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NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYINGI
OFFICE DES EAUX DU NUNAVUT

EXPLORATION/ REMOTE CAMP SUPPLEMENTARY QUESTIONNAIRE

Applicant: Nasittuq Corporation **Licence No:** _____
(For NWB Use Only)

ADMINISTRATIVE INFORMATION

1. Environment Manager: Scott Charland Tel: 613-234-9033 ext. 626 Fax: 613-234-2671
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2. Project Manager: Jacques Plante Tel: 613-234-9033 ext. 833 Fax: 613-234-2671
E-mail: jacques.plante@nasittuq.com

3. Does the applicant hold the necessary property rights? No.

4. Is the applicant an 'operator' for another company (i.e., the holder of the property rights)? If so, please provide letter of authorization.

   Please see attached **Annex A** which contains the authorization in:

   a. the letter dated 06 December 2007, Serial No. NWS-0757, to Ms Dionne Fillatrault, Director of Licensing, Nunavut Water Board from Ms Nancy Morin, Supply Team Leader/NWS Contract Authority, North Warning System.
   The second paragraph explains that Nasittuq was awarded a contract by Canada to operate and maintain the North Warning System (NWS) in November 2001 and that "possession, care, custody and control over the NWS passed from Canada to Nasittuq"; and

   b. Article A2 Infrastructure and Scope of Work for the North Warning System Operation and Maintenance (excerpt from Contract Serial No. W8485-98RH01/01-NX).
   Paragraph 3 states "As of the Effective Date {of the contract}, possession and control over the North Warning System as defined in the SOW {Statement of Work} shall pass from the Crown over to the Contractor who shall have care and custody of the same."

5. Duration of the Project

   ☐ One year or less Start and completion dates: _____
   [X] Multi Year:

   If Multi-Year indicate proposed schedule of on site activities
   Start: 1950's Completion: 2030

CAMP CLASSIFICATION

6. Type of Camp

- ☐ Mobile (self-propelled)
- ☐ Temporary
- ☐ Seasonally Occupied: _____
- ☐ Permanent
- [X] Other: National Defence Long Range Radar Site.

7. What is the design, maximum and expected average population of the camp?

DYE-M is a Long Range Radar Site (LRR) for the North Warning System (NWS). DYE-M is an unmanned site, but it is visited by LSS-Q staff on scheduled quarterly preventive and corrective maintenance trips and on an as needed basis. During the months of May to September there may be an average of 4 to 22 personnel on-site due to seasonal project activity and occasional Third Party visitors.

8. Provide history of the site if it has been used in the past.

DYE-M was built in the 1950's as one of the Distant Early Warning Line (DEW Line) radar sites which stretched from Alaska to Greenland. In the 1980's, the DEW Line in Canada evolved into the North Warning System (NWS) with radar sites extending from the Yukon across the Arctic and down the Labrador coast. DYE-M was modernized as part of this transition. On 31 October 1995, the site changed from manned to unmanned status. Over the years, the Prime Mission of the radar sites remains unchanged: to detect airborne objects within the Arctic surveillance area.

DYE-M is a Long Range Radar (LRR) site. DYE-M's facilities include site buildings with their integral mechanical and electrical systems, power generation system, fuel tanks, radar, antennas, satellite ground terminals, weather equipment, and roads.

CAMP LOCATION

9. Please describe proposed camp location in relation to biogeographical and geomorphological features, and water bodies.

DYE-M (Cape Dyer) is in Nunavut at the extreme eastern edge of Baffin Island at Cape Dyer. Sheer cliffs of over 610 m are the predominant feature. The site consists of the summit (725 m above sea level) and the lower site on the north side of Sunneshine Fiord. The geographical coordinates are: 66 40' 05" N and 61 21' 13" W.

DYE-M is located on the eastern edge of a mountainous peninsula. The terrain is rugged and boulder strewn with very little soil, consisting of mostly silt. Vegetation on the upper site is sparse, consisting of grass, wildflowers, mosses, and lichen. Vegetation at the lower site is more abundant consisting of wildflowers, creeping willows, and sedges. Several small ice fields exist within five miles of the site. The sheer cliffs, some over 610 m high, along the coast line are the most prominent features of the site.

9. Continued.

Caribou are occasionally seen at the lower site, and periodically polar bears are encountered at both the summit and lower site, particularly during the start of the open water season when they are forced ashore by the break-up of the land-fast ice. Cape Dyer is a major denning area for polar bears on south eastern Baffin. Arctic foxes are often seen in the region and near the site.

The coastal waters are important habitat to walrus, seals and many species of whales and porpoises. Walrus are thought to overwinter along the edge of fast ice and in the pack ice off southeastern Baffin Island. Both walrus and seals are hunted in the fiords around Cape Dyer by hunters of neighbouring communities. The offshore waters of the Davis Strait provide important breeding and migration areas for the hooded seal. Historical evidence and scientific data indicates that Bowhead whales occur in the Davis Strait, Baffin Bay and Cumberland Sound. During the fall and early winter, bowhead whales migrate southward along the east coast of Baffin Island to the Cumberland Sound region. Also during this time, there is a migration of narwhals south along the east coast of Baffin Island to their overwintering areas in the Davis Strait and west Greenland.

The Meta Incognita Peninsula contains a relatively high density of peregrine falcon and gyrfalcon nests. Colonies of 6,000 and 50,000 fulmars are located respectively at Exeter Sound to the south and Scott Inlet to the north of the site. The Canadian Wildlife Service has recognized western Baffin Bay as a key migratory bird habitat site. This area contains millions of seabirds including the following species: blacklegged kittiwake, thick-billed murre and black guillemot. Colonies of Sabine's gull can be found south and west of the site.

10. How was the location of the camp selected? Was the site previously used? Was assistance from the Regional Inuit Association Land Manager sought? Include maps and/or aerial photographs.

The location of the site was based on the National Prime Mission (National Defence) requirements.

See attached **Annex B** DYE-M Site Plan Drawings (Serial H-C75/2-8400-101, Serial H-C75/2-8400-102, Serial H-C75/2-8400-103, and Serial H-C75/2-8400-104) and attached **Annex C** DYE-M Aerial Photo.

11. Is the camp or any aspect of the project located on:

[X]	Crown Lands	Permit Number (s)/Expiry Date: Not applicable
[ ]	Commissioners Lands	Permit Number (s)/Expiry Date: _____
[ ]	Inuit Owned Lands	Permit Number (s)/Expiry Date: _____

12. Closest Communities (direction and distance in km):

The closest communities are:
- Broughton Island, 152 km (94 miles) to the northwest;
- Pangnirtung, 201 km (125 miles) to the southwest; and
- Iqaluit, 462 km (289 miles) to the southsouthwest. Flight time from LSS-Q is 2 hours, 40 minutes by helicopter under normal conditions.

13. Has the proponent notified and consulted the nearby communities and potentially interested parties about the proposed work?

Not applicable. The site is unmanned and is visited by Nasittuq employees based in LSS-Q, Iqaluit. For permanent and seasonal work, job openings are posted in a variety of ways including ads in northern newspapers and on Nasittuq's website.

14. Will the project have impacts on traditional water use areas used by the nearby communities? Will the project have impacts on local fish and wildlife habitats?

No.

PURPOSE OF THE CAMP

15.
- ☐ Mining (includes exploration drilling)
- ☐ Tourism (hunting, fishing, wildlife observation, adventure/expedition, etc.)
- [X] Other National Prime Mission (National Defence radar site) (therefore questions # 16 to 22 are not applicable.)

16. Activities (check all applicable)

Not applicable – not a mining camp.
- ☐ Preliminary site visit
- ☐ Prospecting
- ☐ Geological mapping
- ☐ Geophysical survey
- ☐ Diamond drilling
- ☐ Reverse circulation drilling
- ☐ Evaluation Drilling/Bulk Sampling (also complete separate questionnaire)
- ☐ Other: _____

17. Type of deposit (exploration focus):

Not applicable – not a mining camp.
- ☐ Lead Zinc
- ☐ Diamond
- ☐ Gold
- ☐ Uranium
- ☐ Other: _____

DRILLING INFORMATION

18. Drilling Activities

Not applicable – not a mining camp.

☐ Land Based drilling
☐ Drilling on ice

19. Describe what will be done with drill cuttings?

Not applicable – not a mining camp.

20. Describe what will be done with drill water?

Not applicable – not a mining camp.

21. List the brand names and constituents of the drill additives to be used? Includes MSDS sheets and provide confirmation that the additives are non-toxic and biodegradable.

Not applicable – not a mining camp.

22. Will any core testing be done on site? Describe.

Not applicable – not a mining camp.

SPILL CONTINGENCY PLANNING

23. The proponent is required to have a site specific Spill Contingency Plan prepared and submitted with the application. This Plan should be prepared in accordance with the *NWT Environmental Protection Act, Spill Contingency Planning and Reporting Regulations, July 22, 1998* and *A Guide to the Spill Contingency Planning and Reporting Regulations, June 2002*. Please include for review.

Nasittuq's Spill Contingency Plan is attached as **Annex D**.

24. How many spill kits will be on site and where will they be located?

Two (2) spill kits are on-site in the C&E Maintenance Shop:
- the POL (petroleum, oil, lubricants) Spill Kit; and
- the Chemical Spill Kit.

The locations are shown on **Annex B** DYE-M Site Plan Drawing (Serial H-C75/2-8400-104).

25. Please describe the types, quantities, and method of storage of fuel and chemicals on site, and provide MSDS sheets.

Jet A1 is the fuel used on-site. Jet A1 fuel tanks and locations are listed below.

Tank Size	LOC ID	Actual Capacity*	Location	Type of fuel
69,200L	DYEW22J	64,860L	Power Plant	PGS
69,200L	DYEW22K	64,860L	Power Plant	PGS
69,200L	DYEW22I	64,860L	Power Plant	PGS
946,300L	DYEW20A	800,316L	Summit	Aviation/PGS
69,200L	DYEW20B	64,860L	Helipad	Aviation
91,000L	DYEW20G	85,540L	Beach	Aviation/PGS
91,000L	DYEW20H	85,540L	Beach	Aviation/PGS
91,000L	DYEW20I	85,540L	Beach	Aviation/PGS
91,000L	DYEW20J	85,540L	Beach	Aviation/PGS
91,000L	DYEW20K	85,540L	Beach	Aviation/PGS
91,000L	DYEW20L	85,540L	Beach	Aviation/PGS
91,000L	DYEW20M	85,540L	Beach	Aviation/PGS
91,000L	DYEW20N	85,540L	Beach	Aviation/PGS
91,000L	DYEW20O	85,540L	Beach	Aviation/PGS
91,000L	DYEW20P	85,540L	Beach	Aviation/PGS
91,000L	DYEW20Q	85,540L	Beach	Aviation/PGS
SUMMIT TOTAL		1,059,756L		
BEACH TOTAL		940,940L		
TOTAL:		2,000,696L		

The total volume of usable fuel on site is 2,000,696L.

See **Annex E** for the Jet A1 MSDS.

Other items such as batteries, aerosols, and cleaning products are stored in the Building Train A and in the buildings where they are used. Drums of oil and glycol are stored in the C&E maintenance shop and a limited number of cylinders are stored in the HVS Building as shown on **Annex B** DYE-M Site Plan Drawing (Serial H-C75/2-8400-104).

WATER SUPPLY AND TREATMENT

26. Describe the location of water sources.

There are two water sources:
- the water lake (located at the end of the water lake road at the summit). See **Annex B** DYE-M Site Plan Drawing (Serial H-C75/2-8400-103); and
- the meltwater water source, located on the first level area below the summit where meltwater which runs through a culvert beneath the main road. This road is the first road to be cleared of snow in the spring. See **Annex B** DYE-M Site Plan Drawing (Serial H-C75/2-8400-102).

27. Estimated water use (in cubic metres/day):

[X] Domestic Use: up to 3 cubic metres/day during ramp up with site at full capacity Water Source: Water Lake and meltwater water source

☐ Drilling: _____ Water Source: _____

☐ Other: _____ Water Source: _____

28. Describe water intake for camp operations? Is the water intake equipped with a mesh screen to prevent entrapment of fish? (see *DFO 1995, Freshwater Intake End-of-Pipe Fish Screen Guideline*) Describe:

Water from a natural fresh water lake is pumped into a water truck, then transferred to the site's raw water tanks. There is a screen on the water intake. Alternatively, water from the meltwater water source is pumped into a water truck and transferred to the site's raw water tanks. The main road is the first road to be cleared of snow in the spring. There is a screen on the water intake.

Water use varies depending on the number of people on-site, i.e from 0 m^3/day (unmanned status) to a maximum of 3 m^3/day (height of seasonal activity, ramped up site at full capacity). The seasonal activity from May to September varies from year to year; one season may have no projects, while the next season's projects may have the site at full capacity.

Please note that water is not drawn daily from the water lake or meltwater source. The site has three 10 m^3 (10,000 liter) raw water tanks. When the water in the tanks reaches a low level, an alarm alerts Nasittuq staff to fill the tanks with water from the water lake or meltwater source.

In order to fill up the three water tanks in one day and in order to meet the peak seasonal demand of a ramped up site, potentially at full capacity, Nasittuq requests a licence that allows the drawing of 30 m^3/day (30,000 liters/day) up to four times in a month. This totals 120 m^3 (120,000 liters) in a 31-day month. This is less than half of the water usage currently allowed (310 m^3 in a 31-day month, drawn at 10 m^3/day) by the site's Licence NWB6DYE0409 – Type "B". Please note that the filling of the water tanks up to three times in a month is only a potential seasonal occurrence if the site is at full capacity. When the site is unmanned, and only quarterly preventive/corrective maintenance visits occur, the water usage is greatly reduced and the raw water tanks may be filled up to three times during the entire period between October and April.

Nasittuq requests a licence that requires the recording of the daily quantity of raw water drawn from the water lake. We wish to confirm that the monitoring point for the water intake, DYE-1, is the flow meter installed inside the building train in the fill line to the raw water tanks and is not at the intake at the water lake itself. The flow meter was installed at this location for ease of reading and maintenance. We trust this is acceptable.

29. Will drinking water quality be monitored? What parameters will be analyzed and at what frequency?

Yes, the drinking water quality is monitored on a quarterly basis and monthly basis when site is ramped up. Bacteriological water test is performed at two locations on site to be determined by site technicians. Both samples are taken from regular consumption and food preparation areas. The bacteriological tests check the water for *E. coli* and Total Coliforms. A Heterotrophic Plate Count (HPC) is also done. All must pass for the water to be consumed.

On an annual basis a chemical water sample analysis is performed by an outside testing facility. Two samples are taken: one from the water source (lake) and one from a point of consumption inside the building. The samples are shipped to a testing facility where they test for the physical and chemical water properties listed below.

Physical and Chemical Parameters:

Alkalinity	Hardness	Phenols
Ammonia	Hydrogen sulphide	Potassium
BOD5	Iron	Sodium
Calcium	Magnesium	Sulphate
Chloride	Manganese	Tannin and lignin
Colour	Nitrate	Total Dissolved Solids
Conductivity	Nitrite	Total Kjeldahl Nitrogen (TKN)
Chemical Oxygen Demand	PCBs	Turbidity
Fluoride	pH	

Bacteriological Parameters:

E. coli	Heterotrophic Plate Count (HPC)
Fecal streptococci	Total and Fecal coliforms

30. Will drinking water be treated? How?

The drinking water is treated by sediment filters, granular activated carbon filters and an ultraviolet (UV) filtration system.

31. Will water be stored on site?

Raw (untreated) water is stored in three 10,000 liter tanks next to the monitoring point, DYE-1 (the flow meter in the fill line to the raw water tanks). See **Annex B** DYE-M Site Plan Drawing (Serial H-C75/2-8400-104).

Treated drinking water is piped directly to water taps.

WASTE TREATMENT AND DISPOSAL

32. Describe the characteristics, quantities, treatment and disposal methods for:

[X] Camp Sewage (blackwater)

Sewage (blackwater) and greywater are combined in the sewage system. The sewage system comprises a sump, holding tank, and masticating pump within the building train, and a sewage outfall pipe leading to an outfall area on the land. This system has been in place since 1957. In 1995, the site changed from manned to unmanned status. Since then the site is visited by LSS-Q staff on scheduled quarterly preventive and corrective maintenance trips and on an as needed basis.

Little sewage is generated during these visits. During the months of May to September the site may be returned to manned status (ramped up) to support project activity. The amount of sewage depends on the number of people on-site.

Sewage is not discharged daily. When the sewage tank nears or reaches capacity, the sewage is discharged out the sewage outfall pipe to the designated outfall area. Up to 10 m^3 is discharged at one time from two to five times a year, depending on the number of people that have visited the site. When the site is ramped up, sewage may be discharged once a week.

The site has one incinerating toilet which reduces sewage to ash; the ash is disposed of in the approved landfill. The incinerating toilet's cycling time (interval between usage) does not make it practical to support anything but a short site visit by a few staff. It is primarily in place in case the site fails in the winter and freezes. Under these conditions, a small crew would be dispatched to the site to restore power and thaw the site. The incinerating toilet would be used until the sewage system was thawed and returned to a serviceable state. It cannot meet the demands of a ramped up site.

We request the sewage effluent sampling be done during the month when the site is ramped up when there is active discharge, or a minimum once annually during those years when there is no ramp-up. The sampling point is DYE-2, the end of the sewage outfall pipe, as shown in **Annex B** DYE-M Site Plan Drawing (Serial No. H-C75/2-8400-104).

Sewage effluent samples will be analyzed for:
a) Biochemical Oxygen Demand (BOD), total suspended solids (TSS), fecal coliforms, pH, phenols, and oil & grease;
b) total arsenic, total copper, total iron, total mercury, total zinc, sulphate, total cadmium, total chromium, total lead, and total nickel; and
c) nitrate-nitrite, sodium, magnesium, conductivity, ammonia nitrogen, potassium, and calcium.

[X] Camp Greywater

Grey water and sewage (blackwater) are both handled by the sewage system described above. Please see "Camp Sewage (blackwater)" above.

32. Continued.

[X] Solid Waste

Nonhazardous, combustible solid waste is typically paper, paper products, cardboard, rags, kitchen waste, etc. The quantity depends on the number of people on-site and the amount of this type of waste generated by project activity during a given year, but an estimate would be 32 m^3 for a year that included a ramped up site at capacity for two months. This type of solid waste will be incinerated by an incinerator. Ash from the incinerator will be disposed of in the approved landfill. Nasittuq will strive to achieve compliance with the

Canada-Wide Standards for Mercury Emissions and Canada-Wide Standards for Dioxins and Furans by separating out and not incinerating waste that may generate hazardous emissions such as treated wood, plastics, rubber, electrical wire, hazardous materials, and articles containing hazardous materials.

Nonhazardous, noncombustible solid waste will be disposed of in the approved landfill.

[X] Bulky Items/Scrap Metal

These items are stored on a pallet line and retrograded for disposal outside of Nunavut as required, typically every two to four years.

[X] Waste Oil/Hazardous Waste

These items are retrograded to a licensed disposal facility located outside of Nunavut every one or two years.

An average annual retrograde typically includes:
- 11 drums Waste oil
- 2 drums Waste glycol
- 5 drums Waste fuel
- 1 drum Waste paint
- 1 drum Waste oil filters
- 1 crate Waste batteries, wet, filled with acid
- 1 crate Waste batteries, nonspillable
- 1 cylinder Waste refrigerant gases.

[X] Empty Barrels/Fuel Drums

These items are re-used to contain the same liquids.

☐ Other:

33. **Please describe incineration system if used on site. What types of wastes will be incinerated?**

The incinerator will be a forced air incinerator which reduces the waste to ash. The operation and maintenance of the incinerator will meet the criteria in the draft note entitled Incineration by the Nunavut Department of Environment forwarded from Mr. Bernie MacIsaac, Manager Field Operations, INAC-NRO, Iqaluit NU to Mr. Jacques Plante, Nasittuq Corp., Ottawa ON. As stated above in Item 32 Solid Waste, only waste that will not generate hazardous emissions will be incinerated. Typically this will be waste such as paper, paper products, cardboard, rags, kitchen waste, etc.

34. **Where and how will non-combustible waste be disposed of? If in a municipality in Nunavut, has authorization been granted?**

Non-combustible, nonhazardous waste will be disposed of in the approved landfill on-site. Non-combustible, hazardous waste is retrograded to a licensed disposal facility outside of Nunavut every one or two years.

35. **Describe location (relative to water bodies and camp facilities) dimensions and volume, and freeboard for all sumps (if applicable).**

Not applicable.

36. Will leachate monitoring be done? What parameters will be sampled and analyzed, and at what frequency?

Not applicable.

OPERATION AND MAINTENANCE

37. Have the water supply and waste treatment and disposal methods been used and proven in cold climate? What known O&M problems may occur? What contingency plans are in place?

The water supply has been in use at the site by Nasittuq Corp. for many years and is proven in cold climates.

The sewage treatment and disposal methods have been used on-site by Nasittuq Corp. for many years and are proven in cold climates.

The incinerator will be a new method for the treatment of solid waste. However, Nasittuq will select an incinerator that will work in cold climates, such as the Smart Ash which is U.S. EPA approved for small batch incineration.

ABANDONMENT AND RESTORATION

38. Provide a detailed description of progressive and final abandonment and restoration activities at the site.

Not applicable. The Prime Mission is scheduled to at least 2030. No abandonment or restoration is planned at this time.

BASELINE DATA

39. Has or will any baseline information be collected as part of this project? Provide bibliography.

[X] Physical Environment (Landscape and Terrain, Air, Water, etc.)
[X] Biological Environment (Vegetation, Wildlife, Birds, Fish and Other Aquatic Organisms, etc.)
[X] Socio-Economic Environment (Archaeology, Land and Resources Use, Demographics, Social and Culture Patterns, etc.)
☐ Other: _____

Bibliography:

Initial Environmental Evaluation of the North Warning System Project Eleven Long Range Radar Sites and the Short Range Radar Development Site, Volume One. Monenco-Eyretechnics Group, October 1987.

REGULATORY INFORMATION

40. At a minimum, you should ensure you have a copy of and consult the documents below for compliance with existing regulatory requirements:

- ✓ ARTICLE 13 – *NCLA -Nunavut Land Claims Agreement*
- ✓ NWNSRTA – *The Nunavut Waters and Nunavut Surface Rights Tribunal Act, 2002*
- ✓ *Northwest Territories Waters Regulations, 1993*
- ✓ NWB - Water Licensing in Nunavut - Interim Procedures and Information Guide for Applicants
- ✓ NWB - Interim Rules of Practice and Procedure for Public Hearings
- ✓ RWED – *Environmental Protection Act, R-068-93- Spill Contingency Planning and Reporting Regulations, 1993*
- ✓ RWED A Guide to the Spill Contingency Planning and Reporting Regulations, 2002
- ✓ NWTWB - Guidelines for Contingency Planning
- ✓ *Canadian Environmental Protection Act, 1999 (CEPA)*
- ✓ *Fisheries Act, RS 1985* - s.34, 35, 36 and 37
- ✓ DFO - Freshwater Intake End of Pipe Fish Screen Guideline
- ✓ NWTWB - Guidelines for the Discharge of Treated Municipal Wastewater in the NWT
- ✓ Canadian Council for Ministers of the Environment (CCME); Canadian Drinking Water Quality Guidelines, 1987
- ✓ Public Health Act - Camp Sanitation Regulations
- ✓ Public Health Act - Water Supply Regulations
- ✓ *Territorial Lands Act* and *Territorial Land Use Regulations*; Updated 2000