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(via email to Eleanor.ott@ecy.wa.gov)

Dear Ms. Ott.

Thank you for the opportunity to comment on the documents related to the nutrient general permit. I continue to raise the concern that the dissolved oxygen criteria lack a scientific basis, are needlessly over-protective, and cannot be used to assert impairments.

Ecology cites federal regulations at 40 CFR 122.44(d)(1)(iii) that discharges with a reasonable potential to cause an exceedance of a water quality standard, must be given limits to bring the waters into compliance. However, EPA also has regulations that require water quality criteria to have a technical basis and be scientifically defensible (40 CFR 133.11). Ecology's criteria fail the requirements of 40 CFR 133.11. Having a reasonable potential to exceed a flawed criteria results in an exaggerated risk perception for the public, and an expensive prospect to meet a flawed requirement.

The nutrient general permit requirements are driven by the state's DO criteria. EPA has developed marine DO criteria for Chesapeake Bay and has stated that with modification, those criteria may be used elsewhere. Hence, the Chesapeake Bay criteria constitutes EPA's most recent national recommended marine DO criteria.

The Chesapeake Bay criteria vary with depth (surface, deep, and bottom), vary with season, vary between open water, nearshore, and heads of tidal inlets, incorporate averaging periods, and have a clearly defined biological basis. Washington's 54 years old DO criteria provide no such considerations.

Because the criteria are flawed, the entire nutrient general permit process is flawed. The alleged impairments are exaggerated and the benefits from nutrient reduction are dubious.

My comments on sections of the fact sheet, permit, and SEPA checklist are attached.

Sincerely yours,

Lincoln Loehr

**Comments on the SEPA checklist**

Page	SEPA checklist language	City of Everett's Comments
3	<p>“Excess nutrients causes low dissolved oxygen levels, stress aquatic life, and threaten to <b>expand dead zones</b> in the Sound.”</p> <p>Ecology makes similar claims in their notice of the availability of the general permit “<b>To prevent dead zones</b> in Puget Sound, communities must tackle nutrient pollution.”</p> <p>In turn, environmental groups raise similar concerns and a reporter for Investigate West claimed that inadequate wastewater treatment is causing fish to suffocate in Puget Sound.</p>	<p>Where are there “dead zones” in the Sound? I am unaware of any dead zones associated with nutrient additions from humans.</p> <p>Ecology should not fan the flames by making such false claims.</p>
9	<p>Paragraph 5.3 response re measures to preserve or enhance wildlife.</p> <p>The response says that the intent of the permit is to protect the environment by reducing the amount of nutrients discharged into Puget Sound.</p>	<p>Actually, the intent over the span of the permit and permit renewals is to decrease aquatic plant and phytoplankton productivity. Ecology describes only the negative effects of productivity on dissolved oxygen, but productivity is the base of the food web, and productivity is also beneficial. It is false to assert that all increased productivity is harmful. Note that the Southern Resident Killer Whales are struggling because there is not enough food for them. Efforts to make Puget Sound less productive might be detrimental to these whales.</p>
15	<p>Paragraph D.2. The checklist asks, “How would the proposal be likely to affect plants, animals, fish, or marine life?”</p> <p>Ecology answered, “This project will have a <u>net positive</u> to plants, animals, fish and marine life.</p>	<p>What is considered in determining “a net positive”? Did the benefits throughout the foodweb of increased productivity get weighed against the harm from a small decrease in dissolved oxygen associated with that productivity? Throughout this process, Ecology has avoided any consideration of the benefits of nutrients. Nutrients can be beneficial to a point, and then may be harmful beyond a point and those effects may vary from basin to basin. A net benefit calculation would weigh those effects, and may find benefits outweigh harm even when some harm is occurring.</p> <p>Nature provides the following example: Very strong, prolonged upwelling along the outer coast of Oregon and Washington can be highly beneficial for the pelagic zone, creating an abundance of food for out-migrating salmonids to thrive on, while it may also be associated with lower DO levels along the bottom, impacting crabs. Similarly, if</p>

		upwelling is weak or blocked, the surface waters are deprived of nutrients, productivity drops, out-migrating salmonids starve, marine birds starve, and the crabs on the bottom are not impacted by low DO. Nature forces these tradeoffs.
15	The response to paragraph D.2 continues and notes that “Many parts of Puget Sound and the Salish Sea have DO levels that fall below the concentrations needed for marine life to thrive.”	Really??? Where? Note that having DO levels lower than our DO criteria has no relationship to what marine life need to thrive. The DO criteria have no biological derived or scientifically defensible basis. The DO criteria are not based on credible data. The numeric criteria for extraordinary (7 mg/L), excellent (6 mg/L) and Good (5 mg/L) all proclaim they provide the same protection for essentially everything. The 0.2 mg/L difference from human causes (part of the DO criteria) has no biological basis, yet that is what the Salish Sea modeling is fixated on. Most of Puget Sound deep water (below the pycnocline) has higher DO concentrations than the same depth in the Strait of Juan de Fuca, and fish at depth in the Strait of Juan de Fuca thrive. Model demonstration of failure to meet the 0.2 mg/L threshold is not a measure of biological impairment or failure to thrive.

In view of the above concerns, Ecology has grossly misrepresented the need for the nutrient general permit and should be required to revise the answers and present a more accurate response as to the environmental benefits of addressing dissolved oxygen concerns when using a faulty tool (the 54 year old marine DO water quality criteria). An alternative of using best available science to update our marine DO criteria should be considered (such as was done for Chesapeake Bay).

### Comments on the Fact Sheet

Page	Fact Sheet Language	City of Everett's comments
13	Table 2 shows the proposed PSNGP Permittees.	A number of these discharge to the near surface waters of the Strait of Juan de Fuca. These should be excluded from the general permit, as they discharge to waters that are flowing towards the Pacific. These include Port Angeles, Sequim, Sekiu, Clallam Bay, and Clallam Bay Corrections Center. Similarly, if Port Townsend went to a pulsed discharge timed to the outgoing currents, they too should be excluded from the general permit.
23	Description of aquatic life designations for Extraordinary quality uses.	Salmon do not spawn in marine water. The water quality standards regulation was recently changed to take that use out.
23	Description of aquatic life designations for Extraordinary, Excellent, and Good quality uses.	Note that the three different classifications all assert the same broad list of uses that are protected. The Good quality designation is all that is needed, and the higher designations with associated more stringent criteria are simply overkill.
24	The first paragraph asserts that the draft permit supports the goals of the overall Puget Sound Nutrient Reduction Project by establishing requirements <u>based on attaining the numeric marine DO criteria</u> and minimizing cumulative human impacts.	How will any requirements established by the PSNRP attain the numeric marine criteria???? It is impossible. The natural conditions do not meet the numeric marine criteria throughout the water column. When the criteria were adopted 54 years ago, no effort was made to understand how the numeric criteria compared to the marine waters of Washington or the Pacific. To do so, the predecessor agency in 1967 would have had to contact the University of Washington's oceanography department for information, and they would have been directed to Eugene Collias (who was responsible for most of the water quality monitoring in Puget Sound). That never happened (personal communication between Eugene Collias and Lincoln Loehr from 1974 to after 2000.)
26	The second paragraph mentions that the open ocean boundary will always deliver the highest nitrogen load to the Salish Sea. The additional nitrogen load from human inputs, above the natural background, exacerbates the nutrient over-enrichment and leads to <b>eutrophication</b> . The definition of eutrophication in the fact sheet is on page 72. "Excessive richness of nutrient in a body of water, frequently due to human sources which cause a dense growth of plant life	The paragraph on page 26 does not allow for any possible benefit from increased productivity. Essentially it is saying that any nitrogen load from human inputs exacerbates the nutrient over-enrichment and leads to eutrophication, which (by definition) results in the death of animal life from lack of oxygen. Where is the death of animal life from lack of oxygen resulting from the human inputs of nitrogen? Where are the dead zones that the SEPA checklist refer to, and that Vince McGowan alludes to in Ecology's Notice of Availability of the General Permit?

	and death of animal life from lack of oxygen.”	
26	The third paragraph states that failure to address human nutrient loads from domestic WWTPs will increase both the number of days and the size of areas <u>that do not meet the numeric DO standard</u> in both high and low population estimates for 2040. Figure 2 on page 27 illustrates the % increase in noncompliant days and area from the model studies.	The figures and narrative make this seem like a major concern. However, there is no mention of the fact that there is no technical or biological basis behind the numeric criteria. Nor is there any mention that the Good criteria (5 mg/L) asserts it is fully protective of pretty much everything, and the Excellent (6 mg/L) and Extraordinary (7 mg/L) make the same assertion, which means, by definition, that the 6 and 7 mg/L numeric criteria are not biologically based or needed.
28	The first paragraph talks about the Salish Sea Model, and emphasizes how it has endured extensive internal and external peer review and constitutes the best available science for regulatory decisions made by Ecology.	The problem is, it doesn't matter how good the model is, when it is being used to evaluate compliance with marine water quality criteria from 54 years ago that have no identifiable scientific basis, no identifiable internal and external peer review from the time they were adopted, and do not constitute the best available water quality criteria for regulatory decisions made by Ecology. The DO criteria have no credibility.
30	Second paragraph from the bottom discusses how when a permitting authority makes the determination that a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above the numeric water quality standards for an individual pollutant, the permit must contain an effluent limit for the parameter (40 CFR section 122.44(d)(1)(iii)).	The problem with this goes back to the water quality criteria. The criteria are without a technical, scientifically defensible basis (something required for criteria under 40 CFR section 131.11). During the various nutrient related advisory meetings, Ecology has presented a weak analyses trying to support their 54 year old DO criteria, but that effort did not provide for extensive peer review nor does it constitute the best available science for regulatory decisions. Look to EPA's criteria development for Chesapeake Bay to understand what a credible effort looks like, and for what credible criteria look like.
31	The discussion of the Puget Sound Nutrient Reduction Plan emphasizes how there has been more than 10 years dedicated to the technical work and development of water quality models.	However, there has been 0 years for development of science-based marine DO criteria. It doesn't matter how good the model is when the target it is pointed at has no relevance
31	Ecology will use the NRP to explain why nutrient reduction is vital to improving water quality and protecting the designated uses detailed in Chapter 173-201A-210 and this fact sheet.	Many of the waters that the model finds do not meet the water quality criteria are in fact not impaired. The costly efforts called for by the nutrient reduction plan will only make small changes around the edge for a parameter (DO) that varies greatly over time, depth and distance. The small changes will, for the most part, result in little benefit. To test this concern we raise, look at the DO concentrations in the model and compare them to EPA's national recommended DO criteria for

		Chesapeake Bay and see what waters are considered impaired. EPA says their DO criteria for Chesapeake Bay can be used elsewhere with modification.
33	This page talks about best management practices.	Shouldn't development of technically based, scientifically defensible marine DO criteria be the most important BMP? Look before you leap.
36-37	There is discussion about the CWA 303(d) list of impaired waters	<p>The impaired waters list submitted by Ecology and approved by EPA was based on the numeric criteria. It will have included many stations that met the numeric 5 mg/L criteria for Good, but not the higher numeric criteria of 6 or 7 mg/L for Excellent or Extraordinary. Note however that the Good designation asserts it is protective of essentially everything</p> <p><i>(Water quality of this use class shall meet or exceed the requirements for most uses including, but not limited to, salmonid migration and rearing; other fish migration, rearing, and spawning; clam, oyster, and mussel rearing and spawning; crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc.) rearing and spawning.</i></p> <p>and is no different than the protections for the higher criteria. (Note that until 2020, Excellent and Extraordinary did claim one protection not covered by Good, and that was salmonid spawning. However, salmon do not spawn in salt water, so essentially the stated protections were all the same.)</p> <p>The baseless criteria are not a relevant tool for asserting a location is impaired.</p>
44	Optimization approaches	Ecology needs to include configuration changes that may adjust the location or the timing of discharge to reduce the effects of discharged nutrients. Somehow, there should be a means to credit such approaches. Examples could include timing a discharge for the outgoing current, to reduce the nutrient loading to basins reached by the incoming current. Port Townsend or Pierce County could reduce the contribution to productivity from their nutrients in this manner. Everett could divert some of its flow from the shallow water at the mouth of the Snohomish Estuary to its deep-water outfall in Port Gardner, and thereby reduce the availability of some of its nutrients to phytoplankton.

49	AKART analysis requirement	<p>The need for this and the need for the general permit is driven by the faulty marine DO criteria. It is premature to include such a requirement in the permit. Ecology should wait until they have adopted, and EPA has approved technically based, scientifically justified marine DO water quality criteria. Perhaps then, the necessity for nutrient reduction might be narrowed down to just a few inlets that might be more sensitive and can be dealt with by limits on local facilities.</p>
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**Comments regarding the draft nutrient general permit**

<b>Page</b>	<b>Permit language</b>	<b>City of Everett's comments</b>
7-9	Table 3 lists dischargers to Puget Sound covered by this permit	Delete facilities discharging to the Strait of Juan de Fuca. Their discharges are to waters with a net transport out to the Pacific.
14	Paragraph C. "..... evaluate operational strategies for maximizing nitrogen removal ...."	Add "and/or reducing nitrogen effects" after "removal". An example of a way to reduce nitrogen effects would be to discharge to deeper water, where less of the nitrogen would contribute to phytoplankton production.
14	Paragraph C.1. First sentence deals with assessing nitrogen removal potential of current process and identify viable optimization strategies....	After first sentence add, "Assess the options to vary the discharge location and/or timing if such action might reduce the effect of the discharged nutrients." Examples could include taking a shallow discharge and moving it to deep water (an Everett possibility) or timing a discharge to assure most of the effluent leaves Puget Sound (a Port Townsend possibility).
15	Paragraph C.1.c. "Document the expected % TIN removal for the initial optimization strategy...."	Add "or nutrient effect reduction" after "removal".
17	Paragraph D.1.a. "Determine ..... number of days the Permittee discharged above the action level."	If the action level is an <b>annual</b> level, how does one determine the number of <b>days</b> above the annual level?
17	Paragraph D.1.c. "...submit for review a proposed approach to reduce the most recent calculated annual effluent nitrogen load by at least 10%."	Add "or nitrogen effect" after "load".
28, 30, and 31	Tables for sampling requirements for S4 and S5 permittees include requirements for calculations of average monthly TIN and Annual TIN year to date in a column labeled "Minimum Sampling Frequency"	The calculations are not actually samples. Perhaps change column title to "Minimum Sampling or Calculation Frequency."