COLUMBIA RIVER REGIONAL FORUM

TECHNICAL MANAGEMENT TEAM

June 20, 2007 Meeting

FACILITATOR'S SUMMARY NOTES ON FUTURE ACTIONS

Facilitator: Robin Harkless
Notes: Erin Halton

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 Facilitator Notes / Meeting Minutes

Facilitator notes and meeting minutes for the May 30th TMT meetings had no further changes and were finalized. June 13th TMT facilitator notes had additional edits submitted in a redline version by the COE, which were reviewed by TMT members during the meeting. CRITFC submitted an edit to page 3 of the facilitator notes: they support a flat flow in "Montana", not the system. Dave Wills made an edit to the official minutes' to clarify that the sturgeon pulse was not necessarily going to end on June 23rd. Paul Wagner made an edit to the official minutes' updated forecast section: Dworshak "temperatures", not flows were between 45-50°.

Priest Rapids Update

Russell Langshaw, Grant County PUD, reported on Priest Rapids operations; a graph linked to the TMT agenda showed 2 exceedances between 6/11-6/17, with mean flows of 165.9-189.4 kcfs. Langshaw noted that 6/20 was the last day for protected flow bands, as 400 temperature units were expected to be reached. TMT members commended the good job done on Priest Operations this year.

> **Action/Next Steps:** A final Priest Rapid update will be on the agenda for the 7/11 TMT meeting and the full report at the TMT year end review in November.

Libby/Hungry Horse Operations: SOR 2007-MT-1

Brian Marotz, Montana, presented a "brief sketch" of information on research ongoing at the Flathead and the Kootenai River per mainstem amendments calling for a study of dam operations effects on fish population levels. Marotz said that although funding issues caused some delays, a baseline comparison of relative abundance in the Kootenai River will be pulled together by biologist Ryan Sylvester, and computer modeling will be used to augment the physical monitoring until more empirical data becomes available.

> **Action/Next Steps:** Sylvester's 2006 work is available online on BPA's website, and Montana State University will be working on modeling. Marotz said that Instream Flow Incremental monitoring will be ongoing and offered to answer additional inquiries/questions about details of the research via email.

Updated Flow Forecasts

Cindy Henriksen, COE, referred TMT to several flow forecasts posted to the TMT web page, updated as of 6/19. She noted that Libby inflows had increased due to warm weather, with inflows expected to reach 45 kcfs by the end of the week. Henriksen said the Libby ESP graphs showed a general recession through August. Dworshak ESP graphs showed inflows just under 6 kcfs, with general recession expected through August. John Roache, BOR, noted that Hungry Horse was at elevation 3559.37', and that the inflow spike that appears on the ESP graph is due to adjustment/calibration of the forebay gage and not a rise in inflows. Although inflows into Hungry Horse are generally in recession, the project will be closely monitored while full in order to react to any changes in inflows. Regulated outflows at Lower Granite were expected to be fairly flat through the remainder of June and were in the range of 35-40 kcfs.
(NOTE: It was noted that the hydrographs read "discharge", but were actually depicting inflows.)

Grand Coulee Flood Control
John Roache, BOR, reported that the project no longer had any maximum elevation constraints and would operate based on refilling to elevation 1290 feet and maintaining flows in the lower Columbia River as smooth as possible.

Dworshak Operations
Cindy Henriksen reported that Dworshak was at a full elevation of 1599.8' and operating with outflow through the units in overshot mode, with outflows increasing slightly and outflow temperatures of 44°. Jim Adams, COE, referred TMT to thermocline graphs and noted that temperature trends in the lower Snake River have fluctuated since 4/1, but were expected to reach 68° by 7/1 and were typical overall when compared to prior years. TMT members noted the need to use temperature criteria to manage the system and Russ Kiefer, ID, suggested looking at prior years' trends on the DART page and data from Anatone and Orofino.

In addition, Kyle Dittmer, CRITFC, gave a power point presentation on a CRITFC hydro spreadsheet and EPA's RBM10 Dworshak modeling provided by Ben Cope, EPA, that blended four comparable to 2007 years: 1970, '73, '78 and 1988. Included in the presentation was a Nez Perce Dworshak operations scenario for 2007 that showed the project drafting to 1535' on 8/31 and 1520' by 9/20, with temperature control and outflows shaped to support adult and juvenile fish. He also showed a scenario of 2006 operations. Dittmer noted that the 1988 data tracked well with 2007 observed data to date, and that there are concerns for potentially high temperatures in mid-late July.

> **Action/Next Steps:** Ben Cope will be available to discuss the RBM10 modeling at the 6/27 TMT meeting.

Dave Statler, Nez Perce Tribe, acknowledged the challenge in managing summer conditions and said he was hopeful for a good balance of meeting multiple needs. Statler added that the mild weather conditions this year may help support Dworshak operations. TMT members discussed whether releasing warmer water from Dworshak earlier in the spring would promote fish growth; Dave Wills, USFWS, noted that the Dworshak Hatchery would prefer temperatures of 46-47° to support the hatchery fish.

Greg Haller, Nez Perce Tribe, said that the Dworshak Board was awaiting the appointment of an ID representative and hoped to convene late this week or early the week of 6/25 to develop a draft plan for the use of 200 kaf for flow augmentation. Haller clarified that the "plan" will be used as a framework and will include operational flexibility, as use of the water will be driven by actual conditions.

Action/Next Steps:

- The COE will operate Dworshak within the top .5' of the reservoir and expect temperatures to stay in the 44-45° range. Daily flows will be shaped to mimic natural conditions and follow load, with consideration of ramp rate limitations.
- Given the above objectives, the COE and BPA will develop operation specifics that will be shared with TMT.
- Sampling data used to determine the growth rates of Fall Chinook will be on the agenda as part of Dworshak operations for the 6/26 and 7/11 TMT meetings.
- Salmon managers will discuss the draft framework for the 200 kaf developed by the Dworshak Board at FPAC on 6/26.
- TMT members will discuss Dworshak operations at the 6/27 TMT meeting.

Libby Operations Scenarios

Cindy Henriksen, COE, referred TMT to graphs linked to the TMT agenda that were based on updated ESP/STP forecasts, showing scenarios that follow the flat flow objectives of the MT SOR and drafting Libby to 2439' by the end of August. She added that, given the inflow rise from 6.5 MAF last week to 7.1 MAF this week, there may be a need for fluctuation of flows between +/- 3 kcfs relative to the recommended 15 kcfs flat flows. Jim Litchfield, MT, clarified the objective of the flattest flows possible given the new forecasts, and acknowledged the past efforts to avoid double peak. Russ Kiefer, ID, said ID supports MT desire for flat flows to support resident fish and added that they would not want to see flows go above 18 kcfs. TMT members discussed the potential need for higher than 15kcfs flows to support barges traveling through the area; Sue Ireland, Kootenai Tribe, clarified that a steady, stable flow was most important to the tribe at this point, and that any potential issues with barge passage over lower areas would not likely arise until July 6. Henriksen clarified that the sturgeon volume was expected to be exhausted sometime between 6/23-24.

TMT members shared the following feedback on Libby operations of 15kcfs from 6/20 – 6/26:

- ID: support
- OR: generally support, with some concern for potential flow reduction on the lower Columbia. Interest is in a flow-neutral system and look to the Action Agencies to determine how to best mange flows.
- MT: support, as it meets the objectives laid out in the SOR
- USFWS: does not oppose to the 15 kcfs, and looks to revisit next week

- NOAA: supports a stable flow operation. Requested that if there are desired end of month targets that they be discussed at TMT as soon as possible
- Nez Perce: no comment
- CRITFC: no comment

  Action/Next Steps: The COE will continue to operate Libby at 15 kcfs for another week. TMT will discuss updated forecasts and revisit Libby operations at the 6/27 meeting.

Hungry Horse

John Roache, BOR, reported that Hungry Horse was near full, at elevation 3559.37', with outflows of 4.1 kcfs and inflows ranging between 5-5.5 kcfs. He added that the project is estimated to draft around 20' by the end of September if a flat flow of 4.0 kcfs is released through September. ID and NOAA said they generally supported the flat flows; ID acknowledged the need for flexibility and NOAA said they supported a holistic approach to managing the system. MT clarified the desire to see any excess water stored for re-shaping later in the season, if needed to stabilize flows.

Action: The project will continue to operate around 4.1 kcfs outflows unless required to increase in order to manage refill and TMT will revisit Hungry Horse at the next meeting on 6/27.

McNary/Lower Monumental/Bonneville Spill Update

Bernard Klatte, COE, reported on a stilling basin erosion survey and proposed spill schedules linked to the TMT agenda:

- Bonneville summer spill operations (85 kcfs day/spill cap at night starting on 6/21)
- McNary summer spill (randomized 2-day blocks of 40/60% spill starting 6/19.)

The proposal process was coordinated through FFDRWG, SRWG, FPOM and agreed to by signatories to the 2007 Spill Agreement. A 'package' was submitted to the court on 6/19, with a plan to implement actions on 6/21. As of the 6/20 TMT meeting, the judge had not responded.

Action/Next Steps: A status conference was scheduled for later in the day on 6/20, at which these items may have been discussed. The COE planned to implement the proposed actions, barring any objections from the court.

2007 Summer Treaty Fishing

Kyle Dittmer, CRITFC, referred to an SOR linked to the TMT agenda, requesting 1' hard constraints for the pools at John Day, Bonneville and The Dalles. The COE clarified that it operates Bonneville with a 1.5' fluctuation band and said they would coordinate with CRITFC on summer fishing operations.

Action/Next Steps: This will be on the agenda for the 6/27 TMT meeting

Operations Review

Reservoirs – Cathy Hlebechuk and John Roache reported on reservoirs. Grand Coulee was at elevation 1282.5'. Libby was at 2440'. Flows in the Lower Snake were receding and spring season averages will be presented at the TMT meeting on 6/26.

Fish – Paul Wagner, NOAA, reported on juvenile and adult fish. Updated passage numbers on the Fish Passage Center website showed a continued downward trend, with less than 1,000 Chinook passage per day at all project but McNary. Subyearling Chinook counts were decreasing and Steelhead counts were 'trickling through.' Wagner noted that 18,000 adults had passed Bonneville thus far, and said that jack counts continued to be strong. Gas Bubble Trauma data will be discussed once data from ongoing sampling is posted.

Power system – Nothing to report.

Water quality – Jim Adams, COE, had no exceedances to report.

Next face-to-face TMT meeting: Wednesday, June 27th

Agenda items will include:

- Review/Finalize Facilitator's Notes and Meeting Minutes
- Updated Flow Forecasts
- Libby Operations
- Dworshak Operations
- Summer 2007 Treaty Fishing
- Operations Review – including an update on Ice Harbor Spill Caps

Columbia River Regional Forum
Technical Management Team Meeting
June 20, 2007

1. Welcome and Introductions

Today's TMT meeting was chaired by Cindy Henriksen and facilitated by Robin Harkless, with representatives from COE, BOR, Idaho, Montana, Oregon, CRITFC, BPA, NOAA, USFWS and the Nez Perce Tribe attending. 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 Facilitator's Notes/Meeting Minutes

There were no changes to the May 30 facilitator's notes or official minutes.

Cathy Hlebechuk scrolled through changes to the June 13 facilitator's summary. In the section on Grand Coulee flood control, she clarified that the expected residual runoff at all projects was based on the June final forecasts. In the section on Flows, she added Paul Wagner's (NOAA) statement that the proposed Montana operation is consistent with the 2004 BiOp. Spill caps were changed at Lower Monumental, not Ice Harbor, to control TDG levels in the Ice Harbor forebay, Jim Adams (COE) said. At the bottom of page 3, it should say "CRITFC did not oppose targeting flat flows in Montana," not "in the system," Kyle Dittmer said. In the last paragraph of the Grand Coulee Flood Control section, John Roache added "summer" so it now says "spring and summer flow targets."

Regarding the June 13 official minutes, in the last paragraph of section 5 on page 8, Paul Wagner changed outflows at Dworshak to "under 45-50 degrees Fahrenheit," not "kcfs." With the above changes, the June 13 facilitator notes and official minutes were finalized.

3. Priest Rapids Update

Last week, there were a couple of minor exceedances (2 kcfs and 2.9 kcfs) which occurred on Friday and over the weekend, Russell Langshaw (Grant County PUD) said. Mean discharges ranged between 165.9 and189.4 kcfs. Minimums were 153.1 to 179.5 kcfs; maximums were 180.1 to 216.0 kcfs. Daily deltas over the weekend were 18.1 to 62.9 kcfs. Today will be the last day of flat protection flows because 400 temperature units have been reached.

On July 11, Langshaw will give TMT a final update and seasonal summary of the Priest Rapids operation. He will also participate in the November TMT review.

4. Libby/Hungry Horse Research

There has been demand for information on the Libby project, and ongoing research in the Flathead basin covers most of the efforts people were interested in, Brian Marotz (Montana) said. He gave a brief sketch of the research on the Northwest Power and Conservation Council's Mainstem Amendments. The state of Montana has hired a biologist, and the state of Montana is looking at using annual population estimates to evaluate fish abundance in the Kootenai River. PIT tag detection weirs are being installed on specific tributaries to monitor populations. Gaps in research are slowly being filled with models until researchers can get empirical data, Marotz said.

The state is also working with Montana State University to study the bull trout population. An official report by Ryan Sylvester, posted on the BPA website, gives further details on this research. Another Montana project is examining IFIM (instrumental flow incremental methodology) in the Flathead River. Marotz offered to provide further research details to interested TMT members if they don't find what they want online.

5. Updated Flow Forecasts for Hungry Horse, Libby, Dworshak and Lower Granite

Cindy Henriksen (COE) presented inflow and outflow hydrographs based on this week's ESP traces for Libby, Dworshak, Hungry Horse and Lower Granite. Inflows at Libby were 36 kcfs on June 13, dropped to 30 kcfs on June 15, and rose to 36 kcfs again on June 19. The rise in inflows is due to warmer weather in Canada and the upper tier of the Columbia basin. Forecasted inflows could go as high as 45 kcfs later this week. Daily box whiskers plots show Libby inflows generally in recession through the end of the forecast period, Aug. 31.

Forecasts show inflows at Dworshak at less than 6 kcfs and receding through August. Any rises in inflows would be the result of unpredictable precipitation or thunderstorms. Some of the graphs refer to inflows as discharges; Henriksen apologized for the confusion. All the graphs attached to today's agenda depict inflows, regardless of naming convention.

What appears as a bump in inflows actually was a calibration change in the forebay gage at Hungry Horse, which was 0.17 feet off, John Roache (BOR) said. Horse is at elevation 3,559.37 feet and almost full, with inflows in recession. Warmer temperatures can be expected, but there's probably not enough snow left for that to make a measurable difference in the water supply.

Inflows at Lower Granite are in recession through the rest of June. Outflows – about 57 kcfs at this time last week – are currently in the low 40s trending toward 35 kcfs.

6. Grand Coulee Flood Control

There is no longer a need for a flood control maximum elevation, Roache reported. For the remainder of the season, BOR will allow the reservoir to fill based on chosen elevation targets while attempting to provide as smooth an operation as possible in the lower river. Full refill is expected about July 8 or 9.

7. Dworshak Operations

Dworshak is full, and decisions need to be made regarding the rest of the season, Henriksen said. The COE has temperature information for TMT to use in the decision process.

The Nez Perce Tribe has a goal of using its 200 kaf of releases primarily in September, Greg Haller said. He will give an update on the plans at the next TMT meeting June 27. The 200 kaf operation kicks in when the reservoir reaches elevation 1,535 feet. The SRBA board tries to predict when that will happen and makes flexible plans around that date, Haller said.

Adams showed TMT graphics depicting outflow trends since April 1 at Dworshak and tailwater temperatures in the lower Snake River. Tailwater temperatures at Lower Granite have been on a roller coaster this year. Current conditions at Lower Granite tailwater are a daily average temperature of 61.3 degrees F, with an upward trend. Regression analysis shows 68 degrees F occurring around July 1 if the current trend continues. So, based on current trends and the near-term weather outlook it looks like we may be able to hold off increasing cold water releases from Dworshak until early July, Adams said. He reminded TMT that last year, action was specifically called for if the Lower Granite tailwater temperature hit 67 degrees F. Hells Canyon operations are significant in terms of daily flow and temperature fluctuations at Lower Granite, Dave Statler said.

Adams presented a graph of inflow rates and water temperatures entering Lower Granite pool. The graph shows Dworshak flows and tailwater temperatures, and it includes Orofino and Anatone. Using the data from Anatone and Orofino can provide advance notice of a day or two to avoid temperatures exceeding 68 degrees F at the Lower Granite tailwater.

The most recent thermocline data was taken on June 18. The graph shows a very steep thermocline, with the temperature dropping from 19.7 degrees C to 11.8 degrees C. That is expected to flatten out as summer progresses, Adams said. Fertilization efforts at Dworshak this summer could affect the thermocline. At present, it appears that plenty of cool water is available.

Kyle Dittmer (CRITFC) presented EPA-RBM10 modeling results for the lower Snake. The graphs are the fruit of a seven-year cooperative effort between CRITFC, the Nez Perce Tribe and EPA to model summer flow scenarios for Dworshak. The investigation started with 27 scenarios and was narrowed down to a few at a time. Dittmer chose the summers of 1970, '73, '78 and '88 as good years for simulating this year's weather, mainly because they were all El Nino years that translated into La Nina the following year. A characteristic of such years is extremely variable weather.

The first graph Dittmer shared shows release temperatures out of Dworshak and Brownlee at 43 to 46 degrees F, respectively. So far, the analysis shows that the four surrogate years match well with the current year's forecast. The graphs indicate there could be temperature concerns by mid to late July.

Dittmer, Haller and Statler had agreed prior to this meeting that their preferred Dworshak operation this year is a general draft downward from full pool, arriving at elevation 1,535 feet by end August, then 1,520 feet by Sept. 30, while limiting outflows to no more than 7 kcfs during the first half of July to avoid stunting the growth of smolts in the Clearwater. Flows should be increased during the last half of July to satisfy temperature concerns, followed by shaping of the 200 kaf for the Nez Perce Tribe in September. This recommendation represents an attempt to balance the needs of juvenile and adult migrants, Dittmer said.

The data labeled TMT-2006 shows what was done last year, which can serve as a frame of reference. The recommended Nez Perce plan calls for passing inflows of 3 kcfs the first week of July, followed by 7 kcfs the second week, then 12 kcfs the third week and 14 kcfs the last week of July. The plan calls for stepping up to 12 kcfs or down to 10 kcfs for the rest of August, followed by a receding hydrograph of 7 kcfs the first week of September, and 4 kcfs the second week of September. Under this plan, Dworshak would reach elevation 1,520 feet by mid-September.

This year will have carry over of approximately 200 kaf in September, Dittmer said. Water temperature modeling suggests there won't be major temperature problems this year. Releases out of Brownlee and Hells Canyon might be more limited this year due to the steep decline in the water forecast. Therefore, Dworshak will have a bigger impact on water temperatures in relation to the amount of hot water coming from the upper Snake. This could help keep temperatures down in the lower Snake.

Maintaining adequate cooling capability could be a challenge this summer, Dave Statler said. It can be difficult to balance the Nez Perce Tribe's desire for limited releases of cold water in early July with the salmon managers' desire for more flows in early July, Dittmer said. Wagner asked Statler, is there a target you'd like to see in the Clearwater River in July? A temperature of 60 degrees F

would be good, Statler said. Dittmer requested an update on the fork length of fish in the Clearwater relative to historical norms, which Statler will provide at the next TMT meeting.

Scott Bettin asked whether the models assumed undershot or overshot conditions at each generating unit at Dworshak last year? Dittmer said he would find out. All gates are currently in overshot mode this year, Adams said.

The current outflow temperature at Dworshak is 44 degrees F, Henriksen said. Temperatures are stratified at the bottom, but some units are operating in overshot mode now. Outflows were increased June 19 because Dworshak was full, so now the COE is operating both the big and the smaller unit to create space in the reservoir. The expected inflow for the remainder of June is 4 kcfs. Space is needed for diurnal effects that cause reservoir elevation to rise during the day and fall at night. TMT will need to discuss plans. The COE will stay the course as long as the current outflow temperature remains at 44 degrees F, Henriksen said. She asked whether there would be an SOR next week on July operations. FPAC will discuss this issue on Tuesday, with the possibility of presenting an SOR next week.

Russ Kiefer asked whether a range of 60-62 degrees F is optimal for fish growth, and if so, would releasing warmer water from Dworshak at this time of year help boost fish growth? Conversely, if 68 degrees is optimal on June 30, and warmer water is being released now, Robyn MacKay (BPA) asked, should the Clearwater River be cooled now by beginning to release 40 degrees F water from Dworshak in undershot mode to extend the date when the Clearwater River gets to warm, without having to use additional cold water volume from within the reservoir now? That operation could be a useful tool if there are problems in the lower Snake, Statler said. Temperatures of 46-47 degrees F are preferred at the federal hatchery for the sake of steelhead and Chinook growth, David Wills (USFWS) said. Cooling the Clearwater River to 40 degrees F this early in the season would probably have an adverse impact on the hatchery.

At present, the COE is looking for an operating range of 0.5 to 1 foot in the reservoir. Generating unit number one needs to be kept running for the rest of June because of transmission work in the area, Henriksen said. The COE will operate either units 1 and 2 or units 1 and 3, while trying to select flows that keep the reservoir within a foot of full, and outflows in the current range of 44-45 degrees F. Diurnal inflow may mean that daytime inflows will be larger than those at night. These daytime and nighttime inflow amounts will change somewhat in July and August.

The group discussed management of outflows through June. The small amount of remaining volume at Dworshak can be used either to (1) hold a flat discharge with the reservoir elevation moving up and down, or (2) use the reservoir to shape daily outflows which will fluctuate while reservoir elevation

remains steady, MacKay said. She asked whether there was any objection to that operation. Average outflows would fluctuate from 4 to 4.5 kcfs during the daytime to as low as 1.3 kcfs at night, Henriksen said. If outflows are kept in that range during the daytime, diurnal fluctuations could be limited to 2-6 kcfs of outflows within a given day. There was general support for an operation that limits fluctuations to those that mimic the natural river hydrograph.

The COE will operate Dworshak to within the top 0.5 foot of full, managing outflows to mimic the diurnal effects of reservoir inflows, Hlebechuk said. There will be some load shaping for generation, with the reservoir operated to ramp rate limits. The COE and BPA will work on specifics, then present the results to TMT. In the interim, current reservoir operations will continue.

8. Montana Proposal for Libby/Hungry Horse

Henriksen presented scenarios that imitate the Montana SOR through July 21. The strategy currently being shown for Libby outflow is a default operation from the BiOp that shows Libby drafting to elevation 2,439 by end August. The SOR recommended that Libby outflows be kept at the current level of 15 kcfs through July 21. Henriksen informed TMT that last week's prediction of 6.5 maf average inflows to Libby for April-August has risen to 7.1 maf this week, a large jump in the predicted volume, based on temperature and precipitation data. Based on the new forecast, the elevation of Libby reservoir could rise to within 5 feet of full in July, and there may be a need to go to plus/minus 3 kcfs flows after July 21, if the Montana recommendation of flat 15 kcfs outflows is followed.

Litchfield favored maintaining 15 kcfs outflows in light of the new forecast, while making every attempt to avoid big fluctuations in Montana's river levels. Idaho supports Montana's desire for flat or slightly declining flows, Kiefer said. The river appears to be most productive for fish when flows are between 9-18 kcfs; beyond that, the force of the flows disturbs gravel and reproduction. NOAA supports maintaining outflows of 15 kcfs, but clarification is needed ASAP as to when the target elevation of 2,439 feet will be reached, Wagner said. He noted that Montana's proposed operation, which is equivalent to drafting 10 feet into September, is more likely based on this larger water supply volume than the 20 foot draft allowed in the mainstem amendments. Oregon is generally supportive of Montana's request but is concerned about flow reductions that could occur in the lower river in August, Rick Kruger said. Kruger asked if a swap or other water could be used to make up the flow in August. US Fish and Wildlife would prefer going up to 17 kcfs to avoid complications with the river barge but won't oppose the 15 kcfs request, Dave Wills said.

Bettin asked, if flows need to be increased to 17-18 kcfs for a few hours to move the coring barge, can that change be made without consulting TMT? A few hours of fluctuation would not be a problem in Montana as long as the ramp rates are followed, Litchfield said. Sue Ireland of the Kootenai Tribe provided

information on the barge operations. Shallowness could be a problem, but not until after July 6. The Kootenai Tribe supports Montana's request for a steady, stable flow and agrees with keeping flows at 15 kcfs, she said.

The COE will maintain outflows of 15 kcfs with the possibility of continuing at that level until July 21. This issue will be revisited next week when more is known about the impact of flow forecasts on Libby reservoir.

Regarding the Hungry Horse aspect of the Montana SOR, currently the reservoir is at elevation 3,559.37 feet, within the top foot of full, Roache said. Outflows are 4.1 kcfs, and inflows are receding to around 5 kcfs, with the reservoir slowly filling at the rate of about a tenth of a foot per day. Outflows might have to be increased if warmer temperatures cause the reservoir to get closer to full. Outflows will remain at 4.1 kcfs unless inflows pick up. Based on residual volumes and the expectation that the reservoir will fill by the end of June, a flat flow of around 4 kcfs would put the reservoir at 20 feet below full by the end of September, Roache said. Idaho and NOAA approved this operation for the time being. It will be revisited next week in light of new information.

9. Lower Monumental, Bonneville & McNary Spill Update **and** *Bonneville Survey for Spillway Erosion*

Three spill operations were requested which were outside the 2007 Operations Agreement so they had to be coordinated with signatories to the agreement, Bernard Klatte (COE) said.

(1) There has been a request to start summer spill at Bonneville dam on June 21st instead of July 1. Reason: the Chinook run is early this year, and researchers need to tag fish for evaluation. Also, the request asked for 85 kcfs spill during the day instead of 75 kcfs that was prescribed in the 2007 FOP. This increase in daytime spill is to evaluate a new spill pattern developed at ERDC.

(2) There has been a request to move the start of McNary summer spill from July 1 to June 19. This will result in a spill increase of 60% of flow for five days.

(3) A contract has been awarded to investigate erosion in the Bonneville spillway, most notably in bays 9, 12 and 14. As a result, there has been a request for a partial spill outage on Sunday, June 24, from 12 to 4 pm. It appears that the concrete apron in bay 9 has eroded to only 6 inches thickness above an observation gallery. Attraction spill in bays 1 and 18 for adult migrants will continue throughout the survey.

There was also a request to change summer spill at Lower Monumental, but that was opposed by NOAA and Oregon, so it was dropped from further consideration. The change in operations from the 2007 Spill Agreement were submitted to the court in one package. All signatories to the agreement have

participated in these deliberations, so, barring disagreement from the court, COE will begin these operations tonight.

11. 2007 Treaty Fishery (CRITFC SOR C-1)

The summer treaty fishery SOR this year calls for a hard system constraint to hold the Bonneville, The Dalles and John Day pools within 1-foot elevation bands for two and a half days of fishing. The purpose of the 1-foot fluctuation bands is to prevent tribal nets that cost around $500 apiece from getting lost or damaged. This has been an issue in previous years, Dittmer said.

As part of this year's tribal fishing operation, CRITFC did a net flight survey June 19. There were 288 tribal nets in zone 6. Bonneville pool held 110 of the nets (39%), The Dalles held 58 nets (20%), and John Day held 120 nets (41%). In previous years, there have been more nets at John Day and The Dalles, but this year the tribes shifted to Bonneville, Dittmer said. There will be an updated SOR on the tribal fishery next week.

The Corps will hold Bonneville pool between elevations 75.0 and 76.5 feet as a hard constraint, said Henriksen, and a one foot range within that as a soft constraint. The Dalles pool is very small and usually only fluctuates about one foot. Similarly the John Day pool is already operating in a one and a half foot operating range per the BiOp.

12. Operations Review

A. Reservoirs.

Grand Coulee is at elevation 1,282.5 feet, Roache said. Hungry Horse is at elevation 3,559.37 feet, releasing 4.1 kcfs. Libby is at elevation 2,440 feet, filling about half a foot per day. Dworshak is full, with flows in the lower Snake receding to 35 kcfs. McNary flows have also receded to around 200 kcfs.

Regarding flow augmentation on the upper Snake, the BOR has estimated 427 kaf will be available this year, and flows began today from the upper Snake projects. Flow augmentation from the Boise started June 13. Payette flow augmentation started May 31. Brownlee is close to full, meaning inflows will no doubt be passed down the river, Roache said.

B. Fish. Russ Kiefer expressed appreciation for the teamwork that resolved the recent problem with adult fish delay between Little Goose and Lower Monumental.

The numbers for combined yearling Chinook are trending down, with fewer than 1,000 fish passing daily at all projects except McNary, Wagner said.

The subyearling Chinook migration is active, with around 5,000 hatchery fish passing per day. The numbers at Little Goose (5,000-10,000 per day) are lower than those at Lower Granite, thanks to the RSW's efficiency. Subyearling Chinook passage at McNary is up to 50,000 per day.

Steelhead passage is down to a few hundred per day at Lower Granite, and less than that at Lower Monumental, Wagner said. There are less than 1,000 fish passing in the lower river.

Regarding adult passage, 18,000 summer Chinook have passed at Bonneville so far. Jack counts continue to be strong.

C. Power. There is nothing new to report, Robyn MacKay (BPA) said.

D. Water Quality. There have been no exceedances in the past week, Adams reported.

13. Next TMT Meeting

The next TMT meeting on June 27 will include updated flow forecasts, Dworshak and Libby operations, updates on the Montana and CRITFC SORs, and the usual operations review. This meeting summary was prepared by consultant and writer Pat Vivian.

Name	***Affiliation***
Cindy Henriksen	COE
Russ Kiefer	Idaho
Jim Litchfield	Montana
Rick Kruger	Oregon
John Roache	BOR
Kyle Dittmer	CRITFC
Dave Statler	Nez Perce
Tony Norris	BPA
Bernard Klatte	COE
Rudd Turner	COE
Cathy Hlebechuk	COE
Jennifer Miller	Susquehanna
Paul Wagner	NOAA
Robyn MacKay	BPA
Phone:	
David Wills	USFWS
Russell Langshaw	Grant Co. PUD
Brian Marotz	Montana
Greg Hoffman	COE
Laura Hamilton	COE

Barry Espensen	CBB
Margaret Filardo	FPC
Dan Spear	BPA
Scott Bettin	BPA
Tim Heizenrader	Cascade
Richelle Beck	DRA
Shane Scott	NWRP
Dave Benner	FPC
Russ George	WMC
Bruce McKay	Consultant
Sue Ireland	Kootenai Tribe