

**Pend Oreille River TMDL Watershed Advisory Group**  
**Meeting Notes**  
**October 25, 2007**  
**U of I / Bonner Extension Service Office**  
**Sandpoint, Idaho**

**Participants:** Todd Kennedy, Tetra Tech; Scott Jungblom and Curt Knapp, Pend Oreille PUD; Todd Johnson, agriculture representative; Patty Perry, Kootenai Tribe; Paul Pickett, Karin Baldwin and Jon Jones, Washington Dept of Ecology; Don Martin, EPA; Bob Steed, Kajsa Stromberg and Dan Redline, Idaho DEQ; Ruth Watkins, Tri-State Water Quality Council; Christine Pratt, Seattle City Light; Tarang Khangaonkar, Battelle PNNL; Jenna Borovansky, Longview Associates; Kent Easthouse, Corps of Engineers; Ted Runberg, Priest River; Kate Wilson, Pend Oreille Basin Commission; Michele Wingert, Kalispel Tribe; Tim Closson, Kootenai-Ponderay Sewer District; Gary Wescott, Southside Water & Sewer District; and by phone: Mick Schneider, Corps of Engineers; Lincoln Loehr, HellerEhrman; Lori Blau, Ponderay Newsprint; Kent Doughty, EES Consulting; Jessica Koenig, Tetra Tech; Paul Klatt, JUB Engineers.

**Introductions:** Ruth reviewed the purposes of the meeting: (1) Tetra Tech will present the current working draft of the temperature TMDL, (2) commenters will present overviews of their comments/concerns; (3) all WAG members will hopefully gain an understanding of the issues at hand, and (4) the group will discuss the revised schedule and next steps.

**TEMPERATURE TMDL WORKING DRAFT:**

[PowerPoint presentation is posted on IDEQ website:

[http://www.deq.idaho.gov/about/regions/pend\\_oreille\\_river\\_tribs\\_wag/pend\\_oreille\\_river\\_temp\\_tmdl\\_draft\\_081007.pdf](http://www.deq.idaho.gov/about/regions/pend_oreille_river_tribs_wag/pend_oreille_river_temp_tmdl_draft_081007.pdf)] Todd Kennedy of Tetra Tech presented information on the temperature TMDL allocations, which are the heart of the current working draft of the TMDL document. He reminded everyone that the allocations were based on output from 3 calibrated water quality models developed by both Portland State University and Batelle. The model results were reviewed and analyzed by the two states and Tribe for compliance with state water quality standards; Tetra Tech's role was to put the modeling and state analysis results into the document to meet EPA requirements for a TMDL.

- Critical conditions were determined by analyzing two years (2004-05) of daily maximums over the length of the river, May through September. The focus was on the period (day) of maximum impairment. Compliance points in Idaho and compliance areas in Washington were determined by the states and tribe.
- In Idaho, the three compliance points where Water Quality Standards are exceeded are: (1) a longitudinal cross-section of river from Long Bridge to Albeni Falls, (2) river bottom water at 35km below the Railroad Bridge, and (3) the Washington/Idaho state line. The river cross section is the most important compliance point for Idaho. Based on new information, the state line compliance point will be for a date in August, not May; this revision will be reflected in the next version of the document and it will be determined during the implementation phase how to meet the Washington standard at the border. The only load allocation in Idaho is for the river cross section compliance point and it is for Albeni Falls Dam, with a 5% reduction required to meet water quality targets. Wasteload

allocations in Idaho were set for the City of Sandpoint, City of Dover and City of Priest River and are based on current average temperatures and permitted flows, with a reserved allocation for future growth. No reductions will be required now, but the allocations will be important in the future. Idaho DEQ is currently processing a request from the City of Sandpoint and Southside Water and Sewer District to revise its allocation to account for higher growth rates and the potential regionalization of area sewer systems.

- In Washington, the four compliance areas are: Box Canyon reservoir outside Kalispel Reservation, Box Canyon reservoir along Kalispel reservation (river mile 72.1 to 63.7), Boundary reservoir, and below Boundary Dam to Canadian border. Existing and allowable temperatures and heat loads, dates of maximum impairment, and reductions needed to meet allowable targets were developed for each compliance area. Load allocations (based on the date and river mile location of maximum existing temperatures) were distributed among the possible sources, including tributaries, mainstem vegetation, dams and upstream sources. Wasteload allocations for point sources were based on current temperatures and flows with reserved allocations for future growth; as in Idaho, no reductions are required are this time (see Paul Pickett's presentation later in the agenda).
- Other considerations in the TMDL allocations, as required by EPA, included: seasonality (being met by using two years of continuous data over multiple seasons); margin of safety (being met by using conservative assumptions); background (being met through natural conditions simulations); reserve capacity (being used for wasteload allocations only); and reasonable assurance (allocations to dams and point sources are assured through applicable laws and permits, which will be detailed in the implementation strategy).

#### Discussion:

- Heat load vs. temperature: Mike asked if the Corps would be expected to meet Kcal per day (heat load) or temperature at the compliance point. Paul indicated that use of the heat load allocation resulted from a court case and that temperature is most important in this TMDL.
- Washington load allocation table: Tarang stated that the table represents one point in time, which makes it look like temperatures are consistent throughout. Todd said the focus is on a specific day and Paul noted that they used a large spreadsheet from which critical days and critical locations were selected (i.e., if the worst gets fixed, everything gets fixed)—which also provides a margin of safety.
- Flux: Tarang noted that the steady state equation does not consider flux. By using the equation, we are making certain assumptions about temperature mixing. Daily maximum temperature is being combined with average daily flow. However, dams redistribute the heat content of water. It is inconsistent to use equations and heat load; we should leave the heat loads out and fix the problem in terms of temperature.
- Paul noted that the working draft TMDL is more barebones because of the timeframe. More info and better explanation will be added in the next draft.
- Bob thanked Tetra Tech folks for their work in pulling together all the different information; without this draft we would not be getting such great, thought-out comments at this stage of the project.

**CURRENT COMMENTS ON DRAFT:** [All comment letters received to date are posted on IDEQ website]

**Ponderay Newsprint:** Lori and Lincoln reviewed and elaborated on the primary issues as presented in Ponderay Newsprint's letter to IDEQ and Ecology dated October 19, 2007:

- 1.) A TMDL for temperature is not needed for the Idaho segment of the Pend Oreille River. The modeling demonstrates that summer temperatures in the river in Idaho and at the outlet of Albeni Falls dam are *cooler* under the existing conditions than under natural conditions, because of the dam. In 11 out of 12 scenarios the existing conditions are *cooler* than natural conditions, due to the dam.
- 2.) IDEQ and Ecology have misinterpreted Washington's temperature standards with regard to the model results from early May 2004. The agencies need to provide an explanation for the model results. The correct temperature allowances and the correct application of the  $t = 34/(T+9)$  formula (where  $T = \textit{background}$  not natural) need to be applied *before* declaring a violation.
- 3.) The TMDL incorrectly asserts that the allowable temperatures for the Pend Oreille River in Washington are essentially the numeric criteria in the summer and therefore sets incorrect reduction requirements.

Discussion:

- Bob responded that in Idaho 11 points show support and 1 does not. He will talk to DEQ policy staff about this, but usually only one non-compliance point would still require a TMDL. He added that this still doesn't address Tarang's concerns about the compliance points and maybe there is a mixing issue related to the points. Although Bob initially thought that since most of the water is cooler due to operations at Albeni Falls Dam, a TMDL would not be needed; however, DEQ pre-selected the compliance points and he is likely to stick to those points. He will talk to DEQ policy staff about the issue. Lincoln asked Bob to consider what Pend Oreille River temperatures would look like if the dam were not in operation, i.e., that existing temperatures in most instances would be warmer than they are now. Bob agreed that most of the River's temperatures are better with the dam in place, but noted that DEQ is not proposing operational changes in the TMDL, because current operation is focused on protecting upstream beneficial uses. Lori added that there probably won't be a perfect scenario that accounts for every situation.
- Paul noted that Washington used natural conditions and that Table 23 definitely needs to be revised since it has resulted in a lot of confusion. Ecology staff will review policy regarding the use of the  $t = 34/(T+9)$  formula.
- Regarding the selected target and the use of natural conditions, Bob and Paul will double-check the numbers in Table A and make sure they are correct.
- Regarding the modeling error that was discovered, Paul re-iterated that the model may have under-predicted conditions at certain times. Using upstream conditions and re-doing the model analysis, it looks like impairment will be in August rather than May.
- Lori noted that they want to see a good TMDL come out of this process.

**Seattle City Light:** Christine noted that SCL wants the TMDL to be a good, credible document and one that is representative of conditions in the river. She believes that the comments they have made do not require additional data and can be resolved. She reviewed the comments and recommendations presented in SCL's comments dated September 26, 2007, which include:

- 1.) Heat load allocation calculations should account for variability in Pend Oreille flows.
- 2.) Heat load calculations should take into account the cumulative impacts of upstream actions (i.e., other heat sources).
- 3.) Volume-weighted maximum temperature should be used to ensure representativeness. Using daily maximum temperatures based on certain points at the surface is not representative of conditions. SCL is currently working on this with Ecology staff.
- 4.) Analysis should account for temperature increases resulting from lag time. Other commenters share this concern. Lag time is a ½ day to 1 ½ day time period. We could use an approach that has been used elsewhere with our existing data and models. SCL is currently working on this with Ecology staff.
- 5.) Analysis should acknowledge the absence of modeling of Seven Mill Dam reservoir operations.
- 6.) Water quality standards and “allowable temperatures” should be consistent. (Many agree that Table 23 is confusing and needs to be revised.)
- 7.) The TMDL should require Idaho compliance with downstream standards at the state border; even if Idaho is non-compliant at the border, Washington and Kalispel sources should not be required to compensate.
- 8.) The TMDL includes unreasonable shade enhancement obligations. Load allocations for mainstem vegetation should be re-visited.
- 9.) The implementation plan should include specific information about state, EPA and tribal processes so that requirements are clear to regulated entities.

#### Discussion:

- Tarang elaborated on several key points. His biggest concern is with the use of the heat load equation; he asked if a vertical average could be plugged into the equation or if a warmer heat compliance in the vertical area could be assigned. He re-iterated that it is critical to have consistency in order to achieve water quality standards. Regarding heat flux, we should be using 24-hour not instantaneous. Do state regulations require calculation of load during the day? Most states use 7-day average of the maximum. Paul responded that this would take some looking in to.
- Tarang noted that Table B in the Executive Summary needs a footnote stating that results are based on each reach acting independently.
- Bob said that volume-weighted should not be used to determine compliance with Idaho Water Quality Standards because the water quality standards do not have volume weighted criterion. Idaho numeric criteria are in the form of either maximum temperatures or average temperatures.
- Tarang said he doesn't see the need to use heat load since point sources are not part of the calculation. Bob said that the states will need to work with EPA to see if the Kcal method can be changed to temperature. Todd said that the percent reduction will still be the same even if the method is changes to Celsius from Kcal; Tarang did not agree and said that flows under existing and natural conditions would be different. Paul said if we cannot change the method maybe we can de-emphasize Kcal or make it clear what the intent is for using it. Karin added that we can certainly focus on temperature in the implementation strategy.
- Regarding lag time, Tarang noted we should not be focused on one spot, but that we need to track the movement of heat. We could look at a 1-week or 2-week period and determine the highest temperature with or without the dam. Don asked if there is a biological impact

on fish because of lag time, and Paul said there is a difference between now Idaho and Washington address biological impacts. Paul also said that the agencies will continue to analyze the effect of lag time versus other effects that heat up the water. Bob thought it would take a lot more modeling to accomplish this and he has asked the Corps to help, if possible. Mike said he had some ideas regarding some fairly simple model simulations that could be used. Bob and Mike agreed to meet on this topic.

- Regarding comment #7, Bob said an error was found so the next version of the TMDL will have adjusted results, which he thinks we address this question.

**Corps of Engineers:** [PowerPoint presentation posted on IDEQ website.] Kent Easthouse noted that the Corps' comments deal primarily with the model, not the TMDL. He and Mike Schneider reviewed the comments as detailed in the Corps of Engineers letters dates June 1 and June 20, 2007, as follows:

1.) Model uncertainty

- Level of uncertainty in model regarding existing and natural conditions
- Assumption of model certainty
- Overview of confidence limits for model
- Errors introduced at boundary propagate through model

2.) Existing errors in model

- Hydrology: too much flow under existing conditions
- Lake stage: natural conditions too low during July/August when compared to historic data
- Others: model inputs for natural conditions

4.) Representativeness of data and compliance metrics

- Use of surface and bottom cells for compliance; volume-weighted data would be more representative
- Use of instantaneous metric for compliance is flawed (relates to lag time issue)
- Use of alternative data for compliance; use of volume weighted daily average and daily maximum and use of statistics to interpret data
- Idaho 10% frequency exceedance policy

5.) Travel time issues (same as lag time concerns already discussed)

- Travel time needs to be accounted for in analysis
- Natural vs. existing scenarios will transport externally generated thermal load at different rates through system.
- Errors introduced at upstream boundary will propagate through system at difference rates for natural vs. existing scenarios.

6.) Boundary conditions issues

- Upstream boundary condition in Lake Pend Oreille—lake was not modeled which results in a decoupling of the lake from the river in existing model and produces greater model error at boundary segments
- Boundary condition at Albeni Falls (Box Canyon model)—travel time and error propagation

7.) Sensitivity analysis

- Sensitivity analysis of model is needed
- Corps of Engineers sensitivity analysis resulted in an up to 0.5C temperature difference between two natural scenario model runs in July and August, a larger difference than the compliance metric of 0.3C
- There are ways to identify internal and external sources of thermal load

#### 8.) Model uncertainty and compliance determination

- Assumption of model certainty for compliance
- Model is not perfect—it is an estimate of natural and existing conditions
- Sensitivity analysis needs to be performed

#### 9.) TMDL analysis

- Overview: The TMDL and analysis focus on non-compliance; very little analysis is on thermal enhancement from Albeni Falls, which has resulted in a net cooling when compared to hypothetical natural conditions
- Loadings: The TMDL should be a loading analysis and quantify benefits and detriments to the thermal loading in the river; are there ways to look at the benefits of Albeni Falls on the thermal load in the river?

Kent noted that DEQ has been receptive to these issues. The Corps wants to see as good a model as possible, with the flaws and errors reduced, since it's the basis for the TMDL. He also added it is difficult to compare the river today with conditions from 60 years ago.

#### Discussion:

- Bob explained that the hydrology issue has been corrected. The hydrography in scenario 1 has been changed and the calibration has improved; there will be a new existing condition in the next version of the PSU scenario report.
- Bob noted that the IDEQ standards staff has said that the 10% exceedance does not apply in this situation.
- Regarding policy, Mike said that Idaho has good guidance regarding the metric to be used and the Corps is supportive of these being applied to the Pend Oreille River. Technically, we need to focus on changes to load. He asked about looking into other options for protecting aquatic life in the river, such as pollutant trading. Since there is a net cooling due to the dam, the extremes in temperature that can have a negative effect on fisheries do not occur. We now have more moderate temperatures and need a more quantitative assessment.
- Paul noted that the Corps is using the term “error” as a term used in modeling which means “uncertainty”. All models have some error, i.e. some uncertainty, and that the Corps’ points are valid and we need to understand the model’s uncertainties. He said that Ecology is still trying to figure this out since Washington doesn’t have any *completed* temperature TMDLs like this for a river system where dams are the principal source of heating.

**Pend Oreille PUD**, Scott Jungblom explained that PUD was glad to have an opportunity to comments at this point and that a number of their comments had already been discussed. He and Kent Doughty reviewed the main comments from the PUD’s letter dated October 19, 2007 as follows:

- 1.) The TMDL incorrectly allocates heat loads to Box Canyon Dam and reservoir. Contributions of the heat load sources upstream of Box Canyon Reservoir are not properly incorporated into the heat load allocation.
- 2.) The TMDL is based on exceedance of the water quality criteria of 20°C for the daily maximum temperature. There is substantial evidence that the *natural* maximum daily temperature of the Box Canyon reach is warmer than 20°C. The allowable heat load for the Box Canyon reach should be based on the *natural* annual maximum temperature as predicted by the model.

- 3.) The existing condition model scenario uses existing temperature data for the upstream inflow temperature but the natural condition model scenario uses the output from the upstream model for inflow temperatures. The model scenarios must use the same approach for developing initial conditions and inflow boundary conditions.
- 4.) The TMDL allowable temperature and heat load allocations must be representative of the water quality conditions. A volume weighted maximum entrapture that accounts for the entire water column and is representative of the dominant aquatic habitat should be used to define the existing maximum temperature for establishing TMDL temperature exceedances.
- 5.) The statement in the draft that seasonal variation has been accounted for is not consistent with applying the temperature impairment for a single day to the entire summer.
- 6.) Water temperatures throughout Box Canyon Reservoir are largely governed by the temperature of the river flowing into the reservoir from Idaho. The TMDL does not recognize the well establish position that upstream states must comply with downstream water quality standards.

Discussion:

- Paul re-iterated that natural condition is being used and that this needs to be clarified in the document; he also noted that the Idaho/Washington compliance point is being worked on.

**Southside Water & Sewer District:** The District submitted a comment letter to DEQ on September 12, 2007. Gary Wescott reported that the District is still planning to go to EPA with a request to discharge into the Pend Oreille River. He asked why we are concerned about natural conditions if we are never going to get back to natural conditions again. Bob responded that natural conditions are considered a reasonable goal to aim for—keeping in mind that natural is not *pristine*.

**City of Sandpoint:** Representatives from the city were unable to attend today, so Bob gave a quick overview of the comment letter dated September 13, 2007. The city has noted that the allocated heat load does not appear to give adequate allowance for growth, especially if Sandpoint becomes a regional wastewater treatment facility in the future. In response to the city's concern, Bob is working with PSU to run another scenario with new discharge numbers (10.43 – 18.5 mgd rather than 2.5 – 9.41 mgd) so that when growth occurs there will already be an allocation in place. Tim noted that he would want to see the allocation be as reasonable as possible. Bob noted that any discharge numbers used for temperature should be the same for any future TMDLs, like phosphorus.

**REVIEW OF TMDL PROCESS:** Karin explained that Marcie Mangold will be the new TMDL lead for Ecology on this project, but she was unable to attend today because of a scheduled surgery. Karin explained Ecology's TMDL process, which begins when a waterbody is listed as impaired on the 303(d) list. Ecology then performs a study of that waterbody to determine how much pollution needs to be reduced and then an advisory group helps Ecology develop a basic implementation strategy. The study and the implementation strategy then form the TMDL Report, which is submitted to EPA for approval. Once the TDML is approved, a Water Quality Implementation Plan is created that describes in fuller detail "who will do what by when," and timelines for achieving water quality standards.

For the Pend Oreille River, although the study is well underway, Ecology has not yet met with the stakeholders to develop the implementation strategy. Before the next version of the draft TMDL

is completed, Ecology will meet with the stakeholders (including Idaho and the Corps) and develop an implementation strategy to give to Tetra Tech to insert into the next draft. Karin clarified that the implementation strategy is an overall summary of possible actions, while the implementation plan will be a more detailed document to be developed after the TMDL is approved by EPA. She also noted that Ecology staff will perform internal reviews of the TMDL document before it is released to the general public for review.

**REVISED TMDL SCHEDULE AND NEXT STEPS:** The group reviewed the revised schedule, which is attached to these meeting notes. The purpose of the next meeting of the WAG, to be held in December, will be for the agencies to present their responses to all the comments received from the WAG members. The next version of the TMDL will not be ready for review until January. All dates in the schedule past January are “tentative” pending WAG consensus on moving forward with public review of the TMDL document.

### **TRIBUTARY, MAINSTEM SHADE AND POINT SOURCE ALLOCATIONS,**

**WASHINGTON:** [PowerPoint presentation posted on IDEQ website:

[http://www.deq.idaho.gov/about/regions/pend\\_oreille\\_river\\_tribs\\_wag/washington\\_allocations\\_1007.pdf](http://www.deq.idaho.gov/about/regions/pend_oreille_river_tribs_wag/washington_allocations_1007.pdf)]. Paul provided a quick overview of the allocations that have been developed for sources other than dams in the Washington portion of the TMDL.

Tributary water temperature allocations are based on percent effective shade.

- Follows procedures used in the Colville National Forest TMDL
- Uses rTemp temperature response model (including weather conditions, groundwater inflow and temperature, water depth, and percent shade)
- EPA conducted shade analysis from USFS shade coverage (GIS)
- Includes allocations for Cee Cee Ah and Calispell Creek (shared waters of Washington and Kalispel Tribe) and 17 other Washington tributaries.
- Results are shown in TMDL report.

Mainstem riparian shade allocations are based on percent canopy and average tree height.

- Model requires tree height, percent canopy and left/right bank
- Developed from USFS GIS coverage

NPDES-permitted point source allocations are based on seasonal heat load.

- All discharges must have a wasteload allocation (WLA)
- WLA based on current temperatures and flows, calculated for four seasons.
- Includes reserve for future growth, based on state growth projections of 30%, divided between tribal lands (5%) and state (25%)
- Proposed WLAs for Newport, Ponderay Newsprint, Ione, Selkirk School, Metaline, Metaline Falls and Pend Oreille Mine are shown in the TMDL report.

**NEXT MEETING:** The next WAG meeting was set for December 6<sup>th</sup>. Scott will let Ruth know if there is a phone line available at the new PUD meeting room, and if so we will meet there.

Meeting adjourned at 5:10 p.m.



**Pend Oreille River Temperature TMDL Schedule**  
**Revised October 12, 2007**

May 25 2007	All info (modeling results and states' analyses) to Tetra Tech
Jun 1	Conference call with coordination group/Tetra Tech
Jun 25	Draft TMDL from Tetra Tech to coordination group
Jun 25	WAG meeting to preview draft TMDL with WAG members
Jun 25-Jul 13	Coordination group reviews draft
Jul 20	Conference call with coordination group/Tetra Tech to review and finalize draft for presenting to WAG
Week of Aug 6	Draft TMDL (including implementation section) to WAG
Aug 16	WAG meeting to discuss status of modeling issues
Sep 28	WAG meeting to discuss status of TMDL and revisions to schedule
Oct 25	WAG meeting, Tetra Tech presents current working draft of TMDL and comments to date discussed
Nov 9	Comments on working draft due from WAG
Nov 10-early Dec	Agencies determine response to WAG comments
Dec 6 or 13	WAG meeting to review response to comments
Dec 28	TetraTech sends draft to coordination group
Jan 11, 2008	Final draft released to WAG
Week of Jan 21	WAG meeting to come to consensus on final draft TMDL and agree to recommendation to BAG to begin public review process
Feb 4 (tentative)	Public comment period starts
March 3 (tentative)	Public comment period ends
Early March (tentative)	Responses to public comments prepared
Late March (tentative)	Final TMDL submitted to EPA