



May 19, 2011

Our reference
IQALUIT-#463065

Sent by email: licensing@nunavutwaterboard.org

Phyllis Beaulieu
Manager of Licensing
Nunavut Water Board
Gjoa Haven, Nunavut
X0E 1J0

Your reference
1BR-FOX0713

**Re: Type 'B' Water Licence No. 1BR-FOX0713 – Cape Hooper (FOX-4)
Distant Early Warning (DEW) Line Site – Defence Construction
Canada – Qikiqtani Region – Application for Amendment and Term
Extension**

Dear Phyllis,

Thank you for your April 14, 2011 request for written representations on the above referenced water licence application.

A Technical Review Memorandum is provided for the Board's consideration.

Please do not hesitate to contact me by telephone at 867 975-4555 or email at David.Abernethy@inac-ainc.gc.ca to discuss this submission.

Regards,

David W. Abernethy
Water Resources Regional Coordinator
Operations Directorate
Nunavut Regional Office
Iqaluit, Nunavut
X0A 0H0

Encl.

c.c.: J. Rogers, Water Resources Manager
P. Kusugak, Field Operations Manager

Technical Review Memo

TO	Phyllis Beaulieu Manager of Licensing Nunavut Water Board	OUR REFERENCE File #9545-2-3.1BR.FOXA IQALUIT-#463065
FROM	David Abernethy Water Resources Regional Coordinator Indian and Northern Affairs Canada	YOUR REFERENCE 1BR-FOX0713 DATE May 19, 2011
SUBJECT	Type 'B' Water Licence No. 1BR-FOX0713 – Cape Hooper (FOX-4) Distant Early Warning (DEW) Line Site – Defence Construction Canada – Qikiqtani Region – Application for Amendment and Term Extension	

A. PROJECT DESCRIPTION

On April 19, 2011 the Nunavut Water Board (the Board) distributed a public notice of Defence Construction Canada's (DCC) application to amend and extend the term of their Cape Hooper (FOX-4) DEW Line Site's Type B water licence, No. 1BR-FOX0713. Defence Construction Canada manages this site on behalf of the Department of National Defence (DND). The project's Type B water licence allows for the use of water and disposal of wastes associated with post-closure monitoring activities from the clean-up and decommissioning of the DEW line site.

The Cape Hooper (FOX-4) DEW Line Site is located along the east coast of Baffin Island. The closest communities are Qikiqtarjuaq and Clyde River, situated approximately 150 km north and south of the project area, respectively. The North Warning System Office (NWSO) operates a Short Range Radar (SRR) at the Upper Site area and an airstrip remains in place at the Lower Site Area. Reclamation works were completed at this site between 1996 and 1999 as part of the DND's DEW Line Cleanup Project. These works included, "the demolition of site infrastructure not required for the operation of the NWSO SRR site; excavation of one landfill (East Upper Site Landfill); closing and remediation of six existing landfills (Airstrip Landfill, Barrel Landfill, Helipad Landfills East and West, Tanner Bay Landfill, and West Upper Site Landfill); construction of two new Non-hazardous Waste Landfills (Station Area Landfill and Lower Site Landfill); construction of the Tier II Disposal Facility; and collection of site debris."ⁱ

FOX-4 was the first DND DEW Line Site to be reclaimed in Nunavut. As a result of monitoring observations, particularly the 2010 Maintenance

Assessment, DCC needs to carry-out additional reclamation activities to address outstanding environmental and geotechnical concerns. The main activities associated with this additional reclamation work comprise of landfill remediation, hazardous waste removal, non-hazardous waste disposal, and contaminated soil remediation. The planned reclamation activities are anticipated to be completed over three years from mobilization in the fall of 2011 to closing the Tier II Disposal Facility and Waste Landfill and demobilization in 2013.

As outlined in the submitted February 2011 Project Specific Information Requirements document, four of the project's ten (10) landfills will be excavated and the remaining landfills will be maintained (e.g., re-grading and localized maintenance work). A Non-hazardous Waste Landfill will be constructed directly above an existing Non-hazardous Waste Landfill and a Tier II Disposal Facility will be constructed adjacent to the existing Tier II Disposal Facility. Indian and Northern Affairs Canada recognizes that DCC is carrying out their project activities in accordance with the 1998 DND – Nunavut Tunngavik Inc. (NTI) Cooperation Agreement for the Clean-up and Restoration of DEW Sites within the Nunavut Settlement Area.

Project will include a sixty (60) person camp and use eighteen (18) cubic meters of water per day from Water Supply Lake for domestic purposes. Camp sewage and grey water will be treated on-site, maybe using a two-celled facultative lagoon. Domestic solid wastes will be either incinerated or disposed on site in the new Non-hazardous Waste Landfill. Hazardous waste materials should be disposed off-site at an approved facility. The project's fuel requirements are anticipated to be 300,000 litres of diesel fuel and 10,000 litres of gasoline with storage in double-walled 18,000 litre capacity tanks.

Project activities will be carried out by a contractor that was not selected by DCC at the time of their licence amendment application. As a result, the details have not been finalized.

B. RESULTS OF REVIEW

On behalf of the Indian and Northern Affairs Canada (INAC) Water Resources Division I am providing the following comments/ recommendations for the Board's consideration,

1. General

- i Details for the project activities in the licence amendment application have not been finalized. As a result, DCC should be required to provide additional information to the Board as these details are finalized and before their implementation. This includes design plans for all waste disposal facilities, quarry and borrow material areas, the material processing area, fuel storage area(s), and the camp facility.

2. Extension to the Licence' Term

- i DCC has requested that the expiry date of their water licence be extended from December 31, 2013 to December 31, 2023. The INAC Water Resources Division agrees with the proposed licence length.

3. Water Use

- i DCC are requesting an increase to their daily water use limit, for domestic purposes, from 2 m³ per day to 18 m³. As stated above, this water would continue to be acquired from Water Supply Lake. The INAC Water Resources Division recommends that DCC explain how they deliver this water to their camp (e.g., by water truck or water line) and if there are any other project activities that require the use of water which have not been identified in the submitted application (e.g., material processing area?). Any fuel powered generators used for the operation of pumps should be equipped with secondary containment.

4. Treatment of Hydrocarbon Contaminated Soils

- i Section 2.5.2.3 of the submitted February 2011 Project Specific Information Requirements document recommends that a landfarm be constructed within a borrow area (Borrow Area 8) located immediately south of the airstrip for the treatment of recovered hydrocarbon contaminated soil/ gravel. This landfarm would be designed to treat 8,100 m³ of soil from the Upper Site's Station Area. However, due to "physical constraints in the area," DCC is recommending that the hydrocarbon contaminated soil/ gravel identified near the Upper Site's former Atwell and Garage Pads be treated through in-situ remediation methods. DCC claims that, "because there are very few receptors in the vicinity of the plumes identified at these locations, and their surrounding topography is relatively flat, allowing for the construction of surface water control, these areas are considered suitable for in-situ hydrocarbon remediation.

The INAC Water Resources Division believes that, before any hydrocarbon contaminated soils/ gravel reclamation methods are initiated, DCC should provide the findings of their detailed investigation and a

detailed plan for the treatment of hydrocarbon contaminated soil/ gravel to the Board.

5. Wastewater Management

- i Section 4.3.4 of the February 2011 Project Specific Information Requirements document addresses the management and monitoring of wastewater associated with planned reclamation activities, including water passing through or running from the landfills, other contaminated soil excavations, new landfill operations, and contaminated soil treatment areas. The applicant should explain, possibly through a monitoring plan, how the wastewater will be determined to meet discharge criteria, and how the remaining water will be contained and treated. Details associated with all facilities where wastewater effluent, including the domestic wastewater treatment facility, fuel storage area, and material processing area, should be included in this plan.
- ii DCC should provide at least ten (10) days written notice to an INAC Water Resource Officer and the Board prior to any planned discharges from wastewater/ contact water collection areas.
- iii Once the method of treating domestic wastewater (i.e., sewage and greywater) is confirmed, an operations and maintenance manual should be provided to the Board. The submitted licence amendment application indicates that a two-celled facultative lagoon is the preferred option.

6. Abandonment and Reclamation Plan

- i The INAC Water Resources Division recommends that DCC provide a care and maintenance and a final Abandonment and Reclamation Plan that addresses seasonal, interim, and final closure activities associated with the former FOX-4 DEW Line Site. This plan should address removal camp infrastructure (including water supply infrastructure and the domestic wastewater treatment facility), clean up of fuel storage, waste disposal and hazardous waste material storage areas and re-grading of quarry and borrow materials sources, the airstrip, and roads. The plan should also reference long term custodial care and monitoring.

7. Revised Project Monitoring Plan

- i Included in DCC's January 2005 Water Licence amendment application was a Landfill Monitoring Program. The INAC Water Resources Division recommends that this program be revised to address the reclamation activities that are now being planned for the project area. As a minimum, this plan would address the monitoring requirements associated with all

remaining landfills and hydrocarbon contaminated soil/ gravel treatment areas.

8. Spill Contingency Planning

- i The project's Spill Contingency Plan should be revised to address the following details,
 - The coordinates of the camp, fuel storage location(s), and domestic water source;
 - A topographic map, set to an appropriate scale, that identifies the camp, fuel storage location(s), domestic water source, and any other applicable features (e.g., airstrip, spill response equipment, roads, and project infrastructure);
 - Secondary containment provisions for all fuel storage locations; and,
 - Applicable Material Safety Data Sheets;
- ii As a precautionary measure, DCC should provide secondary containment in all locations where fuel, chemicals, and hazardous materials (e.g., lubricants and waste oils) are stored. Secondary containment is to be provided where fuel storage exceeds 4,000 L.

9. 2010 Annual Report

- i Based on my review of the Board's online public registry, DCC has not yet submitted a copy of their 2010 Annual Report. This report should be submitted to the Board as soon as possible considering that it was due on March 31, 2011.

Prepared by David Abernethy

c.c.: J. Rogers, Water Resources Manager
P. Kusugak, Field Operations Manager

ⁱ Defence Construction Canada. *FOX 4 Cape Hooper Project Specific Information Requirements*. Prepared by AECOM Canada Ltd., Project Number 60153669-8. Calgary: February 2011, p. 1.