

Fall / Winter Update to the 2007 Water Management Plan

Introduction

The Fall / Winter Update is part of the annual Water Management Plan (WMP). It is intended to supplement the WMP with more detailed information about fall and winter operations.

Current Conditions

The most recent final water supply forecasts were issued in early February and are as follows. The March final forecast will be issued the first week in March.:

Project	Period	Volume (maf)	% Normal
The Dalles *	Apr - Aug	88.2	95
Lower Granite *	Apr - Jul	16.8	77
Libby**	Apr - Aug	6.6	104
Dworshak **	Apr - Jul	2.1	79
Grand Coulee *	Jan - Jul	63.9	102
Hungry Horse***	Jan - Jul	2.04	98

*Prepared by National Weather Service **Prepared by Corps of Engineers
 *** Prepared by Bureau of Reclamation

The National Weather Service's Climate Prediction Center is forecasting warmer than normal temperatures and an equal chance of above – below or near median precipitation throughout the basin for the March – May period.

- Precipitation conditions from October 1, 2006 to February 19, 2007 were above average in most sub-basins. The National Weather Service reported that precipitation was: 110 percent of average (1971-2000) at the Columbia River above Grand Coulee, 92 percent of average at the Snake River above Ice Harbor, and 108 percent of average at the Columbia River above The Dalles.
- As of February 1, the overall Columbai Basin snowpack was 97% of normal. The snowpack above Grand Coulee and Ice Harbor was 103% and 76% of normal, respectively.

Lake Pend Oreille Kokanee Operation

The State of Idaho, USFWS and NOAA-F submitted a System Operation Request in mid-September requesting the Action Agencies draw down Lake Pend Oreille to elevation 2051 feet for the winter. They used the draft Decision Tree proposed by IDFG and USFWS for guidance, and noted female kokanee abundance numbers were below target levels. They further requested the lake be drawn down begin on Oct. 7, or as late as reasonably possible (while minimizing or eliminating the need to spill at Albeni Falls Dam), and reach the winter elevation by November 20, 2006. There were several reasons for the request for the delayed drawdown: to desiccate lake trout eggs which are an introduced predator of Kokanee and to increase the likelihood of providing additional water for chum spawning below Bonneville Dam.

Due to heavy rain, the project experienced spill, and on November 15, Russ Kiefer, IDFG, reported that 1700 adult Kokanee had been counted and were spawning in Lake Pend Oreille earlier and at shallower elevations than expected. He requested that the COE maintain the lake's elevation within a range of 2052.3' – 2052.8', to avoid de-watering eggs in the area.. This half foot range was maintained until December 31, the most critical spawning period and on January 1 the range was changed to 2052.3' – 2053.3'.

Chum Spawning Flows

During TMT conference calls on November 3, consensus was reached for the chum operation to provide minimum tailwater elevation of 11.3 feet - 11.7 feet targeting 11.5 feet around the clock to facilitate chum salmon spawning around Ives Island Complex, Multnomah Falls and I-205. The agreed upon start date was no later than 0700 hours November 7.

The actual operation started on November 5. On November 7 due to increased river flows from storms, TMT requested an increase in flows at BON to deter chum spawning at higher elevations. To accomplish this, TMT requested a minimum tailwater of 13 feet and if possible provide four to six -hour pulses.

On November 17 after the flows receded, TMT changed the chum operation to provide a minimum tailwater of 11.8 to 12.3, targeting 12.0 feet 24-hours/day if possible or target tailwater elevations from 0700 hrs to 1900 hrs and provide minimum of one 20-minute pulse greater than tailwater elevation of 13.5 feet between 1900 hrs and 0700 hrs.

On December 6, this operation was changed to a minimum tailwater of 12.3 to 12.8, target 12.5 feet 24-hours/day if possible or target tailwater elevations from 0700 hrs to 1900 hrs and provide minimum of one 20-minute pulse greater than tailwater elevation of 13.5 feet between 1900 hrs and 0700 hrs.

By December 20, TMT requested a minimum tailwater of 12.8 to 13.3 feet, target 13.0 feet 24-hours/day if possible or target tailwater elevations from 0700 hrs to 1900 hrs and

provide minimum of one 20-minute pulse greater than tailwater elevation of 13.5 feet between 1900 hrs and 0700 hrs.

By December 22, ODFW stated that chum salmon spawning officially ended, therefore TMT requested a minimum tailwater of 13.0 feet with at least 1 pulse greater than 13.5 feet for minimum of 20 minutes/day for chum salmon incubation.

These decisions were based on location and elevation of redds at the Ives/Pierce Island spawning area, the potential for average, above average, or below average water supply this year, and the need to refill storage reservoirs to meet flood control elevations by April 10.

Chum Spawning Research

The USGS conducted chum spawning tests in 2004, 2005 and proposed a similar study in 2006. In 2004, they conducted experimental flow tests by increasing tailwater elevations from 11.5 ft to 15.1 ft and back down to 11.5 ft. The tailwater elevation steps were 2 hours long. Acoustically tagged fish that had a redd generally remained at the redd during a flow test. Although fish were not displaced by the flows they evaluated, they began to see increases in swimming activity by fish to maintain their position in the current and decreases in nest digging activity as tailwaters and velocities increased. In 2005 flow tests were conducted with tailwater elevation steps 8 hours long to see if chum salmon spawning behavior may be further altered. The USGS concentrated their efforts on evaluating tailwater elevations of 13.5 feet and 15.5 feet. Due to dry basin conditions in November, the project was not able to provide the higher tailwaters requested early in the month. Later in November when precipitation increased, higher tailwaters were obtained but spawning activity was winding down. Study results indicated that chum salmon spawning activity or redds were not found at the higher riverbed elevations during the flow tests, however, fish abundance was low. Some of the chum were displaced from their redds at a tailwater elevation of 15.5 feet. Fish did return to their redds after flows returned to base levels. Some consequences of elevated flows were short term interruption in spawning activity; increased velocities and swimming activity, potential depression of thermal cues used for redd site selection, and temperature variation experienced by incubating eggs and fry. The proposed 2006 study will repeat the 2005 design utilizing a DIDSON hydroacoustic camera to provide greater resolution on locations, behavior and utilization of spawning substrate by chum salmon during different tailwater elevations. However, this work was not possible due to the high November flows and was postponed until 2007.

Burbot Spawning Flows (Non-BiOp Action)

No specific burbot flow requests were made in fall 2006. However, SOR # 2006-FWS-1 dated October 13, 2006 requested that the Corps utilize selective withdrawal structures at Libby Dam to provide the coolest water possible in November and December for burbot spawning. The Corps implemented this SOR starting October 17, 2006. The Corps removed 144 of the 162 selector gates to obtain lower water temperatures. The goal of the SOR was to see if radio-tagged burbot would respond to the lower water temperatures. During the 2005 burbot special operation, only six burbot were captured and three tagged. The COE will continue to monitor temperature for the rest of the year.

Flood Control

Grand Coulee and all Canadian projects will be operated for standard flood control in 2007. Hungry Horse and Libby will be operated for Variable Q Flood Control. General Gregg Martin of the COE signed a Determination of Findings on January 5, 2007 to implement strict VARQ at Libby Dam in Water Year 2007 only. This document described strict application of VARQ as following the eight step VARQ operating Procedures with no flexibility

Beginning in January, the COE calculates Upper Rule Curve elevations based on the monthly final forecasts. Projects are operated to these elevations, with the objective of reaching their April 10 Upper Rule Curve.

Spring Creek Hatchery Release (Non-BiOp Action)

The U.S. Fish and Wildlife Service typically releases between 7 and 8 million tule fall chinook fry in early March from the Spring Creek National Fish Hatchery upstream of Bonneville Dam. In 2007 the Action Agencies plan to operate Bonneville Dam with a second powerhouse priority, operate all units with fish screens in place, operate the bypass facility, and operate the second powerhouse corner collector in order to provide project passage for this hatchery release. The tentative hatchery release date is March 5-10, 2007.

Vernita Bar spawning operation (Non-BiOp Action)

The final official fall chinook redd survey is scheduled for November 19, 2006. As specified in the Vernita Bar Settlement Agreement, the Critical Elevation was being set following that redd survey. Flow will be measured at the USGS gage downstream of Priest Rapids Dam. This protection level will be in effect through emergence in spring 2007.

Snake River Zero Flow (Non-BiOp Action)

According to the Lower Snake projects operating manuals, "From December to February, "zero" minimum project discharge is permitted on a limited basis. Under an agreement between the Corps of Engineers and the fishery agencies, zero riverflow is allowed for water storage during low power demand periods (at night and on weekends) when there are few, if any, actively migrating anadromous fish present in the Snake River...Water stored under zero riverflow conditions may maximize power production from the Columbia River Basin system, but zero riverflow operations are not recommended at Lower Snake projects when fish are actively migrating in the Snake River." Nighttime zero flow was discussed at the December 6, 2006 TMT meeting and it was agreed to operate at zero flow no more than 6 hours between 2200 – 0600 hours starting 2200 hours on December 15, 2006 when the Lower Granite Dam fish ladder goes out of service.