

# Fraser Salmon & Watersheds Program



## 2008 Final Report Template

**FSWP File Number\*** 07350-35/FSWP 08 FM LR44

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

### Contact Information

#### Sponsoring Organization's Legal Name

ESSA Technologies Ltd.

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

10168 6707 RT0001

Are you a registered Society (Yes / No)?

No

Society Registration number

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#### Project Manager<sup>1</sup>

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<sup>1</sup> All correspondence will be directed to the Project Manager.

#### Alternate Project Contact

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## Project Information

### Project Title

Evaluating the vulnerability of freshwater habitats to effects of climate change in the Cariboo-Chilcotin

### Project Location

The study area (Cariboo-Chilcotin) is delineated by tributaries to the Fraser River drainage from the confluence with the Thompson River to the Nechako River, excluding those Rivers. This project is an office exercise.

### Amount Requested

### Total Project Value

### Non-FSWP funds<sup>2</sup>

<sup>2</sup> 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 how your project has satisfied at least one of the FSWP priority activities. 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 directly addresses the 2008 priority activity “*Development of strategies to identify/cope with the impacts of climate change*”.

Given our general understanding of the adverse effects of climate change on freshwater habitats (e.g., increases in water temperature, reductions in summer low flows, etc), it is critical that we develop strategies to help salmon cope with these changes wherever possible. Developing intelligent coping strategies, however, requires that we make decisions using detailed information so we know where to act, when to act, and how significantly to act, thereby avoiding wastage of precious time, money, and people’s energy. An evaluation of the vulnerability of freshwater habitats to climate change is a critical first step to providing decision makers with that detailed information. This project represents the first broad-scale assessment of climate change vulnerabilities across the Cariboo-Chilcotin. Additional efforts are needed to help regional decision makers use this information and decide what they will do differently today for the benefit of human communities and salmon populations in the future.

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

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

Juvenile freshwater life stages and spawners for chinook and coho salmon plus all life stages of bull trout.

### Watershed(s) the project targets: please list

The study area (Cariboo-Chilcotin) is delineated by tributaries to the Fraser River drainage from the confluence with the Thompson River to the Nechako River, excluding those Rivers. The following tributary watersheds to the Fraser were included in this analysis: Alkali, Baker, Bridge, Canoe, Chilcotin, Churn, Dog, Gaspard, Mackin, Nacosli, Naver, Quesnel, Seton, Stein, Swift, West Road, and Williams Lake.

## 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
<u>Scoping meeting</u> at NCC office in Victoria (July 2008), attended by individuals from DFO, MOE, PFRCC, PCIC, NCC, and ESSA	Deliverable paid for with funding from the Pacific Fisheries Conservation Council. Brought together a diverse technical working group to guide and contribute to the successful completion of this project.
<u>GIS shapefiles and data tables</u> illustrating results of habitat modeling and effects of climate change on freshwater habitats	Paid for, in part, by the BC Ministry of Environment. Developed distribution and habitat (flow and temperature) models to estimate productivity of freshwater habitats for chinook, coho, and bull trout.
<u>"Habitat outlook" papers</u> summarizing results of vulnerability assessment by species	Provided a summary of the key results of our analysis, summarizing climate change threats facing freshwater habitats for chinook, coho, and bull trout in the Cariboo-Chilcotin.
<u>Technical report</u> describing methods of vulnerability assessment	Provided a summary of the technical approach to our modeling and analysis.
<u>Outreach meeting</u> at DFO office in Kamloops (March 2009) to present modeling results, attended by the technical working group (DFO, MOE, PFRCC, PCIC, NCC, and ESSA), and more broadly by biologists from across the interior	Deliverable paid for with funding from the Pacific Fisheries Conservation Council. Raised awareness of this project among the technical working group, and a much broader group of biologists within the federal and provincial government in the interior. Raised awareness of the threats of climate change among this audience.

## 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).

At the request of the FSWP project coordinator, this project's workplan was revised since the Detailed Proposal was originally prepared. Consequently, the original evaluation criteria are not relevant to the scope of work completed in 2008-2009. A few considerations are transferable, however. An over-arching goal in both the original proposal and revised scope of work was to:

*"to rigorously assess vulnerability of Pacific salmon to the effects of climate change on freshwater habitats in the Central Interior."*

Related to this goal are a series of questions which can be used to evaluate the project's success and effectiveness:

- Does the vulnerability assessment represent a scientifically rigorous and objective approach that draws upon peer-reviewed literature and technical approaches? Yes.
- Is there general support for the approach to the vulnerability assessment among scientific peers? Yes.
- Has the vulnerability assessment been documented in sufficient detail that it can be repeated by others? Yes.
- Were all project deliverables completed? Yes.

On the basis of answers to these questions, the contributions of highly qualified experts over the course of the project, and the general level of support and interest in the results we believe this project was successful and effective in making progress towards the above goal.

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

(1) Collaborate with strong partners: Without the participation and support of a strong and diverse group (DFO, MOE, PFRCC, NCC, and PCIC) this project would not have been as successful as it was. Particularly noteworthy was the Pacific Climate Impacts Consortium who went above and beyond any reasonable expectation to provide substantive and credible contributions to this effort.

(2) Leverage past work and existing knowledge: Building on lesson (1), these partners brought years of experience and wisdom which helped us leapfrog pitfalls and overcome challenges over the course of the project.

(3) Maintain flexibility to overcome unexpected challenges: With any innovative project such as this, there will always be unexpected challenges. To overcome these challenges it was important that we maintained a flexible workplan while conducting our work (i.e., shifts in timing, budgeting, technical approaches, etc).

**Project Effectiveness**

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

Priority Activity <sup>1</sup>	How the Priority Activity has been Addressed
<p><u>Program Area:</u> Improved Information / Approaches for Sustainable Integrated Fisheries Management</p> <p><u>2008 Priority Activity:</u> Development of strategies to identify/cope with the impacts of climate change</p>	<p>This project directly addresses one of the priority activities for 2008. To develop intelligent strategies that cope with the impacts of climate change, decision makers must have an understanding of the vulnerability of freshwater ecosystems. This project provides a first attempt at assessing broad-scale vulnerabilities across the Cariboo-Chilcotin to help identify the location, timing, and magnitude of concerns so decisions can be made today to mitigate the effects of climate change in the future.</p>

<sup>1</sup>Please paste each priority activity identified in your Detailed Proposal in the space provided.

**Further Comments (optional)**

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 relevant, we encourage you to attach a narrative report or additional project products (e.g. maps, photos) as an appendix.

See appendix and attached files for additional project deliverables.