

COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

April 17, 2019

Facilitator's Summary

Facilitator: Emily Stranz; Notes: 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. These notes are not intended to be the "record" of the meeting, only a reminder for TMT members. Official minutes can be found on the TMT website: <http://www.nwdwc.usace.army.mil/tmt/agendas/2019/>.

Review Meeting Minutes & Facilitator's Summary

TMT members approved the minutes and facilitator's summary for the April 3 meeting, with a clarification note added to a comment from Charles Morrill, WA, in the official minutes on page 2: Charles mentioned the possibility of extending the short term water quality modification into summer 2020 and 2021; however, today he noted that Washington is not looking at extending this modification to summer operations at this time.

Dworshak Operations

Jon Roberts, Corps Walla Walla, provided TMT with an update on current operations at Dworshak Dam. The project is discharging 10 kcfs through the powerhouse (no spill), inflows are 10 kcfs, thus the pool is holding at about 1,557 feet. The RFC forecast shows inflows increasing to about 22,000 cfs over the next few days, with another bump around April 26.

Operational scenarios have been updated to reflect recent snow accumulation in the basin and the water supply forecast has climbed from the official April forecast of 1.96 maf runoff to 2.1-2.2 maf. Jon noted that the three operational scenarios reflect that rain and temperatures highly influence runoff timing, as well as project inflows. These provide current bookends of high and low runoff conditions.

Jon explained that the Corps plans to hold Dworshak at 10 kcfs outflows through April 26, or if conditions allow, until May 9 when unit outages will occur. TMT members present were comfortable with this operation. There will be an update on Dworshak operations at the next TMT meeting.

FOP Spring Spill

Dan Turner, Corps, reported that daily Snake River TDG is looking good and is at 120% at all four projects. He expects only very small changes in spill caps to continue managing to meet but not exceed 120%.

The lower Columbia River has had an interesting first week. McNary yesterday was at minimum generation and spilling the rest, resulting in 117% TDG. John Day's TDG has been fluctuating and the project has been adjusting the spill cap in response; yesterday John Day was at 118% TDG. Bonneville was at 119% TDG and has increased the spill cap to 123 kcfs in order to inch closer to 120%. The Dalles has proved more challenging to operate to meet but not exceed 120%. Since April 13, spill caps have ranged from 153 kcfs down to 122 kcfs and TDG has been exceeding the standard at 123-124%. Dan noted there might be issues with the hydraulics in the tailwater. There is also a 2-hour lag in the data, which poses a challenge when making spill cap decisions. Furthermore, there is not a linear relationship between the TDG and spill at The Dalles.

Dan recapped a lesson learned from last year, noting that John Day TDG has an influence on The Dalles tailwater TDG. He asked Salmon Managers for input on the management approach for The Dalles and John Day in the next couple weeks:

1. Upstream first approach: set a spill cap at John Day to reach 120% TDG in the tailwater, manage The Dalles as needed to not exceed 120% (this could theoretically result in much reduced or no spill at The Dalles); or,
2. Balanced approach: manage John Day spill caps to less than 120% TDG to allow The Dalles to spill up to 120% TDG. There would still be 1-2% variability at The Dalles gauge.

Julie Ammann, Corps, noted that the current approach is to not raise the John Day spill cap to reach 120% TDG due to the volatility below The Dalles. She also noted that the Corps will have to manage conditions in real-time, as they are seeing conditions that they have not seen in the past. Salmon Managers will discuss the options at FPAC and connect back at TMT next week.

Flexible Spill Implementation: Tony Norris, BPA, added that high flows and involuntary spill came and went, and will probably come again. BPA continues to identify opportunities to find value for the flexible spill operation.

Operations Review

Reservoirs: Paul updated the TMT on FPAC's recommendation to change system operations to achieve the spring flow objective at Priest Rapids Dam. Currently the recommendation is to maintain 95 kcfs for the Vernita Bar minimum (the BiOp calls for 135 kcfs). Grand Coulee Dam has been operating for a few days at 85 kcfs to maintain flow to help fish released from the Chief Joseph Hatchery operated by the Colville Tribe. Tony confirmed that the transition to 95 kcfs can start early next week, with a +/- 5 kcfs week average.

Joel Fenolio, BOR reported on Bureau of Reclamation projects:

- **Grand Coulee:** released 87,000 cfs per Colville Tribe's request, inflows are 90,000 cfs. He confirmed the request for operations change for Priest Rapids flow objective.
- **Hungry Horse:** due to recent snow, snowpack is up to 93% of average. The project continues to target the Columbia Falls minimum and is releasing 1,000 cfs and is filling. End of month elevation target is 3,525 - 3,530 feet.

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

- **Libby:** midnight elevation was 2,406.8 feet, with average inflows of 4.4 kcfs, and outflows are being held at 4 kcfs to meet bull trout minimum;
- **Albeni Falls:** midnight elevation was 2,053.8 feet, with average inflows of 28.1 kcfs, and outflows of 24.1 kcfs;
- **Dworshak:** midnight elevation was 1,557.4 feet, with average inflows of 10.7 kcfs, and outflows of 10.1 kcfs;
- **Lower Granite:** average outflows were 110.4 kcfs;
- **McNary:** average outflows were 207.9 kcfs; and,
- **Bonneville:** average outflows were 219.2 kcfs.

Water Quality: Dan had nothing further to report (see FOP spring spill report above).

Fish: Paul reported that adult spring Chinook upstream migration has been slow to start. At Bonneville Dam, 267 Chinook (4% of the 10-year average) and 1,539 steelhead (50% of the 10-year average) have passed. Lower Granite had 1 spring Chinook (8% of the 10-year average) and 2,498 steelhead (35% of the 10-year average). Similarly, passage for wild (unclipped) steelhead is at 35% of the 10-year average.

Moving on to juveniles, most traps have been taken out of service due to high flows. The Grand Ronde trap has recently returned to service. Estimates from Lower Granite show yearling Chinook on the move

with a passage index of 133,000 on the 11th. Lower Monumental estimated lower numbers, but still with strong passage. Estimated steelhead passage is even higher, with 319,000 on the 10th, continuing into the 100,000+ range, with significant passage at the other projects. Yearling Chinook are well above average for this time of year at the Snake River projects, as are steelhead in the Columbia River.

Russ Kiefer, ID, provided an update on hatchery releases in the Clearwater, noting that they've had to find alternate release locations due to inclement weather and impassable roads. The fish should be fine, although they may not spread out into the basin as much when they return due to the limited release sites. He noticed the early peak in passage was primarily hatchery releases while the second peak with high flows in the Snake had both hatchery and wild/natural fish. Jay Hesse, Nez Perce Tribe, added that they're still dealing with adjustments to the upcoming fall Chinook subyearling acclimation releases on May 10, and that 200,000 were able to be trucked to release locations into the Clearwater River mainstem.

Finally, juvenile lamprey are also on the move with significant numbers at Snake River projects. Paul concluded that current river conditions are great for juvenile migration.

Doug added that as described in the FOP, the Corps plans to start collecting for juvenile transportation on April 23 at Lower Granite, Little Goose and Lower Monumental Dams, with the first barge departure on April 24.

Power System: Tony reported there has been quite a bit of wind coming through with the current systems and incoming warmer temperatures.

The next TMT meeting is a call on April 24, 2019 at 2:00 PM.

This summary is respectfully submitted by the DS Consulting Facilitation Team.

Columbia River Regional Forum
Technical Management Team OFFICIAL MINUTES
April 17, 2019
Minutes: Melissa Haskin, FLUX Resources

Today’s TMT meeting was chaired by Doug Baus, Corps, and facilitated by Emily Stranz, DS Consulting. See the end of these minutes for a list of today’s attendees.

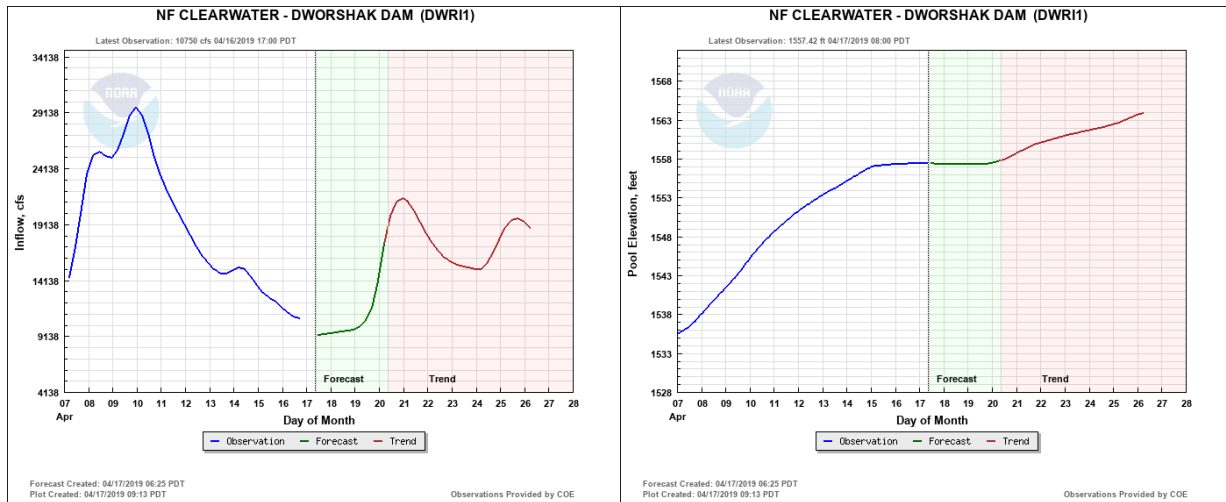
1. Approval of Meeting Minutes and Summaries

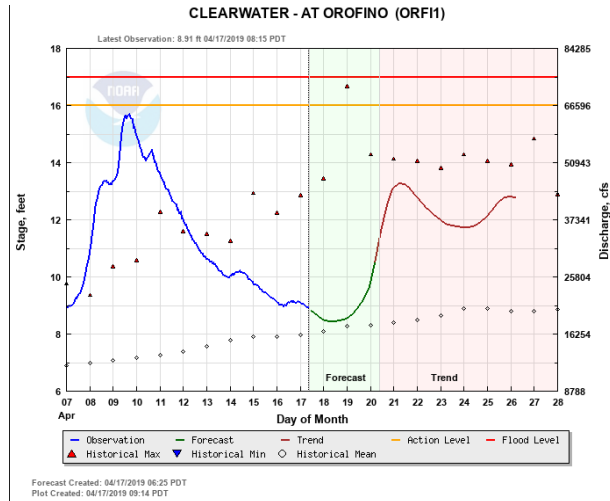
The minutes and summary for the 4/3 TMT meeting were approved with one edit from Charles Morrill, WA, who retracted his statement that WA DOE is considering extending the short-term modification into summer in 2020 and 2021; that information was incorrect. The 4/3 Official Minutes will be noted with that correction.

2. Dworshak Operations – Jon Roberts, Corps

Jon Roberts, Corps Walla Walla, reported on operations at Dworshak Dam. Inflows and outflows are about 10 kcfs as of midnight last night. There is no spill currently and the Corps is hoping to continue to not spill through April 26 and possibly as late as May 9 when a 2-unit outage is scheduled to begin.

The RFC forecast shows inflows hitting 22 kcfs in the next few days and then receding with another increase around April 26-27. Roberts said this should help fill the pool.





The Corps’ official April water supply forecast for April-July runoff is 1.964 maf. However, the basin received some snow last week and the Corps believes runoff will actually be around 2.1 or 2.2 maf. The Corps used these data to update the operational graphs.

Roberts took TMT through three historical examples. He took data from 1995, 2003, and 2016 and applied it to this year’s data. Each year shows different precipitation in May but all 3 datasets show that running 10 kcfs through the powerhouse will be fine through May 9. That said, rain and temperatures affect how and when runoff occurs. Roberts will provide another update next week.

Paul Wagner, NOAA, said the proposed operation of 10 kcfs through May 9 looks fine.

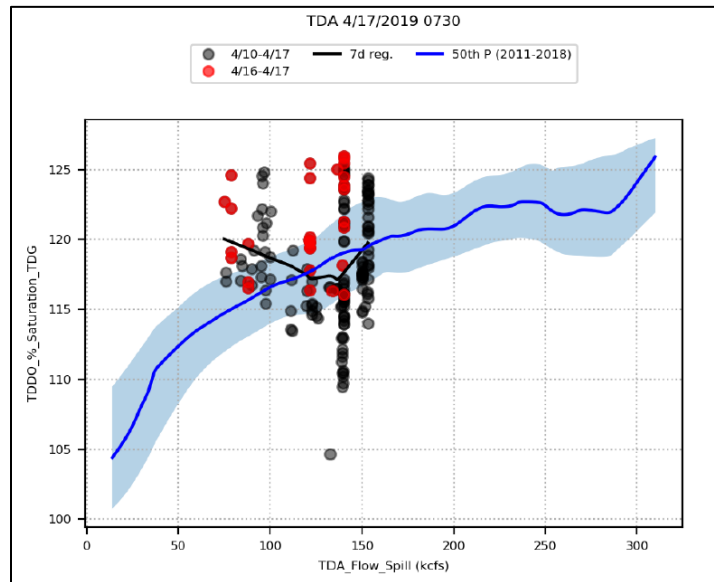
3. FOP Spring Spill - Dan Turner, Corps, and Tony Norris, BPA

3a. Links to Spill & TDG Data - Dan Turner, Corps

Dan Turner reported on spring spill. He said the Corps has been coordinating daily with NOAA, especially regarding spill caps and TDG at The Dalles Dam. Yesterday, all four of the Snake River projects were at 120% TDG. Ice Harbor dropped below 120% so the Corps raised Ice Harbor’s spill cap in an effort to bring it back to 120%.

Spill began on the lower Columbia River last week. McNary is at minimum generation and spilling the rest so the tailwater TDG is under 120%. The John Day spill cap was set to 150 kcfs, resulting in TDG of 120%. However, that bumped slightly to 121% soon after. The Corps dropped the spill cap which reduced TDG to below 120%, lower than anticipated, so the Corps increased the cap to inch TDG back to 120%. Since spill has started, there have been 4 spill cap increases at John Day. Right now the spill cap is at 151 kcfs and TDG is 118% in the tailrace. At Bonneville, TDG was 119% yesterday so the Corps increased the spill cap to 123 kcfs.

Much of today’s discussion centered around spill caps at The Dalles. Spill began with a cap of 140 kcfs, which generated 116% TDG. That indicated a need to raise spill caps so the Corps increased the cap to 150 kcfs, generating 118% TDG. The Corps raised the spill cap to 153 kcfs and that generated much more TDG than the Corps anticipated and exceeded 120%. Flows at that time had decreased meaning the percent of water spilled was higher. On Monday, April 15, the spill cap of 140 kcfs generated 124% TDG. Turner commented that on two different days the spill rate was the same but there was an 8% difference in TDG in the tailwater. After 140 kcfs spill, the Corps dropped the cap to 122 kcfs, which has brought TDG closer to the 120% target. The forebay is currently at 115% TDG coming in from John Day.



Dan noted that the 2-hour lag in data makes it difficult to piece together what is happening in real time at The Dalles. He believes that there may be something unusual going on with the hydraulics in the tailwater. Last year, the Corps/TMT observed that John Day TDG can influence The Dalles tailwater TDG. For now, spill caps are fine since The Dalles is at 120% but it leaves the Corps wondering the best path forward, given the relationship between John Day and The Dalles.

Dan asked Salmon managers to consider two options moving forward:

Option 1: Set spill caps to target 120% in the John Day tailwater and target as low spill as possible at The Dalles. Theoretically, spill at The Dalles could go as low as 0.

Option 2: Limit John Day to spill less than 120% TDG, which would allow The Dalles to increase spill to 120% TDG. Dan noted that there would likely be 1-2% variability.

Dan posed the question: “Are people comfortable with 118% TDG in the John Day tailwater knowing it is giving us 120% at The Dalles?”

Paul Wagner, NOAA, said it would be good to keep at least 40% spill at TDA and then if the Corps needs to reduce spill at John Day to do that.

Tom Lorz, Umatilla/CRITFC, said that the Corps should be using the tools they have available to them to calculate these things.

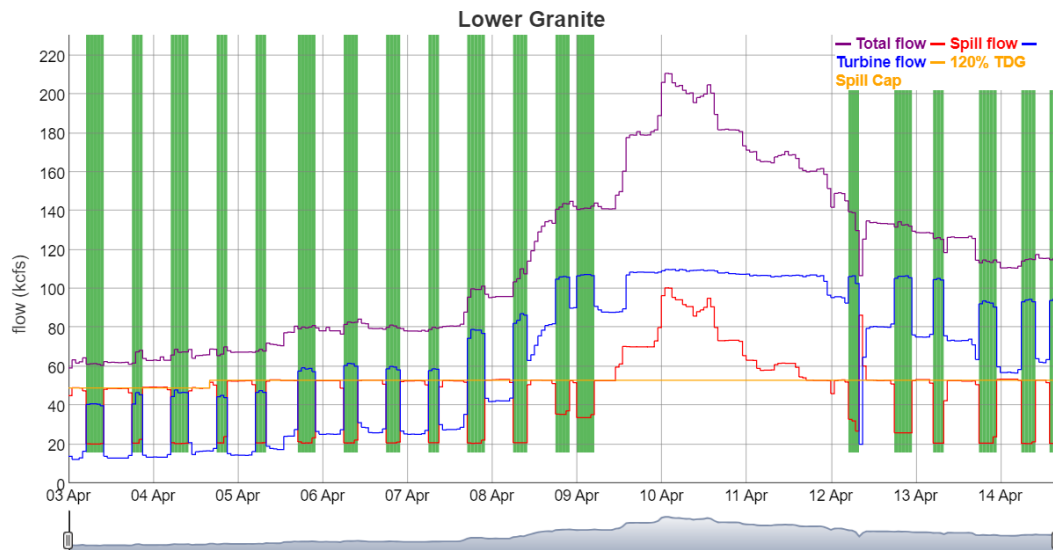
Dave Swank, USFWS, noted that the topic is complicated and it would probably be best to have some time to consider these options.

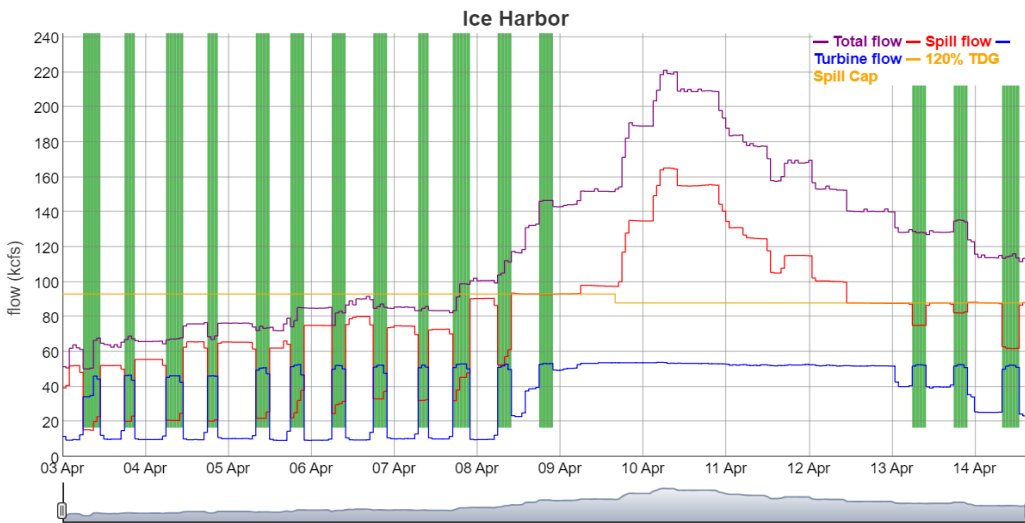
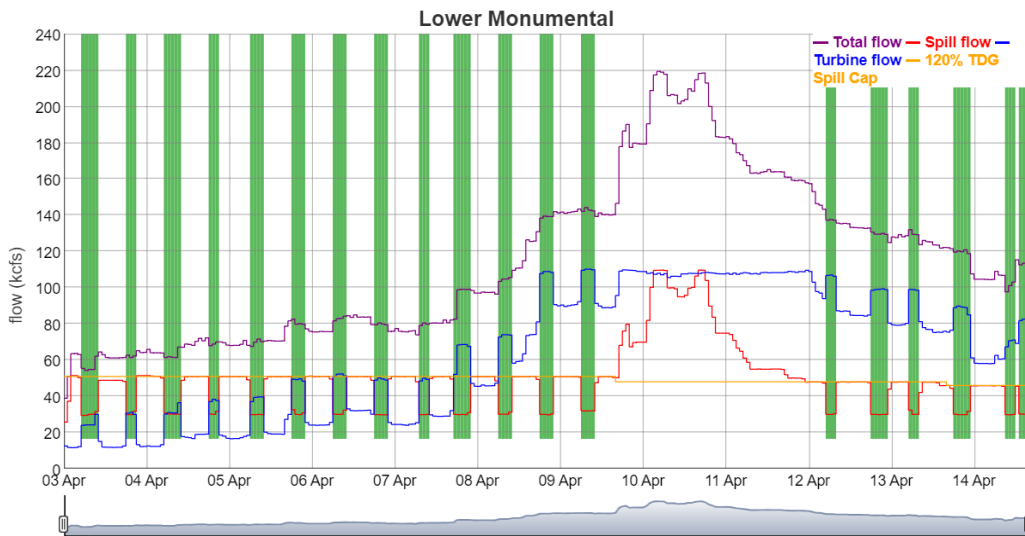
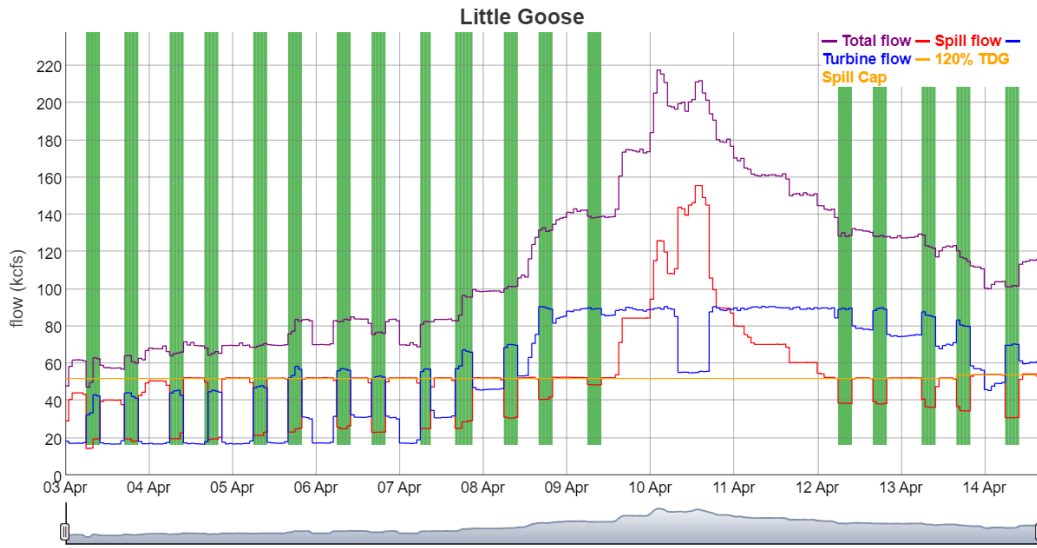
Julie Ammann, Corps, added two things for salmon managers to take into consideration. First, the Corps is not raising John Day to hit 120% TDG at the moment because of the volatility below The Dalles. The spill reduction yesterday looks good today, she noted, and if the Corps starts tweaking John Day, it may have to cut back spill at The Dalles even more. Second, she said “we are seeing things we have not seen before. Right now we cannot guarantee what spill would be to get 120% TDG and what the result would be at The Dalles.” She said there are estimates but that it would need to be managed in real time.

Salmon managers agreed to revisit the options next week after they have time to think about them.

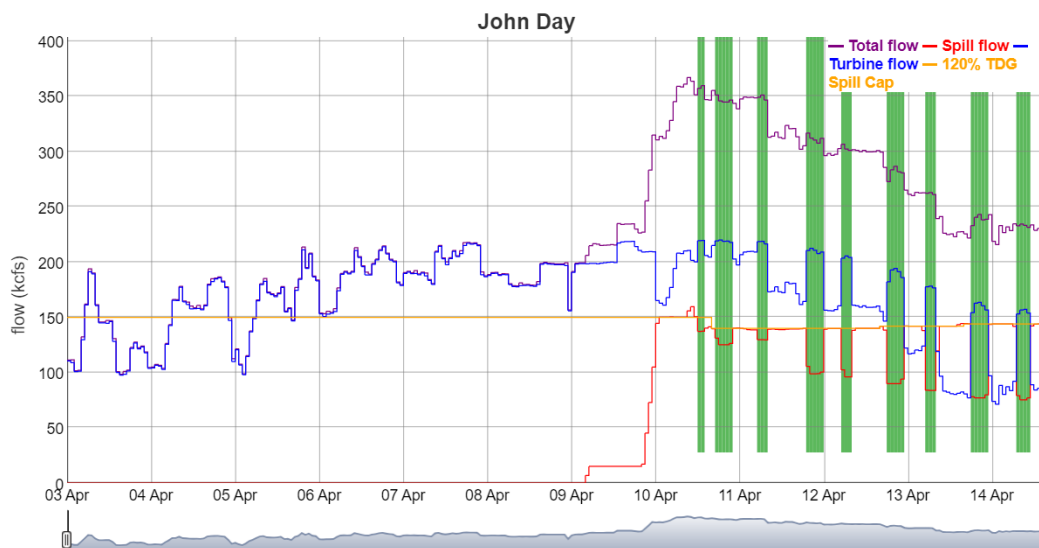
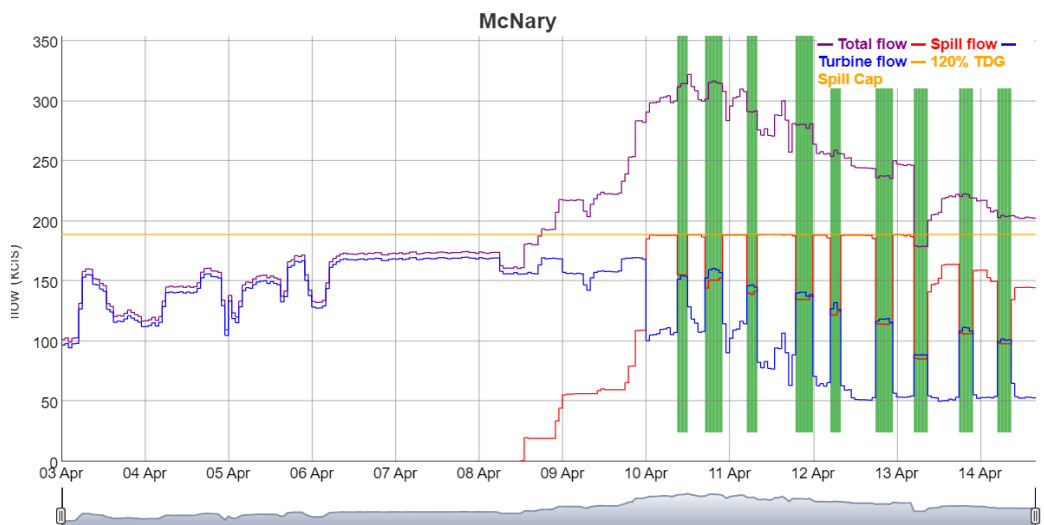
3b. Flexible Spill Implementation, Tony Norris, BPA

Tony Norris, BPA, went over the current flex spill graphs available on the TMT website that show hourly flex spill in green bars. The high flows have come and gone for now. The projects are operating as follows:





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4. Operations Update:

4a. Reservoirs – Joel Fenolio, Reclamation, and Lisa Wright, Corps

Hungry Horse – Snowpack is up to 93% of average. Hungry Horse is starting to fill and Reclamation will probably target 3,530-3,535 ft. at the end of the month.

Grand Coulee – Outflows are currently 87 kcfs to support the Colville hatchery release below Chief Joseph Dam. Current elevation is 1278.8 ft and inflows are around 90 kcfs.

Libby – Midnight elevation 2,406.8 ft., yesterday’s average inflows were 4.4 kcfs and outflows were held at 4 kcfs (bull trout minimum).

Albeni Falls – Midnight elevation 2,053.8 ft., yesterday’s average inflows were 28.1 kcfs and outflows were 24.1 kcfs.

Dworshak Dam – Midnight elevation 1,557.4 ft., yesterday’s average inflows were 10.7 kcfs and outflows were 10.1 kcfs.

Lower Granite – Yesterday’s average outflows were 110.4 kcfs.

McNary Dam – Yesterday’s average outflows were 207.9 kcfs.

Bonneville – Yesterday’s average outflows were 219.2 kcfs.

4b. Water Quality – Dan Turner, Corps

Nothing additional to report.

4c. Fish – Paul Wagner, NOAA

Adults: Passage has been disappointing to date, with 3,067 spring Chinook adult returns to Bonneville – this is better than last year’s number at this time, which was 250, but is only 4% of the 10-year average for this time of year. Overall last year’s return was not great. Steelhead returns to Bonneville are 1,539 – that is 50% of the 10-year average. At Lower Granite, spring Chinook returns are 1. However, with the 10-year average only 12 and last year’s count at this time was 2, it is still early. Steelhead overwintering at Lower Granite were 2,498, which is 35% of the 10-year average. Wild steelhead returns are also 35% of average.

Juveniles: Most tributary traps have been taken out of service because of high flows. Looking at Lower Granite, juveniles are on the move, especially yearling Chinook, with a passage index reaching a high of 133,000. At Lower Monumental, numbers are lower but still represent good passage. Rock Island is not seeing much passage yet.

Looking at steelhead, there was a 319,000 passage index at Lower Granite on April 10, which is big for this time of year. Steelhead passage is underway with significant numbers at Lower Monumental and Little Goose. McNary, John Day and Bonneville also show some action.

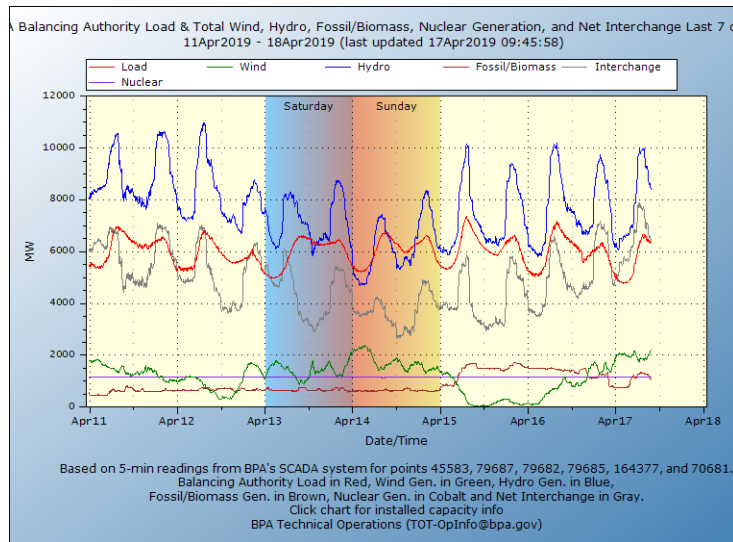
Russ Kiefer, ID, reported on hatchery releases. There have been some challenges and adjustments this spring due to weather, which caused rockslides and washed out roads. This has necessitated some alternate release locations. Kiefer said the fish should be fine but may not spread out in the tributaries as much as IDFG would like. He noted that one of the early peaks in passage was likely primarily hatchery releases. However, the second peak in passage included both hatchery and wild fish.

Juvenile lamprey returns to Lower Monumental have been as high as 20,800 on April 15. This is significant and well above what has been observed at Lower Monumental in quite some time. Lamprey passage is underway.

Other: Doug Baus, Corps, noted that the Corps plans to start collecting for juvenile transportation per the spring FOP on April 23 at Lower Granite, Little Goose and Lower Monumental. The first barge departure is on April 24.

4d. Power – Tony Norris, BPA

There has been quite a bit of wind and temperatures should rise tomorrow.



5. Other

Paul Wagner, NOAA, reported a requested change in operations that was coordinated at FPAC. Flows at Priest Rapids are running at the Vernita Bar minimum of 65 kcfs. The BiOp calls for a spring flow objective of 135 kcfs but salmon managers believe that is too aggressive and are requesting flows of 95 kcfs, if possible.

There has been an operation the past few days to maintain Grand Coulee flow at 85 kcfs for the benefit of fish released from Chief Joseph Hatchery.

Tony Norris, BPA, said that next week BPA can manage to 95 kcfs at Priest Rapids based on a Sunday-Monday weekly average, plus or minus 5 kcfs. He noted that BPA will plan to release water to meet this flow objective on week average basis. The caveats are that there is uncertainty regarding the incremental inflow between Chief Joseph Dam and Priest Rapids and that BPA does not operate the Mid-Columbia dams.

6. Next TMT. The next meeting will be a conference call on April 24 at 2 p.m. The time was shifted to 2:00 to accommodate the CSS Annual Review that is also occurring that day.

Today’s Attendees:

Agency	TMT Representative
Army Corps of Engineers	Doug Baus (Chair), Julie Ammann, Lisa Wright
Bonneville Power Administration	Tony Norris, Scott Bettin
Bureau of Reclamation	Joel Fenolio
NOAA Fisheries	Paul Wagner, Claire McGrath
US Fish & Wildlife Service	Dave Swank

Agency	TMT Representative
Washington	Charles Morrill
Oregon	N/A
Idaho	Russ Kiefer
Montana	Jim Litchfield
Nez Perce Tribe	Jay Hesse
Umatilla Tribe	Tom Lorz
Colville Tribe	N/A
Warm Springs Tribe	N/A
Kootenai Tribe	N/A
Spokane Tribe	N/A

Other Attendees (non-TMT members):

Corps – Dan Turner, Steve Hall, Aaron Marshall, Alexis Mills, Jon Roberts, Heather Baxter, Catherine Dudgeon, Alfredo Rodriguez

DS Consulting – Emily Stranz (Facilitator), Colby Mills

FLUX Resources – Melissa Haskin (Note taker)

Clearing Up – K.C. Mehaffey

Snohomish PUD – Bryan Zigler

NPCC – Lynn Palensky

Public – Charles Pace