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November 7, 2000

N5L3 - 0087

Mr. Thomas Kudloo
Chairman
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NT X0E 1J0

Dear Mr. Kudloo:

Re: Town of Iqaluit - Water Licence Renewal

On behalf of the Department of Indian Affairs and Northern Development, Fisheries and Oceans Canada, and Environment Canada, we are pleased to submit to the Nunavut Water Board our joint federal intervention for the renewal of the Town of Iqaluit's Water Licence. Departmental representatives will also be participating in the Public Hearing scheduled for November 22 to 24, 2000 in Iqaluit.

If the Board would like clarification on any of the points in this intervention, please contact David Milburn (DIAND) at (867) 669-2650, Anne Wilson (EC) at (867) 669-4735, or Jordan DeGroot (DFO) at (867) 979-8007.

Yours sincerely,

David Livingstone
Director
Renewable Resources and Environment
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& Northern Development

Burt Hunt
Director
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Laura Johnston
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Canada

PUBLIC HEARING SUBMISSION TO THE

NUNAVUT WATER BOARD

ON THE APPLICATION BY THE

TOWN OF IQALUIT

FOR A MUNICIPAL WATER LICENCE RENEWAL

NOVEMBER 2000

**ENVIRONMENT CANADA,
FISHERIES AND OCEANS CANADA,
and
DEPARTMENT OF
INDIAN AFFAIRS AND NORTHERN DEVELOPMENT**

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1. INTRODUCTION

This intervention to the Nunavut Water Board is made on behalf of Fisheries and Oceans Canada, Environment Canada, and the Department of Indian Affairs and Northern Development (the Departments) on the renewal of a Water Licence for the Town of Iqaluit, Nunavut Territory. The licence would permit the use of water and the disposal of waste into water for municipal purposes. The Town has applied to use an average of 1.2 million litres of water per day and has requested a five year term commencing January 1, 2001.

This intervention is made jointly by the three federal departments to emphasize the consensus reached regarding our recommendations on the Town of Iqaluit's Water Licence renewal submission.

This intervention is prepared based on information supplied by the Nunavut Water Board. The federal departments may wish to seek additional advice or expertise for any new information presented to the Board.

2. MANDATES OF THE FEDERAL DEPARTMENTS

Environment Canada

The general mandate of Environment Canada (EC) is defined by the *Department of the Environment Act*. This Act provides the Department with a general responsibility for environmental management and protection in terms of the need to foster harmony between society and the environment for the economic, social, and cultural benefit of present and future generations of Canadians. The Department shares this responsibility with provinces and territories. EC is also responsible for providing environmental advice to federal government agencies and for the preservation and enhancement of environmental quality.

Municipal operations of the Town of Iqaluit are subject to the following statutes administered by Environment Canada: the *Fisheries Act*, the *Canadian Environmental Protection Act (CEPA)*, the *Migratory Birds Convention Act*, and *Canada Wildlife Act*. Environment Canada's submission is based primarily on its mandated responsibility for the enforcement of Section 36 of the *Fisheries Act*. Subsection 36(3) of the *Fisheries Act* prohibits the "...deposit of a deleterious substance of any type in water frequented by fish...." A first step towards compliance with this requirement is demonstrating that the effluent is non-acutely lethal. This may be demonstrated by an acute lethality determination such as *Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout* (Reference Method EPS 1/RM/13, July, 1990) and amendments (May 1996), or other techniques and procedures.

Fisheries and Oceans Canada

Under the Habitat provisions of the *Fisheries Act*, Fisheries and Oceans Canada, Habitat Management (DFO-HM) is responsible for the conservation and protection of fish and their supporting habitats, which are part of, or have the potential to support a commercial, sport, or subsistence fishery. These habitat provisions provide mechanisms to allow development projects to occur while providing protection of fish and fish habitat. Section 35 of the Act, which prohibits the harmful alteration, disruption, or destruction (HADD) of fish habitat, provides the Minister with the power to authorize terms and conditions to allow projects to proceed in compliance with the Act. DFO's responsibilities and decision-making procedures are set out in a number of guiding documents, including *The Policy for the Management of Fish Habitat* (1986). This policy outlines a standard approach through the application of the No Net Loss (NNL) Guiding Principle.

The long term objective of DFO-HM is to achieve an overall Net Gain in the productive capacity of fish habitats. Productive capacity is the measure of the capability of a habitat to produce fish and/or food organisms in natural or restored conditions. A fundamental strategy for achieving this is to prevent further erosion of the productive capacity of existing habitat by applying the No Net Loss Guiding Principle. Under this principle, DFO works with developers and/or other government agencies so those projects are designed in a way that maintains the fish habitat's productive capacity.

Department of Indian Affairs and Northern Development

The Department of Indian Affairs and Northern Development's responsibility for water derives from the *DIAND Act*. With respect to water management, DIAND is a unique federal department in that it holds "provincial-type" responsibilities for water resources derived from Crown ownership of the resource and other natural resources in the north. DIAND is responsible for the administration and enforcement of the *Northwest Territories Waters Act*. As described in Section 12, the Act provides for the "conservation, development and utilization of waters in a manner that will provide the optimum benefit therefrom for all Canadians and for the residents of the Northwest Territories in particular" and consequently Nunavut residents as well. At an operational level, the Department is concerned about direct impacts to freshwater resources.

Water use and waste disposal must be either licensed by Water Boards or authorized by regulation. The proposed *Nunavut Waters and Surface Rights Act*, when passed, will continue this process in Nunavut. In addition to its initial mandate, DIAND's mandate has grown to include responsibilities under the *Canadian Environmental Assessment Act* and obligations from the Nunavut Claims Agreement. DIAND also provides the inspection function for licences issued by Water Boards, however, this submission will not include a compliance summary as a component of the intervention. Inspection reports and compliance reviews are submitted to the Board on a regular basis and form part of the public register. DIAND's representatives are prepared to answer any questions regarding the Town of Iqaluit's compliance record.

3. CONDITIONS APPLYING TO WATER USE

Water Source and Anticipated Volumes

The Town of Iqaluit obtains raw water from Lake Geraldine which is pumped to the Water Treatment Plant and reservoir. Water consumption for 1996, 1997, and 1998 were 471,627 m³, 438,778 m³, and 391,555 m³ respectively. The Town forecasts that due to population growth, water consumption rates are expected to steadily rise during the proposed licence term of January 1, 2001 to December 31, 2005 and during the proposed 20-year design life of the water treatment plant upgrade (i.e. 2017). The Town of Iqaluit has requested the approval of the use of 1.2 million L/day of raw water from Lake Geraldine, which amounts to about 438,000 m³/year. This amount does not allow any contingency for growth or for emergency needs of the town of Iqaluit.

The Departments recommend that the licence limit for water use remains at 1.1 million m³/year, as in previous licences.

The Town of Iqaluit has proposed a study to assess long term water supply options for the Town. This study is to include an assessment of the capabilities of Lake Geraldine to supply additional volume, and an assessment of alternative water sources.

The Departments recommend inclusion of this study as a water licence condition, and recommend that this study include the hydrological assessment of Lake Geraldine and realistic predictions of future growth and water use. The study should also assess the potential effects of water draw down on fish populations in Lake Geraldine.

The Town has stated that they do not feel that the integrity of the Lake Geraldine Dam is of concern in light of the inspections that have occurred as a result of the 1997 dam improvements and a risk assessment that the Government of Nunavut is completing which addresses the overall condition of the dam. Without access to the referenced inspection reports, it is not clear that concerns regarding dam stability have been adequately addressed. If any of the recent work done on the dam incorporated an inspection which meets the Water Board requirements, then the Town could submit this inspection to the NWB.

The Departments recommend to the Nunavut Water Board that the Lake Geraldine Reservoir Dam be inspected once during the term of the licence, during open and high water conditions by a qualified geotechnical engineer following the *Canadian Dam Association's 1999 Dam Safety Guidelines*. The engineer's report should be submitted to the Board within 60 days of the inspection with a covering letter from the Licensee outlining an implementation plan to respond to the engineer's recommendations.

4. CONDITIONS APPLYING TO WASTE DISPOSAL

Existing Sewage Lagoon - Inspection

Until the new Sewage Treatment Plant is commissioned, the existing lagoon system will continue to be used, maintaining the current licence discharge limits for effluent Total Suspended Solids, BOD₅, and Fecal Coliforms. Following the change to the new system, the Town proposes to leave the lagoon empty as a backup to the treatment plant. Problems with dyke seepage have resulted in the need to operate the lagoon at lower levels, shortening the retention and treatment time. Leakage from the lagoon's west dyke must be monitored and minimized, and overall dyke integrity evaluated.

The Departments recommend to the Nunavut Water Board that a geotechnical inspection of the existing sewage lagoon dykes be done annually while the lagoon is in use, starting with the next open water season, and that necessary remedial measures be identified, and implemented.

New Sewage Treatment Plant

The Town is expecting the Sewage Treatment Plant (STP) to be operational by Spring 2001, barring further delays. Acknowledging that the Town has experienced unforeseen problems in commissioning the new plant, the Town should be required by the Board to have the new plant fully operational by September 01, 2001. Should the Town experience logistical difficulties in meeting that deadline, an extension should be requested, and a monthly progress report submitted until the commissioning of the new plant.

Once the new sewage treatment facility is operational it will produce a liquid effluent and sludge for disposal. The Town is planning to compost the sludge at the current dump in a HDPE-lined containment structure. Additional information is required on different options for disposal of sludge. Factors that should be considered in the studies undertaken to develop this information are the composition of the sludge, the suitability of different storage techniques, length of time required to compost, and the possibility of incineration, or use as a greening material.

The Departments recommend to the Nunavut Water Board that the licence require full transition to the new system as soon as possible, with a target date of no later than September 1, 2001, in order to improve the quality of effluent entering Frobisher Bay. Options for sludge management should be identified and presented in a plan for approval prior to implementation.

If the plant is not operational by the deadline, the Departments recommend that the Town be required to submit a detailed progress report beginning in September and monthly thereafter, describing activities undertaken and progress made during the reporting period towards the commissioning of the new system, and outlining remaining work.

Solid Waste Disposal

The Departments have received the document entitled “Solid Waste Management Planning Study - Town of Iqaluit” by J.L. Richards & Associates Ltd. and Golder Associates Ltd., dated September 5, 2000. Through consultation and planning, this report has identified a number of potential sites for a new facility and options for waste management. Although a complete review of this report has not been completed, it appears to be comprehensive and identifies available options for solid waste management. The Departments are willing to provide detailed comments to the Nunavut Water Board when they formally review this plan. The next steps for the Town are to commit to their preferred option, choose a site, and begin to plan the new facility. Deadlines set by the Nunavut Water Board for the commissioning of this facility should be realistic, and based on the planning done by the Town, keeping in mind that the current facility has less than a year’s capacity remaining. As the current dump is expected to be full by October 2001, the new facility may not be ready in time to service the Town. This is a situation that should be avoided at all costs. The Departments agree with the Town’s stated goal of developing a contingency plan for any interim period, but request an opportunity to comment on proposed options.

The Departments recommend that the Town submit the final proposal for a new waste management facility to the Nunavut Water Board, for approval, within three months of licence issuance. The Town should also submit a Contingency Plan for any interim period between facilities (with a recommended date of within six months of licence issuance) and an Abandonment and Reclamation plan for the existing dump, prior to closure.

Hazardous Wastes

The Solid Waste Management Study indicates hazardous wastes are not clearly managed. Iqaluit’s current policy makes disposal the responsibility of the hazardous waste generator, without providing clear options or direction. There is concern that such wastes are entering the landfill or sewer system.

The Departments recommend to the Nunavut Water Board that the Town be required to develop a plan for the management of hazardous wastes. The plan should include characterization of the hazardous materials waste stream, and provision for secure storage, handling, and disposal of hazardous materials. It is also suggested that the option of land-farming of hydrocarbon-contaminated soils be investigated as an alternative to shipment out from the community.

5. CONDITIONS APPLYING TO OPERATION AND MAINTENANCE

The Town is required to submit to the Board plans for the Operation and Maintenance of Sewage and Solid Waste Disposal Facilities prior to the commissioning of such facilities. The Licensee is also required to review the approved plan on an annual basis and revise as required. The Northwest Territories Water Board last approved the Town’s Operation and Maintenance Plan in March 1995. Many changes have taken place in Iqaluit’s municipal facilities since this plan was approved, and it is essential that the plan be updated accordingly.

One operational concern is the measurement of freeboard in the sewage lagoon, as a proper gauge has not been installed. Given the need to manage levels to minimise seepage it would be prudent to have an accurate and consistent measure.

The Departments recommend that the licence require the Town of Iqaluit to submit a revised Operation and Maintenance Plan to the Nunavut Water Board which reflects the current waste disposal facilities and practices. This Plan should be revised and resubmitted prior to the commissioning of any new or amended waste disposal facility.

6. CONDITIONS APPLYING TO SPILL CONTINGENCY PLANNING

The Nunavut Water Board received the Town of Iqaluit's Spill Contingency Plan in June 1998. After receiving comments from reviewers, on July 13, 1999 the Nunavut Water Board advised the Town that the plan was not acceptable as submitted and provided comments for future revisions. The Town has not resubmitted the plan.

The Departments recommend to the Nunavut Water Board that the requirement to submit a revised Spill Contingency Plan be a condition of the Water Licence renewal. Submission of the revised plan within a three month period is suggested, with annual updates of the plan to reflect any change in operations.

7. CONDITIONS APPLYING TO ABANDONMENT AND RESTORATION

Existing Sewage Lagoon

Delays with the installation and commissioning of the new Sewage Treatment Plant have extended the use of the existing facultative sewage lagoon. Once the new system is commissioned, a practical closure plan should be developed for the sewage lagoon. It is suggested that a six month period would be realistic for the Town to develop and submit this plan, with implementation to follow as soon as reasonably possible. The Town has indicated the old lagoon will be retained as a backup option to the new sewage treatment plant, so final abandonment and restoration will not be completed in this licence term. An interim abandonment and restoration plan should be developed which addresses the feasibility of using the lagoon as a backup system, and considers long-term dyke stability once the lagoon is drained. In the interim, remedial measures should be detailed, including methods to minimize the lagoon footprint if possible.

The Departments recommend to the Nunavut Water Board that the Town of Iqaluit submit to the Board for approval a closure plan and implementation schedule for the existing sewage lagoon within six months of commissioning of the new Sewage Treatment Plant. The Departments recommend that the plan include an assessment of supernatant treatment, runoff quality, sludge volume and composition, and sludge disposal options. Should the Nunavut Water Board approve the use of the lagoon as a backup facility, the Departments recommend that a comprehensive plan be prepared by the Town that considers dyke

stability and timing of dyke inspections, and final configuration.

Apex and West 40 Landfill Sites

In August 1997, the Town submitted to the Nunavut Water Board abandonment and restoration (A&R) Plans for the Iqaluit and Apex Landfill Sites. After the Board requested revisions, new documents were submitted (Drainage Plans for West 40 - Site #4 and the Apex Dump Site (October 1997)), along with a Remediation Plan for the two sites (December 1997). The Nunavut Water Board advised the Town the above-noted documents were not sufficient to meet the licence requirement and could not be approved. The Board provided comprehensive and detailed comments to the Licensee but did not request the revised plans be resubmitted to the Board's office by a specific date.

The Departments recommend to the Nunavut Water Board that the Town be required to submit appropriate A&R plans for the Apex and West 40 - Site #4 by specific dates within the licence period. These plans should include a schedule for implementation.

8. SURVEILLANCE NETWORK PROGRAM (SNP)

The SNP requires sampling of final discharge from the sewage treatment system and runoff from three waste disposal sites. Faecal coliforms, BOD₅, ammonia, pH and Total Suspended Solids are to be analysed in sewage effluent on an annual basis, and bioassay tests (rainbow trout and Daphnia using Reference Methods EPS 1/RM/13 and EPS 1/RM/14) are to be done four times yearly. For all sites, it is recommended that field parameters also be measured at the time of sampling to aid in interpretation of analytical results. One requirement of the existing SNP is submission of a Quality Assurance /Quality Control (QA/QC) plan, which to date has not been submitted. 1999 Water Board limits for both the lagoon system and the sewage treatment plant are acceptable.

The Departments recommend renewal of the SNP conditions and licence limits, with the addition of the following condition: "The field pH, sample temperature, and ambient wind and weather conditions shall be recorded at all locations at the time of sampling." The QA/QC plan should be submitted within three months of the issuance of the licence.

9. RECOMMENDED TERM OF WATER LICENCE

The **Town** has requested a five year licence term. This time period would bridge the commissioning of new facilities, and closure of old ones, as well as address scheduling of closure of historic waste sites. Performance of new facilities could be evaluated, and any new operational needs identified over that time.

The Departments recommend that the Nunavut Water Board grant the Town of Iqaluit a five year licence.

REFERENCED DOCUMENTS:

Abandonment and Restoration Plan - Apex Landfill Site, Iqaluit, Northwest Territories. Oliver, Mangione, McCalla & Associates Ltd., March 1997.

Abandonment and Restoration Plan - Iqaluit Landfill Site, Iqaluit, Northwest Territories. Oliver, Mangione, McCalla & Associates Ltd., March 1997.

Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout (Reference Method EPS 1/RM/13, July, 1990) and amendments (May 1996).

Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Daphnia magna (Reference Method EPS 1/RM/14, July, 1990) and amendments (May 1996).

Drainage Plan - Apex Dump Site, Iqaluit, Northwest Territories. Oliver, Mangione, McCalla & Associates Ltd., October 1997.

Drainage Plan - Iqaluit Landfill Site West 40, Site #4, Iqaluit, Northwest Territories. Oliver, Mangione, McCalla & Associates Ltd, October 1997.

Dam Safety Guidelines. Canadian Dam Association, January 1999.

The Policy for the Management of Fish Habitat. Department of Fisheries and Oceans Canada, 1986.

Remediation Plan - Iqaluit Landfill & Apex Dump, Iqaluit, Northwest Territories. Oliver, Mangione, McCalla & Associates Ltd., December 1997.

Solid Waste Management Planning Study, Municipality of Iqaluit. Golder Associates Ltd. and J. L. Richards and Associates Ltd., September 5, 2000.