

February 15, 2010

Sarah McKenzie
Regulatory Officer
Northwest Territories Water Board
P.O. Box 2531
125 Mackenzie Road
Suite 302 Professional Building
Inuvik, NT XOE OTO

Dear Ms. McKenzie,

**Re: Hamlet of Tuktoyaktuk
Water Licence Renewal - N7L3-0714
Request for Comments**

The Department of Environment and Natural Resources (ENR) has reviewed the above noted project based on its mandated responsibilities under the *Environmental Protection Act*, the *Forest Management Act*, the *Forest Protection Act* and the *Wildlife Act* and provides the following comments and recommendations for consideration by the Board.

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1. LOCATION

Discussion

ENR has concerns with the location of the current Solid Waste Disposal Facility (SWDF). The SWDF is located directly adjacent to the ocean, which is an unsuitable location for a landfill under any circumstances. The location of this facility leads to the following site-specific concerns:

- The current site is located at sea level, and is prone to periodic flooding;
- High sea levels and storms create high water levels that rise over the berms and allow waste, and leachate (from the solid waste lagoon), to enter adjacent waters, and leads to likely contamination of surface water;
- Potential exists for groundwater contamination due to the shallow water table;
- Surface water from the SWDF (contained in the solid waste lagoon) is decanted to the receiving environment;
- It is known that there is increasing erosion of lands in and around the site, which further brings to question the viability and sustainability of this site for waste disposal;
- There are growing concerns of climate change and subsequent rising sea level; and,
- The site sits directly between the community and its sub-division (Reindeer Point) which further augments potential risks to the community in general and specifically to public health and safety.

Figures 1 and 2 indicate the location of the SWDF in relation to the adjacent water body. Note the standing water in the SWDF, which is referred to in the current Water Licence as a “solid waste lagoon” (SWL).

Recommendation

There are significant concerns over the potential for surface and groundwater contamination due to the location of the Tuktoyaktuk SWDF. This leads to significant immediate concerns of adverse environmental impacts, risks to public health and safety, and the future sustainability of the facility for the community’s solid waste disposal.

ENR recommends that a study, to be completed within 2 years, be conducted to determine future options for solid waste disposal in Tuktoyaktuk. The study should analyze and discuss the practicality of maintaining the current facility, and answer questions and concerns over its future sustainability. The study should include the evaluation of options to relocate the Hamlet’s SWDF to an appropriate location that can meet modern design requirements, ensure environmental protection, and meet the needs of current and future community waste streams.

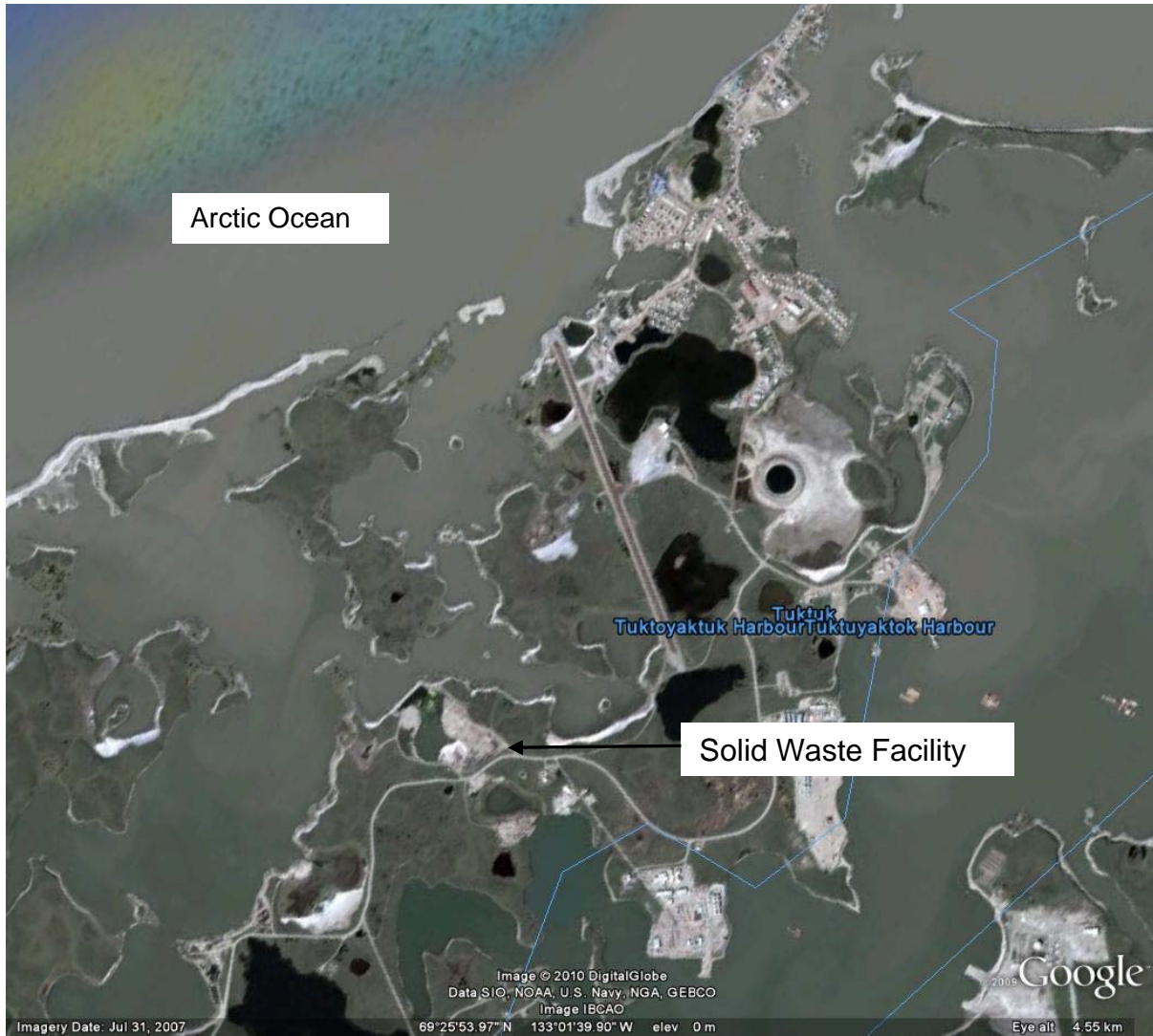


Figure 1: July 31, 2007 Aerial Photo of Tuktoyaktuk's Solid Waste Facility. Source: Google Earth, 2010.



Figure 2 – Inset from Figure 1- Solid Waste Facility, July 31, 2007 Aerial Photo of Tuktoyaktuk's Solid Waste Facility. Source: Google Earth, 2010.

2. OPERATIONS AND MAINTENANCE

Discussion

The purpose of an Operations and Maintenance (O&M) plan is to assist community staff in the proper operation and maintenance of their SWDF. O&M Plan is a requirement of all SWDF in the NWT, regardless of its current state. The need to prioritize the integration of proper operations and management of the Hamlet's SWDF is further augmented by concerns over its location. The Background Report for Water Licence Renewal (Section 3.3.2 and 3.3.5, page 15), states:

- *The landfill is operated with limited compaction and limited cover;*
- *The domestic waste area has a limited area for household hazardous waste storage, and no designated areas for waste separation;*
- *The municipal waste area is used by both the community and local industries;*
- *There is no permanent supervision of the site;*
- *No records of quantities and types of waste are kept; and*
- *The landfill site needs management improvements.*

The current O&M manual for the facility is out-dated and listed as DRAFT. Furthermore, an inspection completed by the Indian and Northern Affairs Canada (INAC) inspector on November 24, 2008 indicated that the O&M Plan is outdated, and that components of that Plan are not being followed.

For use in the NWT, the *Guideline for the Planning, Design, Operations and Maintenance of Modified Solid Waste Sites in the Northwest Territories*¹, is endorsed by the Departments of Municipal and Community Affairs (MACA) and Environment and Natural Resources (ENR), Government of the Northwest Territories. It provides specific advice in this regard, has been developed specifically for use in the NWT, and provides definitions and uses terminology and instructs on common procedures that will provide all stakeholders certainty and clarity when discussing, planning for, and operating the Hamlet's SWDF. For specific guidance on the development of an O&M Plan, consult the *"Guidelines for the Preparation of an Operation and Maintenance Manual for Sewage and Solid Waste Disposal Facilities in the Northwest Territories"*².

Recommendations

In order to ensure that its purpose is to develop operations and maintenance requirements specific to Tuktoyaktuk sourced municipal solid waste, ENR recommends that an updated Operations and Maintenance Plan, specific to Tuktoyaktuk's municipal water use and waste deposits, is prepared and submitted to the Board for its approval. ENR recommends that the Hamlet consult the *"Guideline for the Planning, Design, Operations and Maintenance of Modified Solid Waste Sites in the Northwest Territories"* and the *"Guidelines for the Preparation of an Operation and Maintenance Manual for Sewage and Solid Waste Disposal Facilities in the Northwest Territories"* in developing this plan. Once the plan is developed, ENR recommends that it is made available to Hamlet staff managing the SWDF and that it is implemented.

3. SITE ACCESS

Discussion

ENR has two specific concerns regarding site access:

- 1) ENR understands that the facility is operated, funded and licenced for the purpose of management of community based solid waste. ENR is aware that there is unrestricted access to the SWDF. In the Background Report for Water Licence Renewal (Section 3.3.2 and 3.3.5, page 15), it states: *"there is no permanent supervision of the site"*. Furthermore, in the same paragraph, it states that, *"the municipal waste area is used by both the community and local industries"*. ENR is also aware that historically large scale industrial operators have been using this facility for disposal of project related waste (i.e. the oil and gas sector), and that current and pending projects again reference the

¹ Municipal and Community Affairs. 2003. *Guideline for the Planning, Design, Operations and Maintenance of Modified Solid Waste Sites in the Northwest Territories*.

² Municipal and Community Affairs. 1996. *Guideline for the Preparation of an Operation and Maintenance Manual for Sewage and Solid Waste Disposal Facilities in the Northwest Territories*.

future use of the Tuktoyaktuk facility for disposal of its waste. Improper, unregulated, and unrestricted disposal of large scale industrial wastes sourced from outside the community will result in adverse environmental impacts and the unmitigated transfer of long term economic liabilities to the Hamlet and the Government of the Northwest Territories.

- 2) The second concern arising from the unrestricted access is that the SWDF is based on its location, which is situated directly between the community and its sub-division (Reindeer Point). This location poses a public health and safety risk due to increased potential for human interaction with wildlife attracted to the facility. The project description states that, *“The Tuktoyaktuk Solid Waste Disposal site is a large fenced-in facility, approximately 3 km south of the Hamlet”,* and that *“The landfill site is surrounded by a 1200 m perimeter fence on the inland side of the site. The ocean-facing side of the landfill, to the west, is not fenced”*. ENR understands that there is a berm in place on the ocean-facing side of the landfill. However, the site can be accessed by wildlife from the ocean side.

Recommendation:

ENR recommends that the Hamlet develop and submit a plan to the NWTWB that proposes how site access will be managed to prevent unrestricted access to persons or projects disposing of inappropriate and unauthorized wastes, and to also restrict access to wildlife.

4. MANAGEMENT OF WINDBLOWN DEBRIS

ENR has concerns over the amount of windblown debris that is generated from the SWDF. In the 2005 Operations and Maintenance Plan (section 3.1, page 8), it states that, *“blowing litter will be controlled by the proper use of portable barricades at the active disposal area and by the perimeter fence around the site. The mobile litter fences will be aligned according to the wind direction.”* However, site visits and photos taken in 2008 by ENR staff indicate that these measures, if in fact they are in place, are not working. ENR staff has noted that litter from the SWDF is often present on the other side of the berm and at other times directly in the adjacent ocean waters. Figure 2 is a photo taken from ENR staff in 2008 demonstrates both the height of the berm, and also shows debris collected and up along the berm.

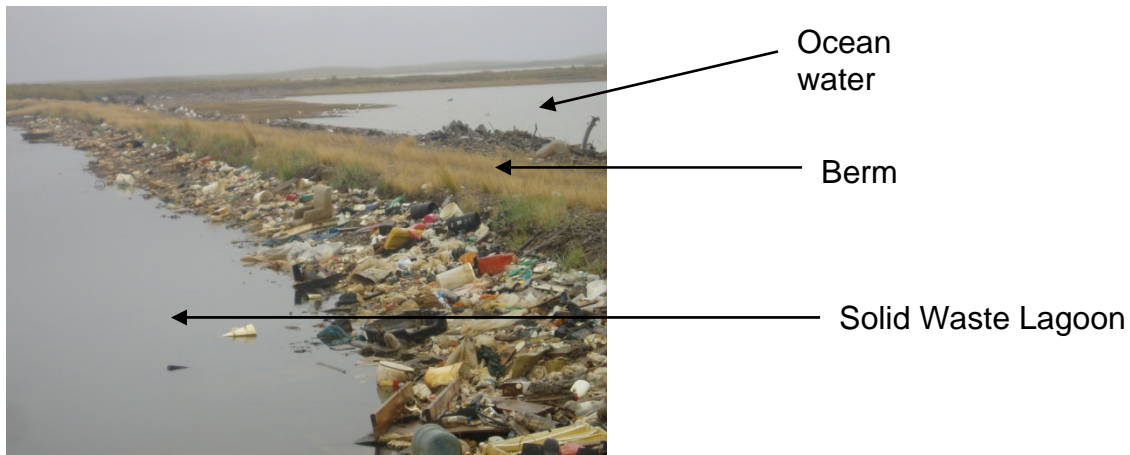


Figure 2: Tuktoyaktuk Solid Waste Facility
(Photos taken by ENR staff in 2008)

Recommendation:

ENR recommends that the Hamlet reassess the methods that are currently in place to prevent windblown debris, and develop procedures to mitigate this issue and include in its updated O&M Plan.

5. HAZARDOUS WASTE

Discussion

ENR tracks the movement of hazardous waste from registered generators, to registered carriers and receivers on movement documents issued by the Environment Division. Household hazardous waste from individual residents is exempt from these requirements. However, once household hazardous waste is collected and consolidated, the Hamlet is then considered a hazardous waste generator (NTG000381) and is required to manage the waste according to the *NWT Guideline for the General Management of Hazardous Waste*.

The Project Description states that the Hamlet is not responsible for commercial or industrial hazardous waste. The Industrial, Commercial, and Institutional (ICI) sector is responsible for ensuring that the hazardous waste it generates reaches appropriately registered receiving facilities. ENR concurs, however, improper, unregulated, and unrestricted disposal hazardous wastes from activities sourced from outside the community in the Hamlet facility, will none the less result in adverse environmental impacts, and adverse economic liabilities transferred to the Hamlet and the Government of the Northwest Territories. Therefore, since the Hamlet of Tuktoyaktuk is not a registered receiver of hazardous waste, it should not be receiving ICI hazardous waste at its facility. The Hamlet needs to affirm its decision of what types of waste it will or will not accept at its facility. This also will allow the Hamlet to ensure accountability, restrict access to its facilities, and ultimately be

responsible for putting in place appropriate measures to screen out inappropriate ICI sources of hazardous waste from entering its facilities.

Recommendation – Hazardous Waste Management Plan

ENR recommends that the Proponent develop a site specific Hazardous Waste Management Plan that identifies hazardous materials and wastes it will accept at the Solid Waste Disposal Facility, and detail mitigative measures for its management. Attached is a draft document, “*Developing a Community Hazardous Waste Management Plan*”, which ENR recommends for use by the Proponent as a guidance document to aid in developing the plan.

ENR is committed to work closely with the Hamlet to aid in determining decisions about hazardous waste management, in the development of the hazardous waste management plan, and also aid in the collection, segregation, and storage of Household Hazardous Waste (HHW). ENR can also provide assistance with the training of local staff through HHW education and the organization of collection events.

Recommendation – Hazardous Waste Collection

The Hamlet should only accept municipal sourced hazardous waste. Hazardous waste or any industrial wastes generated from industrial operations outside the Hamlet should not be accepted or consigned to the facility, as the community facilities are not designed, managed, or licensed to manage wastes of this nature and it is contrary to the NWTWA and Regulations. Hazardous waste should only be accepted that is identified as originating from municipal (residential) or industrial solid waste streams that are generated or sourced only from within community boundaries.

6. OUTSOURCED INDUSTRIAL WASTE STREAMS

Discussion

Contractors are known to be disposing of unauthorized waste streams in the Tuktoyaktuk SWDF that are originating from on and offshore industrial activities. It is also well known that historically, a significant amount of out-of-town sourced industrial waste from oil and gas activities in the area has been deposited in the Tuktoyaktuk SWDF. These facilities are in close proximity to present and potential future industrial undertakings outside the community. This adds additional concern given the state of the current facility, historical dumping of outsourced industrial waste streams in the facility, uncertainty over the contaminant streams originating at the facility, increased risk of adverse environmental impacts, the transfer of unmitigated adverse economic liabilities to the Hamlet and the Government of the Northwest Territories, and further augments concerns over the sustainability of the facility as a future waste disposal location for the Hamlet.

ENR also understands that future oil and gas exploration projects are discussing options to use the Tuktoyaktuk's SWDF as a storage, transfer and/or disposal area (i.e. the Arjurak offshore drilling program). However, ENR is unaware of measures, both environmentally and economically, as under consideration at this time to mitigate these potential activities.

In the NWT Waters Regulations Schedule II, Item 3, Municipal Undertaking (a), Any activity: it states: *"in a municipality, or in a settlement comprising a multiplicity of residential units, that uses only a municipal water and sewage system, including domestic, horticultural, fire protection, commercial or industrial activities..."* The regulations make it clear that waste streams dealt with in the Water Licence are for waste streams resulting from the highlighted activities "in" a settlement or municipality. This part of the act makes it clear that municipal licences are solely designed to deal with waste streams in a municipality or settlement and under no circumstance should hazardous, contaminated, industrial or domestic waste streams generated outside of community boundaries be accepted within a SWDF located within community boundaries.

Recommendation:

ENR recommends that no industrial, hazardous, contaminated or domestic waste sourced from outside the community boundary be accepted at the SWDF. If it is proposed that a future facility is to accommodate complex and variable industrial waste streams sourced from outside the community, then analysis of these waste streams must be provided, along with evidence that any community facility will be designed, operated, funded and licensed to mitigate and appropriately manage these activities.

7. CLOSURE AND RECLAMATION

Discussion

Ultimately, a complete Closure and Reclamation Plan (C & R Plan) will be required for the solid waste facility. A preliminary Closure and Reclamation Plan is also required for any SWDF, as the initial first step. It is more urgent in this case where it may be determined that the Hamlet of Tuktoyaktuk SWDF will require closure and/or relocation in the relatively near future.

The development of a C&R Plan is important. For background, there are three distinct steps, performed in the proper order, through the development of a Final C&R Plan:

1. Preliminary Closure and Reclamation Plan
2. Interim Closure and Reclamation Plan
3. Final Closure and Reclamation Plan

Step 1, a Preliminary C&R Plan, is appropriately prepared in conjunction with the planning and permitting stage of the SWDF. The general purpose is to propose closure objectives, alternatives analysis, and proposed closure criteria to understand the Proponent's intent. Determining appropriate closure options should also be integrated with a level of community engagement to build consensus upfront.

Step 2, the Interim C&R Plan, is to identify uncertainties surrounding certain closure options that guide corresponding areas for reclamation research during operations prior to closure. There are typically several versions that are prepared during the life of the facility to address changes in development alternatives, and to refine as the facility progresses towards closure and subsequent versions of Closure and Reclamation Plan are produced. Interim Plans are prepared on a regular basis to coincide with operational changes, advances in technology, key milestones, information collected during reclamation research, and results of community engagement.

Step 3, the Final C&R Plan, should be more detailed because more information and studies are available to determine duration, frequency, and magnitude of the effects. The final version of the C&R Plan is to contain detailed reclamation activities, and should be prepared and approved prior to a scheduled permanent closure or immediately after an unplanned closure.

ENR is unaware of a Hamlet of Tuktoyaktuk SWDF Closure and Reclamation Plan.

Recommendations:

Given the state of the SWDF, concerns over the sustainability of this location as a future SWDF, and pending study to determine future options (as recommended previously in Section 1.0), ENR recommends the Hamlet prepares and submits a Preliminary Closure and Reclamation Plan for the SWDF as a priority, and submits it to the Board for review and approval. This Preliminary C&R Plan should be submitted one year following the date of the current water licence extension/renewal.

Comments and recommendations were provided by ENR technical experts in the Environment Division, Forest Management Division, Wildlife Division and/or Inuvik Region, and were coordinated and collated by the Environmental Assessment and Monitoring Section (EAM).

Should you have any questions or concerns please do not hesitate to contact Patrick Clancy, Environmental Regulatory Analyst, at (867) 920-6591 or patrick_clancy@gov.nt.ca.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Clancy', written in a cursive style.

Patrick Clancy
Environmental Assessment Analyst
Environmental Assessment and Monitoring
Environment and Natural Resources



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File: N7L3-0714
Hamlet of Tuktoyaktuk

February 15th 2010

Sarah McKenzie
Regulatory Coordinator
NWT Water Board
P.O. Box 2531
Inuvik, NT X0E 0T0

SEND BY FAX: (867) 678-8611

Dear Ms. Mckenzie,

Re: Hamlet of Tuktoyaktuk N7L3-0714 – Municipal Water Licence Draft Revision

The Water Resources Division and North Mackenzie District office of Indian and Northern Affairs Canada have reviewed a draft of the Hamlet of Tuktoyaktuk Municipal Water Licence N7L1-0714. INAC submits the attached comments to improve and provide additional clarity in the Hamlet of Tuktoyaktuk draft water licence. Some recommendations provided differ from the standard conditions used in previous licences; however, INAC feels that these suggestions are appropriate and will improve the licence.

If you have any further questions or concerns please contact Mr. Nathen Richea, Regulatory and Science Advisor, at (867) 669-2657 or Nathen.Richea@inac-ainc.gc.ca, or Mr. Jan Davies, Water Resource Officer, at (867) 777-8909 or Jan.Davies@inac-ainc.gc.ca.

Sincerely,

ORIGINAL SIGNED

Carole Mills
Manager
Water Resources Division
Indian and Northern Affairs Canada

PART A - SCOPE AND DEFINITIONS

- It was noted that the definition for “**Commercial Waste Water**” had been removed. INAC recommends that this definition be reinstated as the licence may be issued for a number of years and over that time there may be commercial operations in Tuktoyaktuk in support of Oil and Gas exploration/production.
- The “**Pump-out Sewage**” definition should read as follows: means all Toilet Wastes *or Toilet Waste and Greywater mixture* collected by means of a vacuum truck for disposal at an approved facility;
- The “**Sewage**” definition should read as follows: means all Toilet Wastes *or Toilet Waste and Greywater mixture*;
- The “**Sewage Disposal Facilities**” definition should read as follows: comprises the area and engineered structures designed to contain *and treat* Sewage;
- The “**Solid Waste Disposal Facilities**” definition should incorporate the lagoon as the Solid Waste Lagoon definition has been removed. INAC suggests the following definition: comprises the area and associated structures designed to contain solid Waste *including lagoon structures used to collect surface runoff*;

PART B - GENERAL CONDITIONS

- Part B - Condition 1 should read as follows: The Licencee shall file an Annual Report with the Board and an Inspector *no* later than April 30th of the year following the calendar year reported that shall contain the following information:
- Part B - Condition 1 l should read as follows: any other details on Waste disposal or water use requested by the Board, *on or before* November 1st of the year being reported.
- Part B – Condition 7 should read as follows: The Licencee shall immediately report to the 24 Hour Spill Report Line (867 920-8130) any spills which are reported to, or observed by, the Licencee in areas of the Water Supply or Waste Disposal Facilities, *or those within the municipal boundaries of sufficient quantity in accordance with spill reporting protocols*.

PART D - CONDITIONS APPLYING TO WASTE DISPOSAL

- Condition 3 - should read as follows: The Licencee shall advise an Inspector at least ten (10) days prior to initiating a decant of the Sewage Disposal Facility lagoon.

- Condition 8 - should read as follows: The Licencee must notify an Inspector at least thirty (30) days prior to any discharge of water from the *Solid Waste Disposal Facility lagoon*.
- Condition 9 - should read as follows: The Licencee may commence the discharge of water from the Solid Waste *Disposal Facility lagoon* upon receipt of an Inspector's approval.
- Condition 16 - should read as follows: Any discharge of water from the Solid Waste Disposal Facility lagoon shall require the use of a floating intake. Any water discharged from the Solid Waste Disposal Facility lagoon shall be collected using a floating intake.
- Condition 17 - should read as follows: The Licencee shall immediately cease discharge of any water upon observing the discharge of turbid or cloudy water.
- Condition 19 should read as follows: A Freeboard limit of 0.5 metres or as recommended by a qualified Geotechnical Engineer and as approved by the Board, shall be maintained at all dykes and earthfill structures associated with the Sewage and Solid Waste Disposal Facilities.
- Condition 23 related to the open burn of solid or liquid Waste should be removed as this condition is not applicable to the *Northwest Territories Waters Act* since it was intended for air emissions. Issues related to leachate concerns can be addressed under Condition 24.
- Under Part H of the previous water licence, a list of key components to be included in Tuktoyaktuk's O&M Plan was provided. INAC recommends that this list of components should remain within the new licence in order to provide additional direction to the proponent, included under the Condition related to the O&M submission deadline which is currently Part E – Condition 3.

PART H - CONDITIONS APPLYING TO ABANDONMENT AND RESTORATION

- Closure and Reclamation are the terms currently used in the mining industry when relating to abandonment and restoration. There should be discussions about changing the terms as some point in the future. It is understood that the NWTWA makes reference to Abandonment.
- Condition 1 h. should read as followed: maps delineating all disturbed areas, borrow material locations, and site facilities; *and*,

SURVEILLANCE NETWORK PROGRAM - PART B

- Condition 2 should read as follows: “Water at Station Numbers 0714-2 and 0714-3 shall be inspected monthly during periods of flow for the presence of an oily sheen. If a sheen is detected, *discharge should be stopped immediately and* a sample shall be collected and analyzed for the presence of Oil and Grease.” The Board should also add some wording with respect to how the Licencee can resume discharge. For example “Following review of the results, approval to resume discharge may be authorized by the Inspector.”
- Condition 3 should read as follows: Water at Station Number 0714-3 shall be sampled prior to, *halfway through and if possible at the end of the discharge* of Water from the Solid Waste Disposal Facility lagoon. Each sample shall be analyzed for the following parameters: