

Seattle City Light's April 15, 2008 Comments on Draft Temperature TMDL for Pend Oreille River

References below are to the portion of the matrix distributed by Ecology on Feb. 25, 2008 that addressed SCL comments.

Index, X-ref	SCL Comment	Ecology's Draft Response	SCL's Further Comments
SL1	Heat Flux model assumes constant flow based on an instantaneous flow at moment of peak temperature; Recommend either summation of 24-hour heat load or daily average of flow temperature.	Heat loads are required by EPA. However, allocations will consist of both loads and temperature. Implementation activities will be based on temperature.	<p>1) As with any load allocation, it is important that the heat load allocation in the temperature TMDL be as accurate as possible. The draft TMDL's use of instantaneous maximum temperature from the surface cell along with corresponding flow (peaking mode discharge at Boundary) significantly overestimates daily heat flux in excess of natural heat flux. Please clarify whether Ecology will change its calculations to use either summation of 24-hour heat load or daily average of flow and temperature and explain basis for decision.</p> <p>2) Per Ecology's minutes of 12/13/07 meeting (copy attached as Appendix A to this matrix), we understand the next draft will specify locations where standards are and are not attained, and accordingly, where allocations will apply.</p> <p>3) Please provide anticipated date for issuance of proposed load allocations and implementation plan.</p>
SL2	Heat load calculations should take into account cumulative impacts of upstream actions; downstream sources should not be required to compensate for upstream sources loading.	We agree. Downstream sources should not be held responsible for heating passed through from upstream. Heat load calculations and load calculations are based on the impact a particular source (wastewater treatment plant or dam) has. The model scenarios run were used to compare what the temperature would be with and without a certain source; the difference was used to set the allocations.	<p>1) SCL appreciates Ecology's concurrence with the policy issues related to upstream and downstream sources and conditions. However, it is unclear whether Ecology's approach will in fact address SCL's concern. Accordingly, please clarify whether the revised TMDL will identify load reductions required for each reach assuming either a) that upstream reaches are meeting water quality standards, or b) that upstream reaches are at natural conditions.</p> <p>2) Upon release of the revised TMDL, please provide the model scenarios used to calculate required heat load reductions in each reach and showing how upstream conditions were modeled for each reach to remove the effects of upstream sources.</p>
SL3 PPC	Volume weighted temperatures should be used; Data credibility act; significant vertical temperature gradient at Boundary Reservoir	See response to PP3 [which states, "Ecology standards are not set up to allow for volume weighted averaging. TMDLs must take into account worse <i>[sic]</i> case scenarios, so Ecology will not use volume weighted averaging. The model does average horizontally and vertically within each cell.	1) Ecology standards do not prohibit volume-weighted averaging and Ecology uses other forms of averaging. <i>See, e.g.</i> 401 certification for Rocky Reach dam, which uses volume weighted averaging and flow averaging to assess compliance with Washington water quality standards. Please explain what is meant by, "Ecology standards are not set up to allow volume-weighted averaging.

Seattle City Light's April 15, 2008 Comments on Draft Temperature TMDL for Pend Oreille River

Index, X-ref	SCL Comment	Ecology's Draft Response	SCL's Further Comments
		<p>Averaging throughout the water column could be less representative of the temperatures in the river.”]</p> <p>Ecology is in compliance with the Data Credibility Act because our data was gathered using the appropriate quality assurance procedures which were documented in an approved Quality Assurance Plan. Ecology took efforts to ensure that the data collected was representative of the location in the water column.</p>	<p>2) Similarly, EPA standards do not prohibit volume or flow weighted averaging. As we have previously noted, EPA recently approved the Willamette Basin Temperature TMDL. The TMDL employs flow weighted averaging (flow-weighted averages are calculated by averaging calculated temperatures for all vertical layers, with a weighting provided based on the relative flow of each layer) to assess attainment of Oregon’s water quality standards. Oregon standards are substantively identical to Washington’s criteria in that both require the sampling/modeling point to be representative of the monitoring site or reach under review. See WAC 173-201A-200(1)(c)(vi) and OAR 340-041-0002(2).</p> <p>3) Considering a worst-case scenario does not require use of unrepresentative data. Data from the surface are not representative of the water body as a whole and a TMDL based on such data alone would not be supported by substantial evidence. This is particularly true due to the significant vertical gradient at Boundary near the dam, which results in the majority of the approximately 300’ deep water column being cooler than the surface layer.</p> <p>4) We are not aware of any reason that data from a single layer of the water body would be more representative than data derived from volume-weighted averaging. Please explain the rationale for the statement that “averaging throughout the water column could be less representative[.]”</p> <p>5) WAC 173-201A-200(1)(c)(vi) requires that measurements “represent the dominant aquatic habitat”, promotes use of samples from “well mixed portions” of rivers, and discourages use of samples from the surface. SCL believes that all water levels taken together represent the “dominant” habitat. If Ecology believes some particular elevation represents the dominant habitat, please explain. SCL believes that use of volume-weighted averaging meets the goals of sampling from “well-mixed portions” of the river better than using samples from and modeling of the uppermost layer of the reservoir while disregarding samples from and modeling of lower layers. Please explain if Ecology disagrees. Likewise SCL believes that use of volume-weighted averaging better meets the goal of avoiding samples from the surface than does use of samples taken exclusively from the uppermost layer of the reservoir. Again, please explain if</p>

Seattle City Light's April 15, 2008 Comments on Draft Temperature TMDL for Pend Oreille River

Index, X-ref	SCL Comment	Ecology's Draft Response	SCL's Further Comments
			<p>you disagree.</p> <p>6) Data Credibility Act – SCL believes that by disregarding data collected from lower levels of the reservoir and disregarding model runs using this data, Ecology's analysis runs afoul of the Data Credibility Act. It serves no purpose to collect data in compliance with the Act if the bulk of the data is then disregarded.</p> <p>7) Ecology's selective use of data from the surface layer for modeling purposes is inconsistent with the QAPP, which provided that temperature data loggers would be installed "close to, but above the river bottom, where there is obvious water mixing" (p. 21 "Monitoring Methods). The QAPP also provided that vertical and lateral temperature distributions would be assessed to evaluate representativeness (p. 18, 20, 21). Please advise as to whether such assessment was performed, and if so, please provide a copy of it and all related workpapers. Ecology's disregard for WAC 173-201A-200(1)(c)(vi) and the QAPP represents a failure to follow prescribed procedures.</p>
SL4 AC4	<p>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.</p>	<p>Ecology is performing preliminary analyses to evaluate the temperatures using frequency distributions that minimize the effect of lag time on model error. It appears that the impairments identified do not change, and if supported by additional analysis we will report that and stick with the original approach. Biological significance of lag time can be addressed during implementation of 401 certification. Ecology will share our initial findings at the Jan. 30 WAG meeting.</p>	<p>1) SCL has illustrated that lag time induces error in assessing the true deviation of observed temperature from natural conditions. Ecology's reliance on its "rolling" 7-day analysis as justification for "stick[ing] with the original approach" rather than adequately addressing lag time effects is inappropriate and not supported by substantial evidence. At the February 25 WAG meeting, Ecology advised that it had attempted to evaluate lag time effects by looking at a rolling 7-day period rather than just looking at single days as had been done in the initial draft TMDL. Ecology further advised that its rolling 7-day analysis did not yield significantly different results, and that Ecology would therefore not make any change to its analytical methods to address lag time effects. During questions and answers at the February 25 meeting, Ecology indicated that, in addition to the rolling 7-day analysis, it had considered analysis of a longer time interval, akin to what SCL has suggested to address lag time (e.g., an 8-10 week duration when temperatures exceed 20 degrees C), and yet chose to present only the results of the 7-day analysis, those which showed little-to-no difference from those presented in the draft TMDL. The longer time interval for the frequency analysis – that which aligns with the period</p>

Seattle City Light's April 15, 2008 Comments on Draft Temperature TMDL for Pend Oreille River

Index, X-ref	SCL Comment	Ecology's Draft Response	SCL's Further Comments
			<p>of temperature exceedance in this particular system - yields more accurate accounting for the effects of lag time. The fact that temperature standards in Washington for certain water bodies other than the mainstem Pend Oreille River use 7-day average of daily maximums is unrelated to the lag time issue. The use of 7 days as the duration time for the frequency analysis has no justification. Use of "rolling" frequency analysis which advances 1-day at each step does not eliminate lag effect, irrespective of the interval considered (4 – day, 7-day or 10 day ...)</p> <p>2) SCL's frequency analysis demonstrates that temperature impairments do change relative to the analysis contained in the draft TMDL. We will provide a detailed write-up of our analysis and findings. Once SCL has completed its review and comparative analysis of both procedures, we will also provide a detailed write-up of this comparative analysis and findings.</p> <p>3) Related, SCL has received (April 2, 2008) a copy of Ecology's analysis, using the rolling 7-day period for its frequency analysis. Could you please also provide SCL with a copy of any other analysis, model runs and all related workpapers, conducted by Ecology to consider the effects of lag time.</p> <p>4) The lag time issue must be properly addressed now in the TMDL. Any error in accounting for lag time in the TMDL analysis would likely result in mistaken load allocations, which erroneous allocations would in turn govern implementation, including 401 certification.</p>
SL5	Acknowledge absence of modeling of Seven Mile Reach.	Additional analysis will try to separate upstream and downstream effects. A downstream temperature effect from flow regimes may actually exist. Additional monitoring and analysis could be specified during implementation. The 401 Certification may also address this issue.	Given that the TMDL has been modeled using a comprehensive temperature data set for Boundary reservoir, inclusive of tailrace data inputs to the calibrated model, SCL contends that no further downstream analysis is necessary. Any backwater effects from Seven Mile Dam – located downstream in another country – are outside Ecology's jurisdiction and beyond any control(s) that could be implemented by SCL.
SL6	Water Quality Standards and Allowable temperatures should be consistent; should explain more clearly and in detail how these	Agreed. Ecology will revisit and clarify where needed.	1) At previous WAG presentations (10-25-07), Ecology has acknowledged that proper use of the natural conditions provision will be implemented in all temperature impairment assessments and that all confusion noted in the Draft TMDL will be corrected to reflect

Seattle City Light's April 15, 2008 Comments on Draft Temperature TMDL for Pend Oreille River

Index, X-ref	SCL Comment	Ecology's Draft Response	SCL's Further Comments
	allowable temperatures were derived.		proper characterization of this provision. 2) Please provide detail regarding the basis for the final derivation of allowable temperatures, including all calculations of natural conditions, assumptions and workpapers.
SL7 PP5	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.	We agree. We will ensure that the requirement and IDEQ's efforts to meet WA water quality standards at the border are clarified in the next draft.	Thank you. Please also provide detail regarding measures to ensure that Washington and Kalispel sources will not be required to compensate for any non-compliance at the Idaho border.
SL8	The TMDL includes unreasonable shade enhancement obligations. Load allocations for mainstem vegetation should be re-visited.	Ecology will clarify the shade relationship with mainstem temperature. However, shade enhancement could help with near-shore temperatures and be considered as mitigation as part of implementation. Shade allocations will be based on potential natural vegetation to be consistent with other temperature TMDLs.	The Pend Oreille River Box Canyon Model: Model Scenario Simulations Report (PSU, July 2007) Table 23 and the Idaho Pend Oreille River: Model Scenario Simulations Report (PSU, October 2007) Table 15 report that there is no statistical difference (i.e., the results are the same) between the existing conditions model runs and model runs with full potential natural vegetation. To date, no similar model scenario simulations report has been provided by Ecology for the Boundary Reach, though, due to the nature of the reach, in particular the canyon walls, it likely that if statistics were run on the modeling results for the Boundary reach, the results would be similar. Accordingly, we reiterate our earlier comment that the TMDL's analysis and conclusions do not support development of a shade allocation. Doing so simply to be consistent with other TMDLs would be arbitrary and unsupported by substantial evidence.
SL9	The implementation plan should include specific information about state, EPA and tribal processes so that requirements are clear to regulated entities.	A new implementation strategy will be written for the next draft.	Thank you. SCL looks forward to the opportunity to review and comment on the new strategy and any related implementation plan.
SL10	Provide explanations on which modeling scenarios were used to determine load allocations.	Agreed. Ecology will clarify in the next version.	Thank you. SCL looks forward to the opportunity to review and comment on this new information.
SL11	Use of single point maximum temperatures is given as a margin of	When implementation actions are taken to achieve compliance with the maximum temperature on the worst day, then temperatures	1) The purpose of the margin of safety is "to account for any lack of knowledge concerning the relationship between load and wasteload allocations and water quality." 33 U.S.C. § 1313(d)(1)(C); 40 C.F.R.

Seattle City Light's April 15, 2008 Comments on Draft Temperature TMDL for Pend Oreille River

Index, X-ref	SCL Comment	Ecology's Draft Response	SCL's Further Comments
	safety in TMDL.	resulting from an unexpected event are likely to meet the water quality standard, thus providing a margin of safety.	<p>§ 130.7(c)(1). SCL believes there is no such "lack of knowledge", and that by excluding many data points and related modeling from the analysis and focusing exclusively on the surface layer, Ecology is improperly ignoring much of the knowledge that is already available.</p> <p>2) A margin of safety may be provided through conservative assumptions in the analysis, but "conservative" means making cautious assumptions about unknown conditions. Ecology's analysis relies on unrepresentative data to justify inaccurate assumptions about known conditions.</p> <p>3) Using measurements from the warmest time period, and from the warmest river mile with the very large reach identified on the 303(d) list, already provides a margin of safety by focusing on a reasonable worst case condition for the listed reach. Compounding this margin by using the warmest available sampling results within the water column impermissibly compounds conservative assumptions, resulting in a margin of error rather than a margin of safety.</p>
SL12	Single point modeling in Washington is inconsistent with the approach being taken in Idaho.	The modeling approach between IDEQ and Ecology is consistent. On two IDEQ compliance points, volume weighted average was used to assess compliance with Idaho's standards. Load allocations were developed for the Idaho sites that exceeded standards. Ecology determined the load allocations consistent with our standards and our approach to develop TMDLs, which is to address the worst case scenario. Ecology's standard does not allow a volume weighted average.	From the presentations made at the February 25 WAG meeting, the states' approaches on single-point modeling do not seem to be consistent. It appears that IDEQ is considering using a flow-based allocation while Ecology will be relying upon the original analysis done for the August 2007 draft TMDL to determine impairment, and applying an alternative methodology for developing allocations (which has not yet been outlined for the WAG). These allocations will apparently rely upon the August analysis which many WAG members have found to be technically flawed. It appears that the 2 states will need to address this.
SL13	Washington and Idaho must use same target dates to ensure consistency; May 1 vs. August 25.	The May dates were due to a modeling inconsistency which has been addressed. The dates are now in better agreement, but may be slightly different due to differences in conditions in different parts of the river.	Thank you. Please clarify how the modeling inconsistency was resolved, what the current dates are, and what the basis is for any difference in target dates.
SL14	Provide context for compliance assessment.	This section in the TMDL is a required by IDEQ and not Ecology. IDEQ used specific areas to evaluate whether the water temperatures were in compliance with their water quality standards.	Thank you. As an active participant, we look forward to the opportunity to review the new draft TMDL

Seattle City Light's April 15, 2008 Comments on Draft Temperature TMDL for Pend Oreille River

Index, X-ref	SCL Comment	Ecology's Draft Response	SCL's Further Comments
		Those sites not in compliance then undergo further analysis to develop load allocations. Ecology does not use specific points, rather we evaluate reaches of the river to determine where our standards are being met and where load allocations are required. Ecology will clarify where and when the temperature impairments are in the next draft.	
SL15	Explain 2 degree exceedance above allowable conditions in Figure 21 Aug 25 – 20 river miles.	Ecology will provide a better explanation of Figure 21 in the next draft.	Thank you.
SL16	Table 31 lists Seattle City Light as responsible for monitoring in "Stinson Lumber Temperature and Sediment." This Is incorrect.	Ecology will correct this mistake.	Thank you.
SL17	p.69 paragraph 4 references 2003 & 2004 data - this should be 2004 and 2005 data.	Ecology will clarify this in the next drag	Thank you.
SL18	Figures 25 and 26 - Y axis label "temperature impairment" is misleading.	Ecology will better explain, and possibly revise Figures 25 & 26 in the next draft.	Thank you. SCL looks forward to the opportunity to review and comment on the new draft.