COLUMBIA RIVER REGIONAL FORUM

TECHNICAL MANAGEMENT TEAM

October 12, 2005

FACILITATOR'S SUMMARY NOTES ON FUTURE ACTIONS

Facilitator: Donna Silverberg

Notes: Robin Harkless

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.

Chum Discussion

A handout was provided with questions, background and responses about chum from regional chum researchers. Today's discussion was focused on those questions and is summarized below. (The written responses can be found in the document 'Summarized Responses for chum salmon questions' attached to today's agenda.)

- What is the maximum fluctuation in daytime Bonneville tailwater elevations that can be tolerated without impacting chum spawning? (Is there flexibility in exceeding the current 11.3-11.7' range for short, 2-hour, periods during the day?)

  Responses:

  - For starters, the question is hard to answer because we have not studied the known effects since all prior flow increases have occurred at night.
  - The chum seem to be more impacted by whether conditions are favorable to dig redds – we have not explicitly studied the impacts of temporal and spatial variations so it is difficult to answer what fluctuations and time periods would be tolerable. However, a two hour period probably is not enough to impact spawning behaviors and success.
  - With increases in flows, it is possible that fish new to the area might go elsewhere to spawn (e.g. at higher elevations). Providing a steady flow is best for the chum. However, some pulse during the day that serves to even out evening pulses would be an improvement to last year's operations.
  - There is not enough current data to answer the question.

- What is the maximum nighttime flow that can be tolerated without impacting chum spawning?

  Responses:

  - 13.5' is the maximum. If any higher, we would likely see new chum spawning areas. If this happens, the focus of the research will need to change.
  - We know they can tolerate 15.1'without major changes in behavior. This level, however, will water up new areas. It is uncertain whether chum can collect redd sites at night and whether they select partners and spawn at night. All need study.

- Concerned that adults will get stranded if flows are up for prolonged periods of time.

- What are the implications to other BiOp requirements (April 10 rule curve, spring flows) and the Vernita Bar agreement of maintaining tailwaters above the current 11.5'?

  Responses:

  - BPA provided a separate table and handout that can be found attached to today's agenda, 'Chum Flow Alternative Analysis', looking at data from 50 historical years. Using a base case, and assuming Grand Coulee has no draft limit, 11.5', 12', 12.5' and 13' tailwater elevations can be met all 50 times, but the Vernita Bar protection flow levels at higher elevations are missed. Priest Rapids and McNary flow objectives are missed more often when higher tailwater elevations were modeled. Grand Coulee also missed April 10 refill probability more often and had to draft deeper when a higher tailwater elevation was modeled.
  - The table does not show what the April 10 refill probability would be; it is based on real time modeling which you do not have until the operation begins. That said, generally there is an increased risk of not meeting refill if flows are above 11.5' (85% probability of refill drops).

- If tailwaters are increased to provide additional spawning habitat and reduce superimposition in the Hamilton Creek area, when would be the best time to do this and to what tailwater to provide the greatest benefit to chum?

  Responses:

  - *To* 13.5'; *When* is more difficult to answer – need on the ground monitoring to get at this question.
  - It remains uncertain whether or not superimposition is negative for the fish. We also do not know if fish would spread out with higher flows. Again, this needs further study. Off the cuff, December might be a good time to increase tailwater elevations.
  - An increase in tailwater for an extended period of time would be required--if you bring it up, you'll need to leave it up to establish conditions for spawning.
  - December might be too late – mid to end of November might be better.

- What is our best estimate for the number of chum expected to spawn in each of the mainstem areas this year as well as tributaries?

  Responses:

  - See the numbers in the handout for a direct answer to this question
  - The overall population trend has been declining since 2001.
  - Need age class data to get a more complete picture.
  - Which population should be tracked to study impacts of ocean productivity? The objective would be to distinguish between effects we can control (spawning habitat) and those we cannot (ocean conditions). Suggest looking at hatchery production.

    - The balance between superimposition and dewatering redds needs to be further studied – it may be that dewatering some redds would benefit a larger number of redds/chum in the long run.
- What are the effects on Bonneville tailwaters and biological benefits to chum by drafting 4' from Lake Pend Oreille?

  Responses:
    - BPA's potential revenue effect is a gain of $5 million annually, about 6 kcfs for 30 days.
    - The biological impacts, generally, would potentially provide a benefit – the salmon managers will have more discussion on this.

Ultimately, the action agencies would like feedback from the salmon managers about what maximum nighttime flow is acceptable before becoming detrimental to the fish – a threshold question. This will greatly aid in making daytime operational decisions. Then, provide guidance on when and what shape flows should be to move excess water during daytime hours.

Next Steps:
- The action agencies will add narrative to the table they provided to assist with their explanation for future discussions.
- The salmon managers will look at night flow maximums and daytime variations for flow (how much and how often) and give feedback to the action agencies.
- Discussions will continue at the next TMT meeting, October 19.
- There will likely be an SOR drafted for operations this year, and, if consensus is reached, changes to operations/protocols might be formalized in a future WMP/ Fall/Winter Update.

Review of Autumn Treaty Fishing

Kyle Dittmer, CRITFC, provided handouts of his summary of the six-week tribal fishing season this year, from August 22-September 30. They are linked to the agenda. The tribes' request was met 100% of the time at Bonneville, 82% at The Dalles and 70% at John Day – an increase in 'compliance' at all pools from last year. Kyle thanked the action agencies for meeting the request so often and for being successful at holding stable flows. The final SOR for treaty fishing this year removed language explicitly requesting a maximum tailwater elevation, and just said 'no lower than x elevation'. This language will be used in future SOR's. Kyle was not aware of any net incidents this year.

Operations Review

Reservoirs – Libby was at 2439.2' and releasing 4700 cfs out. Albeni Falls was at 2059.7' with 19 kcfs out. Dworshak was at 1518.9', releasing 1.6', with slightly lower inflows. Hungry Horse was at 3538.7' and operating to meet Columbia Falls. Grand Coulee was at 1287.2'. The Lower Granite tailwater elevation was increased to 738'.

Fish – Smolts: Paul Wagner, NOAA reported that yearling numbers increased at Lower Granite recently, and subyearlings increased at Lower Granite, Little Goose and Bonneville.

Adults: Cindy LeFleur, WDFW, has a power point presentation on adult passage numbers, which will be posted to the TMT web page. She noted that the Fall Chinook run is coming to a close. Upriver brights were predicted at 354,000 and 293,000 were observed. Upriver summer steelhead were predicted to reach 296,000 and were close to the forecast. Bonneville hatchery fish were estimated at 115,000 and reached 102,000. The sport fishery season has closed. Commercial fishing is ongoing. The total treaty harvest reached around 113,000 chinook. Fall chinook jack numbers are low compared to 2004 and the 10-year average.

Power system – Nothing to report at this time.

Water quality – The rivers are cooling – 59-60° in the Snake, 60-61° in the Lower Columbia, and in the 40's and 50's in the Clearwater.

Next Meeting, Wednesday, October 19:
Agenda items include:

- Chum Discussions
- Lake Pend Oreille SOR
- System Operations Review

TMT Year End Review, November 2, Portland District COE:
An agenda is attached with the potential for some presenter names changing – the meeting will be held from 9am-3pm at the COE's Portland District building, 333 SW 1st , on the 3rd Floor. Security is tight, so anyone that plans to attend should notify Cathy Hlebechuk at the COE, 503-808-3942. The facilitation team will invite Dr. Howard Horton to attend, as requested by the TMT members. Also, lunch will be provided for those that want it (charge is $6.00) – RSVP to the facilitation team whether you plan to attend and if you want lunch: ehalton@cnnw.net or call 503-248-4703 no later than October 27.

Technical Management Team Meeting Notes

October 12, 2005

1. Greetings and Introductions.

Today's Technical Management Team meeting was chaired by Cathy Hlebechuk and facilitated by Donna Silverberg. The following is a summary (not a verbatim transcript) of the topics discussed and decisions made at this meeting. Anyone with questions or comments about these notes should contact Hlevbechuk at 503/808-3942.

2. Chum Discussion.

[I arrive 20 minutes or so into the meeting. When I arrive...]

One other point to make, in regard to chum, we've seen the chum numbers go down by about 20% per year since 2002, said Skalicki. It sounds, then, as though you're arguing for that 13.5 elevation, said Silverberg. And what flow is required to maintain 13.5 feet? Dittmer asked. About 145 Kcfs – there's no way you can maintain that 24/7, said Wellschlager. Could you provide 13.5 feet as a day-average, with some load shaping? LeFleur asked. To the extent that you have the ability to push water into the day, you would be able to shave off those peaks.

The last three water years have been below normal, correct? asked one participant. Correct, said Wellschlager. It sounds as if this might be a normal or wetter-than-normal water year, said the participant. We don't know that yet, said Wellschlager – I wouldn't bank on that. Norris noted that, historically, an 11.5-foot tailwater elevation cannot be correlated to a specific velocity regime below Bonneville. That is absolutely correct, said Tiffan.

The discussion then moved on to question 3: "What are the implications to other BiOp requirements (April 10 rule curves, spring flows etc.) and the Vernita Bar agreement or maintaining tailwaters above the current 11.5 feet throughout spawning, incubation and emergence? Wellschlager said Bonneville had done a study, based on 50 historic water years, of the outcome of this operation; he noted, however, that it does not apply to this water year (study assumptions and results are available via hot-link from today's agenda on the TMT homepage).

What are the outcomes? You can meet the Vernita Bar operation providing you can draft Grand Coulee to the bottom, said Wellschlager. However, at the higher tailwater elevations, you start to get some misses on the Vernita Bar target, because the tailwater elevation is at the bottom of the system. You would miss those flow targets in 5 of the 50 years? LeFleur asked. Correct, Wellschlager replied.

With respect to Grand Coulee, said Wellschlager, the higher the tailwater elevation, the lower Grand Coulee elevations go – for example, the average Grand Coulee elevation on March 31 was 1244 if a 13.5-foot tailwater elevation is maintained. In some years, Grand Coulee would bottom out at 1208, the lowest it could go. However, in 50 out of 50 years, Grand Coulee would have refilled by June 30, Wellschlager said.

If you're meeting the chum flows, what does that do to your spring flows at Priest Raipds and McNary? Wellschlager continued. At Priest Rapids, it looks as though average flows don't go down that much at Priest Rapids for the April 16-June 30 period. However, the bookends are wide. Norris noted that this is a monthly 14-timestep model; actual flows vary considerably in their timing. If

Grand Coulee is drafted to the bottom, and you have another week to wait until the freshet arrives, you could strand the entire Vernita Bar reach for a week.

One other point, said Wellschlager: in a prefect world, you would vary flows for each particular water year. In a high water year, when Willamette and Sandy River flows are high, you would need less water from the headwater projects. In a drier year, more water will be needed from the headwater projects. However, we weren't able to include that parameter in the model, because there is no historic record of Bonneville tailwater elevations. It's basically a complete crap-shoot, as to how much you'll need to draft from the headwater projects in a given year to maintain a given tailwater elevation below Bonneville, Norris observed. Probabilities of refill are based on real-time information, not on the historic record.

The short answer to this question, then is that if you go above 11.5 feet below Bonneville, you impact your ability to meet spring refill targets, said Wellschlager. If the TMT decides to do that, that's fine, but the group will need to acknowledge that risk, he said.

The discussion then moved on to Question 4: "If tailwaters are increased to provide additional spawning habitat and reduce superimposition in the Hamilton Creek area, when would be the best time to do this and to what tailwater to provide the greatest benefit to chum?"

Skalicki noted that the first part of the question, what elevation would be optimal, is relatively simple to answer – 13.5 feet. The question of when that should be achieved is more problematic. Answering that question will require on-the-ground monitoring, to determine when spawning begins.

Tiffan said that, in a nutshell, the researchers are assuming that superimposition is a bad thing, and spreading the redds out would be a good thing. We haven't really looked at that, however – we don't have data that shows that redd superimposition is bad, and that a higher tailwater elevation would encourage the spawners to spread out. Off the cuff, he said, I would say that you would want to ramp the tailwater elevation up around December 1. Tiffan added that chum spawners seek warmer bed temperatures in choosing where to spawn, so simply opening up more spawning areas may or may not encourage chum spawners to spread out, rather than spawning on top of existing redds. Skalicki added that the date of the spawning peak varies from year to year; if you can determine when the peak is occurring, that would be the time to increase the tailwater elevation.

The discussion then moved on to Question 5: "What is our best estimate of the number of chum expected to spawn in each of the mainstem areas (Ives Island, Multnomah, the 205 Bridge) this year as well as tributaries (Hardy, Hamilton, Grays Harbor etc.)?"

The researchers provided a table showing a declining population trend from 2002 to 2003 to 2004 for each of the three primary mainstem chum spawning areas: Ives Island, Multnomah and I-205. At the Ives Island area, for example, the 2002 population estimate was 3,179; in 2003, it was 1,899; in 2004, 1,041. LeFleur noted that age data on the spawners for each year would be a critical component in estimating the number of returning spawners in 2005.

Skalicki noted that the tributary spawning areas are extremely susceptible to sudden high flow events; in one year, the Greys River spawning channel blew out, and the entire year-class was lost. He added that researchers have identified at least three genetically-distinct chum populations in the lower river.

Russ Kiefer asked about the impacts of ocean productivity on chum populations, vs. the impacts of river operations. He noted that various Snake River populations have shown a similar decline in the last three years. That's a good point, said Skalicki; however, we don't have any control over ocean conditions – all we can do is try to provide the best in-river conditions we can. Still, said Kiefer, unless we look at this, there is no way to separate out the effects of our management actions on chum and other spawners – perhaps we could choose a tributary or hatchery population that is not affected by river operations, and track their status from year to year. That might be one way to get a handle on the effect of ocean conditions, he said.

The group discussed the impact of tidal effects, as well Willamette River discharge, on Bonneville tailwater elevations, particularly at spawning sites that are farther from Bonneville, such as I-205. There are times when you could be running a perfect operation at Bonneville, but because of tidal and Willamette River effects, the I-205 redds can be left high and dry. In response to a question, he noted that there really doesn't appear to be a beneficial intermediate tailwater elevation between 11.5 feet and 13.5 feet. There is a balance between dewatered redds at various elevations and redd superimposition is probably one you should be paying more attention to, one researcher observed.

I think one thing we haven't been willing to do, in previous years, is to say, let's start out at 11.5 feet, then bump up to 12.5 feet once spawning begins to peak, then drop back down to 11.5 feet if it looks as though refill is in jeopardy, Wellschlager observed. I have a problem with that, because no one is willing to drop the tailwater elevation, potentially dewatering chum redds, based on the January forecast, said Norris. It's not an easy decision, but it is one we made in 2001, Paul Wagner replied.

The group devoted a few minutes of discussion to within-day operations; in particular, the question of what peak nighttime flow the salmon managers would prefer that the action agencies not exceed. If you could give us a top flow which, if it looks as though that's going to be exceeded, you would prefer to see

us move some of that flow into the day, that would be very helpful, Wellschlager said. The group also discussed what magnitude and duraction of daytime flow fluctuations might be tolerable to chum. It was agreed that the salmon managers will discuss these questions and will try to give the action agencies an answer at the next TMT meeting.

In response to a question from Filardo, Wellschlager said that, even when the market price of energy is very high, Bonneville would not implement a major power draft during the winter if it meant going below 85% probability of refill. There is a saying on our trading floor, Wellschlager said – "Pigs get fat, but hogs get slaughtered." In other words, he said, Bonneville is obligated to take a very conservative approach to both power sales and their impacts on refill probability, said Wellschlager.

The discussion then moved on to Question 6: "What are the effects on Bonneville tailwater and biological benefits to chum by drafting 4 feet (from elevation 2055 to 2051) from Lake Pend Oreille?"

Wellschlager provided a brief overview of Bonneville's analysis of this question, noting that 4 feet at Albeni Falls is equal to 180 ksfd, or 6 Kcfs over a 30-day period. That means energy production would increase during November, and a decrease during April. Since power prices are higher in November than they are in April, that would be financially beneficial to Bonneville, a gain on the order of $1 million-$13 million, depending on the price of power. The other side of the question, of course, is what the biological benefits of such an operation would be for chum, Wellschlager said. After a brief discussion, it was agreed that the answer to this question is not known at this time.

This has been a very useful conversation, said Silverberg, I really appreciate the work everyone has done on this issue. This is the first year in which we've had this conversation in advance of the chum management season, and hopefully, that will yield some benefits once November arrives. It was agreed that, between now and the next TMT meeting, the salmon managers will attempt to draft an SOR describing their view of how daytime/nighttime Bonneville flow fluctuations should be managed to avoid harming chum.

3. Review of Autumn Treaty Fishing.

Dittmer said CRITFC submitted four SORs covering operations during the 8-week 2005 autumn treaty fishery. Each of these SORs requested a stable 1-foot operating range at the three Zone 6 pools (Bonneville, The Dalles and John Day). He noted that the Corps agreed to operate Bonneville pool within a hard 1.5-foot range, but imposed no hard constraints on the operation of The Dalles or John Day pools. The Corps did agree to hold the elevation of The Dalles and John Day pools within 1.5 feet as a soft constraint, however. He provided a table showing 2005 hourly compliance with CRITFC's requested 1-foot elevation band criteria, and with the Corps' 1.5-foot operating range.

Dittmer noted that, in 2005, Bonneville elevation was within the 1-foot elevation range 100% of the time, the first time that has ever happened. this compares to 81% compliance in 2004. At The Dalles pool, compliance was 82%, up from 72% in 2004. At John Day pool, compliance was 70%, up from 51% in 2004. Compliance with the Corps' 1.5-foot range at Bonneville, The Dalles and John Day pool was 100%, 94% and 100%, respectively. In all, it was a very good fishing season, Dittmer said.

Dittmer said he has not yet contacted the CRITFC Law Enforcement office to see whether any significant incidents occurred during the autumn treaty fishery; he said, however, that he is not aware of any. In general, he said, I think we're getting closer to the operation we'd like to see, from a treaty fishing perspective.

4. Operations Review.

Hlebechuk said Libby 2439.2 feet and filled 2.6 feet since September 29 – high inflows from the rainstorms. The project is releasing 4.7 Kcfs. Albeni Falls: 2059.7 feet, releasing 19 Kcfs. Dworshak: 1518.9 feet, releasing 1.6 Kcfs minimum outflow. Inflows are currently below 1.6 Kcfs. HH: 3538.7 feet, operating to meet the Columbia Falls minimum. Grand Coulee is at elevation 1287 feet. Hlebechuk said Lower Granite has experienced a significant amount of natural cooling, so the project is now operating up to elevation 738, up half a foot. This operation was coordinated with the Salmon Managers

Wagner said both yearling and subyearling chinook passage has unexpectedly nosed upward at the Lower Snake projects, with 200-300 fish now passing Lower Granite daily. These are likely spring/summer fish, he said. Subyearling passage has also increased recently at Bonneville, with daily counts in the low three digits.

With respect to adult passage, LeFleur said the fall chinook run is now at its tail end. The upriver bright fall chinook run was predicted at 354,000, pre-season; the actual run estimate is now 293,000 at the river mouth. For Spring Creek Hatchery fish, we predicted 115,000, and right now, the total is about 102,000. Upriver summer steelhead totaled 296,000, about 2,000 fish over the number forecast, similar to the 10-year average. With respect to sport fisheries, harvest is about 27,000 chinook so far in 2005, for the area below McNary. Commercial fisheries are ongoing; the harvest to date is about 26,000 chinook. the treaty fishery took 113,000 chinook this year. Currently, the commercial fishery is focused on sturgeon harvest, although there may be some more chinook and coho fishing next week. The commercial season will close at the end of this month.

It sounds as though the summer and fall returns were pretty much in-line with your pre-season predictions, unlike the spring chinook, said Wellschlager –

any thoughts as to why? They're completely different stocks, and go to different places in the ocean, LeFleur replied. Obviously there was a problem with our spring forecast; WDFW will be preparing a report for the US v. Oregon parties, who will be examining the question of what happened with the spring run. In response to a question from Wagner, LeFleur said 2005 fall chinook jack counts are significantly below the 10-year average. However, that only gives you information about next year's three-year-old returns, she said; there are five fall chinook age classes in all. Bear in mind, too, that we've seen record returns in recent years; it wasn't long ago that an escapement of 40,000 upriver brights, rather than the 300,000 we've been seeing lately, was the norm.

Wellschlager said there is nothing significant to report, with respect to the power system. Moving on to water quality, Laura Hamilton said there is little of significance to report, other than the fact that both the Snake and the Columbia are cooling down.

5. Next TMT Meeting Date.

The next Technical Management Team meeting was set for Wednesday, October 19. Meeting summary prepared by Jeff Kuechle.

TMT Participant List
October 12, 2005

Name	**Affiliation**
Russ Kiefer	IDFG
Cathy Hlebechuk	COE
John Wellschlager	BPA
David Wills	USFWS
Donna Silverberg	Facilitation Team
Cindy LeFleur	WDFW
Tony Norris	USBR
Paul Wagner	NMFS
Kyle Dittmer	CRITFC
Robin Harkless	Facilitation Team
Dan Spear	BPA
Nic Lane	BPA
Margaret Filardo	FPC

Dave Benner	FPC
Larry Beck	COE
Tina Lundell	COE
Tim Heizenrater	PPM
Ken Tiffan	USGS
JoeSkalicki	USFWS