

COLUMBIA RIVER TECHNICAL MANAGEMENT TEAM

January 25, 2012

Facilitator's Summary

Facilitator: Robin Gumpert

The following notes are a summary of issues that are intended to 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.

Meeting Minutes/Notes Review

The Official Minutes and Facilitator's Notes from all December, 2011 and January 11, 2012 TMT meetings were reviewed.

- Official Minutes, December 7, 2011 Year End Review Section 4a: The White Salmon Work Group members are representatives from USFWS, Yakama Nation, NOAA Fisheries, USGS, US Forest Service, WDFW and PacifiCorp (not those listed in the notes).

With the above correction, and with no further edits, the notes were considered final.

NWRFC Water Supply Forecast

Stephen King, Northwest River Forecast Center, shared information with TMT about major shifts in the modeling methodology and website format, and reviewed the latest water supply forecasts. He reminded everyone that the RFC has shifted from using a regression based model procedure to now using ESP to model and issue forecasts. He invited TMT to ask questions and offer suggestions for improving products.

Observed conditions – Precipitation: October saw good rain, with a drier November and very dry December. January precipitation was below average for Grand Coulee, Ice Harbor and The Dalles, however the seasonal precipitation October-current is near normal. Snow pack: Raw data showed a 'dry' regional snow pack for January 7, with some increases showing up on the January 24 reading. Stephen also displayed some individual snow stations to show the variability and also the upward trend in accumulating snow pack. Runoff: Runoff is showing up low for the entire water year – this was a surprising finding.

Future conditions – ENSO predicts a La Nina year now through the Spring, but not as extreme as last year's La Nina condition. The correlation at The Dalles predicts a below normal runoff. Stephen noted that 'normals' will be recalibrated next year based on the most recent 30XX years' of data. The precipitation outlook shows a 'weak' signal toward slightly above normal and cooler temperatures over the next three months.

Changes to modeling/website – the ESP 10-day forecasts are updated daily and are agency *collaborated*, meaning there is information exchange, but no direct data input to the ESP model as was done in the past through agency *coordination*. All forecasts are considered official and are issued at least weekly, some daily – and moving toward a more consistent daily issuance. The forecasts include 10 days of QPF (deterministic

forecast for precipitation and temperature). As the season progresses, there should be less variability in the forecasts since it is not a regression model but adds in observed runoff. The RFC is working to get adequate software to be able to issue forecasts with 3 days and 0 days of QPF in addition to 10 days. Stephen asked for stakeholder input on specific needs for this, e.g. for long term forecasting.

Forecasts – The following are the current water supply forecasts (issues 1/23):

- Upper Columbia: Libby 81% of normal; Hungry Horse 76%; Coeur D Alene 96%; Grand Coulee (Jan-July) 88%
- Snake: Jackson Lake 101% of normal; Irwin 98%; Clearwater 86%; Lower Granite 87%
- Lower Columbia Lake Chelan 86% of normal; Willamette 101%; Rogue 71%; The Dalles 87%

Stephen added that there is the capability to use climate forcings as a function of forecasting but it is not currently included in the official forecast. Most of the influence happens in mid-Winter, so that by January and on, there is not much difference in forecasts including vs. not including the La Nina condition.

Questions/comments –

- Are you running the ESP in parallel with the regression model? Response: Yes, as back up, but not published. Eventually, the regression model will become the RFC's legacy model.
- COE comment: The official forecast used by the Action Agencies will be the NWRFC forecast that is available on the NWRFC website on the fourth work day of the month at 5 pm PST.
- While there is no need to obtain this product more often for use as an official forecast, the region may find it useful to view the more regularly issued forecasts.
- It would be helpful for TMT to see The Dalles water supply in an April-August time frame.

For ongoing updates, anyone can join Stephen's monthly live water discussions. The next one is scheduled for 2/8.

Chum Update

Paul Wagner, NOAA, reported that the salmon managers discussed the possibility of lowering the tailwater elevation to 11.7 feet if conditions necessitate it. Recent data collection revealed a potential risk to dewatering redds if the tailwater is dropped below the 12' elevation, so the salmon managers recommended that the current 12 foot tailwater elevation be maintained while there is adequate water supply. Paul added that Battelle is working on a 3-dimensional analysis of the 2-D GPS data and will be able to share mapping of the redds in the near future.

Action: WDFW will follow up with Battelle on the mapping and report back to TMT ASAP.

Operation: John Roache, Reclamation, said given no Grand Coulee storage has or will be used to maintain the current elevation at Bonneville, Reclamation was supportive of the operation. Doug Baus, COE, said the action agencies will continue the current operation and revisit with TMT next week.

Operations Update

Reservoirs – John Roache reported on Reclamation projects. Grand Coulee was at elevation 1280 feet, passing inflow to support chum. Hungry Horse was at elevation 3537.39 feet with 2.5 kcfs outflows and 1 kcfs inflows, operating to meet Columbia Falls minimums. The Reclamation official forecast for Hungry Horse was 92% of normal. Banks Lake refill is going well and is about 9-10 feet from reaching operating range. Lisa Wright reported on COE projects. Libby was at elevation 2410.65 feet with 2.5 kcfs inflows and 4.0 kcfs outflows. Albeni Falls elevation was 2052.2 feet with 15.2 kcfs inflows and 13.0 kcfs outflows. Priest Rapids elevation was 486.6 feet with 107.3 kcfs inflows. Dworshak was at elevation 1523.1 feet with 1.7 kcfs inflows and 1.5 kcfs outflows. Lower Granite outflows were 32.4 kcfs; McNary outflows were 132.4 kcfs; and Bonneville outflows were 162.4 kcfs.

Fish – Paul Wagner, NOAA, said chum are doing well given the conditions and operations provided to support them this year.

Water quality – Laura Hamilton, COE, reported that there were problems with some of the gauges in January so the report shows missing data, indicated by a red box with a dot. Dworshak, Lower Granite, Little Goose, John Day, The Dalles and Warrendale gauges were effected, and have all been recovered. The problem was likely due to the rains and high flows. In response to a request, Laura said she would reformat the report to distinguish those gauges that were not operating due to seasonal outage from those that were not operating because of a break down in the reporting system.

Next Meeting, 2/1 Conference Call, 9:00 am: Chum operations will be discussed. Please check the website for updates on schedule and meeting cancellations. If the Wednesday meeting is cancelled, a notice will be posted to the TMT page by 3:30 pm the Tuesday before.

Columbia River Regional Forum
TECHNICAL MANAGEMENT TEAM – OFFICIAL MINUTES

January 25, 2012

Notes: Pat Vivian

1. Introduction

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

2. Review December 7, 14, 21, 28 and January 11 Meeting Minutes

David Wills, USFWS, corrected the list of White Salmon Working Group members in the first paragraph of section 4a of the official minutes for the December 7 TMT year end review. The seven members are USFWS, Yakama Tribe, NOAA, USGS, U.S. Forest Service, WDFW and PacifiCorp. With this change, all of the above notes and minutes were declared final.

3. NWRFC Forecasting Update

Stephen King, NWRFC, gave a presentation on the River Forecast Center's new method of forecasting and showed TMT how to navigate the updated RFC website. King showed TMT the latest weather projections and trends as of January 23, 2012.

At present, conditions are wetter in the northern tier of the Columbia basin than in the south. Observed water year precipitation shows a pattern of extreme dryness from the end of November to mid December. However, as of January 23, seasonal precipitation was 95% of normal above Grand Coulee, 98% of normal above Ice Harbor and 94% of normal above The Dalles. King noted that, on average, about 30% of the flow through The Dalles comes from the headwaters in British Columbia, with strong upstream contributions also from western Montana.

King showed plots of snowpack on January 7 vs. January 24, with a visible increase in areas where snowpack is greater than 110% of normal. Conditions in the Columbia basin have clearly improved, and many areas have gone from having below normal to almost normal water supplies. In the lower Columbia, the Cascade Range in Washington is generally above normal, while conditions are dry in Oregon. The driest areas are in southeast Oregon.

Regional observed runoff has been low in 2012 and a bit surprising after the enormous runoff for water year 2011. Drought conditions have crept into the Northwest as depicted by the US Drought Monitor product.

The Northwest is in a La Nina pattern as it was in 2011, but the current episode is milder than last year's. The sea surface temperature anomaly for the El Nino 3.4 region is -1.1 C; last year it was -1.8 C. Most of the models indicate that La Nina conditions will continue through the spring of 2012 and revert to neutral conditions by summer or fall. King showed TMT a scatter plot of La Nina vs. El Nino years that directly correlates La Nina episode to higher runoff volumes at The Dalles. However, he noted that there the relationship is weak and contains considerable scatter.

Average runoff for The Dalles is 107 MAF for the Jan-Jul period. Every 10 years the RFC updates its historic database. The current definition of normal water supply is based on observed data from 1971-2000. Starting in the 2013 water year, the definition of normal will be based on observed data from 1981-2010.

The 90 day climate outlook for the Northwest shows an increased chance for above normal precipitation. The ESP forecast use a 10-day deterministic forecast for precipitation and temperature and the current forecast was based on a forecast that was near to slightly above normal across the region.

The new RFC forecasting method relies heavily on precipitation and temperature data and is tuned by NWRFC staffed on a daily basis. It takes 24 hours to generate an ESP run. The ensemble date indicates the date when the model was initialized and the issue date is when the forecast was posted to the web. Forecasts will be provided at least once weekly, with the long-term goal of providing daily or near-daily forecasts. In recent months, the RFC has issued updates approximately four times per week. All RFC forecasts posted on the web are considered official; there is no single official forecast for each month.

Baus and Bill Proctor clarified that the Action Agencies are using the RFC forecast provided at 5 pm PST on the fourth working day of each month as the official monthly RFC water supply forecast

Users of the new web-based RFC system can extract data for their own purposes, using creation date to note when they did so, King explained. There was discussion of confidence intervals and the number of days of forecast data used in the forecasts. The RFC uses 10 days of forecast precipitation and temperature and this is combined with approximately 50 years of weather scenarios. The new RFC forecasts include a 50% likelihood (median trace), 90% likelihood and 10% likelihood scenario. King asked TMT to let him know whether intervals of 95% and 5% likelihood would be more useful.

In summary, the region's water supply is still below normal for water year 2012 despite the recent heavy rains. For future conditions, King gave April-August projections:

- Libby – 81% of normal (the 40th driest year of 50 years on record)
- Hungry Horse – 76% of normal (year 34 of 42)
- Coeur D’Alene – 96% of normal (year 22 of 42)
- Grand Coulee (January-July) – 88% of normal (year 35 of 52)
- Upper Snake – 101% of normal (year 19 of 52)
- Palisades – 98% of normal (year 20 of 42)
- Clearwater – 86% of normal (year 27 of 42)
- Lower Granite (January-July) – 87% of normal (year 26 of 52)
- Lower Columbia at Lake Chelan Dam – 86% of normal (year 27 of 52)
- Willamette – 101% of normal (year 18 of 42)
- South Rogue River – 71% of normal
- The Dalles (January-July) – 87% of normal (April-September: 92% of normal)

King asked whether the timeframe matters to TMT. Wagner said April-August is preferable, with April-September acceptable for The Dalles. Wagner asked, will RFC run the new ESP forecasts in parallel with regression forecasts? King said yes, RFC is using a legacy system as an unpublished backup this year.

In terms of climate patterns for La Nina years, King pointed out that most of the increased water supply happens mid-winter in a typical La Nina year. Last year was unusual in that a strong La Nina signal produced fairly dry observed conditions during the winter months. The heavy rains of 2011 came during the spring months, which is not the typical La Nina pattern.

Users of the new website can find registration information for periodic live water supply briefings hosted by the NWRFC. The website also has an archive that includes historical forecasts and how they were verified.

4. Chum Update

Paul Wagner, NOAA, gave an update on the chum operation. Bonneville is still operating in accordance with the 12-foot tailwater operation as previously coordinated, per FPAC’s recommendation. There was consideration of dropping the range to 11.7 feet, but field survey crews advised that redds clustered on shoreline edges could be placed at risk by a lower level. Therefore, if water supplies are sufficient to maintain 12 feet, that is the preferred operation. Baus asked the status of Battelle’s efforts to plot 3-dimensional redd location maps for 2012. Cindy LeFleur, WDFW, said she will find out when this information will be available.

Flows at Bonneville to support the 12-foot tailwater for chum are not currently dependent on releases from Grand Coulee storage, so BOR supports the current 12-foot operation, John Roache said. The Action Agencies will continue the current 12-foot operation below Bonneville in support of chum, Baus said. TMT will revisit the chum operation in a conference call February 1.

5. Operations Review

a. Reservoirs. Grand Coulee is at 1280 feet elevation, essentially passing inflows for the past few weeks. This operation is expected to continue as no more storage is needed, and local inflows are sufficient to support the chum operation at Bonneville. Banks Lake refill is on track, with a current lake elevation of 1555 feet after drafting down 30-32 feet for maintenance that started last October. BOR has since pumped 15-16 feet back into the lake, bringing the elevation closer to its normal operating range of 1565-1570 feet for this time of year.

Hungry Horse is at 3537.39 feet, with 2.5 kcfs releases and 1 kcfs inflows, drafting slightly to support Columbia Falls minimum flows. The official BOR forecast is 92% of normal water supply. Libby is at 2410.65 feet, with inflows of 2.5 kcfs and releases of 4.0 kcfs. Albeni Falls is at 2042.2 feet, with inflows of 15.2 kcfs and outflows of 13 kcfs. Priest Rapids is at 486.6 feet, with inflows of 107.3 kcfs. Dworshak is at 1523.1 feet, with inflows of 1.7 kcfs and outflows of 1.5 kcfs.

Lower Granite outflows are 32.4 kcfs. McNary outflows are 132.4 kcfs. Bonneville outflows are 162.4 kcfs.

b. Fish. Chum are the only fish active at present, and they are doing fine, Wagner reported.

c. Water Quality. Laura Hamilton, COE, reported that six gages experienced technical problems in January. Dworshak tailwater gage produced no data for January 17-19. Lower Granite tailwater gage produced less than 24 hours of data on January 19, and Little Goose tailwater gage produced no data that day. The gages at John Day, The Dalles, and Warrandale below Bonneville failed to transmit 4 days' worth of data in January. Some of these data are being recovered by USGS, which maintains the gages on the lower Columbia.

It is not yet clear what caused the gage failures. The fact that all four faulty gages on the Lower Columbia quit transmitting data on January 12 at 2400 hours indicates that the DCP transmitter failed.

Hamilton reported that the Cascade Island monitoring station, which was destroyed by the heavy flows of 2011, has been rebuilt at a higher elevation.

Dave Wills, USFWS, suggested that the background colors on the RCC's water quality graphs be changed to distinguish between missing data and gages that are offline for the season.

d. Power System. There was no update today.

4. Next TMT Meeting

A tentative conference call for a chum operations update was scheduled for February 1.

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Kim Johnson	COE
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