Innovations in Flood Management, the Environment and Sustainability

Workshop Report

March 26, 2009

Sheraton Vancouver Guildford Hotel
Surrey, BC

Fraser Basin Council

Acknowledgements

On March 26, 2009, the Fraser Basin Council hosted a workshop on "Innovations in Flood Protection, the Environment and Sustainability" in Surrey, BC.

Workshop Planning and Implementation

The Fraser Basin Council would like to thank Tom Cadieux, Fisheries and Oceans Canada and Dianne Ramage, Pacific Salmon Foundation for assistance and advice in planning the workshop. The workshop was also planned and implemented by Fraser Basin Council staff, Tanya Hebron, Steve Litke and Saul Milne.

Funding Contributions

Funding for the workshop was provided by the Watershed Fish Sustainability Planning Process (Fisheries and Oceans Canada) and the Fraser Salmon and Watersheds Program (Pacific Salmon Foundation and Fraser Basin Council)

Collaboration with the Canadian Water Resources Association

In order to further bridge the gap between environmental stewards and flood hazard management practitioners, the Fraser Basin Council (FBC) decided to collaborate with an event of the BC Branch of the Canadian Water Resources Association (CWRA) to coordinate two related events scheduled for March 26. Due to similar timing and scope of the two events, the FBC workshop on "Innovations in Flood Protection, the Environment and Sustainability" and the CWRA seminar on "Flood Protection in BC – Recent Projects" (followed by the BC-CWRA Annual General Meeting) were delivered in a coordinated program at a common venue – the Sheraton Vancouver Guildford Hotel (Room: Guildford A), located at 15269 104th Avenue, Surrey, BC.

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1. Background

Communities along the Lower Fraser River have long been protected from Fraser River flooding by a system of flood protection dikes and related infrastructure including pumps, floodgates, and erosion protection works such as riprap. Since the termination of the Fraser River Flood Control Program in 1995 there has been relatively little financial assistance for local diking authorities to maintain and improve flood protection works. In addition, these historic works have resulted in a variety of impacts on the aquatic environment, including barriers to fish migration from the Fraser River into Fraser Valley tributaries, loss or degradation of riparian habitat, and loss or degradation of instream habitat. More recently, local governments, diking authorities and management agencies are being challenged to improve the level of flood protection provided to communities including residents, businesses, farmers and others while also improving the degree of environmental protection associated with flood hazard management practices.

Following dialogue with a wide variety of organizations involved in flood hazard management and/or the protection of fish and fish habitat, interest has been identified to explore opportunities and challenges to strengthen and better integrate the ways in which we manage flood hazards and fish habitat. These issues are very timely considering the establishment of new programs to strengthen both flood protection infrastructure and the stewardship of fish and fish habitat through the BC Flood Protection Program and the Fraser Salmon and Watersheds Program (FSWP) respectively. It is an opportune time to identify ways to achieve multiple benefits through integrated and collaborative approaches.

Workshop Purpose:
The March 26 workshop was intended to provide a forum for stewards of the environment and managers of flood hazards to learn from recent experiences and good practices and also to inform planning and management strategies into the future.

Workshop Objectives:
- To share experiences, lessons learned and innovative approaches to managing flood hazards while protecting habitat and environmental health;
- To identify and discuss challenges, opportunities and best management practices; and,
- To explore interest in a longer-term process of networking, raising awareness, improving working relations, and implementing best practices.

Workshop Participants
The following is a summary of the number of participants (by sector) that attended the workshop.

Sector	# of Participants
Local Governments	23
Private Consultants	18
Agencies (Federal and Provincial)	10
Not for Profit Organizations	8
Total	59

2. Summary of Dialogue

2.1 Welcome and Introduction

Steve Litke welcomed the workshop participants and provided an introduction and background. Steve acknowledged the funding contributors including the Watershed Fish Sustainability Planning Process (Fisheries and Oceans Canada) and the Fraser Salmon and Watersheds Program (Pacific Salmon Foundation and Fraser Basin Council). Steve also provided a brief overview on the Fraser Basin Council.

2.2 Speaker Panel – Reviewing the Lay of the Land – Innovations, Success Stories, Good Practices, Challenges and Opportunities

Steve Litke, Senior Program Manager, Fraser Basin Council

Questions and Discussion

- What are the flood protection standards in the Netherlands? There are varying standards for river and coastal flood hazards and also for rural and urban communities. The standards range from 1:1,000 to 1:10,000 based on risk, rather than a single standardized approach.
- Where do flood protection initiatives address agricultural interests, particularly in managing sediment loads? There should be more land use options in floodplains than "use" or "no use". The Fraser Valley floodplain includes the best agricultural lands in BC so there is a need to include agricultural interests in flood hazard management.

Marc Gaboury, Fisheries Biologist, LGL (for Bob Guerin, Musqueam First Nation)

Questions and Discussion

- The Okanagan River Restoration Initiative (ORI) is a project in the Okanagan that is pursuing opportunities for setback diking.
- Culvert baffles can be retrofitted to existing culverts to help improve fish passage.
- What is the geographic scope of the study? There are two similar projects including one that is led by the Musqueam First Nation from the Brunette River downstream (west) and a second project that is led by the Pacific Streamkeepers Federation focusing upstream (east) of the Brunette.
- Does the project distinguish between streams and sloughs that are natural versus man-made watercourses like ditches? The project looks at all watercourses, and also assesses the habitat values. The project has identified the need to share the results with municipalities to look for opportunities to improve fish passage.

Carrie Baron, Drainage and Environment Manager, City of Surrey

Questions and Discussion

- The City of Surrey has implemented a wide variety of flood protection and drainage projects with significant environmental aspects. Surrey Lake is a good story as far as a man-made solution that supports both agriculture and fish. This and other examples of drainage and environmental works in Surrey support improved water quality treatment, stormwater detention and park development. There has also been significant collaboration with community groups. Salmon have returned although it has been ten

years at Robson Park. Coastal shoreline erosion protection works were designed to encourage public access (with sand) at places where there are less ecological values and to discourage access (with exposed rock riprap) where there are higher ecological values.

- Are you concerned about trees being established on dikes? We use willows that are planted in rock riprap. The willows can be cut occasionally so the integrity of the works is maintained. The willows will re-grow to provide aesthetic and environmental benefits.
- How big is your department and what is the level of effort required for these types of projects? We established a drainage utility so there is a levy to help fund these projects from a dedicated budget rather than requesting funds from the City's general revenue. There are ten staff and an average annual budget of $11 million dollars available for everything from routine maintenance like replacing old pipes to these sorts of initiatives. Much of the work is contracted out.
- The City of Surrey has been proactive in communicating with DFO ahead of time before they get to the design stage of drainage and flood protection works. This has gone a long way to help build trust. They still have disagreements but the relationship is better.

Alan Jonsson, Habitat Engineer, Fisheries and Oceans Canada

Questions and Discussion

- Historically we have focused on fast-flowing river habitats including spawning gravels, but in more recent decades we have understood the importance of off-channel habitats, which provide the "buffet" for growing salmon. 66% to 70% of historical off-channel habitat has been lost in the lower mainland and along the lower Fraser River.
- We often hear that ocean survival is a big threat to salmon stocks. Is that true or is freshwater habitat more important? Both are important. Salmon are dependent on ocean conditions, which vary with the Pacific Decadal Oscillation, which includes different ocean temperatures, and in turn, influences upwelling of nutrients, food for salmon and distribution of predators such as mackerel. However, healthy well-fed salmon have a better chance of surviving, so the off-channel freshwater habitat is also vital. Further, this is a component of habitat that we can protect.
- Does DFO distinguish between natural streams and roadside ditches in terms of habitat priorities for DFO? Habitat is habitat. The priority depends on the utilization of the watercourse by fish. Typically a ditch has replaced what was once a natural stream.
- For those who work in different municipalities, it is important to recognize that different colour-coding systems for habitat may be used. You need to understand what the colours represent in a particular area.
- Are there opportunities to feed fish? It is most efficient and productive to retain vegetated riparian corridors along off-channel habitats and let nature look after feeding the fish.
- Are there any studies between DFO and the agricultural sector with respect to set backs and best management practices for sediment management? There is a need for more work to resolve issues of fish and fish habitat and agricultural uses such as best management practices, resources and work windows. There is an initiative underway (Partnership for Agriculture and the Environment) with the Ministry of Agriculture and Lands, the Ministry of Environment, Fisheries and Oceans Canada and the Union of BC Municipalities. A document is soon to be released with a focus on agricultural setbacks and habitat restoration.
- Can you comment on day lighting culverts with "windows?" To my knowledge, windows or skylights in culverts have not been used since the late 1980s and are not a priority at this time.

2.3 Roundtable and Plenary Dialogue

- Although there are many examples of good initiatives throughout the Lower Mainland – as illustrated by Surrey – they are akin to MASH / providing first aid when this is put in the context of the staggering level of population growth and development being experienced in the region.
- Although there are opportunities in situations like Surrey where there are more financial resources available, there may be higher priorities for environmental protection and fish habitat values in rural areas with limited resources like in the Hatzic area.
- Some available sources of funding include the federal Green Infrastructure program as well as the BC Flood Protection Program ($100 million from BC over 10 years and $60 million from Canada over 6 years).
- In addition to pooling of resources, we need to consider pooling of liabilities. This may help provide leverage and incentives for further cooperation.
- One way to think about establishing priorities is to look at both priority habitat values and priority needs for flood protection (including critical infrastructure that may be vulnerable to flooding).
- There may be a role for the Fraser Basin Council to help with planning and integration of flood and habitat protection at a regional scale (i.e., beyond the municipal scope). There is a need to get the appropriate organizations and agencies engaged and focus on proactive work rather than reactive work.
- The BC Hydro Water Use Planning process may provide a model where technical and planning teams were established that are open and inclusive and help to look at long-term needs, with recognition of the importance of influencing political decision makers.
- A 1994 report reviewed the Fraser River Flood Control Program. This report acknowledged the environmental issues related to flood protection and also emphasized the importance of an integrated approach to flood management. The report also identified some unresolved gaps such as flood modeling, floodplain mapping, and infrastructure. It also raised the question about the potential for a new river management authority. The Conservation Authorities in Ontario are one example of an authority that could work in BC. The Fraser Salmon and Watersheds Program is also exploring collaborative approaches to watershed governance.

2.4 Open Forum to Explore Next Steps

- Steve Litke suggested several next steps for consideration, discussion and feedback. These suggested next steps have been used to organize the participant feedback that follows.

Some Principles

- Long-term, comprehensive management
- Dedicated, long-term, cost-shared funding
- Regional coordination

Some Possible Next Steps

Available Guides and Resources

- It is recommended to share information with flood managers and environmental stewards such as existing guides and resources (e.g. reports by Alan Thompson).
- It was suggested to follow-up on the status of the agriculture partnership initiative that was discussed at the workshop.
- The BC Ministry of Environment has recently adopted an updated design flood profile for the lower Fraser River flood of record. Relevant reports are available on the Ministry's website: http://www.env.gov.bc.ca/wsd/public_safety/flood/structural.html.

Network of Practitioners

- A network of practitioners could help people connect and collaborate with the 'Alan Jonssons' of the world (i.e., those with experience and expertise in developing solutions in the realm of flood management and the environment).
- Some form of a network would be helpful for ongoing communication.
- There may be opportunities for networking and collaboration around technical issues for efficient access to limited technical resources and expertise.

Research on Good Practices

- What may help is to document how organizations achieved their goals and visions as a guide to building a successful initiative. This could include aspects such as relationship and trust building, quick lessons to get started and political pit falls.
- It could be helpful to document financial benefits associated with various flood protection and environmental protection measures to make the political case on costs versus benefits (both environmental and financial).
- Consider ecosystem services (such as wetlands providing flood attenuation benefits).
- Describe the current level of cooperation and integration, profiling examples of new, integrated approaches.
- A holistic, integrated approach is necessary. For example, there is no point establishing a fish-friendly pump, if it improves fish migration to habitat where irrigation pumps may result in fish mortality.
- There would be value in profiling case studies that demonstrate both successes and failures (i.e., share lessons about what worked and what did not work).

Addressing Barriers, Identifying Opportunities and Setting Priorities

- There is a need to explore how new issues are impacting flood hazards and flood risks such as climate change and mountain pine beetle.
- Priorities can be informed by the following:

- Proactive approaches / flood mitigation is more cost effective than flood response and recovery.
- Identify where the most environmental and flood protection benefits can be delivered with limited effort and investment. Refer to prior analysis such as that undertaken by Alan Thompson, Musqueam First Nation / LGL and others.
- Identify where flood protection benefits and environmental benefits can be advanced simultaneously.

Working with Authorities and Champions

- There is a need to educate decision makers. The FBC is well situated to help with this because your voice carries a lot of weight.
- The message needs to be multi-sectoral and consensus-based (i.e., the FBC needs to maintain its impartiality, and is in a better position to lend its voice where a broad-based consensus is established.
- We need to consider the merit of establishing a "Project Team" to build momentum and advance the issues that have been discussed at the workshop.
- We need a delivery model for the types of projects that have been discussed. There are some governance options that are being explored through FSWP and other initiatives. It would be good to undertake an inventory of governance approaches. The Fraser Basin Council commissioned a report on governance models for flood hazard management. These and other models should be explored.
- We each need to plant the seeds and build support among the decision-makers within our own organizations if we are going to effectively advance these issues.

Follow-up Session

- One suggestion for a follow-up workshop is to further explore remaining gaps as well as a regional approach to governance (i.e., is it time for a new authority to help set regional priorities).

3. Attachments:

3.1 Workshop Agenda

3.2 Participant List

Attachment 3.1 Innovations in Flood Management, the Environment and Sustainability

March 26, 2009
9:00 a.m. – 1:30 p.m. (lunch included for session participants only)
Sheraton Vancouver Guildford Hotel (Room: Guildford A)
15269 104th Avenue · Surrey, BC

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Objectives:
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Agenda

Refreshments (9:00 am)

1. Welcome and Introduction (9:30 am)

2. Speaker Panel (9:45 – 11:00 am)
Reviewing the Lay of the Land – Innovations, Success Stories, Good Practices, Challenges and Opportunities (10-15 minute presentations; followed by Q & A)
- Steve Litke, Fraser Basin Council
- Bob Guerin, Musqueam First Nation
- Carrie Baron, City of Surrey
- Alan Jonsson, Fisheries and Oceans Canada
- Questions and Discussion

3. Roundtable and Plenary Discussions (11:00 am – 12:00 noon)
- Sharing Participant Experiences, Innovations and Lessons Learned
- Available Guides and Resources
- Exploring Next Steps

Lunch (12:00 noon – 12:45 pm)

4. Open Forum to Explore Next Steps – continued (12:45 – 1:30 pm)
- Network of Practitioners
- Research on Good Practices
- Addressing Barriers, Identifying Opportunities and Setting Priorities
- Working with Authorities and Champions
- Interest in a Follow-Up Workshop?

5. Wrap-Up (1:30 pm)

Attachment 3.2 Participant List (listed alphabetical by last name)

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