



## **Pend Oreille County Public Utility District**

Administrative Offices - P.O. Box 190 • Newport, WA 99156 • (509) 447-3137 • FAX (509) 447-5824  
Box Canyon Hydro Project - P.O. Box 547 • Ione, WA 99139 • (509) 446-3137 • FAX (509) 447-6790

November 23, 2010

Karin K. Baldwin  
Water Quality Program  
Department of Ecology  
4601 N Monroe  
Spokane, WA 99205

**Re: Public Utility District No.1 of Pend Oreille County Comments on Draft Pend Oreille River Temperature TMDL**

Dear Ms. Baldwin:

Public Utility District No. 1 of Pend Oreille County ("District") appreciates the opportunity to provide the comments and requests submitted hereafter. Specific and technical comments are attached, as well as the comments provided in this correspondence.

In addition, it is noted that the temperature TMDL study assumes, and is based upon, the water quality standards applicable to the Pend Oreille River shown in Table 602, WAC 173-201A-602 for Water Resource Inventory Area (WRIA) 62. Some of the statements made in the water quality improvement report do not appear reasonable or logical. These are specifically addressed in the attached comments.

On November 17, 2010, Governor Gregoire issued an Executive Order suspending non-critical rule development and adoption. By Executive Order 10-06, the Governor of the State of Washington did "order and direct: (1) the suspension of non-critical rule development and adoption from the date of this Executive Order through December 31, 2011." The District suggests, and requests, that Ecology suspend the development and adoption of the TMDL rule for the Pend Oreille River at least through December 31, 2011. By suspending the development and adoption, Ecology will provide sufficient time for the District to obtain further data and information regarding the temperature models used by Ecology in its proposed TMDL rule.

The draft Temperature TMDL Report for WRIA 62 and the conclusions are based upon exceedances of the temperature increase for the Pend Oreille River as set forth in footnote 1, Table 602 in WAC 173-201A-602. The water quality standards (WQS) for the Pend Oreille River, as well as other surface waters in the State of Washington, are being reviewed by the Department of Ecology. The triennial review by Ecology will not be completed until 2011. Is it logical to complete a TMDL regulation for the Pend Oreille River before the results of the triennial review of the WQS for the Pend Oreille River has been completed?

The District submits the following attached comments on the draft Pend Oreille River Temperature Total Maximum Daily Load – Water Quality Improvement Report. The District is a public utility district organized under Title 54, RCW. The District is a municipal corporation under Washington law. The District owns and operates the Box Canyon Project (FERC Project No. 2042) located near the City of Ione, Washington, on the Pend Oreille River near river mile 34. The Box Canyon Project is a "run-of-the-river" project and has a reservoir that is approximately 55 miles in length. As a "run-of-the-river" project, the discharge at the powerhouse and spillway at the dam is approximately the same as the discharge of the Albeni Falls Project owned and operated by the United States Corps of Engineers, located in Idaho, near the Idaho-Washington border, on the Pend Oreille River.

As a municipal corporation, the District is non-profit, which means that all of the costs of the Box Canyon Project must be passed on to the people who consume the power from the Box Canyon Project. Any additional costs imposed on the Box Canyon Project by regulations, or otherwise, will result in an increase in the cost of power delivered from the Box Canyon Project to the rate payers, who are generally persons who are located in Pend Oreille County and served by the District.

Since the Box Canyon Project is a relatively small project located on the Pend Oreille River, the District is very concerned about any additional costs that are imposed on the Box Canyon Project. The District appreciates the opportunity to submit these comments on the Draft Pend Oreille River TMDL Report and to advise the Department of Ecology of the potential effects of the Draft TMDL Report. The District will address some of the specific language and provisions of the Report by reference to the page of the Draft Report as published.

The District is concerned that a number of aspects of the Department's analysis have not been thoroughly explained or justified, resulting in mischaracterization of the effects of the Box Canyon Project on river temperatures. We are requesting that the final TMDL address the issues described in the following comments. Please feel free to contact me at (509) 447-9331 if you have questions regarding this submission.

Sincerely,



Mark Cauchy  
Director, Regulatory and Environmental Affairs

Attachment (1)

## **Public Utility District No. 1 of Pend Oreille County Comments on Washington Department of Ecology's Draft Pend Oreille River Temperature TMDL**

### **1. How is uncertainty in the model predictions considered in the analysis and subsequently in determination of impairment for the Box Canyon Project?**

The draft TMDL (p. 19) states that the model calibration uncertainty (RMSE) was 0.41°C. The determination of impairment is based upon the difference between predicted existing temperatures and predicted natural condition temperatures, in which case, statistically the errors in each of these two quantities should be added in quadrature, resulting in an overall error of 0.58°C. There is no discussion of modeling error, what it implies, or how it was considered in the TMDL. At the very least, charts and graphs should include appropriate error bars, and the text should include an explanation of how model uncertainty is considered. We request that a paragraph be added to discuss the implications of the error in the model, especially since the overall error (0.58°C) is very close to the value of the exceedance for the Box Canyon Reservoir.

### **2. Why were only maximum temperatures for each model segment (p. 26) considered in the analysis?**

Basing analyses on only maximum temperatures within each modeled segment effectively restricts the analysis to only the top 1m of water in the reservoir. This approach does not accurately represent the heat load imparted to the water in the reservoir. A more realistic approach would be to average the temperatures throughout the water column, either a simple arithmetic average of the vertical temperature distribution or a weighted average based on the flow through each cell at each vertical location in the water column. If WDOE will not agree to this change in the analysis, we request that the report include a discussion of why averaging throughout the water column was not used and why this is the preferred analytic method.

### **3. The report mis-characterizes the non-compliance:**

When the report is read in full detail, it is clear that the temperature non-compliance in the Box Canyon Reservoir occurs only from the period early-July through late-August (page 31, third paragraph). It only occurs in 17 miles of the 55 mile reservoir (the Skookum, Tiger and Box Forebay Reaches). It is also clear that not every day in this two month period experiences a non-compliance event, that non-compliance may be only for a few hours in duration on some days, and that the non-compliance is only at the surface of the river and does not extend down through the water column. We acknowledge that a non-compliance situation does occur at some times in some places. However, the report is very unclear about the extent of the non-compliance events, and, in fact, in places leads the reader to conclude that the non-compliance lasts all year (see Table 6 on p. 41 and Table 11 on p. 73 as examples). In reports by the press and on the radio after the draft TMDL was released, it was implied that non-compliance was year round by reporting the results shown in Tables 6 and 11, making the temperature exceedances seem much more serious and long lasting than they actually are. Table 6 and 11 say that non-compliance is

for the years 2004 and 2005. We request that these tables be altered or that an explanation be added under each table that says:

*“Temperature non-compliance in the Box Canyon Reservoir indicated above has been determined to occur by use of a computer-based model, and occurs only from the period early-July through late-August. Non-compliance only occurs in 17 miles of the 55-mile reservoir (the Skookum, Tiger and Box Forebay Reaches). Not every day in this two-month period experiences a non-compliance event. Non-compliance may be only for a few hours in duration on some days, and non-compliance is only at the surface of the river and does not extend all the way down through the water column to the river bottom.”*

**4. What is causing the modeled increased temperatures in the Skookum and Tiger reaches in the existing condition compared to natural conditions in the Box Canyon modeling scenario?**

Table 6 (p. 41), and Figures 13 and 15 (pp. 45 and 47, respectively) indicate existing temperatures can be increased by as much as 0.5°C and 0.8°C at the Skookum and Tiger reaches, respectively. These do not appear to be merely progressive temperature increases as one moves downstream, but are marked jumps in temperature compared to those reaches upstream or downstream. Examination of the model input parameters could lend insight as to the cause of these increases, which may in turn lead to suggestions for mitigation of these increases. However, we are concerned that part or all of these temperature jumps could be due to an artifact of the modeling, possibly due to specific placement locations of temperature monitoring sensors in these locations. We note that both the Tiger and Skookum reaches have a large slough associated with them that could skew temperature measurements depending on where the temperature sensors were placed. These jumps should be discussed and analyzed in the report body to provide a valid explanation of these predictions.

For example, on page 42, third paragraph, the report states that by the time you reach Tiger and Box Forebay reaches, “the average velocity has been slowed sufficiently to lead to the increased heating.” We request that the velocity analysis WDOE did to support this statement be added here in the report. What is the average velocity during the non-compliance time period today and pre-project? How did you conclude that the difference in velocity was “slowed sufficiently” to cause the heating? Doesn’t the river slow more and more as you get closer to the dam? Therefore, you would expect the temperatures to increase slowly, in each reach, as you move downstream. But this is not what the model predicts. Why did temperatures increase in the Skookum Reach and then apparently cool off in the next three reaches downstream? This is inconsistent with the “slowed sufficiently” concept. These modeling inconsistencies have to be addressed in the report.

Additionally, the District annual temperature monitoring at depth between Kelly Island in Newport and the Box Canyon Dam forebay shows minimum warming.

**5. How do you reconcile the result that implies that the highest temperatures in the Box Canyon forebay reach are on the order of 1°C higher than the highest temperatures in the Metaline reach immediately downstream? (compare Figures 15 and 16, pages 47 and 48, respectively). Where did the heat go?**

This question is related to a prior question regarding selection of only maximum temperatures (upper 1m of the water column) for analysis. The apparent result is merely a remnant of the fact that only surface temperatures are considered in the analysis, and that temperatures at the surface in the Metaline reach result from mixing of the water after passing through Box Canyon Dam. There is no “cooling effect” due to Box Canyon dam, i.e., there is no negative heat load or loss of BTUs. Such illustrations in the TMDL resulting from consideration of only maximum temperatures can be misleading to the reader.

The data report in Appendix C, on page C-135, third paragraph, says that the temperature monitoring measured profiles near shore and mid-channel, and that these measured temperatures were all very similar, “indicating again that the river is well-mixed.” Yet the measured water temperatures downstream from Box Canyon Dam are clearly lower than those measured upstream. This indicates that there is a strong variation in temperature with depth just upstream of Box Canyon Dam, and this invalidates the “well-mixed” conclusion. This conclusion is borne out by the work done on model development and calibration by Portland State University in 2006, which indicates temperature stratification near-surface in the Box Canyon Reach in late July (refer to their Figures 122-125, and Figures 129-131). This discrepancy has to be addressed in the final report.

**6. What can be done to facilitate private landowner cooperation in efforts to improve shade conditions, particularly small recreational property owners along the reservoir?**

The TMDL suggests increased shade along the main stem reservoir as a strategy to reduce water temperatures, and actually goes so far as to establish load allocations on main stem shade (Table 13, p. 77). However, much of the reservoir shoreline is under private ownership, and many property owners have purposely removed vegetation from reservoir shorelines in order to improve their view of the river. What would be the motivation for these landowners to agree to replanting of shoreline trees on their property, and what can be expected of the Pend Oreille PUD to effect such shade improvements on private property?

**7. To what extent can the PUD expect to rely upon expected improvements to shade conditions in the reservoir and/or in tributaries due to its activities related to conditions of its license (e.g., Trout Habitat Improvement Project)? (Refer to Table 14, p. 78.)**

**8. To what extent can the Pend Oreille PUD expect to rely on the investment in the cold water release pipe at Sullivan Dam as partial mitigation for temperature issues above Box Canyon Dam?**

The cold water release pipe in Sullivan Lake will result in favorable temperature impacts downstream of Box Canyon Dam. How will this mitigation be factored in when considering efforts made by Pend Oreille PUD toward TMDL allocations above Box Canyon Dam?

**9. Statements made in the temperature TMDL report regarding the Pend Oreille River are misleading, if not erroneous.**

On page 7 of the draft report, statement is made that the Pend Oreille River has a special temperature criteria. This is based upon the table at WAC 173-201A-602. What the report does not state is that the designated use of the Pend Oreille River for aquatic life is "Spawning/Rearing." The Pend Oreille River is not designated for char spawning and rearing. As shown in table 600 in WAC 173-201A-600, Spawning/Rearing has a key identifying characteristic with trout spawning and emergency that only occurs outside of the summer season (September 16 – June 14). No reference is made to this characteristic. As noted in the report, the temperature increases (if real) of 0.3° C occur during the months of July and August, not during the key characteristic period of September 16 – June 14.

**10. There are inconsistent statements made in the draft temperature TMDL report for the Pend Oreille River.**

On page 3 of the draft report, it is noted that the subsurface portion of the Pend Oreille River can be cooler than that closer to the water surface where the daily maximum temperatures are typically found. This is essentially an admission that using daily maximum temperatures is inappropriate for the Pend Oreille River. Yet, on page 26 of the draft temperature TMDL report, the statement is made that "only the daily maximum temperatures... were used for further analysis." The draft report goes on to state, on p. 26, that "the sole use of daily maximum temperatures is consistent with the Pend Oreille River temperature criterion specifically applicable to this TMDL study." Using daily maximum temperatures that occur at the surface does not represent the differences between existing conditions and the natural conditions where the water would be shallow without the Box Canyon Dam. Without Box Canyon Dam, the majority of locations would exhibit higher water temperatures - nearly all of the graphs comparing natural conditions with existing conditions illustrate the benefits of Box Canyon Dam for water temperature in the Pend Oreille River.

As otherwise discussed in these comments, some of the conclusions and results reported in the draft Temperature TMDL Report defy logic. At page 41 of the draft report, the statement is made that there is a "chronically elevated heating pattern" in the Tiger and Box Canyon Forebay reaches. However, there is no logical explanation for such conclusion. As noted in all of the other reaches, the maximum temperatures with the existing conditions are lower than those determined for the natural conditions. The river in the vicinity of Tiger and Box Canyon Forebay is significantly deeper with the existing conditions than the river would be under natural conditions. There is no logical reason to conclude that the maximum temperature would be greater with the existing condition than with the natural condition. Such conclusions are suspect and should be reviewed.