FISH PASSAGE CENTER

1827 NE 44th Ave., 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: Andrew Kolosseus

FROM: Margaret Filardo

DATE: October 20, 2008

RE: Response to Questions regarding the FPC Spill Volume Analysis.

You stated that there is confusion over what the FPC analyzed in the four scenarios. The assumptions that went into that analysis and the details are presented in the FPC February 6, 2008 memo (document 303). Pages 1-4 outline the planned operations for each year. The planned operations are what was intended pre-season based on whether a previous BIOP was in place, or whether some other operations such as the Court Order was in place. Remember, the intent of the FPC analysis was to present the possible range of spill volumes that might occur dependent on the spill program implemented and the water conditions experienced.

In response to your specific questions:

- The planned operations were different among years dependent on the spill program implemented. For example 2003 spill program followed the 2000 Biological Opinion, the 2005 spring followed the 2000 Biological Opinion, whereas the 2005 summer followed the Court Order. Years 2006 and 2007 followed the Court Order. All planned operations made exceptions and modifications for research studies. The spill programs implemented were different from the 2008 Biological Opinion. You can compare the scenarios for planned operations to the 2008 BIOP by reviewing Tabes 1 and 2 below. The 2008 Biological Opinion has two significant differences from the scenarios used in the FPC analysis. The BIOP reduces the number of days that spill occurs in both the spring and summer. In addition, the 2008 BIOP changes the definition of spring and

summer period. To-date spring spill has lasted until June 20th in the Snake River and June 30th in the lower Columbia River. The 2008 BIOP ends spring spill as early as May 30 in the Snake River and June 15 in the lower Columbia. For some hydroprojects the summer spill amounts are less than the spring amounts, resulting in less spill.

- The planned operations were not the same in each year. See Table 1 in the February 6 memo for the specific operation implemented.
- Within a year the planned operations were the same among the different scenarios.
- The TDG Management document is prepared by the COE annually and outlines the spill program and TDG management that they expect for the upcoming year – they are posted on the COE's Technical Management Team web page.
- The spill caps that the FPC used were based on a regression between the spill volume and total dissolved gas for data collected during 2006, a year when a wide range of spill and TDG was observed. The FPC used the same set of spill caps for all four years whereas the COE developed slightly different spill caps for a low, medium and high flow year. The COE used 2007 as the foundation for the spill caps because the configuration of the hydrosystem was judged to be the same as it would be in other years. The FPC analysis did not use this limitation, but depended on the actual data observed. The FPC estimates for TDG caps are not that much different that the COEs estimates, at some projects they are lower and at some projects they are higher. However, this difference is not responsible for the larger differences in volumes observed between the two methods of estimation. The range of potential error in estimated spill volumes that may have occurred from using constant gas caps is likely small compared to the range of error associated with BPA/COE's assumption of average flows for each month. The average monthly flows were then reconverted to daily flows via a modulation program for input to the COMPASS model. The factors that explain the differences observed in the volume estimated between the two methods is how excess generation spill is calculated, and the implementation of the 2008 Biological Opinion spill program that decreases the number of days that spill occurs in the spring and terminates spill earlier in August.

Table 1. Assumptions used in the FPC Analysis (Table 1 in Document 303 on AMT web page)

Table1. Planned Operations for each project (2003, 2005-2007), according to the TDG and Water Management Plans for these years.

Project	Year	Spring Spill	Summer Spill
LGR	2003	0/GC vs. 18.5-20.5 Kcfs (24hrs)	No Spill
	2005	No Spill	GC/GC
	2006	20 Kcfs/20 Kcfs	18 Kcfs/18 Kcfs
	2007	20 Kcfs/20 Kcfs	18 Kcfs/18 Kcfs
LGS	2003	0/GC	No Spill
	2005	No Spill	GC/GC (6/20-6/28); 50%/GC (6/29-6/30); 30%/GC (7/1-8/31)
	2006	30%/30%	30%/30%
	2007	30%/30% Additional 14 nights GC (Apr 29- May 12)	30%/30%
LMN	2003	50%/50% (flows <75 Kcfs, >100 Kcfs); 45%/45% (flows 75-100 Kcfs); 12K/12K (flows <24 Kcfs)	No Spill
	2005	No Spill	GC/GC
	2006	40 Kcfs/40 Kcfs	17 Kcfs/17 Kcfs
	2007	GC/GC	17 Kcfs/17 Kcfs
IHR	2003	45 Kcfs/100 Kcfs; 50%/50%	45 Kcfs/100 Kcfs; 50%/50%; 0/0; GC/GC
	2005	45 Kcfs/GC; GC/GC; 35%/35%	45 Kcfs/GC; GC/GC; 35%/35%
	2006	45 Kcfs/GC; 30%/30%	45 Kcfs/GC; 30%/30%
	2007	45 Kcfs/GC; 30%/30%	45 Kcfs/GC; 30%/30%
MCN	2003	0/GC (Until flows <200 Kcfs)	No Summer Spill
	2005	0/GC	GC/GC (all flows above 50 Kcfs)
	2006	40%/40%; 0/GC	40%/40%; 60%/60%
	2007	40%/40%	40%/40%; 60%/60%
JDA	2003	0/60%; 0/45%	0/60%; 30%/30%
	2005	0/60%; 40%/60% (5/22-5/30)	30%/30%
	2006	0/60%	30%/30%
	2007	0/60%	30%/30%
TDA	2003	40%/40%	40%/40%
	2005	40%/40%	40%/40%
	2006	40%/40%	40%/40%
	2007	40%/40%	40%/40%
BON	2003	75 Kcfs/GC; GC/GC	75 Kcfs/GC
	2005	75 Kcfs/GC	75 Kcfs/GC
	2006	100 Kcfs/100 Kcfs	75 Kcfs/GC
	2007	100 Kcfs/100 Kcfs	85 Kcfs/GC (June 21-July 15); 75 Kcfs/GC (July 16-Aug 31)

Table 2. 2008 Biological Opinion Spill levels

Table 2. Initial Voluntary Spill Operations at Columbia and Snake River Dams[1/]

Project	Spring Operation (Day/Night)	Spring Planning Dates	Summer Operation (Day/Night)	Summer Planning Dates
Bonneville	100 kcfs/100 kcfs	4/10-6/15	85 kcfs/Gas Cap[8/]	6/16-8/31[4/]
The Dalles	40%/40%	4/10-6/15	40%/40%	6/16-8/31[4/]
John Day	30/30% or 40/40%[2/]	4/10-6/15	30%/30%	6/16-8/31[4/]
McNary	40%/40%	4/10-6/15[7/]	40%/40% vs. 60%/60%	6/16-8/31[4/]
Ice Harbor	30%/30% vs. 45 kcfs/Gas Cap	4/7-5/30	30%/30% vs. 45 kcfs/Gas Cap	6/16-8/31[5/]
Lower Monumental	27 kcfs/27 kcfs (Bulk Spill Gas Cap)	4/7-5/6; 5/21-5/30[3/]	17 kcfs/17 kcfs	6/1[6/]-8/31[5/]
Little Goose	30%/30%	4/5-5/6; 5/21-5/30[3/]	30%/30%	6/1[6/]-8/31[5/]
Lower Granite	20 kcfs/20 kcfs	4/3-5/6; 5/21-5/30[3/]	18 kcfs/18 kcfs	6/1[6/]-8/31[5/]

Notes:
[1/] Voluntary spill operations and planning dates may be adjusted (increased or decreased) for research purposes or through the adaptive management process (to better match juvenile outmigration timing, and/or to achieve or maintain performance standards).
[2/] 24-hour spill operations are being tested at John Day following construction of surface flow outlets.
[3/] Maximized transport operations (i.e., elimination of voluntary spill at collector projects) will occur from May 7 to May 20 in years when flows are greater than 65 kcfs on the Snake River.
[4/] Transitions from spring to summer spill has changed from July 1 to June 16 based on updated run timing of subyearling fall Chinook salmon. For further information see the 2007 FCRPS BA, Appendix B.2.1.1, paragraph 3.5.
[5/] Termination of summer spill will occur at the four lower Snake projects when subyearling counts fall below 300 fish per day for 3 consecutive days on a per project basis, but no later than August 31 each year. Termination of spill at Ice Harbor Dam will be two days after Lower Monumental Dam spill ends. If after discontinuing spill at any of the Snake River projects after August 1, the subyearling Chinook collection again exceeds 500 fish per day for two consecutive days, spill will resume at that project. Thereafter, fish collection numbers will be reevaluated to determine if spill should continue, using the criteria above until August 31.
[6/] The actual start of summer spill will be initiated when subyearling Chinook exceed 50% of the collection for a 3 day period for each Snake River project after June 1.
[7/] When seasonally average flows are projected to be less than 125 kcfs, voluntary spill may not be initiated at McNary Dam for spring run fish.
[8/] 85 kcfs daytime spill will be provided from June 16 - July 31 of each year to protect the great majority of the migrating ESA-listed SR fall Chinook salmon, then 75 kcfs during the day from August 1 – August 31 as proposed by the Action Agencies.