

COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

May 10, 2023

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: <http://pweb.crohms.org/tmt/agendas/2023/>. 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 April 26 official meeting minutes and facilitator's summary. Minutes and summary from May 3 will be reviewed at the next regularly scheduled TMT meeting.

Official May Water Supply Forecasts - Chris Runyan, Reclamation, reported the official May water supply forecast for Hungry Horse Dam, noting a slight decrease from last month. May through July is 1,460 kaf, or 88% of average; April through August is 1,720 kaf, or 84% of average; and May through September is 1,550 kaf, or 88% of average. The end of September draft target is 3,548 feet, resulting in a 12-foot draft.

Doug Baus, Corps, reported official May water supply forecasts for Corps of Engineers projects:

- **The Dalles:** NWRFC April to August volume forecast is 83 maf, or 93% of average;
- **Lower Granite:** NWRFC April to July is 21 maf, or 104% of average;
- **Libby:** Corps runoff forecast April to August is 4,408 kaf, 72% average; and
- **Dworshak:** NWRFC runoff forecast April to July is 2,620 kaf, or 106% of average.

Spill Priority List - Dan Turner, Corps, provided clarifications and formatting changes to the Spill Priority List (SPL), following up on conversations and questions from the TMT (posted to the TMT website). He reminded the TMT that the SPL is a communication tool to reflect operations for managing lack of load spill on the system. Shading has been added to Level 1 to show the FOP operation. Similarly, shading in Level 2 shows projects that do not have a change in spill rates between Levels 1 and 2.

Jay Hesse, Nez Perce Tribe, noted that the revised SPL helps capture some nuances, and that Fish Managers remain interested in helping the Action Agencies (AAs) understand fish-focused priorities for reducing performance standard spill at various projects; he emphasized that this is a point for further discussion in the future, outside of the SPL conversation.

Tom Lorz, Confederated Tribes of the Umatilla Indian Reservation/CRITFC, added that Fish Managers have offered their input on shifting excess spill due to lack of load, and Fish Managers are hoping that the AAs can work the requests into their operations where possible to benefit fish. He noted they hope to adaptively manage this year as best possible, and further improve operations in next year's FOP to ensure that operational wording doesn't constrain managers from implementing the best possible operations from a fish perspective when opportunities arise. The Corps noted the desire from Fish Managers, and while they are trying to work within the existing FOP, they will continue to consider where there is flexibility.

Further discussions and clarifications surrounding the SPL will be addressed at the next TMT process meeting. Additionally, David Gruen, ODEQ, will follow up with Erick Van Dyke, ODFW, to develop suggested wording regarding water quality standards in Levels 2 and 3.

Unrelated to the SPL, but following up on Fish Managers' interests, Tony Norris, BPA, reported that BPA has modified how they implement footnotes during high flow conditions, spilling up to 40% at Lower Granite during performance standard hours when forecasted to fill above MOP to achieve the 20 kcfs performance standard block at Lower Granite. This has been a useful tool over the past few days when experiencing high flows on the Snake River. Fish Managers were concerned that moving forward, there be more clarity and understanding on how frequently, or if ever, in a situation not under high flows, would Lower Granite be spilling above 20 kcfs up to 40%. Tony noted that it certainly can occur, and doesn't have to occur during high flows, and agreed that this issue is best fit for discussions on 2024 operations as previously noted.

Lower Snake Tailwater Impacts – In response to recent questions from TMT Members about the Corps' raised MOP operations, Julie Ammann, Corps, shared back the Corp's assessment of impacts resulting from not meeting minimum tailwater requirements at Lower Snake River projects (presentation posted on the TMT website). She reviewed current, historic, and hypothetical (with no raised MOP) operations at Lower Granite, Little Goose, and Lower Monumental dams, noting impacts to the adult fishway entrances, pumps, turbines, and spillway flow deflectors.

Moving forward, the Corps will operate to ensure the navigation lock tailwater gauge always meets the minimum tailwater elevation to avoid barge collisions with the navigation sill; Julie noted that this is a human health and safety and infrastructure concern. The Corps will also look more broadly at general trends in the tailwater elevation at the powerhouse gauge and allow for occasional small fluctuations below minimum tailwater. The Corps will continue to take advantage of opportunities to return projects to MOP and will report MOP adjustment updates to the TMT.

TMT members appreciated the information and wanted to take time for individual review and digesting of the information presented. Many felt a need for further discussion on fishway criteria at FPOM, noting that there are a number of contributing factors to why the criteria are not always met, and other tools to use to meet criteria more effectively.

TMT Members provided comment:

- The presentation focused on summer spill operations, which have not changed in years, but the MOP concerns have centered during high spills.
- It would be helpful to connect the issues directly to the gauge being used to measure tailwater.
- The original motivation for the information request was around the sill depth in the navigation lock.
- Pumps are in fragile states at many of the Corps' projects; and,
- More information on the flow deflectors would be helpful.

Sean Milligan and John Reynolds, Corps Walla Walla, responded to TMT member's questions, and offered to provide more of a visual aid in the future if desired.

Operations Review

Reservoirs – Chris reported on Bureau of Reclamation projects:

- **Hungry Horse:** midnight elevation was 3,527.1 feet, with inflows of 14.5 kcfs, and outflows of 4.3 kcfs. The project is 32.9 feet from full, and refilled about 11 feet last week. With the substantial heat last week, the project saw inflows near 24,000 cfs; a similar warming trend is expected next week, with the RFC forecasting similar inflows.
- **Grand Coulee:** midnight elevation was 1,261.6 feet, with inflows of 203 kcfs, and outflows of 153 kcfs. The project is 28.4 feet from full, with about 12 feet of refill last week. This year's fill target is 1,289.6 feet, with 0.4 feet for the Lake Roosevelt incremental storage project. The project is operating to control refill and lower river flood risk management targets.

Lisa Wright, Corps, reported on Corps of Engineers projects:

- **Libby:** midnight elevation was 2,419.5 feet, average inflows of 34.6 kcfs, and outflows of 4.2 kcfs;
- **Albeni Falls:** midnight elevation was 2,056.8 feet, average inflows of 69 kcfs, and outflows of 63.5 kcfs;
- **Dworshak:** midnight elevation was 1,544.3 feet, average inflows of 20.3 kcfs, and outflows of 5.2 kcfs;
- **Lower Granite:** average outflows of 128.8 kcfs;
- **McNary:** average outflows of 319.7 kcfs; and
- **Bonneville:** average outflows of 350.9 kcfs.

Aaron Marshall, Corps, reported that all Lower Snake River projects are currently operating in the normal MOP range. From April 5 to May 1, Little Goose operated within a 0.5 foot raised MOP forebay range to help maintain the minimum tailwater elevation at Lower Granite. Aaron clarified that during this time, Little Goose was able to operate within the normal MOP range at least 99% of the time. The Corps expects all Lower Snake projects to continue operating in MOP during this current period of high flows.

Water Quality – Dan reported that with higher flows in the Columbia River, McNary and John Day have been spilling to the spill caps; the Corps is actively managing spill caps, changing to meet but not exceed the Water Quality Standard (WQS). Three of the spill bays at McNary have been out of service for a number of hours each day due to maintenance issues, and will continue as scheduled until tomorrow. This caused a jump in total dissolved gas (TDG), with a WQS exceedance of 126% on May 8. The spill cap was lowered to 260 kcfs, which is within the range of the previous year’s spill caps. On the Snake River, spill caps are also being actively managed to meet but not exceed the WQS of 125%. Lower Granite, Little Goose, and Lower Monumental dams have been meeting performance standard hours.

Dan added that non-salmonid gas bubble trauma (GBT) sampling data were collected below Ice Harbor Dam yesterday; the incidence of GBT exceeded the action criteria of 15% in non-paired fins, and over 27% of the native non-salmonid sample had incidences of GBT. As outlined in the approved GBT Monitoring Plan: when an action criterion is exceeded, the water quality standard at projects in the geographic zone where exceedance was detected would be reduced to 120% TDG in the tailrace and 115% in the next downstream forebay. The recent exceedance at Ice Harbor means all projects within the Snake River zone will need to be reduced to target 115% forebay/120% tailwater TDG (during the current 125% TDG cap operations 16 hours/day). The Corps anticipates reducing spill to that level later today at all four Snake River dams. With forecasted flow increases, there is a chance the spill level might not be met, but Dan felt levels would be met with current conditions. The next sampling effort will be on Tuesday, May 16. As outlined in the Biological Monitoring Plan (posted to the TMT website), the following criteria will be used to guide reinstatement of the 125% TDG water quality standard):

- a) If GBT exceeds any action criteria, additional GBT monitoring must demonstrate the incidence of GBT is below the applicable action criterion before spill up to 125% TDG can resume.
- b) GBT must be below the applicable action criterion over the next 7-day period before spill up to 125% TDG can be applied again.

Fish Managers expressed significant concern that spill is being curtailed at the peak of the outmigration for listed salmonid stocks due to GBT occurrences in non-listed species. It was suggested that the Corps not continue performance standard blocks at Lower Granite and Lower Monumental Dams and instead operate to 120% /115% Gas Cap 24 hours/day. Additionally, there was concern that the collection facilities would not be prepared for the sudden increase in juveniles needing transport.

Clarifying questions and significant concerns from TMT Members led to the following Action Items:

- **ACTION:** Charles Morrill, WDFW, will connect internally with WDFW and WDOE as soon as possible, to report Fish Managers’ concerns and options to act at an individual project instead of the whole geographic reach.

- **ACTION:** Julie Ammann and Dan Turner, Corps, will take the concerns raised by Fish Managers, and the respective sense of urgency, back to their Policy Team for further consideration of the requests to minimize impacts to out-migrating juvenile salmonids. If needed, the Corps will email TMT any updates or changes.
- **ACTION:** Paula Calvert, BPA, will reach out to USGS for more details on the monitoring that occurred within the last few days and will report back to the TMT as soon as possible.

Fish – Trevor reported significant numbers of juvenile salmonids in the river, from all the ESUs; yearling Chinook passage index at Lower Granite peaked at 383,000 on May 4, and is down to 84,000, with similar numbers at Little Goose; Bonneville is currently at 40,000. Sub-yearling passage index peaked at Lower Granite at about 6,000 on May 4 (currently 1,000), Little Goose peaked at 20,000 on May 7 (currently 2,000). At Bonneville, Gorge complex fish are moving through and declining significantly, to about 8,000 yesterday. Coho passage index at Lower Granite is decent, with about 4,000 yesterday, and 5,000 at Little Goose; Bonneville index is declining, with a peak of 24,000 (6,000 currently). Steelhead passage index is strong, with 320,000 on May 4, down to 54,000 at Lower Granite and similar passage at Little Goose. Bonneville saw 11,000 yesterday. Sockeye have some releases occurring, with 1,500 at Lower Granite, and also some at McNary and Bonneville.

Dave Swank, USFWS, noted a high collection count of juvenile lamprey at Little Goose, 216,000 on May 7. This is one of the highest collection counts of juvenile lamprey ever seen at a project. The pulse at Little Goose may be reflecting downstream, with 26,000 at McNary, and could be detected further down at Bonneville in the coming days. Dave noted that collection counts are different than index counts.

Adult returns at Bonneville are slower than expected, far below last year and the 10-year average. It remains unclear if this is due to extremely late returns, predictions being off, or possible pinniped predation. Returns are tracking low, with passage index of 38,600 spring Chinook currently at Bonneville, although things have picked up with between 4,500-5,800 in the last couple days. Lower numbers at The Dalles (only 15,000) reflect a trend up the Columbia and Snake Rivers, with 2,500 at Ice Harbor and 10 times fewer fish passing Lower Granite than this time last year. Trevor reiterated that a colder start to the season, higher flows, and pinniped predation could all be affecting returns. Substantial delay hasn't been observed in the Snake River, based on the few PIT-tags and counts, although there seems to be some delay from McNary to Ice Harbor, which could be a result of higher flows. The situation will continue to be monitored, and hopefully passage begins to improve.

Power System – Tony reported that the significant amount of water in the river is resulting in high energy production during a period of low usage. BPA is still finding load, with only a couple hours of lack of market conditions so far. This has not affected BPA's ability to achieve performance standard blocks, and Tony expected that the incoming hot weather will increase load across the weekend and into next week. Additionally, with forecasted flows coming up in the Snake River, BPA expects to utilize high flow tools as needed at Lower Granite.

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 May 17, 2023, at 9:00 AM.

**Columbia River Regional Forum
Technical Management Team
OFFICIAL MINUTES
Wednesday, May 10, 2023
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 – April 26 (May 3 pending)

- April 26 – Summaries and Minutes – approved

2. Official Water Supply Forecast – Chris Runyon, BOR & Doug Baus, Corps NWD

May

a. Hungry Horse - *Reclamation*

- May – July
 - . 1460 kaf
 - a. 88% of average
- Apr – Aug
 - . 1720 kaf
 - a. 84% of average
- May – September
 - . 1550 kaf
 - a. 88% of average
- It was a slight decrease from last month – the last couple of months have been in the mid-80s to mid-90s.
- Using the May through September forecast
 - . End of September draft target: 3548 feet
 - a. 12 foot draft
 - b. The May through September forecast fell into the 10 to 20 foot interpolation zone for the end of September draft at Hungry Horse

b. The Dalles - NWRFC

- April – August
 - . 83 maf

- a. 93% of average
- c. Lower Granite - NWRFC
 - April – July
 - . 21 maf
 - a. 104% of average
- d. Libby – Corps NWS
 - April – August
 - . 4408 kaf
 - a. 72% of average
- e. Dworshak - NWRFC
 - April – July
 - . 2620 kaf
 - a. 106% of average

3. Spill Priority List – Dan Turner, Corps-NWD

- a. Formatting and Clarification Changes

Turner followed up on TMT conversations over the last few weeks about the Spill Priority List (SPL). Last meeting he had heard that TMT had wanted to see clarification and formatting changes on the SPL. He reminded everyone that the list as shown is a communication tool and it is his goal to make it as clear and reflective of what they are doing.

- Level 1
 - a. Makes clear that Level 1 is the state water quality standard, which is the FOP operation and includes performance standard spill blocks at some projects and The Dalles at 40%.
 - b. Fish passage projects are shaded in blue.
- Level 2
 - a. To try to gain clarity of what is changing between Level 1 and Level 2 as BPA moves through the SPL.
 - b. Darker gray shading to what does not change in spill rate between Level 1 and Level 2.

Jay Hesse, Nez Perce, thanked Turner for making the adjustments. He thinks that they are helping the capture some of the nuances. He thinks that there is still room for more clarity in the table but understanding what it is for will make it so he keeps it in mind. Within the

blue section highlighted as FOP operations, Hesse has some interest in helping the Action Agencies understand priorities for reducing the Performance Standard Spill (PSS) at various projects, understanding that it is within the discretion within the FOP. He said that might be something that may be a point for further discussion outside of the SPL. He wanted to highlight that it reverts back to the priorities of projects within the blue that had been discussed previously. He said he is not lobbying for change; he is just highlighting a point for further discussion later on.

Tom Lorz, Umatilla, thanked Turner for making the modifications and trying to add clarity. He commented that he is not sure that it is getting to the issues that they have raised. He said that they have given their ideas and they had hoped it could have been implemented. They would have liked for as the excess spill that needs to be shifted around could also be used in a way benefit the fish as well. That is what they are wanting done. He pointed to Lower Granite, if it is staying at 20 kcfs, and spilling at Chief Joseph, Grand Coulee, and Dworshak, it is not (in their view) a benefit to fish. He is looking for the best method to get that done. If the Action Agencies are still saying that there are limitations, which it sounds like they are, then it is something that will need to be worked on next year's FOP. He hopes that way it will ensure that it will not have the operational wording and documents that constrained them from doing the best possible from a fish operation standpoint when there are possible opportunities. He is still hoping that they can use adaptive management this year. If not, they have given their recommendations and he hopes they can implement them the best they can.

Charles Morrill, WA, said that as Salmon Managers their objectives is to find a way to use the water, if there is excess water available, to provide the most benefits to juvenile fish. He noticed when spilling only 20 kcfs at Lower Granite additional spill there would definitely provide benefit to juvenile fish passage. He thinks that is the key point and emphasizes what Lorz said. He echoes his concern for not only Washington but also all the common interests

Julie Ammann, Corps, said that the Action Agencies have heard what the desire is, and they are trying to work within the existing FOP that they have. She asked the Fish Managers to understand that they do not see the flexibility that they are asking but they hear their concerns and it is something that they can work toward in the future.

Tony Norris, BPA, added that they had heard the comments last week about Footnote C would require them to fill above MOP to achieve the Performance Standard Spill Blocks of 20 kcfs at Lower Granite. Since adding Footnote A, to account for high flow conditions in 2022, they took a closer look at how they were implementing those footnotes during high flow conditions. Norris shared that last week the modified the priority in how they implement the footnotes during high flow conditions. Now they are spilling up to 40% when they forecast that they would have to fill above MOP to achieve the performance standard spill block at Lower Granite. Norris said that it has been a useful tool over the last several days when they experienced high flows on the Snake River.

Norris showed the Flexible Spill Graph (found on TMT Main webpage).

- Zoomed in on April 30 through Current

- After Wednesday, through Thursday (May 4, 2023) – Started spilling above 20 kcfs during the performance standard block and that continued until May 8, 2023 during the high flow period.
- This did limit the amount of fill that was required to achieve that block.
- Also minimized the daily within day swings in outflow downstream

Ammann reiterated that they are seeing some potential high flow conditions coming in the next week or two.

Norris agreed and he expects to implement accordingly.

Trevor Conder, NOAA, said that he appreciates the Action Agencies coming part of the way on this, especially for the MOP purpose, clarification, and rearrangement. He thinks it's a gain for the system, from a fish perspective. He really appreciates it. He asked, in relation to Hesse and Lorz's questions, for a better understanding for what scenarios under the FOP how often or frequently would there be a situation where:

- System would not be under high flows
- Spilling 20 kcfs at Lower Granite
- Have a Lack of Load
- Not going to 40% at Lower Granite
- Spilling at some of the storage projects

Conder understands that this situation would be rare. He asked if it is something that could occur. He asked if it were possible how likely it would it happen in certain flow years. He is not sure about these details and he would like to learn more about this information.

Norris said that he cannot give it a likelihood, but it can occur. He said that typically, they would get lack of load conditions during high flow events but it would not have to occur during high flows. Norris provided a small example but said that the FOP does not identify it as an option. He agreed with Lorz that it is probably a discussion for 2024 operations.

Erick Van Dyke, OR, said that he appreciates the conversation. He asked if it is the updated data. He asked if today's information was available yet.

Norris said that he believes that there is a 12-hour delay.

Van Dyke asked if there is a way to see where that is.

Norris said that it is available in the hourly data. *Most of the data was missing.*

Norris asked what Van Dyke wanted to know.

Van Dyke said he wanted to follow the trend and see where they were today and where they are spilling.

Norris said they are spilling as they have been. The two available hours (six and seven) they are achieving the 20 kcfs performance centered spill block. He added that it started today at 0400.

Van Dyke requested to look at the operation page for Lower Granite that summarizes the last week in graph. He was hoping to see a trend line represented but it did not answer his question. He will follow up on it at another time. His second question was to look at the SPL to understand the way that the water quality thresholds are different between Level 2 and Level 3 because they were being described under the level text in the same way.

Turner said that they are targeting different TDG rates. Level 2 is targeting 125% TDG and Level 3 is targeting 130% TDG.

Van Dyke said that it is about the percent but it is calling it the threshold. He asked what was being used to measure the threshold of 130% TDG because he was not sure that he had seen the water quality agencies describe a threshold of for that in their rules.

Turner said the water quality standard is not changing. This is an example of when they are in forced spill and the TDG is expected to be exceeding the water quality standard. It would not be appropriate to call Level 2 and Level 3 meeting a water quality standard.

Van Dyke said that the confusion might be in the way that Level 3 has been labeled and maybe Turner should have said what it was and that would have been helpful to document it that way.

Turner said that he would be welcome to suggestions.

Van Dyke said he did not have a suggestion at the time. He thought that Turner is referring to something that would be called involuntary, or it would be part of it. It is when you are exceeding the water quality standard guidance. He said he would think on it and provide Turner with more feedback later.

Stranz said that it would be a good idea to think about it some more and provide any suggested language for clarifying to Turner because it did seem like the clarifications that happened between last meeting and today were helpful. If there are more Turner is receptive to help clarify the SPL and use it as a communication tool.

David Gruen, ODEQ, said that he could follow up with Van Dyke and send some suggested language. From the water quality regulatory perspective, in Level 3, the text that says, “Spill level estimated to meet but not exceed daily threshold” does not align with the 130% TDG. He said that in the sense that the TDG modification order goes up to 125% TDG, it does not allow for 130%. The text needs to be clarified and he thinks that they can find text to clarify it. He will work offline to better frame it to be more accurate.

Lorz stated that at Level 2 is exceeding the standards and asked if they did not need to follow some restrictions that they are following in Level 1.

Ammann answered saying that she is not sure exactly what he meant by the question but she qualified that at Level 2 things like performance standard hours go away in the white projects.

Lorz said that he is trying to figure out why Level 2 is where they are not concerned about if they have performance hours as opposed to Level 1. He asked what makes Level 2 the change point.

Ammann said the SPL is a tool that was part of the Action Agencies' TDG management protocols. They worked on it with the States to show them how the Action Agencies would manage TDG in a situation where they had to spill above the water quality standard. It was a tool that was developed years ago to help spread spill out and incrementally increase it when they had lack of load conditions and when they had control over which units they turned on and off. They never intended to operate it to 130% TDG but the reality is that sometimes they have more water or not enough load and they have to make increases. The strategy behind the SPL is to do it in steps and balance the spill across the system as a TDG management tool, understanding that they are exceeding the state water quality standards. They are trying to minimize the impact by balancing the gas across the system when they can.

Lorz said that the new water quality standard is 125% TDG. He then said that in Level 1 we are not going to hit 125% TDG at all projects, because the Action Agencies are afraid of not keeping their performance hours. At Level 2, they will hit 125% TDG at all the projects. He asked why 125% TDG is fine in Level 2 but it is not in Level 1 when 125% TDG is the current water quality standard.

Ammann said that the water quality standard is caveated in their ESA documents, so that is why they have it listed as the FOP at some projects.

Lorz said that it is confusing because Ammann just said that they need to keep it under the 125% TDG. It used to be 120% TDG, which Lorz said made sense. Lorz said that now 125% TDG is the new water quality standard so in Level 1 it seems like we should try to get all the projects up to 125% TDG in the most judicious and best way possible. Instead, we are doing that at Level 2, not Level 1.

Ammann said that there has already been many hours of TMT spent on discussion about the SPL and feels that maybe they should have more detailed discussion at a process meeting where they can keep going.

Stranz shared that what she has noticed from the conversations that TMT has had over the last 3 or 4 weeks is that people very quickly get to a point where they are not really listening to others trying to understand. She agrees with Ammann that they should table the SPL for today. She would like members to recognize that there has been a lot of misunderstanding and some clarity that is needed. It might be better suited at a process meeting. She does not want to have repeats of what happened over the last weeks, which were tough conversations without much clearer understanding.

Conder said he thinks that it is fine, he disagrees that it is that people are not hearing each other. He thinks that it is complex, how the Action Agencies are viewing the FOP performance standard spill operation as part of the water quality standard. Others have viewed the water quality standard as going up to 125% TDG for 24 hours/day. He thinks there is a difference in understanding that people are just beginning realizing, himself included. He does not think that people are intending not to listen. He agrees it is a discussion for the process meeting where the group can really dive in.

Lorz said that he is fine with taking it to the process meeting. The Action Agencies know what the Fish Managers are trying to get. The Fish Managers have given the Action Agencies their guidelines and Lorz hopes that they can implement them as best as they can. If they cannot, he said it just shows that they have got their work cut out for next year to try to make things clear. He hopes that we can use adaptive management as much as possible, if the Action Agencies do not feel have that option. That is a problem and we will have to work through it.

Ammann said great and that she and Lorz could have offline conversations to come to a better understanding, she may not have understood his question from earlier.

4. Lower Snake Tailwater Impacts – Julie Ammann, Corps-NWD

Follow up conversation that has been coming up the last several weeks, the Corps of Engineers has been discussing about how they do their raised MOP operations and that they are doing it to meet their minimum tailwater requirements.

They were asked to provide some feedback on what the impacts are if they do not meet the minimum tailwater requirements.

a. Lower Granite

- There are graphics from Fish Passage Plan overlaid with where the Tailwater Gauges are.
- There have been many conversations about the Nav Lock Tailwater Gauge versus the Project Tailwater Gauge.
- There are things that are impacted by tailwater elevation. The focus for today will be on flow deflectors and adult fishways.
- The trend is that the gauges are similar when they do not have a spill operation going or when flows are high.
- When spill percentages are high and flows are below 50k, there is a difference between the gauges. The nav lock gauge is generally higher.

b. Historic Operation (Little Goose Forebay)

- Historic operation at Little Goose (10-years of data) primarily occurring before more recent spill operations show a historical rise in the Little Goose Forebay in late summer to meet needs downstream of Lower Granite.
- FOP included language raising MOP beginning in 2009
- Rises common in summer when flows decreased.

c. Lower Granite 2022

- Operation in 2022
 - a. Gray band – max and min of the powerhouse tailwater

- b. Gray Dashed line – median powerhouse
- c. Blue line – average tailwater and the nav
- d. Red band – Little Goose forebay operating range
 - Increase for the anchor bracket in early spring
 - Resulted in high pool operation at the beginning of the season for a short time
- e. Yellow – flows
- f. Red dotted line – minimum tailwater
 - Looking at the gray band, they had to raise the Little Goose forebay and have had to do it these last few years, to keep the project powerhouse tailwater gauge up.
 - Flow is higher during certain periods and then the two tailwater gauges become more aligned when the flows get high.
 - Team did an assessment since the increase in spill operation has changed the tailrace hydraulics creating more turbulence and wave action.
 - They looked for trends for when they were consistently higher and for Lower Granite outflows of ~75 kcfs is the threshold. The forebay range and the differential at the tailwater is minimized.
- d. Hypothetical Operation – No Raised MOP
 - If they did not do the raised MOP operations what would happen?
 - Red band indicates what the Little Goose forebay would be.
 - There are times that the tailwater elevation could be 1.5 feet below the powerhouse. This has potential impacts
 - Nav lock also gets close late in the summer with potential dips below.
- e. Little Goose
 - Project Tailwater Gauge and Nav Lock Tailwater Gauge coinciding with the fishway entrances between the powerhouse and the spillway.
- f. Little Goose 2022
 - With adjustments at the Lower Monumental forebay.
 - Flow threshold negative differential: ~100 kcfs
 - 0.5 foot raised MOP part of the year at Lower Monumental in order to meet Little Goose tailwater
- g. Hypothetical Operation – No Raised MOP
 - Without the Raised MOP operation at Lower Monumental the Little Goose tailwater dips half foot in spring and potentially in summer

- Highlighted again nav lock could brush up against the minimum tailwater elevation of 537 feet.

h. Lower Monumental 2022 & Hypothetical Operation

- There was a slight rise in the summer.
- The hypothetical operation on the right shows the dips below when it flows, low around 50 kcfs.

Raised MOP operations for tailwater needs, only seem to pertain to Lower Granite, Little Goose, and Lower Monumental. With Lower Granite being the most impacted, followed by Little Goose and then Lower Monumental. Ammann reached out to Walla Walla District and the project staff, Chris Peery, Jon Renholds and Sean Milligan, and they are at the meeting today to walk through some concepts. The following slides walked through impacts.

i. Flow Deflector and Erosion

- Flow deflectors designed in the 1970s and 1990s.
- Design condition was skimming flow.
- Stilling basin ball milling issues in the Snake River projects part of which comes with the recirculating flow, therefore we can get more volatile hydraulic conditions when there are plunging conditions. This will increase erosion rates and may increase injury and mortality rates for spill passed juvenile salmon.

j. Flow Deflector Impact Summary

Ammann asked to characterize these on the hypothetical scenarios provided from Lower Granite, Little Goose, and Lower Monumental.

- Most increased stilling basin erosion potential impact would occur at Lower Granite because not operating the Little Goose MOP would have the biggest decreases in tailwater.
- Where they see minor impacts are Lower Monumental and Little Goose with the increased ball milling and increased velocities there is potential for higher fish injury.

k. Adult fish facilities

- Operate to the 2023 Fish Passage Plan
- Three criteria
 - a. Entrance differentials should be 1 – 2 feet and create attraction flow
 - b. Entrance depths should be ≥ 8 feet (≥ 7 feet at some ladder entrances)
 - c. Channel Velocities should be 1.5 – 4 fps

- Low tailwater can cause issues with the fishways. The fishway entrances are more likely to have less attraction velocity and the fishway pumps are more likely to overheat and trip resulting in O&M issues. Spill at low tailwater can also lower local tailwater at some main entrances adding to the challenge.

l. Summary

- Investigating the flow deflectors, the erosion potential, and their impact on the spilling in the basin and the adult fishway.
- If they did not raise the downstream forebays they anticipate that it will have negative impacts at Lower Granite, Little Goose, and Lower Monumental.
- The impacts at the fishways, especially at Lower Granite, are the most concerning for the Corps.
- The risk of the pump failure due to the added strain on the aging equipment is not acceptable.

m. Operations for 2023

Ammann said that they have proposed taking a different look at the MOP criteria.

- New Criteria for MOP adjustments
 - a. The Nav lock tailwater gauge must remain above the minimum elevation at all times (*e.g. Lower Granite min Nav lock gauge = 633.0 ft.*)

This is not generally the driver as they have been seeing when looking at the two gauges together; it is typically the project tailwater.

- b. Powerhouse tailwater gauge will still be maintained above the minimum.

The Corps will use a little more engineering judgement and will allow more flexibility for occasional small fluctuations below tailwater. There is volatile turbulence downstream they are seeing the dips below and have been reacting to the steps in the past. Now they will look more to the general trends and make sure that they are meeting the minimum tailwater but allow for flexibility for occasional small dips.

- c. Forebay elevations downstream will need to be raised to meet this criterion but they expect it shorten the time of MOP adjustments.

- d. The Corps will monitor the new criteria for adverse effect and may adjust if needed using best engineering judgment. If needed, they will adjust their operational plan and commit to providing those adjustments at TMT.

Some of the questions that her team will be looking at will be whether they have a differential between the tailwater and the next downstream forebay, if so, how much is it and what is happening with the inflow forecast. They are more confident in decreasing the forebays when they see flows come up. Projects are all in MOP right now and they have not seen as many rises this year as they had last year for raised MOP operations.

Conder appreciated the summary comment that they will continue to look for opportunities to return to MOP. He asked if we are seeing significant circumstances

where the Corps are operating above with the new criteria. He has some questions about the adult criteria; he is not sure about the entrance threshold. Whether it will have a substantial effect on adult entrance criteria of 1 to 2 feet. It is measured by taking the collection channel and subtracting the tailwater. By raising the tailwater Conder is not clear how that will compute and whether it will result in a significant reduction in criteria violations. He thinks that there are other ways like closing certain entrances; floating orifice gates; or rehabbing the pump that would be more effective than this operation. Conder does encourage the Corps to have further discussion with FPOM. He thanked Ammann for providing the information in a clear way and expressing the Corps concerns.

Van Dyke said it was helpful to understand how they were looking at the problem and how it is seen operationally. He did not have a question at this time but will be considering and thinking on the topic for future discussions.

Morrill said thank you for the presentation and that it was helpful. He said he needs more time to digest and think if he does have questions. He does appreciate what Ammann provided, it is a big step forward in better understanding how we address this and what, if any, concern are.

Lorz said it is a FPOM discussion. Asked if it is because the tailwater is so low, the pumps are working too hard.

Lorz said that because this topic is about fishway entrances and fishway criteria it is an FPOM discussion because that is where some of the experts are. He asked if it because the tailwater is so low that the pumps are having to pump harder to try to get that back to the criteria. He asked if that is the concern for the pumps and why the pumps are tripping because they are having to operate more aggressively to try to maintain the 1 – 2 foot.

Sean Milligan, Corps, told Lorz that what happens is that you have the minimum diffuser capacity but the highest demand at the entrance is because they are becoming very efficient as they approach sill; the pumps are having to move up the pump curve. You are pumping against a higher pumped head to try to deliver more water but as you move up the pump curve, they pump less water at a high head. It is trying to chase a new equilibrium. They operate at a given setting but they have to pump against the higher pump head and if you get outside of the intended design range, they overheat and trip.

Lorz asked if they have three pumps at Lower Granite or two.

Milligan said that they have three. As designed, they are supposed to be able to operate within criteria with two and that leaves the one as the one pump equivalent emergency backup that is supposed to be maintained as well. The two main pumps are full on/off pumps, the third can operated at half speed and was designed with the intent so that it could be used when the tailwater is really high. For that condition, all the diffusers in the lower end of the ladder are submerged and contributing, so there is a bunch of diffuser space. The intent was to add more water at the bottom end of the ladder to maintain transport velocities when the lower weirs are submerged. You cannot turn on the third pump at half speed to try to get more water when tailwaters are low because it is pumping against too high of a head differential and it trips off. They tried it years ago to try to get more attraction water but it did not work.

Lorz said that this is why this needs to be taken to FPOM because as Conder noted there are other operational options such as FOGs (Floating Orifice Gates) and other things that they can tweak to see if they can smooth out this operation.

Swank said that he would probably have more technical follow up questions that will be more suited for the process meeting after he has had time to digest all of the slides. He said thank you for the presentation.

Ebel said like it has said before, fishway criteria is a FPOM issue. He would like to raise that the fish ladder at Lower Granite is out of criteria and it appears irrespective of the tailrace. That is a long-term issue and is not necessarily connected to the issue at hand. The focus of the presentation is later in the summer but at the same time, the discussion has been centered on issues in the tailrace during high spill, but the spill in summer has not changed in years. Ebel said he would like to question why it is an issue now when it has not appeared to be in the past during the month of August. He also said that he is having trouble because the Corps did not connect issue to the gauge being used, it is kind of acknowledged at the end in the new criteria of increased flexibility with the powerhouse gauge. Connecting the issues with the gauge being used is important, especially when the Corps has put forth that it is a spillway deflector issue. We have that the tailwater is different from the tailwater at the powerhouse but because of where the flow is the tailwater at the spillway should be higher than both the nav lock and the powerhouse, because that is where the bulk of the flow is going. Ebel said he is not sure how to interpret the Corps reasoning regarding the spillway deflectors. He said that is something that he is struggling with understanding. He will have more comments when he has a chance to look at it more closely.

Ebel summarized that he does not see how this will solve the problem of fishway criteria being violated at Lower Granite, moreover, the fishway criteria at Lower Granite being violated so often do not seem to impact adult passage. Summer spill has not changed in years so where is the concern coming from. The spillway deflector aspect confused him; he asked how six inches would make a difference that elevation should be higher than where the actual gauges are.

Milligan responded to Ebel's question about tailwater elevation at the spillway. There is a lot of water going over there but the tailwater at the spillway is actually lower than the powerhouse because of the surface skimming jets. It is a much higher velocity so it depresses the tailwater elevation there as compared to either the powerhouse or the nav lock. Even though there is a lot of water going there the tailwater is measurably and quite a bit lower at the spillbay than the powerhouse or the nav lock.

Ebel said that is useful information, and asked how the forebay elevation, six inches to a foot, at the next lower dam influence that process.

Milligan said that the depression is localized and it is basically a conversion of energy grade line to hydraulic grade line. If you raise the forebay downstream, it creates a backwater that carries up all the way to the next upstream dam. A couple things are happening:

- Powerhouse: where some of the fish entrances are, it helps maintain those better depths and alleviate some of the degree of stress on the pump heads.

- Spillway: higher tailwater provides more submergence on the deflector. At a lower tailwater, they are already operating the deflector close to the boundary that changes from skimming flow to either plunging or unstable flow. If the tailwater goes lower it pushes into the unstable or plunging zones more strongly.

Milligan said that the deflector performance (i.e. skimming vs unstable or plunging) is based pretty strongly on submergence.

Ebel said that he needs to think about the answer. He is not an engineer and the answer was complex.

Milligan said that it might be more helpful to see it visually with some graphics and other representations, which is beyond the scope of this meeting. He is happy to share more if Ebel is interested.

Ebel said FPOM is the place for this type of information.

Jon Renholds, Corps, added that they did look at the half-foot, one foot, one and half foot impacts on the deflectors. They did see that they could flip them from a skimming flow to a plunging or unstable in some cases, especially Lower Granite. The greater impact to Lower Granite was based on being able to flip to plunging flow at 125% gas cap spill with slightly lower tailwater as well as that there is rock in the basin already. When compared to Little Goose and Lower Monumental, their deflector performance did not show as much of a tailwater impact and Little Goose tends to have a bit more stable skimming flow. They looked into the effect of this operation with reasonable detail for the impact on the spilling basin hydraulics.

Brian Marotz, MT, said that presentation and the question and answer period had answered many of his questions. It always raises more but it focuses what he needs to learn. One of the things that caught his attention was how this affects the access to the fishways. He thinks that the conclusion that the Corps arrived at makes sense to him, that it is a localized condition due to hydraulics at the lower gauge. He said that he sees that they recognize that they have one part of the equation and will be looking for ways to not to have to raise it above the MOP. That is the conclusion he was looking for.

Hesse had a few comments that he did not feel needed responses at this time. He appreciated the presentation and assumed it will be posted on the webpage so that it can be digested further. He said that it is important not lose sight that the motivation for the presentation was originated around concerns about the sill depth of the nav lock and that has taken a backseat now given the long discussions that they have had. He saw in the summary point and early on that it is still being taken into consideration but some constraining factors do not look like they are with the nav lock depth. He thinks that it is important to understand that the criteria for the fishway entrances we have had challenges meeting those under a range of operations. He feels that this should be a continued discussion but it is not specific to pool elevation depths and should be kept in mind. The pumps at a number of projects are failing on a fairly regular basis and so the pumps either due to age or routine stress once again, not associated with pool elevation, are in a fragile state and we need to keep that in context of full operations. He has questions about the flow deflectors, he would like to learn more from a broader standpoint, but he does not

have a sense of urgency for today’s discussion. He looks forward to spending more time thinking and asking questions in a different forum.

Morrill said there is one thing missing in the discussion. He would like to know what the impact in terms of adult passage. Washington was involved in system bio work from 1991 to 2016, when the court took the bio-assistance over; his experience was that they consistently did not meet criteria. He does not recall any discussion of being out of criteria having impacts on adult fish passage. That component is missing in what is different between the gauge on the powerhouse side and the gauge on the navigation lock.

5. Operations Review

a. Reservoirs

Reclamation – Chris Runyon

- Hungry Horse Dam
 - Inflows: 14.5 kcfs
 - Outflows: 4.3 kcfs
 - Midnight elevation: 3527.1 ft.
 - Feet from full: 32.9 feet from full
 - Refilled ~11 feet last week
 - Warm up this week and saw inflows near 24 kcfs into Hungry Horse
 - Similar warm up next week
 - RFC forecasting similar inflows

- Grand Coulee Dam
 - Inflows: 203 kcfs
 - Outflows: 163 kcfs
 - Midnight elevation: 1261.6 ft.
 - Feet from full: 28.4 ft.
 - Target Full 2023: 1289.6 ft. (0.4 feet for the Lake Roosevelt incremental storage project)
 - Refilled ~12 feet last week
 - Grand Coulee is being operated to control refill and lower river flood risk management target.

Corps – Lisa Wright

- Libby Dam
 - Midnight elevation: 2419.5 ft.
 - Inflows: 34.6 kcfs
 - Outflows: 4.2 kcfs

- Albeni Falls

- Midnight elevation: 2056.8 ft.
- Inflows: 69 kcfs
- Outflows: 63.5 kcfs
- Dworshak Dam
 - Midnight elevation: 1544.3 ft.
 - Inflows: 20.3 kcfs
 - Outflows: 5.2 kcfs
- Lower Granite average outflows: 128.8 kcfs
- McNary average outflows: 319.7 kcfs
- Bonneville average outflows: 350.9 kcfs
- b. Reservoir Operations – Lower Snake Projects - Aaron Marshall, Corps
 - Currently all reservoirs operating within the normal MOP range.
 - From April 5 – May 1, 2023 Little Goose was in a half foot raised MOP to help maintain minimum tailwater elevation at Lower Granite. During that period, Little Goose was able to operate within the normal MOP range 99% of the time.
 - Expect all Lower Snake projects to continue operating in MOP during this period of high flows.
- c. Water Quality – Dan Turner, Corps
 - McNary and John Day
 - Actively managing the spill caps – changing them to meet but not exceed the water quality standards
 - McNary has had three spillbays out of service due to maintenance issues a number of hours each day – that is scheduled to continue until tomorrow.
 - a. Caused a jump in TDG and there was an exceedance of the water quality standard at 126% TDG (May 8, 2023)
 - b. Lowered the spill cap down to 260 kcfs
 - c. Context: This is within the range of spill caps that were seen last year.
 - d. Lower than what we had previous days, it is not outside of the range of what we might expect.
 - Snake River
 - Active management of the spill caps to meet and not exceed the water quality criteria of 125% TDG.
 - Meeting the performance standard hours at Lower Granite, Lower Monumental and Little Goose.

- Gas Bubble Trauma – Ice Harbor Dam
 - They saw non-salmonid gas bubble trauma sampling data collected below Ice Harbor, the incidence of gas bubble trauma exceeded the action criteria of 15% in non-paired fins and over 27% of the non-salmonids sampled had incidents of the gas bubble trauma.
 - As outlined in the approved GBT Biological Monitoring Plan, when one of the action criterion is exceeded, spill at all project in the geographic zone where the action criteria exceedance was detected will be reduced to 120% TDG at the tailraces and 115% TDG in the next downstream forebay.
 - Because this sample was taken below Ice Harbor dam that is within the Snake River zone and all Snake River dams will need to be reduced to target 115% TDG forebay, 120% TDG tailwater. That is during the 125% TDG cap operation that are going now for 16-hours a day.
 - They anticipate reducing spill to that level later today at all four Snake River dams. As flows begin to increase there is a chance they will not be at that level, but currently they should be able to meet those levels. It will be a big change for BPA to try to meet those new spill targets and they will try as hard as they can to meet those they have already marketed.
 - As outlined in the Biological Monitoring Plan [link available on the TMT site] the following criteria will be used to guide reinstatement of spring spill operations up to 125% TDG:
 - a. If gas bubble trauma exceeds any of the action criteria, additional GBT monitoring must demonstrate the incidence of gas bubble trauma is below the applicable action criterion before spill up to 125 percent TDG can resume.
 - b. Gas bubble trauma must be below the applicable action criterion over the next 7-day period before spill up to 125 percent TDG can be applied again.

Lorz said that he looked at the report and all of the fish were basically sculpin. He asked what type of sampling methodology was used. He said that they were supposed to use seines first but asked if it was known if they used electroshocking. He asked because sometimes when high flows they cannot use seines and will have to use electroshocking which disproportionately samples shallow water. If you are backpacking around you cannot be in very deep water. He asked if anyone knew the particulars of this case.

Turner said that he did not know.

Lorz said that he could not believe that they are going to reduce spill because of sculpins over an ESA-listed species. He said we are going to reduce for up to a week and cause chaos and pandemonium because of sculpins. He looks forwards to this discussion in the future.

Hesse appreciated the update. He asked if there had been a discussion with ecology on the water quality standards and the conditions that led up the observation to verify that there were no extenuating circumstances that can be taken into consideration.

Turner said yes.

Hesse asked if the occurrence of levels above 125% TDG in the reach above was included or taken into consideration when considering the potential extenuating circumstances. He said his interpretation of the water quality standards is that there is a caveat for exceeding GBT you are under uncontrolled conditions and essentially that was analogous to being above 125% TDG, understanding that the exceedances in the pool above were not uncontrolled but did exceed the 125% TDG standard. He asked if that could be viewed as similar to uncontrolled situations, on which there would be an exemption to the conditions triggering a change to 120 % TDG.

Turner said that because they are not in a forced spill situation, that caveat would not apply. They have been at spill caps and performance standards.

Hesse asked if that nuance were discussed with ecology

Turner said that he does not know.

Ammann said that these conversations were happening at their policy level and RCC is getting the feedback from Dan Feil and Tim Dykstra on their end at the Corps.

Hesse said he thinks that those are important nuances. He asked if there was a change in the sampling location or methodology for the fish compared to the previous week.

Turner said he was not the right person to ask for where the sampling occurred, he is just getting the reports and getting feedback from policy.

Ebel said to reduce spill during peak ESA-listed salmonid passage for sculpin is ludicrous. He asked for clarity on when they reduce the 120% TDG cap would the performance spill period also go away and that it would be a stable spill. In this scenario, Ebel said the best spill operation would be to reduce to 120% TDG flat during the day. He asked for clarification on what the operation would be.

Turner said that the operation would include eight hours of PSS and then 16-hours per day it go up to the 120%/115%, unfortunately it would not be would Ebel proposed.

Ebel said that it would essentially be an operation that would reduce spill, relative to 2018, throughout the day.

Turner said that in 2018 we operated to the gas cap of 120%/115% for 24 hrs.

Stranz asked Turner to clarify when the next sampling dates in Snake region.

Turner said they are on a week cycle, there would be another sample from Ice Harbor evaluated next Tuesday.

Conder asked whether the operation is expected to be 120%/115% for 24 hours in the Snake River or if PSS will continue.

Turner said that PSS would continue.

Ebel said TMT needs to talk about this; he is not sure what the path forward. The Corps will take the black and white within the water quality regulations. He thinks it is important in this scenario to flat spill during the day and remove the performance spill periods at most places except for Little Goose. He is not sure how to move forward. He

does not think that this response, and this has been their viewpoint on this water quality regulation, is warranted to the level that it is about to be implemented. He wants some clarity on how to move forward. Ebel objects.

Stranz said that the Corps are implementing the water quality standards in the way that they interpret them and they have been in conversations with Washington's Department of Ecology. If there are specific requests or questions that we can give to the Corps that they can take back to policy that might be the next piece. She recognized that that did not answer Ebel's question or concern but that is probably the next step.

Hesse acknowledged that the water quality standards are what they are, and the Corps response is consistent with those. He wanted to echo Ebel's concern that this response to a non-listed species in specific tributarial areas, not the full population of sculpin is inconsistent with the management intent of high spill for listed species during the peak of the juvenile migration coming out the Snake. He encouraged the Washington Department of Ecology and the Corps of Engineers to be in frequent and open discussions to figure out ways to best benefit the listed fish. He is encouraging that strongly given the failed ability of those two entities to coordinate on clarifying water quality standards in the past. He appreciates that they have all communicated today. He said there has not been a great track record and that is occurring where the fish managers cannot see or have evidence of those conversations. This was his voice that this change is not in the best interest of the listed salmon and steelhead, which are in dire condition knowing that low levels. It is strongly encouraged Ecology (WDOE) to be engaged with the regulating agencies and to make those discussions transparent to the rest of us.

Morrill lost some of what Ebel had said, he had lost connectivity and it took him a few moments to get back into the meeting. He picked up the end of it and everything that Hesse had said. He is concerned with what Hesse had said. The one nuance that he would like to request the Corps to consider is that they are following the guidelines are laid out by Ecology. One of the concerns that he thinks Washington has raised with Ecology, but has not pursued this year, is this concern of have an exceedance below Ice Harbor you reduce all the Snake River projects. He would encourage and request that be a question for the Corps to discuss with Ecology. Because to him:

- 1) It does not fit logically that they would shut down and spill all the projects.
Could you reduce spill at Ice Harbor? At Lower Monumental?
- 2) Why the seven-day window?
- 3) What is appropriate in terms of biological response to provide more for additional protection for a listed salmonid population?

That is what Morrill wanted to throw in for the discussions that he hopes would occur. He will be working with Michael Garrity and they will be working with Ecology as well.

Stranz asked if Morrill will be asking those questions directly to Ecology.

Morrill said he would talk to Michael next and they would take it from there.

Stranz said that another piece to the next step and the concerns that we are hearing from some managers. One thing that we have learned from previous years is that it was very

effective to have FPAC ask for clarification from the water quality agencies. Stranz said that would be another tool available to use.

Lorz asked that given they are doing a reduced spill operation whether the Corps had notified the collector projects. They are probably going to start getting well above what can easily be transported. Right now they are doing an every other day transport. They might start having density and Lorz would release fish. He would strongly encourage the Corps to reach out to their project biologists at those projects and be prepared for this operational change because what was anticipated will be different from what they will be doing now. There will potentially be some fish impacts so they need them to be prepared.

Baus said that they heard Lorz and they will take it into consideration.

Van Dyke asked how they will hear answers to the questions that did not have answers. He wants to ask specifically how they will hear the responses to the questions that were asked in this forum that did not receive an answer. From his view, part of the TMT process is to clearly understand what is occurring at the moment and when we do not get answers to important answers that have been raised it leaves the impression that there is a lack of urgency about the modifications that will occur. He said, like Stranz mentioned, in the past FPAC has been brought into try to nail down statements that are provided for recommendations. He said they have done that on this issue, and they have been reviewed, and yet the lack of urgency seems to still be an issue. So he is concerned and he would like to know when to expect when there will be some demonstration of urgency and some answers to the questions that were unanswered.

Stranz asked if Van Dyke was referring to the questions unanswered being the monitoring that took place and whether it was a saines or electroshock and if it was different that last week's monitoring.

Van Dyke said that the Corps was not able to answer several questions about there were changes operation the duration and the inclusion of the other aspects of what have been measured and how it has been used by the water quality agencies as well as the action agencies make decisions they have. He did not write all of the questions that were not answered down but he said his colleagues have been fluent and fluid about their questions so he assumes someone has them.

Turner said said he can speak to duration and it is seven days, at least.

Van Dyke said that has been brought up in the past in their other communications about not meeting their expectations of urgency and it is something that he would like to have addressed here and find out how they do that.

Turner said that he heard Van Dyke and understood that it is an important issue for everyone and he is not taking it lightly. They are trying to implement the plans they put forward and coordinated have been approved by Ecology.

Van Dyke said that he appreciates that Turner is the messenger and said that it is not directed at him as an individual. Van Dyke said that there are things that Turner does not have the answer to for them so he hopes that Turner will find a way to get them. Van Dyke asked Stranz about the call for objection by his colleague from Idaho. He would

like to join Ebel with his call for objection. He thought this process was supposed deal with that level of discussion.

Stranz said that objection is specifically a term that is reserved for SORs; there is no SOR in front of us so there is no way to call Objection. If there is something that needs to be elevated through RIOG, it is always an option to work with your RIOG reps to elevate your concerns. Stranz said that she does not know if the same objection at this moment has any meaning unless there is follow up through RIOG. She said that what we are hearing from the Corps is that they are implementing the agreed up on steps for addressing GBT that has been agreed upon with Ecology. She thinks that some follow up with Ecology and then the Corps could also talk to their policy group and share back what they are hearing with TMT. Charlie is going to talk to Ecology and then there is the option of FPAC reaching out directly to ask for some kind of waiver or something like that is a tool that TMT has used in the past.

Morrill said that he would contact Michael after he gets off the call. It is a time sensitive issue and it is his opinion and has been clearly stated by the other managers that cutting back spill at this point of time during the peak of migration does not fit with our management scheme for listed salmonid species. So he will do what he can to take this upwards as quickly as he can. He requested to have the notes available as soon as possible because he did not capture everything in the discussion today and having the notes would be valuable to provide to Ecology.

Stranz asked Ammann and Turner, and the Corps team, if it fair to say that they will circle back to their policy group and share the significant concerns and urgency from the salmon managers.

Turner said that they would.

Stranz said that she was tracking questions. She will make sure the questions that were voiced are put in the summary today. She is aware that some of them that we did not get answers to are around how the monitoring was conducted. Stranz said she is not sure whom to turn to respond to those questions. She asked if there was anyone on the phone who either knows who to talk to or who we can pass those questions on to.

Paula Calvert, BPA, said that she could reach out to USGS to get more detail.

Conder said in terms of that detail they would be interested in having some type of presentation or some ability to ask more detailed questions on things like method and depth so that they can work through this.

Morrill said he thinks that USGS has reports that they have that provide those details that he thinks the fish managers have discussed and reviewed through FPAC. He said reaching out seems appropriate. He would add that there is information that describes the procedures and list the methodology the USGS is using.

Stranz reminded Morrill that Lorz had asked if they were electroshocking or seining due to the flows. She said that those are some of the more situational questions that USGS may be able to answer.

Van Dyke said that it is not just about how USGS observes samples, many of the questions were about operation decisions based on recommendations or not. He said that Dan Feil and Ammann have plans to talk to those questions.

Stranz said that there was recommendation from Ebel to not do PSS at the Lower Snake projects, except for Little Goose, and instead do flat 120% TDG. She did not hear this as a question; she heard it as a recommendation.

Van Dyke said that the detail about PSS is not one that he is recalling as a written rule and things like that are what they need to know to understand this better. He said the urgency point is very important. He said that it is not just about how an agency is collecting and observing something.

Ammann told Van Dyke that they posted the GBT Monitoring Plan on the agenda under Operations Review, and that would be a good place to look for what have been approved by Ecology and what the Corps has pre-coordinated as the operation. She said that she thinks it has the duration and the spill operation. It is the operation that they are working towards implementing.

Van Dyke said that it helps to know what they are using, to remember what is being done. It may not necessarily demonstrate the process that took place for the last few years. He appreciates the share.

Action Items

- Charles Morrill, WA, reach out to Michael Garrity and have conversations on the changes that are being made and what options to work with Ecology to refine what changes are being made.
- Ammann and Turner, Corps, take the concerns that have been voiced from Salmon Managers, including the intense sense of urgency, back to Policy.
- Culvert, BPA, reach out to USGS on the monitoring details that occurred yesterday and share back what she learns.
- TMT members review Biological Monitoring Plan for more information.

Stranz said that the communication path between now and next week would be an email sent from Baus to TMT members if there is something of note to report out.

Baus said that if the Corps feels that an email notification is appropriate then the Corps will send something out.

Lorz asked for clarity about where in the Oregon and Washington water quality standards on what the triggers hit. He asked where the Corps saw that they maintain the Performance Spill operation, whether it is Washington or Oregon. He wants to make sure he looks in the correct location. Turner later posted the location in chat GBT Monitoring Plan, page 4, talks about operations.

d. Fish – Trevor Conder, *NOAA Fisheries*

- Juveniles

Many juvenile salmonids in the river from all the estuaries.

In a good number – keep in mind from an operational perspective.

a. Lower Granite

- Combined Yearling Chinook:
 - ~383,000 peak
 - 84,000 current
- Subyearling:
 - ~6,000 peak (May 4, 2023)
 - 1,000 current
- Coho:
 - Decent numbers for rebuilding population
 - 4,000 current
- Steelhead:
 - Strong Numbers
 - 320,000 peak (May 4)
 - 54,000 current
- Sockeye:
 - Releasing occurring
 - 1,500

b. Little Goose

- Combined Yearling Chinook:
 - ~407,000 peak
 - 123,000 current
- Subyearling:
 - ~20,000 peak (May 7, 2023)
 - ~2,000 current
- Coho:
 - 5,000
- Steelhead:
 - Similar to Lower Granite
- Lamprey:
 - High collection count on May 7, 2023
 - 216,000
 - Collections not same as index – highest ever seen

c. McNary

- Sockeye:
 - Seeing some the Upper Columbia
- Lamprey:
 - Pulse has moved downstream
 - 26,000

d. Bonneville

- Combined Yearling Chinook:
 - ~40,000 current
 - Subyearling:
 - Gorge Complex fish are moving through and are declining
 - 8,000 yesterday (May 9, 2023)
 - Coho:
 - ~24,000 peak (May 4, 2023)
 - 6,000 current
 - Steelhead
 - 1,000 (May 9, 2023)
 - Sockeye
 - Seeing some releases as well
- Adults
 - a. Return
 - Slower to accumulate – tracking below last year and 10-year
 - Unclear if it is an extremely late return or if TAC was extremely off. TAC has downgraded prediction.
 - Could be possibly due to pinnipeds or the colder start.
 - In terms of Snake River not seeing substantial delay
 - Based on few PIT tags and counts in Snake
 - Small delay from McNary to Ice Harbor that they are tracking
 - Type of delay from high flows not necessarily from operations.
 - b. Bonneville
 - Spring Chinook:

- 38,600
- Up 4500/5800 last couple of days
- Hopeful trend continues

c. The Dalles

- Spring Chinook:
 - 15,000
 - Low conversion

d. McNary

- Spring Chinook:

e. Ice Harbor

- Spring Chinook:
 - 2500
 - Couple hundred a day

f. Lower Granite

- Spring Chinook:
 - ten times lower than last year

e. Power System – Tony Norris, *BPA*

- Lot of water, Lots of energy
- Finding load
- Lack of Market conditions
- Increase load across weekend
- Utilize high flow at Lower Granite.

6. Public Comments: None

7. Set agenda for next meeting – May 17, 2023

a. Water Quality – GBT Monitoring Plan

Today’s Attendees:

Agency	TMT Representative(s)
Army Corps of Engineers	Doug Baus (chair), Julie Ammann, Lisa Wright
Bonneville Power Administration	Tony Norris, Scott Bettin
Bureau of Reclamation	Chris Runyan

NOAA Fisheries	Trevor Conder
US Fish & Wildlife Service	Dave Swank
Washington	Charles Morrill
Oregon	Erick Van Dyke
Idaho	Jonathan Ebel
Montana	Brian Marotz
Nez Perce Tribe	Jay Hesse
Umatilla Tribe	Tom Lorz (CRITFC)
Colville Tribe	
Warm Springs Tribe	
Kootenai Tribe	
Spokane Tribe	

Other Attendees (non-TMT members):

Corps – Dan Turner, Jon Renholds, Alexis Mills, Aaron Marshall, Chris Peery, Sean Milligan

NOAA – Chris Magel

BPA – Ben Hausmann, Paula Calvert

DS Consulting – Emily Stranz (Facilitator), Colby Mills

BPA – Andrea Ausmus (note taker, Contractor with CorSource Technology Group)

Columbia Basin Bulletin – Mike O’Bryant

Oregon DEQ – David Gruen

Clearing Up – K.C. Mehaffey

Talen Energy – Patrick McGonigal

FPC – Erin Cooper