Pend Oreille River Temperature TMDL
2-25-08 WAG Meeting

(Power Point Slides referenced below)

Introduction

1. Where we left off and what will and won't happen today. (Slides 1-2)

Development of allocations

1. Explain what temp data is being used to put into model (where sampled from) (Slides 3-6)
    a. Mention why/how the temp data is representative
2. Explain difference between representative measurements and providing a margin of safety in interpreting model results for TMDL development. (Slide 7)
3. How the model works
    a. Mention how the model is broken into reaches (upstream, shared, Kalispel rolling, etc) (Slide 8)
4. Describe model scenarios (Slide 9)
5. Importing model results into Excel for analysis and comparison to standards (Slides 10 and 11)
6. Describe how allocations are calculated from exceedances of criteria (Slide 12)

Response to comments

1. Loading capacity is:
    a. The temperature that the river can reach and still meet standards.
    b. The temperature that is allowable under the standards
        i. When the existing temperature is less than 20 ^{o}C: the loading capacity is 20°C
        ii. When natural is greater than 20 ^{o}C: the loading capacity is 0.3^{o}C higher (cumulative for all human sources)
    c. We will change the loading capacity table on page 72, LAs on pages 81-85 (which includes Table 23), WLAs on page 88 (to reflect the critical period)

2. Natural conditions
    a. There are times of the year when the river is cooler than what would have occurred naturally
    b. The TMDL applies during the season when temperatures under current conditions exceed the 20° C criterion.
        i. Paul identified that June through September are the months when temperatures exceed 20 ^{o}C.
        ii. Within this critical season Ecology will identify the number of days and locations that are impaired (when current conditions exceed the loading capacity) (Slides 13 and 14)
        iii. Ecology will include a figure in the next TMDL version to show where and when the river exceeds standards
    c. Ecology is no longer using the t = 34/(T+9)
    d. We will not use the 2.8^{o}C allowance for nonpoint sources as this applies when temperatures are below 20°C

3. Heat Load equation (Slide 15)
    a. Paul will use instantaneous flow at the time maximum impairment occurred (instead of average flow) to determine the load allocations (in terms of heat load) for the dams
    b. We will also express the load allocations for dams in terms of temperature.
        i. Implementation activities for dams will use the temperature allocations for determining compliance.
    c. Maximum temperature on the day of worst impairment is used to calculate a load allocation (based on our standard) that is applied for the entire critical period.

4. Volume Weighted average
    a. WA's standard for the Pend Oreille River is a "one-day maximum," so Ecology's standards do not allow for a volume weighted average
        i. The model already averages horizontally and vertically within each cell.
        ii. Fluctuations around the mean temperature can be variable and could erase or diminish the benefits of otherwise healthy average temperatures.
        iii. Using an average may obscure the impacts of warmer surface waters by averaging with cooler deeper waters.
            1. So, averaging temperature within the water column may in some areas be less representative of the temperatures in the river.
    b. TMDLs must also take into account worst case scenarios
        i. Using conservative assumptions in the analysis (the max temp) builds in an implicit margin of safety into the TMDL.
            1. When implementation actions achieve compliance on the worst day, temperatures from an unexpected event are likely to be within the criteria, thus providing a margin of safety.
    c. In the draft, IDEQ used volume weighted average to characterize 2 compliance points to determine if their standard was being met at that location. The impaired sites in the TMDL do not use a volume weighted average. IDEQ will provide additional information in their presentation.

5. Lag Time
    a. Rationale
        i. Considered a rolling 7 day period to pool data for a frequency distribution analysis.
            1. Most of Ecology's temperature criteria are based on a 7 day average daily maximum (7DADM)
                a. Due to research that shows 7 days is the time when impacts to fish begin to occur.
            2. The Tribe has a 7-day average in their standard.
            3. The lag time of the Boundary Reservoir is reported at 1 to 2 days, which would be captured within the 7 day period.
            4. So, Ecology could provide justification in the TMDL why we are pooling one day maximums over 7 days. (This justification would be needed for EPA approval.) Ecology has no such justification for pooling beyond 7 days.

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b. Description of the method used to analyze lag time. (Slides 16-19)
    i. Daily maximums are also pooled over multiple segments in a reach
c. The results of the frequency distribution are not that different from our original analysis.
    i. Some results are a little higher and some are a little lower, but overall they are similar.
d. Because the results from the original analysis and frequency distribution are not that different, Ecology will:
    i. Use the original analysis
    ii. Insert an explanation into the TMDL about Ecology's frequency distribution analysis efforts and results.

6. Load Allocation at the Stateline
    a. Idaho model results are now used as the Box Canyon upstream boundary for all scenarios.
        i. Calibrated model used observed measurements for upstream boundary
            1. Differences between modeled and measured may look like "impairments"
        ii. Some "impairments", such as during May 2004, are no longer present
        iii. The maximum temperatures in Idaho and WA are more aligned now (both occur in Aug.).
    b. Idaho has to meet WA standards at the stateline

7. Seven Mile Dam
    a. Additional analysis will try to separate the up- and downstream effects.
    b. Ecology recognizes additional monitoring and analysis is needed:
        i. Can be included in the implementation strategy
        ii. May also be addressed by the 401 Certification

8. Shade allocations
    a. To be consistent with other temperature TMDLs in WA, shade allocations are based on potential natural vegetation (PNV)
    b. Shade allocations are not "assigned" to a particular person or organization, but rather to the watershed.
        i. Ecology and other organizations work with landowners along the river to establish shade where the possibility exists.
    c. Increasing shade where possible could help improve near shore fish habitat.
        i. We could consider these areas as off-sets in the implementation strategy & plan.
    d. Ecology will clarify language about the shade allocations in the draft.

9. Temperature Credits
    a. No credits will be given for dams lowering temperatures below natural conditions.

10. Other edits for the next TMDL version:
    a. Ecology will write a new implementation strategy.
        i. Karin still needs to contact you!
        ii. The strategy will likely contain a number of approaches to reduce temperature:

        1. Analyze and evaluate alternative reservoir mgmt strategies
        2. Other actions that help reduce temperature (increasing shade, etc.)
        3. Operational changes
        4. Etc.
    iii. Ecology will acknowledge in the strategy that we are not advocating for dam removal.
b. Ecology will:
    i. Clarify other tables and figures in the document so they are easier to understand.
    ii. Insert additional or revise text in the draft document to clarify points raised in other comments not addressed here.