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ECCC File: 6500 000 004/005
NWB File: 8AC-ALT----



September 27, 2019

via email at: licensing@nwb-oen.ca

Richard Dwyer
Manager of Licensing
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU X0B 1J0

Dear Richard Dwyer:

**RE: 8AC-ALT---- – Department of National Defense – Canadian Forces Station Alert
Project – Renewal Application for Type A Water License – ECCC Written Public Hearing
Submission**

Environment and Climate Change Canada (ECCC) has reviewed the information submitted to the Nunavut Water Board (NWB) regarding the above-mentioned submission for the Written Public Hearing. This letter and attached submission provides ECCC's specialist advice based on our mandate, in the context of the *Canadian Environmental Protection Act* and the pollution prevention provisions of the *Fisheries Act*.

Please contact Eva Walker at (867) 669-4744 or Eva.Walker@Canada.ca should you require more information.

Sincerely,

Andrea McLandress
Regional Director

Attachment: ECCC Written Public Hearing Comments

cc: ECCC Review Team
Margaret Fairbairn, Manager Environmental Operations and Protection Directorate, Prairie and Northern Division





Environment and
Climate Change Canada

Environnement et
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ENVIRONMENT AND CLIMATE CHANGE CANADA'S WRITTEN PUBLIC HEARING COMMENTS TO THE NUNAVUT WATER BOARD RESPECTING

THE TYPE A WATER LICENCE PERMIT APPLICATION FOR THE CANADIAN FORCES STATION ALERT PROJECT PROPOSED BY DEPARTMENT OF NATIONAL DEFENCE

September 27, 2019



Canada 

**Department of National Defence Canadian Forces Station Alert Project
Environment and Climate Change Canada
Written Public Hearing Submission to the Nunavut Water Board**

Executive Summary

The Department of National Defence (DND) has applied for a Type A Water Licence (WL) for the Canadian Forces Station Alert Project (The Project) located on the eastern tip of Ellesmere Island, Nunavut. The Alert Station has previously held a Type B Water Licence but increased water use has resulted in the need for a Type A Water Licence.

In Nunavut, Environment and Climate Change Canada (ECCC) provides specialist expert information or knowledge to the Nunavut Water Board (NWB or the Board) as required under Article 13 of the Nunavut Agreement.

ECCC has participated in all phases of the WL application review process for the Project thus far, including submitting Information Requests on August 26, 2016, Technical Review comments on July 20, 2018, attending the NWB Technical Meeting on October 12, 2018 and providing a Final Submission on July 18, 2019. On August 7, 2019, ECCC and Crown Indigenous Relations and Northern Affairs Canada (CIRNAC) also met with DND via teleconference. The informal meeting was intended to allow ECCC and CIRNAC to understand the status of the wastewater treatment system at Station Alert, the proposed plans for the wastewater system upgrades, and to clarify comments and considerations made by ECCC and CIRNAC for the Type A WL renewal. By this submission for the Written Public Hearing, ECCC continues its participation in this Type A WL review.

This Written Public Hearing Submission provides ECCC's expert advice based on our mandate in the context of the *Canadian Environmental Protection Act*, and the pollution prevention provisions of the *Fisheries Act* and identifies outstanding issues and recommendations for consideration by the NWB.

Our comments and recommendations relate to sewage treatment upgrades, monitoring of the effluent, and the rehabilitation of the terrace wetland wastewater treatment system.

List of Abbreviations

CEPA	Canadian Environmental Protection Act
CFS	Canadian Forces Station
CIRNAC	Crown Indigenous Relations and Northern Affairs Canada
DND	Department of National Defence
ECCC	Environment and Climate Change Canada
MBCA	Migratory Birds Convention Act
NWB	Nunavut Water Board
SARA	Species at Risk Act
TSS	Total Suspended Solids
WL	Water Licence

Table of Contents

Executive Summary	3
List of Abbreviations	4
1.0 Introduction	6
2.0 Environment and Climate Change Canada’s Mandate, Roles and Responsibilities	7
3.0 Environment and Climate Change Canada’s Technical Review Comments	8
3.1 ECCC 1 - SEWAGE TREATMENT UPGRADES.....	8
3.2 ECCC 2 - MONITORING.....	10
3.3 ECCC 3 – REHABILITATION OF THE TERRACED WETLAND WASTEWATER TREATMENT SYSTEM.....	11
4.0 Summary of Recommendations	12
4.1 ECCC 1: SEWAGE TREATMENT UPGRADES.....	12
4.2 ECCC 2: MONITORING	12
4.3 ECCC 3: REHABILITATION OF THE TERRACED WETLAND WASTEWATER TREATMENT SYSTEM	12
5.0 Acknowledgements	13

1.0 Introduction

The Department of National Defence (DND) has applied for a Type A Water Licence (WL) for the Canadian Forces Station Alert Project (The Project) located on the eastern tip of Ellesmere Island, Nunavut. The Alert Station has previously held a Type B Water Licence, but increased water use has resulted in the need for a Type A Water Licence.

In Nunavut, Environment and Climate Change Canada (ECCC) provides specialist expert information or knowledge to the Nunavut Water Board (NWB) as required under Article 13 of the Nunavut Agreement.

ECCC has participated in all phases of the WL application review process for the Project thus far, including submitting Information Requests on August 26, 2016, Technical Review comments on July 20, 2018, attending the NWB Technical Meeting on October 12, 2018 and providing a Final Submission on July 18, 2019. On August 7, 2019, ECCC and Crown Indigenous Relations and Northern Affairs Canada (CIRNAC) also met with DND via teleconference. The informal meeting was intended to allow ECCC and CIRNAC to understand the status of the wastewater treatment system at Station Alert, the proposed plans for the wastewater system upgrades, and to clarify comments and considerations made by ECCC and CIRNAC for the Type A WL renewal. By this submission for the Written Public Hearing, ECCC continues its participation in this Type A WL review..

This Written Public Hearing Submission provides ECCC's expert advice based on our mandate in the context of the *Canadian Environmental Protection Act*, and the pollution prevention provisions of the *Fisheries Act* and identifies outstanding issues and recommendations for consideration by the NWB.

A summary of ECCC's mandate and legislation is provided in Section 2.0. ECCC's technical review comments and recommendations are provided in Section 3.0. A summary of ECCC's recommendations are in Section 4.0 and Acknowledgments in Section 5.0.

ECCC's Public Hearing review, comments and recommendations relate to sewage treatment upgrades, monitoring of the effluent, and the rehabilitation of the terrace wetland wastewater treatment system.

2.0 Environment and Climate Change Canada's Mandate, Roles and Responsibilities

The mandate of ECCC is determined by the statutes and regulations under the responsibility of the Minister of Environment and Climate Change. ECCC's mandate covers matters such as the preservation and enhancement of the quality of the natural environment (including water, air and soil quality and the coordination of the relevant policies and programs of the Government of Canada), renewable resources (including migratory birds and other non-domestic flora and fauna), meteorology and the enforcement of rules and regulations. ECCC's specialist advice is provided in the context of CEPA 1999, the pollution prevention provisions of the *Fisheries Act*, *Species at Risk Act* (SARA) and the *Migratory Birds Convention Act* (MBCA).

ECCC administers the pollution prevention provisions of the *Fisheries Act*, which prohibits the deposit of a deleterious substance into fish-bearing waters. ECCC also participates in the regulation of toxic chemicals and the development and implementation of environmental quality guidelines pursuant to CEPA 1999.

ECCC is responsible for protecting and conserving migratory bird populations and individuals under the MBCA. ECCC also administers SARA in cooperation with Fisheries and Oceans Canada (DFO) and the Parks Canada Agency to prevent wildlife species from becoming extirpated or extinct, to provide for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity, and to manage species of special concern to prevent them from becoming threatened, endangered or extirpated.

Additional information on ECCC's mandate can be found at: <https://www.canada.ca/en/environment-climate-change/corporate/mandate.html>.

3.0 Environment and Climate Change Canada's Technical Review Comments

This Written Public Hearing Submission summarizes the results of ECCC's technical review of information provided to date, as well as Information Requests on August 26, 2016, Technical Review comments on July 20, 2018, the NWB Technical Meeting on October 12, 2018 and the Final Submission on July 18, 2019 as well as teleconference discussions on August 7, 2019.

ECCC is continuing its participation in this Type A WL review by way of this submission for the Written Public Hearing. The following sections outline the current status of ECCC's outstanding recommendations, identifies issues that have been resolved, issues which ECCC deems resolved pending further actions committed to by the Proponent, and issues that remain outstanding.

3.1 ECCC 1 - Sewage Treatment Upgrades

Reference(s)

- Letter from DND to the NWB dated Aug. 3, 2018 Subject: Response to ECCC Technical Review Comments
- Feb. 28, 2019 email to the NWB from Andrew Tam, DND
- DND Submission to the NWB (undated; unsigned) submitted Mar. 7, 2019: 2 page Tech Memo - Sewage Treatment Options.
- DND Submission to the NWB from G. McKay Mar. 4 2019: 1 page email - Alert Sewage Treatment Proposal
- DND letter to NWB dated Aug. 22, 2019 Re: ECCC Final Submission Comments
- DND Technical Meeting Commitment 6 – Provide Preliminary Site Water and Runoff Management Plan - Letter to NWB Dated April 30, 2019
- Teleconference with DND, CIRNAC, and ECCC Aug.7, 2019

Proponent's Conclusion(s)

In the August 22, 2019 letter from DND to the NWB in response to ECCC's Final Submission, DND stated that information on the proposed package treatment plant will be provided when available, and outlined a timeline. DND indicated that following the first phase of planning, "...contracting / data collection will take place from year 2020-2023. Once completed, development of the project plans will be coordinated between years 2023-2024 with planned implementation in 2025."

In response to CIRNAC's request that a Site Water and Runoff Management Plan be developed, DND stated in their April 30, 2019 letter that this plan will be developed between 2023-2024 and implemented in 2025. During the August 7, 2019 teleconference, DND agreed to provide an interim wastewater management plan to cover the time period to commissioning of the package treatment plant.

ECCC's Conclusion(s)

ECCC supports the installation of a treatment system that will be able to consistently treat wastewater to levels that are acceptable for marine discharge (e.g. meeting standards such as those set in the *Wastewater Effluent Systems Regulations* or similar protective criteria).

Conditions at the site present challenges for wastewater treatment with respect to logistics, variable wastewater volumes and concentrations, and development of a site water balance and management plan. Information on the quality and quantity of wastewater, which includes variable volumes of bypass water for freeze protection, is needed to allow identification of an appropriate treatment system.

ECCC notes that the front-end work on site water balance and effluent characterization will need to be prioritized in order for the selection of an appropriate package treatment. Steps required before the packaged treatment plant is selected include developing the water balance and site water management plan, characterizing wastewater quality and quantities, and identifying how bypass water management will affect treatment of wastewater. The length of the timeline proposed by DND to deliver a water management plan (2024-2025) is considerable, and will not provide information on the site water balance in time to support identification of wastewater treatment systems that would be capable of handling widely varying strengths of influent. ECCC acknowledges the challenges involved with tracking the bypass water given the valves below the buildings, and the loop system going through several facilities, and suggests that consideration be given to either finding other ways to estimate quantities other than direct measurement, and that potential suppliers of treatment systems be fully aware of the variability in wastewater strength and volumes.

ECCC Recommendations

ECCC recommends that there be reporting requirements for the tasks leading up to the selection of the treatment system, to demonstrate that the required information has been assembled. These steps include:

- Preparation of the site water balance and water management plan;
- Characterization of wastewater quality and volumes, including variability;
- Submission of the proposed package treatment system, including the rationale for assurances that the system would be feasible to install and operate at Alert.

ECCC recommends that the licence include a condition requiring the submission of an interim wastewater management plan to cover current practices, until the installation and commissioning of a package treatment plant.

3.2 ECCC 2 - Monitoring

Reference(s)

- Letter from DND to the NWB dated Aug. 3, 2018 Subject: Response to ECCC Technical Review Comments
- DND letter to NWB dated Aug. 22, 2019 Re: ECCC Final Submission Comments
- Teleconference with DND, CIRNAC, and ECCC Aug.7, 2019

Proponent's Conclusion

In the August 2018 letter from DND to the NWB in response to ECCC's technical submission, DND stated that:

"DND is supportive of Recommendation ECCC #2 [for DND to enhance the frequency of effluent monitoring]. DND is incorporating Effluent Quality Monitoring into the standard contract statement of work and deliverables for the next Contractors that are operating the sewage terrace systems on a weekly frequency basis during the summer months for grab samples."

This support for increased monitoring was re-iterated in the August 2019 letter from DND, with biweekly sampling suggested.

ECCC's Conclusion

The 2017 Annual Report included monitoring results for only two effluent samples, collected in June and July, and ECCC made the recommendation for improving ongoing effluent characterization with more frequent sample collection. ECCC notes that at the time of writing this submission the 2018 Annual Report has not been posted on the NWB Public Registry and ECCC has not had the opportunity to evaluate monitoring efforts for 2018.

The purpose for increased monitoring is to allow the Proponent to characterize the wastewater and track performance of the terrace system; it should be noted that there was substantial variability in effluent quality reported between 2015 and 2016 during more intensive monitoring.

ECCC Recommendation:

- ECCC recommends weekly sampling with analysis of (at a minimum) BOD₅, ammonia, TSS, pH, and oil and grease.
- ECCC recommends that the Water License include requirements for effluent quality monitoring at a frequency that will provide information on current treatment performance and characterize ongoing wastewater variability in order to inform the selection of the package treatment system.

3.3 ECCC 3 – Rehabilitation of the Terraced Wetland Wastewater Treatment System

References

- DND letter to NWB dated Aug. 22, 2019 Re: ECCC Final Submission Comments
- Teleconference with DND, CIRNAC, and ECCC Aug.7, 2019

Proponent's Conclusion

ECCC identified issues related to erosion and sedimentation in the Final Submission Comments. , The letter from DND to ECCC dated Aug. 22, 2019 stated that annual repairs would be done, and 60% design development review documents were provided for the proposed upgrades. Gabion baskets with rocks and geotextile are proposed to reduce and slow hillside flows. In the Aug. 7, 2019 teleconference, DND stated that they would engineer the terraced wetland wastewater treatment system to withstand freshet. Reconstruction of the terraced wetland wastewater treatment system is estimated for 2024.

The intent is to keep the terraced wetland wastewater treatment system as a back up to the packaged wastewater treatment plant.

ECCC's Conclusion

Wastewater going to the terraced treatment system has been flowing along paths outside the terrace berms, causing erosion and short-circuiting treatment time. This has resulted in reduced effluent quality and the transport of suspended solids into Parr Inlet.

ECCC concurs with the proposal to retain the upgraded terrace treatment system for use as a backup treatment system; the reconstructive work should be done in any event to stabilize the terrain and prevent transport of suspended solids into the marine environment.

ECCC Recommendation

ECCC recommends that upgrades to the terrace treatment area be done, and that the final design be submitted with confirmation that it will be effective in preventing further erosion and transport of sediments from the terrace.

4.0 Summary of Recommendations

4.1 ECCC 1: Sewage Treatment Upgrades

ECCC recommends that there be reporting requirements for the tasks leading up to the selection of the treatment system, to demonstrate the needed information has been assembled. These steps include:

- Preparation of the site water balance and water management plan;
- Characterization of wastewater quality and volumes, including variability;
- Submission of the proposed package treatment system, including the rationale for assurances that the system would be feasible to install and operate at Alert.

ECCC recommends that the licence include a condition for the submission of an interim wastewater management plan to cover current practices, up until the installation and commissioning of a package treatment plant.

4.2 ECCC 2: Monitoring

ECCC recommends weekly sampling with analysis of (at a minimum) BOD₅, ammonia, TSS, pH, and oil and grease.

ECCC recommends that the Water Licence include requirements for effluent quality monitoring at a frequency that will provide information on current treatment performance and characterize ongoing wastewater variability in order to inform the selection of the package treatment system.

4.3 ECCC 3: Rehabilitation of the Terraced Wetland Wastewater Treatment System

ECCC recommends that upgrades to the terrace treatment area be done, and that the final design be submitted with confirmation that it will be effective in preventing further erosion and transport of sediments from the terrace.

5.0 Acknowledgements

ECCC would like to thank the NWB for this opportunity to provide input to the review process for the Station Alert Project and looks forward to continuing its participation in this process.

ECCC's technical review comments and recommendations are not to be interpreted as any type of acknowledgement, compliance, permission, approval, authorization, or release of liability related to any requirements to comply with federal or territorial statutes and regulations.