



March 3, 2021

Fourteen Island and Mink Lakes Watershed Association
P.O. Box 105
Hartington, ON
K0H 1W0

Attention: Mary Rae, Director and President

Dear Ms. Rae:

**Re: Fourteen Island Lake Dam
Permitting Requirements, Investigation of Rocky Ramp and Next Steps
D.M. Wills Associates Project No. 20-5394**

D.M. Wills Associates Limited (Wills) was retained by the Fourteen Island and Mink Lakes Watershed Association (FIMLWA) to complete a structural inspection of the concrete gravity dam located at the outlet of Fourteen Island Lake in the Township of South Frontenac. The inspection was completed by David Bonsall, P.Eng. of Wills on November 11, 2020.

A structural report letter was submitted to the Fourteen Island and Mink Lakes Watershed Association with the findings of the inspection and recommendations for the structural rehabilitation of the dam. This letter is intended to complement the structural letter report by outlining the anticipated permitting requirements for the proposed dam rehabilitation, describing the identified rocky ramp alternative and identifying the next steps in the process towards rehabilitating the existing dam.

Permitting Requirements

It is Wills understanding that the rehabilitation of the Fourteen Island Lake Dam will require approvals/permits from the Ministry of Natural Resources and Forestry (MNRF) and from Quinte Conservation (QC). The details of the permitting requirements for each are outlined below in additional detail.

Ministry of Natural Resources and Forestry – The Lakes and Rivers Improvement Act (LRIA), Section 16 states that: *“No person shall alter, improve or repair any part of a dam in the circumstances prescribed by the regulations unless the plans and specifications for whatever is to be done have been approved by the Minister. 1998, c. 18, Sched. I, s. 31”*. The LRIA Technical Bulletin for Alterations, Improvements and Repairs to Existing Dams (MNRF, 2016) provides the MNRF with direction and guidelines for the review and approval of applications for alterations or repairs of dams under Section 16 of the LRIA.

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Wills recommendations for rehabilitation of the dam include the following:

- Crack injection (repair) and refacing of the upstream face;
- Removal and replacement of the top slab;
- Removal and replacement of the gains and sluice walls; and
- Installation of drains in the downstream face.

The amount of rehabilitation work that the dam requires exceeds the limits stated in the Technical Bulletin for alteration work without requiring LRIA approval. In order to gain approval from the MNRF, a permit application will need to be submitted, complete with information relating to dam safety (i.e. Hazard Potential Classification, Inflow Design Flood, hydraulic capacity and stability) and detailed design drawings and specifications.

Quinte Conservation – A permit from Quinte Conservation will be required. The Watershed Regulations Policy Manual (Quinte Conservation, 2019) states that alterations and/or maintenance of existing water control structures will be permitted where it can be demonstrated that:

- a. Impacts on hydrologic functions (e.g. water quality and quantity control) are avoided or that site and structure design and appropriate remedial measures will mitigate and/or compensate for disturbance to features and functions;
- b. There will be no adverse hydraulic or fluvial impacts;
- c. There are no adverse impacts on the capacity of the structure to pass flows; and
- d. The integrity of the original structure is maintained or improved.

Quinte Conservation recognizes that the MNRF is responsible for the approval of water control structures under the LRIA; however, the proposed works will still require a permit.

Feasibility of Rocky Ramp Alternative

Based on our understanding of the site, Wills is able to provide the Fourteen Island and Mink Lakes Watershed Association with an evaluation of the feasibility of replacing the existing structure with a rocky ramp. The following thoughts are provided for consideration:

- It is Wills understanding that there is an agreement that requires the water levels to be maintained in a certain way during spawning time, summer and fall seasons. The rocky ramp alternative does not allow for any controlled regulation of water levels.

- Without proper maintenance, the rocky ramp structure could degrade over time resulting in a lowering of the lake level.
- There is also a concern that a rocky ramp could be more easily modified (vandalized) to manipulate the water levels.
- The construction of a rocky ramp would require filling in a portion of the lake and/or the downstream wetland. This would require permits and approvals from the DFO, which would add significant time and cost to the current project.

Wills' recommendation with respect to the rocky ramp alternative is that it be considered as a possibility in the future when a full dam replacement becomes necessary. The preferred alternative at this time would be the rehabilitation of the existing dam as recommended in the previously completed structural-letter. The rehabilitation alternative is expected to be the lower cost option at this time and will increase the life of the dam by 15 to 20 years. This will give the FIMLWA time to plan and secure the finances required for the eventual dam replacement.

Recommended Next Steps

The recommended next steps in the process towards dam rehabilitation include:

1. Undertake a scoped dam safety assessment to determine the Hazard Potential Classification and Inflow Design Flood for the dam and assess the hydraulic capacity and stability of the dam.

Note that this information will be required when submitting a permit application to the MNRF and will support the detailed design.

2. Based on the results of the scoped dam safety assessment, confirm that the dam rehabilitation is still feasible and proceed to complete the detailed design drawings and specifications.

Note that rehabilitation may not be feasible if the dam does not have the required hydraulic capacity or if the MNRF's dam stability requirements are not met.

3. Secure the required permits and approvals from the MNRF and Quinte Conservation.
4. Retain a contractor and undertake the dam rehabilitation work.



Ms. Mary Rae
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We trust this information is adequate for your purposes at this time. To further discuss the next steps and how Wills may be able to support the FIMLWA in the process, please contact the undersigned.

Sincerely,

A handwritten signature in blue ink, appearing to read 'David Green'.

David Green, P.Eng.
Assistant Manager,
Water Resources Engineering

A handwritten signature in blue ink, appearing to read 'Sebastian Tejada'.

Sebastian Tejada, M.Sc., EIT
Project Manager

ST/DG/kr