

Common Ground Drainage Channel Diversion

Design Report

Phase 1



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Background

The following is description of the Purposed Operational Plan for the “Common Ground”, which is the drainage system from the Ducks unlimited Dam in Peel Lake, southwest to Peter’s Lake.

The drainage system’s objective is to minimize the risk of Quill Lake rising to the Spill point and flowing freely into the Last Mountain Lake system. Quill Lake has risen from 2.5 m below the Spill Point to 0.5 m below the Spill point in the past decade.

The Common Ground Drainage is expected to divert approximately 4-6% of the runoff water flowing into the Quill lake basin and drain it southwest into the Last Mountain Lake system. This drainage is expected to reduce the risk of Quill Lake Rising to the Spill point and flooding southwest to the Last Mountain Lake system uncontrolled.

The Operational Maximum Flow is 1.4 m³/sec. The flow will not exceed 7,000 dam³/yr. (Based on Common Ground Design Report Phase 1)

The average TDS coming through the Common Ground Drainage system will be [2500-6500](#) mg/m³.

The desired Water quality must have a TDS less than 9000

The operational TDS Range is 2500 to 6500.

There channel has 6 control structures in 15 miles of length.

Operation Principles

The operating principle of the channel will be to lower the downstream storage areas during the summer and fall at opportune times and therefore creating more spring storage in the Kutawagan Basin during the heavy spring runoff. This strategy is intended to ensure no Kutawagan Basin Water runs northeast into Quill Lake. This small change is expected to reduce the quill lake water in flow by 3-6% and hopefully cease the rise in Quill Lake reducing the risk of over flowing the Spill Point (currently has 0.5m free board)

There are control structures at six locations which allow complete control of water flow in either direction.

Operational Details

Sampling for water quality will be done biweekly in the first three years to ensure that there is good understanding of the changing water quality with time throughout the year. After three years of collecting water quality data on a biweekly basis the sampling will be reduced to monthly. Monthly

sampling will remain in place until it is determined that the time span may be extended between sampling.

Any reported TDS values over the specified control limit will be reported immediately to WSA. Should the Common Ground runoff water have a TDS above the maximum allowed limit the control structures will be shut down and the water will build up throughout the Common Ground storage area. Should the storage area fill the runoff water will eventually run northeast toward Quill Lake. Hopefully Quill Lake will have the capacity to take this amount of water. Should the Quill Lake level be near or above the Spill Point the water will continue southwest as it would have in its natural state.

An annual report shall be assembled with pictures that shows the condition of the channel and the structures.

A short Channel Maintenance Program will be put in place to address channel erosion, siltation, structure repair and any change to inflow to the channel. The report will be approved by the QLWA No. 14 and sent on to WSA for review and comment.

The QLWA No. 14 will have responsibility for the day to day operation of all aspect of the drainage channel.

The Structures are expected to operate at full capacity during the late spring and then operate at a lower flow throughout the summer and fall season. The goal will be to create storage in the Basin to ensure that next year there is no flow into Quill Lake.

Should you have further questions or concerns, feel free to contact me.

Regards,

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