Okanagan Basin Water Board Meeting Agenda

DATE: Tuesday, January 10, 2023

TIME: 10:00 a.m. to 12:00 p.m.

PLACE: Online

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1. CALL MEETING TO ORDER
   - 1.1 Acknowledgement of First Nations Traditional Territory

   We acknowledge that we are holding this meeting on the unceded territory of the Syilx Okanagan Nation.

2. ELECTION OF CHAIR AND VICE CHAIR

3. INTRODUCTION OF LATE ITEMS

4. APPROVAL OF AGENDA

5. ADOPTION OF MINUTES
   - 5.1 Minutes of the Regular Meeting of the Okanagan Basin Water Board of October 4, 2022 held online *(page 1)*

6. STAFF PRESENTATIONS
   - 6.1 Executive Director presentation: OBWB overview
   - 6.2 Deputy Administrator presentation: Highlights of the OBWB's SFA and Milfoil Programs

7. STAFF REPORTS
   - 7.1 Executive Director Report *(page 6)*
     - 7.1.1 2023 OBWB meeting schedule for reference
     - 7.1.2 BC Flood Intentions Summary paper
   - 7.2 Deputy Administrator Report *(page 17)* *(resolution required)*
   - 7.3 Water Stewardship Director Report *(page 20)*
   - 7.4 Office and Grants Manager Report *(page 28)*
   - 7.5 Communications Director Report *(page 30)*
     - 7.5.1 Make Water Work 2022 Wrap-Up Report *(to be sent separately)*
     - 7.5.2 Don't Move a Mussel 2022 Wrap-Up Report *(to be sent separately)*

8. CORRESPONDENCE
   - 8.1 Letter cc'd to the OBWB from the Shuswap Watershed Council re: resources needed to prevent invasive mussels *(page 34)*

9. NEXT MEETING
   - 9.1 The next meeting of the Okanagan Basin Water Board will be **Tuesday, February 7, 2023, at 10 a.m. ONLINE**

10. ADJOURNMENT

**** NOTE:*** *Meetings of the Okanagan Basin Water Board are open to the public, and only closed for in-camera sessions as set out in the B.C. Community Charter. From time-to-time, the board will be holding its meeting online. If you are interested in attending this online meeting, please contact our Communications Director Corinne Jackson at corinne.jackson@obwb.ca for further details. Thank you for your patience and understanding.*

Okanagan Basin Water Board
Regular meeting
January 10, 2023
Agenda No: 5.1

MINUTES OF A REGULAR MEETING OF THE OKANAGAN BASIN WATER BOARD HELD OCTOBER 4, 2022, ONLINE

OKANAGAN, B.C.

PRESENT

Chair Sue McKortoff	Regional District Okanagan-Similkameen
Vice-Chair Cindy Fortin	Regional District Central Okanagan
Director Victor Cumming	Regional District North Okanagan
Director Rick Fairbairn	Regional District North Okanagan
Alt. Director Christine Fraser	Regional District North Okanagan
Director Bob Hrasko	Water Supply Association of B.C.
Alt. Director Jeremy Fyke	Okanagan Water Stewardship Council (OWSC)

REGRETS

Director to be appointed	Okanagan Nation Alliance (ONA)
Director Colin Basran	Regional District Central Okanagan
Director James Baker	Regional District Central Okanagan
Director Doug Holmes	Regional District Okanagan-Similkameen
Director Rick Knodel	Regional District Okanagan-Similkameen
Caitlyn Glasser	ONA Technical Staff

STAFF

Anna Warwick Sears	Executive Director
Nelson Jatel	Water Stewardship Director
James Littley	Deputy Administrator
Kellie Garcia	Policy and Planning Director
Carolina Restrepo-Tamayo	Office and Grants Manager

1. CALL MEETING TO ORDER

Chair McKortoff called the meeting to order at 10:02 a.m.

Chair McKortoff respectfully acknowledged that the meeting was being held on the traditional and unceded territory of the Syilx Okanagan Nation.

2. INTRODUCTION OF LATE ITEMS

3. APPROVAL OF AGENDA

"THAT the agenda of the regular meeting of the Okanagan Basin Water Board of Oct. 4, 2022 be approved."

CARRIED

4. ADOPTION OF MINUTES

4.1 Minutes of the Regular Meeting of the Okanagan Basin Water Board of Sept. 9, 2022 held at Okanagan Regional Library, downtown Kelowna branch.

"THAT the minutes of the regular meeting of the Okanagan Basin Water Board on Sept. 9, 2022 held at Okanagan Regional Library, downtown Kelowna branch be approved."

CARRIED

5. STAFF REPORTS

5.1 Executive Director Report

Dr. Sears presented the proposed meeting schedule.

"THAT the OBWB adopts the 2023 meeting schedule as presented."
CARRIED

The board was presented with a memo regarding updating signing authority.

"THAT the OBWB adopts the updated signing authority memo as presented."
CARRIED

Directors were told that the forecast is for La Niña conditions to continue through the autumn.

Staff are continuing to work on projects while waiting for the new board to convene in the new year, Dr. Sears added, noting Ms. Garcia is wrapping projects up as she prepares to leave for a position with the Okanagan Collaborative Conservation Program. The OBWB will be looking to hire a replacement in the spring.

"THAT the Executive Director's Report, dated Sept. 28, 2022, be received."
CARRIED

5.2 Policy and Planning Director Report

Ms. Garcia provided an overview of drought conditions in the valley, noting that the watershed rebounded from the previous summer's drought with a cold, wet spring. It wasn't until late July when the Okanagan experienced hot, dry conditions which have created concerns in some streams. With drought conditions continuing, B.C.'s Thompson Okanagan Drought Response Team will continue to meet into October. OBWB staff have been working with the provincial team to create a primer, she added, to help communicate the difference between local water restriction stages, provincial drought levels, and drought ratings from the Canadian Drought Monitor.

Staff are preparing for an upcoming presentation on the OBWB's Source Water Protection Toolkit to B.C.'s Drinking Water Leadership Council this month. The council includes drinking water managers, regulators, medical health officers, policymakers, and engineers.

Additional projects over the last few months have included working with the District of Lake Country and several other partners to develop a Beaver Lake Watershed Management Plan. It is hoped that the plan will be a pilot for other watersheds. And, the CivicInfo BC Planning Guides database has been updated.

"THAT the Policy and Planning Director's Report, dated Sept. 27, 2022, be received."
CARRIED

5.3 Water Stewardship Director Report

Dr. Jatel noted that the last Okanagan Water Stewardship Council meeting included a presentation from Cassidy Rankine on the use of satellite data for watershed management. The Oct. 13 meeting will include Jeffery McDonnell who has retired here from the University of

Saskatchewan's Global Institute for Water Security, presenting on carbon-dating of water and how it can be used to manage water.

The board was also told that work to update Okanagan flood hazard maps should be completed this month. The additional risk map layers will support communities with flood planning and adaptation. Work on hydrometric stations also continued in September with project partners Environment Canada and Okanagan Nation Alliance installing new stations and collecting hydrometric data.

"THAT the Water Stewardship Director's Report, dated Sept. 28, 2022, be received."
CARRIED

5.4 Deputy Administrator Report

Mr. Littley reported on the Pacific NorthWest Economic Region Invasive Species Working Group conference and discussions around significant U.S. federal government funding to states for their invasive mussel inspection programs. Although B.C. and Saskatchewan received some Canadian federal funding, other Western provinces received none. It was also noted that invasive mussels continue to multiply and spread in Lake Manitoba. And South Dakota, which has had mussels for years, has announced a new detection less than 100 km from the Montana border – a concern since two reservoirs in Montana were just this year declared mussel-free after five years of testing negative.

Although B.C.'s inspection program is one of the more robust programs in Canada, it has also seen funding reduced. Provincial staff report that they are continuing to negotiate for more funding and appreciate the OBWB's continued support. They are also still working on an updated economic analysis of a potential infestation in B.C.

In response to questions, it was noted that an infestation can occur with one boat if there is sufficient mussel diversity. Between April 1 and Sept. 28, inspection crews intercepted 12 watercraft with adult mussels coming from Ontario (10), Manitoba (1) and Quebec (1). The watercraft were destined for the Lower Mainland (5), Okanagan (4), Thompson-Nicola (2) and Vancouver Island (1).

An update was given on the milfoil control program, including work on Vaseux Lake where the milfoil crew spent 10 operating days on the lake, removing 30 loads – approximately 87 tons of the weed. The board was updated on the potential purchase of milfoil harvester and agreed to defer the purchase to allow staff to review options.

"THAT the Board defers the purchase of a new milfoil harvester to provide staff time to gather information and make an updated recommendation."
CARRIED

The board was updated on a review of the Sewerage Facilities Assistance Grant Program including a Request for Proposals to hire a contractor to review pertinent information including Okanagan municipal bylaws and variances regarding OBWB's one-hectare bylaw, and provide recommendations.

"THAT the Board authorizes the Executive Director, following a full RFP process, to contract for the services outlined above to support the SFA Program Comprehensive Review to a maximum of $45,000 plus GST."
CARRIED

"THAT the Deputy Administrator's Report, dated Sept. 28, 2022, be received."
CARRIED

5.5 Office and Grants Manager Report

Ms. Restrepo-Tamayo reported on the upcoming "Nk'mip (Osoyoos Lake) - The Heart of the Watershed" water science forum, Oct. 27-29, adding this is the fourth forum with previous events in 2007, 2011 and 2015. The theme of this year's forum is bridging Indigenous and western approaches to knowledge, science and management. Topics include how water is managed, climate change impacts, fisheries restoration, and more, and will be presented by Indigenous and non-Indigenous residents living on both sides of the Canada-U.S. border. A short documentary will be filmed and a follow-up report will be written on the event. Current registrations are at about 150.

"THAT the Office and Grants Manager's Report, dated Sept. 28, 2022, be received."
CARRIED

5.6 Communications Director Report

Ms. Jackson provided an update on the Make Water Work campaign, encouraging outdoor residential water conservation. Given the warm weather and fall being a good time to plant, staff are continuing to work with garden centre partners and the Okanagan Xeriscape Association to promote the Make Water Work Plant Collection and help residents transition to more WaterWise landscapes.

Work on the Don't Move a Mussel campaign has slowed down as water recreation tourism winds down. It was noted that early results suggest stronger engagement with the campaign this year, and most recent water testing suggests no invasive mussels have been introduced into Okanagan waters this summer. Directors were told that a full report would be provided at the next board meeting.

Additional communication projects have included work on the OBWB's Annual Report, a media drought primer and assistance with the Osoyoos Lake Water Science Forum.

"THAT the Communications Director's Report, dated Sept. 28, 2022, be received."
CARRIED

6. NEW & UNFINISHED BUSINESS

6.1 2023 Water Conservation & Quality Improvement Grant Program Memo

Ms. Restrepo noted that the WCQI program provides grants between $3,000 to $30,000. A call for applications is planned for the end of November with proposals due by Feb. 24. Staff will review the applications based on scoring criteria and the annual theme. The board was asked to consider this year's theme: data towards action for community resilience.

"THAT the process and scoring criteria for the grant competition be approved as outlined; AND THAT for the 2023-2024 WCQI grant competition, 10 bonus points will be awarded for projects in any category that apply data toward action for community resilience."
CARRIED

"THAT the WCQI Grant Program memo, dated Sept. 27, 2022, be received."
CARRIED

7. NEXT MEETING

7.1 The next meeting of the Okanagan Basin Water Board will be held Tuesday, January 10, 2022 at 10 a.m., online.

Chair McKortoff thanked board members and staff for all their work and offered best wishes to those retiring and those seeing election again. Directors Baker and Cummings offered similar wishes.

8 ADJOURNMENT

"THAT there being no further business, the regular meeting of the Okanagan Basin Water Board of October 4, 2022 be adjourned at 11:26 a.m."

CARRIED

Certified Correct:		
Chair		**Executive Director**

Okanagan Basin WATER BOARD
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MEMORANDUM

Okanagan Basin Water Board
Regular meeting
January 10, 2023
Agenda No: 7.1

To: OBWB Directors

From: Anna Warwick Sears

Date: January 4, 2023

Subject: Executive Director Report

Board Election

The first item on the agenda is the election of Chair and Vice-Chair for the OBWB. Please reach out to your fellow directors to discuss nominations before the meeting. We are working on a digital "ballot" process if there is more than one nomination for either position. For 2023, Directors and Alternates are:

Regional District of North Okanagan (RDNO): Director Victor Cumming, Director Rick Fairbairn, Director Christine Fraser (alternate: Director Bob Fleming).

Regional District of Central Okanagan (RDCO): Director Charlie Hodge, Director Blair Ireland, Director Wayne Carson (alternates: Director Tom Dyas, Director Patrick Van Minsel, Director Kevin Kraft).

Regional District of Okanagan-Similkameen (RDOS): Director Sue McKortoff, Director Doug Holmes, Director Rick Knodel (alternates: Director Adrienne Fedrigo, Director Subrina Monteith, Director Matt Taylor).

Water Management Appointments: Mr. Bob Hrasko - Water Supply Association of BC (alternate: TBD), Mr. Scott Boswell – Okanagan Water Stewardship Council (alternate: Dr. Jeremy Fyke). Okanagan Nation Alliance (director and alternate: TBD).

Board Meetings

The OBWB approved the 2023 meeting schedule in October 2022. I have attached it for your reference, and we will send out calendar invitations to save the dates for the remainder of the year. I will work with the OBWB Chair and Vice-Chair to plan which of these are in-person, or online.

Board Training

Over the next two board meetings, staff will make presentations on the main OBWB program areas. At our January meeting, I will make a presentation reviewing OBWB governance, and James Littley, Deputy Administrator, will cover the Sewerage Facilities Assistance grant program and the Milfoil Control program. In February, Nelson Jatel, Water Stewardship Director, will cover the Water Management Program, Corinne Jackson, Communications Director, will give an overview of OBWB's communication initiatives, and Carolina Restrepo-Tamayo, Office and Grants Manager, will go over the OBWB's Water Conservation and Quality Improvement Grants Program.

I am also interested and available to meet with new OBWB directors and alternates, to answer questions and go into further detail. Please let me know if you would like this.

For a general background of Okanagan water issues, I recommend that board directors watch (or re-watch, *it's so good*…) the River Film we created with the International Joint Commission in 2017. The 38-minute film is available here. We are in the process of developing a follow-up to this film as a short documentary covering the 2022 Osoyoos Lake Water Science Forum.

B.C. Water Policy Consultations

Since the last OBWB meeting in October, I have participated in two different consultations with B.C. government staff. The first, on November 18, was a workshop on the new B.C. Flood Strategy (available here, and see attached summary). This is an ambitious and forward-thinking document that was heavily influenced by the dramatic floods of November 2021. All aspects of the strategy are important, but the ones that the OBWB is, or could be, most directly involved with are:

Action 1.1: Work with other levels of government to advance flood maps to better inform flood construction levels and development decisions.

Action 3.1: Enhance flood forecasting capabilities and early warning systems; and

Actions 4.1 – 4.4: regarding enhancing investments in flood avoidance, flood accommodation; flood protection, and community-led retreat.

I also attended a workshop in Vancouver on the BC Watershed Security Strategy and Fund (see information here), where provincial staff presented their "What We Heard" report and sought further details on what priorities for the strategy should be. The engagement process uncovered the following key themes emphasizing the importance of:

- Reconciliation, climate change and governance
- Creating a culture of one water: Encompassing cultural, social, economic and environmental systems
- Understanding water and watersheds, including watershed assessment and risk, adaptive management and knowledge systems
- Working together on watershed governance: The need for local approaches, integration across sectors, policy and legislation, and compliance and enforcement
- Stewarding watersheds: The importance of source water protection, land water links, water for agriculture, water conservation, watershed restoration, fish and healthy aquatic ecosystems
- Building capacity and funding watersheds: Developing internal and external resourcing capacity and providing funding for watersheds

The next step for the Watershed Security Strategy and Fund is the release of an Intentions Paper, which will be informed by the public engagement to date and will include proposed actions for the Watershed Security Strategy. The lead staff for the strategy are from B.C. Ministry of Water, Land, and Resource Stewardship, and I was impressed by the caliber of the individuals working on the plan.

As for all the provincial planning processes, the actual outcomes will depend on how the strategies are implemented. Many of the most persistent problems are a result of legislative conflicts and lack of internal resourcing, and these are some of the most challenging to solve. Most of the OBWB's letters to government have focused on these two problem areas – across a number of topics.

Water Indicators – preliminary pilot

In 2022, the Okanagan Water Stewardship Council recommended that the OBWB look into developing indicators for Okanagan water. This is a challenging task, with failed initiatives littering the B.C. landscape. Typically, one report will be created, providing a set of indicators, but the labor and expense of creating the report has the end result of the indicators not being ongoing in future years. This leads to a set of snapshots over time, which don't have the same value of tracking trends through the years. To be really successful, it is best to base the indicators on data that are collected regularly and over a long period.

The best long-term data that we have for Okanagan water are from our water quality database, collected by Heather Larratt and colleagues (Larratt Aquatics) for water purveyors and the B.C. Ministry of Environment, and the observed weather data collected by Environment Canada. We also have access to calculated inflow volumes to Okanagan Lake. I have asked Larratt Aquatics to develop a set of potential water quality indicators showing how lake water quality is changing over time. I am hoping to get an intern to develop indicators from the weather and inflows data showing how the patterns of precipitation and temperature are changing over time. Ideally, all of these indicators will be programmed into an app that will reside on the OBWB's website, that can be easily updated as the data are updated.

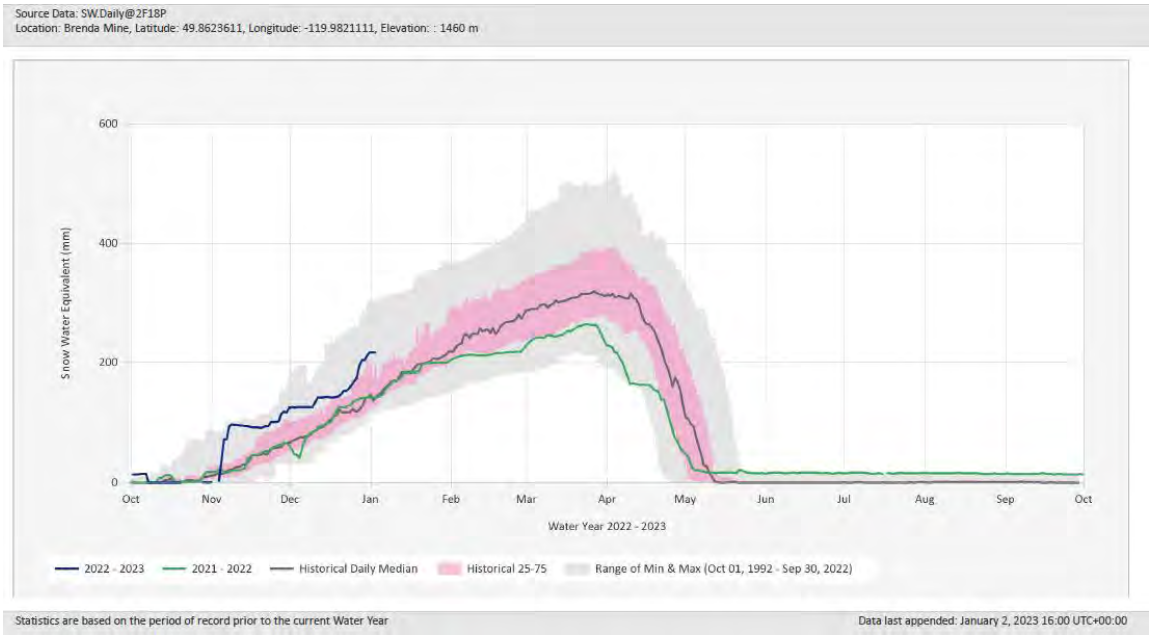
Weather Report

I am sorry to report that the Mission Creek Snow Pillow (elevation 1780m) had a technical problem this year, and will not be operational until it is repaired in the summer. This is very unfortunate, as Mission Creek provides 25 – 30% of the water to the Okanagan Basin, and we rely heavily on the snow pillow measurements to predict potential flooding and water shortages related to snowpack volume. The B.C. River Forecast Centre will be adding more manual snow survey measurements to partly compensate for the loss of the snow pillow information, but there will inevitably be a loss of accuracy for inflow modeling. The OBWB created an excellent short film on snow pillows and snow surveys (here) – using footage from the 2017 River Film. The other two snow pillows we use are Brenda Mines and Silver Star.

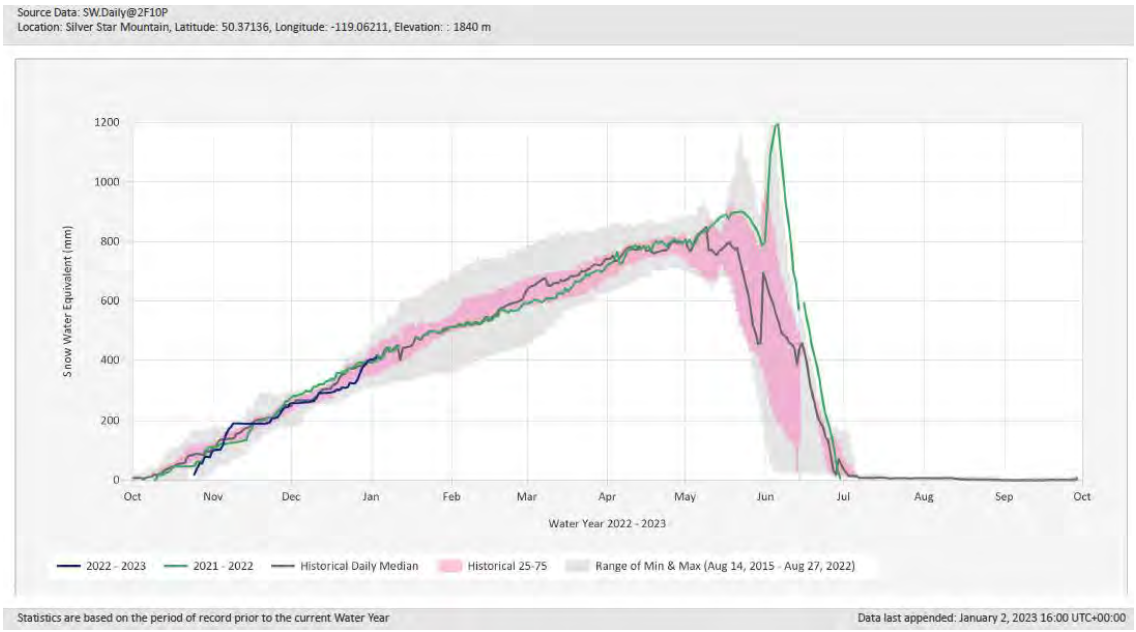
The BC River Forecast Centre releases monthly snow reports, giving their best estimate of snow volumes, beginning January 10th, the day of the OBWB meeting. I will report out verbally at the meeting if the report is posted by then. Based on the limited data we have right now, it looks like we are beginning the year with above average snow at Brenda Mine, and about average snow at Silver Star. Note that the Silver Star record is more erratic looking because they have only been collecting data in this location since 2015.

Environment Canada's seasonal forecast provides an "equal chance" for either above or below normal temperature or precipitation, but the U.S. NOAA Climate Prediction Center forecasts continued above-normal precipitation and below-normal temperature for the remainder of the winter – consistent with the continued La Niña ocean conditions in the Pacific. La Niña is expected to transition to neutral conditions by March 2023.

Brenda Mine snow pillow – elevation 1460 m. Current year given in dark blue.



Silver Star snow pillow – elevation 1840 m. Current year given in dark blue.



Okanagan Basin Water Board
Regular meeting
January 10, 2023
Agenda No: 7.1.1

Board Meeting Schedule for 2023

Month	Date	Location	Notes
January	Tuesday, Jan 10	ONLINE or RDCO TBD, Kelowna	Election of Chair & Vice Chair Shifted to second Tuesday to avoid conflicts with holiday schedules
February	Tuesday, Feb 7	ONLINE or RDCO TBD, Kelowna	
March	Tuesday, March 7	ONLINE or RDOS TBD, Penticton	
April	Tuesday, April 4	ONLINE or RDNO TBD, Coldstream	WCQI grant approvals
May	Tuesday, May 2	ONLINE or RDCO TBD, Kelowna	Joint OBWB/Stewardship Council meeting
June	Tuesday, June 6	ONLINE or RDOS TBD, Penticton	Adopt audited financial statements
July	Tuesday, July 4	**Cancelled**	Avoiding day after Canada Day STAT
August	Tuesday, August 1	ONLINE or RDNO TBD, Coldstream	
September	**Friday**, September 8	ONLINE or TBD location in Kelowna	Annual Public Meeting/OBWB regular meeting
October	Tuesday, October 3	ONLINE or RDOS TBD, Penticton	
November	Tuesday, November 7	ONLINE or RDCO TBD, Kelowna	First opportunity to adopt 2024-25 OBWB budget
December	Tuesday, December 5	ONLINE or RDCO TBD, Kelowna	Adopt 2024-25 OBWB Budget

TBD = To be determined.

From Flood Risk to Resilience in B.C.

Intentions Paper Summary

Okanagan Basin Water Board
Regular meeting
January 10, 2023
Agenda No: 7.1.2

Indigenous Peoples and Flooding

First Nations have been disproportionately impacted by flood events in B.C. and have not always received appropriate funding and capacity to reduce flood impacts on their communities. To reverse damage and move forwards with reconciliation, First Nations' needs, values, and worldviews should be incorporated in flood management decisions. Reconciliation also means greater attention paid to environmental sustainability issues, and ecosystem-based approaches that realise the interconnectedness of water and the land. These also relate directly to many Indigenous rights. It is time for conventional planning and design practices for flood control to be better reconciled with Indigenous priorities, knowledge, and wisdom to achieve flood resilience.

The wisdom of Indigenous peoples - who have always viewed environmental sustainability as inseparable from economic stability and public health issues - is increasingly understood, embraced, and reflected in decision-making. The rights of Indigenous peoples and their traditional ways are protected on our pathway to reconciliation.

There is a strong need for respectful, reciprocal sharing of information and data to balance Western Science with Indigenous ways of knowing. The knowledge, practices, and values of First Nations - which are complex and deeply contextual – needs to be better respected alongside Western science to better understand flood risks.

Vision and Outcomes

Vision

Together, we are leaders in innovative, holistic flood risk management, enhancing B.C.'s flood resilience for the 21st century.

Enhanced Public Safety

Communities are built/rebuilt and managed to allow "safe flooding" to prevent and minimize risk to public safety and public health, including death, injury, stress and social disruption caused by events.

Economic Stability

Provincial and local economies and critical infrastructure absorb flood shocks with less economic disruption and property damage and public investments in flood resilient infrastructure realize a high cost/benefit return.

Environmental Sustainability

Natural floodplains and green infrastructure provide a wide range of valued ecosystem services, including flood regulation, fish and wildlife habitat, clean water, open space amenities, recreation opportunities, and spiritual benefits.

Sendai Framework for Disaster Risk Reduction

The proposed strategic approach to developing B.C.'s Flood Strategy is anchored in the United Nation's Sendai Framework for Disaster Risk Reduction. It is based on 4 priorities:

1. Understanding disaster risk.
2. Strengthening disaster risk governance to manage disaster risk.
3. Investing in disaster risk reduction for resilience.
4. Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation, and reconstruction.

The Need for a B.C. Flood Strategy

3 Focus Areas

Provincial government mandates recognise the need for a modern B.C. Flood Strategy with a focus on the following:

Future-Proofing Our Ability to Respond to Crises: Both Canada and B.C. have signed the UN Sendai Framework for Disaster Risk Reduction, which includes four priorities related to knowledge, governance, funding, and disaster preparedness.

Preparing for Climate Change: Due to climate change:

- River flooding is expected to be at least 10-20% more frequent
- Local floods from heavy downpours are expected to be 40% more frequent
- Sea level rise of 1m or more is expected by the end of this century

Meaningful Indigenous Reconciliation: The B.C government also acknowledges the need for increased rights recognition, self-determination, and partnerships with B.C.'s Indigenous peoples, and is committed to bringing all provincial laws into harmony with the *Declaration on the Rights of Indigenous Peoples Act (Declaration Act)*.

Program Area 1:

Understanding Flood Risks

Action 1.1: Work with other levels of government to advance flood maps to better inform flood construction levels and development decisions

Coordinating a provincial flood mapping program (including First Nations) to apply consistent standards and quality control processes. This will inform decisions on infrastructure investment and emergency management.

Action 1.2: Conduct a province-wide flood risk assessment

Creating an assessment based on available province-wide data would fill a gap in understanding and provide a more consistent provincial picture of flood risk.

Action 1.3: Strengthen dike regulatory programs

Developing a publicly accessible, central repository of up-to-date dike information will support:

- Regulatory and compliance
- Emergency planning, response and recovery
- Risk assessments
- Increased awareness

Action 1.4: Increase public and business awareness of flood risks

Ensuring that flood risk information is transparent, easily accessible and understandable will increase public safety and empower informed decision making.

Action 1.5: Support applied research and training

Complementing applied research, training and education with Indigenous ways of knowing will support increased awareness and capacity in flood resilience.

Program Area 2:

Strengthening Flood Risk Governance

Action 2.1: Improve First Nations' involvement in flood resilience decision-making

Strengthening disaster risk governance is a crucial part of reconciliation between Indigenous peoples and other governments and needs to prioritise Indigenous self-determination and the interests of First Nations.

Action 2.2: Review and modernise provincial legislation, regulations, and policies to address flood risks

Modernising legislation requires careful work to better address the growing risks, liabilities, and changing public values.

Action 2.3: Review and modernise provincial technical guidance

Ongoing improvements to technical guidance and standards are critical to enabling innovative and resilient flood infrastructure planning, design, and construction practices.

"The Sto:Lo worldview is similar to other First Nations – a worldview centred on water bodies – that's what needs to be incorporated into a B.C. Flood Strategy – A First Nations way of thinking for the future."

- Tyrone McNeil, Sto:Lo Tribal Chief

Program Area 3:

Enhancing Flood Preparedness, Response, and Recovery

Action 3.1: Enhance flood forecasting capabilities and early warning systems

Continuous improvements in flood modelling and forecasting services across B.C. ensures accurate, up to date flood advisories for the public and emergency responders to enable flood resilience.

Action 3.2: Enhance flood preparedness by developing and exercising flood emergency response plans at multiple scales

Business continuity planning (planning, testing, and validating plans) enables critical services to remain functional despite a disaster or disruption and enhances overall preparedness.

Action 3.3: Enhance emergency response activities

Ensuring an immediate and well-coordinated emergency response requires local governments, First Nations, and the Province to co-develop strategies for future resilience.

Action 3.4: Enhance pre-disaster recovery planning and post-disaster recovery, including "Build Back Better"

Defining community-based flood recovery blueprints before a flood disaster occurs is critical to improve the balance between reactive and proactive approaches.

Program Area 4:

Investing for Flood Resilience

Action 4.1: Enhance investments in flood avoidance

Designing future funding programs to support flood avoidance concepts, pilots, and approaches to enhance resilience while promoting environmental stewardship and deterring new flood exposure.

Action 4.2: Enhance investments in flood accommodation

Enhancing investment programs to reflect modern priorities including measures around tsunamis, communities with no means to relocate, flood proofing, and flood insurance coverage.

Action 4.3: Enhance investments in flood protection

Enhancing investments to reflect modern priorities include seeking co-benefits for flood protection, emphasising green infrastructure, ensuring archaeological resources and sites of Indigenous cultural significance are identified and protected, to name a few.

Action 4.4: Enhance investment in community-led retreat

Purposeful and proactive movement of people and infrastructure out of known high-risk floodplains requires collaboration between all levels of government, affected communities, and First Nations.

Flood Avoidance

Flood Accommodation

Flood Protection

Flood Retreat

Principles for Strategic Flood Resilience

Proactive: Flood resilience must be built before major floods occur–not reactively in response to flood disasters–to proactively protect people and property and enable nature-based solutions.

Place-Based: Decisions to reduce flood risks must be based on the best available place-based data and knowledge and reflect regional, watershed-based approaches including upstream and downstream connections. No single solution will work for every flood, requiring flexibility and diversity in solutions.

Accountable: Organisations and individuals must take responsibility for their decisions and actions to build greater flood resilience over time.

Collaborative: Reducing flood risks requires effective collaboration across diverse roles and responsibilities at all levels of governments (including First Nations), and include industries, businesses, communities, landowners, and the public.

Transparent: Flood resilience decisions and flood risk data must be open and accessible to all, enabling full, accurate, clear information on flood risks–including uncertainties.

Fair: Programs to reduce flood risk must be equitable and accessible to all people at risk–including Indigenous peoples–and must apply a GBA+ lens addressing race, culture, gender, sex, age, income, and ability, while respecting human rights and the rule of law.

Holistic: A holistic approach to flood management is interdisciplinary, balanced, and Indigenous-centred, and integrates across a network of relations within watersheds, ecosystems, land, and society.

Pre-Contact
First Nations' oral histories shape seasonal migration and other practices to co-exist with flooding

Pre-Contact
Inland and coast flood events

1894
Largest Fraser River flood on record post-contact

1948
Large flood on the Fraser River causes dike failures, Federal-Provincial Fraser River Board created

1948
Columbia River Flood destroys Vanport, Oregon

1953
Dike Maintenance Act passed to address dike failure issues

1961
Columbia River Treaty signed and helps address international food risks

1972
North Thompson River breaches dikes near Kamloops

1973
Agricultural Land Reserve legislation protects many floodplains from development

1974
B.C. launches Floodplain Development Control Program and floodplain mapping

Next Steps

Impact of having a flood strategy and collaboration

There is a need for collective leadership in innovative, holistic flood risk management to enhance B.C.'s flood resilience. By shifting to more proactive measures in collaboration with partners, we will be better prepared to reduce the number of people affected by flooding, while securing future growth and prosperity, avoiding cultural asset destruction, and improving our shared environments for the benefit of all. The Strategy will be future focused and meet government mandates: support communities to prepare for climate impacts; future-proof our province-wide ability to respond to flood crises; protect land and water; and invest in the infrastructure of tomorrow.

Call to Action

It is important that we hear from you:
BCFloodStrategy@gov.bc.ca

Together, we will define B.C.'s flood resilient future, then act accordingly to make that vision a reality. Thank you in advance for your feedback–it is highly valued and appreciated.

"When we take care of the land and water, the land and water take care of us."

- siwɬkʷ (water) Declaration

1990
Nooksack River Flood (Sumas Prairie, Abbotsford)

2003
Province removed from floodplain subdivision and bylaw approval process

2010
Major flood in Kingcome, central coast

2013
Severe floods in Calgary, AB and Toronto, ON

2015
National Disaster Mitigation Program created

2017
Okanagan and Interior floods

2018
B.C. adopts UN Sendai Framework for Disaster Risk Reduction

2018
Grand Forks flood

2019
Eastern Canada floods in Quebec, Ontario, New Brunswick

2020
Floods in Cowichan, Sooke, Port Coquitlam, Cariboo, Chilcotin, Nazko, Nicola, Kootenays, Kelowna, Vernon, Shuswap, McBride

2021
Atmospheric River flooding across Southern and South Central B.C. (Nooksack River, Abbotsford, Merritt, Princeton, Coquihalla Highway, Highway 8, Highway 1)

2022
Future Federal and Provincial flood programs and strategies evolve

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MEMORANDUM

Okanagan Basin Water Board
Regular meeting
Jan. 10, 2023
Agenda No: 7.2

To: OBWB Directors

From: James Littley

Date: Dec. 12, 2022

Subject: Deputy Administrator Report

Invasive Mussel Prevention and Preparation

While we continue to lobby the provincial and federal governments for more action to prevent the introduction of invasive mussels into B.C., it is critical that we provide information and tools for local governments to understand the risks and prepare to mitigate damages and liabilities should these mussels arrive. To assist in this preparation, we are creating an *Invasive Mussel Vulnerability Assessment Toolkit for Local Governments.* The content for the toolkit will be provided by a leading expert on invasive mussels in North America, Renata Claudi of RNT Consulting. Ms. Claudi is an environmental scientist with over 25 years of experience, including 15 years in the electric power industry where she developed the mussel mitigation program for Ontario's largest electricity utility. Ms. Claudi has provided mussel expertise internationally on the various aspects of alien species invasions, including their economic impact, protection of assets, selection of appropriate control options, and installation of these control options. Her clients have included Environment Canada, Transport Canada, Ontario Power Generation, U.S. Army Corps of Engineers, U.S. Bureau of Reclamation, California Department of Water Resources, U.S. Patent Office, Brazilian and Spanish Utilities.

The toolkit will include the following sections:

1. Intro to Invasive mussels and the effects on infrastructure (Why use this toolkit?)
2. Parameters for invasive mussel survival (Is my water at risk?)
3. Determining infrastructure vulnerability (How do I assess my systems?)
4. Options for risk mitigation and adaptation (How do I protect my systems and operations?)
5. Prioritizing actions for mitigation and adaptation (What are my next steps?)

While RNT consulting will provide the content and technical information for the toolkit, we will complete the layout and design locally, before having a draft reviewed by facilities managers who are intended to be the end-users. We anticipate having a final toolkit ready for the summer of 2023, coinciding with the start of our annual Don't Move A Mussel campaign. The toolkit will be publicly available.

Amphibious Milfoil Harvester RFP

At the October 4th Board meeting, I reported that a plan to replace our two aging milfoil harvesters with new similar machines should be delayed as we had been made aware of a new amphibious milfoil harvester which has the capability to address many development and water-level issues that we face with our current machines. The amphibious harvester is capable of launching itself, moving up the beach to drop weeds on dry land, and positioning the operators cab low on the machine to move under the bridge in Osoyoos. As it is

driven by propellers on the stern and not paddlewheels, it is also capable of fitting into narrower areas between docks and at marinas. The machine only uses one conveyor belt to collect and offload the weeds, leaving it with more capacity to hold weeds while making it shorter in length than our current harvesters, and reducing mechanical components prone to breakdown. An amphibious harvester would solve many of the significant issues with access and lake levels that we are increasingly facing today, including some costs associated with those issues.

While an amphibious machine would address significant operational issues, the costs to purchase and potentially import it to Canada (if provided by an international manufacturer) may be more than was projected in the recently approved 2023-2027 Milfoil Equipment Asset Replacement Plan. The Asset Plan approved the purchase of two conventional milfoil harvesters at a combined cost of $500,000 in the next year, not including GST and shipping. In November, we ran a public request for Expressions of Interest to supply an amphibious harvester to ensure that we were aware of any manufacturers that currently make them, or who would be willing to design and build the machine to meet our needs. We received only one expression of interest from a German manufacturer of an amphibious harvester.

Despite a potential difference in cost, *I recommend that OBWB continue to pursue the option to procure an amphibious harvester* as the lifespan of the equipment is expected to be a minimum of 30 years, and the accessibility issues we currently face will likely continue to get worse. An amphibious harvester may also negate the need to explore other on-water storage options for the cut weeds, such as a shedding and storage barge. Because the machine can drive on land, it can deposit the weeds farther onshore, without blocking public access to beaches and boat launches.

The next step is to release a Request for Proposals (RFP) for the supply of an amphibious milfoil harvester, or for two conventional harvesters, as previously approved. The RFP **does not commit the board to a purchase,** but will provide us with specific terms and costs for various options. The RFP could be structured to solicit proposals for both amphibious harvesters and conventional harvesters, and even for proposals to work with a manufacturer to develop a custom amphibious harvester, similar to how we procure our rototillers.

Should the board ultimately decide to purchase an amphibious harvester, it may require us to defer the purchase of a second harvester, a replacement staff car, and a replacement milfoil boat, beyond the current 5-year asset replacement plan. There would be no implications to the tax requisition before 2027, and likely no change after that as the purchase would be made from the existing milfoil equipment reserve fund, and the deferment on other equipment would offset the cost.

> ***Recommendation** THAT staff issue a Request for Proposals for the supply of an amphibious milfoil harvester, with options for a conventional milfoil harvester, and following that process, bring a recommendation to the board for approval.*

Sewerage Facilities Assistance RFP

We are continuing to work on the review of the Sewerage Facilities Assistance (SFA) Grants program with a technical advisory committee including staff from several provincial ministries, Interior Health, local governments and Westbank First Nation. The SFA program is unique, and the deliverables from the RFP were varied and will likely require more than one type of specialist to complete. The three deliverables are:

1. A map set showing existing sewered areas, and parcels/lots that were subdivided prior to 1978 which are not currently sewered. This would allow us to estimate the remaining eligible areas under the current terms of the SFA program.
2. A review of local government bylaws to audit for consistency with the one-hectare policy.
3. An audit of the past five years of subdivisions and variances to identify non-compliance with the one-ha policy; a requirement to receive funding.

A major part of the program review will be to strengthen and clarify the terms of the one-ha policy. Okanagan taxpayers have spent more than $75 million through the SFA program since 1983 to ensure high quality sewage treatment, to mitigate septic pollution, and to recover the quality of our shared water. It is imperative that all local governments benefitting from this shared resource apply the rules in a consistent and fair manner.

The review will seek to identify all instances of non-compliance and bylaws which are contrary to the spirit of the policy. The OBWB's policy mirrors that of the B.C. Ministry of Municipal Affairs, Infrastructure Finance Division, and staff there are also participating in the review of any non-compliant local government policies. Compliance with the one-ha policy must be confirmed annually by the local government CAO in each eligible community.

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MEMORANDUM

Okanagan Basin Water Board
Regular meeting
January 10, 2023
Agenda No: 7.3

To: OBWB Directors

From: Nelson R. Jatel

Date: December 16, 2022

Subject: Water Stewardship Director's Report

January marks the start of a new Board term for the OBWB. As OBWB Water Stewardship Director, I manage the Okanagan Water Stewardship Council, Hydrometric Monitoring Service, and a portfolio of projects in addition to policy, financial planning, and administrative support. My monthly report highlights updates and current information about the council and several of our ongoing projects.

Okanagan Water Stewardship Council

The council is the Water Board's standing technical advisory body and meets monthly to discuss relevant and time-sensitive watershed issues, supporting information sharing and knowledge building. Two volunteers provide the current leadership: Council Chair Mr. **Scott Boswell** (Okanagan Collaborative Conservation Program) and Vice-chair Dr. **Jeremy Fyke** (Environment and Climate Change Canada). The Council has a two-year term and develops a work plan at the start of each time. The new Council term starts on April 1, 2023.

The Council's 2021-23 work plan includes the designation of sub-committees to support and respond to Board requests/needs and advance priorities the council sets. This term, the council has seven committees: *Policy, Water and Climate, Alluvial Fans, Wetlands, Agriculture Water, Water Quality,* and *Source Protection* (a permanent standing committee). The committee chairs meet monthly to discuss progress and cross-cutting issues, inform the guest speaker selection process, and discuss council leadership and membership.

Coordinating water learning: guest speakers

The regular monthly Council meeting includes a guest speaker as part of the agenda to support shared learning about contemporary water issues in the Okanagan. Recent guest speakers included **Dr. Jeffery McDonnell**, Professor of Hydrology and Associate Director of the Global Institute for Water Security at the University of Saskatchewan, who presented on October 13. His work focuses on rainfall-runoff processes and tracing the catchment water cycle. Over the past 30 years, McDonnell's work has focused on field-based runoff process descriptions worldwide, leading to new measurement techniques and a new understanding of the dominant controls of rainfall-runoff behaviour. He is the author of over 350 papers and co-edited Elsevier text "isotope Tracers in Catchment Hydrology." He presented a talk titled "*Watershed Runoff Processes: Things we still don't know*."

Ms. Natasha Lukey, Okanagan Nation Alliance Fisheries Department (ONAFD) biologist, presented on December 8. Presentation highlights included information about the significant in-stream fisheries restoration works that had taken place throughout 2022. These works involved adding several riffle structures (shallower, faster-moving sections of a stream) in the Okanagan River, enhancements to

the Okanagan River Restoration Initiative and improvements to drop structures to improve fish passage. Pacific salmon, including Columbia River Sockeye and Chinook, are now entering Okanagan Lake to spawn, an occurrence that hasn't happened for over 50 years due to engineered dams and structures that restricted fish passage.

I have scheduled the next council meeting for Thursday, Jan. 12, with lunch served at noon and the discussion from 1 to 4 pm. Our guest speaker is Mr. **Bob Hrasko**, Manager of the Black Mountain Irrigation District (and OBWB director), who will present on polyfluoroalkyl substances (PFAS), an emerging class of contaminants for drinking water. PFAS are a group of over 4,700 human-made substances used as surfactants, lubricants, and repellents (for dirt, water, and grease). They can be found in certain firefighting foams, textiles (including carpets, furniture, and clothing), cosmetics, and food packaging materials. Adverse environmental and health effects have been observed for well-studied PFAS, and they have been shown to pose a risk to the Canadian environment. Board members are encouraged to attend.

OBWB Hydrometric Service

Hydrometric information is fundamental to water planning, operation, and management. Several activities that depend on hydrometric data include water resource planning, water licensing, regulation development and control, assessment of the impact of operational policy, allocation of flow, fish management, environmental flow and critical flow management, and contingency planning.

Pearson Creek (08NM172). Activated on May 21, 2021.
Photo courtesy ECCC.

The Okanagan saw a steep decline in active hydrometric stations beginning in the early 1980s, dropping from a high of 154 stations to 24 stations in the early 2000s. The author of a report commissioned jointly by OBWB and the Province of B.C., identified that the current reduced levels of hydrometric stations are inadequate for Okanagan's operational and water security needs (Dobson 2008). The goal of the current OBWB hydrometric service, which started in 2021, is to develop and manage an adequate hydrometric information network for the valley. Information about the OBWB's hydrometric service is available online at https://www.obwb.ca/hydrometrics/.

Our partners, including Environment and Climate Change Canada and ONA staff, were busy in 2022 installing new hydrometric stations and managing collected data. Data collected by OBWB/ONA hydrometric stations is posted on the B.C. government water data websites, supplying public access to the data. The province's real-time water data tool is available online:

https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-science-data/water-data-tools/real-time-water-data-reporting.

The Technical Advisory Committee for the OBWB hydrometric service met on November 18. We discussed activities from the past year, including a review of the new stations, and started planning for the upcoming year. A new water management tool to integrate real-time hydrometric information with the data from our environmental flow project developed over the past six years is under construction and is scheduled for launch in March 2023. An updated map of hydrometric stations is attached to my report. Also, an example of real-time hydrometric station data (week of December 10) collected by the ONAFD team and published by the province are attached.

PROJECTS

Okanagan Lake Regulation System (OLRS) project

The OLRS project provides an essential contextual framework for many projects I am currently working on. Information about the Okanagan Lake Water Management plan includes 18 studies and is available online: https://www.obwb.ca/lakelevelmanagement/ .

Okanagan Hydrology Models

Hydrology models provide vital information to Band, provincial and local decision-makers. For example, during the run-up to flood season in the Okanagan, the high-flow hydrology models support decisions about how much water to release from Okanagan Lake at the Penticton dam, considering flood, drought, and fish flows. From a local government and Band perspective, this model provides critical information about infrastructure maintenance and replacement, including the appropriate sizing of culverts and bridges and flood management tools. Moreover, local government and Band government decision support are enhanced with the new low-flow Raven hydrology model providing essential information for the management of new and aging infrastructure and balancing several considerations for reservoir storage management, agricultural irrigation demand management, and fishery management.

Recently, I have been working on making our hydrology models, both for flood and low-flow conditions, more accessible and available to the public, governments, and researchers. Recently, we published two of our models on GitHub, an open-source programming sharing website, and the accompanying datasets on Google Cloud. I will post our other high-flow hydrology models and the newly developed flood risk model this year. OBWB's hydrometric service, in part, provides the necessary information to run these complicated distributed hydrology models.

Okanagan Flood Risk Mapping project

Flood hazard maps are critical tools that can help us show potential risks with associated damages and mitigate flood impacts. The OBWB completed Okanagan flood hazard maps in 2020 and identified areas that may be covered by water or show where the water reaches during a specific flood event. The OBWB flood risk mapping project builds on these, as well as a previously completed flood and debris-flow risk mapping project by the Okanagan Nation Alliance (ONA). It will increase the resolution and granularity of previous flood risk maps.

The Okanagan Flood Risk Mapping project will produce digital maps of vulnerable lakeshore areas to support flood planning and adaptation, customized to support all levels of government. A draft report was provided in late November, with project completion and completed risk map layers for the Okanagan to be delivered in early 2023. This project will update the flood depth and hazard maps with

risk and vulnerability information. This risk assessment will consider social, cultural, economic, and environmental consequences to communities during a potential flood event. Flood maps offer many advantages to Okanagan communities. And they:

- Provide a foundation for land use planning and government decision-making.
- Support emergency management practices.
- Enable flood mitigation activities like adding dikes or other infrastructure, including modernizing the Okanagan Lake regulation system. This project is one of 18 identified priority research areas within the OLRS study. OLRS Study link: https://www.obwb.ca/lakelevelmanagement/
- Empower citizens and property owners to make informed decisions about flood risk.

The new flood map layers will be added to the OBWB's flood website: www.OkanaganFloodStory.ca.

The value of agricultural water uses in the Okanagan Valley

Climate change is increasing the demand for irrigation water in the Okanagan Valley as growing seasons become longer and warmer and agriculturally suitable regions shift northward and into higher elevations. At the same time, unprecedented population growth is generating concern about how future access to water will be prioritized and protected in this already water-stressed region. Agriculture has played an undeniable role in shaping the Okanagan culture, landscape, and economy. Still, researchers and practitioners have not comprehensively evaluated agricultural water use's benefits and costs.

This collaborative project is led by several partners, including all three Okanagan regional districts, the University of British Columbia – Okanagan, and the BC Tree Fruit Association. Information about policy to protect access to water for the farming sector, prioritize infrastructure and ecological restoration investments, and address anxieties around future water supply will be developed. This project will address the following three questions:

1. What is the economic value of irrigated agriculture to the Okanagan region (direct: e.g. increased yield, higher value crops; indirect: e.g. food processing, Agri-tourism; induced: e.g. business investment; external: aesthetics, climate moderation, culture, fire breaks)?
2. What is the opportunity /cost of using water for irrigation in the Okanagan (e.g. infrastructure construction and maintenance, alternative water uses no longer available, riparian ecosystem damage)?
3. How can future water allocations and investments in irrigation infrastructure maximize the contribution that irrigated agriculture makes to the Okanagan economy, given forecasts for climate change-induced expansion of irrigated areas, and how are climate change impacts distributed among the different communities and sectors of the valley?

Okanagan Water Quality monitoring initiative

What are the effects of Okanagan urban centers on Okanagan drinking water? In the Okanagan, an upstream community's urban discharge water contributes to downstream communities' drinking water. A coordinated monitoring network is lacking to assess and improve water quality in urban environments. As a pilot initiative, this project seeks to partner with Okanagan community governments to develop water quality monitoring stations on three streams that flow through Okanagan urban environments. Data from standardized monitoring stations will help track water quality changes over time, find areas of concern, track water quality changes resulting from land management decisions and support ecosystem management policy.

Okanagan Groundwater

Groundwater monitoring wells are essential to support our understanding of water supply throughout the Okanagan. In partnership with B.C. Ministry of Forestry, we identified several Okanagan aquifers as critical for water supply or quality yet to be monitored. To address this gap in groundwater monitoring and information, this year, two new monitoring wells are under construction, including a well in Deep Creek (near Vernon) and one west of Osoyoos.

Okanagan Wetland Strategy – Mapping data

As part of efforts to increase Okanagan water data availability, I have been working on adding the Okanagan Wetland Phase I data to our public server. The original 9,456 wetland polygons identified during Phase 1 of the Wetland Management Strategy Project were manually refined using GIS and R software. The refinement of the wetland database included adjusting wetland boundaries to eliminate duplicate records and overlapping polygons. In addition, wetlands that we examined for overlaps were assigned a wetland class based on aerial imagery interpretation and information available within the existing wetland database. The refined Okanagan Wetland Database contains 9,005 wetlands. Of these, 923 have a new wetland class assigned to them. All the Phase 1 Wetland Management Strategy shape files are now available.

Okanagan Basin
WATER BOARD

Active Hydrometric Stations in the Okanagan

Station Operators

- Black Mountain Irrigation District
- City of Kelowna
- City of Penticton
- City of West Kelowna
- District of Lake Country
- District of Summerland
- District of Peachland
- Province of BC
- Glenmore Ellison Improvement District
- Lower Nipit Improvement District
- Okanagan Nation Alliance
- Okanagan Basin Water Board
- Regional District of North Okanagan
- Regional District of the South Okanagan
- US Geological Survey
- Water Survey of Canada

Watershed with Active OBWB / ONA Station

Watershed with Active WSC Station

Manually Operated Station

Real-Time Station

Water Level Measurement (periodic)

E-12 Watershed Label*

Watershed Bounday

Canada / US border

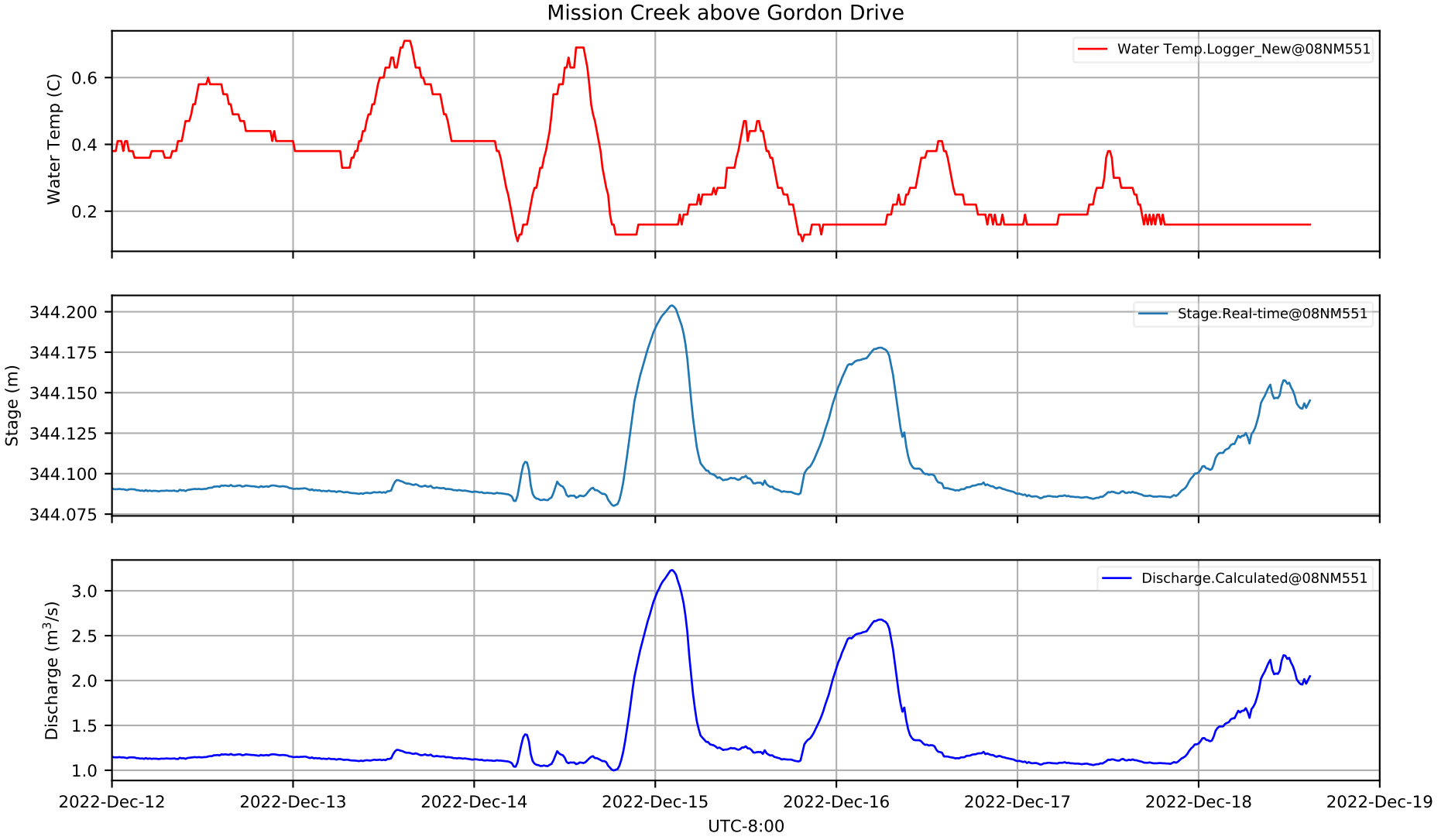
- Active is defined as a hydrometric station that is currently in operation as of the date this map was produced.
- Station Number IDs as provided by the WSC, the OBWB, or assigned.
- All available metadata is provided in a supporting database and specific details about map production is provided by Associated (2021)
- Watershed labelling consistent with the Okanagan Water Supply and Demand Project (Summit 2010)

Date: November 2022

N

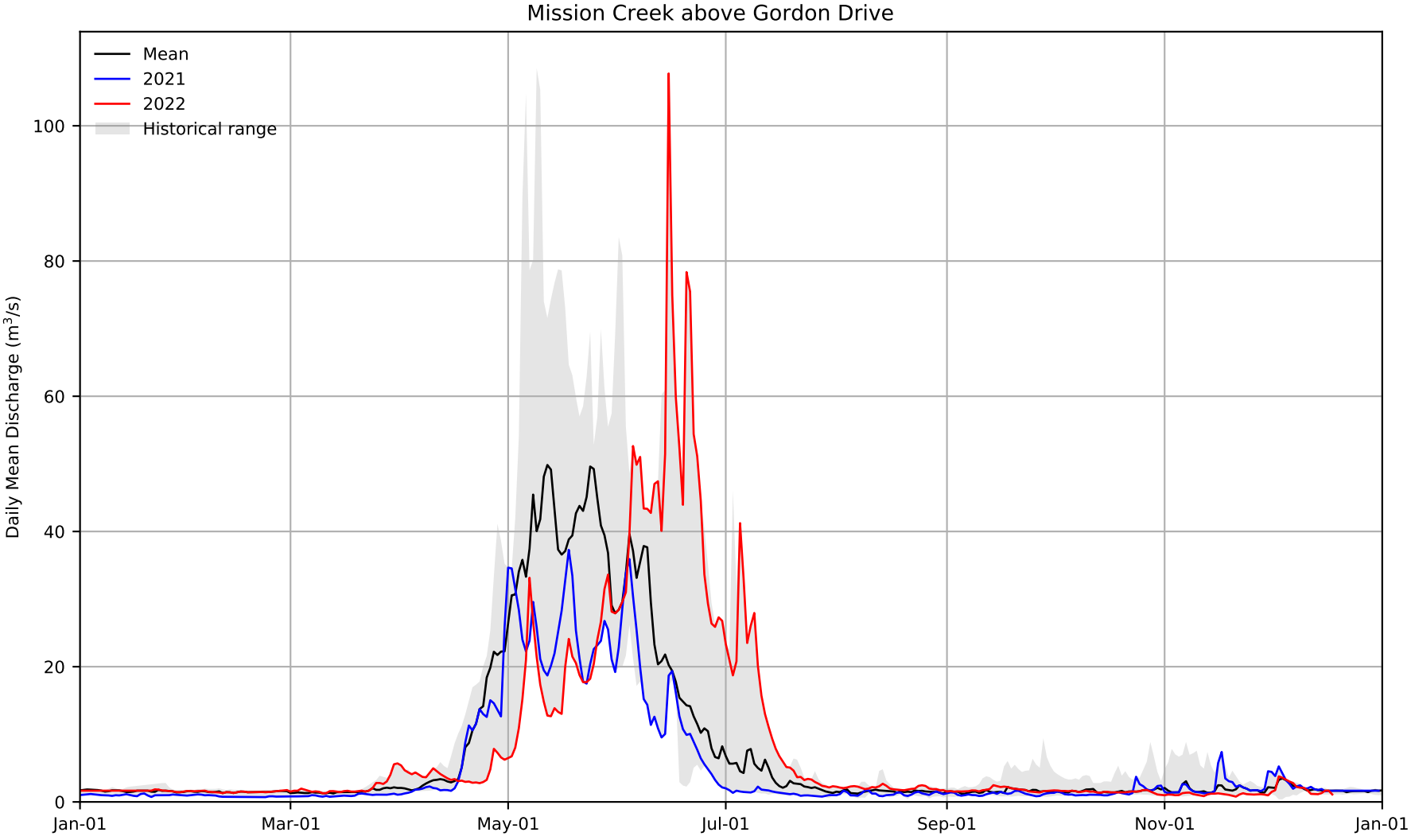
0 5 10 15 20 25

Kilometers



Recent Stage and Discharge
Site: 08NM551
Date created: 2022-12-19 09:05:16

Disclaimer: The near real-time information presented in this report is preliminary and has been generated automatically with limited verification and review.
The information should be used with caution. Subsequent quality assurance and verification procedures may result in differences between the currently displayed data and final published data.
Discharge values are based on the active rating curve and may be inaccurate. Discharge values will be revised for final publication following detailed review.



Historical Mean Daily Discharge
Site: 08NM551
Date created: 2022-12-19 09:05:16

Disclaimer: The near real-time information presented in this report is preliminary and has been generated automatically with limited verification and review.
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MEMORANDUM

Okanagan Basin Water Board
Regular meeting
January 10, 2023
Agenda No: 7.4

To: OBWB Directors

From: Carolina Restrepo Tamayo

Date: December 14th, 2022

Subject: Office and Grants Manager Report

Water Conservation and Quality Improvement (WCQI) Grants 2023

The call for proposals for the WCQI program opened for applications on December 1st. With an annual funding pool of $350,000, applicants that meet the program criteria can receive between $3,000 and $30,000 for water projects within the Okanagan Basin. The theme for this year, as approved by the board in October, is "from data to action for community resilience," encouraging the use of open data developed by the OBWB and others to address Okanagan water challenges. Data available includes: hydrometric (water level and flow), floodplain topographic LiDAR and nearshore topobathymetric LiDAR mapping, and water quality data. This year's application deadline is 4 p.m., Feb. 24, 2023.

Osoyoos Lake Water Science Forum:

After two years of planning, the forum took place in Osoyoos, Oct. 27 to 29. This was the fourth edition of the conference, with previous ones held in 2007, 2011 and 2015. The 2022 edition was different from the previous ones as the goal was to bridge Indigenous and western approaches to knowledge, science and management. The forum was presented by the Okanagan Basin Water Board, the International Joint Commission, and the Okanagan Nation Alliance, with many other partners. It was hosted by the Osoyoos Indian Band and the Town of Osoyoos.

The event was facilitated by Kelly Terbasket and Aaron Derrickson using the Four Food Chiefs framework. Talks about Traditional Ecological Knowledge and western science were balanced during the event that featured field trips to Spotted Lake (Kɬilɬ'xʷ) and the Nk'Mip Desert Cultural Centre. Receptions at the Nk'Mip centre and the Osoyoos Museum Society featuring the Waterways Exhibition were also hosted during the event. Keynote presentations and sessions covered topics such as Osoyoos Lake Management, Climate Change, Watershed Influences, Responsibility Planning, Fisheries Restoration and Water Quality.

The event was a success in terms of the goal defined but also in terms of attendance and local participation. We plan to replicate the methodology used for this conference at future ones. More information about the conference can be found here: https://www.obwb.ca/olwsf/

OLWSF 2022 at a glance:

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MEMORANDUM

Okanagan Basin Water Board
Regular meeting
January 10, 2023
Agenda No: 7.5

To: OBWB Directors

From: Corinne Jackson

Date: January 4, 2023

Subject: Communications Director Report

"Make Water Work" and "Don't Move A Mussel" 2021

The OBWB's Okanagan WaterWise outreach and education program includes two campaigns: Make Water Work (MWW) aimed at tackling the 2nd largest use of water in the Okanagan – residential outdoor use, and Don't Move A Mussel (DMM) to help raise awareness and protect Okanagan waters against an introduction of invasive zebra and quagga mussels. Both campaigns, coincidentally, run May to October – when outdoor water use and outdoor water recreation is highest. This fall and winter, we have been reviewing the campaigns with an eye to improvements in 2023. Wrap-up reports for both campaigns are being finalized and will be provided to directors ahead of next week's board meeting.

Some of the highlights and findings from the 2022 MWW campaign include:

- This year's late start to summer saw a shift in campaign engagement, starting to rise in early June and peaking in August, and then starting to drop in September. (You might recall, warm temperatures didn't hit until late July and then continued with minimal precipitation into October.) Just as weather patterns are shifting and becoming less predictable, so seems the Okanagan's outdoor watering season.
- We welcomed Westbank First Nation and City of West Kelowna as full partners in the campaign, joining local government and utility partners from Armstrong in the north to Osoyoos in the south.
- For the 3rd year, we forwent a public **launch** and invited valley mayors to post Make Water Work **pledge videos** on their social media pages. We then put out a news release to announce the launch with links to the posts. (Several of the videos are on our YouTube channel at https://bit.ly/3h2AGv0.
- A **refreshed** website with bright, fun creative, replicated on other outreach materials. New graphics were also created to highlight the native plants in the *"Make Water Work Plant Collection."* (Samples below.)

- Continued **partnership with retail landscape-related businesses**, with eight Okanagan garden centres promoting the *"Make Water Work Plant Collection,"* and an irrigation retailer promoting WaterWise irrigation.
- Ads on **billboards**, **bus shelters**, **buses**, **TV PSAs** on Global Okanagan, Castanet **digital ads**, **Facebook** & **Instagram ads.**
- A **contest** for two $500 WaterWise yard upgrades.
- A **kit** for partners with a General Info sheet, Tips sheet, social media graphics and text. We also provided MWW branded **gardening gloves** and **bookmarks** with MWW conservation tips, MWW Plant Collection and contest information. MWW **yard stakes** were given for local government and utility partners to use in high-profile WaterWise landscape settings.
- MWW **yard and plant stakes**, bookmarks and **plant lists** were distributed to garden centre and irrigation partners.
- We partnered with Okanagan Xeriscape Association to do **onsite outreach** at garden centre partners, at events, and more.

We have now sent our annual offer of matching funds to Okanagan local governments and utilities in mid-December for participation in the MWW program and will be following up in the new year.

Some of the highlights and findings from the 2022 DMM campaign include:

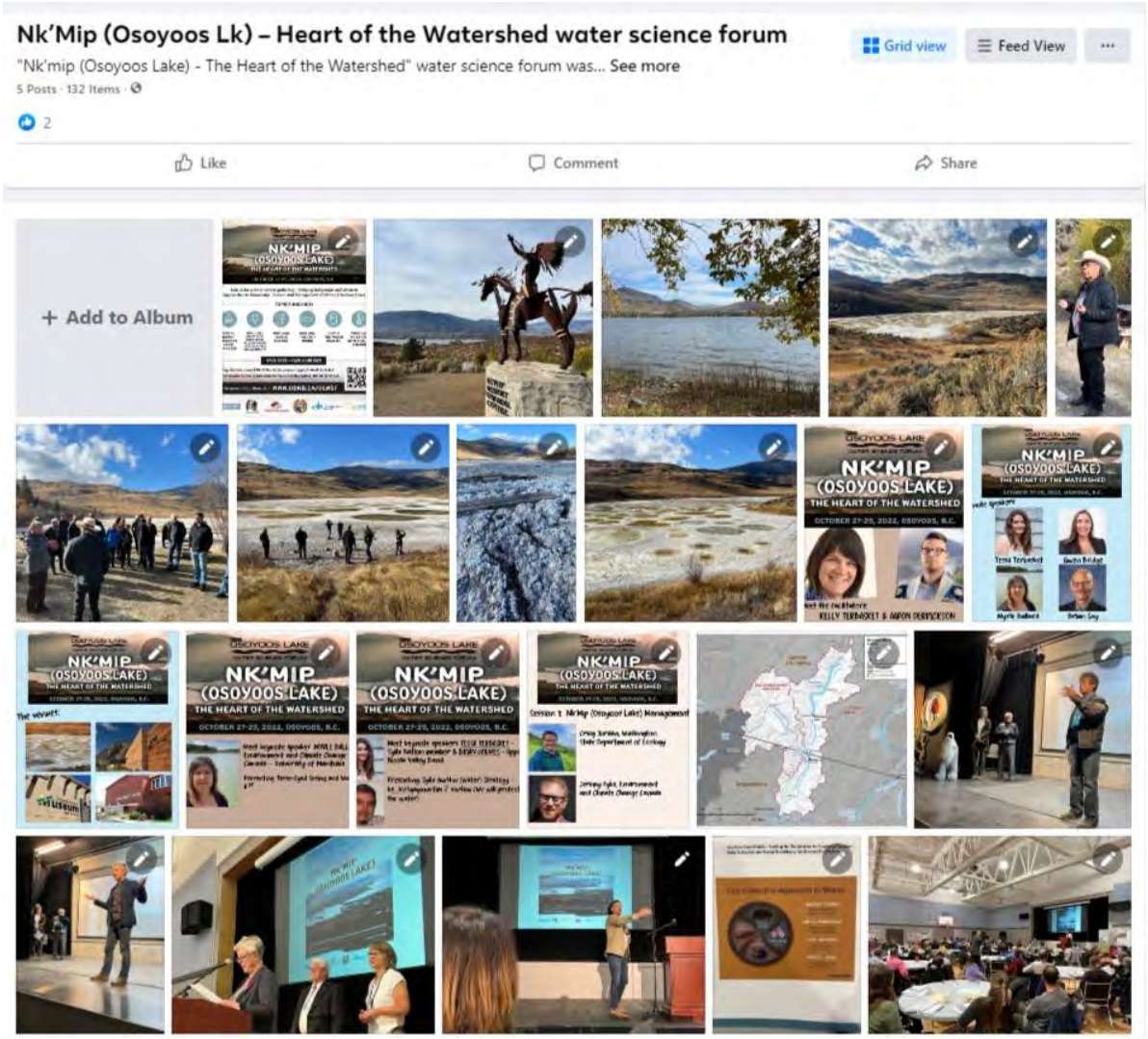
- A **refreshed** website with updated inspection station map, invasive mussels map, eye-catching creative, replicated on other outreach materials.
- Ads on **billboards**, **radio ads**, Castanet **digital ads, Facebook** & **Instagram ads.**
- A **contest** for a Don't Move A Mussel prize pack, including outdoor recreation gear.
- A **kit** for partners with a **General Info sheet**, **Fact sheet**, **rack card** with Clean-Drain-Dry and general mussel information, **posters**, **social media graphics** and text. We also provided DMM branded **muscle shirts**, **smartphone wallets**, selfie **postcards**, and **sandwich boards**. (Poster samples below.)

- We provided funding to Okanagan and Similkameen Invasive Species Society to extend our DMM **onsite outreach** efforts. These efforts included surveying 1,111 watercraft at 18 launches, presented to 116 youth at summer camps, attending eight community events and five farmer's markets - connecting with 3,478 people. They also distributed hard copy DMM materials to 145 businesses and organizations. With additional funding they also collected 148 water samples from 19 locations on

five lakes and deployed substrate monitors at 12 locations on five lakes. All sampling has tested negative for invasive mussels.

<u>Other communication initiatives</u>
In addition to the above, communications support has been provided to a number of projects including the **Osoyoos Lake Water Science Forum** – with a news release, follow-up with B.C. and Washington-based media outlets, assistance with a follow-up short documentary film, and our own social media.

Please find photos and video clips from the event on our Facebook page at https://www.facebook.com/media/set/?set=a.496494902513757&type=3.



A news release was also prepared and sent out announcing the opening of the 2023 OBWB **Water Conservation & Quality Improvement Grant** intake, and promoted on our social media channels.

Work continued with the B.C. government-led **Thompson-Okanagan Drought Response Team** on a drought primer for media and the public, helping communicate the difference between local water utility drought stages, provincial drought levels, and the Canadian Drought Monitor's agricultural drought ratings.

Summary of OBWB-Related News Coverage

Sept. 24	"Okanagan Water Board bracing for the effects of climate change," *Summerland Review, Kelowna Capital News, Salmon Arm Observer, The Golden Star*
Sept. 28	"Xeriscape perennials show its not just about rocks and cacti," *Castanet.net*
Sept. 29	"Amphibious craft eyed for Valley's battle against water weeds," *Kelowna Daily Courier*
Oct. 6	"No invasive mussels added to Okanagan waters," *VernonMatters.ca*
Oct. 12	"Plant now for spring garden colour," *Castanet.net*
Oct. 15	"Summerland votes in Doug Holmes as new mayor," *Castanet.net*
Oct. 15	"Town of Oliver seeks grant for xeriscape garden," *Times Chronicle*
Oct. 18	"Collaborative water science forum to be held discussing health future of Osoyoos Lake," *Castanet.net*
Oct. 18	"Studying the science of Osoyoos Lake," *Penticton Herald*
Oct. 20	"Water forum builds relationships," *Times Chronicle*
Oct. 23	"OBWB talk mussels & drought at final 2022 meeting," *Times Chronicle*
Oct. 26	"Try a new easier fall clean up in the garden," *Castanet.net*
Oct. 28	"Cross-border waterway forum returns to Osoyoos, B.C." *Global Okanagan*
Oct. 28	"Photo panels latest progress in Osoyoos Museum project," *Times Chronicle*
Nov. 2	"syilx people are protecting this miraculous lake," *IndigiNews, Vancouver Sun*
Nov. 3	"Osoyoos water forum starts with Salmon People," *Times Chronicle*
Nov. 4	"IJC plaque on transborder lake cooperation vandalized," *Times Chronicle*
Nov. 6	"CAO updates and Okanagan remains mussel free," *Times Chronicle*
Nov. 9	"Engaging young minds in the garden," *Castanet.net*
Nov. 10	"syilx conservation knowledge at the heart of water forum in swiw̓s," *IndigiNews, Yahoo News*
Nov. 19	"Microplastics are an Okanagan problem too," *Times Chronicle*
Nov. 23	"Choose deer and drought-resistant hedging," *Castanet.net*
Dec. 3	"UBC Okanagan study to investigate where Eurasian watermilfoil occurs in lakes," *Kelowna Capital News, Vernon Morning Star, Penticton Western News*
Dec. 5	"A crucial time to protect kɬúsx̌nítkʷ the heart of syilx lands," *IndigiNews*
Dec. 7	"Don't torture your shrubs, bushes and trees," *Castanet.net*
Dec. 14	"Cold water tactic effective against milfoil in Okanagan Lake," *Castanet.net*

Recent Presentations

Oct. 11	"Collaborative Source Water Protection in the Okanagan Basin," to B.C. Ministry of Health's Drinking Water Leadership Team – Kellie Garcia and Heather Larratt
Oct. 18	"Climate change and Okanagan Lake Level Management," to the Kelowna Roundtable – Anna Warwick Sears
Nov. 3	"Climate change and Okanagan Lake Level Management," to UBCO Sustainability class – Anna Warwick Sears
Nov. 4	"Climate change and Okanagan Lake Level Management," to the Water Supply Association of B.C. – Anna Warwick Sears
Dec. 7	"Current and future Okanagan water management and research priorities," to Kelowna Ogopogo Rotary Club – Nelson Jatel

c/o Fraser Basin Council
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Okanagan Basin Water Board
Regular meeting
January 10, 2023
Agenda No: 8.1

Hon. Josie Osborne
BC Minister of Land, Water and Resource Stewardship
Room 310 Parliament Buildings
Victoria, BC. V8V 1X4
Sent by e-mail to LWRS.Minister@gov.bc.ca

15 November 2022

Re: New measures and more resources needed to prevent an invasion of Zebra or Quagga Mussels in British Columbia

Dear Minister Osborne,

I am writing on behalf of the Shuswap Watershed Council as a follow up to our meeting at the UBCM Convention in September. Thank you again for taking the time to meet with me, and for listening to our concerns about the risk and consequences of invasive mussels arriving in British Columbia. I would like to re-iterate our top four calls-to-action for your Ministry to better protect the Shuswap – and all of BC – from invasive mussels.

As you know, the Shuswap watershed is at high risk of an invasion of Zebra and Quagga Mussels (ZQM, i.e., *Dreissenidae* sp.) due to boat traffic into the watershed. The primary vector for invasive mussels is watercraft. The Shuswap is a top destination for boaters, and that greatly increases the chance that infested watercraft will arrive in our waters. Fortunately, early detection monitoring has indicated that the Shuswap is still invasive-mussel free. This is due, in part, to the preventative work by the Province and regional organizations such as the Shuswap Watershed Council, and others. However, every year infested watercraft arrive at our provincial borders[1]. The threat of invasive mussels will never subside, and more action by the Province is needed to curb this significant threat to our water security.

We are calling for greater resourcing for the province's Invasive Mussel Defence Program (IMDP). While it could take just a single watercraft from out-of-province infested with invasive mussels launching into BC waters, it is of utmost importance that the IMDP be expanded such that all routes into BC from Alberta and the USA have a watercraft inspection and decontamination station. The IMDP is the first line of defense to protect BC's waters, but in 2022 there were only six permanent stations and two roving stations set up around the provincial border[2]. This presents a significant gap in the defense, as travellers with watercraft can enter BC via unchecked routes or outside of inspection station operating hours.

[1] The IMDP Summer Status Report (dated August 22, 2022) reported that 10 watercraft entering BC were confirmed to have adult invasive mussels.
[2] Since 2020, the watercraft inspection and decontamination stations have declined significantly; in 2019 and 2020, the IMDP had a peak level of 12 inspection stations.

Secondly, we urge the Province to introduce 'pull-the-plug' legislation, which would require all watercraft to have their drain plugs removed prior to travelling on BC roads. We understand that the Province is already considering this, as part of updates to the *Wildlife Act*.

Thirdly, the Provincial ZQM Early Detection and Rapid Response Plan for British Columbia (published February 2015) should be reviewed and updated. New methods for eradicating ZQM from waterbodies should be researched and considered for use in BC. Additionally, we believe there would be great value in carrying out a mock response exercise on a BC lake, including rehearsing the process of quarantining watercraft as a key containment measure.

Lastly, we urge you to advocate for new containment measures in Manitoba and Ontario which already have ZQM infestations. The federal Department of Fisheries and Oceans needs to take strong action and fully enact the *Aquatic Invasive Species Regulation*. Our prevention efforts in the west must be met with robust containment measures in eastern and central Canada. Watercraft should not be able to leave watersheds known to have ZQM infestations without being inspected, decontaminated, and issued a quarantine period if necessary.

We have previously shared our concerns, and these calls-to-action, with the Minister of Environment's office, and with your federal counterparts, on several occasions. Furthermore, we are not alone in our concerns: several other organizations in BC including the Shuswap Waterfront Owners Association, Okanagan Basin Water Board, and regional invasive species societies share these concerns and priorities for action. Unfortunately, we have not been satisfied with the responses we have received from provincial and federal offices to-date.

Considering all that is at risk in the Shuswap, and the projected on-going costs and lost revenue associated with an infestation of Zebra or Quagga Mussels in BC – which is conservatively estimated to be $42 million[3] annually to BC tax-payers in the Okanagan alone – we call upon your Ministry to provide more resources and implement new measures to protect BC waters from invasive Zebra & Quagga Mussels.

Sincerely,

Jay Simpson
Chair, Shuswap Watershed Council
Director, Columbia Shuswap Regional District Area 'F' North Shuswap
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[3] Source: Limiting the Spread of Aquatic Invasive Species into the Okanagan. Larratt Aquatic Consulting. 2013. Available online https://www.obwb.ca/fileadmin/docs/2013_obwb_ais_report.pdf. See Section 5.2.

CC:

- Hon. George Heyman, Minister of Environment & Climate Change Strategy
- Shuswap MLA: Greg Kyllo
- North Okanagan – Shuswap MP and Associate Shadow Minister for Fisheries, Oceans and the Coast Guard: Mel Arnold
- Provincial Critic for Land, Water and Resource Stewardship: Lorne Doerkson
- Columbia Shuswap Regional District Chair: Kevin Flynn
- Regional District of North Okanagan Chair: Kevin Acton
- Shuswap Mayors: Alan Harrison (Salmon Arm), Colleen Anderson (Sicamous), David Lepsoe (Chase)
- Okanagan Basin Water Board Chair: Sue McKortoff
- Shuswap Waterfront Owners Association

About the Shuswap Watershed Council

The Shuswap Watershed Council (SWC) was established in 2014 as a watershed-based partnership of several organizations with an interest in or responsibility for protecting water quality. There are up to 22 members that represent three regional districts, two municipalities, the Secwepemc Nation, three provincial government agencies, and Shuswap communities. The SWC is a collaborative, non-regulatory group that focuses on strategic initiatives to protect, maintain, and enhance water quality and promote safe recreation in the Shuswap. The SWC works alongside organizations that have regulatory roles in managing the Shuswap watershed, complementing their work and carefully avoiding duplication.