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, Washington Department of Ecology
Agnes Lut, Oregon Department of Environmental Quality

Michele DeHart

FROM: Fish Passage Center Staff

DATE: June 2, 2008

RE: Response to COE comments regarding FPC modeling efforts presented in December 2007 Adaptive Management Team meeting.

In November 2007, the Adaptive Management Team (AMT) requested that the FPC conduct an analysis to estimate the additional volume of spill that may occur if the criteria of 115% total dissolved gas (TDG) at the next downstream forebay were removed from existing waivers. The FPC presented preliminary results from this analysis at the December 2007 meeting and provided a finalized memo of these results in February 2008. In March 2008, the FPC received comments on these analyses from the U.S. Army Corps of Engineers (COE). Herein, we provide a response to the comments made by the COE for your consideration.

FPC Spill Caps:

In their comments, the COE suggests that the spill caps used in the FPC analysis are unreliable and methods to derive these spill caps were unclear. As stated in the document and the analysis, the FPC used empirical data to develop the response to the AMT. Spill caps (to the 120% TDG in the tailrace) were based on data from the spring of 2006. As explained, to estimate the spill caps, the FPC used regression analyses of the 12 hour average TDG and the corresponding spill volumes over those same 12 hours. Most of these regressions relied on empirical data from the 2006 spill season. Data from 2006 were used because this was a year when 12 hour average TDG in the tailrace reached or exceeded 120% at most projects. Other years (e.g., 2007) would not allow for this type of regression due to a lack of exceedences in the tailrace and, therefore, insufficient data at this level of TDG.

Furthermore, the COE suggests that, "The [FPC analysis] does not assess the effects of TDG levels from one project to the next … [and] … is not able to take into consideration the various factors that effect TDG production." These statements are not true. Since the estimates of spill caps were based on empirical data, all of these factors would have been reflected in the empirical data that were used to estimate those spill caps.

Comments on Assumptions:

Spill Regime was Not Considered: In their comments, the COE states that the 120% Scenario (e.g., all projects spilled to the 120% gas cap, not limited by planned operations) that the FPC modeled resulted in an overestimation of the additional volume if the 115% criteria were to be eliminated. As stated in the February report, the purpose of the analysis was to allow for a range of possible volume changes and the estimation of the magnitude of change in spill volumes. The 120% Scenario provided for the upper portion of that range of possible volume changes.

Unit Outages and Removal of Involuntary Spill: In their comments, the COE suggests that not accounting for unit outages and removing involuntary spill was erroneous. While involuntary spill can occur for a variety of reasons, including unit outages and excess generation, the purpose of the analysis was to provide estimates of the increased volume of **voluntary** spill if the 115% criteria were removed. Typically, spill under the BiOp or Court's Order at each project is set to a specific volume (Kcfs) or a percent of the instantaneous flow volume. The FPC analysis considered any spill in excess of that prescribed by the BiOp or Court's Order to be excess spill due to limited hydraulic capacity or lack of market. In order to make relative comparisons among the modeled scenarios and the Base Case, excess spill had to be removed from the Base Case, since unit outages and excess generation spill cannot in the future be predicted nor guaranteed.

The COE also points out a "contradiction" in the methods that the FPC used when dealing with excess spill. As stated above, under the Base Case scenario, the FPC removed any spill above what was prescribed by the BiOp or Court's Order. This was considered to be excess spill and could not be modeled under the hypothetical scenarios. However some planned operations under the Base Case scenario called for 12-hour spill (e.g., MCN 2006, JDA 2006, JDA 2005, etc.) but occasionally spilled outside the 12-hour spill window. When this occurred, these hourly spill volumes were not removed from the Base Case scenario, unless they were in excess of the 120% spill cap. In order to allow for a relative comparison between the 120% Limited and the Base Case scenarios, these volumes needed to be included in the 120% Limited scenario. It was pointed out in the FPC methods that this would not result in additional spill under this scenario, as the spill volumes during these times would be the same between the Base Case and 120% Limited scenarios. Consequently, there is no contradiction.

Difference in Spill Caps:

In this section of their comments, the COE suggests that the spill caps used by the FPC in the Base Case Scenario were higher than those used in their SYSTDG modeling efforts. For most projects, spill caps were not necessary for the Base Case scenario, especially in 2007.

Only when project operations called for gas cap spill were spill caps used to estimate the base case spill volume. In this case, FPC used the spill caps that were published in the COE's TDG Management Plan for that year (Table 2 in FPC report). These spill caps were used as a means of determining excess spill under these operations and were often above what is typically seen when operating to the 115%/120% criteria.

It seems that the COE is confused as to what the three modeled scenarios in the FPC analysis were. In Table 2 of their comments, the COE compared the volume changes from their modeling efforts to those that the FPC got. However, the COE only modeled one "hypothetical" scenario. The only FPC scenario that can really be compared to the COE's modeling efforts was the 120% Limited scenario, where projects spilled to the estimated 120% spill cap, unless restricted by project operations. The FPC analysis resulted in an estimated 5.98 MAF increase in spill under this scenario for 2007, whereas the COE's estimate was 5.15 MAF. These results were very similar.

Spill Volumes in SYSTDG Model Simulations:

In this section of their review, the COE argues that the 120% (unlimited) scenario modeled by the FPC is an overestimation of the additional volume of spill if the 115% criteria were eliminated. We acknowledge that this scenario allows for a high volume of spill, as projects were not limited by planned operations and spilled to the estimated 120% spill cap at all times. However, the FPC included this scenario since it was recommended by the State of Oregon as an alternative in the Biological Opinion Remand discussions. We recognize that the Action Agencies do not accept this operation and the scenario most like the Action Agencies proposal was the 120% Limited scenario. This scenario had comparable results to those presented by the COE. In fact, in their review comments, the COE presented results from modeling efforts for a high water year (2006). In this year, if spill were managed to the 120% spill cap (i.e., removing the 115% criteria) the COE estimated a 6.0 MAF increase in spill volume. Under its most comparable scenario, the FPC estimated a 9.56 MAF increase for 2006. Although the difference in these estimates is greater than that for 2007, that difference is likely due to our dissimilar treatment of unit outages and excess generation spill.

Finally, the COE also presented results from a new modeling scenario where planned operations were eliminated and the 115% criterion was removed. This scenario is more similar to the 120% (unlimited) scenario presented by the FPC. In a high flow year (2006), the COE estimated a 34.8 MAF increase in spill volume under this scenario. The FPC's 120% (unlimited) scenario resulted in an estimated 52.5 MAF increase in spill for this year. It is true that these estimates are less similar than those under the 120% Limited scenario but it is worth noting that this scenario was modeled to illustrate the upper range of additional volumes that are possible.