

COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

March 19, 2014

Facilitator's Summary

Facilitator & Notes: Emily Plummer, 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.

Review of Meeting Minutes

With no suggested edits to the 2/19 and 3/5 Official Minutes and Facilitator's Summaries, the notes were considered final.

Water Supply Forecast

Doug Baus, COE, shared that the official water supply forecasts for March have been posted on the TMT website (<http://www.nwd-wc.usace.army.mil/tmt/>). Official forecasts are as follows:

- The Dalles April – August 88 MAF (101% of average)
- Lower Granite April – July 21 MAF (108% of average)
- Dworshak April – July 2,701 KAF (111% of average)
- Grand Coulee April – August 58 MAF (102% of average)
- Libby April – August 5,505 KAF (94% of average)

Mary Mellema, BOR, shared the official March forecasts for Reclamation projects:

- Hungry Horse is currently at 3,528ft and is releasing approximately 3,200cfs, increasing to release 9,400cfs later this week. The March 1 forecast was 109% of average and the latest forecast is putting HH at 124% of average. The project will be increasing discharges and likely spilling throughout April.
- Grand Coulee midnight elevation is 1,270.25ft. The forecast shows increasing water supply and thus the flood control elevation will be lowered; the project will be drafting to meet flood control elevations. Mary noted the similarity to 2011 and 2012 discharges.

It was noted that the NWRFC water supply and NRCS SNOTEL are continuing to increase from the official forecasts issued on March 5th. Russ Kiefer, Idaho, pointed out that there is gradation across the Columbia Basin, with a wet Northeast and dry Southwestern basin.

Joel Fenolio, COE, reported on the current conditions at Libby. He noted that the current snow water equivalent (SWE) in the east and northern portions of the basin are similar to 2013 conditions, however, SWE in southern parts of the basin is higher than in 2013. He noted that for March, precipitation in West Glacier is 430% of average. Models are forecasting 6.4 MAF, which is in line with RFC forecasts and similar to the last five water years. Libby is expecting to begin drafting next week to meet flood control and due to a unit outage in April will likely reach full capacity in April. Joel also noted that there is some benefit for both flood control and sturgeon if the project pushes the water out early; however, the project has to work to balance multiple objectives. The project is trying to prevent early draft in June and thus will target releasing 400-500 KAF by the end of March. There was inquiry as to if COE had abandoned the mid-month targets, to which Joel affirmed that due to past deviations from the mid-month target and the fact that the end-month target satisfies flood control requirements, COE has stopped using the mid-month control. This allows the project more flexibility to adjust to changes in forecasts.

Steve Hall, COE, reported on the current conditions at Dworshak. He noted that the conditions are similar to those at Libby, and that the project has already implemented operations to address the increase in water volume. In order to meet end of March flood control, the project is currently releasing 17 KCFS, which puts the project above TDG limits. There was inquiry as to if the project will hold 17 KCFS, to which Steve responded that due to considerable increases in precipitation, it is likely that there will be another jump in April and the project may have to spill more to meet flood

control. It was clarified that the TDG exceedences are in response to the project targeting flood control and that there are exemptions from the standards. COE is coordinating closely with ID DEQ and the fish hatcheries to minimize the impacts of the exceedences.

Mary Mellema, BOR, added that Hungry Horse and Grand Coulee are tracking similarly to Libby and Dworshak. Hungry Horse is operating at and will hold at full powerhouse; they will likely have to spill more in April in order to hit flood control targets for the end of April. Coulee is drafting, which may result in being below flood control targets at the end of March, however, at this point there is not a specific target for the end of March. It was noted that the projects are having to chase an increasing water supply forecast and are operating with the intention of avoiding extreme draft or spill. TMT posed the following questions:

- Q: How is this impacting operations for Vernita Bar and fry protection?
 - o A: It is challenging, however, the project is coordinating closely with Mid-Columbia partners and meeting Vernita Bar and fry protection operations is a priority for all partners.
- Q: What are the drum gate maintenance plans?
 - o A: There will not be drum gate maintenance this year because of the low runoff forecast and precipitation early this year causing a delay in planning and start of the maintenance. There are also potential challenges posed by Wanapum repair needs where there may be more flexibility needed at Grand Coulee. However, as Grand Coulee is drawn down this year for flood control there may be some maintenance on drum gate 11 and more gates as possible. This maintenance will not be considered full drum gate maintenance, which means maintenance will be required in 2015.

Spill Priority List

Scott English, COE, shared the draft Spring 2014 Spill Priority List (SPL) that will be implemented on April 1-May 31 through the initial spring conditions. Scott noted that the spill priority order of projects is the same as last year and that if there are comments or questions please contact COE. Russ Kiefer, Idaho, noted that the SPL was not discussed at FPAC, however, with general consent from the fish managers present, suggested an alteration:

1. March 24 –March 31: BON, LWG, LGS, LMN, IHR, MCN, JDA, TDA, CHJ, GCL, DWR
2. April 1 – approximately April 28 (2 days prior to start of performance testing): LWG, LGS, LMN, IHR, MCN, JDA, TDA, BON, CHJ, GCL, DWR
3. Approximately April 28 – mid-May : LWG, LGS, LMN, IHR, JDA, TDA, BON, MCN, CHJ, GCL, DWR

The objectives of the respective SPL are: 1) Increased likelihood of continued operation of the Bonneville Dam Powerhouse Two Corner Collector through March, 2) Prioritize spill from LWG down to BON, and 3) Move MCN near the bottom of the SPL due to performance standard testing at MCN.

- **ACTION:** Doug Baus and Lisa Wright, COE, will post the modified SPL on the TMT website by noon on March 20, 2014. The revised lists will be implemented in accordance with the dates identified above.

BON Corner Collector

The group discussed TMT preference for the order of closure of the corner collector, PH1 ice and trash sluiceway, and bays 1 and 18, at Bonneville if necessary in order to reduce TDG. The group agreed that in order to attract fish, priority is to keep the corner collector open as long as possible. With the assumption that PH 1 is operating with 2 or more units, the group agreed that if necessary to reduce TDG, the project will first reduce the spill cap spill then discontinue project spill in the following order:

1. Bays 1 and 18
2. PH1 Ice and trash sluiceway
3. Corner collector

COE noted that they are open to further discussions if preferences change.

Vernita Bar Update

Russell Langshaw, Grant County PUD, updated TMT on Vernita Bar. Russell reported that emergence is expected on March 22nd, and rearing protection will begin on March 23rd. He noted that although there may be challenges due to special operation requests and ladder maintenance, at this point everything is going well and the operation is expected to be successful. Russell will provide an update at the next TMT meeting.

Chum Update

Charles Morrill, Washington, Doug Baus and Lisa Wright, COE, said the chum operation is going well and continuing to meet targets. Based on accrued temperature units from the Ives piezometers, modeling by PNNL, and the observed spawn timing for Chum in the Ives area, fry emergence reached 40 % on March 14 and is expected to reach 100 % by the end of the week. Current Bonneville tailwater is 19.6ft and the water conditions are great. TMT will receive an update at the next TMT meeting.

Operations Review

Lisa Wright, COE, reported on COE projects. Libby was at elevation 2,423 feet, with 5kcfs inflows and 4kcfs outflows. Albeni Falls was at elevation 2052.8 feet, with 25.7kcfs inflows and 22.2kcfs outflows. Dworshak was at elevation 1,532.3 feet with 9.1kcfs inflows and 17.1kcfs outflows. Lower Granite average outflows were 74.7kcfs; McNary outflows were 241.3kcfs; and Bonneville outflows were 262.2kcfs.

Fish

Paul Wagner, NOAA, reported on fish, noting that it is still early in the season; however, there is migration from the Snake and the Columbia basin is seeing yearling movement. Throughout the last few weeks, between 400 and 1,500 yearlings have passed Bonneville and sub-yearlings, mostly fry, are moving downstream. Some Coho, Sockeye and Steelhead have passed Bonneville, and more are expected soon. There are a few Steelhead in the upper basin. Approximately 200-700 Lamprey have passed Bonneville; Dave Statler, Nez Perce, noted that due to increased flows there should be an increase in ammocete movement. Adult numbers are beginning to climb, with 10 Chinook and up to 100 winter Steelhead past Bonneville. A couple hundred winter Steelhead are passing Lower Granite per day; these are over-wintering fish that are looking to spawn.

Water Quality

Scott English, COE, reported on water quality. He noted that the Districts are working with service providers to ensure that all of the gauges are in place and working. With the exception of the Bonneville tailwater gauge, which is currently being replaced, all gauges are currently operating. Tina Lundell, COE, shared that a pipe system for the Bonneville tailwater gauge will be installed on March 21st and USGS will be collecting real time data by April 1st. The gauge replacement was coordinated at FPOM.

Power System

Nothing to report.

The next TMT meeting will be face to face on April 2nd at 9:00 am.

Agenda items include:

- Water Supply Forecast Update
- Spill Priority List Update
- Vernita Bar Update
- Chum Update
- Libby Summertime Operations
- Other?

Columbia River Regional Forum
TECHNICAL MANAGEMENT TEAM – OFFICIAL MINUTES

March 19, 2014
Minutes: Pat Vivian

1. Introduction

Today's TMT meeting was chaired by Doug Baus, COE, and facilitated by Emily Plummer, DS Consulting. Representatives of the COE, Washington, USFWS, NOAA, Oregon, BPA, BOR, Idaho, Montana, Nez Perce, Montana, CRITFC, Yakama and others attended. This summary is an official record of the proceedings, not a verbatim transcript.

2. Review Meeting Minutes – February 15 and March 5

There were no comments on the facilitator's notes or meeting minutes for the February 15 or March 5 meetings so they were deemed final.

3. Update on Water Supply Forecasts and Operations

Baus presented the COE's official March forecast for individual basins:

- TDA (April-August) – 88 MAF, 101% of average
- LWG (April-July) – 21 MAF, 108% of average
- DWR (April-July) – 2701 kaf, 111% of average
- GCL (April-August) – 58 MAF, 102% of average
- LIB (April-August) – 5505 kaf, 94% of average
- HGH (April-August) – 2110 kaf, 109% of average;
(May-September) – 1845 kaf, 109% of average

Discussion turned to the effects of rising inflows since these official forecasts were made on the fifth working day of March. Snow-water equivalents continue to build, as shown in current data from NRCS snow stations. Data from SNOTEL sites are following a similar trend, with the driest readings in southwest areas of the Columbia basin and the wettest readings in the northeast. Discussion turned to managing flows in specific basins.

Libby: Joel Fenolio, COE, reported that precipitation in the Kootenai basin has been between 250-400 percent of average, and the official forecast for Libby will jump from 5.5 MAF in March to at least 6.2 MAF in April and could get as high as 6.4 MAF. This trend is reflected in ESP traces as well. At 6.4 MAF, the current April 10 target of 2412' (based on a forecast of 6.2 MAF) would drop to 2402' so the COE plans to begin drafting 9-15 kcfs out of Libby next week. Heading toward 2412' is primarily for flood control but also benefits sturgeon and drops VARQ flows from an estimated 20-22 kcfs to 17 kcfs. The storage reservoir diagram for Libby shows the reservoir now has about 1.5 MAF of space, so the COE will be trying to push another 400-500 kaf out of Libby over the next month. In response to questioning, Fenolio explained that the COE stopped operating to mid-month targets when the water control manual for Libby Dam was updated last year. This change removes unnecessary paper work and allows for more operational flexibility to meet end of month targets.

Dworshak: Like Libby, Dworshak is seeing increased volume forecasts, Steve Hall reported. Dworshak discharges were increased to 17 kcfs which is generating TDG levels of 112-113%. This

operation is required for the sake of flood control although it violates state water quality standards. The COE is working closely with Idaho and local hatcheries to minimize the impact of TDG exceedances. The COE is also in the process of shifting 75 kaf of storage space from Dworshak to Grand Coulee because the April forecast for Dworshak is expected to jump from its current level of 2.7 MAF to 2.8 MAF. That would require almost 1700 kaf of space in April, an increase of 300 kaf over what's required now. The current end of March target for Dworshak is 1517' but it will probably go lower than that. TMT can expect significant outflows from Dworshak in April.

Hungry Horse: Mary Mellema, BOR, reported. The March 1 forecast for HGH is 109% of average but conditions are following the same escalating trend as Libby – the preliminary HGH forecast for April is 124% of normal. The BOR increased discharges to 3.5 kcfs last night and will continue to ramp up to 9.4 kcfs discharges by Friday, which amounts to 1 kcfs spill at full powerhouse with 3 units operating. It will probably be necessary to spill more than 1 kcfs in April to reach potential target elevations in light of the rising forecast.

Grand Coulee: The GCL forecast is also increasing, with no specific flood control target until an updated forecast is available, Mellema said. It was noted that all of the projects are operating to escalating water supply forecasts. Tony Norris, BPA, noted that the end of April flood control elevation at GCL is especially sensitive to changes in the water supply forecast when the forecast is close to average. Changes to the water supply forecast and the associated end of April flood control are being tracked carefully now in order avoid extreme amounts of spill or draft rate exceedances that could cause problems in the reservoir and downstream. Charles Morrill, Washington, asked how this might affect Vernita Bar flows. The Action Agencies are coordinating closely with the mid-Columbia PUDs to accommodate the repair of Wanapum Dam while maintaining Vernita Bar protections for fry emergence, Norris replied. Kiefer asked how all this will affect drumgate maintenance, and Mellema said it will be postponed this year due to lack of a reliable window for completing the full 8 weeks of work, in addition to a special need for operational flexibility to accommodate the Wanapum repairs. While Coulee is drafted down this year, the BOR will do as much maintenance as possible on drumgate 11, Mellema said. In 2015, drum gate maintenance will be required.

4. Spill Priority List

Scott English, COE, presented for final TMT concurrence the spring spill priority list discussed at the last TMT meeting and posted to today's agenda. Russ Kiefer, Idaho, wondered whether the list should be implemented earlier than April 1 in case fish are moving earlier this year due to unusually high flows. The Salmon River has the highest flows on record.

Baus said the COE would be willing to move up the start date, but it might be difficult to implement the list earlier than April 1 and keep the BON powerhouse 2 corner collector operating in March. Operation of the corner collector in March is challenging because Oregon state water quality waivers for spill season don't start until April 1. In past years, TMT has been asked to prioritize the closure of fish passage routes at BON when TDG levels exceed 110% at Warrendale before the OR waiver goes into effect. One benefit of having BON at the top of the spill priority list in March is that involuntary spill does not preclude operation of the corner collector when TDG levels exceed 110%. That potential benefit could be lost if BON is moved to the bottom of the list.

Kiefer recommended moving BON from the bottom to the top of the April 1 spill priority list and implementing that list prior to April 1. He also recommended keeping MCN in its normal position from April 1 until performance testing begins on approximately April 28, when MCN would move to the

bottom of the list prior to CHJ. Bill Proctor said the COE would accommodate this proposal if FPAC supports it.

There was agreement on the following spill priorities, which the COE will post to the TMT website. The purpose of these lists is to facilitate operation of the corner collector prior to April 1 and MCN performance testing beginning April 28, Lisa Wright, COE, clarified.

- March 24-31: BON, LWG, LGS, LMN, IHR, MCN, JDA, TDA, CHJ, GCL, DWR
- April 1-28: LWG, LGS, LMN, IHR, MCN, JDA, TDA, BON, CHJ, GCL, DWR
- April 28-mid May (MCN spring performance test): LGR, LGS, LMN, ICR, JDA, TDA, BON, MCN, CHJ, GCL, DWR

The COE will implement these changes beginning Monday, March 24. Baus asked TMT to prioritize routes at Bonneville Dam (the ice and trash sluiceway, or spill bays 1 and 18) for closure if necessary for TDG management. Dropping the spill cap is another option to consider before shutting off any passage routes, Proctor said. Kiefer noted the ice and trash sluiceway benefits juvenile passage, while spill bays 1 and 18 benefit adult passage. Therefore he recommended bays 1 and 18 be shut off first because impacts to adults would be less serious than for kelts and juveniles passing through the ice and trash sluiceway at this time of year.

Proctor said it's likely the COE will be forced to spill anyway and no triage will be needed. However, if conditions and priorities change TMT could have a conference call to discuss options. If the COE has to curtail spill because of TDG levels, Kiefer asked that TMT be notified. In an effort to maintain operation of the corner collector as long as possible the TMT agreed taking the following steps if TDG exceeded 110%:

1. Lower spill cap
2. Close bays 1 and 18
3. Close powerhouse 1 ice and trash sluiceway
4. Close corner collector

5. Vernita Bar Update

Russell Langshaw reported that rearing protections for emergence will begin on March 22. That includes daily delta constraints, anti-stranding operations and flow bands. Langshaw will report at the next TMT. Spillway construction outages for fishways will no doubt be in effect by then.

6. Chum Update

Fry emergence is under way at BON, Charles Morrill, Washington, reported. Water conditions are good. Baus said the COE is maintaining the chum operation with no difficulties. Current tailwater elevation is 19.6' which is adequate for chum protection. According to data provided by PNNL, peak emergence occurred around March 14, Wright reported. Approximately 40% of chum fry have already emerged and the rest are expected to emerge by March 21.

7. Operations Review

a. Reservoirs. Hungry Horse is at elevation 3528 feet, releasing 3500 cfs. Grand Coulee is at elevation 1270.25 feet, drafting heavily.

Libby is at elevation 2423 feet with inflows of 5 kcfs and releases of 4 kcfs. Albeni Falls is at elevation 2052.8 feet, with inflows of 25.7 kcfs and releases of 22.2 kcfs. Dworshak is at elevation 1523.3 feet with inflows of 9.1 kcfs and releases of 17.1 kcfs.

Lower Granite daily average outflows are 74.7 kcfs. McNary daily average outflows are 241.3 kcfs. Bonneville daily average outflows are 262.2 kcfs.

b. Fish. Paul Wagner reported. The yearling smolt index at Bonneville Dam rose from 400 to 1500 fish per day over the past few weeks. Yearlings are moving in the upper basin of the Salmon River. Adult passage numbers at BON are beginning to climb. Steelhead are passing at rates of up to 100 fish per day, with a total of 2500 to date for the year. Fish that overwintered in the hydrosystem are now seeking spawning locations. Pacific lamprey macrophthalmia are also migrating which is to be expected at this time of year, Dave Statler, Nez Perce, said.

c. Water Quality. Scott English, COE, reported that all gauges are now operational except the tailwater gage at BON, which is being replaced. Tina Lundell, COE Portland, gave details of the replacement. Because the site has failed in the past, this time the COE designed a more robust system. The pipes will be installed March 21 and the site is expected to be collecting data by April 1. An onshore and offshore anchoring system and rebar into the ground are expected to keep the equipment stable for years regardless of high flows.

d. Power System. There was nothing to report today.

8. Next TMT Meeting

The next TMT meeting in person will be April 2, with a water supply forecast update, spill priorities, Vernita Bar operations and a chum update on the agenda.

Name	Affiliation
Doug Baus	COE
Charles Morrill	Washington
David Wills	USFWS
Paul Wagner	NOAA
Erick Van Dyke	Oregon
Tony Norris	BPA
Mary Mellema	BOR
Russ Kiefer	Idaho
Lisa Wright	COE
Laura Hamilton	COE
Scott English	COE
Karl Kanbergs	COE
Bill Proctor	COE

Phone:

Jim Litchfield	Montana
Scott Bettin	BPA
Dave Statler	Nez Perce Tribe
Tina Lundell	COE Portland
Steve Hall	COE
Joel Fenolio	COE Seattle

Heather Dohan	Puget
XX	USFWS
Margaret Filardo	FPC
Mike Shafley	Snohomish PUD
Brian Zigler	Snohomish PUD
XX	Grant PUD
Barry Espenson	CBB
Russell Langshaw	Grant PUD
XX	Energy GPS
Tom Iverson	Yakama
Tom Dresser	Grant PUD
Tom Lorz	CRITFC