



March 11, 2016

Our file – Notre référence
IQALUIT-# 1034995

Licensing Department
Nunavut Water Board
P.O. Box 119
GJOA HAVEN, NU, X0B 1J0

Re: Technical Review of New Water Application – Coral Harbour Airport Community Road Washout Rehabilitation Project – Department of Community and Government Services (8BW-RWR----

To Whom It May Concern,

Thank you for the Nunavut Water Board's February 12, 2016 notice of the above mentioned water licence application. A memorandum is provided for the Nunavut Water Board's consideration. Comments and recommendations have been provided pursuant to Indigenous and Northern Affairs Canada's mandated responsibilities under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Department of Indian Affairs and Northern Development Act*.

Please do not hesitate to contact me by telephone at 867-975-3877 or email at Amanda.Winegardner@aandc-aadnc.gc.ca for further information.

Sincerely,

Amanda Winegardner
Water Management Specialist
Water Resources Division
Resource Management Directorate
Indigenous and Northern Affairs Canada
IQALUIT, NU, X0A 0H0

Encl.

Cc. Scott Burgess, Manager, Water Resources – INAC, Nunavut Regional Office (NRO)
David Abernethy, Regional Coordinator – INAC, NRO
Erik Allain, Manager, Field Operations – INAC, NRO

Memorandum

To: Licensing Department, Nunavut Water Board

From: Amanda Winegardner, Water Management Specialist, Water Resources Division, INAC

Date: March 11, 2016

Re: Technical Review of New Type B Water Licence 8BW-RWR

Applicant: Government of Nunavut's Department of Community and Government Services (designate: Tetra Tech EBA Inc.)

Project: Coral Harbour Airport Community Road Washout Rehabilitation Project

Region: Kivalliq

Comments:

A. Background

On February 12, 2016, the Nunavut Water Board (NWB) invited interested parties to review the Government of Nunavut's Department of Community and Government Services' (GN-CGS; the proponent) application for a new Type B water licence for the Coral Harbour Airport Community Road Washout Rehabilitation Project. The proponent has retained Tetra Tech EBA Inc. to design this project and lead required construction activities. The Airport Community Road is the community's only connection to the Coral Harbour Airport; which the community relies on for transportation, medevac operations and food deliveries. Since 2004, the road has experienced washouts four times, including a washout in 2012 that left the community unable to access the airport for a period of one week. The community's access to their fuel storage facility tank farm has also been restricted during these washouts. The Airport Community Road crosses the Post River at several points between the community and the airport, where snowmelt during spring freshet, possibility exacerbated by precipitation creates ideal washout conditions (particularly northwest of the community's fuel storage facility).

Tetra Tech EBA Inc. has used hydrometric data from five hydrometric stations across the territory, specifically hydrographs from the nearby Kirchoffer River (also located on Southampton Island) as well as flow data from four other hydrometric stations (located in the Kivalliq, and on Baffin Island) to estimate peak flow and the hydrograph shape for the Post River. Using these estimates, Tetra Tech EBA Inc. has designed a washout rehabilitation and construction plan that would prepare the Airport Community Road to withstand a 100-year storm event.

The proponent is proposing work on seven of the crossings of the Airport Community Road and the Post River, including the removal and relocation of several culverts, the construction of a new bridge consisting of earth-filled abutments and rip-rap protection, the relocation of an

existing bridge and construction of new bin-wall bridge abutments, and the construction of temporary access roads around crossings so as not to interrupt traffic between the airport and community during the upgrade work. The objectives of this work is multi-faceted; to attempt to decrease flow through the East Basin in order to prevent inundation around the community's fuel storage facility as well as to rehabilitate and fortify bridge crossings over the Post River to prevent future wash-out of these crossings.

The proponent is applying for a Type B water licence to cross a watercourse, modify the banks of a watercourse and perform flood control work. No water withdrawal or waste deposition to water is outlined in this licence application. The applicant has indicated that final construction drawings stamped by an engineer licensed to practice in Nunavut are forthcoming.

A two year licence term has been requested, with the licence being issued in March 2016 and expiring in March 2018. Construction activities are planned to occur in 2016 and post-construction monitoring activities will be carried out in 2017.

B. Results of review

On behalf of Indigenous and Northern Affairs Canada (INAC)'s Water Resources Division, the following comments and recommendations are provided for consideration:

1. Water use for dust suppression

Source:

- 1) 160204 8BW-RWR---- Supplementary Information Report Coral Harbour, Table 5-1: 'Summary of Potential Environmental Effects and Mitigation Measures'

Comment: The licence application indicated that there will be no use of water for the proposed project and as such, no quantities or source for water withdrawal are specified in the application. However, the applicant notes that water may be used for dust suppression in relation to the proposed construction and roadwork, where "water will be applied as needed to minimize dust" (p. 25, Source 1).

Recommendation 1: The applicant should clarify the water use requirements for any construction activities (e.g. dust suppression, potential blasting for aggregate material), and water sources if needed.

Recommendation 2: Daily water use limits should be included in any issued Type B licence.

2. Duration of licence

Sources:

- 1) 151210 8BW-RWR ---- Application New Water Licence, Block 25: 'Proposed Term of Licence'
- 2) 160204 8BW-RWR ---- CEMP Coral Harbour, Section 3.2: 'Environmental Monitor Responsibilities'

Comment: The proponent has proposed a two year term for the Type B licence, ending in March 2018. This licence term is presumed to cover the proposed construction period (August – September 2016) as well as water quality sampling proposed during spring freshet in the year following project completion, resulting in a project schedule that includes:

- August/September 2016: Proposed construction work
- ~June 2017 (spring freshet): Post-project water quality sampling
- March 2018: End of Type B licence term

Considering the short duration of the construction window (~ 6 weeks), it is unclear whether the post project freshet sampling would still occur in the year following construction if the planned activities need to be completed during the second summer of the licence term.

Recommendation 3: Any issued licence should have a term expiry that extends to spring freshet of 2018; in order to ensure that post work freshet sampling can occur in the year following the completed works if any of the proposed work needs to be finished during the construction season of 2017, meaning that sampling could occur on the following schedule if needed:

- August/September 2016: Proposed construction work
- ~June 2017 (spring freshet): Post-project water quality sampling unless work has not been completed.
- ~June 2018 (spring freshet): Post-project water quality sampling (only if work had to be completed during the 2017 construction season).
- September 2018: End of Type B licence term

3. Environmental monitor/ water quality monitoring plan

Sources:

- 1) 160204 8BW-RWR ---- CEMP Coral Harbour, Section 3.2: 'Environmental Monitor Responsibilities'
- 2) 160204 8BW-RWR ---- Supplementary Information Report Coral Harbour, Section 4.5: 'Water Quality'
- 3) 160204 8BW-RWR ---- Supplementary Information Report Coral Harbour, Section 4.6: 'Aquatic Resources'

4) 151210 8BW-RWR ---- Application New Water Licence, Block 23: ‘Studies Undertaken to Date’

Comment: The proponent has indicated that full time monitoring during the project may not be necessary because “much of the work will be conducted away from flowing water and because existing information indicates that fish presence or migrations in the Post River are unlikely” (p. 3, Source 1). However, the construction work outlined may increase sediment release and terrestrial material deposition during the upgrades, with the potential to adversely affect aquatic biodiversity (i.e. benthic invertebrates, macrophytes, any fish that are found to inhabit the Post River system (even without an identified fishery)) and water clarity. While the upgrades proposed, if successful, are likely to improve water turbidity and fish passage, the lack of baseline data for this system means that robust and efficient monitoring is important to document any work impacts as well as to better understand the extent to which the work may contribute to improved water quality outcomes (information that may be beneficial to the Hamlet of Coral Harbour in the future).

The proponent has outlined a tentative monitoring plan in the Construction Environmental Monitoring Plan (CEMP) that would include environmental monitoring during: works conducted directly within the wetted channel of the Post River, installation of erosion and sediment control measures, start of each project phase, and first freshet following (see Recommendation 3) the project (p. 3, Source 1).

Recommendation 4: It is recommended that the applicant have an environmental monitor on site for the majority of the construction work.

Recommendation 5: It is recommended that the proponent submit a final water quality monitoring plan to the Nunavut Water Board within 30 days of the issuance of a Type B licence. This plan should include the finalized schedule of monitoring activities as well as the parameters to be measured in terms of water quality.

Recommendation 6: The water quality monitoring plan aforementioned in Recommendation 5 should include water quality sampling prior to commencement of construction in order to attempt to establish baseline conditions, once weekly during construction and immediately after construction. This sampling should include collection of samples upstream and downstream of all crossings to be modified. The proponent could also consider sampling during the spring freshet prior to construction in order to allow for comparability with post-construction freshet sampling planned for the year following the road work.

Recommendation 7: The water quality monitoring plan aforementioned in Recommendation 5 should include measurement of either Total Suspended Solids (TSS) or Turbidity. While TSS is often preferred to Turbidity because TSS measurements encompass changes to both water clarity and potential secondary effects of sediment release, the measurement of Turbidity in-field will allow the environmental monitor access to immediate feedback regarding project impacts during construction. Monitoring

results must be provided to the Nunavut Water Board for review in Annual Report submissions.

4. Spill Contingency Plan

Source:

- 1) 160204 8BW-RWR ---- CEMP Coral Harbour, Section 7.3: 'Spill Contingency Plan'

Comment: The proponent has included a Spill Contingency Plan within the CEMP.

Recommendation 8: The proponent should ensure that the Spill Contingency Plan be available as a standalone document to allow for quick and easy access in the event of a spill.

5. Potential for contamination from construction fill material

Source:

- 1) 151210 8BW-RWR---- TT EBA Design Option Report Final, Section 2.1.3.1: 'Aggregate Source Investigation'

Comment: The proponent has investigated various sources of sand, gravel and rip-rap for the proposed construction work and had laboratory analyses completed on aggregate samples from a few sources to determine the materials' potential for use as construction material. Sieve analyses and moisture density relationship testing are mentioned, but no mention is made of the fill material's potential to generate acid rock drainage or leaching of metals above guidelines for the protection of aquatic life.

Recommendation 9: The proponent should ensure that all aggregate material used in construction is free of contaminants and not possessing the potential to generate acid or metal leaching.