Managing and Monitoring Alberta's Lakes: Where are we at and where do we need to go? Statement of Opportunity

1. Background on the issue and why it is important

Lakes in Alberta exhibit a great ecological and physical diversity across Alberta's landscape. From the prairie pothole lakes in southern Alberta, clear lakes with sandy beaches in the Lakeland Region, nutrient poor alpine lakes in the Rocky Mountains, to the shallow nutrient rich or tannic brown lakes dotting the Parkland and Boreal regions Alberta is home to one of the most diverse lake ecosystems in North America. With addition of reservoirs, particularly in the south, we've added a new system to the existing diversity on the landscape.

Alberta lakes are very young from a geological perspective and largely originate after the last glaciation (12,000 years old); as glaciers retreated, numerous depressions and blocked waterways remained, which filled with water to form an estimated 800 lakes in Alberta. Such is the legacy of Alberta's lakes: they are young, diverse, ecologically important, and finite. Alberta's lakes reflect not only the physical features (soils, land cover) of the landscape, but also climate and, more recently, changing land use in lake watersheds. The nature of a particular lake depends not only on its physical setting, but also on what enters it from its watershed because drainage of the watershed of a lake carries particles of soil and organic matter and dissolved substances, including nutrients such as phosphorus and nitrogen, into the lake system. Other inputs include groundwater as well as dust, precipitation, and gases from the atmosphere. As such, each lake's water quality reflects the contribution of all of these materials, and the influence of sunlight and wind energy. The complex aquatic ecosystem within the lake is also affected by changing inputs and in turn influences the lake's character and its water quality.

Human influence on lake ecosystems in the last 100 years has altered the nature of many Albertan lakes, and is evident in scientific data and repeated anecdotally from those living near these lakes. Influences include control of water levels, diversion of water, changing the land cover and use in the lake's drainage basin, urbanizing the lakeshore and climate change. The effects of these changes are often difficult to reverse because lakes, unlike flowing waterbodies, are frequently closed or functionally closed systems. The scientific community has made great progress in addressing lake issues in a general sense in understanding eutrophication, acidification, and other human impacts to lakes. However, the science, and more so the management, of lakes continues to be an evolving discipline in Alberta- one that arguably lacks direction.

With the understanding that many of Alberta's lakes are already exhibiting changes in water quality and aquatic health due to human influences, combined with increased recreational demand and population growth throughout Alberta, our finite lake resource is under pressure. As well, reservoirs, which serve as important links in the water supply infrastructure, as drinking water sources and, increasingly, as recreational destinations also feel this pressure. As growth continues the public expectation of adequate protection of those attributes associated with the Canadian lake experience (good water quality, good sport fishing, safe contact recreation, pleasing aesthetic values, and healthy aquatic ecosystems) will also continue. For this reason, it is imperative that a proactive, coordinated approach to lake monitoring, evaluation, reporting, and management be taken, ideally one that is a made-in-Alberta approach.

Currently there are two major challenges for effective lake management in Alberta: ensuring we have enough information on any given lake to identify its water quality and related management needs; and secondly to clearly define sector management roles and responsibilities.

The newly established Alberta Environmental monitoring agency will be moving forward with developing an effective lake monitoring, evaluation and reporting program with input from lake management groups, scientists, and other stakeholders. In addition, an Alberta Water Council project is required that will provide recommendations for a Provincial Lake Management Strategy that would include clearly defined management roles and responsibilities.

The proposed project would evaluate current management frameworks surrounding lakes and gain an understanding of where lake management nests into these frameworks.

Potential Outcomes:

- To provide recommendations around roles and responsibilities on lake management in Alberta.
- To develop recommendations leading to the development of a strategy for lake management in Alberta. The project team would ensure the report has both 'buy-in' for and outlines specific, agreed upon roles and responsibilities. This could include recommendations for a new policy framework that enables implementation for all players.

2. Why it is appropriate for the Council to work on this issue

The topic is appropriate for the Council to take on for the following reasons:

- Effective Lake Management involves the participation and collaboration of multiple stakeholders and sectors, which include: All Water for Life partners, NGOs, municipal, academia and relevant industry.
- Through the Water for Life Strategy, the goal of Healthy Aquatic Ecosystems and the Partnership key direction are most aligned with this topic.
    - Healthy Aquatic Ecosystems: Albertan's are assured that Alberta's aquatic ecosystems are maintained and protected. Specific Outcome: Protection of aquatic ecosystems in critical areas.
    - Partnerships: Water for Life partners are empowered, informed and fully engaged in watershed stewardship.
- The proposed project fits well within the Council's multi-sector consensus decision-making model. The Council includes and has access to a broad range of stakeholders that could provide useful input and direction. The potential project outcome to provide recommendations for a Lake Management framework requires the participation of all relevant stakeholders. The Council is the best positioned to provide the collaborative environment required to meet this outcome.

3. How the issue aligns with the Council's core business, goals, and mission and with the GoA priorities for implementing *Water for Life*

The Council's mandate is to provide leadership, expertise and sector knowledge to engage and empower industry, non-government organizations, and governments to achieve the outcomes of the WFL Strategy. This project aligns with the Council's Core Business #2, which is to "provide valued policy advice."

4. The expected benefits of the Council's involvement in the issue

The Council's multi-stakeholder consensus decision-making process is best suited for this lake management project. In order to achieve an effective, long term management strategy, support and coordination from all relevant stakeholders will be essential. The Council structure is beneficial in that it accesses all relevant stakeholders and has the capability to ensure that the right stakeholders are either directly involved or indirectly involved through sector engagement. The Council process will help develop the collaborative environment necessary to meet the following desired outcomes:

- Outlining recommendations for roles and responsibilities among relevant stakeholders to ensure there is accountability and coordination at all scales
- Outlining recommendations that will lead to an effective lake management strategy

5. Evidence of a client and potential funding sources

The GoA, Alberta Environment and Sustainable Resource Development would be the primary client along with Alberta Lake Management Society, and Watershed Planning and Advisory Councils.

6. Potential stakeholders who would be involved in developing terms of reference for the project

Key players would be:

- Various GoA departments (ESRD, Tourism, Parks and Recreation, municipal affairs)
- Watershed Planning and Advisory Councils (WPACs)
- Watershed Stewardship Groups (WSGs)
- Municipalities (Large Urban, small urban, and rural)
- Academia
- Alberta Environmental Monitoring Agency
- Relevant NGOs related to lake management
- Relevant Industry

7. How timeliness of response would affect the issue

Currently, the Council will be bringing forth the Non-Point Source Pollution (NPSP) report which outlines lakes and small tributaries as some of the most vulnerable areas for NPSP. The team provides suggested strategies to help better manage NPSP and water quality issues in general. Lake Management was listed as a suggested strategy in the report.

In addition, the Alberta government has established its environmental monitoring system which is a centrally-coordinated system that will integrate the monitoring, evaluation and reporting of air, land, water and wildlife. The Province will also be investigating how to better manage their natural resources which will involve a coordinated approach at multiple scales. With the Province moving towards the cumulative effects model and regional planning, the integrated watershed-based approach to management is high priority. With this direction from the Province, there is no better time to provide recommendations from the Council that will help highlight priorities and improved governance on how to better manage one of Alberta's most important resources- lakes.