UMA Engineering Ltd.
Engineers, Planners & Surveyors
#206 – 303 Jarvis Street, Whitehorse, Yukon Terr., Canada Y1A 2H3, Telephone (403) 668-4222

November 15, 1993

1315 160 00

Government of the Northwest Territories
Department of Public Works and Services
Box 1320
Yellowknife, NWT X1A 2L9

Attention: E. Gordillo, P.Eng.

Dear Sir:

RE: COMMENTS FROM MR. TIM BURETTE, DEPARTMENT OF FISHERIES AND OCEANS, EASTERN ARCTIC AREA ON PRELIMINARY REPORT FOR GRISE FIORD SEWAGE DISPOSAL IMPROVEMENTS IN LETTER DATED OCTOBER 18, 1993.

We would like to respond to the specific comments made by Mr. Tim Burette in his letter of October 18, 1993 on the preliminary report for Grise Fiord sewage disposal improvements. We will endeavour to do this by addressing each point in his letter.

General

1. Discharge area for the improvements was presented in the report using an air photo, in addition to site plan. Photos of area were presented as part of Inspection Report, which was submitted separately from the preliminary report.
2. The sewage lagoon effluent sampling completed the INAC may be relevant only to the solid waste disposal site in the vicinity of the lagoon. The elevated concentrations of metals may originate from the solid waste disposal site because of its close proximity to the lagoon.

   The reference to the Guidelines for Canadian Drinking Water Quality may not be appropriate because the lagoon discharge is not associated with any source of drinking water.

Specific

Section 2.5 - Important Considerations

The volume of effluent from the old cell does not need to be considered in the volume of the proposed lagoon because this effluent will be transferred into the proposed lagoon near the start of its design life when it will have excess capacity.

The effluent will then be discharged within the year it was transferred to the proposed lagoon.

Any sludge from the old cell should remain in the old cell where it may be disposed of as part of the decommissioning of the old cell.

Section 4.4.2 - Lagoon Systems

The proposed lagoon sewage will discharge by seepage through the lagoon dyke and subsequent overland flow to the ocean. In anticipating the eventual "blinding" of the seepage face, the configuration has a discharge pipe for future lagoon discharging. The future lagoon discharge would make its way into the stream adjacent to the site.

The reference to "Canadian Water Quality Guidelines" is presumed to be the "Guidelines for Canadian Drinking Water Quality," which may not be appropriate as previously stated.

Section 4.4.3 - Treatment Concepts

A seepage lagoon would, for all practical purposes, function as a storage lagoon because the seepage face would remain impermeable for at least 10 months of the year because of the frost penetration into the dyke.

Section 5.1.1 - Design Criteria

Refer to previous paragraph.

Section 5.1.2 - Recommended Configuration

The sideslope reduction is based upon the geotechnical considerations presented in Appendix C of the report. A sideslope reduction will require less material for construction, thus reducing the construction cost.

The seepage lagoon structure cannot guarantee a non toxic effluent discharge into the ocean, however this is the most appropriate technology for Grise Fiord for maximizing the probability of a non-toxic effluent.

Section 5.3 - Design Details

The seepage section is recommended for construction on the ocean side of the lagoon, and the controlled seepage section is recommended for construction of the remainder of the lagoon.

The outlet system should be constructed with sufficient clearance above the bottom of the lagoon to accommodate sludge accumulation without plugging.

Section 7.3 - Snow Accumulation

Snow accumulation in the bagged sewage area may or may not be a problem, however any leachate generated by excess moisture would seep through the fill into the proposed sewage lagoon.

We hope this information addresses the comments made the Fisheries and Oceans. If there are any further questions please direct them to Mr. Kevin Ness at 920-4004.

Sincerely,

UMA Engineering Ltd.

Ken Johnson, M.A.Sc., P.Eng.
Environmental Engineer

uma