COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM
June 26, 2024
Facilitator's Summary
Facilitation Team: Emily Stranz & Colby Mills, 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; it is not intended to be the "record" of the meeting. Official minutes can be found on the TMT website: https://pweb.crohms.org/tmt/agendas/2024/ Suggested edits for the summary are welcome and can be sent to Colby at colby@dsconsult.co.

Review Meeting Summaries & Minutes – TMT Members approved the official meeting minutes from the June 5 meeting and the facilitator's summary from June 12. Official meeting minutes are pending for May 17, May 22, and June 12 and will be reviewed at a future meeting.

Lower Snake River MOP Operations – Aaron Marshall, Corps, reported on recent adjustments to MOP operations on Lower Snake River projects, specifically due to a gap between the Lower Granite (LWG) tailwater elevation and the Little Goose (LGS) forebay as flows decreased out of LWG on June 15. Aaron noted this can be seen this time of year with the recession of spring flows, and the recent high spill and little generation at LGS. On June 18 the Corps raised the LGS forebay to a 0.5-foot raised MOP to maintain the LWG tailwater elevation. The project returned to MOP last Friday; the raised MOP occurred for about 5 hours on June 21. Since then, all 4 Lower Snake projects have been operating at MOP. Aaron noted that with flows receding on the Lower Snake, the Corps will likely need to raise the LGS forebay again to maintain the LWG tailwater elevation.

Aaron also reported that the Corps will be implementing a new alternative summer spill pattern at LWG when spill is less than 15 kcfs (operate at minimum generation, spill the rest) and flows drop below about 28 kcfs. The operation will shift to uniform spill pattern before raising the LGS tailrace for maintaining the LWG tailwater elevation.

In response to a query if the project data provided on the TMT agenda includes the navigation channel gauge data, Aaron noted that data are just from the LWG tailwater, and that the navigation gauge is typically about a foot higher than project data during operations. The navigation channel data are available in the dataquery 2.0 and will be posted to the TMT agenda. A link for viewing this data was posted into the chat and will be added to today's TMT agenda.

- **ACTION**: Doug Baus, Corps, will add the navigation lock gauge data to the dataquery 2.0 link to today's TMT agenda that is posted to the TMT website.

Scott Bettin, BPA, asked for more details regarding the threshold of 28 kcfs at LWG. Some Salmon Managers agreed this was an important question to be aware of and a good learning opportunity, as this will be the first time implementing this operation. The Corps will see how the new spill pattern affects the tailwater elevation before raising LGS to a higher MOP range. Depending on Dworshak outflows, another adjustment will need to be made potentially by the end of next week, unless inflows at Dworshak pick up.

Jay Hesse, Nez Perce Tribe, appreciated the discussion, noting that from the Tribe's perspective the navigation lock gauge is sufficient at those levels, and that uncertainty remains regarding the justifications for tailrace criteria at LWG. From the Tribe's perspective, tailrace elevations are communicated as navigation safety issues without question, and more discussion and vetting of the LWG tailrace elevation criteria before next year is important.

Dworshak Operations – Willow Walker, Corps, reported on current conditions and temperature trends at Dworshak Dam (DWR). The project is within the top half of full and is operating outflow to match inflows to remain in the top 0.5-foot band. With cold snow melt, the project has been able to pass cooler inflows through the lower system.

Temperatures throughout the system have been rising the past couple days with the summer heat: 67 degrees F at Anatone, 64 degrees F at Orofino, 42 degrees F at DWR, and 63 degrees F at the LWG tailwater. This has been stable for the past couple days, but after the last heat wave temperatures were rising about 1 degree/day, which will need to be monitored.

In the LWG forebay, water at the 15-20-meter mark is hanging around 63 degrees F; similar for yesterday and prior to that temperatures were also rising about a degree/day. Inflows at the project have been falling off as most of the snowmelt has passed, it will continue to pass inflow to maintain the LWG forebay elevation until the start of temperature augmentation.

Precipitation and cloud cover are moving into the Lower Snake and Clearwater today and tomorrow, then it is expected to clear up for a few days, although temperatures will not rise above 90 degrees F. More cloud cover is possible through the weekend and into next week that should keep things cool for the next week or so. Willow noted that these weather conditions will significantly influence when temperature augmentation flows will need to start ramping up.

Willow reviewed the DWR water temperature modeling results, noting that the Corps expects temperatures to continue increasing at a stable rate, as is typical for this time of year. The Corps is closely monitoring the situation and will communicate with TMT if this modeling changes and when the start of temperature augmentation flow needs to begin. Dworshak updates will be added to future TMT meeting agendas.

Finally, Willow reported that the raw data for the LWG tailwater temperature showed an increase up to 68 degrees F on June 24, this spike was from a period when sensors were being serviced and does not represent an actual data point.

A new employee, Jessika Solleder, will be joining the Corps Walla Walla division, specifically working on Dworshak operations and temperature modeling.

Scott Bettin's Retirement – Emily Stranz, DS Consulting, and TMT Members expressed appreciation and congratulations to Scott for his many years of dedicated service as an original BPA representative on the TMT. We wish him the best in his future endeavors!

Questions and Comments from Members of the Public – There were no questions or comments from members of the public.

The next scheduled TMT meeting is on July 3, 2024, at 9:00 AM.

Columbia River Regional Forum
Technical Management Team
OFFICIAL MINUTES
Wednesday, June 26, 2024
Minutes: Andrea Ausmus, BPA (contractor, CorSource Technology Group)

Today's TMT meeting was held via conference call and webinar, chaired by Doug Baus, Corps, and facilitated by Emily Stranz, DS Consulting. A list of today's attendees is available at the end of these minutes.

1. **Review Summaries and Minutes**

   a. June 5 Official Minutes and June 12 Facilitator Summary

   - June 5 Minutes – Approved
   - June 12 Summary - Approved

   b. Official Minutes pending for May 17, May 22, and June 12

2. **Lower Snake River MOP Operations –** *Aaron Marshall, Corps-NWD*

   - Recent MOP Adjustments
   - Little Goose (LGS) operating at MOP
     - June 12
       - Similar elevations for Lower Granite (LWG) tailrace and LGS forebay.
       - Flows started to decrease.
     - June 15
       - LWG outflows decreasing
       - LWG tailwater elevation was running a little lower than LGS forebay.
       - Topic seen at LGS at this time of year.
     - June 18
       - There were several drops below minimum tailwater elevation at LWG.
       - In Spring Spill period – high amount of spill and very little generation at LGS due to some issues with the T1 transformer.
       - Raised the LGS forebay half-foot raised MOP elevation. Over the course of several days the AA filled into LGS forebay. That helped to maintain the LWG minimum tailwater elevation.
       - As flows continued to decrease out of LWG, they saw a differentaial between the LWG tailwater elevation and the LGS forebay.
     - June 21
       - Switched to Summer Spill operations – sharp decrease in spill volume.

        - Changed the tailrace hydraulics at LWG – less differential between the LWG tailwater and LGS forebay so the AA was able to return LGS to MOP last Friday.

- Since then, all four Lower Snake projects have been operating at MOP.
- Note: Even though the AAs raised the LGS forebay elevation they did not actually go outside of the normal MOP range except for about 5 hours on May 21. They are seeing flows continue to recede in the Lower Snake.
- At some point they will likely need to raise the LGS forebay operating range again to help maintain that LWG tailwater elevation.
    - New operation this summer to try out: New spill pattern at LWG that will kick in when flows drop down to around 28 kcfs. When they have to spill less than 15 kcfs they will be operating at minimum generation and spill the rest. Then they will be able to start implementing the new spill pattern for LWG.
    - Looking to see how that may or may not change the tailrace, hopefully will be an alternative to just raising the LGS forebay to help maintain the LWG tailwater elevation.

Tom Lorz, Umatilla/CRITFC, asked if the LWG data linked to the agenda included the nav channel marker.

Marshall said that the data are from the tailrace gauges, not the navlock.

Lorz asked if we had the navlock because he is curious and that the main reason to do this was for the nav channel.

Marshall said that the reason to do this was to maintain the tailwater elevation which covers the multitude of purposes that LWG was constructed and operated.

Lorz said that we would not go down the path we have gone on, how important some of those are. Lorz said that he thinks navigation is the primary one we are focusing on. He said that he just wondered if TMT could get a look at that with the nav channel, what the nav channel depth gauge looked like at the same time.

Marshall said that it is typically a foot higher than the LWG project tailwater data during spill operations.

Lorz said okay. He said that is something that TMT will work at this Winter and try to figure out how important this tailwater is for other pieces at LWG and if so_

Stranz asked if the navigation data online somewhere.

Lorz said no, or he would not be asking.

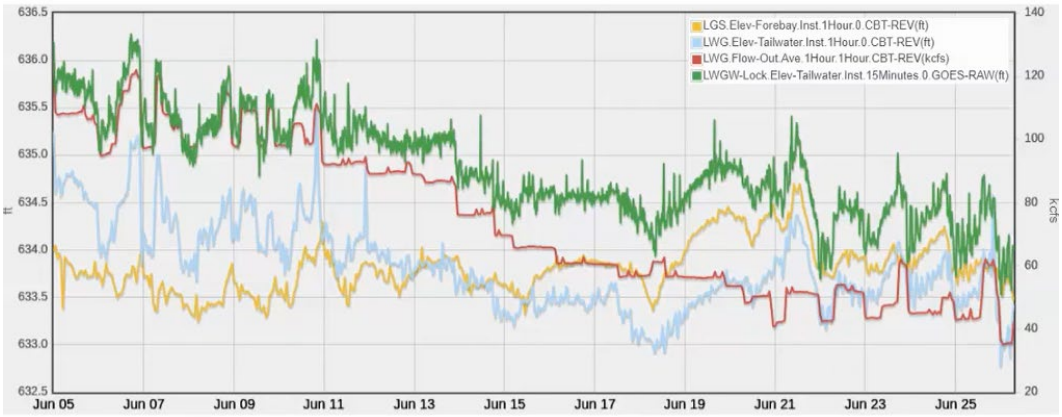
Jonathan Ebel, ID, said that he put the link to it on the chat.

> *from Jonathan Ebel to everyone: 9:13 AM*
>
> *https://pweb.crohms.org/dd/common/dataquery/www/?s=eyJ0aW1lem9uZSI6IlBTVCIsImJhY2t3YXJkIjoiMjFkIiwic3RhcnRkYXRlIjoiMDYvMDUvMjAyNCAwNjowMCIsInRpbWVzZXJpZXNMaXN0IjpbIkxXRy5FbGV2LVRhaWx3YXRlci5JbnN0LjFIb3VyLjAuQ0JULVJFViIsIkxXR1ctTG9jay5FbGV2LVRhaWx3YXRlci5JbnN0*

LjE1TWludXRlcy4wLkdPRVMtUkFXIiwiTEdTLkVsZXYtRm9yZWJheS5JbnN0LjFIb3VyLjAuQ0JULVJFViIsIkxXRy5GbG93LU91dC5BdmUuMUhvdXIuMUhvdXIuQ0JULVJFViJdfQ==

Erick Van Dyke, OR, said that it seems to him that he has heard that question multiple times and there is confusion as to where it is. That's why we have Ebel…

Stranz asked if it would be helpful for us to click on it right now so TMT can visually see it. She also asked if the link should be put on the TMT website for easy finding.



Date Time [UTC-0700]	LGS.Elev-Forebay.Inst.1Hour.0.CBT-REV [ft]	LWG.Elev-Tailwater.Inst.1Hour.0.CBT-REV [ft]	LWG.Flow-Out.Ave.1Hour.1Hour.CBT-REV [kcfs]	LWGW-Lock.Elev-Tailwater.Inst.15Minutes.0.GOES-RAW [ft]
2024-06-26 07:00	633.470	633.420	42.300	634.060
2024-06-26 06:45	---	---	---	633.980
2024-06-26 06:30	---	---	---	634.040
2024-06-26 06:15	---	---	---	633.910
2024-06-26 06:00	633.610	633.240	35.500	633.800

Marshall said that they could do that.

Dave Swank, USFWS, asked for a reminder about the alternative spill pattern for LWG at the really low flows. He asked if that was more of uniform pattern. He said that he was trying to remember the details of how that worked, how it differed from the traditional one.

Alexis Mills, Corps, said that it was a more uniform pattern, and that was the one Trevor and Tom (she thought) had some input on last year about the potential issues associated with more of a bulk pattern and a potential depression right at the singular (historical) gauge but now that are using the median of seven gauges and then also switching to that more uniform pattern at the low flows when we are at min gen spill the rest.

Lorz said that if we trigger that, that is the first step. If the low tailwater mark you go to the uniform pattern. If that does not work, then you go to raised MOP range.

Scott Bettin, BPA, asked how tight you go to 28 kcfs, if you go to 28 then you go to 29 then you go back to 28 and what happens if sometimes, we hang around that number so what is the threshold. He asked – and once you do it do you stick with it?

Marshall said that was a great question, it is not something that we have had to operate around just yet. He said that is something that we all should be aware of as we get to that point in Summer with flows dropping down to and hovering around 28 to 29 kcfs.

Van Dyke said that this pattern has not been implemented yet. And it will be the first time starting when we hit that level of flow.

Marshall said yes, when the spill drops below 15 kcfs.

River flow of 28 kcfs and spill of 15 kcfs.

Stranz said that will be a good opportunity for us all.

Swieca asked for clarification. She said it is when we drop to 28 flow/15 spill, AND we are observing an issue with the tailwater elevation. So, both of those things need to occur. She asked if we are at 28 flow and 15 spill and the minimum looks okay at LWG do we hold the more bulk spill pattern.

Marshall said that the way that he sees it playing out this year is that there is a good chance we are going to have to raise MOP at LGS before we get to the point that we can implement the new spill pattern. So he would like to see is maybe just change one variable at a time, so implement the new spill pattern to see how that affects tailwater elevation drop LGS if possible to a lower range and then see if we can operate there.

Swieca said the assumption is when we get to 28, we are going to have a minimum tailwater issue.

Marshall said that is his expectation, based off what they have seen over the past years of implementing MOP operations.

Stranz asked if he had a sense of when this will be a problem.

Marshall said that it depends somewhat on Dworshak outflows. If what we are seeing right now in the RFC's latest forecast for LWG inflows, yesterday there were 47 kcfs showing a recession down to below 40 kcfs, potentially sometime early next week. Potentially by the end of next week they may need to make another adjustment, but if DWR starts releasing additional water for temperature augmentation at LWG we may see things come up again and that may get us out of that situation.

Jay Hesse, Nez Perce, said that it is good discussion, Marshall with his highlighting that we are likely to have to raise LGS pool range because of the LWG tailwater elevation. He think that it is important to highlight that the navlock gauge is sufficient at those levels, he thinks that it is for people understanding the mechanisms and the discussions that we have had over this topic over the recent past has certainly highlighted the uncertainty of what the justifications are for those tailrace elevation criteria at LWG. As Lorz references having that discussion and embedding those and potentially revising them before next year is really important. He said generally when a tailrace is communicated to the outside world the default assumption is it is a navigation safety type thing and we all say, go ahead and that is (he thinks) clearly not the case here. He said that he wanted to remind TMT of that and then make sure that we do not drop the ball over the next six months (or whenever we have the window) to modify the planning documents for next year.

3. **Dworshak Temperature Augmentation Update –** *Willow Walker, Corps-NWW*

c. Current Hourly Data

- Top half-foot of full
  - Operating outflow to match inflow to stay in the half-foot band.
- Passing inflow cold snow melt passed through the lower system has been helping out.

d. Snake and Clearwater Rivers Temperature Data

- Temperatures have been rising over the past couple days with Summer heat spells.
- Anatone: 67°F
- Orofino (Clearwater Mainstem): 64°F
- Dworshak: 42°F
- Lower Granite Tailwater: 63°F
  - Stable last couple days
  - Before that rising a 1°F/day.
  - Something to keep an eye on.

e. Lower Granite Forebay Temperature String

- Current 15/20m: 63°F
- Rising about 1°F/day

f. Dworshak STP Extended Inflow Forecast

- As inflow has been falling off – we are past most of the snowmelt – passing inflow to maintain the forebay until we start temp augmentation.

g. 10-Day Regional Forecast (June 27 – July 7)

- Days 1 – 2
  - Precipitation and cloud cover moving into the region, both around the Clearwater and Lower Snake areas.
- Days 3 – 4
  - Clears up, no temperatures reaching the 90s
- Days 5 –
  - More cloud cover coming out of the weekend
- How the cloud cover and temperature actually plays out will be a driving factor in when temperature augmentation flows actually need to start ramping up.

- Right now, the cloud cover looks great, it will keep things pretty cool for the next week.

h. Model Results – Updated June 25, 2024

- Temperatures are expected to increase at a steady rate which is normal for this time of year.
- With the cloud cover coming up there is a chance we can get away with not starting temperature augmentation yet.
  - It is very dependent on how the next weather system plays out.
  - They are keeping a close eye on it and will continue to communicate and let everyone know if that changes and when they do see the start of temperature augmentation flows needing to begin.

i. Additional Notes

- If you have been looking at raw data for LWG spill water temperature, there was a spike on June 24 that measured 68°F. That was bad data and has been cleaned up. The water quality team had gone out to service the sensors and that was an effect of them working on it and had things out of the water. It was not a real data point and has since been removed.
- Walker also introduced a new employee, Jessika Solleder. She started a couple of weeks ago and is being trained in Dworshak operations, particularly the temperature modeler.

4. Farewell to Scott Bettin

Scott Bettin said that it has been wonderful being the last original member, thirty years ago when he started doing this. It is a fantastic group, and you guys have a large burden on your back. All the things you get to balance in this room impact so many people in the whole Northwest. It is truly amazing what actually comes out of all the things we do here. He said that he cannot wait to watch from afar. It is going to be hard to walk away a bit because it has been the fabric of his life. Thank you guys all.

5. Set agenda for next meeting – July 3, 2024

a. Dworshak Update
b. Opt. Update on LMN MOP

Today's Attendees:

Agency	TMT Representative(s)
NOAA Fisheries	Kelsey Swieca
Oregon	Erick Van Dyke
Washington	Charles Morrill
Kootenai Tribe	
Colville Tribe	Dennis Moore
Umatilla Tribe	Tom Lorz (CRITFC)
Yakama Nation	Tom Iverson
Bureau of Reclamation	Chris Runyan
Army Corps of Engineers	Doug Baus, Aaron Marshall
US Fish & Wildlife Service	Dave Swank
Idaho	Jonathan Ebel
Montana	Brian Marotz
Spokane Tribe	
Nez Perce Tribe	Jay Hesse
Warm Springs Tribe	
Confederated Salish and Kootenai Tribes	
BPA	Tony Norris, Scott Bettin

Other Attendees (non-TMT members):

COE – Dan Turner, Alexis Mills, Catherine Dungeon, Willow Walker, Tiffany Dixon, Tom Conning

BPA – Carolina Andes

Oregon DEQ – David Gruen

DS Consulting – Emily Stranz (Facilitator), Colby Mills

CorSource – Andrea Ausmus (BPA note taker, Contractor)

Energy Keepers – Eve James

Northwest Power and Conservation Council – Kate Self

Chelan PUD – Kate von Reis Baron

Clearing Up – K.C. Mehaffey