FISH PASSAGE CENTER

1827 NE 44th, Suite 240, Portland, OR 97213
Phone: (503) 230-4099 Fax: (503) 230-7559
http://www.fpc.org
e-mail us at fpcstaff@fpc.org

MEMORANDUM

TO: FPAC

FROM: David A. Benner

DATE: February 15, 2008

RE: JDA Spill 4-10-08 to 4-21-08

At the February 14, 2008 FPOM meeting, spill operations at John Day Dam from April 10th, 2008 to April 21st, 2008 were discussed. Specifically, based on results from an ERDC trip, it was intended to spill only 55% of total flow over the nighttime hours (1800 to 0600, 12 hrs), instead of the BiOp level of 60% of total flow. Results at ERDC indicated that a 55% spill level may provide better tailrace egress conditions for spring migrants at a total river flow level of 250 Kcfs. Initially, fisheries managers approved of this test operation as long as spill operations were made whole, meaning that if spill was reduced to a level of 55% for 12-hrs at night instead of the BiOp level of 60%, they would like an extra hour of spill on either end of the nighttime period to make up for the nighttime 5% reduction of spill. At the FPOM meeting, Bonneville Power indicated that they would agree to spill 55% for the nighttime period, but would not provide any additional spill to make up for the reduction in nighttime spill. It should be stated clearly that BPA's agreement to spill 55% over the nighttime period without providing any additional spill, will be a reduction in comparison to current protections provided to juvenile migrants at John Day Dam.

This brief memo will estimate how much spill will be lost by reducing spill to 55% from 60% over the period from April 10th to April 21st. Also, because it was clear that BPA did not want to reduce powerhouse flows for an hour before or after the nighttime spill period presumably because these hours are important power load hours, a plan will be outlined where it would be possible to add an extra hour of spill in the morning or evening without reducing powerhouse flows during that hour.

John Day total outflows from April 10th, 2007 to April 21st, 2007 were used to estimate the amount reduced spill if spill levels were reduced from 60% of total flow to 55% of total flow over the 12-hour period from 1800 to 0600. The percentage of spill calculated for each hour of the 12-hour period was calculated by simply multiplying the actual total outflow for that hour by either 0.60 (for 60% spill) or 0.55 (for 55% spill). The

difference in hourly spill between 60% spill and 55% spill was calculated for each hour of each 12-hour period. Additionally, for each 12-hour block, the hourly differences were averaged to provide an average hourly loss of spill over the entire 12-hour period. Lastly, the loss of spill over each 12-hour period was expressed as a volume. The following table displays this information.

12hr Spill Period, 1800-0600 2007 Actual Data	Average Hourly Reduction in Spill due to Spilling 55% instead of 60% over 12-hr Spill Period, Kcfs	Sum of Reduction in Spill by Spilling 55% instead of 60% over 12-hr Spill Period, Kcfs	Storage Needed in JDA to Release Summed Reduced Spill Amount for One Hour (Kaf)
April 10-11	12.6	150.8	12.5
April 11-12	10.6	126.7	10.5
April 12-13	13.5	162.1	13.4
April 13-14	10.2	122.4	10.1
April 14-15	12.8	153.5	12.7
April 15-16	11.0	132.1	10.9
April 16-17	11.6	138.7	11.5
April 17-18	11.0	131.9	10.9
April 18-19	10.1	121.7	10.1
April 19-20	12.0	143.4	11.9
April 20-21	11.8	141.2	11.7

Based on 2007 data from April 10th to April 21st, the above table shows that average hourly loss of spill by reducing spill from 60% to 55% over the 12-hour nighttime period, would range between 10.1 and 13.5 Kcfs. The table also shows that the amount of storage needed in John Day reservoir to store the differences in spill over all of the 12-hour periods is relatively small, ranging between 10.1 and 13.4 Kaf. This amount of storage is only several tenths of one foot in the John Day pool.

At the February 14, 2008 FPOM, Bonneville Power stated that they would not be willing to spill for an extra hour to account for the 12-hour reduction in spill from 60% to 55% over the nighttime hours. It is hypothesized that BPA is not willing to provide spill during these hours because they are important hours for power loading. Therefore, we propose the following plan where spill can be provided for one hour after the 12-hour nighttime period without impacting the amount of flow through the powerhouse for the hour that spill is provided.

Over the 12-hour nighttime period BPA could provide 55% spill and store the difference between 60% spill and 55% spill in the John Day Reservoir. The amount of water stored over each 12-hour nighttime period would likely be comparable to values in the above table (using 2007 data), ranging between 10-15 Kaf. This stored water could then be released in a one hour period on top of what BPA had planned to go through the powerhouse for power needs.

Using this plan, the amount of water going through the powerhouse would not be impacted by a reduction in spill to 55% over the nighttime period. During the nighttime

period, spill would be 55% and the reduced 5% would be stored in the John Day pool. During the additional hour of spill, the water stored over the nighttime period would be used to provide the extra spill. This plan should not impact the amount of water needed through the John Day Powerhouse and if anything may provide extra power by increasing the reservoir height behind John Day Dam, providing several tenths of extra head.