



National Defence

National Defence Headquarters  
Ottawa, Ontario  
K1A 0K2

Défense nationale

Quartier général de la Défense nationale  
Ottawa (Ontario)  
K1A 0K2

Directorate of Contaminated and Legacy Sites Project Delivery  
National Capital Region  
Ottawa, ON K1A 0K2

27 September 2017

INAC File: CIDM #1176224  
NWB File: 1BR-SHE1016

Via email to: [richard.dwyer@nwb-oen.ca](mailto:richard.dwyer@nwb-oen.ca)

Richard Dwyer  
Licence Administrator  
Nunavut Water Board  
P.O. Box 119  
Gjoa Haven, NU X0B 1J0

**Re: Response to INAC's Letter Dated September 18, 2017, Titled "Indigenous and Northern Affairs Canada's (INAC) Review of Defence Construction Canada's Renewal Application for Water Licence #1BR-SHE1016"**

Dear Mr. Dwyer,

DND has reviewed the above-referenced letter and is submitting this letter in response to the recommendations provided therein. For consistency, DND has followed the naming convention of the section headers in the INAC letter.

#### **B.1. Geotechnical Monitoring of Tier II Soil Disposal Facility and USAF Landfill**

##### Reference:

- Long-Term Landfill Monitoring at the CAM-3 Former DEW Line Site (Arcadis, 2017).

##### Summary of INAC Comment:

- The current monitoring schedule calls for the next CAM-3 monitoring event to be completed during Year 15 (2022).
- Arcadis recommends that an erosion channel at the Tier II Soil Disposal Facility be monitored in advance of Year 15 (2022) and that an erosion channel at the USAF Landfill be monitored annually.

##### INAC Recommendation:

- "We recommend that the Licensee explain how they will address their Consultant's recommendations regarding the geotechnical monitoring of Tier II Soil Disposal Facility and USAF Landfill if they do not plan on changing their monitoring schedule."

Canada

#### DND Response:

As per Section 7.1 of the *Agreement Between Nunavut Tunngavik Incorporated and Her Majesty in the Right of Canada as Represented by the Minister of National Defence for the Clean-up and Restoration of Distant Early Warning Sites Within the Nunavut Settlement Area* (NTI-DND Environmental Provisions, September 1998), an Environmental Working Group (EWG) has been established to examine the results of the DEW Line monitoring program. The EWG consists of two members chosen by DND and two members chosen by NTI.

As per Section 7.3 of the NTI-DND Environmental Provisions (September 1998), should changes to the monitoring plan and/or additional remediation be required, the EWG is responsible for making recommendations to the DEW Line Steering Committee on what action(s) should be taken. In accordance with the process, DND then takes action based on Steering Committee decisions. The EWG completed its review of the above-referenced report (Arcadis, 2017) and submitted a summary of its recommendations to DND in a letter dated August 21, 2017. The EWG review letter did not include any recommendations related to Arcadis' recommendation that the Tier II Soil Disposal Facility and the USAF Landfill require more frequent monitoring.

As part of DND's normal review of the Consultant's reports and EWG review letters, this discrepancy is flagged back to the EWG for a response. DND's next step will be to ask the EWG to address the two specific recommendations (Section 6.5 (Tier II Soil Disposal Facility) and Section 8.5 (USAF Landfill) of the 2016 CAM-3 monitoring report (Arcadis, 2017)) in an updated letter.

Concurrently, DND conducts their own independent review for discussion with Arcadis and/or the EWG to seek clarifications where required. DND noted a discrepancy in Arcadis's recommendation regarding the USAF landfill within their report. In their Executive Summary for the USAF landfill they recommend only that the "next geotechnical monitoring event should be earlier than as per monitoring schedule to continue assessing marginal erosion feature". It should be noted that not all recommendations in reports are feasible, nor are they all technically necessary. If the recommendation is found to be technically necessary, additional monitoring could be scheduled for 2019. This decision will be made pending further analysis and discussion at a Steering Committee level.

#### **B.2. Soil Sampling in Areas of Staining**

##### References:

- Long-Term Landfill Monitoring at the CAM-3 Former DEW Line Site (Arcadis, 2017).
- The Collection of Landfill Monitoring Data at the Former CAM-3 Distant Early Warning Line Site, Shephard Bay, Nunavut (Biogénie, 2015).
- Abandoned Military Site Remediation Protocol (INAC, 2008).

##### Summary of INAC Comment:

- Staining was observed at the Station Landfill, Northeast Landfill and USAF Landfill in 2014 and 2016.
- "These stains are located at the toe of the landfill covers which typically indicate areas where leachate is seeping out."
- The designated soil sampling locations in the monitoring program do not coincide with these locations of observed seepage/staining.

#### INAC Recommendation:

- “We recommend that the Licensee clarify why they are not sampling soil at areas where staining indicates seepage occurring from the landfills.”

#### DND Response:

Section 5.3.4 of the scope of work for the current DND DEW Line monitoring contract that included the 2016 monitoring event at CAM-3 states that the consultant “shall ensure to bring sufficient sampling equipment and sample containers to allow for the collection of additional soil and surface water samples presenting potential evidence of impact, should they be encountered on or adjacent to the landfills being monitored at the time of the site visit.”

It should be noted that areas of ponded water near the toe of a landfill cover do not necessarily indicate leachate seepage; it can be the result of the accumulation of snow melt or water in low-lying areas adjacent to the landfills.

Similarly, rust coloured staining does not necessarily indicate leachate seepage. Iron oxide staining caused by naturally occurring sulphides such as pyrite and arsenopyrite in bedrock and surficial rocks/soils is a common phenomenon at the DEW Line sites in Nunavut; the staining is particularly prevalent in low-lying areas where surface runoff pools or flows regularly.

The EWG completed its review of the 2016 report (Arcadis, 2017) and submitted a summary of its recommendations to DND in a letter dated August 21, 2017. The EWG review letter did not indicate any concerns, nor any recommendations related to any stains identified at CAM-3 in 2016.

DND conducted the following review of the photographs from the 2014 and 2016 monitoring reports of the stains in question, which are available on the Nunavut Water Board Public Registry and attached here for convenience.

#### *Station Landfill (Refer to Attachment 1 for photos)*

The staining identified in both 2014 and 2016 at the toe of Lobe A of the Station Landfill (Feature J) was described as “rust coloured” (Biogénie, 2015 and Arcadis, 2017); the photos corroborate this characterization. The staining is also very small in extent (6.0 m<sup>2</sup>). This is most likely iron oxide staining.

#### *Northeast Landfill (Refer to Attachments 2 and 3 for photos)*

The staining identified in both 2014 and 2016 on the cover of Lobe D of the Northeast Landfill (Feature U) was described as “dark” in 2014 (Biogénie, 2015). The associated photo corroborates this characterization. A review of the 2014 photograph of Feature U suggests that the small dark stains on top of the landfill cover look like the surficial release of limited quantities of fuel, likely from a vehicle. Feature U is later described as “reddish oxidation staining” in 2016 (Arcadis, 2017). The colouring is difficult to distinguish on the 2016 photo, and it does not appear to show the same dark stain that was in the foreground of the 2014 photo (note the angles in the photographs are slightly different). Based on the position (on the top of the landfill cover) and extent (small area of 0.09 m<sup>2</sup>) of this feature, surficial deposition of a stain-producing material such as fuel or a naturally occurring iron oxidation would be the most plausible explanations.

The staining identified in 2014 at the toe of Lobe G of the Northeast Landfill (Feature V) was described as “rust coloured” (Biogénie, 2015); the associated photos corroborate this characterization. Feature V was not observed in 2016 (Arcadis, 2017).

#### *USAF Landfill (Refer to Attachment 4 for photos)*

The staining identified in both 2014 and 2016 at the toe of the USAF Landfill (Feature G) was described as “rust coloured” (Biogénie, 2015 and Arcadis, 2017), indicative of a likely iron oxide stain. The photos corroborate this characterization. The staining is also very small in extent (5.0 m<sup>2</sup>).

#### *Conclusion*

Based on the consultant's scope of work (requirement to sample in areas of potential impact and detailed geotechnical visual assessment), a review of the photographs of the particular stains in question, and the absence of EWG concerns, it does not appear that any of these particular cases warranted additional sampling. DND will continue to include provisions in DEW Line monitoring contracts stipulating that additional samples should be collected if areas of potential environmental concern, outside of the prescribed sampling locations, are identified during field programs. For completeness, DND will also ask Consultant's to include text in future reports to describe their technical rationale for not sampling identified areas of staining.

### **B.3. Contact Information in the Spill Contingency Plan**

Thank you for providing updated INAC contact information. We will make the recommended changes and corrections to the Spill Contingency Plan and resubmit it to the Nunavut Water Board.

### **B.4. Spill Contingency Plan**

#### Summary of INAC Comment:

- The Spill Contingency Plan suggests that spill kits will be onsite in the event of an equipment leak, but the contents of these kits are not specified.

#### INAC Recommendation:

- “The Spill Contingency Plan should include a listing of the contents of the spill kits.”

#### DND Response:

The Consultant is provided with a copy of the Spill Contingency Plan and contractually required to comply with it (Terms of Reference Section 6.3.3). We leave it to the Consultant to determine the contents of the spill kits in order to meet the license and Spill Contingency Plan obligations which help govern their on-site activities.

### **B.5. Term of Licence**

#### Summary of INAC Comment:

- The Licensee has requested that the renewed Licence expire in August 2042.

#### INAC Recommendation:

- “The Department supports a water Licence term that will bring the Licensee in line with the scheduling of monitoring events for Phase II of their Landfill Monitoring Program. Because there are only scheduled monitoring events up until 2032, the Department suggest that the

Licence be issued a term ending after the following field season of their last scheduled monitoring event, in December 2033."

DND Response:

As per Section 4.0 of Appendix H of the (NTI-DND Environmental Provisions, September 1998), the long term landfill monitoring of the DND DEW Line sites consists of three phases in the years post-remediation at each site: Phase I (Years 1 to 5), Phase II (Years 6 to 25) and Phase III (beyond Year 25). The Year 25 monitoring event for CAM-3, which will signify the end of Phase II of the long term monitoring program, is scheduled to take place in 2032.

The exact nature and duration of Phase III of the monitoring program is still to be determined through consultation with the DEW Line Steering Committee. At this time, DND anticipates that the Phase III monitoring program would endure for at least ten years, hence the requested expiry date of 2042 for the renewed CAM-3 Licence.

DND would like to request that INAC revisit this recommendation for early expiry in light of this additional information and reconsider the original expiry date of 2042.

It is anticipated that the information herein addresses all outlined concerns and recommendations. If further clarification is required, please do not hesitate to contact me at (613) 943-7852 or [Laura.Dcosta@forces.gc.ca](mailto:Laura.Dcosta@forces.gc.ca)

Regards,



Laura D'Costa, M.Sc., P.Eng.  
Senior Project Manager, DEW Line Clean-Up and Long Term Monitoring, DND

cc: Sarah Forté, Water Management Coordinator, Indigenous and Northern Affairs Canada  
Karén Kharatyan, Acting Manager of Licensing, Nunavut Water Board  
Ian Parsons, Acting Manager of Water Resources, INAC Nunavut Regional Office  
Erik Allain, Manager of Field Operations, INAC, Nunavut Regional Office  
Alison Street, Environmental Specialist, DND



**Attachment 1: CAM-3 Station Landfill Staining Feature J**



2014 (Source: Biogénie, 2015)



2016 (Source: Arcadis, 2017)



**Attachment 2: CAM-3 Northeast Landfill Staining Feature U**



2014 (Source: Biogénie, 2015)



2016 (Source: Arcadis, 2017)



**Attachment 3: CAM-3 Northeast Landfill Staining Feature V (Two Locations)**



2014 (Source: Biogénie, 2015)



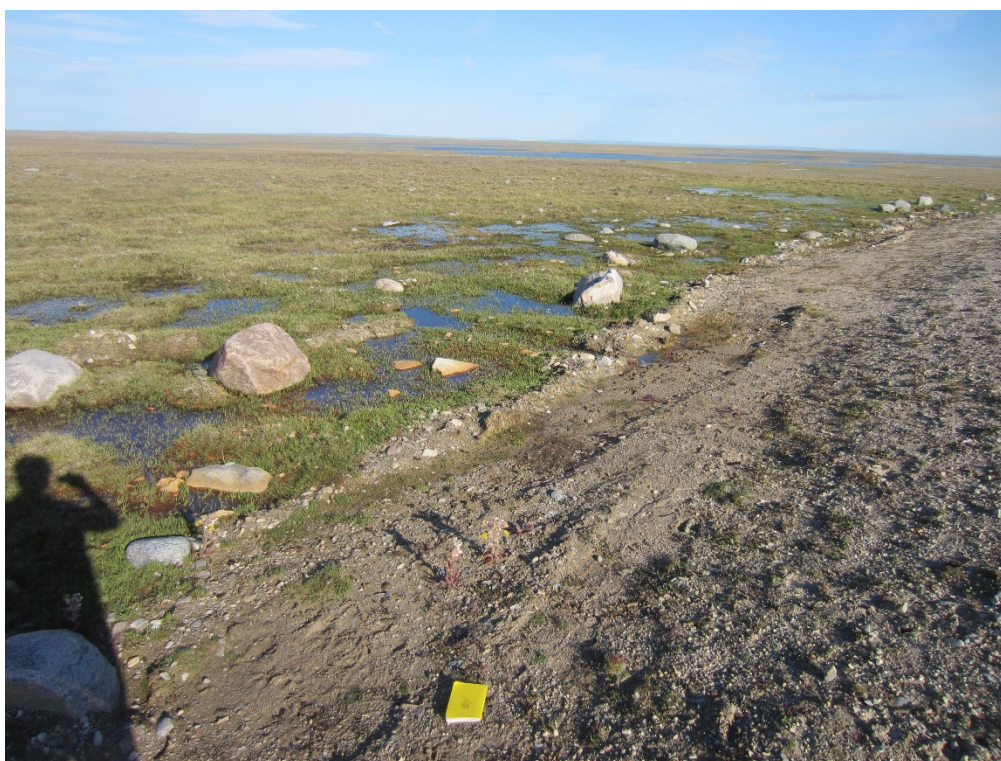
2014 (Source: Biogénie, 2015)



**Attachment 4: CAM-3 USAF Landfill Staining Feature G**



2014 (Source: Biogénie, 2015)



2016 (Source: Arcadis, 2017)