

COLUMBIA RIVER REGIONAL FORUM

TECHNICAL MANAGEMENT TEAM

June 13, 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 14, 16, 23 and 30th TMT meetings were posted as links to the TMT website. Paul Wagner noted an edit to the May 30th facilitator notes: page 3, in the fish operations section, Lower Granite, not "Little Goose" passage data was expected to be updated. TMT members said they needed more time to review the 5/30 meeting minutes; they will be finalized at the 6/20 meeting.

Priest Rapids Update

TMT members reviewed a Priest Rapids operation graph linked to the TMT agenda, showing no exceedances between 5/28 -6/10. Russell Langshaw, Grant County PUD, clarified that dates without flow bands displayed on the graph were those with inflows exceeding 170 kcfs.

Action/Next Steps: The project will operate for one more week with standard flow bands until 400 temperature units are reached, for rearing protection. An update on Priest Rapids will be on the agenda for the 6/20 TMT meeting.

Grand Coulee Flood Control

John Roache, BOR, reported that the project was at 1282.1' on 6/13 and will operate with a maximum elevation of 1285', effective 6/17. Cathy Hlebechuk, COE, reported on expected residual runoff from June 11 to the end of the forecast period for the following projects. She emphasized the residual runoff is based on the June final forecasts:

- Dworshak, through end of July: 17.7%
- Libby, through end of August: 44%
- Hungry Horse, through end of August: 30%
- Albeni Falls, through end of July: 31%
- Grand Coulee, through end of August: 48%
- The Dalles, through end of August: 42%
- Lower Granite, through end of July: 24.5%
- Arrow, through end of August: 60%

Roache shared the BOR preference to refill Grand Coulee to its full elevation of 1290' on 7/8 or 7/9, for recreation purposes and being aware of the spring flow targets at Priest Rapids and the spring and summer flow targets at McNary. The following

representatives provided feedback on the proposal: NOAA: support; MT: support; OR: support; ID: no comment; COE: support; BPA: support; Nez Perce: no comment; CRITFC: neither oppose nor support.

Action/Next Steps: The BOR will operate Grand Coulee as proposed and will work with the COE to analyze project volumes on a weekly basis. This will be on the agenda for the 6/20 TMT meeting.

Updated Flow Forecasts / Dworshak Operations

Cathy Hlebechuk, COE, referred TMT to several flow forecasts posted to the TMT web page, updated as of 6/12. John Roache, BOR, noted that Hungry Horse inflows had receded to 7 kcfs, which had been taken into account in the proposed operations. Libby inflows were at 42 kcfs and were forecasted to continue to recede. Lower Granite outflows were expected to drop to near 30 kcfs by the end of July. Jim Adams, COE, noted the recent moderate weather and said that Lower Granite tailwater temperatures were average as compared to 2000-2007 data.

Hlebechuk reported on Dworshak operations: inflows were 7.3 kcfs, outflows were 4.3 kcfs, elevation was 1598.8', and augmentation volumes per this week's ESP ranged between a minimum 76 kaf and a maximum 160 kaf. Hlebechuk said that Dworshak elevation was expected to reach its full elevation of 1600' by the end of June. Dave Statler, Nez Perce Tribe, and Kyle Dittmer, CRITFC, said that they support Dworshak fill before the end of June. Hlebechuk acknowledged the desires of the Nez Perce and CRITFC, and TMT members suggested that reviewing summer flow scenarios produced by the EPA and COE, as in the past, would help inform Dworshak discussions at the next meeting.

Action/Next Steps:

- The COE will continue its Dworshak operations and this item will be on the agenda for the TMT meeting on 6/20. Dworshak scenario comparisons, temperature targets, operating in under vs. over-shot mode and the pilot fertilization program are anticipated discussion points.
- Greg Haller, Nez Perce Tribe, gave a heads up that he will share the SRBA plan for the use of 200 kaf for flow augmentation with the Salmon Managers and TMT, in the future.

Libby Operations Scenarios

Cathy Helebechuk, COE, referred TMT to graphs linked to the TMT agenda that were based on updated ESP/STP forecasts, showing how operations might be shaped after the sturgeon pulse. A flat flow operation ranged between 12-16 kcfs, given the average ESP volumes. The May-August average maximum elevation average given the ESP data was 2448.2', and the STP data runs showed a peak elevation of 2449.2'. Hlebechuk noted that the graph on Kootenai River and Koocanusa Reservoir temperature graph shows that the project has been very successful in moving selector gates to achieve the desired outflow temperatures.

Libby/Hungry Horse SOR 2007-MT-1

Jim Litchfield, Montana, presented a final draft SOR for summer 2007 Libby and Hungry Horse operations. An earlier draft SOR shared with IT at their June 7 meeting was updated, and the new version (dated June 12, 2007) was posted as a link to the TMT agenda. In the development of the latest draft, Montana discussed proposed operations with the Kootenai Tribe relative to habitat improvement projects being planned for this year, and the Tribe signed on to the final draft SOR submitted today.

The main goals for the Hungry Horse operation were to meet refill by June 30, but not too quickly. The proposed flow given current forecasts was a 4 kcfs flat flow for July, August and September. Given current forecasts, it was expected that this flat flow would have the project drafting approximately 20' to elevation 3540' by the end of September.

The proposed Libby operations were to continue at 15 kcfs flows through July 21 (until core sampling for the habitat improvement project is complete); then reduce to 12 kcfs for July and August, followed by a gradual ramp down in September. Given the uncertainty of flow conditions through the summer, Jim suggested the operation be further discussed in mid-July, with the specifics of the operation refined as needed at that time. The goal is to avoid a mid-summer double peak, maintain flat flows, and save some flow for the month of September. Jim noted that the operation being proposed, from Montana's perspective, is a middle ground between the action agencies' proposed action and the NPCC's Mainstem Amendment recommendations. Montana requested feedback from TMT members today on the general direction and objectives of the proposed operations.

Questions were raised about the research aspect of the SOR, and TMT agreed it would be good to have a quick refresher on the study information available regarding productivity etc.

ACTION: Jim will invite Brian Marotz, MT, to share a brief review of his research at the next TMT.

NOAA offered support for the objectives of the proposed operations, and stated the proposed operation is consistent with the 2004 BiOp. Oregon was not prepared to provide comment at this time. The COE asked whether maintaining as flat a flow as possible and targeting an end of August elevation of 2439' at Libby would meet Montana's needs, to which Jim responded that this was not Montana's objective – rather to maintain flat flows through the summer. CRITFC offered their preference for reaching 20' drafts at both projects, with an overall desire to provide flows in August in the lower Columbia. CRITFC did not oppose targeting flat flows in Montana. The Nez Perce said they would need more time to consider the proposal and emphasized that this operation had a flow shaping objective where as the Dworshak summer operation is driven by temperature.

Next Steps: TMT will revisit Libby and Hungry Horse operations at the 6/20 meeting. It was suggested that determining next steps for Hungry Horse operations will need to happen in the nearer term, so folks should come prepared

to offer input on that aspect of the proposal. Also, the sturgeon operation will end on 6/23, after which a decision about how to operate Libby will need to be made.

Lower Monumental/McNary Spring/Summer Spill Schedules

Marvin Shutters, Walla Walla COE District, reported on a proposal to shift the dates specified in the 2007 Fish Operations Plan Agreement for spill volumes to coordinate with fish studies at Lower Monumental and McNary. The proposed shifted dates are as soon as possible at Lower Monumental and June 21st at McNary.

Action/Next Steps: The proposed dates were under review by the parties to the Agreement as well as the SRWG, and Shutters will provide an update to TMT at the 6/20 meeting.

Spring-Summer Non-Treaty Storage Agreement

Tony Norris, BPA, reported the following: Arrow reservoir continues to operate near maximum levels permitted for flood control, allowing no space for U.S. flow shaping. Projections are for Arrow to remain near flood control levels or near full into July. Given current circumstances, BC Hydro has declined to pursue an agreement at the present time; however, as hydrologic conditions change, BPA and BC Hydro will continue discussion on potential operations to use non-Treaty space for mutually beneficial flow shaping. The US and Canadian sections of the Operating Committee continue to use the Nonpower Uses Agreement to shape Treaty flows, including one Maf of flow augmentation storage for U.S. fisheries, to provide mutual nonpower benefits. The U.S. Section of the Operating Committee is maintaining the maximum flow augmentation volume possible for release in July, pursuant to the Nonpower Uses Agreement.

Action/Next Steps: Norris said that the agreement would not likely be discussed again until mid-July, but that BPA would continue to follow the issue and keep TMT members in the loop.

Little Goose Spill for Adult Fish Passage

Bernard Klatte, COE, reported that Little Goose was operating with a flat spill pattern 24 hours/day, as the passage counts at the project had clearly benefited from the shift in spill pattern.

Operations Review

Reservoirs – Cathy Hlebechuk and John Roache reported on reservoirs. Grand Coulee was at elevation 1282.1' and will have elevations of no greater than 1285' effective 6/17. Hungry Horse was at 3558', with outflows at 3.2 kcfs and inflows of 6.5 kcfs. Libby was at 2434.5', with inflows receding, at 42 kcfs and outflows of 15 kcfs. Dworshak was at elevation 1598.8', with inflows of 7.3 kcfs and outflows reducing to 4.3 kcfs. Average flows through 6/12 were 63 kcfs at Lower Granite, 175 kcfs at Priest Rapids, 280 kcfs at Bonneville, and the April 10-June 11 average was 249 kcfs at McNary.

Fish – Paul Wagner, NOAA, reported on juvenile and adult fish. Updated passage numbers on the Fish Passage Center website indicated that yearling migration was over. Subyearling Chinook counts were up at Little Goose, Lower Monumental and McNary. Lower Granite, likely due to hatchery releases. Steelhead at Lower Granite were

decreasing into the 1,500 per day range and were in the 5,000 per day range at Little Goose. Margaret Filardo, Fish Passage Center, reported on a June 8th memo regarding elevated evidence of gas bubble trauma in fish sampled at Little Goose and Lower Monumental. She said that passage center crews would continue surveying at the two projects and that those results would be posted on the Fish Passage Center website under gas bubble trauma.

Power system – Nothing to report.

Water quality – Jim Adams, COE, reported on the effects of alternating spill caps at Lower Monumental: 23.6 kcfs led to TDG exceedances at the Ice Harbor forebay (IHRA), but 22.6 kcfs kept TDG levels well under exceedances levels. This operational strategy is intended to maximize spill while keeping TDG levels at IHRA below state criteria.

Next Steps: The COE will operate Lower Monumental with spill caps of 23.6 kcfs during the day and 22.6 kcfs at night, and will report TDG results at the 6/20 TMT meeting.

Other

- Kyle Dittmer, CRITFC, reported that an SOR for summer treaty fishing would be submitted to the COE the week of 6/20 and requested that this item be on the agenda for the 6/20 TMT meeting.
- Dennis Schwartz, COE, reported that erosion issues in bay 9 at Bonneville have prompted a recommendation to provide an outage to conduct a survey of the area. A technical memo was expected to be submitted by June 14, which will be shared with TMT. TMT members are asked to provide feedback at the 6/20 meeting on when the best date to do the repair work would be.

Next face-to-face TMT meeting: Wednesday, June 20th

Agenda items will include:

- Review/Finalize Facilitator's Notes and Meeting Minutes
- Priest Rapids Update
- Grand Coulee Flood Control Update
- Updated Flow Forecasts
- Libby Operations Scenarios
- Dworshak Operations/Scenarios
- MT SOR for Libby/Hungry Horse
- Lower Monumental/McNary Spill Dates Update
- Operations Review – including an update on Lower Monumental Spill Caps

**Columbia River Regional Forum
Technical Management Team Meeting
June 13, 2007**

1. Welcome and Introductions

Today's TMT meeting was chaired by Cathy Hlebechuk and facilitated by Robin Harkless, with representatives from BOR, CRITFC, COE, BPA, USFWS, NOAA, Montana, Idaho, Oregon, 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

Regarding the 5-30-07 facilitator's notes, page 3 under Fish Operations, the passage indices data quoted are for Lower Granite, not Little Goose, Paul Wagner (NOAA) said.

There were no other comments at this time. TMT will revisit meeting note reviews on June 20 for the sake of those who have not yet had a chance to review the various facilitator's notes and official minutes that have been recently posted.

3. Priest Rapids Update

It's been another good couple of weeks with no exceedances, Russell Langshaw (Grant County PUD) reported. Mean daily discharges were 153 to 203.5 kcfs, with 148.5 to 164 kcfs minimum flows. Maximums ranged from 162.4 to 228.7 kcfs. Daily deltas were 14.1 to 77.1 kcfs. There was one weekend protection flow of 40 kcfs, as well as several 60 kcfs and several 150 kcfs minimum protection flows.

On days when inflows are greater than 170 kcfs, the only protections are 150 kcfs minimums, which are imposed in place of flow bands, Langshaw said. Emergence is expected to end June 20, with about another week of spawning operations to go. TMT will check in on this at its next meeting June 20.

4. Grand Coulee Flood Control and Refill

The current guidance is maximum elevation 1,285 feet on June 17, John Roache (BOR) said. COE is still analyzing this weekly, based on residual volumes, so there will be a revised target next week.

Hlebechuk gave a report on residual runoff, which is calculated by subtracting the actual volume through June 10 from the most recent volume

forecast. Residual runoff percentages mean how much water is left to run off during this forecast season; a low percentage means there's not much water left to come for this forecast season.

Residual runoff percentages as of June 10 are:

- Dworshak – 17.7% for June 11 to end July
- Libby – 44% for June 11 to end August
- Hungry Horse – 30% for June 11 to end August
- Albeni Falls – 31% for June 11 to July 31
- Grand Coulee – 48% for June 11 to end August
- The Dalles – 42% for June 11 to end August
- Lower Granite – 24.5% through end July
- Arrow (in Canada where snow is at higher elevations) – 60% for June 11 to end August

Grand Coulee refill probably won't be a problem this year, Roache said, especially with lots of water coming from Canada. The primary objective of refilling is to help meet summer flow objectives at McNary. To accommodate recreational needs at the reservoir over July 4 which occurs mid-week this year, Roache proposed reshaping the water by refilling to elevation 1,290 feet on July 8 or 9 instead of June 30 and based on the latest The Dalles forecast, drafting to elevation 1,278 feet by August 31.

NOAA and Idaho representatives endorsed this proposal to move the water later into summer. BPA is working to support that operation, Tony Norris said. CRITFC neither opposes nor supports it, Kyle Dittmer said. There were no other comments today.

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

Hlebechuk presented the week's ESP forecasts. Hungry Horse is definitely in recession, with inflows around 7 kcfs and dropping quickly, Roache said. The 10-day forecast does not predict rain. Like Hungry Horse, Libby is in gradual decline, with inflows at 42 kcfs on June 12. Inflows at Dworshak the same day were 7.3 kcfs. Based on this week's ESP forecast, the augmentation volume remaining at Dworshak is between 76 and 160 kaf. Hlebechuk and Wagner agreed the message here is that the peak of the runoff has passed.

Litchfield asked, are there any plans for this summer if temperatures get hot? In low flow summers, temperatures tend to be moderate because Dworshak's cooler water becomes a high percentage of flows in the river, Wagner said. Jim Adams (COE) observed that the weather this year has been helping to keep river temperatures down, putting them at an average for this date over the past 8 years.

The conversation turned to surface water temperatures at Dworshak, which are lower now than at this time last year. Dave Statler informed TMT that the Nez Perce will be doing a pilot fertilization program in Dworshak this year. The intention is to increase plankton growth. A side effect of this is that increased plankton growth will help stratify the reservoir by absorbing heat at the surface and preventing light from penetrating deep into the reservoir.

Jim Adams asked about outflows at Dworshak. It would be good to keep them under 45-50 °F, Wagner said. Since river temperatures are moderate now, we could save the cold water for later, Adams said. TMT will revisit the issue of reservoir water temperatures next week and throughout the season.

6. Dworshak Operations

Based on the lack of water in the North Fork of the Clearwater basin, we should fill Dworshak as full as possible, Statler said. He advocated passing inflows as soon as possible to stay ahead of the demand for cooler water later this summer.

At elevation 1,598.8 feet, Dworshak is 1.2 feet from full now, Adams said. Current discharges are 4.3 kcfs. The reservoir will be full by the end of the month, Hlebechuk said. The COE will continue to operate as is until the Salmon Managers call for water to cool temperatures at Lower Granite.

CRITFC supports the Nez Perce position and would like to see Dworshak full before June 30, Kyle Dittmer said. CRITFC has submitted two flow scenarios to EPA for water temperature modeling. One is the Nez Perce plan, which calls for drafting Dworshak to elevation 1,535 feet by end August. The other is the TMT 2006 plan, used for a baseline comparison. Dittmer will give a full presentation on this at the June 20 TMT meeting. Greg Haller said the Nez Perce Tribe is beginning to develop the Snake River Basin Adjudication plan for using 200,000 acre feet of water in September.

7. Libby Operations Scenarios

Hlebechuk showed TMT a whiskers plot depicting flat flows at Libby starting June 24 after the sturgeon pulse is completed. The graph indicates that 50% of the flows would fall in the 12-16 kcfs range in order to draft Libby Reservoir to elevation 2,439 feet by end of August. Flat flows could go as low as 11 kcfs and as high as 25 kcfs depending on the inflow to Libby Reservoir.

Litchfield asked whether the model was set up to try to calculate a flat flow for the period from June 24 through August 31. Hlebechuk said she would check on that, as well as on the ESP volumes for the June final forecast, then email the information to TMT members.

Under the flat flow scenario, the average Libby maximum elevation would be 2,448 feet, with a range of 2,445 to 2,458 feet, and 2,459 feet being full. The Libby flat flow STP scenario showed a volume of 6.5 maf and a maximum elevation of 2,449.2 feet. The resulting flat flows will be low, Hlebechuk said. Temperatures at Libby tailwater and at Bonner's Ferry are very close to optimal for sturgeon, Wagner noted. Hlebechuk, Bettin and Wagner agreed that project staff have been doing an excellent job of gate placement to contain thermal layers in the reservoir and control river temperatures for sturgeon and trout.

8. Montana SOR for Libby/Hungry Horse

Jim Litchfield presented the final SOR dated June 12, noting that the draft presented at last week's IT meeting is obsolete. A footnote on page 2 of the final SOR was omitted, which said that the SOR signatories understand the Action Agencies will need to select a turbine loading that allows things to run smoothly at the project.

The purpose of the SOR is to maintain steady flows and productive river conditions throughout the summer season in Montana. The SOR requests refill of Hungry Horse (which will likely happen) by June 30, and flat flows of 4.0 kcfs for the remainder of July, August and September.

For Libby, which is still operating at 15 kcfs outflows for the tail end of the sturgeon operation, the SOR recommends extending that flow level through July 21 or until the core drilling is finished at Bonner's Ferry, then reducing flows to 12 kcfs and maintaining 12 kcfs through the end of August. For the month of September, the SOR recommends flows be to ramped down gradually, providing at least the minimum bull trout flows as defined in the USFWS Bi Op.

The SOR requests that the situation be reevaluated in July, when the river coring at Bonner's Ferry has been completed and in light of existing conditions and weather forecasts for Hungry Horse and Libby available then. Refill of Libby is a lower priority in Montana than providing steady flows throughout the summer months of June through September, Litchfield said. A drop from 15 to 9 kcfs in July, as called for in the USFWS Bi Op, would disrupt the aquatic environment because dewatering a given area for even a few hours renders it biologically unproductive, Litchfield said. No target elevation, flow level, or river temperature is associated with this SOR because the main concern is shaping of the river flows so there is enough water to last through September. Essentially, Montana proposed to shift outflows of 3 kcfs from the last week of July and all of August into September to achieve that goal.

NOAA supports the operations specified in this SOR and has for the past several years, Wagner said. Rick Kruger (Oregon) had no comments today. CRITFC would like Hungry Horse drafted to elevation 3,540 feet and Libby to near elevation 2439 feet by end August to protect ESA-listed stocks in the lower

Columbia River, Dittmer said. The Nez Perce will need more time to look at the conditions proposed in the SOR before commenting, Statler said.

TMT will discuss the SOR further at its June 20 meeting, focusing on Hungry Horse first. Libby operations are set through June 23, when flat flows for sturgeon end.

9. Lower Monumental and McNary Summer Spill Schedules

Regarding subyearling Chinook passage studies at Lower Monumental and McNary, the fish are of sufficient size and numbers now that a representational sample of the run can be captured, Marvin Shuttles (COE) said. These studies will begin within passage of the first 10% of the run and will continue until either there aren't enough fish remaining, or water temperatures are too high. The Fish Operations Plan calls for different operations of those projects in summer than in spring. This year the COE is proposing to move those operational start dates back approximately 10 days to dovetail with fish research needs, Shuttles said. The goal is to release most of the fish during the summer operation, rather than splitting the releases between two operations, which would make the study results difficult to interpret.

The COE intends to initiate the spill date change first at McNary. The SRWG and TMT will be consulted first, then the COE will work with the parties to the 2007 Agreement and report to the court.

Moving the summer spill treatment start date up from July 1 to June 20 in order to accommodate the study will have the effect of lowering spill volume, Bernard Klatte (COE) explained. Klatte will report on coordination of this effort at the next TMT meeting.

10. Spring-Summer Non-Treaty Storage Agreement

Arrow reservoir continues to operate near maximum levels permitted for flood control, allowing no space for U.S. flow shaping, Tony Norris (BPA) said. Projections are for Arrow to remain near flood control levels or near full into July. Given current circumstances, BC Hydro has declined to pursue an agreement at present. However, as hydrologic conditions change, BPA and BC Hydro will continue discussion on potential operations to use non-Treaty space for mutually beneficial flow shaping.

The U.S. and Canadian sections of the Operating Committee continue to use the Nonpower Uses Agreement to shape Treaty flows, including one Maf of flow augmentation storage for U.S. fisheries to provide mutual nonpower benefits, Norris said. The U.S. Section of the Operating Committee is maintaining the maximum flow augmentation volume possible for release in July, according to the Nonpower Uses Agreement.

11. Little Goose Spill and Adult Fish Passage

Adult spring Chinook at Little Goose were noticeably low which raised concerns, so the COE proposed changing to a flat spill pattern during daytime and a tapered bulk pattern at night. The pattern change was coordinated by NWW and a teletype was issued Tuesday June 5th. Fish passage immediately increased at Little Goose Dam.

On Friday, June 8, the COE changed the nighttime tapered bulk spill pattern to a flat spill 24 hours per day because the tapered bulk pattern – which simulates the flow produced by an RSW – created poor attraction flows and egress issues. This means that there is work to be done with the physical model at ERDC to figure out what the best spill pattern is for adult spring Chinook as well as juveniles. Modeling results indicate that passage numbers decreased at around 55 kcfs flows, apparently because the adult fish couldn't find the ladder entrances under those conditions, Wagner noted.

12. Operations Review

A. Reservoirs. Grand Coulee is at elevation 1,282.1 feet, Roache said. Its maximum elevation is 1,285 feet on June 17. Hungry Horse is at elevation 3,558 feet, releasing 3.2 kcfs, with inflows around 6.5 kcfs, so the reservoir is slowly filling, Roache said.

Libby is at elevation 2,434 feet, with inflows of 42 kcfs and outflows of 15 kcfs. Inflows are receding, Hlebechuk said. Dworshak is at elevation 1,598.8 feet, with inflows of 7.3 kcfs which are receding and 5.6 kcfs outflows.

Lower Granite outflows were 63 kcfs June 12. For April 3-June 11, the average outflows were 63 kcfs. McNary average outflows were 249 kcfs for April 10-June 11. Priest Rapids average outflows were 175 kcfs for May 17-June 12. Bonneville flows have ranged from 248 to 280 kcfs.

B. Fish. The numbers for combined yearling Chinook passage are dropping, Wagner said. They were 100 per day at Little Goose, less than 100 per day at Lower Monumental, and around 5,000 per day at John Day and in the Lower Columbia River. There were 500 at Bonneville, so the yearling Chinook migration appears to be largely over.

What's picking up is subyearling Chinook, whose numbers rose from 10,000 to around 20,000 at Lower Granite beginning June 10, then falling to around 5,000 per day over the past few days, Wagner said. These numbers largely represent hatchery releases. The reason for higher passage numbers at Little Goose rather than Lower Granite is probably due to the efficiency of the RSW passing more fish. Subyearling Chinook passage at Lower Monumental

has been around 9,000 the past couple days, and around 25-30,000 at McNary. These are wild subyearlings.

Steelhead passage numbers are dropping to 1500 per day at Lower Granite, but steelhead counts are surpassing yearling Chinook, Wagner said. The same is true at Little Goose, with 5,000 steelhead per day. Steelhead numbers are dropping in the lower river – 1,500 at John Day, 1,000 at Bonneville. Basically, steelhead are hanging around in the lower Snake because they're sensitive to flow and can't find their way past the projects at current flow levels, Wagner said. The fish are showing elevated signs of gas bubble trauma – not that gas levels are high at 105 to 110%, but due to prolonged exposure. TDG levels are in the 105% range at Lower Granite, and around 113-114% at Little Goose. Margaret Filardo (FPC) said the effects of the trauma are not severe, but are significant enough to report to TMT. Monitoring efforts will continue, with data posted weekly to the FPC web page (<http://www.fpc.org/>) under "smolts" (left side of screen). The discussion turned to ideas on how to balance the needs of steelhead vs. the needs of subyearling Chinook.

C. Power. There is nothing new to report, Tony Norris (BPA) said.

D. Water Quality. Despite finding fish with bubbles in them, gas levels have been low recently, partially due to low flow which prevents spill caps from being reached, Jim Adams (COE) said. The only problem has been Ice Harbor forebay. When spill caps were set at 23.6 kcfs for a number of days, there were exceedances close to 118%. When the spill cap was lowered one stop to 22.6 kcfs, TDG levels were significantly under the limit, at around 112-113%. Half-stops are not available, and one stop has been making a big difference in TDG levels downriver. The COE considered toggling between 22.6 and 23.6 kcfs, but that would mean spilling in 24-hour blocks, and since TDG levels are measured daily as the average of the 12 highest values, it made more sense to split spill segments into 12 hours. So spill levels are at 23.6 in the daytime, 22.6 at night.

TMT discussed whether that spill pattern should be reversed. Adams pointed out that night spill at Bonneville reaches the Camas Washougal gage at the warmest/worst time of the day, and that also happens at specific flow rates between John Day and The Dalles. Studies have shown that fish tend to move whenever spill is provided, whether at night or during the daytime, Wagner said.

13. Other

A. Summer Treaty. CRITFC will submit a SOR to the COE on June 14 and plans to go fishing Monday through Wednesday of the following week, Dittmer said. This will be on the agenda at next week's TMT meeting.

B. Bonneville Spillway Issue. The COE is requesting a 2-3 hour outage in the next few weeks at Bonneville to survey the area around Bay 9, where

erosion appears to have worn the spillway to about 5 feet of thickness above an inspection gallery. This outage would probably be best scheduled on the weekend, Dennis Schwartz (COE) said. It will be on next week's TMT agenda.

C. Next Meeting Agenda. The next TMT meeting on June 20 will include a Priest Rapids update, Grand Coulee flood control operations, updated flow forecasts, Dworshak operations, the Montana SOR, follow up on the Lower Monumental/Mcnary summer spill schedule, and the usual operations review. This meeting summary was prepared by consultant and writer Pat Vivian.

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John Roache	BOR
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