WASHINGTON CONSERVATION ACTION EDUCATION FUND

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Jeremy Reiman
Department of Ecology
Water Quality Program
PO Box 47600
Lacey, WA 98503

Dear Mr. Reiman,

Thank you for the opportunity to comment on the *Draft Puget Sound Nutrient Reduction Plan*. Washington Conservation Action Education Fund (WCA) is a 501(c)(3) organization founded in 1967 as Washington Environmental Council. Our mission is to develop, advocate for, and defend policies that ensure environmental progress and justice by centering and amplifying the voices of the most impacted communities. We are committed to reducing sewage and other pollution that impact communities and the environment.

WCA served on the Puget Sound Nutrient General Permit Advisory Committee in advance of the January 1, 2022 permit issuance and collaborated with multiple environmental organizations in that effort. We have also deeply engaged in the Puget Sound Nutrient Forum since its inception in 2017. Our members and our partners are concerned about nutrient pollution to Puget Sound and the Salish Sea and impacts to water quality and food webs. We offer the following comments.

Ecology must act expeditiously to regulate nutrients

Regulating sewage and other nutrient discharges is long overdue, as Ecology has been developing the technical basis for this for over 25 years. The longer Ecology waits, the more sewage treatment plants will push for flow expansions, locking in outdated technologies for decades to come. We urge you forward.

Plan Lacks Impacts of Non-compliance

On page 41, Ecology acknowledges "...that permittees may need to make large investments in treatment plant infrastructure to add nutrient reduction technologies necessary to meet their WQBEL" (water-quality-based effluent limit). However, nowhere in the plan does Ecology acknowledge the ongoing harm during the period of non-compliance while state water quality standards are not met.

Ecology has developed numerous documents over the years that describe some of the impacts that nutrient pollution has on Puget Sound water quality and food webs. This plan lacks any discussion of those impacts. The plan reads as a series of changes that dischargers need to make and lacks any mention of benefits to the communities that rely on a healthy Puget Sound.

We suggest adding context for why dissolved oxygen and ocean acidification must be addressed through local nutrient actions from point and nonpoint sources, and the potential repercussions for Tribes and other communities that rely on healthy systems to provide food and other services. A new section could parallel the *Nitrogen in the Sound* section that begins on page 17, or that section could be retitled and expanded. In addition, the language on page 41 requires a balanced representation of harm until compliance is achieved since harm is only framed as to the dischargers that did not plan for processes that the LOTT and Pierce County Chambers Creek plants have.

2050 is too long of a time horizon for meeting goals

The plan goal is to achieve state water quality standards by 2050, which means locking in 25 years of non-compliance. We are unaware of any other category of pollution that allows for such a long timeline – even Model Toxics Control Act sites and Superfund sites have shorter action windows. We recognize that some activities that require significant capital investments will take years to plan, finance, design, permit, and build, including multiple cycles of Capital Facilities Plans. However, such an extraordinarily long timeline simply secures the delays that some dischargers have been seeking. **We urge Ecology to adopt a timeline of 2035 for meeting water quality standards**.

Delaying water quality based effluent limits (WQBELs) until 2031 is also too long of a time horizon for meaningful action. These must be established sooner, and timelines for compliance addressed in individual permits themselves. We understand that Ecology permit writers will require time to address all of the permits, particularly without clarity on whether dischargers will even opt into the general permit or accept that tool at all. We recommend that rather than one date for all discharges, that **Ecology commit to adopting WQBELs for mega loaders (see below regarding King County and Tacoma) by 2027, dominant loaders by 2028, moderate loaders by 2029**, and industrial and small loaders by 2031. This phased approach should be incorporated into Table 9.

The phased approach by discharge size should be incorporated into the overall plan timeline. Rather than full compliance by 2050, Ecology should require that all mega and dominant loaders comply with WQBELs by 2035 and moderate loaders by 2040. We understand that addressing smaller dischargers will take time, and the region will learn from other facilities. Phased discharger compliance also should be reflected in Table 9.

The first progress report is not planned until 2042 with a second due in 2055. That is simply too long. **Interim progress reports are needed beginning in 2027 and completed every two years to ensure the region makes progress and adapts to changing conditions**. Progress reports will be needed to make the case for funding to the state legislature and to Congress. The 2055 progress report would come after the goal of 2050 and would be irrelevant as a progress report. The progress reports also need to inform effectiveness monitoring described beginning on page 63, implementation tracking on page 64, and adaptive management with feedback loops on page 72. Ecology requires annual reporting from dischargers, and the status needs to be rolled up into biennial reports of progress toward the end goal.

Page 71 states that Ecology will "… re-run the Salish Sea Model, or its equivalent, in 2040 and 2053, three years following our target date for plan implementation." This is also too long and Ecology needs to invest in model maintenance more frequently to inform and interpret results from the monitoring program. Only modeling tools can distinguish between local and oceanic influences on Salish Sea water quality given high inter-annual variability and ocean trends. The plan sections on monitoring recognize the importance of in situ work, but the plan misses the importance of corollary modeling tools, especially at a time of rapid advancement in the world of computing. When I was part of the Ecology team that adapted the framework of the 1980s Budd Inlet model for the South Puget Sound Dissolved Oxygen Model, that process took many years to upgrade from what had been a desk top model to one that relied on a server and then cloud computing on entirely new operating systems. We urge you not to undervalue computer modeling investments. In addition, given the inter-annual variability, relying on one single year to evaluate compliance is not reasonable.

Page 20, top paragraph, includes the language that "[w]it this [reasonable potential] determination, federal law requires that limitations be established on permitted dischargers to restore water quality as soon as possible (40 CFR 122.44(d)(1))." Twenty-five years is not as soon as possible. In fact, multiple large capital facilities have been built in 5-10 years.

Page 22, top paragraph, states that "Facilities that do not opt-in to the General Permit coverage will see nutrient reduction requirements moved to their individual permits. As Ecology renews expired individual permits or modifies existing individual permits, the draft documents containing nutrient requirements will be made available for formal public comment before final issuance." **This section needs a specific timeline of no later than 2027 or 2029 or 2031 for individual permit limits by discharger size**, possibly using a compliance schedule to address actions needed beyond the 5-year permit term.

Given the extended plan timeline proposed, even our recommendation of 2035, Ecology also needs to address on page 22 what it will do when facilities seek approvals for plant expansions to meet growing populations and/or aging infrastructure. As we commented in the separate letter on the Puget Sound Nutrient General Permit, **Ecology must categorically state that it will not approve flow increases without concomitant technology improvements to reduce nutrient discharges**. Approving flow increases with status quo technology would be inconsistent with the "reasonable potential" determination.

Advance Restoration Plan Approach

We support the use of the Advance Restoration Plan approach, but only if it actually results in cleaning up pollution faster than a traditional Total Maximum Daily Load (TMDL). We know of no other TMDLs with implementation plans of 25 years in Washington State. The justification for using ARPs seems inconsistent with this reality as a result. Furthermore, while the plan keeps a TMDL on the table, its use would only come if the ARP does not result in meeting water quality standards in 2050. Again, this timeline is too lax, and a target of 2035 is more reasonable for using the ARP approach.

The third paragraph contains an incorrect reference to "… working directly with impacted communities to explore innovative solutions to reduce nutrient pollution" (emphasis added). We presume this refers to working with sewage dischargers. **Impacted communities include Tribes with Usual and Accustomed Areas in Puget Sound impacted by sewage discharges, populations impacted by cumulative pollution burdens who rely on fish and shellfish for cultural practices and for sustenance, and many others whose use and enjoyment of Puget Sound has been and continues to be impacted by sewage pollution**. This is why we suggest a better balance in the plan to describe pollution impacts. We recommend that Ecology modify the sentence to read "… working directly with sewage dischargers to explore innovative solutions to reduce nutrient pollution." We agree that this would be a healthy step.

Water Quality Criteria

Ecology should expect off-track comments on the water quality criteria included in the plan from dischargers. The dischargers, and Tacoma in particular, have aggressively attacked these standards. In closed-door meetings with legislators, their representatives have stated that the marine dissolved oxygen criteria are "overly protective." We disagree and stated so on multiple occasions. The marine dissolved oxygen criteria are protective and have been for some time. Moreover, Ecology based sewage pollution reductions for Spokane on similar standards applied in fresh waters. **Ecology simply cannot give the two largest western Washington counties/cities a pass on environmental standards that have been applied to eastern Washington**. When WCA has engaged with Members of Congress, we often hear criticism of Puget Sound sewage dischargers, and King County in particular, which impedes meaningful discussions of federal actions needed for Puget Sound recovery.

The Water Quality Criteria section factually states the current criteria. In particular, the reference to the historical inclusion of Natural Conditions Criteria is accurate. Reference to anti-degradation is accurate as well. We anticipate dischargers may push back on the description of the 0.2 mg/L decrease below standards, requesting that Ecology develop site-specific nutrient standards. This would simply be another mechanism to delay meaningful action. **We support Ecology's use of 0.2 mg/L to define impacts in this plan.** Relaxing this value, that has been applied in eastern Washington, would not be fair and could raise political concerns. Technically, with the current water quality standard of >5.0 or >7.0 mg/L, there is zero capacity for sewage discharges where natural conditions produce lower concentrations.

Total Nitrogen Targets for Sewage Treatment Plants

We understand that some dischargers have expressed concerns that Ecology has shifted to total nitrogen from total inorganic nitrogen as the pollutant of concern in this plan. As Ecology well knows, the organic nitrogen fraction of sewage effluent is exceedingly small, and often within the noise of laboratory measurements that generate the organic nitrogen fraction by difference calculations. In the marine environment, organic nitrogen pools can convert to inorganic forms of nitrogen through various mechanisms, and the Salish Sea Model includes these processes. However, treatment technologies of the future could shift more nitrogen to the organic fraction and **we concur with Ecology framing the pollutant as total nitrogen**. Similarly, the first full paragraph on page 32 assumes patterns between TIN and DIN

that are reasonable given that particulate inorganic nitrogen is so small. Ecology may need to clarify this point.

We also concur with using the Opt2_8 scenario to establish TN targets. Aggregating the two bottom layers of model output reasonably characterizes bottom-water conditions while not averaging over such a large depth that surface waters mask low oxygen in the bottom waters. Layer depths are model decisions early on in model development, before key processes are characterized. Particularly given that small portions of the shallow Sinclair and Henderson Inlets require larger reductions, the decision represents a reasonable balance. Keeping flows at the 2014 levels is consistent with other modeling approaches. While older at this point, the 2014 year has the most complete data set available and is still appropriate for establishing TN targets. Finally, distinguishing among the cool (Nov – March), warm (April – June, October), and summer (July – September) seasons appropriately accounts for the temporal variation in primary productivity and impacts to dissolved oxygen from nutrients. This seasonal approach has been used successfully at the LOTT treatment plant for 30 years and allows dischargers the flexibility to adapt systems while also protecting the resource.

WCA concurs with setting the targets at 3 mg/L for the summer season, 5 mg/L for the warm season, and 8 mg/L for the remainder of the year for all dischargers to the Northern Bays, Whidbey, Main, and South Sound basins. WCA also agrees with setting the targets at 3 mg/L for discharges to Sinclair Inlet given the high sensitivity of the inlet to nutrient loading, its shallow waters, and high productivity, and we urge more technical assistance for the plants involved.

Capping small discharges of <22 lbs TN/day or <14 lbs DIN/day at the 2014 levels seems reasonable. This involves a large number of small facilities, and their collective load is many orders of magnitude below those of King County (42,000 lbs/day based on self-reported loads for West Point, South King, and Brightwater in 2023). In addition, given the high level of flushing in Admiralty Inlet, Strait of Juan de Fuca, and Strait of Georgia basins, plant impacts are far more muted and capping at 2014 levels is reasonable. Dischargers to Hood Canal are also capped at 2014 levels rather than requiring lower effluent concentrations, which could create questions given Hood Canal's extreme sensitivity to nitrogen[1]. However, the only permitted sewage discharge

[1] Cope and Roberts, 2013. Review and Synthesis of Available Information to Estimate Human Impacts to Dissolved Oxygen in Hood Canal. Ecology Publication No. 13-03-016. Review and Synthesis of Available Information to Estimate Human Impacts to Dissolved Oxygen in Hood Canal.

is the Alderbrook Resort, discharging approximately 0.01 lbs at concentrations <10 mg/L. Ecology may need to add this rationale to the plan given the importance of Hood Canal, using more recent values than the 2013 report had available at that time. This is another reason why Ecology should categorically state that the agency will not approve new or increased discharges of nitrogen.

Capping industrial discharges at 2014 levels is also reasonable given no known high-nitrogen effluent from industrial sources. Ecology should reiterate that this precludes approving permits for new industrial sources with non-negligible nitrogen loads. In addition, Ecology may need to make clear that no future industrial expansions will be permitted without reductions in nitrogen, such as from oil and fossil fuel processing facilities concentrated in North Puget Sound and the Straits. The fossil fuel industry continues to target the Pacific Northwest for new and expanded facilities, and we expect this pressure will amplify during the current federal administration.

Ecology should prioritize watersheds with known hot spots during summer baseflow conditions and describe how seasonality will be addressed for watershed reduction targets in Table 4. While future watershed plans will consider this, Ecology should prioritize plans for those watersheds with already documented elevated levels of nitrogen in the summer season. A 2015 USGS publication[2] evaluated nitrogen attenuation in Puget Sound rivers and also identified rivers with high baseflow concentrations, including the Cedar/Green and Nooksack rivers.

The Marine Point Source targets in Table 5 sum state domestic sewage, state industrial, and federal sewage targets by basin under the plan. We note that the target for just the Main Basin is 6,619,298 lbs of nitrogen per year yet summing the Puget Sound Nutrient General Permit action level loads for only King County and Tacoma's plants yields 18,569,000 lbs of nitrogen. Allowing those discharges – nearly three times the load targets – for the next 25 years is unreasonable.

Ecology notes on the first paragraph of page 36 that three plants have ceased operations since 2014 yet their loads "… were included in the above targets as a margin of safety and/or reserve capacity that could be allocated to another nutrient source in the basin." Ecology must delete "could be allocated to another nutrient source in the basin." **Because Ecology has determined that there is reasonable potential for the existing sources to cause or contribute to violating water quality standards,**

[2] Sheibley et al., 2015. Nutrient Attenuation in Rivers and Streams, Puget Sound Basin, Washington. Scientific Investigations Report 2015–5074. https://pubs.usgs.gov/sir/2015/5074/.

there is no capacity in Puget Sound to approve any new sources or expansions of existing sources.

Page 20, last paragraph, states that Ecology "… set action levels for total inorganic nitrogen (TIN) loading at existing discharge levels for large and moderate-sized facilities and required the facilities to take specific actions if the reported TIN level exceeds the action level." This should read "… set action levels for total inorganic nitrogen (TIN) loading at the 99th percentile upper confidence limit of existing discharge levels for large and moderate-sized facilities and required the facilities to take specific actions if the reported TIN level exceeds the action level."

In a separate comment letter on the Puget Sound Nutrient General Permit Phase 2, we note that actual discharges for multiple treatment plants have been substantially below the action levels developed using the 99th percentile. We maintain that using the 99th percentile of the upper confidence limit is far above actual existing discharge levels, as indicated by the table below. **All future Ecology reference to the 2022 Puget Sound Nutrient General Permit action levels must include the 99th percentile statistic to clarify what was used rather than referring to them as existing loads, which they are not.**

Sewage Discharge	Action level (lbs)	2022 reported load (lobs)	%action level	2023 reported load ()	%action level
King County South King	7,340,000	4,965,000	68%	6,067,000	83%
Tacoma Central No. 1 WWTP	2,410,000	1,552,455	64%	1,865,944	77%
Post Point WWTP (Bellingham STP)	993,000	777,927	78%	786,130	79%
Midway Sewer District WWTP	625,500	341,003	55%	364,040	58%
Bremerton WWTP	602,000	375,036	62%	338,385	56%

In the second paragraph of page 40, Ecology reiterates that "…targets are assigned at the basin-wide scale." Because King County and Tacoma both discharge to the Main Basin, with only a few other moderate loaders, neither entity has anything to trade in

terms of nitrogen. To meet the target of over 6.6 million pounds for sewage treatment plants in the Main Basin will require every discharger to reduce nutrients. This point is why we stress that Ecology remove King County and Tacoma from the Puget Sound Nutrient General Permit and incorporate targets into their individual permits now rather than decades from now. The action level for West Point alone is greater than the target for the entire basin, which also includes South King, Brightwater, Tacoma Central, and Tacoma North.

Total Nitrogen Targets for Watersheds

The Watershed Targets text on page 37 states that they do not include diffuse shoreline sources such as septic systems. In my time at Ecology, I helped develop the earliest watershed nutrient loads, and at the time Ecology did incorporate 100% of the terrestrial areas contributing flows to marine waters, extrapolating from estimates at the most downstream river monitoring stations. We urge you to confirm with the Environmental Assessment Program the approach used for these values. Because septic systems are in upland areas in addition to shoreline areas, unit area loads likely already account for septic systems.

Table 6 summarizes watershed nitrogen annual targets by basin, and the paragraph on page 37 describes spatial flexibility among watersheds within a basin. However, the temporal variability of watershed loads is not described in this section or elsewhere in the plan, as mentioned above. The majority of watershed nitrogen loads discharges in the winter, when productivity is low and marine waters are less sensitive to nitrogen loading. Therefore, this paragraph and next section must mention that any future plan will include seasonal approaches, as described for the sewage treatment plants. At least one former Tacoma Environmental Services Director thought he could trade a pound of stormwater nitrogen in the winter for a pound of sewage nitrogen in the summer. We urge Ecology to clarify this important point in the final plan to avoid these types of misinterpretations.

Non-local and Regional Sources

We concur with not including non-local and regional sources in the 0.2 mg/L human use allowance. The United States does not have jurisdiction over Canadian discharges. Atmospheric deposition loads are very small relative to other sources. Controlling transportation emissions through the Climate Commitment Act and other approaches will reduce local atmospheric deposition.

Much misinformation exists on the role of the Pacific Ocean. While the ocean is the largest overall source of water to the Salish Sea, including nitrogen as a result, most nitrogen also flows back out to the Pacific Ocean. Human nitrogen sources within the Salish Sea are far more concentrated than what enters from the ocean. As has been well understood for nearly 30 years, the vast majority of what comes in also goes out through the Pacific Ocean. Moreover, the Pacific Ocean boundary condition would be the same in both base runs and scenario runs of the Salish Sea Model, so any differences within Salish Sea results would be due to local contributions within the Salish Sea. Including Canadian sources in both base runs and scenarios also "cancel out" as they are held constant in base runs and scenarios. Ecology should reiterate these points in the final plan to counter the significant misinformation on the Pacific Ocean and misunderstanding of Canadian contributions.

Implementation – Marine Point Sources

Page 40 states that "Facilities that do not opt-in **may** see nutrient monitoring, reporting, and planning requirements added to their individual permits through permit renewals or modifications, or through administrative orders." However, "**may**" should be "**will**" as Ecology has committed to incorporating changes, just that the mechanism to do so will vary by discharger if they do not opt into the General Permit.

We do not support water quality standards variances mentioned on page 41. As a matter of fair and equitable policy, Ecology should not allow a variance to western Washington, especially after Spokane sought a variance which was not granted by Ecology. **Holding western Washington to a weaker standard than eastern Washington is not fair**. Ecology used a compliance schedule to accommodate Spokane while also maintaining progress toward a complicated capital facilities project, which was far shorter than the 25 years that Ecology is proposing for this plan. Spokane had to comply with WAC 173-220-140, WAC 173-226-180 and 40 CFR 122.47, which, as Ecology points out specify that the length of the schedule shall be the "shortest reasonable period of time necessary to achieve compliance."

In the discussion of compliance schedules on page 41, Ecology notes that to remain consistent with federal and state law, "Ecology or EPA may evaluate and adjust interim limits during each permit renewal." However, while sidestream treatment and refining operations to control nitrogen may provide incremental reductions, the large changes needed require a step function in nitrogen reduction rather than gradual reductions. The language could be interpreted as gradually reducing nitrogen WQBELs over time,

which would pose challenges for dischargers that must plan, finance, and build significant capital investments to protect Puget Sound once a generation.

Nutrient Credit Trading

Page 42 describes Nutrient Credit Trading but lacks crucial context that trading systems cannot create sacrifice zones, where poor water quality would continue or even worsen. **Ecology must make clear that any nutrient credit trading system cannot perpetuate or worsen waters that fail to meet water quality standards**. The third bullet on page 43 recommends that a program would "[r]estrict trading to facilities within the same basin or only allow trading between certain basins," which would help avoid selling a pound of nitrogen credit in the Northern Bays that perpetuates water quality problems in South Sound. The last paragraph on page 43 simply states "Note that trades cannot result in a lowering of water quality." This is a fundamental premise of trading programs that must be expanded on earlier rather than left to what could seem an afterthought in this section.

The second paragraph of Page 43 notes that Ecology will "… begin engaging with permittees in the coming years to identify the level of interest." **We strongly recommend that Ecology consult with Tribes before engaging with permittees on a nutrient credit trading system**. Moreover, referring to "in coming years" suggests a much slower timeline than needed to address water quality needs in Puget Sound. This should be done in 2026. Similarly, the first sentence of the third paragraph should read "In the event there is broad support for a program, including from Tribes and from permittees, and the market feasibility analysis identifies a viable market for trading…."

Topics Missing from the Plan

We find the plan comprehensive, and note potential clarifications and additions:

- Page 53 refers to the Tetra Tech 2011 economic evaluation, which I am familiar with. However, that evaluation used exorbitantly high flow rates in the projections for Tacoma and likely other plants – the highest of the highest flows a plant would experience at most once every several years. This significantly amplified costs and would overdesign the plant for a pollutant that is primarily a problem in the summer months. As a result, the cost estimates were highly exaggerated. We urge Ecology to consider alternative value engineering approaches and draw from recent advances in the Chesapeake Bay region that

have found cost-effective approaches to reducing nutrients while addressing small footprints, electricity, and greenhouse gas emissions.

- The Reclaimed Water section describes the benefit of reducing discharges to marine waters. Another opportunity is to reduce Inflow and Infiltration (I/I), which increase the hydraulic demand during wet and dry weather on sewer systems. We suggest that Ecology consider the (Massachusetts) Metropolitan Water Resources Authority inflow and infiltration approach, which I was involved with in the 1990s. At the time, local governments were exploring cost effective ways to reduce I/I. Nitrogen concentrations of I/I are lower than domestic sewage, but the flow alone could reduce flow peaking that challenges treatment plants, leading to smaller volumes to treat for nitrogen. Puget Sound dischargers today are far behind where Massachusetts dischargers were in the 1990s in addressing I/I.

Additional Edits

- Page 9, Basin definition – should be Part and not Port
- Page 11, second paragraph, line 6 – should be Sound and not sound
- Page 14, last paragraph – Puget Sound is the largest estuary by volume and second largest by surface area (to Chesapeake Bay)
- Page 17, last paragraph – should be for over two decades rather than a decade as the report cites Albertson et al., 2002
- Page 40, last paragraph – should be "… only LOTT ~~none~~ of the WWTPs or industrial facilities discharging to Puget Sound have numeric effluent limits protective of dissolved oxygen across the Sound."
- Page 43, second paragraph – we urge you to work with Tribes directly, but an edit is needed such as "… we will work directly with permittees, ~~Tribes,~~ environmental groups, and other interested parties, and consult with Tribes, to establish…" to reflect the government-to-government relationship and not lump Tribes with stakeholders.

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Thank you for considering these comments.

Mindy Roberts, Ph.D., P.E.
Puget Sound Program Director
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