NUNAVUT WATER BOARD UPDATE

December 23, 1997

LICENSEE: HAMLET OF BAKER LAKE N6L3-1191

As required under Part D: Conditions Applying to Waste Disposal, Item 2 and Item 3:

2. *"The Licensee shall conduct the "Baker Lake Water Quality Study" as described in the Terms of Reference annexed to this License." (See attached)*

3. *"The Licensee shall submit a report of the Study described in Part D, Item 2, within two (2) years of the issuance of this Licence."*

Historically, the community has expressed concerns regarding the quality of water obtained from Baker Lake. The concerns stem from the fact that the water source is withing the same drainage basin as abandoned solid waste facilities, abandoned sewage facilities and existing sewage facilities. (See Figure 1)

Overview

The License was issued on September 1, 1993. DIAND agreed to perform Water Quality Study for the Hamlet. Report was submitted to the Hamlet on October 30, 1996. August 1997 brought to the attention of the NWB that approval required. Distributed for comments in September 1997.

Summary

The results of the Baker Lake Water Quality Study indicate that the hamlet's water supply does not appear to be threatened by contamination from the sewage and solid waste disposal sites or surface run-off from the community. All samples taken from the treated drinking water and the water in the vicinity of the water intake pipe met the Guidelines for Canadian drinking Water Quality for the parameters analyzed.

The Canadian Guidelines for Freshwater Aquatic Life were exceeded for phenols and several of the metal parameters. The main sources of contamination were the sewage and solid waste disposal sites. The abandoned solid waste disposal site and the culvert passing under the bridge that crosses the creek that flows into Baker Lake may also contribute to the elevated levels of some parameters. The contamination, however, does not appear to be seriously affecting the integrity of the aquatic environment.

Comments

RWED

- supports recommendation for station 1191-2 to be located at the inlet to Airplane Lake.
- sampling of Phenol, Total Copper, Total Iron , and Total Lead to be continued to confirm contributing sources.
- recommend clean up of abandonded solid waste facility near Garbage Creek.

DIAND

- SNP station to be 1191-2 at the inlet to Airplane Lake.

EC

- confirms my recommendation that bioassays should have been conducted to evaluate the level of toxicity associated with the water flowing into each lake. If toxicity is present, further treatment is required.
- Dept Health recommendation require concurrence for them.
- supportive information should have been submitted. (ie; Spill Line)
- evaluation of originating contamination sources still unanswered, further evaluation of drainage from each disposal site (abandoned or current) , drainage paths from each site should be identified, would be useful in developing treatment options if required.

Recommendations by Technical Advisor

1. The degree of contamination entering Baker Lake from the waste disposal sites and surface run-off from the community was evaluated. The report indicated elevated levels of phenols *(toxic pollutant which can occur naturally in fossil fuel ie benzene, also used as a disinfectant, antiseptic)* and metals Total Copper, Total Iron, and Total Lead.

2. The origins of the contaminants is unknown. Recommend further evaluation could be conducted on the drainage that originated from each disposal site. Identification of the drainage passage would provide information which could be used in developing treatment options if required.

3. Given that the Guidelines for Canadian Drinking Water Quality were never exceeded there does not appear to be health risks associated with the quality of the drinking water.

4. That the SNP Station 1191-2 be identified as "just prior to the inlet to Airplane lake, prior to the culvert". To confirm that the necessary treatment is being achieved for FAL within the defined treatment area, recommend that bioassays be conducted to evaluate the level of toxicity associated with the water flowing into fish bearing lake. This could be performed by collaboration between local HTA and DFO or EC.

5. Bathymetric survey of Finger Lake was not performed. The survey was to evaluate the depth of freeze. (TAC agreed that < 8 ft freezes to the bottom). Given that the lake contains "immature lake trout" it is unlikely that the lake freezes to the bottom. In setting

the Terms of Reference for the study it is likely that the TAC assumed the worst case scenario, that there was contamination at the inlet to Finger lake due to sewage (elevated fecal levels). Therefore, it would be important to evaluate the retention time of the sewage in the lake and the dilution factor for the lake.

Two samples were obtained and both samples were within the Drinking Water Quality Guidelines and therefore, it is not necessary to evaluate retention time and a dilution factor. One question may remain, should additional sampling be done? Are 2 samples enough to adequately reflect the conditions?

General recommendation - supportive information for conclusion should be provided.

Recommendations from Board: