

Environmental Protection Operations Directorate
Prairie & Northern Region
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ECCC File: 6100 000 036/010
NWB File: 3AM-PAN1828



September 16, 2024

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: 3AM-PAN1828 – Hamlet of Pangnirtung – 2023 Annual Report

Environment and Climate Change Canada (ECCC) has reviewed the information submitted to the Nunavut Water Board (NWB) regarding the above-mentioned 2023 Annual Report.

ECCC provides expert information and knowledge to project assessments on subjects within the department's mandate, including climate change, air quality, water quality, biodiversity, environmental preparedness and emergencies. This work includes reviewing proponent characterization of environmental effects and proposed mitigation measures. We provide advice to decision-makers regarding a proponent's characterization of environmental effects, the efficacy of their proposed mitigation activities, and may suggest additional mitigation measures. Any comments received from ECCC in this context does not relieve the proponent of its obligations to respect all applicable federal legislation.

The following comments are provided:

1. Wastewater Treatment Plant (WWTP) effluent and sludge storage area runoff

Reference:

- Annual Report for the Hamlet of Pangnirtung, 2023 (Hamlet of Pangnirtung; June 2024)

Comment:

Environment and Climate Change Canada is the lead for the administration and enforcement of the pollution prevention provisions of the *Fisheries Act*. These provisions include general prohibition subsection 36(3), which prohibits the deposit of any deleterious substance in water frequented by fish or to a place, which a deleterious substance may flow



into water frequented by fish, unless authorized by regulations made either under the *Fisheries Act* or under another Act of Parliament. Deleterious substances include any substance that, if added to water, would degrade, alter, or form part of a process of degradation or alteration of the quality of water so that it is rendered deleterious to fish or fish habitat or for human consumption of any fish from that water. The full definition of “deleterious substance” can be found in the *Fisheries Act* section 34 (1) at <http://laws-lois.justice.gc.ca/eng/acts/F-14/FullText.html>

In the case of an unauthorized releases which is likely to be detrimental to fish or fish habitat or of an imminent danger of such an occurrence, the person responsible for the deposit must (as per subsections 38(5), (6) and (7) of the *Fisheries Act*):

- immediately notify an inspector, a fishery officer, a fishery guardian or an authority prescribed by a regulation
- take all reasonable measures to mitigate impacts and prevent further damage
- submit a written report as soon as possible after the occurrence or learning of the danger of an occurrence to an inspector, fishery officer, fishery guardian or an authority identified in a regulation

ECCC’s environmental notification system uses a federal-provincial/territorial 24-hour call line as the first point of contact. In the event of an environmental emergency or unauthorized deposit, the person responsible and/or anyone discovering the emergency is to call the NWT/NU spills line number at 1-867-920-8130 or email spills@gov.nt.ca.

ECCC Recommendation:

ECCC recommends that seepage from the sludge disposal area and effluent from the WWTP be contained, treated or managed such that poor quality water does not enter waters frequented by fish. Effluent exceedances should be reported as required under the *Fisheries Act* and NWB licence conditions.

2. Quality of wastewater treatment plant effluent

Reference:

- Certificate of Analysis 23-022501 (Caduceon Environmental Laboratories; September 11, 2023) - Sample ID: PAN-3

Comment:

Results for the August 22, 2023 sample at surveillance network program (SNP) station PAN-3 (Effluent from Wastewater Treatment Plant) are reported in a Certificate of Analysis appended to the Annual Report. ECCC noted elevated concentrations of nitrogen compounds and heavy metals that may cause impacts to aquatic life. Though the water licence does not prescribe effluent quality limits for these parameters, discharges must comply with Section 36(3) of the *Fisheries Act*.

ECCC acknowledges the Hamlet made important efforts at managing their wastewater treatment plant (WWTP) in 2023, including completing training for a new chief WWTP operator and maintenance that involved changing all the membranes in the plant. However, all discharges must meet the Fisheries Act requirement that any deposits to waters frequented by fish be non-deleterious.

ECCC Recommendation(s):

ECCC recommends the Proponent:

- Identify sources of heavy metals and causes of elevated nitrogen compounds in WWTP effluent; and
- Identify options to optimize WWTP process to remove excess metals and nitrogen compounds.

3. Quality of runoff from sludge disposal area

Reference:

- Certificate of Analysis 23-022501 (Caduceon Environmental Laboratories; September 11, 2023); Sample ID: PAN-4

Comment:

Results for the August 22, 2023 sample at SNP station PAN-4 (Run-off from sludge disposal area) are reported in a Certificate of Analysis appended to the Annual Report. ECCC noted elevated concentrations of nitrogen compounds and heavy metals that may cause impacts to aquatic life if released. Though the water licence does not include effluent quality limits for seepage, discharges including seepage, must comply with Section 36(3) of the *Fisheries Act*.

Given the poor quality of the seepage, it should be managed in such a way that it does not enter the Pangnirtung Fiord. Seepage from the sludge disposal area should be contained so that it can be treated or managed such that poor quality water does not enter waters frequented by fish.

ECCC Recommendations:

ECCC recommends the measures be taken to attempt to capture all leachate from the sludge disposal area for appropriate management such that poor quality water does not report to Pangnirtung Fiord.

4. Deficiencies in monitoring – runoff monitoring

References:

- Annual Report for the Hamlet of Pangnirtung, 2023 (Hamlet of Pangnirtung; June 2024)

- Type “A” Water Licence No. 3AM-PAN1828 (Nunavut Water Board; May 4, 2018)
- Certificate of Analysis 23-022501 (Caduceon Environmental Laboratories; September 11, 2023); Sample ID: PAN-4

Comment:

The annual report is missing monitoring information prescribed by the licence, so in several instances it is not possible to evaluate if the measures to protect water quality are effective. Item C requested in Schedule B of the water licence is incomplete. Item C requires: Quality of the runoff from the sludge disposal area, Solid Waste Management Facility, and Metal and Hazardous Waste Storage Area at Monitoring Stations PAN-4, PAN-5, and PAN-6, respectively. These locations are supposed to be sampled monthly when discharge is observed and only a single sample result is included with the annual report at station PAN-4 in August. It is not clear if there was no runoff observed at other stations or whether they were not sampled. It is also not clear if August was the only month when runoff was observed.

ECCC Recommendation:

ECCC recommends the Proponent sample at the frequency prescribed in their water licence and that future annual reports include explanations of why samples are missing or were not collected, including reporting the absence of runoff.

5. Deficiencies in monitoring – sludge removal

References:

- Annual Report for the Hamlet of Pangnirtung, 2023 (Hamlet of Pangnirtung; June 2024)
- Type “A” Water Licence No. 3AM-PAN1828 (Nunavut Water Board; May 4, 2018)
- Certificate of Analysis 23-022501 (Caduceon Environmental Laboratories; September 11, 2023); Sample ID: PAN-4

Comment:

Item D of Schedule B of the water licence is missing. Item D of Schedule B requires the monthly and annual quantities in cubic metres of sludge removed from the Wastewater Treatment Plant. As noted in a comment above, the runoff quality from the sewage sludge disposal area is of poor quality. Tracking estimated sludge quantities will contribute to the design of any mitigation measures needed to the disposal area to manage runoff and improve its quality.

ECCC Recommendation:

ECCC recommends the Proponent report estimates of sludge removed from the Wastewater Treatment Plant in future annual reports.

6. Deficiencies in monitoring – quantity of waste landfilled

References:

- Annual Report for the Hamlet of Pangnirtung, 2023 (Hamlet of Pangnirtung; June 2024)
- Type “A” Water Licence No. 3AM-PAN1828 (Nunavut Water Board; May 4, 2018)

Comment:

Item E requested in Schedule B of the water licence is missing. Item E of Schedule B requires the monthly and annual quantities of Wastes disposed of at the landfill. The annual report notes “Both Domestic and Metal dump sites have a lack of capacity. Hamlet is expecting new sites in next 2 to 3 yrs.” Tracking estimated volumes of waste disposed of at the landfill will contribute to designing a landfill adapted to the Hamlet’s needs.

ECCC Recommendation(s)

ECCC recommends the Proponent report estimates of quantities of waste disposed at the landfill in future annual reports.

7. Deficiencies in monitoring – summary report

References:

- Annual Report for the Hamlet of Pangnirtung, 2023 (Hamlet of Pangnirtung; June 2024)
- Type “A” Water Licence No. 3AM-PAN1828 (Nunavut Water Board; May 4, 2018)
- Certificate of Analysis 23-019773 (Caduceon Environmental Laboratories; August 11, 2023); Sample ID: Effluent
- Certificate of Analysis 23-022501 (Caduceon Environmental Laboratories; September 11, 2023); Sample IDs: PAN-3 and PAN-4

Comment:

Item F requested in Schedule B of the water licence is missing. Item F of Schedule B requires a summary report which includes all data and information generated under the Monitoring Program, including the QA/QC program, in electronic and printed formats acceptable to the Board.

There are several deficiencies related to this item including:

- Monitoring program data is not summarized. Three lab analysis reports are appended to the annual report, however the data is not collated or compared to discharge limits or water quality criteria. Doing so would help both the Hamlet and reviewers flag exceedances (such as Faecal Coliform in 2023) and identify potential problems.

- Sample names in two of the three lab analysis reports do not match Station IDs from Schedule H in the water licence. It is not possible to confirm where those samples were taken because the annual report doesn't explain the sample labelling. For example, the sample labelled "Effluent" in Certificate of Analysis 23-019773 might be the same as PAN-3, but reviewers cannot confirm.
- Laboratory detection limits for some metals are not precise enough to allow results to be compared with appropriate guidelines for the protection of aquatic life. Specifically, the detection limits for cadmium, lead and nickel are all above their corresponding guidelines.
- No quality assurance/quality control (QA/QC) data or discussion was included in the report. These measures monitor the adequacy of the sampling procedures, so presently it is not possible to do so.
- Elements of the monitoring program detailed in Schedule H of the licence are not included or are incomplete in the annual report, without an explanation of why they are missing. The annual report contains a blanket statement that sometimes it is not possible to ship out samples because of flight cancellations. This statement is not specific enough, reasons should be provided for each missed monitoring event.
 - Only one or possibly two results for effluent quality at PAN-3 are provided when monthly sampling is prescribed.
 - No Acute Lethality sample result for the Wastewater Treatment Plant effluent was provided.
 - Sample results are missing field temperature, which is used when determining ammonia toxicity.
 - As mentioned above, no sample results were provided for PAN-5 or PAN-6 and only a single one is provided for PAN-4, when monthly samples during periods of flow are prescribed by the program.

ECCC Recommendation:

ECCC recommends the Proponent correct deficiencies noted above in their future Monitoring Program summary reports, which should be submitted with the annual reports.

If you need more information, please contact Jennifer Sabourin at Jennifer.Sabourin@ec.gc.ca.

Sincerely,



Jennifer Sabourin
Environmental Assessment Officer

cc: Eva Walker, Head, Environmental Assessment North (NT and NU)