

COLUMBIA RIVER REGIONAL FORUM

TECHNICAL MANAGEMENT TEAM

March 11, 2009 Meeting

FACILITATOR'S SUMMARY NOTES ON FUTURE ACTIONS

Facilitator: Robin Gumpert

The following notes are a summary of issues that are intended to point out future actions or issues that may need further discussion at upcoming meetings. These notes are not intended to be the "record" of the meeting, only a reminder for TMT members.

Review of Minutes/Agenda

The 2/25 facilitator notes had been posted with edits from TMT members. With no further edits, they were considered final. TMT members had not had a chance to review the Official Meeting Minutes from the 2/25 meeting, so they will be finalized at the 3/25 TMT meeting.

Hanford Reach Protection Flows

Paul Wagner, NOAA, reminded TMT members that the previous update from Russell Langshaw, Grant County PUD, indicated that river temperatures were tracking well with previous years, and that Hanford Reach protection flow operations were expected to begin sometime in the next few weeks. At this point, 800 of the 1,000 temperature units had been reached. TMT Chair Jim Adams will coordinate with Russell Langshaw to provide an update at the March 25 TMT meeting.

Dworshak Operations

Steve Hall, Walla Walla District COE, shared ESP plots modeled after the COE's March 1 water supply forecast, indicating a total 2460 kaf at Dworshak during the April-August period. The ESP plots were provided to show expected flows needed to reach an end of April flood control elevation while staying within TDG limits. By definition, the end of April flood control target elevation is an un-shifted target. ESP traces indicated Dworshak would operate 10-14 kcfs during the second half of April to reach the target. Average daily discharge above inflows is expected to range about 4 kcfs into mid-April, and 0-2 kcfs through the end of the month to meet the target. Steve also showed a 2009 forecast comparison to '03 and '07 historic data, which showed that this year is tracking well with those two years. The COE's intention is to operate to the maximum allowable shift – 134 kaf – by the end of March. The current plan for achieving these objectives is to continue operating minimums (1.5 kcfs) until the end of March. On April 15th, the COE plans to reduce the shift to 100 kaf, resulting in about 14 kcfs out of the project, through the end of April. Steve noted that this operation plan is within the COE's acceptable level of risk for meeting flood control elevation targets, but are contingent on the forecast and inflows not changing significantly. He added that the RO's at the project are anticipated to be fully functioning by the end of March and that no flow volume limitations are anticipated.

Paul Wagner, FPAC chair, said FPAC had discussed the latest information and operating plan for Dworshak, and the salmon managers present for the discussion agreed that the COE's proposal would meet the objectives of higher elevations at Dworshak earlier and higher flows later in April to support fish passage. They noted the concern that if Dworshak does not achieve its elevation objective, Grand Coulee would be drafted the shifted volume regardless of the elevation achieved at Dworshak, and acknowledged that this known risk was acceptable.

Dave Statler, Nez Perce Tribe, asked the COE for Dworshak elevation estimates, to which the COE responded that, based on the current forecast of 2.4 MAF, the project will reach elevation 1542.1 by the end of March, 1532.7' on April 15, and 1526' at the end of April. Dave also expressed, on behalf of Nez Perce and other salmon managers, the desire to refill Dworshak earlier than July 1 to the extent possible. The COE acknowledged this desire and offered that while there are too many uncertainties at this point to confirm a refill plan, current information suggests the project may refill earlier, and the COE is supportive of this within the limitations of flood control requirements. The COE plans to monitor conditions closely and will employ the use of snow flights as necessary to inform their operation decisions. Dave Statler also added that temperature cooling benefits downstream as a result of this operation are an important consideration.

Finally, it was noted that end of month flood control constraints are a 'hard constraint' target and mid-month are softer constraints, given the water supply forecasting tools used to set the respective targets.

Water Supply Forecast/Flood Control Operations

Amy Reese, Seattle District COE, reported on the latest water supply forecast and operations plan at Libby. As of March 6, the April-August water supply forecast showed 5296 kaf, and a flood control target of 2442.6 feet. The project was currently at elevation 2405 feet. The COE has been and planned to continue operating at minimums (about 4 kcfs) through the end of March, and perhaps beyond. It was noted that the RFC and COE forecasts for Libby were very similar.

Action/Next: Amy will provide reservoir operation scenarios for Libby that include consideration of bull trout minimum flows and the sturgeon pulse operation, at a TMT meeting in April.

John Roache, BOR, reported that the Hungry Horse water supply forecast for March-July was 1936 kaf (93%), similar to the RFC forecast and a decrease from February final forecasts. Hungry Horse has a flood control elevation of 3536.2 feet for the end of April, and the project was currently over 20 feet below that elevation. The BOR planned to continue to operate the project at minimums. John also noted that the Grand Coulee shifted flood control elevation for the end of March was 1281.6 feet.

Fish Operations Update

Rudd Turner, COE, introduced Kim Johnson, a new addition to the COE who will be working on NEPA, water quality and other environmental issues out of the COE's

Environmental Resources office. He went on to report that the 2009 FOP had not yet been released; however, at the March 6 hearing with Judge Redden over the 2008 BiOp, Federal agencies agreed to implement spring 2009 spill operations similarly to 2008. Two spill changes were described; first, John Day would spill at 30% 24 hours/day starting April 10 (instead of 0/60% as was implemented last year) and Little Goose would operate at 30% spill consistently for testing of the new TSW (i.e., forego the 14 nights of spill to the TDG cap as occurred last year). Parties to the litigation were continuing discussions that would inform the COE's spring spill and transportation operations plan. With regards to transportation, the COE planned to initiate transportation similarly to 2008, beginning between April 20 and May 1 at Lower Granite Dam and employing a staggered start on the Lower Snake projects – the specifics of which would be informed by in-season management discussions at TMT.

It was suggested that TMT and the region consider how to shape flows at Little Goose during the transition into low flows given the new installation of the RSW at the project. It was further clarified that FFDRWG discussions led to a decision to perform a single treatment, 'modified bulk' pattern, test of the RSW – which would retain juvenile benefits while having the least impact to adults passing the project.

Rudd also reported that, as in 2008, spring spill end dates in 2009 were expected to be June 20 on the Snake River and June 30 on the Columbia River, with the exception of those projects undergoing tests that might require a different schedule (e.g. Lower Monumental, McNary and Bonneville). Finally, he noted that transportation tests to evaluate seasonal effects and latent mortality would occur at Lower Granite in April and would involve barging and trucking fish. In response to a question, Rudd said that summer spill operations were not developed at this point.

SOR 2009-1

Tom Lorz, as Vice Chair to FPAC, presented an SOR signed by ODFW, WDFW and the Nez Perce Tribe, with a note that the same issue was being discussed directly between CRITFC and three Accord tribes, and the action agencies pursuant to the Fish Accords. The request was to begin operating the B2 corner collector on Thursday, March 12 (after completion of BGS inspection and once all divers were out of the area) and to continue operating it through the spill season. From a biological perspective, this operation would support kelt passage as indicated by studies conducted in 2007 and 2008 and, from a process perspective, it would be consistent with a rollover from 2008 operations. Tom offered that one objective of bringing the issue to TMT was to ask the COE what and how much lead time would be needed to implement the request, if a decision to do so was made.

Biological and operational considerations were raised, including TDG impacts relative to chum, spring flow impacts and impacts to other reservoir operations. The COE suggested that given the current TDG levels below Bonneville (a graph was posted to the agenda indicating current levels around 104-106% at the Warrendale gage), and the anticipated increase in TDG levels from operation of the corner collector, more depth compensation would be needed to support chum below Bonneville – an expected change in operations

from an 11.5 feet tailwater to about 12.5 feet tailwater. In response to a question, the COE's Jim Adams suggested that the current TDG levels were likely due to gas build up in the spillway from not running the adult attraction flows, and possibly impacts from upstream projects.

Rudd Turner said that from a process standpoint, the COE was intending to begin corner collector operations on April 10 coinciding with spring spill operations, not last year's earlier implementation that involved a test of the corner collector in March. The Portland District COE was working on a white paper regarding kelt passage which, Rudd said, could inform decisions this year. The white paper was not yet available at the time of today's meeting. The group acknowledged that discussions around this operation were also occurring in other forums outside TMT, and that it could be useful to fold TMT input on biological and operational considerations into those discussions and this year's and/or future year decisions. As such, TMT agreed to reconvene on March 18 to continue their technical discussions with more information. The following actions/information will feed into the next TMT meeting:

- Portland District COE white paper: Rudd will encourage finalization of the paper as soon as possible, and will share it with Jim Adams to pass to TMT when it is available.
- The COE and others will analyze the potential impacts to chum and other operations in the system.
- Tom Lorz, CRITFC, will share information that was used as biological support for the SOR with Jim Adams, who will pass the information on to TMT prior to Wednesday's call.
- FPOM was scheduled to meet on 3/12 and any relevant information from that discussion will be brought back to TMT.
 - Jim Adams will assist Dave Statler in getting linked in to the FPOM process. It was suggested that an FPOM website with all relevant information, discussion and decisions, would provide better access to this important group.
- Paul Wagner and Jim Adams will work to secure a room and phone line for the 3/18 TMT meeting.
- Rudd Turner will talk with management and Bonneville operators about what would need to happen at the project to set it up for implementation of the request, if a decision is made to open the corner collector before April 10. He will share that information with TMT.

The COE acknowledged receipt of the SOR during the meeting, and said they would not likely start operating the corner collector on March 12 as specified in the request. If any changes to operations are made, they will notify TMT.

Operations Review

Reservoirs: Jim Adams reported on COE projects: Libby was at elevation 2405.2 and passing inflows, targeting 2442 feet at the end of March. Albeni Falls continued to operate between 2051-2052 feet. Dworshak was at elevation 1529.6 feet with 1.6 kcfs out. 7-day average inflows were 39.2 kcfs at Lower Granite, 108.3 kcfs at McNary and

128.9 kcfs at Bonneville. Grand Coulee was at elevation 1284.2 feet and operating to meet the 11.5 feet tailwater objective at Bonneville. Regarding chum operations, Tony Norris, BPA, requested that the salmon managers begin discussions about low flows and prioritization relative to chum, Vernita Bar and April 10 Grand Coulee elevation targets. John Roache reported on BOR projects: Grand Coulee was targeting 1281.9 feet on April 10. Hungry Horse was at elevation 3512.02 feet with 3 kcfs out. John Roache noted that the BOR expected summer refill of Hungry Horse to be met.

Fish: Paul Wagner, NOAA, reported on juvenile counts. Yearling chinook passage at Bonneville was about 400/day; subyearlings were about 200/day and coho and steelhead were each showing 5/day. Paul suggested that, given today's SOR, it would be useful to have consistent kelt passage counts at Bonneville in the future. FPOM will discuss this issue.

Power System: Tony Norris, BPA, said there was little change to the wind generation graphs shared at the 2/25 TMT meeting.

Water Quality: Nothing to report.

Upcoming TMT Meetings: Please note: TMT meetings will likely be held at NOAA Fisheries at least through April due to phone system issues in the Columbia Room at the COE. Please check the meeting agendas for location confirmation.

- **Conference call, March 18, 9:00 AM** to discuss SOR 2009-1. Location and conference line TBD.
- **Face to face, March 25, 9-noon at NOAA Fisheries.** Agenda items include:
 - Hanford Reach Protection Flows Update
 - Follow up on B2 corner collector operations discussion
 - Status of spring spill / FOP
 - Chum, VB and Grand Coulee April 10 target: Feedback from salmon managers and TMT discussion about priorities
 - (Tentative): NMFS Science Center report on 2006-07 transportation study results
 - BPA's Generation Emergency Actions List: review
 - Spring spill priority list: review
 - Operations Review

**Columbia River Regional Forum
Technical Management Team Meeting
March 11, 2009**

1. Introduction

Today's TMT meeting was chaired by Jim Adams (COE) and facilitated by Robin Gumpert (DS Consulting) with representatives of NOAA, Oregon, COE, BPA, BOR, Idaho, Washington, USFWS, CRITFC, the Nez Perce Tribe, and others participating. The following is a summary (not a verbatim transcript) of the topics discussed and decisions made at the meeting. Anyone with questions or comments about these notes should provide them to the TMT chair or bring them to the next meeting.

2. Review Meeting Minutes for Feb. 25, 2009

Finalization of the official minutes for Feb. 25 was postponed until the next regular TMT meeting on March 25. The facilitator's notes have been reviewed.

3. Hanford Reach Protection Flows

Two weeks ago, things were proceeding on schedule, and Grant Co. PUD was targeting end March for the beginning of protection flows, Paul Wagner (NOAA) reported in the absence of Russell Langshaw (Grant Co. PUD). The river is at 800 temperature units, which means another 3 weeks of temperature increases until incubation, shifting to maintenance around April 1, Adams said. TMT will revisit this topic at its next regular meeting March 25.

4. Dworshak Operations

Steve Hall (COE) gave a presentation on slides linked to this agenda item. The first plot shows ESP traces for Dworshak inflows. The March 1 water supply forecast for Dworshak is 2.4 maf (or 2,460 kaf), which is 92% of normal. That's a bit higher than other forecasts in the basin, but close to the RFC's forecast of 2.17 maf and the COE's regression forecast of 2.36 maf.

Flood Control Shift: The COE is working on setting operations for the shift of flood control space from Dworshak to Grand Coulee. The first graph linked to today's agenda shows ESP inflow traces at Dworshak, the second and third show the amount of shift available through March and April 15. The rule for a flood control shift is that Dworshak has to be back down to its unshifted flood control elevation by the end of April. The goal of the shift is to generate outflows of about 14 kcfs throughout the last half of April. Dworshak discharges are limited to 14 kcfs by the TDG water quality standard. During the last half of April, the average inflow of ESP traces ranges between 10-14 kcfs. This indicates there won't be much discharge capacity to draw the reservoir down beyond inflows. By

mid-April, around 4 kcfs of discharge capacity (over inflows) will be available for drafting every day. By the end of April, that capacity is expected to drop down to 0-2 kcfs.

Inflow forecasts and snow conditions throughout the basin indicate that the 2009 water year could resemble 2003 and 2007. Plotting these conditions led to a goal of operating the shift at 14 kcfs from the end of the first week of April to the end of April. That's contingent on the forecast not changing dramatically. The COE calculated the maximum allowable shift at the end of March to be 134 kaf, putting Dworshak reservoir at elevation 1,542.7 feet instead of its flood control target of 1,532.9 feet.

In light of this information, the COE recommends limiting the shift to 100 kaf on the 15th of April. For now, the COE expects to operate Dworshak turbines at minimum flows of 1.5 kcfs until the shift occurs because flows of 1.3 kcfs cause cavitation of the turbine units. A shift of 100 kaf would amount to an average of 4 kcfs per day during the last half of April.

Hall gave a status report on the repair of RO gate #2 at Dworshak. Most of the equipment is back in place, and the COE is confident that the gate will be operational by end March. It's important that the RO gate be operational by April because the high reservoir elevation will require using the RO gates to discharge flows above 10.4 kcfs. This weeks STP trace show flat flows from the project during the first half of April, at 10.2 kcfs. The STP trace doesn't show the reservoir elevation reaching elevation 1,542.7 feet, although it did show substantial inflows in April. In summary, the proposed operation, based on current conditions, shows Dworshak discharges reaching 14 kcfs on April 10 and continuing through the end of April.

Yesterday at FPAC, the Salmon Managers discussed the flood control shift proposal and decided that it appears to be effective, Wagner reported. It will achieve the objective of moving more water to a higher elevation at Dworshak at times that will benefit fish. The Salmon Managers recognize and acknowledge the risk that if Dworshak reservoir doesn't achieve its target elevation, the Grand Coulee reservoir elevation will still be lower than it would have been without the shift. The difference between the Grand Coulee shifted and unshifted reservoir elevation on April 10 is about 1.4 feet, John Roache (BOR) said. The effect of the shift at Dworshak is significant, while the effect at Grand Coulee is extremely minor, Tony Norris (BPA) said.

Dave Statler (Nez Perce Tribe) asked for an estimate of what Dworshak elevations would be under the COE's flood control shift proposal. The target elevations are 1,542.7 feet on March 31 and 1,534.1 feet on April 15, based on a 2.6 maf forecast, Hall replied. Those numbers will change if the forecast changes. Statler wondered what the refill part of the flood control operation will look like with a target refill date of July 1. He expressed the Nez Perce Tribe's

preference for refilling Dworshak before the end of June, then passing inflows to provide spill for fish. That would depend largely on when inflows start picking up, Hall said. In the similar water years 2003 and 2007, there was a substantial increase in inflows during the last half of March, which led to a tendency to refill reservoirs earlier than planned. There's a likelihood that Dworshak reservoir will also refill early in 2009. However, another cold snap could delay runoff like last year. The COE will be watching this situation closely. Statler requested that the COE consider the temperature cooling benefits of river flows which could be needed during the first week of July.

The COE's short term plan is to continue operating the project at minimum flows of 1.5 kcfs through the end of March, depending on inflows. If 2009 turns out to be like 2003 and 2007, the maximum shift could happen before the end of March. The intent is for the reservoir to reach elevation 1,542.7 feet by the end of March in preparation for maximum outflows April 10-30 for fish migration. The COE doesn't anticipate changing the volume of the shift until the April final forecast is released around April 7. The April 10 objectives are based on March final forecast flood control elevations, Norris said. Because the April flood control elevation won't be available until a few days after the April final forecast is released, it will be difficult to alter system operations in time for the start of spill on April 10, just 1 or 2 days later.

5. Updated Water Supply Forecasts and Flood Control Operations

Libby Dam: The updated water supply forecast for inflows at Libby was released on Friday, March 6, Amy Reese (COE Seattle) reported. The low forecast volume for April was 5,296 kaf, 84% of normal, with a March 31 target elevation of 2,442.6 feet. The current elevation of Libby pool is 2,405.2 feet, 37 feet below the end of March target, based on releasing minimum flows of 4 kcfs. The project is still drafting slowly at the rate of about a tenth of a foot per day, and is expected to remain at minimum outflows until refill starts. The RFC forecast matched the COE forecast at 84% of normal, Adams noted. Both forecast volumes are 5.25 maf.

This forecast makes 2009 a tier 2 year for sturgeon, with 0.8 maf of sturgeon volume and a 7,000 cfs bull trout minimum in July and August, Reese said. If the project continues to operate at minimum flows, the end of April elevation will be 2,404 feet. These forecasts are iffy, Reese emphasized, because they're projecting two months out (May). The COE will present information on summer operations to TMT, but it's still early. The ESP runs posted to the TMT page are the most recent inflow estimates available, Adams said. Inflows at Libby are currently 3-3.5 kcfs, and minimum outflows are 4 kcfs. Wagner expressed interest in seeing modeling of potential reservoir scenarios when the time is right.

Statler asked whether the present low elevation at Libby is unusual for this time of year, and whether it could lead to refill problems. The end of December target for Libby is low, so it's not uncommon for the reservoir to be below its flood control elevation in March and April, especially with VARQ flood control in effect, Reese replied. Libby doesn't refill reliably every year. TMT will revisit this issue again when the April forecast becomes available.

Hungry Horse and Grand Coulee: The BOR's forecasted volume for March-July 2009 at Hungry Horse is 1,936 kaf, about 93% of normal, Roache reported. That's close to the RFC forecast of 91% of normal. Columbia Falls and Hungry Horse minimum flows of 3,500 cfs at the falls and 900 cfs below the project will remain in effect. A flood control shift of 100 kaf would put the April 15 elevation of Grand Coulee at 1,282 feet, Norris said. The April 15 flood control elevation is above the March 31 flood control elevation because the graph assumes less than a full shift on April 15 vs. a full shift on March 31. However, there won't be a full shift on April 15. The Grand Coulee reservoir elevation of 1,282 feet on April 15 will be about 280 kaf less than it would be without the shift.

6. 2009 Fish Operations Plan Update

Rudd Turner (COE) gave an update on Fish Operations Plan development. The COE is preparing the plan for spill and transport operations in 2009. Federal defendants at the March 6 BiOp hearing agreed to continue 2008 spring spill operations again in spring 2009. Thus the COE is working now to define spring operations at projects in the 2009 FOP. The principal litigants in the case will discuss this plan again within the next week or so.

In agreeing to continue the 2008 operation, Defendants indicated that two projects will operate differently this year than last, John Day and Little Goose. In 2008, spill levels of zero daytime and 60% nighttime flows were in effect at John Day when spill season began. After discussion, TMT changed the John Day spill regime to 30% daytime and 30% nighttime, and the same operation is planned for John Day in 2009 beginning April 10. The spill pattern at Little Goose will be altered this year to test the new removable spillway weir which is adjustable, with flows in the 6-7 kcfs and 9-10 kcfs ranges depending on whether the weir crest is set high or low. In order to maintain a consistent 30% spill for test conditions, the 2009 plan will forego the 14 nights of spill to the TDG cap which occurred in 2008.

The 2009 FOP will also describe transportation, Turner said. As in 2008, the 2009 transport operation at Lower Granite Dam will begin between April 20 and May 1, with staggered start dates shortly thereafter at Little Goose and Lower Monumental. The discussion of specific transport start dates for 2009 will occur at TMT. Last year, fish collection began on May 1 at Lower Granite, May 9 at Little Goose, and May 12 at Lower Monumental dams.

FFDRWG has discussed the spill plan for Little Goose in 2009, and if extended periods of low flow are expected in spring, they recommend using the high crest of the spillway weir, Rick Kruger (Oregon) pointed out. Apparently the higher crest creates a better spill pattern for fish. Kruger cautioned against changing the reservoir elevation while testing the TSW.

Last year, TMT dealt with a generation deadband issue at Little Goose by implementing an 11 kcfs flat spill regime as the basin moved into a low flow situation, Norris recalled. Spring 2009 could also turn out to be a low flow season. Norris suggested that TMT members think about how operation of the newly installed RSW will affect the generation deadband issue in 2009.

In 2008, the COE initiated spill at all four Lower Snake projects on April 3 and plans to do so again this year, Turner reported. The April 10, 2008, start of spill date for Lower Columbia projects will also be repeated in 2009. Wagner asked whether the three test spill operations that occurred in 2008 at Little Goose will be repeated this year. In 2009, it will be a single-treatment test with a modified bulk spill pattern, which appears to be the safest operation for juveniles with the least risk of impacting adult passage, Tom Lorz (CRITFC) replied. Flat spill patterns don't work with a TSW.

As in 2008, spring spill will end on June 20 for projects on the Snake River and on June 30 for projects on the lower Columbia, Turner recalled. Tagging of subyearlings in the Snake could affect the June 20 end of spill date for 2009. Tagging could also affect the 2009 end of spring spill dates on the lower Columbia, for example at McNary and Bonneville dams. Studies of seasonal effects and latent mortality in 2009 will involve collecting and trucking fish at Lower Granite Dam in April, which is similar to what happened in 2008. The spill operation at McNary Dam will vary from 2008 if a decision is made to move one of the new TSWs from bay 20 to bay 4, a possibility now under consideration.

7. Bonneville Corner Collector Operation (SOR 2009-01)

Signed by WDFW, ODFW and the Nez Perce Tribe, the first system operational request of 2009 asks the Action Agencies to begin operating the Bonneville Dam 2nd powerhouse corner collector on March 12, 2009, as soon as divers inspecting the fish screens are out of the water. CRITFC and three Fish Accord tribes didn't sign the SOR because they are pursuing the request pursuant to the Fish Accords. Tom Lorz noted that he signed it as vice chair of the Salmon Managers, not as a CRITFC representative.

The justification for operating the Bonneville corner collector is to aid steelhead kelt passage, Lorz explained. The corner collector opened on March 15, 2008; Lorz asked how the rollover would be handled in 2009. The COE's planned operation is to open the corner collector the morning of April 10, pending the findings of a white paper being prepared by the Portland district, Turner

replied. While corner collector operation was part of the FOP last year, during March 2008 it was a test operation, and the COE has not agreed to corner collector operation as a spring routine.

Lorz asked whether the COE is prepared to operate the corner collector if a decision is made to open it on March 15. If the needed equipment is ready, it is possible the corner collector could be opened within a day or two of notification depending on the status of work in the navigation lock, Turner replied. He said the project would need to be contacted to answer this. He suggested that FPOM discuss technical information regarding early corner collector operation. Wagner asked when opening and closing the corner collector would become a dedicated operation. There's money in the 2010 or 2011 budget to automate it, Lorz said. Lack of a working TIE crane has made corner collector operation more difficult than anticipated.

Brett Hall (Umatilla Tribes) recalled an earlier proposal to begin operating the corner collector on March 13 or 16, 2009. A NOAA memo on kelt passage written by Gary Fredricks could be considered, Turner said in response to questioning. Lorz explained the rationale behind today's SOR. Tests in 2007 and 2008 found that the corner collector passed 172 and 223 steelhead kelts from March 1 to April 10, 2007 and 2008, respectively. During corner collector operation, few adults were detected in the juvenile bypass facility.

There was discussion of possible TDG impacts on the chum operation as a result of opening the corner collector early. Adams showed TMT a graph of the chum operation, linked to today's agenda. At present, TDG levels at the Warrendale gage are 104-106%. The elevation of the corner collector outfall is 16 feet, while the chum protection minimum elevation is 11.5 feet. Depth compensation would be required in order to keep TDG levels below the state standard of 105%. Generally, TDG levels of 108% at the Warrendale gage will require a foot of depth compensation to protect chum sac fry in the gravel beds. In the absence of attraction flows, the fish ladders at Bonneville generate TDG levels of up to 124% at the Cascades Island gage. Flows of 2.4 kcfs or more through the fish ladder provide sufficient hydraulic pressure to move the gas downriver. Gas levels upstream at The Dalles tailrace are in the 101-102% range, so something is clearly happening between The Dalles tailrace and downstream of Bonneville to raise TDG levels.

SOR 2009-1 was posted mid-meeting, so the COE will need time to review it before giving a response. Release of a white paper on kelt passage by Corps biologists is expected sometime next week. There was general acknowledgement that the final decision on corner collector operation will not be made at TMT. A tentative meeting was planned for a week from today so TMT can coordinate the operational response.

There were no comments on SOR 2009-1 from USFWS, Washington or Idaho today. The issue needs to come back to TMT because other forums don't include BOR representation, John Roache said. Kruger advocated treating the corner collector operation as a repeat of 2008 operations. Because 2009 looks like a low flow year, Norris advised TMT members to begin thinking about tradeoffs involved in providing depth compensation now for corner collector operation vs. achieving April 10 storage objectives and their effects on spring flows. Any extra water spilled now will probably be subtracted from flows during the April 10-30 migration period, as well as from flows in June and July.

8. Operations Review

a. Reservoirs. Grand Coulee is at elevation 1,284.2 feet. The two main objectives are maintaining the minimum tailwater elevation of 11.5 feet at Bonneville and hitting the April 10 refill target.

Hungry Horse is at elevation 3,512.02 feet, with releases of 3.0 kcfs. Air temperatures are below zero, so the water supply is blocked. The forecast is 93% of normal, so refill probably won't be a problem this summer.

Libby is at elevation 2,405.2 feet, passing minimum flows of 4.0 kcfs for the foreseeable future. The end of March flood control elevation is 2,442 feet; the around 37 feet above the current elevation.

Dworshak is at elevation 1,529.6 feet, with minimum outflows of 1.6 kcfs through end March to avoid cavitation problems. The plan is to move toward a shifted elevation of 1,542.7 feet on March 31.

Albeni Falls is still operating between 2,051-2,052 feet elevation, passing inflows of 15-20 kcfs.

Seven-day average inflows are 39.2 kcfs at Lower Granite, 108.3 kcfs at McNary, and 128.9 kcfs at Bonneville.

b. Fish. This is the beginning of juvenile migration season, Wagner reported. Bonneville is the only project recording passage numbers at present. Yearling Chinook have passed the project at a rate of nearly 400 per day over the past week, while sub-yearlings passage is around 200 per day. Coho have been averaging about 5 fish per day. In light of today's SOR it would be good to have kelt passage counts for Bonneville accessible online, but at this point data on kelt passage are documented separately from juvenile bypass counts, Wagner noted. Because kelts prefer surface passage, the juvenile bypass isn't a good route for them. FPAC will discuss the kelt accounting issue further. Previous counts indicate that a substantial number of non-hatchery fish are part of the sub-yearling passage counts at Bonneville, David Wills (USFWS) said. Kelt

counts at the separator are sporadic, so while the historic data indicate the presence of kelts, the numbers aren't quantitatively valid, Margaret Filardo (FPC) said.

c. Power System. There was nothing new to report today, Tony Norris (BPA) said. The total installed wind capacity in BPA's balancing authority area is still 1,871 MW, same as last time.

d. Water Quality. There was nothing new to report today.

9. Next Meeting

A tentative TMT conference call was planned for 9 am, March 18, 2009, to discuss the Bonneville operation for kelts. The next regular TMT meeting will be on March 25, 2009. That agenda will include a Hanford Reach update, follow-up on the Bonneville corner collector operation, chum operations in relation to Vernita Bar flows and Grand Coulee refill, an update on the FOP and water supply forecasts, spill and MOP operations strategies, the BPA generation plan emergency action list, preliminary Science Center findings regarding transport operations in 2006 and 2007 (if available), and the standard operations review. This summary prepared by consultant and writer Pat Vivian.

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Richelle Beck
Laura Hamilton
Dave Statler
Amy Reese
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Puget Sound Energy
DRA
COE
Nez Perce Tribe
COE Seattle
Umatilla Tribes