Meeting Minutes

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

Thursday, October 14, 2021
12:30 – 3:30 PM (PDT)

Virtual Meeting: Microsoft Teams

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

	United States	**Canada**
Co-Chairs	Cindi Barton	Dave Hutchinson (host)
Members	John Arterburn Col. Xander Bullock x Kris Kauffman x Arnie Marchand	Ted White x Sue McKortoff Brian Symonds Anna Warwick Sears
Secretaries	Andrew Gendaszek	Martin Suchy
IJC representatives	Lance Yohe, (Commissioner, U.S. Section), Rob Caldwell (Engineering Advisor, Canadian Section), Paul Allen (Communications, Canadian Section), Jeff Kart (Communications, U.S. Section), Adam Greeley (AAAS Fellow, U.S. Section)	
Guests	Shaun Reimer (BC FLNRO), Trevor Hutton (WADOE), Emanuelle Johnston (ECCC), Ken Brettmann (USACE), Chris Laveau (USGS), Tana Stratton (GAC), Ian Collado (U.S. State Department)	

1. Welcome and Introductions

The meeting was opened at 12:00 p.m. by Dave Hutchinson (Board Chair, Canadian Section) with welcoming remarks and introductions of the Board members, IJC Commissioners, and guests who were in attendance.

2. Review of Agenda

Dave Hutchinson reviewed the draft agenda and proposed delaying item 5.5, review of the IOLBC Work Plan, to the December Board quarterly conference call. The agenda was accepted with this modification.

3. Conditions, Compliance, and Operations Update

3.1 2021 Hydrologic Conditions and Order Compliance

Martin Suchy (Board Secretary, Canadian Section) reviewed the 2021 hydrologic conditions and compliance with the IJC Orders of Approval for Osoyoos Lake. In fall 2020, ECCC and NOAA issued a seasonal outlook for La Nina conditions, which typically result in wetter conditions on the coast and colder conditions inland with Osoyoos Lake at the boundary between the two. Although early winter precipitation for the Similkameen and Okanagan basins was near normal precipitation, below normal precipitation began in February and persisted through the spring and summer with typical June rainfall absent in 2021. Except for a below-normal period of cold weather in February, temperature was near normal during the winter and spring. In late June, a record-breaking heat dome developed across the western U.S. and Canada and above normal temperatures persisted through July and August.

Snowpack in the Similkameen basin, as measured at Blackwall Peak (elevation 1940 m (6365 ft)), was near normal through the winter, but started to decrease below normal by late-May and June. In the Okanagan basin, above-normal snowpack persisted through the winter and spring until rates of melting increased in May and June. Record high temperatures during the late June heat dome event resulted in minimal increases in runoff because most of the snowpack had melted prior to the heat-dome event. No concerns about drought existed in the winter and early spring because of normal to above-normal snowpacks, but drought became an increasing concern by May and June as snowpack decreased below normal.

Drought concerns within the Okanagan and Similkameen basin increased throughout the summer as a result of lower-than-expected inflow to Okanagan Lake and runoff within the Similkameen basin. Forecasted runoff for the Similkameen River in April and May was nearly 1,500,000 acre-feet, exceeding the IJC Order of Approval 1,000,000 acre-feet drought criteria (Condition 8a). Similarly, Okanagan Lake net inflows in early April were forecasted to exceed 400,000 acre-feet, but these were revised downwards in early May due to drier than expected conditions leading to lower net inflow, but ultimately exceeded the IJC Order drought criteria (Condition 8bi). Although Okanagan Lake levels were forecasted in April and May to meet the IJC Order drought criteria of 1,122.6 feet (Condition 8bii), peak Okanagan Lake level on June 18 was 1,125.25 feet and this part of the drought criteria was met. Because the other drought criteria was not met for the Similkameen River flow volume, the Board made no drought declaration, which was communicated to the Applicant. No request from the Applicant for a Condition 10 variance was received from the Applicant.

In 2021, no significant peak occurred during the spring freshet on the Similkameen River leading to backwater conditions and elevated Osoyoos Lake during the spring freshet did not occur. Okanagan Lake net inflow peak was about four weeks earlier than normal and net losses began earlier this year as well because of dry conditions starting in July; in a normal year net losses do not begin until August. Osoyoos Lake levels were maintained within the standard Condition 7 rule curve with a peak lake level of 911.87 feet in late July. No compliance issues occurred in 2021 and lake levels have been declining since late-September when down ramping to winter lake levels started. Discharge capacity in 2021 was not demonstrated because Okanogan River discharge never reached 2,500 cfs and Osoyoos Lake level never reached 913 feet, which is required to assess discharge capacity of the Okanogan River.

3.2 *Zosel Dam Operations*

Trevor Hutton (Washington State Department of Ecology) updated the Board about Washington State Department of Ecology's operation of Zosel Dam in 2021. Ecology's goals for Zosel Dam operations include: adherence to the IJC Orders of Approval for Osoyoos Lake, protecting water rights within the Okanogan River and Columbia River basins, and working with fisheries

interests to maintain instream flows for fish. Ecology coordinates Zosel Dam operations with the Oroville-Tonasket Irrigation District (OTID), which implements day-to-day operations of the dam. In 2021, Ecology and OTID were able to follow their operational plan and maintain compliance with the rule curve defined by the IJC Orders of Approval. A variance from the standard Condition 7 rule curve was not sought by Ecology under Condition 10 in 2021 because adequate water was projected to be available in the spring.

The definition of drought for Washington state differs from the drought criteria defined within the IJC Orders of Approval. Washington state declares a drought if there is less than 75 percent of normal water supply and it can be demonstrated that there will be hardship from that unavailability of water. On July 14, the Washington Governor declared a near statewide drought, which included the Okanogan basin. This drought declaration occurred late in the season relative to previous drought declarations because high snowpacks existed in the spring, but late spring and early summer hot, dry weather resulted in the concentration of runoff in particular periods. Operations of Zosel Dam helped alleviate some of those impacts within the Okanogan Basin.

Ecology is coordinating ongoing maintenance activities of Zosel Dam with OTID, updating the operations and maintenance manual, and seeking funding for future major upgrades (e.g., updating the dam gates) with the Ecology's Office of Dam Safety. Surveys of easements for Zosel Dam are being done to reestablish property boundaries where markers have been lost. Finally, Ecology is collaborating with Columbia River Inter-Tribal Fish Commission to monitor sockeye using PIT (passively induced transponder) tags.

3.3 Okanagan Lake System Operations

Shaun Reimer (British Columbia – Forest, Lands, Natural Resources Operations and Rural Development) provided an overview of the Okanagan Lake Regulation system (OLRS) operations in 2021. In spring 2021, Okanagan Lake was drawn down in anticipation of higher-than-normal runoff expected from an above average winter and early spring snowpack. This operational decision also considered higher-than-expected lake levels in three of the past five years on Okanagan Lake. Early spring expected runoff was similar to 2020 when higher late spring precipitation caused Okanagan Lake level to rise above targeted levels. By May 2021, however, a drying trend during the spring resulted in net inflows to Okanagan Lake that were lower than expected. Negative inflows began earlier than usual by about a month, which is attributable to the late June heat dome. Okanagan Lake levels were below targeted levels resulting in impacts to shore-spawning kokanee. Lake levels were similar in 2003 but snowpack was less than normal that year; inflow to the lake was able to be replenished during the following fall and winter.

Question: Will the BC River Forecast Center be transitioning to Principal Component Analysis (PCA) model to forecast net inflow? Also, it seems like the old inflow model seems to outperform the new PCA model

Answer: For the next few years, Shaun will request both models to be run. Extreme conditions in 2021 confounded both models and do not necessarily mean that the PCA model will underperform in the future.

Question: What were salmon returns in the Okanagan like in 2021?

Answer: It was a moderate return year, but it was a surprise that returning salmon weathered the warm water as well as they did and no DO/temperature squeeze developed in Osoyoos Lake, which was surprising. However, Colville Tribe fisheries researchers found lower fecundity in the returning sockeye because of the heat. It seems like fish are showing resiliency and adapting to warmer temperatures.

4. Special Projects

4.3 Bathymetry Project

Anna Warwick Sears presented an update about Lake Osoyoos bathymetry. Following 2017 flooding, OBWB initiated a project to map elevation of the Okanagan River main-stem channel and lakes, which was published in March 2020. One of the conclusions of the report was that wave effects and wave runup of flooding was difficult to model because of a lack of lake bathymetry. OBWB applied and secured funding in April 2021 to measure nearshore lake bathymetry of seven lakes in the Canadian Okanagan basin ultimately deciding to survey with airborne LiDAR. Shoreline topography and lake bathymetry was measured up to a depth of 10 meters, which were linked to previously surveyed terrestrial topographic data measured using LiDAR. Orthophotos were also collected. Funding secured by OBWB was limited to the Canadian part of Osoyoos Lake but the U.S. part of Osoyoos Lake was not able to be measured. In August, the IOLBC then applied for IWI funding to survey the U.S. part of Osoyoos Lake, the Okanogan River channel to its confluence with the Similkameen River, and the Similkameen River from Enloe Dam to its confluence with the Okanogan River. This funding provided considerable cost-saving by piggy-backing with the OBWB project. This dataset will form the basis for future hydraulic modeling projects in the Okanogan and Similkameen Rivers. Data will be available towards the end of February.

4.2 Phase II Model Integration Status

Andy Gendaszek presented a summary of the second phase of the Okanagan/Similkameen model integration. OBWB funded development of a Raven model for the Canadian Okanagan model which was completed in spring 2020 and IWI funded a project to develop a comparable Raven model for the Similkameen River. The Similkameen model was used to assess how projected climatic shifts may affect drought criteria and runoff within the Similkameen Basin but the climatic effects on Osoyoos Lake level and the Okanagan based drought criteria were not evaluated. To assess these remaining parts of the IJC Orders for Osoyoos Lake, the IWI funded a second phase of the modeling effort to merge the Similkameen and Okanagan models. The project is currently undergoing contracting and will take advantage of new bathymetric modeling within the Okanagan and Similkameen basins. The project will start in early 2022 and the contractor will be invited to share preliminary results at the upcoming Osoyoos Lake Water Science Forum, if possible.

4.3 Ice Jam Proposal

John Arterburn presented an update about a proposal idea for consideration by the IJC-IWI program concerning the formation of ice jams at the southern end of Osoyoos Lake. Preliminary analysis suggests that weather conditions including wind speed, wind direction, and temperature are correlated to the formation of ice jams such that air temperatures are below freezing, mild winters contribute to open water conditions conducive to the formation of frazzle ice, and northerly winds push frazzle ice into the outlet of Osoyoos Lake at its southern margin. Reduced discharge from the formation of ice jams results in reduced discharge and increased

lake levels. Reductions in winter flows below 300 cfs endanger incubating salmon eggs by contributing to egg desiccation, reduced oxygen levels, and freezing of the eggs. Preliminary assessment of discharge records suggest that on twenty occasions an ice jam reduced discharge below 200 cfs and on 3 occasions discharge was reduced below 100 cfs during an ice jam event. The next step is to develop an IWI proposal will provide a formal analysis of the history and frequency and physical processes that contribute to the ice jams, but its scope will not consider engineering proposals.

4.4 Osoyoos Lake Water Science Forum

Anna Warwick Sears updated the Board about planning for the Osoyoos Lake Water Science Forum. Representatives of the Okanagan Nation Alliance presented a plan to "indigenize" the Forum by engaging an indigenous facilitator to bring in indigenous approaches and content to the Forum. The Forum was postponed from October 2021 to April 2022 due to COVID travel restrictions.

5. Special Projects

5.1 Public Correspondence

Martin Suchy provided an overview of the Board's public correspondence, which include correspondence with the Applicant informing non-declaration of drought in 2021 and a series of correspondences about Enloe Dam clarifying that the Board does not have a position on Enloe Dam removal.

5.2 News Releases

The Board made three news releases during the past year in an effort to increase communication with the public. These news releases included: a pre-freshet news release, a peak-freshet news release, and a news release advertising the fall public meeting of the Board. In future years, the Board secretaries plan to regular publish news releases on a schedule during the year as well as special projects. News releases will be distributed to local news media via the IJC Communications and through the IJC newsletter published in February, May, August, and November. This fall, the Board will be submitting an article to the IJC newsletter about the 75th anniversary of the Board.

5.3 Engaging Tribes and First Nations

Board members spoke with the Okanagan Nation Alliance (ONA) and Colville Tribes for each to identify representatives to the Board. In addition, several schools will participate at the Osoyoos Lake Water Science Forum and Arnie Marchand and Anna Warwick Sears are working to give a presentation to guide their participation.

5.4 Fall Semi-Annual Appearances

The Board reviewed the draft presentation that Dave Hutchinson will be giving on behalf of the Board at the IJC Fall Semi-Annual Board Appearance. Commissioners have asked for the Board to highlight Board communications and outreach including use of the Board website within their presentations. The Board was also asked to evaluate their outreach efforts.

6. Round Table

The Board discussed several items including development of an article for the 75th Anniversary of the Board, development of the 2022 Quarterly Conference Call schedule, implementation of an Office 365 Sharepoint to facilitate document sharing among the Board, the coincidence of the establishment of the Board and the anniversary of the town of Osoyoos in 1946, and posting of a FAQ (frequently asked questions) section on the Board website.

7. Preparation for Public Meeting

The Board reviewed the agenda and protocols for the public meeting of the Board which will start at 6:30 PM. Commissioners Yohe, Beland, and Corwin are planning to attend.

8. Meeting Adjourned at 3:30 PM