PUBLIC WORKS

EVERETT

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The City of Everett thanks the Department of Ecology for the opportunity to provide input regarding possible issues to be considered in the Triennial Review of Water Quality Standards. The City understands that at this time there is no specific regulatory language which to review or respond. The attached comments pertain to arsenic human health criteria, copper criteria, other metals criteria, and the appropriate application of temperature and dissolved oxygen criteria in stratified waters.

Sincerely,

John McClellan, PE
Operations Superintendent
Everett Public Works

Arsenic

The current arsenic human health criteria for Washington in the National Toxics Rule are 0.018 ug/L (applicable in fresh water) and 0.14 ug/L (applicable in marine water). The drinking water standard is 10 ug/L. Natural fresh and marine waters of our state do not meet the current criteria because of the background levels. Background arsenic in the world's oceans is in the 1 to 2 ug/L range.

In February 1997, the City of Everett petitioned Ecology to go through rule-making to revise the applicable human health surface water quality criteria for arsenic. The petition provided information about the issues with the current criteria and proposed an alternative approach based on an approach recommended by EPA Region 6. Ecology denied the petition, but acknowledged the issues and uncertainties. As a result of the petition, Ecology's policy appears to have been to not implement the arsenic human health criteria in NPDES permits.

Subsequent to the City's petition for rule making, Idaho adopted the drinking water criterion of 10 ug/L as the human health criterion. (See, IDAPA 58.01.02.210) Alaska also adopted the drinking water criterion of 10 ug/L and has no other human health based criterion. (See, Alaska Water Quality Criteria Manual for toxic and other Deleterious Organic and inorganic Substances, amended December 12, 2008) Each state was originally under EPA's National Toxics Rule, just like Washington. Each state later adopted the drinking water criterion either directly as the human health criterion, or to use in lieu of having a human health criterion. EPA has approved both Alaska's and Idaho's arsenic water quality standards.

As Washington considers changes to human health based surface water quality standards, Washington should follow Idaho's and Alaska's lead specifically applying the drinking water criterion of 10 ug/L for Arsenic as the only human health surface water quality criterion. It is a defensible position that EPA Region 10 has already approved in Idaho and Alaska. This avoids the situation of trying to implement a more stringent standard which is already exceeded by natural conditions in Washington State and the Pacific Ocean.

Copper and other metals criteria

The current copper criteria include the ability to make adjustments based on the Water Effects Ratio (WER). EPA intended that a WER could be used without necessitating site-specific standards and associated rule-making, since the WER methodology itself is from EPA, is reproducible and allowing its usage was incorporated into our state's water quality standards before the year 2000.[1] The state has recently pulled the WER guidance from the Permit Writers'

[1] See, EPA Final Rule re Review and Approval of State and Tribal Water Quality Standards. 65 FR 24642-24653

Manual and now asserts that it can only be used in the case of developing site-specific standards, which are subject to state rule-making, subject to EPA review and approval, subject to ESA consultation. This is a time consuming process that offers little relief to dischargers subject to NPDES permitting. The important utility of a WER was undermined, rendering the use of science with regard to the bioavailability and toxicity of copper useless.

We feel it is important that the state make it clear in this rule-making that its metal standards allow the use of a WER, following known, specific EPA protocols, in order to make adjustments to the water quality criteria without requiring individual rule-making as site-specific criteria. Because the procedures themselves are incorporated into our standards, review and approval by EPA of adjustments made to criteria based on EPA's established WER procedures would be redundant.[2] The two agencies should work together to modify the language in footnote "dd" in WAC 173-201A-240(3) to make the WER process available to adjust metals criteria without requiring rule-making every time a WER is used. This is one example of using new science with regard to the bioavailability and toxicity of copper, and is appropriate in both fresh water and marine water.

EPA has also promulgated new freshwater copper criteria in 2007[3] based on the Biotic Ligand Model (BLM). EPA's new science recognizes that copper toxicity varies with more parameters than just hardness.The BLM considers other factors such as dissolved organic carbon, pH, alkalinity, and temperature. Functionally, the BLM accomplishes the same thing as a WER, but gets to it without the need for conducting bioassay tests. The BLM is another example of using new science with regard to the bioavailability and toxicity of copper.

We recommend that the state adopt the BLM based freshwater copper criteria now and look towards the current effort underway to develop a copper BLM for marine water.

The state should look at the development of other BLM criteria and evaluate whether they could be adopted now, even if ahead of EPA. The state should make the use of a WER available to adjust criteria without needing site-specific rule making. While use of a WER will not be needed for freshwater copper if the BLM is adopted, it will still be needed as a tool for other metal standards and for marine copper, until such time as a BLM based criteria is adopted.

If the state does not adopt the copper BLM, then it should amend footnote "dd" to allow site-specific adjustments to the criteria based on either a WER or the BLM.

Having these tools, the WER and BLM, allows the application of new science in the endeavor to protect the beneficial uses of the state's surface waters. This emphasis is indicated in SSB 6557 (the "brake pad bill"), which states

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[2] See, See 65 FR 24648.

[3] EPA's Aquatic Life Ambient Freshwater Quality Criteria – Copper. EPA-822-R-07-001, February 2007.

"The department shall consider any new science with regard to the bioavailability and toxicity of copper."

The number of species tested for copper and for various other metals has expanded over the years. Most of the existing metals standards are based on old EPA criteria documents that had fewer tested species than now exist. Consideration of the additional data should be used to update our metals standards.

Stratified Waters

Some waters are naturally density stratified. Examples include lakes and parts of Puget Sound. Density stratification may result from warming of surface waters, or from lower salinity of surface marine waters due to river inputs. The effect of density stratification is to limit mixing of surface waters and deeper water. Consequently, surface waters may heat up naturally in the summer to temperatures well above our temperature criteria, while deeper waters remain cool. Streams and rivers that are the outlets of lakes will naturally have temperatures reflecting the stratified surface waters of the lake. Stratification also keeps deeper water from being easily re-oxygenated, so dissolved oxygen concentrations at depth drop to levels well below the numeric dissolved oxygen standards.

It does not make sense to rigidly apply numeric temperature and dissolved oxygen criteria over the entire water column of a stratified waterbody. Fortunately, the state's standards include a provision allowing the natural condition to be higher (for temperature) or lower (for dissolved oxygen) and the criteria should adjust to whatever the natural is. The state's standards also include provisions to allow a small incremental increase of temperature or decrease of dissolved oxygen from the natural condition. We believe the state could do a much better job of considering these allowances when identifying impaired waters (waters that do not meet our standards) and typically defaults to the numeric criteria, applicable anywhere in the water column.

Furthermore, the water quality standards offer no useful guidance on where in the water column these criteria need to be applied, resulting in the default of application everywhere in the water column. But, for many such waters, what matters to the fish is that there are some parts of the water column with suitable dissolved oxygen and temperatures that the fish can reside in, or return to after visiting deeper or shallower water. In stratified waters, the criteria do not need to be met throughout the water column in order to support the beneficial uses.

Idaho's water quality standards provide such guidance for dissolved oxygen in lakes or reservoirs. Idaho does not apply dissolved oxygen criteria to 1) The bottom twenty percent (20%) of water depth in natural lakes or reservoirs where depths are thirty five (35) meters or less, 2) The bottom seven (7) meters of water depth in natural lakes or reservoirs where depths are greater than thirty five (35) meters, 3) Those waters of the hypolimnion in stratified lakes and

reservoirs.[4] Idaho provides an example for treating stratified waters different than non-stratified waters. Other options should also be developed and considered.

[4] (IDAPA 58.01.02.250.02.a)