

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

### **2014 Archive – Lake Level Status and Trends**

#### **Update: Oct.27, 2014; Osoyoos Lake Water Level Trends – International Osoyoos Lake Board of Control**

Water levels in Osoyoos Lake are currently being lowered by operations at Zosel Dam in keeping with normal seasonal requirements.

The lake will be gradually lowered to winter operational levels and maintained at about 909.5 feet until spring. Zosel Dam will be operated to maintain low winter levels until early March, when dam operators will gradually raise the lake to conform with the prescribed summer operations level (typically mid-range between 911.0 – 912.0 ft).

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#### **Update: August 13, 2014: Osoyoos Lake Water Level Trends – International Osoyoos Lake Board of Control**

Since the end of the freshet peak in mid-June, water levels in Osoyoos Lake have been maintained at elevations close to the middle of the summer range allowed by the 2013 IJC Supplementary Order of Approval for Osoyoos Lake (the Order). Lake elevations have ranged from about 911.5 to 911.8 ft during this time, within the allowable range of 911.0 to 912.0 ft. Lake levels will be maintained within this range until September 15, when the rule curve allows for decreases in lake levels for the fall and winter periods towards 909.5 ft by November 1 (see historical lake levels and the rule curve at <http://wa.water.usgs.gov/data/12439000.html>).

At this time of year (August), Osoyoos Lake levels are largely controlled by Zosel Dam at the outlet of Osoyoos Lake. The dam is operated such that lake levels are maintained according to the rule curve specified in the Order within the constraints provided by inflow to the lake from the Okanagan River (largely governed by outflow from upstream Okanagan Lake) and losses from Osoyoos Lake through evaporation, irrigation, other water use, etc.

Fisheries experts expect a large return of sockeye salmon in Osoyoos Lake and the Okanagan River later this summer. Given the relatively warm dry summer thus far and the forecasted continuation of these conditions for several more weeks, water managers at Zosel Dam (Washington State Department of Ecology) and Okanagan Lake (BC Ministry of Forests, Lands and Natural Resources Operations) have taken proactive steps to improve conditions in the system for both the passage and spawning of returning sockeye salmon and rearing of sockeye smolts in Osoyoos Lake. Pulses of cooler high water flows from Okanagan Lake are being released to help offset higher water temperatures and low dissolved oxygen in Osoyoos Lake to improve conditions for the fish. These steps are being taken with the support of fishery agencies, tribes and first nations, and dam operators on both sides of the border.

On August 5, dam operators in Canada began ramping up outflow from Okanagan Lake from approximately 12 cubic metres per second (cms); (420 cubic feet per second [cfs]) to approximately 35 cms (1,200 cfs). This pulse of increased flow is expected to last until about August 19. The exact timing will depend on weather conditions but by late summer, outflow from Okanagan Lake is expected to be returned to levels typical for the season.

The operator of Zosel Dam is aware of the operational changes in Canada and is adjusting dam operations in order to manage Osoyoos Lake levels within the rule curve specified in the Order.

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### **Update: May 30, 2014: Osoyoos Lake Water Level Trends – International Osoyoos Lake Board of Control**

Water levels in Osoyoos Lake currently exceed the rule curve elevation of 912 feet (see lake levels and rule curve at <http://wa.water.usgs.gov/data/12439000.html>). The lake levels are elevated due to spring snowmelt at higher elevations in the Okanagan and Similkameen River basins. Condition 9 in the 2013 Supplementary Order of Approval makes allowances for these natural conditions and the dam operator is in compliance with the order.

By storing some of the spring runoff in upstream reservoirs, the British Columbia Ministry of Natural Resource Operations (MNRO) has worked to decrease and stabilize the natural discharge into Osoyoos Lake to about 2,600 cubic feet per second (75 cubic meters per second) since about May 10 (as measured at the Okanagan River near Oliver, BC, streamflow gage). Lake levels, however, are currently also affected by backwater conditions created by high flows from the Similkameen River downstream from the lake. Backwater conditions result when discharge from the unregulated Similkameen River enters the Okanagan River downstream from Osoyoos Lake, which restricts outflows from the lake. Under these conditions, Zosel Dam is operated to allow for maximum possible outflow from the lake. Even then, however, natural conditions are such that water cannot flow out of the lake quickly enough to maintain lake levels within the rule curve. In the coming weeks, lake levels may drop temporarily as air temperatures and thus snowmelt decrease and then they may rise again as air temperatures and snowmelt increase. This process will continue until most of the high-elevation snowpack has melted, generally by late spring.

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### **Update: April 10, 2014; Osoyoos Lake Water Level Trends and 2014 Drought Declaration information – International Osoyoos Lake Board of Control**

Current hydrologic forecast information indicates that the Drought Criteria under the IJC Osoyoos Lake Order will **not** be met for 2014 (i.e. the Board of Control does not expect to declare drought with respect to Condition 8 of the IJC 2013 Supplementary Order of Approval).

The drought declaration criteria in the 2013 Supplemental Order for Osoyoos Lake (Condition 8) are:

a) the volume of flow in the Similkameen River at Nighthawk, Washington for the period April through July as calculated or forecasted by United States authorities is less than 1.0 million acre-feet (note: for 2014, NOAA National Weather Service information currently estimates 1.136 MAF for the April-July period).

**and**

b i) the net inflow to Okanagan Lake for the period April through July as calculated or forecasted by Canadian authorities is less than 195,000 acre-feet (note: BC River Forecast Centre currently predicts 437,800 acre-ft)

**or**

b ii) the level of Okanagan Lake fails to or is forecasted by Canadian authorities to fail to reach during June or July elevation 1122.6 feet Canadian Geodetic Survey Datum (note: BC River Forecast Centre currently predicts 1123.5 ft GSC).

Note:

Based on this information, Zosel Dam will operate within the normal maximum and minimum lake level range specified in the IJC Order of Approval (between the maximum of 912 ft/278 m from May 1 to Sept.15 and the minimum of 910.5 ft/277.5 m from June 1 to Sept.15th; note: minimum is 910 ft/277.4 m from April 1 to June 1).

Through April, Zosel Dam operations will aim to maintain a lake level close to 910.5 ft/277.5 m.

Note that freshet (aka. Spring Rise) conditions associated with snow-melt at higher elevations (and influenced by rainfall) in the larger Okanagan and Similkameen basins can result in high lake level conditions for Osoyoos Lake, occasionally exceeding the maximum level specified in the IJC Order. Under such conditions of excessive natural inflow to Osoyoos Lake, Zosel dam operators lift flow-control gates out of the water to allow as much flow past the dam as possible until high inflow conditions abate and lake levels return to levels specified in the IJC Order.

For updates on freshet conditions and warnings or advisories, please visit the BC River Forecast Centre website:

<http://bcRFC.env.gov.bc.ca/>