

Fraser Salmon & Watersheds Program



Fraser Basin Council



2008 Final Report

FSWP File Number* **08 HPR LR91**

*Please use the FSWP File Number provided in previous FSWP 2008 project correspondence

Contact Information

Sponsoring Organization's Legal Name

British Columbia Ministry of Environment

Are you a federally registered Charity, Non-profit organization or Business (Yes /No)?

No

If yes, please indicate which.

Charity

Non-profit organization

Business

Registration number

GST number

Are you a registered Society (Yes / No)?

No

Society Registration number

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Project Information

Project Title

Nicola Naturalized Flows and Pine Beetle Risk Assessment

Project Location

Nicola River Watershed sub-drainages

Amount Requested

30 000

Total Project Value

40 000

Non-FSWP funds²

10 000

² Non-FSWP funds include both cash and in-kind funding. In-kind funding refers to all non-cash contributions such as equipment, supplies, labour, etc. Please refer to Budget Section for further details.

Project Summary

Please provide a single paragraph describing your project, its objective, and the results. As this summary will be used in program communications, clearly state the issue addressed and avoid overly technical descriptions. Do not use more than 300 words.

This project is part of a larger initiative that includes the Nicola Water Use Management Plan (WUMP) including First Nations and funding through the Pacific Salmon Commission and Habitat Conservation Trust Fund to develop instream flow requirements (IFR's) to sustain healthy aquatic ecosystems for salmon, trout and char throughout the Nicola Basin. Salmon in the Nicola watershed include COSEWIC listed Coho and key indicator Chinook stocks for the Pacific Salmon Treaty. It also includes Thompson steelhead which are considered threatened and bull trout which are blue-listed provincially. The first step for IFR's development relies on using the natural hydrograph in numerous sub-basins of the Nicola and the B.C. Instream Flow Methodology:

http://www.env.gov.bc.ca/wld/BMP/instreamflow_wkgdrft.html

Two factors have combined to create a significant obstacle to developing defensible, science based instream flows requirements. First, over one hundred years of water licensing for off-stream uses confuses years of data and analysis that must rely on multi-year, naturalized hydrograph as the "benchmark" for most major sub-basins in the Nicola watershed. Second, the mountain pine beetle epidemic has hit the southern interior hard and has driven a watershed forest harvesting regime that is unprecedented in scope, further complicating the understanding of what was and will be "natural" for instream flow. So far, 7 sub-watersheds have had daily naturalized hydrograph developed by private consultant for the Nicola WUMP and 2 by the BC Ministry of Environment.

The goals of this project are: to develop daily naturalized hydrograph for the remaining major sub-watersheds of the Nicola Watershed, and; to document the potential effects of pine beetle infestation and related salvage harvesting on affected sub-watersheds in the Nicola watershed.

The 3 remaining major sub-watersheds of the Nicola Watershed daily naturalized hydrograph were developed and projected Equivalent Clearcut Area of pine beetle mortality and salvage logging generated for the Upper Nicola watershed.

OPTIONAL If your project lends itself to sparking interest through a compelling sound bite (for potential use in FSWP media communications), please tell us what that sound bite would be. Do not use more than 150 words.

Species and life stage(s) the project targets: please list

The naturalized daily hydrograph provides the basis for developing the Instream Flow Requirements (IFR) which supply optimum flow guideline for all life stages of salmon, trout and char present in the watershed.

Watershed(s) the project targets: please list

For the naturalized daily hydrograph:

Spahomin Creek

Skuhun Creek

Nuaitch Creek

For the pine beetle infestation/Salvage harvesting risk analysis:

Upper Nicola River

(All in the Nicola River watershed)

Project Deliverables and Results

- Paste in the deliverables outlined in your Detailed Proposal (question #3 under project 'relevance and significance' heading) into the table below. Then, please list the results associated with each deliverable.
- Please include copies of any relevant communications products (brochures, posters, videos, website addresses etc.) resulting from this project.

Deliverable	Result
<p>1. Naturalized hydrographs and summary flow statistics including but not limited to 1:5, 1:10, 1:20 low flow and high flow, drought/flood frequency return periods, mean annual flow and other key hydrological values. Report to include all sub-basin maps and data.</p>	<p>Daily naturalized flows data for Nuaitch, Skuhun and Spahomin for a period of 40 years from 1967 to 2006 with report. (Report and data enclosed)</p>
<p>2. Report documenting risk/potential effects based on best available science and spatial analysis for changes to low flow/high flow, drought/flood return periods from pine beetle infestation and current/recent salvage actions including Arcview maps and all datasets.</p>	<ul style="list-style-type: none"> • Equivalent Clearcut Area (ECA) model updated to 2008 for the Upper Nicola Watershed (report) • Updated forest cover prepared for all sub-basins of the Upper Nicola Watershed (maps) • ECA curves for existing and projected Mountain Pine Beetle kill and salvage harvesting scenario modeled for all sub-basins of the upper Nicola Watershed.
<p>3. An MS PowerPoint presentation of the results to an open meeting of the Nicola Water Use Management Plan</p>	<p>Not presented yet, working with the Nicola WUMP to schedule a date. (Excerpt from communication with the Nicola WUMP enclosed)</p>

Project Effectiveness

Please evaluate the effectiveness of the project, using the objective standards, quantifiable criteria and/or quality control measures identified in your Detailed Proposal (under question #1 in the 'performance expectations' heading).

The natural hydrograph modeling were developed by a specialized consulting firm under the direction of a Professional Engineer and reviewed by a Registered Professional Biologist and a hydrology analyst.

What are the top three lessons learned from this project that would be important to communicate to others doing similar work throughout the Basin?

With the increase harvesting rate due to salvage logging much of the forestry information is not up-to-date often lagging several years behind. To analyse the potential impact of pine beetle much effort has to be spent on bring up to date the forest cover.

Modelled data should be checked with actual measurements when developing synthetic hydrographs.

There is a value to provide a field reconnaissance to the contractor/modeller to improve their understanding of the local topography and hydrology.

Project Effectiveness

Please describe how your project has addressed each Priority Activity identified in your Detailed Proposal.

Priority Activity ¹	How the Priority Activity has been Addressed
Habitat and Water Restoration and stewardship: <ul style="list-style-type: none"> • Development of tools that protect habitat • Initiatives which provides integrated information on habitat status to highlight high priority areas for restoration and protection 	Provided critical information on natural stream flows and mountain pine beetle impacts that was never available before to guide water restoration, protection and stewardship.
Integrate Planning and Governance – Support development of approaches to the incorporation of conservation flow in watershed planning	We are providing the information and reports to the Nicola Water use management plan and have plans to make a presentation.

¹Please paste each priority activity identified in your Detailed Proposal in the space provided.

Further Comments

Please provide any further comments including recommendations for future conservation efforts and suggestions for helping partners to meet the goals of the Fraser Salmon and Watersheds Program. If your project produced a narrative or scientific report or additional project products (e.g. maps, photos), attach them as an appendix.