

Middle Vernon Creek Stream Restoration Project: Final Report (2001-2006)



Prepared for:
Oceola Fish and Game Club, District of Lake Country, British Columbia



July 2006

Acknowledgements

The five-year **Middle Vernon Creek Stream Restoration Project** was funded by the Habitat Conservation Trust Fund (HCTF). The Ocoola Fish and Game Club is very grateful to the HCTF for their support of this project.

The success of this project was primarily due to the leadership of the Ocoola Fish and Game Club (OFGC), in particular Bill Bosch (current president) and Darcy Armitage (previous president). Ron Taylor and Rick Simpson contributed hundreds of hours of their valuable volunteer time on this project. Ted Burnell was instrumental in handling the financial aspects of this project.

The Calendar newspaper in the District of Lake Country wrote several stories on the HCTF project activities. This gave the project a very high level of awareness in the local community.

A big thank you goes to the private landowners (Day, Reynolds, McCarthy, Holt and Takenaka families) who worked with the OFGC to complete the stream restoration projects on the creek. A special thanks goes to Eddie Holt who assisted Ron Taylor on numerous occasions.

For the stream restoration projects riprap was donated by Henry Weibe (private landowner), logs were donated by Riverside Forest Products (now Tolko Industries Ltd.), and root wads were donated by Tolko Industries Ltd. Additional funding for the stream restoration projects was also obtained from Fisheries Renewal BC.

The District of Lake Country was an active partner throughout this project.

- ❑ They assisted the OFGC in obtaining the necessary permits for the stream restoration projects;
- ❑ They provided substantial volumes of information through discussions, reports and technical data; and
- ❑ They participated in lively discussions on water management.

The OFGC worked in partnership with the Central Okanagan Regional District to complete Sensitive Habitat Inventory Mapping (SHIM) on Middle Vernon Creek and to complete four educational posters.

The OFGC would like to thank the Okanagan Indian Band and Okanagan Nation Alliance for their on-going support and leadership for projects on Duck Lake Indian Reserve No.7. In particular, Keith Louis and Howie Wright provided numerous hours of their time to this project.

The BC Ministry of Water, Land and Air Protection (Penticton office) funded the ***Middle and Upper Vernon Creek Hydrological Analysis*** report by Northwest Hydraulic

Geostream Environmental Consulting

Consultants, dated May 2003. The main purpose of this report was to look at instream flow requirements for fish.

This project has received considerable community support of which there are too many people and activities to list. One of the highlights was the saving of the 2003 Kokanee spawning run with the diversion of groundwater into Middle Vernon Creek by the Aspen Grove Golf Course and Holts (private landowners). Another was the completion of restoration works on the concrete spillway on Upper Vernon Creek by the City of Kelowna and McIntosh Properties Ltd.

This report is considered to be a working document, part of an iterative planning process implemented by the Ocoela Fish and Game Club. Modifications to project data are anticipated as new information is collected and knowledge gained. The extent of the assessments in project reports has been limited by available information, time and budget.

Biological consulting services for this project were completed by Columbia Environmental Consultants Ltd., Summerland, British Columbia.

The principal consultant for this project was:

- Lorne Davies, P.Geo., Geostream Environmental Consulting, Kelowna BC (Telephone: 250-860-7401; Email: geostream@shaw.ca).

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1.0 Introduction

Wood Lake is one of the few remaining low elevation lakes in the Okanagan where Kokanee [*Oncorhynchus nerka*] fishing can take place. To maintain this important sports fishery the Oceola Fish and Game Club (OFGC) has been working over the last 15 years to protect, restore, and enhance Middle Vernon Creek, the principal creek used by the Wood Lake Kokanee population for spawning. The numbers of Kokanee spawners in Middle Vernon Creek are shown below in Figure 1.

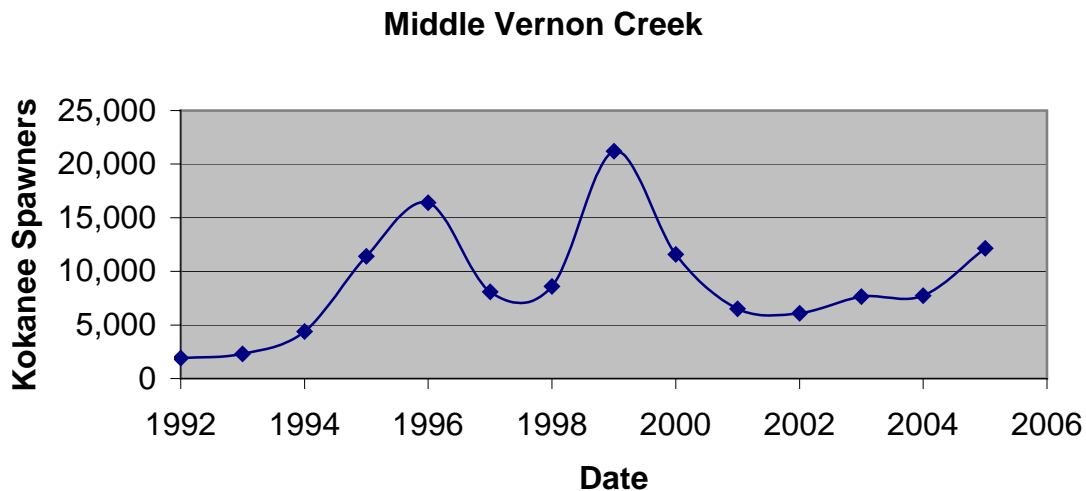


Figure 1. The number of Kokanee spawners for Middle Vernon Creek from 1992 to 2005.

The Oceola Fish and Game Club initiated the Middle Vernon Creek Stream Restoration Project because of their concerns for the sustainability of the Wood Lake Kokanee population. The two main issues that were addressed were:

- The deterioration of natural habitat in Middle Vernon Creek;
- The lack of water in the creek (for both instream and off-stream users).

The OFGC implemented an integrated program of dialogue, planning and action. Reports completed are part of an iterative planning process where changes are made, if necessary, as new information is collected and knowledge gained. The activities are summarized below.

2.0 Dialogue

Dialogue was a large part of this project. The OFGC had extensive dialogue with all levels of government, First Nations, local residents, businesses, landowners and anyone else who wanted to talk about fish and water.

For the stream restoration projects the OFGC had to build trust and a positive working relationship with the private landowners along Middle Vernon Creek. The stream restoration projects allowed the OFGC to identify and address water management concerns at the same time. The private landowners and OFGC drew closer together when Middle Vernon Creek went dry in the summers of 2002 and 2003.

The private landowners and OFGC were equally frustrated with water management being based on jurisdictional boundaries and not watershed boundaries. The Middle Vernon Creek watershed including sections of the Central Okanagan Regional District, the City of Kelowna, the District of Lake Country and Duck Lake Indian Reserve No.7 (Okanagan Indian Band). Upper Vernon Creek and Middle Vernon Creek are managed as separate entities, even though they are part of the same mainstem channel for the watershed that drains into Wood Lake.

The OFGC wanted it acknowledged that considerable time and energy was spent dealing with the ministerial changes that took place within the federal and provincial governments during the course of this project. Fisheries and Oceans Canada closed their Penticton office; administration for the Water Act moved from Penticton to Kamloops (Lands and Water BC Inc. was formed and dismantled); the Ministry of Environment in Penticton now looks after Upper Vernon Creek and the Ministry of Environment in Vernon now looks after Middle Vernon Creek (Penticton used to cover both creeks). It is also acknowledged that staff and budget reductions did not help either.

The Oceola Fish and Game Club has established an informal working relationship with the University of British Columbia – Okanagan (formerly Okanagan University College). Activities included:

- Presentation by Rick Simpson and Ron Taylor (OFGC members) to Dr. Adam Wei's watershed management lab class in 2004.
- Field visits and discussion of club activities with Dr. Bob Newbury, Dr. David Scott and Dr. Adam Wei. This has resulted in completion of two student papers on Upper Vernon Creek and Middle Vernon Creek.

Outreach activities comprised a large part of this project. The OFGC attended numerous local meetings and workshops; made several presentations to various community groups; and provided on-going communication to watershed stakeholders/interested parties through email and telephone communication.

Outreach highlights included:

- Being listed (as part of the Okanagan River) on the Outdoor Recreation Council's list of BC's Most Endangered Rivers for the last three years. As stated in the 2006 ORC press release "*For example, there are still serious issues pertaining to water management throughout much of the watershed and particularly Upper and Middle Vernon Creek, the headwaters of the Okanagan. Among these are the inadequate management of groundwater, the over-allocation of water licenses and the unauthorized removal of surface water*".
- Presentations at:
 - The Status of Central Okanagan Watershed workshop, City of Kelowna, in 2004 and 2006.
 - The Making Ecosystem Connections: Partnerships for a Restored Okanagan Basin Habitat conference in Penticton, BC, June 2003.
- *Story of the year: spawning run saved in Middle Vernon Creek*, Calendar newspaper, District of Lake Country, dated December 29, 2004.

3.0 Planning

The Middle Vernon Creek Stream Restoration Project resulted in the completion of a number of reports. They were:

1. *Middle Vernon Creek – Water Management Plan* report by Geostream Environmental Consulting dated March 2002. This report provided the OFGC with a broad watershed planning framework and action plan.

The low flow issue became the central issue of concern for this project when Middle Vernon Creek went dry for a few days in the summer of 2002. This resulted in the request for more detailed information on the creek – resulting in the next report.

2. *Biological and Hydrological Assessment of the Middle Vernon Creek Watershed* report by Geostream Environmental Consulting and Columbia Environmental Consulting Ltd. dated February 2003.

The deliverables from this report included:

- Sensitive Habitat Inventory Mapping on 6 km of Middle Vernon Creek (the results are summarized in Appendix A of this report);
- Biological assessment of Middle Vernon Creek (under low flow conditions); and

- A better understanding of the reasons for the low flow conditions (the cumulative impacts associated with several factors – including natural variability, reservoir management, over allocation of water licenses, surface water and groundwater interaction, alteration of natural surface and sub-surface drainage pathways and unauthorized water withdrawals).
3. ***Middle and Upper Vernon Creek Hydrological Analysis*** report by Northwest Hydraulic Consultants dated May 2003. This report was prepared for the BC Ministry of Water, Land and Air Protection, Penticton office. This report focused on the instream flow requirements for fish.
 4. ***Ellison (Duck) Lake Sub-watershed Plan: Middle Vernon Creek Stream Restoration Project*** report by Geostream Environmental Consulting dated March 2005.

The OFGC developed sub-watershed level plans because management requirements, and subsequent mitigative measures, vary from sector to sector in the watershed. This sub-watershed area includes Duck Lake Indian Reserve No.7. The highest priority water management issue is the management of water levels in Ellison (Duck) Lake. A long-term solution is required to replace the temporary flow control structure installed in 2004 (see Appendix C).

4.0 Action

A physical inventory of stream channel attributes was completed on 6 km of Middle Vernon Creek. A summarization of the Sensitive Habitat Inventory Mapping data and photographs are presented in Appendix A.

The OFGC worked with seven private landowners to stabilize approximately 500 m (15 sites) of eroding streambank on Middle Vernon Creek. A photographic summary of some of the project sites is found in Appendix B.

The OFGC worked with First Nations (Okanagan Indian Band and the Okanagan Nation Alliance) to facilitate the movement of water from Ellison (Duck) Lake to Middle Vernon Creek. The two main projects were the construction of a low flow channel and the installation of a temporary flow control structure (see Appendix C).

The OFGC installed a network of 5 hydrometric stations (photographs of the sites are shown in Appendix D). A summarization of the hydrometric data collected is found in Appendix F. Further details were summarized in the ***Upper Vernon Creek and Middle Vernon Creek: Water Quantity Data – 2004*** report by Geostream Environmental Consulting, dated April 2005. Station installation, stream flow measurements and establishment of stage-discharge curves were based on procedures as outlined in the ***Manual of Standard Operating Procedures for Hydrometric Surveys in British Columbia***.

The hydrometric data collected provides a good comparison between drought conditions (2003) and more normal conditions (2004 and 2005). The larger runoff in 2005 was due to spillage from the Swalwell (Beaver) Lake reservoir. Data gaps were the result of equipment/programming problems (such as freezing of the pressure transducer) or equipment maintenance (Appendix F).

The main hydrologic finding was that stream flows are highly variable – daily, monthly and annually. In summary, water for spawning Kokanee in Middle Vernon Creek (and Upper Vernon Creek) is dependent on the interaction of a number of natural variables and water management activities. The Middle Vernon Creek Stream Restoration Project has resulted in a better understanding of the complexities of these interactions and has identified some mitigation measures that can be carried out.

Other action items included the construction of a fish ladder around an irrigation dam (see Appendix E). The public contacted the OFGC when the kokanee were having a problem. Two examples are illustrated in Appendix E, Kokanee trying to spawn in a silted tributary and electrocuted fish from a charged water intake pipe.

5.0 Conclusions

The Middle Vernon Creek Stream Restoration Project is an example of planning from the bottom-up. One of the main highlights of this project was the ability to complete cost-effective action items within a watershed that had multiple jurisdictional boundaries. Without the efforts and leadership of the OFGC there probably would have been no spawning Kokanee in Middle Vernon Creek in 2003 and 2004.

The main successful components of this project were partnership development; working with others; professional guidance; working within watershed boundaries (not jurisdictional boundaries); and integrating dialogue, planning and action (the implementation of all three is required for success).

The philosophy of the OFGC is summed up in the quote from the Catalyzing Change report (Global Water Partnership, 2004) *“In the end, a strategy’s success or failure depends on its ability to catalyze change. This is what matters – not the specific process, not the form of the strategy document, but whether or not it results in positive action”*.