

Problem Statement – Impacts of Excess Nutrient Loads on Treaty Resources and Puget Sound Food Web

Marine and coastal ecosystems face challenges from the effects of changing ocean chemistry due to ocean acidification, and hypoxia or low dissolved oxygen, with human sources of nutrients contributing to acidification and lower dissolved oxygen levels. Approximately 20% of the area in the greater Puget Sound does not meet the dissolved oxygen standards.<sup>1</sup> Low dissolved oxygen will continue to cause habitat fragmentation and reduction for some species, with low marine dissolved oxygen contributing to: acidification, which can prevent shellfish and other marine organisms from forming shells; shifts in the number and types of bottom-dwelling invertebrates; increases in abundance of macroalgae, which can impair the health of eelgrass beds; seasonal reductions in fish habitat and intensification of fish kill events; and potential disruption of the entire food web.

- In numerous Salish Sea locations, seasonal oxygen levels are below those needed for fish and other marine life to thrive, thereby affecting tribal water-based resources and treaty harvest opportunities.
- Models indicate that nutrient loads discharged into Puget Sound's Main Basin are transported to the South Sound and Whidbey Basin, demonstrating that discharges in one basin can affect the water quality in others. Therefore, wastewater treatment plant (WWTP) permit requirements must acknowledge and address ecosystem-wide impacts to protect water quality in the Salish Sea.
- Current WWTP discharges to Puget Sound, together with nonpoint nutrient sources in rivers, violate the state water quality standards for dissolved oxygen in Puget Sound set under the federal Clean Water Act. Ecology is thus obligated to implement measures to reduce nutrient discharges. WWTP effluent discharge limits should be established to comply with nutrient and dissolved oxygen water quality criteria. In the absence of nutrient criteria, Ecology should fully implement corresponding narrative criteria as required under the Clean Water Act.

Expedited WWTP Nutrient Discharge Reductions Are Necessary

Ecology recently concluded that Puget Sound's five largest treatment plants represent approximately two-thirds of municipal wastewater flows - West Point, Brightwater, and South King - all three in King County, and Chambers Creek (Tacoma) and Everett/Snohomish. Ecology also concluded that 27 WWTPs deliver 99% the nutrients under the proposed permit. Meaningful and immediate action is necessary to address this known problem. Current models show that if reductions are made at all municipal WWTPs a 50% improvement in areal compliance can be expected with regard to dissolved oxygen standards. "[F]uture population growth in the Salish Sea region will likely increase human nutrient loads, including excess nitrogen and carbon from wastewater, stormwater, agricultural runoff, and other land-use activities. Regional population growth will contribute to further [dissolved oxygen] concentration reductions if no actions are taken to reduce human nutrient sources."<sup>2</sup> Permittees should plan for future nutrient reductions without delay, while also planning for WWTP hookups needed to accommodate future growth without increasing nutrient discharges. Puget Sound nutrient general permit monitoring and reporting methods must be sufficient to document discharges and reductions,

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<sup>1</sup> WA Dept. of Ecology, Puget Sound Dissolved Oxygen Model Nutrient Load Summary for 1999-2008 xvi (2011).

<sup>2</sup> *Id.*

inform adaptive management, cumulative effects and determine compliance with water quality based effluent limits. Ecology should implement significant nutrient reductions in the first Puget Sound nutrient general permit cycle, using known technologies to remove both nutrients and chemicals of emerging concern – a priority recommendation of Governor Inslee’s Southern Resident Killer Whale Task Force.

- Treaty resources and harvests have already been affected by excess nutrient loading. Therefore, the Puget Sound nutrient general permit should be implemented rapidly with significant load reductions from the largest dischargers addressed in first permit cycle.
- Commercial, recreational, and tribal fisheries experience harm from Salish Sea dissolved oxygen impairments, as do other designated uses. Tribes and these other interests should not bear the cost of excess WWTP nutrient discharges. Each tribe that suffers impairments to their reserved resources from nutrient-related discharges must experience aquatic habitat recovery as an immediate priority.
- The costs of nutrient reduction should appropriately be allocated to permittees whose discharges contribute to violations of water quality standards. Ecology should implement significant nutrient effluent limits at each WWTP starting with the first general permit cycle, as well as through any interim or other individual permits.
- All Puget Sound nutrient discharge permits should require water quality based effluent limits for each WWTP and exceedance of limits warrants application of all known, available, and reasonable treatment technologies to protect and restore water quality and fishery uses. Thurston County communities have demonstrated reasonable application of advanced nutrient treatment, and their technological and rate strategies can serve as a model for other WWTPs. If permit effluent limits in the context of the Puget Sound Nutrient Reduction Plan are insufficient to promptly demonstrate compliance with water quality standards, then Ecology should consider other alternatives including an overarching Clean Water Act Total Maximum Daily Load for Puget Sound nutrients and dissolved oxygen.

#### Watershed Nutrient Reductions Are Necessary

Agricultural runoff carried by rivers, failing septic systems discharges, and wastewater treatment plant loads collectively carry nutrients and organic carbon into marine waters.

- The state should advance consistent science-based riparian buffer protection in agricultural and urbanizing areas to address land-based watershed nutrient loading.
- Consideration should be given to both WWTPs and watershed nutrient loads affecting tribal resources.
- Ecology should consult formally with all affected co-manager tribes to actively address dissolved oxygen and nutrient concerns necessary to tribal shellfish and salmon recovery objectives.
- It would be inappropriate for Ecology to implement a phased approach allowing continued degradation of treaty resources for some tribes while promoting recovery in other regions first. Ecology must engage each tribe and their reserved treaty resources on an individualized basis.
- Implementation of water quality trading should comply with the Clean Water Act, and should not result in unaddressed impairments to tribal treaty resources.