Name of Toolbox Element—Alternate Season Limits

1. Introduction / Overview

U.S. EPA and Washington Department of Ecology (Ecology) developed a Total Maximum Daily Load (TMDL) for nutrients and oxygen demanding materials designed to minimize the anthropogenic affects on dissolved oxygen in Lake Spokane. The TMDL established wasteload allocations (WLA's) for Washington dischargers, which are illustrated on Table 5 of the TMDL. The TMDL also included equivalent pollutant concentrations for point source discharges in Idaho (see the estimated permit limits in Table 2 of PSU 2009). The WLA's are for Ammonia (NH3-N), Total Phosphorus (P), and Carbonaceous Biological Oxygen Demand (CBOD). These WLA's were established for each discharger based on TMDL CE-QUAL-W2 Model Scenario 1.

The final CE-QUAL-W2 model used to develop the approved TMDL includes an alternate season of operation for wastewater treatment plants at Post Falls, Hayden Area Regional Sewer Board (HARSB), and Inland Empire Paper Company (IEP). Results from the final TMDL model show that point source discharges in January and February may have an impact on DO in Long Lake during the critical period (reference PSU report dated June 5, 2011 and memorandum provided by Limnotech, Dilks and Helfand, 2011). Results from this model indicate that a higher seasonal average concentration for the dischargers is possible by extending treatment into January and February. This extended modeling scenario may provide a solution for dischargers who are unable to achieve the waste load allocations that are defined by a shorter critical season in the TMDL. It is important to note that extended season of operation with advanced treatment technologies will likely result in greater mass reduction of nutrients to the Spokane River, even at a higher seasonal average concentration.

Specific language regarding this provision is provided in Section S5 of the final NPDES Permit for IEP (Permit Number WA-000082-5, dated September 29, 2011): *"The Department may adjust the final water quality based effluent limitations on the basis of new information following a revision to the Spokane River DO TMDL. This new information may include: alternate modeled water quality based effluent limits extended into February or January. Any adjustment of the final effluent limitations that result in less stringent limitations must ensure that the dissolved oxygen responsibility for Avista identified in Table 7 of the DO TMDL remains unchanged as determined through the use of the DO TMDL model and is subject to the provisions of the Clean Water Act for deriving limitations in section 303(d)(4)(A), 42 U.S.C. § 1313(d)(4)(A) as well as the anti-backsliding provisions of the Clean Water Act, including the exceptions in section 402(o)(2) of the Clean Water Act, 33 U.S.C. § 1342(o)(2)."*

Although the above language states that "*The Department may adjust the final water quality based effluent limitations on the basis of new information following a revision to the Spokane River DO TMDL*", if the adjustment to the effluent limitations in the dischargers permit based on alternate season operation are consistent with the assumptions and wasteload allocations in the Spokane River DO TMDL, no modification to the DO TMDL should be necessary.

2. Toolbox Concept

Each discharger may evaluate the impact of extended treatment into January and February using the CE-QUAL-W2 model simulation to determine if the point source discharge has an effect on DO in Long Lake during the critical period. The results of the CE-QUAL-W2 model simulation must be assessed in terms of "equivalency" with the TMDL based on EPA's described test "Compliance with Washington Water Quality Standards" (EPA October 27, 2010). Ecology may then adjust the final water quality based effluent limitations in the NPDES permit based on the results of the model for an extended season of treatment into January or February.

3. Data Collection, Sampling, and Research Needed

For the Alternate Season Limits toolbox element, no data collection, sampling, or research is needed. Modeling requirements to demonstrate equivalency are defined in the next section.

4. CE QUAL W2 Modeling Requirements for Ortho-P

For Pollutant Equivalency using Alternate Season Limits, a discharger will be required to obtain the latest approved version of CE-QUAL-W2 model files from Ecology. The discharger will be required to use the services of a qualified modeler to conduct the CE-QUAL-W2 analysis and the analysis will be subject to technical review by Ecology and/or their designated technical resource. The modeler will adjust the input variables and run the model according to the following *January and February Tests*:

- The **January Test** is to determine whether point source discharges in January have an effect on DO in Long Lake during the critical period. The test scenario is the NO SOURCE setup except during the period January 1-31. January boundary conditions for point sources in both Washington and Idaho are set to 2001 conditions, and revert back to NO SOURCE boundary conditions from February 1 through the rest of the year.

  If the January Test shows an impact to DO during the critical period, no further simulations are needed at this time, because it will then be known that February discharges also affect reservoir DO. If the January Test shows no impact, then a February Test is needed. This test is identical to the January Test, except only Washington boundary conditions are

adjusted to 2001 levels from the No Source condition. This is because Limnotech has already determined that Idaho point source discharges in February affect DO in the lake and PSU confirmed that finding.

- If conducted, the **February Test** scenario is the NO SOURCE setup except during the period February 1-28, when boundary conditions for point sources in Washington are 2001 conditions. The boundary inputs revert back to NO SOURCE boundary conditions from March 1 through the rest of the year.

After determination of impact has been established by the above test(s), additional modeling scenarios can be run with treatment into February and also January if necessary. Results from each model run must then be evaluated for equivalency to the TMDL.

To meet equivalency with the approved TMDL, the Alternate Seasons Limit must result in predicted water quality in Lake Spokane that is equal to or better than the result under Scenario 1 of the approved TMDL according to the guidelines defined by EPA in the "Compliance with Washington Water Quality Standards" (October 27, 2010). These guidelines allow the results of a given CE-QUAL-W2 simulation to be assessed in terms of whether its results were consistent with the TMDL. This test for compliance has three criteria, all of which must be met:

1. The alternate scenario must not increase the spatial or temporal extent of Avista responsibilities, after results are rounded to 0.1 mg/l.
2. The alternate scenario must not decrease the dissolved oxygen concentration averaged across all Avista-affected segments and times.
3. The alternate scenario must not increase Avista's responsibility in any segment or time, after results are rounded to 0.1 mg/l.

At the completion of the modeling, the discharger will prepare a technical memorandum that summarizes the alternate season limit scenario, characterizes the effluent parameters, documents adjustments to the CE-QUAL-W2 input files, and summarizes the results of the analysis. This memorandum will be submitted to Ecology for review and approval.

5. Permit Provisions

After completion of the modeling phases outlined in Step Number 4 above, the NPDES permit may be revised by Ecology to adjust the final water quality based effluent limitations with a higher seasonal average concentration. An adjustment to the effluent limitations in the dischargers permit based on alternate season operation should be consistent with the assumptions and wasteload allocations in the Spokane River DO TMDL and, as such, should not require a modification to the DO TMDL.