

October 25, 2016

Bill Beamish, Senior Administrative Officer
Hamlet of Tuktoyaktuk
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E-mail: sao@tuktoyaktuk.ca

Dear Bill:

Project No: PN 60439290

Regarding: Hamlet of Tuktoyaktuk Water Licence – Part D-34; Impact Analysis

This letter provides the terms of reference and a timeframe for an assessment of the effects of the solid waste facility on the small bay located adjacent to the facility; to satisfy the requirements of Part D, Clause 34 of the Hamlet of Tuktoyaktuk's (the Hamlet) Water Licence issued by the Inuvialuit Water Board (IWB) April 16, 2016.

Thank you for considering AECOM for this work. Please call me at 867-873-6316 ext. 22 if you have any questions.

Sincerely,
AECOM Canada Ltd.



Michel Lanteigne, M.Eng., P.Eng.
Manager, Northwest Territories
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ML:pm
Encl.

Hamlet of Tuktoyaktuk

Assessing the Impact of the Landfill on the Adjacent Bay

TERMS OF REFERENCE

1. Purpose

To assess the effects of the Tuktoyaktuk Solid Waste Disposal Facility (landfill) on the small bay located adjacent to the facility, to satisfy the requirements of Part D, Clause 34 of the Hamlet of Tuktoyaktuk's (the Hamlet) Water Licence issued by the Inuvialuit Water Board (IWB) April 16, 2016.

2. Background

Tuktoyaktuk's Solid Waste Disposal Facility (landfill) is located approximately 3 km south of the Hamlet along the all-weather road to Reindeer Point. This site has been in operation since the early 1970's. It was developed in a bay of the Beaufort Sea after the bay was isolated from the ocean by construction of a 250 m long, clay and gravel dyke, as illustrated in Figure 1. The site forms a containment that retains water, which becomes contaminated from contact with the waste. The berm does not have any discharge control structure, so water that accumulates from spring melt and rain is pumped over the berm into the ocean periodically, posing an environmental concern.

This landfill is scheduled to cease operation, and is listed as a priority site for closure by the Government of Northwest Territories (GNWT) and Aboriginal and Northern Development Canada (AANDC). A new landfill located approximately 17 km southwest of the community is currently under construction. Construction of Phase 1 of the new landfill site was completed in 2015; construction of Phase 2 is scheduled to occur during winter 2017.

The existing landfill covers an area of approximately 20 hectares, but not all of the area is currently in use. The active municipal waste disposal area is approximately 70 m wide and 50 m long. There are designated areas for separation of municipal solid waste, metal, white goods and tires. Hazardous waste is stored at the municipal yard. The site is fenced, access is not controlled and the site is not manned.

A bulky metal waste area, approximately 100 m wide by 100 m long, was closed and remediated with complete cover in 2004. Several old landfill areas were remediated in the north, southwest and east portions of the site. These areas have been covered, and have limited vegetative cover in the north and southwest areas and substantial vegetative cover in the east area.

3. Scope of Work

To assess the effects of the landfill on the small bay located adjacent to the landfill; as specified in Part D-34 of the Hamlet's Water Licence No. N5L3-0714; issued in April, 2016. The work consists of, but is not limited to:

- a) Sampling and analysis of water in the adjacent bay into which the water is discharged before, during and after decanting from the site;
- b) Sampling and analysis of sediments in the bay before and after decanting from the site;
- c) Sampling and analysis of fish, shellfish and benthic organisms.

This study shall collect water, sediment, fish, shellfish and benthic invertebrate samples from locations influenced by the landfill discharge, as well as from reference sites for comparative purposes.

4. Laboratory Testing

4.1 *Water samples shall be tested for, but not limited to the following parameters:*

- pH
- Total Suspended Solids (TSS)
- Biological Oxygen Demand (BOD)
- Polychlorinated Biphenyls (PCBs)
- Fecal coliforms
- Total metals including:
 - Cadmium
 - Chromium
 - Cobalt
 - Copper
 - Iron
 - Lead
 - Mercury
 - Nickel
 - Zinc

4.2 *Sediment samples shall be tested for, but not limited to the following parameters:*

- PCBs
- Total metals including:
 - Cadmium
 - Chromium
 - Cobalt
 - Copper
 - Iron
 - Lead
 - Mercury
 - Nickel
 - Zinc

4.3 *Fish and shellfish samples shall be tested for, but not limited to the following parameters:*

- Total Metals and PCBs

4.4 *Benthic organisms shall be tested for, but not limited to the following parameters:*

- Benthic Invertebrate Community Analysis (genus level ID)

5. Schedule

The work shall be carried out prior to, or in association with, closure of the landfill. The discharge from the landfill occurs between September 15 and October 31, and typically takes between 4-6 days to complete.

6. Deliverables

A final report providing:

- a) A description of the work carried out;
- b) Sample locations indicated on a map and laboratory test results;
- c) An assessment of the impact on the bay from the landfill operation; including a qualitative and statistical analyses.



Tuktoyaktuk

Tuktoyaktuk
Airport

Tuktoyaktuk

Solid Waste Facility

Figure 1