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ATTENTION: Mr. Tom Maher
Environmental Assessment Branch

RE: Project Proposal
Flood Control Berm Upgrading, Fishing Lake Saskatchewan

Dear Mr. Maher:

KGS Group is pleased to provide you with ten (10) paper and ten (10) digital copies of the Fishing Lake Flood Control Berm Upgrading Project Proposal on behalf of the Saskatchewan Watershed Authority (SWA). The SWA are submitting this project proposal, as prepared by KGS Group, for screening under *The Environmental Assessment Act* (1980). Please do not hesitate to contact us if you have any questions or require additional information.

Prepared By:

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Submitted By:

Bert Smith, P.Eng.
Principal

SM/jr
Enclosure

cc: Jim Waggoner, Saskatchewan Watershed Authority

EXECUTIVE SUMMARY

Kontzamanis Graumann Smith MacMillan Inc. (KGS Group) was retained by the Saskatchewan Watershed Authority (SWA) to prepare an Environmental Assessment for the proposed upgrading of the existing emergency flood protection berms to provide an effective and minimal maintenance long-term flood protection at Fishing Lake, Saskatchewan. The SWA is representing the interest of the beach communities that are in direct proximity to the proposed works. The objective of the Environmental Assessment was to assess the environmental, social and economic effects of the proposed project, including the development of mitigation plans and follow-up activities for potential impacts identified.

Since 1964 (earliest recordings of water levels) the water level on Fishing Lake has typically ranged between El. 527 and 529 m above sea level (masl), which is below the natural outlet spill at El. 529.74 masl at which the majority of cabins are still above the water level. However, in 1997 water levels in the lake reached El. 529.92 masl, which resulted in flooding of 149 cabins. Several consecutive high runoff years followed and in 2007 the peak water level of Fishing Lake was El. 530.6 masl, which led to flooding of approximately 300 residences. The area was declared a disaster by local government emergency orders, making funds available to assist with the response to the floodwater.

The SWA developed a plan to alleviate the flooding in 2007 through the construction of a drainage channel from the outlet of Fishing Lake. Opposition from some local landowners and the Fishing Lake First Nation stopped this plan during the construction phase and alternative methods of flood abatement were considered. The alternative of temporary earthen berms was designed and approved, and constructed between September and December 2007 in specific locations around the lake with the floodwater behind the berms pumped back into the lake.

Construction of the temporary berms consisted of end-dumping fill followed by shaping and trimming, application of erosion protection, and backfilling lots. In total 6,750 m of beach side berms and 6,250 m of back road berms were constructed consisting of approximately 525,000 m³ of excavated dirt from borrow pits established in the project study area and more than 70,000 t of coarse gravel and rocks. As the construction occurred within an area inundated by water, not all of the berms were built to a height that would provide sufficient long-term flood protection. Additionally, the 6H:1V design slope for the lakeside of the berms was not achieved at all locations, and overlying riprap was placed in ridges in some locations.

The Department of Fisheries and Oceans Canada (DFO) issued an authorization for the harmful alteration, disruption or destruction (HADD) of fish and fish habitat, which specified that all temporary berms at or below El. 529.57 masl be removed as of October 15, 2009 and that alternatives for long-term flood protection be investigated. The Fishing Lake Advisory Committee (FLAC) determined that the best course of action for the surrounding communities was to upgrade the existing berms to provide permanent flood protection.

The scope of the proposed berm upgrade project includes planning, design, construction and maintenance once the berms are permanent. The scope of the assessment included identification, assessment and mitigation of adverse environmental effects of the project, and evaluation of the significance of residual environmental effects. The scope of the assessment also included consideration of alternatives to the project, and direct and indirect biophysical and socio-economic effects, including cumulative environmental effects.

Public consultation for the Fishing Lake berm project has been ongoing since just prior to the spring flood of 2007 and included public meetings, on-site briefings, media updates, publications in local newspapers, posting on the Fishing Lake Flood Information website, and a toll-free telephone line to provide the public with current flood information. The FLAC was established to facilitate discussions between provincial, federal and local governments, to co-ordinate local government flood response initiatives and represent the communities affected by the flooding.

To develop long-term flood protection plans, the Saskatchewan Ministry of Corrections, Public Safety and Policing and the SWA have been working with local communities since construction of the temporary berms. Specifically a public meeting was held on April 18, 2008 in Kuroki to discuss permanent flood control measures for Fishing Lake. Additionally, the SWA met representatives of the local governments on February 17, 2009 to discuss any suggestions or concerns that they may have regarding upgrading the existing berms to provide permanent long-term flood protection. The public has expressed a number of concerns at the various public open house and meetings, through correspondence received by the proponents and in newspaper articles. The main concerns expressed by the public in relation to upgrading the existing berms to provide permanent long-term flood protection included the following:

- Portions of the berms on both public and residential land are not at the required elevation of 531.6 masl or areas do not have protective berming at all, therefore undermining the corresponding community's flood protection.
- Lowering sections of the berms higher than the proposed elevation of 531.6 masl.
- There are still land issues that need to be settled as portions of the berms are placed on private lots.
- Some areas behind the berms have standing water due to blocked internal drainage or because drainage was left unfinished. These areas between the berm and residents' properties require fill to address the drainage.
- Lake is not easily accessible at this time because of the riprap material. Residents would like construction information so that communities can begin planning and rebuilding boat launches and beach access.
- Some finishing details on the berms are still necessary including flattening steep slopes, fixing erosion control issues and providing gates to prevent traffic from driving on the berms.
- Once upgrading is completed remnants of the turbidity curtains and their posts need to be removed and the rock stockpile needs to be relocated to a more suitable location.

Methods of correspondence with the Fishing Lake First Nation have included letters, telephone conversations and meetings with the Chief and Council. The Fishing Lake First Nation wishes to create some positive momentum and early success in working with the SWA on this project. The concerns of Fishing Lake First Nation, as understood by the SWA, include the following:

- Ensure a healthy environment able to support their peoples' lives and provide them with opportunities.
- Uphold a healthy, respectful and productive working relationship with outside agencies and people.
- Ensure the Fishing Lake First Nation's opinions are heard and their concerns and interests are respected and meaningfully considered.
- Ensure a level playing field by providing the Fishing Lake First Nation with access to science based knowledge and resources for legal costs and consultants.

Potential environmental effects of the proposed berm upgrade project were identified using scoping methods, checklists, an interaction matrix and linkage diagram techniques. Additionally, public comments, advice from specialists and professional judgment were considered. Effects of the environment on the project and cumulative environmental effects were also determined. Mitigation measures were identified to eliminate, reduce and control environmental effects determined to be adverse. Follow-up was proposed to verify the accuracy of the assessment and determine the effectiveness of the mitigation measures. Significance of the residual environmental effects remaining after mitigation was then evaluated.

Positive effects resulting from the proposed project, primarily associated with flood projection and re-vegetation, include; alleviating drainage problems, improving public attitude, increasing public safety, returning aesthetics of the area to pre-flood, protecting residential land use, and potentially increasing tourism with the associated increase in employment and income.

Potential adverse environmental effects of the proposed berm upgrade project that were assessed to be moderate include: loss and disturbance of aquatic species and habitat, localized modified surface water run-off, elevated suspended sediment levels in the lake, contamination of soil, surface water and groundwater, noise concerns, possible loss of agricultural land around borrow pits, and human health associated with contamination. There are no known historic resources in the vicinity of the proposed work. Although there are species of conservation concern within the regional study area, the habitat that will be directly impacted by the proposed works is not likely to support these species. With mitigation and follow-up the residual effects of the project for all the potential adverse effects were determined to be insignificant.

Mitigation for potential adverse effects identified for the proposed berm upgrade project included a wide variety of design and proposed measures, regulatory requirements and management practices. Some of the more important mitigation measures to address the adverse effects included:

- Conduct majority of the work from the berm to prevent further disturbance to fish habitat;
- Use of screened intakes suspended in the water column when filling the Aqua Dams® and while dewatering and refilling the enclosed shoreline work areas;
- Conduct fish salvage of enclosed shorelines prior to dewatering;
- Limit construction activities to designated and previously disturbed areas;
- Use of sediment barriers and turbidity curtains during construction and remove sediment collected by turbidity curtains;
- Limit noise-creating activities, including heavy equipment operation and truck movements to normal working hours, muffle vehicles and equipment, limit un-necessary idling, and require a high standard of maintenance for construction equipment and vehicles;
- Preventing leaks, spills and releases by providing secondary containment for fuel and hazardous materials, requiring drip trays for equipment, equipment refuelling or maintenance away from the water, complying with provincial fuel storage and dispensing regulations, providing spill clean-up equipment and materials, and preparing an emergency (spill) response plan; and
- Re-vegetate disturbed and reclaimed areas after construction.

Follow-up identified for the proposed berm upgrades included a variety of inspecting, monitoring, record keeping and reporting requirements. Proposed inspection typically involves

periodic observations of the project area for leaks, spills and releases, VOC sources, noise levels, surface water runoff and ponding, condition of sediment barriers and turbidity curtains, and maintenance of re-vegetated areas. Proposed monitoring includes sampling of surface water quality during construction. Record keeping generally includes maintaining files and documentation related to implementation of mitigation, tracking public complaints, submission of MSDS's, fuel volumes delivered and used, number of monitoring and testing samples collected and analytical data generated, updating the emergency response plan, record any workplace accidents and update training and safety guidelines. Reporting requirements for the proposed project will be placed on the public registry and include communication of records that mitigation measures are implemented and whether or not they have been effective, a summary of any incidents that require implementation of an emergency response plan, and annual monitoring reports to Fisheries and Oceans Canada describing the success of the re-vegetation, bank stability, and long-term erosion control.

The proposed berm upgrade project will not likely result in significant adverse environmental effects, based on the available information on the project and the environment, the assessment of environmental effects outlined in the environmental assessment report, and the application of proposed mitigation measures and conducting of required follow-up.