WATER LICENCE INSPECTION FORM

☒ Original
☐ Follow-Up Report

Licensee	Licensee Representative
Hamlet of Pangnirtung	Bhabesh Roy
Licence No. / Expiry	**Representative's Title**
3AM-PAN1828 expiry May 3, 2028	Municipal Engineer
Land / Other Authorizations	**Land / Other Authorizations**
Date of Inspection	**Inspector**
August 23, 2018	Joseph Monteith

Activities Inspected

☐ Camp ☐ Drilling ☐ Mining ☐ Construction ☐ Reclamation ☐ Fuel Storage
☐ Roads/Hauling ☒ Other: Potable Water Source, Waste Water Treatment, and Solid Wastes ☐ Other:

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

PART:	Condition	Observation No.*
A: SCOPE, DEFINITIONS AND ENFORCEMENT	NA	
B: GENERAL CONDITIONS	A	
C: CONDITIONS APPLYING TO SECURITY	NI	
D: CONDITIONS APPLYING TO WATER USE	A	1-10
E: CONDITIONS APPLYING TO WASTE DISPOSAL AND MANAGEMENT	C	11-19
F: CONDITIONS APPLYING TO MODIFICATIONS	NI	
G: CONDITIONS APPLYING TO CONSTRUCTION	NI	
H: CONDITIONS APPLYING TO EMERGENCY RESPONSE AND CONTINGENCY PLANNING	A	
I: CONDITIONS APPLYING TO ABANDONMENT, RECLAMATION AND CLOSURE PLANNING	NI	
J: CONDITIONS APPLYING TO MONITORING	NI	
SCHEDULES	A	

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

Samples taken by Inspector:	Location(s): Latitude : N66° 09' 00" , Longitude: W65° 40' 34"
☐ Yes ☒ No	

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

BACKGROUND

Pangnirtung is a hamlet in the Qikiqtaaluk Region, in the Canadian territory of Nunavut, located on Baffin Island. As of the 2016 census the population was 1,481, an increase of 3.9% from the 2011 census. The area of the town is 7.77 km (3.00 sq. mi). Pangnirtung is situated on a coastal plain at the coast of Pangnirtung Fjord, a fjord which eventually merges with Cumberland Sound.

On June 23, 2018 Richard Dwyer, Nunavut Water Board, Manager of Licencing emailed Water Resource Officer Monteith a copy of the replacement and amended Licence 3AM-PAN1828. In the renewal and amended licence it indicates that as of May 4, 2018 the Hamlet can now use 120,000m³ annually as per the new water licence.

Inspector Statement

On August 23, 2018, A Water License inspection was conducted at the Hamlet of Pangnirtung, Qikiqtani Region, Nunavut, to verify compliance with the terms and conditions of the Water Licence.

General Condition

On July 11, 2018 the Nunavut Water Board uploaded to their FTP site a copy of the Hamlet of Pangnirtung's Annual Report. (link below)

ftp://ftp.nwb-oen.ca/registry/3%20MUNICIPAL/3A/3AM%20-%20Municipality/3AM-PAN1828/3%20TECH/B%20GENERAL/2%20ANNUAL%20RPT/2017/180312%203BM-PAN1417%202017%20Annual%20Report-ILAE.pdf

Water Use and Related Structures

Duval River (See photo 1)

1. Water is extracted from the Duval River using a water pump and mobile generator (See photo 1).
2. The water transferred by pipes from Duval River to the Water Storage Reservoir (See photo 2).
3. No fish mesh screen on extraction pipe at Duval River.
4. No Water Meter at Duval River

Water Treatment Facility & Water Storage Reservoir

5. The Water from Duval River is deposited into a reservoir next to the Water Treatment Facility (See Photo 3).
6. Water is delivered from the Water Treatment Plant by truck to the public (See photo 4).
7. Water Meter reading read 62,929m³ (See photo 5).
8. Water Usage Records were up to date and provided at the Waste Water Treatment Facility (See photo 6). Water Technician log sheet, Water Flow Meter Readings shows 62,929m³ before being filtered and 64,433 m³ after being filtered (See photo 7).
9. Records show between the months of January and July 2018, the Hamlet of Pangnirtung delivered a total of 28,529m³ of water (See photo 8).
10. The Water Storage Reservoir capacity is 12,000m³ in the summer, and taking in considerations for the 1.8 metres of ice 71,000m³ in winter. The walls looked to be in good shape, with no signs of erosion or slumping (See photo 3). Past inspection reports documented seepage of water into the reservoir from the east, but the installation of the walls above the fence line on the East up slope have appear to corrected that issue.
11. On October 25, 2018 William Toonoo, Municipal Technician, Government of Nunavut, Community Government, and Services, emailed WRO Monteith a copy of the "Delivery Summary by Month and Year" for the months of January to September 2018 showing 36,004.735 m³ delivered to date. That doesn't account for the amount of water within the Water Reservoir, the Water Treatment Facility, and for uses such as Suppression (See photo 22).

Waste Water Treatment Facility (see photo 9)

12. The Waste Water Treatment Facility located 146 metres from the high water mark of the ocean.
13. Liquid treated waste is discharged towards the ocean from a pipe that extends out 19 metres out of the Waste Water Treatment Facility (See photo 10).

Solid Waste Facility (see photo 11)

14. The burn and cap is fenced, and contains the solid waste from the Waste Water Treatment Facility (See photo 12).
15. The bulk metals area contains such waste as vehicles, white waste, snowmobiles, and all-terrain vehicles (See photo 13).
16. Hazardous Waste was found throughout the Bulk Metals section such as waste oil drums, and batteries. (See photo 14).
17. The Bulk Metals section is merged with the Hazardous Waste section (See photo 15).
18. Hazardous Waste section contains a full sea can mostly of electronics, and batteries. Accessing the sea can proved unsafe due to the amount of abandoned snowmobiles, and other bulk metal in front of the sea can entrance. Walls of sea can are compromised, and not hold any leaks. (See photo 16).
19. A separate and standalone Hazardous Waste section along the side of the road is exposed to the elements and not bermed (See photos 17, 18, and 19). A submission of a Spill Report was requested due to the abundance of leaks, and spills that have damaged the surrounding vegetation and the amount of hazardous waste blowing away from the site (See photo 20 and 21).
20. Bhabesh Roy requested that the cleanup start when the Hazardous Waste section is developed over the summer time so they can have a place to store the hazardous waste. WRO Monteith agreed that some of the material didn't have a place to go until the Hazardous Waste section was cleaned and developed. A Spill Report was still requested to announce it as risk, and start to mitigate the potential for further contamination of the landscape and further migration of the hazardous waste.

Water Usage Reports

21. The Hamlet is authorized to withdrawal 120,000m³.
22. Water Usage Records were up to date and provided at the Waste Water Treatment Facility Meter reading read 62929m³(See photo 6).
23. Water Technician log sheet Flow Meter Readings shows 62,929m³ before being filtered and 64,433 m³ (See photo 7).
24. Records show between the months of January and July 2018, the Hamlet of Pangnirtung delivered a total of 28,529m³ (See photo 8).

Action Required

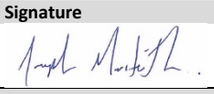
The following information is a summary of the Actions Required by the licensee to promote and ensure compliance. Please provide a response to the following Actions Required within 30 days of receiving this report proposing timelines to address the concerns noted:

- Articulate the calculation for use of water, as the "Delivery Summary by Month and Year, doesn't take into account the amount of water in the Water Storage Reservoir, the Water Treatment Facility, and for such uses as dust suppression;
- Dig a trench downslope of the hazardous waste deposit (see photo 17, 18, and 19), to control the migration of hazardous waste and install a monitoring station at that site, and sample for Oil and Grease, and hydrocarbons.
- Prioritize the segregation of the Hazardous Waste Section from the Solid Waste Facility;
- Remove drums from the Hazardous Waste site, and deposit them in an area where the leaks and spills doesn't mix with water;
- Install a water meter at Duval River as requested in previous inspection reports to get an accurate result of withdrawal from the site.

Non-Compliance with the Act, or the Licence

- Part E: Item 7, The Licensee shall implement measures to prevent hazardous materials and/or leachate from the Solid Waste Management Facility and Metal and Hazardous Waste Storage Area from entering water, and shall control surface runoff from the Solid Waste Management Facility and Metal Storage Area.

- Part E: Item 8,
  The Licensee shall erect a fence surrounding the Metal and Hazardous Waste Storage Area within six months of the approval of this Licence by the Minister.

Licensee or Representative	Inspector's Name
Bhabesh Roy	Joseph Monteith
Signature	**Signature**
	
Date	**Date**
	November 28, 2018

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

PHOTO LOG

Date	Camera	Inspector	
August 23, 2018	Nikon Coolpix	Joseph Monteith	
Photo Log #		**Location**	
Photo 1		Pangnirtung	

Description: Duval River

Photo Log #1	Location
Photo 2	Pangnirtung

Description: Insulted pipe on top of the land scape. No signs of leaks

Photo Log #1	Location
Photo 3	Pangnirtung

Description: Water Reservoir capacity is 12,000m³ in the summer, and taking in considerations for the 1.8 metres of ice 71,000m³ in winter. Past inspection reports have documented water seeping into the reservoir from the East.

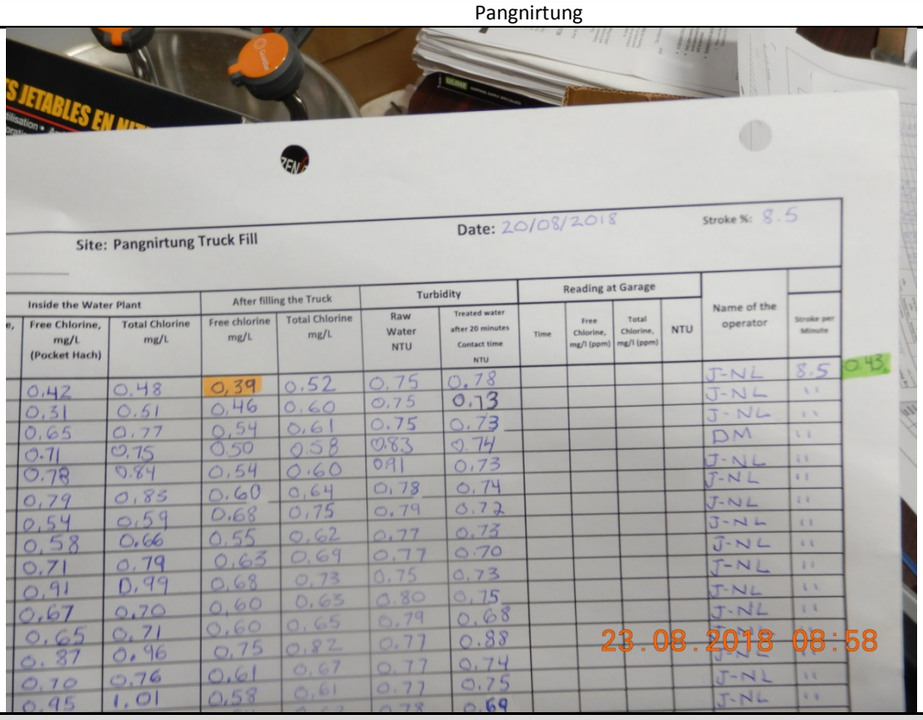
Photo Log #1	Location
Photo 4	Pangnirtung

Description: Water Truck being recharged at Water Treatment Facility

Photo Log #1	Location
Photo 5	Pangnirtung

Description: Water Meter before filtration reads 62929.17m³

Photo Log #1	Location
Photo 6	Pangnirtung



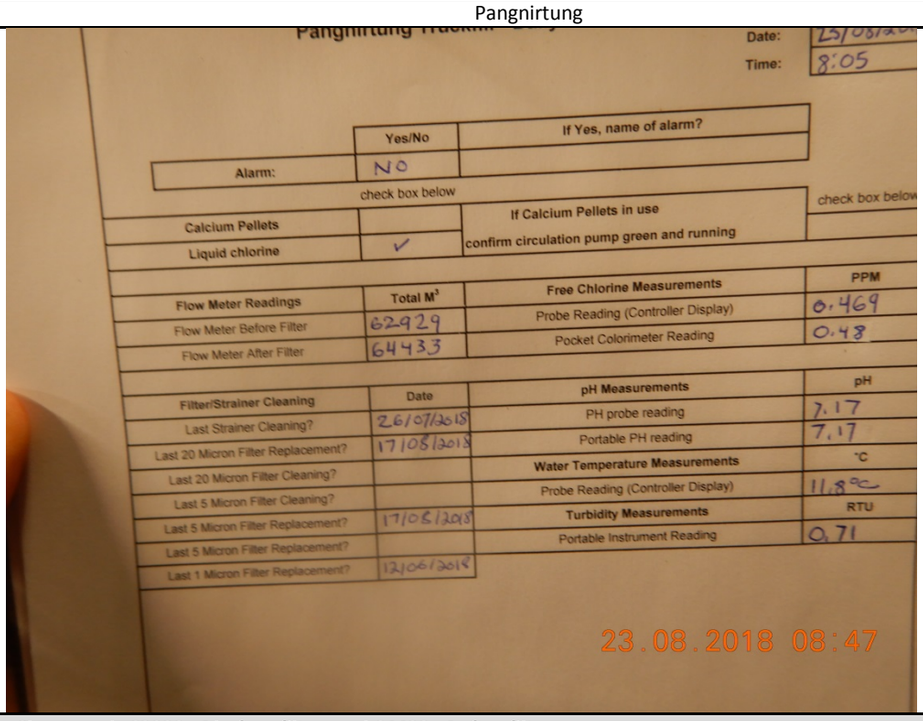
Site: Pangnirtung Truck Fill Date: 20/08/2018 Stroke %: 8.5

Inside the Water Plant		After filling the Truck		Turbidity		Reading at Garage				Name of the operator	
Free Chlorine, mg/L (Pocket Hach)	Total Chlorine mg/L	Free chlorine mg/L	Total Chlorine mg/L	Raw Water NTU	Treated water after 20 minutes Contact time NTU	Time	Free Chlorine, mg/l (ppm)	Total Chlorine, mg/l (ppm)	NTU		Stroke per Minute
0,42	0,48	0,39	0,52	0,75	0,78					J-NL	8,5
0,31	0,51	0,46	0,60	0,75	0,13					J-NL	"
0,65	0,77	0,54	0,61	0,75	0,73					J-NL	"
0,71	0,75	0,50	0,58	0,83	0,74					DM	"
0,78	0,84	0,54	0,60	0,91	0,73					J-NL	"
0,79	0,85	0,60	0,64	0,78	0,74					J-NL	"
0,54	0,59	0,68	0,75	0,79	0,72					J-NL	"
0,58	0,66	0,55	0,62	0,77	0,73					J-NL	"
0,71	0,79	0,63	0,69	0,77	0,70					J-NL	"
0,91	0,99	0,68	0,73	0,75	0,73					J-NL	"
0,67	0,70	0,60	0,63	0,80	0,15					J-NL	"
0,65	0,71	0,60	0,65	0,79	0,68					J-NL	"
0,87	0,96	0,75	0,82	0,77	0,88					J-NL	"
0,70	0,76	0,61	0,67	0,77	0,74					J-NL	"
0,95	1,01	0,58	0,61	0,77	0,75					J-NL	"
					0,69					J-NL	"

23.08.2018 08:58

Description: Log Book in Water Treatment Facility

Photo Log #1	Location
Photo 7	Pangnirtung



Date: 23/08/2018
Time: 8:05

Alarm:	Yes/No	If Yes, name of alarm?
	NO	

check box below

Calcium Pellets		If Calcium Pellets in use	check box below
Liquid chlorine	✓	confirm circulation pump green and running	

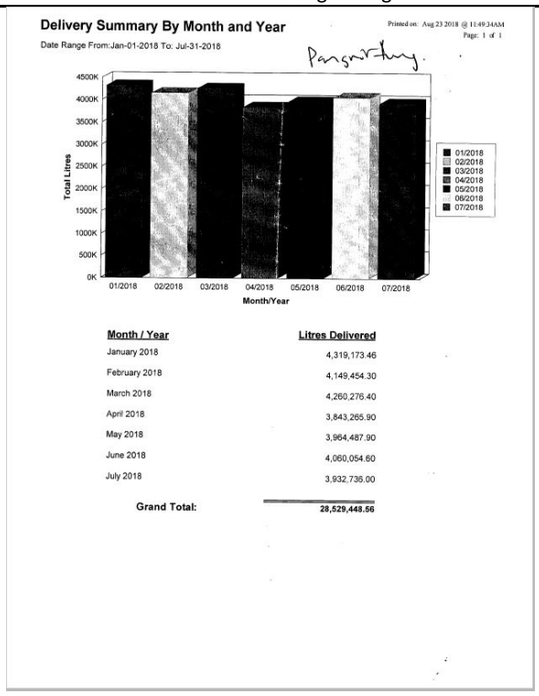
Flow Meter Readings	Total M³	Free Chlorine Measurements	PPM
Flow Meter Before Filter	62929	Probe Reading (Controller Display)	0,469
Flow Meter After Filter	64433	Pocket Colorimeter Reading	0.48

Filter/Strainer Cleaning	Date	pH Measurements	pH
Last Strainer Cleaning?	26/07/2018	PH probe reading	7.17
Last 20 Micron Filter Replacement?	17/08/2018	Portable PH reading	7.17
Last 20 Micron Filter Cleaning?		Water Temperature Measurements	°C
Last 5 Micron Filter Cleaning?		Probe Reading (Controller Display)	11.8°C
Last 5 Micron Filter Replacement?	17/08/2018	Turbidity Measurements	RTU
Last 5 Micron Filter Replacement?		Portable Instrument Reading	0.71
Last 1 Micron Filter Replacement?	12/06/2018		

23.08.2018 08:47

Description: Water Log Sheet reads 62929m³ before filter, and 64433m³ after filter

Photo Log #1	Location
Photo 8	Pangnirtung



Delivery Summary By Month and Year

Printed on: Aug 23 2018 @ 11:49:24AM
Page: 1 of 1

Date Range From:Jan-01-2018 To: Jul-31-2018

Pangnirtung.

Month / Year	Litres Delivered
January 2018	4,319,173.46
February 2018	4,149,454.30
March 2018	4,260,276.40
April 2018	3,843,265.90
May 2018	3,964,487.90
June 2018	4,060,054.60
July 2018	3,932,736.00
Grand Total:	**28,529,448.56**

Description: Delivery Summary By Month and Year total 28,529.4486 m³.

Photo Log #1	Location
Photo 9	Pangnirtung

Description: Waste Water Treatment Facility

Photo Log #1	Location
Photo 10	Pangnirtung

Description: Monitoring Sites PAN-3 observed at the discharge point of Waste Water

Photo Log #1	Location
Photo 11	Pangnirtung

Description: Entrance to the Burn and Cap section of the Solid Waste Facility

Photo Log #1	Location
Photo 12	Pangnirtung

Description: Burning is conducted on the left, and the storage of the solid waste from the Waste Water Treatment Plant is on the right.

Photo Log #1	Location
Photo 13	Pangnirtung

Description: Bulk Metals section. Some water within the Bulk Metals Section. Waste Oil Drum in the mid ground

Photo Log #1	Location
Photo 14	Pangnirtung

Description: Hazardous Waste in the Bulk Metals section. Waste Oil Drums, can propane tanks can be seen littered around the entrance fringes of the Bulk Metals section. Embankment appears to be working diverting water into the Solid Waste Facility.

Photo Log #1	Location
Photo 15	Pangnirtung

Description: The Bulk Metal Debris in front of Hazardous Waste Sea Can. Sea can door is on the top right of photo.

Photo Log #1	Location
Photo 16	Pangnirtung

Description: The Bulk Metal Debris in front of Hazardous Waste Sea Can. Sea can is damaged; the wall is pushed out on the bottom.

Photo Log #1	Location	
Photo 17	Latitude: 66°9.370	Longitude: 65° 40.274

Description: Separate standalone Hazardous Waste section. Next to the road. Water on road

Photo Log #1	Location	
Photo 18	Latitude: 66°9.370	Longitude 65° 40.274'W

Description: Migration of spills from leaking waste oil drums

Photo Log #1	Location	
Photo 19	Latitude: 66°9.370	Longitude 65° 40.274'W

Description: Spills killing vegetation on its migration downslope towards the ocean.

Photo Log #1	Location
Photo 20	Pangnirtung

Description: Hazardous Waste Drums blown away from site. Deposited into creek downslope from site towards the ocean.

Photo Log #1	Location
Photo 20	Pangnirtung

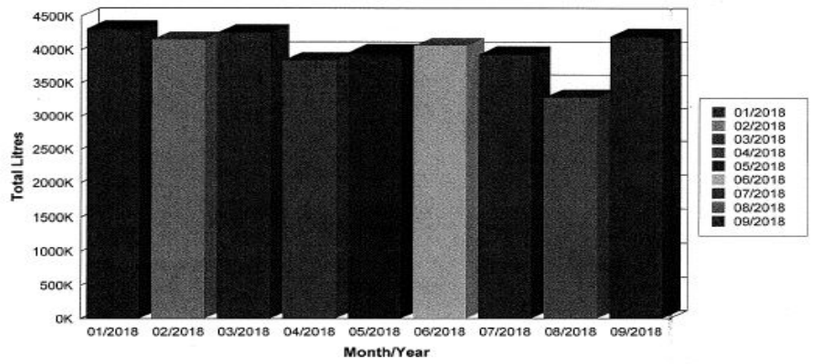
Description: Glycol Storage Tank and waste oil drum blown downslope from hazardous waste deposit.

Photo Log #1	Location
Photo 20	Pangnirtung

Delivery Summary By Month and Year

Printed on: Oct 22 2018 @ 3:52:13PM
Page: 1 of 1

Date Range From:Jan-01-2018 To: Sep-30-2018



Month / Year	Litres Delivered
January 2018	4,319,173.46
February 2018	4,149,454.30
March 2018	4,260,276.40
April 2018	3,843,265.90
May 2018	3,964,487.90
June 2018	4,060,054.60
July 2018	3,932,736.00
August 2018	3,277,986.90
September 2018	4,197,288.10
Grand Total:	**36,004,723.56**

Description: Delivery Summary By Month and Year total delivered equals 36,004.723 m³ doesn't account for the amount of water in the reservoir, the water treatment plant, and for activities such as dust suppression.