CENWP-OD 26 October 2016

Memorandum for the Record

SUBJECT: DRAFT minutes of North Santiam temperature targets

The meeting was held after the WFPOM meeting at USACE NWP HQ, Block 300. Portland, Oregon. In attendance:

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On the phone: Garletts, Grenbemer, Hall, Helms, Hudson, Kovalchuk, Sharpe and Petersen.

1. **Recommendations made at this meeting:**
	1. Proposed targets appear a little better for spawning, a little worse for incubation (ChS), differences are minimal compared to current
	2. Proposed minimum target a concern Jun-Sep (potential migration delay, ChS)
	3. Cooler temps better for fish health at Minto FF and in the river
	4. Impacts between Current vs Proposed were essentially Equal for StW (very similar emergence timing)
	5. Next Steps/Thoughts:
		1. Vary approach depending on water year
		2. Maybe set max target Jul-Aug 58oF during warmer years
		3. Use 54oF as max target Jul-Aug (normal & cooler years)
		4. Maybe set min target Jul-Aug between 50-52oF (minimize potential delay)
		5. Engage DET Temperature PDT
		6. Bennett and Willamette counts needed
2. **Action Items**
	1. ACTION: Grenbemer will gather the count data between Willamette and Bennet with Sharpe.
3. **Task group discussion of slide show presentation:**

Turner put together some graphs to look at different temperature targets to examine potential impacts. The first graph is the proposed temperature targets which are cooler during the summer for both minimum and maximum. The model is based on the operations of the dam including spillway, powerhouse and upper RO. The lower RO operations were not included because they are only used at very low forebay elevations. Slide 2 represents current temps versus the proposal by ODFW for a normal year. The resultant temperatures (modeled) are cooler during the summer and a little higher in the fall but by November, it is similar to the current target. Slide 3 compares resultant temperatures between using the current targets versus the ODFW proposal for a cool wet year which turns out similar to the normal year. Slide 4 is the hot dry year which shows a drastic increase in September. ODFW looked at different target temps in July and August to try to decrease that increase. The drop in temps in July is due to the losing availability of the spillway crest causing temps to decrease to lower than preferred. The hot dry year was not 2015 but Turner couldn’t remember which year he used. The time blocks for spawning, holding and incubation can be reexamined and refined for each dam. There are always a few redds in August but the water release decisions will be based on the majority of spawning. In slide 6 spring Chinook Evaluation, the proposed targets would be slightly better for number of days out of criteria for spawning but the current target would be slightly better for incubation. However, both have pretty similar numbers for emergence. The two targets are weighing pre-spawn mortality with incubation risk. Other factors to consider are BKD risk, copepods levels and cumulative effect. The mortality rate correlates to copepod loads and disease rates. Grenbemer and Graham-Hudson provided the mortality rates at Minto to the task group. 2016 was a great water year for hatchery production. Mortality rates are much lower than 2015. USGS temperature gauge showed a major drop after the spillway closure and temps didn’t reach 60° until recently. 2016 appears to be acting like a hot dry year. Grenbemer reviewed the collection data during the temperature drop. Approximately 60% of fish came in July. If the water temperature is too cold, fish are not moving. Before temperature control, fish were not coming until August. ODFW doesn’t want the dramatic drop of temperature when losing spill. A temp control tower is needed to mix temperatures. Until there is a temperature control tower, September will remain warm during spawning with cooler June, July and August flows. One option is to regulate the amount of flow in September and use the Upper RO but it only cools by a few degrees. With winter steelhead, there was minimal impact using the proposed targets according to the model. There was not a lot of data to use for the model so the peak spawning date was suggested by Sharpe. With the cold flows, steelhead may emerge too late. The temperature changes are not just for hatchery fish but also natural fish as well. Grenbemer said that summer steelhead numbers from 07-14 with temp control were much lower than 2000-2006 counts. However, 2016 had the highest rate even though it was a smaller release. The summer steelhead counts are total fish for the year but the peak is June and July. The fish appear to be reacting negatively to the warmer water. The steelhead may be going to other rivers but the actual whereabouts is unknown. The changes in fish counting at Bennet make it impossible to compare their numbers. Before Minto in ‘11 and ‘12, fish were scatter planted and this may have an effect on returning counts in ’13 and’14. The data from the falls to Bennet is missing and could hold a clue for where the steelhead are going. Video started in 2008 at upper Bennet. ACTION: Grenbemer will gather the data between Willamette and Bennet with Sharpe. Slide 8 is July and August with a maximum target of 58° in a normal year. Slide 9 is the same as slide 8 but for a hot and dry year. There is a spike in October that is most likely an error. In July, the dramatic drop should be more gradual with less spill and added the turbine flow. A ten degree drop is so dramatic. This year, the flows met criteria and the water stayed cooler. The trigger temperature for fish to start moving is about 52° with 52-54 optimal but this is anecdotal. When the lines are overlapping, it means that the target is constrained by the current system. Pre-temp control had problems getting fish to the trap because it was too cold. The ODFW proposed minimum temps might be too cold **TG members suggest using 54 and not 58 as the maximum in a normal year (later input by e-mail suggested using 52-55 for temperature target range).**  This way there would not be much effect in fall or emergence year but it would help for summer operations. Fluctuations in October/November has to be minimal. Temperature strings should be back online but it has been hit or miss. Sharpe will share more data to the TG that he prepares for the Science review every year. The temperature control tower needs be flexible depending on the type of year so it would be beneficial to know the range of targets for the PDT. If 2015 was used as the hot dry year, the graph may have looked different especially with the use of the RO. The next meeting is not scheduled. TG will update WFPOM in the future.