waste.

Photo Log #	Location
Photo 19	Igloolik



Description: Hazardous Waste Seacan #3, Partially empty, some waste batteries exposed to the outside elements. Some hazardous waste removed from last year, and new buckets added. Public access doesn't prohibit interaction with hazardous waste.

Photo Log #	Location
Photo 20	Igloolik

Description: Bulk Metal Seacan #4: with empty propane tanks overflowing. This seacan starts the merge from hazardous waste to bulk metal.

Photo Log #	Location
Photo 21	Igloolik

Description: Some empty camping fuel tins, and standing water in the bulk metals section of the Solid Waste Facility

Photo Log #	Location
Photo 22	Igloolik

Description: End of Bulk Metals. Sewage lagoon starts on left hand side of photo.

Photo Log #	Location
Photo 23	Igloolik Sewage Lagoon Cell # 1

Description: Decanting at the Cell#1 Lagoon. Structural Integrity possibly compromised. Doubled walled storage tank to fuel a high intensity water pump.

Photo Log #1	Location
Photo 24	Igloolik

Description: Discharge Location for cell #1. The discharged product runs along the base of the lagoon.

Photo Log #1	Location
Photo 25	Igloolik, NU Cell 2, looking at Cell 1 East Wall

Background: Cell 1 East side of the sewage lagoon's wall. Source of suspected leak that prompted Spill Report 2021-372. Green streak down the side of the cell walls. October 26, 2021

Photo Log #1	Location
Photo 26	Igloolik, NU, Cell 2 looking at Cell 1 East wall

2020 photo of the East side walls of Cell 1. No sign of leak.

Photo Log #1	Location
Photo 27	Igloolik, NU , Cell 1 East Wall

Foreground: Suspected leak of Cell 1 Sewage Lagoon. The leak prompted Spill Report 2021-372. Green streak down the side of the cell wall.

Photo Log #1	Location
Photo 28	Igloolik

Map of the 3 sewage lagoon cells. Spill Report 2021-372 shows location, and proximity to ocean. A measure of distance from suspected source to ocean measured at 405.41 metres.

Photo Log #1	Location
Photo 29	Igloolik Cell 1, North wall

Signs of slumping of walls of Cell 1 sewage lagoon. As reported in an email sent by the hamlet on Aug. 28, 2021

Photo Log #1	Location
Photo 30	Igloolik , NU Cell 1, West wall

Cell # 2. Freeboard is good. No observable sludge. At the time of the inspection, a decant of the cell was being conducted to investigate the cause of a suspected leak.

Photo Log #1	Location
Photo 31	Igloolik

Delivery Summary By Month and Year

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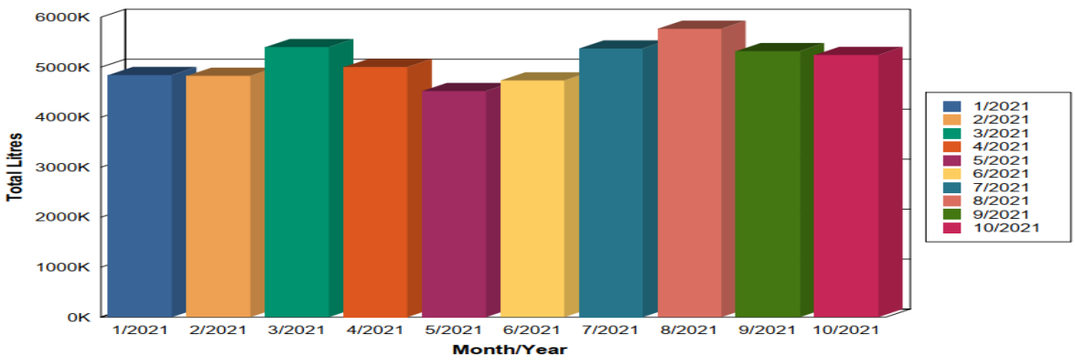

Month / Year	Litres Delivered
January 2021	4,844,121.10
February 2021	4,829,235.30
March 2021	5,403,465.20
April 2021	5,003,091.30
May 2021	4,524,598.90
June 2021	4,735,202.10
July 2021	5,375,973.20
August 2021	5,769,795.70
September 2021	5,322,750.70
October 2021	5,245,193.50
Grand Total:	**51,053,427.00**

Quantity of Water Obtained from all sources in litres, Annual Total is 51, 053, 4427.00 Litres withdrawn and delivered