

Fraser Salmon & Watersheds Program



2009/10 FINAL REPORT

FSWP File Number: FSWP 09 42

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

1. Project Information

1.1. Project Title

Survival Study Development at Wilsey Dam

1.2. Proponent's Legal Name

Okanagan Nation Alliance

1.3. Project Location

Wilsey Dam, Middle Shuswap River, Lumby, BC.

1.4. Contact for this report

Name: Shayla Lawrence

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1.5 Funding Amount

Original Approved Grant Amount:	Total FSWP Expenditures:	Final Invoice Amount:	Final Non-FSWP leveraging, including cash and in-kind:
\$9,300.00	9,300.00	1,860.00	11,712.27

2. Project Summary

Please provide a single paragraph describing your project, its objectives, and the results. As this summary may be used in program communications, clearly state the issue(s) that were addressed and avoid overly technical descriptions. Maximum 300 words.

This project will partially address fish habitat issues at the Wilsey Dam on the Middle Shuswap River by developing methodology for a survival study specific to Wilsey Dam before moving forward and creating fish passage at Wilsey Dam. The blockage of access to historical habitat is listed within the Middle Shuswap River Watershed Section of the BC Hydro's Strategic Plan as being one of main factors limiting current levels of fish populations.

Fisheries & Oceans Canada, the BC Ministry of Environment, and ONAFD were involved in the decision making process that determined that fish passage is desirable. This group decided the next steps needed were to address mortality level issues through Wilsey Dam, leading to the development of this project.

We recommend a step-wise approach to address key research questions.

In Phase I, we recommend that additional information be gained prior to performing survival testing. Further information is needed on juvenile Chinook salmon life history characteristics, whether the environment near Wilsey Dam is conducive to the tag technology we recommend, and what potential management decisions could

be made from the results of the study.

In Phase II, we recommend additional research to determine the effects of Wilsey Dam on survival of re-established Chinook salmon. A decision process, comparison of technologies, statistical method, sampling protocol, and costs are outlined to guide decision makers on which approach to use to estimate survival at Wilsey Dam. Measuring survival of juvenile Chinook salmon will assist resource managers in determining whether reintroduction of salmonids upstream of Wilsey Dam is a viable option to increase salmonid abundance in the Shuswap River Basin.

OPTIONAL Please give a short statement (up to 100 words) of the most compelling activity or outcome from your project.

3. Final Project Results and Effectiveness

3.1 Copy EXPECTED OUTCOMES from your detailed proposal and insert into this section. Add additional rows as needed. Then please list the FINAL OUTCOMES (the tangible end products resulting from this work) associated with expected outcome.

If FINAL OUTCOMES differ from the original EXPECTED OUTCOMES please describe why, and the implications for the project.

EXPECTED OUTCOMES	FINAL OUTCOMES
1. A survival study will be created as a result of the developed methodology from this project.	A phased survival study with different tagging and budget options has been developed.
2. The study will determine the feasibility of a Salmonid reintroduction to the 31Km reach above Wilsey Dam.	Once the report has been forwarded to the agencies (DFO and MOE) and BC Hydro a decision can be made as to what option would be the best to move forward with for conducting the actual survival study.
3. The project will create information pertinent to other fish impediments within the Fraser basin, and will be used in management practices and design to better enable fish passage.	In completing this report it was discovered that there are many critical uncertainties concerning how Chinook salmon will respond to the effects of Wilsey Dam after they are reintroduced, and how to conduct appropriate research. Additional information will be collected to better understand life history characteristics of reintroduced Chinook salmon upstream of Wilsey Dam and the impacts of Wilsey Dam on these reintroduced salmonids.
4. The results from the survival study will lead to the encouragement of additional funders for continued fish passage creation, and habitat enhancement at Wilsey dam and elsewhere.	ONA will continue to increase awareness, meet with the stakeholders and submit proposals to implement the survival study for Wilsey Dam.
5. COSEWIC listed Interior Fraser Coho, Chinook, and other fish species (rainbow trout and bull trout) will be reintroduced above Wilsey Dam.	Was not completed within this project as it was not funded. This is a long term goal that we will continue to work towards.

3.2 Please evaluate the EFFECTIVENESS of your project in achieving Project Objectives. Please identify the indicators you have used to measure the effectiveness of your project. Please include any notable successes or challenges.

The project was effective and completed. The report produced because of this project provides a solid foundation for moving forward with completing a survival study at Wilsey Dam in a phased approach so that it will be adaptable and address the concerns and specific requirements of ONA, MOE, DFO and BC Hydro.

Some of the objectives did not get completed due to not being funded and was already addressed and reported on in the interim report.

3.3 REQUIRED: attach all DOCUMENTATION of Final Outcomes, and LIST attachments here. These may include technical reports, maps, photos, evidence of communications, lists of meeting participants, etc.

Bussanich, R., H. Wright, D. Robichaud and C. Peven. 2010. Study Plan to Measure Survival of Juvenile Chinook Salmon Through Wilsey Dam Turbines. Prepared for Pacific Salmon Foundation, Fraser Salmon and Watershed Program, Vancouver, BC. Prepared by Okanagan Nation Alliance, Westbank, BC.

3.4 Please describe how the benefits of this project will be sustained and/or be built upon into the future. What are the planned next steps, or recommendations for further work, if applicable?

The following recommendations are based on information gathered to date, and outlined in the report.

1. Assign agency personnel currently involved in survival and behaviour studies of juvenile salmon at Wilsey Dam Project the task of reviewing, editing, and finalizing a detailed study plan to accomplish the objective of measuring the impact on juvenile Chinook salmon.
2. Continue discussions with hydro system operators to develop a schedule to fit the study design.
3. Fund a pilot project (Phase I) to monitor 25 acoustic-tagged, juvenile Chinook (yearlings and subyearlings) during June and August to assess equipment performance and fish behaviour. A report of the trial will summarize:

- a. Efficiency trials using acoustic telemetry arrays at pre-selected sites,
- b. A decision process to determine the zone of inference for future studies,
- c. How the information collected will be used for system management decisions; and
- d. Which technology is suited for future studies and project objectives.

ONA will continue to initiate meetings between all stakeholders to keep them informed and receive feedback on the report produced from this project. ONA also plans on attending or providing comment on the future meeting to be hosted by BCRP to update area priorities for the Shuswap. We are also looking to other funding agencies to fund a summary report that will put together all the work done to date for fish passage at Wilsey dam into one concise report for submission to BC Hydro to decide on fish passage.

3.5 What are the top three lessons learned from this project that could be useful to communicate to others doing similar work in the Basin?

1. Importance of developing a decision making flowchart to guide managers and stakeholders with future direction.
2. Several technologies available to monitor juvenile salmon survival through dam projects (i.e. newest technology JSAT).
3. Several statistical models are available to study fish passage survival each tailored to project objectives (i.e. project survival versus turbine survival).