

COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

May 13, 2015

Facilitator's Summary

Facilitator, Emily Plummer; Notes, Tory Hines DS Consulting

The following Facilitator's Summary is intended to capture basic discussion, decisions and actions, as well as 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 Meeting Minutes

The April 29th Official Minutes and Facilitation Team's Summary were approved. The group will review the May 4th and 6th minutes and summary for approval at the next meeting.

Water Supply Forecast

Mary Mellema, BOR, provided an update on the official May water supply forecast. She noted that the volumes for the final May forecast for Hungry Horse Dam:

- May-September: 1,490 kaf (88%)
- May-July: 1,395 kaf (88%)
- January-July: 2,415 kaf (115%)
- April-August: 1,789 kaf (92%)

Mary also noted that the minimum flows downstream of Hungry Horse are as follows:

- Columbia Falls: 3,500 cfs
- Hungry Horse: 900 cfs

Doug Baus, COE-NWD, provided official May forecasts:

- The Dalles April-August: 62 maf (71%),
- Lower Granite April-July: 10.5 maf (53%),
- Libby April-August: 5,396 kaf (92%),
- Dworshak April-July: 1,325 kaf (54%), and
- Grand Coulee April-August: 45 maf (80%)

Paul Wagner, NOAA, asked where Dworshak's water supply forecast ranked compared to prior years. Tony Norris, BPA, noted that Dworshak is in 46th place, just below 1994 which was a considerably dry year and about 100 kaf from 1977, which ranks as the driest analog year to date.

Libby Dam Release for Sturgeon and Bull Trout - SOR-FWS#1

Jason Flory, USFWS, provided an update on the proposed SOR-FWS#1. He noted that with the warmer weather and current system moving through, the proposed operation would likely start as early as next week, if approved through TMT. The date change proposed is due to river temperatures approaching spawning temperatures. Jason noted the daily maximum river temperatures are currently between 8-9 degrees Celsius and typically Sturgeon spawn between 8-10 degrees Celsius. USFWS is working with ID to assess where the sturgeon are in the system, as this will feed into when the operation would be implemented. Doug clarified that the SOR operation discussed last week remains the same, the only change is the potential change in start

date.

TMT representatives present were polled in regards to their support for implementing SOR-FWS #1: BOR, BPA, Colville, ID, Kootenai, MT, Nez Perce, NOAA, Umatilla, USACE, USFWS, and WA were in support of the operation; OR did not have objection to the operation.

- **ACTION:** The Action Agencies will implement SOR-FWS#1; Doug Baus will email TMT members when the SOR is implemented and will provide an update on the project at the next TMT meeting.

September-October Libby Operations for the Kootenai River Habitat Restoration-SOR 2015-02

Doug recapped SOR 2015-02, noting that the request is to hold a steady 6,000cfs or less from Libby Dam during September and October, with a gradual decline to reach the targeted flow (following ramping rate guidelines in the 2006 USFWS BiOp for Bull Trout and White Sturgeon). This SOR is intended to hold flows low and steady for construction on the next phase of the Kootenai River Habitat Restoration Project. TMT was briefed on this SOR by Sue Ireland at the 5/6 TMT meeting. Paul Wagner, NOAA, noted there were no additional FPAC comments on the SOR. Tony Norris, BPA, noted that the operation will draft on minimums through the end of September and will be revisited by TMT in July to ensure the pool is not over drafted.

TMT representatives present were polled in regards to their support for implementing SOR-2015-02: BOR, BPA, Colville, ID, Kootenai, Nez Perce, NOAA, Umatilla, USACE, USFWS, and WA were in support of the operation; MT approved the SOR with the caveat that TMT will revisit the operation in July/August for in season management of pool elevations; OR did not have objection to the operation.

- **ACTION:** The Action Agencies will implement SOR-2015-02; TMT will check back in on the operation in July.

Dworshak Operations

Steve Hall, COW-NWW, discussed the Dworshak Operations, noting that the current elevation is at 1,587.5ft, releasing minimum discharge (1.5kcfs) and slowly filling the reservoir. Paul Wagner noted that after looking at forecasts, FPAC discussed potential options for additional flow augmentation out of Dworshak. As discussed in FPAC, the intent of the operation would be to give another pulse to help move fish through the system by increasing flows to 5kcfs for one day, then 10kcfs for a day, ramping back down to 5kcfs for a day and then returning to minimum flows. Steve cautioned that although RFC forecasts show a bump in inflows from 8.8kcfs to 11kcfs though the weekend, he does not expect inflows to reach 11kcfs.

Paul noted that the salmon managers discussed the risk to refill that further augmentation poses; he also noted a significant increase in yearling Chinook passage at Lower Granite, Lower Monumental and Little Goose, which correlated with the previous operation coordinated at TMT (4 days of full powerhouse then ramp down, see 5/6/15 summary). There was discussion regarding how this year compares to other years, both in regards to streamflows and fish passage.

Steve noted that last week's operation resulted in the reservoir being 10 feet below the assured refill curve of 95% confidence. If the project was to implement a 5kcfs to 10kcfs to 5kcfs followed by minimum discharge, the reservoir will likely be 2 to 3 feet below full based on analog years 1992 and 1977.

Following a brief caucus, Salmon Managers requested that the Action Agencies implement another flow augmentation operation at DWR, beginning on May 16th: 5kcfs for one day, 7.5kcfs on May 17th, 5kcfs on May 18th and then return to minimum discharge on Tuesday May 19th. Paul noted that Salmon Managers fully acknowledge the risk this operation poses to refill and thus to the availability of summer augmentation water.

- **ACTION:** The Action Agencies will implement the request. On Saturday, May 16th, DWR will release 5kcfs, at 0100 on Sunday, May 17th the project will increase to 7.5kcfs, at 0100 on Monday, May 18th the project will ramp back down to 5kcfs, and on Tuesday, May 19th the project will ramp down to minimum flow and hold.

McNary Flow Objectives

Paul Wagner discussed the McNary flow objectives, noting that the consensus among Salmon Managers is to increase outflow to 180kcfs, or more if possible without drafting. Tony Norris noted that increasing outflow to 180-185kcfs would produce some temporary draft, likely around 2-3ft, however, would not likely have a net impact. Tony noted that it is a good idea to shape flows now, and that there is snowpack in the upper basin that will eventually come down and help augment any water drafted. Sheri Sears, Colville, noted that there are fish which need to be released, and the Colville would like to see refill starting by June 1.

- **ACTION:** The Action Agencies will operate McNary for weekly average outflows between 180-185kcfs; the operation will be revisited on May 20.

Operations Review

Reservoirs: Mary Mellema, BOR, reported on Reclamation projects:

- Grand Coulee elevation was 1,249.4ft.
- Hungry Horse elevation was 3,539.8ft with 7.5kcfs outflow; discharge will be increased tomorrow to 7.6kcfs, with inflows hovering around 9,000 and likely to increase as temperatures rise.

Lisa Wright, COE-NWD, reported on Corps projects:

- Libby was at elevation 2,422.5ft, with 15.5kcfs inflow and 14.3kcfs outflow.
- Albeni Falls was at elevation 2,056.8ft, with 28.5kcfs inflow and 15.2kcfs outflow.
- Dworshak was at elevation 1,587.4ft with 6.9kcfs inflow and 1.5kcfs outflow.
- Lower Granite average inflow was 52.9kcfs.
- Bonneville average inflow was 176.6kcfs.
- McNary average inflow was 173.3kcfs.

Fish: Paul Wagner, NOAA, reported on fish. Paul noted that passage index numbers do not represent actual abundance because they are not adjusted for spill efficiency, which varies for each dam. However, they do reflect relative abundance within the season and timing of juvenile passage. For juveniles, Sockeye have been released in the Upper Snake River, and they have not

yet passed Lower Granite in significant numbers. Lamprey numbers continue to remain low, only appearing at John Day thus far. The second peak of Chinook occurred at Lower Granite recently as well as at Little Goose. Lower Monumental data is unavailable on Chinook passage, likely due to a DART data collection or transmission error. Similar to Lower Granite, Rock Island and McNary both experienced early peak passage numbers. Bonneville index numbers are above the 10 year average and passage is continuing. Steelhead numbers are similar to Chinook numbers, with early peaks close to the 10 year average at Little Goose, McNary and possibly Bonneville. For adults, 178,000 spring Chinook passed Bonneville, 180% of the 10 year average. Jack Chinook numbers are struggling compared to adults ; they remain well below the 10 year average and well below last year's numbers. Similar to Bonneville, early migration trends for spring Chinook are seen at Lower Granite, around 65,000 (550% of the ten year average).

Water Quality: Tina Lundell, COE-NWD, reported on water quality, noting that all tailwater and forebay gauges are working properly, with the exception of the John Day tailwater gauge which quit recording yesterday (5/12) at 1700 hours due to a voltage problem. She noted that Ice Harbor forebay recorded a TDG exceedance of 116.4% for the high 12 hour average yesterday. Tina stated that the %TDG is dropping today to 115% range as expected, due to cooler and windy conditions.

Power System: Nothing to report.

Given the earlier discussion regarding alterations to the McNary flow targets and Dworshak operations, Erick Van Dyke asked for clarification from Corps, BPA, and BOR on how they intend to implement the 2015 FOP under the recent forecasted low flow/dry water year conditions? For instance, moving forward, when flows fall below FOP spill+ generation minimums what should we expect to see? Corps and BPA representatives indicated they would expect to do what has been done in the past and what is described in the 2015 FOP, which would be to spill all flow in excess of generation minimums. When Van Dyke asked if TMT had officially determined that they would be managing under low flow conditions/dry water year scenario for the remainder of the season, The Corp and BPA representatives indicated they were confused by the question, noting that TMT does not officially declare 'dry water years. The Facilitator suggested Erick call Tony or Doug directly to take the question off line.

The next TMT meeting will be a face to face meeting on May 20th at 9:00am.

Columbia River Regional Forum
TECHNICAL MANAGEMENT TEAM—OFFICIAL MINUTES

May 13, 2015

Minutes: Pat Vivian

Representatives of BPA, NOAA, COE, BOR, Oregon, Idaho, USFWS, Montana, Washington, Nez Perce, Colville, Kootenai and Yakama tribes and others participated in today's TMT meeting. Doug Baus, COE, chaired the discussion, with facilitation by Emily Plummer, DS Consulting. This summary is an official record of the proceedings, not a verbatim transcript.

2. Review Meeting Minutes – April 29, May 4 and May 6

Review of the May 4 and 6 minutes and facilitator's notes was postponed until the next TMT meeting May 20. The April 29 minutes and notes were approved as final.

3. Water Supply Forecast

Baus and Mary Mellema, BOR, gave the official May water supply forecasts for individual projects (also posted to today's agenda):

- The Dalles (April-August) – 62 maf, 71% of average
- Lower Granite (April-July) – 10.5 maf, 53% of average
- Libby (April-August) – 5396 kaf, 92% of average
- Dworshak (April-July) – 1325 kaf, 54% of average
- Hungry Horse (May-September) – 1490 kaf, 88% of average
(May-July) –1395 kaf, 88% of average
(January-July) – 2415 kaf, 115% of average
(April-August) –1789 kaf, 92% of average

Paul Wagner, NOAA, wondered how the Dworshak water supply in 2015 ranks in comparison to the past years on record. So far, 2015 is #46 out of 48 years, putting it near the bottom of the list and less than 100 kaf higher than 1977, the lowest water year on record, Baus and Tony Norris, BPA, said.

4. Libby Dam Releases for Sturgeon and Bull Trout – SOR-FWS#1

At the last TMT meeting May 6, Jason Flory, USFWS, presented SOR-FWS#1, with the intention that TMT members will poll on it today.

This is a tier 2 year for the sturgeon pulse, meaning there isn't enough water to support the two-pulse operation of previous years. The goal of a two pulses is to get sturgeon to spawn on the second peak. The goal of this year's single-pulse operation is to supplement the natural hydrograph at peak spawning time.

Since the last TMT meeting, it appears that current warmer weather could create conditions in the Kootenai basin that are conducive to spawning earlier than previously anticipated, Flory said. This means the operation could begin early next week. River temperatures are approaching target spawning temperatures, and reservoir thermal conditions are close to the right temperature to encourage spawning. Current temperatures are approaching 8-9 degrees C as a daily maximum; sturgeon typically spawn in water that's close to 10 degrees C.

Final decisions on when to start the pulse will depend on IDFG field survey information. Baus clarified the operation will be the same as discussed last week, regardless of when the operation is started.

NOAA, BPA, COE, Nez Perce, Montana, Idaho, USFWS, BOR, CRITFC/Umatilla, Colville, Kootenai, Washington and Oregon representatives unanimously approved of the SOR, with no objections from Oregon and the Nez Perce Tribe, and support from all the others.

The COE will implement the SOR as advised by the sturgeon recovery team, and will notify TMT when the sturgeon pulse begins. The COE will also provide modeling to show TMT the most likely outcome in the shape of Libby releases.

5. August-October Libby Operations for Kootenai River Habitat Restoration

At the last meeting on May 6, Sue Ireland gave a presentation on the Kootenai Tribe's habitat restoration program and presented an SOR requesting that Libby releases be limited to 6 kcfs or less in September-October 2015 and again in 2016. The plan was to poll TMT today on implementation of the SOR in 2015.

Wagner said FPAC did not discuss the SOR in its conference call yesterday due to paramount concerns about the region's water supply. If approved now, Libby summer operations to implement the SOR will be reviewed again by TMT for in-season management. TMT members gave their views:

- **NOAA** – Supports the SOR
- **BPA** – Supports the SOR
- **COE** – Supports the SOR
- **Nez Perce** – Supports the SOR
- **Montana** – Supports the SOR if provisions discussed last week are made. Montana has concerns, as documented in last week's meeting notes, that the reservoir not be over-drafted in September.
- **Idaho** – Supports the SOR
- **USFWS** – Supports the SOR
- **BOR** – Supports the SOR
- **Umatilla** – Supports the SOR
- **Colville** – Supports the SOR
- **Kootenai** – Supports the SOR

- **Washington** – Supports the SOR
- **Oregon** – No objection

With TMT's overall approval and no objection from Oregon, the COE will implement the SOR. The initial operation will be to target 2439 feet at the end of August but the Action Agencies will confer with TMT to avoid over-drafting the reservoir in September, per Montana's request.

6. Dworshak Operations

Steve Hall, COE Walla Walla, reported that currently Dworshak reservoir is at 1587.5 ft elevation, releasing minimum discharges of 1.5 kcfs and slowly refilling.

FPAC's discussion yesterday focused on more potential flow augmentation from Dworshak, but without participation from the Nez Perce Tribe and Idaho, there was no consensus on a recommendation, Wagner said. While the RFC forecast indicates that Dworshak inflows will rise to 8.8 kcfs this week and almost 11 kcfs over the coming weekend, Hall said he believes only 5-6 kcfs of that will actually materialize. The COE believes inflows will peak at approximately 9 kcfs. There is not much snow left in the basin.

Pending approval today from Idaho and the Nez Perce Tribe, Wagner proposed an approximate 2 ft draft of Dworshak reservoir to provide one day of 5 kcfs flow augmentation, one day of 10 kcfs, and a final day of 5 kcfs. This could be the Salmon Managers' last chance in 2015 to provide flow augmentation for fish, and they want to use it for spring migrants.

To provide context for the request, Wagner reported how fish responded to last week's DWR augmentation releases. Passage definitely increased, yearling Chinook in particular. There were substantial bumps in index counts at Lower Granite, Little Goose and Lower Monumental dams, plus a second peak in yearling Chinook passage. Steelhead passage likewise increased at Lower Granite, Little Goose and Lower Monumental, although not as much as spring Chinook, according to index counts. Actual counts are probably higher due to improved passage efficiency and higher spill proportion, especially in a year like this with low flows and fixed spill percentages.

Another reference point is the cumulative population index (see the FPAC link on the TMT webpage). So far, spring Chinook passage in 2015 is tracking almost identically to 2010, with similar flows in both years, Wagner reported. The steelhead population also is tracking almost identically to 2010.

Hall cautioned that 2010 had dramatically different runoff projections than 2015, with substantially greater snowpack. Peak flows of around 20 kcfs at Dworshak and 200 kcfs at Lower Granite in mid-June 2010 will not materialize this year. We'll be lucky to see 60-70 kcfs inflows at Granite. As a result of last week's DWR releases and continuing low

water supply volume, Dworshak reservoir is now about 10 ft below the FCRC for 95% confidence of refill.

As requested at TMT last week, the COE modeled one day each at 5 kcfs, 10 kcfs, 5 kcfs, and back to minimum discharges. Based on 1992 and 1977 observed inflow, by the end of May or June 1, the reservoir could be 2-3 ft from full as a result of last week's augmentation, Hall said. If inflows are 4 kcfs as they were in 1977, the reservoir would refill by June 7. If inflows are 2.5-3 kcfs as they were in 1992, refill wouldn't happen until June 20. This water year more closely resembles 1992 than 1977.

According to the Lower Granite streamflow forecast, there will be more precipitation starting today. Wagner asked, are the Salmon Managers willing to risk refill at Dworshak in order to augment that water now? Given that not all participated in the FPAC call, they decided to caucus to answer this question.

The Salmon Managers requested one last augmentation push from May 16-18, with one day each of 5 kcfs, 7.5 kcfs and 5 kcfs, then dropping to minimum flows. The goal of this operation is to supplement an increase in natural flows at Granite as currently forecasted. The Clearwater and Lower Granite forecasts follow the same trend on those dates.

Hall reiterated the risk to refill and summer augmentation with this operation. Another risk is if the reservoir barely fills by end June, augmentation flows will be needed earlier than usual, which could impact other reservoir uses such as recreation. Prior to today's request, the probability of refill at Dworshak was around 80%. Today's recommendation will further erode the probability of refill to 65-70%, and will draft approximately 1.5 ft out of Dworshak. Wagner said loss of confidence in refill was recognized as part of the Salmon Managers' decision.

Based on the consensus recommendation for Salmon Managers the COE will implement the operation as requested. Dworshak releases will be 5 kcfs on May 16, 7.5 kcfs on May 17, and 5 kcfs on May 18, then the project will drop to minimum flows.

7. McNary Flow Objectives

FPAC's consensus is to provide as much water as possible, Wagner reported. Due to existing constraints—the 1243 ft minimum elevation at Coulee and a lot of elevation to refill—the Salmon Managers have no strong desire to draft at this time. Therefore the request is to increase the target McNary flows to 180-185 kcfs over the next week.

Tony Norris, BPA, said Grand Coulee has been roughly passing inflow across May with about 1 foot of draft to date, so increasing releases to 180-185 kcfs might cause some draft over the week, but the Grand Coulee elevation should recover later. The range of 180-185 kcfs is a good one if the Salmon Managers are willing to accept up to 2-3 ft of draft, depending on streamflow, with recovery expected later. Actual streamflows are uncertain, and the Action Agencies need time to operate Coulee in a way that might

allow the reservoir to recover when snowpack in the northern part of the basin runs off. The alternative is to target less than 180-185 kcfs at McNary. Wagner advocated 180-185 kcfs and asked for feedback from the other Salmon Managers.

- **USFWS** – The recommendation is okay for now, but watch how things progress.
- **Washington** – The forecast suggests that precipitation in part of the basin might help.
- **Colville Tribe** – Some draft now is acceptable, with the understanding that hatchery fish need to be released. Starting refill by June 1 would be a desirable outcome.
- **Oregon** – Asked for details of how the Action Agencies will implement the 2015 FOP given increasingly dismal inflow and water supply forecasts. Norris clarified that the Action Agencies will implement Dry Water Year operations per the BiOp RPA, as triggered in the lowest 20th percentile of water years when the May final forecast for The Dalles Apr-Aug runoff is below 72.2 MAF. As discussed at recent TMT meetings and confirmed by the May final forecast of 62.1 MAF at The Dalles, this year is a dry year. The operations triggered are an extended draft at Libby and Hungry Horse, and release of 1/2 MAF from non-Treaty Storage. Baus and Norris clarified the AAs will operate in accordance with the 2015 FOP for low flow operations and Baus and Norris clarified the AA's will continue coordinating with the TMT regarding operations this year (MCN flow objectives, DWR outflow, additional draft at LIB and HGH, and non-treaty storage releases).

TMT will revisit McNary flow objectives at its next meeting May 20.

8. Operations Review

8a. Reservoirs. Hungry Horse is at elevation 3539.8 ft, discharging 7.5 kcfs that will probably be reduced to 6.5-7 kcfs when the mid-month forecast is released May 15. Grand Coulee is at elevation 1249.4 ft. Libby is at elevation 2422.5 ft with inflow of 15.5 kcfs and releases of 14.3 kcfs. Albeni Falls is at elevation 2056.8 ft with inflow of 28.5 kcfs and releases of 15.2 kcfs. Dworshak is at elevation 1587.4 ft with inflow of 6.9 kcfs and releases of 1.5 kcfs.

Lower Granite average outflow is 52.9 kcfs. McNary average outflow is 173.3 kcfs. Bonneville average outflow is 176.6 kcfs.

8b. Fish. Juveniles: Wagner said hatchery sockeye have been released in the upper Snake but haven't arrived in significant numbers at Lower Granite yet. Their projected arrival is two days off, which dovetails with the Dworshak operation. Juvenile sockeye are showing up at mid-Columbia projects, and lamprey are arriving in small numbers at John Day Dam. At Lower Granite, chinook smolt passage is in its second peak this year, with similar timing at Little Goose. A lack of data for Lower Monumental on

the DART page has yet to be explained. The trend at Bonneville is above the 10 year average and continuing to rise. Scott Bettin, BPA, said only the second powerhouse is running at Bonneville this year, so collection numbers might be higher than usual.

Adults: Spring Chinook arrival at Bonneville is 178,000 to date, which is 180% of the 10 year average and well above NOAA's forecast for this year. However, spring Chinook jack returns at Bonneville are well below last year's numbers and the 10 year average. The same early trend persists at Lower Granite to a greater degree, with spring Chinook passage at 65,000 fish or 550% of the 10 year average for this date.

8c. Water Quality. Tina Lundell, COE-NWD, reported on water quality, noting that all tailwater and forebays gauges are working properly, with the exception of the John Day tailwater gauge which quit recording yesterday (5/12) at 1700 hour due to a voltage problem. USGS is repairing the gage today. She noted that Ice Harbor forebay recorded a TDG exceedance of 116.4% for the high 12 hour average yesterday. Tina stated, %TDG dropping today to 115% range as expected, due to cooler and windy conditions.

8d. Power System. There was nothing to report.

9. Next TMT Meeting

TMT will meet next in person on May 20. The meeting agenda will include McNary flow objectives, Dworshak operations, and the sturgeon/bull trout operation.

Name	Affiliation
Tony Norris	BPA
Scott Bettin	BPA
Paul Wagner	NOAA
Lisa Wright	COE
Doug Baus	COE
Tory Hines	DSC
Tina Lundell	COE
Michelle Yuen	COE
Karl Kanbergs	COE
<i>Phone:</i>	
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Joel Fenolio	COE Seattle
Steve Hall	COE Walla Walla
Sarah XX	COE Seattle
Erick Van Dyke	Oregon
Pete Hassemer	Idaho
Joe Skalicky	USFWS
Jim Litchfield	Montana
Dave Statler	Nez Perce
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Sheri Sears
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