

COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

April 2, 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

The group commented on the 3/19 Facilitator's Summary, noting a few changes:

- There is gradation in the water supply across the Columbia Basin: the Northeast is wet and the Southwestern basin, *not the Southeastern basin*, is dry.
- Average precipitation, *not SWE*, in West Glacier was 430% of average.
- It was also noted that Joel reported that Libby was trying to prevent early draft in June and thus will target releasing 400-500 KAF, *not 4-5 KAF*, by the end of March.

The group will review the 3/19 Facilitator's Summary and respond to Emily Plummer with any changes prior to the 4/16 TMT meeting. With no suggested edits to the 3/19 Official Minutes, the minutes were considered final.

Water Supply Forecast

Doug Baus, COE, shared that the current NWRFC water supply forecasts for April, noting that the official forecast will be determined based on the April 7 NWRFC forecast will be posted on the following website <http://www.nwd-wc.usace.army.mil/tmt/>. Current NWRFC forecasts are as follows:

- The Dalles April – August 93 MAF (106% of average)
- Lower Granite April – July 22 MAF (113% of average)
- Libby April – September 6.9 MAF (110% of average); the official April – August forecast for Libby is expected to be between 6.7-6.8 MAF.

It was noted that the NWRFC water supply and NRCS SNOTEL are continuing to increase. The NRCS SNOTEL forecasts show below average SWE in the Southwestern Columbia River Basin and above average SWE in the Northeastern Basin.

Vernita Bar Update

Russell Langshaw, Grant County PUD, updated TMT on Vernita Bar. Russell reported that emergence protection was initiated on March 23rd, with no exceedences at this point. He noted that the temperatures recorded may be a few degrees off due to the draw down. Priest Rapids has been operating to the 40,000kcf flow band constraint. Russell will provide an update at the next TMT meeting. The following questions were posed by TMT members:

- Q: How much longer are you expecting to implement this operation?
 - Response: Typically it runs into the 2nd or 3rd week of June; models are projecting June 21st for this season.
- Q: When is peak emergence?
 - Response: Peak emergence typically occurs in late April. This year the water is running colder and will likely extend emergence. Models are projecting that the weekend flow program will occur during the period between May 3-25th to provide protection for juveniles that emerged during the peak emergence period.

Wanapum Dam Update

Russell Langshaw, Grant County PUD, updated TMT on the Wanapum Dam fracture. Russell's presentation is available on the TMT website. He noted that about a month ago a 65ft fracture was found in one of the monolith piers (Pier 4), leading to an emergency draw down and concern for potential failure and eminent threat. The fracture has since been downgraded to a non-emergency. Grant County PUD is working with an independent Board of Consultants and Forensic

Team to establish goals and objectives, to identify the extent of the fracture, and repair needs. The reservoir is currently operating in the 541-545ft range and will be held there until the failure is defined, other piers have been inspected and there is a plan in place to rehab Pier 4 (and others if necessary). Grant PUD is currently drilling into the pier to identify the extent of the failure. Partial restoration of the forebay level to minimum operation elevation is estimated for July 1st. Russell noted that fish passage is a top priority and that juvenile bypass is operating, with all downstream passage routes available. Adult passage has been retrofitted at Priest Rapids and is operating; construction on adult passage retrofits at Wanapum is underway and expected to be operational by April 15th. Trap and haul at Priest Rapids will also begin on April 15th. The surface passage bypass at Wanapum will be operating and has 99% survival according to acoustic telemetry. The following questions were posed by TMT members:

- Q: Is there a specific ladder preference for fish?
 - Response: There is some species preference, however, 70-80% of the fish use the river-left bank ladder.
- Q: Does the crack in the monolith extend through the monolith pier and into the spillway?
 - Response: At this point it is unclear. It is expected that it is centered on the monolith and extends into the OG on each side.
- Q: Did water come out of every drill hole that was made in the monolith?
 - Response: Water came out with some of the drilling, however, was stopped with temporary sealing. They are planning to drill all the way through the monolith and inspect the bores visually, as well as evaluate the core samples.
- Q: Do you have any report back on the core samples at this point?
 - Response: At this point the only information available is that there has been some corrosion on the rebar; however, this may be a normal occurrence.
- Q: Will you be able to measure juvenile fish passage efficiency at Wanapum this year?
 - Response: Grant PUD is not sure at this point; at a minimum there will be PIT tag monitoring and passive, run of the river monitoring. They are also discussing options for an acoustic telemetry study.
- Q: Do you think there could be adverse impacts on juvenile egress in the tailrace caused by the lower (5 rather than 20k cfs) spill for juvenile fish passage?
 - Response: Based on current operations Grant PUD does not anticipate the lower spill rate (5 k cfs) will adversely impact tailrace conditions for juveniles but will be monitoring the situation.
- Q: In regards to the Wanapum adult fish passage weir and ramp that is being constructed, is Grant PUD screening the pumps for juveniles and/or lamprey?
 - Response: No, screening the pump was a limiting factor to efficiently implementing passage. NMFS allowed Grant PUD not to screen because juveniles will still have access to passage routes; they are not expecting the pumps to be an issue for significant numbers of juveniles.
- Q: How many fish is Grant PUD expecting to trap and haul at Priest Rapids?
 - Response: Forecasts are calling for 30,000-40,000 fish per day, with approximately 75-100 fish per truck, more if necessary. Trucking needs are dependent on the fish and trips are dependent on the release locations. Trips are expected to take anywhere between 30 minutes and 3 hours depending on where the fish are taken. [It was noted via edits that 30,000-40,000 fish per day may be realized later in the season when the ladder is functional, however, fewer fish are expected in the Wanapum area during the truck and haul period.]
- Q: In regards to the trap and haul operations, will WDFW close fishing at the release areas?
 - Response: There is no open season until summer. Additionally, there is no public access to the banks or reservoir due to safety and cultural resource concerns.
- Q: Will Grant PUD increase avian hazing efforts to limit impacts to productivity?
 - Response: Grant PUD is coordinating with partners on foraging and nesting impacts and working within the avian plan. They will monitor and will have crews onsite that can increase hazing if necessary.
- Q: Is Grant PUD planning on counting the fish that go over the flume?
 - Response: There will be some staff onsite monitoring and recording. It would be a good idea to also get passage counts to supplement PIT tag data.
- Q: What information are you hoping to gather from tagging at Bonneville?

- Response: Specifically transit time between McNary and Priest Rapids to inform impacts on passage and timing. Tagging will be focused on Spring Chinook at Bonneville and not McNary because Bonneville currently has tagging infrastructure.
- Q: Do you have estimates on reservoir travel times?
 - Response: We haven't done any calculations and are not expecting to run models. However, normal travel time is approximately 3 days, now it is potentially down to 2 days.
- Q: How confident are you that you'll be able to return the forebay elevation to 562ft by July 1st?
 - Response: It is very optimistic; if everything goes as planned it is possible. There are a lot of factors that could influence that date.
- Q: How much hydraulic capacity do you have in the Powerhouse and do you expect to spill the rest?
 - Response: Right now 8 of 10 turbines are operating; all 10 are expected to be online by June. The priority is to send as much water through the turbines as possible, and spill the rest. Grant PUD is currently modelling for TDG limits.

Little Goose Navigation Lock Update

Doug Baus, COE, provided an update on the Little Goose navigation lock, following up on a notification sent to TMT members on 3/25 stating that there is a crack in a gudgeon linkage on the lock. Doug recounted that the crack was noted during an annual inspection; Steve Hall, COE Walla Walla, clarified that the crack was previously noted, however, had expanded at a rate that suggested that it could potentially fail prior to the next outage window. Doug shared that the replacement parts are expected to arrive at the project by April 4th, the contract has been awarded and work is expected to begin this weekend, with the lock back online on May 1st. COE recognizes that this could pose a challenge to TMT coordination on spring transport and will hopefully have more information at the FPOM meeting on the 10th and the TMT meeting on the 16th. There was inquiry as to if there were plans to replace all of the linkages, to which Doug responded that he believes only the cracked linkage will be replaced at this point.

- **Action:** TMT Fish Managers will discuss transport preferences at the 4/15 FPAC meeting; and Doug will provide an update on the navigation lock repair at the TMT meeting on the 16th.

Libby Operations

Jim Litchfield, MT, shared that as a result of conversations at the 3/19 TMT meeting regarding the desire for uniform summertime flows, MT is working with the Kootenai Tribe to draft a SOR for late summer/fall flow operations at Libby. Jim will continue moving forward with a draft and will have an SOR ready for the 4/16 TMT meeting.

Spring Creek Hatchery Release

Dave Wills, USFWS, reported that there will be two Spring Creek hatchery releases, one on April 11th and another in the first week of May. Per the Water Management Plan, TMT will coordinate passage through the Bonneville turbines. Dave proposed that this year's operation be similar to last year, noting that current flow forecasts suggest that the project should have the capacity to operate for passage. Doug Baus concurred that the 10 day forecast shows inflows that should allow COE to accommodate moving water for passage. Doug also inquired about the region's preference for the May release, noting that PNNL provided new information that could inform the operation.

- **Action:** TMT Fish Managers will discuss their preference for the May operation at the next FPAC meeting and TMT will revisit this topic on the 4/9 TMT conference call.

Chum Update

Charles Morrill, Washington, reported that the Chum operation has been successful due to good water supply and coordination; all of the fry are expected to have emerged. Temperature Units at the monitoring stations have reached 1,000 and flow forecasts continue to look healthy. The official Chum emergence operation is complete and the agencies will continue to operate for protection.

Operations Review

Mary Mellema, BOR, reported on Reclamation projects:

- Hungry Horse is currently at 3,518ft and is releasing approximately 9.8kcfs, 1kcfs of that is spill. The April 1st forecast shows significant increase in water supply, thus the project expects to continue to spill, potentially increasing to 2,000cfs to target an end of April elevation below 3500ft.
- Grand Coulee midnight elevation is 1,256.8ft. The project is drafting for flood control and expecting to be below the April 30th target. It is expected that they will be under the April 10th target elevation (based on the March forecast) due to the amount of water that needs to be passed for end of month flood control due to the rising water supply forecast. Mary noted the similarity to 2011 and 2012 operations.

Lisa Wright, COE, reported on COE projects.

- Libby was at elevation 2,416.9 feet, with 4kcfs inflow and 26.2kcfs outflow.
- Albeni Falls was at elevation 2052.3 feet, with 25.2kcfs inflow and 25.2kcfs outflow.
- Dworshak was at elevation 1,509.7 feet with 10.9kcfs inflow and 20.1kcfs outflow.
- Lower Granite average outflow was 67.7kcfs
- McNary average outflows was 221.5kcfs
- Bonneville average outflows was 243.9kcfs

There was inquiry regarding outflows at Dworshak. Russ Kiefer, ID, noted that the STP from COE stated that outflows would be increased to 25kcfs in a few days and then reduced down to below 5kcfs in late April and into May. Russ noted that it is important not to jeopardize flood control; however, the planned operation is a concern for both TDG in the short term and reduced flow augmentation in late April and early May. Steve Hall, Walla Walla COE, explained that due to the increasing water supply forecast the project typically would operate to bankfull discharge (25kcfs) until intersecting the refill curve and then transition to refill discharge regime (2.5kcfs). The Walla Walla COE is submitting a deviation request to the Division and will update TMT at the 4/9 TMT conference call. Specific details on the deviation request will be provided at that time.

There was inquiry as to if the project is coordinating with the hatchery on fish release. Steve noted that they have been coordinating on operational needs.

- **Action:** Dave Wills, USFWS, will check with the hatchery regarding their release needs and connect back with Steve Hall.

Fish

Paul Wagner, NOAA, reported on fish, noting that it is still early in the season; however, the season is underway. Paul reported on adult runs, directing the group to the DART annual total run graphs, which can be accessed via the TMT website. 554 spring chinook have passed Bonneville, which is ahead of the 10 year average of 223 for this time of year. The run is forecast to reach 200,000+; however, it is too early to tell if the run will be that strong. Charles Morrill, WDFW, directed the group to the Columbia River Compact (via TMT and WDFW websites) which shows the forecast and actual returns; forecasts call for 347,000 spring and summer chinook in 2014. Winter steelhead are currently tracking with the 10 year average; due to an increase in overwintering steelhead, passage at Lower Granite is ahead of the 10 year average with for this time of year.

Charles Morrill reported that juvenile collection at Lower Granite started on 3/26. 6,100 smolts were collected in the first few days; 79% were yearling chinook, with some sockeye/kokanee and 8% unclipped steelhead. Very few clipped steelhead were collected and no lamprey. Yearling passage at Bonneville is within the historical range.

Water Quality

Scott English, COE, reported on water quality. He noted that COE is managing TDG to individual state water quality standards which can be found on the TMT website. Two monitoring gauges are currently down, the Camas/Washougal and the Clearwater gauge at Peck; neither of these gauges will impact TMT coordinated operations. USGS is currently

working to get the Camas/Washougal gauge online. Laura Hamilton, COE, noted that the Cascade Island gauge is currently operating.

Power System

Nothing to report.

The next TMT meeting will be a conference call on April 9th at 9:00 am.

Agenda items include:

- Water Supply Forecast Update
- Vernita Bar Update
- Libby Summertime Operations
- Spring Creek Hatchery Release
- Dworshak flow deviation
- Other?

Columbia River Regional Forum
TECHNICAL MANAGEMENT TEAM – OFFICIAL MINUTES

April 2, 2014
Minutes: Pat Vivian

1. Introduction

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

2. Review Meeting Minutes – March 19

The following were requested changes to the March 19 meeting minutes. On page 1 of the facilitator's notes, the end of month release target for Libby is probably a misprint at 4-5 kaf; more likely it was 400-500 kaf. The snow water equivalent (SWE) report was dry in the southwest, not the southeast, Russ Kiefer said. These changes will be made and the March 19 minutes will be considered final.

3. Update on Water Supply Forecasts and Operations

With the final April forecast not available yet, Baus presented the most recent 5-day QPF forecasts from the NWRFC at the following projects:

- TDA (April-August) – 93 maf, 106% of average
- LWG (April-July) – 22 maf, 113% of average
- LIB (April- September) – 6.9 maf, 110% of average

Joel Fenolio, COE, reported that the COE official forecast for Libby will probably be around 6.7-6.8 maf for April-August, so there will be a need to move water.

4. Vernita Bar Update

Russell Langshaw, Grant PUD, reported. Rearing protections for emergence in Hanford Reach began March 23, with no exceedances to date. For the past week flow constraints have been in the 40 kcfs range, with an average daily delta of 28.5 kcfs. Hanford Reach protection flows will probably continue until the third week of June. Peak emergence is typically expected in late April, but this year it will probably occur the first through the fourth weekend in May.

5. Update on Wanapum Dam Repair

Langshaw gave a detailed presentation on activities Grant PUD is undertaking to ensure safe and reliable fish passage in the mid Columbia River this year despite the 65' foot fracture of pier 4 at Wanapum Dam. When the crack was discovered, Grant PUD operated according to emergency action plan B, used in the threat of dam failure. Since then, the situation has been downgraded to condition C, not an emergency. The Wanapum reservoir is being kept at 541-545' elevation, which is 25-30' below normal, to minimize risk. It is not known whether the fracture extends the length of the pier all the way to the ogee. Grand PUD is doing exploratory drilling to examine the crack in detail. This led to identification of corrosion on the rebar, which might or might not be unusual.

The two main goals now are restoration of dam operations and preservation of natural resources. Operational goals are to stabilize monolith 4, investigate the cause of the crack, perform an intermediate pool rise, and fully restore operation of the pool and spillway. Stabilization of monolith 4 has been completed. An independent forensic team will investigate the cause of the crack and prepare a series of 17 reports. An intermediate pool raise means partial restoration of the Wanapum forebay to a minimum of 562' from the current elevation range of 541-545'. The forensic team will evaluate whether this is feasible by July 1. Repairs to the dam will take at least two months.

Now that the fracture is stable, safe and reliable fish passage is Grant PUD's highest priority. Natural resources goals include fulfilling FERC license requirements, protecting fish passage, supporting the Hanford Reach fall chinook protection program, and fulfilling other natural resource preservation goals.

The Wanapum juvenile bypass is operating now with reduced discharges, and the new juvenile bypass at Priest Rapids began operation yesterday. It has good flow dynamics and is operating as expected. Wanapum ladder modifications are due to be finished April 15, when the trap and haul operation is scheduled to begin if necessary.

Typically 70-80% of fish use the left bank ladder, so that's where modifications are being made. The work will consist of two construction phases. In phase 1, a ramp is being built to move fish into the forebay and pumps are being installed to draw water from the forebay into the ladder. Side panels will help orient adults after a 10-13' drop. Phase 2, construction of a ramp will take another 2-4 weeks and involve building a corkscrew slide.

If the ladder fails, fish will be trucked from Priest Rapids Dam around Wanapum Dam to the forebay of Rock Island Dam. They will be routed through ramps into trucks at a rate of approximately 75-100 fish per truck, using up to 10 trucks as needed. The number of trips per day will depend on the release location. This trap and haul operation will be ready to implement on April 15. Grant PUD will provide 1,000-2,000 additional PIT tags for tagging efforts at BON to monitor results.

Langshaw showed TMT the decision tree being used to guide preparations for the 2014 passage season. If there's no passage at Wanapum due to structural difficulties, the ladder will be closed and the left bank will be the only route available. If Wanapum is operational, passage will be allowed. Trucking of fish from Priest Rapids will continue while Wanapum is being evaluated. The Wanapum bypass has a collection efficiency rate of about 70% at 20 kcfs, and survival rates are higher than 99% based on acoustic telemetry data.

Due to the critical nature of this effort and its potential impacts on fish passage, TMT members asked Langshaw a number of detailed questions:

Q: Are the joints from one monolith to the next centered on spillway piers (BPA)? **A:** Doesn't know; will find out.

Q: Will there be trapping and hauling at Wanapum, Priest Rapids, or both dams (Montana)? **A:** The plan is to truck fish from Priest around Wanapum and around Rock Island dams if necessary.

Q: Will you be able to measure juvenile fish passage efficiency at Wanapum this year? **A:** Response: Grant PUD is not sure at this point; at a minimum there will be PIT tag monitoring and passive, run of the river monitoring. They are also discussing options for an acoustic telemetry study.

Q: Will the pumps be screened to keep out juvenile fish and lamprey (CRITFC)? **A:** The pumps won't be screened due to limited availability of screening materials and construction. They don't really need screens because they are trash pumps and no significant numbers of juveniles are expected to pass.

Q: Are there plans to radio tag more adults to monitor potential changes in behavior under these conditions (Washington)? **A:** There will be additional PIT tag monitoring to review timing and passage, as well as an acoustic telemetry array in the project area to collect timing and passage data. All ladders are wired for PIT detection. If fish are released at Wanapum, all boat launches and access to the reservoir shoreline will be closed to the public so no fishing can occur.

Q: Are there plans for additional hazing to control avian predators in the Wanapum reservoir, given that lower forebay and tailwater elevations make fish more vulnerable (CRITFC)? **A:** Grant PUD is developing an avian management plan and will monitor bird activity. Hazing crews will be onsite.

Q: Will the ladder be closed unless there's a truck to receive fish (USFWS)? **A:** Yes. If there is no passage at Wanapum, the right bank will be closed and the left bank will be the only adult passage route past Priest Rapids.

Q: Why will there be PIT tagging at BON but not Priest Rapids, and what information will be gathered at BON (Oregon)? **A:** There will be radio tagging and PIT tag monitoring to evaluate travel time between Priest Rapids and Rock Island. The ultimate goal is safe and effective adult passage, with a primary focus on spring chinook. PIT tag data will be used primarily to gather information on timing. Charles Morrill, Washington, said there's no effective way to tag adults at MCN so tagging at BON makes sense.

Q: How much hydraulic capacity does the powerhouse have with the forebay elevation reduced (Montana)? **A:** Currently 7 of the 10 units at Wanapum are operating. The dam is expected to handle 300 kcfs; hydraulic capacities above that are uncertain. The plan is to move as much water as possible through the turbines and spill the rest. As part of this effort TDG levels will be monitored and evaluated. All 10 units are expected to be back in service by June.

Langshaw will provide an update on passage conditions at Wanapum and the other mid-Columbia dams along with the usual Hanford Reach update at the next TMT meeting on April 16.

6. Little Goose Navigation Lock Update

On March 25, the COE notified TMT via email that the LGS navigation lock was shut down when cracks were discovered in the gudgeon linkage. The contract for repairs was awarded yesterday, parts will arrive by April 4, and work will begin this weekend. The lock will remain closed until May 1. Because this has potential impacts on juvenile transport operations, it will require TMT coordination. The COE will post photos of the gudgeon crack to this item on today's agenda. Forthcoming updates regarding this situation will be provided during the FPOM meeting on April 10 and upcoming TMT meetings on April 9 and 16.

7. Libby Operations

Jim Litchfield, Montana, reported. The Kootenai Tribe will not need flows restricted to 8 kcfs in September for ongoing sturgeon habitat restoration. This means a change in Libby operations for

September. Montana is coordinating with the Kootenai Tribe to present a system operational request at the next TMT meeting April 16.

The SOR will address concerns about Libby flow management in September by setting up a plan for flow management starting in June after the sturgeon pulse ends. The goal of the SOR will be to move the reservoir to elevation 2449' by end September without abrupt changes in flows or reservoir levels. Montana prefers that flows from Libby reservoir remain constant or decline uniformly through the month rather than targeting a specific elevation of 2449'. Joel Fenolio said the COE will provide modeling of Libby flows on April 16.

8. Spring Creek Hatchery Release

The first of two releases will occur April 11, David Wills, USFWS, reported. Approximately 6.4 million spring chinook are expected to reach BON by midnight April 11 or sometime on April 12. Another 4.8 million fish will be released May 2 or 5.

To address turbulence in the gatewells at BON during high flows, TMT will need to coordinate an operation similar to last year's. Wills suggested the turbines be operated at the midpoint as a hard constraint until April 12, then as a soft constraint for another 4-5 days.

Baus reported that flows in the range of 260 kcfs are predicted by the current RFC 10-day forecast. That means BON should have sufficient hydraulic capacity to implement the request. Based on previous operations, the COE can reduce flows at powerhouse 2 and reallocate to powerhouse 1 as long as flows remain below 320-330 kcfs.

Based on the RFC flow forecast, flows are expected to exceed 320-330 kcfs by the middle to the end of May, so TMT will need to prioritize BON unit operations. Baus asked TMT members to begin thinking now about how they want to prioritize unit operations for the May release. Last year's priorities were: (1) operate PH2 units within the midrange of 1%; (2) operate PH1 units to the upper limit of 1%; (3) operate PH1 units to best operating efficiency (BOP); and (4) pass flows of approximately 16.5 kcfs at PH2 unit to achieve a flow neutral operation. TMT will discuss BON operations further during the April 9 TMT call.

9. Chum Update

Charles Morrill reported that 100% emergence is estimated to have occurred March 23, based on an accumulation of 1,000 temperature units by that date. Tony Norris, BPA, asked whether that means the chum operation should end. It's safe to consider emergence complete given the high likelihood that flows will continue to offer sufficient protection, Paul Wagner said. There was agreement to end the chum operation as of today.

10. Operations Review

a. Reservoirs. Hungry Horse is at elevation 3518', releasing 8.8 kcfs through the powerhouse and spilling 1 kcfs through the outlet tubes. A preliminary April forecast shows significant inflow increases. Later today, discharges will be bumped up to 9.8 kcfs through the powerhouse and possibly 2 kcfs spill through the tubes. This will bring the end of April flood control elevation down to 3496'. TDG levels will probably remain below 110% even with spill through the tubes. (Note: the 2 kcfs actually caused the TDG to rise to 111% on Thursday, April 3rd.) Grand Coulee is at elevation 1256.8'

drafting toward an April 30 elevation of 1236.7' based on the March forecast. Grand Coulee will draft below the April 10 elevation due to the rising water supply forecast.

Libby is at elevation 2416.9' with inflows of 4 kcfs and releases of 26.2 kcfs. Albeni Falls is at elevation 2052.3', passing inflows of 25.2 kcfs.

Dworshak is at elevation 1509.7' with inflows of 10.9 kcfs and releases of 20.1 kcfs. Russ Kiefer, Idaho, expressed concern that the COE's latest ESP run shows DWR releases of 25 kcfs for 10 days, then dropping down to 4.6 kcfs for the latter part of April and early May. This doesn't match Idaho's desire to avoid high TDG levels and provide flows for the bulk of the run in early May. Steve Hall said there are dramatic increases in the water supply forecast, so the COE Walla Walla office is working with the Division office on a deviation request for DWR. The COE is also coordinating operations with the Dworshak hatchery. Dave Wills said he will confer with the hatchery on their needs as well. Idaho supports the deviation request. Hall will give an update on DWR operations during the April 9 TMT call.

Lower Granite daily average outflows are 67.7 kcfs. McNary daily average outflows are 221.5 kcfs. Bonneville daily average outflows are 243.9 kcfs.

b. Fish. Paul Wagner reported. Adult spring chinook are heading upriver, with 554 passing BON to date. The forecast this year is more than 200,000 returns, well above the 10 year average. It's early yet for steelhead movement, but Lower Granite returns are already ahead of the 10 year average, due in part to overwintering steelhead who are migrating upriver.

Juvenile passage was estimated to be 6400 fish as of February 26 at LWG, Charles Morrill reported. About 79% of these were unclipped wild yearling chinook and about 8% were unclipped steelhead. Wagner said yearling passage is also in progress at BON. Lamprey migration season is just starting.

c. Water Quality. Scott English, COE, reported that all gages are operating except Camas Washougal and the Peck (Clearwater) gages. Neither of these gages will impact spill management. Camas Washougal gage is still included on the COE's water quality data page, but it is used for information only and has no effect on spill. The Cascade Island gage was successfully installed and transmitting data as of March 27. This year the COE will operate to individual state water quality standards for TDG.

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

11. Next TMT Meeting

The next TMT meeting will be a conference call April 9, with the Spring Creek Hatchery release and the Dworkshak deviation request on the agenda. The next TMT meeting in person will be April 16, with further discussion of Wanapum repairs on the agenda.

Name	Affiliation
Jim Litchfield	Montana
Tony Norris	BPA
Lisa Wright	COE
Paul Wagner	NOAA
David Wills	USFWS

Doug Baus	COE
Scott English	COE
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Russell Langshaw	Grant PUD
Erick Van Dyke	Oregon
Dave Statler	Nez Perce
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