
Fisheries and Oceans Canada (DFO)

Detailed Review

Iqaluit Water Licence Renewal

Submitted to:
Nunavut Water Board (NWB)

April 29, 2016
DFO File No.: 14-HCAA-01381

Executive Summary

Fisheries and Oceans Canada, Fisheries Protection Program (DFO-FPP) understands that the City of Iqaluit is requesting a ten year water licence renewal which the Nunavut Water Board is presently considering. The City would continue to withdraw a maximum annual water supply of 1,100,000 m³ from Lake Geraldine and return used water effluent to Koojesse Inlet. The City would install a DFO-FPP compliant fish screen on the Lake Geraldine water intake.

DFO-FPP reviewed the water licence renewal to determine if it results in serious harm to fish that are part of a commercial, recreational or Aboriginal fishery, or to fish that support such a fishery which is prohibited under subsection 35(1) of the *Fisheries Act*, or by sections 32, 33 and 58 of the *Species at Risk Act* that apply to aquatic species.

The water withdrawal has been occurring for 58 years. Based on the information supplied, Lake Geraldine undergoes an annual cycle of replenishment in the spring, gradual lowering of lake levels through summer and fall, and a greater water volume reduction after ice up in the winter. This yearly cycle could be a cause for Lake Geraldine having few or no fish. This is supported by input from local stakeholders and DFO fisheries managers who have no record of fish in this watershed.

At present, DFO-FPP has no concerns with the issuance of this water licence renewal. However, future supplemental water supply could change the situation and DFO-FPP advises careful consideration of effects across all watersheds, including Lake Geraldine, as those plans are considered. Iqaluit is advised to retain qualified environmental consultants (e.g., biologists) when considering supplemental water supply.

It remains Iqaluit's responsibility to ensure it avoids causing serious harm to fish in compliance with the *Fisheries Act*, and that it meets the requirements under the *Species at Risk Act* as it may apply to its projects. If plans change or if the description of a proposal is incomplete, or changes in future, Iqaluit should consult DFO-FPP's website (http://www.dfo-mpo.gc.ca/pnw-ppe/index_eng.html) or consult with a qualified environmental consultant to determine if further review is required by DFO.

Further, it is also Iqaluit's *Duty to Notify* DFO if it has caused, or is about to cause, serious harm to fish that are part of or support a commercial, recreational or Aboriginal fishery. Such notifications should be directed to <http://www.dfo-mpo.gc.ca/pnw-ppe/violation-infraction>

Executive Summary- Inuktitut

Executive Summary French

Introduction

This detailed review summarizes the Fisheries Protection Program of Fisheries and Oceans Canada (DFO-FPP) assessment and recommendations concerning the proposed Iqaluit Water Licence Renewal. The purpose of this submission is to provide expert advice to the Nunavut Water Board (NWB) to assist in their assessment of potential environmental impacts associated with this proposal.

This submission focuses on the information available to date, with the objective of assessing the quality of the supplemental and/or revised information presented by the Proponent in support of the water licence renewal, and reflects DFO's mandate.

Mandate, Relevant Legislation and Policy

The *Constitution Act* (1982) provides the federal government with exclusive authority for coastal and inland fisheries within Canada's territorial boundaries. DFO exercises this power through, the administration of the *Fisheries Act* and some aspects of the *Species at Risk Act*. Under the *Fisheries Act*, DFO is responsible for the management, protection and conservation of fish (which include marine mammals as defined by the *Fisheries Act*) and their habitats. The Minister of Fisheries and Oceans is one of the competent ministers under the *Species at Risk Act* (SARA).

In general, the Fisheries Protection Program of DFO undertakes the review of proposed developments in and around fisheries waters to ensure that works, undertakings and activities are conducted in such a way that the proponents are in compliance with the applicable provisions of the *Fisheries Act*.

The mandate of the Fisheries Protection Program is to maintain the sustainability and ongoing productivity of commercial, recreational and Aboriginal fisheries. Subsection 35 (1) of the fisheries protection provisions of the *Fisheries Act* states that "No person shall carry on any work, undertaking or activity that results in *serious harm to fish* that are part of a commercial, recreational, or Aboriginal fishery or to fish that support such a fishery."

Fisheries and Oceans Canada interprets *serious harm to fish* as:

- the **death of fish**;
- a **permanent alteration** to fish habitat of a spatial scale, duration or intensity that limits or diminishes the ability of fish to use such habitats as spawning grounds, or as nursery, rearing, or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes;
- the **destruction of fish habitat** of a spatial scale, duration, or intensity that fish can no

longer rely upon such habitats for use as spawning grounds, or as nursery, rearing, or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of these life processes.

However, under paragraph 35(2)(b) of the *Fisheries Act*, the Minister of Fisheries and Oceans may issue an authorization with terms and conditions in relation to a proposed work, undertaking or activity that may result in *serious harm to fish*, subject to the consideration of the four factors in Section 6 of the *Fisheries Act*:

1. The contribution of the relevant fish to the ongoing productivity of commercial, recreational or Aboriginal fisheries;
2. Fisheries management objectives;
3. Whether there are measures and standards to avoid, mitigate or offset *serious harm to fish* that are part of a commercial, recreational or Aboriginal fishery, or that support such a fishery; and
4. The public interest.

The Fisheries Protection Program is guided by the “Fisheries Protection Policy Statement,” the intent of which is to provide guidance to Canadians to ensure that they are complying with the *Fisheries Act*. It strengthens the Government’s ability to address key threats to the productivity and sustainability of our fisheries, through standards and guidelines to avoid, mitigate and offset impacts to fisheries and to ensure compliance with these requirements.

The “Fisheries Productivity Investment Policy: A Proponent’s Guide to Offsetting” provides guidance on undertaking effective measures to offset *serious harm to fish* that are part of or that support a commercial, recreational or Aboriginal fishery, consistent with the fisheries protection provisions of the *Fisheries Act*. The objective of offsetting is to counterbalance unavoidable *serious harm to fish* and the loss of fisheries productivity resulting from a project.

The *Species at Risk Act* is intended to prevent Canadian indigenous species, subspecies and distinct populations of wildlife from being extirpated or becoming extinct; to provide for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity; and to manage species of special concern to prevent them from becoming endangered or threatened. The Minister of Fisheries and Oceans is the competent Minister for listed aquatic species that are fish (as defined in section 2 of the *Fisheries Act*) or marine plants (as defined in section 47 of the *Fisheries Act*).

For more information, see: <http://www.dfo-mpo.gc.ca/pnw-ppe/pol/index-eng.html>

Comments

The present, and proposed, water withdrawal significantly reduces Lake Geraldine’s natural water volume, leaving two relatively small pools, every winter. The water withdrawal diverts

water away from Lake Geraldine's small natural outlet stream. After use, Iqaluit releases effluent into Koojesse Inlet, a shallow tidal marine environment.

The gravity fed water intake does not have a DFO-FPP compliant fish screen.

Lake Geraldine is a 0.29 km² freshwater reservoir perched above Iqaluit at an approximate elevation of 109.6 m. It has a volume of 1361x103 m³, a 3.52 km perimeter, and approximate depth of 12 m. Its watershed area is 3.47 km² with a 13 km perimeter (Geological Survey of Canada 2011).

Historically, it seems likely that Lake Geraldine was even smaller. The present reservoir has been expanded four times by raising its outlet control dam and dykes, first constructed around 1958 by the Department of National Defence. Some 58 years later, the lake's water balance and Iqaluit's population projections, suggest that the Lake Geraldine system is approaching its servicing capacity due to the limited available water quantity from the Lake Geraldine watershed. The 1,100,000 m³ requested annual withdrawal is approximately 80% of the lake's total volume. Iqaluit reports that the water volume reduction, in winter, is severe, exceeding DFO's recommended 10% maximum for ice covered lakes in Nunavut (DFO 2010), leaving two relatively small pools prior to spring and summer replenishment. This suggests that the lake, as modified for water supply, could be a stressful over-wintering environment for fish – perhaps providing a reason for the lack of fish observed there.

There is no information or reports of fish occurring in Lake Geraldine or its natural outflowing stream. The City of Iqaluit has not surveyed either water body to determine if fish are present.

The City of Iqaluit's checks with local fishers and the DFO fisheries management office in Iqaluit, requested by the Fisheries Protection Program in January 2016, did not provide any indication of potential fish or fish habitat concerns.

Although opinion is that the lake seems fishless it is not without life. The Geological Survey of Canada (2011), using an underwater camera, observed 'small swimming organisms...in the lake, possibly amphipods or some other type of crustacean.'

Lake Geraldine's small, short, outlet stream runs through Iqaluit. It is initially very steep immediately downstream of the Lake Geraldine control dam, gradually flattening out on its way to the ocean. It flows through several culvert crossings on its way through the City. It eventually discharges into a shallow tidal marine environment.

DFO-Species at Risk Program appears to have no concerns for Species at Risk in the Iqaluit area that might be affected by the water withdrawal. As such, permitting under the *Species at Risk Act* does not have to be considered.

Avoidance and mitigation measures for water withdrawal impacts seem unnecessary and impractical at present. However, the continuing extensive winter drawdown seems likely to greatly reduce, or eliminate, any fish habitat value that Lake Geraldine might have historically had, or that it might, otherwise naturally develop. The decades long history of, and continued need for, extensive water withdrawal from Lake Geraldine, and Iqaluit's prohibition on any use of the lake to protect the water supply, make improvements or fishing impractical. In addition, Lake Geraldine, which was likely a relatively small, possibly inaccessible, lake, perched above Iqaluit, may never have been a significant fish habitat. Similarly, Lake Geraldine's outlet stream, due to water diversion and urban development, would continue to have reduced habitat suitability – and, again, improvements seem presently impractical, assuming the stream ever had significant fish habitat value. The situation suggests there are no reasonable – or necessary – measures presently required.

As a precautionary measure, and based on previous DFO concerns raised at licencing hearings, Iqaluit plans to screen its water intake according to the DFO 'Freshwater Intake End-of-Pipe Fish Screen Guideline' (DFO 1995) to prevent entrainment and impingement of fish. DFO supports this initiative since the absence of fish from Lake Geraldine, while likely, has not been proven. In addition, Iqaluit's future consideration of supplemental water supply could introduce fish and a fish screen may be necessary should fish become established in the lake at that time.

If Iqaluit obtained supplemental water in future that maintained reasonable water levels in Lake Geraldine and flow in its outlet stream, it would be interesting to see if some fish habitat developed. The general shortage of fresh water in the area, however, suggests that Iqaluit would likely only obtain enough supplemental water to meet increasing urban demands, leaving little left over for fish habitat. Potential effects across all watersheds involved in a supplemental water supply plan, including Lake Geraldine, would change the present situation and Iqaluit should evaluate them carefully when considering supplemental water planning.

The Iqaluit water licence renewal appears, fundamentally, to be for an 'existing facility' as described in the DFO(2007) existing facilities position statement (written as part of the previous *Fisheries Act's* habitat protection program but, in general, still applicable today) – as Lake Geraldine has been a water supply reservoir since 1958 – that is for some 58 years. While the present fisheries protection provisions of the *Fisheries Act* apply to the possible ongoing effects of water withdrawal, there have been no indications of significant localized effects or local concern about them. The licence renewal is not different from the previous licence in

terms of the potential physical effects to fish habitat, so the lack of localized effect seems unlikely to change.

Given the above considerations, DFO-FPP supports the issuance of the Iqaluit Water Licence renewal.

However, DFO-FPP review of Iqaluit water licencing to date and particularly this water licence renewal, have been repeatedly hampered by lack of reasonably suitable biological information. DFO-FPP has filled this gap as best it can at this time, making several assumptions, to arrive at a determination for the Nunavut Water Board but, more particularly, for the City of Iqaluit that allows them to move forward on this water licence application. Iqaluit should, in future, retain qualified environmental professionals (e.g., biologists) to collect and analyze data and other relevant information specific to the possible effects on fish and fish habitat – or the lack of such effects, and aquatic species at risk, for works, undertakings, and activities that it wishes to consider.

Lastly, DFO-FPP notes that Iqaluit has general responsibilities under the *Fisheries Act* that apply to its projects:

- It remains Iqaluit's responsibility to ensure it avoids causing serious harm to fish in compliance with the *Fisheries Act*, and that it meets the requirements under the *Species at Risk Act* as it may apply to its projects. If plans change or if the description of a proposal is incomplete, or changes in future, Iqaluit should consult DFO-FPP's website (http://www.dfo-mpo.gc.ca/pnw-ppe/index_eng.html) or consult with a qualified environmental consultant to determine if further review is required by DFO .
- It is also Iqaluit's *Duty to Notify* DFO if it has caused, or is about to cause, serious harm to fish that are part of or support a commercial, recreational or Aboriginal fishery. Such notifications should be directed to <http://www.dfo-mpo.gc.ca/pnw-ppe/violation-infraction>

Summary of Recommendations

That the Nunavut Water Board notes the following:

1. DFO-FPP agreement with issuance of a water licence renewal for the City of Iqaluit – with a ten year term and maximum annual water volume withdrawal, from Lake Geraldine, of 1,100,000 m³

2. DFO-FPP support of Iqaluit's plan to provide a DFO-FPP compliant fish screen on its Lake Geraldine water intake as a precautionary measure
3. That Iqaluit should ensure it carefully evaluates potential effects on fish and fish habitat, across watersheds, including Lake Geraldine, when considering future plans for supplementary water supply.
4. That Iqaluit should retain qualified environmental professionals (e.g., biologists) when considering works, undertakings, and activities in or near water to determine requirements for avoidance, mitigation, and, if necessary, offsetting, to be compliant with the *Fisheries Act* and the *Species at Risk Act* as it applies to aquatic species at risk
5. That it remains Iqaluit's responsibility to ensure it avoids causing serious harm to fish in compliance with the *Fisheries Act*, and that it meets the requirements under the *Species at Risk Act* as it may apply to its projects. If plans change or if the description of a proposal is incomplete, or changes in future, Iqaluit should consult DFO-FPP's website (http://www.dfo-mpo.gc.ca/pnw-ppe/index_eng.html) or consult with a qualified environmental consultant to determine if further review is required by DFO .
6. That it is also Iqaluit's *Duty to Notify* DFO if it has caused, or is about to cause, serious harm to fish that are part of or support a commercial, recreational or Aboriginal fishery. Such notifications should be directed to <http://www.dfo-mpo.gc.ca/pnw-ppe/violation-infraction>

References

DFO. 2007. Application of the Habitat Protection Provisions of the *Fisheries Act* to *Existing Facilities and Structures*, Fisheries and Oceans Canada, Ottawa

DFO. 2010. Protocol for Winter Water Withdrawal from Ice-Covered Waterbodies in the Northwest Territories and Nunavut, 3 pages

Geological Survey of Canada. 2011. Description of watershed outline and water depth survey datasets from Geraldine Lake - Iqaluit, Nunavut. Open File 6750