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Spokane River Nutrient and Oxygen Demand Limit Adjustments: Compliance with Washington Water Quality Standards

Relative to the wasteload allocations for Washington point sources and the prior modeling assumptions for Idaho point sources, adjustments to effluent limits may not affect DO in the lake uniformly, but may instead result in slightly *increased* DO in some lake segments and at some times, and slightly *decreased* DO in other segments at other times. Furthermore, field measurements of dissolved oxygen and the CE-QUAL-W2 model used to develop the Spokane River TMDL both have some degree of uncertainty. EPA and Ecology considered these issues when developing the rules below.

When establishing effluent limits for oxygen-demanding pollutants, EPA and Ecology will comply with both of the following rules. Wherever rounding is employed in the rules below, all digits must be carried in the calculations until the final step.

1. **Effluent limits, considered cumulatively with the load allocations in Table 6 of the TMDL and Avista's DO responsibility as reported in Table 7 of the TMDL, must meet Washington's DO criteria (WAC 173-201A-200(1)(d)).** When determining compliance with the 0.2 mg/L allowable DO decrease from natural conditions in Washington's DO criteria, Avista's DO responsibility, as reported in Table 7 of the TMDL, shall be added to the modeled DO concentrations resulting from the TMDL's non-point source load allocations and the Idaho and Washington effluent limits. Then, differences in DO between the "no source" modeling scenario (natural conditions) and the DO concentration resulting from the effluent limits, considered cumulatively with the TMDL load allocations and Avista's DO responsibility, shall be rounded to the nearest 0.1 mg/L.

This rule allows for small DO deviations relative to the wasteload allocations and Idaho modeling assumptions at times in individual lake segments (i.e., individual numbers in a table of modeling results), as long as the DO concentration complies with Washington's water quality criteria for DO considered cumulatively with Avista's DO responsibility.

For example, in segment 180, from July 1st through 15th, the "no source" DO concentration is 7.38 mg/L, and Avista's DO responsibility is 0.2 mg/L. Suppose the DO concentration resulting from the Idaho and Washington effluent limits and the non-point source load allocations is 6.95 mg/L. Adding Avista's responsibility of 0.2 mg/L yields 7.15 mg/L, which is 0.23 mg/L less than the "no source" DO concentration. Rounding the difference to the nearest 0.1 mg/L yields 0.2 mg/L, which complies with Washington's water quality criteria for DO. If the difference rounded to 0.3 mg/L or greater (i.e., if the difference before rounding was 0.25 or greater), this would not comply with Washington's water quality criteria for DO.

Ecology reported Avista's DO responsibility in Table 7 of the TMDL rounded to the nearest 0.1 mg/L. It is reasonable to use this same level of precision when evaluating whether a given set of effluent limits ensures compliance with Washington WQS.

2. **The effluent limits must not further decrease the cumulative average dissolved oxygen in the shaded cells in Table 7 of the final TMDL.** Relative to the prior modeling

assumptions for Idaho point sources and the TMDL's wasteload allocations for Washington point sources, the average DO change resulting from the effluent limits must be zero or positive. The calculation of the average DO change shall include all lake segments where and all times when controls on oxygen-demanding pollution alone fail to meet Washington's WQS for DO. Lake segments where and times when controls on oxygen-demanding pollution alone fail to meet water quality criteria for DO are identified by shaded cells in Table 7 of the TMDL. In these shaded cells, Avista has a DO responsibility. At all other times and locations, DO criteria are achieved by reductions in upstream pollution alone.

This rule ensures that the total magnitude of the point source DO impact does not increase relative to the point source wasteload allocations and prior modeling assumptions. This criterion does not apply to lake segments where and times when upstream controls on oxygen-demanding pollution alone meet Washington's water quality criteria for DO. Incremental DO changes that nonetheless meet Washington's DO criteria are irrelevant, and rule #1 ensures that the effluent limits meet Washington's DO criteria through controls on oxygen-demanding pollution alone, in the same lake segments and during the same times as the prior modeling assumptions. That is to say, if Avista has no DO responsibility (or, equivalently, a DO responsibility of 0.0 mg/L) in a given instance, then rule #1 requires that the effluent limits, considered cumulatively with the non-point source load allocations in the TMDL, ensure compliance with Washington's water quality standards, absent any action by Avista. Because rounding combined with averaging could mask small but widespread decreases in dissolved oxygen concentrations, rounding may not be used to evaluate compliance with this rule.