

Flood Control, Power Drafts, Spring Flows and Refill

The 2005 Water Management Plan (WMP) should consider the balance between flood control, power drafts, and the ability to achieve spring flow objectives and reservoir refill. For example, the operators of Grand Coulee Dam currently have the flexibility of drafting to elevations below flood control that provide them with an 85% probability of reaching their April 10th BiOp Flood Control elevation. In relatively unstable water years, where Water Supply Forecasts (WSF) can change rapidly, operators may have a difficult time reaching their April 10th elevations if they have drafted to the extent of their 85% probability elevations. In the latest draft of the WMP which includes the fall/winter update, the current conditions based on several indicators, suggest that this may be a dryer than average winter, in which case a conservative approach is warranted.

Last year, Grand Coulee was drafted well below flood control in January and February and the March Water Supply Forecasts decreased dramatically and led to Flood Control elevations increasing significantly. Because Grand Coulee was already well below the flood control points based on the February WSF Forecast, Grand Coulee could not refill enough to meet the April 10th BiOp elevation determined by the decreased March WSF. As a result, Grand Coulee had to refill about 7 feet and 539 Kaf during the spring flow period, effectively reducing flows during this period – a time period that is very important for migrating smolts. We realize that it is difficult to make appropriate decisions based on forecasts and not on actual data in hand; however, when the result of these early decisions are critical to salmonid survival, it is important to provide some flexibility for forecasting error.

Chum Flows/ Reservoir Refill

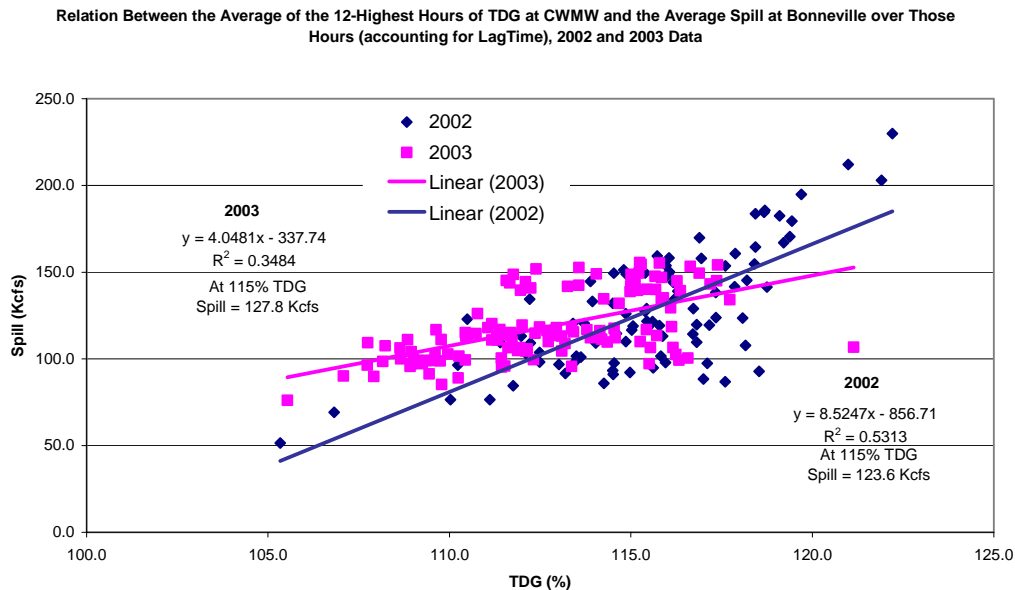
The WMP should clarify that there must be a balance between providing chum flows, reservoir refill *and* flexible power operations. The following table shows the average flows at Bonneville Dam over the last six chum spawning and incubation periods (average flows were calculated between November 1st and March 31st). During all years, the average flow at Bonneville Dam was well above the 120-125 Kcfs flow level needed for a Bonneville tailwater of 11.5 feet, even during the 2001 WY, one of the lowest on record. The WMP should clarify that it might be difficult to provide the full chum tailwater levels, provide full power flexibility, and not risk refill. Chum operations, by themselves, do not appear to impact refill. WDFW considers refill to be a very high priority and it is hoped that priority can be accommodated while meeting chum operation needs.

| Chum Season | Average Discharge at Bonneville Dam (Kcfs) |
|-------------|--|
| 1998-1999 | 202.8 |
| 1999-2000 | 191.9 |
| 2000-2001 | 133.3 |
| 2001-2002 | 131.9 |
| 2002-2003 | 135.4 |
| 2003-2004 | 139.3 |

Spill/TDG

The COE should not use the Camas/Washougal TDG Gauge to manage spill at Bonneville Dam. The use of this gauge has long been a subject of concern. The location of this gauge is too far downstream to adequately measure the effects in the Bonneville tailrace and is influenced by other environmental factors. In March 2004, the fishery managers sent a technical memorandum to Jim Adams in the Corp's Water Management Division requesting that the Camas/Washougal gauge be discontinued and providing data to support the use of the Bonneville tailrace monitor in lieu of the Camas/Washougal gauge.

An analyses of the data shows a very weak relationship between spill at Bonneville Dam and the 12-Highest Hours of TDG recorded at the Camas/Washougal gauge, using hourly data from April 10th to July 10th in 2002 and April 11th to August 14th in 2003 (Figure 1, below). Figure 1 further indicates that the management of spill at Bonneville Dam for TDG at Camas/Washougal is extremely variable. There is however a strong relationships between the Bonneville Spillway TDG and spill at Bonneville Dam in 2002 and 2003 (Figure 2, below); a more appropriate place for management of spill at Bonneville Dam, and likely more predictable. The relationship between TDG at Camas/Washougal and spill at Bonneville is extremely poor.



Relation Between the Average of the 12-Highest Hours of TDG at BON TWP1 and the Average Spill at Bonneville over Those Hours (accounting for LagTime), 2002 and 2003 Data

