COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM
February 28, 2018
DRAFT 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/

Dworshak Operations

Steve Hall, Corps, reported on current and proposed operations at Dworshak. Current elevation is 1508 ft., with 5 kcfs inflows and 20 kcfs discharge, with 5 kcfs through the turbines. TDG levels are about 122% in the North Fork Clearwater River and 104-105% in the hatchery. The NWRFC water supply forecast for April-July is for 2.925 maf using the 5-day QPF, 2.96 maf with 10 days QPF, and 2.955 maf with 0 days QPF, so very similar among the three. Steve thought the Corps' water supply forecast, to be released on Friday, March 2, would probably be similar.

In addition, the meteorological forecast suggests a colder than average, but somewhat drier, next ten days. The 20-day forecast predicts the Clearwater basin will experience about normal temperatures and a little above normal precipitation. The thirty-day forecast is for below normal temperatures and maybe higher precipitation, and the ninety-day forecast outlook is also below normal temperatures and above normal precipitation.

Current Snotel data suggest this year is tracking similar to water year 2011. Graphs for the Crater Meadows, Hemlock Butte, Hoodoo, Lolo Pass, and Lost Lake sites are available on the TMT web site. A rollup of all Snotel sites shows a 124% of normal, which is well above average and higher than anticipated at this time. Weather forecasts indicate that snowpack may continue to increase substantially.

The Corps also provided three slides of possible Dworshak operations options moving forward, also available on the web site. An inflow event is expected early in April, and with low elevation snowfall already above normal, the Corps wants flexibility to respond for flood control. They also want to minimize harm to fish. As such, the Corps' preference is to reduce outflow to 16 kcfs from the end of February through the middle of April, depending on input from salmon managers. After that, they suggest employing a flat discharge pattern of 5 kcfs until the pool level intercepts the flood control rule curve in June, where data predictions are now too far out to provide significant confidence in the forecast.

Based on a 3 maf water supply forecast, the Corps guessed that at an outflow of 18 kcfs, river TDG will be lower than 120% and 103-4% at the hatchery; at 16 kcfs, river TDG would be in the 117-18 range and hatchery TDG at 102-3%; and at 14 kcfs, river TDG would be 115% and hatchery TDG about 100%. Others noted that last year's data are inconsistent with this projection, and believe the hatchery TDG will be at 103-103.5% at all these outflows.

Steve cautioned that the limiting factor for releasing water from Dworshak is the continuing unavailability of Unit 3. All stator bars have now been replaced, testing is underway, and the contractor maintains the project is on schedule. Still, the Corps believes Unit 3 will return to service in July, so probably will not be ready to move water in June to meet TDG needs.

Salmon managers noted that few yearling migrants will be moving in June. The predicted early April runoff peak is driving the need for higher outflows now. USFWS, the Nez Perce discussed and other salmon managers feel moving to 16kcfs would be acceptable a this time, especially if it can be held as long as possible. In addition, a USFWS decision on an early fish release from the hatchery will be made on Tuesday, March 6. An early release decision will probably not trigger an SOR to drop outflow this year.

- **ACTION: The Corps will reduce outflows at Dworshak to 16 kcfs today or tomorrow, and will hold that outflow level for the foreseeable future, at least through March and into April. TMT will watch for a runoff spike and work together to manage as needed, should that occur.**

TMT members thanked the Corps for putting today's option documents together so promptly.

Methodologies to Monitor Adult Passage in the Snake River

Russ Keifer, IDFG, reported he completed a first draft of guidelines he hopes TMT will adopt in order to assist those working to develop this methodology. TMT members should have received this by email. He requested TMT members to review the document and submit their comments to him **via email by Monday morning, March 5**. He especially would like to focus on any items missing from the current draft. Russ stressed the desirability of this being seen as a TMT document, not an Idaho document, developed through an open process. A second draft, incorporating member comments, will be available for discussion and approval at the March 7 TMT meeting. The document would then be sent to those doing the monitoring, who also would be encouraged to comment and improve the document. Russ clarified that he saw this as a living document that TMT could change as needed.

- **ACTION: TMT members will get suggested changes or questions to Russ by Monday morning, March 5th.**

March 2018 Juvenile Bypass System Operations

Doug Baus, Corps, updated TMT on March 1 operations of the juvenile bypass systems at 3 projects (Little Goose Dam, John Day Dam, and Bonneville Dam) identified in the 2018 court order. The plan has been coordinated through FPOM and RIOG, and is on track to be implemented as coordinated to have screens installed by March 1 in at least the top 3 available priority units at Little Goose, at least the top 4 available priority units at John Day, and all available Powerhouse Two units at Bonneville.

He noted that the criteria are further defined in the 2018 Fish Passage Plan, which is now available on the COE TMT web site.

Libby Dam - February and March Flood Risk Management Elevations

Joel Fenolio, Corps, presented an update on operations at Libby Dam. The forecast jumped from 6.8 MAF to 7.2 MAF, so Libby is drafting. It is now about 2 ft. below (current elevation is 2386.4 ft.) the February flood risk management target. This will help with March operations given that the March draft should be down to 2362 ft. Readings show record snowpack in the Pend Oreille Basin and above average in the Kootenai Basin, with low temperatures and higher precipitation forecast. Water levels throughout the system are ahead of 2011.

The next TMT meeting will be face-to-face on Wednesday, March 7, at 9:00am.

Columbia River Regional Forum
TECHNICAL MANAGEMENT TEAM OFFICIAL MINUTES

February 28, 2018
Minutes: Pat Vivian

1. Introduction

Representatives of the Nez Perce Tribe, COE, BOR, NOAA, Montana, USFWS, CRITFC/Umatilla, Colville Tribe, BPA, Idaho and others participated in today's TMT call chaired by Doug Baus, COE, and facilitated by Donna Silverberg, DS Consulting.

2. Dworshak Operations

Steve Hall, COE Walla Walla, presented the latest information on Dworshak operations in light of a high inflow forecast for the North Fork Clearwater.

2a. Hourly Data. Dworshak reservoir is down to 1508 ft elevation, still discharging 20 kcfs. Inflows are around 4-5 kcfs.

2b. Dworshak TDG Report. Total dissolved gas in the river is 122% saturation downstream of Dworshak Dam.

2c. Dworshak Hourly TDG Data (tailrace and hatchery). In Dworshak National Fish Hatchery raceways, total dissolved gas levels are around 104-105% saturation with 122% saturation in the river.

2d. NWRFC Dworshak Dam Inflow Forecast. The inflow forecast has been shifting up and down and is expected to spike in the next few days. Temperatures have been cold, keeping inflows low.

2e. NWRFC Water Supply Forecast North Fork Clearwater – Dworshak Dam. The NWRFC 10 day QPF forecast is 2.925 maf, and the 5 day forecast is 2.96 maf. On March 2, the COE expects to release its ESP water supply forecast of probably 2.9 or 3.0 maf for Dworshak, putting all the forecasts in close agreement.

2f. NWRFC Climate Forecast. The next 6-10 days on the North Fork Clearwater River are expected to be very cold and possibly drier than normal according to the River Forecast Center. Their 8-14 day forecast calls for below normal temperatures and above normal chance of precipitation. The 30 day forecast is showing below normal temperatures, and the 90 day forecast calls for below normal temperatures and above normal precipitation. So the area will probably remain wet and cool throughout the rest of snow accumulation season into runoff season.

2g. SNOTEL Sites. Hall showed TMT snow accumulation data from several representative sites in the basin. Crater Meadows in the southeast quadrant, Hemlock Butte in the south central area, and Hoodoo in the northeast corner continue to track closely with 2011 snowpack. Lolo Pass in the southeast corner is showing slightly greater accumulation this year than in 2011, as is Lost Lake in the northwest corner of the basin.

Taken together, the SNOTEL site data indicate that as of February 26, snowpack is 124% of normal, which exceeds several recent years on record. Snowpack is growing at a rapid pace, which is the basis for the approximately 3 maf water supply forecast that the COE expects to release in early March.

2h. Dworshak March Operational Options. As requested by TMT in its March 22 conference call, Hall presented three potential scenarios for Dworshak operations based on a 3 maf runoff volume forecast and an April 15 flood control target of 1445 ft.

A spring inflow event like that of early April 2011 is likely, and the project needs to be in a position to be able to respond. All three scenarios assume there will be an inflow event, which is the reason for a slight bump in April discharges:

1. Per the Nez Perce Tribe request, the first scenario shows a flat discharge of about 5 kcfs as refill begins. Discharges would have to step up later in June to manage refill as the reservoir gets closer to full. It's likely the project will intercept the refill curve and go from flood control to refill in April. For now, this scenario drops discharges to 16 kcfs and remains there almost through April 15, with an increase to 20 kcfs for 8-9 days in April in order to meet the April 15 flood control target.

2. The second option is a reduction to 18 kcfs out for roughly a week, than another reduction to 14 kcfs out through the end of March. This option would require discharges of 20 kcfs in April in order to meet the April 15 flood control elevation.

3. A more conservative option is to hold 20 kcfs out for another week, then drop to 14 kcfs out, which would lessen the time the project would need to release 20 kcfs in April.

Hall said the COE favors option 2 and asked the Salmon Managers for their views on the options.

Russ Kiefer, Idaho, asked for an estimate of what TDG levels would be in the river below the project at 18, 16, and 14 kcfs discharges. Hall estimated that 18 kcfs would produce 103-104% TDG in the hatchery, while 16 kcfs would probably produce TDG levels of 102-103% in the hatchery. River levels might drop to 117-118% or maybe lower, depending on temperatures. Discharges of 14 kcfs would probably produce 115% TDG in the river and close to 100% in the hatchery.

Jay Hesse, Nez Perce, said those levels are inconsistent with last year's observations, when TDG levels stayed above 119% in the river even at 14 kcfs releases. Hesse predicted that hatchery levels would be 103-103.5% under all three scenarios, based on last year's results.

Tom Lorz, CRITFC/Umatilla, asked whether the scenarios take system vs. local flood control into account. Hall explained that Dworshak has to meet system as well as local flood control requirements. There's a disparity between system and local requirements on March 31, but the rules of the Dworshak flood control shift say it's supposed to be reversed in April. At present, that means about a 50 ft difference between local and system flood control elevations on April 15 that will have to be balanced out by the end of April. So if inflows rise across the month, especially in the last half of April, it could become a problem.

Lorz said 18-20 kcfs releases from Dworshak at the end of June would not be the best timing for migrating spring Chinook and requested that water be released earlier, if possible. There aren't a lot of juveniles out-migrating at the end of June. Lorz advocated planning for flow augmentation from Dworshak to dry areas in the basin later this year.

Flood control at Dworshak during April typically means maximum draft until the reservoir elevation intercepts the refill curve, Hall said. Once the project transitions out of flood control, the operational goal becomes 95% confidence of refill while releasing relatively flat flows. Water Supply in 2011 was 4 maf, exceedingly high throughout the basin, while 2018 is probably a 3 maf year with much of the snowpack at Dworshak. The Climate Prediction Center foresees only a slight possibility of colder and wetter conditions. Dworshak inflows may be tracking close to 2011 now, but that will probably change.

The challenge in planning Dworshak operations is the return to service date for unit 3 – a big unknown. Replacement stator bars have been installed, and the contractor says unit 3 will be back in service by late June, but the COE believes it could take longer. Therefore, it's not a good idea to rely on the capability of moving water safely out of Dworshak without TDG impacts. Hall acknowledged the Salmon Managers' desire to boost flows to the extent possible with runoff from Dworshak this year.

Dave Swank, USFWS, asked about the possibility of keeping outflows at 16 kcfs now if there's no peak in early April like there was in 2011. What would outflows look like in the first half of April if the peak never comes? If there's no spike and inflows stay in the 8 kcfs range, the project would be able to continue drafting with a 14 or 16 kcfs release, Hall replied. A spike in low elevation snowmelt and runoff is typical in big water years, and the timing depends on weather. Because low elevation snow is known to be present, elevated inflows can be expected, whether 20 or 30 kcfs remains to be seen. The size of the bump in April releases will be directly related to inflows.

Swank said over the next week, hatchery staff will decide whether to do an early release this year due to TDG impacts in hatchery ponds that aren't protected by vacuum degassers or access to reservoir water. **USFWS** expressed a preference for option 1 because the steelhead in systems 2 and 3 would get some relief if discharges drop to 16 kcfs. If we could hold off on releasing 20 kcfs until April 7-8, that would allow time for hatchery staff to contract for fish transport. The **Nez Perce Tribe** and **Idaho** agreed with the USFWS recommendation for 16 kcfs releases, as depicted in the first scenario.

Scott Bettin, **BPA**, asked whether the hatchery will request a decrease in spill for the early release, and for how long. Dworshak Hatchery doesn't need a decrease in spill because they can release fish directly into the mainstem, but the Clearwater Hatchery might need it, Swank replied.

At current TDG levels, Russ Kiefer said **Idaho** would not request that Dworshak discharges be less than 16 kcfs unless conditions change. **NOAA** favored 16 kcfs releases sooner rather than later, and the **Colville Tribe** had no objection to that operation.

Hall said the **COE** has no objection to reducing discharges to 16 kcfs until a need for further action is seen, such as an inflow event. Next week's updated water supply forecast will help shed light on the situation. Peter Cooper said the **BOR** supports whatever operation the COE deems prudent. The COE will coordinate with BPA on reducing Dworshak discharges to 16 kcfs tonight or tomorrow. That operation will continue for the foreseeable future, pending an inflow event.

3. Methodologies to Monitor Adult Passage in the Snake River

Russ Kiefer asked TMT members to send him comments by Monday morning, March 5, on draft recommendations to the technical research groups who are working on ways to improve tracking of adult passage for in-season management. Kiefer will incorporate the comments

and send out a second draft next week. The goal is to give researchers clear guidance on what the Salmon Managers need to order to make in-season management recommendations to the Action Agencies, and how researchers can slice the data to provide a useful product for TMT's purposes.

Kiefer hopes to hear from every TMT member whether they support the guidelines or recommend changes. He also asked TMT members to let him know if they haven't received the document, and to forward it to any TMT members he might have missed. He said he views this as a living document, subject to inclusion of new information and ideas at any time.

4. March 2018 Juvenile Bypass System Operations

Part of the 2018 court-ordered spill operation includes required screened units by March 1, 2018 in order to operate the juvenile bypasses at Little Goose, John Day, and Bonneville. The plan for meeting these requirements has already been coordinated through FPOM.

Three priority units at Little Goose, four priority units at the John Day, and all powerhouse 2 units at the Bonneville must be screened by March 1, 2018. Baus reported that all three juvenile bypasses are on track for operations starting March 1.

Baus also pointed these operations are described in the 2018 Fish Passage Plan that is now posted to the TMT website under the Fish Passage Plan (FPP) link.

5. Libby Dam – February and March Flood Risk Management Elevations

Joel Fenolio, COE Seattle, gave a TMT heads-up: the Libby forebay elevation at end February is projected to be about 2 ft below its 2387.7 ft February flood risk management target. That is because the Libby inflow forecast jumped from 6.8 maf for February to 7.2 maf in March, which is 122% of average.

The current ESP trace predicts a water supply of 6.3 maf for April-August. In response to an over 25 ft gap between the February and March flood risk management targets, the COE is drafting Libby lower than the February flood risk management target.

Fenolio presented SNOTEL site readings for 2018 along with those for 2011, 2012 and 2017, historic analog years in which the Libby water supply forecast was above average as it is now. Most SNOTEL sites above Libby are currently reporting above average snowpack.

In years with plenty of cold and snow, COE regression forecasts generally perform better predictively than ESP traces, which do a better job of forecasting in dry years like 2015 and 2016 when there's a discrepancy between above-average precipitation and below-average snowpack or earlier runoff.

In the Pend Oreille basin, snowpack is above average, with some Snotel sites close to historic SWE buildup. There will probably be a lot of water passing through the Kootenai and Pend Oreille systems this spring.

6. Next TMT Meeting

TMT will meet next on March 7 to revisit Dworshak operations in light of updated water supply forecasting.

Name	***Affiliation***
Jay Hesse	Nez Perce
Chris Peary	COE Walla Walla
Peter Cooper	BOR
Joel Fenolio	COE
Paul Wagner	NOAA
Jim Litchfield	Montana
Dave Swank	USFWS
Stacy McAfee	Clearing Up
Michael O'Bryant	CBB
Steve Hall	Coe Walla Walla
Logan Thurman	COE Seattle
Tom Lorz	CRITFC/Umatilla
Sheri Sears	Colville Tribe
Scott Bettin	BPA
Doug Baus	COE
Julie Ammann	COE
Lisa Wright	COE
Russ Kiefer	Idaho