

COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

July 12, 2017

Facilitator's Summary

Facilitator: Emily Stranz; 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/2017/>

Upper Snake River Flow Augmentation

Mary Mellema, BOR, reported that the Bureau began moving Upper Snake River flow augmentation water out of the basin upstream from Milner Dam yesterday. The flow augmentation operation from Milner will last for about twenty days. The Bureau is holding space in the Boise and Payette reservoirs and is waiting for the allocation date; however, they have already released some flow augmentation water. Flow augmentation water releases from the Snake and Boise systems will be completed by the end of July, with the Payette augmentation completed by the end of August. The total volume released from the Snake, Boise and Payette systems will be 487,000 acre-feet.

Dworshak Operations

Steve Hall, Corps, presented on Dworshak operations. Current reservoir elevation is 1592.5 ft, with a 10.7 kcfs discharge at the time of the meeting. TDG at the tailrace has been between 118.6 and 119.4%; TDG at the hatchery fixed monitoring station has been between 103 and 103.7%. Water temperature in the Lower Granite tailrace is 68.6 degrees F and has been coming down slightly due to cooler weather and lower inflow temperatures from Orofino and Anatone. Dan Turner, Corps, provided a graphic depicting system water temperature in the Snake and Clearwater Basin. The graphic shows water temperatures for various parts of each project. TMT members thanked Dan, noting that it was very helpful. It was suggested that it would also be helpful if he could develop a graphic that showed the water temperature stratification in the Lower Granite forebay. Recently, Lower Granite temperatures were significantly affected by winds that reduced temperature stratification in the pool. This stratification is now starting to rebuild, and cold water will reamass in a few days.

According to weather forecasts for Lewiston, temperatures are expected to stay high around 97-98 degrees F through Saturday. Temperatures are expected to cool down to the low 90's starting Sunday. The Corps shared that the new weather station at Lower Granite is now on line.

The Corps is running models daily and will post results every few days to the TMT agendas. Steve shared that they are doing what they can within the current limitations, however, are above 68 degrees F and don't expect to drop below 68 until the weekend. He is working with operators to be less risk adverse and push as much water as they can while staying below 121% TDG. They are close to 11kcfs out.

Lower Granite & Little Goose Spillway Weir Operations

Russ Kiefer, ID and Doug Baus, Corps, began the discussion of proposed changes to spillway weir operations at Lower Granite and Little Goose Dams. Doug noted that the FPP lists flow criteria for when to take the spill weirs out, however, the criteria have not yet been met. It is expected the criteria would be met in August. However, there was request for the TMT to consider an earlier removal. Russ explained that removing the surface weirs would assist with adult passage, especially sockeye by limiting the warm surface water spill. Removing the weirs would not be a decrease in spill, instead, it would change where the spill comes from, allowing more spill of deeper, cooler water. Russ noted that this operation may also be beneficial for juvenile fall Chinook. He explained that as the dam forebay warms, juvenile Chinook may migrate deeper to get into cooler water, making the surface weirs less effective than deeper spill gates at passing fish. One of the challenges is that currently there is not much data on what temperature or depth is most effective for passage, though PNNL is tasked with researching to see if they have data on forebay temperature and passage efficiency. Eventually, these data may help develop good criteria for spill

weir removal. However, those data are not available for this year. There is however, some literature that around 20-22 degrees C juvenile Chinook stop feeding, which is a signal that they are struggling and may go deeper at that point for cooler temperatures. He noted that due to the low returns, water temperatures, limitations at DWR, and percent of the run past Bonneville, Idaho thinks that the surface weirs at both Lower Granite and Little Goose should be shut off as soon as possible. Idaho is also concerned with wild summer Chinook and steelhead runs, he noted that the adult situation is dire.

Jay Hesse, Nez Perce, inquired as to the impact of the adults in the ladder exits, noting concerns of ladder temperatures from previous years. Russ noted that fish ladder improvements at Lower Granite should help avoid temperature differentials that would cause delayed passage. At Little Goose the temperature mixing is not as dramatic. However, the situation would still need to be monitored in season and operations adjusted if fish are holding or falling back. Anne Setter, Corps, reminded all that while operators could re-open the weir at Lower Granite, once the Little Goose weir is closed it would remain closed for the remainder of the season.

Dave Swank cautioned that the operation may not be as impactful due to the lack of temperature stratification and that there is no way to determine the operations' success. Russ stressed that although it is great if they can measure the effects of an operation on fish, the TMT is a management team, and not a research team and we need to make in season management decisions using the best available information. In the past, the region has used tailwater temperature as an indicator of impact.

Paul Wagner, noted that the current proposal is consistent with the 2015 Sockeye After Action Report that criticized waiting too long to make a decision; he noted that this was the only available option. Lisa Wright, Corps, said that the operation at Little Goose requires a crew and could be done next week; Lower Granite does not require a crew to close the spillway weir so it could be done immediately.

All of the TMT members present supported or did not object to the operation. Erick Van Dyke, OR, said Oregon would not oppose the proposal, but he viewed the operation as trading one age group's protection for another's. He advocated taking a more system-wide approach in the future and noted that Oregon would be interested in exploring options to shift to a flat spill pattern throughout the system. He also urged TMT members to think hard on other potential changes to operations that could help the system as a whole. Both Erick and Jay shared that they would not want to see this operation set precedent for future years. Doug noted that with the removal of the weirs, the FPP calls for specific spill patterns, which would be implemented and are actually fairly flat patterns. Charles Morrill, WA, suggested delaying the removal of the Little Goose weir until later next week if at all possible to allow for more juveniles to move through the system. He said he would prefer a Wednesday or Thursday removal over earlier in the week.

→ **ACTION:** The Corps will close the Lower Granite surface weir as soon as possible, and will take the same action at Little Goose Dam next week, prioritizing Wednesday or Thursday for removal if possible. Once out of service, the Little Goose weir will remain out of service through the end of the season. Both projects will shift to the spill pattern called for in the FOP for when the weir are out of service. There will be a check-in at the next TMT meeting.

SOR 2017-C1 Extension

Kyle Dittmer, CRITFC, shared an extension on the tribal fishing season. The extension request is for a 1.5 ft pool for the Bonneville, The Dalles and John Day pools for July 12 through 15th. He noted that last week's net flight revealed a total of 256 nets: 114 in the BON pool, 69 in the TDA pool and 146 in the JDA pool. Another net flight is scheduled for July 13th. Kyle thanked the Action Agencies for their quick response to the request on such short notice.

→ **ACTION:** Doug noted that the Corps and BPA are implemented the request for the extension as stated.
The next TMT meeting will be face-to-face on Wednesday, July 19 at 9:00.

**Columbia River Regional Forum
TECHNICAL MANAGEMENT TEAM OFFICIAL MINUTES**

July 12, 2017
Minutes: Pat Vivian

1. Introduction

Representatives of Washington, Idaho, BOR, Nez Perce, USFWS, CRITFC, COE, NOAA, BPA, Umatilla, Oregon, and other participated in today's TMT call chaired by Doug Baus, COE, and facilitated by Emily Stranz, DS Consulting.

2. Snake River Flow Augmentation

Mary Mellema, BOR, reported. Flow augmentation started yesterday from upper Snake River projects upstream of Milner Dam and will continue for approximately 20 days. Releases started at 2500 cfs and will ramp up to 5 kcfs. Reservoir space is being held for flow augmentation on the Boise and Payette rivers; the day of allocation has not yet been declared. However, releases for flow augmentation has already started in those basins. The total flow augmentation target remains 487 kaf from the entire upper Snake system. The augmentation from the Boise and upper Snake should be completed by the end of July. Flow augmentation from the Payette will continue into August as usual.

3. Dworshak Operations

Steve Hall led a discussion of Dworshak operations, including TDG saturation levels and temperatures.

3a. Current Operations Data. Dworshak reservoir is at elevation 1595.5 ft, discharging 10.7-10.9 kcfs.

3b. TDG Dworshak Tailrace (DWQI). Total dissolved gas levels downstream of Dworshak Dam have been 118.6-119.4% saturation.

3c. TDG Dworshak Hatchery (DHCI). At fixed monitoring stations in the hatchery, TDG levels have been 103-103.7% saturation.

3d. Hourly Snake and Clearwater River Temperatures. Lower Granite tailwater temperature is 68.6 degrees F and dropping slightly. Anatone and Orofino temperatures have dropped since this morning. Temperatures at 20 meters deep in Lower Granite forebay have also decreased.

3e. Snake and Clearwater River Flow and Temperature Diagram (through July 11). Dan Turner, COE, presented a visual depiction of water temperatures on the Snake River that he prepared for TMT, linked to today's agenda. The graphic

shows the temperatures of fish ladders, spillway, and generation flows at 30 meters depth for each dam on the Snake.

3f. Weather Forecast for Lewiston, Idaho. The forecast is for high temperatures of 97-98 degrees F through July 15, then a slight cooling.

3g. Water Temperature Model: 10.5 kcfs. This graph depicts observed temperature data through July 11. The COE is doing as much as possible to bring Lower Granite tailwater temperatures down below the 68 degrees F criteria. Dworshak discharges have been increased to almost 11 kcfs and TDG levels are pushing the 120% water quality target to provide flow augmentation. Water temperatures are expected to recede as cold water accumulates behind Lower Granite Dam and the weather cools off.

The model indicates that temperatures will continue to exceed 68 degrees F until this weekend, Hall reported. The COE will continue to post graphs of daily modeling runs to the TMT web page.

Dave Swank, USFWS, asked, to what extent are ambient air temperatures and increasing flows on the Snake River as measured at the Anatone gauge and the Clearwater River as measured at the Orofino gauge are influencing the model results? Warm flows in the Snake River as measured at the Anatone gauge have already decreased from 50 kcfs on Jul 4 and are expected to decrease to 30 kcfs during the forecast period, Hall replied. Warm flows from the Clearwater have already decreased from around 18 kcfs on June 20 to 4 kcfs now, and are expected to decrease to 3 kcfs by the end of the forecast period. These things will help Lower Granite tailwater meet its 68 degrees F temperature criteria.

The model doesn't capture the mixing effects of wind, John Heitstuman, COE, pointed out. Hall agreed it will take a few more days of stratification for the reservoir to provide cold water from 35 meters. Baus asked whether there are any online data sources that can be used to monitor wind activity at Lower Granite tailwater. A new water quality monitoring station at Silcott Island (LGWW) will soon provide a stream of data to the TMT page, Hall reported. Wind direction is an important factor in the extent of reservoir mixing.

4. Lower Granite and Little Goose Spillway Weir Operations

The main portion of today's TMT call focused on deciding whether to remove the surface spillway weirs that pass juveniles at Little Goose and Lower Granite dams a few weeks earlier than usual in order to reduce temperatures that would provide a benefit to adults migrating upstream. The goal is to aid migration of about 400 adult Snake River sockeye salmon and to time weir removal when surface temperatures are high enough that juveniles are likely to seek cooler water at deeper levels than the weirs allow.

Noting that he was unable to participate in yesterday's FPAC conversation on this issue, Russ Kiefer, Idaho, gave his reasons for advocating weir removal at this time. As forebays warm up, juvenile fall chinook migrate deeper, and at some point the surface weirs become less effective than the deep spill gate at passing juvenile fall chinook.

There's a lack of data at this point to indicate the depth at which temperature monitoring will provide the best information on surface weir effectiveness. Preliminary indications are that yearlings avoid water of 20-21 degrees C and stop feeding if they can't escape to cooler water. PNNL has been hired to review their data on dam passage performance to help identify when fish will pass more effectively via deep spill than surface weirs. Surface PIT tag detection capability is needed to develop effective criteria for weir removal.

At certain flow rates, the bathymetry of the Little Goose tailrace creates eddies at ladder entrances that delay adult passage. Removal of the weirs at this time of year is not only likely to benefit juveniles, but will also benefit adult passage and help manage downstream temperatures, Kiefer said.

The challenge is selecting the right time of year to shut off the surface weirs with confidence. This year, the need to get it right is especially urgent because ocean productivity and adult return rates are low. The good news is that their migration is occurring normally in terms of timing, conversion rates and travel times.

Wild spring and summer chinook counts are also low this year. Wild steelhead predictions for B-run fish are especially low. With unit 3 out of service at Dworshak and long range forecasts of high temperatures, it's especially imperative to help adults. For that reason it would be prudent to shut off the surface weirs as soon as reasonably possible. By switching to deep spill of cooler water through the spill gates, shutting off the surface weirs will help to manage temperatures downstream.

TMT discussed the proposal and the Salmon Managers shared their initial responses:

Dave Swank, **USFWS**, suggested looking at ladder temperature differentials and questioned how juveniles would respond to weir removal. Given the amount of mixing in the past few days, there might not be that much of a temperature advantage in Lower Granite tailwater to weir removal. We should also make sure that temperature differentials in the ladder are within an acceptable range. While USFWS didn't oppose weir removal, Swank said he was not confident it would have a meaningful impact. He expressed concern about how the impacts would be measured, and whether it would even be possible to determine that weir removal caused the results. How will we know if it was successful?

Ann Setter, COE Walla Walla, reminded TMT that 40 foot extended-length submersible bar screens (ESBS's) on the Snake River intercept fish that would

otherwise pass through the turbines. With the present lack of stratification, juveniles might pass below the ESBS's. This will become irrelevant as of August 1 when the Lower Granite juvenile bypass system is shut down for reconstruction. The screens probably won't be in service when the weirs are removed.

Modeling done at the ERDC research lab in Mississippi indicates the surface weirs are best removed when river flows are in at 55-60 kcfs, Scott Bettin, BPA, said. **NOAA's** perspective is the weirs are best removed at the 50-55 kcfs range, Paul Wagner said.

Kiefer recalled that in 2015 **Idaho** objected to weir removal because shutting off the surface weir could have allowed warm water to build up at the Lower Granite exit. Mitigation efforts since then have helped to address ladder temperature differentials, and the mixing that occurs below Lower Granite helps prevent this from occurring at Little Goose. A year and a half ago, the COE proposed using flows of 50 kcfs or less on the Snake as a criteria for shutting off the surface weir at Little Goose; Idaho was the lone dissenting vote. Reasons for Kiefer's opposition then included a sense that, even with low flows, temperatures were cool enough that the weir was still the most effective passage route for juveniles. What's different now is that temperatures are high enough to render the weirs ineffective. As for measuring the effectiveness of weir removal, PIT tag detection capability would be needed to accomplish that.

Jay Hesse, **Nez Perce Tribe**, agreed with taking the weirs out of service now, although the juvenile benefits are uncertain. He asked about the ability to reverse this decision if problems arise, and hoped that whatever is done this year isn't viewed as precedent-setting for standard operations in the future. Surface weir removal at Lower Granite is easier done than at Little Goose, Setter said. Weir removal at Little Goose would be permanent for the rest of fish passage season, but it has excellent (99%) juvenile spillway survival without the weir. Tom Lorz, Umatilla, didn't oppose weir removal.

Baus asked when the Little Goose weir could be removed if TMT recommends it as of today. Project operators could do it next week, Lisa Wright, COE, said, confirming that once taken out of service, the Little Goose weir will remain so for the rest of fish passage season due to the labor-intensive process of installment. The Lower Granite weir, however, can be opened and closed at the push of a button, so it could be reactivated if necessary.

Erick Van Dyke, **Oregon**, expressed concern about solving problems TMT can't control, such as the DWR unit 3 outage, by trading protection for one age group over another instead of addressing the long term problems of in-season transitions. He didn't oppose weir removal as long as the region recognizes that larger issues aren't being addressed by short-term solutions. He advocated a broader look at operational and other factors that play a role in the current situation. Flat patterns should be used for traditional spill routes. Baus indicated we will be using the patterns in the Fish Passage Plan and was not aware of the Lower Granite Dam flat pattern Oregon

was describing. Closing the weirs sooner rather than later do not change the rate of spill on the pattern. Van Dyke asked the COE to take advantage of every opportunity to reduce gas by using appropriate spill patterns at each project, and to seek solutions that do not involve juvenile passage through turbines.

Charles Morrill, **Washington**, questioned whether delaying spillway weir removal at Goose would be wise considering the juvenile passage index is 4,000-10,000 subyearlings a day. TMT should consider the uncertainty regarding benefits and risks to juveniles. Once passage numbers drop at Granite, the change occurs downstream within 3-5 days.

Wagner recalled that the 2016 sockeye after-action report said TMT waited too long to take action during the hot weather crisis of 2015. For that reason he recommended taking both weirs out of service early. Morrill agreed, but preferred to wait until the end of this week or early next week to remove the Little Goose weir.

The Salmon Managers were then polled on removing the Little Goose and Lower Granite spillway weirs earlier than scheduled in the Fish Passage Plan:

- **NOAA** – Supports spillway weir removal
- **Washington** – Doesn't oppose weir removal, but prefers removal at Little Goose later next week
- **Umatilla** – Doesn't oppose spillway weir removal
- **USFWS** – Doesn't oppose weir removal, but prefers removal at Little Goose later next week
- **Idaho** – Supports spillway weir removal
- **Nez Perce** – Supports spillway weir removal
- **BPA** – Supports spillway weir removal
- **BOR** – Supports spillway weir removal
- **COE** – Supports spillway weir removal
- **Oregon** – Doesn't oppose spillway weir removal, but wants more adaptive management applied to this issue from a system-wide point of view. Spill pattern changes should be on the table, as well as alternatives that don't involve passing juveniles through turbines. There are additional options that need to be explored.

With TMT consensus, the COE will take the spillway weirs out of service. The Lower Granite weir will be turned off today. The Little Goose weir will be removed on July 19-20 (or July 17-18 if that's not possible) and will remain out of service for the rest of the season. Spill patterns will be used as described in the Fish Passage Plan. TMT will revisit this issue next week.

5. SOR 2017-C1 Extension

By extension of SOR 2017-C1, a tribal fishery is currently in progress, starting at 6 am today, July 12, and continuing through 6 pm, July 15, Kyle Dittmer, CRITFC, reported. The SOR requests that the Bonneville, The Dalles and John Day pools be held to a 1.5 ft elevation band for the duration of the fishery. The COE is implementing the extension of SOR 2017-C1, Baus said, and will confer with CRITFC on the notification process.

The tribes appreciate the Action Agencies' quick response on short notice, Dittmer said. According to the latest CRITFC net flight, there were 256 nets with 114 (35% of the total) in the Bonneville pool, 69 (21%) at The Dalles, and 146 (44%) at John Day. CRITFC plans to do another net flight tomorrow, July 13, and will decide on that basis whether to extend the treaty fishery SOR for another week. Dittmer will report the net flight observations at the next TMT meeting.

6. Next TMT Meeting

TMT will meet on July 19 in person, followed by a process meeting.

Name	Affiliation
Charles Morrill	Washington
Russ Kiefer	Idaho
Mary Mellema	BOR
Jay Hesse	Nez Perce
Dave Swank	USFWS
Kyle Dittmer	CRITFC
Laura Hamilton	COE
Michelle Yuen	COE
Paul Wagner	NOAA
Tony Norris	BPA
Aaron Marshall	COE
Julie Ammann	COE
Lisa Wright	COE
Doug Baus	COE
Dan Turner	COE
Steve Hall	COE Walla Walla
John Heitstuman	COE Walla Walla
Wayne Jousma	COE Walla Walla
Alfredo Rodriguez	COE Walla Walla
Charles Wiggins	DSC
Laura Berg	Clearing Up
Michael Bryant	CBB
Dave Benner	FPC
Ann Setter	COE Walla Walla
Shane Scott	PPC
Tom Lorz	CRITFC/Umatilla
Erick Van Dyke	Oregon

