

COLUMBIA RIVER REGIONAL FORUM

TECHNICAL MANAGEMENT TEAM

March 26, 2008 Meeting

FACILITATOR'S SUMMARY NOTES ON FUTURE ACTIONS

Facilitator: Robin Gumpert

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.

Official Minutes/Facilitator Notes

Paul Wagner, NOAA, made the following clarification to the 2/27 Official Meeting Minutes: under Transport Permit, clarify that the permit will be extended for this year. Dave Wills made the following edit to the 3/12 facilitator notes: under Spring Creek Hatchery Operations, add "with depth compensation" to the second sentence of the second paragraph. The 3/12 official meeting minutes had been posted on 3/24; TMT requested more time to review the minutes before finalization.

Action/Next Steps: Wagner will send 2/27 official minutes revisions to the COE for reposting. DS Consulting will make the edit to the 3/12 facilitator notes and send to the COE for posting. With the above edits made, these sets of notes will be considered final. TMT will look to finalize the 3/12 official minutes at the next business meeting, scheduled for 4/9.

Priest Rapids Operations

Russell Langshaw, Grant County PUD, reported that temperature units were at 990 and that rearing protection will commence on 3/29. Based on the most recent forecasts, Langshaw said he expected that flow bands will likely be in the range of 20-30 kcfs. As in past year, rearing protection will continue through mid May/mid June, with conclusions determined by water temperatures.

Action/Next Steps: Langshaw will provide an update at the next TMT meeting, scheduled for 4/9.

Dworshak Operations

Cathy Hlebechuk, COE, referred TMT to a 44-year ESP comparison graph for Dworshak. She noted that over the 44 years, average flows ranged from 6 kcfs to 17 kcfs and that for 24 out of the 44 years, there were slight exceedances of the 110% gas cap. Hlebechuk said that the end of March shifted flood control elevation was 1519' and that flows at the project had been shaped during the week, with flat flows on the weekends. Hlebechuk said the current end of April flood control elevation target was 1506.7' (based on the March Final water supply forecast) and clarified that it will be influenced by the new April forecast.

TMT members discussed how to balance the need to meet flood control targets, meet fish needs and make efforts to minimize the risk of elevated TDG levels. A potential operation of minimum flows through the weekend, then shifting to full load (about 14 kcfs) on April 1 was discussed.

After a caucus, the Salmon Managers complimented the COE's management of this complex operation. Russ Kiefer, speaking on behalf of the Salmon Managers, stated the preferred path forward: flows as smooth as possible through the weekend, with the least dramatic shift to nighttime flows on 4/1 and one big/one small unit. The Salmon Managers requested that higher flows be passed in the latter part of April, but deferred to the COE to do what was needed to meet flood control targets. The Salmon Managers recognized the risk of spilling beyond 110% TDG. The COE noted that they will work to keep the lines of communication open as they discuss April flow shifts with the Salmon Managers and other TMT members. The path forward for Dworshak operations is summarized below. Action Agencies clarified that the operation is expected to draft the project to 3' below the full shift, which the Salmon Managers acknowledged as acceptable.

Action/Next Steps:

- The COE will operate Dworshak with one big / one small unit through the weekend.
- At 2100 hours on Sunday, March 30, the COE will shift the project to full powerhouse (~10.7 kcfs).
- Based on the new forecast (expected on 4/1), the COE may adjust project operations. The COE will communicate their decision, including their rationale, via an email to TMT members (expect to send on 4/2.)
 - The decision/rationale will also be posted by the COE as a link to today's TMT agenda.
- NOTED: Salmon Managers prefer that the project spill later rather than early in April; however, they defer final management decisions to the COE and they will continue to discuss their needs with the Action Agencies as time progresses.

2008 Water Management Plan and Fall/Winter Update

Scott Boyd, COE, reported that no additional comments to the Water Management Plan had been received and said that the document was currently under internal COE legal review and expected to be finalized soon.

Action/Next Steps: The COE will email a notice out to TMT members once the document has been finalized. The COE expects to post the Spring/Summer update as a link to the TMT web page by 4/9.

2008 Project Activities Update

Dan Feil, COE, referred TMT to several links to the TMT agenda. He provided the group with a project-by-project review of the anticipated activities and newly developed spill patterns, noting those that deviate from what was written into the 2008 Fish Operations Plan and Fish Passage Plan. A bulleted summary of Feil's overview was

linked to the agenda as a handout. TMT discussion during the meeting helped clarify the following points:

- One additional spill pattern for John Day is expected and will be emailed to TMT members for their review by the end of next week.
- Hydro –acoustic monitoring of steelhead kelt passage is currently underway at the Bonneville Powerhouse II Corner Collector.
- Construction for the new spillway wall at The Dalles will occur over two in-water work periods (2008-09 and 2009-10).
- At John Day, the TSWs went into bays 15&16; there will still be spill in bays 17-18-19.
- The John Day revised unit operating priority has yet to be vetted through FPOM.
- John Day’s start date for the TSW evaluation has shifted from April 21 to April 27.
- The new spill patterns for McNary TSW’s have been vetted through FPOM; TMT has an opportunity to review these patterns as well.
- Regarding McNary navigation for towboaters, there are no anticipated issues; however, good communication with the towboaters will help the effort to stay ahead of any developments that may arise.
- For Lower Monumental, two new spill patterns have been developed; TMT review is requested.
- For Little Goose, three new spill patterns have been developed; TMT review is requested.
- It was suggested that the COE remove the “good vs. bad” language from Little Goose bulk spill patterns.
- As TMT will need to determine the start date for Snake River transport, after operations there may be a newly scheduled TMT meeting or call for April 16th.
 - Salmon Managers have discussed the likelihood of a recommendation similar to last year’s start on May 1; migration trends will influence the recommended date.
 - Note: Walla Wall District will need a minimum two-day notice to begin the operation.
 - Paul Wagner, NOAA, will talk with Jim Litchfield, MT offline about providing additional information to aid in the discussions about transport.
- It is expected that TMT will discuss the specific anticipated effects of Little Goose test operations during the scheduled April 9th TMT meeting.
- It is expected that MOP operations will commence as planned, on April 3. The Salmon Manager preferred sequence for start of MOP is: a staggered approach as has been implemented in recent past years (Granite – Goose – LoMo – Ice), with one or ½ day between starts.
 - Note: BPA will reserve the right to stagger starts as needed, but will be mindful of the recommendation

Action/Next Steps: TMT member comments on the new spill patterns are due to the COE by the week of 4/7. The April 9 and April 16 TMT agendas will include discussion on MOP and Transport operations.

Ocean Indicators Website

Bill Peterson, NOAA, referred TMT to the NOAA-hosted “Ocean Indicators” website linked to the TMT agenda. A desire to have a fuller view of the ecosystem, as well as a format for information sharing and multi-agency collaboration led to the development of the website. He described current data sampling efforts and methods of interpreting data and noted that sampling is conducted in June and September. Peterson said that the hope is to enhance the ability to address areas where there are poor (red) indicators for each stock and ultimately use this site as a management tool.

Action/Next Steps:

- TMT members are encouraged to provide feedback regarding the website directly to Peterson: phone: 541-867-0201 / email: bill.peterson@noaa.gov
- Peterson was encouraged to make a presentation on the website to the CR TAC group.
- Cindy LeFleur, WA, will help Peterson make contact with members of the TAC; she also planned to assist with refining the “adult returns by year of ocean entry” data section.

ESP Plots

Jim Adams, COE, referred TMT to the ESP graphs linked to the TMT web page. The new archive feature of previous ESP runs is a new feature and was greatly appreciated by other TMT members. Adams said that the plots from this week would be uploaded to the link soon.

Operations Review

Reservoirs – Grand Coulee was at elevation 1251.9' and providing releases for chum. Hungry Horse was at elevation 3508.29', with outflows of 2.7 kcfs and inflows of .6-.8 kcfs. Libby was at elevation 2396.8', with inflows of 2.7 kcfs, outflows of 4 kcfs and targeting 2399.8' end of March. The new water supply forecast is expected to be available 4/8. Dworshak was at 1518.3'. 7-day average flows were 37.1 kcfs at Lower Granite, 128 kcfs at McNary, and 152.3 kcfs at Bonneville. Adams added that a Lower Granite transistor will need repair work, requiring a unit outage.

Action: The specific date and duration of the Lower Granite repair will be shared with TMT as soon as the information is available.

Fish – Paul Wagner, NOAA, reported that 20 adult spring chinook and about 22 steelhead had been observed passing Bonneville Dam.

Power system – Tony Norris, BPA, reported that some of the 1 maf of flow augmentation previously stored in Canada has been released by Canada. It is expected that BPA will be able to restore most of the augmentation volume during the spring freshet. The amounts of flow augmentation released and the amount that will be restored are not yet known.

Water quality – Jim Adams gave TMT members an FYI: Lower Columbia forebay monitors are in; Little Goose, Lower Monumental and Ice Harbor monitors are not yet in.

Other – **Action:** TMT members were asked to review an updated draft of the TMT Guidelines, linked to the meeting agenda. TMT will look to finalize the guidelines at the TMT meeting on 4/9.

Next TMT Meeting: April 9th, 9am-noon

Agenda Items include:

- Priest Rapids Update
- Dworshak Operations Update
- Spring Spill/Transport Operations
- MOP Operations
- Spring Creek Hatchery Release
- TMT Guidelines
- Operations Review

**Columbia River Regional Forum
Technical Management Team Meeting
March 26, 2008**

1. Introduction

Today's TMT meeting was chaired by Jim Adams (COE) and facilitated by Robin Gumpert (D.S. Consulting), with representatives of BOR, USFWS, BPA, NOAA, COE, FPC, CRITFC, Nez Perce, Oregon, Montana, Idaho, Washington and others attending in person or by phone. 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

The February 27 facilitator's notes were finalized today. Paul Wagner (NOAA) commented on the February 27 official minutes, agenda item #6, Transportation Permit, amending a previous statement on permitting and the 2008 BiOp. NOAA's current plan is to extend the existing permit to cover this year's operation because it's already been defined. The new permit under the 2008 BiOp will take effect in 2009. Wagner will edit accordingly; with that change the February 27 official minutes will be considered final.

The facilitator's notes for the March 12 meeting received comments and have been revised and reposted. The changes came from Dave Wills (USFWS), Paul Wagner (NOAA) and Scott Bettin (BPA). Regarding Spring Creek Hatchery operations, Wills added "with depth compensation" after "105%" in the second paragraph under Spring Creek Hatchery Operations. Wagner edited the first paragraph under Dworshak shifted flood control operations for clarification of FPAC's discussion. Bettin sent comments clarifying the Lower Monumental RSW test conditions described on page 3 of the notes. The 2-hour outage would have required zero flow. The version currently posted is correct.

3. Priest Rapids Update

Russell Langshaw (Grant Co. PUD) gave the first of this season's updates on chum rearing protections, which will begin Saturday, March 29. As of today, 990 temperature units have accumulated since the initiation of spawning. This coming weekend marks the beginning of official spawning season and spring flow band protections, which will last into May or June depending on how quickly the water warms up. Grant County PUD operations this coming weekend will be based on Friday's BPA forecast and inflows. There will probably be a flow band daily delta constraint of 20-30 kcfs. Langshaw will continue to give updates at TMT meetings throughout the 2008 spawning season.

4. Dworshak Operations

Cathy Hlebechuk (COE) presented an ESP graph depicting this week's inflows into Dworshak. Based on the 1929 -1999 weather sequence that serves as a forecast of initial conditions every month in 2008, the minimum average inflow for April is 6 kcfs and the maximum average inflow is 17 kcfs. {Note: Cathy has indicated that the correct dates of the weather sequence are 1949 - 1992}. The max and min average inflows are based on the 44 different April ESP average inflows Hlebechuk explained. Dworshak is now attempting to shift the full 232 kaf of flood control volume to Grand Coulee Dam per the Salmon Managers' request. This will result in a 19-foot shift in the Dworshak end of March elevation, or 1,519 feet vs. the unshifted elevation of 1,500 feet.

The current operations plan is to go to full load plus spill on April 1, starting with 14 kcfs outflows and increase spill slightly while keeping gas levels below 110%. Hlebechuk explained the reason for the gradual increase. According to ESP analysis, the COE would meet its end of April flood control elevation and would have had to release more than 15 kcfs in 20 of the 44 ESP years. This would could cause total dissolved gas levels to exceed the 110% limit. In 24 of the 44 years the end of April flood control was met without exceeding 15 kcfs. Just prior to reaching elevation 1,519 feet at the end of March, the project will probably be at minimum flows for the weekend, so there will be a sudden increase in spill at the end of the month. In previous years, gas production has been higher at a given spill rate when water temperatures increase by 1-2 degrees. Current water temperatures at Dworshak are around 40 degrees F, with units in undershot mode to keep conditions cool. Gas caps will have to drop as the project warms in April.

From now until April 1 is the last opportunity we have to create additional space in the reservoir, Bettin and Adams emphasized. The current operations plan involves releasing more flows during day and dropping to minimum flows at night and on the weekend. A large volume of inflows under that strategy could increase the chance of needing to spill past the gas cap, Hlebechuk warned. The only exception would be if an initial control flow of 350 kcfs is met at The Dalles. In that case the COE would begin refill mode, and Dworshak would not need to reach its 1,506.7 foot end of April elevation target, but that scenario appears unlikely. {Note: Cathy has indicated the refill actually can start before the initial control flow is reached if certain conditions are met}

Yesterday, the Salmon Managers discussed current conditions at Dworshak and expressed a preference to stick with the flood control shift, Wagner reported. If the situation changes and only a partial shift becomes possible, the Salmon Managers would want to be informed. The Salmon Managers deferred to the COE's expertise in flood control to make the final decision. Kiefer asked whether it would be advantageous to continue current operations into early next week, then keep the reservoir slightly below elevation

1,519 feet on April 1 to avoid having to begin spill then. Flat flows on the weekend are needed for fishing, Hlebechuk replied. There's enough load to accommodate full powerhouse from now until April 1, Bettin added.

The Salmon Managers caucused and made a recommendation, presented by Russ Kiefer, to increase flows as much as possible in April with higher flows in late April. They asked the COE to smooth out diurnal flows to reduce the likelihood that resident fish in Dworshak reservoir will be entrained. While the Salmon Managers acknowledged that diurnal fluctuations may be necessary, they preferred less dramatic fluctuations than from minimum powerhouse at night to full powerhouse during the day. They recommended operating up to the big unit and the small unit during the day, and either one big unit or one small unit and night as well as throughout the weekend. The Salmon Managers also asked the COE not to start spill on April 1. Spill to the gas cap should be delayed until late April if possible.

Norris suggested running 7.5 kcfs flat flows, or a big unit and a small unit, through April 1. The Salmon Managers agreed to that operation. The COE proposed an operation of 7.5 kcfs outflows using the big and small unit for 24 hours a day until the morning of April 1, then ramping up to 14 kcfs outflows, or full powerhouse plus spill. The proposed operation will probably draft Dworshak 3 feet below elevation 1,519 feet. Inflows at Dworshak are currently averaging 3.5 kcfs daily.

Scott Bettin suggested increasing flows by 8 kcfs now for 5 days in order to delay the start of spill by 5 more days. TMT members agreed to communicate via email regarding this option. As of today, there was agreement to operate the big unit and the small unit through the weekend and go to full powerhouse at 9 pm Sunday, March 30, with further discussion once the April forecast is released. The Salmon Managers acknowledged a lower risk of exceeding the gas cap as a result of this operation and asked the COE to minimize the risk as much as possible. On April 1, the COE will inform TMT via email of the actual operation. TMT agreed not to meet on April 2 unless the email triggers a need for an emergency meeting.

Dworshak Hatchery is planning its spring Chinook release beginning the end of this month, Dave Wills announced. In some years, Dworshak flows have had to be increased to accommodate that release, as called for in the WMP. This year, an increase won't be necessary.

5. 2008 Final Water Management Plan and Spring/Summer Update

There have been no more comments on the 2008 WMP. It will be considered final once it passes COE legal review, Scott Boyd (COE) reported. The WMP spring/summer update will be posted on the web page for review in time for the April 9 TMT meeting.

6. 2008 Project Activities Update

A. Planned Test and Spill Patterns. The COE has developed new spill patterns for three of the four projects whose patterns have needed changing from those specified in the Fish Operations Plan – Little Goose, Lower Monumental, and McNary. These patterns have been finalized and vetted by FPOM and are linked to today's agenda. Spill patterns for the fourth project, John Day, will be finalized after an ERDC trip next week to address them. Dan Feil (COE) gave TMT a heads up that the new John Day spill patterns will arrive in an email sometime the week of April 7.

Rudd Turner requested that TMT members alert the COE soon if they have any issues with the spill patterns attached to today's agenda or the RSW bay location changes at John Day (described below). These changes require TMT approval because they are departures from the Fish Operations Plan.

Feil showed TMT an online summary of ongoing project work:

Bonneville Dam: Early in March, the COE installed a 700-foot-wide, 10-foot-deep behavioral guidance structure in the B2 powerhouse to guide more fish to the corner collector. An acoustic telemetry study during 2008 passage season will shed light on fish behavior and passage distribution as a result of the BGS. There will also be a spring spillway survival evaluation from April 21 through mid-June of 100 kcfs spill for 24 hours a day. The summer evaluation will be of 85 kcfs daytime spill with spill to the gas cap at night. Acoustic telemetry will be used for both of these studies.

Other work at Bonneville includes an evaluation of 2nd powerhouse fish guidance efficiency improvements using hydro acoustics; a corner collector kelt passage evaluation; chum redd TDG monitoring; sea lion predation observations; and an adult lamprey passage evaluation. The 2nd powerhouse FGE improvement study is being repeated because of poor reception last year. This year, a high resolution camera with a 30-foot range is being used for that study and also to monitor chum spawning. The adult lamprey passage evaluation will look at effects of reducing nighttime flows at the ladder entrance.

The Dalles Dam: There will be no research at The Dalles this year. Next fall the COE will begin construction of an 850-foot spill wall between bays 8 and 9. This project will be completed in 2010 if all goes as planned.

John Day Dam: Two TSWs have been installed in bays 15 and 16, which was changed from bays 18 and 19 as stated in the FOP due to concerns about eddies and predation in the tailrace. Each RSW will pass approximately 10 kcfs. Spill pattern development for John Day is still underway. A passage survival test during spring and summer will look at 30% vs. 40% spill, using acoustic

telemetry. The spring test will start later than previously thought, April 27 instead of April 20. The revised operating priority for turbines at John Day is linked to today's agenda. The delay in testing needs to be vetted by FPAC and technical committees. The other departures from the FOP have already been approved.

McNary Dam: The two TSWs will be evaluated again this year. They were moved from their location last year in bays 20 and 22 to bays 19 and 20 due to concerns about predation. The revised spill pattern for McNary (linked to today's TMT agenda) has been approved by technical committees and FPAC. The spring test will be a single treatment of 40% spill; the summer test will be a randomized block spill test to compare 40% and 60% spill. Jim Adams asked whether there were any navigation issues when the spill patterns were investigated at ERDC. There were not, but navigation will need to be tracked throughout spill season. Feil replied.

Ice Harbor Dam: The FOP states that Ice Harbor will operate at 30% spill vs. a 45 kcfs gas cap at night for 2-day treatments, but recently the COE determined that the study can be conducted using a single release from the Lower Monumental RSW evaluation. That study will yield an estimate of project survival and an avian predation evaluation of steelhead being tagged at Lower Monumental and Ice Harbor.

Lower Monumental Dam: The RSW is being evaluated using balloon tags, with an injury test to be conducted this week. The spring survival test will consist of two spill patterns, one flat and one bulk. The summer test will consist of one treatment using a bulk pattern of 17.5 kcfs.

Little Goose Dam: Three spill patterns used for an evaluation of adult passage at Goose are linked to today's agenda. A uniform pattern and two variations of a bulk pattern will be documented using radio telemetry to evaluate the effects of hydraulics on adult passage. Hydraulic conditions set up to benefit juveniles may be inhibiting adults from finding the ladder entrance at Goose. The test will evaluate the suspect patterns, with preparation to switch out of them if adults begin to experience inordinate delays.

B. Spring Spill and Transport Operations. TMT will need to decide when transportation starts, as stated on page 24 of the FOP, Feil noted. If the projected seasonal average flow is greater than 70 kcfs, transportation is to begin sometime between April 20 and May 1, with TMT to pick the exact start date. The COE Walla Walla district wants as much lead time as possible. TMT considered meeting on April 16 to make this decision. Most of the Salmon Managers believe this year's operation will be similar to last year's, meaning it's unlikely that transportation will start before April 20, Wagner said. Therefore, an extra meeting is probably unnecessary. Russ Kiefer suggested scheduling the transportation discussion for April 9 so the COE has time to plan, given that FPAC will probably

recommend that transportation start at Lower Granite on May 1. TMT added transportation planning to its April 9 meeting agenda.

FPAC will probably place the 14 days of nighttime gas cap spill at Goose (to be scheduled sometime between April 22 and May 15) on the same fish that are either spilled or intentionally bypassed at Lower Granite, Kiefer added. Jim Litchfield asked whether updated information on 2008 transport vs. in-river ratios will be available. He and Wagner will coordinate on this.

C. Start of MOP Operations. MOP operations will begin as planned, Fiel reported. FPAC discussed this issue yesterday and made a recommendation consistent with prior years' recommendations, Wagner reported. Norris asked whether that recommendation includes a staggered date for each project. A full day or half a day between projects would be optimal, Wagner said.

7. Ocean Ecosystem Indicators Website

Bill Peterson (NOAA) showed TMT this website which has been up for about 6 months: www.nwfsc.noaa.gov/research/divisions/fed/oeip/a-ecinhome.cfm. The web page is a storehouse of information on studies correlating ocean conditions with salmon survival. A major goal of this effort is the capability to forecast adult returns based on past years' ocean conditions. As an example of how salmon runs are tied to the ocean, 2005 was the worst year on record with the highest PDO, a factor that has been linked with poor salmon survival. Returns in 2007 were correspondingly low. Because 2006 was not much better, low returns can also be expected this year. In future, ocean conditions could be used to predict a number of factors relative to salmon runs, such as optimal times for barge transportation. The NOAA researchers have been working on how to account in their data reporting for the number of years a fish has spent in the ocean. Cindy LeFleur (Washington) offered to help with this.

Peterson welcomed comments on how to make the website as clear as possible. He can be reached at: bill.peterson@noaa.gov or 541-867-0201.

8. Columbia River Basin ESP Plots

Adams introduced TMT to a new feature available on the web page under the "documents" and "ESP forecasts" buttons. The COE plans to generate weekly spaghetti plots and box whiskers plots like these whenever new ESP information becomes available. The information will be archived.

9. Operations Review

a. Reservoirs. Grand Coulee is at elevation 1,251.9 feet and providing releases to meet chum flows.

Hungry Horse is at elevation 3,508.29 feet, discharging 2.7 kcfs to meet the Columbia Falls minimum. Inflows are low at 600-800 cfs, however the March final water supply forecast is 102% of normal.

Libby is at elevation 2,396.8 feet, with inflows of 2.7 kcfs and outflows holding steady at 4 kcfs. The end of March flood control elevation is 2,399.8 feet. The water supply forecast is still 102% of normal.

Albeni Falls is at elevation 2,055.3 feet at the Hope gage, with inflows of 15.5 kcfs and outflow of 13.2 kcfs, still operating within the 1-foot range of 2,055-2,056 feet.

Dworshak is at elevation 1,518.3 feet.

The 7-day average for inflows at Lower Granite is 37.1 kcfs. The 7-day average for inflows at McNary is 128.7 kcfs. The 7-day average for inflows at Bonneville is 152.3 kcfs.

Adams informed TMT of two operations issues: (1) Yesterday the COE discovered a transformer bushing issue at Lower Granite that requires unit 5 to be operated continually until repairs are completed. If flows and generation drop, this will influence the unit priority scheme at Lower Granite. If flows are sufficiently high, it won't be a problem. The COE is investigating how long the repair will take. (2) The Bonneville 2nd powerhouse corner collector will be out of service on the morning of March 29 from 6 am-6 pm so divers can realign the BGS.

b. Fish. It's still early in the passage season, with fish counts in the 20s at Bonneville. Numbers should pick up in the next few weeks, Wagner reported.

c. Power System. A month ago, BPA had stored the full amount of flow augmentation under the non-power uses agreement with Canada, but since then Canada has exercised its right to release some of that water, Norris reported. BPA expects to be able to replenish the volume lost on the freshet and will store it for the rest of the season.

d. Water Quality. Water temperatures and gas production continue to be low. All monitors on lower Columbia projects have been installed including Camas Washougal. Forebay monitors are in the process of being installed on the Snake River projects.

e. Other. With the anticipation of spring spill starting at midnight on April 10, Spring Creek Hatchery is planning its second release that morning, Wills reported. There could be a request to go to 1% operations at Bonneville on April 11. TMT will discuss this at its April 9 meeting.

TMT members were asked to review an updated draft of the TMT Guidelines, linked to the meeting agenda. TMT will look to finalize the guidelines at the TMT meeting on April 9.

7. Next Meeting

The next regular TMT meetings will be on April 9 and April 23. The April 9 agenda will include a review of the TMT guidelines, the next Spring Creek Hatchery release, John Day spill patterns, spring transportation planning, and follow-up reports on Little Goose, Lower Granite, and MOP operations. This summary prepared by consultant and writer Pat Vivian.

Name	Affiliation
John Roache	BOR
Rick Kruger	Oregon
Dave Wills	USFWS
Jason Sweet	BPA
Tony Norris	BPA
Paul Wagner	NOAA
Jim Adams	COE
Kyle Dittmer	CRITFC
Jennifer Miller	Susquehanna
Holli Krebs	Bear Stearns
Russ George	WMC
Scott Boyd	COE
Stephen Hall	COE
Cathy Hlebechuk	COE
John Crandall	Constellation Energy
Dan Spear	BPA
John El	Constellation
Dan Feil	COE
Jim Litchfield	Montana
Scott Bettin	BPA

Phone:

Shane Scott	PPC
Laura Hamilton	COE
Cindy LeFleur	Washington
Russ Kiefer	Idaho
Rudd Turner	COE
John Wasach	Bear Energy
Dave Benner	FPC
Bruce Mckary	Consultant
Bob Buchholz	COE
Tim Heizenrader	Centaurus
Glen Trager	Shell Energy

Mike Butchko
Tom Le
Richelle Beck
Russell Langshaw
Bill Peterson
Dave Statler

Powerex
Puget Sound Energy
DRA
Grant Co. PUD
NOAA
Nez Perce