COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM
May 7, 2025
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://public.crohms.org/tmt/agendas/2025/. 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 30 TMT meeting, official meeting minutes will be reviewed at the next TMT meeting.

Official May Water Supply Forecasts (WSF) - Chris Runyan, Reclamation, reported the official May WSF for Hungry Horse Dam (HGH). The Flathead Basin received somewhat above average precipitation for the month of April, at 109%; WY to-date is 97% of average. The May 1 snowpack above the project was 91% of average, 79% in the North Fork, and 67% in the Middle Fork. The May through July forecast was 1,450 kaf, or 87% of average; April through August was 1,790 kaf, or 87% of average; and the May through September was 1,552 kaf, or 87% of average.

Chris noted that based on this forecast, the current VARQ flow is 5.5 kcfs and will hold until conditions require an adjustment. Finally, the May through September forecast is used to set the end of September draft; the project will have a flow augmentation draft elevation of 3,548.3 feet (11.7 feet of draft for end of September).

Doug Baus, Corps, reported the May WSF for Corps of Engineers projects:

- **The Dalles (TDA)**: NWRFC April to August volume forecast is 76 maf, or 85% of average.
- **Lower Granite (LWG)**: NWRFC April to July volume forecast is 17 maf, or 87% of average.
- **Libby (LIB)**: Corps May runoff forecast is 4,944 kaf, or 81% of average; resulting in a Tier 2 year for sturgeon volume (0.8 maf). Greg Hoffman, Corps, will provide an update on the FPIP flow planning process at the next TMT meeting.
- **Dworshak (DWR)**: NWRFC April to July volume forecast is 1,916 kaf, or 77% of average.

Lower Monumental Dam (LMN) MOP Update - Leah Hamilton, Corps, provided an update on MOP operations at LMN, emphasizing the importance of maintaining minimum tailwater levels at Little Goose (LGS) for navigation safety and general project safety. She noted an initial adjustment of 0.2 feet raised MOP on April 18, followed by a larger adjustment up to 0.7 feet on May 5 due to significant fluctuations in LGS tailwater levels observed over the weekend. The Corps is making incremental adjustments as needed, monitoring the situation closely, and expects to be able to adjust LMN MOP back down as flows increase in the coming days.

In response to a question about which gauges were not meeting tailwater criteria, the Corps clarified that they use the median of 8 gauges in the LGS tailwater (located between each unit and on the ends) to determine the minimum tailwater levels; the navigation lock gauge is not included in the median. Project tailwater minimums are set to support tailrace hydraulics for all project purposes, including but not limited to safe navigation. TMT partners expressed appreciation for the Corps' incremental approach to MOP adjustments.

Lower Monumental Dam Operations for Transport Update - Alexis Mills, Corps, presented LMN operations to minimize flow reductions during fish transport barge transit and loading in the LMN tailrace, as requested at the last TMT meeting. The Corps and BPA revised operational direction to the project to increase generation during the spill reductions occurring to help facilitate barge transit across the tailrace in order to reduce total outflow fluctuations. Alexis introduced a new tool created to display LMN hourly flow, total flow, generation, spill, and corresponding effects at Ice Harbor Dam (IHR). She added the caveat that the five-minute data presented in the tool is raw data and not checked for quality. Data showed that flow was reduced to zero during barge transits, increasing to about 50 kcfs during loading.

Erick Van Dyke, FPAC Chair/ODFW, reviewed the last week of operations data, highlighting that the operational patterns look similar to the previous week, despite the increased generation; Fish Managers are concerned about the effects of within-day flow fluctuations on fish passage. He noted that even with the operational adjustments at LMN, changes in flow still affected IHR. From a fish perspective, there is a need to monitor these fluctuations closely in addition to the potential impacts on fish passage.

TMT Members discussed ongoing concerns and operational constraints; while efforts have been made by Action Agencies (AAs) to increase generation and reduce potential impacts, Fish Managers voiced concern over the challenges that remain in managing flows for fish. AAs emphasized that project operators are working within tight constraints and that adjustments (hourly decisions) are made based on real-time conditions; operators often do not have precise information on when flow reductions for the barge are required due to the uncertainty of barge arrival timing. Daily transport at LMN will shift to every other day transport starting on May 14, based on fish collection numbers and operational needs.

The Corps shared that given the operational constraints, there is no additional flexibility available to change conditions. IDFG and the Nez Perce Tribe questioned whether the operation as implemented is meeting the Corps expectations, they asked the Corps TMT representatives to connect internally with their policy/RIOG representatives regarding implementation data given the operational constraints. The AAs also encouraged Fish Managers to connect with their respective RIOG representatives on continued concerns regarding the transport process, noting that the decision was made via the RIOG forum and further changes would need to be made at RIOG.

Fish Managers appreciated the Corps' efforts in creating the new tool for analyzing the operation at LMN; the Corps plans to maintain this tool through the remainder of the transport operation and spill season. Jonathan Ebel, IDFG, asked for the raw data so he can model, archive, and brief his RIOG representative on implementation of the operation.

Questions or Comments from Non-TMT Members – There were no questions or comments from members of the public.

The next scheduled TMT meeting will be on May 14, 2025, at 9:00 AM.
***Please note that TMT meetings will be held on Microsoft Teams starting May 14*

Columbia River Regional Forum
Technical Management Team
OFFICIAL MINUTES
Wednesday, May 7, 2025
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 Donna Silverberg, DS Consulting. A list of today's attendees is available at the end of these minutes.

1. **Review Summary and Minutes**

   a. April 30 Summary

      - Approved

   b. April 30 Minutes

      - Delayed due to technical issues.

2. **Official Water Supply Forecasts** – *Chris Runyan, BOR; and Doug Baus, Corps NWD*

   Reclamation

   - Hungry Horse Basin Conditions
     - May 1 snowpack abv HGH:
       - South Fork: 91% of median
     - Snow in the unregulated tributaries of Columbia Falls:
       - North Fork: 79% of median
       - Middle Fork: 67% of median
     - Water YTD Precipitation: 97% of median
     - April Precipitation: 109% of median
       - Above average.
   - Hungry Horse
     - May – July
       - 1450 kaf
       - 87% of average
     - April – August
       - 1790 kaf
       - 87% of average
     - May – September

        - 1552 kaf
        - 87% of average
    - May – September
        - 1424 kaf
        - 80% of average
- VARQ Flow
    - Based on the forecast and the April 30 elevation of HGH VARQ
    - Calculated at 5.5 kcfs.
        - Currently at 5.6 kcfs.
    - Hold the VARQ until conditions require adjustments.
- Weather Note: There is a decent storm coming in this weekend. HGH will be keeping a close eye on that.

- September Draft Target
    - May – September forecast is used to set the End of September Draft.
    - 2025 Draft Target: 3548.3 feet

Kelsey Swieca, NOAA, asked if Runyan knew how many foot of draft it is for the End of September.

Runyan said that he thought it would be 11.7 feet.

Corps

- The Dalles
    - April to August Runoff Volume
        - 76 maf
        - 85% of average
- Lower Granite
    - April to July Volume
        - 17 maf
        - 87% of average
- Libby
    - April to August Runoff Volume
        - 4944 kaf
        - 81% of average
    - May forecast sets Sturgeon Volume
        - Volume: Tier 2 Year

- Tier 2 Year: 0.8 maf
- Greg Hoffman will be at the next TMT meeting to give an update on the FPIP flow planning process.

- Dworshak (Clearwater Fork)
  - April to July Runoff Volume
    - 1916 kaf
    - 77% of average

3. Lower Monumental Dam (LMN) MOP Update – *Leah Hamilton, Corps NWD*

- Reminder: The reason the Corps has the minimum tailwaters is for both navigation safety in the navlock and across the whole pool as well as general project safety for all authorized purposes. The Corps needs to maintain the minimum tailwater elevation across the whole project.

a. TMT Email Notifications April 18, May 5

- April 18
  - Small adjustment for 0.2 feet raised MOP.
    - Start with small adjustments to see if they work.
- May 5
  - Monday and over the weekend there were bigger swings
    - Required larger adjustment up to 0.7-ft raised MOP.

b. LMN Hourly Data

◀ LOWER MONUMENTAL DAM ▶

Wednesday May 7, 2025

Hour	Total Outflow kcfs	Generation Flow kcfs	Spill kcfs	Forebay Elevation	Tailwater Elevation	Average Head	Nav Lock Tailwater Elevation
1	70.00	12.20	57.30	538.07	438.81	99.26	439.16
2	70.20	12.20	57.40	538.07	438.83	99.24	439.18
3	70.10	12.20	57.30	538.21	438.73	99.48	439.00
4	70.10	12.10	57.40	538.21	438.73	99.48	439.07
5	70.10	12.20	57.30	538.24	438.67	99.57	438.94
6	69.90	12.10	57.20	538.47	438.62	99.85	438.97
7	79.80	12.30	66.90	538.32	438.80	99.52	
8							

Figure 1: LMN Hourly Data May 7

- The Corps looked at the data yesterday again to adjust it, hoping to bring it back to the half-foot MOP instead of the 0.7 foot.
- With flows coming down over the next few days the Corps decided that they needed to wait.
- Flows should come up in the middle of next week so the Corps will keep an eye on adjusting MOP back down again.

Jay Hesse, Nez Perce, asked if Hamilton had more detail about which gauges are indicating not meeting the criteria. He asked if it were all of them or just one.

Hamilton said they use the median of all gauges across the project. That is what they look at as their primary gauge. Looking at all of the gauges and taking the median because at some projects it is much more targeted at specifically the navlock, but the Corps does need to make sure that across the whole pool navigation is safe, not just at one specific point.

Hesse said for the median of all gauges. He asked how many gauges there were below LGS.

Alexis Mills, Corps, said that the sensors for the tailwater at LGS are between each of the units and then on the end so there are eight total that go into the median calculation. She said that it the gauge within the navlock is on a separate feed.

Hesse confirmed that it was 9 gauges that he had heard.

Mills said yes but only 8 gauges go into the median calculation.

Hesse confirmed that the navlock one is not used in the calculation.

Mills said that was correct.

Hesse asked if there was a separate rule curve if the navlock was too low that would override the median of the unit gauges.

Hamilton said that specifically at LGS the navlock tailwater is not the lowest part of the pool but they do have issues at their normal MOP elevation where the navlock gauge sits. She said that every project is different, last year when TMT talked about LWG tailwater there was a slightly different conversation. The Corps is aware that LGS has issues operating, it is more challenging even when LGS is at normal MOP elevations. She said for this project specifically they cannot rely on just the navlock gauge.

Hesse said that the navlock at LGS is spatially separated from the powerhouse (PH) in a significant way. He said that he was trying to understand what the 8 gauges meant in terms of functional operations. Hamilton was general in terms of dam safety and operations. He asked if that was fishway entrance. He said that he was trying but maybe he could educate himself offline.

Aaron Marshall, Corps, said that all the gauges try to provide a characterization of the tailrace hydraulics. He said that the Corps has minimum tailwater criteria that applies for the project for multiple purposes, so the gauges are providing that data to make sure that the Corps is meeting it for all intended purposes of the project.

Hesse said that for this case the navlock really is not the issue, it is the project operations. Navigation is not the motivation on this one_.

Marshall said that they have the requirement to meet the minimum tailwater elevation of the project and that applies to navigation safety as well as all of the other project purposes.

Hesse said that he heard that. He said that he guessed that understanding that the data or understanding that the navlock had not dropped below or even come close to that threshold that the motivation for this is not navigation, it would be the other reasons.

Hamilton said that she had talked to the project and when they are at the normal MOP elevation, even though the navlock gauge is reading higher they still have issues there with some of their transport coming through the navlock. When we see the dips below MOP out in the 8 gauges that are not in the navlock, the Corps has to consider that it is probably also bringing the navlock a little lower, even though it is not technically under the minimum tailwater at the navlock. She said that is because with the river conditions around the navlock the sediment and stuff around the navlock is constantly changing and it is unpredictable, and it is not going to be the same for the 50 years or more that the dam has been in place. So, the Corps has to look at the real-time conditions and listen to what the operators are telling them in addition to knowing the minimum tailwater elevation that is required for the project.

Hesse said that he appreciated that, and he also appreciated the Corps' efforts to make incremental changes. He said that the extra effort was noticed.

Stranz appreciated the additional details for Hesse

Erick Van Dyke, OR, said that he appreciated the conversation and the details. He said like others had mentioned, the small incremental approach is something that is observed and understood as an effort to try to make things work. He said that the detail about the navigation channel, which Van Dyke said that he assumed included the navlock entrance was something that stood out. He asked if there had been a violation of the fourteen-foot navigation channel or if that was part of the thinking that is going on here. He said that he only asked that because the Corps had implied that there is sediment in the channel and that was moving around. He said that part stood out as a question worthy about the navigation channel and how that fits into the Corps decision.

Hamilton said that she thought that they did not know details. She said that what the project had told them is that some barges have issues that had been reported by the project.

Marshall said that they had not done a survey of the nav-channel there. He said that they had been just responding to issues reported by the project.

Van Dyke said that he appreciated the extra detail. He said that one thing that the Fish Managers (FM) had pointed out in the past is having the community, the group actually consider all of the details that have constrained the ability to use the important facilities. He said that he was not hearing strong information-share about how barging constraints are different for each setup of a tow. He said efforts to include that would be useful, but Van Dyke said that he understood that it would require having some coordination conversations with the navigation group.

4. **LMN Operations for Transport Update –** *Alexis Mills, Corps NWD; Doug Baus, Corps NWD; and Erick Van Dyke, OR/FPAC Chair*

a. LMN, IHR Flow & Elevation Timeseries – *Mills*

- As requested last week at TMT, BPA and Corps revised their operational directions to LMN to minimize flow reductions to the extent possible by increasing generation during spill reductions for barge transit and loading.
  - Baus sent out an email last week.
  - Due to the request for additional information and to have a tool to facilitate discussions Action Agencies (AA) developed the graph with some data consolidated to look at barging at LMN and effects at ICH.

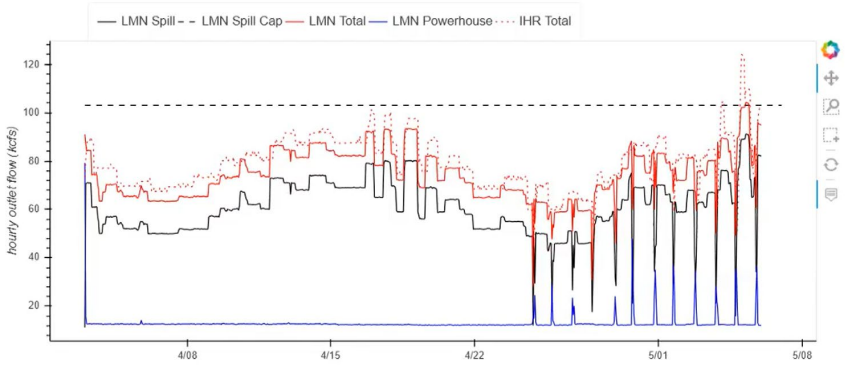

Figure 2: LMN Flow and Spill

- Figure 2 (top graph provided in the link created by the Corps)
  - LMN Hourly Flow, LMN Total Flow, LMN Generation Spill, Total Flow at IHR (dashed red line), Spill Cap (horizontal dashed line)
- Figure 3 and Figure 4 are graphs of forebay elevations at LMN and IHR

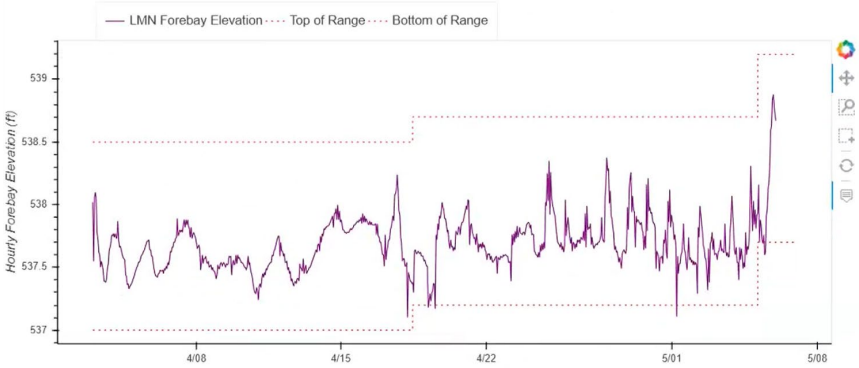

Figure 3: LMN Forebay Elevation

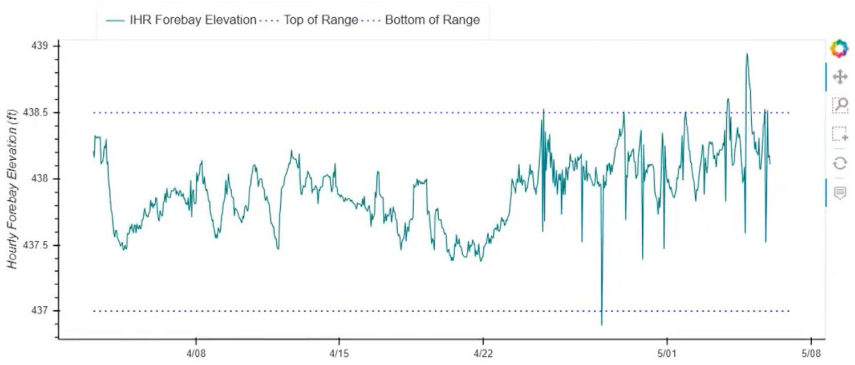

Figure 4: IHR Forebay Elevation

- Three top graphs include hourly data.

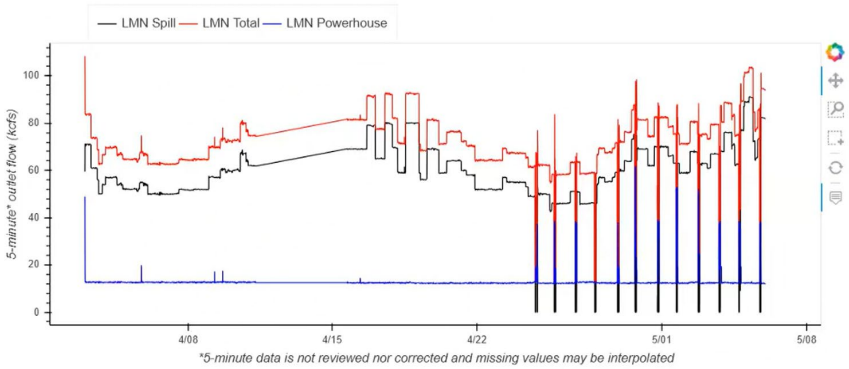

Figure 5: LMN 5-Minute Data

- Figure 5 includes the 5-minute data at LMN.
  - The 5-minute data through GDAC is not QA/QC'd – it is raw data.
    - There can be issues with this data because it has not been QA/QC
    - It is not used generally in the Corps' reports.
  - For example, there was a period of approximately 1 week in April when the server was down and data shown are linearly interpolated.
  - Figure 5 highlights some of what was talked about last week.
    - Spill is reduced to zero during barge transits and during loading flow goes up to ~50 kcfs.
    - Generation Flow, Total Outflow, and Spill are shown in Figure 5.

b. FPC Spill to FOP Graphs – *Van Dyke (FPAC Chair)*

- LWG and LGS patterns are following expected operations, and they appear close to gas cap or briefly hitting gas cap.

Figure 6: FPC LMN Spill to FOP Graphs

- Purpose for the conversation is LMN and IHR patterns
  - Same graphs as last week.
- Even with the operational modification that were inserted last FMs are still seeing changes/drops in operation as it occurs on kcfs. The severity of the change is still showing in the blue dots. The within day flow fluctuations that were a concern for many FM still seem to be appearing.

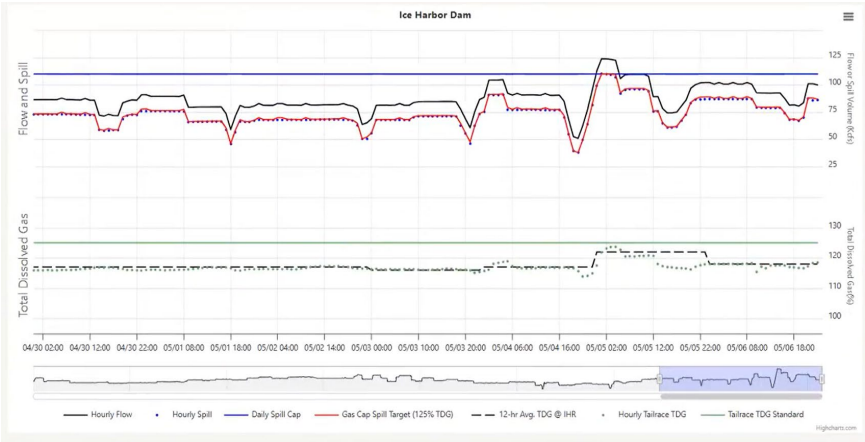

Figure 7: FPC IHR Spill to FOP Graphs

- IHR is still showing changes in outflow that reflect operational decision at LMN.
  - This is a point that FM are keeping an eye on and are concerned about as it relates to fish passage operation measure.

c. TMT Discussion

Jonathan Ebel, ID, thanked the Corps for putting the information out there and creating the link. He said it was very nice but he would still appreciate having the raw data because he functions in code and things like that. He said that when looking at the 5-minute data we are still seeing significant swings in flow. From the 90 kcfs range down

to 30 kcfs. He asked if this was the best that the Corps could do or if there was anything else that could be done to further minimize this.

Marshall said that the Corps has a number of operating constraints and operators are trying to respond in real-time as best they can. The Corps has pinned the operation down to a pretty tight and narrow operating flexibility; there is really no flexibility. They are trying to respond to conditions in real-time and adjust the spill, PH discharge based on the information the operators have at the time.

Tony Norris, BPA, said that they made a change immediately after TMT last week to do their best to minimize the total net flow change. He said that there is only so much you can do because we are picking up generation when we do not have load for that generation, so generation has to be displaced from someplace else in the system and that is not always completely available. He said that they are doing what they can. He said that he believed that they had made a change that has reduced, in particular, the impact to IHR, but it is not no impact. He said that there will be changes in total outflow due to the uncertainty of when the reduction in flow occurs for the barge transit across the spillway. The flow drop is unavoidable as they compensate for the drop in spill flow.

Kelsey Swieca, NOAA, said what she saw in the data was potentially in line with the constraint by BPA. She asked about what Norris had just stated. He said that is was not always possible to shift load throughout the system. She said that she would like to know if it was ever possible. She said that it was not clear to her in some of the instances whether or not that was pursued or if it had been not possible throughout the duration of this season. She asked if Norris expected it to become more possible as we move through the season or should the FMs expect to see difficulty shifting that load.

Norris said that all happens within an hour and so they do not schedule “within an hour” such short notice. He said that more time to prepare for that is helpful He said that if you wanted to further modify IHR flow fluctuation they would need to have more water in IHR prior to LMN flow reduction. He said that they are also trying to minimize the spill reduction at LMN. He said that the departure is usually only ~20 minutes and the arrival is typically 40 minutes. He said that they are doing all that they can.

Swieca said that was helpful to hear that the decision needs to be made on an hourly basis because from an outsider’s perspective, somebody not in the power marketing world, when she sees the barge coming at what appears to be regular timing, every day, it is difficult for her to comprehend how that could not be planned for. She said that it makes sense now because Norris had made it clear that there is an hourly decision that needs to be made, and it cannot be compensated for knowing that the barge generally arrives at what appears to be about the same time.

Norris reminded TMT that generation needs to meet load every second of the day. He said that is the challenge because that barge does not arrive at precisely the same time every day and they do not always have precise information of when the flow reduction is required. He said that the project makes that decision with communication with the barge operator.

Swieca said that was understood. She said that she was more referring to the planning aspect and the ability to potentially shift load that is still occurring on an hourly basis at a maximum, if not finer time scale.

Baus asked Norris to elaborate. He said that it sounded like folks may want to put things on the table. He said that what he heard Norris say regarding this operation was that IHR had limits on MOP can make it challenging and results in the data that he sees. He asked Norris to elaborate about spill operations at LMN as well. He said that it was his understanding that by implementing the gas cap operation at LMN there is a causable factor as to why we see the large swings. He said that he was wondering if Norris would elaborate on how spill operations at LMN impact changes at IHR.

Charles Morrill, WA, said that there are several things that we can do, water over the spillways, power generation. He said that he was curious if going above MOP at the time, whether that would be an instance, can be a real-time short-time operation. He asked if we say instead of having a 60 – 75 kcfs flow differential between the next time period that the barge comes through, loads and leaves, if increasing the pool elevation is a quick time response or a long-time response. He said that he was not sure if any of the FM support that but maybe that was something that we should put on the table for consideration if we want to minimize the change in flow by backing up the pool for a short time period. He said that he was not crazy about it but asked Norris if he had any thoughts about that process. He asked if it was even feasible for a short time operation.

Norris said LMN forebay range would not have to change because of the spill reduction and the ability to increase generation. He said that when he was referring to having more water, it was regarding IHR forebay. He said that we could further dampen, because sometimes we run out of water at IHR depending on how the IHR forebay responds to the flow reduction. He said that if we are trying to minimize the flow reduction at IHR also, there needs to be more water behind IHR. He said that they will manage LMN forebay within MOP for this operation.

Hesse asked if the Corps, given the adjustments and what had been characterized as the best implementation possible, had internal discussions and coordinated with NOAA on the adequacy of implementing this relative the decision memo on the SOR. He asked if there had been a feedback loop to say if this was being adequately implemented. He said that if the answer is not as quite as good as the Corps thought they could do, had there been or will there be an opportunity for the Corps to reconsider that decision memo.

Baus said that he did not quite understand what he heard Hesse say so he attempted a response. He said that the Corps is implementing the RIOG decision to implement the LMN transportation. He said that they are continuing to discuss that in TMT and at this time they are planning on continuing the operation that they are implementing right now that was the decision made at RIOG. He said that was his understanding of where they are at this place and time on behalf of the Corps of Engineers.

Hesse said that he would like to rephrase his question. He asked if Baus had shared this implementation data with those who made the decision within the Corps, and if not, would Baus plan to do that as a feedback look to describe to them the sideboards for implementation on actually flattening flows at IHR.

Baus said that he was not sure that he would respond any differently. He said that the Corps had heard back from the region that there were some desired adjustments to the current operation. They did work – Thank you BPA – they did work subsequent to the last TMT meeting to make adjustment in an effort to meet the expectations and they are planning on continuing that operation.

Ebel said he did not think that Baus answered Hesse's question. He said that there was an expectation by some RIOG members that this could be improved, that this operation could be improved and going back the States and the Tribal entities disagreed with the Corps decision and had some technical justification for their disagreement. He said that what he was hearing now, this was the best, given the complexity of what is going on and the complexity of factors external to the transport of fish at LMN are limiting the ability to achieve the objective of the Corps decision.

Baus said that was addressed through the RIOG decision, the Corps made a decision through the RIOG process, where, as an AA decisions are made. He said that they had made the adjustments deemed appropriate at the last meeting and the Corps will continue the juvenile transportation at LMN.

Stranz said a lot of times when we have these types of situations at TMT it is not uncommon for the Corps and BPA to at least brief the Policy flows or their internal RIOG members on how things are going. She said that was kind of what she was hearing from Ebel and Hesse. She said their desire was to have the AAs circle back with their Policy folds when they meet with them.

Baus said that they can do that, they had done this and will do it again. He said that he would also encourage folks to elevate. He said that he heard them all loud and clear, he heard to reach out to your RIOG folks. He said that he would encourage all folks to reach out to their RIOG folks just emphasizing this was something that was addressed at RIOG and he hoped all would appreciate that it is challenging when you take a decision from one regional forum and put it into another and try to find solutions. He said that he would on behalf of the Corps do that but would also encourage other folks to talk to their RIOG folks too.

Stranz pointed out the question in chat from Ben Hausmann.

> *from Ben Hausmann to everyone: 9:51 AM*
>
> *When does every day transport at LMN end? Next week?*

Chris Peery, Corps, said that it was on the fourteenth of May.

Pete McHugh, Umatilla/CRITFC, asked if speed no load had a potential to play. He said that he did not know the constraint on LMN for that kind of operation to smooth out some of the flow bumps when there is not a load.

Norris said that was not something that BPA could implement on that timeframe.

McHugh said that it was constrained on the same temporal lead needed.

Norris added that it was nowhere near enough. He said that speed no load is 5 kcfs. He said that it was not something that could be implemented in this way.

Van Dyke said that he wanted to follow up on Peery's comment about May 14. He said that in the past, the change to every other day had been associated with the number of fish that are being collected. He asked if that was all still in the mix for managing collections at LMN of if it literally was going to change no matter how many fish are still present.

Peery said that they were not anticipating the need to remain on everyday barging past the 14th. He said that the numbers looked like they could manage on every other day trips following the 14th. That means that the 14th would be the last everyday barge, and May 16 would be the first day for the alternate day barges to start.

Van Dyke asked Peery if that calculation showing that it might actually be few fish before the 14th.

Peery said that he did not have the numbers with him. He said that they were probably down to the numbers by the end of this week that they would not have to go everyday but it is part of the contract that they need to give the tug company at least a week prior to making changes. He said even if they asked them today, they could not implement it until next week.

Stranz provided a summary:

- There were some changes made to try to increase generation last week after the TMT meeting.
- Not everyone is happy with the degree of change that was implemented with increasing generation.
- There was a request to circle back with their RIOG representatives to share what these operations have looked like given the constraints that the AAs are working within.
- Next week there will be a shift from daily transport to every other day transport at LMN.

Ebel said that he wanted to reiterate that he really appreciated the graphics and the time that the Corps took to code that. He said that it was interesting, and he was not aware that the platform existed in Python, and he was going to explore it's equivalent in the R environment. He asked what the future of the application was going to be.

Mills said that they were planning to keep it running through the end of the spill season. She said that it was pretty easy to maintain once it is up there, it runs on a daily time step, and it will continue to be updated during the remainder of the transport operation.

Ebel said thank you and that he would like to reiterate that he would like to have the raw 5-minute data. He said that he would appreciate that so that we can make sure that it is archived. He said good job on the coding.

5. Set agenda for next meeting – May 14, 2025

Meeting Location: Microsoft Teams

a. Sturgeon Pulse – Greg Hoffman
b. LMN Operations
c. Operations Review

Today's Attendees:

Agency	TMT Representative(s)
NOAA Fisheries	Kelsey Swieca
Oregon	Erick Van Dyke
Washington	Charles Morrill
Kootenai Tribe	
Confederated Tribes of Colville Reservation	Dennis Moore
Umatilla Tribe (CRITFC)	Pete McHugh
Yakama Nation	Keely Murdoch, Tom Iverson
Bureau of Reclamation	Chris Runyan
Army Corps of Engineers	Doug Baus (Chair), Aaron Marshall, Lisa Wright
US Fish & Wildlife Service	Dave Swank
Idaho	Jonathan Ebel
Montana	Brian Marotz
Spokane Tribe	Brent Nichols
Nez Perce Tribe	Jay Hesse
Warm Springs Tribe	
Confederated Salish and Kootenai Tribes	
Bonneville Power Administration	Tony Norris, Ben Hausmann

Other Attendees (non-TMT members):

COE – Leah Hamilton, Chris Peery, Michelle Yuen, Tom Conning, Tiffany Stoeckig-Dixon, Eric Chow, Alexis Mills,

BPA – Tammy Mackey

NMFS – Emi Melton

Oregon DEQ – David Gruen

Washington Ecology – Thomas Starkey

DS Consulting – Emily Stranz (Facilitator), Colby Mills

CorSource – Andrea Ausmus (BPA note taker, Contractor)

NPCC – Kate Self

EKI – Eve James

Douglas Co PUD – Andrew Gingerich

Clearing Up – K.C. Mehaffey

Chelan PUD – Lance Beyer, Jay Fintz

Snohomish PUD – Scott Richards, Mike Shapley

Avista – Steve Lentini, Patrick Maher, Mike Dillon

Columbia Basin Bulletin – Mike O'Bryant

Vitol – Ryan Russell

FPC – Erin Cooper, Noah Campbell

EPS – Joshua Rasmussen

Puget Sound Energy – John Chandler, Chris Evidente, Ethan

Mike Buchko

Oscar Espinoza

Mark Kruzel

Kenneth Curtis