

## Meeting Minutes

### Annual Board Meeting, International Osoyoos Lake Board of Control (IOLBC)

Tuesday, September 17, 2019

1:00 – 4:30 PM

Oroville Port of Entry/Osoyoos Border Facility – conference room SA225

#### List of Acronyms

IJC	International Joint Commission
IOLBC	International Osoyoos Lake Board of Control
OBWB	Okanagan Basin Water Board
USGS	U.S. Geological Survey
USACE	US Army Corps of Engineers
WADOE	Washington State Department of Ecology
BCFLNRORD	BC Ministry of Forest, Lands and Natural Resource Operations and Rural Development
ECCC	Environment and Climate Change Canada

#### Membership

	<b>United States</b>	<b>Canada</b>
Co-Chairs	Cynthia Barton	Bruno Tassone (host)
Members	John Arterburn (absent) Col. Mark Gerald Kris Kauffman	Ted White Sue McKortoff Brian Symonds Anna Warwick Sears
Secretaries	Andrew Gendaszek	Martin Suchy
IJC representatives	Lance Yohe (Commissioner, U.S. Section), Wayne Jenkinson (Engineering Advisor, Canadian Section), Mark Colosimo (Engineering Advisor, U.S. Section), Paul Allen (Communications, Canadian Section), Caron DeMars (Senior Advisor, U.S. Section), Adam Greeley (AAAS Fellow, U.S. Section)	
Guests	Shaun Reimer (FLNRORD, BC), Al Josephy (WADOE), Joe Witczak (WADOE), Jay O'Brien (OTID), Felicia Minotti (Global Affairs Canada), Doug Walker (U.S. State Department)	

### 1. Welcome and Introductions

The meeting was opened at 1:00 p.m. by Bruno Tassone (Board Chair, Canadian Section) with welcoming remarks and introductions of the Board members and IJC Commissioner Lance Yohe who was in attendance.

### 2. Agenda

The draft agenda was accepted with the addition of a discussion of the Applicant's Condition 10 Update request after agenda item 4.1 – Hydrologic Conditions.

### 3. Overview and History of IOLBC and IJC Order

Canadian Co-Chair, Bruno Tassone, presented an overview of the IOLBC and the IJC Orders of Approval for Osoyoos Lake and discussed allowable lake levels under the rule curve established under the 2013 Supplementary Orders of Approval. The range of allowable lake

levels prescribed under the non-drought rule curve may be changed if drought conditions outlined under Condition 8 are met or if the IJC approves a variance from the non-drought rule curve under Condition 10. The U.S. and Canadian sections of the IJC both consist of all new commissioners who were appointed in 2019. He also described the role of Washington State Department of Ecology as the owner of Zosel Dam and Applicant to the IJC Order.

#### **4. Implementation of Order of Approval**

##### *4.1 Hydrologic Conditions in 2019 and Order Compliance*

Brian Symonds (Board Member, Canadian Section) presented an overview of the 2019 hydrologic conditions and compliance with the IJC Orders of Approval for Osoyoos Lake. Snowpack within both the Similkameen and Okanagan basins, as measured at the Blackwall Peak and Mission Creek snow pillows, respectively, was below normal for the 2019 Water Year. Unlike the previous two years (2017 and 2018), the spring freshet was minimal and maximum instantaneous discharge for the Similkameen River during 2019 was 10,500 cfs on May 18. Backwater effects on Osoyoos Lake at this discharge was minimal. While total runoff in both the Similkameen and Okanagan basins was less than normal, but Condition 8 drought criteria were only met for the Similkameen River basin.

Cumulative April – July flow volume for the Similkameen River was 831,000 acre-feet as measured at the USGS streamflow gaging station at Nighthawk, which was consistent with early April and early May forecasts. Cumulative net inflow to Okanagan Lake and peak Okanagan Lake level were forecasted to exceed Condition 8 drought criteria in early April. While these values decreased in subsequent forecasts, Condition 8 drought criteria for Okanagan Lake drought criteria were ultimately not met, in part, due to a late June rainstorm that increased runoff to Okanagan Lake. Actual Okanagan Lake net inflow and peak level calculated as 207,000 acre-feet and 1,122.60 feet, respectively.

Although Condition 8 drought criteria were not met, the Applicant, concerned about adequate water supply to meet irrigation demands and instream flows, requested a variance under Condition 10 of the IJC Orders to operate under the Condition 8 drought rule curve. The Board considered this request and recommended its approval by the IJC, which approved it on June 7. Several exceedances several hundredths of a foot above the maximum water level allowed under the drought rule curve (912.5 feet) occurred during July and August related to wind and precipitation events. The capacity of Zosel Dam to pass at least 2,500 cfs was not demonstrated this year because low runoff.

##### *4.2 Condition 10 Extension*

On June 7, the IJC approved the Applicant's request for a Condition 10 variance to operate under the Condition 8 drought rule curve through September 30, the end of the water year. Under the 2013 Orders of Approval, however, the Condition 8 drought rule curve merge with the Condition 7 standard rule curve until November 7. In order to remain compliant with the IJC rule curve without an abrupt change in lake level on September 30, the Applicant requested an extension of the Condition 10 variance to operate under the drought rule curve until November 1. This extension would allow the Applicant to gradually reduce lake levels during the fall, which supports spawning fish by allowing redds to remain wet during the fall incubation period. The Board approved this request and the Secretaries will draft a recommendation to the IJC to approve this request. The Board was encouraged by IJC staff to consider developing

operational guidelines to catalog best practices for operating within the rule curve as the Rainy Lake of the Woods Board has done.

#### *4.3 2019 Zosel Dam Operation and Fall Ramping Rates*

Al Josephy (Washington State Department of Ecology) updated the Board about Washington State Department of Ecology's operation of Zosel Dam and plans for Fall 2019 ramping rates. Ecology's first goal for Zosel Dam operations is to adhere to the IJC Orders of Approval for Osoyoos Lake. While operating within the Orders, Ecology also seeks to protect water rights within the Okanogan River and the Columbia River Basin while working with fisheries organizations to maintain instream flows for fish.

When discharge in the Okanogan is 500 cfs or more, the Okanogan River can meet water demands, but when the Okanogan River is less than 500 cfs, discharge in the Similkameen River becomes important for meeting downstream water demands. At discharges of less than 600 cfs as measured at the Okanogan at Tonasket, OTID intakes become emerged and irrigators are unable to pump water out of the Okanogan River. In 2019, discharge in the Similkameen River became increasingly low and Ecology was forced to look for additional storage in Lake Osoyoos to meet water demands.

Low runoff in the Similkameen River was forecasted in the Similkameen River from March. In response to this forecast, Washington State declared a drought for Okanogan County, which was expanded to additional counties in the Columbia River Basin in March. Similkameen River flows were also forecasted to be low in August and irrigation withdrawals during this time period remained unknown. In order to meet instream flow needs for fish and irrigation needs, Ecology applied for a Condition 10 waiver to operate under the drought rule curve. Many gate changes at Zosel Dam were made to maintain summer lake levels near the top of the drought rule curve.

Mr. Josephy presented a proposal for a flushing flow of 1,100 cfs for a 24-hour period on September 21 to mobilize sediment in the reach of the Okanogan River immediately downstream of Zosel Dam. Additional water stored in Lake Osoyoos during 2019 made this flushing flow possible. This reach is used by spawning Chinook salmon, but because high discharge is coincident with backwater conditions from the Similkameen River, fine-grained sediment has accumulated resulting in deteriorated spawning habitat. Ecology distributed a press release about the flushing flow, which was picked up by local media outlets. The Board requested John Arterburn (Board Member, U.S. Section) provide an update to the Board about the ecological effects of the flushing flow.

#### *4.4 Operations of Okanogan System*

Shaun Reimer (British Columbia – Forest, Lands, Natural Resources Operations and Rural Development) provided an overview of Okanogan system operations in 2019. Forecasted inflow to Okanogan Lake during the spring freshet became increasingly lower between February and June forecasts. Moderate low outflow from Okanogan Lake were released through May when conservation flows were adopted to keep Okanogan Lake as high as possible in anticipation of low runoff during the 2019 freshet. Record low precipitation fell in the Okanogan Basin during May and June, but July was wetter and closer to normal resulting in moderate flow in the Okanogan basin for the remainder of the summer. The peak water-surface elevation of Okanogan Lake was 342.18 m, which occurred during the third week of June. This water-surface elevation was 30 cm less than the annual target elevation of 342.48 m.

#### 4.5 *Public Correspondences*

The Board received two emails from members of the public regarding the elevated lake levels due to the adaptation of the drought rule curve under Condition 10. Board Secretaries replied to each letter.

#### 4.6 *Okanagan Operational Inflow Forecasting*

David Campbell, Head BC River Forecast Center (British Columbia – Forest, Lands, Natural Resources Operations and Rural Development) provided an overview and history of the operational inflow forecasting for Okanagan Lake. Empirical seasonal forecasts were initiated in the 1970's, updated in 1984, then again in 1999 with antecedent inflow to the lake and optimized equations with data to 1997. A 2011 in-house review added principle component analysis (PCA) approach, which converts correlated variable, resulting in a multivariable linear equation, but with no seasonal outlook incorporated into the model.

A new Okanagan Ensemble Prediction System (EPS) was initiated in 2016, and developed using RAVEN. The process based hydrologic model is being used to simulate runoff from climate/weather inputs, and provide a probabilistic forecast of seasonal runoff. The model accounts for snow dynamics, precipitation runoff, evaporation and water-usage. It includes year-to-date spin-up and calibration, while and the modeler can adjust climate inputs. Weather data from 1938-2018 is fed into the EPS model, which provides a deterministic 10-day forecast by calculating volumes for specific time periods, and outputs percentiles of inflows based on how often flows are exceeded based on future conditions.

Challenges and limitations of the EPS model result from empirical approaches to seasonal forecasts inherently don't forecast extreme events, but give a best "fit" to predictors. This was observed in 2017, when the actual inflow was much greater because of wet spring weather, and the model did not say much about rapidly changing conditions. Empirical approaches don't forecast extreme events. Re-analysis of flood frequency statistics must be updated more frequently, otherwise current conditions can no longer be represented by past data that the model was calibrated to.

The River Forecast Center is working to update equations to include data form last decade; investigating utility of incorporating seasonal weather forecasts; and improving model calibration.

### **5. Special Projects Updates**

#### *5.1 IWI Proposal - Similkameen Hydrologic Model*

Andy Gendaszek (Secretary, U.S. Section) updated the Board on the status of the Board's proposal to the IJC's International Watershed Initiative to fund a hydrologic model of the Similkameen River Basin. The model will be used to simulate the hydrologic response of the Similkameen River basin to current and projected climatic conditions in order to inform the Board about the impacts of climate change on the IJC Orders of Approval. Under the second phase of this project, which will be funded separately, the Similkameen Basin hydrologic model will be integrated with a hydrologic model of the Okanagan/Okanogan Basin to complete the assessment of the impact of projected climate change on the IJC Orders of Approval for Osoyoos Lake. The model will be funded by the Canadian Section of the IJC and the Board working group is working with IJC staff to develop a statement of work to put the model out for

bid. The model be non-proprietary (open source) and the Board working group needs to determine how the model will be stewarded into the future so that it remains accessible and able to be updated in the future.

### *5.2 High-Water Monuments*

A monument showing the water-surface elevation of historic floods from 1896 through 2018 was developed by the USGS in Fall 2018 in coordination with the Board, IJC, and cities of Osoyoos and Oroville. The monument also describes the history of regulation and the role of the IJC in establishing allowable levels of Osoyoos Lake. The monument was installed in near the Memorial Fountain in Osoyoos in March 2019 and will be established in Veteran's Memorial Park in Oroville in Fall 2019 after coordinating with the City of Oroville about its specific installation site.

### *5.3 Zosel Dam Operational Model*

The USACE Zosel Dam Operational model was used in 2018 to provide estimates of Osoyoos Lake levels during the 2018 spring freshet to hydrologic forecasting agencies. It was not used in 2019 and the USACE has identified several datasets that could improve model predictions. These improvements include updated lake capacity curves developed from improved bathymetry and LiDAR topographic data. In addition, staff-gage readings and information about tributary inflows to the Okanagan River between Okanagan Lake and Osoyoos Lake would help refine the model.

### *5.4 A River Film and New Vignettes*

Ascent films developed five five-minute vignettes from "A River Film" about agriculture, native fisheries, fisheries, infrastructure, and the temperature-oxygen squeeze. The Board and the IJC are now able to post these vignettes on their respective websites and the Board Secretaries will coordinate with IJC communications staff to put them on the Board website.

## **6. Business Items – Work Plan Review**

Review of the 2018-2019 work plan and development of the 2020-2021 work plan was not completed during the Annual Board Meeting and was rescheduled to a conference call.

The following notes are from the October 7 work plan conference call.

### *6.1 Review of 2018-2019 work plan*

Board Members reviewed the old work plan and discussed both the ongoing core activities, and evaluated completed and uncompleted components of the Priorities through 2019. In general, Ongoing core activities were deemed relevant and appropriate, with three additional items discussed for addition to the 2020 work plan (see section 6.2). Priorities through 2019 were reviewed and assessed for completeness:

1. Plan and implement lake shore high water monuments: Ongoing, monuments designed, manufactured and installed on Canadian side, US side monument not yet installed;
2. Plan and implement the installation of additional water level gauges above and below Zosel Dam: Completed;
3. Plan and implement the installation of a webcam at Zosel Dam: Completed;

4. Implement plan for production and distribution of documentary film “A River Film”: Completed, multiple screenings and documentary awards, now available on Telus download in Canada;
5. Implement relevant aspects of Communications Plan: Completed as part of 2019-2020 Work Plan;
6. As opportunities arise, assist and possibly co-sponsor events with public outreach utilizing “A Rive Film”: Moved to 2019-2020 ongoing core activities;
7. Continue development of operation analytical model for Zosel Dam: On-going, kept on 2019-2020 priorities;
8. Improve knowledge of Osoyoos Lake water balance: Ongoing, kept on 2019-2020 priorities;
9. Improve data availability using harmonized transboundary GIS map of Okana(o)gan Basin: Completed

### *6.2 Development of 2020-2021 work plan*

As part of the IOLBC 2019-2020 Work Plan, the previously separate 2016 Draft Communications Plan and appended as Appendix B, while a bullet referencing the Communications Plan was added to the ongoing core activities. Additional core activities changes included the documentation and addition of the quarterly conference calls (and additional calls as needed), and the co-sponsoring of events with public outreach potential.

The Board identified priorities through 2020 on which to focus its efforts. These priorities complement and build on the priorities through 2019, ongoing core activities, input from the local community, other stakeholders, and the Commission. Summarized priorities through 2020 are as follows:

1. Complete installation of lakeshore high water monument in Oroville, WA.;
2. Integrate data from newly installed water level gauges into USACE analytical model; and work with IJC to link new Zosel Dam webcam into Board website;
3. Upload documentary film “A River Film” to Board website;
4. Continue development of operation analytical model for Zosel Dam;
5. Improve knowledge of Osoyoos Lake water balance;
6. Plan and implement IWI funded Similkameen Basin Hydrologic Model;
7. Plan and secure funding via IJC, and implement an Okanagan Basin Science Forum for the Fall of 2021.

### **7. Meeting Adjourned at 4:30 PM**