

COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

April 17, 2024

Draft 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 facilitator's summary from the April 10 meeting. Official meeting minutes will be reviewed at the next TMT Meeting.

Flow Augmentation – Kelsey Swieca, NOAA, emphasized that water supply for this year's migration season is expected to be low; Grand Coulee Dam's predicted runoff volume is at 78% of average with Lower Granite at 86% and The Dalles at about 78% of average predicted runoff. Currently both the Corps' STP and NWRFC are predicting well below average flows for the remainder of April through mid-May (with an early June peak). Modified chum operations, system-wide water management operations, and environmental conditions have all contributed to a record high elevation at Grand Coulee for this time of year, and Salmon Managers have been considering how to best manage the available volumes for fish and augment flows during early migration.

Salmon Managers had follow-up conversations after last week's TMT meeting and reached general agreement that a request for flow augmentation would need to include a significant enough bump at Chief Joseph Dam for a meaningful fish response, and not draft Grand Coulee too much in consideration of later springtime flow needs. There were two perspectives regarding the timing of potential releases:

- 1) Increasing flows by April 15 to support planned upper Columbia River hatchery releases and timing of wild Chinook moving out of the upper Columbia tributaries.
- 2) Wait longer before releasing water to support a greater number of fish migrating out of the upper Columbia and Snake Rivers, given the historical run timing of those fish, and evidence of the relationship between river flow and fish travel times that vary across the season.

FPAC recommended targeting a weekly average flow of 90 kcfs at Chief Joseph from April 15 to 28 with a maximum draft of 5 feet out of Grand Coulee (with no objections). In response to the request, Tony Norris, BPA, emphasized the amount of day-to-day streamflow uncertainty at this time during the season, noting that streamflow combined with the 5-foot draft limit at Grand Coulee limits the weekly average flow for the operation. BPA expects to remain within the 5-foot draft below the April 30 FRM elevation of 1,283.3 feet (1,278.3 feet end of month) with approximately 75-80 kcfs through the end of the month. BPA can provide updates each week on forecasts.

Kelsey clarified that this is not Canadian flow augmentation water, it is water from Grand Coulee. Tony added that the operation is reshaping volume that would have otherwise come into the reservoir. BPA expects to fill Lake Roosevelt prior to the July 4 holiday weekend; drafting the additional 5-foot shapes water out of the May/June period into April.

In response to queries, Tony clarified that the 75-80 kcfs is the outcome with the 5-foot draft to 1,278.3 feet by the end of the month; the outcome currently forecasted given projected inflows into Lake Roosevelt. Without the flow augmentation, flows would likely be running closer to Hanford Reach

minimums. Finally, Tony noted that there are no changes in project operations upstream from Grand Coulee resulting from this operation.

Some Salmon Managers offered their perspectives on the request/timing for flow augmentation:

- Confederated Tribes of the Colville Reservation: CTCR's support was based on the extremely low flows throughout the month of April, with ESA-listed endangered natural origin spring Chinook migrating out of the upper Columbia tributaries into the mainstem as well as planned hatchery releases of ESA-listed endangered spring Chinook from PUD programs, releases of ESA-listed threatened upper Columbia steelhead, and releases of non-ESA-listed summer/fall Chinook; all important Tribal fisheries. Even a small amount of augmentation out of Coulee was thought to be beneficial to these fish, especially those migrating through mid-Columbia reaches in the last 2 weeks of April, as stream flows are low. The 5-foot draft limit was to not adversely affect flows or fish in May/June.
- NOAA/NMFS: NMFS is generally supportive of considering flow augmentation releases in late April/early May when conditions like this year persist, especially with the high elevation at Grand Coulee. NMFS was supportive of the consideration although they did advocate waiting a couple days to start, based on the ability of the flow to be most beneficial to the greatest number of fish (upper Columbia and Snake River species that meet at McNary Dam). They understood the potential benefits for hatchery releases and wild Chinook migration, and how the relationship between fish travel time and flow may not be as strong early in the season. Ultimately, NMFS did not object to the request although they prefer an end of April/early May timeframe for flow augmentation.
- Yakama Nation: YN supported the operation and are very concerned about upper Columbia stocks. The latest status assessments show things getting worse and anything to help those stocks is important. It is always difficult to balance releases from Grand Coulee and this small amount at this time will have a higher percentage of benefit for these fish, versus holding the water until later in the season.
- Confederated Tribes of the Umatilla Indian Reservation: CTUIR wants to do what is in the best interest for fish. They did not have a prior concern using the water at the time, and the question remains, when is the best time to use water? In hindsight it may have been better to wait a couple days. This will likely be a challenging year given the water supply.

In response to a query from Jonathan Ebel, ID, regarding refilling non-Treaty storage accounts and potential influence on Grand Coulee inflows, Tony clarified that there is no non-Treaty storage currently happening, emphasizing that refilling non-Treaty storage does not occur without consultation from Salmon Managers. He noted that 1maf of Treaty flow augmentation was stored in December 2023 and January 2024. Aaron Marshall, Corps, clarified that the first 10 days of STP is influenced by the Corps' 10-day forecast window and weather/hydrology conditions within that; beyond the 10-day reflects historical climatology (single trace) and doesn't include a range of uncertainty. The Corps suggested waiting until April 22 to make further decisions on shifting ramping/shaping requests for fish after forecasts are available for the first week of May.

Charles Morrill, WA, reported that Washington Department of Ecology declared a drought emergency for eastern WA for this coming runoff year. Charlie posed the idea to Salmon Managers of requesting a larger bump of flow augmentation over a shorter period rather than a smaller amount over a span of 2 weeks; this is a discussion topic that will be addressed at the next FPAC meeting.

Dworshak Update – Willow Walker, Corps, provided a detailed update based on the Corps' Walla Walla [Clearwater Basin snow flight](#) on April 10, the ArcGIS map and refill analysis are posted to the TMT website. Willow noted this additional, and earlier in the season, flight has been added (in 2023) to provide

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managers more information for water supply forecasting and to improve risk-based decision-making regarding releases from Dworshak. Based on their analysis, the Corps expects observed runoff this season to be consistent with/slightly drier than current water supply volume forecasts.

Willow reported that based on precipitation in the basin this month (almost 3 inches so far), the project is on track to reach the 95% refill trajectory (not much higher); 1-1.5 inches are predicted over the next 10 days. Inflows have increased due to warm weather over the past weekend, with cooling at the end of this week and then more warming trends to continue runoff; this type of stable runoff helps localized runoff and flood control. To remain on this refill track (the most likely scenario), 4 inches of rain will be needed over the next 30-days, which is average for this time of year. Refill would likely occur in the end of June, ideal for starting flow augmentation, although the earlier the better. To see an improvement of 10-15%, above average precipitation is needed, about 11 inches over the next 30 days which is not currently forecasted. Per Salmon Managers' request, Willow confirmed that the Corps Walla Walla will provide another refill update at the next TMT meeting.

Water Management Plan Seasonal Update – Doug Baus, Corps, reported that the request to provide additional narrative on gauge upgrades made in the lower Snake River and the new Lower Granite Dam spill pattern has been completed. This is posted in the 2024 Water Management Plan Seasonal Update (Pg 32).

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 April 24, 2024, at 9:00 AM.

**Columbia River Regional Forum
Technical Management Team
DRAFT OFFICIAL MINUTES
Wednesday, April 17, 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.

Kirk Truscott, Colville, requested that the Grand Coulee (GCL) Flow Augmentation be moved up in the agenda as he had another meeting starting at 10:00 am.

1. Review Summaries and Minutes – April 10 Summary

- Summary approved. Minutes still pending and will be reviewed at the next TMT.

2. Flow Augmentation – Kelsey Swieca, NOAA; Tony Norris, BPA; Chris Runyan, BOR; and Aaron Marshall, Corps-NWD

a. Flow Augmentation - Swieca

- Kelsey Swieca, speaking as FPAC Chair, wanted to provide some perspective before the conversation. She first thanked Stranz for making the changes to the agenda order as it is important to have Truscott available for the conversation.
- Water supply for the 2024 migration season is expected to be quite low.
- Predicted Runoff Volume:
 - GCL: 78% of average
 - Snake River: 86% of average
 - TDA: 78% of average
- Breaking the season-wide runoff volumes down to a finer time step, there is a better sense of what those flows might look like throughout the migration season.
 - Both the Corps' STP and the NWRFC are predicting well below average flows for the remainder of April through mid-May, with an early June peak in the hydrograph.
- With these conditions the Salmon Managers (SM) have been and continue to consider how to best manage the available volumes of water for fish during the low flows.
 - Due to some modified chum operations, system-wide water management operations, as well as the prevailing environmental conditions GCL elevation is at a record high for this time of year.
 - This has prompted some discussions among the SM about how to explore opportunities to use some of this volume of water out of GCL to augment flows during early migration season, when low flow is predicted.

- Last week at TMT all the SM were generally interested in and agreed that this was something worth consideration but needed time to discuss the exact timing and quantity of an augmentation request before putting forward.
 - Follow up conversations among the SM there was a general agreement that there would need to be a significant enough bump at Chief Joseph (CHJ) that it would be meaningful for a response for fish.
 - They also did not want a large enough draft at GCL to support this operation.
 - There were two perspectives regarding the timing of the releases:
 - One group supported increasing flows now, by April 15, citing planned Upper Columbia River hatchery releases happening at or around April 15 and they provided some evidence that some portion of the wild population were moving out of the Upper Columbia tributaries, which could benefit from the increased flows.
 - Another group supported waiting longer before releasing water again. All agreed that releases would be beneficial, but the conversations revolved around the timing of the releases. This group emphasized the current status of migration both in the Upper Columbia and the Snake River. They also emphasized historical run timing of both those groups of fish and also provided some evidence citing the relationship between river flow and fish travel time which varies across the season,

b. Proposed Request from FPAC - *Swieca*

- FPAC put a proposal forth to target a weekly average of 90 kcfs at CHJ from April 15 – 20, 2024, with a maximum draft at GCL to support that operation of 5 feet.
- No entities at FPAC objected or felt strongly enough to object to this proposal.
- This proposal moved forward and was presented to the Action Agencies (AA) for implementation.

c. Implementation of Request - *Norris*

- Norris said that springtime there is a lot of uncertainty regarding stream flows.
 - A few weeks ago, 90 kcfs looked like a reasonable operation. The request with a 5-foot draft can minimize the outcome from a flow perspective.
 - The limited draft was expressed by the Colville Tribe as a priority.
 - The 5-foot draft has resulted in a lower week-average flow.
- Currently GCL is expecting to be able to stay within the 5-foot of draft below the April 30 FRM Elevation of 1283.3 feet.
 - GCL End of Month: 1278.3 feet
 - Monday – Sunday average outflows: ~75 – 80 kcfs
 - Beginning Monday, April 15.
 - Will continue through the end of the month.
 - There have been significant runoff drops in water supply volume; stream flows continue to drop as we continue to have dry weather.

- AA can continue to update each week.

Swieca added one point because the summary may not have been clear. She said that this is not Canadian flow augmentation water this is only coming out of GCL.

Norris said yes. They are shaping volume because they expect to refill to the same elevation in Lake Roosevelt prior to the July 4 holiday weekend. He said by drafting an additional 5 feet in April, it shapes water out of the May/June time period into April. Norris said that we are just reshaping anything that would have otherwise come into the reservoir.

Charles Morrill, WA, asked Norris for clarification about the 75-80 kcfs in this coming week. He asked if that is without any flow augmentation, without the AA implementing the request or if that is an outlook based on the reality that we currently have.

Norris said no that is the outcome that we are currently forecasted to experience given our forecasted inflows into Lake Roosevelt.

Morrill said if he understood that correctly, the 90 kcfs target that they hoped to achieve is now a target between 75 and 80 kcfs.

Norris said yes, if GCL has a flow target and an elevation target, something has to give, with the elevation limit as the primary priority and lower stream flows will lower the flow outcome.

Truscott said thank you for the update. He said it is disappointing that we are not going to see the 90 kcfs that we were hoping for. He asked with the flow that we are going to get what will happen without the additional water this week at CHJ.

Norris said it would probably be running closer to whatever was needed for Hanford Reach minimums; 63 – 64 kcfs. He said that we are still targeting above what would otherwise occur if we were targeting an end of month elevation closer to the April 30 FRM elevation.

Jonathan Ebel, ID, said right now TMT is focused on GCL in isolation. He asked how the status of the upriver storage projects and their management play into this drop in GCL inflow.

Norris said not much. He said that those operations are planned, those projects are either on minimums or are transitioning to refill operations managing under their FRM elevations. Norris said that Lake Pend Oreille is being targeted to fill as is typical for every year to an end of April target of 2055 feet. Norris said that there is no change to any operation upstream of GCL. Norris said that the only change that has been made is the flow request.

Truscott wanted to relate to TMT that the premise of his support and request for the limited augmentation was based upon the fact that we have extremely low flows currently throughout the month of April. We were hoping that flows would pick up in the later two weeks of April when we know that we have ESA-listed endangered natural origin Upper Columbia spring chinook migrating out of the tributaries into the mainstem Columbia and there will be hatchery releases of ESA-listed spring chinook from some of the hatcheries from some of the PUD programs as well as some of the ESA-listed threatened Upper

Columbia steelhead and some releases of non-ESA-listed summer/fall chinook, that are also important to the Colville's relative to providing a fishery opportunity when they return as adults. The Colville felt although a small amount of flow augmentation out of GCL would be beneficial to all those groups of fish with the primary purpose focused on the ESA-listed natural and hatchery origin fish that are emigrating through the Mid-Columbia reaches during the last two weeks of April. We put up the 5-foot draft limit agreement so that we do not significantly adversely affect flows for fish in May and June. Truscott said that they are hoping that we see some runoff shortly so that we do not see low flows in May as well.

Swieca, NMFS, said that NMFS is generally supportive of considering some flow augmentation releases in the late-April, early-May time period, when conditions like we are seeing this year persist and especially when we have the elevation in GCL which is atypical. In this instance NMFS was supportive of this instance of the consideration of these releases. They did advocate for waiting a couple of days based on the ability of this flow to be most beneficial to the greatest number of fish, the Upper Columbia species and the Snake River species, most flows meet at McNary (MCN) Dam. However, they understand the perspectives that Truscott and others will put forth about the potential benefits to the hatchery releases as well as the wild migration out of the tributary. She said that they did discuss in depth the relationship between fish travel time and flow and how that varies across the season and how it may not be quite as strong early in this season as it is later in this season. Ultimately NMFS did not object to this proposal, and they generally support the consideration of something of the flows. NMFS preferred the last week of April into early May so we can tack those additional flows into the increasing hydrograph however they did not object to the earlier proposal this year.

Tom Iverson, Yakama Nation Fisheries, said that they were in support of this operation. He said that they are very concerned about the Upper Columbia stocks. The latest status assessments show them as getting worse and not better. Iverson said anything that we can do to help those stocks is important. It is always difficult balancing release of this water from GCL, he said that they think that this small amount at this time will have a higher percentage of benefit for these fish versus holding this water until later would have less a benefit. It is less percentage of flow later in the season. He said that was his logic in supporting this operation.

Ebel asked the AA if refilling Non-Treaty accounts influencing the inflow into GCL at the moment. He said that he knows that would be a paper exercise but in theory if we look across the season, something different needs to happen in terms of management of water in Canada this year under specific circumstances. Ebel asked if that is influencing decisions being made right now.

Norris said that they do not store into Non-Treaty without consultation with the SM. We avoid any storage between fish passage season April 10 through August 31 unless there is subsequent release, i.e., when they have done Spring from Summer releases when we have had higher flows. Norris said there is no Non-Treaty storage going on presently – so there is no impact and the 1 maf of treaty storage (Flow Augmentation) was stored in December/January.

Ebel said maybe he and Norris can talk offline about that. He said that is not lining up with some other information. He said that the reservoirs in Canada are filling, and

accounts are filling. Ebel said that he was wondering if this year was any different given various deadlines associated with the treaty and non-treaty type things.

Norris said currently none of those are impacting stream flows. Presently just as Dworshak, Hungry Horse, and Libby are filling the Canadian storages are filling because that is what happens this time of year. That is their normal rule curve that they would follow.

Ebel said okay. He said we were provided an STP in terms of GCL outflow, he said that he is aware that the uncertainty on this is extreme, and it had 80 kcfs but now it has 75 – 80 kcfs weekly average for the next two weeks. Then at the beginning of May flows drop to the mid-60s. Ebel asked if the AA can put a number on how probable the forecast is.

Norris said that those are just single trace forecasts, and this is not uncommon in dry years. The AA have received the flow request which is propping up GCL discharge until the end of that flow request. In the past, prior to the start of runoff, the flow requests had continued into the first weeks of May until the runoff began in earnest. He said that it was not uncommon to see weekly flow requests from SM to the start of refill when we are starting to manage the runoff, then you get what you get after that. Absent a request from the SM to continue some measure of shaping flow at GCL across this period you can expect a potential drop in outflow, it will all come down to streamflow uncertainty, that is just a single trace and now that trace is several days old and this is a volatile time of year. If you are not just looking at Streamflow Forecast but if you are just looking at water supply volume and what the 10-day QPF from NWRFC then you can imagine that you can expect lower streamflows with drier weather.

Aaron Marshall, Corps, added with respect to the STP forecast that the first ten days are influenced by our 10-day forecast window and the weather and hydrology conditions that we see within that 10-day forecast period. Beyond that the forecast goes to historical climatology, we essentially lose a lot of the shape that we typically see in runoff beyond that 10-day forecast window. Marshall echoed Norris saying that this is just a single trace, so it does not include the range of uncertainty. He added similar to last year, we had a rapid warm up in May there was a below average seasonal runoff volume, but the shape really peaked in May. It depends on the weather conditions that we see beyond the 10-day forecast window as to what the shape and runoff might look like.

Norris recalled 2015 where we lost another 10 maf out of the forecast between April and the end of the year.

Marshall agreed that could be another possible outcome.

Ebel said he appreciated that, and it aligned with the helpful presentation at the TMT Annual Review on the forecast. He said he was asking to get their general feelings on it because when he sees a higher and higher probability that they have released this water now they have taken it out of a period when the data tells us that the benefit per unit water for juvenile migrants is higher and put it at a time when it is lower. Ebel said he was just trying to get a feeling because a lot of fish will start arriving in the river when the major gains of flow from a fish perspective are made. He said that we are up to the weather now and he does not think that it is possible to alter this request in terms of maybe shifting it to a ramp to some flow, guarding against a discharge at the beginning of May.

Norris said right now this is just a shaping exercise, if you want flows to be higher in May he said that he would wait until early next week to take a look as we will be closer. The forecasts two to three weeks out are more uncertain than the forecast one week out. Norris said that we can revisit this with an update or SM can pick up the phone on Monday to see what things look like for a potential continued shaping exercise. We could pull out another 5 feet from May which shapes more water into those first weeks of May, or some other amount. Norris said that it is his guess that we would have some operating room because May and June are incredibly volatile, and we might have to manage around refill. He said that there is some flexibility around smoothing the flows around May and June based on what we are seeing with streamflow forecast. Norris said that he would wait until Monday afternoon and then see what the first week of May looks like in our forecast.

Ebel said that is the funny thing about water management decisions, you need to make a decision early, but the information will be better tomorrow. He said in general; you can keep shaping water earlier, and that can actually theoretically keep going (and it will be theoretical because it will not happen) and keep moving that water deficit forward until all of a sudden you do not fill. Because ultimately there is a good idea of how much water there is versus how much water needs to be stored, we have our finite amount of water now in theory we keep basically kicking it on to another group of fish. Especially if we draft another 5 feet, and then draft another 5 feet to try to keep increasing these flows. Eventually it will come back to hit some group of fish in terms of negative impact.

Tom Lorz, Umatilla, said that he somehow chose a beautiful time to be on vacation when the decisions had to be made so he came in at the beginning and then he has come back at the end. He said that his rationale at the time was yes, you want to do stuff for fish, whatever you can. Lorz said that he looked at it and GCL has never been this full, pretty much ever. He said that this is a ridiculously unique situation they had. Lorz said that he did not have a concern using the 5 feet at this time. The only question that he had was, like everyone, when is the best time to use the water and that is always going to be a challenge. It will always be difficult. He said in hindsight maybe pushing it forward a couple of days would have been a good idea but who knows? But these are the decisions we unfortunately have to make, sometimes we have good information, sometimes we do not. We felt it was prudent to do something for our Upper Columbia stocks, which are in equally, if more dire straits than some of the other ones. Lorz said that he felt that this was a small ask and that played into his decision-making process. Going forward it is going to be a bigger risk to take more water out and we will have to evaluate that going forward. Since most of our management seems to be with fingers crossed that the weather gods will bail us out let's hope for that. It will be a challenging year as it always is.

Norris noted that they expect to fill prior to the July 4 weekend to approximately the same elevation they fill every year: ~**1286** feet. From the bottom of that 5-foot range, **1278.3** feet, that is not a lot of space to fill at GCL from a historical perspective. Norris said that we are shaping some water here but in the grand scheme of things we are really not moving around that much water, it is a pretty small increment of water.

Marshall said he wanted to add to the comments, just looking at the latest volume inflow forecast for GCL for the month of April, to put this in perspective, we are halfway through the month now and the forecasted inflow for the month of April is **5.9** maf into GCL. For perspective, the difference in that 5-foot draft at GCL we are talking about **388** kaf. It is a very small amount of water.

Morrill shared that Washington State Department of Ecology officially declared a drought emergency for the State of Washington (Eastern Washington) for this coming runoff year. He said that the 5 feet of water would be beneficial to use that and use that sooner rather than carry it forward. Morrill asked (with the understanding that it needs more discussion) if instead of carrying it over two week could we get a bigger bump in a shorter time period and what do his colleagues think about that. He asked if that would be a discussion for TMT or FPAC.

Swieca said that this is a discussion for next week's FPAC meeting. She said that she thinks that there are a lot of considerations that need to be worked through and she thinks that it could end up being a fairly extended conversation.

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

a. Snowpack Overview – post flight

- Snow Flight occurred April 10.
- Lower N. Fork Clearwater
 - There has been melting snow since April 10.
 - Warmer weather from April 10 forward.
- Upper N. Fork Clearwater
 - Same in the upper part of the basin
- SWE graphs can have spikes in snow data when snow stations melt out completely that are part of the averaging and are not dropped right away. Typically, NRCS goes back and corrects this but sometimes it is not instantaneous, they have to do it manually.
 - Current spikes are not increasing snowpack, it is errors in the data and we are stalling out or melting.

b. Clearwater Basin Snow Flight

[Clearwater Basin Snow Flight \(arcgis.com\)](https://arcgis.com)

- Walker finished the site on April 16, the snow flight occurred on April 10.
- Walker pointed out a few highlights on the website.
 - Past snow flights were typically only scheduled in June and the intention was to see where the snow level is and get an idea of how much snow is still in the mountain to see if it is safe to move toward final spill.
 - Last year was the first March/April snow flight. The benefit of this flight is it allows them to get a better idea of the assumptions that go into the Water Supply Forecast (WSF) because those are based on the snow, the characteristics of the snow, and how well the basin is doing as a whole.
 - They pay attention to the characteristics of the snow and how that compares to the available SNOTEL stations and remote sensing. They look at how dense the snow is, how much snow is at the gaging station compared to the surrounding areas, whether the snow is melting, what the soil conditions look like under the snow, and if there is anything that may mess up the information being reported that they we not aware of.

- This is only the second year, so they are working gathering a longer record of pictures and data to compare to but in images of this year compared to last there was more snow last year than this year.
- They got out and explored some areas around the SNOTEL stations.
 - Most places that they landed were in the southern portion of the basin; Crater Meadows, Hemlock Butte, Shanghi Summit.
 - Crater Meadows SNOTEL data lined up with observations.
 - Hemlock Butte was interesting because of the hills and lumps. The ground is not that uneven. The SNOTEL station is on a ridgeline and a lot of the trees were burned recently so that left the station open to snowdrift. The station is reporting accurately but if you take measurements at different spots across the ridgeline you get a big difference in the amount of snow. The soil was also drier than was expected.
 - Shanghi Summit had clear cut areas that had no snow, only bare ground. The SNOTEL station was reporting correctly but adjacent plots of land the soil conditions were quite different. The soil was moist as expected of an area that was starting to melt and start run off.
- The website also includes a map of their flight path and photos with GPS location marked and maps from National Resources Conservation Service (NRCS) and National Operational Hydrologic Remote Sensing Center (NOHRC) to give an idea of SWE and snow cover. They did confirm that snow cover from remote sensing is not as accurate, it usually shows more snow than there is because of the additional cloud cover in this basin.

c. Dworshak Precipitation and Temperatures

- Precipitation: ~3”
- Required Precipitation for Trend: 4”
 - On track for 4” refill but not much over.
 - Forecasted to get between 0.5 – 1” of precipitation over the next 10 days.
- Inflows have been up over the weekend and the last few days because there was some warm weather, and the snow has started to runoff.
- Temperatures have cooled off today and tomorrow and it should hold inflows steady or decrease a little.
- After tomorrow, it is expected to warm so they expect the snow to continue to runoff.
 - The good thing about the warm-cool-warm periods is that it makes the runoff occur in a more stable manner and it helps for localized run off and flood control.

d. Dworshak Refill Analysis

- The 95% trajectory is the most likely option at this point. Over the next 30 days we will need 4” of rain to stay on this track. This precipitation is average for this time of year.

- If we were to see an improvement of approximately 10 – 15%, we would need above average precipitation, 11” over the next 30 days. We do not see that in the longer-term weather forecast right now but it is always theoretically possible.
- Our most likely refill trajectory we would be able to refill in the range of the end of June. This would be ideal because it would allow us to be most prepared for flow augmentation.
- The graphs, as always, are produced with minimum discharge.

Hesse told Walker that she did good work on the presentation.

Stranz said that it was neat to see the story map and thanked Walker for pulling it together.

Walker asked if TMT would like a DWR refill update next week.

Hesse said that he would like an update.

Morrill would appreciate an update and told Walker that it was a great presentation and update.

Stranz said that if Walker has time TMT always appreciates it.

4. Lower Snake River Projects – Updates on Tailwater Elevation Monitoring Data and Lower Granite Dam Spill Pattern – *Doug Baus, Corps*

- Baus said that in the past there was a request to provide additional narrative on some of the gage updates that have been made in the Lower Snake River as well as additional information on the new Lower Granite Dam spill pattern.
- This has been completed and posted in the 2024 Water Management Plan Seasonal Update on page 32.

5. Public Comments:

6. Set agenda for next meeting – April 24, 2024

- a. GCL Operations
- b. DWR Update

Today’s Attendees:

Agency	TMT Representative(s)
NOAA Fisheries	Kelsey Swieca
Oregon	
Washington	Charles Morrill
Kootenai Tribe	
Colville Tribe	Kirk Truscott
Umatilla Tribe	Tom Lorz (CRITFC)
Yakama Nation	Keely Murdoch, Tom Iverson
Bonneville Power Administration	Tony Norris, Scott Bettin
US Fish & Wildlife Service	
Idaho	Jonathan Ebel
Montana	Brian Marotz
Spokane Tribe	
Nez Perce Tribe	Jay Hesse
Warm Springs Tribe	
Bureau of Reclamation	Chris Runyan
Army Corps of Engineers	Doug Baus (Chair), Julie Ammann, Lisa Wright, Aaron Marshall

Other Attendees (non-TMT members):

Colville Tribes – Dennis Moore

COE –Dan Turner, Leon Basdekas, Chris Peery, Alexis Mills, Willow Walker

Oregon DEQ – Dave Gruen

Washington Ecology – Thomas Starkey

DS Consulting – Emily Stranz (Facilitator), Colby Mills

CorSource – Andrea Ausmus (BPA note taker, Contractor)

NW Power and Conservation Council– Kate Self

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