



Puget Sound Nutrient Credit Trading

Recommendations for Program Implementation

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By the

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DEPARTMENT OF
ECOLOGY
State of Washington

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Executive Summary

Many parts of Puget Sound are experiencing oxygen levels below the thresholds needed to sustain marine life, due in part to discharges of nutrients from domestic wastewater treatment plants (WWTPs). To address the largest source of these discharges, the Washington State Department of Ecology (Ecology) issued the Puget Sound Nutrient General Permit (PSNGP) in December 2021. The permit applies to the 58 domestic WWTPs that discharge to Puget Sound and limits the amount of nitrogen they can discharge.

In 2022, Ecology was directed by the Washington State Legislature to research and recommend how to structure and establish a nutrient credit trading program for Puget Sound that would result in quicker and more efficient nutrient reductions from these WWTPs. Water quality trading is a market-based approach to help meet water quality goals and promote more effective, lower cost pollution reduction. The proviso in Engrossed Substitute Senate Bill 5693, Section 302(46) to Ecology reads as follows:

“(46) \$350,000 of the general fund—state appropriation for fiscal year 2023 is provided solely for the department to recommend one or more draft structures for nutrient credit trading that could be used to efficiently and quickly achieve nutrient discharge reductions for point source dischargers covered under the Puget Sound nutrient general permit. By June 30, 2023, the department must submit a report to the appropriate committees of the legislature consistent with RCW 43.01.036 that summarizes the draft structure or structures and describes a tribal consultation and a stakeholder engagement process to solicit feedback on the draft structure or structures and any necessary statutory changes and funding.”

If a nutrient credit trading program is established in Puget Sound, Ecology recommends the following program components:

- **Program structure** – The trading program should be administratively simple to start, overseen by Ecology, and initially only for permittees covered under the PSNGP. To mitigate risk and uncertainty associated with trading, the program should define geographic boundaries for trading, eligible trade partners, when an entity is eligible to trade, and trade ratios.
- **Statutory considerations** – There is no need for statutory updates to begin trading. However, the program may benefit from clarifying language in state rules.
- **Tribal consultation and engagement** – Before developing a trading program, Ecology should develop a tribal engagement plan, detailing how we would engage Tribes and offer formal consultation during program development.
- **Stakeholder engagement** – Ecology should develop a stakeholder engagement plan, which would include an open stakeholder process, a technical advisory committee, and targeted interest group outreach.
- **Funding** – Funding in the near-term is needed to support completing a market feasibility analysis to determine whether a trading program is viable in Puget Sound, as well as to develop and initiate stakeholder outreach and tribal engagement plans. Future funding is needed to support additional research and dedicated Ecology staff to design, implement,

and maintain the program. Funding may also be needed for WWTP upgrades to expand the supply of credits for the program.

In the event of broad support for a trading program, Ecology recommends the following next steps to advance development of a program in Puget Sound:

- **Request funding** to conduct a market feasibility analysis, develop a stakeholder outreach plan, and initiate stakeholder outreach and tribal engagement.
- **Establish nitrogen limits** in the next re-issuance of the PSNGP, scheduled for 2027.
- **Develop a tribal engagement plan** and begin engaging Tribes on the program recommendations.³
- **Initiate a stakeholder engagement strategy**, by reaching out to the broader public, existing Puget Sound oriented workgroups and interest groups, including domestic WWTPs.³
- **Explore clarifying water quality offset regulations** at Chapter 173-201A-450.

³ Recommendation contingent on funding.

Introduction

A healthy Puget Sound is an integral part of our regional identity, a vital source of food, the foundation of our natural resource economy, and the heart of our shared cultural history and future. Marine life, including orcas and salmon, are suffering due to the current state of Puget Sound.

Excess nutrients, particularly nitrogen, can cause too much plant and algae growth which ultimately depletes dissolved oxygen (oxygen). Many parts of Puget Sound have oxygen levels that fall below the concentrations needed for marine life to thrive and are below our state’s water quality criteria. To address this problem, Ecology is developing a [Nutrient Reduction Plan](#)⁴, which will use the best available science and modeling to describe how we will reduce the different human sources of nutrient pollution to Puget Sound.

Current research shows discharges of excess nutrients to Puget Sound from domestic wastewater treatment plants (WWTPs) are significantly contributing to low oxygen levels in Puget Sound. This means Ecology must require WWTPs to control nutrients consistent with the federal Clean Water Act and Washington’s Water Pollution Control Act. As a result, Ecology issued the [Puget Sound Nutrient General Permit](#)⁵ in 2021, which applies to 58 municipality or public utility district owned WWTPs discharging to marine and estuarine waters of Puget Sound. The infrastructure costs associated with reducing nutrients from WWTPs are primarily paid by the public through local sewer rates. With the region’s growing population and recognizing that WWTP improvements to limit nutrients will take time, work to reduce nutrient pollution to Puget Sound needs to start as soon as possible.

In response to this need for action, the Washington State Legislature in 2022 included a proviso in Engrossed Substitute Senate Bill 5693, Section 302(46) to the Washington State Department Ecology as follows:

“(46) \$350,000 of the general fund—state appropriation for fiscal year 2023 is provided solely for the department to recommend one or more draft structures for nutrient credit trading that could be used to efficiently and quickly achieve nutrient discharge reductions for point source dischargers covered under the Puget Sound nutrient general permit. By June 30, 2023, the department must submit a report to the appropriate committees of the legislature consistent with RCW 43.01.036 that summarizes the draft structure or structures and describes a tribal consultation and a stakeholder engagement process to solicit feedback on the draft structure or structures and any necessary statutory changes and funding.”

Water quality trading is a market-based approach to help meet water quality goals and promote more effective, lower cost pollution reduction. A trading program assigns pollution reduction activities an improvement value, or a “credit”, which can be traded on a local market

⁴ <https://ecology.wa.gov/Water-Shorelines/Puget-Sound/Helping-Puget-Sound/Reducing-Puget-Sound-nutrients/Puget-Sound-Nutrient-Reduction-Project>

⁵ <https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Nutrient-Permit>

to achieve cost effective water quality improvements. EPA has supported trading as an efficient and flexible approach to achieve water quality goals on a watershed basis (see [EPA' national Water Quality Trading Policy](https://www.epa.gov/system/files/documents/2022-12/Water-Quality-Trading-Policy.pdf)⁶). Several states have implemented trading programs to address nutrient pollution and meet their long-term water quality goals. Ecology's [framework for establishing water quality trading within Washington](https://apps.ecology.wa.gov/publications/documents/1010064.pdf)⁷ is a useful resource for understanding general concepts and considerations involved with establishing and implementing a trading program in Washington state waters.

To complete this report, Ecology contracted with PG Environmental (further referred to as the 'PG Team') to conduct the necessary technical research to draft recommendations for designing and implementing a nutrient credit trading program in Puget Sound. Research tasks included:

- Research nutrient general permit trading programs operating under the Clean Water Act.
- Research how existing trading programs are set up and operate.
- Identify options and recommendations for trading structures for Puget Sound.
- Identify funding and other resources necessary to establish and sustain a trading program.
- Identify statutory considerations that would aid in development and stability of a trading program.
- Draft a report containing all research, analysis, and recommendations.

The PG Team produced a [final research report](https://apps.ecology.wa.gov/publications/documents/2310006.pdf)⁸ in spring 2023. Their report informed the recommendations presented in this report.

This report to the Washington State Legislature:

- Provides Ecology's recommendations on program structure, regulatory considerations, and funding needed to establish an effective water quality trading program for point source dischargers covered under the Puget Sound Nutrient General Permit.
- Defines Ecology's strategy for future tribal engagement and consultation and stakeholder outreach to solicit feedback on Ecology's recommendations.
- Provides next steps for implementing the recommendations.

Due to the detailed nature of the consultant report, we elected to keep our recommendations concise. We have cited the relevant sections in the consultant report which can provide more information on concepts, context, and reasoning for the recommendations provided.

⁶ <https://www.epa.gov/system/files/documents/2022-12/Water-Quality-Trading-Policy.pdf>

⁷ <https://apps.ecology.wa.gov/publications/documents/1010064.pdf>

⁸ <https://apps.ecology.wa.gov/publications/documents/2310006.pdf>

Recommendations

Note: These are Ecology’s recommendations for the initial phase of establishing a water quality trading program in Puget Sound. As program considerations evolve in the future (for example, permit limits, modeling results, watershed models developed, funding), the program structure should be re-evaluated. These recommendations do not represent a commitment by Ecology to develop a water quality trading program for Puget Sound but have been developed in the spirit of the budget proviso.

Trading program structure

Below are Ecology’s recommendations for the structure of a nutrient trading program in Puget Sound. Following each recommendation is a citation to the section in the consultant report with more information on the concept and detailed reasoning for the recommendation.

Limit initial trading to only WWTPs covered under the Puget Sound Nutrient General Permit.

We do not currently have the information necessary interpret dynamics between the WWTPs covered under the PSNGP, other nitrogen pollution sources, and dissolved oxygen levels in Puget Sound. Therefore, allowing other nitrogen sources to trade with WWTPs would pose the risk of generating un-intended localized water quality issues. Limiting trading to only the PSNGP WWTPs would allow administrative simplicity in the early phases of the program, ensure trades are based on the state of the current science, and provide assurances that trades support our water quality goals. Ecology could consider expanding trading eligibility to other point or nonpoint nitrogen sources in the future if future modeling or other sound science can support it. (III.D)

Develop trade ratios and geographic boundaries for trading to mitigate risk and uncertainty.

Both are key to mitigating the risks and uncertainties related to facility performance, potential impact on oxygen limited areas, and avoiding localized water quality problems. Ecology could assemble a reserve pool of credits or an offset fund to provide additional assurances that water quality targets will be met if a trade agreement fails. (III.E)

Restrict trading to either only facilities within the same basin or only between certain basins.

The next set of Salish Sea Model runs will help inform how we define which basins and entities can trade with one another. This approach will require rigorous oversight by Ecology, in conjunction with our municipal partners, but will be necessary to prevent the potential for localized water quality problems. (III.F)

Permittees are responsible for negotiating trades. Ecology would assist in developing resource documents for trading (e.g., example trade agreement language necessary for National Pollutant Discharge Elimination System (NPDES) compliance). This strategy is preferred over Ecology identifying and negotiating trades due to the predicted small market in the initial phase of trading. If the demand for trading in the future is large and there is discharger support, Ecology could consider developing a discharger-led credit-exchange association. (III.G)

Avoid modifying permit-limits when establishing trade agreements. Ecology would evaluate compliance with permits by either using the established permit limits or by establishing a process to calculate variable permit limits based on executed trades. (II.H.)

Ecology would verify credits prior to exchange between permittees. Ecology would need staff and a database to track and verify credits and exchanges. (III.I)

Statutory & Regulatory Considerations

Ecology has determined there is no immediate need for statutory or regulatory actions to allow trading. Current statutes⁹ and regulations¹⁰ allow trading, as does the federal Clean Water Act. No legislation or rulemaking is necessary to establish a water quality trading program in Puget Sound. However, the following recommendations would help support implementing a trading program. More information on recommendations can be found in consultant report Section IV.

Establish initial trading program provisions through the Puget Sound Nutrient General Permit. Future reissuances of the general permit should provide more clarification on trading program components, such as initial requirements to participate in trading and eligible trading partners.

Consider clarifying water quality offset regulations for surface waters in Chapter 173-201A-450 WAC. Additionally, consider modifying Chapter 173-220 WAC to explicitly allow water quality trading for dischargers. Modifications to these regulations are not necessary but would clearly define Ecology's authority to administer a trading program.

Any rules for water quality trading should be simple. Other states have stressed the importance of flexibility to accommodate new science, lessons learned, and changes in funding or other program elements.

Tribal consultation & engagement

Ecology is committed to meaningful engagement and formal government to government consultation with Washington's Tribes, in accordance with the 1989 Centennial Accord. While we are not recommending including tribally-owned WWTPs in an initial trading program¹¹, we acknowledge the potential impacts this program may have on Usual and Accustomed fishing and shellfish harvesting areas and reservation waters. Thus, Ecology met directly with tribal staff and organizations to present our draft recommendations and solicit feedback on how they would like to be engaged in future trading development discussions.

Based on feedback, Ecology commits to drafting a formal tribal engagement plan with our Executive Advisor for Tribal Affairs, in the event we move forward with a trading program. The plan would include the follow components:

⁹ RCW 90.48.080 and RCW 90.48.260

¹⁰ Chapter 173-201A WAC, ¹⁰ Chapter 173-220 WAC, and Chapter 173-260 WAC

¹¹ Ecology currently recommends limiting the initial phases of a water quality trading program in Puget Sound to permittees covered under the PSNGP. Tribe-owned WWTPs are not regulated under Ecology's PSNGP, but rather EPA's NPDES program. See Trading program structure section for more information.

- Offer Tribes seats on a Water Quality Trading Technical Advisory Committee (which is described below in the [Stakeholder engagement subsection](#))
- Commit to offer a tribal preview and comment period, prior to public review of any draft policy, rule or statutory language, or other materials related to the trading program.
- Commit to engage Tribes early and often regarding any new program developments.
- Offer opportunity for formal consultation at any point in program development and clearly describe how to initiate consultation.

As we develop a better understanding of the relationship between various nitrogen sources to Puget Sound and their impact on dissolved oxygen, we may consider expanding trading eligibility to other point or nonpoint nitrogen sources, such as tribally-owned WWTPs, if future modeling or other sound science can support it.

Stakeholder engagement

The success of any water quality trading program hinges on stakeholder support. Based on the information provided in the consultant report in Section III.C, we recommend three primary components to a stakeholder engagement plan. Ecology would develop a formal stakeholder engagement plan, which will identify goals, key stakeholders, specific engagement opportunities, and a timeline of actions.

State-led open stakeholder process. We would allow any interested parties and individuals to engage in program development activities during any point of the process. We would publicly advertise opportunities for stakeholder participation. We can utilize existing outreach groups, such as the [Nutrient Forum](#)¹² or [Puget Sound Nutrient General Permits Advisory Committee](#)¹³ to reach stakeholders currently engaged in Puget Sound issues.

State-led Water Quality Trading Advisory Committee (WQTAC). The WQTAC would be composed of technical experts representing a diverse array of stakeholders and Tribes. The committee would provide input on program decisions and review policy, draft regulatory language, and other materials related to the trading program.

State-led specific interest group process. Ecology would dedicate time for more focused engagement and discussions with stakeholders, such as dischargers or environmental advocacy groups. This would allow Ecology to have open, targeted conversations with stakeholders and allow them to share their thoughts on how program decisions may affect their interests and responsibilities.

¹² <https://www.ezview.wa.gov/DesktopDefault.aspx?alias=1962&pageid=37106>

¹³ https://www.ezview.wa.gov/site/alias__1962/37618/nutrients_general_permit_advisory_committee.aspx

Funding for a Potential Nutrient Credit Trading Program

Stable funding is needed to develop, implement, and sustain any water quality trading program. Based on the recommendations above, we suggest near-term funding to support the following activities:

- Conduct a *market-feasibility analysis*. A market feasibility analysis is a study which evaluates water quality targets, facility performance, risk and uncertainty measures, trading boundaries, and other information to determine the potential supply and demand of credits within a trading area. Such a study would provide valuable insight on the true potential for a trading program in Puget Sound.
- Develop an outreach plan and initiate Tribal, discharger and stakeholder outreach.
- Develop outreach and trading resource materials, such as draft trade contract language.
- Continue funding for the [Puget Sound nutrient reduction grants program](#)¹⁴.

In the long-term, we anticipate a nutrient credit trading program in Puget Sound would need funding to support the following activities:

- Supporting One Ecology full-time employee to manage the trading program.
- Developing trade ratios and geographic boundaries to mitigate risk and uncertainty. Such technical work may require additional use of the Salish Sea Model, especially if the scope of a trading program expands beyond the Puget Sound Nutrient General Permit permittees.
- Developing a water quality trading tracking database or integrate into an existing system.
- Funding WWTP upgrades to expand supply of credits.
- Establishing a reserve pool of credits or offset funds to mitigate risk and uncertainty.
- Funding to start a discharger-led credit exchange system (if dischargers show interest and a robust trading program develops).

We believe that funding for near-term and future activities to support trading would best be supported with appropriations from the Legislature, rather than through permit fees for the PSNGP. It would be difficult to determine the appropriate fee to cover costs at the beginning of the trading program as the number of trades and credits available are unknown. Additionally, rate payers are already experiencing the financial burden of compliance with the PSNGP. Increasing their burden to finance a water quality trading program is not likely to garner their support.

¹⁴ <https://ecology.wa.gov/About-us/Payments-contracts-grants/Grants-loans/Find-a-grant-or-loan/Puget-Sound-Nutrient-Reduction>

Next Steps

The success of a water quality trading program in Puget Sound hinges on whether dischargers are interested in a water quality trading program. In the event of such support, Ecology would put forward the following next steps to develop a program based on the recommendations above:

- **Ecology will need to request legislative appropriations** to support the following near-term work:
 - Conduct a market feasibility analysis.
 - Develop a formal stakeholder engagement plan.
 - Initiate robust discharger and stakeholder outreach.
 - Develop outreach and trading resource materials.
- **Ecology will need to establish nitrogen limits** in the 2027-2031 Puget Sound Nutrient General Permit cycle.
- **Ecology will need to develop our tribal engagement plan** and begin engaging with Tribes.
- **Ecology will need to initiate our stakeholder engagement strategy**, by reaching out to the broader public, existing Puget Sound oriented workgroups, and interest groups.
- **Ecology will consider clarifying water quality offset regulations** at Chapter 173-201A-450 WAC.

Conclusion

Human actions are contributing to low dissolved oxygen in Puget Sound. Without action, water quality will get worse as the area's population grows. Ecology believes a nutrient credit trading program could lead to faster reductions in nutrient discharges and a quicker recovery of dissolved oxygen to healthy levels in Puget Sound. This report's recommendations are based on the current state of knowledge. As the science, regulations, and funding available for advanced wastewater treatment evolve over time, it is important to revisit components of any water quality trading program to evaluate their relevancy and effectiveness.

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