

DEWDNEY AREA IMPROVEMENT DISTRICT

Operations Manual Hatzic Lake Slide Gates

Prepared October 2014



LETTS ENVIRONMENTAL CONSULTANTS LTD.

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1.0 Introduction

This document provides the information necessary for the operation of the Hatzic Lake slide gates and outlines the principles under which Operators will control Hatzic Lake water levels. Included in this manual is a description of the slide gates and infrastructure, results of slide gate test operations, and the guidelines within which Hatzic Lake levels will be maintained.

1.1 BACKGROUND

Hatzic lake is located in North of the Fraser River and east of Mission. The lake has a surface area of 3.4 km² and is the main drainage reservoir for the 90 km² Hatzic Valley Watershed. The watershed consists of a low relief flood plain surrounded by steep mountainous terrain. Annual flooding in the watershed persists due to low drainage potential through the low relief valley floor to the Fraser River. High Fraser River levels restrict downstream drainage causing backwater effects upstream. A major flood event in 1948 prompted the construction of flood boxes and a pump station on a dike which crosses Lower Hatzic Slough separating Hatzic Lake from the Fraser River.

Flow is conveyed through the dike through 4 flood boxes with flap gates and a pump station which were constructed at the same time as the dike in 1949. Typically drainage from Hatzic Lake flows through the flood boxes and into the Fraser River through Lower Hatzic Slough. However, high Fraser River levels can prevent this drainage and during rain events the lack of drainage causes flooding and necessitate the use of the pump station. During high Fraser River Levels the pump station is the only means of drainage. In 2013 a second pump station with three fish friendly axel pumps was completed to enhance drainage against high Fraser River levels.

In addition to the construction of the new pump station and other ongoing flood management works the Dewdney Area Improvement District (DAID) will manage late summer draw down in Hatzic Lake. DAID, a local government authority operating under Letters Patent, is responsible for the maintenance of the section of the Dewdney Dike from Dewdney Trunk Road and Lougheed Highway in Mission, BC to Bell Road in Dewdney, BC.

The lack of any means to control lake level results in a drawdown of Hatzic Lake during late summer. As Fraser River Levels recede, unchecked flow through the flood boxes draws down Hatzic Lake to such an extent that large portions of its eastern basin are exposed. During low water events occurring in the fall of 2001, 2002, and 2003 recreational value of the lake was diminished. Fish kill was reported in shallow channels and pools remaining in isolated low lying areas of previously inundated sediments (DAID 2006¹). In fall 2003 the low water levels of Hatzic Lake restricted Irrigation to a nearby nursery.

To address Hatzic Lake level draw down in late summer DAID retrofitted the flood boxes on Lower Hatzic Slough by installing slide gates with fish access and a means of opening the flap gates. Prior to the retrofit there were no fishway provisions about the dike or through the flood

¹ DAID, 2006; Dewdney Area Improvement District. January, 2006. *Fishway Application-Hatzic Lake*

boxes, which are the only means of fish access to Hatzic Lake and tributaries. Although the flood boxes previously contained stop log guides no lake level controls have been consistently used. This is primarily due to concerns over decreasing fish passage opportunities.

The operation of the slide gates is meant to control the draw down of lake levels during late summer but not introduce novel conditions for the Hatzic Lake system. Lake draw down is not an annual event, frequently lake levels remain sufficiently high to avoid exposure of sediment. The operation of the slide gates will maintain the lake at 2.4 to 2.5 masl, these levels are frequently maintained throughout the summer prior to slide gate installation (**Figure 1**). The control of late summer lake levels will not expose the Lake system and species assemblage to novel conditions. However the control of lake levels will reduce the occurrence of draw down events.

Draw down events can affect the competitive advantage of different species. To ensure natural draw down events will still occur the slide gates will only operate during the summer. The removal of the slide gate for the remainder of the year will allow winter draw down events.

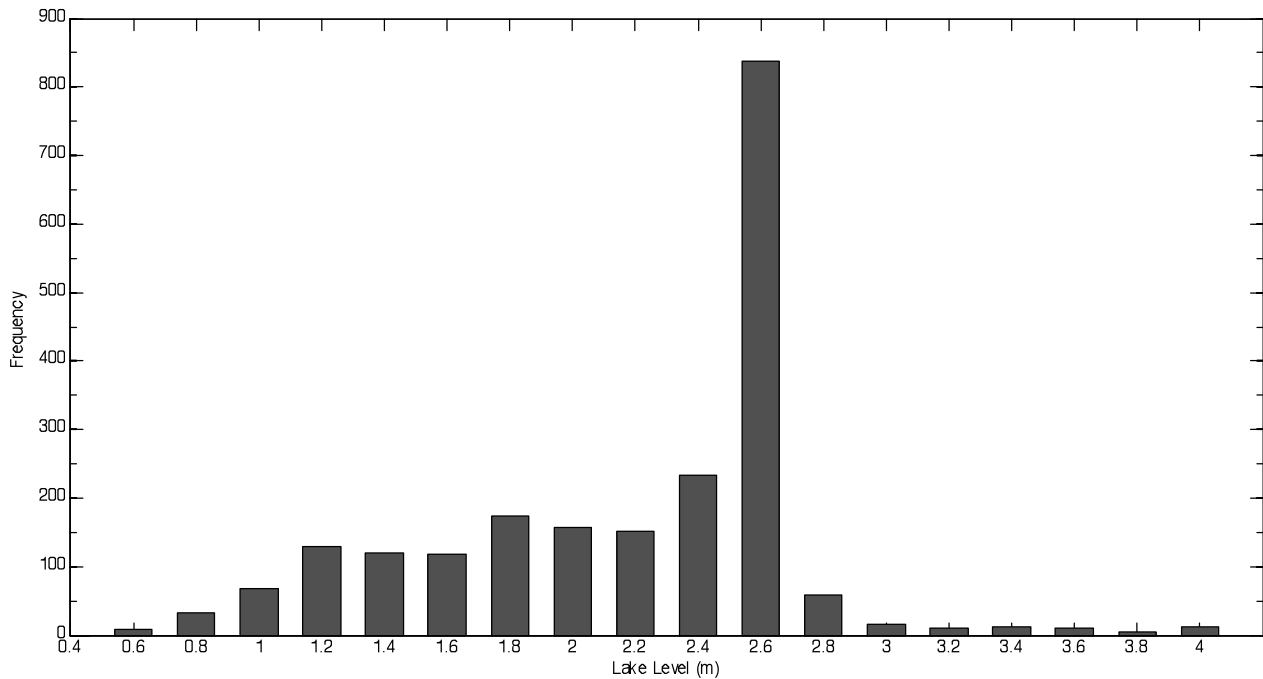


Figure 1: Frequency distribution of lake levels from July 1 to Sept 15 from 28 years of recorded data (1949, 1959, 1976, 1978, 1981-1986, 1988-2005). (Data from, Golder 2006²)

² Golder, 2006; Golder Associates, April, 2006. *Hydrologic analysis late summer lake level assessment Hatzic Lake, Mission, B.C*

2.0 Site Description

The slide gates are located the Lower Hatzic Slough Dike in Mission, BC, south of the Lougheed Highway (**Figure 2**). The dike crosses Lower Hatzic Slough approximately 920 m east of its confluence with the Fraser River. Access to the slide gates is gained from Dyke Rd, a parking area is located on the southern shore of Lower Hatzic Slough. The Slide gates and flood boxes are situated on DAID owned land in the Fraser Valley regional district.



Figure 2: Slide gates are location, on the southern extent of the dike crossing Lower Hatzic Slough. ($49^{\circ} 8.585'N$, $122^{\circ} 14.109'W$)

The flood boxes on Lower Hatzic Slough were constructed in 1949 along with the pump station in response to flooding in 1948. They consist of four rectangular concrete culverts 45.7 m in length and a span and rise of 1.83 m. The flood boxes pass through an earthen dike with a 9.5 m crest elevation.

At the downstream invert (towards the Fraser River) of the flood boxes, four top hinged flap gates open towards the Fraser River. The flap gates check flow from the Fraser River entering upstream of the dike while allowing flows from Hatzic lake towards the Fraser River. The head on either side of the flap gate determines the flow regime.

The inlet and outlet headwalls consist of a wing wall to the north and the Hatzic pump station inlet and outlet to the south. The headwall on both sides also includes a concrete apron extending out below the culvert inverts.

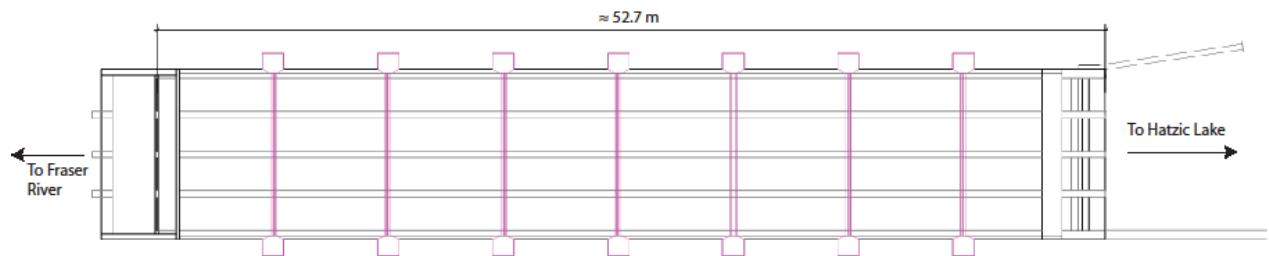


Figure 3: Flood boxes pass through the dike providing passive drainage for the Hatzic Lake system.

3.0 Slide Gates

At the flood box inlet (towards Hatzic Lake) each of the four conduits is fitted with 1.83 m high plate metal slide gates installed in vertical stop guides. Two 0.3 m sections can be added to each of the slide gates to give a total height of 2.13 m and a max height 2.43 m (**Figure 4**). The invert of the flood box is at 0.54 masl and thus the maximum height of the slide gate with both removable sections added is 2.87 masl, and can be set at a total height of 2.67 masl and 2.37 masl. Each of the 0.3 m sections can be added and removed by hand whereas the slide gates are operated through the use of a chain hoist and lifting beam. The hoist beam assembly is supported by the existing flood box structure and extends 3.66 m above the upper surface of the flood box inlets. The top of the flood boxes are covered providing a platform from which the slide gates can be operated.

Fish passage has been facilitated in the form of an orifice in the most northerly gate (**Figure 5**). The orifice is a rounded 40cm diameter opening installed on the bottom edge of the gate. During late summer operation of the gates, the orifice allows for fish passage through the northern flood box.

In addition to the slide gates the flap gates are also controlled when Fraser River level is low. Located on the river side of the flood boxes the flap gates were installed to inhibit the inflow of Fraser River water into Hatzic Lake when Fraser River levels are high. An overhead beam was

installed to enable the flap gates to be held open this promotes water exchange and aids in fish passage.

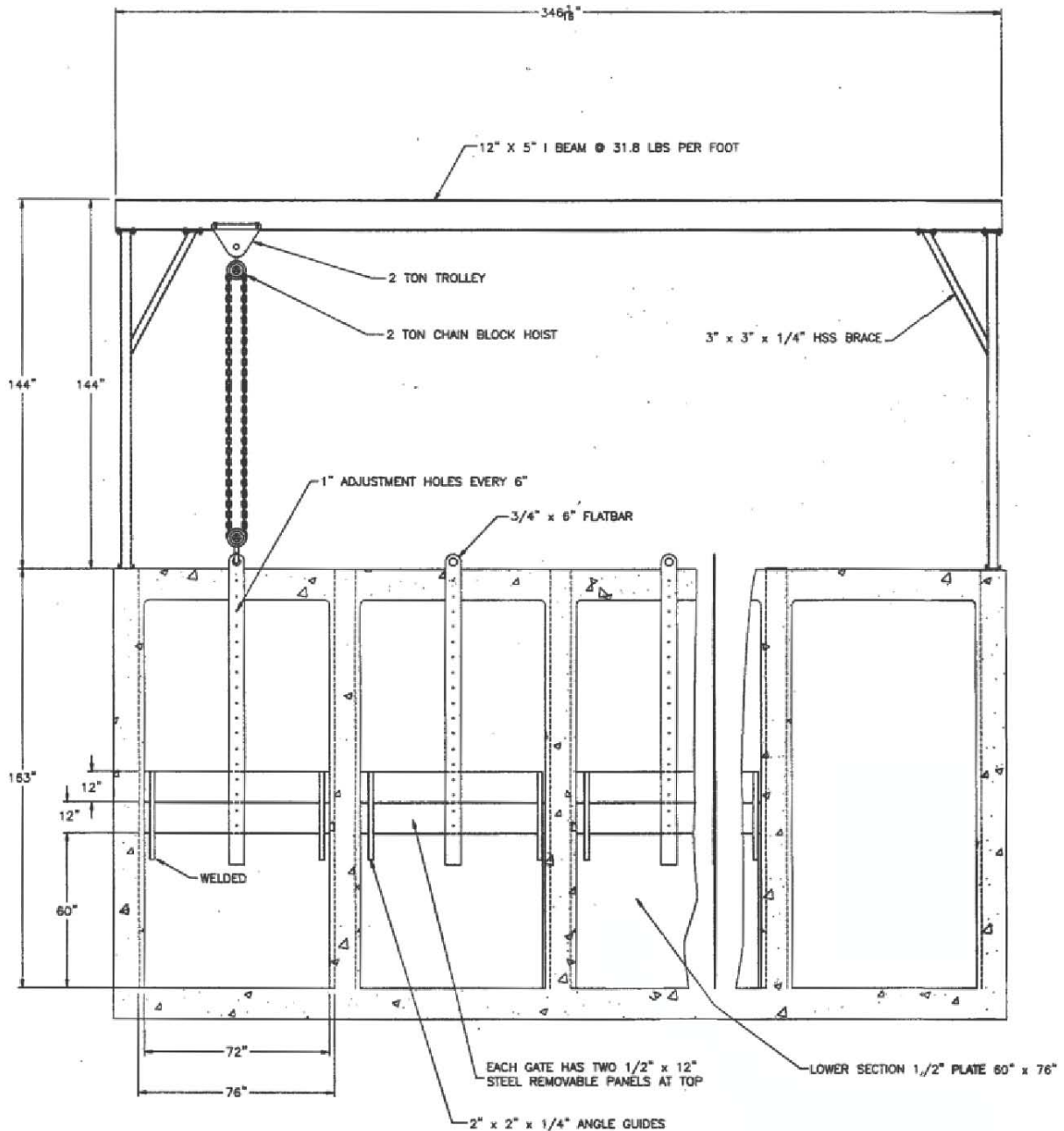


Figure 4: Detail of slide gates, fish passage not shown

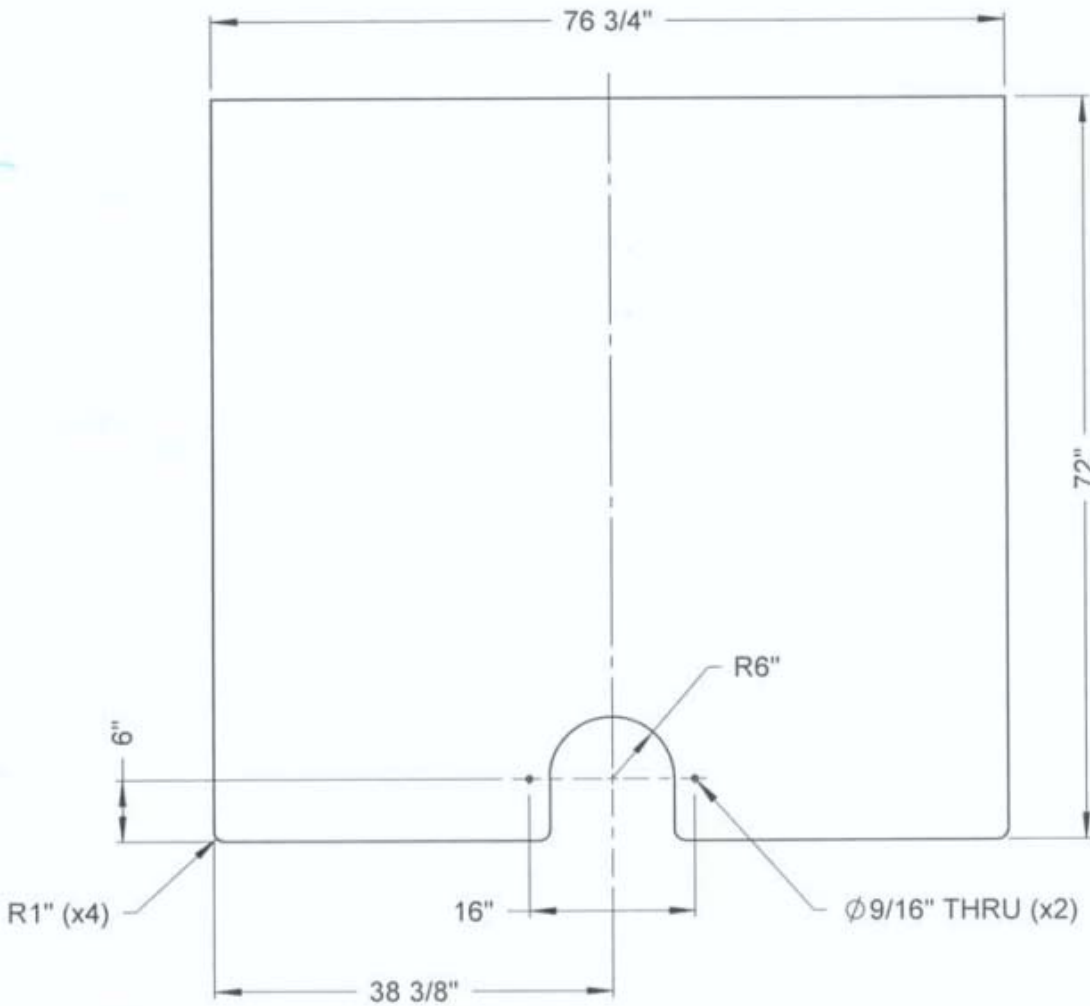


Figure 5: Detail of fish passage installed on the northernmost gate.

3.1 SLIDE GATE TEST OPERATIONS 2014

To investigate lake response to slide gate operation DAID has logged water levels and lake temperature during late summer water control (**Figure 6**). These operations provide the background for future operations. The test operations were conducted from July 27th to September 15th. The operation of the gates had a target lake level maintenance at a low of 2.4 masl and a high of 2.5 masl.

The Gates were first put into place at a height of 2.6 masl on the 27 of July once lake levels had receded to 2.55 mas (see **Figure 6** for logged lake levels). On July 29, three slide gates were set at 2.6 m and one was set at 2.4 m the lowering of the gate was in anticipation of a rain event in combination with high river levels. By July 30th the rain event had raised lake levels to 2.62 m, one pump was put into operation steadily drawing down the lake to a level of 2.49 masl on August 1. At this level the pump was stopped.

After operation of the pump was discontinued lake levels remained consistently above the 2.4 m level. A gradual rise in lake level continued reaching a level of 2.59 m on Aug. 19, at which point

one gate was lowered by removing a 0.3 m section. The following day lake level remained the same and the slide gates for two more flood boxes was lowered by 0.3 m. On August 21 lake level was at 2.58 m and the slide gate for the last flood box was also lowered by 0.3 m, resulting in a slide gate level of 2.4 m across all flood boxes. Water level over toping the slide gates was measured at 0.18 m. The lake level was allowed to gradually decline until September 3rd at this point the slide gate for a single flood box was completely removed. On September 7th flow exchange between the Fraser River and Hatzic Lake was noted to occur as it has in past years. On September 15th the remaining three slide gates were removed, ending slide gate operation.

In addition to the four slide gates the flap gates on the river side of the flood boxes were also manipulated. During periods where the Fraser River levels are lower than Hatzic Lake the flap gates are held open. During periods where Fraser River levels exceeded Hatzic levels the Flap Gates were allowed to operate as designed. Holding the flap gates open encourages nutrient and biological connectivity as flow is exchanged between Hatzic Lake and the Fraser River system. Flow exchange primarily occurs during high tide on the Fraser River, when flow through the flood boxes is reversed. The flap gates were opened during periods when this exchange could be enhanced.

Water temperatures were also collected at the Flood boxes. Lake water temperatures were observed to decrease during periods in which the Fraser River water flows into Hatzic Lake. In **Figure** water temperature is seen to drop markedly in three instances related to slide gate operation, this is on August 13, August 21 and September 3. The August 13 temperature drop is due to the flap gates being opened and cooler Fraser River water entering the lake. The August 21 and September 3 drop is due to increased flow through the flood boxes as the slide gates are lowered.

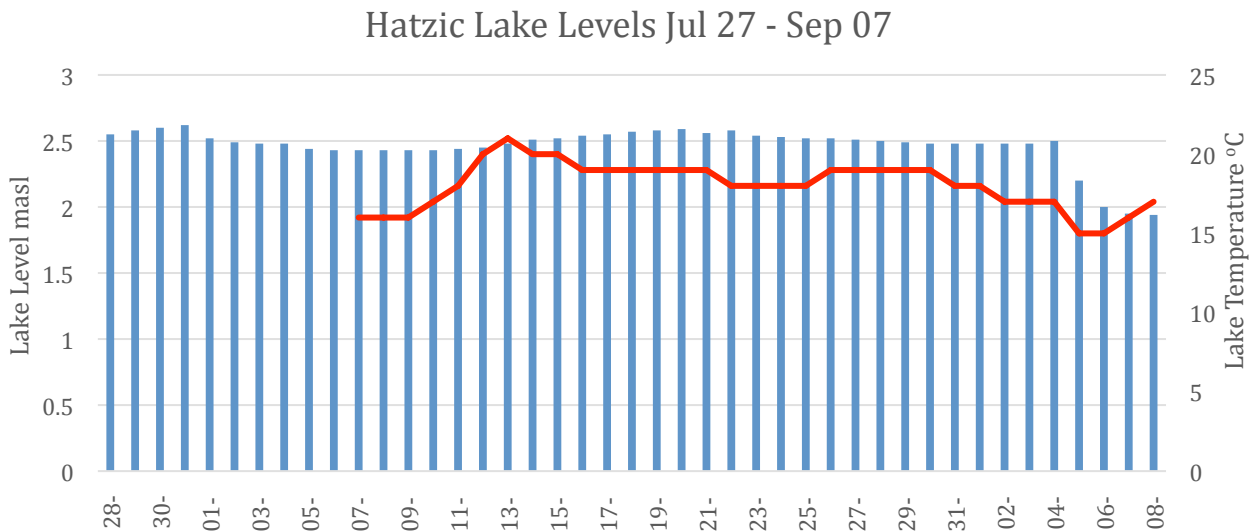


Figure 6: Hatzic Lake levels (bars) and lake temperatures (line) during slide gate operation from July 27th to September 7th 2014.

4.0 Slide Gate operation

4.1 OPERATING PRINCIPLES

The operation of the slide gates is for the purposes of controlling Hatzic Lake levels. The control of lake levels is meant to address a number of concerns residents have for late summer water levels. The low water levels seen in late summer reduces recreational value, influences irrigation of adjacent farmland, entraps fish in shallow pools and restrict fish passage to tributaries in the Hatzic water shed. Slide gate operation will not introduce novel conditions in Hatzic Lake. The slide gates maintain Hatzic Lake at a levels that existed prior to their installation. The slide gates will limit the timing of lake draw down to after September 15th. The gates will not be used during other periods in the year were lake draw down can occur.

The gates are designed such that Hatzic Lake flood levels (+4.masl) will always overtop the gates. The gates have a maximum height of 2.87 masl with both 0.3 m sections added. The operation of the slide gates is carried out in conjunction with weather forecasts. In Addition to lowering gates to accommodate rising water levels in Hatzic Lake, lake level may be drawn down in anticipation of upcoming rain events. Operators will monitor weather reports and ensure the operation of the slide gates does not contribute to lake levels in excess of 2.6 masl.

Additionally the Slide gates are operated in conjunction with the flap gates to enhance fish passage between the Fraser River and Hatzic Lake. Prior to the manual opening of the flap gates, fish access was restricted during periods where Fraser River Levels were higher than Hatzic Lake levels. During Slide gate operation the flap gates are manually opened when no flood risks are present and flow exchange can be enhanced. This is primarily during periods when tidal influences on the Fraser River cause daily inflow into Hatzic Lake.

The flap gates will continue to be opened after the operational periods of the slide gates has ended (September 15th). The flap gates will be manually opened to enhance exchange with the Fraser River throughout the year. The flap gates will be placed in their operational configuration when there are risks of flooding from high Fraser River levels.

4.2 OPERATING PROCEDURES

The slide gates are operated manually and can be manipulated by a single operator. The level of the slide gates along with the opening of the flap gates is at the discretion of the operator. The operator considers the lake and river level along with weather forecast in taking decisions to raise or lower gates or open the flap gates.

The highest priority for gate operation is to ensure flood risks are controlled. The target maintenance level for Hatzic Lake is between 2.4 and 2.5 m. In addition, the gates are operated such that fish passage and flow exchange opportunities are maximized when possible.

APPENDIX I

Project Consultation

FIRST NATIONS

The nearest First Nations reserve is the Pek'xe:yles Reserve which is approximately 2 km west of the site location). The Pekw'xe:yles reserve is a 10.3 ha territory shared by 21 bands belonging to the Sto:lo Nation³

Notifications and project details have been submitted to local First Nations (Appendix II). No objections to the project were received. The local First Nations initiate and support many programs for the enhancement of the salmon fishery. Improvements to fish passage entailed in the project aligns with First Nations values of protecting and enhancing traditional salmon fishery.

PUBLIC/ LOCAL GOVERNMENT

The control of lake levels is an important initiative for the entire Hatzic Lake community. Plans for the control of lake levels has been submitted for review and comments to a broad range public and Government departments. Written support for the control of lake levels was received from the Fraser Valley Regional District (Appendix II).

³ Aboriginal Affairs and Northern Development Canada, accessed July 2012, <http://www.aboriginalcanada.gc.ca/acp/community/site.nsf/eng/rn09657.html>

APPENDIX II

Photographs



Flood box inlets facing Hatzic Lake. Adjacent to the flood boxes is the Hatzic Pump Station.



Flood box outlet (Fraser River side), a top hinged flap gate is fitted to the exit of each culvert



New flood gate control beam



Pump house intake showing Dewidag bars and float level gauge



One-way flood gates draining Hatzic Lake into the Fraser River



1949 pump house with flood boxes on the right side

APPENDIX III

Correspondence

**Dewdney Area Improvement District
Lake Level Select Committee
Box 3005, Mission, B.C., V2V 4J3**

Request for Written Support, Feedback, and Funding, where available.

Date: February 28, 2005
To: See Distribution List Attached
From: DAID Hatzic Lake Level Select Committee
Steve Dimond, Chairman
Re: **Request for Support and Input from Affected Parties
Seasonal Water Level Control for Hatzic Lake, Mission, B.C.
To Improve Fish Access and Habitat and to Enhance Recreational Opportunities**

Greetings. This memo is being distributed to parties who have an interest in the Hatzic Lake system as our **request for your written support and for feedback on the implementation of lake level controls, including concerns or suggestions for information and data collection. We would also ask that any agencies which may have an interest and access to contributing funding sources accept this as an application for assistance.** The water levels in Hatzic Lake affect, among other things, fish populations, weed populations, flood control abilities, recreational pursuits, fire fighting abilities, irrigation requirements for adjacent farms, ditch and creek maintenance, and farming area drainage.

The Dewdney Area Improvement District formed a select committee in 2001 to review water levels on Hatzic Lake and to learn what seasonal control of the those levels would have on affected parties. The committee has resolved to implement a test flow control installation at the dike to continue gathering of meaningful data to further understand the lake system and to allow a more technical review of the hydraulics within the lake and its tributary systems. The committee will seek approval from Fisheries and Oceans Canada for the implementation and request specific support from agencies concerned with fish habitat and fish access into the lake system as well as public concerns.

Both sturgeon and salmon frequent the Hatzic Lake system during their life cycle and the committee understands that assured access to and from the lake during control periods is essential for a successful project. The committee wishes to improve the access to and from the lake for fish populations — this is currently not in place due to the operation of the control gates at the dike.

To be sure, the issue of flood protection is paramount with the Dewdney Area Improvement District. In concert with the committee s review will be studies on the risk of flooding in the August and September periods and the conditions which contribute to flooding, if any, in the late summer period. All of these factors must be considered and adequately addressed for permanent changes to the lake control systems.

We ask that you please write to the Dewdney Area Improvement District in order that we may gauge support for the control of lake levels and the improvement of fish habitat in the lake and properly include and address all issues in our review of changes to the lake system. This is a volunteer effort on the part of the committee and we hope to enlist financial and physical support for these works.

How you can help :

1. Do you have data on Hatzic Lake which could be shared ?
 - water level or flow data
 - lake and stream bed sand gradation sieve results
 - flow or level information for tributary creek systems
 - quality of water testing data for the lake
2. Are you aware of funding for volunteer projects for fish habitat improvement?
 - contact us with any queries or suggestions regarding eligibility requirements
3. Are you aware of habitat degradation in Hatzic Lake due to low lake levels?
 - evidence of trapped fish
 - reduction in accessibility in fish passageways due to low lake levels
 - elevation of water temperatures in the lake
4. Can you add to our records of Sturgeon sightings in Hatzic Lake?
5. Do you have concerns with lake level controls in late summer? Are you in favour?
6. Can you provide volunteer assistance?
7. Can you contribute materials (wood, concrete, aluminum) or heavy equipment for the installation of a test system?
8. Can you contribute digital flow measuring devices or gauges?
9. Do you have expertise in hydraulics and fluid flow for evaluating outflows with various designs of the fish ladder?
10. Do you have experience with fish ladders and their installation?
11. Do varying lake levels affect in any way a commercial enterprise you may have ?

All of these questions are relevant and many answers are required. During and after a test installation, a wealth of data will be collected. Any assistance you may provide will be greatly appreciated. Any feedback or comments you may provide are most welcome and specifically requested.

Background information on the lake and the proposed installation is provided hereinafter.

**Thank you,
DAID Lake Level Select Committee**

Mary Bryant, Robert Dale, Ernie Loewen, Ron Pearson, Joel Pineau, Peter Schalkx,
David Scott, Steve Dimond, Chairman

DISTRIBUTION LIST : CALL FOR FEEDBACK & SUPPORT

Changes to Hatzic Lake - Improving the Habitat - Improving the Recreational Opportunities

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Ministry of Sustainable Resource Management

B.C. Conservation Data Centre
P.O. Box 9358 Stn Prov Govt
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<http://srmwww.gov.bc.ca/cdc/>
cdcdata@victoria1.gov.bc.ca

Ministry of Water, Land & Air Protection

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HCTF - Habitat Conservation Trust Fund

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604-587-4600
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feedback@fraserhealth.ca

Health Protection / Licensing

32618 Logan Ave,
Mission, BC, V2V 6C7
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Environmental Groups

Fraser River Sturgeon Conservation Society

Troy C. Nelson, Executive Director,
Resource Management Biologist,
c/o LGL Limited environmental research
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BC V4P 2B5 CANADA
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Fax: 604-535-1769
tnelson@lgl.com

The Fraser Valley Salmon Society

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NatureServe Canada

Steve Curtis, Dir, Canada Partnerships
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Canadian Wildlife Service

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Habitat Conservation Trust Fund

P.O. Box 9354, Stn. Prov. Gov t.
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Mountain Equipment Co-op

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Friends of the Environment Fund (FEF)

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Pacific Salmon Foundation - Grants

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Thank You

**for any and all
feedback and assistance
you may provide in this worthwhile
community cause.**

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MEMORANDUM

To: Hugh Sloan, Director of Planning
From: Graham Daneluz, Planner I – Long Range
Date: March 31, 2005
Subject: Dewdney Area Improvement District – Hatzic Lake Level Control Project
File No.: 9600-24-001

RECOMMENDATION

THAT Electoral Area Directors support Dewdney Area Improvement District's initiative to test temporary water level controls on Hatzic Lake subject to:

1. a commitment from DAID that the works will be removed prior to and through out the duration of any in-stream works undertaken by Fraser Valley Regional District so that water levels in the Lagace Creek-Hatzic Slough main stem above Hatzic Lake return to the levels that would occur under pre-existing conditions; OR certification by a hydraulic engineer that the proposed works will not influence water levels above Hatzic Lake; and,
2. determination by a hydraulic engineer of any increase in the risk of flooding associated with the works;
3. DAID holding a public information meeting to discuss risks and benefits associated with the works prior to implementation;
4. supervision of the project by a responsible professional; and,
5. authorization from Fisheries & Oceans Canada.

ISSUE

Dewdney Area Improvement District proposes to install a temporary flow control device at the Hatzic Pump Station to maintain higher water levels in Hatzic Lake over the summer. There are potential implications for flood risks and FVRD's plans for flood mitigation works in Hatzic Prairie.

BACKGROUND

During the late summer, particularly in recent years, low water level in Hatzic Lake has greatly impeded its recreational use. Deposition of sediment, drier than average summers, and possibly withdraws of water for irrigation, all contribute to low lake levels. Dewdney Area Improvement District proposes to install a temporary flow control device at the Hatzic Pump Station to maintain higher water levels in Hatzic Lake during the summer.

The Hatzic Pump Station consists of floodboxes and pumps. When the Fraser River water level is low, the floodboxes remain open to allow water from the Hatzic system to drain out by gravity. When the Fraser rises, the floodboxes close to prevent Fraser River water from flooding into the Hatzic system. When the floodboxes are closed water draining from Hatzic is pumped away to the Fraser.

During August and September, Fraser River levels are typically low and the floodboxes remain open. DAID proposes to temporarily modify the floodboxes during August and September to restrict water from flowing out of the Hatzic system and thereby raise the water level in Hatzic Lake. Specific details about how this would be accomplished are not provided, except that a fish weir would be included to maintain, even improve, fish access.

The purpose of the test installation is to improve summer recreational use, test the effectiveness of the designed floodbox modifications, assess impacts on a variety of related values, and to collect data to increase understanding of lake hydraulics. Higher lake levels may have a variety of ancillary benefits such as improving conditions for fish, increasing lakeshore habitat and reducing aquatic weed growth.

A memo from the Dewdney Area Improvement District outlining the proposed lake level control project is attached as Schedule 1.

DISCUSSION

There are long-standing concerns relating to the Hatzic Pump Station:

- it has insufficient pumping capacity to prevent flooding during moderate to heavy rain storms;
- it doesn't provide means for controlling lake levels during the summer; and,
- it kills fish when the pumps are operating.

In 2003, the Regional District, in partnership with DAID, DFO and others, commissioned Golder Associates to develop a strategic plan for pump upgrades to solve these problems. Unfortunately, the price tag for the needed infrastructure upgrades is in excess of \$6 million. Accordingly, the Improvement District is looking for a low-cost way to temporarily modify their infrastructure to allow control over summer lake levels. The proposed works don't address concerns with fish mortality or pump capacity.

There is strong support among Hatzic Island residents for raising summer lake levels to improve recreational values. Of those who responded to a community planning survey in 2004, 60% identified low summer lake levels as the most important issue facing the community. There may be considerably less support among Hatzic Prairie farmers who have traditionally perceived there to be an increased and unacceptable flood risk associated with maintaining higher lake levels.

Flood Risk

High water levels in the Hatzic system are most likely to occur: 1) May to July when the Fraser is in freshet and drainage is dependent on pumping; and, 2) November to December when the greatest amount of rainfall occurs and the chances of extreme rain events are greatest. High water levels are least likely to occur January to March.

DAID records of pump operations indicate that the pumps often operate in August and occasionally in September. Again, the pumps operate when higher Fraser River levels cause the floodboxes at the outlet of the Hatzic system to close. Drainage from Hatzic is dependent on pumping at these times and the risk of flooding rises. A regional-scale rainstorm which causes water levels in both the Fraser and Hatzic to rise could cause flooding during August and September. While the risk of flooding in the late summer is lower than during other times of the year, there clearly is some risk. Maintaining higher water levels during this period will exacerbate any flood event that might occur by reducing storage capacity in the lake.

It may be that flood risks associated with the proposed works are low and acceptable. However, the risk should be assessed by a hydraulic engineer and presented to the community for discussion before any works are undertaken. Ultimately, the community must be able to understand any increase in risk and decide whether it is acceptable. Staff recommend that FVRD's support for this project be contingent on a hydraulic engineering assessment of flood risk and the holding of a public meeting to discuss flood risks and other aspects of the works. Staff further recommend that the overall project be supervised by a responsible professional and that the works be designed so that any structures can be quickly and safely removed, even under high flow conditions, if a heavy rain storm occurs and flooding is imminent.

Impact on Hatzic Prairie Sediment Control Works

Frequent and widespread flooding occurs in Hatzic Prairie during moderate to heavy rainfalls when water levels in Hatzic Lake are moderate and the floodboxes are open. This flooding is largely independent from Hatzic Lake levels; it is caused by sediment build-up in the Lagace Creek – Hatzic Slough main stem which prevents water in tributary streams from draining away.

It is not clear whether raised lake levels would increase the risk of Hatzic Prairie flooding caused by stream bed aggradation. However, higher water levels would likely interfere with the program of in-stream sediment removal planned to alleviate Hatzic Prairie flooding.

FVRD has applied for funding from the Provincial Emergency Program to excavate sediment from the Lagace Creek-Hatzic Slough main stem this summer. Under provincial and federal regulation, in-stream works such as the removal of sediment may only occur during the 'fisheries window' - mid August to mid September - when impacts to fish are minimized. The 'fisheries window' coincides with the period when DAID wishes to maintain higher lake levels. Low water level in Hatzic Prairie streams is a critical operational requirement for this in-stream work. Higher water levels would likely increase project costs and increase the complexity of sediment removal efforts.

Staff recommend that FVRD seek assurances from DAID that any lake level control works will be removed prior to and through-out the duration of any in-stream works undertaken by Fraser Valley Regional District so that water levels in the Lagace Creek-Hatzic Slough main stem above Hatzic Lake return to the level that would occur under pre-existing conditions. Coordination between DAID and FVRD will be required to avoid conflicts.

Community Plan Policies

Low water levels in Hatzic Lake have been a concern for recreational users for at least two decades. The current Official Community Plan for the Dewdney-Hatzic Lake area, adopted in 1988, recognizes this problem and assures Regional District assistance in resolving it while acknowledging that DAID is the responsible authority. Relevant OCP policies are:

6.1 The Regional Board recognizes that recreational opportunities on Hatzic Lake are curtailed during the summer months because of inadequate water levels. The Regional Board also recognizes the inadequate capacity of outlet facilities on Hatzic Slough as well as the need to manage stream drainage in the Hatzic Basin.

6.2 The Regional Board will continue to liaise with the Dewdney Area Improvement District and will provide assistance when called upon to help resolve the problem of drainage management and lake level control on Hatzic Lake. However, the Regional Board also recognizes that the Dewdney Area Improvement District is the responsible authority for drainage management in the plan area.

Conclusion

The solution to problems with the Hatzic Pump station is infrastructure upgrades to significantly increase pumping capacity, improve fish access and enable greater control of lake levels without unacceptably increasing flood risks. However, the costs for such work, estimated at more than \$6 million, are well beyond the means of the local community and no external sources of funds have been identified.

Therefore, staff suggest that EA Directors support DAID's initiative as an interim measure towards addressing lake level concerns subject to:

- a commitment from DAID that the works will be removed prior to and through out the duration of any in-stream works undertaken by Fraser Valley Regional District so that water levels in the Lagace Creek-Hatzic Slough main stem above Hatzic Lake return to the level that would occur under pre-existing conditions - OR - certification by a hydraulic engineer that the proposed works will not influence water levels above Hatzic Lake;
- determination by a hydraulic engineer of any increase in the risk of flooding associated with the works;
- supervision of the project by a responsible professional;
- DAID holding a public information meeting to discuss risks and benefits associated with the works prior to implementation; and,
- authorization from Fisheries & Oceans Canada.

COMMENT BY DIRECTOR OF PLANNING

COMMENT BY ADMINISTRATOR

Graham Daneluz, Planner I - Long Range

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