

Appendix A

MOE Decision Letters

Ministry of the Environment

Environmental Assessment and
Approvals Branch

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Ministère de l'Environnement

Direction des évaluations et des
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MAR 25 2011

Ms. Karen McGhee
Project Manager, P. Eng.
Swift River Energy Limited
kmcghee@m-k-e.ca

Dear Ms. McGhee:

Between October 13, 2010 and November 27, 2010, I received 105 requests asking that Swift River Energy Limited (SREL) be required to prepare an individual environmental assessment (EA) for the proposed North Bala Small Hydro Project (Project) in the Township of Muskoka Lakes.

I am taking this opportunity to inform you that I have decided that an individual EA is not required. This decision was made after giving careful consideration to the issues raised in the outstanding requests, Project documentation, the provisions of the Environmental Screening Process (ESP), and other relevant matters required to be considered under subsection 16(4) of the *Environmental Assessment Act* (EAA).

While I have determined that an individual EA is not warranted for the Project, I am placing the conditions set out below on SREL. Commitments made by SREL through discussions with MOE staff, as documented in the Environmental Study Report (ESR) and through agreements with stakeholders, such as Ontario Power Generation (OPG), must be fulfilled prior to the implementation of the Project.

As such, I hereby deny the elevation requests and impose the following conditions on SREL:

1. In order to ensure that the operations of the two downstream OPG hydroelectric facilities are not negatively impacted by the Project, SREL shall fulfill all commitments made to OPG in its letter of December 16, 2010, appended for your reference.
2. In order to avoid any impacts to the Cranberry Festival and other key tourism events within the Village of Bala, SREL shall implement all commitments made in the ESR and in discussions with MOE staff regarding the construction schedule for the Project including:
 - i. beginning construction after the October 2011 Cranberry Festival;
 - ii. commitments with regards to lane closures and reductions during the winter; and
 - iii. maintaining access to the municipal boat docks through the construction period.



3. SREL shall implement all commitments made in the ESR with regards to establishing a Public Advisory Committee with members of the public and affected stakeholders regarding the aesthetics of the Project and its surrounding landscape, during the detailed design phase of the Project.
4. SREL shall consider any recommendations from meetings of the Project's Public Advisory Committee mentioned in Condition 3.

In addition, as the Metis Nation of Ontario (MNO) has expressed concerns with the Project, I am hereby encouraging SREL to continue discussions with the MNO to resolve any outstanding issues. Please advise MOE of any meetings that may take place between SREL and MNO as they relate to this Project and MNO's concerns. SREL must follow the Addendum provisions in section B.5.2 of the Guide to Environmental Assessment Requirements for Electricity Projects should discussions with the MNO result in applicable modifications to the Project.

In accordance with the ESP, my decision will become final 15 calendar days after this notice of my decision is received, unless a request is made by one of the original requesters within that time that the Minister of the Environment (Minister) review my decision. This notice is deemed to be received on the fifth day after it is mailed. Please note that the details for requesting that the Minister review my decision are outlined in section B.4.1.2 of the Guide to Environmental Assessment Requirements for Electricity Projects. If you do not have a copy of this guide, it is available on the Ministry of the Environment's web site.

If no request is made to the Minister to review this decision, SREL must submit the required Statement of Completion and may proceed with the Project, subject to any other permits or approvals required.

Please note that the contravention of the EAA, including failure to comply with the ESP and the commitments made in the Project ESR and with OPG, may result in prosecution under Section 38 of the EAA. This decision is made with the understanding that SREL recognizes the importance and value of the EAA and that these commitments will be fulfilled.

Yours sincerely,



Agatha Garcia-Wright
Director

Environmental Assessment and Approvals Branch

c: Mr. Larry King, Consultant Project Manager, Hatch Energy
Requesters
EA File No.EA06-07 North Bala Small Hydro Project



December 16, 2010

Ontario Power Generation Inc.
700 University Avenue H18-A22
Toronto, ON
M5G 1X6

Attn: Ms. Joan Frain, Manager – Water Policy & Planning

Re: North Bala Falls Small Hydro Project

Dear Joan:

Further to our correspondence over the last year regarding SREL's proposed North Bala Falls Small Hydro Project and OPG's elevation request, we hereby agree to the minimum conditions as outlined in the attached document prepared by OPG.

Respectfully,
Swift River Energy Limited

A handwritten signature in dark ink, appearing to read 'Anthony Zwig', is written over a faint, larger version of the signature.

Anthony Zwig
President

c.c. Adam Sanzo, EAAB, MOE

2300 Yonge Street
Suite 801, P.O. Box 2300
Toronto, ON M4P 1E4
Phone: 416-864-9977

December 15, 2010

Swift River Energy Limited Partnership ("SREL") is planning to construct and operate a 4.3MW hydroelectric power facility approximately 25m south of the existing North Bala Dam on the Moon River, in the village of Bala, Ontario (the "Proposed Undertaking"). Ontario Power Generation Inc. ("OPG") operates two facilities downstream of the location of the Proposed Undertaking, namely Ragged Rapids G.S. and Big Eddy G.S. OPG is concerned that the planning, construction and operation of the Proposed Undertaking will negatively impact on OPG, including the existing operation of the above named facilities, OPG's compliance with the obligations under the Muskoka River Water Management Plan ("MRWMP") with respect to the water levels at Bala Reach and Big Eddy G.S., and discharge from the Moon Dam during the walleye spawn period. In order to prevent the Proposed Undertaking from causing a negative impact on OPG, SREL has agreed that the planning, construction and operation of the Proposed Undertaking shall, at a minimum, meet conditions 1-8 set out below (the "Minimum Conditions").

1. The Proposed Undertaking shall be operated only as a run-of-the-river facility, incorporating a flow plan developed weekly in consultation with the Ministry of Natural Resources ("MNR") and OPG, based on the conditions forecast for each week. The facility would initially be run flat under normal flow conditions (i.e. no load cycling of the unit throughout the day). The intent of this condition is to simulate the status quo (i.e. a manually operated dam at Bala). After the facility is placed in service, if SREL can demonstrate to the satisfaction of OPG, that the operation of the Proposed Undertaking can be optimized without negative impacts to OPG's facilities, lands, operations, existing permits, approvals or licensed conditions of operation, revenue or cost streams, then, OPG is prepared to enter into discussions on possible means of amending this condition. For greater clarity, it is up to the SREL to ensure that such changes are acceptable to regulatory authorities, including the MOE and the MNR.
2. Lake Muskoka would not be used as storage with respect to the operating regime of the Proposed Undertaking.
3. When Inflow at the Proposed Undertaking is less than 26 cms (the minimum operating capability of Ragged Rapids GS), the Proposed Undertaking shall be cycled such that its operating discharge is 26 cms or more. Compliance with the WMP and public safety will continue to be ensured. During summer months, this discharge is to be timed in order to provide adequate navigable water conditions for Go Home Lake on Friday and Sunday evenings. This requirement would be included in the weekly flow plan.
4. When Inflow at the Proposed Undertaking is greater than the discharge capacity of Ragged Rapids GS, then SREL or the operator of the Proposed Undertaking as the case may be, shall provide OPG notice, of a minimum of forty-eight (48) hours, with respect to water adjustment plans so that OPG may coordinate the Moon Dam log adjustment, regulate the elevations at the Bala Reach, and thereby comply with the MRWMP.
5. To ensure no impacts to OPG compliance under the MRWMP with respect to the walleye spawning period, ranging from approximately April 15th to June 1st of any year, during such period, the Proposed Undertaking shall be operated with no cycling of units (i.e. run flat). A continuous minimum discharge shall be provided as required by the MRWMP.
6. As soon as the information is available, and in any event, prior to the commencement of construction of the Proposed Undertaking, SREL shall provide to OPG the equipment discharge characteristics, and any studies and modeling information with respect to the operation of the Proposed Undertaking. OPG will review such information to ascertain the nature and impact of the operating regime for the Proposed Undertaking on OPG's facilities, lands, operations, existing permits, approvals or licensed conditions of operation, revenue or cost streams.
7. In the event that OPG is of the opinion that the studies or modeling information provided under condition 6 indicate impacts from the Proposed Undertaking to OPG's facilities, lands, operations, existing permits, approvals or licensed conditions of operation, revenue or cost streams, OPG shall

notify SREL, MOE and MNR immediately. SREL agrees to mitigate such negative impact on OPG immediately so that the Proposed Undertaking will not have the impacts identified by OPG, and agreed upon by SREL, MOE and MNR.

8. SREL agrees to enter into a communications protocol to ensure that the communication and notification specified herein is carried out effectively.

**Ministry of
the Environment**

Office of the Minister

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MAY 24 2012

ENV1283MC-2011-1471

Ms. Karen McGhee
Project Manager, P. Eng.
Swift River Energy Limited
kmcghee@m-k-e.ca

Dear Ms. McGhee:

I am in receipt of 75 requests, asking that the Minister of the Environment review the decision of the Director of the Environmental Assessment and Approvals Branch (Director) that an individual environmental assessment is not warranted for the North Bala Small Hydro Project (Project), in the Township of Muskoka Lakes.

I am taking this opportunity to inform you that I have decided to confirm the Director's decision. This decision was made after giving careful consideration to the issues raised in the requests, Project documentation, the provisions of the Environmental Screening Process, and other relevant matters required to be considered under subsection 16(4) of the Environmental Assessment Act. A more comprehensive discussion of the evaluation of the requests may be found in the attached letters to the requesters. My decision is final.

Please note that any contravention of the Act, including failure to comply with the Environmental Screening Process and the commitments made in the Environmental Screening Report, may result in prosecution under Section 38 of the Act. This decision is made with the understanding that Swift River Energy Limited recognizes the importance and value of the Act and that these commitments will be fulfilled.

Yours sincerely,

A handwritten signature in black ink that reads "Jim Bradley".

Jim Bradley
Minister

Attachment

c: requesters
Mr. Larry King, Consultant Project Manager, Hatch Energy

Appendix B

Alternative 2D Drawing from ESRR



NOTE:
LANDSCAPE ARCHITECT PLANS
ARE UNDERDEVELOPMENT AND
ARE NOT DEPICTED.

**THIS DRAWING IS FOR
ESTIMATING USE ONLY**
All ratings and sizes of equipment,
concrete, steel, and materials, shown on
this drawing are approximations only and
must not be considered as final design
requirements.
**DO NOT USE FOR
CONSTRUCTION**

Plot Scale: 1:1
Lisp Name: Pk410133
Drawing Name: P:\SWIFT\327078\CAD\327078-SK-205.dwg

DRAWING No. 327078-SK-205



ALL DIMENSIONS ARE IN MILLIMETRES.
ALL ELEVATIONS ARE IN METRES.

DATE	NO.	ISSUE / REVISION	CH.	APP.	APP.
SEP. 19, 2008	C	GENERAL REVISION			
JUL. 24, 2008	B	REVISED FOR LANDSCAPE CONCEPT			
MAR. 28, 2008	A	ISSUED WITH FEASIBILITY REPORT	D.P.	B.C.	B.M.

	SWIFT RIVER ENERGY BALA, ONTARIO BALA NORTH HYDRO DEVELOPMENT	
	ALTERNATIVE 2D GENERAL ARRANGEMENT	
DESIGN PREPARED M. RAGWEN CHECKED B. CRAIG DRAWING PREPARED A. LACOURSIERE CHECKED D. PARKES LEAD DISCIPLINE ENGINEER	ENGINEERING MANAGER PROJECT MANAGER B. A. MacTAVISH	SCALE 1:250 HATCH ENERGY PROJECT No. H-327078
DRAWING NO. 327078-SK-205		REVISION

Appendix C

Consultation Record

Provincial and Federal Agency Consultation Summary for Addendum

Date	From	To	Method of Communication	Content/Topic	Reference
Mar 28, 2011	MOE	SREL	Email	MOE Director's decision on the ESRR	Appendix A
Mar 31, 2011	SREL	CEAA, DFO, TC, MOE, MNR	Email	Distributed March 25, 2011 MOE Director's decision to CEAA and other agencies	
Mar 31, 2011	SREL	Hon. Tony Clement, MP, Norm Miller, MPP, Min. Of Energy	Project Information Package Booklet by courier	Information on project including briefing notes/FAQ, results from the Economic Impact Study, renderings, MOE Director's decision, results from Cultural Heritage Landscape Assessment, drawings, etc.	
May 3, 2011	SREL/Hatch	DFO	Email	Provided clarification on if any impacts from cycling and how impacts will be addressed.	
May 9, 2011	SREL/Hatch	DFO, MOE, MNR	Email	Revised draft letter providing clarification on impacts from cycling and how impacts will be addressed.	
May 17, 2011	SREL/Hatch	DFO	Email	Finalized letter providing clarification on impacts from cycling and how impacts will be addressed.	Project website
May 30, 2011	MNR	SREL	Courier	MNR provided SREL with a copy of its Bala dams Public Safety Measures Plan.	
May 31, 2011	SREL	MNR, MOE, DFO	Email	Forwarded MNO meeting notes from April 15, 2011 meeting and listed SREL intended response to the action items provided.	
Jul 20, 2011	SREL	REFO/MEI	Meeting	Discussed project and next steps.	
Jul 28, 2011	DFO, TC	SREL	Conference Call	Discussion of remaining tasks / next steps for CEAA and federal permits.	
Aug 15, 2011	SREL	MNR	Email	Confirmed with MNR that Shield Parking lot is under MNR control.	
Sep 8, 2011	SREL	TC	Email	Outlined cycling operations with respect to MOE Director's decision from March 2011.	
Sep 21, 2011	SREL	MNR, TC, DFO	Email	Preliminary draft of Addendum Report and request for initial comments prior to issuance of document to the public.	
Sep 30, 2011	MNR	SREL	Email	Initial comments on Addendum Report	
Oct 6, 2011	DFO	SREL	Email	Initial comments on Addendum Report	
Oct 7, 2011	SREL	MOE	Email	Preliminary draft of Addendum Report and request for initial comments prior to issuance of document to the public	
Oct 12, 2011	SREL	MNR, DFO, TC	Conf. Call	Discussion of Addendum Report, comments and next steps.	
Oct 12, 2011	MNR	SREL, Hatch	Email	MNR sent a copy of its recent Navigable Waters Protection Act Approval for relocation of the upstream booms at the north and south Bala dams.	

Date	From	To	Method of Communication	Content/Topic	Reference
Oct 26, 2011	SREL	TC	Email	Draft summary of upstream flows under proposed Option 1 plan including velocity modelling results from Hatch.	
Oct 27, 2011	SREL	MOE, Hatch	Meeting	Discussed Addendum Report comments and next steps.	
Oct 27, 2011	SREL	Hatch/TC	Conf. Call	Discussion regarding changes in navigation regime with respect to Option 1, in particular in the upstream north channel.	
Oct 29, 2011	SREL	MNR	Email	Copy of draft summary of upstream flows under proposed Option 1 plan including velocity modelling results from Hatch (previously sent to TC).	
Oct 31, 2011	SREL	DFO	Email	Response to question regarding if there would be any changes to Shawanaga First Nation's previously related concerns, i.e. portage and fishing areas.	
Oct 31, 2011	SREL	MNR	Phone call	Discussed copy of draft summary of upstream flows under proposed Option 1 plan including velocity modelling results from Hatch (previously sent to TC). In particular, discussed existing operations of Bala dams by MNR and original assumptions made with respect to operations in summary.	
Nov 1, 2011	SREL	TC, MNR	Email	Issued revised summary of upstream flows under proposed Option 1 plan including velocity modelling results from Hatch (previously sent). Revision included updated assumptions with respect to MNR existing dam operations and analysis of 1:100 year flood event.	Tables and charts - Appendix E
Nov 1, 2011	TC	SREL, DFO	Email	TC comments on Addendum Report and recent summary/modelling of upstream flows.	
Nov 29, 2011	SREL	MNR, DFO, TC, MOE	Email	Notice that SREL was not able to reschedule a meeting/PIC with Shawanaga FN for 2011 due to scheduling issues.	
Dec 2, 2011	SREL	MPP, Norm Miller	Email	Offered to meet to discuss the project.	
Dec 5, 2011	SREL	TC, MNR	Email	Provided results of downstream modelling of proposed flow conditions.	Appendix E
Dec 5, 2011	SREL	MNR	Phone call	Discussed MNR's plans with respect to relocation of upstream boom and additional signage. MNR still planning to complete in fall 2011.	

Municipal / Public / Stakeholder Consultation Summary for Addendum

Date	Industry / Stakeholder Group	Method of Communication	Content/Topic	Reference
Aug 29, 2007	All	Public Information Centre, Bala, ON,	Presented Alternative 1 to public	(summarized in ESRR)
Oct 14, 2008	All	Presentation at open DMM Council Meeting	Comparison of the Alternative 1A and 2D location plans	(summarized in ESRR)
Oct 26, 2009	All	Presentation at open DMM Council Meeting	Outline of ESRR and comparison of the Alternative 1A and 2D location plans	Project website
Aug 24, 2010	All	Presentation at open TML Council Meeting	Outlined comparison of Alternative 1A and 2D location plans and noted that Alternative 1A location will be pursued if municipal land for 2D not available	
Aug 24 & 27, Sep 1, and Sep 2, 2010	All	Interview for local newspapers Gravenhurst Banner, Bracebridge Examiner, Weekender, Muskoka Sun, and Muskoka Today, Toronto Star and A-Channel news	Articles covered the August 24, 2010 meeting and in particular noted that should municipal land for Alternative 2D not be provided by Municipality, a plan at Alternative 1A location would be pursued by SREL	
Aug/Sep 2010	TML council candidates	Issued briefing notes on project to Township council candidates prior to election	Outlined two alternatives and respective benefits of both. Confirmed that Alternative 1/1A site was viable and will be pursued if municipal lands not provided for Alternative 2D.	
Sep 29, 2010	All	Interview with local newspaper Gravenhurst Banner	Article quotes SREL as "We can indeed build only on the Crown land without using any municipal land if we are forced to and they (the two options) would be of similar size and similar costs. So it is definitely feasible"	
Sep 29, 30 and Oct 1, 2010	All	Full page ads in local newspaper, Muskoka Today, Bracebridge Examiner, Gravenhurst Banner and Weekender (Total 4 papers)	Outlines that Alternative 2D requires municipal land but that Alternative 1A is still technically and economically viable	Attached
Oct 6 and 8, 2010	All	Full page ads in local newspapers Bracebridge Examiner, Gravenhurst Banner, and Weekender	Outlines that Alternative 2D requires municipal land but that Alternative 1A is still technically and economically viable	Attached
Oct 13, 2010	All	Interview with local newspapers Bracebridge Examiner and Gravenhurst Banner	Articles noted "SREL ...has suggested it will build on the first option, the Crown land, if the district revokes approval to build on its land." The article then interviews MOE spokesperson on the possible regulatory process to make such a change.	

Date	Industry / Stakeholder Group	Method of Communication	Content/Topic	Reference
Oct 13, 2010	Flow Distribution Committee	Meeting	Meeting with new Flow Distribution Committee comprised of residents, cottagers, businesses, municipality, and MNR. Meeting focused on scope and mandate of committee, overview of current operation of dams, proposed project and status, and regulatory process overview.	
Oct 20, 2010	Flow Distribution Committee	Meeting	Meeting focused on proposed flow distribution plan for project and review of photographs of various flows over the dams. Discussion included outline of proposed cycling operations.	
Oct 27, 2010	Flow Distribution Committee	Meeting	Review of information from previous two meetings and further discussion on cycling operations. Listing of some recommendations for flow distribution during operations.	
Nov 25, 2010	All	Local newspapers report on project, Bracebridge Examiner and Gravenhurst Banner	Articles noted "SREL may revert to less attractive Option 1 for plant. The Option 1 proposal would see the plant constructed on Crown land near the falls"	
Nov 2010	DMM and TML	Information package issued to all new municipal councillors at TML and DMM	Outlined the history, layout and benefits of the two alternatives and noted that the Alternative 1A site would be pursued if the municipal land required for Alternative 2D was not available.	
Dec 29, 2010	All	Interview with the Toronto Star newspaper	Article stated "(SREL) prefers to lease municipal land, because it can build a less obtrusive power plant and provide public parkland...But if its access to municipal land is blocked, it can locate its buildings in a more obtrusive site on Crown land."	
Jan 10, 2011	All	Presentation at open DMM Council meeting	Walked through the development and benefits of both options and presented updated drawings and renderings of Alternative 1A and 2D location plans. It was clearly noted that Alternative 1A location will be pursued if municipal land for 2D not available. Publically answered questions from DMM staff and councillors.	Project website
Jan 12, 2011	All	Article by local newspaper Gravenhurst Banner	Reported on DMM council meeting presentation. Article stated "...the company has opted to move the project 100 feet away from the falls on District of Muskoka lands, if the district agrees to enter into a land-lease agreement with the proponent. (SREL) said failure to do so would mean the company would run with its initial plan to locate the hydrogenating station exclusively on Crown lands."	
Jan 18, 2011	All	Presentation at open TML Council meeting	Outlined two alternatives and provided updated rendering of Alternative 1A.	Project website

Date	Industry / Stakeholder Group	Method of Communication	Content/Topic	Reference
Jan 26, 2011	All	Interview with local newspaper Gravenhurst Banner	Article describes two options and quotes SREL "If the municipal lease is approved for the Option 2 plan, Swift River is planning to start construction this October...if no agreement is made for the lease this month, Swift River will be issuing an addendum to the environmental screening outlining the Option 1 plan on the Crown land."	
Feb 1, 2011	Flow Distribution Committee	Email	Outline of the proposed cycling mode being considered for operations under low flows and statement that FDC meetings would continue once it is confirmed that this mode of operations would be acceptable to agencies.	
Feb 15, 2011	Local media, TML, DMM, misc. Stakeholders	News Release	Provides updated renderings of both options and quotes SREL "We remain hopeful that we'll get a decision from the District soon so we can move ahead with the generally preferred District Option...but we're ready to go with the paper work and reports needed to finalize approvals to develop the original Crown land site right next to the falls as our back-up plan"	Attached
Feb 17, 2011	All	Interview with local newspapers Bracebridge Examiner and Gravenhurst Banner	Article reports on Feb 15 news release - provides updated renderings of both options and quotes SREL "We remain hopeful that we'll get a decision from the District soon so we can move ahead with the generally preferred District Option...but we're ready to go with the paper work and reports needed to finalize approvals to develop the original Crown land site right next to the falls as our back-up plan"	
Feb 21, 2011	All	Interview for local web based newspaper Muskokatodaily	Article reports on Feb 15 news release - provides updated renderings of both options and quotes SREL "We remain hopeful that we'll get a decision from the District soon so we can move ahead with the generally preferred District Option..but we're ready to go with the paper work and reports needed to finalize approvals to develop the original Crown land site right next to the falls as our back-up plan"	
Feb 22, 2011	All	Presentation at open TML Council meeting	Presented updated drawings and renderings of Alternative 1A and 2D location plans and noted that Alternative 1A location will be pursued if municipal land for 2D not available. Publically answered questions from TML councillors.	Project website
Feb 23, 2011	All	Presentation at open DMM Council's Public Works Committee meeting	Presented updated drawings and renderings of Alternative 1A and 2D location plans and noted that Alternative 1A location will be pursued if municipal land for 2D not available. Publically answered questions from DMM staff and councillors.	Project website

Date	Industry / Stakeholder Group	Method of Communication	Content/Topic	Reference
Mar 2011	Local MP and MPP	Project information package issued to local MP and MPP	Outlined the history, layout and benefits of the two alternatives, including new renderings of both. It was noted clearly that the Alternative 1A site would be pursued if the municipal land required for Alternative 2D was not available.	
Mar 2, 2011	All	Interview with local newspaper Gravenhurst Banner	Article outlines both option and the land tenure issues with both. The article states that SREL "continues to require the township make a decision on the hydro-generating station option it prefers, so they can move forward with the desired option as soon as the MOE releases its EA report".	
Mar 16, 2011	All	Article on project in local newspaper Gravenhurst Banner	The article states "SREL needs both district and township land for its project. The company has threatened to build the plan on a separate portion of Crown land at the falls if the municipalities don't cooperate."	
Mar 28, 2011	All elevation requesters and others	Email from MOE	MOE Director's decision issued by MOE to all elevation requesters and others.	
Apr 1, 2011	All	Interview with local newspapers Bracebridge Examiner and Gravenhurst Banner	Article states "Swift River has said it will move the project to Crown land - what it refers to as its Option 1 proposal - if the land is not released. Option 1 was deemed by many residents as being a much larger and more intrusive looking dam."	
Apr 20, 2011	Flow Distribution Committee	Email	Advising FDC that MOE Director had made her decision on the elevation requests for the project and outlined/explained the conditions contained in the decision, in particular with respect to cycling the facility during low flow periods. Email also notified group that appeals to the Director's decision had been received, therefore, FDC meetings would again be postponed until a Minister's decision was received with respect to the cycling mode of operations.	
May 4, 2011	All	Article in local newspaper Gravenhurst Banner	Article outlines two options available for the project and land tenure issues with both.	
May 16, 2011	All	Presentation at open TML Council meeting	Noted that Alternative 1A would be pursued if municipal land for Alternative 2D not available.	
May 16, 2011	All	Presentation at open DMM Council meeting	Noted that Alternative 1A would be pursued if municipal land for Alternative 2D not available.	

Date	Industry / Stakeholder Group	Method of Communication	Content/Topic	Reference
May 20, 2011	All	Interview with local newspaper Gravenhurst Banner	Article states "SREL needs the Bala land to build the dam in the less obtrusive of two construction options unveiled in February. The first elevation presented would build the dam only on Crown lands. The second, lower-profile option would use both Crown and the land the district recently voted to transfer to the township."	
May 30, 2011	Muskoka River Water Management Plan Standing Advisory Committee	Email	Update on status of the project. Outline of the conditions included in the MOE Director's decision from March 2011, in particular with respect to the proposed cycling mode during low flow conditions. Provided May 17, 2011 letter from Hatch outlining impacts from the proposed cycling that was previously provided to DFO.	
Jun 2, 2011	Township of Muskoka Lakes	Email to council, CAO, Clerk	Informed Township that MNR had apparently completed its public safety report for the Bala dams.	
Jun 16, 2011	Muskoka Lakes Association (MLA)	Email	Provided copy of Hatch's May 17, 2011 letter outlining impacts from the proposed cycling that was previously provided to DFO.	Project website
Jun 22, 2011	All	Interview with local newspaper Gravenhurst Banner	Article quotes SREL as saying "If the township isn't ready to negotiate for option two lands when the minister's decision is received, SREL will have to assume that they have chosen option one."	
Jun 23, 2011	Muskoka Lake Cottage Association (MLA)	Meeting with MLA executive representatives	Outlined history and benefits of both options and presented updated renderings of both options. Confirmed that Alternative 1A will be pursued if municipal lands not available for Alternative 2D. Outlined the change to the operational regime and the expected impacts and associated mitigation measures.	
Jun 27, 2011	All	Presentation at open TML Council meeting	Outlined history and benefits of two options and clearly stated that both options are still being considered.	
Jun 27, 2011	All	Preparation and presentation of answers to TML for 156 questions that was subsequently posted on project and TML's websites	Answers included outlines of both projects, statement that both alternatives are feasible and that Crown land option will be pursued if municipal land is not available for use for Alternative 2D. Answers also included outline of the change to the operational regime and the expected impacts and associated mitigation measures.	Project website

Date	Industry / Stakeholder Group	Method of Communication	Content/Topic	Reference
Jun 30, 2011	All	Interview with local newspaper Gravenhurst Banner	Article reported on the Jun 27th TML council meeting. It stated SREL "said a refusal from the township (for its lands) would leave the developer with no choice but to build the project on Crown lands only, in an elevation that it says will be more obtrusive."	
Jul 6, 2011	Muskoka Lake Cottage Association (MLA)	Meeting with MLA executive representatives	Follow-up to June meeting.	
Jul 7, 2011	MLA	Email	Provided copy of August 2010 Briefing Note provided to municipal councillors prior to the October election that outlined the two options for the project.	
Jul 28, 2011	All	Interview with local newspaper Gravenhurst Banner	Article states SREL "said the proposed hydroelectric project will not use Margaret Burgess Park for construction if the company is able to build in its Option 2 elevation, which will use a mix of Crown land and municipal land. However, (SREL) said if the company is restricted to building on Crown land (option one), the park will like be used for construction." It also quotes SREL as saying "This confirms that option one will be viable should the municipality not provide a lease for the option two lands."	
Aug 3, 2011	All	Interview with local newspaper Gravenhurst Banner	Article states SREL said "a lease denial from the township would leave the developer no choice but to build the project on Crown lands only, in an elevation it says will be more obtrusive."	
Aug 10, 2011	All	Article in local newspaper Gravenhurst Banner	Articles announces that TML will be posting the answers that SREL submitted on its website (also see row for Jun 27/11) so they are available for public review and feedback and states that they are also on SREL's website.	
Aug 17, 2011	All	Article in local newspaper Gravenhurst Banner	Article states "To date, the TML and SREL have been locked in a disagreement over land lease issues for the project. SREL has said it needs to lease township land if it is to build the facility in what it says will be the less obtrusive of two possible elevations at the north Bala Falls." The article also notes that the answers that SREL provided to the TML are posted on both SREL's and TML's website for the public to review and provide feedback.	
Aug 17, 2011	TML	Email from SREL to TML	SREL requested all information about TML's proposed heritage designations properties.	

Date	Industry / Stakeholder Group	Method of Communication	Content/Topic	Reference
Aug 18, 2011	TML	Email from TML to SREL	TML stated that all information regarding TML's proposed heritage designation properties was provided on TML's website.	
Aug 19, 2011	All	Half page advertorial in Muskoka Magazine	Outlined history and benefits both options and presented updated rendering for both. Stated "If the municipal land is not secured from the Township of Muskoka Lakes by the time the decision is received, Swift River will have no choice but to pursue Option 1."	attached
Aug 31, 2011	All	Article in local newspaper Gravenhurst Banner	Article states "SREL has said it needs to build the facility on a combination of Crown and municipal land if it is to build it in the "Option two" elevation, which SREL says is the least obtrusive of two possible elevations for the project. If a municipal lease is denied, SREL says it will be forced to build on Crown land only, in a more obtrusive elevation known as "option one".	
Sep 21, 2011	TML	Email from SREL to TML	SREL requested a copy of TML's report to the Ontario Conservation Review Board with respect to the heritage designations and associated appeals.	
Sep 21, 2011	TML	Email from TML to SREL	TML notified SREL that it was TML's understanding (though not confirmed yet) that TML had 15 days to submit all appeal paperwork (checklist, background reports and correspondence) for the heritage designations to the Ontario Conservation Review Board and that no "report" was required.	
Sep 15, 2011	All	Interview for local magazine, What'sUp Muskoka	Article outlined the history, layout, and benefits of the two options. It quotes SREL as saying "Should the township not lease the lands required for the revised Option plan (that the township council and the community requested SREL pursue back in 2007), SREL will be left with no choice but to revert back to the original Option 1 plan".	
Sep 27, 2011	TML	Email from SREL to TML	SREL requested land registration documents for the TML proposed heritage designation properties.	
Oct 17, 2011	All	Posting by Gravenhurst Banner on its website	Posting notes that SREL has decided to abandon its Option 2 plan and pursue its Option 1 plan.	
Oct 17, 2011	All	Moose FM Radio	Announcement that SREL has decided to abandon its Option plan and pursue its Option 1 plan. Posting on its website, Moose FM included SREL's letter to the community of Bala regarding the change and associated reasons.	
Oct 18, 2011	All	Moose FM Radio	News report regarding switch from Option 2 plan to Option 1 plan and included a statement from the Mayor of Muskoka Lakes.	

Date	Industry / Stakeholder Group	Method of Communication	Content/Topic	Reference
Oct 19, 2011	All	Gravenhurst Banner	Article notes that "Swift River announced that it will no longer consider building the project in the Option 2 elevation, which it says is the less obtrusive of the two possible elevations for the project". And cites the reason for the change as an inability to come to a compromise with the Township for a lease of municipal lands required for Option 2.	
Oct 19, 2011	All	Gravenhurst Banner	Editorial in the paper announced "Swift River Energy has switched its plan for its plan for the hydro project at Bala Falls to the less appealing of two options".	
Oct 19, 2011	All	Gravenhurst Banner	SREL's Letter to the Editor/Open Letter to Bala Community was published announcing the switch in plans and associated reasons.	Attached
Oct 19, 2011	All	Gravenhurst Banner / Bracebridge Examiner	SREL posted a ½ page ad in local newspapers "Open Letter to Bala Community", announcing the switch in plans from Option 2 to Option 1 and the associated reasons.	Attached
Oct 21, 2011	All	Toronto Star	Article announcing that the project has switched from the less intrusive municipal land option to the crown land option due to an inability to negotiate a lease with the Township. Included comments from SREL and the Mayor of Muskoka Lakes.	
Oct 26, 2011	All	Gravenhurst Banner	Article again announced the switch in plans from Option 2 to Option 1 and included comments from SREL regarding the need to move forward with the project due to timeline obligations with the FIT Contract. Article also quotes MOE spokesperson regarding requirement for an addendum and that it would need to be issued to the public for review.	
Oct 26, 2011	All	What's Up Muskoka Magazine	SREL posted a 3/4 page ad in local newspaper "Open Letter to Bala Community", announcing the switch in plans from Option 2 to Option 1 and the associated reasons.	Attached
Oct 26, 2011	All	What's Up Muskoka Magazine	Announced that SREL "had abandoned Option 2 as a possible location for their small hydro plant in Bala. Instead they will return to the original Option 1, located on Crown land".	
Oct 31, 2011	Bala United Church	Phone call	Discussed aesthetics, blasting, parking and use of Burgess Park during construction for the Option 1 plan.	
Nov 1, 2011	All	Moose FM Radio	News report states that Swift River "is moving ahead with its first option for a hydro-electric plant at the falls". Included comments from SREL and the Mayor of Muskoka Lakes.	
Nov 2, 2011	All	Gravenhurst Banner	Two letters to the editor were posted by community members stating the project is not needed or wanted.	

Date	Industry / Stakeholder Group	Method of Communication	Content/Topic	Reference
Nov 16, 2011	All	What's Up Muskoka	Opinion Editorial on project in local newspaper focusing on benefits of waterpower in Ontario and the Project locally. Article also notes that Option 1 is now being pursued due to land tenure issues with the Township with respect to Option 2.	
Dec 7, 2011	TML	Email from TML to SREL	TML notified SREL that due to a staff shortage at TML the materials for the heritage designation appeal had not yet been filed with the Conservation Review Board.	

Aboriginal Consultation Summary for Addendum

Date	Aboriginal Community	Method of Communication	Content/Topic	Reference
Apr 15, 2011	MNO	Meeting	Presentation to Georgian Bay Consultation Committee for the Métis Nation of Ontario. Presentation outlined history of project including both options, the March 2011 MOE Director's decision on the ESRR, and the Nov 2010 Letter of Intent for Works of Undertaking Affecting Fish Habitat to MNR and DFO. A project information package was provided to attendees that providing copies of these documents as well as the archaeological studies, heritage landscape assessment, economic impact study and various other project information. It was made clear at this meeting that should the municipal lease not be provided for the Alternative 2D plan, that an addendum would be issued so that Alternative 1A could be pursued.	
Apr 21, 2011	Shawanaga First Nation	Meeting	Presentation to Chief and Council for the Shawanaga First Nation. Presentation outlined history of project including both options, the March 2011 MOE Director's decision on the ESRR, and the Nov 2010 Letter of Intent for Works of Undertaking Affecting Fish Habitat to MNR and DFO. A project information package was provided to attendees that providing copies of these documents as well as the archaeological studies, heritage landscape assessment, economic impact study and various other project information. It was made clear at this meeting that should the municipal lease not be provided for the Alternative 2D plan, that an addendum would be issued so that Alternative 1A could be pursued.	
May 2, 2011	MNO	Letter from MNO to SREL	MNO provided Briefing Notes from the April 15, 2011 meeting including a list of Strategic considerations / action items generally requiring further information from SREL. Items included fisheries objectives, bottom sediment analysis, request to participate in monitoring process for fisheries objectives, request to sit on Muskoka Watershed Council, request to participate in the rehabilitation for the site (Landscape Advisory Committee).	
Jun 30, 2011	Shawanaga FN	Letter from DFO to Shawanaga FN	DFO wrote a follow-up letter to Shawanaga First Nation summarizing the April meeting and addressing concerns noted at the meeting. Concerns included spawning locations and walleye spawning enhancement work, water temperatures, portage areas, site visits/photos at various flows/site plans showing bed elevations.	

Date	Aboriginal Community	Method of Communication	Content/Topic	Reference
Jun 31, 2011	MNO	Letter from DFO to MNO	DFO wrote a follow-up letter to MNO summarizing the April meeting and addressing concerns noted at the meeting. Concerns included those included above in the MNO Briefing Notes from May 2.	
Jul 14, 2011	MNO	Follow-up letter from SREL to MNO	This letter was sent in response to MNO's Briefing Notes dated May 2, 2011. SREL provided further information regarding fisheries objectives, river bottom sediment, monitoring, the Muskoka Watershed Council, and the site rehabilitation committee (Public Landscape Advisory Committee).	
Sep 20, 2011	Shawanaga FN	Email	SREL/SFN set date for meeting/PIC for Nov 2, 2011 at SFN.	
Oct 28, 2011	Shawanaga FN	Email	Meeting notes for April 21 st , 2011 meeting, Velocity and Flow Assessment Report including photos of different flows over each of the dams.	
Nov 1, 2011	Shawanaga FN	Email	SFN cancels meeting / PIC for Nov 2 and asks to reschedule.	
Nov 22, 2011	Shawanaga FN	Email	SREL provides possible dates for meeting / PIC in Dec.	
Nov 28, 2011	Shawanaga FN	Email	It is agreed that will have to wait to reschedule meeting/PIC until Jan.	



Bala Falls

small hydro project

www.balafalls.ca

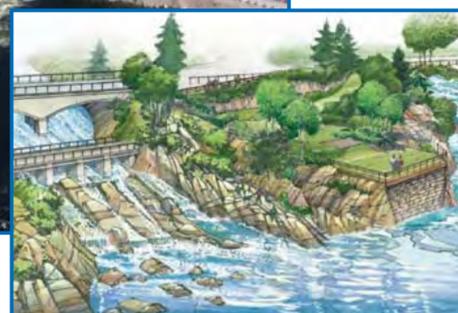
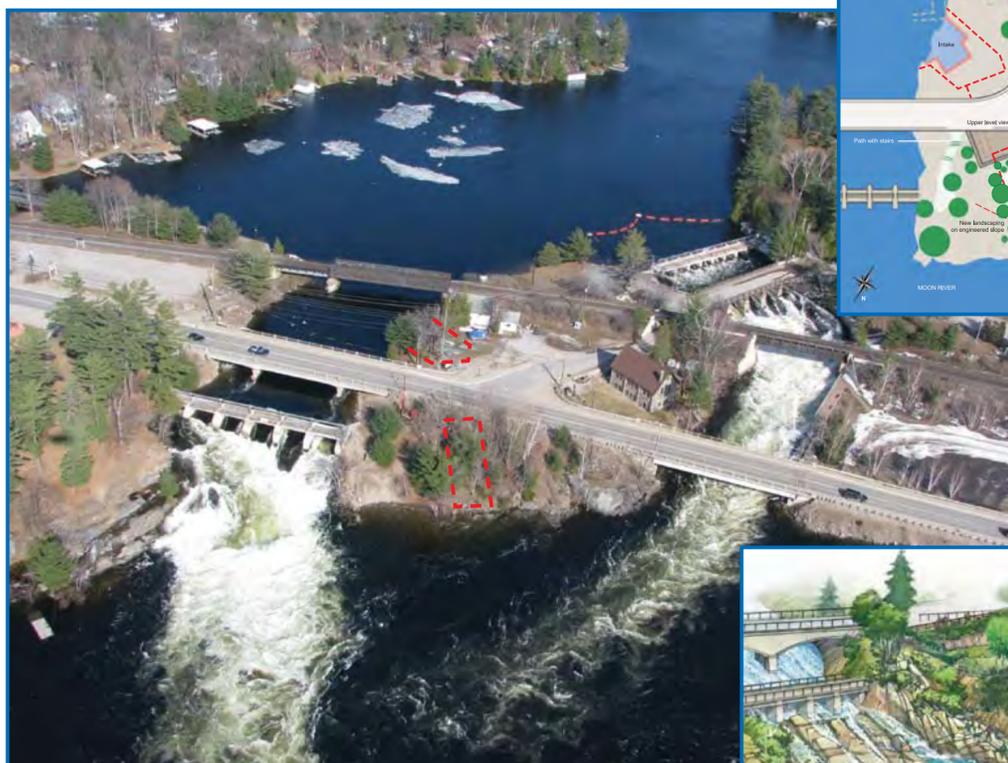
Preserving Bala's natural beauty while contributing to its economic well-being

Swift River Energy would like to thank the residents, cottagers, business operators and the municipality for the valuable input that has led to the development of the Option 2 Plan for our Bala Falls Small Hydro Project.

This Option 2 Plan is made possible by a long term lease to use a small parcel of municipal land. This will enable us to move our small hydro project from provincial lands abutting Bala Falls to a site some 35 metres away. While we have confirmed that both the original Option 1 and the preferred Option 2 plans are technically and economically viable, Option 2 more effectively addresses community concerns about our original site design.

Relocating the project away from Bala Falls will allow us to landscape over a low profile powerhouse, improve access to the Bala Falls, and better restore the natural beauty of this site.

It is worth noting that reports released by the West Muskoka Chamber of Commerce and the Muskoka Lakes Township identified a number of initiatives that would encourage and lengthen visits to the community. Many of these initiatives are part of our site development plan.



The Bala Falls area showing the location of our proposed Bala Falls Small Hydro Project.

For example, our Option 2 Plan includes:

- Two new picturesque public viewing areas:
 - An upper, barrier-free lookout adjacent to Hwy 169
 - A lower, easily accessed, water's edge lookout
- Parkland improvements, with input from a Community Advisory Committee, that include:
 - Safer pathways to Bala Falls
 - Interpretive signage highlighting Bala's history
 - New walkways and seating
 - Indigenous plantings and rock elements to maintain the Muskokan character
- Support for a new, safer, all-season pedestrian/snowmobile link connecting Bala's two commercial areas.

The 40-year lease, for use of municipal land, will provide additional long-term community benefits.

As evidence of our continuing commitment to make a lasting positive contribution to the Bala community, we have commissioned a study, to be made public, that will bring some rigour to the various

claims about the project's potential economic impacts. And, to address questions about the project's implications for the "scenic flows" at Bala Falls, we are working to form a local committee to address this matter.

We take particular pride in the fact that our Bala Falls Small Hydro Project represents a small but important part of a province-wide effort to find and develop new green sources of renewable energy generation. And, we are especially heartened by the role this project can play in preserving Bala's legendary history while contributing to its long term economic well-being.

Respectfully,

John Wildman | Vice Chair | Swift River Energy Limited

Back to the future
building on Bala's legacy

Thank you to the residents, cottagers, business operators and the municipality for your valuable input that has improved our Bala Falls Small Hydro Project.

The current plan has been made possible by a long term lease to use a small parcel of municipal land. This will enable us to move our small hydro project from provincial lands abutting Bala Falls to a site some 35 metres away. While we have confirmed that both the original Option 1 and the preferred Option 2 plans are technically and economical viable, Option 2 more effectively addresses community concerns about our original site design.



Preserving Bala's Natural Beauty

- With input from a Community Advisory Committee, parkland improvements that include safer pathways, seating, and, interpretive signage depicting Bala's history
- Two new picturesque viewpoints from which to take in Bala Fall's scenic beauty (an upper, barrier-free lookout adjacent to Hwy 169 and a lower, easily accessed water's edge lookout)
- A commitment to maintain historical summer flows over Bala Falls

Contributing to Bala's Long-Term Economic Well-Being

DURING CONSTRUCTION:

- \$22 million private sector investment in new, local source of clean, green, renewable energy
- Millions to be spent through "buy local" policy
 - Materials supply: lumber, concrete, food, lodging, fuel, haulage
 - Employment: carpenters, electricians, pipefitters, welders, landscapers
 - Equipment rentals and servicing, warehousing

OVER THE PROJECT'S LIFE:

- A new local feature to draw new visitors
- Facility operations and maintenance services provided by Lakeland Energy, a respected, customer-owned, local utility
- Support for a new, safer, all-season pedestrian/snowmobile link connecting Bala's two commercial areas
- 40-year lease of municipal land offers additional long-term community benefits (particulars to be determined)
- A new local business to help champion and support Bala's economic development over the long term

As part of a province-wide effort to find and develop new green sources of renewable energy generation, our Bala Falls Small Hydro Project will help Ontario fulfil its commitment to shut down its dirty, greenhouse gas emitting, coal-fired generating stations by 2014. By locating this facility close to a rural load centre, it will eliminate the need for costly new high voltage power lines, while improving the reliability of the local electricity distribution system.

In addition to our Project's clear environmental and electricity system benefits, Swift River Energy is particularly proud that our Bala Falls Small Hydro Project will also contribute to Bala's long-term economic well-being.

Respectfully,



John Wildman | Vice Chair | Swift River Energy Limited



NEWS RELEASE FOR IMMEDIATE DISTRIBUTION

Bala Falls Update: New site photos answer more questions

February 15, 2011 – Muskoka residents wanting to know what the future Bala Falls hydro plant may look like, now have more views to help inform them. Swift River Energy Limited has unveiled a set of new images using photographs from Moon River and Bala's Burgess Park that detail the potential landscaping and relative size of the project.

The new set was sent to the District and Township of Muskoka Lakes last week (February 10), in addition to engineering drawings and images previously provided with the license of occupation application required by the District of Muskoka (January 28). Using information from that application, the District is expected to draw up a lease agreement that would allow Swift River to move forward with the project.

“Once we get approval to move ahead with the District land, or decide to build on the Crown land only option instead, we'll be able to provide even more specifics of what the project will look like,” says waterpower engineering professional Karen McGhee, P.Eng., project manager for Swift River.

Final details of the architectural and landscaping details must still be worked out in close cooperation with a local advisory committee to be made up of area residents, businesses and municipal officials, adds McGhee. “We're eager to get input into making the site fit with Bala's aesthetic values, and plan to do that with the help of those who know the look and feel of the area best.”

What these new photo images do now, says McGhee, is to further answer the kinds of requests for more visuals that came up at District and Township meetings in January.

“We had already provided as much information as we could without knowing exactly which site we'll build on, and our initial images were prepared as concepts only. It's understandable that people still want to see a visual showing the size of the plant right on the actual land, and what vegetation around it could look like, so they understand how it can fit on and blend into the land available,” says McGhee. The new photo images provide these depictions for both the Crown land only option (directly beside the falls), and the District land option (about 100 feet or 35 metres away from the falls).

Next steps for the project include hearing back from District on the progress of the lease application, now before a District Committee. The Township of Muskoka Lakes and District Councils have also indicated they have more questions about the project and Swift River has asked those be forwarded sooner, rather than later.

“We remain hopeful that we'll get a decision from the District soon so we can move ahead with the generally preferred District option,” adds McGhee. “But we're ready to go

with the paper work and reports needed to finalize approvals to develop the original Crown land site right next to the falls as our back up plan.”

The District land option was developed in concert with the previous Township and District councils as a response to community concerns about the impacts of the original proposal to build on Crown land only (the site of the original hydro plant demolished in the 1972). *To see the full set of the most recent images of both options and how they differ, please visit www.balafalls.ca*

About the North Bala Small Hydro Project

The North Bala Small Hydro Project is one of the first projects awarded under Ontario’s crown land release program for renewable energy. The Project was awarded a Feed-in Tariff contract by the Ontario Power Authority in 2010 as part of the Green Energy Act. The Green Energy Act is the largest green house gas reduction initiative in North America at this time.

It is estimated that the Bala project will offset an estimated 20,000 tonnes of CO₂ per year for the 50+ year life span. That’s equal to removing 3,800 cars & light trucks from the road each year of the project life.

The Project is expected to increase local spending in the District of Muskoka by \$10.8 million over the 12-18 month construction period and many Bala businesses have indicated they can provide both products and services needed during construction.

About Swift River Energy Limited

Swift River Energy Limited develops small, low-impact, run-of-the-river hydroelectric generating facilities. It was selected by the Ministry of Natural Resources in 2005 to design and construct the Bala Falls small hydro project, which originated from provincial policy aimed at developing new clean, renewable, ‘green’ sources of power generation. Such projects help reduce Ontario’s dependence on dirty, coal-fired sources of electricity production.

For more information, please contact:

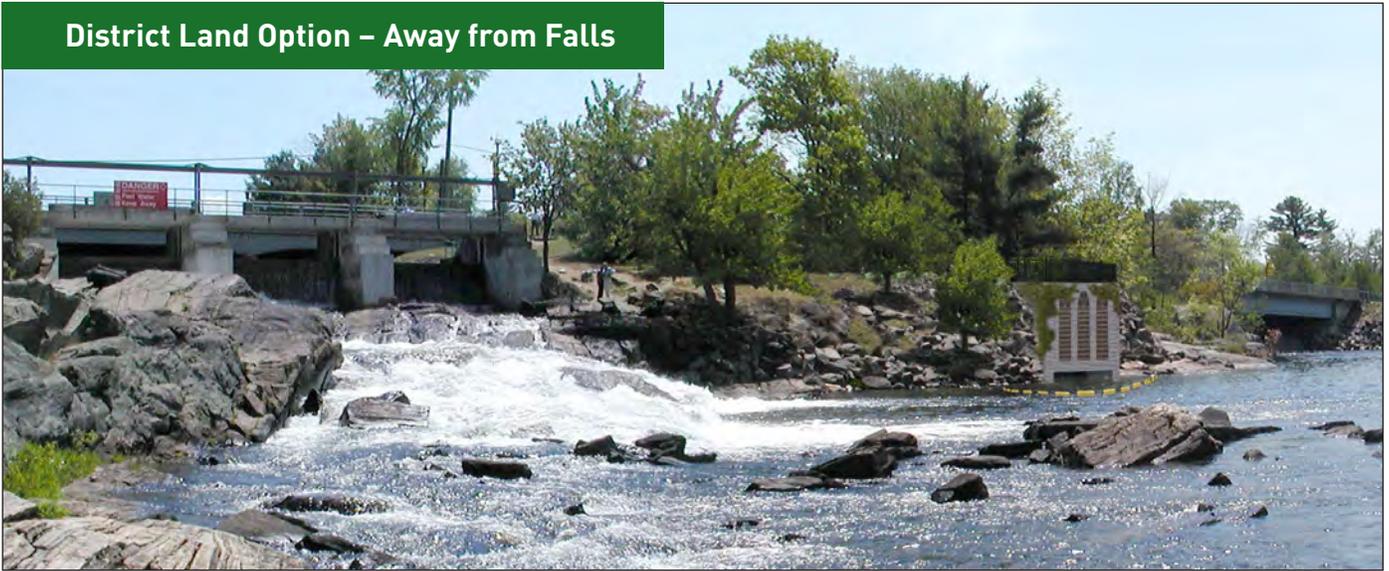
Karen McGhee, P.Eng.
Swift River Energy Limited
Office: 905-331-9692
Email: kmcghee@m-k-e.ca
Website: www.balafalls.ca

Which option would you prefer?

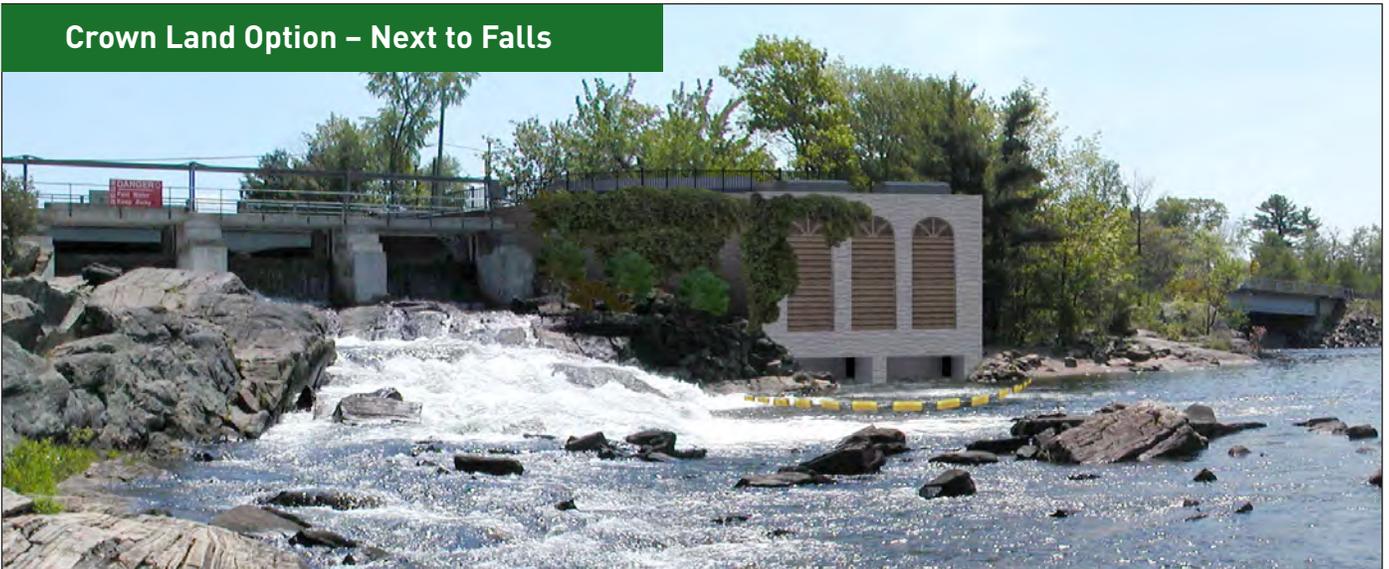
These images show the size and potential landscaping relative to the existing landscape using either the District land option or the Crown land option. They are presented in response to community requests for details on how the site options differ. Community suggestions to move the building

further away from the North Falls resulted in the District option, allowing for a lower building profile set about 100' away from the falls. If Swift River does not receive approval to build on District lands, the company would proceed with the original plan on Crown land, directly next to the falls.

District Land Option – Away from Falls



Crown Land Option – Next to Falls



Did you know?

- > Your elected officials want to hear from you about which option you feel is best in the long term for Bala.
- > Local project spending in the District of Muskoka is estimated to be \$10.8 million.
- > This project will offset an estimated 20,000 tonnes of CO2 per year – that's equal to removing 3,800 cars from the road each year.

Features of the Bala Falls Small Hydro Project – Comparing Options

Learn more at www.balafalls.ca



Note 1: These photo representations show the relative size of the proposed hydro plant depending on its location on District or Crown land and with respect to the existing landscape.

Note 2: These photo representations are for public viewing and press publication only. They cannot be copied, distributed or changed in any way without the express permission in writing of Swift River Energy Limited.

North Bala Small Hydroelectric Project Before and After Development

District Land Option



Photos clockwise from top-left: Existing intake area, Existing powerhouse area from Burgess Park, Existing powerhouse area from River/Cottages, Proposed powerhouse from river/cottages, Proposed powerhouse from Burgess Park, Proposed Intake.

Proposed landscaping and architecture represents a preliminary concept. Final landscaping and architecture will be developed with input from the Landscape Advisory Committee. Additional images and information are provided on the project website at www.balafalls.ca

North Bala Small Hydroelectric Project

Before and After Development



Above: Existing powerhouse area from Burgess Park Below: Proposed powerhouse from Burgess Park.



Proposed landscaping and architecture represents a preliminary concept. Final landscaping and architecture will be developed with input from the Landscape Advisory Committee. Additional images and information are provided on the project website at www.balafalls.ca

These photo representations show the relative size of the proposed hydro plant for the District Land Option with respect to the existing landscape. They are for public viewing only. They cannot be copied, distributed or changed in any way without the express permission in writing of Swift River Energy Limited. Potential landscaping and architectural features shown may be subject to change.
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North Bala Falls Project: Swift River Answers Your Questions

What will it look like? Are there still two site options?

Project Background: In 2003, the Ministry of Natural Resources made Crown land next to the North Bala Falls available for re-development as part of its green energy plan. By 2005, Swift River Energy Limited was awarded the opportunity to pursue the project. By 2007, initial drawings were displayed at a public meeting to show people what the site might eventually look like.

Members of the public asked if the new facility could be moved and further away from the falls. Swift River answered by developing a second option that would use municipal land as well as Crown land. This "Option 2" was presented at a public meeting in 2008.

These renderings show you the difference in location for Option 1 Crown Land right next to the falls, and Option 2 Municipal Land, 100' further away from the falls, what many consider to be less obtrusive. To see more drawings of the two options, please visit www.balafalls.ca and view several renderings under Notices and Links.

Option 1: Crown Land, next to the Falls.



Provides rooftop lookout with interpretive signage if desired by community, but offers limited landscaping options due to less space.

Option 2: Municipal Land, 100 feet away from the Falls.



Provides lookout and landscaped public park with access to river and falls (as per 2002 Bala streetscape plan). Includes walkways, seating, native plantings, and signage describing area history and waterpower heritage.

What happens next?

Swift River is currently awaiting a final decision on the Environmental Assessment from the Minister of Environment. Once this is received, Swift River will need to make a decision on which option will be built. If the municipal land is not secured from the Township of Muskoka Lakes by the time the decision is received, Swift River will have no choice but to pursue Option 1. Next steps include engineering design, permitting and finally construction.

Make your choice known:

Email comments@balafalls.ca to let Swift River know your option preference, and please talk to your Township of Muskoka Lakes councillors to let them know as well.

For more information, visit www.balafalls.ca



Open Letter to the Bala Community

We are writing this letter on behalf of Swift River Energy Limited to the residents of the community of Bala, to inform them that after four years of public and stakeholder engagement, and of satisfying the painstakingly detailed provincial and federal scientific and engineering review of the North Bala Small Hydro Project environmental assessment, we have been left with little choice but to abandon the generally preferred Option 2 plan and pursue the re-development on the Ministry's originally offered Option 1 site.

Swift River's team submitted the original Option 1 plan to the Ministry of Natural Resources (MNR) in 2005 in response to MNR's open invitation for applications to re-develop the Bala site, and were ultimately the successful applicant. After an initial presentation and feedback from the community in 2007, however, our team spent extensive time and effort to redesign the project into what is now known as the Option 2 plan. Those changes were made to specifically accommodate the community's requests to maintain greater public access to the south shore of the Bala Falls; to improve the appearance of the facility; and to incorporate a public park area atop of the facility that the whole community would enjoy. It was clear to all involved that this improved Option 2 plan would only be possible with the agreement of the Township of Muskoka Lakes (TML) and the District Municipality of Muskoka (DMM) to lease the required lands to Swift River. In 2008, TML and DMM agreed, through resolutions in council, that this was an acceptable plan.

However, the Oct. 2010 municipal election saw a new TML council elected, led by Mayor Alice Murphy. Mayor Murphy has made no secret of the fact that she is opposed to seeing any waterpower development at the site for which her property is located directly opposite. However, in a last ditch effort to try to work with the new mayor and council, Swift River committed this last year to try to achieve some compromise or agreement with the Township in this matter - with no success.

Therefore, at this late stage, we have been left with little choice but to pursue the re-development on the MNR's original Option 1 site, located entirely on Crown lands for which we have Applicant of Record Status (the location of the original waterpower facility). This scenario requires no lease agreement with TML.

Swift River remains committed to becoming a socially and environmentally responsible member of the Bala community. Our team will continue to maintain an open dialogue and work with the residents and businesses and to ensure construction is orderly and considerate of the issues. Our goal remains to ensure that this new green energy facility will be one in which the Bala community can again be proud.

Swift River will be announcing the next steps in the process in the coming weeks. Thank you for your understanding.

Respectfully,
Anthony Zwig, President and John Wildman, Vice Chair
(www.balafalls.ca)

Appendix D

DFO Letter of Intent

(November 2010)

Project Report

October 26, 2010

**Swift River Energy Limited
North Bala Small Hydro Project**

DISTRIBUTION
J. Predie – DFO
S. Taylor/S. Scholten – MNR
K. McGhee – SREL

Letter of Intent for Works or Undertakings Affecting Fish Habitat

North Bala Generating Station

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1. Introduction and Background

Swift River Energy Limited (SREL) is proposing to construct a 4.3-MW waterpower facility between the North and South Dams at the outlet of Lake Muskoka in the village of Bala, Ontario in the Township of Muskoka Lakes (ESR Figure 1.1). Both dams are currently owned and operated by the Ontario Ministry of Natural Resources (MNR) in accordance with the provisions of the Muskoka River Water Management Plan (MRWMP).

The North Bala Dam site was offered for competitive release under the MNR Waterpower Site Release Policy. SREL submitted a Plan of Development (POD) in July 2005 and was named the Applicant of Record (AR). SREL subsequently retained Hatch Energy (Hatch) to undertake detailed feasibility studies to identify a preferred design and mode of operation, and to undertake the environmental screening.

No new dam construction will be involved in the development of the proposed facility. The development will consist of the excavation of an intake channel, construction of a powerhouse, and excavation of a tailrace returning water to the Moon River immediately below the site (ESR Figure 1.2). The arrangement of the proposed development is based on a gross head of approximately 6.2 m, which is provided by the existing dams at the site. There will be no structural changes made to the two existing dams as part of the project.

Both dams are presently operated as water control structures, and are used to regulate the water level in Lake Muskoka and control flows into the downstream area, being Bala Reach and the Moon River. Both dams are presently operated by the removal and replacement of timber stop logs, with the South Bala Dam being the main operational structure. The North Bala Dam is presently operated mainly during the spring freshet to provide additional flow capacity (as required) with stop logs subsequently replaced for the remainder of the season.

The Environmental Screening/Review Report (ESR) was issued for public, agency and First Nation review in October 2009. Fisheries and Oceans Canada (DFO) provided comments on November 26, 2009 (Appendix A) and raised a number of concerns related to loss of aquatic habitat due to the proposed development. Discussions with DFO have led to revisions to the construction and operational plans for the facility as noted in the subsequent sections.

The following sections outline the final plan for fish habitat related measures for the North Bala Dam. Where measures that were outlined in the ESR will remain unchanged, those are noted and identified as such. Where new or replacement measures are proposed, they are also identified as such. The proposals contained herein will supersede the plans and measures outlined in the ESR.

2. Construction Effects and Proposed Mitigation

2.1 Construction Activities and Effects

Section 5 of the ESR identified the construction activities associated with development of the site and described the alterations to habitat at the approach to the intake channel and in the tailrace area.

Those activities are unchanged from those noted in the ESR, and are summarized here for completeness.

2.1.1 Intake Channel

Works proposed to divert flow from Lake Muskoka to the facility (see ESR Figure 5.2) would result in the permanent alteration of 250 m² of shoreline habitat in the approach to the intake channel. This area is considered non-specific fish habitat (foraging, resting) and consists of bedrock (60%), boulders (20%), cobble (10%) and gravel (10%). Existing substrates would be removed and the area would be deepened to match the invert elevation of the intake channel leading to the powerhouse.

The remainder of the intake channel would be excavated into the existing shoreline/island between the north and south channel outlets of Lake Muskoka. The intake channel would be approximately 13 m in length, 11 m wide and 4 to 5 m deep. Depending on subsurface conditions encountered during construction, the channel is likely to have near vertical walls (assuming excavation into bedrock) and a relatively flat bottom, sloping downward to the facility intake. The construction of this channel would result in the creation of 182 m² of low quality wetted habitat.

2.1.2 Tailrace Channel

Works proposed to return flow from Lake Muskoka to Bala Reach downstream of the facility (see ESR Figure 5.2) would result in the permanent loss of 5 m² of wetted habitat and the permanent alteration of 190 m² of shoreline habitat between the North and South Dam outlet channels. This area is also considered non-specific fish habitat (foraging, resting) and consists of exposed bedrock (40%), boulders (10%), cobble (30%) and gravel (20%). Existing substrates would be removed and the area would be deepened to match the invert elevation of the outlet from the powerhouse.

2.1.3 Blasting Effects

The following information related to blasting is contained in Section 5.2.7.2 of the ESR and is repeated here for completeness.

Blasting in and around water has the potential to result in disturbance, injury or death to aquatic biota (including incubating eggs) (Wright and Hopky 1998). Therefore, in order to protect fish and fish habitat, all blasting is to be conducted in accordance with the *Guidelines for the Use of Explosives in or near Canadian Fisheries Waters* (Wright and Hopky 1998). These guidelines specify that

1. no explosive should be used in or near fish habitat that could produce an instantaneous pressure change greater than 100 kPa in the swim bladder of a fish (appropriate setback distances or charge burial depths are specified in the Guidelines to ensure this criteria is satisfied)
2. no explosive should be detonated if it is likely to produce a peak particle velocity greater than 13 mm/s in a spawning bed during the period of egg incubation (i.e., during the MNR in-water works timing restriction period of April 1 to July 15).
3. no ammonium nitrate fuel oil mixtures should be used in or near water, as this could potentially result in surface water quality impairment.

SREL acknowledges that a Section 32 Authorization for fish kill due to blasting will be issued for the project. To ensure that the requirements noted within the Authorization are satisfied, the project contract documents will require that the Contractor abide by the applicable approval requirements under the federal Fisheries Act. Monitoring will be conducted throughout the construction period to verify that mitigation measures are implemented as specified and having the desired effect.

2.2 Mitigation of Construction Effects

To mitigate the alteration of habitat due to construction of the intake and tailrace channels, the following measures are proposed. Existing and new measures are noted as such.

1. New - A series of individual pockets or cross channel ditches, totalling approximately 150 m² (approximately 75 m² per channel), be over-excavated into the outer extent of the intake and tailrace channel bottoms, in which blasted rock is allowed to remain at the completion of the construction process. These areas would be colonized over time by benthic organisms that select their own niche within the variable flow velocities that would be present over and within that material. Given the flow characteristics of each area, these patches of coarse habitat within each channel are expected to develop into a source of drift organisms for the downstream reach.
2. Existing - Two benthic habitat/spawning shoals are proposed on either side of the tailrace channel as shown in ESR Figure 5.3. Each structure will be constructed on the upper edge of the tailrace and will be formed by adding coarse rock fill (consisting of excavated material from the intake channel and powerhouse excavation) topped with a 0.40-m thick layer of 10 to 15-cm diameter rounded river stone. Each structure will be graded so that the surface is approximately 0.8 m below the normal freshet water level. The structure will be subject to relatively constant hydraulic conditions and will be designed to provide benthic habitat and spawning habitat for walleye and white sucker. It is anticipated that the individual structures will enhance approximately 44 m² and 38 m² of habitat for a total area of approximately 82 m².
3. Existing - An existing area of walleye spawning habitat on the south shore of the channel below the South Dam (see ESR Figure 5.3) will be enhanced. The shoal will be created by adding coarse rock fill (consisting of excavated material from the intake channel and powerhouse excavation) topped with a 0.40-m thick layer of 10 to 15-cm diameter rounded river stone. The shoal will be graded so that the surface is approximately 0.8 m below the normal freshet water level. Walleye are known to spawn at depths of up to 2 m. It is anticipated that approximately 64 m² of suitable walleye and white sucker spawning habitat will be created. The rocky shoal will also provide additional habitat for benthic invertebrate production.
4. New – A Section 32 Authorization for fish kill due to blasting will be issued to SREL. The construction Contractor will advise Fisheries and Oceans Canada, Parry Sound office of blasting plans no less than 2 weeks prior to the start of any blasting activities.

3. Operational Effects and Proposed Mitigation

3.1 Operational Activities and Effects

Once the North Bala Small Hydro Project is in place and operational, SREL will take over operation of both the North and South dams. Flows will be passed as per the plan noted below.

3.1.1 Existing Flow Regime

A number of existing flow requirements are currently in place for the outlet of Lake Muskoka as detailed in the Muskoka River Water Management Plan and in Section 6.2.2.1 of the ESR. These are:

- a flow of 4 m³/s through the Burgess Generating Station, and
- a flow of 1 m³/s through each of the North and South Bala Dams (typically by leakage).

Together, these previous commitments amount to 6 m³/s. As noted in Section 1, the South Dam is the main operational structure, with the North Dam used primarily to pass flow in excess of the capacity of the South Dam.

3.1.2 Proposed Flow Regime - New

When the North Bala GS is constructed and in operation, the facility will pass up to 96 m³/s through the powerhouse. Combined with the existing flow requirements at the outlet of Lake Muskoka, the total flow will then equal 102 m³/s. Flow in excess of 102 m³/s will be assigned to either the North or South dam as noted below.

3.1.2.1 North Dam Flow Regime

SREL will provide a flow of 9.5 m³/s into the reach below the North Dam during the spring to maintain the walleye spawning habitat along the north shore of Bala Reach, as shown in Figure 2.9. Initiation of that flow will occur in the spring (typically late March/early April as per ESR Figure 6.1) when outflow from Lake Muskoka typically exceeds 109.5 m³/s, and would be retained for a 2-week period during the walleye spawning event (walleye spawning typically occurs between April 15 to June 1 of any year). The timing of the initiation of the spawning release may vary from year to year depending on water temperature, and will be determined in consultation with MNR's Bracebridge Area Office. Subsequent to the release for spawning, 2 m³/s will be released through the North Dam (primarily via leakage) for an additional two weeks during the egg incubation period.

Should outflows from Lake Muskoka exceed 109.5 m³/s for longer than the required 2-week period during any year, SREL will continue to provide 9.5 m³/s through the North Dam. As Lake Muskoka outflows recede toward 102 m³/s, flows in excess of generating capacity at Burgess and North Bala GS may continue to be passed through the North Dam. SREL will then continue to provide 2 m³/s (by leakage) through the North Dam through the remainder of the incubation period.

Should outflows from Lake Muskoka during any specific year not be adequate to allow for the release of the above-noted walleye spawning flow (9.5 m³/s), SREL will reduce generating capacity to provide the agreed upon flow.

3.1.2.2 *South Dam Flow Regime*

As noted in Section 3.1 above, all flow in excess of 109.5 m³/s would be diverted through the South Dam during the spring walleye spawning period, and flows above 102 m³/s would be diverted through the South Dam during the remainder of the year.

3.1.3 *Entrainment Mortality*

Operation of the North Bala GS may result in entrainment and passage of fish through the facility, with subsequent mortality due to turbine strike, pressure changes or other aspects of facility passage as noted in Section 6 (Subsection 6.2.5.6). DFO has indicated that a Section 32 Authorization under the Fisheries Act for any mortality associated with facility operation will be required for the project.

3.2 **Mitigation of Potential Operational Effects**

3.2.1 *Habitat Enhancements*

Existing - Habitat enhancements proposed along the south side of the outlet of the South Dam channel to Bala Reach (as described in Section 2.2 above) are expected to provide additional spring spawning habitat in that area when excess flows are passed through that channel during the spring freshet. No change to that measure is proposed

New - The ESR contained a proposal to install approximately 200 m² of spawning habitat at the outlet of the south channel (as noted in ESR Section 6.2.5.2, last paragraph, p 6-18) to replace habitat lost below the North Dam by the originally proposed flow regime. With the flow regime proposed in Section 3.1.2, the need for that habitat no longer exists, and it is withdrawn.

3.2.2 *Turbine Mortality*

The level of turbine mortality predicted for the facility (see ESR Section 6.2.5.6) is low. A Section 32 Authorization for this mortality will be issued by DFO. Monitoring will be undertaken as requested by DFO.

4. **Monitoring Plan**

Monitoring will be conducted by SREL (or its agents) to ensure the works are constructed according to the final plans and to determine whether the mitigation measures outlined above are developed and functioning as intended. The monitoring program shall include, but not be limited to, the following Construction Monitoring Plan and Mitigation Monitoring Plan. Written notification of the commencement of works or undertakings shall be provided to DFO five (5) days prior to the initiation of those works or undertakings.

4.1 **Construction Monitoring Plan**

4.1.1 *Fish Habitat*

SREL (or its agent) commits to the monitoring of the fish habitat mitigation measures during construction as follows:

- Monitor and ensure the proper function of the erosion and sediment controls; also inspect such activities as dewatering, stockpiling, site stabilization and, refueling/maintenance activities. If

- any problems with erosion, sediment control effectiveness, geo-textile stability or other fish habitat issues are encountered, repairs shall be made promptly.
- A Project Construction Monitoring Report shall include a photographic record of pre-construction conditions, the work phase, including implemented mitigation measures, and completed project showing that all works and undertakings have been completed according to the proponent plan and conditions of this Authorization. The construction report shall be submitted to DFO no later than December 31, 2013 (construction is expected to be completed by spring 2013).
 - All photographs for each period of documentation shall be taken from the same vantage point(s), direction and angle of view, and shall be clearly labelled with the date, location and viewing direction. The photographic locations and viewing directions shall be indicated on a plan view drawing of the work site and clearly indexed to the photographs.
 - "As constructed" drawings shall be included in the final report.

4.1.2 Fish Mortality

Monitoring of the construction process will be undertaken to ensure that blasting activities are not adversely affecting fish. Results of that monitoring will also be reported in the Project Construction Monitoring Report.

4.2 Mitigation Monitoring Plan

4.2.1 Fish Habitat

To assess the success of the fish habitat mitigation measures, SREL will implement a monitoring program consisting of the following components:

- Monitoring shall be conducted for a period of two (2) years upon completion of the mitigation works. The Mitigation Monitoring Report shall be submitted to DFO (Parry Sound Office) on or before December 31 the year of monitoring completion (i.e., 2014 and 2015). Each report shall include, but not be limited to, a detailed summary on the physical stability of each project, and any indications of fish usage including dates of observations and photographs or plan view site sketches whenever possible.
- Any problems encountered with the stability or function of the various fish habitat improvement works that would cause harm to fish or the environment shall be promptly repaired following consultation and approval of the modifications by DFO.

4.2.2 Fish Mortality

Observations of fish mortality will be undertaken throughout the life of the project when SREL personnel are on site for other activities (facility maintenance, North or South Bala dam operations, etc). Results of those monitoring activities will be reported to DFO bi-annually.

5. Reports

All mitigation and environmental monitoring reports will be submitted to MNR, Bracebridge and DFO - Habitat Management Program - Northern Ontario District, Parry Sound Office.

Reports describing the results of all environmental monitoring programs will be submitted on an annual basis (presumably December 31 through construction and post-construction).

Environmental Screening Report (ESR) Figures



Photo 1



Photo 2



Photo 3



Photo 4



Photo 5



Photo 6



Photo 7



Photo 8



Photo 9



Photo 10



Photo 11



Photo 12

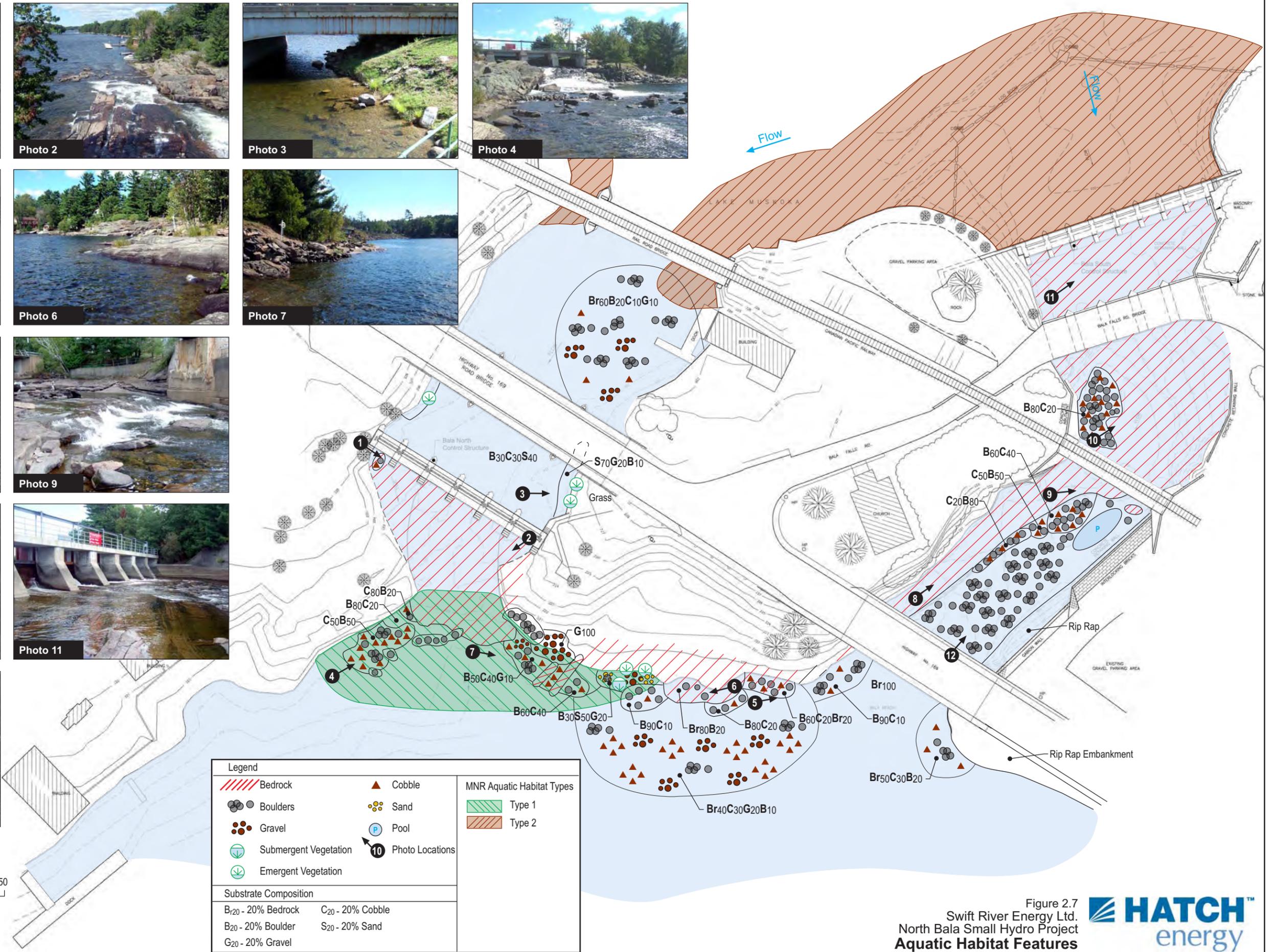


Figure 2.7
Swift River Energy Ltd.
North Bala Small Hydro Project
Aquatic Habitat Features



Legend

-  Walleye Spawning Habitat
-  Photo Locations



Photo 1
Spawning habitat downstream from North Dam (September 2007).



Photo 2
Spawning habitat downstream from North Dam (May 2008).

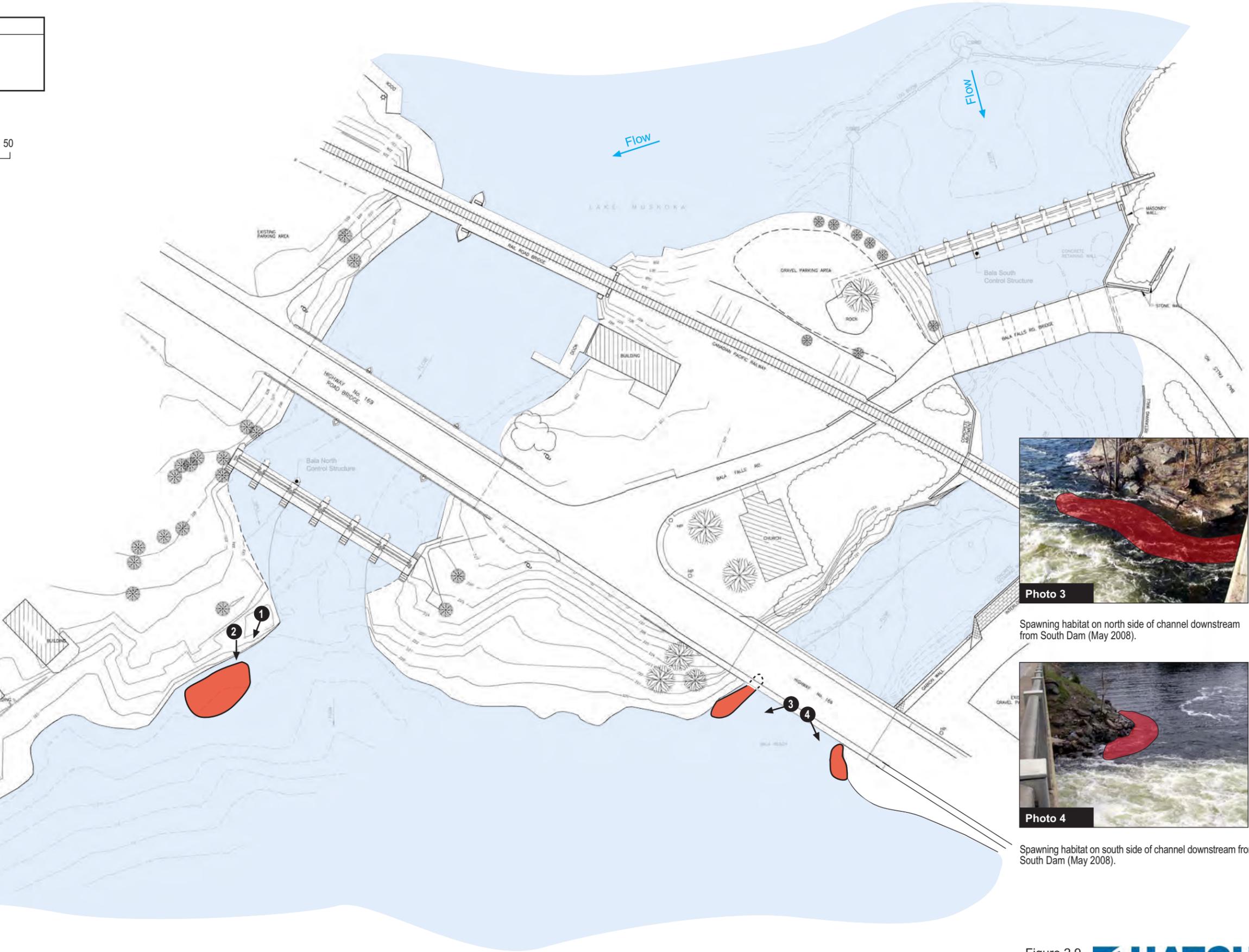


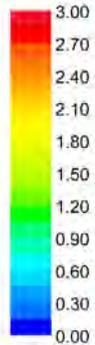
Photo 3
Spawning habitat on north side of channel downstream from South Dam (May 2008).



Photo 4
Spawning habitat on south side of channel downstream from South Dam (May 2008).

H/327078_May_09_rm

Velocity



Velocity
1.0 m/s

$Q_{in} = 82.00 \text{ m}^3/\text{s}$

$Q_{out} = 82.03 \text{ m}^3/\text{s}$

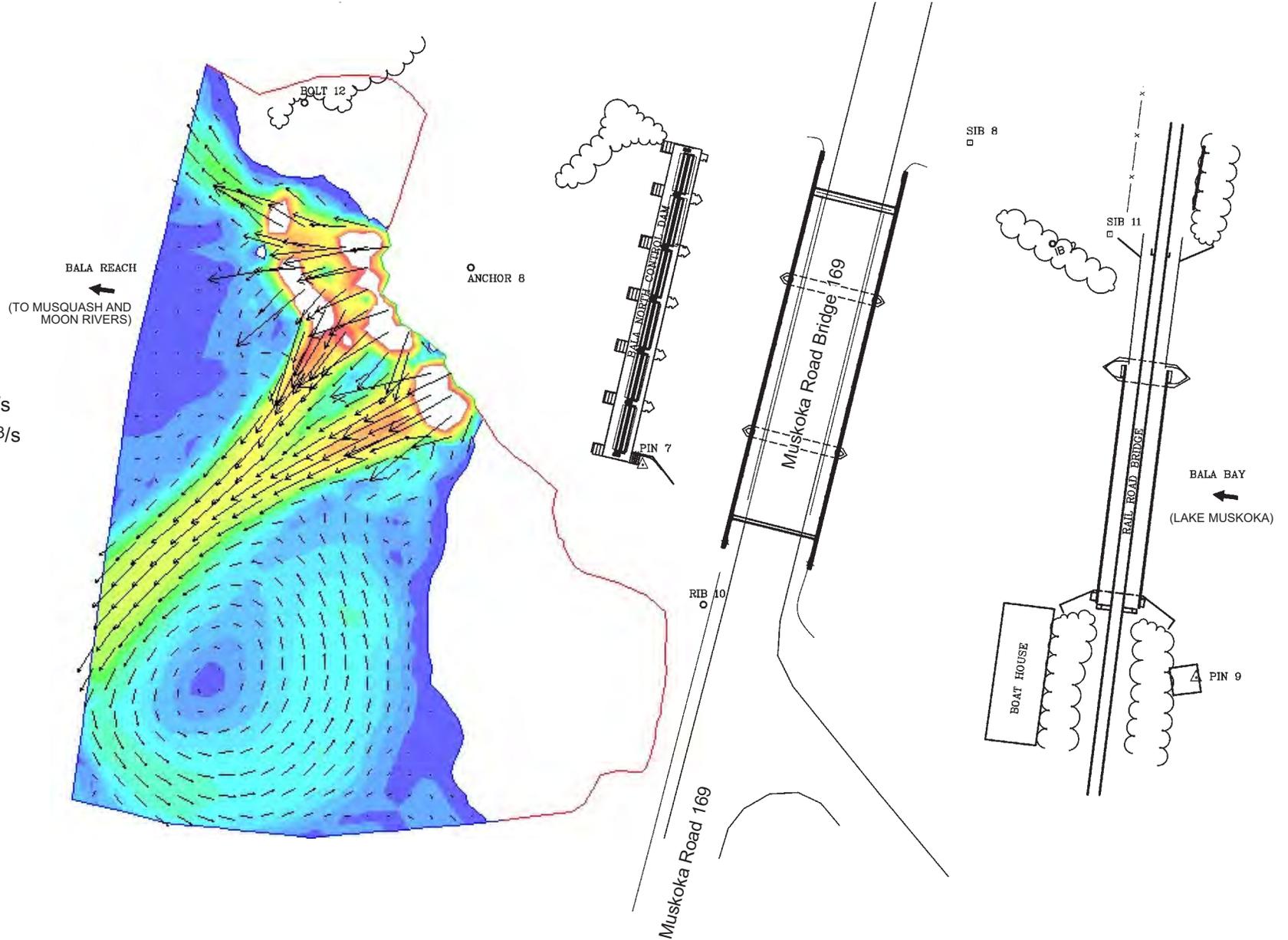


Figure 6.2a
Swift River Energy Ltd.
North Bala Small Hydro Project
Downstream Reach Existing Conditions - Power Flow + Bypass Flow



Velocity



Velocity
1.0 m/s

$Q_{in} = 81.99 \text{ m}^3/\text{s}$

$Q_{out} = 82.01 \text{ m}^3/\text{s}$

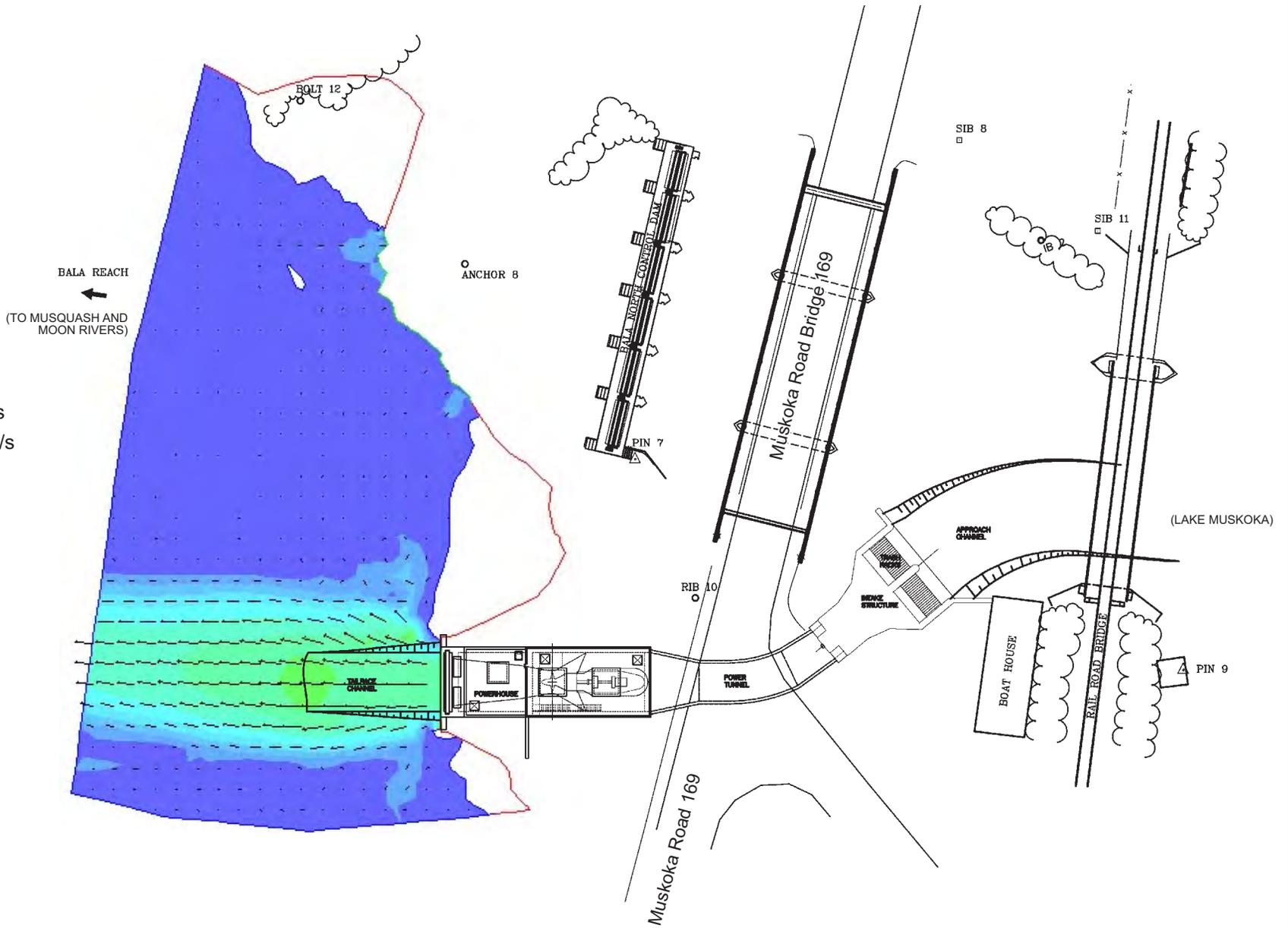


Figure 6.2b
Swift River Energy Ltd.
North Bala Small Hydro Project
Downstream Reach Post Development Conditions - Power Flow + Bypass Flow



Appendix E

Upstream and Downstream Flow Modelling Results

Table 1
North Bala Dam Generating Station
Monthly Flow Summary

Gauge 02EB006
Gauge D.A. 4770 km²
Site D.A. 4683 km²
Proration Factor 0.982

Flows represent total flows in river at the proposed dam.

Year	Flow (m ³ /s)												Annual
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
1937						28.2	19.4	24.5	23.7	37.3	109.8	82.6	46.5
1938	43.1	43.2	137.3	257.9	93.2	67.7	20.5	17.7	32.6	43.8	50.7	60.6	72.4
1939	47.5	47.8	87.5	146.6	236.3	29.3	26.0	29.5	34.1	34.5	40.5	33.7	66.1
1940	36.6	32.7	35.3	63.9	127.5	69.4	28.1	31.6	54.4	53.1	84.0	91.3	59.0
1941	82.6	55.6	60.5	154.9	84.5	20.8	20.9	19.2	15.6	26.2	95.5	87.1	60.3
1942	84.3	51.8	90.5	179.0	132.0	76.4	27.6	23.1	14.1	45.3	97.7	85.4	75.6
1943	65.8	66.7	101.9	154.7	283.8	70.2	42.4	39.3	27.6	25.2	37.5	48.8	80.3
1944	39.7	44.3	46.1	84.0	93.9	39.0	37.8	33.6	26.3	39.4	54.4	63.5	50.2
1945	47.5	36.6	134.8	141.7	110.3	90.2	41.4	27.4	25.5	34.4	58.4	66.2	67.9
1946	79.4	90.2	162.3	97.4	68.5	51.3	24.9	13.7	15.3	23.0	20.9	54.6	58.5
1947	69.2	69.5	112.7	219.9	258.0	121.4	36.9	39.2	21.3	23.9	21.4	36.8	85.8
1948	41.2	52.9	113.3	239.8	90.7	52.0	27.1	21.0	16.0	18.3	58.1	77.5	67.3
1949	81.0	96.6	119.0	245.9	72.2	41.0	39.1	19.0	10.5	18.6	18.7	59.1	68.4
1950	177.9	121.2	70.7	130.7	81.6	34.5	22.1	17.1	16.1	18.8	39.6	93.2	68.6
1951	83.5	53.3	109.5	300.8	182.9	24.4	28.1	25.3	21.6	52.6	145.4	120.8	95.7
1952	109.8	72.0	66.6	199.9	97.1	44.1	26.4	23.6	43.9	25.5	42.8	99.1	70.9
1953	68.0	56.9	129.5	148.1	76.0	36.0	28.0	18.5	16.5	19.7	18.4	56.7	56.0
1954	51.0	49.4	130.6	161.1	92.8	65.3	23.1	19.7	41.6	172.2	112.2	71.5	82.6
1955	53.1	63.4	72.9	181.9	58.9	17.7	14.5	12.5	10.9	22.8	82.1	42.2	52.7
1956	41.6	42.2	68.3	74.2	160.7	78.1	66.8	21.3	54.4	50.6	43.3	76.8	64.9
1957	73.3	78.0	98.8	94.7	31.4	53.2	167.6	15.1	62.2	47.9	124.8	146.8	82.8
1958	130.1	70.1	83.9	62.1	7.9	14.5	27.2	17.0	32.7	44.5	55.8	59.8	50.5
1959	44.1	72.2	89.2	185.5	166.7	41.3	18.1	25.8	35.4	47.1	111.3	106.1	78.6
1960	83.5	64.7	75.6	246.9	195.7	58.4	55.9	28.6	26.7	27.8	51.5	41.6	79.7
1961	43.5	31.3	80.3	122.6	90.5	35.0	35.0	26.7	27.2	20.3	22.7	44.5	48.3
1962	51.2	71.6	63.3	102.7	68.3	15.7	6.6	10.4	14.4	35.6	25.1	41.8	42.2
1963	52.6	41.2	50.7	125.5	107.7	31.6	10.9	19.6	33.5	28.5	32.6	62.4	49.7
1964	55.1	73.3	81.4	50.8	75.2	14.4	8.4	10.7	24.5	31.3	20.6	57.7	42.0
1965	88.1	80.3	81.9	132.3	126.9	12.1	11.7	24.0	57.2	157.6	85.2	159.0	84.7
1966	108.7	69.8	102.8	77.4	54.7	42.0	12.0	8.7	19.0	28.0	111.0	234.9	72.4
1967	94.4	88.1	89.5	191.4	51.8	90.9	50.9	29.3	55.6	94.8	210.1	122.4	97.4
1968	98.9	111.2	113.2	104.9	25.8	17.8	26.2	29.7	48.9	33.1	33.2	76.0	59.9
1969	70.2	75.9	89.6	155.9	150.0	66.6	38.3	16.1	26.9	42.1	111.6	80.8	77.0
1970	69.7	60.5	68.6	128.4	133.5	33.1	104.1	49.6	36.0	84.6	85.0	86.9	78.3
1971	71.9	72.2	127.7	179.2	129.4	28.2	20.1	16.6	25.6	19.7	30.3	69.2	65.9
1972	79.9	78.2	92.7	166.7	166.7	45.1	57.1	71.3	44.0	56.3	97.6	86.7	86.9
1973	103.4	118.4	205.4	187.8	117.7	93.6	46.7	44.2	26.5	46.2	64.3	98.1	96.0
1974	83.6	93.4	147.3	192.6	198.7	49.8	25.1	16.1	40.3	95.0	111.2	93.7	95.6
1975	70.7	72.4	142.3	145.8	130.8	12.3	9.1	15.0	40.5	42.1	35.5	125.7	70.2
1976	85.8	85.5	165.1	220.6	86.5	30.7	41.4	17.1	21.3	21.8	32.6	78.2	73.9
1977	51.8	49.5	151.3	152.7	43.9	6.4	19.1	13.7	49.8	121.0	105.8	109.9	72.9
1978	95.7	66.1	68.8	106.8	139.1	47.7	14.0	16.4	46.8	67.9	57.7	83.0	67.5
1979	83.0	81.0	162.4	226.6	145.6	41.0	14.5	21.6	37.3	73.9	110.9	148.0	95.5
1980	109.3	75.3	86.9	244.8	75.9	64.6	58.6	57.0	69.1	116.0	110.6	90.1	96.5
1981	74.5	96.8	180.3	122.1	74.3	46.0	20.0	9.2	185.6	105.0	59.5	67.5	86.7
1982	67.1	70.5	94.7	188.4	90.2	62.0	23.8	14.9	39.3	62.6	114.7	201.1	85.8
1983	152.9	97.1	127.2	82.8	198.5	74.4	15.8	5.2	19.5	61.5	48.5	96.9	81.7
1984	81.9	124.7	150.6	153.1	83.1	87.9	39.4	11.4	33.9	43.3	73.8	101.4	82.1
1985	163.8	90.7	168.7	238.9	163.3	40.8	39.0	31.7	113.0	108.5	110.6	105.9	114.6
1986	88.2	85.8	108.7	182.0	82.1	69.7	28.6	28.7	54.9	131.6	46.0	73.6	81.7
1987	51.8	62.5	92.6	110.8	23.9	23.3	16.7	4.8	5.1	27.6	32.0	106.6	46.5
1988	93.2	105.9	113.0	189.7	90.8	22.5	4.1	8.7	33.0	70.0	132.6	76.0	78.3
1989	76.7	67.9	116.4	189.4	115.0	87.3	21.2	6.5	14.5	28.4	37.8	82.5	70.3
1990	76.8	98.9	145.9	156.0	92.4	45.8	12.1	10.3	7.8	81.4	85.4	152.9	80.5
1991	108.5	71.7	153.9	240.9	70.0	32.8	9.8	8.6	22.4	61.4	79.9	141.2	83.4
1992	84.3	67.7	124.5	142.7	73.8	12.3	28.1	29.3	105.1	120.4	219.1	146.3	96.1
1993	121.4	79.2	65.8	130.4	58.4	95.5	74.1	14.8	49.2	138.3	113.5	104.3	87.1
1994	71.1	53.6	79.0	67.4	100.7	70.0	75.1	33.5	47.2	43.5	112.6	121.5	72.9
1995	138.2	106.9	111.2	64.8	138.3	51.0	38.9	38.4	39.5	61.5	194.4	117.1	91.7
1996	94.4	126.3	121.3	151.6	147.9	67.7	59.9	42.8	47.9	60.8	127.3	98.0	95.5
1997	147.9	130.1	138.3	191.7	183.1	31.5	17.9	5.9	16.9	35.3	24.2	50.6	81.1
1998	71.6	67.6	124.5	169.3	37.7	5.5	6.0	4.4	11.6	20.3	4.2	41.5	47.0
1999	65.7	112.3	89.7	37.9	20.9	37.8	65.7	12.0	28.7	90.2	93.6	95.8	62.5
2000	97.0	69.1	73.6	79.2	134.5	43.1	26.0	86.5	34.7	28.7	19.0	71.9	63.6
2001	72.1	82.7	117.1	123.6	39.1	59.9	11.2	6.8	45.6	118.4	101.0	129.6	75.6
2002	90.3	75.0	177.3	186.1	75.1	83.3	11.0	8.3	17.6	30.4	14.3	52.4	68.4
2003	62.6	75.0	101.4	122.5	110.4	64.1	15.1	10.1	21.5	104.0	171.2	125.7	82.0
2004	94.9	70.6	127.7	129.0	148.1	53.1	32.2	10.6	16.7	20.0	14.5	70.4	65.6
2005	116.6	89.5	87.4	159.6	97.1	68.5	9.5	9.3	7.5	17.6	38.9	107.2	67.4
2006	116.1	108.5	137.9	211.5	63.5	24.8	32.7	40.8	22.6	95.4	88.7	170.1	92.7
2007	125.8	64.8	74.3	123.8	70.9	37.7	29.4	9.0	19.7	41.2	30.2	82.2	59.1
Average	83.0	75.4	108.2	153.3	107.2	47.9	31.6	22.2	35.0	56.0	74.0	91.6	73.4
Maximum	177.9	130.1	205.4	300.8	283.8	121.4	167.6	86.5	185.6	172.2	219.1	234.9	114.6
Minimum	36.6	31.3	35.3	37.9	7.9	5.5	4.1	4.4	5.1	17.6	4.2	33.7	42.0

Table 2
North Bala Dam Generating Station
Monthly Flow Over North Dam - Existing Conditions*

Assumptions:

Flows in river are reduced by up to 4 cms for Burgess GS and the flows through the south dam when available

Flows are split between the north and south dam as follows:

For months Nov-Feb upwards of approx. 10 cms may spill over north dam during winter to keep the logs from freezing in

For the months Mar and Apr, flows are approximately split between the two dams

For months May-Oct, minimum flows leak through the stop logs (1-2 cms) unless there is an extreme events say >Q2 (117)

*these are approximations based on conversations with MNR on current dam operations

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1937					1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	23.0
1938	10.00	10.00	66.63	126.93	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	23.2
1939	10.00	10.00	41.73	71.29	116.15	1.50	1.50	1.50	1.50	1.50	10.00	10.00	23.2
1940	10.00	10.00	15.66	29.96	61.74	1.50	1.50	1.50	1.50	1.50	10.00	10.00	23.2
1941	10.00	10.00	28.26	75.44	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	23.3
1942	10.00	10.00	43.27	87.50	64.02	1.50	1.50	1.50	1.50	1.50	10.00	10.00	23.5
1943	10.00	10.00	48.97	75.36	139.88	1.50	1.50	1.50	1.50	1.50	10.00	10.00	23.5
1944	10.00	10.00	21.06	39.99	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	23.5
1945	10.00	10.00	65.39	68.84	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	23.7
1946	10.00	10.00	79.13	46.72	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	23.8
1947	10.00	10.00	54.36	107.94	126.98	58.69	1.50	1.50	1.50	1.50	10.00	10.00	23.9
1948	10.00	10.00	54.64	117.88	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	23.8
1949	10.00	10.00	57.49	120.94	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	23.9
1950	86.94	58.61	33.37	63.33	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	23.9
1951	10.00	10.00	52.77	148.40	89.44	1.50	1.50	1.50	1.50	1.50	70.69	10.00	23.9
1952	10.00	10.00	31.29	97.95	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	23.8
1953	10.00	10.00	62.76	72.07	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	23.9
1954	10.00	10.00	63.30	78.54	1.50	1.50	1.50	1.50	1.50	84.12	10.00	10.00	24.1
1955	10.00	10.00	34.47	88.96	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	24.1
1956	10.00	10.00	32.17	35.12	78.37	1.50	1.50	1.50	1.50	1.50	10.00	10.00	24.2
1957	10.00	10.00	47.41	45.35	1.50	1.50	81.78	1.50	1.50	1.50	60.40	71.38	24.3
1958	63.03	10.00	39.97	29.06	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	24.3
1959	10.00	10.00	42.60	90.74	81.34	1.50	1.50	1.50	1.50	1.50	10.00	10.00	24.4
1960	10.00	10.00	35.78	121.45	95.84	1.50	1.50	1.50	1.50	1.50	10.00	10.00	24.5
1961	10.00	10.00	38.13	59.30	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	24.5
1962	10.00	10.00	29.66	49.37	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	24.7
1963	10.00	10.00	23.33	60.74	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	24.9
1964	10.00	10.00	38.68	23.41	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	25.1
1965	10.00	10.00	38.97	64.14	61.44	1.50	1.50	1.50	1.50	76.81	10.00	77.51	25.4
1966	10.00	10.00	49.39	36.72	1.50	1.50	1.50	1.50	1.50	1.50	10.00	115.43	25.3
1967	10.00	10.00	42.74	93.70	1.50	1.50	1.50	1.50	1.50	1.50	103.06	59.22	25.4
1968	10.00	10.00	54.58	50.43	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	25.4
1969	10.00	10.00	42.80	75.96	72.98	1.50	1.50	1.50	1.50	1.50	10.00	10.00	25.6
1970	10.00	10.00	32.29	62.20	64.73	1.50	1.50	1.50	1.50	1.50	10.00	10.00	25.7
1971	10.00	10.00	61.87	87.61	62.69	1.50	1.50	1.50	1.50	1.50	10.00	10.00	25.9
1972	10.00	10.00	44.36	81.36	81.33	1.50	1.50	1.50	1.50	1.50	10.00	10.00	26.0
1973	10.00	10.00	100.71	91.89	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	26.1
1974	10.00	10.00	71.63	94.28	97.33	1.50	1.50	1.50	1.50	1.50	10.00	10.00	26.2
1975	10.00	10.00	69.14	70.91	63.39	1.50	1.50	1.50	1.50	1.50	10.00	60.85	26.2
1976	10.00	10.00	80.53	108.30	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	26.2
1977	10.00	10.00	73.66	74.34	1.50	1.50	1.50	1.50	1.50	58.52	10.00	10.00	26.4
1978	10.00	10.00	32.41	51.40	67.55	1.50	1.50	1.50	1.50	1.50	10.00	10.00	26.5
1979	10.00	10.00	79.21	111.28	70.79	1.50	1.50	1.50	1.50	1.50	10.00	71.99	26.7
1980	10.00	10.00	41.46	120.39	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	26.6
1981	10.00	10.00	88.16	59.07	1.50	1.50	1.50	1.50	90.81	1.50	10.00	10.00	26.8
1982	10.00	10.00	45.35	92.21	1.50	1.50	1.50	1.50	1.50	1.50	10.00	98.56	26.9
1983	74.46	10.00	61.60	39.40	97.23	1.50	1.50	1.50	1.50	1.50	10.00	10.00	27.0
1984	10.00	60.37	73.32	74.53	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	27.0
1985	79.88	10.00	82.37	117.43	79.67	1.50	1.50	1.50	1.50	1.50	10.00	10.00	27.2
1986	10.00	10.00	52.37	89.01	1.50	1.50	1.50	1.50	1.50	63.80	10.00	10.00	27.0
1987	10.00	10.00	44.28	53.38	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	27.2
1988	10.00	10.00	54.52	92.84	1.50	1.50	1.50	1.50	1.50	1.50	64.31	10.00	27.6
1989	10.00	10.00	56.19	92.70	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	27.8
1990	10.00	10.00	70.94	76.02	1.50	1.50	1.50	1.50	1.50	1.50	10.00	74.47	28.2
1991	10.00	10.00	74.94	118.43	1.50	1.50	1.50	1.50	1.50	1.50	10.00	68.61	28.4
1992	10.00	10.00	60.26	69.33	1.50	1.50	1.50	1.50	1.50	1.50	107.55	71.13	28.5
1993	58.71	10.00	30.90	63.18	1.50	1.50	1.50	1.50	1.50	67.16	10.00	10.00	28.5
1994	10.00	10.00	37.52	31.72	1.50	1.50	1.50	1.50	1.50	1.50	10.00	58.74	28.7
1995	67.10	10.00	53.60	30.41	67.15	1.50	1.50	1.50	1.50	1.50	95.18	10.00	29.3
1996	10.00	61.16	58.65	73.79	71.95	1.50	1.50	1.50	1.50	1.50	61.67	10.00	29.3
1997	71.96	63.04	67.17	93.85	89.55	1.50	1.50	1.50	1.50	1.50	10.00	10.00	29.3
1998	10.00	10.00	60.24	82.65	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	29.1
1999	10.00	10.00	42.83	16.97	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	29.6
2000	10.00	10.00	34.81	37.61	65.25	1.50	1.50	1.50	1.50	1.50	10.00	10.00	30.5
2001	10.00	10.00	56.57	59.80	1.50	1.50	1.50	1.50	1.50	1.50	10.00	62.79	31.2
2002	10.00	10.00	86.64	91.04	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	31.8
2003	10.00	10.00	48.72	59.25	1.50	1.50	1.50	1.50	1.50	1.50	83.58	60.87	32.5
2004	10.00	10.00	61.84	62.50	72.07	1.50	1.50	1.50	1.50	1.50	10.00	10.00	32.9
2005	10.00	10.00	41.68	77.82	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	33.6
2006	10.00	10.00	66.93	103.76	1.50	1.50	1.50	1.50	1.50	1.50	10.00	83.05	34.8
2007	60.91	10.00	35.17	59.88	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	35.4
Average	16.90	12.90	52.08	74.66	29.69	2.31	2.63	1.50	2.76	6.33	17.98	22.60	26.51
Maximum	86.94	63.04	100.71	148.40	139.88	58.69	81.78	1.50	90.81	84.12	107.55	115.43	35.40
Minimum	10.00	10.00	15.66	16.97	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	23.03
Pecentile													
10%	10.00	10.00	32.08	36.56	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	23.52
20%	10.00	10.00	35.66	50.22	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	23.92
30%	10.00	10.00	41.61	59.86	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	24.34
40%	10.00	10.00	43.87	66.96	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	25.35
50%	10.00	10.00	50.88	74.44	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	25.99
60%	10.00	10.00	55.26	79.67	1.50	1.50	1.50	1.50	1.50	1.50	10.00	10.00	26.62
70%	10.00	10.00	61.67	90.83	63.39	1.50	1.50	1.50	1.50	1.50	10.00	10.00	27.21
80%	10.00	10.00	66.98	93.94	71.95	1.50	1.50	1.50	1.50	1.50	10.00	10.00	28.50
90%	58.93	10.00	75.36	117.48	89.44	1.50	1.50	1.50	1.50	1.50	60.40	71.13	30.52

Table 3
North Bala Dam Generating Station
Monthly Flows Through North Channel - Proposed

Assumptions:

Flows in river are reduced by 4 cms for Burgess GS and the flows through the south dam

Flows are split between the north and south dam as follows:

For months Nov-Mar flows over south dam = 1.5 cms plus any flows in excess of 99 cms (96 + 1.5 + 1.5), rest to north dam

For months Apr-May flows over south dam = 1.5 cms plus any flows in excess of 107 cms (96 + 1.5 + 9.5) rest to north dam

For months Jun-Oct flows over south dam = 2.0 cms plus any flows in excess of 99.5 (96 + 1.5 + 2.0) rest to north dam

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1937						22.16	13.42	18.47	17.66	31.33	97.50	77.14	39.7
1938	37.58	37.74	97.50	105.50	87.66	61.66	14.49	11.70	26.64	37.77	45.24	55.11	51.5
1939	42.01	42.26	81.97	105.50	105.50	23.34	19.98	23.54	28.10	28.53	35.03	28.24	47.0
1940	31.06	27.24	29.81	58.42	105.50	63.37	22.10	25.59	48.37	47.09	78.54	85.81	51.9
1941	77.12	50.08	55.02	105.50	79.01	14.75	14.94	13.21	9.58	20.23	90.00	81.59	50.9
1942	78.79	46.33	85.03	105.50	105.50	70.36	21.63	17.08	8.10	39.33	92.22	79.91	62.5
1943	60.33	61.25	96.45	105.50	105.50	64.20	36.44	33.34	21.58	19.23	32.02	43.30	56.6
1944	34.16	38.81	40.62	78.47	88.44	33.05	31.75	27.55	20.28	33.44	48.94	58.01	44.5
1945	42.01	31.10	97.50	105.50	104.81	84.22	35.41	19.52	28.36	52.85	60.66	56.66	56.9
1946	73.88	84.66	97.50	91.94	63.03	45.30	18.87	7.72	9.30	17.03	15.43	49.06	47.8
1947	63.70	63.97	97.50	105.50	105.50	97.50	30.92	33.21	15.25	17.89	15.89	31.31	56.5
1948	35.70	47.41	97.50	105.50	85.24	45.96	21.07	14.99	9.99	12.32	52.64	72.03	50.0
1949	75.51	91.10	97.50	105.50	66.75	35.01	33.11	12.98	4.52	12.62	13.23	53.63	50.1
1950	97.50	97.50	65.24	105.50	76.06	28.49	16.13	11.10	10.06	12.78	34.08	87.70	53.5
1951	78.04	47.76	97.50	105.50	105.50	18.43	22.14	19.29	15.58	46.57	97.50	97.50	62.6
1952	97.50	66.50	61.07	105.50	91.55	38.06	20.37	17.63	37.86	19.46	37.27	93.57	57.2
1953	62.51	51.39	97.50	105.50	70.54	30.02	22.01	12.46	10.49	13.66	12.93	51.19	45.0
1954	45.54	43.90	97.50	105.50	87.29	59.31	17.12	13.72	35.62	97.50	97.50	66.05	63.9
1955	47.56	57.94	67.44	105.50	53.38	11.67	8.50	6.55	4.92	16.79	76.60	36.67	41.1
1956	36.10	36.70	62.85	68.75	105.50	72.14	60.83	15.29	48.37	44.61	37.82	71.35	55.0
1957	67.81	72.52	93.31	89.20	25.93	47.23	97.50	9.12	56.16	41.93	97.50	97.50	66.3
1958	97.50	64.56	78.44	56.61	2.40	8.52	21.24	10.96	26.71	38.46	50.34	54.28	42.5
1959	38.60	66.72	83.70	105.50	105.50	35.28	12.08	19.79	29.39	41.06	97.50	97.50	61.1
1960	78.00	59.23	70.06	105.50	105.50	52.42	49.86	22.58	20.71	21.77	46.02	36.10	55.6
1961	37.98	25.82	74.75	105.50	85.02	28.96	28.98	20.73	21.21	14.35	17.25	39.00	41.6
1962	45.66	66.05	57.83	97.25	62.82	9.71	0.65	4.38	8.41	29.62	19.60	36.28	36.5
1963	47.15	35.70	45.15	105.50	102.18	25.61	4.89	13.56	27.51	22.45	27.06	56.85	42.8
1964	49.65	67.76	75.87	45.33	69.66	8.44	2.40	4.72	18.49	25.33	15.15	52.17	36.2
1965	82.63	74.78	76.44	105.50	105.50	6.12	5.65	17.97	51.15	97.50	79.65	97.50	66.7
1966	97.50	64.26	97.28	71.95	49.19	36.02	5.96	2.68	13.05	21.98	97.50	97.50	54.6
1967	88.89	82.55	83.97	105.50	46.28	84.90	44.89	23.32	49.65	88.80	97.50	97.50	74.5
1968	93.40	97.50	97.50	99.36	20.31	11.84	20.18	23.73	42.92	27.07	27.69	70.54	52.7
1969	64.69	70.42	84.10	105.50	105.50	60.62	32.27	10.08	20.94	36.09	97.50	75.33	63.6
1970	64.17	55.04	63.09	105.50	105.50	27.07	97.50	43.58	29.96	78.58	79.54	81.42	69.2
1971	66.38	66.75	97.50	105.50	105.50	22.23	14.10	10.60	19.57	13.73	24.81	63.72	50.9
1972	74.39	72.68	87.23	105.50	105.50	39.06	51.10	65.34	38.03	50.32	92.14	81.23	71.9
1973	97.50	97.50	97.50	105.50	105.50	87.58	40.74	38.20	20.54	40.25	58.79	92.56	73.5
1974	78.14	87.86	97.50	105.50	105.50	43.80	19.09	10.14	34.27	89.03	97.50	88.24	71.4
1975	65.22	66.87	97.50	105.50	105.50	6.28	3.10	8.96	34.54	36.09	30.02	97.50	54.8
1976	80.28	80.02	97.50	105.50	80.99	24.66	35.43	11.13	15.32	15.79	27.09	72.69	53.9
1977	46.27	44.02	97.50	105.50	38.45	0.41	13.12	7.75	43.79	97.50	97.50	97.50	57.4
1978	90.19	60.57	63.33	101.30	105.50	41.73	7.98	10.37	40.84	61.91	52.22	77.52	59.5
1979	77.52	75.47	97.50	105.50	105.50	34.96	8.52	15.57	31.27	67.86	97.50	97.50	67.9
1980	97.50	69.82	81.41	105.50	70.41	58.58	52.62	51.00	63.12	97.50	97.50	84.63	77.5
1981	69.00	91.28	97.50	105.50	68.80	40.02	14.01	3.20	97.50	97.50	53.97	62.01	66.7
1982	61.60	65.02	89.20	105.50	84.70	56.00	17.81	8.87	33.31	56.62	97.50	97.50	64.5
1983	97.50	91.65	97.50	77.31	105.50	68.43	9.81	0.00	13.48	55.49	43.04	91.39	62.6
1984	76.43	97.50	97.50	105.50	77.63	81.86	33.44	5.41	27.89	37.32	68.27	95.91	67.1
1985	97.50	85.17	97.50	105.50	105.50	34.77	32.98	25.72	97.50	97.50	97.50	97.50	81.2
1986	82.67	80.31	97.50	105.50	76.64	63.73	22.63	22.66	48.92	97.50	40.47	68.10	67.2
1987	46.32	57.05	87.06	105.26	18.42	17.26	10.73	0.00	0.00	21.60	26.54	97.50	40.6
1988	87.69	97.50	97.50	105.50	85.27	16.47	0.00	2.74	27.04	63.98	97.50	70.51	62.6
1989	71.25	62.37	97.50	105.50	105.50	81.25	15.22	0.52	8.47	22.37	32.26	76.98	56.6
1990	71.35	93.38	97.50	105.50	86.87	39.77	6.08	4.35	1.81	75.40	79.93	97.50	63.3
1991	97.50	66.23	97.50	105.50	64.46	26.77	3.81	2.62	16.41	55.40	74.41	97.50	59.0
1992	78.78	62.23	97.50	105.50	68.32	6.31	22.05	23.34	97.50	97.50	97.50	97.50	71.2
1993	97.50	73.74	60.30	105.50	52.88	89.47	68.13	8.77	43.15	97.50	97.50	97.50	74.3
1994	65.62	48.08	73.55	61.95	95.22	63.97	69.14	27.49	41.21	37.49	97.50	97.50	64.9
1995	97.50	97.50	97.50	59.32	105.50	45.03	32.88	32.40	33.52	55.53	97.50	97.50	71.0
1996	88.89	97.50	97.50	105.50	105.50	61.75	53.90	36.78	41.94	54.78	97.50	92.47	77.8
1997	97.50	97.50	97.50	105.50	105.50	25.52	11.87	0.00	10.92	29.26	18.65	45.11	53.7
1998	66.13	62.08	97.50	105.50	32.24	0.00	0.04	0.00	5.63	14.32	0.50	36.05	35.0
1999	60.19	97.50	84.15	32.45	15.38	31.77	59.75	5.96	22.72	84.21	88.10	90.29	56.0
2000	91.45	63.57	68.11	73.73	105.50	37.07	19.97	80.53	28.68	22.70	13.53	66.44	55.9
2001	66.62	77.23	97.50	105.50	33.64	53.87	5.24	0.84	39.59	97.50	95.54	97.50	64.2
2002	84.85	69.50	97.50	105.50	69.62	77.33	4.98	2.27	11.64	24.42	8.84	46.86	50.3
2003	57.13	69.50	95.93	105.50	104.91	58.05	9.14	4.14	15.46	97.50	97.50	97.50	67.7
2004	89.36	65.10	97.50	105.50	105.50	47.08	26.23	4.56	10.68	14.05	8.96	64.89	53.3
2005	97.50	84.02	81.85	105.50	91.57	62.54	3.50	3.34	1.53	11.62	33.44	97.50	56.2
2006	97.50	97.50	97.50	105.50	58.04	18.78	26.67	34.78	16.62	89.41	83.20	97.50	68.6
2007	97.50	59.33	68.84	105.50	65.41	31.66	23.45	3.03	13.73	35.15	24.73	76.73	50.4
Average	71.95	67.96	85.47	98.00	81.51	41.66	24.71	16.30	27.69	46.41	60.00	75.69	57.87
Maximum	97.50	97.50	97.50	105.50	105.50	97.50	97.50	80.53	97.50	97.50	97.50	97.50	81.22
Minimum	31.06	25.82	29.81	32.45	2.40	0.00	0.00	0.00	0.00	11.62	0.50	28.24	35.00
Pecentile													
10%	41.67	41.92	62.67	71.63	37.97	9.71	4.89	2.62	8.41	14.32	15.43	43.30	42.50
20%	47.47	49.68	69.82	98.94	62.99	18.78	8.50	4.35	10.68	19.46	26.54	54.28	50.12
30%	63.34	60.20	81.72	105.50	69.65	26.77	13.12	7.72	15.32	22.70	33.44	64.89	52.67
40%	66.53	64.14	86.25	105.50	80.20	33.05	16.13	10.14	19.52	29.62	45.24	72.03	55.02
50%	74.95	66.61	97.39	105.50	87.48	38.06	20.18	12.46	21.58	37.49	53.97	79.91	56.60
60%	78.39	70.06	97.50	105.50	104.85	45.30	22.10	15.57	28.10	44.61	79.65	88.24	62.48
70%	88.05	78.06	97.50	105.50	105.50	58.05	30.92	20.73	34.27	55.53	95.54	97.50	64.21
80%	97.50	88.50	97.50	105.50	105.50	63.37	35.41	23.73	41.2				

Figure 3

Pre-Development Flow Velocity Field (Q=117 cms)

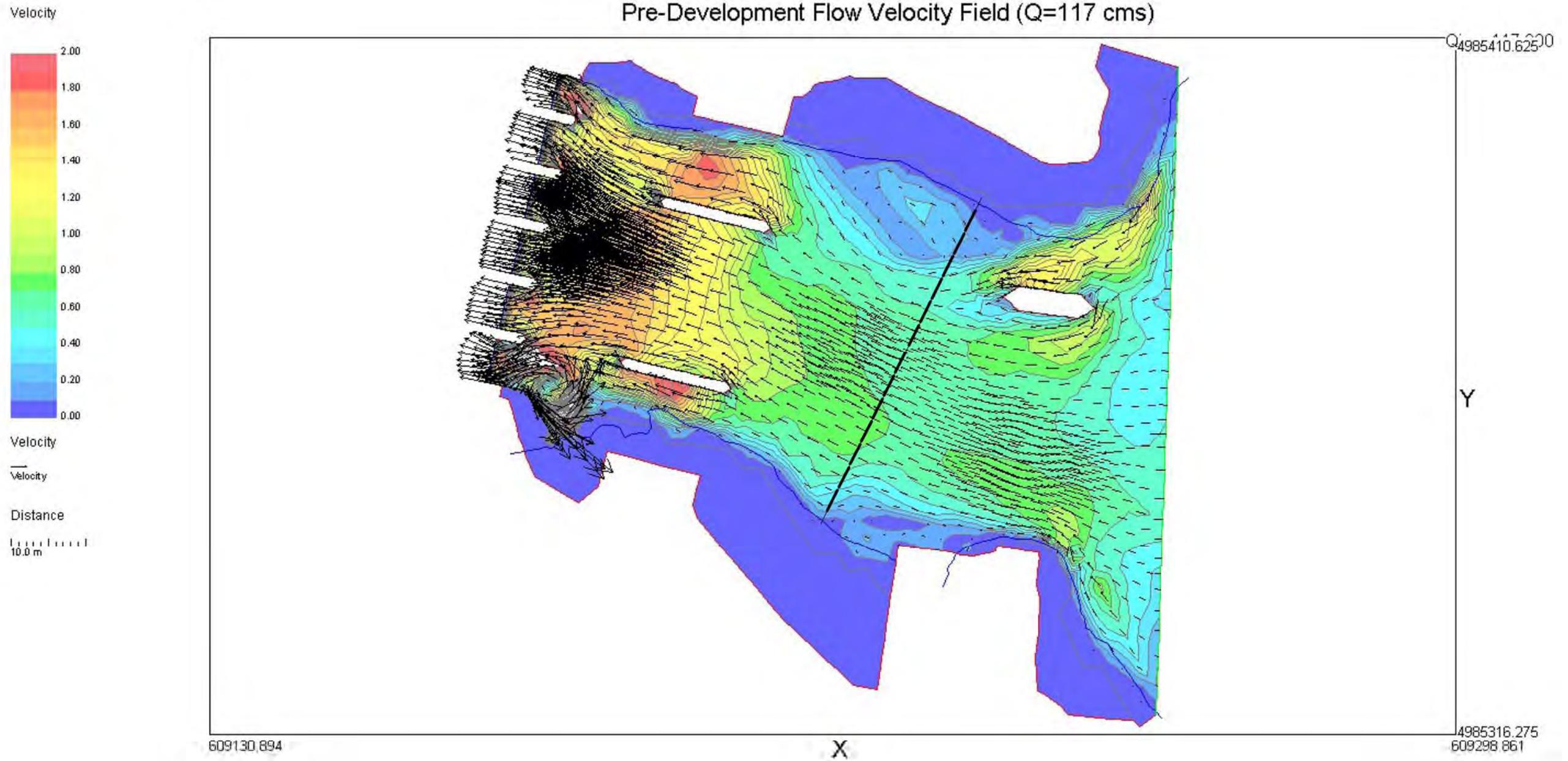


Figure 4

Post-Development Flow Velocity Field (Q=21 cms)

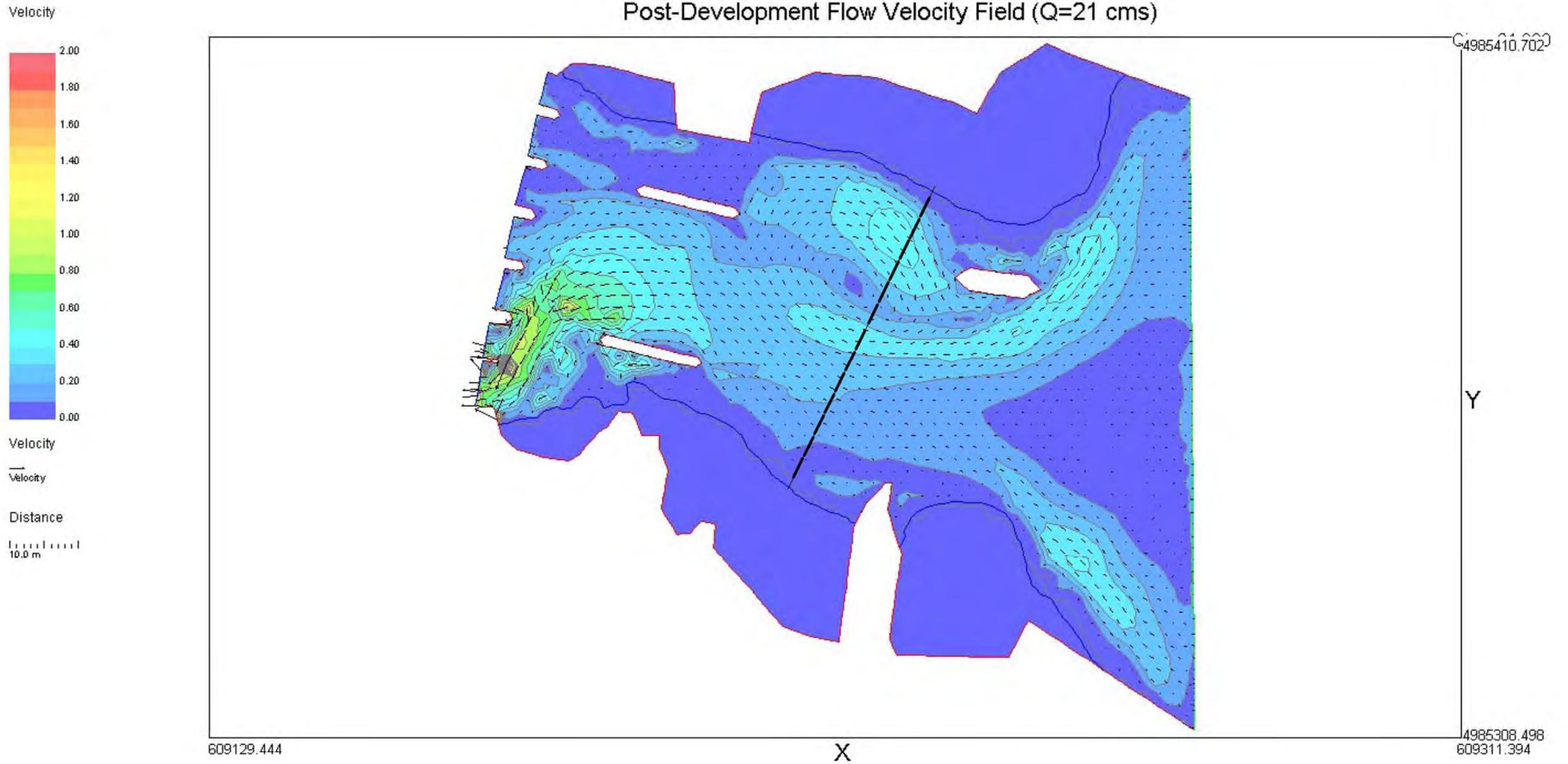


Figure 5

Post-Development Flow Velocity Field (Q=51 cms)

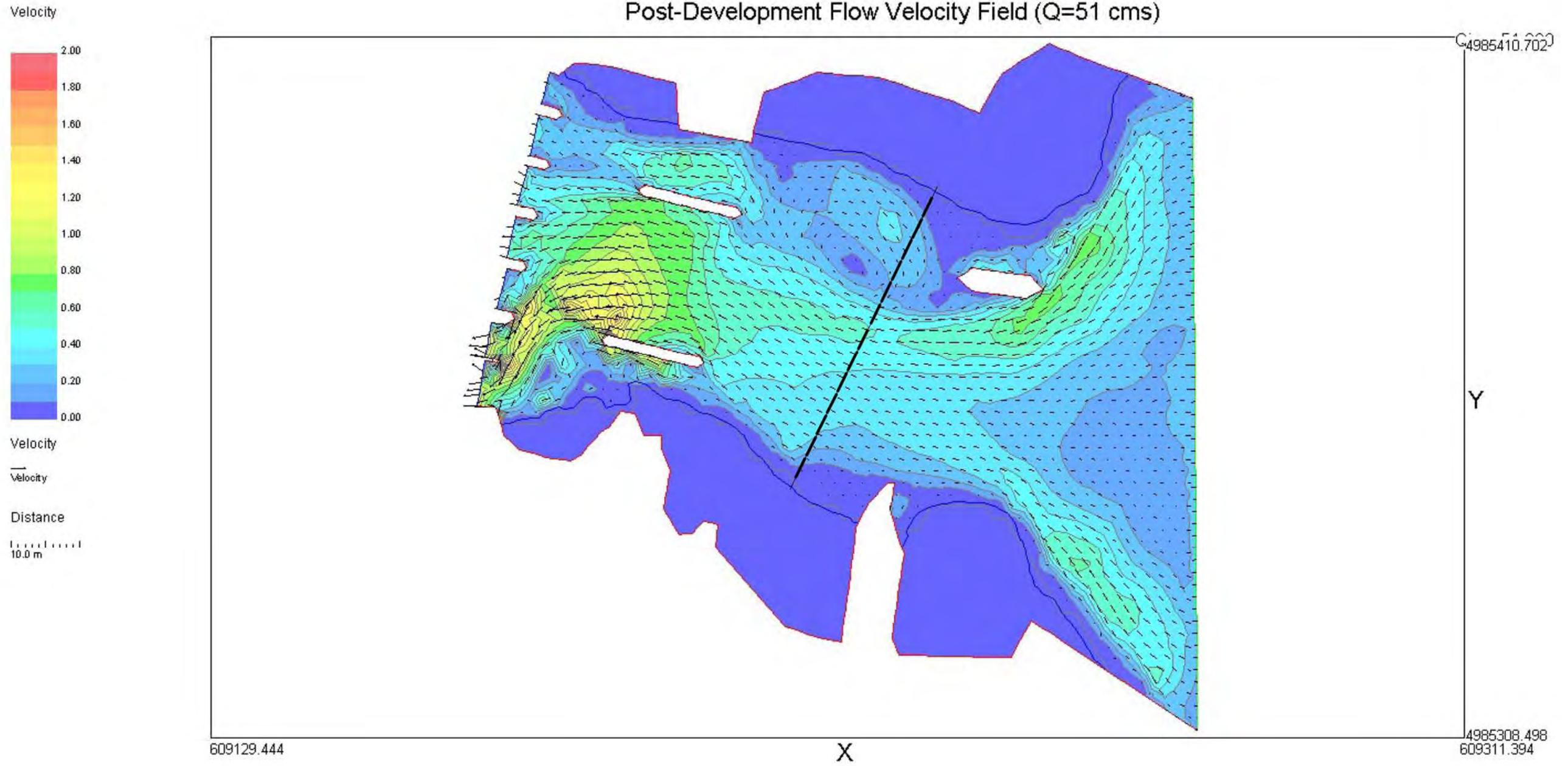
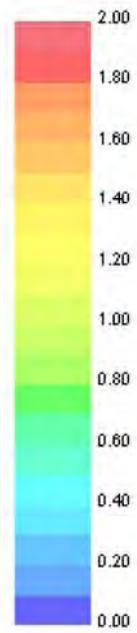


Figure 6

Post-Development Flow Velocity Field (Q=98 cms)

Velocity



Velocity

Velocity

Distance

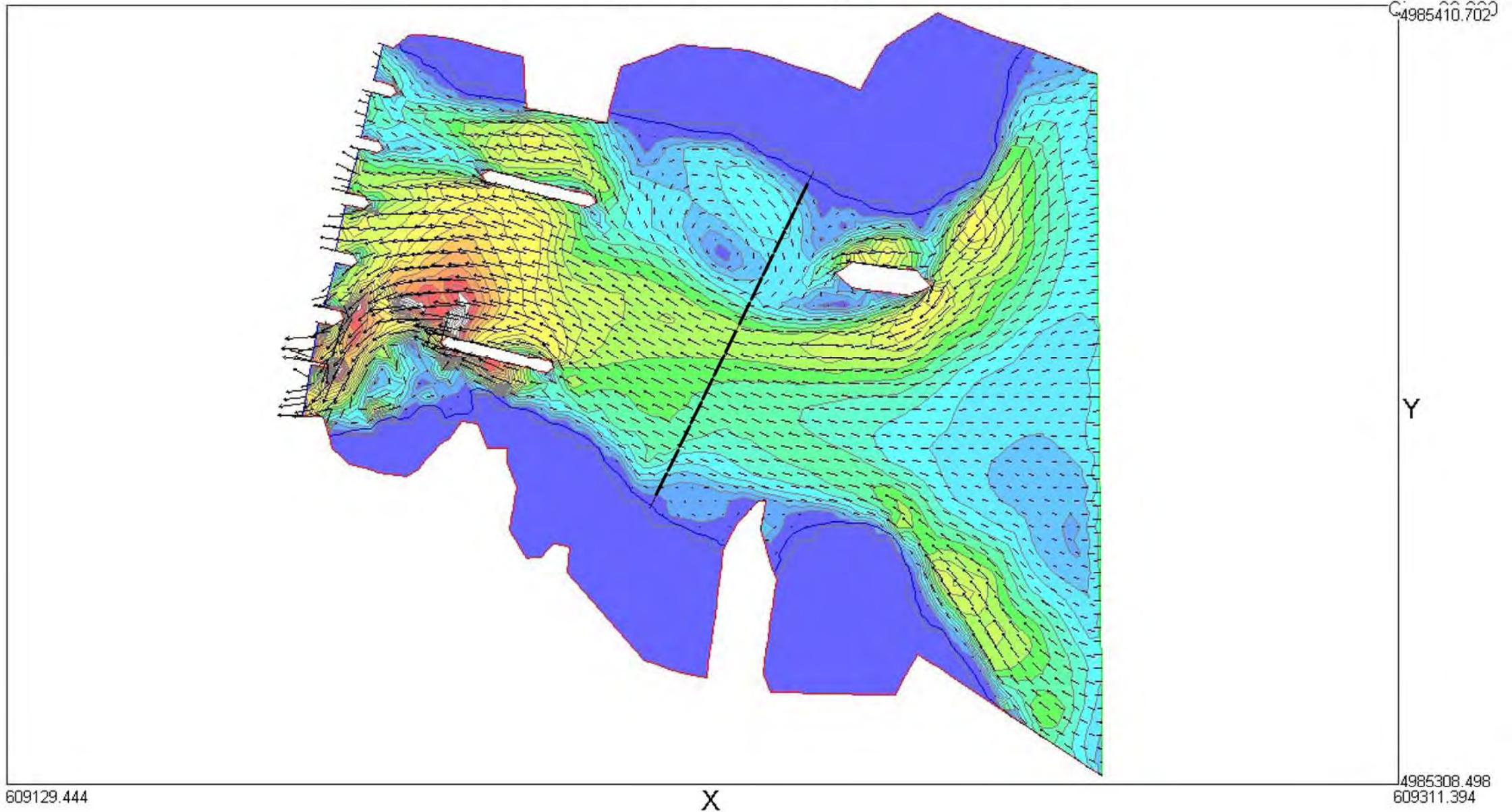
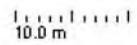
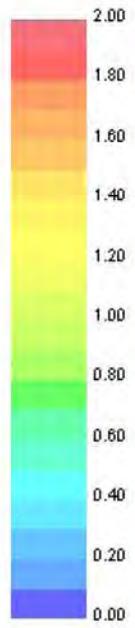


Figure 7

Post-Development Flow Velocity Field (Q=105.5 cms)

Velocity



Velocity

Velocity

Distance

10.0 m

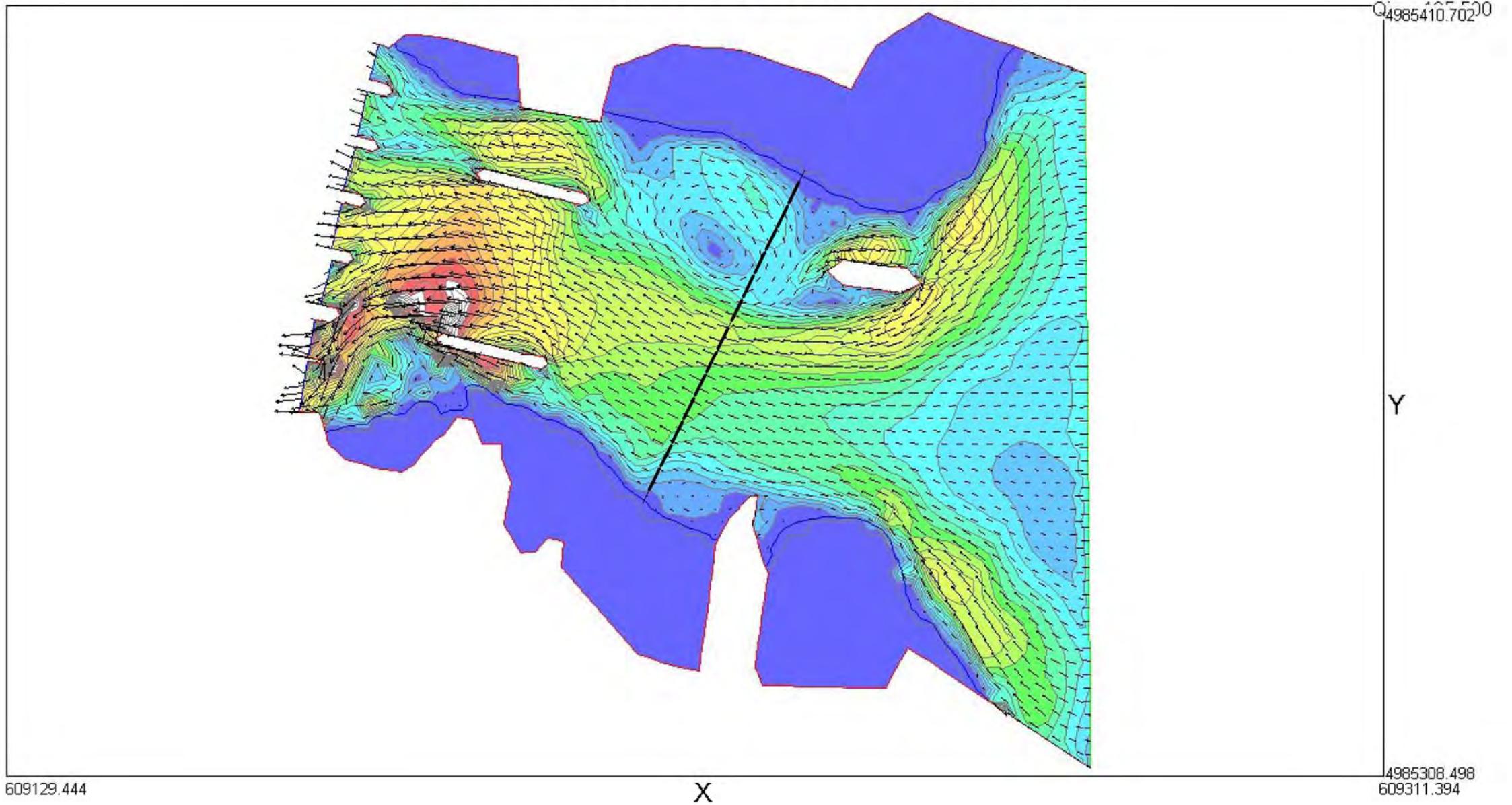
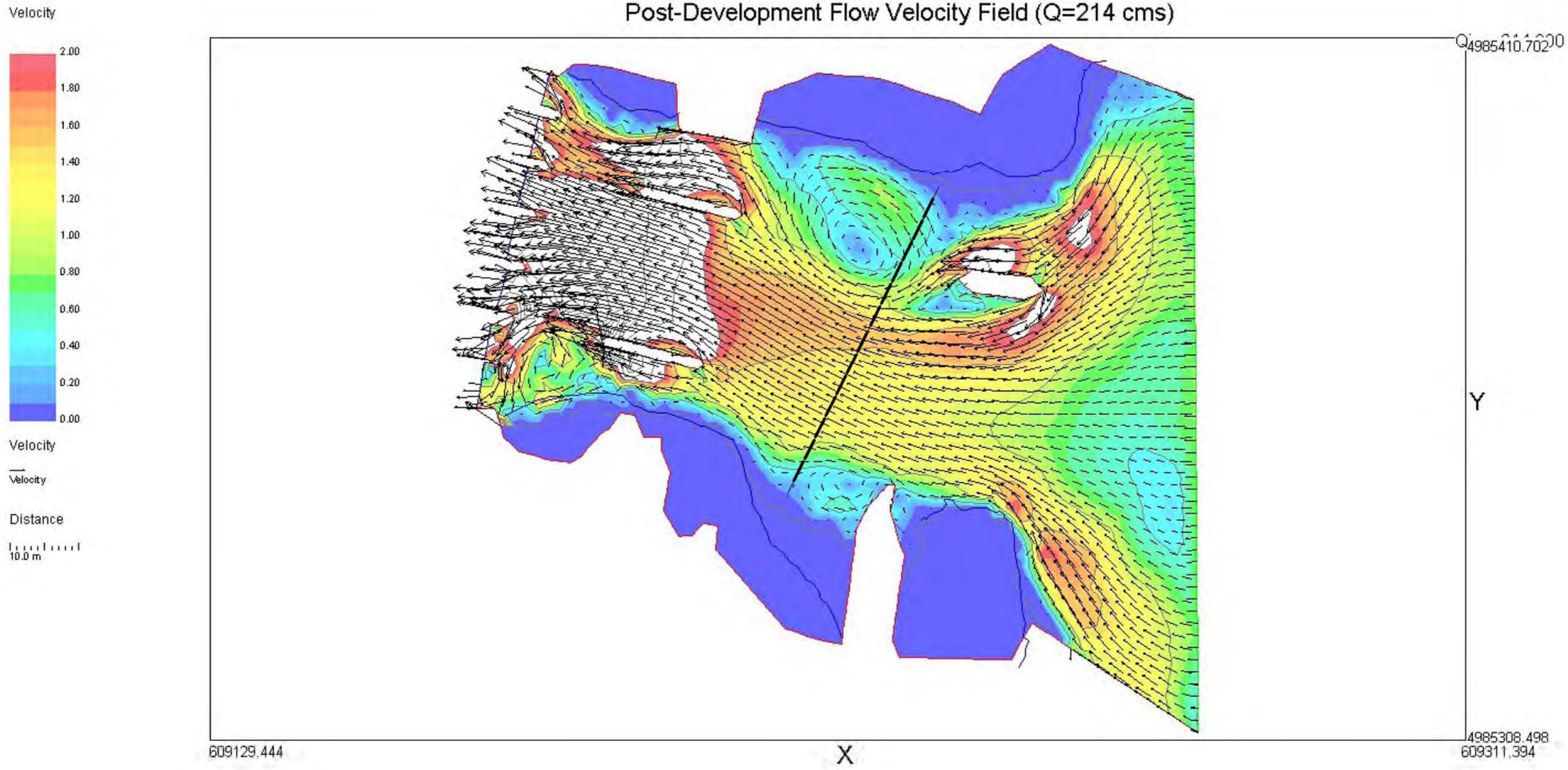
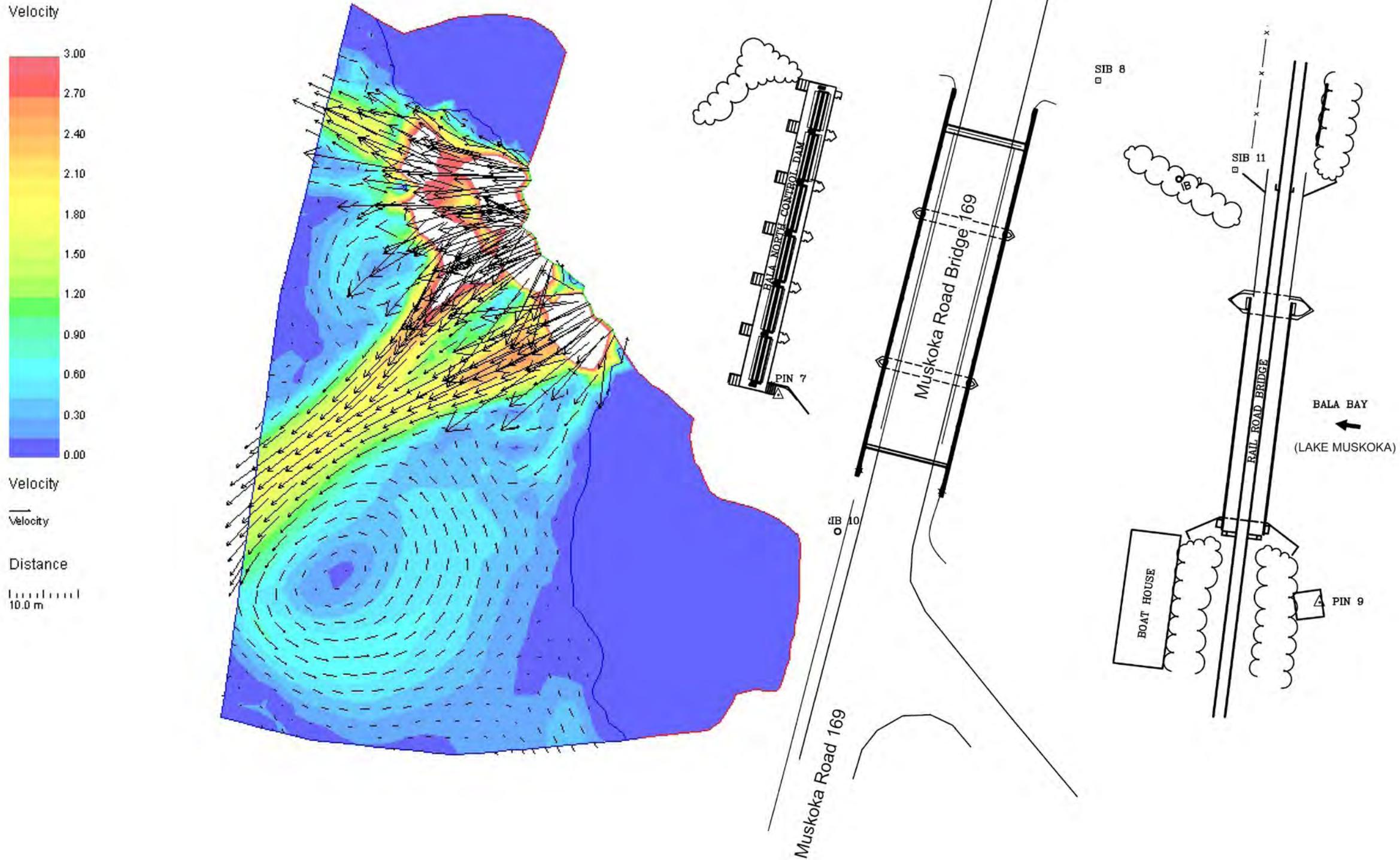


Figure 8

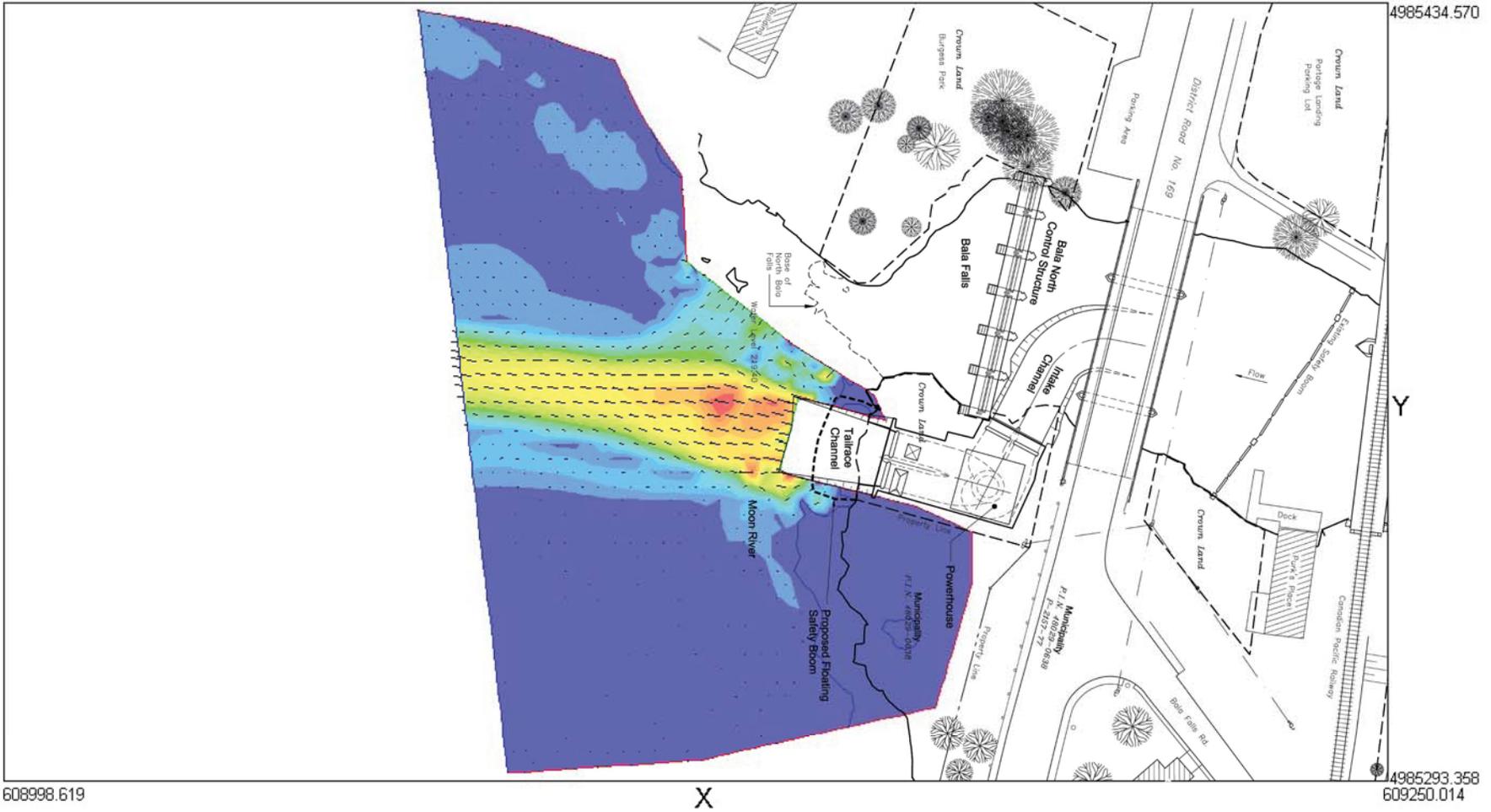
Post-Development Flow Velocity Field (Q=214 cms)



Flow Velocity Field, Downstream Channel, Existing Conditions, Q= 117 cms



Flow Velocity Field, Downstream Channel, Post Development, Q=117 cms,



608998.619

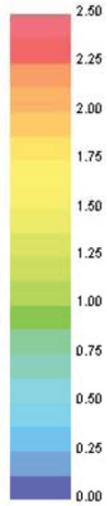
X

4985434.570

4985293.358
609250.014

Flow Velocity Field, Downstream Channel, Post Development, Q=105.5 cms,

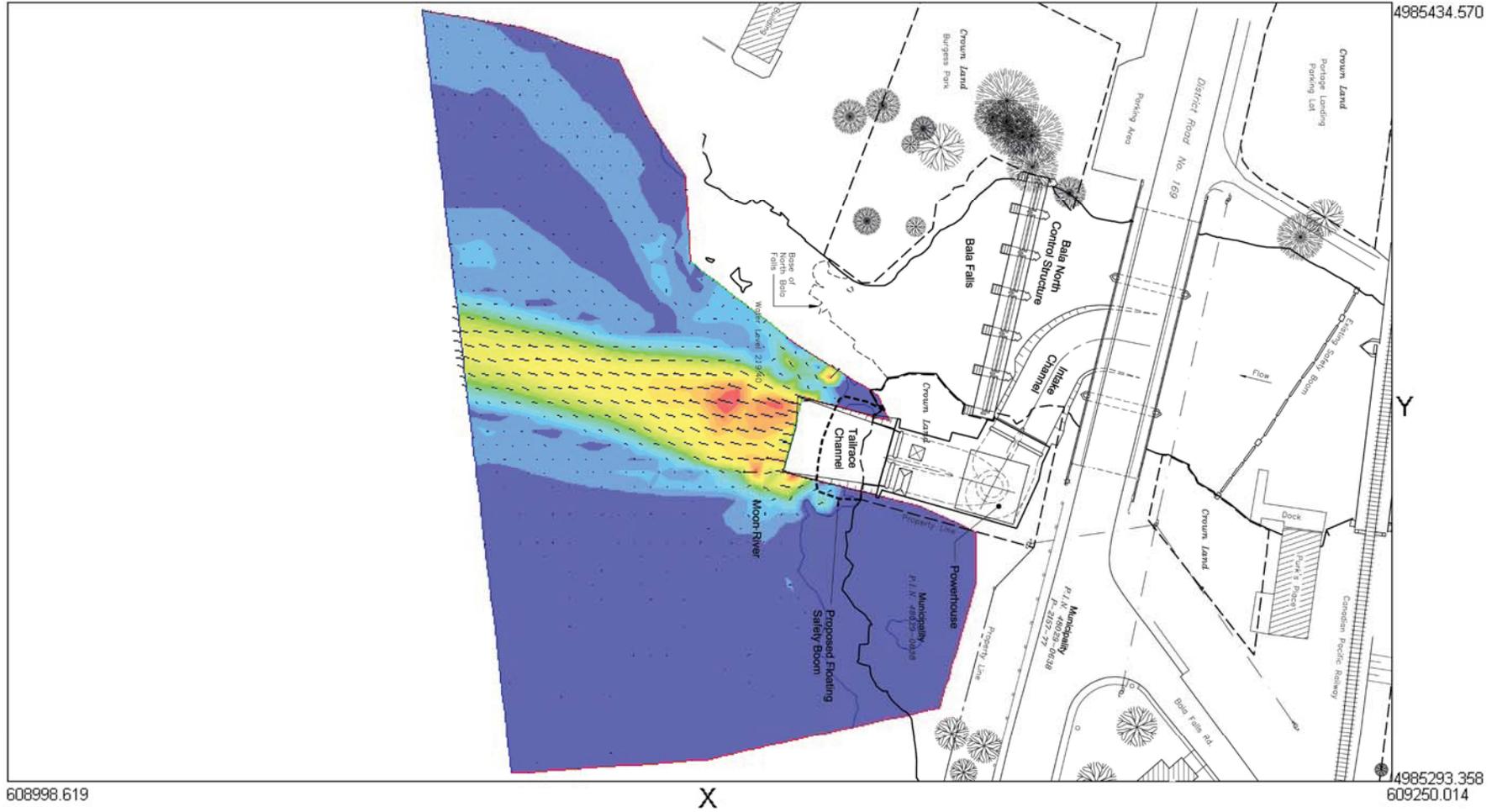
Velocity



Velocity

— Velocity

Distance





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