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John Miller, Director

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To Whom It May Concern:

RE: COMMENTS FOR ECOLOGY'S TRIENNIAL REVIEW PROCESS TOPIC: BIOLOGICAL ASSESSMENT AND CRITERIA

Please consider a more proactive use of biological assessment and criteria in your Water Quality program. As the EPA notes: (http://water.epa.gov/scitech/swguidance/waterquality/standards/criteria/aqlife/biocriteria/basics.cfm)

> One of the most meaningful ways to answer basic questions about the quality of the nation's waters is to observe directly the communities of plants and animals that live in them. Because aquatic plants and animals are constantly exposed to the effects of various stressors, these communities reflect not only current conditions, but also stresses and changes in conditions over time and their cumulative impacts. Bioassessment data is invaluable for managing our aquatic resources and ecosystems. We can use it to set protection and restoration goals, to decide what to monitor and how to interpret what is found, to identify stresses to the waterbody and decide how they should be controlled, and to assess and report on the effectiveness of management actions.
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> To better serve these key management functions, biological assessments and adoption of biological criteria must become an equal component of water quality management programs along with chemical, physical, and toxicity based water quality standards. By themselves, traditional chemical, physical and toxicity assessments cannot fully answer questions about the ecological integrity of a waterbody, or determine whether aquatic resources are being protected. Relying on traditional chemistry alone may lead to situations in which meeting chemical and toxicity standards may not be enough to fully protect the aquatic community, or conversely, to situations in which the community remains in satisfactory condition despite a failure to attain standards.

There is a voluminous scientific literature about biological assessment; see, for example, http://www.clallam.net/streamkeepers/assets/applets/Bioassessment_references.pdf. The most commonly-accepted and widely-used biological assessment method for streams in the Pacific Northwest is the Benthic Index of Biological Integrity (B-IBI), as developed by Karr and others over the past 20 years (http://www.clallam.net/streamkeepers/html/BIBI_references.htm), which assesses stream health by sampling a stream's benthic macroinvertebrate (BMI) population.

Organizations throughout the Puget Sound region, including the Department of Ecology itself, have conducted extensive BMI sampling, as evidenced by the Puget Sound Benthos website, http://pugetsoundstreambenthos.org/, which presents data from 800 samples. Ecology is, in fact, currently working with King County to facilitate the process of submitting BMI sample data to Ecology's database.

BMI are already a designated use per WAC 173-201A-200: "It is required that all indigenous fish and nonfish aquatic species be protected in waters of the state." They're important not only in the food chain for the "key species" of fish, but also in their virtues as a watershed-health indicator, with many advantages over fish in that regard, including the facts that they're much easier to sample and that they spend their entire life cycle in the watershed, and thus integrate the impacts of all activities therein, over extended periods of time.

Given the above, we offer the following recommendations:

1. ECY should work toward developing Aquatic Life Use criteria for BMI by the time of the Call for Data for the 2015 WQ Report, following EPA's guidelines and the examples of other states. In this effort, ECY is urged to partner with King County's EPA grant project entitled "Enhancement and Standardization of Benthic Macroinvertebrate Monitoring and Analysis Tools for the Puget Sound Region".
2. In the meantime, for the 2011 WQ Report, ECY should make every effort to gather and analyze as much BMI data as possible, such as from the aforementioned Puget Sound Benthos website.
3. BMI data should be used for listings on the State Water Quality Report if the submitter has provided evidence that the analytical system being used is scientifically valid, is based on a sufficient number of reference sites, and provides results that can be directly equated to State Water Quality Report categories (Meets Standards, Of Concern, Impaired). The Clallam County Streamkeepers program did all of the above using the Karr B-IBI in 2003, with ECY's Water Quality Program consulting with and receiving approval from Steve Butkus and Rob Plotnikoff of ECY's Environmental Assessment Program.
4. Given fulfillment of the above criteria (and consistent with ECY Water Quality Program Policy 1-11), a single year of B-IBI data should be considered adequate for an Impaired rating of a site if the B-IBI score is less than the Impairment threshold minus the confidence interval. In the case of the B-IBI the impairment threshold has been established at 35 and the 95% confidence interval has been established at ±4, so a single sample's score of 30 or below should be sufficient data for an Impaired listing. Otherwise, two years of scores of 34 should be sufficient for an Impaired listing, given a probability of error of .05 x .05, or 0.25%. More sophisticated analytical suggestions covering a wider variety of cases are available on request.

Respectfully submitted,

John Miller

John Miller, Director

c. Streamkeepers of Clallam County
Board of Commissioners