

**TECHNICAL MANAGEMENT TEAM
MEETING NOTES
September 24, 2003
CORPS OF ENGINEERS NORTHWESTERN DIVISION OFFICES – CUSTOM HOUSE
PORTLAND, OREGON**

FACILITATOR'S SUMMARY NOTES ON FUTURE ACTIONS

Facilitator: Donna Silverberg

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.

RPA 143 Subgroup Report:

Mike Schneider (COE), Ben Cope (EPA), and Mark Schneider (NOAA) gave a power point presentation on work relative to RPA 143 done by a subgroup of the WQT. The group worked through a consensus process to select the CEQUAL-W2 model for temperature monitoring in the Snake River from the Hell’s Canyon complex to the confluence of the Snake and Clearwater rivers. The model is to be used as a pre-season planning tool and for real time monitoring. The group is now looking for a modeling strategy for implementing the tool and would like TMT to offer decision support on how the model can be synthesized to be more user-friendly. The monitoring is critical not just for modeling, but for real time data. The RPA 143 subgroup hopes for the tool to be operational by Summer 2004. Anyone interested in joining the modeling work group should contact Mike Schneider. Kyle Martin, CRITFC, expressed interest in working with the group. The subgroup will give a progress update to TMT in February or March.

System Status:

Reservoir operations: Cindy Henriksen, COE, reported that Libby has been reduced to 6 kcfs. The project will be reduced to minimum or near-minimum outflows starting on Sept. 29th to accommodate in- river work by USGS for a study of critical habitat for sturgeon recovery. Libby is currently 25’ from full and drafting. Bonneville switched to powerhouse one because of the large numbers of fish at the project, and is now back to powerhouse 2. Dworshak reached elevation 1520’ on September 15th and has since been releasing 1.6 kcfs. John Roache, BOR, reported that Grand Coulee is at elevation 1284.2’. Hungry Horse is at 3536.6’ and releasing 2 kcfs to maintain flows at Columbia Falls. Banks Lake is at elevation 1557.1’.

ACTION: FPAC and BPA will check in next Wednesday, October 1st, on MOP operations at Lower Granite. Paul Wagner, NOAA, will email the results of that discussion to the COE.

Fish status: Paul Wagner reported that Fall Chinook have reached a total of 560,000 to date at Bonneville – more than two times the ten year average!

SOR's: CRITFC submitted two SOR's, 2003-C7 and 2003-C8 for treaty fisheries for the previous two weeks. Kyle Martin, CRITFC, reported that the COE did an excellent job meeting CRITFC's operational request for 100% of the time. There may be another request for a fishery

next week – Kyle expected to have more information on this on Friday. Cindy Henriksen said that the COE may not be able to keep Bonneville at the 1-1.5’ range requested due to other constraints, but would like to find an acceptable elevation that could remain stable. The COE and CRITFC will work together on this.

Chum Criteria:

Paul Wagner presented two handouts (also linked to today’s agenda on the TMT home page) of NOAA’s rationale for chum operations from November 2002 and January 2002. The overall message was one of conservatism. Paul would like the two memos to be referenced in the WMP. The criteria are:

- Start low (125 kcfs to maintain 11.5’ tailwater)
- Maintain Vernita Bar flows
- Hold low flow/elevation to avoid dewatering; step up if the season indicates a good water year, and as weather allows.

Paul said that NOAA’s recommendation for timing to begin chum operations is: plan to begin November 1 and observe for presence of fish, precipitation and long term hydrologic forecasts.

Kyle Martin presented his draft winter forecast and flow forecasts, which showed near normal temperatures and above normal precipitation until March, followed by near normal precipitation. Kyle will present an update of his forecast at the November 5th TMT year end review.

Process for Making Changes to the BiOp:

The Action Agencies are working on a process ‘flow chart’ in response to one presented from FPAC at the last TMT meeting. The goal of this exercise is for all TMT members to work within the same process and timeline. The discussion was deferred to the October 8 meeting so the Action Agencies can further develop a process visual.

Year End Review Topics:

The facilitation team shared a list of year end review topics from previous years (1999-2002). TMT began adding to the list today and were asked to think about additional items before or at the next TMT meeting. Topics noted today:

- Operations review: Begin/end spill
- Results of reach survival ’03 (performance standards) for Chinook and steelhead – NOAA
- Billy Connor’s analysis of Fall Chinook migration and distribution in reservoir relative to temperature
- Comparison to other years
 - Fish passage
 - Water
- 2001 fish returns analysis of effects from no spill year, if available (Paul will check on this)
- Kyle’s weather forecast

Water Management Plan:

Scott Boyd, COE, reported that NOAA, USFWS, and Montana have submitted comments on the 2004 WMP. Oregon, Idaho and CRITFC plan to submit comments (preferably soon!). The Action Agencies expect to finalize the document October 8-22. All comments will be posted on the TMT website.

Next Meeting, October 8, 9am-noon:

Agenda items:

- Review of Autumn treaty fishing – CRITFC
- System status
- WMP status – COE
- Process chart – Action agencies
- Year End review topics
- Hamilton Creek rating curve – COE Portland district
- Update on Albeni Falls/Lake Pend Orielle coordination between NOAA/USFWS
- Update on Spring Creek spill status – USFWS

1. Greeting and Introductions

The September 24 Technical Management Team meeting was chaired by Cindy Henriksen of the Corps and facilitated by Donna Silverberg. The following is a distillation, not a verbatim transcript, of items discussed at the meeting and actions taken. Anyone with questions or comments about these minutes should call Henriksen at 503/808-3945.

2. RPA 143 Presentation.

Mark Schneider said the intent of this agenda item is to provide an overview of the work products of the Reasonable and Prudent Action (RPA) 143 subgroup of the Water Quality Team. RPA 143 called for the development of a model showing the water temperature effects of alternative Snake River operations, including a data collection strategy to develop and operate the model and to document the effects of project operations. The model is intended to be a predictive tool, one- or two-dimensional; its purpose is to facilitate both pre-season planning and real-time management of river temperatures, Schneider said. It also recognizes that the current water quality monitoring system is not adequate to fulfill those needs, hence the need for an enhanced data collection system. The report from the RPA 143 subgroup is now available, Schneider said.

With that, he yielded the floor to Mike Schneider, who said any TMT feedback about how to optimize the model for pre-season and in-season use would be most helpful. Mike Schneider and Ben Cope then went through a series of PowerPoint slides laying out the highlights of the final RPA 143 subgroup report, touching on the following major topic areas:

- July 30, 2003 – draft plan/report complete
- The contents of the report
- 2002 Data collection and analysis (characterized 2002 thermal patterns in the Lower Snake River system during the summer and fall periods, provided information to evaluate existing water quality monitors in representativeness for both spatial and temporal

- patterns in temperature and provide guidance of future sampling requirements, provided information that helped to decide on the required model resolution and model; provided calibration and verification data for the selected model)
- 2002 data collection and analysis conclusions -- characterization of Lower Snake River thermal patterns (annual vertical temperature gradient in Dworshak; cold-water releases from Dworshak can result in rapid changes in Lower Clearwater River temperatures; resulting change in Lower Granite forebay temperatures is more subtle; annual thermal cycles are consistent for all study area sampling stations; the Clearwater underflows when mixing in with the Middle Snake, annual vertical thermal gradient in Lower Granite pool of 6 degrees C exists from July-mid-September)
 - 2002 data collection and analysis conclusions -- evaluation of the representativeness of the fixed water quality monitors (the tailwater monitor was a good measure of tailwater and average forebay water temperature even during periods of significant vertical gradients; the forebay monitors were generally comparable to the 5 m profile instruments; both tailwater and forebay samples are point measures in space but the tailwater reach is generally well mixed; the forebay instrument is positioned at one discreet depth in an area that can experience some significant vertical thermal gradients and will be a biased measure of forebay temperature)
 - The model selection process – based on the 2002 data collection/analysis and other model selection criteria, the RPA 143 technical team recommends using the CEQUAL-W2 model for this modeling effort – it is two-dimensional, model code is non-proprietary, it has a long history of successful similar applications, is supported by USACE ERDC, handles other water quality parameters in addition to temperature; computer run times are in the medium range in comparison to other tools.
 - The model’s geographic boundaries – three phases; the model will ultimately encompass the Dworshak reservoir head down to the mouth of the Snake, including Brownlee reservoir
 - Water temperature routine sampling – high priority: continue water temperature monitoring at each project tailwater and forebay (long-term) with the following recommendations – water temperature monitoring year-‘round at all stations, suggest relocating forebay monitor upstream of project to avoid downwelling/upwelling associated with dam face; suggest replacing point monitoring approach with a profiling approach using a real-time temperature string; no changes to tailwater stations)
 - Water temperature research sampling – high priority: continue vertical and longitudinal thermal monitoring in the Lower Snake River from spring through the fall period
 - Data collection strategy – tributary/boundary sampling (high priority): fixed temperature loggers at (Phase 1) Snake R. at Anatone, Clearwater at Orofino, Toucannon, Palouse; (Phase 2) Grande Ronde R., Salmon R., Snake R. mainstem at Hells Canyon tailrace; (Phase 3) Snake mainstem at head of Brownlee Reservoir
 - Data collection strategy – water discharge/project operation (high priority): continue close-interval project operations data, continue routine COE operations data collection
 - Data collection strategy – meteorological data (high priority): continue current weather stations (8 total) monitoring air temperature, dew point temperature, barometric pressure, wind speed and direction, solar radiation, precipitation, cloud cover
 - Proposed model implementation: objective (temperature management for habitat, improvement in the Lower Snake basin) and approach (CEQUAL W-2, short and long-

- term forecasts of hydrological and meteorological conditions)
- Proposed model implementation: goals – develop an operational model by the summer of 2004 (domain Phase 1: Clearwater River to the confluence with the Snake, Snake River from Anatone to Lower Granite; decision support: water control alternatives, temperature control alternatives at Dworshak, fisheries management)
- Model development team under the leadership of COE, in partnership with regulatory agencies: EPA, WDOE, IDEQ, BPA, the Tribes, the Fish and Wildlife Service, consultants, other interested parties
- Initial tasks: data assimilation (flow, stage, velocity, water temperature, channel bathymetry, meteorology, biology, hydraulic structure)
- Other tasks: numerical grid generation, boundary conditions, model calibration, model verification, real-time model application (forecasting)
- Decision support: What decisions are needed to begin “real-time” management using the temperature model? (what we can control – Dworshak release temperature, Dworshak flow, Snake flow; constraints – general water supply outlook, minimum temperature in the Clearwater, minimum flow from Dworshak during certain weeks for the purpose of simply moving fish)
- Decision support: pilot water temperature targets – e.g. daily average temperature in Lower Granite tailrace in a normal snowpack year: for example, 19 degrees C from June 1-September 15; draft TMDL targets July 7-Sept. 30; “as cold as we can get it all summer, until elevation 1520 is reached (don’t need a model to shoot for this target)
- Real time: what is the necessary flow from Dworshak now to meet the target at Lower Granite a few days from now? Predictive application of the model, using: today’s measured conditions at system boundaries (flow, temperature); weather and flow forecasts for the coming week; release temperature constraints; vary the Dworshak flow until the target is met; step forward one day and do it again.
- Potential benefits of real-time management (conservation of Dworshak cold water, saving water during cool weather; fewer, smaller temperature spikes; clearer basis for operational changes; less decision-making burden on TMT; over time, a better understanding of what is possible)

Cope noted that model development is already underway; the goal is to have it up and running by the spring of 2004. In order to make this a real-time decision-making tool for Dworshak, however, we’re going to need a lot of information, including well-defined operational scenarios, Cope said.

Essentially, we just wanted to let the TMT know that we have selected a model and identified a data collection strategy to support it, Mark Schneider said; the next step is to have it operational in time for use during the 2004 in-season management period. Schneider added that the RPA 143 report will be available on CD-ROM soon; he asked anyone with an interest in reviewing this document to contact him directly.

The group devoted a few minutes to a discussion of next steps in the model development process; Mike Schneider said that, in his view, information from the TMT as to their needs – can we go beyond simply a flat temperature, for example – would be very helpful. If the model can tell us how much cooler we can get for a given amount of water, that would be helpful, said

Wagner – if the model can tell us how to optimize the available water from Dworshak to benefit the greatest number of fish, that would be the ideal. Henriksen noted that weather parameters would have a large influence on the model results, and asked how the model will predict future weather conditions as much as three months into the future. Cope conceded this is still an issue in model input. After a few minutes of additional discussion, it was agreed that the RPA 143 modeling team will update the TMT on its efforts some time in February or March.

3. Chum Criteria.

Wagner distributed a document titled “Chum Spawning Criteria” dated November 12, 2002 (available via hotlink from today’s agenda on the TMT homepage). Wagner explained that this document lays out NOAA Fisheries’ thinking during the 2001 and 2002 chum spawning and incubation seasons; as you can see, he said, that thinking was quite conservative – start low (125 Kcfs outflow from Bonneville) because that is what the system can generally sustain through the incubation period. Wagner went briefly through this document, touching on both NOAA Fisheries’ recommendations and their underlying rationale. Bonneville outflow can then be stepped up through the season if the water supply forecasts support such a course of action, Wagner said. The problem, of course, is that the chum spawning season begins in early November, long before we know what kind of a water year we can anticipate, he said.

I thought there might be some value in referencing previous years’ chum management experiences in the 2004 Water Management Plan, Wagner continued. That includes the fact that there is a good relationship between the 11.5-foot minimum tailwater elevation and the 125 Kcfs discharge level from Bonneville, he said. Perhaps we can reference the November 2002 memo as an appendix in the 2004 Water Management Plan, Wagner suggested. No TMT disagreements were raised to this suggestion.

I’m not very clear on the timing of the start of the chum operation, particularly given the very low base flows in the system, currently, Henriksen said – will that be addressed in the plan? Basically, last year we had an El Niño condition, Wagner said; we started the operation on November 6. We monitored the presence of fish and started off at an 11.3-foot Bonneville tailwater elevation, then bumped it up to 11.5 feet. The Water Management Plan has November 1 as a planning date, he said; when the operation actually begins depends on hydrologic conditions, the presence of fish, and the water supply forecast. Wagner noted, however, that the BiOp says the chum operation should begin no later than November 1.

Kyle Martin then provided his winter forecast information, based on the University of Washington’s Climate Impact Group’s one-year forecast. He noted that this forecast is subject to change. Martin said his forecast assumes the cold-wet phase of Pacific Decadal Oscillation and ENSO (El Niño-La Niña) neutral conditions.

Martin said that, based on his analysis, the Northwest can expect near-normal temperatures in November, December, January and February, trending slightly colder than normal; he expects temperatures to be colder than normal in March. With respect to precipitation, Martin expects November to be above-normal (110%-130%), December to be near-normal (90%-110%), January to be above-normal (110%-130%), February to be above-

normal (110%-130%) and March to be near-normal (90%-110%). The bottom line, he said, is that based on currently-available information, I'm forecasting a January-July water supply forecast at The Dalles of 125 MAF, 116% of normal. He noted that his predictions for last year were fairly accurate, although they did underpredict observed precipitation, particularly in the month of March. Martin added that he will present an updated forecast at the TMT's October 22 meeting.

4. Process for Making Changes to BiOp.

Henriksen noted that, at the last TMT meeting, the group briefly discussed this issue and the FPAC flow chart showing a suggested process for making changes to the BiOp. The action agencies generally agreed that we did not see the world that way, she said; we agreed that we would present our own recommendations about where and under what timeline the BiOp might be changed, but have not yet finalized those recommendations. It was agreed to defer this discussion to a future TMT agenda, probably on October 8.

5. Year-End Review Status.

Silverberg said the facilitation team had looked at past year's meeting notes to generate a list of past year-end review topics. These included:

- Temperature/water and runoff patterns, comparison to previous years
- alternative operations for spring flow augmentation
- Dworshak operations
- coordinating hatchery releases
- water year water supply forecast (Harold Opitz)
- Vernita Bar
- Mixers at McNary
- Lower Granite study
- Comparison analysis to other years
- FPC operations analysis
- Snake River operations
- TDG level variations: criteria for modifications to spill
- fall chinook survival in the Snake River
- Hanford Reach juvenile stranding
- history of spawning correspondent to Vernita Bar levels
- Migration status
- NOAA survival study: comparison to previous year
- Performance standards
- weather review (Kyle Martin)
- CRITFC winter climate forecast

Scott Bettin suggested that the beginning/end of spill issue be added to the agenda for this year's review meeting, scheduled for November 5. The results of the reach survival evaluations for 2003 would also be a worthwhile topic, suggested Rudd Turner. Billy Connor's analysis of what happened this year in terms of the fall chinook migration, as well as his work on vertical

distribution of fish in the reservoir relative to temperature, would also be interesting, Wagner suggested. We should also get the usual comparison and analysis of fish passage in 2003 compared to other years, he added. Can we look at the adult returns from the 2001 outmigration with an eye toward assessing the impacts of the 2001 operation? Bettin asked. I'll see what's available, Wagner replied. Silverberg asked everyone to consider the agenda for the 2003 "lessons learned" meeting and to provide any suggestions they may have to her.

6. System Status.

Henriksen said Libby outflow has been reduced to 6 Kcfs, the minimum needed for instream flows and bull trout. Libby outflow will likely be reduced further, to minimum (4 Kcfs) or near minimum beginning September 29 to accommodate some USGS in-river work. The minimum or near minimum outflow will likely be held through the end of October. Libby inflow is still very low; the project is now 25 feet from full and drafting.

Scott Boyd said there are still large numbers of fish passing Bonneville Dam; we moved some flow to Bonneville PH1 for a few days to relieve some of the pressure, he said. Bonneville flow has now been transferred back to PH2.

Henriksen said Dworshak reached elevation 1520 on September 15; the project has been at minimum discharge (1.6 Kcfs) ever since. Flow at Lower Granite is now in the 18 Kcfs-21 Kcfs range. Dworshak will continue at minimum flow for the foreseeable future, she added.

John Roche of Reclamation said Grand Coulee is at elevation 1284.2 and filling gradually; it will be around this elevation through October. Hungry Horse is at elevation 3536.6 feet and releasing enough flow to meet the 3.6 Kcfs Columbia Falls minimum.

Flows at McNary have ranged between 71 Kcfs and 109 Kcfs over the past week, Henriksen said, base flows in the Columbia are very low, currently. The system is being initialized very dry for the next 30-60 days of forecasting, she said.

Wagner said the current fall chinook count is 560,000 adults to date at Bonneville, 2.4 times the 10-year average, with 7,000-8,000 fish per day currently passing the project.

Kyle Martin said CRITFC has submitted two SORs covering the fall treaty fishery since the last TMT meeting; compliance, in terms of maintaining stable pools, has been phenomenal even relevant to CRITFC criteria at both Bonneville and The Dalles Dam, he said. There may or may not be a formal fishery next week, he said; we'll know by late tomorrow morning. Henriksen said it may be trickier, next week, to maintain a stable pool elevation in Bonneville pool; we will work with you to see if we can find a range that works for CRITFC, she said.

7. Status of Water Management Plan.

Comments on the 2004 WMP were due today, said Boyd; comments have been received from the action agencies, NOAA Fisheries, the Fish and Wildlife Service and Montana. Others intending to comment are Oregon, CRITFC and Idaho, he said. Martin said CRITFC's comments

are very nearly complete and will be submitted soon. The plan is to finalize the 2004 Plan within two to four weeks, said Boyd; at that point, we'll need to start working on the fall/winter update. He added that the comments received to date have been posted to the TMT website.

8. Next TMT Meeting Date.

The next meeting of the Technical Management Team was set for Wednesday, October 8. Meeting summary prepared by Jeff Kuechle.

**TMT PARTICIPANT LIST
September 24, 2003**

Name	Affiliation
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David Benner	FPC
Scott Boyd	COE
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