

Appendix A. Puget Sound Nutrient Forum

The Puget Sound Nutrient Forum (the Forum) was formed in 2017 as a public advisory group to discuss, learn, and provide input on how to reduce human sources of nutrients entering Puget Sound. The Forum is composed of interested parties from the wastewater treatment and stormwater regulated community, environmental groups, local/state/federal agencies, and Tribal governments. The overarching objective of the nutrient forum has been to inform the development of the Puget Sound Nutrient Reduction Plan and find the best solutions for nutrient reductions that are effective, implementable, and efficient. Our strategies for achieving these objects have been information sharing, engaging others, and listening to all those willing to share.

The Forum has convened over twenty public meetings since its inception and is still meeting today. Meetings have included presentations and/or discussion on the status of water quality in Puget Sound, best available science in engineering and environmental sciences, other state approaches to addressing nutrient pollution, Salish Sea Model development and nutrient reduction framework model scenarios, and other items that would inform the targets and reductions strategies outlined in this plan. Agendas from past Forum meetings are included within this appendix.

For more information on the Forum, visit the Puget Sound Nutrient Forum's website:

https://www.ezview.wa.gov/site/alias_1962/37106/puget_sound_nutrient_source_reduction_project.aspx



Chamber's Cove shoreline

Puget Sound Nutrient Dialogue

Starting a conversation about the effects of excessive nutrients in Puget Sound

July 19, 2017 8:15am – 4:00pm

Green River Community College
Lindbloom Student Union Center, Grand Hall
12401 SE 320th St
Auburn, WA 98092



Parking Instructions: Parking is free; the most convenient parking is in lot P13 and P12 ([see campus map](#)). From that parking lot walk west along Mathews Way to the Lindbloom Student Union Center. There will be signs directing guests to the meeting room.



Food: Coffee, tea, and other beverages and light refreshments will be available during the morning and afternoon sessions. Lunch is not provided, but the college has a newly remodeled cafeteria with lots of food options available for purchase or feel free to bring your own lunch.



Sign-in starts at 8:15am and we will get everything started promptly at 9:00am. Arrive early to find a good seat, get some coffee, and network with others.

Agenda

Schedule	Total Time (min)	Topic	Presenter
8:15 – 9:00am	30	Registration and Networking	
9:00 – 9:30am	30	Welcome and Introduction Opening Remarks	Sarah Brace, Facilitator, Veda Environmental Heather Bartlett, Ecology
9:30 – 9:45am	15	What is the Puget Sound Nutrient Source Reduction Project	Dustin Bilhimer, Ecology
9:45 – 10:15am	30	Nutrient and phytoplankton trends and ties to climate in central Puget Sound	Kimberle Stark and Stephanie Jaeger, King County
10:15 – 10:30am	15	<i>Break</i>	
10:30 – 11:00am	30	Changes in Puget Sound from Ecology's long-term marine water quality monitoring program	Christopher Krembs, Ecology
11:00 – 11:30am	30	Impacts of excessive nutrients on eelgrass and kelp	Bart Christiaen, DNR
11:30pm – 12:30pm	60	<i>Lunch- Will be available for purchase in the college cafeteria or bring you own</i>	
12:30 – 1:00pm	30	Regional declines in Puget Sound benthic communities	Sandy Weakland, Ecology
1:00 – 2:00pm	60	Salish Sea Model Panel <ul style="list-style-type: none"> Salish Sea Model Framework Salish Sea Residence Time Nutrient loading in the Salish Sea model Current Model results 	Cristiana Figueroa-Kaminsky, Ecology Tarang Khangaonkar, PNNL Anise Ahmed, Ecology Teizeen Mohamedali, Ecology Greg Pelletier, Ecology
2:00 – 2:10pm	10	<i>Break</i>	
2:10 – 2:55pm	45	Salish Sea Marine Survival Project- The role of nutrients in Puget Sound food webs: insights from empirical and modeling studies	Correigh Greene and Chris Harvey, NOAA
2:55 – 3:45pm	50	Q&A Panel: this will be an opportunity for open questions between audience members and presenters. Questions will be collected throughout the day on notecards and the audience can ask questions about the science, potential challenges, data gaps, and where we are headed.	Sarah Brace and all previous speakers
3:45 – 4:00pm	15	Closing remarks	Sarah Brace
4:00pm		Adjourn	



Puget Sound Nutrient Forum

Agenda

April 25, 2018 ~ 1:30 p.m. to 3:30 p.m.
Tukwila Community Center, WA

Ecology is leading a Puget Sound wide project, called the Nutrient Forum, to engage stakeholders, tribes, and the public in discussions on significant issues related to the development and implementation of nutrient reductions to Puget Sound. This Nutrient Forum is intended to improve the public's understanding of existing conditions in Puget Sound and the need to reduce nutrient over-enrichment from human sources. An important goal of the Forum is to provide a collaborative environment to share information, understand the perspectives of those participating, and provide feedback to Ecology on potential actions and strategies for reducing point and nonpoint nutrient sources to Puget Sound. The kick off meeting for the Nutrient Forum will be held at the Tukwila Community Center, 12424 42nd Ave S Tukwila.

Agenda

Note: Times may vary according to questions and discussion during topic presentations.

1:30 p.m.	Introductions & Welcome (Heather Bartlett, WQP) <ul style="list-style-type: none"> Welcome & why we're asking you to participate in this Nutrient Forum Some background and history of where we have been and what we've learned Ecology's objectives of the Nutrient Forum
2:00 p.m.	How Nutrient Forum relates to Puget Sound Partnership efforts (Dustin Bilhimer, WQP) <ul style="list-style-type: none"> Background on Puget Sound Action Team efforts Background on Puget Sound recovery efforts Marine Water Quality Implementation Strategy (MWQ-IS) How efforts from the Nutrient Forum and MWQ-IS will overlap
2:30 p.m.	Feedback on future Nutrient Forum topics (Susan Braley, WQP) <i>What Ecology has heard that will be a part of future Nutrient Forum discussions:</i> <ul style="list-style-type: none"> The extent of the science and what it tells us, and application of water quality standards Nutrient sources and options to address those sources Nutrient reduction strategies being used in other parts of the country Discuss approaches that could work for Puget Sound to manage nutrient reductions from both point and nonpoint sources Opportunities and challenges for addressing Puget sound nutrient loads (e.g. funding, timing). <i>What issues/concerns are we missing in the list above?</i> <ul style="list-style-type: none"> Group discussion on other topics that have not already been raised to Ecology that should be considered as a part of the Nutrient Forum discussions.
3:15 p.m.	Next Steps (Susan Braley, WQP) <ul style="list-style-type: none"> Future meetings to discuss key topics Feedback from stakeholders, tribes and the public on topics related to forum

Additional Resources

Agency Contacts

Primary Nutrient Project Manager

Dustin Bilhimer

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Facilitation of Nutrient Forum

Susan Braley, Water Quality Program

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More Information

Puget Sound Nutrient Source Reduction Project Webpage:

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

Nitrogen in Puget Sound Story Map:

www.bit.ly/nitrogenstorymap

Ecology's Salish Sea Model Webpage:

<https://ecology.wa.gov/Research-Data/Data-resources/Models-spreadsheets/Modeling-the-environment/Salish-Sea-modeling>

Pacific Northwest National Labs Salish Sea Model Webpage:

<https://salish-sea.pnnl.gov>

Join our WQ Listserv

Interested in receiving email notices about the Nutrient Project in Puget Sound?

Sign up here: <http://listserv.ecology.wa.gov/scripts/wa-ECOLOGY.exe?GETPW1>



Puget Sound Nutrient Forum

Agenda

May 30, 2018 ~ 10:00 a.m. to 3:00 p.m.

Red Lion Hotel SeaTac, WA

The Department of Ecology is hosting the second Nutrient Forum meeting to provide a collaborative process to discuss nutrient reductions in Puget Sound. This meeting agenda is based on feedback from the last meeting on April 25, 2018, to provide more information on the science that informs this project and further describe how this Forum is connected to the Puget Sound recovery efforts

To Participate:

This public meeting will be held at the Red Lion SeaTac Hotel, Seattle Conference Room (18220 International Blvd, SeaTac, WA), and will also be conducted as an interactive webinar (WebEx). Participants can attend in person or at a location of their choice using WebEx. Please register online to let us know how you will be attending (<https://www.surveymonkey.com/r/May30NutrientForum>). To participate by WebEx, you must [register](#) prior to the meeting.

Agenda

Note: Times may vary according to questions and discussion during topic presentations.

10:00 a.m.	Introductions & Welcome (Susan Braley, ECY)
10:10 a.m.	Big Picture overview of nutrient over-enrichment and what we know about its effects on Puget Sound <ul style="list-style-type: none"> Christopher Krembs (ECY): marine water quality and indicators of eutrophication Ben Cope (EPA Region 10): <ul style="list-style-type: none"> The use of water quality models in a regulatory framework Salish Sea Model overview and how it compares to other nationwide modeling efforts Teizeen Mohamedali (ECY): Nutrient loading into Puget Sound and the Salish Sea Model Questions and Discussion
11:45 a.m.	Break for lunch (<i>lunch will not be provided</i>)
12:45 p.m.	Dissolved Oxygen standards and criteria (Bryson Finch, ECY) <ul style="list-style-type: none"> History and relevance of Ecology's DO criteria Application of DO Criteria to Nutrients
1:30 p.m.	Marine Water Quality Implementation Strategy (Kari Stiles, Puget Sound Partnership) <ul style="list-style-type: none"> Purpose and elements of an Implementation Strategy
2:00pm	Connecting the Forum to the Implementation Strategy (Dustin Bilhimer, ECY) <ul style="list-style-type: none"> Further discussion about how the relationship between the Forum and Marine WQ Implementation Strategy Stakeholder responses to questionnaires and building topics into a Forum meeting schedule
2:45 p.m.	Next Steps (Susan Braley, ECY)

Additional Resources

Agency Contacts

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Facilitation of Nutrient Forum

Susan Braley, Water Quality Program

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More Information

As part of the Marine WQ Implementation Strategy, a Starter Package summarizing the current state of science and policy is being prepared. This Starter Package will be delivered to the Interdisciplinary Team as a primer for the Implementation Strategy. **If you have information that you would like included in the Starter Package content, please contact: Tanya Roberts with the Puget Sound Institute at 360-591-6213, or rtanya@uw.edu**

Puget Sound Nutrient Source Reduction Project Webpage:

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

Nitrogen in Puget Sound Story Map:

www.bit.ly/nitrogenstorymap

Ecology's Salish Sea Model Webpage:

<https://ecology.wa.gov/Research-Data/Data-resources/Models-spreadsheets/Modeling-the-environment/Salish-Sea-modeling>

Pacific Northwest National Labs Salish Sea Model Webpage:

<https://salish-sea.pnnl.gov>

Join our Nutrient Project Listserv

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Sign up here: <http://listserv.ecology.wa.gov/scripts/wa-ECOLOGY.exe?GETPW1>



Puget Sound Nutrient Forum

Agenda

July 16, 2018 ~ 10:00 a.m. to 12:30 p.m.

Department of Ecology HQ, Lacey WA

The Department of Ecology is hosting the third Nutrient Forum meeting to continue presentations and discussions by regional scientists to talk about their work that will help us understand the mechanisms, trends, and impacts of nutrient over-enrichment on Puget Sound. The Nutrient Forum is a collaborative space for the regulated community, tribes, researchers, practitioners, government, and the public to learn about and discuss issues related to nutrient reduction to improve marine water quality and protect the resiliency of Puget Sound.

To Participate:

This public meeting will be held in the auditorium Ecology's Headquarters building in Lacey (300 Desmond Drive SE), and will also be conducted as an interactive webinar (WebEx). Participants can attend in person or at a location of their choice using WebEx. Please RSVP online to let us know how you will be attending (<https://www.surveymonkey.com/r/G3ZPL2K>). To participate by WebEx, you must [register](#) prior to the meeting.

Agenda

Note: Times may vary according to questions and discussion during topic presentations.

10:00 a.m.	Introductions & Welcome (Susan Braley, ECY)
10:10 a.m.	Mechanisms and trends in ocean transport of nutrients and low DO water to the Salish Sea and Puget Sound Guest Speaker, Dr. Parker MacCready, is a Professor of Oceanography at the University of Washington. He works to advance our fundamental understanding of estuarine and coastal physical oceanography. He leads the UW Coastal Modeling Group which creates realistic numerical simulations of the waters of the Salish Sea and Pacific Northwest coast, including the LiveOcean daily forecast model.
11:10 a.m.	Growth and survival of forage fish and juvenile salmon in response to oceanographic variability in the northern California Current, including the Salish Sea Guest Speaker, Dr. Marisa Litz, currently works for the Washington Department of Fish and Wildlife as the Puget Sound pink, chum, and sockeye salmon specialist. Marisa has a Ph.D. from Oregon State University where she worked with NOAA to advance understanding of the effects of oceanographic variability on forage fish and juvenile salmon growth and survival.
12:10 p.m.	Question & Answer: We will provide 5-10 minutes at the end of each presentation for questions, and we will use this time to see if there are any more questions for our guest speakers.
12:20 p.m.	Next Steps: <ul style="list-style-type: none">• August 22 will be the next Nutrient Forum meeting and we will continue hearing from regional scientists about water quality trends, hydrodynamics of the different Puget Sound basins, algal bloom dynamics, watershed nutrient attenuation and natural function, and potential nutrient over-enrichment impacts on nearshore eelgrass and kelp habitats.

Additional Resources

Agency Contacts

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Facilitation of Nutrient Forum

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More Information

Puget Sound Nutrient Source Reduction Project Webpage:

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

Nitrogen in Puget Sound Story Map:

www.bit.ly/nitrogenstorymap

Ecology's Salish Sea Model Webpage:

<https://ecology.wa.gov/Research-Data/Data-resources/Models-spreadsheets/Modeling-the-environment/Salish-Sea-modeling>

Pacific Northwest National Labs Salish Sea Model Webpage:

<https://salish-sea.pnnl.gov>

Peer-reviewed publications from guest speakers:

Marisa Litz: https://scholar.google.com/citations?user=r51_eEMAAAAJ&hl=en

Parker MacCready: <http://faculty.washington.edu/pmacc/publications.html>

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Sign up here: <http://listserv.ecology.wa.gov/scripts/wa-ECOLOGY.exe?GETPW1>



Puget Sound Nutrient Forum

Agenda

August 22, 2018 ~ 10:00 a.m. to 3:00 p.m.

Department of Ecology HQ, Lacey WA

The Department of Ecology is hosting the third Nutrient Forum meeting to continue presentations and discussions by regional scientists to talk about their work that will help us understand the mechanisms, trends, and impacts of nutrient over-enrichment on Puget Sound. The Nutrient Forum is a collaborative space for the regulated community, tribes, researchers, practitioners, government, and the public to learn about and discuss issues related to nutrient reduction to improve marine water quality and protect the resiliency of Puget Sound.

To Participate:

This public meeting will be held in the auditorium Ecology's Headquarters building in Lacey (300 Desmond Drive SE), and will also be conducted as an interactive webinar (WebEx). Participants can attend in person or at a location of their choice using WebEx. Please RSVP online to let us know how you will be attending (<https://www.surveymonkey.com/r/YLMHMMN>). To participate by WebEx, you must [register](#) prior to the meeting.

Agenda

Note: Times may vary according to questions and discussion during topic presentations.

10:00 a.m.	Introductions & Welcome <ul style="list-style-type: none">Susan Braley (WA Dept. of Ecology)
10:10 a.m.	Puget Sound basin dynamics: what a concentration actually represents, mechanisms for nutrient fluxes <ul style="list-style-type: none">Jan Newton (University of Washington Applied Physics Lab and WA OA Center)
11:00 a.m.	Nutrients, phytoplankton, and oxygen levels in Central Puget Sound: What can long-term monitoring data tell us? <ul style="list-style-type: none">Stephanie Jaeger, Kim Stark, & Gabriela Hannach (King County Dept. of Natural Resources and Parks)
12:15 p.m.	Break for Lunch: bring your own sack lunch or there is a cafeteria on site
1:15 p.m.	Potential impacts of nutrient over-enrichment on nearshore habitats, with a focus on eelgrass and kelp <ul style="list-style-type: none">Bart Christiaen, (WA Dept. of Natural Resources)
2:00 p.m.	Nutrient Attenuation in Rivers and Streams, Puget Sound Basin, Washington <ul style="list-style-type: none">Rich Sheibley & Bob Black (USGS Washington Water Science Center)
2:45 p.m.	Next Steps
3:00 p.m.	Adjourn

Additional Resources

Agency Contacts

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More Information

Puget Sound Nutrient Source Reduction Project Webpage:

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

Nitrogen in Puget Sound Story Map:

www.bit.ly/nitrogenstorymap

King County marine monitoring page: <http://green2.kingcounty.gov/marine/>

PSEMP marine waters report: <http://www.psp.wa.gov/PSmarinewatersoverview.php>

Poster: Extending Observations Further: Using Historical Biogeochemical Data to Understand Changes in an Estuary:

<http://green2.kingcounty.gov/ScienceLibrary/Document.aspx?ArticleID=487>

Presentation: Nutrient dynamics and ties to environmental conditions and drivers in Central Puget Sound:

<http://green2.kingcounty.gov/ScienceLibrary/Document.aspx?ArticleID=517>

Phytoplankton program sampling and analysis plan:

<http://green2.kingcounty.gov/ScienceLibrary/Document.aspx?ArticleID=314>

NANOOS: <http://www.nanoos.org/>

USGS Report: Nutrient attenuation in rivers and streams, Puget Sound Basin, Washington

<http://dx.doi.org/10.3133/sir20155074>

WDNR Puget Sound Eelgrass Monitoring Data Viewer:

<https://www.dnr.wa.gov/programs-and-services/aquatics/aquatic-science/puget-sound-eelgrass-monitoring-data-viewer>

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Puget Sound Nutrient Forum

Agenda

September 20, 2018 ~ 10:00 a.m. to 3:00 p.m.
Green River Community College, Auburn
Student Union Building 2nd Floor, Pine/Noble/Willow

The Department of Ecology is hosting this Nutrient Forum meeting with the goal of beginning more in-depth discussions about the Salish Sea Model and how we will use it to test nutrient reduction scenarios.

To Participate:

This public meeting will be held at the Green River Community College campus in Auburn ([12401 SE 320th St, Auburn](https://www.google.com/maps/place/12401+SE+320th+St,+Auburn,+WA+98002/@47.30588,-122.45988,15z)), and will also be conducted as an interactive webinar (WebEx). Participants can attend in person or at a location of their choice using WebEx. **Please RSVP online** to let us know how you will be attending (<https://www.surveymonkey.com/r/RMDYP25>). To participate by WebEx, you must [register](#) prior to the meeting.

Agenda

Note: Times may vary according to questions and discussion during topic presentations.

10:00 a.m.	Introductions & Welcome (Susan Braley)
10:10 a.m.	Recap of Science Forums and how modeling is used in this project (Dustin Bilhimer) <ul style="list-style-type: none"> Highlights from what we heard about science in Puget Sound and a transition to more detailed discussion on Ecology's approach to using the Salish Sea Model Q&A
11:00 a.m.	The reference conditions: a detailed look (Teizeen Mohamedali) <ul style="list-style-type: none"> What is a reference condition? Our current approach to estimating reference conditions & limitations of estimates Ideas for improvement Q&A
12:00 p.m.	Break for Lunch
1:00 p.m.	Discussion from information presented in the morning presentations (Susan Braley) <ul style="list-style-type: none"> Q&A
1:45 p.m.	Model updates and bounding scenarios (Anise Ahmed) <ul style="list-style-type: none"> Overview of the modeling system and recent updates; model performance How does the model evaluate the DO water quality standard? Bounding scenario model inputs and next steps Q&A
2:45 p.m.	Next Steps (Susan Braley) <ul style="list-style-type: none"> Ecology's Bounding Scenario Report shared with Forum participants The next meeting (date TBD) will focus on the results from the Bounding Scenario report
3:00 p.m.	Adjourn

Additional Resources

Agency Contacts

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Facilitation of Nutrient Forum

Susan Braley, Water Quality Program

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More Information

Puget Sound Nutrient Source Reduction Project Webpage:

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

Nitrogen in Puget Sound Story Map:

www.bit.ly/nitrogenstorymap

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Puget Sound Nutrient Forum

Agenda

February 6, 2019 ~ 10:00 a.m. to 3:00 p.m.

Red Lion Hotel, SeaTac (Seattle Room)

The Department of Ecology is hosting this Nutrient Forum meeting to discuss the results of the bounding scenarios conducted with the Salish Sea Model and to discuss Ecology's response to the recent AKART petition.

To Participate:

This public meeting will be held at the Red Lion Hotel Seattle Airport SeaTac ([18220 International Blvd, Seattle WA](#)), and conducted as an interactive webinar (WebEx). Participants can attend in person or by using WebEx. [Please RSVP online](#) to let us know how you will be attending. To participate by WebEx, you must [register](#) prior to the meeting.

Agenda

Note: Times may vary according to questions and discussion during topic presentations.

10:00 a.m.	Welcome (Susan Braley) <ul style="list-style-type: none">Opening remarks from Heather Bartlett, Ecology Water Quality Program Manager
10:15 a.m.	Using Bounding Scenarios to Understand Nutrient Inputs in Puget Sound (Anise Ahmed) <ul style="list-style-type: none">Recap of the Salish Sea Model: What is it? What inputs were used?Existing conditions in 2006, 2008, 2014.Impacts of varying biological nitrogen removal (BNR) sources.Predicted improvement scenarios.
11:30 a.m.	Salish Sea Model Result Web Map Overview (Sheelagh McCarthy) <ul style="list-style-type: none">Introduction to ArcGIS online mapping tool to communicate Salish Sea modeling and recent bounding scenario results.
12:00 p.m.	Break for Lunch (<i>lunch will not be provided</i>)
1:00 p.m.	Ecology Response to AKART Petition (Ellie Ott) <ul style="list-style-type: none">Original petition from NWEAEcology response letter
2:15 p.m.	Questions & Discussion
2:45 p.m.	Next steps (Susan Braley) <ul style="list-style-type: none">Upcoming meetings in 2019.
3:00 p.m.	Adjourn

Additional Resources

Agency Contacts

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2019 Forum Schedule

- | | |
|---|--|
| <input type="checkbox"/> Feb 6, Bounding Scenarios | <input type="checkbox"/> June 4, Puget Sound Implementation Examples |
| <input type="checkbox"/> March 6, Nutrient Management in Other States | <input type="checkbox"/> July 17, Marine Water Quality Update |
| <input type="checkbox"/> April 30, Optimization Scenarios | <input type="checkbox"/> Aug 7, Costs and Creative Solutions |

More Information

Puget Sound Nutrient Source Reduction Project Webpage:

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

Bounding Scenario Report:

<https://fortress.wa.gov/ecy/publications/SummaryPages/1903001.html>

Nitrogen in Puget Sound Story Map:

www.bit.ly/nitrogenstorymap

Join our Nutrient Project Listserv

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Puget Sound Nutrient Forum

Agenda

March 6, 2019 ~ 10:00 a.m. to 3:00 p.m.

Lacey Community Center

The Department of Ecology is hosting this Nutrient Forum meeting to learn and discuss how other coastal estuaries manage nutrients. We will hear from three guest speakers from the Long Island Sound, Chesapeake Bay, and San Francisco Bay on their agencies' nutrient management plans.

To Participate:

This public meeting will be held at the Lacey Community Center ([6729 Pacific Ave SE, Olympia](#)) and conducted as an interactive webinar (WebEx). Participants can attend in person or by using WebEx. [Please RSVP online](#) to let us know how you will be attending. To participate by WebEx, you must [register](#) prior to the meeting.

Agenda

Note: Times may vary according to questions and discussion during topic presentations.

10:00 a.m.	Welcome <ul style="list-style-type: none"> Recap of Puget Sound Nutrient Source Reduction Project
10:15 a.m.	Nutrient Management in Long Island Sound <ul style="list-style-type: none"> Guest speaker, Rowland Denny is a Supervising Environmental Analyst for the Water Planning and Management Division at the Connecticut Department of Energy and Environmental Protection. He will present on the Long Island Sound TMDL and permitting process and their state-managed nitrogen trading program.
11:05 a.m.	Nutrient Management in Chesapeake Bay <ul style="list-style-type: none"> Guest speaker, Allan Brockenbrough II, is the Manager of VPDES Permits at the Virginia Department of Environmental Quality. He will present on nutrient management in the Chesapeake Bay, how they work with point vs. non-point sources of nutrients, and their water quality trading program.
12:00 p.m.	Break for Lunch (<i>lunch will not be provided</i>)
1:00 p.m.	Nutrient Management in San Francisco Bay <ul style="list-style-type: none"> Guest speaker, David Senn PhD, is the Co-Director of the Clean Water Program at the San Francisco Estuary Institute and Lead Scientist for the Bay Area Nutrient Management Program. He will present on nutrient management in the San Francisco Bay, nutrient monitoring, and preparing for future scenarios and population growth.
1:50 p.m.	Questions & Panel Discussion (Speakers and Ecology staff) <ul style="list-style-type: none"> We will hold this time for questions for our speakers and to discuss how other state's strategies may apply to the Puget Sound Nutrient Source Reduction Project.
2:50 p.m.	Next steps <ul style="list-style-type: none"> Upcoming meetings in 2019.
3:00 p.m.	Adjourn

Additional Resources

Learn about nutrient management in other regions

[Long Island Sound TMDL FAQs](#)

[Chesapeake Bay TMDL FAQs](#)

[Nutrient Management in San Francisco Bay](#)

[San Francisco Bay Nutrient Management Science Program](#)

Agency Contacts

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2019 Forum Schedule

- | | |
|---|--|
| <input checked="" type="checkbox"/> Feb 6, Bounding Scenarios | <input type="checkbox"/> June 4, Puget Sound Implementation Examples |
| <input type="checkbox"/> March 6, Nutrient Management in Other States | <input type="checkbox"/> July 17, Marine Water Quality Update |
| <input type="checkbox"/> April 30, Optimization Scenarios | <input type="checkbox"/> Aug 7, Costs and Creative Solutions |

More Information

[Puget Sound Nutrient Source Reduction Project Webpage](#)

[Bounding Scenario Report](#)

[Salish Sea Model Webmap](#)

[Nitrogen in Puget Sound Story Map](#)

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Puget Sound Nutrient Forum

Agenda

April 30, 2019 ~ 10:00 a.m. to 3:00 p.m.

Ecology Headquarters, Lacey

The Department of Ecology is hosting this Nutrient Forum meeting to discuss the optimization scenarios to be tested by the Salish Sea Model in the next year. We will present our draft optimization scenarios, explain the modeling schedule moving forward, and we look forward to feedback from the Forum.

To Participate:

This public meeting will be held at the Ecology Headquarters Office (300 Desmond Dr. SE, Lacey). Due to the interactive nature of this meeting, there will be no webinar option. [Please RSVP online](#) to let us know how you will be attending.

Agenda

Note: Times may vary according to questions and discussion during topic presentations.

10:00 a.m.	Welcome & Introductions (Gretchen Muller, Cascadia Consulting) <ul style="list-style-type: none"> Overview of Forum and purpose of today's meeting Puget Sound Nutrient Source Reduction Project schedule Explain format for today's breakout groups
10:30 a.m.	Draft Model Scenarios Presentation <ul style="list-style-type: none"> Introduction to draft scenarios for Year 1 modeling Description of scenario questions and objectives Q&A
11:00 a.m.	Facilitated Breakout Discussion Groups: Model Scenarios 1 & 2 Attendees will be assigned to discussion groups. <ul style="list-style-type: none"> Scenario 1: Watershed source reductions by basin Scenario 2: Marine point source reductions by basin
12:15 p.m.	Break for Lunch (<i>lunch will not be provided</i>)
1:00 p.m.	Facilitated Breakout Discussion Groups Continued: Model Scenario 3 <ul style="list-style-type: none"> Scenario 3: Annual vs. Seasonal nutrient load reductions
1:30 p.m.	Group Activity: Fish Bowl Style Discussion on Scenarios 4 & 5 This discussion activity will be with the whole group. <ul style="list-style-type: none"> Scenario 4: Future population growth and climate change Scenario 5: Everybody, everywhere
2:45 p.m.	Wrap-up and Adjourn (Dustin Bilhimer) <ul style="list-style-type: none"> Overview of how we will incorporate Forum feedback on draft scenarios and future communications to the Forum on modeling decisions. Upcoming meetings in 2019.
3:00 p.m.	Adjourn

Additional Resources

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Puget Sound Nutrient Forum Coordinator

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2019 Forum Schedule

- | | |
|--|--|
| <input checked="" type="checkbox"/> Feb 6, Bounding Scenarios | <input type="checkbox"/> June 4, Puget Sound Implementation Examples |
| <input checked="" type="checkbox"/> March 6, Nutrient Management in Other States | <input type="checkbox"/> July 17, Marine Water Quality Update |
| <input type="checkbox"/> April 30, Optimization Scenarios | <input type="checkbox"/> Aug 7, Costs and Creative Solutions |

More Information

[Puget Sound Nutrient Source Reduction Project Webpage](#)

[Bounding Scenario Report](#)

[Salish Sea Model Webmap](#)

[Nitrogen in Puget Sound Story Map](#)

Join our Nutrient Project Listserv

[Sign up here](#) to receive email notices about the Forum and the nutrient project in Puget Sound. You can also access materials from our previous Forum meetings on our [Puget Sound Nutrient Forum webpage](#).



Puget Sound Nutrient Forum

Agenda

June 4, 2019 ~ 10:00 a.m. to 3:00 p.m.

Pierce County Environmental Services Building

The Department of Ecology is hosting this Nutrient Forum meeting to learn about successful nutrient management projects and programs in the Puget Sound region. Speakers will present on their program successes, lessons learned, and answer questions.

To Participate: This public meeting will be held at the Pierce County Environmental Services Building ([9850 64th St. W, University Place](#)) and conducted as an interactive webinar (WebEx). Participants can attend in person or by using WebEx. [Please RSVP online](#) to let us know how you will be attending. To participate by WebEx, you must [register](#) prior to the meeting.

Agenda

Note: Times may vary according to questions and discussion during topic presentations.

10:00 a.m.	Welcome <ul style="list-style-type: none"> Recap of Puget Sound Nutrient Source Reduction Project
10:15 a.m.	Pierce County Wastewater Treatment, Chambers Creek (Cassandra Moore, Patrick Kongslie, Amanda Summers) <ul style="list-style-type: none"> Overview of the Pierce County Sewer System Recent expansion of the Chambers Creek Regional Wastewater Treatment Plant Current Biological Nutrient Reduction Study Upcoming planning efforts
11:00 a.m.	Governor's Salmon Recovery Office (Keith Dublanica) <ul style="list-style-type: none"> Connecting salmon recovery efforts to nutrient attenuation Overview of nutrient-related salmon recovery projects
11:30 a.m.	Snohomish Conservation District (Eric Schuh) <ul style="list-style-type: none"> Small farm projects to reduce nutrients Working with dairy farms Community conservation projects
12:00 p.m.	Break for Lunch (<i>lunch will not be provided</i>).
1:00 p.m.	LOTT Wastewater Treatment Plant (Lisa Dennis-Perez) <ul style="list-style-type: none"> How and why LOTT started nutrient reduction Future planning Process of nutrient removal
1:45pm	Nooksack-Fraser Transboundary Nitrogen Project (David Hooper, Jana Compton, JiaJia Lin) <ul style="list-style-type: none"> Overview of NFTN project Nutrient Sensor Action Challenge Nitrogen budget- results and long term goals

2:30 p.m.	Next steps <ul style="list-style-type: none"> • Next meeting: Webex on July 17, 2019 • August 7, 2019: Costs and Creative Solutions
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Additional Resources

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Puget Sound Nutrient Forum Coordinator

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2019 Forum Schedule

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|--|--|
| <input checked="" type="checkbox"/> Feb 6, Bounding Scenarios | <input type="checkbox"/> July 17, Webex: Update on Salish Sea Modeling Scenarios |
| <input checked="" type="checkbox"/> March 6, Nutrient Management in Other States | |
| <input checked="" type="checkbox"/> April 30, Optimization Scenarios | <input type="checkbox"/> Aug 7, Costs and Creative Solutions |
| <input type="checkbox"/> June 4, Puget Sound Implementation Examples | |

More Information

[Puget Sound Nutrient Source Reduction Project Webpage](#)

[Bounding Scenario Report](#)

[Salish Sea Model Webmap](#)

[Nitrogen in Puget Sound Story Map](#)

Join our Nutrient Project Listserv

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Puget Sound Nutrient Forum

Agenda

July 17, 2019 ~ 10:00 a.m. to 12:00 p.m.

[Webex Link](#)

The Department of Ecology is hosting this Nutrient Forum meeting to give an update on the Salish Sea modeling scenarios and modeling schedule for 2019-2020. This Forum is a follow-up to our April 30 Forum where we presented draft scenarios and gathered feedback. This Forum will be Webex only.

To Participate: To participate by Webex, you must [register](#) prior to the meeting.

Agenda

Note: Times may vary according to questions and discussion during topic presentations.

10:00 a.m.	Welcome <ul style="list-style-type: none">Recap of Puget Sound Nutrient Source Reduction Project
10:15 a.m.	Overview of Feedback from April 30 Forum <ul style="list-style-type: none">What we heard from the ForumSteering Committee review process
10:30 a.m.	Finalized Modeling Scenarios for 2019-2020 <ul style="list-style-type: none">Proposed changes to scenarios: Yes/No explanationScenarios 1-5Modeling ScheduleParking Lot
10:50 a.m.	Questions? <ul style="list-style-type: none">Please type in your questions to the Webex chat box
11:15 a.m.	Next steps <ul style="list-style-type: none">August 7 Forum: Costs and Creative Solutions

Additional Resources

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2019 Forum Schedule

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|--|---|
| <input checked="" type="checkbox"/> Feb 6, Bounding Scenarios | <input checked="" type="checkbox"/> June 4, Puget Sound Implementation Examples |
| <input checked="" type="checkbox"/> March 6, Nutrient Management in Other States | <input type="checkbox"/> July 17, Update on Salish Sea Modeling Scenarios |
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More Information

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[Bounding Scenario Report](#)

[Salish Sea Model Webmap](#)

[Nitrogen in Puget Sound Story Map](#)

Join our Nutrient Project Listserv

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Puget Sound Nutrient Forum Agenda

August 7, 2019 ~ 10:00 a.m. to 3:00 p.m.

Green River College, River Room

Auburn, WA

The Department of Ecology is hosting this Nutrient Forum meeting to discuss costs, creative solutions, and funding opportunities for nutrient management in Puget Sound. We will also continue our discussion on nutrient controls at wastewater treatment plants and different permitting approaches.

To Participate: This public meeting will be held at the Green River College in the River Room ([12401 SE 320th St. Auburn](#)) and conducted as an interactive webinar (Webex). Participants can attend in person or by using Webex.

- If you plan to attend in person, [please RSVP online](#).
- If you plan to participate via webinar, [please follow this link to register prior to the meeting](#).

Agenda

Note: Times may vary according to questions and discussion during topic presentations.

10:00 a.m.	Welcome (Heather Bartlett, Water Quality Program Manager, Ecology) <ul style="list-style-type: none"> • Recap of Puget Sound Nutrient Source Reduction Project
10:15 a.m.	Understanding the value of marine water quality (Emilie Franke, Northern Economics) <ul style="list-style-type: none"> • Environmental value of Puget Sound and what we are trying to protect • Viewing nutrient reduction through an economics lens
10:45 a.m.	Washington State's Nonpoint Program (Ben Rau, Ecology) <ul style="list-style-type: none"> • Overview of existing programs that can address nonpoint sources of nutrient pollution. • Puget Sound Nutrient Reduction Project and nonpoint pollution.
11:15 a.m.	Nutrient management in watersheds: technology solutions and successful partnerships <ul style="list-style-type: none"> • Research and funding, farm digesters, renewable gas opportunities (Peter Moulton, Department of Commerce) • Nutrient recovery technology for dairies (Craig Frear, PhD, Regenix) • Tulalip tribe anerobic digester case study (Daryl Williams, Tulalip Tribe) • Q&A panel
12:15 p.m.	Break for Lunch (<i>lunch will not be provided</i>)
12:45 p.m.	Nutrient management funding opportunities (Shelly McMurphy, Seth Elsen, Ecology) <ul style="list-style-type: none"> • State and Federal funding opportunities • On site septic system loan and grant program
1:15 p.m.	Nutrient controls for point sources and permitting approaches (Rachel McCrea, Ecology) <ul style="list-style-type: none"> • Nutrient controls at wastewater treatment plants (WWTPs) • Permitting options for point sources
2:50 p.m.	Next steps <ul style="list-style-type: none"> • Next meeting: TBD, Late 2019, Marine Water Quality Implementation Strategy Update

Additional Resources

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2019 Forum Schedule

- | | |
|--|---|
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| <input checked="" type="checkbox"/> June 4, Puget Sound Implementation Examples | <input type="checkbox"/> TBD, late 2019 Marine Water Quality Implementation Strategy Update |

More Information

[Puget Sound Nutrient Source Reduction Project Webpage](#)

[Bounding Scenario Report](#)

[Salish Sea Model Webmap](#)

[Nitrogen in Puget Sound Story Map](#)

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Puget Sound Nutrient Forum Agenda

Looking Ahead to 2020

December 19, 2019 1:30-3:00pm

[Register here for the Webex](#)



Ecology is hosting a Nutrient Forum Webinar *Looking Ahead to 2020* to discuss what we heard in the public comment for the Nutrients General Permit, next steps for nutrient permitting, and our plans for the Nutrient Forum and the Puget Sound Nutrient Reduction Project in 2020.

Agenda

1:30 pm	Welcome & science recap (Dustin Bilhimer) <ul style="list-style-type: none">Science behind why nutrients are a problem in Puget Sound
1:40 pm	Nutrient Forum year in review (Kelly Ferron) <ul style="list-style-type: none">Overview of the Nutrient Forum work done in 2019
1:50 pm	Clarification around nutrient permitting (Heather Bartlett) <ul style="list-style-type: none">Ecology will be including nutrient controls in permitting
2:00 pm	Overview of what we heard in public comment process (Maia Hoffman) <ul style="list-style-type: none">Summary of what we heard in preliminary determination public comments and who we heard from
2:20 pm	Next steps (Rachel McCrea, Dustin Bilhimer) <ul style="list-style-type: none">Next steps for permitting (Rachel)How we will address comments on modeling, watershed inputs, PSNRP, future Forum topics (Dustin)
2:40 pm	Q & A <ul style="list-style-type: none">Please type any questions you have into the Webex chat box.
2:50 pm	Meeting wrap-up (Dustin Bilhimer) <ul style="list-style-type: none">Jan 30, 2020: next in-person Forum meeting

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More information:

Sign up for the [Puget Sound Nutrients Listserv](#) to receive emails about the Nutrient Forum and project in Puget Sound.

Resources:

[Puget Sound Nutrient Source Reduction Project webpage](#)

[Previous Forum Meeting Materials & Schedule](#)

[Ecology's Salish Sea Model Publications](#)

[Salish Sea Model Webmap](#)

Puget Sound Nutrient Forum Agenda

Ecology's Decision on Nutrient Control Permits

January 30, 2020 10:00am-3:00pm

Green River College, Cascade Hall

[Register here for the Webex](#)



10:00am (15 min)	Welcome & Puget Sound Nutrient Reduction Project recap (Dustin Bilhimer) <ul style="list-style-type: none">Overview of Puget Sound Nutrient Reduction Project and today's Forum
10:15am (30 min)	Ecology's decision on WWTP nutrient controls (Rachel McCrea) <ul style="list-style-type: none">Current status of permitting actions: how we got to this pointNext steps for permitting actionsOverview of Governor's budget request regarding PS nutrients
10:45 (30 min)	Questions and answers
11:15am (30 min)	Stakeholder engagement process (Rachel McCrea, others) <ul style="list-style-type: none">Summary of stakeholder engagement efforts regarding PSNSRP: Forum, Puget Sound Partnership, Salish Sea Model, WWTP permittingNutrients permit stakeholder advisory committee proposal: goals, timeline, frameworkPurpose and instructions for break-out group exercise
11:45am (45 min)	Break out group discussions on stakeholder advisory groups <ul style="list-style-type: none">Your facilitator will ask questions to gather feedback on stakeholder engagementWe will distribute worksheet for those on webinar
12:30pm (1 hour)	Lunch break: there is an on-site cafeteria at Green River
1:30pm (15 min)	Report back to Forum (Kelly Ferron) <ul style="list-style-type: none">Each group's facilitator will report 2-3 ideas from their group discussion
1:45pm (15 min)	Permitting process moving forward (Rachel McCrea) <ul style="list-style-type: none">How to stay involved and where to get informationWhat we're doing with collected feedback and timeline moving forward
2:00pm (15 min)	Watershed sources of excess nutrients (Dustin Bilhimer) <ul style="list-style-type: none">How we are and will be addressing watershed sources in Puget Sound nutrient management plan
2:15pm (30 min)	Question and answers
2:45pm (5-10 min)	Meeting wrap-up <ul style="list-style-type: none">Upcoming Forum dates and topics

Agency Contacts

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NW Regional Office Water Quality Section Manager

Rachel McCrea
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More information:

Sign up for the [Puget Sound Nutrients Listserv](#) to receive emails about the Nutrient Forum.

Sign up for the [Nutrients Permit listserv](#) to receive emails about the Puget Sound Nutrients General Permit for WWTPs and relevant individual WWTP permits available for public comment.

Resources:

[Puget Sound Nutrient Source Reduction Project webpage](#)

[Previous Forum Meeting Materials & Schedule](#)

[Ecology's Salish Sea Model Publications](#)

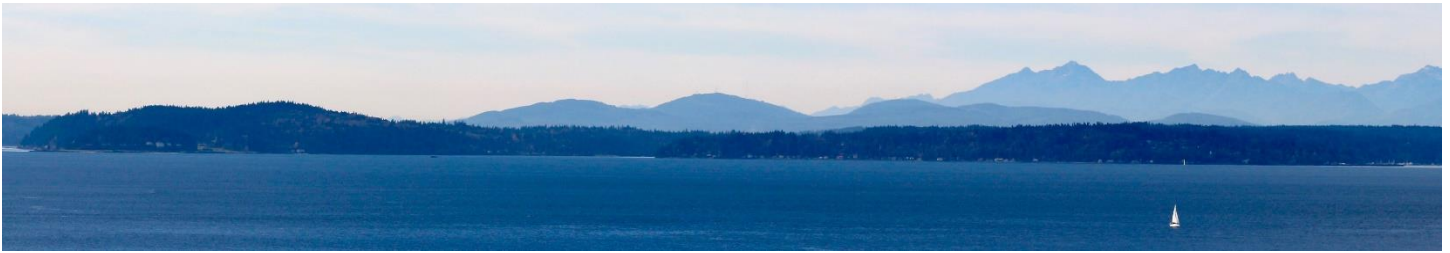
[Salish Sea Model Webmap](#)

[Summary of preliminary determination public comment](#)

Puget Sound Nutrient Management Plan Outline

Water Quality Program

May 2020



The Puget Sound Nutrient Management Plan is a comprehensive plan for addressing human nutrient sources to Puget Sound. This Plan is part of the [Puget Sound Nutrient Source Reduction Project](#). The goal of this plan is to meet the marine water quality standards for dissolved oxygen (DO) in Puget Sound.

This document is a draft outline for the Nutrient Management Plan and is intended as a preview of what will be included in the draft plan. As the document is developed, we may update this outline document with new section titles, new information, or re-ordered sections. We will release the draft plan in 2022 and it will be open for public comment.

The final Nutrient Management Plan will detail nutrient reduction targets for human nutrients sources, establish nutrient load allocations for marine and watershed sources, and the actions necessary to achieve the targets. It will also include an adaptive management plan to track effectiveness.

Contact Info:

If you have questions, please contact the Puget Sound Nutrient Source Reduction Project manager, Dustin Bilhimer, at dustin.bilhimer@ecy.wa.gov.

Executive Summary

1. Introduction

- 1.1. History and context of Puget Sound dissolved oxygen (DO) Studies
- 1.2. Why is nutrient management important?
 - 1.2.1. What's wrong with excess nutrients?
 - 1.2.2. Connecting excess nutrients to DO and impacts of low DO on aquatic species
 - 1.2.3. Emerging science to understand relationship between excess nutrients and other eutrophication indicators
 - 1.2.4. Other physical and geochemical factors that affect marine water response to anthropogenic nutrients
 - 1.2.5. Sensitive marine areas of biological, tribal, social, and economic importance

2. Scope of the Problem-Where we are seeing impairments and geographic area for the Plan

- 2.1. Define project area: Washington's marine waters of the Puget Sound and Hood Canal, the Greater Puget Sound, and the Straits of Georgia and Juan de Fuca
- 2.2. Monitoring data that informs our understanding of the problem
 - 2.2.1. Areas in Puget Sound that do not meet DO water quality criteria
 - 2.2.2. Puget Sound water quality trends including: Marine Water Condition Index, Eyes Over Puget Sound results, Ecology's long-term marine water and benthic monitoring, etc.
 - 2.2.3. Freshwater monitoring and nutrient trends
- 2.3. What modeling data tells us about the problem
 - 2.3.1. Summarize Ecology's Salish Sea Model Reports and other relevant reports
- 2.4. Human nutrient sources

3. Water Quality Standards and Clean Water Act (CWA)

- 3.1. CWA and WA State Water Pollution Control Act Authority
- 3.2. Water Quality Standards, marine DO criteria (Part A and B) and designated uses
- 3.3. Ecology's National Pollution Discharge Elimination System (NPDES) regulatory authority over point sources
- 3.4. Ecology's rules, policies, and programs to address nonpoint source pollution
- 3.5. Connection to DO work in Budd Inlet

4. Nutrient Forum stakeholder engagement and collaboration

- 4.1. Summarize Puget Sound Nutrient Source Reduction Project (PSNSRP) engagement, participants, and key outcomes
- 4.2. Nutrient Forum web resources

5. Salish Sea Model

- 5.1. How the model and analysis was used to develop the loading capacity and load reduction targets
 - 5.1.1. Model assumptions used to develop marine and watershed source allocations
- 5.2. Methods used to determine when dissolved oxygen water quality criteria objectives are met
- 5.3. Baseline assumptions (Reference Condition) used for determining nutrient load capacity and allocations
- 5.4. Comparison with other coastal nutrient management approaches for modeling

6. Nutrient Load Reduction Targets for Marine & Watershed Human Sources

- 6.1. Total nutrient load reduction needed to meet water quality criteria
- 6.2. Marine point source wasteload allocations
- 6.3. Watershed sources load allocations
- 6.4. Seasonal and annual variation and critical conditions
- 6.5. Margin of safety and allocation for growth

- 7. Marine Source NPDES Nutrient Control Strategy-** *the structure and content of this section is dependent on the outcome of the Nutrients General Permit (NGP) development process*
 - 7.1. The importance of marine source nutrient reductions and definition of marine sources
 - 7.2. Wastewater Puget Sound Nutrients General Permit
 - 7.2.1. Stakeholder Advisory Committee engagement summary
 - 7.2.2. NGP and the pathway from Individual Permit to the NGP
 - 7.2.3. How Water Quality Based Effluent Limits will be derived from the nutrient load reduction targets and incorporated into the NGP
 - 7.3. Water Quality Trading discussion
 - 7.4. Reclaimed water as a possible implementation strategy for individual wastewater treatment facilities
- 8. Watershed Source Nutrient Control Strategy**
 - 8.1. Importance of watershed source reductions
 - 8.1.1. Understanding role of nitrogen, phosphorus, carbon, and suspended sediments in watersheds
 - 8.1.2. Human nutrient sources and natural sources in watersheds
 - 8.1.3. The role of groundwater and local nitrate vulnerability
 - 8.1.4. Land use distribution summary and trends over the last several decades
 - 8.1.5. Existing water cleanup plans (TMDLs or other WQ improvement plans) that include nutrient reduction
 - 8.2. Long-term strategy for watersheds
 - 8.2.1. Describe need for allocating nutrient loads among sources within Puget Sound watersheds
 - 8.2.2. Watershed modeling to understand human sources in watersheds and evaluate potential nutrient reduction actions to meet watershed load allocations
 - 8.3. Near-term strategy for human sources of nutrients in Puget Sound watersheds
 - 8.3.1. Priority watersheds- *ranked by watershed load allocation values*
 - 8.3.2. Point sources of nutrients in watersheds
 - 8.3.2.1. Municipal Wastewater and Stormwater
 - 8.3.2.2. Other point sources
 - 8.3.3. Nonpoint sources in watersheds
 - 8.3.3.1. State Clean Water Act Nonpoint Program
 - 8.3.3.2. Agricultural operations (crop and animal)
 - 8.3.3.3. Forestry
 - 8.3.3.4. Urban/rural homeowners
 - 8.3.4. Restoration of natural nitrogen attenuation functions
 - 8.3.5. Implementing Organizations/Partners
 - 8.4. Recovered nutrients are a resource
 - 8.4.1. What happens with the nutrients we don't discharge to Puget Sound?
 - 8.4.2. What is the value and benefits of nutrient recovery and reuse?
 - 8.4.3. Ecology's rules for solids handling and disposition that protect water quality and public health
 - 8.4.3.1. Municipal biosolids permit program
 - 8.4.4. Agricultural manure
- 9. Tracking Implementation Progress and Accountability**
 - 9.1. Tracking implementation activities and measuring progress
 - 9.2. Reporting progress
 - 9.3. Accountability for point source actions in NPDES permits; nonpoint source (NPS) reductions; watershed actions
- 10. Monitoring Marine WQ Improvement and Adaptive Management**
 - 10.1. Current Programs tracking changes in marine dissolved oxygen and other eutrophication indicators

10.1.1. Ecology, UW, King County, Puget Sound Ecosystem Monitoring Program (PSEMP), Department of Natural Resources (DNR), Stormwater Action Monitoring (SAM), et al)

10.2. Fresh water quality monitoring

10.3. Data gaps, and recommendations for additional monitoring

10.4. Adaptive management framework

11. Implementation Schedule and Milestones

11.1. Nutrient General Permit timeline and milestones

11.2. Milestones for watershed reductions

12. Implementation Costs and Funding Needs

12.1. Estimated funding needs for point and nonpoint implementation activities

12.2. State and Federal grant and loan programs for point source improvements

12.3. Funding opportunities for nonpoint source activities

12.3.1. Ecology's Water Quality Integrated Financial Assistance Program

12.3.2. Other state and local funding opportunities

13. Environmental Justice Requirements and Considerations

14. Outreach to encourage implementation

14.1. Human behavior changes and community based social marketing

14.2. Communication resources for watershed nonpoint outreach

14.3. Communication resources for point sources

15. References

16. Appendices

Appendix A: Public participation (more detailed information than what is included in Chapter 4.

Appendix B: Public comments and response to comments

Appendix C: Glossary and Acronyms

Appendix D: Links to Salish Sea Model publications and resources

Appendix E: List of relevant TMDLs or other plans referred to in body of document

Appendix F: Marine Water Quality Implementation Strategy- summary and links to materials

- Conceptual Models and Results Chains
- Priority recommendations for the Action Agenda
- Identifying Benefits and Costs of Marine Water Quality Improvements
- Human Dimensions of Marine Water Quality Improvements

Appendix G: EPA's 9 key elements (NKE), found in [EPA's Handbook for Develop Watershed Plans](#)

- Source identification
- Load reduction estimates
- List implementation activities
- Identify implementation partners
- Communication strategy
- Implementation schedule
- Interim measurable milestones
- Criteria to measure success
- Effectiveness monitoring design

Puget Sound Nutrient Forum Agenda

Puget Sound Nutrient Source Reduction Project (PSNSRP) Update

August 11, 2020 10:30am-11:45am

[Register here](#) to attend the meeting via Webex.



10:30am (5 min)	Welcome & Agenda (Kelly Ferron, Ecology)
10:35am (10 minutes)	Nutrient Reduction Feedback (Dustin Bilhimer, Ecology) <ul style="list-style-type: none">• Overview of how we will incorporate your feedback into the Nutrient Management Plan outline
10:45am (10 minutes)	Salish Sea Modeling (Dustin Bilhimer, Ecology) <ul style="list-style-type: none">• New modeling schedule for 2020-2021
10:55am (10 minutes)	Salish Sea Modeling Center (Tarang Khangaonkar, PNNL/UW PSI) <ul style="list-style-type: none">• Update on the Salish Sea Model move to UW PSI
11:05am (5 minutes)	Nutrient Science Workshop Update (Scott Redman, Puget Sound Partnership) <ul style="list-style-type: none">• Report out from the July 23 scientist workshop
11:10am (10 minutes)	Nutrients General Permit Update (Eleanor Ott, Ecology) <ul style="list-style-type: none">• Latest update on permit advisory committee and general permit timeline
11:20am (5 minutes)	Upcoming Forum meetings (Kelly Ferron, Ecology) <ul style="list-style-type: none">• What's coming this Fall
11:25am (20 minutes)	Question and answers

Agency Contacts

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More information:

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Puget Sound Nutrient Forum Agenda

Nutrient General Permit Advisory Committee Report-Out & Emerging Nutrient Technologies at Wastewater Treatment Plants

November 3, 2020 9:30am-12:00pm



[Register here](#) to attend the meeting via Webex.

9:30am (5 min)	Welcome & Nutrient Forum Overview (Kelly Ferron and Melissa Gildersleeve, Ecology)
9:35am (5 min)	Nutrients General Permit (NGP) Advisory Committee Process (Rian Sallee, Ecology)
9:40am (20 min)	NGP Advisory Committee Recommendations to Ecology (Advisory Committee Members) <ul style="list-style-type: none">Committee presenters: Rebecca Singer (Chair, Utilities Caucus), Mindy Roberts (Environmental Caucus), Valerie Smith (State Caucus), Jenny Wu (Federal Caucus)
10:00am (5 min)	Next Steps in General Permit Process (Eleanor Ott, Ecology)
10:05am (25 min)	Questions & Answers
10:30am (1 hour)	Emerging Nutrient Technologies at Wastewater Treatment Plants <ul style="list-style-type: none">Speakers: Tom Coleman (R2H), Dave Stensel (UW), April Gu (Cornell University)
11:35am (20 min)	Questions & Answers
11:55am (5 min)	Next Steps in Puget Sound Nutrient Reduction Project (Dustin Bilhimer, Ecology)

Agency Contacts

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More information:

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Puget Sound Nutrient Forum Agenda



Refresher course: Clean Water Act, regulatory models, and using the Salish Sea model to manage nutrients

March 9, 2021 1:00pm-3:00pm

[Register here to attend](#) the meeting via Webex.

1:00pm (10 min)	Introduction (Dustin Bilhimer, Ecology)
1:10pm (20 min)	Clean Water Act, regulatory models (Ben Cope, EPA) <ul style="list-style-type: none">Using the Salish Sea Model to make Clean Water Act decisions
1:30pm (30 min)	How we use the Salish Sea Model (Anise Ahmed, Ecology) <ul style="list-style-type: none">Salish Sea Model refresher course
2:00pm (30 min)	Questions & Answers
2:30pm (20 min)	Using the Salish Sea Model to calculate meeting standards (Dustin Bilhimer, Ecology) <ul style="list-style-type: none">Review how we use Salish Sea Model to evaluate human impactsCalculating whether water quality standards are being metQ&A
2:50pm (10 min)	What's coming down the pipeline (Ecology Team) <ul style="list-style-type: none">Nutrient General Permit update (Kelly Ferron)Fee Rule update (David Giglio)Nutrient Grant update (Jeff Nejedly)Future Forum meetings (Kelly Ferron)
3:00pm	Closing

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Puget Sound Nutrient Forum Agenda

Next phase of Salish Sea modeling: Proposed Year 2

Optimization Scenarios

February 23, 2022 1:30pm-3:30pm

[Register here](#) to attend the meeting via Webex.



You may view a [meeting packet](#) that describes our proposed list of Year 2 Optimization Scenarios, which is also posted on the [Nutrient Forum webpage](#). Participants are encouraged to review it ahead of time if possible.

1:30pm	Puget Sound Nutrient Reduction Project Overview (Kelly Ferron)
1:40pm	Brief recap of latest Salish Sea modeling results (Kelly Ferron) <ul style="list-style-type: none">Highlights of results in Optimization Scenario Tech Memo
1:50pm	Modeling objectives & high-level walkthrough of Salish Sea modeling scenarios (Dustin Bilhimer) <ul style="list-style-type: none">How we designed and will use next set of modeling scenariosWWTP Load Reduction FrameworksWatershed Load Reduction FrameworksProposed draft scenariosFeedback we're looking for from Forum
2:30pm	Q & A
~short break~ We will reconvene to go deeper into some of the modeling assumptions for those Forum members that want to go in more depth.	
3:00pm	Technical deep dive into modeling scenarios (Dustin Bilhimer) <ul style="list-style-type: none">A short presentation on the tables that were included in the meeting packet to discuss and answer detailed questions about the proposed scenarios.
3:30pm	Adjourn

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Puget Sound Nutrient Forum Agenda

Watershed Nutrient Monitoring and Modeling

December 7, 2022 | 1:00pm-3:30pm



Register in advance for this webinar:

https://waecy-wa-gov.zoom.us/webinar/register/WN_BFNbWeD-RkuWFhUdJNBmvA

Presentation slides will be posted on the Nutrient Forum EZView after the meeting.

Schedule

1:00pm	Welcome and Introduction (Melissa Gildersleeve, ECY) <ul style="list-style-type: none">• Updates on related work (Melissa Gildersleeve, ECY)• Nutrient General Permit Update (Adrien Carroll-Perkins, ECY)
1:0pm	Watershed inflow TN targets and water clean-up actions (Dustin Bilhimer, ECY) <ul style="list-style-type: none">• Overview
1:20pm	Watershed Nitrogen Monitoring (Markus Von Prause and Daniel Dugger, ECY) <ul style="list-style-type: none">• New continuous nitrogen monitoring• Challenges and Benefits <i>15-minute Q & A</i>
2:20	~short break~
2:25pm	Seasonally Dynamic SPARROW: Spatially Referenced Regression on Watershed Attributes (Noah Schmadel, USGS Cristiana Figueroa-Kaminsky, ECY) <ul style="list-style-type: none">• Application of SPARROW in watersheds contributing to the Washington Waters of the Salish Sea <i>15-minute Q & A</i>
3:25pm	Next steps and Adjourn

Helpful Links

Puget Sound Nutrient Source Reduction Project Webpage

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

Salish Sea Model Year 1 Optimization Scenarios Results Webmap

<https://waecy.maps.arcgis.com/apps/webappviewer/index.html?id=c7318e19bf3141aca62e980a7e5b53f2>

USGS SPARROW Webpage

https://www.usgs.gov/mission-areas/water-resources/science/sparrow-mappers?qt-science_center_objects=0#overview

Puget Sound SPARROW Quality Assurance Project Plan

<https://apps.ecology.wa.gov/publications/SummaryPages/2203109.html>

Puget Sound Nutrient Forum Agenda

Puget Sound Nutrient General Permit- Recommended Trading Structure

July 25, 2023 9:00 a.m. -11:00 a.m.

[Register online](#) attend the meeting via Zoom.



You may view the [trading report](#) that was submitted to the Legislature in June 2023, which is also posted on the [Nutrient Forum webpage](#). Participants are encouraged to review it ahead of time if possible.

9:00-9:15am	Welcome and Introductions <ul style="list-style-type: none">• Puget Sound Nutrient Reduction Project Overview
9:15-9:30am	Updates: <ul style="list-style-type: none">• Modeling• New Staff• Puget Sound General Permit• Status of lawsuits
9:30-10:15am	Puget Sound Nutrient Credit Trading Recommendations for Program Implementation
10:15-10:45am	Q&A
10:45-11am	Next Steps/Adjourn

Puget Sound Nutrient Forum Agenda

Salish Sea Model Optimization Scenario Round 2 & other key project updates

March 27, 2025 9:30am – 12:30pm



[Register](#) for the Zoom meeting.

As part of each agenda item, we plan to answer questions.

9:30 – 9:40 am (10 mins)	Introduction (Kate Loy)
9:40 – 10:10 am (30 mins)	Puget Sound Nutrient General Permit Update (Vincent McGowan & Jeff Killelea)
10:10 – 10:30 am (20 mins)	Puget Sound Nutrient Reduction Plan update (Ben Rau)
10:30 – 10:35 am (5 min)	<i>Break</i>
10:35 am – 12:10 pm (95 min)	Salish Sea Model Optimization Scenarios Phase 2 Update (Cristiana Figueroa-Kaminsky, Teizeen Mohamedali, John Gala, Anise Ahmed) <ul style="list-style-type: none">• Optimization Scenarios Phase 2 Results• Salish Sea Model Updates
12:10 – 12:30 pm (20 min)	Closing (Kate Loy) <ul style="list-style-type: none">• Next steps• Additional Q/A time

Agency Contacts

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More information:

Review material provided in the [meeting packet](#).

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Puget Sound Nutrient Forum Agenda

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12:10 – 12:30 pm (20 min)	Closing (Kate Loy) <ul style="list-style-type: none">• Next steps• Additional Q/A time

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