

Participants: Kevin Glowa INAC, Christopher Beveridge GNWT Health, Tara Schweitzer DFO,  
Robert Alexie, Helga Harlander

Absent: Mardy Semmler GLA, Dorthy Majewski DFO, Anne Wilson EC, Nathan Millar GRRB

Guests: Richard Feilden EarthTech, Rick Campbell Town of Inuvik

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## Minutes

### Meeting commenced at 09:10

### Introductions

### Review of Application – no discussion

### Review of comments from reviewers

*Inuvik Hunters and Trappers Committee (EISC submission, dated March 17, 2006) had addressed concern with “seepage that occurs at the south end of the Sewage Lagoon.” (Attachment to copy of correspondence received from EISC to Town re screening decision, dated March 17, 2005)*

1. According to Richard, there is a karst lake forming and this is, were the “seepage” originates. He believes that it is isolated from the sludge/effluent cells, but that it is connected to the Twin Lakes. It would make sense to re-instate SNP #6 (discontinued in 1996) to monitor/document the characteristics of the “seepage.” INAC proposed to collect a sample as part of the regulatory inspections. A sign needs to be installed to identify the sample location. There would be merit to identify a sample location in the area, which could provide background data to aid in the interpretation of the test results. There is another karst lake forming at the N/W end of the secondary cell. Town is monitoring this development re potential effects on structural integrity of the berms. INAC to collect sample from this location also, as a proactive measure.

### Information items and action taken

2. In light of the concerns raised by reviewers, the Town proposes to withdraw its request to discontinue sampling at SNP #4 & #5.

*Comments forwarded by GRRB in response to information provided by Town (Earth Tech to GLWB, March 24, 2005): “I still am not convinced that we know enough about the winter effects to rule out negative impacts. The fact is that the DIAND study found unacceptably low levels of dissolved oxygen 500 m below the output in January across at least half the channel (0.34 mg/L and 0.1 mg/L). We do not know how long the DO levels remain this low (or below the limit) - except that by the following March they were fine. We do not know if DO is reduced throughout the entire water column.*

3. Predicted impact on DO in the river is in the magnitude of 0.2 mg/L DO, a level, which cannot be reliably measured. The following assumptions, which Richard considers conservative, were used in the calculation: max. historical BOD level, 50% increase in BOD load over the next 10 years, instant consumption of BOD. Considering climatic conditions, BOD should be well dispersed by the time it is completely assimilated.  
No rational explanation for the low DO level recorded in the DIAND study, unless the measurement was taken from the unmixed plume. DOs were surprisingly high otherwise in the river, above 12 mg/L.

There were extremely anomalous flow conditions, recorded during two periods one winter, judging by flow data collected over 30 years. The cause is unknown. It is not foreseeable if and when this may occur again. The flow data for that year were excluded from the analysis by EarthTech.

As a bottom line, the concern is the effect of the effluent plume on fish/fish habitat. The DIAND study found healthy populations of fish even in the plume. The mild gill hyperplasia, detected in some fish, was not conclusively linked to the effluent.

The plume could be delineated by taking DO measurements (grid pattern). The plume is considered to be fairly concentrated (narrow band) for a few miles downstream. It has not been determined where exactly the plume is, it is however not expected to be very large. The river system, as a whole, carries enough oxygen for fish to thrive. Fish are expected to avoid localized areas, where conditions (i.e. oxygen levels) are less than optimal, i.e. the concentrated effluent plume.

DIAND study is the only study that ever examined oxygen levels in the river. Although it would be an interesting area for further studies, can the expenditure be reasonably justified, considering the data provided by the DIAND study.

The diagram of the effluent plume, from the Reid Crowther study, was derived using ammonia measurements. The plume is expected to be somewhat longer under current conditions, but not necessarily wider. The question was raised, whether further study would be warranted, as a fair number of reviewers appear to have voiced concerns. Toxicity of ammonia is temperature and pH dependent. The low temperature in the winter time, when the river flow is low and the plume is more concentrated, is a benefit. CCME guidelines for ammonia address acceptable levels that fish could safely be exposed to, on a permanent basis. Biodiversity at the effluent discharge point is unique, due to the increased nutrient load, and fish may be attracted to this habitat. However, the time period, fish would actually spend in this area, is likely very limited.

Considering the size of the river, any effect of the effluent on the river is very localized.

Richard believes that the studies completed to date do provide sufficient information to support the conclusions reached in the submission to the licence renewal application. An individual study report, by its nature, does not necessarily convey the writer's application of generally accepted concepts and detailed knowledge of a system to the reader. Although a detailed DO study would be interesting, the minimum cost would be \$50,000. The mass of the BOD in the effluent is not sufficient to significantly affect DO levels in the river.

*Town's response to information request by TAC – Hydrology and soil conditions – landfill. Does the town have any documentation on this? The GLWB files do not contain any documentation re the suitability of the site and it would be useful to have this information on file.*

4. The town does not have any documentation. The town chose the area for landfill after it had to close another site, which was too close to the river. Factors like proximity to town, access to material for intermediate cover and elevation were likely considered in the decision. Richard proposed to generate a letter on behalf of the town, summarizing all that is known about the site. This may be something to address in the licence renewal. Some soil sampling was done at the gravel pit near the site, which uncovered ice rich clay. There are no measurements available as to depth of active layer and depth of permafrost. The extent of the degradation of the permafrost due to heat generation through biological activity or the recent fire at the landfill is unknown. The assumptions re hydrology and soil conditions at the landfill area are based on what is known of the conditions of the general area.

*Town's response to information request by TAC – Discharge from backwashing filters into Duck Lake.*

5. Maximum estimated discharge between 30,000 to 40,000 m<sup>3</sup>/y. Discharge only occurs during winter months, when water is treated at the East Channel filtration plant. There are two culverts which connect Duck Lake to the river. Therefore fish do have access. It is assumed that Duck Lake freezes to the bottom, but that a small channel is open due to the discharge from the filtration plant. The sediment, introduced with the discharge, likely settles in Duck Lake. TSS is low in the

winter anyhow. General consensus - the discharge from the filtration plant is not of concern re its effect on the river or fish. Include a reference to this discharge into the water licence.

*Town's response to information request by TAC – Shale pit solid waste site*

6. It is not really known if this is officially a special waste disposal site. The federal government used it as such and the town believes that the federal government retains liability for wastes deposited there prior to the town taking the site over. The sign at the entrance is believed to state “Dry Hazardous Waste.”  
It would be appropriate to document anything known about the site and include in the file.  
Town originally made use of the site as the guidelines did not allow for asbestos to be disposed of in the municipal solid waste landfill.  
There is no inventory available. The town has buried asbestos and metal waste. Documentation re hazardous waste accepted by the town has been sent to “Yellowknife.” The federal government is believed to have buried drilling chemicals (dry chemical, corrosive) excavated from a site near Fort McPherson. The site used to be a quarry (common fill – mud stone & shale) and the chemicals are buried in clay.  
Is the description of the site as a dry inert waste site appropriate, considering what it contains? The town has only buried steel and wrapped asbestos and the current use is as a dry inert waste landfill. It needs to be determined what the site is approved for and documentation should go on file for reference.

*Town's response to information request by TAC – Contaminated Snow dump*

7. The contaminated snow dump is located behind the dog pound, on a raised bank on the side of the hill. The separator used, is an oil/water separator purchased from Green Turtle technologies in Toronto. A drawing or manual for this equipment is not currently available. The town has contacted the manufacturer to get a copy of the operations manual.  
“Clean” snow cover is removed prior to treatment of contaminated snow. When the contaminated snow is melted, oil floating on the surface is absorbed with “soakers.” Remaining liquid is then pumped through the oil/water separator. The contaminant level going into the oil/water separator is believed to be very low.  
Area is lined with clay and surrounded by a 3’ dike. The contaminated snow is processed before the ground is thawed.  
Most snow, taken in by the town, is contaminated with Diesel fuel. Town only takes hydrocarbon contaminated snow, i.e. glycol would not be acceptable. Town believes area is contained by the berm and any precipitation collected during snow-free months evaporates.  
The town treats approximately 100 m<sup>3</sup> of contaminated snow. 30 to 40 “soakers” are typically used to blot up the floating hydrocarbons within the bermed in area. Around 25 m<sup>3</sup> of contaminated water are pumped through the separator, yielding approx. 10 gal of hydrocarbons to be disposed of. Water off the separator is discharged onto the land. The water is not sampled to confirm effectiveness of treatment in the oil/water separator.  
Residents of Inuvik as well as industry deliver contaminated snow.

*Town's response to information request by TAC – Encapsulating camp incinerator ash*

8. The town has not made a determination on how it will treat camp incinerator ash, should it be delivered to the solid land fill, at this point. Current practice is to accept incinerator ash either encapsulated, if so delivered, or as is.  
Ash is a highly leachable material and high quantities of ash in the landfill would be an issue of concern if not properly addressed. This could be done through O & M.  
Also, follow up with Anne (EC) for input.
9. Town of Inuvik is supportive of the MGP, but is not prepared to put itself into a compromising position when it comes to environmental responsibilities. Meeting its responsibilities to the residents has priority.

*EarthTech concerns with review comments submitted by INAC re licence violations*

10. Violations were summarized for the past 10 years and did occur in the area of sampling and allowable MAC for BOD and TSS. Town of Inuvik “does a good job” and responds to deficiencies. INAC inspector has an excellent working relationship with Town of Inuvik. There is frequent contact between INAC, Town staff and EarthTech. Typically inspections on municipal water licences are conducted two times per year. INAC has reduced this to only one inspection per year due to the Town’s record. INAC inspector considers violations re sampling as minor, but did suggest implementing a system to ensure samples are collected regularly. EarthTech questions validity of TSS violation, there was one anomalous test result, which may be due to contamination of the sample. Small BOD violations did occur a number of times. INAC inspector will review records to confirm the accuracy of the statements made in the review comments. BOD is expected to increase as the town grows. Increase of MAC for BOD to 120 mg/L may not be sufficient to keep the Town in compliance.

*BOD removal efficiency of existing effluent treatment facility- when was the system last assessed*

11. Sludge is removed from the primary cells about every 10 years. Primary cells are most efficient when there is maximum settling time. During the winter months, the secondary cells basically provide primary treatment also, as there is little biological activity due to temperature. Primary cells were depth surveyed last summer; data have not been reviewed yet. It is expected that the primary cells are due for sludge removal.

*Berms*

12. Restoration work on dyke, separating primary and secondary cells has priority though. (Violation had been issued re this matter and Town has commissioned engineering on the project.) Shrubs growing on dykes are a concern for INAC. Some discussion whether shrubs serve to stabilize or undermine structural integrity of berm. Large shrubs provide habitat and make it difficult to inspect berms. Small shrubs may be beneficial. Town does remove brush periodically, failed to do so last summer though. EarthTech does inspect berms on an annual basis.

*Solid Waste O & M manual*

13. Manual is in the process of being revised

*Upcoming CCME guidelines*

14. CCME task group is in the process of developing Canada wide standard for municipal waste water discharges. Challenges faced in the North are being addressed. Standard based approach more suitable to populated areas as cumulative effects are more of a concern. Risk based approach may make more sense for the North. If standard based approach is applied across the country, expenditures for Northern communities will be significant to meet the guidelines.

*Town’s response to information request by TAC –Hidden Lake*

15. Chlorination level of the town water supply during winter months, when Hidden lake is being recharged with water from the river, is relatively low. River water carries a low amount of organic matter during that time. Chlorine residuals are measured via an online analyzer at Hidden Lake. Trihalomethanes (THMs) will form in the lake. The town does test the raw water, prior to treatment and has confirmed the presence of THMs. Ask EC for input.

*Town’s response to information request by TAC –Sewage bags*

16. Proposed procedure not a concern in terms of the water licence, possibly a health issue though. System is not in place yet. Some discussion re most appropriate location, landfill vs effluent

treatment area. INAC has received calls re sewage bags having been discarded in the area. Citizens need to be aware of disposal facility. Old landfill had designated honey bag area, current landfill does not. There are still a number of people that use honeybags. Solid waste landfill does not officially accept honeybags. However, it is assumed that people do deposit the honeybags there.

#### *Water licence and operation of landfill*

17. Discussion re mandate of NWT Waters Act re operation of landfill site. Landfill management issues are not covered under the Act, unless there is a concern that contaminants migrate into water. INAC has no basis to enforce landfill management issues otherwise. There are guidelines re the management of landfills in the NWT.
- The GLWB has no interest in prescribing landfill operation. The purpose of the review is to assess potential risks re pollution of water.
- The Town strives to meet existing guidelines and protect public health. In regard to sewage bags, it is trying to implement a practical, affordable solution.
- The utilidoor system is not covered by the water licence and INAC has no authority re inspection or response to spills, unless there is potential for contamination of water. The utilidoor system is not owned by the town. The Town is however open to input and welcomes co-operation with INAC in case of a spill.

#### **CB, RF, RC & RA left meeting ~ noon**

#### *Duck Lake and Hidden Lake – effects on fish?*

18. It is assumed that Duck Lake is frozen to the bottom during winter months except for a small area at the discharge point. It is unknown if the discharged water channels through the lake and actually makes its way to the river during the winter. Solids are expected to settle out in Duck Lake, TSS of discharge to river is unknown. It is unlikely that there are any fish present in Duck Lake over the winter time, as it is either frozen or would likely have very low DO in open areas. The bottom is expected to be covered in sediment. The Lake is unlikely to serve as spawning habitat. Fish are expected to be present during the ice free months.
- The conditions at Hidden Lake are not particularly well known. There are possibly suckers and carp present, which appear to thrive.
- Both lakes do have fish populations at some point during the year. The lakes are more or less designated as part of the Inuvik infrastructure.
- GLWB would like to have a comment by DFO re their assessment of the current use of Duck Lake and Hidden Lake, in conjunction with the water licence, on file.

#### *Discharge from oil/water separator*

19. This practice needs closer examination. There is a potential that contaminants like glycol and other engine fluids are contained alongside hydrocarbons in the contaminated snow. There is no documentation re the quality of the water discharged. Uncertainty as to who has jurisdiction over discharges to Commissioner's land. This needs to be followed up on. There a potential for contamination of water and assurances need to be in place that the discharge is harmless. Follow up with EC and INAC to get input.

#### *Land farm – treatment of contaminated soil*

20. Hydrocarbons are expected to be attached to the soil and unlikely to escape from the site. Review O & M, to find out that the potential of contaminants escaping during spring runoff does not exist. Is there an existing drainage runoff management plan? SNP sites are the only way runoff is currently monitored. Surface well monitoring may be appropriate.

#### *Other*

21. A professional assessment of the soil conditions and hydrology of the landfill site would be useful and may be appropriate at this point. This does not necessarily imply that physical studies have to be conducted.

There are a lot of unknowns re the next years in this area, this needs to be considered in drafting the water licence.

Brief discussion on term of licence, five years vs. ten years; CCME guidelines only affect a portion of the licence; water licence is issued on authority of federal legislation – does it override CCME guidelines – needs to be researched

Discussion whether another meeting was required. Decision: circulate minutes asap to TAC members; distribute 1<sup>st</sup> draft of water licence by May 1, 2006 to TAC members for comment

**Meeting adjourned 12:40**