

2023 DYE-M ANNUAL NUNAVUT WATER BOARD REPORT

**FOR THE
NORTH WARNING SYSTEM**

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EXECUTIVE SUMMARY

This 2023 Annual Report for the Nunavut Water Board (NWB) has been prepared by Nasittuq for the Department of National Defence in order to meet the requirements of Part B “General Conditions”, paragraph 1 of its licence 8BC-DYE-1929. This report covers 01 January to 31 December 2023.

Nasittuq is the Operations and Maintenance (O&M) Contractor for the North Warning System (NWS), including DYE-M, the North Warning System radar site located at Cape Dyer, Nunavut. In 2023 the site was visited quarterly by Nasittuq staff based in Iqaluit for preventive maintenance inspections and as required for other work.

All water was taken from the melt-water water source, listed in the licence as “DYE-1(b)”. The quantity of water taken (139 cubic metres) was below the annual maximum of 3,000 cubic metres allowed by the licence.

Samples of the water contained in the berms of fuel storage facilities were tested on-site using hydrocarbon test strips and confirmed to be within effluent quality limits of the NWB licence before the water was pumped out of the berms.

No hazardous waste and waste oil were shipped off-site in 2023 due to logistical issues. In 2024 hazardous waste and waste oil will be sent to an approved hazardous waste disposal site outside of Nunavut as required by the licence.

Non-hazardous domestic solid waste was flown out to the Logistics Support Site in Iqaluit and disposed of at Iqaluit’s landfill. Nasittuq has documented authorization from the community for receiving the waste.

One spill to the environment occurred at DYE-M in 2023.

- 17-Jul-2023, NTNU Spill # 2023-302: Rapid rainfall and melting snow caused water to overtop a berm resulting in an unauthorized berm discharge of approx. 1000L on to a gravel pad. The berm was repaired, and remaining water was tested and found to not contain hydrocarbons.

No progressive reclamation work was undertaken in 2023.



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1.0 INTRODUCTION

This 2023 Annual Report for the Nunavut Water Board (NWB) has been prepared by Nasittuq for the Department of National Defence in order to meet the requirements of Part B “General Conditions”, paragraph 1 of its licence 8BC-DYE0919 issued on 01-Sep-2019 and amended effective 14-April-2022. The amendment now allows for 3,000 cubic metres per year.

This report covers 01 January to 31 December 2023.

Nasittuq is the Operation and Maintenance (O&M) Contractor for the North Warning System (NWS), including DYE-M, the unattended (unmanned) NWS radar site located at Cape Dyer, Nunavut.

In 2023 the site was staffed over the summer and visited quarterly in the winter by Nasittuq staff based in Iqaluit for preventive maintenance inspections and as required for other work.

1.1 Report Details

Licensee:	Department of National Defence, Government of Canada
Licence:	8BC-DYE-1929 – Type “B”
Location:	DYE-M North Warning System Site, Cape Dyer, Qikiqtani Region, Nunavut
Report Prepared by:	Alaina Leslie and reviewed by Don Beattie Nasittuq Corporation , 26-Mar-2024
Time period covered:	01 January to 31 December 2023

2.0 WATER USE

In 2023, **139 cubic metres** of water was drawn from the water source, with a daily maximum of **10 cubic metres**. All water was taken from the melt-water water source, listed in the licence as “DYE-1(b)”. The quantity of water taken was below the annual maximum of 3,000 cubic metres, and daily maximum of 299 cubic metres, allowed by the licence.

See Table 2-1 for the volume of water drawn from the water source at DYE-M each month in 2023.

Table 2-1: Monthly Raw Water Usage at DYE-M in 2023

Month	Raw water usage (m ³)
January	0
February	0
March	0
April	0
May	0
June	0
July	66.9
August	31.1
September	30
October	10.5
November	0
December	0
TOTAL	138.5

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3.0 HAZARDOUS WASTE AND WASTE OIL DISPOSAL

No hazardous waste and waste oil were shipped off-site in 2023. In 2024 hazardous waste and waste oil will be sent to an approved hazardous waste disposal site outside of Nunavut as required by the licence.

4.0 NON-HAZARDOUS SOLID WASTE DISPOSAL

Non-hazardous domestic solid waste was flown out to the Logistics Support Site in Iqaluit and was disposed of at Iqaluit's landfill. Nasittuq has documented authorization from the community for receiving the waste.

See **Table 4-1** for the quantity of waste generated.

Table 4-1: Non-hazardous Domestic Solid Waste Sent for Disposal from DYE-M in 2023

Month	Waste Generated (kg)
January	0
February	0
March	0
April	0
May	318
June	113
July	329
August	0
September	0
October	113
November	0
December	0
TOTAL	873

5.0 MONITORING PROGRAM

In 2023, a monitoring program was implemented at DYE-M as required by the water licence. The monitoring program included the following:

1. Volume of raw water drawn from the water Supply Lake (DYE-1(a)). No water was drawn from the water lake in 2023.
2. Volume of raw water drawn from the melt water source (DYE-1(b)). The information from this monitoring program is shown in **Section 2.0 Water Use**. The volume of water drawn was within the limit stated in the water licence.
3. Quality of sewage discharged from the final discharge point of the sewage disposal facility (DYE-2). The location of the sewage effluent outfall is shown in **Annex B**. Two sumps for the sewage outfall were constructed in 2010. The outfalls were not discharged in 2023 and therefore no sampling was required. **Annex C** has been left blank.

4. Accumulated rain and meltwater contained in the berms of fuel storage facilities was analyzed with hydrocarbon test strips and confirmed to be within the effluent quality limits listed in the water licence, Part D, prior to discharge (DYE-3). The coordinates and the results of the analysis are shown in **Annex D**. All samples met the effluent requirements of the water licence, Part D.
5. Final Discharge Point from the Landfarm (DYE-4). No landfarm has been established at DYE-M, so this monitoring station remains inactive.

6.0 SPILLS (UNAUTHORIZED DISCHARGES)

One spill to the environment occurred at DYE-M in 2023. Table 6-1, below, describes the spill (unauthorized discharge) details.

The Spill Contingency Plan was successfully implemented.

Table 6-1: Unauthorized Discharges at DYE-M in 2023

Date, NT-NU Spill #	Product	Quantity	Cause and follow-up action	On-site location
17-Jul-2023, Spill # 2023-302	Water	1000 L	Rapid rainfall and melting snow caused water to overtop a berm resulting in an unauthorized berm discharge of approx. 1000L on to a gravel pad. The berm was repaired, and remaining water was tested and found to not contain hydrocarbons.	DYE-M Summit PGS Tank Berm (66° 39' 53"N, 61° 21' 24" W)

7.0 REVISIONS TO THE SPILL CONTINGENCY PLAN

The Spill Contingency Plan was updated on **12-Jun-2023**. An updated copy of the Spill Contingency Plan has been submitted to the NWB with this annual report.

8.0 PROGRESSIVE RECLAMATION WORK UNDERTAKEN

No progressive reclamation work was undertaken in 2023.

9.0 ACRONYMS

Table 9-1: Acronyms

Acronym	Definition
n.o.s.	not otherwise specified
NWB	Nunavut Water Board
NWS	North Warning System
PCB	Polychlorinated Biphenyl
TDGR	Transportation of Dangerous Goods Regulations



ANNEX A. HAZARDOUS WASTE AND WASTE OIL DISPOSAL

Hazardous waste was not shipped off site in 2023.

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ANNEX B. SEWAGE OUTFALL LOCATION (DYE-2) WITH COORDINATES



Figure 9-1: Coordinates of Sewage Outfall Location (DYE-2): 66° 39' 51.26"N, 61° 21' 16.54"W

ANNEX C. ANALYSIS OF DISCHARGED SEWAGE EFFLUENT

The sewage outfall sump was not discharged in 2023 and therefore samples were not required.

ANNEX D. LOCATION OF BERMED FUEL STORAGE FACILITIES

Table D-1 contains the locations and sampling dates for the wastewater discharged from the bermed fuel storage facilities.

Table D 1: Location of Bermed Fuel Storage Facilities and Date Sampled in 2023

Berm	Location on-site	Discharge Latitude ¹	Discharge Longitude	Date
DYE W20A	Summit	66°40'00.13"N	61°21'25.76"W	26-Jun-2023
DYE W22K, W22J, W22I & W20B	Summit	66°39'53.59"N	61°21'23.78"W	17-Jul-2023

¹ Final discharge point of bermed fuel storage facility

ANNEX E. ANALYSIS OF BERM WATER²

Accumulated rain and meltwater in the bulk fuel storage tank berms at DYE-M was analysed using hydrocarbon test strips as per the approved QA/QC Plan for Berm Water Sampling as stated in the water licence 8BC-DYE1929, PART D, Item 12. The photo log of the hydrocarbon test strips is included below.

Photo Log



Figure 9-2: DYE W20A, June 26 2023



Figure 9-3: DYE W22K, W22J, W22I & W20B, July 17 2023

² Effluent from bermed fuel storage facilities.



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