



March 4, 2011

Our reference
File IQALUIT-#450530

Sent by email: IPorter@nunavutwaterboard.org

Your reference
3BC-EUR0611

Ida Porter
Licensing Administrator
Nunavut Water Board
Gjoa Haven, Nunavut
X0E 1J0

**Re: Nunavut Water Board Licence #3BC-EUR0611 – Eureka Weather
Station – Environment Canada – Qikiqtani Region – Renewal
Application**

Dear Ida,

Thank you for your January 19, 2011 request for written representations on the
above referenced submission.

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 Memorandum

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| TO | Ida Porter Licensing Administrator Nunavut Water Board | OUR REFERENCE File #9545-2-3.3BC-EURA CIDM #450530 |
| FROM | David Abernethy Water Resources Regional Coordinator Indian and Northern Affairs Canada | YOUR REFERENCE 3BC-EUR0611 DATE Mar. 4, 2011 |
| SUBJECT | Nunavut Water Board Licence #3BC-EUR0611 – Eureka Weather Station – Environment Canada – Qikiqtani Region – Renewal Application | |

A. PROJECT DESCRIPTION

On Jan. 19, 2011 the Nunavut Water Board (NWB or Board) distributed notification of Environment Canada's Oct. 10, 2010 application to renew their Type B Water Licence, 3BC-EUR0611. This licence allows the use of water for domestic purposes, disposal of waste, and the handling and storage of petroleum products or hazardous materials. Interested parties were requested to review this submission and provide written representations by Mar. 4, 2011.

The Eureka Weather Station is situated on the north side of Slidre Fiord on the north-western point of Ellesmere Island's Fosheim Peninsula. Environment Canada holds a federal land reserve for this site. This station has been operated by Environment Canada since Apr. 1, 1947. Its infrastructure includes accommodation and office facilities, an airstrip, a water reservoir, a sewage lagoon, a petroleum hydrocarbon contaminated soil treatment facility (i.e., land farm), roads, and solid waste disposal sites. As discussed in the submitted Interim Abandonment and Restoration Plan and recent Water Resource Officer inspection reports, several components of the project area require reclamation.

Indian and Northern Affairs Canada notes that project infrastructure, including the East Landfill, airstrip, and water reservoir appear to be associated/ jointly operated with the Department of National Defence. The Department of National Defence has been issued Water Licence 3BC-ERK1015 for the operation of Canadian Forces Station Eureka, which has separate accommodation and office facilities, a petroleum hydrocarbon contaminated soil treatment facility, and two-celled sewage treatment lagoon.

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. Term of Licence

- The INAC Water Resources Division recommends that the Eureka Weather Station's licence be renewed for five (5) years. This licence term will allow Environment Canada to continue operating their project in accordance with licence conditions. There should be sufficient time for Environment Canada to improve the performance of their domestic wastewater treatment capacity, and address any outstanding closure and reclamation requirements associated with the project area before a subsequent renewal is required.

2. Water Use

- Environment Canada is not proposing any changes to the existing licence terms and conditions for water use. Domestic water will continue to be acquired from Station Creek where it will be pumped to a water reservoir to a maximum of 10,000 cubic metres annually.

3. Sewage Treatment

- Domestic wastewater generated on site (sewage and greywater) is directed to a single cell treatment lagoon that is subsequently decanted in the summer months to Slidre Fiord. This lagoon is situated within thirty (30) metres of the marine environment and based on the effluent quality monitoring results included in the 2008 and 2009 Annual Reports, this facility is having difficulty meeting licensed effluent quality discharge limits for Biochemical Oxygen Demand, Total Suspended Solids, and pH. According to their Interim Abandonment and Reclamation Plan and Sludge Disposal Plan, Environment Canada plans to decommission this facility and replace it with one that has a better treatment capacity. The INAC Water Resources Division recommends that Environment Canada keep the NWB and INAC Water Resource Officers aware of any developments concerning this facility's replacement and closure/ reclamation.

4. Solid Waste Management

- Several landfills are referenced in the February 2010 Operations and Maintenance Manual. According to this plan, the “East Landfill” is the project’s main landfill. Non-organic and non-hazardous wastes that cannot be incinerated are directed to this facility. Other landfills referenced in this plan include the “Ash Landfill,” “Asbestos Landfill,” the former “West Landfill,” and the “Crushed Barrel Landfill.” The INAC Water Resources Division recommends that Environment Canada clearly articulate which landfill areas will remain in use and which landfills will be reclaimed as part of their present abandonment and restoration plans. Also, any waste disposal areas/ landfills jointly operated with the Department of National Defence or other organizations should be identified.

5. Operations and Maintenance (O&M)

- The comments included in the NWB’s Sept. 13, 2010 letter (attached) to Environment Canada regarding the project’s O&M Plan appear to have not yet been implemented in a revised plan. The INAC Water Resources Division recommends that they be addressed in a timely manner.
- The submitted O&M Plan should be revised to include a topographic map or schematic, set to an appropriate scale that, as a minimum, identifies all project facilities, surface flow paths/ drainage areas, and licensed monitoring program stations.
- The submitted O&M Plan does not reference the petroleum hydrocarbon contaminated soil treatment facility situated adjacent to the main complex area as referenced in document “101021 3BC-EUR0611 APP B MAPS AND UNDERTAKING-IAAEPDF.” The operations and maintenance procedures for this facility, including plans for the disposal of treated hydrocarbon contaminated soils and effluent management should be included in a revised plan.
- Environment Canada should demonstrate to the Board that the waste management facilities/ landfill sites currently in use are properly engineered. This information should be reflected in revisions to the submitted O&M Plan and the submission of as-built design drawings.
- The NWB’s public registry does not include a geotechnical engineer’s inspection report of all facilities intended to contain water, fuel, or waste and a corresponding cover letter from Environment Canada that outlines an implementation plan to respond to the engineer’s recommendations as required by Part G, Item #5 of the licence. This condition is outstanding and should be addressed by Environment Canada.

- The November 2010 Sludge Disposal Plan should be incorporated into the project's O&M Plan. Environment Canada's strategy for handling this sludge has not been finalized but a two-cell drying bed is being considered along with the disposal of dried sludge either in place or at an existing site landfill. The INAC Water Resources Division recommends that prior to removing any sludge Environment Canada submit a revised plan to the Board specifying mitigation measures that will be implemented to prevent any negative impacts to surrounding water sources that can result from the drying or disposal of this material.
- According to the Sludge Disposal Plan, sludge sampled and analyzed from the existing sewage lagoon in the summer of 2006 had concentrations of certain parameters exceeded the Canadian Council of Ministers of the Environment *Canada Sediment Guidelines for the Protection of Aquatic Life*. This plan also states that Environment Canada and the Department of National Defence are investigating the reasons for these exceedances. A summary of analysis findings should be included in the next revision to this plan.

6. Spill Contingency Planning

- The Apr. 1, 2011 Emergency Plan for Petroleum and Allied Petroleum Products appears to satisfy Environment Canada's Part H, Item 1 licence requirements.

7. Abandonment and Restoration (A&R)

- The submitted Interim A&R Plan provides a general description of the reclamation requirements associated with the Eureka Weather Station project area. Standard Operating Procedures for a temporary shutdown of project operations are provided and a schedule of implementing necessary reclamation activities is provided. As discussed above, the INAC Water Resources Division notes that there are infrastructure and waste material on site associated with the Department of National Defence. Plans for the reclamation of these areas are not clearly addressed in this plan. Any agreements in place with the Department of National Defence or other parties for reclamation initiatives should be communicated to the Board along with their respective implementation schedules.
- The INAC Water Resources Division recommends that all empty barrels in the Eureka Weather Station project area (including those of Environment Canada, the Department of National Defence, and any other organization that stockpiles barreled fuel in this area) be delivered to an approved

(southern) disposal facility. The current practice of burying crushed barrels should not be continued.

8. Monitoring Program

- The licence does not include monitoring procedures for the project's petroleum hydrocarbon contaminated soil treatment facility (land farm). The INAC Water Resources Division recommends that the renewed licence include effluent quality discharge limits for effluent released from this facility along with the corresponding monitoring program station. These conditions should be consistent with similar undertakings permitted by the NWB and be included in a revised O&M Plan.

Prepared by David Abernethy

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