

COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

May 30, 2018

Facilitator's Summary

Facilitator: Donna Silverberg; Notes: Charles Wiggins, 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.nwd-wc.usace.army.mil/tmt/agendas/2018/>

Review Meeting Minutes – 4/30; 5/02; 5/09

TMT members approved the minutes of April 30, May 2 (with one change), and May 6 for posting.

Adult PIT-Tag Monitoring Tools

Paul Wagner, NOAA, presented analyses performed over the past week using the FPC and the DART adult PIT-tag monitoring tools. Supporting documents are available on the TMT web site. For the past two days the FPC Daily Adult Passage Report notes delay as compared to 'expected' fish passage. DART's data produces a similar result, with conversion falling below expected levels. At Lower Monumental Dam, 1,834 spring Chinook adults were observed on 5/29, with a similar pattern at Ice Harbor Dam. However, issues with delay are still occurring at Little Goose Dam: the 3-day average differential for fish transiting from Lower Monumental Dam upstream to Little Goose Dam indicates conversion below the 85% threshold. Some fallback also may be occurring. Because of this delay, TMT took action at its unscheduled meeting on May 29 to reduce spill to 30% during peak adult fish passage hours of 4 am to noon. Notes will be posted on the TMT web site.

Little Goose Revised Operations

Doug Baus, Corps, reported that hourly data show that the TMT coordinated operation at Little Goose, which reduces spill to 30% from 4 am to noon in order encourage adult fish passage at the project, began today and will continue through June 1. Doug noted that the project reduced spill to 38 kcfs (29.7% spill) at 4 am today. A second day of screen cleaning as originally planned will not be needed because all screen cleaning was completed in one day on 5/29. The COE will continue with 30% spill from 0400 to 1200 hours, then increase spill to pass inflow from 1200 to 1600. From 1600 to 0400, they will increase spill in order to draft the pool back to MOP. The upper limit for spill is not to exceed 125 kcfs, which would result in TDG levels beyond the preferred upper limit, at 130%. Data also show the system effects of how spill operations at Little Goose Dam may have affected the downstream projects at Ice Harbor and Lower Monumental Dams. The last day of the operation is currently scheduled on Friday (6/1).

- **ACTION: TMT will hold an unscheduled meeting at 12:00 on Friday, June 1, to review the Little Goose operation and see whether to extend it through the weekend.**

FOP Spring Spill Update

Dan Turner, Corps, noted that all projects in the Snake River are operating with involuntary spill. TDG levels are above the State criteria everywhere. Graphs posted at 0900 today, show a direct correlation at Little Goose between spill and TDG levels, flattening at about 127% even with increasing spill levels. At McNary Dam, TDG levels in the tailrace were fluctuating a bit more than expected with observed spill levels.

Some degassing is occurring throughout the system. On the Snake River, at Lower Monumental Dam, TDG levels on May 28 dropped from 128% in the forebay to 121% in the tailwater. In the lower Columbia River at The Dalles Dam, TDG on May 24 dropped from 129% in the forebay to 126% in the tailwater. Windy weather conditions contributed to decreased TDG in downstream forebays. The Bonneville Dam tailrace gauge at Cascades Island remains out of service.

The flow forecast suggests a week of transition back to voluntary spill conditions at Snake River projects on about June 3 (with the possibility of continuing at some projects). This will allow high TDG to flush out of the system, its speed depending on wind conditions. Involuntary spill will continue in the lower Columbia River until approximately June 12 to 18, and then begin its own “awkward” transition from involuntary spill back to voluntary.

Turbine Operations and Contingency Reserves

Tony Norris, BPA, reminded the group that TMT discussed reserve operations at its May 16th meeting and reported on last week’s power supply operations. Graphs showed turbine operations at McNary, John Day, and The Dalles dams. Turbines are operating at the mid- to high-end of the 1% range. The Dalles Dam is currently carrying reserves that were previously held at John Day Dam, and its graph shows operations within the 1% operating range. Efforts to operate turbines at the high-end of the range at The Dalles Dam occasionally could result in brief exceedances, which are reported. Many factors contribute to the fluctuations observed; maintenance that takes a unit out of service reduces the turbine output line to zero.

Julie Amman, Corps, noted that they now have two weeks of operations at McNary to help with TDG reductions and one week at John Day. The operations have successfully reduced TDG and the Action Agencies, after reviewing the FPP and FOP, believe these operations to be consistent with these plans and, consistent with the BiOp, plan to work directly with NMFS to coordinate further action. As such, the Corps suggests removing further discussion about future operations at these projects from TMT. Instead, they will bring notice to TMT of any excursions above the upper limit of 1% for contingency reserves. Also, the daily fish condition monitoring at McNary and John Day Dams is scheduled to return to every-other-day operation on June 1.

- **ACTION: At TMT’s request, the Corps will continue to make data available to aid in monitoring fish conditions. Erin Kovalchuk and Ann Setter agreed to check with operators at John Day and McNary Dams to see whether staff could continue daily monitoring after June 5, and will report back at the June 1 TMT meeting.**

It was noted that the descaling rates of migrating subyearling Chinook at McNary Dam have been low, between 0-3.8%. One concern about fish condition data is that an upriver hatchery recently released a group of sick fish above McNary Dam. These fish end up being counted as injured, descaled, or mortalities by the project, confounding the data and complicating the ability to draw conclusions about the condition reports. Salmon managers noted that they will bear this in mind and they want to see whether there may be an effect from turbine operations in the upper end of the 1% range; a longer data set will help the group make management decisions in the future. The continued monitoring may provide a good lesson for everyone.

Kootenai River White Sturgeon

Kevin McDonnell, IDFG, discussed efforts to restore habitat and manage water flow operations to enhance spawning activities for white sturgeon in the Kootenai River. After Libby Dam was constructed on the Kootenai River in 1972, the white sturgeon population in the river decreased substantially, and poor spawning conditions hampered the effort to maintain the population at

about 8,000 fish. IDFG and the Kootenai Tribes of Idaho have worked together in an effort to move the fish spawning upstream from the current clay river bottom location to more suitable, restored habitat in constructed gravel beds above Bonners Ferry. They have also worked with the region to manage river flows by shaping the hydrograph to encourage upstream fish migration. These efforts have been successful, resulting in a 15% increase in upstream sturgeon spawning movement.

Beginning in 2005, acoustic tagging has allowed for monitoring a sample of sturgeon recruited from Kootenai Lake to upstream spawning beds. The research considered several covariates, such as flow duration and magnitude, discharge shape, number of peak flow pulses, and water temperature. Kevin reported that the number of days of high flows, indicated by a discharge greater than 30 kcfs at Bonners Ferry, was the most significant causal factor for upstream fish movement. The number of peaks in flow did not seem to be as influential. He noted that continuing research will attempt to correlate fish movement above Bonners Ferry with upstream spawning behavior. It appears that mere upriver movement out of Kootenai Lake is a good predictor of spawning success, suggesting that managers could develop action strategies to facilitate this movement. Adaptive management procedures have provided more benefit than earlier prescriptive operating methods.

TMT thanked Kevin and his colleagues Ryan Hardy, IDFG, and Jason Flory, USFWS, for contributing to this helpful and informative presentation.

Libby Operations

Logan Osgood-Zimmerman provided the TMT with an update on Libby operations. The Corps, informed TMT that flows at Bonners Ferry have been above 30 kcfs, with the planned sturgeon pulse release of 20 kcfs from Libby Dam. The goal of sturgeon augmentation this year is to maximize the duration of peak river stages, approximated by keeping flows at Bonners Ferry above 30 kcfs. Tributary flows have been decreasing faster than forecasted and therefore Libby outflows may be increased to 23 kcfs for a week in order to achieve the 30 kcfs flow objective at Bonners Ferry.

Operations Review

Reservoirs

Joel Fenolio, BOR, reported on Bureau of Reclamation projects:

- Hungry Horse midnight elevation 3,539 ft., which is 20 ft. from full; current inflows 27.5 kcfs; current discharge 6 kcfs. This is the highest river inflow volume in May since 1928.
- Grand Coulee midnight elevation 1,252.4 ft.; spill has stopped, with 215 kcfs outflows, and a daily average of 226 kcfs. TDG level was 123% yesterday.
- Upper Snake River flow augmentation of 487 kaf will begin in the next few weeks, to be completed by late July to early August.

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

- Libby midnight elevation was 2,427.8 ft.; yesterday's average inflow was 55.1 kcfs and outflow was 20 kcfs.
- Albeni Falls midnight elevation was 2,064.2 ft.; yesterday's average inflow was 119.6 kcfs and outflow was 119.1 kcfs.
- Dworshak midnight elevation was 1,578.1 ft.; yesterday's average inflow was 21.1 kcfs and outflow was 6 kcfs.
- Lower Granite average outflow yesterday was 160.5 kcfs.
- McNary average outflow yesterday was 449.6 kcfs.

- Bonneville average outflow yesterday was 444.6 kcfs

Fish

Paul Wagner, NOAA, reported on fish.

Adults

- Spring Chinook counts: 85,698 at Bonneville, 58% of the 10-year average, and 107% of last year; 13,430 at Lower Granite Dam, 29% of average, 200% of last year; 23,000 (approx) at Ice Harbor, 40% of average.
- Adult Chinook will counted as Summer Chinook beginning June 1.

Juveniles

- Yearling Spring Chinook: counts are trailing down at Lower Granite, Little Goose, and the lower river. Subyearlings are picking up, and will continue for the next few weeks.
- Coho also are ticking up.
- Steelhead are somewhat higher at Lower Granite, with 20,000-30,000 passing, and trailing elsewhere.
- It is the end of the Sockeye run.
- There are many lamprey in the upper projects compared to last year.

Water Quality

- See the earlier report on spring spill operations.

Power Supply

- Tony Norris, BPA, reported steady hydro operations. Wind variability led to deploying mitigation procedures over the weekend.

**The next TMT meeting is an unscheduled conference call
Friday June 1 at 12:00.**

The next scheduled meeting is a conference call June 6 at 9:00.

Columbia River Regional Forum
TECHNICAL MANAGEMENT TEAM OFFICIAL MINUTES
May 30, 2018

Minutes: Melissa Haskin, FLUX Resources, mahaskin@bpa.gov

1. Introduction

Representatives of BPA, Corps, BOR, Washington, USFWS, Umatilla, Idaho, Nez Perce Tribe, Oregon and others participated in today's TMT meeting chaired by Doug Baus, Corps, and facilitated by Donna Silverberg, DS Consulting.

2. Review Meeting Minutes – April 18 and April 25

Meeting minutes and summaries for April 30 and May 9 were approved. Minutes for the May 2 meeting were approved with an edit to the Steelhead count for accuracy.

3. Adult Pit-Tag Monitoring Tools – Paul Wagner

3.a. FPC Passage Indicator

According to the passage indicator graphs, passage for Little Goose and Lower Monumental are lower than what is expected for this time of year. Wagner reported a cumulative delay.

Wagner took TMT through the graphs available through the DART and FPC sites. At this time, the Corps is still unable to access the FPC Passage Indicator website and is working internally and with FPC to resolve the issue as soon as possible. In the meantime, the agenda includes an image of the FPC simulation graphs as of this morning (Figures 1 and 2).

3.b. FPC Passage Indicator Graphs (simulated 5/30 at 7:40am)

Figure 1: FPC Passage Indicator - LMN & LGS Counts.

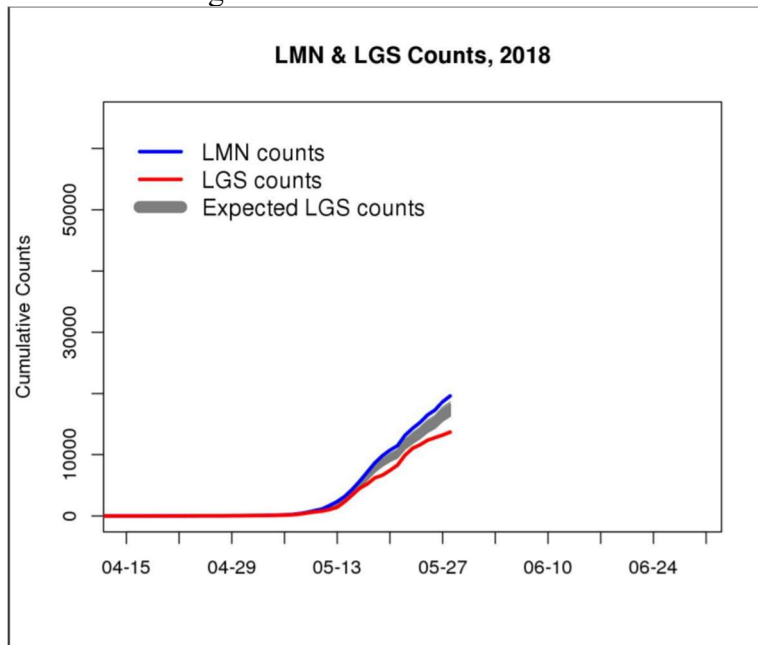
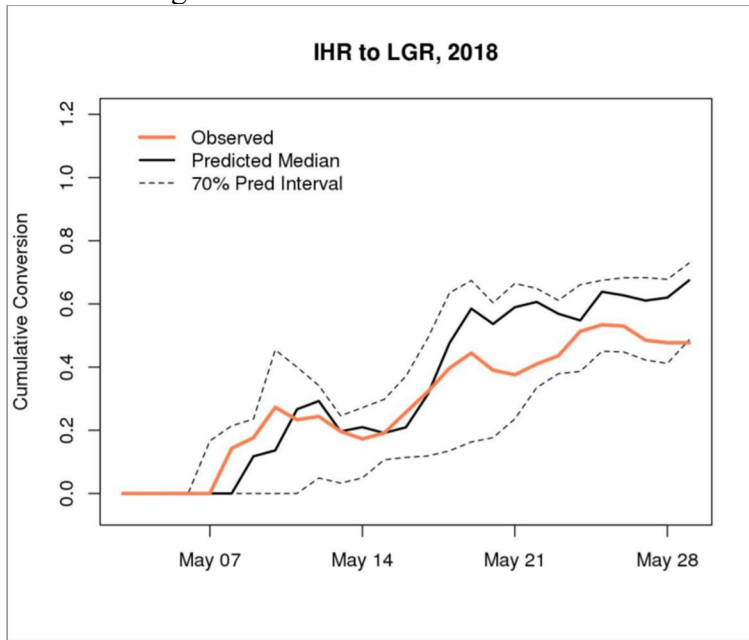


Figure 2: FPC Passage Indicator - IHR to LGR.



c. DART Adult PIT-Tag Reach Distribution and Delay

Figure 3: DART – Running 3-Day LMN to LGS Travel Days and Run Size.

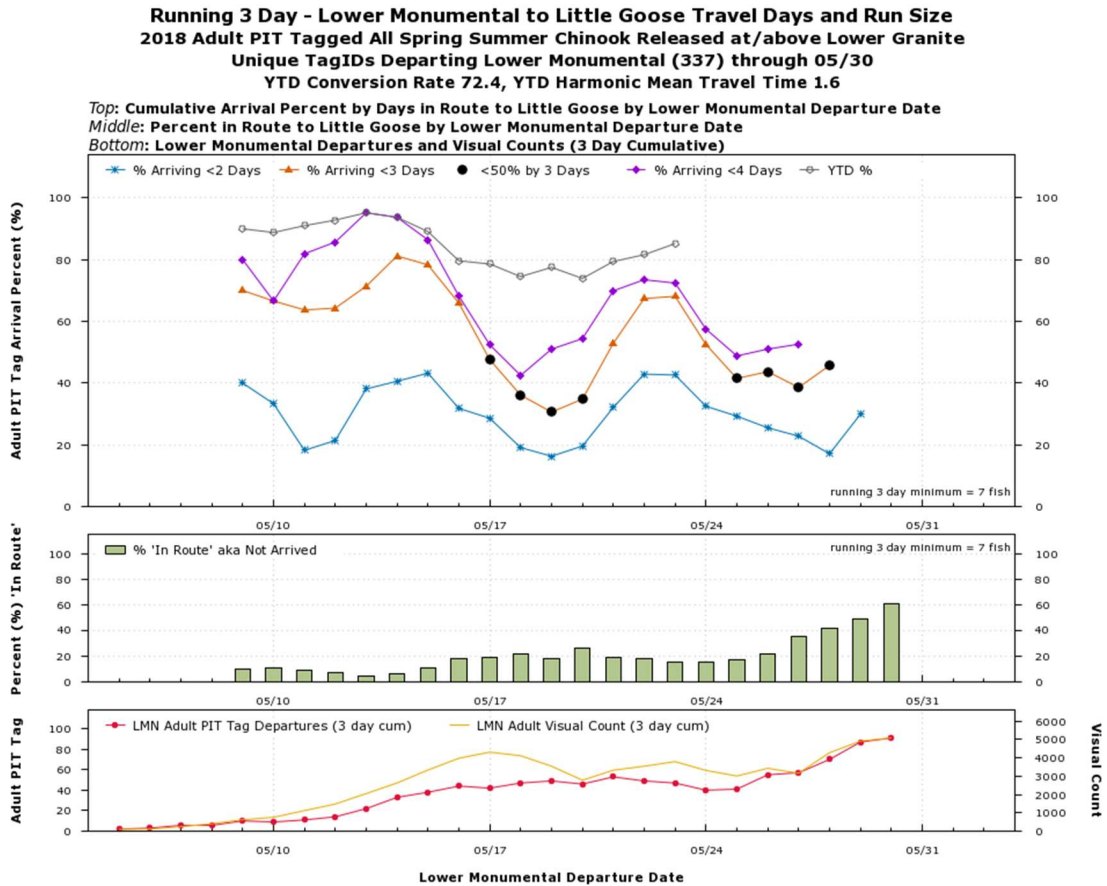


Figure 4: DART – LMN-LGS Travel Time and Conversion Rate, LGS Daily Distribution of Entry Hour, and LGS Hourly Spill and TDG.

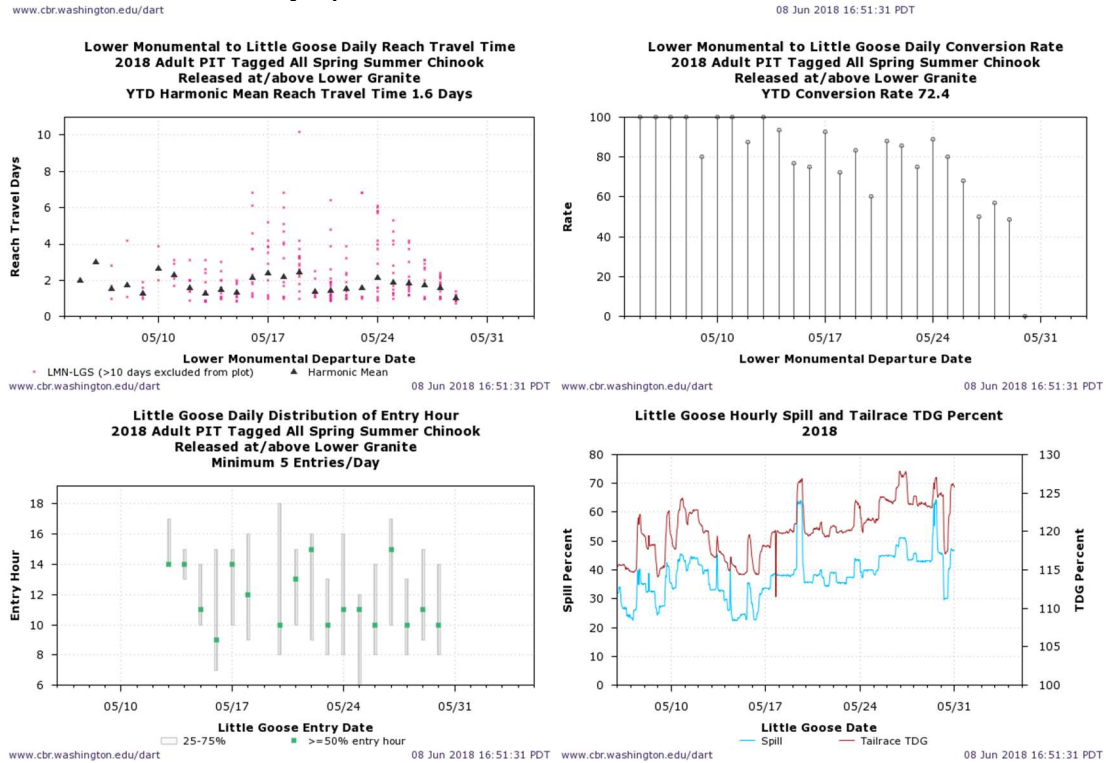
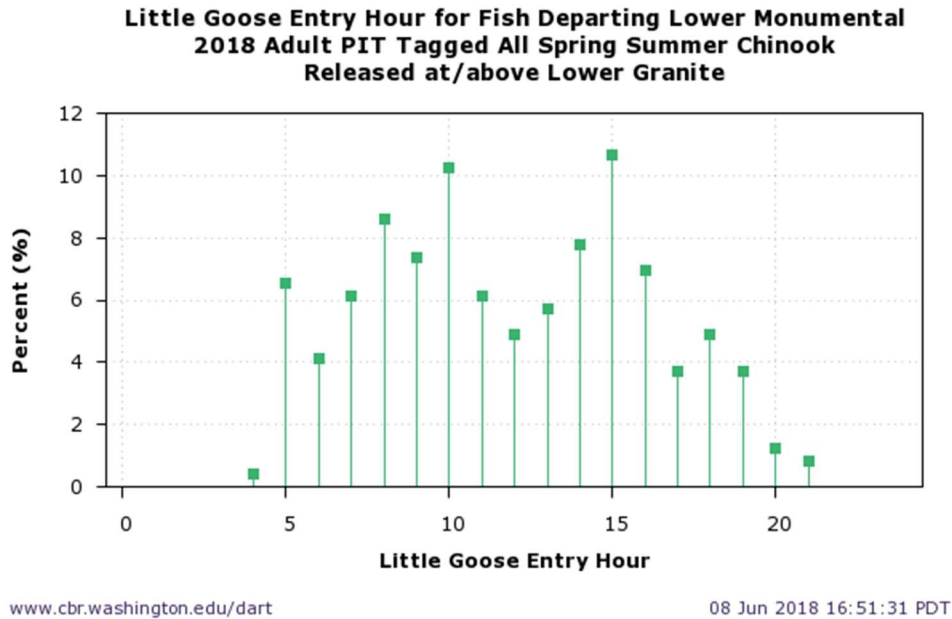


Figure 5: DART – LGS Entry Hour.



Doug Baus, Corps, reported on hourly data for Little Goose. At 0100 hours on May 30, the average hourly outflow was 164.9 kcfs and spill was 75.4 kcfs. At 0400 hours, the Corps began the operation to reduce involuntary spill to 30% of outflow from 4am to noon in order to improve adult fish passage. Hourly average spill from 0400-0500 was 38 kcfs (30% of outflow), down from the previous hour at 70.7 kcfs (44% of outflow). Baus reported that screen cleaning at Little Goose was completed yesterday, May 29, and would not interfere with the 30% spill operation. Baus reminded TMT that maintaining spill at 30% of outflow for the 8-hour period may require filling the Little Goose forebay above the 1-foot MOP range of 633-634, depending on inflows. As of 0800 today, the forebay elevation was 633.9 feet and filling. Spill will be increased at noon to pass inflow through 4pm, then increased again as necessary to draft the forebay back to the MOP range by 4am the next morning (not to exceed 125 kcfs spill). **Baus noted that this operation will continue through Friday, June 1, at which time TMT will convene to review the information to inform whether or not to extend the operation.** Inflows are forecasted to be around 150 kcfs, which would result in involuntary spill levels of approximately 40% of outflow.

Erick Van Dyke, OR, noted that Ice Harbor and Lower Monumental also saw reductions in spill. He mentioned he did not remember discussing this when talking about the Little Goose operation and asked in the future that the impacts to the whole system be discussed instead of just a specific part.

Baus noted that whatever happens at an upstream project does have a downstream impact. He also shared that the operation was reshaping involuntary spill so reductions for 8 hours of the day are compensated by increases during the remaining 16 hours of the day. He also noted that excursions above MOP at downstream projects was not part of the current operation. The current operation was specifically about Little Goose, he noted.

Paul Wagner asked for clarification on the maximum spill level of 125 kcfs from 4pm to 4am, and was curious whether that was meant to be 125% TDG. Julie Ammann, Corps, noted that 125 kcfs is the upper limit to ensure TDG doesn't exceed 130%, but it's highly unlikely spill will get that high.

4. FOP Spring Spill Update - Dan Turner, Corps-NWD

Dan Turner, Corps, led TMT through the FOP spring spill update.

a. Snake River TDG Overview Table

There has been some degassing at Lower Monumental – for example, on May 27, the forebay was 128% and the tailwater was 121%; however, it is still above state criteria for TDG.

b. Columbia River TDG Overview Table

There are also some instances of degassing at The Dalles. For example, on May 24, the forebay was 129% and the tailwater was 126%. Spill will be allocated to The Dalles to the extent possible by moving TDA to the top of the spill priority list for lack of load spill and by shifting reserves from JDA to TDA.

The Bonneville Dam tailrace gauge at Cascades Island is still out of service due to damage by debris and will be repaired as soon as crews can safely access the area.

The McNary tailrace TDG decreased from 129% on May 24 down to 119% on May 27.

c. NWRFC Extended Inflow Forecast - Lower Granite

Based on the current inflow forecast, Lower Granite is expected to be in involuntary spill until June 3, 2018, then will resume spilling at the spill cap. It may take up to a week for TDG from the involuntary spill to move through the system.

d. NWRFC Extended Inflow Forecast - The Dalles

Based on the current inflow forecast, the lower Columbia projects are expected to be in involuntary spill until June 12-18, then will resume spill cap operations.

e. Project Graphs

Figure 6, Project Graph 1.

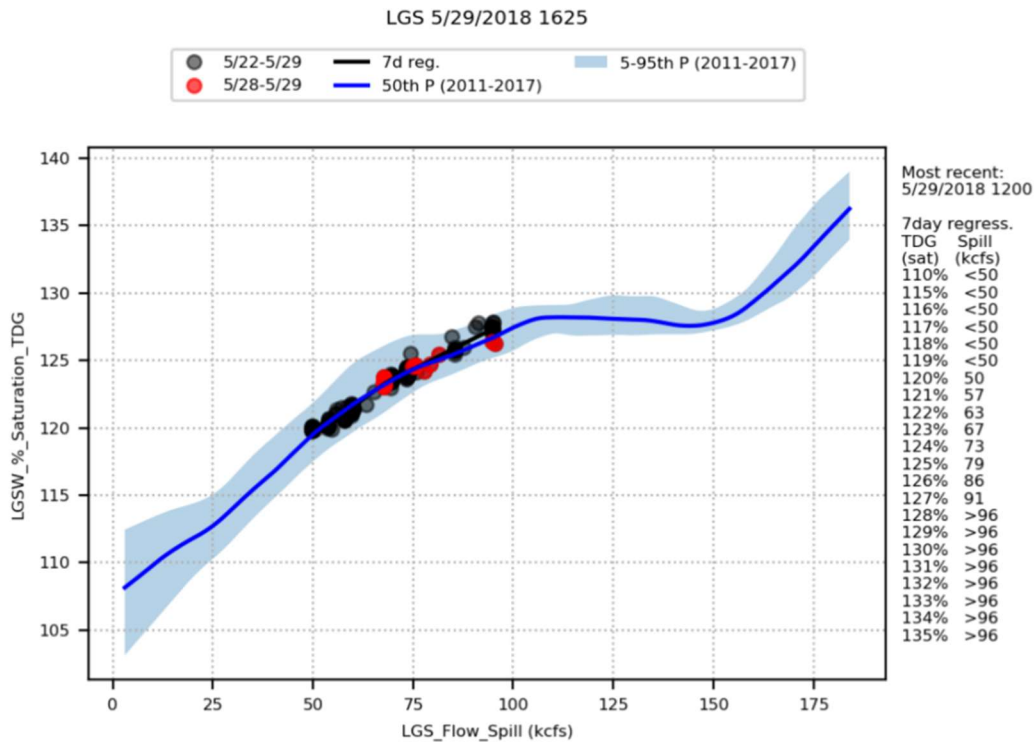


Figure 7, Project Graph 2.

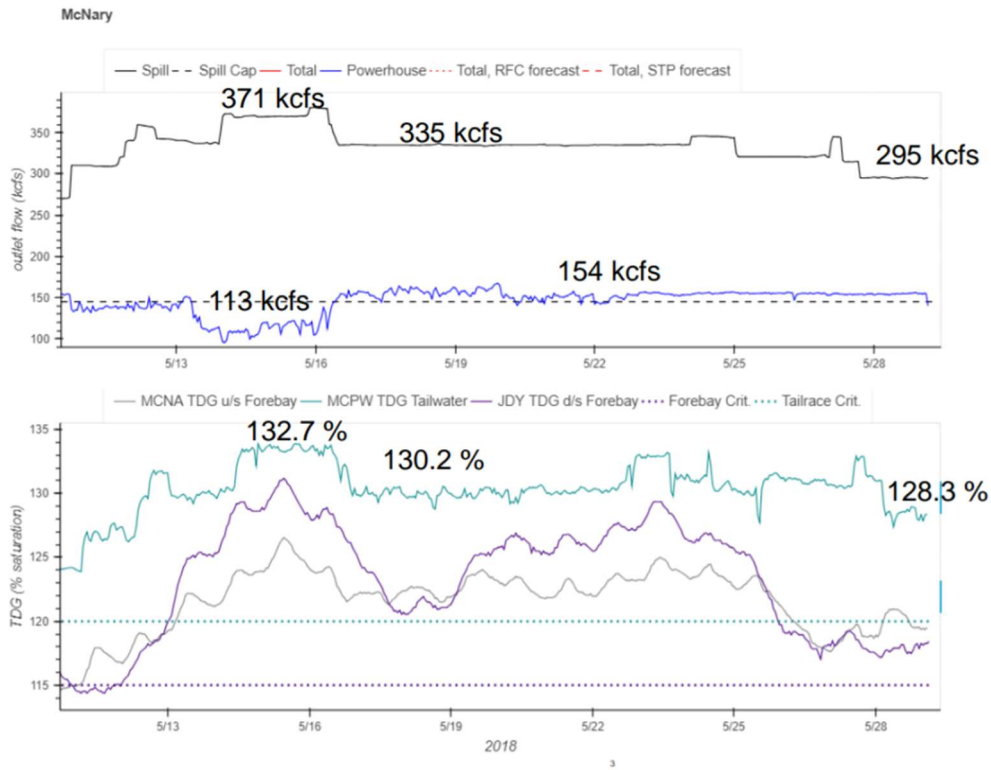


Figure 8, Project Graph 3.

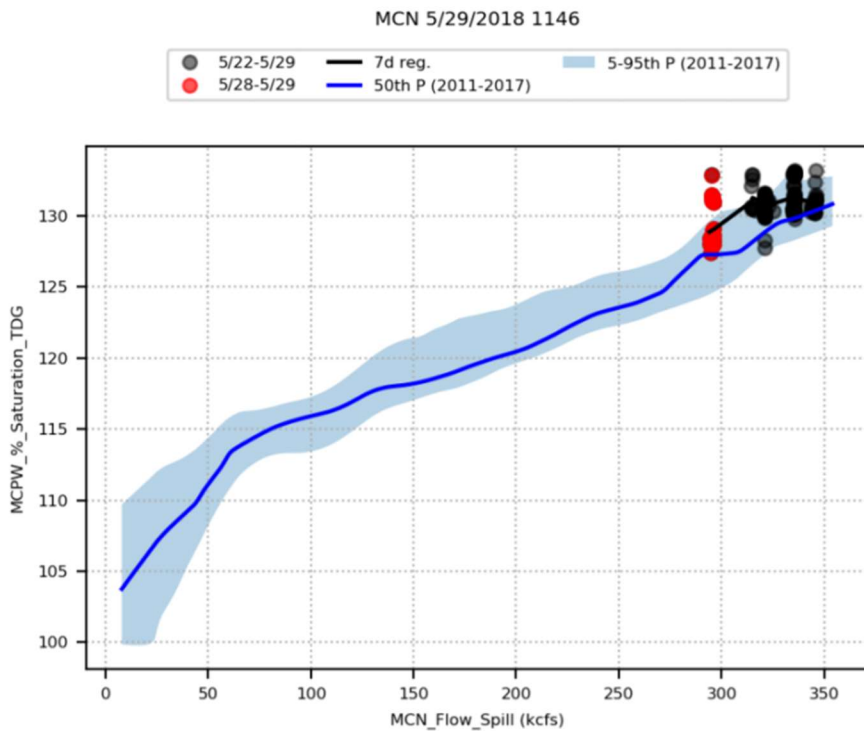


Figure 9, Project Graph 4.

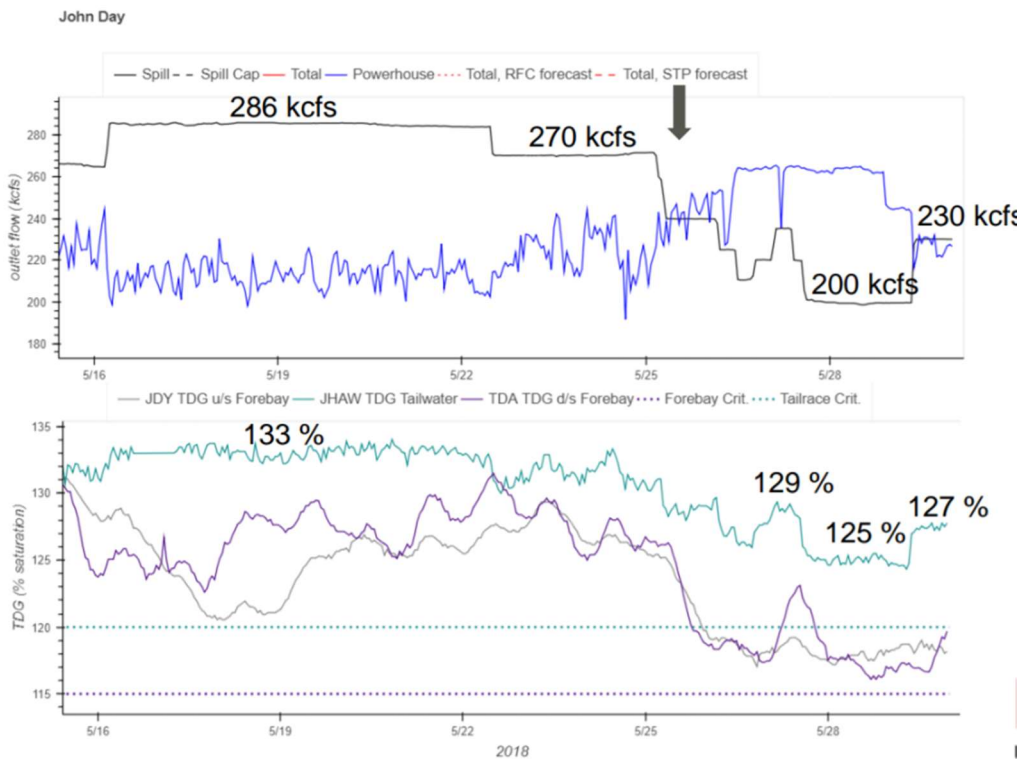
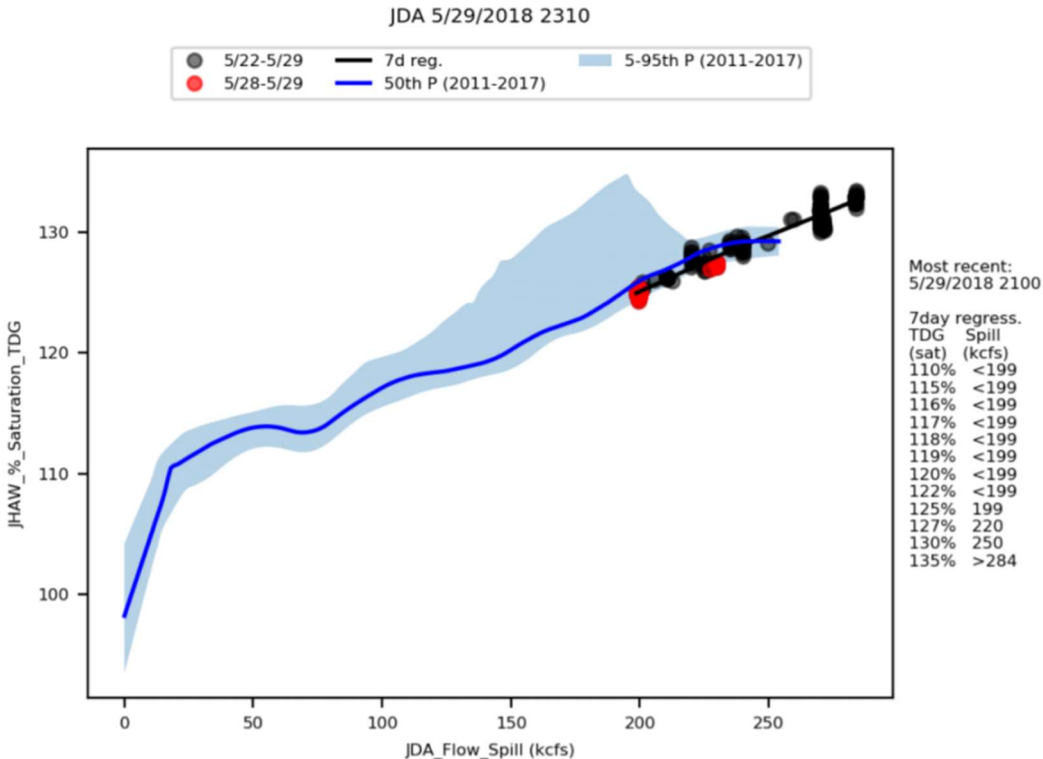


Figure 10, Project Graph 5.



Turner reported that spill above 100 kcfs at Little Goose doesn't seem to generate more TDG (Figure 6). Based on historic data, he said, the Corps could probably spill quite a bit at Little Goose without going over the gas cap.

As coordinated with TMT, the Corps and BPA shifted contingency reserves to above the 1% range at McNary Dam on May 16. The newest graphs (Figure 7) show a resulting increase in generation at McNary and a decrease in spill from 335 to 295 kcfs. McNary tailwater TDG decreased to 130.2%, but was fluctuating, maybe due to changes in spill pattern due to spill bay 2 coming back in service. Turner also reported the Corps is looking into an 11-hour lag in the upload of McNary data between the USGS and Corps databases.

Turner pointed out that there is a lot of variability in the relationship between TDG and spill at McNary (Figure 8).

At John Day, an increase in generation due to shifting reserves to The Dalles on May 25 resulted in a decrease in spill from 270 kcfs down to 200 kcfs (Figure 9).

Turner observed that the relationship between TDG and spill (Figure 10) is stronger at John Day than it is McNary.

5. Turbine Operations and Contingency Reserves - Tony Norris, BPA

Tony Norris, BPA, reported on turbine operations and contingency reserves. He showed TMT the following graphs. (Colors in the graphs do not signify anything, but are default colors assigned by Excel.)

Figure 11, Power Graph 1.

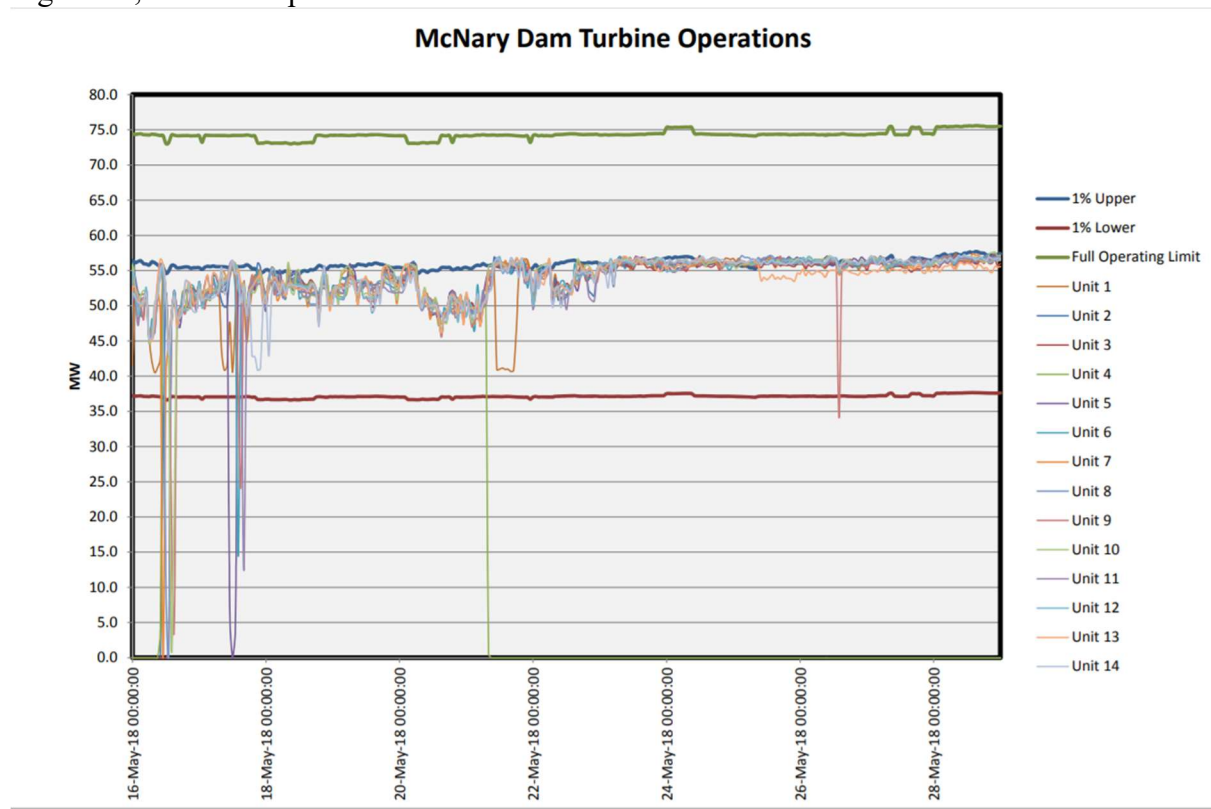


Figure 12, Power Graph 2.

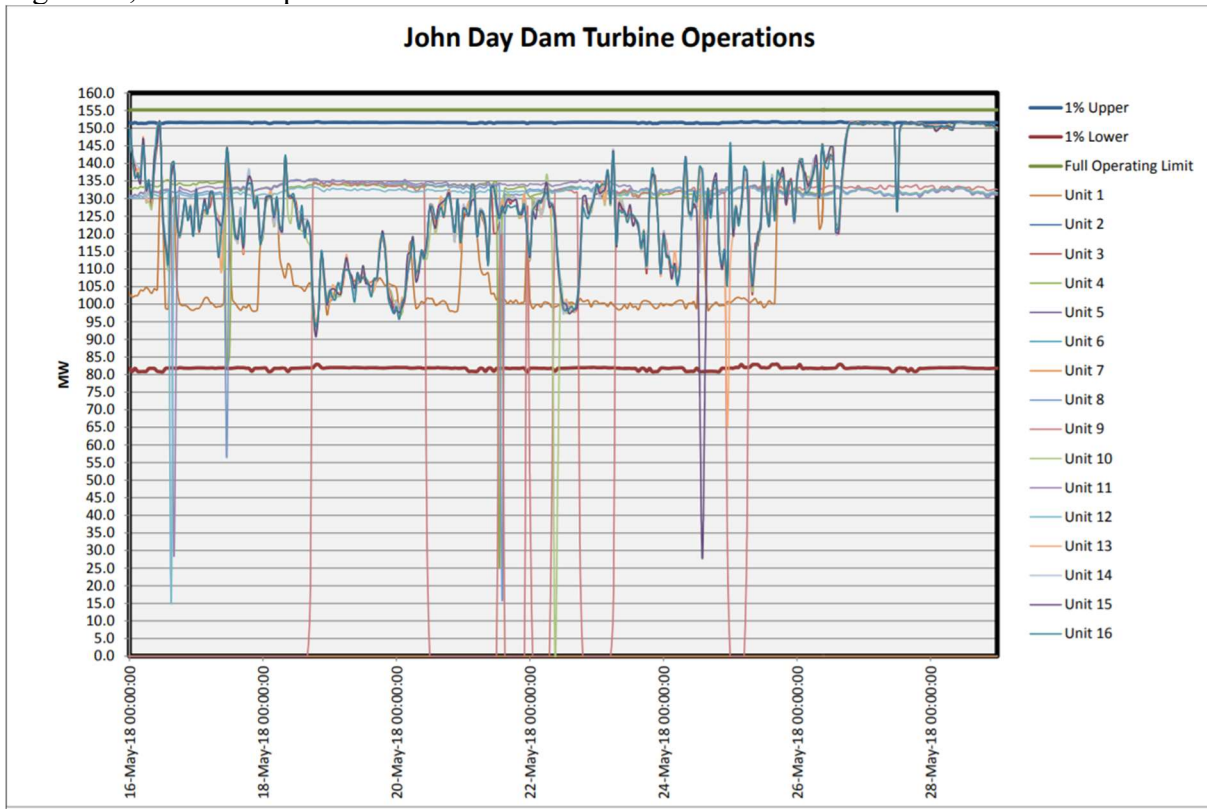
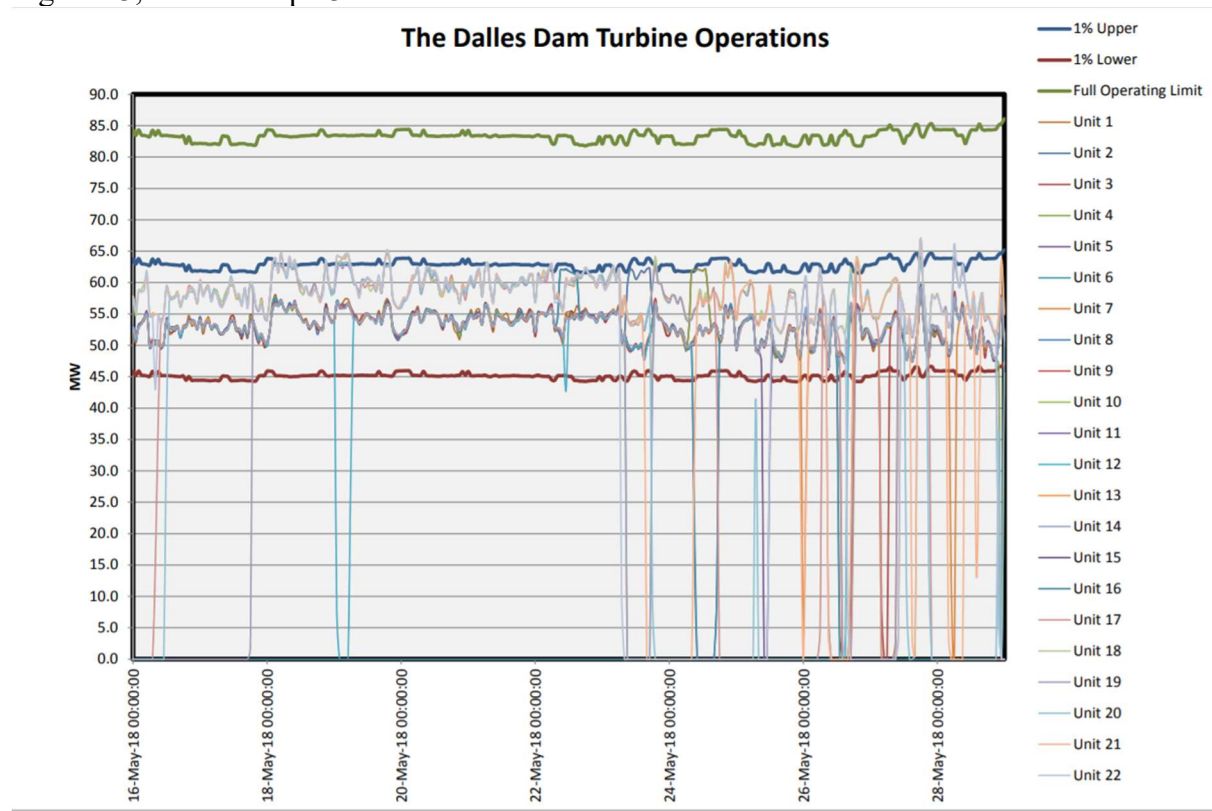


Figure 13, Power Graph 3.



Wagner inquired about the dips in Figure 13 (operations at TDA). Norris responded that BPA was carrying reserves and that it is difficult, if not impossible, to operate units 100% precisely. Based on the data in front of him, he was unable to explain each unit's drop to 0 (the dips) but noted that most were probably a result of how the project dispatched the units based on the amount of reserves being carried. Scott Bettin, BPA, also noted that some of the drops could be due to non-spinning units.

Peaks above the 1% range were best efforts to stay within 1% -- in the instances that operations exceeded 1%, the project adjusted the operation of the unit to within the 1% range as soon as possible. On average, flows through the turbines decreased.

Tom Lorz, Umatilla, requested the turbine operating data to allow FPAC to analyze potential fish impacts of operating units at different operating points, which he said would help inform decisions at John Day, McNary, and Bonneville. Lorz will write up a description of the data they are requesting and submit to the Corps and BPA.

TMT discussed plans to continue holding contingency reserves above the 1% range and the corresponding fish condition monitoring. Julie Ammann, Corps, communicated the operation is consistent with guidelines in the operative documents (BiOp, FPP, FOP) and will be implemented when necessary to manage TDG. The Corps and BPA will report to TMT in the event of any excursions above the 1% range for reserves. She noted that the operation this year has successfully reduced TDG in the system without operating any units above the 1% range for contingency reserves. She reiterated that in accordance with the BiOp and Fish Passage Plan Appendix C, the Corps and BPA will work with NOAA to implement the operation when necessary as a tool to reduce TDG.

Tom Lorz, Umatilla, voiced concern about potential fish impacts from operating the units at higher points that may be missed with every other day condition sampling.

As part of the operation coordinated with TMT, condition sampling at McNary and John Day was temporarily increased to daily, which requires additional costs and staffing issues. Lorz and Van Dyke supported continuing daily sampling during the operation. Injury rates are currently at 0-0.38%. Dave Swank also noted that daily sampling may provide additional data points, which may be useful since TMT is working with a limited data set.

After some discussion, members of TMT supported continuing daily condition sampling at John Day and McNary through June 5. Doug Baus, Corps, will coordinate this request with the Districts and report back to TMT at the Friday, June 1, TMT meeting.

Wagner noted that some of the condition sampling data may be biased due to a hatchery release of sick fish. "When a hatchery releases a group of fish that were sick at one of the projects upstream, they have a tendency to die fast and show up in the data downriver," he said.

6. Kootenai River White Sturgeon – Kevin McDonnell, IDFG

Kevin McDonnell, IDFG, presented to TMT research done on the Kootenai River White Sturgeon.

The Kootenai River White Sturgeon are found between Kootenai Falls (MT) and Bonnington Falls (British Columbia). The overall population of White Sturgeon has steadily declined since 1970 (Figure 14). They spawn between June and July after river temperatures increase above 9°C. Adults upstream of Shorty's Island are considered part of the spawning population. One of the issues IDFG considered was downstream spawning. They wondered why fish were spawning below Bonner's Ferry, never making it up to Shorty's Island. The fish are spawning over clay instead of the more ideal habitats above Shorty's Island. To encourage fish to move to better spawning, the Kootenai Tribe of Idaho used two approaches: 1) Flow manipulation and 2) Habitat restoration.

For habitat restoration, the Tribe dug holes in the river and created holding habitats for fish (Image 1, below). The habitats were created to provide a resting spot for the fish and get them to spawn further upstream, away from the clay.

IDFG found that new habitats result in about a 15% increase in the probability that a tagged, spawning fish would travel above Bonner's Ferry. Thus, habitat support seems to be effective in encouraging fish to spawn above Bonner's Ferry. They also found that high water events, specifically the number of days above 30k, affected what percent of fish made it above Bonner's Ferry.

Figure 14, White Sturgeon Populations.

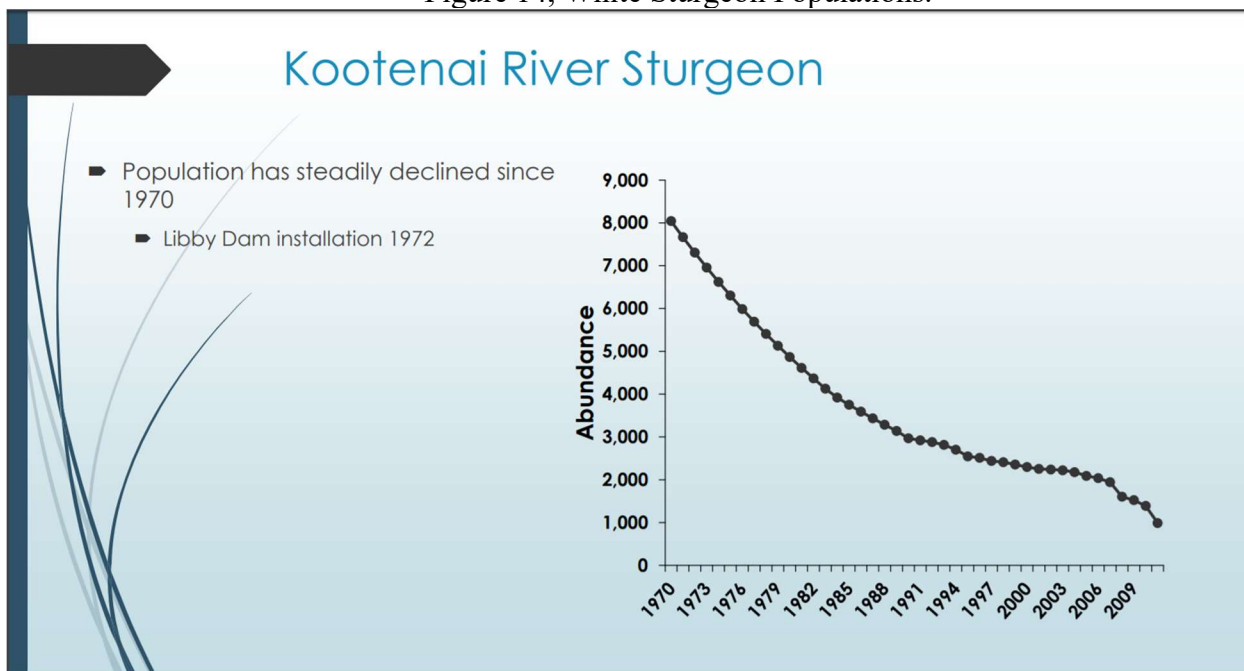


Figure 15, White Sturgeon Populations by Year.

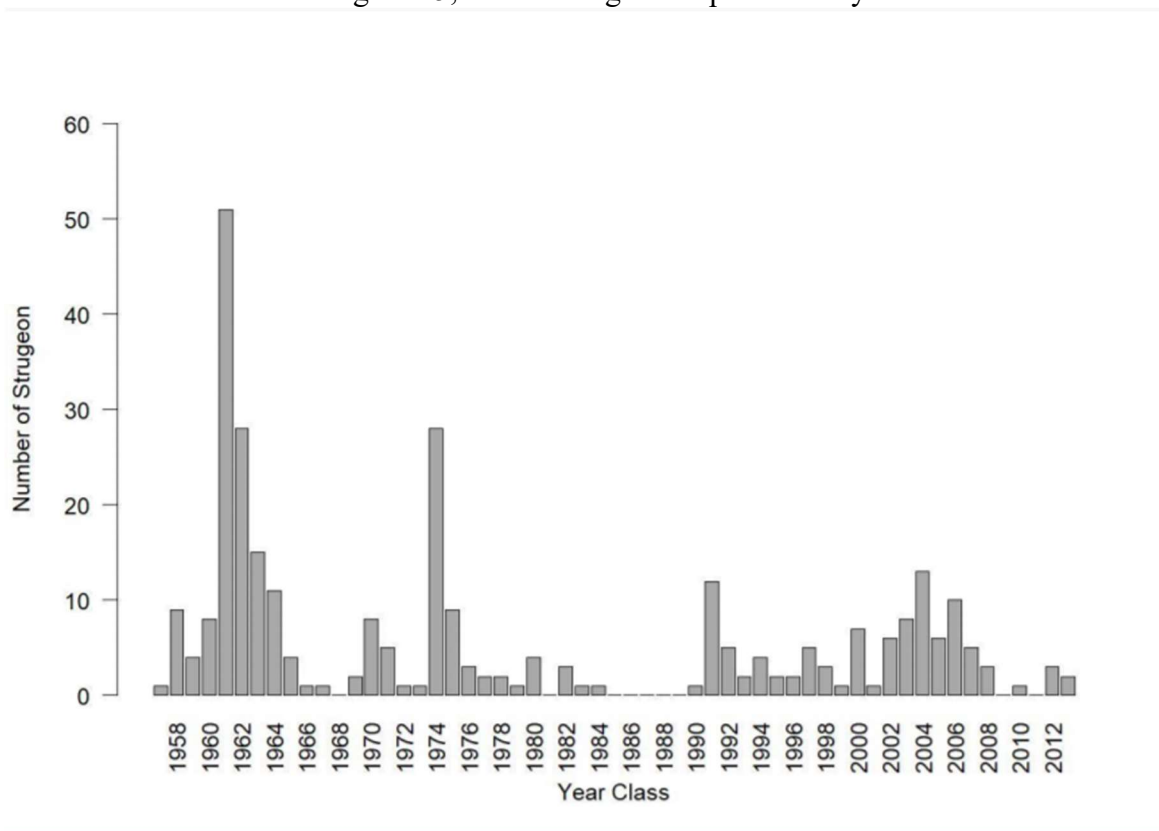


Image 1, Habitat Restoration.



Dave Statler, Nez Perce, observed that the hydrograph had changed significantly after Libby's construction. He asked how 30 kcfs compared to natural flows in terms of magnitude and duration of big water and wondered if it would be enough to help sturgeon spawning in the future. McDonnell noted that flows are much lower now that the dam is in place. 30k is just a placeholder for the idea that bigger water for longer amounts of time may affect fish.

Erick Van Dyke, OR, asked about the tag life duration. McDonnell said it was about 10 years, meaning that some females have been tracked for 2-3 spawning events on one tag.

Right now IDFG has only been able to track movement above Bonner's Ferry, not spawning. Their hope is that this year they will be able to look at spawning. For now, the data reports migration above Bonner's Ferry as success.

Jim Litchfield, Montana, wondered about strategies that could encourage fish to leave the lake to begin spawning/travel earlier. McDonnell said there could possibly be some flow management policies that could help with that.

White Sturgeon spawning and population growth is just one objective in the Kootenai River. Additional goals are to make the overall ecosystem stronger so that it supports sturgeon as they begin to recruit other fish as well. For now, IDFG is optimistic about this year. Thus far, significantly more fish have traveled higher in the system than last year, reported Ryan Hardy, IDFG. However, it is still early in the season.

TMT members with questions can reach Kevin at kevin.mcdonnell@idfg.idaho.gov.

7. Libby Ops - Logan Osgood-Zimmerman, Corps, presented.

Logan Osgood-Zimmerman, Corps walked TMT through operations at Libby. The goal at Libby is to keep flows above 30 kcfs, if possible. It seemed like that was not going to be an issue because of the high water supply forecasts, however, flows are starting to drop. The Corps will meet to consider increasing outflow for a week to keep it higher for a little longer at Bonner's Ferry.

8. Operations Review

a. Reservoirs - Joel Fenolio, BOR, and Lisa Wright, Corps

Joel Fenolio (BOR) and Lisa Wright (Corps) reported on reservoirs.

Hungry Horse – elevation 3,539 ft; inflows 27.5 kcfs; outflows 6 kcfs

Grand Coulee – elevation 1,262.4 ft; inflow 215 kcfs; TDG 123%

Libby – elevation 2,427.8 ft; inflows 55.1 kcfs; outflows 20 kcfs

Albeni Falls – elevation 2,064.2 ft; inflows 119.6 kcfs; outflows 119.1 kcfs

Dworshak – elevation 1,578.1 ft; inflows 21.1 kcfs; outflows 6 kcfs

Lower Granite – outflows 160.5 kcfs

McNary – outflows 449.6 kcfs

Bonneville – outflows 444.6 kcfs

At Hungry Horse, inflows have been the highest in many years and are projected to be 13-15% above the record year (1928). Right now, the reservoir is about 20 feet from full. However, flows are finally beginning to let up.

On the Upper Snake, flows augmentation will start in the next few weeks.

b. Fish - Paul Wagner, NOAA

Paul Wagner, NOAA, reported on fish.

Adults: At Bonneville, counts were up to 85,698 adult spring Chinook, about 107% of last year, but well below the 10-year average.

At Lower Granite, adult spring Chinook are delayed as well, thus far numbering 13,430, which is 29% of 10-year average but 200% of last year.

At Ice Harbor, counts for adult spring Chinook are 23,000 (40% of 10-year average).

Passage: DART showed that adult passage is late but continuing fairly strong.

Juveniles: Yearling Chinook are trailing down at Little Granite. Counts were 68,000 on May 17 dropping to 2,100 on May 29. The daily index at Little Goose was in the 5,000-range.

This trailing off is pretty typical as June approaches. Numbers overall indicate the end of yearling Chinook migration.

Coho were also trailing off. The steelhead run, on the other hand, is still continuing strong, with numbers at 20,000-30,000 at Lower Granite and 8,000 at John Day. Wagner reported the end of the steelhead run coming gradually. Meanwhile, sockeye were reaching the end of their run with counts at Little Goose quickly dropping down from 55,000 on May 17 to 0 on May 27. Lamprey exhibited a similar trend with 65,000 passing for the season, but just 1,000 passing the day before the meeting.

c. Power, Tony Norris, BPA

Tony Norris, BPA, reported on the power system. Hydropower generation has been steady. There has been some variability in wind due to on-shore flow systems. During the weekend, power exceeded the bounds on balancing reserves. BPA was unable to integrate changes in the wind so it curtailed the wind generators to maintain power system reliability.

9. Agenda for Next Meeting

The next TMT meeting is a conference call on Friday, June 1.

Attendees:

Name	Affiliation
Doug Baus	Corps
Joel Fenolio	BOR
Lisa Wright	Corps
Scott Bettin	BPA
Tony Norris	BPA
Julie Ammann	Corps
Tom Lorz	Umatilla (CRITFC)
Dave Statler	Nez Perce
Charles Morrill	WA
Russ Kiefer	ID
David Swank	USFWS
Erick Van Dyke	OR
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Tom Iverson	Yakima Nation Fisheries
Mike O'Bryant	Columbia Basin Bulletin
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