

## Okanagan Basin Water Board Meeting Agenda



**DATE:** Tuesday, Oct. 2, 2018

**TIME:** 10 a.m. to 2 p.m.

**PLACE:** Regional District of North Okanagan  
9848 Aberdeen Rd., Coldstream, B.C.

**1. CALL MEETING TO ORDER**

1.1 Acknowledgement of First Nations Traditional Territory

**2. INTRODUCTION OF LATE ITEMS**

**3. APPROVAL OF AGENDA**

**4. ADOPTION OF MINUTES**

4.1 Minutes of the Regular Meeting of the Okanagan Basin Water Board of Sept. 7, 2018 at Regional District of Central Okanagan ([page 1](#))

**5. CHAIR'S REPORT**

**6. STAFF REPORTS**

6.1 Executive Director Report ([page 6](#))

6.2 Water Stewardship Director Report ([page 11](#))

6.3 Operations and Grants Manager Report ([page 15](#))

6.4 Communications Director Report ([page 16](#))

6.5 Policy and Planning Specialist Report ([page 20](#))

6.5.1 Powerpoint presentation on the Drought Triggers Recommendations

**7. NEW AND UNFINISHED BUSINESS**

7.1 Invasive Mussel Memo ([page 23](#))

([resolution recommended](#))

**8. IN-CAMERA**

8.1 In-camera session (under sec. 90(1)(k) of the Community Charter)

**9. RISE & REPORT FROM IN-CAMERA**

**10. NEXT MEETING**

10.1 The next meeting of the Okanagan Basin Water Board will be **Wednesday**, December 12, 2018 at 10 a.m. at Regional District of Central Okanagan in Kelowna.

**11. ADJOURNMENT**



**MINUTES OF A REGULAR MEETING OF THE OKANAGAN BASIN WATER BOARD  
HELD SEPTEMBER 7, 2018, AT THE REGIONAL DISTRICT OF CENTRAL OKANAGAN  
1450 KLO RD., KELOWNA, B.C.**

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**PRESENT**

Chair Tracy Gray	Regional District Central Okanagan
Vice-chair Juliette Cunningham	Regional District North Okanagan
Director Doug Dirk	Regional District North Okanagan
Director Rick Fairbairn	Regional District North Okanagan
Director Doug Findlater	Regional District Central Okanagan
Director Cindy Fortin	Regional District Central Okanagan
Director Ron Hovanes	Regional District Okanagan-Similkameen
Director Sue McKortoff	Regional District Okanagan-Similkameen
Director Peter Waterman	Regional District Okanagan-Similkameen
Director Lisa Wilson	Okanagan Nation Alliance
Alt. Director Scott Boswell	Okanagan Water Stewardship Council

**REGRETS**

Director Toby Pike	Water Supply Association of BC
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**STAFF**

Anna Warwick Sears	Executive Director
Nelson Jatel	Water Stewardship Director
James Littley	Operations and Grants Manager
Corinne Jackson	Communications Director
Kellie Garcia	Policy and Planning Specialist

**1. CALL MEETING TO ORDER**

Chair Gray called the meeting to order at 10 a.m.

Chair Gray respectfully acknowledged that the meeting was being held on the traditional territory of Okanagan Nation.

**2. INTRODUCTION OF LATE ITEMS**

10.2 Correspondence from Shuswap Watershed Council to MP Arnold and cc'ed to OBWB re: federal funding for invasive mussel prevention

**3. APPROVAL OF AGENDA**

***"THAT the agenda of the regular meeting of the Okanagan Basin Water Board of Sept. 7, 2018 be approved as amended."***

**CARRIED**

**4. ADOPTION OF MINUTES**

4.1 Minutes of the Regular Meeting of the Okanagan Basin Water Board of Aug. 10, 2018 at the Okanagan Regional Library, Downtown Kelowna branch

***“THAT the minutes of the regular meeting of the Okanagan Basin Water Board of Aug. 10, 2018 at the Okanagan Regional Library, Downtown Kelowna branch be approved.”***  
**CARRIED**

**5. CHAIR’S REPORT**

7.1 Board Chair Report

Chair Gray explained she may need to leave early and that the Vice-Chair would take over chairing duties. The agenda was reorganized to ensure the chair was in attendance for a couple of items.

**6. NEW AND UNFINISHED BUSINESS**

6.1 Proposed OBWB budget for 2019-20 - Budget Features Memo

Dr. Sears presented the proposed 2019-20 budget to the board noting that there has been no increase in the tax requisition since 2011-12.

Dir. Wilson entered the meeting at 10:05 a.m..

Dir. Cunningham noted that it is a responsible budget.

Dir. Dirk entered the meeting at 10:07 a.m.

Dir. Findlater agreed with Dir. Cunningham but noted that there won’t be the same growth in assessments in future years and to be aware this will affect future budgets. Dir. Gray cautioned the same. Dr. Sears responded that the Sewage Facilities Assistance (SFA) Grants program costs will go up if there’s a substantial increase in applications to the program and if interests rates rise but we have a reserve fund to help buffer those increases. The Milfoil program will continue to fund equipment replacement through our equipment reserve – slowly over time. The Water Management Program is funded in part through grants, and we are beginning to include administration fees to the applications to ensure project costs are covered.

In response to additional questions, Dr. Sears noted that staff are reviewing the SFA program and the number of eligible pre-1977 properties in the valley to determine demands on the program in future years.

***“THAT the 2019-20 budget be accepted as presented.”***  
**CARRIED**

**7. IN-CAMERA**

7.1 In-camera session (under sec. 90(2)(b) of the Community Charter)

A resolution was presented that the board go into closed meeting at 10:24 a.m.

***“THAT the board meeting be closed under sec. 90 (2)(b) of the Community Charter.”***  
**CARRIED**

Came out of in-camera at 10:35 a.m.

**8. STAFF REPORTS**

8.1 Executive Director Report

Dr. Sears reviewed the upcoming board meeting schedule in light of the October municipal elections. As such, there will be no November meeting and the December meeting will be rescheduled to Wed. Dec. 12.

***“THAT the December 2018 regular meeting of the Okanagan Basin Water Board be rescheduled to Wednesday, December 12, 2018.”***

**CARRIED**

***“THAT the Okanagan Basin Water Board 2019 meeting schedule be accepted as presented.”***

**CARRIED**

Dr. Sears provided an update on the LiDAR project and the unfortunate death of the pilot and mapping technician on Aug. 1 when the plane they were using for the project crashed on its way home to Alberta. The board asked staff to send a letter of condolence to the families through the company contracted to do the work.

***“THAT the Okanagan Basin Water Board send a letter of condolence to Eagle Mapping, to pass along our sympathies to the company and the families of the deceased.”***

**CARRIED**

Dir. McKortoff noted that the International Joint Commission’s Osoyoos Lake Board of Control has its annual public meeting on Sept. 17 in Oroville. Flooding and the effects of high water and drought on Osoyoos Lake will be discussed, she added.

***“THAT the Executive Director’s Report, dated August 29, 2018, be received.”***

**CARRIED**

## 8.2 Water Stewardship Director Report

Mr. Jatel spoke to the upcoming council meeting and a presentation by Freshwater Alliance’s Christine Mettler on their Water Sustainability and the City project. The council will also review a workplan for the new term and an exit survey completed by outgoing council members.

Okanagan Nation Alliance (ONA) has a new lead on the Environmental Flow Needs (EFN) project. Work on calculating Okanagan EFNs should be complete in the next six months. Planning for the October EFN conference is continuing with early-bird registration ending Sept. 14. The conference will showcase Okanagan EFN work conducted by OBWB, ONA and the province.

A project to conduct hydrology modeling of several tributaries into Okanagan mainstem lakes, linking surface and groundwater flow with the Okanagan Water Demand Models, is underway. An RFP for the project closed on Monday and a committee is now reviewing applications. The project is funded through federal Gas Tax funding.

***“THAT the Water Stewardship Director’s report, dated August 28, 2018, be received.”***

**CARRIED**

## 8.3 Operations and Grants Manager Report

Mr. Littley provided an update on the Sewerage Facilities Assistance (SFA) Grant program, noting that between 2007 and 2017, the annual SFA payment has declined from more than \$2.17 mill. to less than \$1.56 mill. as interest rates have declined and some large grants have expired. He added that because federal and provincial grants are now available and can be

used with the OBWB grants, it is possible that there will be new applications. In all, the OBWB has provided \$65 mill. towards sewer infrastructure in the Okanagan since it began in 1975.

Harvesting of invasive milfoil is now complete for the summer and the milfoil crew are now preparing for the upcoming rototilling season. In response to a question about milfoil in Vaseaux Lake, Mr. Littley noted that the OBWB has received a federal permit to do weed control and RDOS has provided a launch site. Staff are now waiting for ONA to complete its review of potential issues working in the area.

With another invasive mussel inspection season almost complete, staff will be reviewing the past year, including what the board has requested of the province and the federal government, and what is being recommended by other various agencies, to determine next steps for the Water Board.

***“THAT the Operations and Grants Manager’s Report, dated August 28, 2018, be received.”***

**CARRIED**

#### 8.4 Communications Director Report

Ms. Jackson reported on efforts to connect a local Okanagan resident with recreational property in the Thompson-Nicola Regional District with officials to erect boat launch signage regarding invasive mussels. There was a discussion about efforts to elevate the mussel issue as a concern with the TNRD. A similar effort, sharing information and efforts to address the issue, was done in the Shuswap with success.

***“THAT the Okanagan Basin Water Board offer to present on the invasive mussel issue to the Thompson-Nicola Regional District.”***

**CARRIED**

The board was provided a synopsis of outreach efforts from Feb. to September 2018, during the term of the Okanagan WaterWise Outreach and Communications Coordinator, Jocelyn Whalen. Outreach included attendance at 36 events and interactions with about 2,400 people, and four classroom presentations which reached about 210 students. In addition to outreach, a new interactive “fishing game” was created to engage young people in water issues which will be used in future years. Chair Gray asked that Ms. Whalen be thanked on behalf of the board.

***“THAT the Communications Director’s Report, dated August 29, 2018, be received.”***

**CARRIED**

#### 8.5 Policy and Planning Specialist Report

Ms. Garcia explained that work to update the Sustainable Water Strategy is ongoing which should be ready to be reviewed and adopted by the new board in the spring. The strategy includes sections to address water quality and quantity, as well as an introductory chapter that speaks to the importance of water, and an implementation/delivering the strategy chapter with action items (e.g. communication, collaboration, water governance, funding).

The board was updated on the drought, and coordination efforts with the province to address the issue. Ms. Garcia noted that staff attended drought calls every two weeks with the province during the summer. The province elevated the Okanagan to Level 2 drought on Aug. 24, especially out of concern for three fish-bearing creeks, Vaseux, Shuttleworth and Middle Vernon, and continued hot, dry conditions. The OBWB responded by putting out its second Drought

Bulletin to water utilities and media to draw attention to the need for conservation. Staff will be working with the province’s Water Sustainability Coordinator to further improve coordination efforts.

In response to questions, directors were told that the drought levels are announced by the province but are based on technical information provided by staff in local areas. The province is also improving how it determines and announces drought levels, understanding that low-water supply may be in a specific watershed rather than an entire region, they were told.

***“THAT the Policy and Planning Specialist’s Report, dated August 28, 2018, be received.”***  
**CARRIED**

**9. CORRESPONDENCE**

9.1 Letter from B.C. Ministry of Energy, Mines and Petroleum Resources to OBWB re: mining activities in Okanagan watersheds

Directors discussed the letter from the province. Dir. Fortin added that she will be addressing the issue with the ministry at the upcoming Union of BC Municipalities convention. Dir. Wilson added that the ONA has had similar issues and has developed a mining policy to try and address it. She invited directors to contact the ONA for more information.

***“THAT the letter from B.C. Ministry of Energy, Mines and Petroleum Resources to OBWB re: mining activities in Okanagan watersheds be received.”***  
**CARRIED**

10.2 Correspondence from Shuswap Watershed Council to North Okanagan-Shuswap MP Mel Arnold and cc’d to OBWB re: federal funding for invasive mussel prevention

***“THAT the letter from Shuswap Watershed Council to North Okanagan-Shuswap MP Mel Arnold and cc’d to OBWB re: federal funding for invasive mussel prevention be received.”***

**CARRIED**

**10. NEXT MEETING**

10.1 The next meeting of the Okanagan Basin Water Board will be Tuesday, October 2, 2018 at 10 a.m. at Regional District of North Okanagan in Coldstream.

**10. ADJOURNMENT**

***“THAT there being no further business, the regular meeting of the Okanagan Basin Water Board of September 7, 2018 be adjourned at 11:49 a.m.”***

**CARRIED**

Certified Correct:		
Chair		Executive Director

## MEMORANDUM

Okanagan Basin Water Board  
Regular meeting  
October 2, 2018  
Agenda No: 6.1

File No. 0550.04

To: OBWB Directors  
From: Anna Warwick Sears  
Date: September 26, 2018  
Subject: Executive Director Report

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### **LiDAR Capture and Flood Mapping**

My last update on the LiDAR capture was on Thursday, September 20<sup>th</sup>. At that time the LiDAR and orthophoto (aerial photography) capture was still not complete, due to the overcast weather. We are working with the project managers at GeoBC to prioritize the lower elevation watershed where the primary flood mapping will take place. The contractor is working to retrieve the data that was on the equipment in the downed plane, but depending on its condition, may need to fly that section again. The original news story is here: <https://calgaryherald.com/news/local-news/were-like-family-calgary-company-mourning-pilot-killed-in-kananaskis-plane-crash>.

We've sent a letter of condolence to the president of Eagle Mapping, the company contracted to conduct the mapping, with a request to forward our sympathies to the families of the pilot, Daniel Thibeault, and technician, Levi VandenBrink. Their obituaries are here:

<http://vancouver.sunandprovince.remembering.ca/obituary/levi-vandenbrink-1994-2018-1067380554>

<http://www.centrerousseau.com/avis-de-deces/thibeault-daniel>

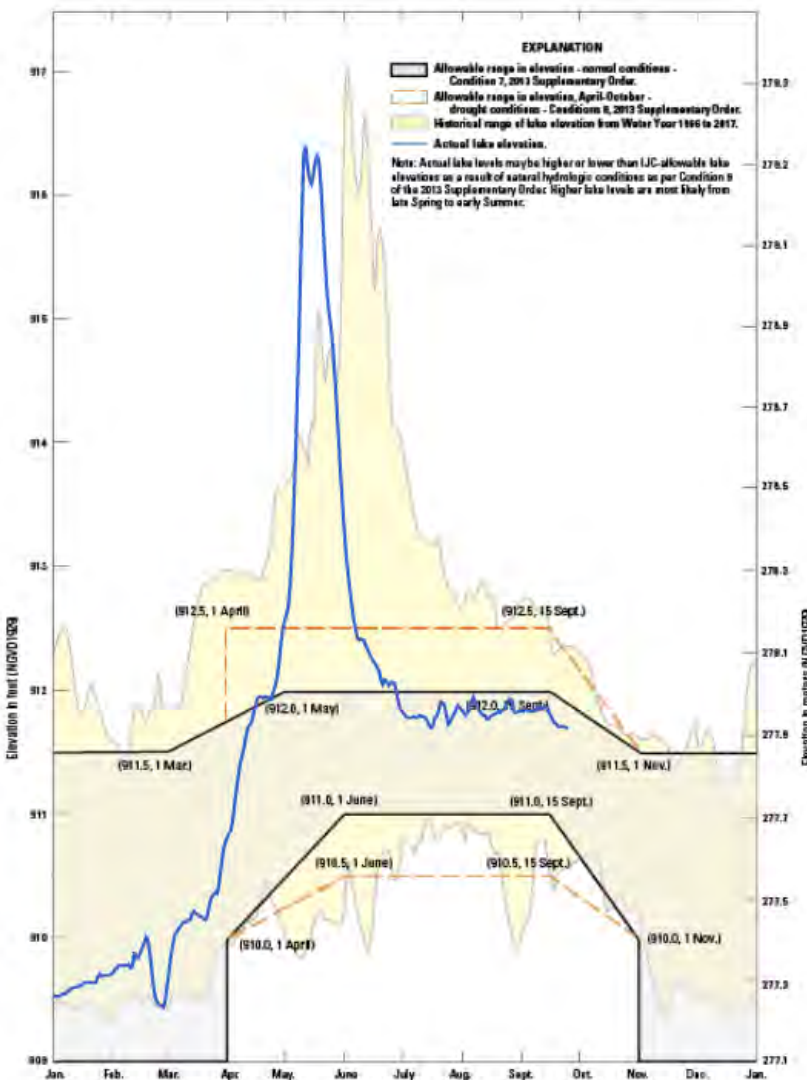
Meanwhile, the next step is to work with the three Okanagan regional districts to develop and issue an RFP for the hydrology modeling portion of the flood mapping. The RDCO will issue the RFP and hold the contract, the RDOS and RDNO will contribute funds from their grants, and FLNRO will support project management. For a good primer on flood mapping, here is the short video from the Government of Alberta again (I provided last month): <https://youtu.be/bNasdKVeivk>

### **International Osoyoos Lake Board of Control meeting**

The International Joint Commission (IJC)'s Osoyoos Board of Control met on September 18<sup>th</sup>, in Oroville. It was attended by two IJC commissioners, Rich Moy (appointed by Pres. Obama) and Gordon Walker (appointed by Prime Minister Harper). It is anticipated that there will be new commissioners appointed this year on both sides. The IJC is looking for partners on climate adaptation pilots for their transboundary waters (including Osoyoos Lake), and expressed interest in working with the OBWB on this. Although climate adaptation is not explicitly part of the mandate of the Board of Control, both flooding and drought affect lake levels. I will be following up with Ottawa IJC staff and the secretaries from the Board of Control.

181002\_ED Report\_memo

At the public meeting in Oroville, there was significant concern about the flooding on Osoyoos Lake in 2018, and many questions about whether dam operations on Okanagan Lake were contributing to the crisis. Brian Symonds (retired Director of Water Stewardship for FLNRO) and Al Josephy (WA Dept of Ecology) presented and explained the complicated hydrology in a number of ways. According to Josephy, Zosel Dam can “pass” any amount of water released from Okanagan Lake. The challenge this year was the large amount of snow melt and rain coming into the river channel south of Penticton (more than 65 m<sup>3</sup>/s at its height between May 1 and June 1, when the Okanagan dam releases were brought down to less than 40 m<sup>3</sup>/s). This flow coincided with extremely high flows in the Similkameen, which interfered with the ability for water to flow south out of the lake. The last time lake levels exceeded 916 feet elevation was in 1972, the last time there were comparable flows in the Similkameen.

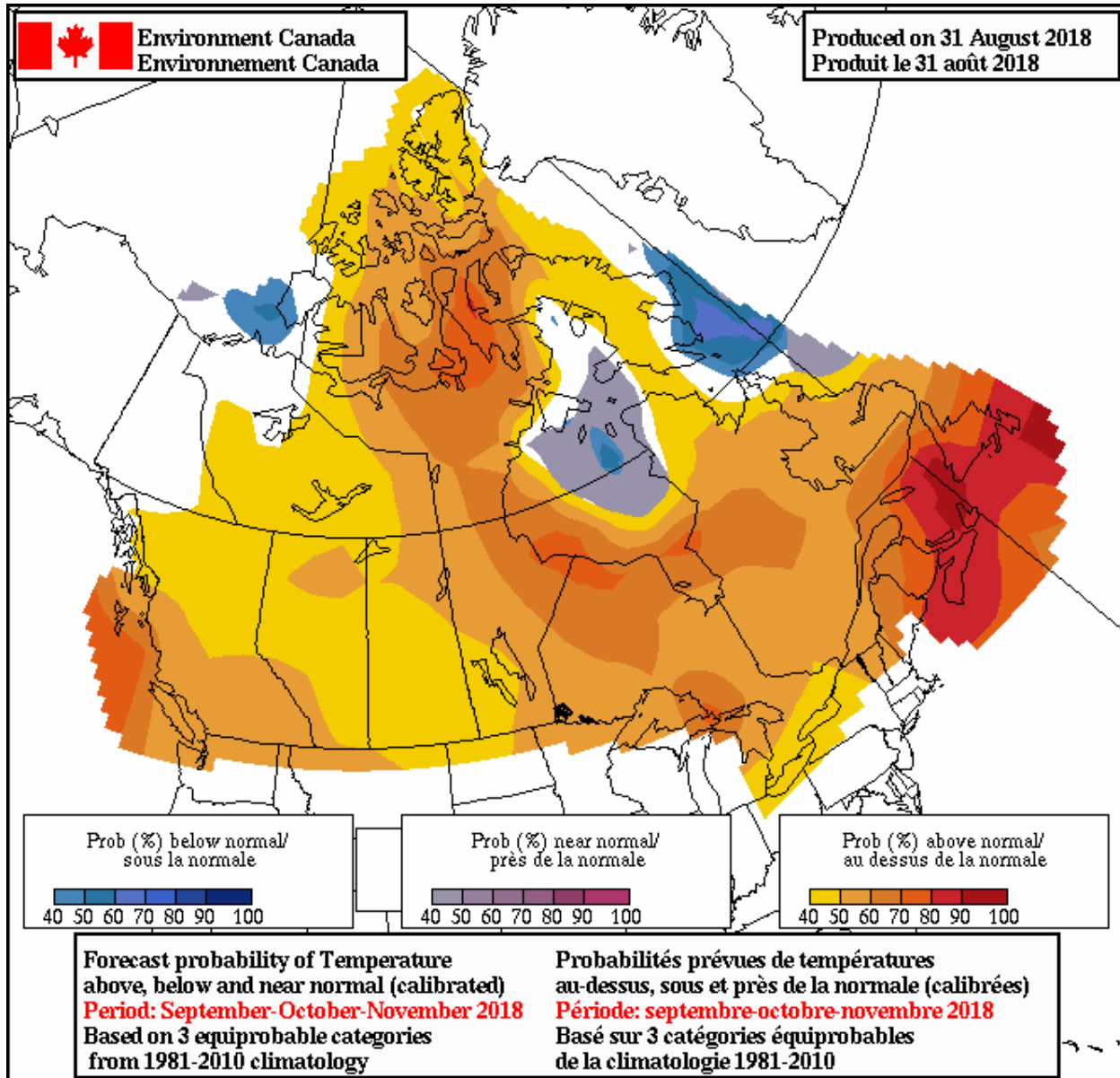


Actual and Allowable Lake Elevations per IJC Orders of Approval,  
Osoyoos Lake near Oroville, Washington, USGS Station 12439000



**Weather Forecast:**

We continue to expect a warmer than normal fall and winter, due to El Nino conditions. Normally, this would have us planning for drought in 2019, and I'll be following this closely.



### **Non-exhaustive list of River Film screenings and distribution**

The River Film, a joint production of the IJC, the Washington State Department of Ecology and the OBWB has been widely distributed in the last year. The following is a list we've been compiling of where it has been featured at festivals, where it's been screened and other ways we've distributed it in the valley.

### **International Film Festivals**

The film has been submitted to 42 international festivals, from which it has been accepted and screened at 8 festivals (to-date, some are still pending)

#### **The film won the following awards:**

Winner - Award of Excellence, Cinematography: Docs Without Borders Film Festival

Winner - Award of Excellence, Narration: Docs Without Borders Film Festival

Winner - Award of Excellence: The Impact DOCS Awards, La Jolla, CA

#### **Official Selections:**

2018 Directors Circle Festival of Shorts

Metamore Film Festival

Show Me Justice Film Festival

World Community Film Fest

2018 Oregon Coast Film Festival

#### **Finalist:**

Zensa Media International Film Festival

### **Film Screenings (non-festival):**

- October 17, 2017 Premiere at IOLBC meeting, Osoyoos
- October 25, 2017 Film screening & panel, Oliver Theatre, Oliver, (Jiri & A. Sears - Q&A)
- October 25, 2017 Global Affairs Canada, Lester B. Pearson, Ottawa, ON
- December 3, 2017 OBWB Board Meeting, Kelowna (A. Sears Q&A)
- December 14, 2017 Okanagan Water Stewardship Council Meeting, Kelowna
- March 5, 2018 Okanagan College, OC Pent. Speaker Series, Penticton, (A. Sears - Q&A)
- March 13, 2018 Wenatchee Valley Museum and Cultural Center, WA
- March 21, 2018 WA-BC Chapter American Fisheries Society AGM (Brian Symonds - Q&A)
- March 21, 2018 OBWB - Canada Water Week, Kelowna (A. Sears Q&A)
- March 21, 2018 Summerland Museum, Summerland (Mar 21-24)
- March 22, 2018 Environment Canada, Vancouver
- March 29, 2018 Summerland Museum (Brian Symonds - Q&A)
- March 29, 2018 Depot Museum
- April 7, 2018 Vernon Museum

- April 10, 2018 Penticton Library (Brian Symonds - Q&A)
- May 3, 2018 NOAA, Portland, OR
- June 9, 2018 Vernon Yacht Club (Jiri & A. Sears - Q&A)
- July 14, 2018 Bonneville Power Administration HQ, Portland
- Sept 11, 2018 Central Okanagan Naturalists' Club, Kelowna (A. Sears Q&A)
- October 25, 2018 UBC Okanagan Geography Class on Sustainability (A. Sears Q&A)

#### **Film Distribution**

- International Joint Commission members and staff (US/Canada)
- IOLBC members and staff
- Film Interviewees
- Okanagan College library collections in Penticton, Kelowna, Vernon and one for the Local History collection
- Deputy Auditor General for Local Governments in B.C.
- University of BC – Okanagan library: one for general circulation, one for Special Collections
- UBC – Vancouver library: one for Special Collections, one for general circulation
- Okanagan Regional Library: ten for general circulation
- Penticton Library: three for general circulation
- Five Okanagan school districts have received 52 copies between them
- Armstrong Museum
- Vernon Museum
- Kelowna Museum
- Peachland Museum
- Summerland Museum
- Oliver Museum
- Osoyoos Museum
- Oroville Museum
- Regional District of North Okanagan
- Regional District of Okanagan-Similkameen
- BC Wildlife Federation
- Association of Professional Engineers and Geoscientists BC
- Lake Windermere Ambassadors
- Armstrong Environmental Trust
- Central Okanagan Naturalists Club
- Leo's Videos, Kelowna (free rentals)
- Sorrento Centre, Sorrento

## MEMORANDUM

Okanagan Basin Water Board  
Regular meeting  
October 2, 2018  
Agenda No: 6.2

File No. 0550.04

To: Board of Directors  
From: Nelson R. Jatel  
Date: September 26, 2018  
Subject: **Water Stewardship Director's Report**

### September Water Stewardship Council meeting

The Water Stewardship Council, technical advisory committee to the OBWB, had a well-attended meeting on September 13<sup>th</sup>. The Council received a presentation from **Christine Mettler**, Canadian Freshwater Alliance, on the Water Sustainability and the City Report (December 2017). The report highlighted some key findings:

- Urban waters are instrumental in supporting a number of environmental, social, economic, cultural and human health functions. But they are among the most degraded watersheds.
- Local governments in British Columbia have the ability to influence a number of activities that impact watershed degradation in their jurisdictions. However, many practitioners are concerned about the health of urban watersheds and report challenges to addressing the pressures that negatively impact these waters.
- This report describes some of these challenges, and suggests how new tools developed under B.C.'s new *Water Sustainability Act* could help to address some of these challenges.

A copy of the full report is available here:

- [https://www.freshwateralliance.ca/water\\_sustainability\\_and\\_the\\_city](https://www.freshwateralliance.ca/water_sustainability_and_the_city).

Dr. Anna Warwick Sears provided an update on the Okanagan LiDAR mapping project with lots of interest from water consultants and local government representatives.

Copies of Council presentations are available online:

- <http://www.obwb.ca/about-the-council/presentations-videos/>

The next regularly scheduled Council meeting will be held on October 11<sup>th</sup> at the Capri Hotel from 12:30pm to 4:30pm. All Board members are encouraged to attend.

### Project management: project updates

The Water Stewardship Director's office supports two major activity hubs: the organizational support of the Water Stewardship Council and Senior Project Management. Select highlights and project activity from the month of September include:

#### Organization of Environmental Flow Needs Conference (October 17-18, 2018)

We are three weeks away from hosting the *siwIk<sup>w</sup> (WATER) FOR ALL – OUR RESPONSIBILITY...* Environmental Flow Needs Conference in Kelowna. This conference is being co-chaired by me and **Brian Guy** (Canadian Water Resource Association) and provides an opportunity to celebrate the unique OBWB/ONA collaborative partnership spanning three years of intensive in-field

stream flow sampling to develop relevant EFN calculations (Modified Tennant and Weighted Usable Width) to the semi-arid Okanagan.

We have an exceptional line-up of speakers including: **Claudine Pahl-Wostl** (Renowned Water Governance Scholar- Germany), **Karilyn Alex** (Senior Fishery Biologist - ONA), **Ted White** (Water Comptroller - BC), Robert Sandford (UN EPCOR Chair, Water Security), and **David Tichner** (Water Scholar - England).

One unique feature of this conference is the talented team of facilitators including **Kelly Terbasket** and **Aaron Derickson**, both members of the Okanagan Nation. They bring a very experienced history of facilitating a Syilx Tradition and Dialogue Process approach that includes applying the traditional Four Food Chief story. The four food chiefs (Saskatoon Berry, Bitter Root, Black Bear and Salmon) provide four differing perspectives: Youth, Female, Elder, Male. More information about the Four Food Chief process can be found online here: <https://www.syilx.org/wordpress/wp-content/uploads/2010/11/Okanagan-Syilx-Nation-Health-Plan-2010.pdf>

As of September 26<sup>th</sup> we have an attendance count of 172 people and have reached 100% of our fundraising goals for this conference. We are on track for hosting a world class conference that will highlight collaboration and the importance of science, policy and practice relative to Environmental Flow Needs.

The updated program is available online at: [www.EFN2108.ca](http://www.EFN2108.ca). Early bird registration closed on September 14<sup>th</sup>. The conference will be held at the Coast Capri Hotel in Kelowna. All Board members are encouraged to attend this important Okanagan water conference with staff.

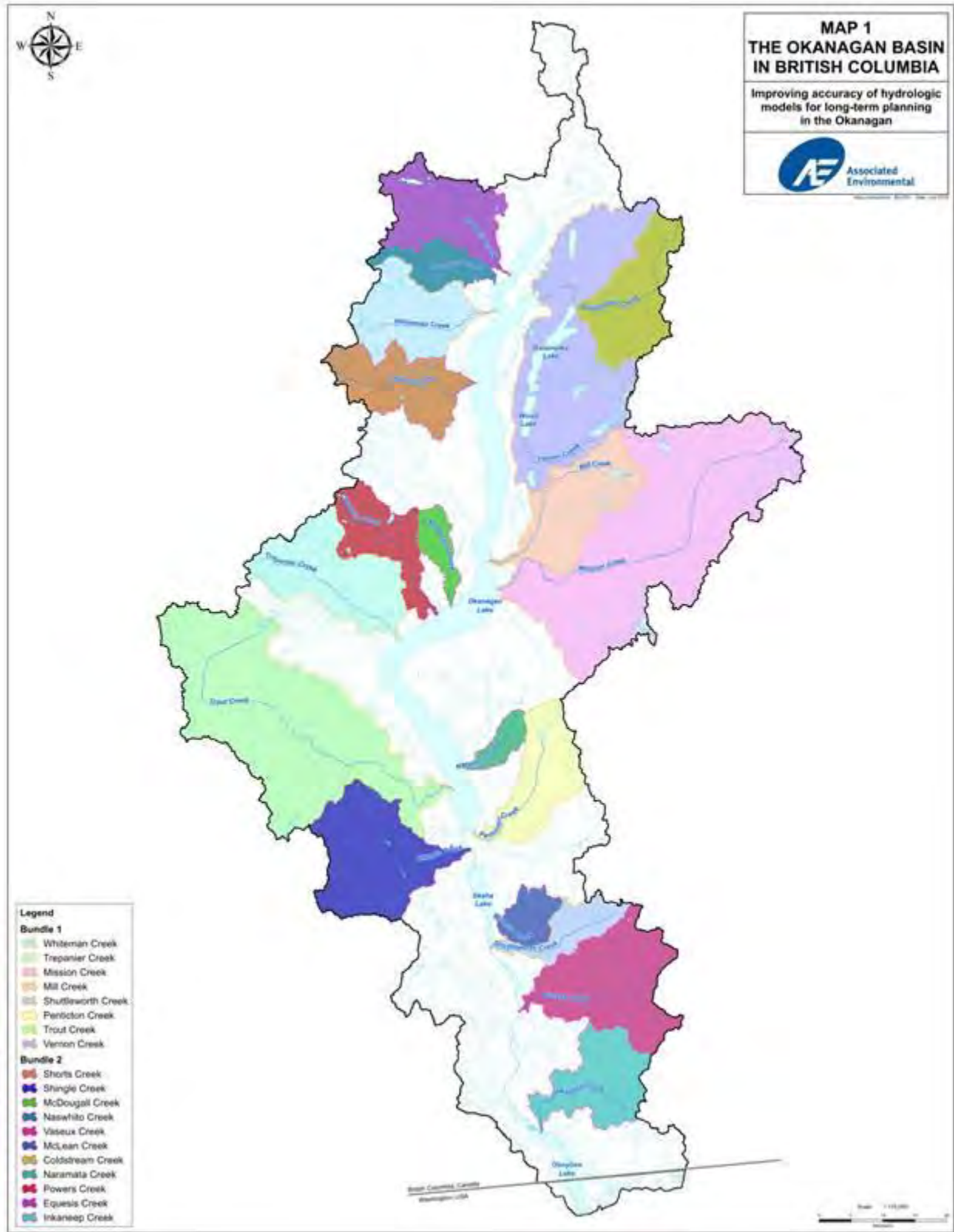
**Okanagan Hydrology Model**

The Okanagan Hydrology modelling project is intended to build on the significant Water Supply and Demand study developed for the Okanagan basin. The original modelling project, one of the first of its kind in Canada, provided an important whole basin hydrology perspective. With the whole basin hydrology complete, including a detailed climate modelling component, this new hydrology study provides a more detailed look at 19 sub-basins in the Okanagan. With enhanced resolution at the sub-basin level, the new models, for Mission Creek for example, will provide local governments who develop and use 2-D hydraulic models (i.e. sewer systems, storm systems) everyday, to incorporate this new hydrology modeling in order to improve hydraulic and risk models for major water and wastewater infrastructure day-to-day decisions made by local government staff.

The proposed hydrology models will be developed in two waves (or bundles) of development so that we can learn from our first efforts and help inform the second set of modelling efforts.

<u>Selected Streams (Bundle 1)</u>	<u>Selected Streams (Bundle 2)</u>
Whiteman Creek	Coldstream Creek
Mission Creek	Equesis Creek
Mill Creek	Inkaneep Creek
Shuttleworth Creek	McDougall Creek
Penticton Creek	McLean Creek
Trout Creek	Naramata Creek
Vernon Creek	Naswhito Creek
Trepanier Creek	Powers Creek
	Shingle Creek

	Shorts Creek
	Vaseux Creek



One important component of developing sub-basin hydrology models is developing naturalized flows for each sub-basin. Naturalized flows refer to a streamflow value which manageable and quantifiable human influences have been removed, including effects of upstream water withdrawals and discharges, reservoir regulation, and water control using hydraulic structures (e.g. pumps, gates, valves). The naturalized flow tables are important for a variety of water management planning tools including hydrology modelling and environmental flow needs. Developing naturalized flow tables is complex, often difficult to calculate due to lack of data or high quality data, and requires a high degree of experience and expertise. Recently, our EFN project team has identified some interesting anomaly's in the summer low flows (August and September) where there appears to be a consistent downward trend of total summer runoff occurring over the past ~40 years. We are working to see if these data trends are statistically significant or not. This recent observation by our team of hydrology experts provides new evidence that a broader climate induced effect on Okanagan stream flows may have occurred sooner than anticipated. This will require additional study and will influence the naturalized flow calculations used both in Environmental Flow Needs calculations and Hydrology Models of Okanagan streams.

This Okanagan Hydrology modeling project is made possible with funding provided by the Federal/Provincial Gas Tax Program Services initiative.

## MEMORANDUM

Okanagan Basin Water Board  
Regular meeting  
October 2, 2018  
Agenda No: 6.3

File No. 0550.04

To: OBWB Directors  
From: James Littlely  
Date: September 24, 2018  
Subject: **Operations and Grants Manager Report**

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### Presentation to Shuswap Watershed Council

On September 19th I presented to the Shuswap Watershed Council (SWC), giving them an introduction to the OBWB. Following the presentation, the Council Chair asked me to pass on to our Board that the Council would welcome opportunities to work together within our respective mandates and find areas for increased collaboration and coordination. OBWB staff will arrange a presentation from the SWC early in the new year. According to the Council website:

The Shuswap Watershed Council (SWC) is a collaborative program of the Columbia Shuswap Regional District (CSR), Thompson-Nicola Regional District (TNRD), District of Sicamous, City of Salmon Arm, Regional District of North Okanagan, Secwepemc Nation and Province of BC (Ministry of Agriculture and Ministry of Environment and Climate Change Strategy), working with other agencies and interests.

The mandate of the Shuswap Watershed Council is to help enhance water quality and safe recreation in the Shuswap for the long term. In 2014-2015 SWC focused efforts on development of a five-year Water Quality and Safe Recreation Education Programs for the watershed. Implementation of these programs began in 2016, with financial support from the TNRD, CSR and City of Salmon Arm. See all members on the SWC membership list (as of June 20, 2018).

#### Vision:

*Enhanced water quality that supports human and ecosystem health and the local economy in the Shuswap watershed.*

#### Objectives:

To maintain and enhance water quality in the Shuswap watershed through collaboration with water quality monitors. By working together, we can help ensure clean water and the many benefits it affords including a healthy ecosystem and a thriving tourism economy.

To coordinate and report on water quality data and information in the Shuswap watershed.

To communicate with and inform residents and visitors about water quality in the Shuswap, and advocate for good practices to prevent water quality degradation. The SWC will also communicate with the public about its activities and accomplishments.

To encourage safe behaviour by recreationists on and near the water.



## MEMORANDUM

Okanagan Basin Water Board  
Regular meeting  
October 2, 2018  
Agenda No: 6.4

File No. 0550.04

To: OBWB Directors  
From: Corinne Jackson  
Date: September 25, 2018  
Subject: Communications Director Report

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### Make Water Work (MWW) and Don't Move A Mussel (DMM)

Both the MWW and DMM campaigns are winding up in the next couple of weeks as residents start to winterize their yards and irrigation systems, and as local water recreationists put their watercraft away and tourists take their water toys home. The last few weeks have been spent wrapping up the contest portion of the MWW campaign. We are also continuing to have strong engagement on social media, allowing us to extend the conversation on valley-wide water issues. I will provide an update at the board meeting, and a more thorough report in December, once final reports are completed.

### Other communication initiatives

With the upcoming *siwtk<sup>w</sup> (WATER) FOR ALL - OUR RESPONSIBILITY... Environmental Flow Needs Conference* fast approaching, I've been busy assisting with communications, including pulling together a media panel.

The OBWB-OkWaterWise was invited to conduct outreach on water issues at a couple of events in the last few weeks, including the **Thompson Okanagan Tourism Association's golf tournament** on Aug. 30. Tournament organizers matched each of the UN's 17 sustainable development goals with an agency working on that particular issue and then invited them to set up at the hole with the matching number to speak with attendees. (In fact, several of the goals touch on water and the work of the OBWB: #6 - Clean Water and Sanitation, #14 - Life Below Water, #13 - Climate Action, and more). The tournament allowed us to speak to attendees on various issues including avoiding personal care products with microbeads, picking laundry and dish soaps and shampoos without sulfates, raising awareness about micro-plastics in clothing, importance of wetlands, keeping ATVs out of creeks, tips to conserve water in our yards, invasive mussel prevention, and more. The best comment of the day: "I'm learning so much today - it's great!"



Included here are a few photos. You can find more on our Facebook page here: <http://bit.ly/2xD0VxV>.



We were invited to attend the **City of Kelowna's Fall Field Day** on Sept. 21 for municipal park employees from around the Thompson-Okanagan. Topics included turf management and irrigation optimization.

The OBWB's Okanagan WaterWise program was invited to be available to talk about the Make Water Work program. We also spoke to the invasive mussel issue, helping raise awareness about best practices when moving between water bodies to prevent the spread.



Following up on discussions at the September board meeting, an offer has been sent to the Thompson-Nicola Regional District to meet with their board, and/or the TNRD's Thompson Nicola Invasive Plant Management Committee, about the invasive mussel issue and how we can work together to protect B.C. waters.

This month we have also provided communications support to various partners on water-related items (e.g. Summerland Ornamental Gardens Fall Plant Sale featuring drought-tolerant species, Okanagan Xeriscape Association fall workshop, Okanagan Nation Alliance's Salmon Feast 2018 event, Osoyoos Lake Water Quality Society's public information meeting on invasive mussels, and more).

### **Summary of Recent Media**

- August 24 "Okanagan now on a level 2 drought rating," *Kelowna Now*
- August 27 "\$37 million wastewater plant proposed for site north of Swan Lake," *InfoNews.ca Kelowna*
- August 27 ["Coming together on project."](#) *Castanet*
- August 27 "North Okanagan parties agree on wastewater recovery centre," *Penticton Western News, Keremeos Review*
- August 30 "Kelowna city councillor expected to seek Conservative nomination," *Kelowna Capital News, Lake Country Calender*
- Sept. 6 "Kelowna city councillor enters race for Conservative nomination," *Kelowna Capital News*
- Sept. 7 ["Mining work going ahead."](#) *Castanet.net*
- Sept. 7 "Outdoors Column: Central Okanagan Naturalists' Club screening A River Film," *Kelowna Daily Courier*
- Sept. 12 "Water responsibility focus for October conference," *Kelowna Daily Courier*

- Sept. 13 "20 mussel-fouled watercraft prevented from entering BC this summer," *Kelowna Capital News, Summerland Review, Keremeos Review, Revelstoke Review, Penticton Western News*
- Sept. 13 "Central Okanagan residents reminded to be careful about what they put down the drain," *Lake Country Calendar*
- Sept. 19 ["BC invasive mussel fight continues into fall season."](#) *InfoNews.ca Penticton*

#### **Recent Presentations**

- Sept. 11 "River Film," screening and Q&A to Central Okanagan Naturalists – Anna Warwick Sears
- Sept. 13 "Local Government Sustainability Planning" to UBC Okanagan class – James Littlely
- Sept. 14 "Overview of OBWB/Climate Change/Zebra Mussels," to BC Dragoons Regimental Council Society - Anna Warwick Sears and James Littlely
- Sept. 19 "Introduction to OBWB," to Shuswap Watershed Council – James Littlely

## MEMORANDUM

Okanagan Basin Water Board  
Regular meeting  
October 2, 2018  
Agenda No: 6.5

File No. 0550.04

To: OBWB Directors  
From: Kellie Garcia  
Date: September 25, 2018  
Subject: **Policy and Planning Specialist Report**

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### Okanagan Mainstem Lakes Drought Stage Triggers

Many Okanagan purveyors that withdraw water from valley lakes and the Okanagan River are working on drought response plans, and requested assistance with triggers for moving between water restriction stages. These purveyors do not control the level of their “reservoirs” – the Province of B.C. does - making it difficult for the purveyors to develop rational and easy-to-quantify drought stage triggers. Ideally, they need triggers that link with the Province’s management practices, including established lake elevation and river flow targets.

In July 2016, the OBWB convened a technical team of lake management, hydrology, water supply, and fisheries experts to begin work on the mainstem drought stage triggers. Okanagan water purveyors provided considerable input throughout the project, resulting in substantial revision and refinement of the triggers before settling on the final version.

**The recommended mainstem drought stage triggers were delivered to water suppliers last week.** The triggers use elevations of Okanagan Lake and Kalamalka Lake between July and November to indicate potential water shortages. Historic lake elevation data for the 30-year period, 1986-2015, were statistically analysed to generate several scenarios for consideration by the technical team.

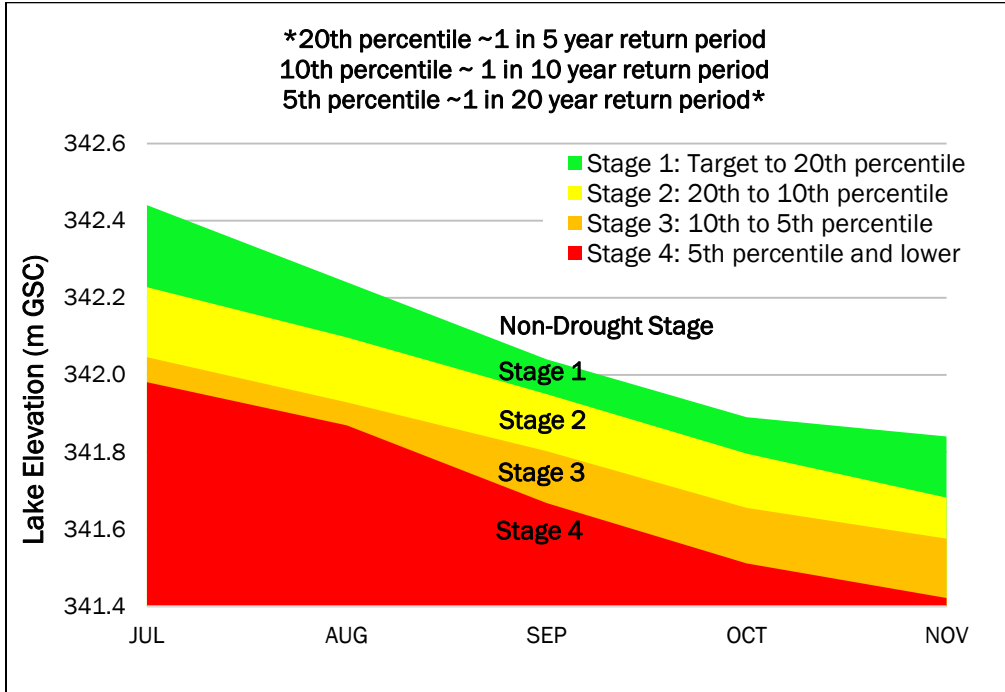
When evaluating the various scenarios, the following factors were considered:

1. Ability to link with the lake management practices of the Province of B.C.;
2. Frequency with which the different drought stages might be declared;
3. Ease of application and understanding of triggers; and
4. Acceptability of drought stage triggers to key users.

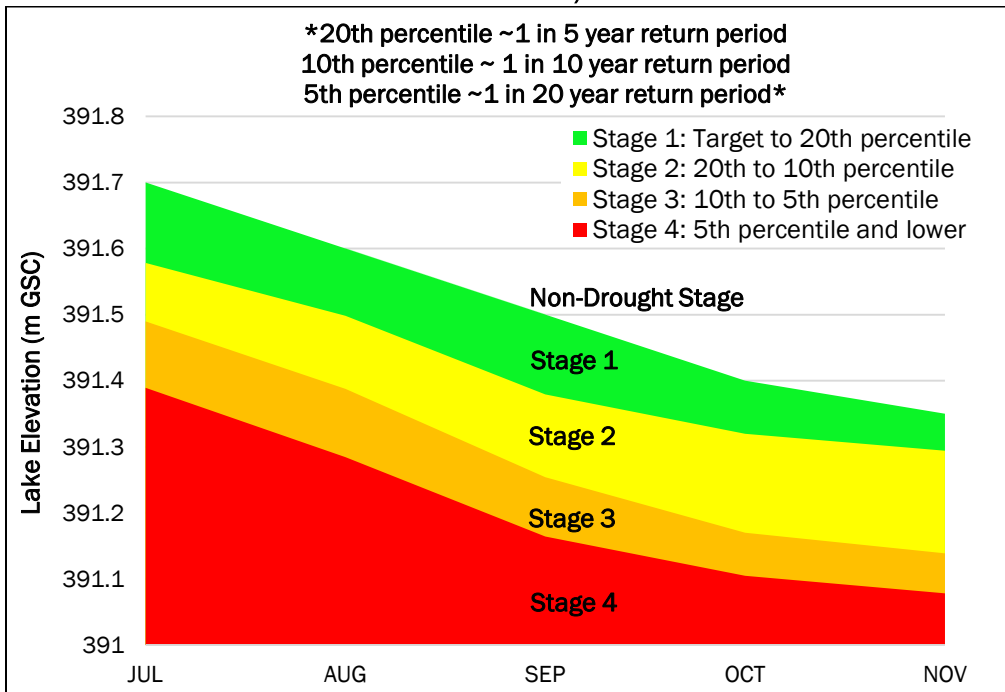
After considering these factors and input received from local water suppliers, the Province’s operational target elevations, and the 20<sup>th</sup>, 10<sup>th</sup> and 5<sup>th</sup> percentile elevations were recommended. The chosen percentiles are approximately equivalent to drought events with 1 in 5, 1 in 10, and 1 in 20-year return periods. Two trigger graphs were developed– one for Okanagan Lake, downstream mainstem lakes (Skaha, Vaseux, and Osoyoos) and the Okanagan River, and one for Kalamalka/Wood Lake (see next page).



Recommended drought stage triggers for Okanagan Lake, downstream lakes, and Okanagan River (based on Okanagan Lake elevations on 1<sup>st</sup> of month)



Recommended drought stage triggers for Kalamalka Lake (based on lake elevations on 1<sup>st</sup> of month)



The triggers are included in a technical report that also provides guidance on how to operationalize the triggers, recommended responses for each stage, an example drought communications plan, and key messages about the triggers. The intended goal is to achieve better alignment and consistency across the valley in an effort to improve clarity and support communication efforts during drought.

It is important to note that in addition to referencing the trigger graphs (which relate to actual lake levels), moisture conditions, weather forecasts, lake level forecasts, infrastructure capacity, and/or customer demand also need to be considered when deciding whether to move between drought stages. The Province will need to be engaged so water purveyors are aware of upcoming lake management decisions.

**The OBWB is committed to helping Okanagan water suppliers operationalize the mainstem drought stage triggers.** Our role will depend on the level of interest and engagement of water purveyors. We can assist with integrating the triggers into drought plans, and can coordinate the evaluation and refinement of the triggers until they are truly suitable for their intended purpose. The OBWB can also provide information on lake levels and provincial water management decisions throughout the summer, and make recommendations about drought stages based on the guidelines outlined in the report.

### **Okanagan Agricultural Water Supply Communications: Phase 2**

Last year, the OBWB worked with the BC Agriculture and Food Climate Action Initiative (CAI) and two pilot purveyors – Greater Vernon Water and City of Penticton – to develop and test water supply communication materials and mechanisms specifically targeted to agricultural producers. The goal was to provide accurate information about the state of local water supplies and associated water conservation expectations in advance of and during the growing season. Messaging focused on reservoir levels, water restrictions stages, relationship between provincial drought level and local water restriction stage). In addition to strengthening their existing communication mechanisms (e.g. mail-outs) a new e-alert distribution system (email, text and voice messages) was tested by the purveyors. Through follow-up evaluation, both purveyors and the participating producers indicated there was value in the pilot and in expanding its reach.

We have just received confirmation that the CAI will provide funding for a second phase of the project, to be carried out over the next three years. The total estimated project cost is \$86,900, with the CAI contributing \$75,500 and the OBWB contributing approximately \$3,800 per year from our drought planning project budget. A second phase of project activity will enable much broader purveyor and producer participation with the aim to establish a consistent and reliable Okanagan-wide system for communicating water supply information to agricultural water users.

The project will kick-off with an analysis of Okanagan water purveyors (size, geographic reach, number of agricultural water connections) to better understand which could be best served by the project. This will be followed by an invitation to participate in the pilot for select purveyors. The communications materials will be piloted with 5 to 10 purveyors during the 2019 growing season. Additional purveyors and their agricultural water users will be recruited during the second year of the pilot. The final year will be used to provide ongoing support to the purveyor participants and to onboard any remaining interested purveyors, while continuing to increase the number of agricultural producers subscribed to the service.

## MEMORANDUM

Okanagan Basin Water Board  
Regular meeting  
October 2, 2018  
Agenda No: 7.1

File No. 0550.04

To: OBWB Directors  
From: James Littley and Corinne Jackson  
Date: September 25, 2018  
Subject: **Invasive Mussel Report**

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After the recent announcement of federal funding for the prevention of invasive mussels, and years of calls to action by the OBWB, it is appropriate to review the latest information and discuss future needs. OBWB's last call for action to the province was in October 2017 (attached), and called for 10 ranked action items for prevention, and six action items for preparation. Although the province did act on some of the items, we did not receive a formal response to our request outlining which actions were not taken and why. Over the next few months, staff will engage with the province and make revised recommended action items as appropriate. Since provincial inspection stations do not close until late October for the season, the next few months will give provincial staff a chance to conduct an 'after-action review' of the inspection season, and identify strengths and weaknesses in the inspection regime. This Thursday, September 27<sup>th</sup>, the province will be providing a preliminary 2018 inspection season debrief to partners and Water Board staff will provide a verbal update to the board following that meeting.

One outstanding item, listed by OBWB as a top priority to close the gap on provincial inspections is to **make legislative changes that require all watercraft entering B.C. to report to an inspection station prior to launching in any provincial waters**. At this time, that legislative requirement is not in place. This legislative change would address the gap of watercraft entering the province after inspection station hours, outside of inspection season, or through routes not covered by the inspection net. Other groups have called for action to address this gap by providing 24-hour inspection stations, or through preventing all out-of-province watercraft from entering B.C. While these measures would, in theory, eliminate AIS transmission by watercraft, they also have serious drawbacks in terms of education, enforcement, funding and potential legal challenges.

The change in legislation proposed by OBWB in October 2017 could complement existing inspection stations, and could be enforceable at boat launches throughout the province, year-round by asking to see a boater's record of inspection, or proof that the boat is from B.C. The operator could report to any Conservation office with a trained inspector, throughout the province, for an inspection and appropriate paperwork in the off-season and at the boater's convenience after travelling and before launching. B.C.'s existing Report All Polluters and Poachers (RAPP) system can be used to schedule inspections and decontaminations as needed, and the costs to run the program would not be significantly higher than current operational costs for the CO's service. This new regulation could be in place prior to the 2019



boating season, with significant public outreach, including out-of-province education happening throughout the winter.

Staff will continue to analyse the other calls to action, with the intent of updating our recommendations early in the new year to provide time for the province to consider changes before the next boating season. However, the recommended legislative change outlined above should continue to be the top priority for OBWB for improvements to AIS prevention in the province.

**Recommended motion: *That OBWB send an open letter to the province calling for legislative changes that require all watercraft entering B.C. to report to an inspection station prior to launching in provincial waters, and requesting an update on all other action items as called for in our October 2017 letter to Minister Heyman.***

## Action Items for B.C. Invasive Mussel Prevention

October 20, 2017

### **PREVENTION OF INVASIVE MUSSEL INTRODUCTION TO BRITISH COLUMBIA**

#### **SUMMARY**

Following recent meetings at the Union of BC Municipalities 2017 conference meetings with various local governments and the Okanagan Basin Water Board (OBWB), Honorable George Heyman, Minister of Environment and Climate Change Strategy, asked for a comprehensive list of action items to enhance invasive mussel prevention in B.C. Further, he asked that these items be prioritized. The following list is in response to this request, separated into items for prevention of invasive mussels, and preparation should an invasion occur. The full list is provided point-form, and details of each called-for action item are included in the second section, entitled “Detailed Rationale and Expected Outcomes.”

We call on the Province of B.C. to do a full costing of all action items as outlined below and to budget permanent, sufficient funding to guarantee ongoing mussel prevention, preparation and response efforts.

Further, we call on the government to continue to make prevention and preparation decisions based on science and data, and to further develop scientific and data gathering and analysis capabilities for effective management.

#### **ACTION ITEMS FOR PREVENTION - RANKED**

##### Prevention

1. Make legislative changes that require all watercraft entering B.C. to report to an inspection station prior to launching in any provincial waters.
2. Expand watercraft inspection and decontamination options for all boaters, and increase signage at boat launches to raise awareness of Aquatic Invasive Species (AIS).
3. Expand the number of full-status B.C. Conservation Officers (COs) with authority to intercept those who fail to stop at mandatory inspection stations.
4. Review the effectiveness of mussel detection dogs as part of the Conservation Officer Service K9 program, and expand the use of multi-purpose dogs as appropriate for increased efficiency and effectiveness.
5. Provide funding and materials to regional invasive species societies for ongoing mussel monitoring and public outreach efforts.
6. Create a province-wide, broad public education and awareness campaign, beyond boaters, and beyond the “Clean, Drain, Dry” message. Engage all professional regulatory bodies that are

established in provincial legislation (such as Engineers and Geoscientists of BC, the College of Applied Biology, etc.), to give information to their members and request that they take appropriate precautions regarding AIS.

7. Coordinate with the Canadian government and call for more federal action to contain infestations in already-infested provinces, and for prevention resources in non-infested provinces.

8. Call on the federal government to amend air transport regulations with regard to aquatic aircraft such as float planes and water bombers to prevent the spread of AIS from one water body to another.

9. Request that the federal government amend the Pleasure Craft Operator Card to include a component on AIS and the responsibility to “Clean, Drain, Dry” watercraft.

10. Work with other western provinces to coordinate a call for action from the Government of Canada to support mussel containment and prevention efforts.

#### **ACTION ITEMS FOR PREPARATION - RANKED**

1. Build a contingency fund (such as the emergency fund for natural disasters) to provide for rapid response and long-term containment and management of a possible infestation.

3. Assist local governments, water purveyors and utilities to conduct vulnerability assessments and infrastructure upgrades to reduce their risk in case of an infestation.

4. Provide facilities for centralized inspection and decontamination near at-risk water bodies to promote awareness and best-practices for boaters and other water recreationists.

5. Provide funding for research into materials to contain or eradicate invasive mussels, and pre-approve materials for appropriate rapid response.

6. Provide internal and external funding opportunities for further study into mussel-related issues such as effects on native species and the economy, infrastructure preparation, enhanced detection techniques, and materials for control or eradication.

## DETAILED RATIONALE AND EXPECTED OUTCOMES

### ACTION ITEMS FOR PREVENTION - RATIONALE

#### **1. Make legislative changes that require all watercraft entering B.C. to report to an inspection station prior to launching in any provincial waters.**

Currently, inspection stations are seasonal (April 1 – October 31), and limited to hours between dusk and dawn. People transporting watercraft outside of the inspection season, or when stations are closed are not under any legal obligation to report for inspection before launching in B.C. waters. Further, 20% of vehicles transporting watercraft currently fail to stop when inspection stations are open. The expected outcome of such a legislative change is that a far greater number of watercraft will be inspected, including those coming from out-of-province outside of inspection season, or when highway stations are closed. Further, this will lead to more public awareness of the threat of invasive species. Should a localized infestation occur in the future, the procedure of reporting to an inspection station will already be known to boaters, helping to contain the infested water body, and prevent further spread.

#### **2. Expand inspection and decontamination options for all watercraft transporters, and increase signage at boat launches to raise awareness of (AIS).**

Currently when inspection stations are closed, the only option for watercraft transporters coming from out-of-province is to call the RAPP line, and arrange to meet an inspection crew. Since there is no regulatory requirement to arrange an out-of-season inspection, it is likely that a majority of these watercraft are launched into provincial waters uninspected. Centralized inspection and decontamination options would allow boaters to report for inspection, even if they did not pass a highway inspection station en route to their destination. Private marinas, boat detailers, car washes, and others could have trained staff to provide this service, offsetting some provincial costs.

With expanded options, a greater number of watercraft will report for inspection and decontamination. Further, it would encourage awareness and behaviour changes that would enhance the prevention regime. It would also support the requirement for out-of-province watercraft transporters to report to an inspection station.

#### **3. Expand the number of full-status B.C. Conservation Officers (COs) with authority to intercept those who fail to stop at mandatory inspection stations.**

In 2017, 20% of vehicles with watercraft failed to stop at roadside inspection stations. In the case that a vehicle fails to stop, auxiliary COs must call the RAPP line and report the vehicle for follow-up enforcement. More full-status COs would enhance inspection and enforcement efforts. With this change, full-status COs would be available to respond more quickly to watercraft that are not stopping at inspection stations, reducing the chance that they launch into provincial waters. More full-status COs would also have the authority to enforce all other resource and conservation related laws in the province.

**4. Review the effectiveness of mussel detection dogs as part of the Conservation Officer Service K9 program, and expand the use of multi-purpose dogs as appropriate for increased efficiency and effectiveness.**

Early reports from 2017 indicate that the use of multi-purpose dogs enhanced the mussel prevention program since K9 officers may be more successful and efficient at detecting mussel-fouled watercraft. Dogs also raise the public profile of the invasive mussel prevention program, and enhance public relations. The province should review the effectiveness of the program, and expand the use of dogs as appropriate to achieve better outcomes. The dogs can also enhance the enforcement options for other conservation-related regulations.

**5. Provide funding and materials to regional invasive species societies for ongoing mussel monitoring and public outreach efforts.**

Much of the monitoring for invasive mussels in B.C. is currently carried out by non-profit regional invasive species societies. Many of these groups lack stable funding, and rely on donations to carry out monitoring and a host of other invasive-related activities. When public outreach materials have been made available through provincial funding, in some cases, regional non-profit groups have still been required to pay for those materials. Regional invasive species societies play a fundamental role in the preservation of our waters, and the province should support these groups. These societies, as local experts, can reduce provincial costs for monitoring and public outreach with low overhead costs and year-round engagement.

**6. Create a province-wide, broad public education and awareness campaign, beyond boaters, and beyond the “Clean, Drain, Dry” message. Engage all professional regulatory bodies that are established in provincial legislation (such as Engineers and Geoscientists of BC, the College of Applied Biology, etc.), to give information to their members and request that they take appropriate precautions regarding AIS.**

Public awareness into the threat of invasive mussels has been increased by regional information and awareness campaigns. Primary among these campaigns is the message for boaters to “Clean, Drain, Dry” their watercraft when leaving a water body. However, there is a need to increase awareness and education among the non-boating public which will lend support to prevention efforts, and better prepare the population for the potential costs and actions required should an infestation occur. The [“Don’t Move A Mussel”](#) public awareness campaign in the Okanagan has led to very high public recognition in the valley, demonstrating that it can be effective.

Professionals working regularly in and around water should also be educated on the risks associated with AIS, and the best practices of moving watercraft from one water body to another. Using professional networks will help to spread the message, and create greater awareness.

**7. Coordinate with the Canadian government and call for more federal action to contain infestations in already-infested provinces, and for prevention resources in non-infested provinces.**

Federal funding for action on invasive mussels is significantly lacking, with only \$7 million annually to address all AIS across Canada in both freshwater and marine environments. The federal government has responsibility in several areas such as fisheries, navigable waters and other environmental considerations which will be significantly impacted should mussels invade.

**8. Call on the federal government to amend air transport regulations with regard to aquatic aircraft such as float planes and water bombers to prevent the spread of AIS from one water body to another.**

Mussels in their larval stage are microscopic and free-floating in the water. Also, aircraft which stay on the water for longer periods of time may have their floats encrusted by mussels. In both instances, when the aircraft moves to another water body – carrying mussel-infested water or mussels on their floats – it facilitates the spread of the species.

**9. Request that the federal government amend the Pleasure Craft Operator Card to include a component on AIS and the responsibility to “Clean, Drain, Dry” watercraft.**

In Canada, if you operate a boat with a motor, you are required to show proof of competency, usually through a Pleasure Craft Operator Card. As pleasure craft owners represent the most likely vector to transport invasive mussels, best practices such as “Clean, Drain Dry” should be a required component of boater education.

**10. Work with other western provinces to coordinate a call for action from the Government of Canada to support mussel containment and prevention efforts.**

B.C has been actively engaged in coordination with other western provinces and states to prevent invasive mussels from entering the Pacific Northwest. The B.C. CO service has also been highly proactive in educating Canada’s Border Services Agents about the need to inspect watercraft and report any that are considered high-risk. However, the provincial governments should coordinate a call for federal action to support the containment, prevention, and preparation for invasive mussel infestations.

#### ACTION ITEMS FOR PREPARATION

**1. Build a contingency fund (such as the emergency fund for natural disasters) to provide for rapid response and long-term containment and management of a possible infestation.**

Should a mussel infestation occur, the province needs to have resources in place to establish an incident command centre, and to put the Early Detection Rapid Response Plan into action. Much like other natural disasters, the initial response will be expensive, and urgent. Having funds in place will help to mitigate the effects of an initial infestation, and will help prevent the spread to additional water bodies.

**3. Assist local governments, water purveyors and utilities to conduct vulnerability assessments and infrastructure upgrades to reduce their risk in case of an infestation.**

Once established, invasive mussels will create significant negative stresses on local infrastructure. With current spending on infrastructure improvement and repair, vulnerability assessments are a timely addition to designing any in-the-water systems with protection measures and redundancies to keep operating costs low, and systems functioning and in good repair.

**4. Provide facilities for centralized inspection and decontamination near at-risk water bodies to promote awareness and best-practices for boaters and other water recreationists.**

Should an infestation occur in the province, perimeter inspection stations will need to be supported by inspection and decontamination facilities around any contaminated waters to prevent further spread. With legislation requiring all watercraft entering B.C. to report to an inspection station, more facilities, centralized around high-risk water bodies will ensure that the spread of an infestation is contained as long as possible.

**5. Provide funding for research into materials to contain or eradicate invasive mussels, and pre-approve materials for appropriate rapid response.**

While there is no current material which will eradicate a large-scale infestation of invasive mussels, several materials are being tested and have proven successful in smaller areas. However, in Canada the ability to use these materials requires a long permitting process through the federal government which will not allow for a rapid response where appropriate. More research, and pre-approval of appropriate materials will provide the flexibility to react to an initial invasion, based on scientific-based protocols, and a high likelihood of success.

**6. Provide internal and external funding opportunities for further study into mussel related issues such as effects on native species and the economy, infrastructure preparation, enhanced detection techniques, and materials for control or eradication.**

Preventing and preparing for mussel infestations requires many gaps to be filled. Further research must be conducted to assess the best options for preventing, preparing for, and controlling an infestation of invasive mussels. Long-term costs may be mitigated with further research in these areas.