COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM
March 14, 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/

Dworshak Operations

Steve Hall, Corps, reported on current and proposed operations at Dworshak. He presented several charts that are available on the TMT web site. Current reservoir elevation is 1477 ft. and drafting, with 5 kcfs inflows and 16.5 kcfs discharge. TDG levels are about 122% in the North Fork Clearwater River and 104.5% in the hatchery. In addition, the inflow forecast suggests an expected bump to approximately 15.5 kcfs around March 16, tapering down afterwards. Today's NWRFC water supply forecast for April-July is 2.8 MAF, which is lower than the NWRFC March 7 forecast. Predictions for the next 10 days are showing a bit warmer temperatures, then wetter and colder conditions for the next 3 months.

Steve added four new water year tracings to the snow-water equivalent slides as requested last TMT. In addition to 2011, there are now comparisons for 2008, 2012, and 2014, at the Crater Meadows, Hemlock Butte, Hoodoo Basin, Lolo Pass, and Lost Lake snotel sites. This year's observations to-date are close to any one of these tracings, and suggest that snowpack will continue to build in the Clearwater Basin. The last set of graphs linked to the TMT agenda for this item shows possible operation scenarios for the four years modeled. Steve thought any one of the four historic scenarios was possible for 2018, depending on future weather events. The flood control elevation for these models was 1445 ft. on April 15th.

Paul Wagner, NMFS, noted that FPAC had questioned whether it might be possible to reduce discharges to 14 kcfs for longer, as opposed to reducing from 16k to 12 kcfs. Steve said this was possible, but they likely would need to go up to 20 kcfs between 3/31-4/15 and that might impact the hatchery release.

Dave Swank, USFWS, reported on a hatchery call that noted a delay until March 26 getting screens at Lower Granite functioning. Therefore, there would be a delay in early hatchery releases from the dates given last week. Hatchery early release dates are now shifted to begin on March 29-30 for spring Chinook; offsite transportation of steelhead from Systems 2 and 3 on March 29 or 30 depending on truck availability; and onsite steelhead releases from Systems 2 and 3 on April 2.

After considerable conversation about the implications of these models, the group reached consensus on a plan for moving forward:

- **ACTION:** The Corps will reduce discharge from Dworshak to 15 kcfs as soon as possible March 14, with the intention of maintaining this outflow until reductions are needed to accompany early hatchery releases on March 29.
- The Corps will model predictions for all four water years assuming a discharge of 15 kcfs, and14 kcfs. This work will be posted on the TMT web site by close of business today (March 14), with an **unscheduled TMT call at 9:00 on March 16** to check in, review the data, and discuss any changes to implementation.
- At the end of the hatchery release period, discharge likely will increase to 20 kcfs, and will remain at that level to meet the flood control target of 1445' on April 15.

Members thanked Alfredo Rodriguez for preparing these models quickly.

Dave Swank updated TMT on fish health in the hatchery. Inspectors observed minor to moderate gas bubble trauma in the gills. Of the 10 inspected spring Chinook in B Bank (blended water) the stomachs of 2 were 75% full, 3 were 25%, and 2 had no food. In System 3 (no reservoir water), of the 10 inspected, 1 stomach was full, 2 were at 30%, 2 were at 10%, and 5 had no food. Because steelhead had been on a reduced ration feed level for many weeks, it is likely these food issues were due to high TDG levels.

Methodologies to Monitor Adult Passage in the Snake River

Russ Kiefer reported that the second draft of the guidelines was completed with comments from TMT members incorporated, and has been shared with FPC and DART personnel. The next step is to receive their work product and assess whether the guidelines should be adjusted. There is no decision step on this process currently, but the procedure for moving forward is reserved for a later TMT meeting.

Chum Operation

Tony Norris, BPA, reported that from now to April 10 outflows at Bonneville may result in a tailwater elevation down near the minimum protection level of 11.8 feet on some hours due to managing flood risk at at Grand Coulee. Charles Morrill, WA, will report on chum emergence data next week.

The next TMT meeting will be an unscheduled conference call on March 16, 2018, at 9:00 AM. The next regularly scheduled meeting will be face-to-face on March 21, 2018, at 9:00 AM. Agenda items include: Chum emergence information; Status of LGR and screens, Transport planning/decision for the year; Spill priority list; Power system emergency plan; and System Operations review.

Columbia River Regional Forum
TECHNICAL MANAGEMENT TEAM OFFICIAL MINUTES

March 14, 2018
Minutes: Pat Vivian

1. Introduction

Representatives of Idaho, Washington, BOR, the Umatilla and Colville tribes, USFWS, Oregon, BPA, NOAA 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 and Alfredo Rodriguez, COE Walla Walla, reported.

2a. Hourly Data. Dworshak Dam has drafted to 1477 ft with discharges of 16.5 kcfs. Inflows are 5 kcfs and increasing.

2b. Dworshak Hourly TDG Data (tailrace and hatchery). Total dissolved gas levels are 122% saturation in the river and 104.5% in the Dworshak National Fish Hatchery raceways.

2c. NWRFC Dworshak Dam Inflow Forecast. The inflow forecast is expected to peak at 15.5 kcfs by March 16 and taper down after that.

2d. NWRFC Water Supply Forecast North Fork Clearwater – Dworshak Dam. The 5 day QPF ensemble shows a 2.8 maf forecast for April-July, which is lower than the official forecast the COE released at the beginning of the month. The zero day QPF forecast is 2.9 maf, which is quite a difference from the 10 day QPF precipitation forecast.

2e. NWRFC Climate Forecast. Temperatures are expected to be colder than average with above average precipitation over the long term. The next few days should be warmer, but the 6-10 day and the 3 month forecast is for wetter and colder conditions.

2f. Snow Water Equivalent – Multiple Years. In response to a request from Oregon at the last TMT meeting, Steve Hall added modeling results for 2008, 2012 and 2014 to the modeling for 2011, the closest analog year to 2018. Models of all four years were presented for several SNOTEL stations throughout the basin – Crater Meadows, Hemlock Butte, Hoodoo, Lolo Pass, and Lost Lake. Crater Meadows and Hemlock Butte are tracking closely in three of the four analog years. Lolo Pass is

very close to 2011, while Hoodoo is slightly below 2011 and closer to 2012. Snowpack at Lost Lake this year exceeds all the analog years. All indications are there's a lot of snow in the basin, and it's expected to grow.

2g. Proposed Operations for Water Year 2018. Steve Hall presented operational scenarios based on the four analog years.

- The 2011 model shows Dworshak holding 16 kcfs out through March 25 then dropping to 12 kcfs out for 3 days would put the reservoir at slightly below the end of March flood control target, but the 2011 inflow event would force discharges to increase to 20 kcfs to reach the April 15 flood control target.

- In 2008 the hydrograph followed an ideal runoff pattern, with late runoff and cool weather until May. Inflows stayed in the 6-10 kcfs range throughout April. If 2018 follows that example, Dworshak could hold 16 kcfs out through March 25, then drop to 12 kcfs and finally 5 kcfs to reach the April 15 flood control target.

- The 2012 scenario shows a substantially earlier runoff than in 2008. Under this scenario, Dworshak would hold 16 kcfs out through March 25 and drop down to 12 kcfs for 3 days, then it would have to go to 18 kcfs out and finally 20 kcfs to reach the April 15 flood control target.

- While the first three scenarios all modeled 3 maf inflows or greater, 2014 had a 2.9 maf runoff volume, with several small spikes early in March. Under this scenario the April 15 flood control elevation would be 1460 ft, not 1445 ft. Dworshak would hold 16 kcfs out through March 25, then drop to 12 kcfs through April 15 and back off to 4 kcfs through most of the refill period.

Dave Swank asked why yesterday's FPAC call referred to a different April 15 flood control elevation than 1445 ft; Ron Malmgren, COE, said that's been corrected and the April 15 elevation is indeed 1445 ft.

Yesterday FPAC discussed the current 16.5 kcfs operation based on an assumption that outflows would drop to 12 kcfs for 3 days, Paul Wagner, NOAA, said. Would it be possible instead to reduce discharges to 14 kcfs and maintain it, rather than dropping to 12 kcfs as originally requested?

Rodriguez said yes, 14 kcfs is a viable option, although eventually discharges will likely have to go up to 20 kcfs for 16 days between the

end of March and April 15. He has already modeled this operation for 2011, the year most resembling 2018, and will model the other three analog years soon. He will also model the 14 kcfs discharge scenario using the latest 10 day STP forecast. The updated scenarios will be posted to the TMT website in the next day or so.

Dave Swank requested modeling of 15 kcfs out as well. He wanted to know how many days discharges could be kept down to 15 kcfs and when that would force outflows up to 20 kcfs. The goal is to schedule low outflows on days when smolts are likely to be released. Initially this was March 26-28, but the latest information on the Lower Granite juvenile bypass system indicates that screen installation will not start until March 26, pushing the JBS opening date out to March 29-30. Therefore, smolt release dates have been shifted to March 29-30 for Chinook and to March 28-30 for trucking steelhead from system 2 and 3, depending on availability of staff and trucks. On April 2, Dworshak hatchery plans to release the onsite steelhead from system 2 and 3 into the mainstem, where TDG levels have been relatively low and reduced outflows aren't critical.

As for the Clearwater River hatchery, Russ Kiefer said IDFG would be willing to forego 2 days of reduced discharges for a smolt release on March 29-30 in exchange for dropping discharges to 14 kcfs now in an attempt to get the federal hatchery fish back on feed. While the preference would be for lower TDG levels, the hope is that the IDFG smolts will disperse from the North Fork quickly. Based on last year's experience, this plan should work.

At this point Russ Kiefer summarized the Salmon Managers' preferred alternative: Drop DWR outflows to 14 kcfs as soon as possible until next week, preferably holding 14 kcfs out until March 30 unless there are changes in the weather or JBS opening date. The COE will provide additional modeling to aid in decision making as the March 29-30 release date approaches. If runoff is delayed like it was in 2008 and circumstances warrant, the Salmon Managers might request reduced discharges for the fish releases.

Swank said his only concern with this plan is that increasing discharges to 20 kcfs out on March 30 would expose the steelhead scheduled for direct release into the Clearwater on April 2 to a weekend of elevated TDG levels. This is why he asked the COE to analyze 15 kcfs out instead of 14, although USFWS would prefer 14 kcfs as soon as possible.

Baus asked whether the Salmon Managers would prefer to see the updated model runs before making any changes to the Dworshak

operation. **USFWS, Washington, Idaho, the Colville Tribe, CRITFC/Umatilla Tribe,** and **Oregon** agreed the best course of action is to drop discharges to 15 kcfs now, then revisit the model runs in a conference call the morning of March 16. Accordingly, the COE will coordinate with BPA and reduce Dworshak outflows to 15 kcfs as soon as possible.

2h. Fish Health Report. Swank reported on the latest hatchery sampling results. The fish are still showing symptoms of minor gas bubble trauma such as bubbles in the gills, but the real concern is whether they're feeding. For the spring Chinook in B-bank, which gets some benefit from the low oxygenation system but not full benefit, 2 fish had 75% full stomachs, 3 fish were 20% full, 2 fish were 10% full, and 2 fish had no food at all in their stomachs. Of the steelhead in system 3, which gets water directly from the river with no addition of reservoir water, 1 fish had a full stomach, while 2 were 30% full, 2 were 10% full, and 5 had no food at all in their stomachs. This is a recent phenomenon most likely due to elevated TDG levels.

3. Methodologies to Monitor Adult Passage in the Snake River

Russ Kiefer recently sent out a revised version of his report that incorporates edits and comments from TMT members. He thanked everyone for their input and will send the revised document to FPC and DART researchers who are working on methodologies to improve in-season tracking of adult passage and conversion rates. The next step will be review of the methodologies. Kiefer said he has discouraged researchers from including decision criteria in their methodologies because TMT's role is to make in-season management decisions.

4. Chum Operation

Tony Norris gave TMT a heads up that between now and April 10, during some hours the Bonneville tailwater elevation could come close to the minimum protection level of 11.8 ft. Significant draft of upstream storage projects is expected after April 10 depending on inflows at Grand Coulee and the Snake River. Erick Van Dyke asked about tracking of biological information for chum emergence. Washington might be able to provide a report on chum emergence at the next TMT meeting, Charles Morrill said.

5. Next TMT Meeting

TMT will meet next in a conference call this Friday, March 16 to review updated modeling of Dworshak operations.

The next regular TMT meeting will be in person on March 21. Dworshak operations, the Lower Granite juvenile bypass system, transportation planning, the spill priority list, the power system emergency action plan, and possibly chum emergence will be on the agenda.

Name	***Affiliation***
Russ Kiefer	Idaho
Charles Morrill	Washington
Joel Fenolio	BOR
Tom Lorz	CRITFC/Umatilla
Sheri Sears	Colville
Dave Swank	USFWS
Erick Van Dyke	Oregon
Tony Norris	BPA
Scott Bettin	BPA
Doug Baus	COE
Paul Wagner	NOAA
Lisa Wright	COE
Ron Malmgren	COE
Dan Turner	COE
Aaron Marshall	COE
Steve Hall	COE Walla Walla
Charles Wiggins	DSC
Wayne Jousma	COE Walla Walla
Amanda Morelos	COE Walla Walla
Alfredo Rodriguez	COE Walla Walla