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Section A. Summary Information

Background Information for the Toxics and Nutrient Strategy

The Environmental Protection Agency (EPA) awarded the National Estuary Program (NEP) Lead Organization Cooperative Agreement for Toxics and Nutrients Prevention, Reduction, and Control to the Washington Department of Ecology (Ecology) in February 2011. This was one of seven NEP Lead Organization Assistance Agreements that the EPA awarded to Management Conference partners to support Puget Sound recovery. An 'Overview of the Puget Sound National Estuary Program Management Conference and Funding Agreements under CWA Section 320' is provided in Appendix 3 and introduces the general role and relationship of these Lead Organizations. Ecology and EPA developed this amended work plan to be consistent with the National Estuary Program FFY 2012 Funding Guidance.

EPA allocated \$3.1 million for the Toxics and Nutrient grant in the first year, \$5.6 million in the second year, and \$3.5 million in the third year. EPA is allocating an additional \$3.3 million in the fourth year. The first three years of funding have been allocated; this implementation strategy prioritizes the allocation of these funds for the next three years in the context of previous NEP and non-NEP funding.

Goal of the Implementation Strategy

The goal of the NEP toxics and nutrients grant is to improve both human and environmental health in the Puget Sound ecosystem by preventing, reducing and controlling toxics and nutrients from entering Puget Sound fresh and marine waters.

The goal of this strategy is to effectively and strategically allocate Puget Sound NEP toxics and nutrients money over the next few years. The Puget Sound region has been addressing, and continues to address, toxics and nutrient activities in many arenas. In order to be allocated strategically and effectively, NEP funds should fill key data and programmatic gaps in these ongoing activities. The NEP activities must fit under broader toxics and nutrients strategies for Puget Sound, the state, and the larger region.

Toxics Strategy

Information Informing the Toxics Strategy

Themes and projects were selected by analyzing the following documents/priorities:

- Priorities of 2012 Action Agenda (strategic initiative and ranked sub-strategies)
- NEP Six-Year Strategy and Workplan
- Biennial Science Workplan
- LIO Priorities
- Interim Targets
- EPA Strategic Measures
- Treaty-Protect Resources
- PSEMP Gap-Filling Recommendations
- New Toxics Strategy
- Budget, General Logistics, Readiness to Start

The 2012 Action Agenda is driving the NEP expenditures. According to the 2012 Action Agenda, The Action Agenda was created to drive investment and action. All of the work described is important and needed to protect and recover Puget Sound. At the same time, the Partnership recognizes the need to think practically about how work might be sequenced, both for maximum efficiency and because resources are scarce and declining. The Action Agenda should be used to guide decision making related to allocation of funding or other resources in the following way. Focus on the Strategic Initiatives: Strategic initiatives are the highest priorities for 2012 and 2013. First consider whether the new or discretionary funding source can support an unfunded or partially funded priority regional or related local action in one or more of the strategic initiatives. Strategic initiatives are the top priority for funding and the allocation of other resources. Strategic initiatives should also guide the development of policy agendas.

If the funding source or other resource cannot be used to support implementation of a strategic initiative, refer to the ranked list of sub-strategies and related implementation information.... Extract the sub-strategies eligible for funding by the source in question and generally fund near-term actions or local actions related to the highest ranked sub-strategies first except where implementation information or local priorities may be used to justify funding actions related to lower-ranked sub-strategies.

Toxics Funding Priority #1: Strategic Initiatives

The following item is the highest priority for Round 4 funding because it is a Near-Term Action (NTA) associated with a strategic initiative (stormwater, habitat, and shellfish) in the 2012 Action Agenda.

NTA #	Title and Description
C2.4 NTA 1	<u>Compliance Assurance Program</u> . Ecology and local governments will increase inspection, technical assistance, and enforcement programs for high-priority businesses and at construction sites.

Three NTAs relate to toxics issues, but only one is proposed for NEP funding.¹

¹ C1.1 NTA 3 “Fish Consumption Rates” is not proposed for funding under Round 4 of NEP. It is very important to the Puget Sound Partnership and EPA, and NEP has previously funded fish consumption rate issues, but NEP funding of this specific NTA not critical for the issue. B3.1 NTA 2 “Outfall Strategy” is not proposed for funding under Round 4 of NEP. It is an important issue, but is mostly pathogen-related. DNR, DOH, and Ecology are all working on an outfall strategy.

Toxics Funding Priority #2: Sub-strategies Ranked Based on Ecological Criteria and Local Priorities

PSP ranked all of the substrategies in the Action Agenda.² The second-ranked sub-strategy is C1.1 – “Implement and strengthen authorities and programs to prevent toxic chemicals from entering.” This sub-strategy clearly addresses toxics issues. See the Action Agenda for the full text of this sub-strategy.

Other Factors

While the Action Agenda was the dominant source for determining priorities, Ecology also considered the Puget Sound Toxics Assessment, the toxics roadmap, and the toxics reduction strategy. More information on other sources of priorities, a conceptual model, targets, pressures, existing programs, chemicals of concern, water quality standards, and gaps are in Appendix 3.

Toxics Science Strategy

In 2011, Ecology completed a multi-year study to evaluate a short list of toxic chemicals in the Puget Sound basin. The assessment focused on answering several key questions about each chemical:

- Where do the chemicals come from?
- How much is being delivered?
- What delivery pathways contribute to the loading?
- What is the relative toxic hazard posed by these chemicals at observed concentrations

Major findings of this assessment are:

- A variety of diffuse sources appear to account for the majority of contaminant releases in the Puget Sound basin. In addition surface runoff during storms was identified as the major delivery pathway for most contaminants. Since most contaminants originate from a variety sources a high priority should be given to identifying and preventing the initial release of contaminants.
- Vehicle and related activities represent an important source of a number of contaminants. Examples include; copper and zinc from brakes and tires, mercury and PAHs from fuel combustion, and petroleum from motor oil drips and leaks, and refueling operations.

² The highest-ranked sub-strategy is related to stormwater: C2.2 (“prevent problems from new development at the site and subdivision scale”). While this sub-strategy touches on toxics and nutrients, it is clearly aimed at the watershed grant.

- Runoff and leaching from roofing materials were estimated to be a major source of several metals, particularly cadmium, copper and zinc.
- Developed lands (commercial/industrial and residential) had higher concentrations of most COCs compared to undeveloped forest land. Source control strategies should focus on identifying and controlling contaminant releases from existing and new developments.

One of the biggest limitations of the toxics assessment was that it was limited to a small list of 17 chemicals of concern (COCs). This list was developed during Phase I of the project based on observed harm or the threat of harm to the Puget Sound Ecosystem. There is a wide range of chemicals which lack environmental information in the Puget Sound basin and have the potential to cause biological harm. Data are needed to understand the transport, trophic transfer, and associated ecological and human health risks from a much wider range of PBTs and endocrine disrupting chemicals (e.g. pharmaceuticals and personal care products, brominated flame retardants, current use pesticides and nanomaterials) in the basin.

Projects underway to address sources

A number of projects are already underway using funding from the Puget Sound NEP Toxics and Nutrients grant to directly address key findings of the Puget Sound Toxics Assessment report. They include:

- Updating the Puget Sound Regional Toxics Model with new monitoring data collected during Phase 3 of the Puget Sound assessment project. These data will reduce uncertainty in the model outputs and allow an assessment of reductions needed in external loadings to achieve the Puget Sound vital sign targets for toxic chemicals.
- Analysis of Phase 1 Stormwater NPDES Permit data. This data will be useful in expanding our understanding of the contribution of different land uses to toxics chemical loadings
- Assessment of roofing materials to evaluate which roofing products have the potential to leach the most contaminants
- PAH source reduction - Grants have been awarded to continue removal of creosote pilings in Puget Sound and to enhance a wood smoke abatement program in the Pierce County non-attainment area. Creosote treated wood and wood smoke were both identified as key sources of PAHs in the region

Priority Science Needs

The data currently available indicates that a variety of diffuse sources account for the majority of contaminant releases in the Puget Sound basin. Surface runoff (especially storm events) from developed lands is the largest delivery pathway for contaminants to Puget Sound. In order to effectively implement source control and prevention programs information is needed to target the most significant chemical releases. In addition to data on releases, information on biological impacts will be needed to identify priority areas and implement a range of regulatory controls.

Key contaminants to address include: PAHs, phthalates, petroleum, PCBs, PBDEs and copper. In addition there is a need to gather information on a broader range of PBTs and endocrine disrupting chemicals in Puget Sound.

Finally, environmental monitoring is needed to evaluate the effectiveness of source control actions implemented under the Toxics/Nutrients NEP grant. Development of ambient monitoring that integrates the assessment of toxic chemical sources, exposure and effects will be critical to prioritizing source control actions and assessing the overall health of Puget Sound.

A summary of priority science needs is:

Priority	Action	Rationale
1	Characterization of emerging contaminants (especially biological impacts from EDCs)	Little information available outside of the 17 chemicals included in the Puget Sound Assessment
2	Ambient monitoring (vital signs for toxics in fish and toxics in sediment)	Needed to assess Puget Sound vital signs and link sources, exposure and effects
3	Effectiveness monitoring of source control actions	Needed to inform adaptive management of source control strategies
4	Identification of sources from developed lands	Surface runoff during storm events from developed lands identified as largest pathway for chemicals to enter Puget Sound

Nutrient Strategy

Information Informing the Nutrients Strategy

Ecology is relying on several pieces of information to inform the NEP nutrients strategy including:

1. The 2012 Puget Sound Action Agenda.
2. The *South Puget Sound Dissolved Oxygen Study Interim Nutrient Load Summary for 2006-2007* (<http://www.ecy.wa.gov/pubs/1103001.pdf>).
3. The *Puget Sound Dissolved Oxygen Model Nutrient Load Summary for 1999-2008* (<http://www.ecy.wa.gov/pubs/1103057.pdf>).
4. The *Toxics in Surface Runoff to Puget Sound: Phase 3 Data and Load Estimates*, and the Ecology Nonpoint Nutrient Strategy.

According to the 2012 Action Agenda,

The Action Agenda was created to drive investment and action. All of the work described is important and needed to protect and recover Puget Sound. At the same time, the Partnership recognizes the need to think practically about how work might be

sequenced, both for maximum efficiency and because resources are scarce and declining. The Action Agenda should be used to guide decision making related to allocation of funding or other resources in the following way. Focus on the Strategic Initiatives: Strategic initiatives are the highest priorities for 2012 and 2013. First consider whether the new or discretionary funding source can support an unfunded or partially funded priority regional or related local action in one or more of the strategic initiatives. Strategic initiatives are the top priority for funding and the allocation of other resources. Strategic initiatives should also guide the development of policy agendas.

If the funding source or other resource cannot be used to support implementation of a strategic initiative, refer to the ranked list of sub-strategies and related implementation information.... Extract the sub-strategies eligible for funding by the source in question and generally fund near-term actions or local actions related to the highest ranked sub-strategies first except where implementation information or local priorities may be used to justify funding actions related to lower-ranked sub-strategies.

Nutrients Funding Priority #1: Strategic Initiatives

The following items are the highest priorities for Round 4 funding because they are the NTAs associated with the strategic initiatives (stormwater, habitat, and shellfish) in the 2012 Action Agenda.

NTA #	Title and Description
C1.6 NTA 3	<u>Water Quality Enforcement.</u> Ecology, working with DOH, will increase the capacity for enforcement, and enforce all regulations pertaining to pathogens and contaminants that pollute the waters of the state to ensure achievement of approved shellfish growing water certification.
C3.2 NTA 1	<u>Priority Areas for Voluntary Incentive and Regulatory Programs.</u> The State Conservation Commission and the Washington State Departments of Agriculture, Ecology, and Health will identify priority areas to better target and coordinate implementation of voluntary incentive and regulatory programs for rural landowners, small-acreage landowners, and working farms.
C9.4 NTA 4	<u>Pollution Identification and Correction Programs.</u> DOH and Ecology will administer EPA grants to help counties and tribes set up sustainable programs to identify and correct nonpoint pollution sources to improve and protect water quality in shellfish growing areas and at marine swimming beaches. These sustainable programs will have ongoing monitoring to identify pollution sources and assess effectiveness of efforts, a local sustainable funding source, and a compliance assurance component.

There are four NTAs that address nutrient issues, but only three are proposed for NEP funding.³

³ C7.1 NTA 3 “Pollution Control Action Team” is not proposed for additional Round 4 funding. The Whatcom County PCAT program was fully funded in previous rounds. The C1.6 NTA 3 covers PCAT-like non-point inspection work in other areas.

Funding Priority #2: Sub-strategies Ranked Based on Ecological Criteria and Local Priorities

The third-ranked sub-strategy is C9.1 – “Complete Total Maximum Daily Load (TMDL) studies and other necessary water cleanup plans for Puget Sound to set pollution discharge limits and determine response strategies to address water quality impairments.” This sub-strategy clearly addresses nutrients (as well as toxics, pathogens, and temperature). See the Action Agenda for complete text of this sub-strategy.

Since all NEP funding (plus much more) could be used to address the strategic initiatives and sub-strategies C1.1 and C9.1, no additional sub-strategies are explicitly included.

See Appendix 4 for additional pertinent information on the nutrient strategy, including loading by land use, a conceptual model, targets, pressures, existing programs, geographical foci, and gaps.

Nutrient Science Strategy

Several ongoing efforts are evaluating the role of human nutrient contributions and other factors on low dissolved oxygen in marine and freshwaters of the Salish Sea watershed. Other efforts are monitoring the status and trends of nutrient-related parameters in the ecosystem. Strategic scientific investments can help identify the most beneficial management activities to implement. Additional work is needed to better understand the sources, transport, fate, and impact of human and natural nutrients in the Salish Sea ecosystem.

The driving question is whether human nutrient contributions need to be reduced now or in the future to restore or maintain the health of these waters. The question requires models that link human pressures to ecosystem endpoints. Models require extensive data to describe complex physical, chemical, and biological processes. These data collection efforts differ from traditional status and trends monitoring and may include both laboratory and field investigations.

We do not have complete knowledge of nutrient inputs, transformations, and influences on ecological endpoints. Improving the knowledge we do have in key areas will allow us to refine and adapt our nutrient management activities to control the most critical sources or processes with the limited resources available and avoid investments in sources or processes with little influence on local or regional water quality. Better information is needed for a variety of processes or components as described below. The highest-priority nutrient science needs include uncertain but potentially influential sources, critical rate processes, and innovative monitoring using continuous sensors and remote sensing. Modeling results will help identify where human nutrients require reductions; however, we have tripled the amount of nitrogen

released in the Puget Sound ecosystem, and we need to develop tools that quantify and reduce these releases from known hotspots.

Refine Estimates of Nutrient Sources

See Appendix 5 for additional information. The table below summarizes the highest nutrient science needs for refining sources. Many sources vary geographically. The highest priorities include the following geographic areas:

- Locations and load reductions identified by ongoing marine dissolved oxygen modeling, when available.
- Contributions to areas of known low dissolved oxygen in freshwater or marine environments.
- Areas with high nutrient concentrations or relative loads in freshwater or marine environments.

Nutrient Priorities for Scientific Investigation

Topic	Priority	Source	What’s needed?	Why needed?	Related efforts
Develop Modeling Tools and Apply to Management Questions	1	Sediment models	Develop links between productivity, sediment processes, and sediment fluxes	Influential in shallow bays	Ecology South Puget Sound
Nutrient Sources	2	Sediment flux monitoring	Additional measurements to characterize spatial and temporal patterns	High magnitude and medium uncertainty	South Puget Sound, Quartermaster Harbor
Nutrient Sources	3 ⁴	Ocean exchanges	Additional Strait of Juan de Fuca stations, depths, or frequency	High magnitude and medium uncertainty	JEMS now online
Quantify Transport, Transformation, and Fate of Nutrients	4	Vertical exchanges	Mixing at sills, vertical advection through stratified water column	High variability and medium uncertainty	Limited studies at Admiralty Inlet, Tacoma Narrows, and Hood Canal

⁴ Partially funded in Round 3

Supplement Monitoring of Key Processes and Locations	5	Remote sensing of surface processes	Spatial and temporal patterns in surface proxies for primary productivity	High variability (by location, over time)	Ecology's Eyes Over Puget Sound, ambient monitoring
Quantify Transport, Transformation, and Fate of Nutrients	6	Phytoplankton component	Biomass, community composition, continuous measurements (in time and space)	High variability and high uncertainty	Chlorophyll and fluorescence monitoring by Ecology and UW; Pacific Shellfish Institute species data
Develop Modeling Tools and Apply to Management Questions	7	Large-scale landscape model	SPARROW or similar application that links mappable attributes to freshwater quality or loads to marine waters	Missing at Puget Sound scale	USGS Pacific Northwest SPARROW (not optimized for Puget Sound)
Develop Modeling Tools and Apply to Management Questions	8	Hood Canal next steps	Modeling and monitoring to support modeling		
Supplement Monitoring of Key Processes and Locations	NA ⁵	Ferry-based monitoring	Transects of salinity, temperature, and proxies for primary productivity	High variability (location, over time)	Ecology and WS Ferries, Victoria Clipper, ambient monitoring
Eelgrass: Connections to Nutrients	Unranked		Calculating needed reductions in nutrients to protect eelgrass beds.		

⁵ Funded in Round 3

Linkages to Action Agenda and Other Broader Puget Sound Activities

Note: Rankings and Initiatives were established one-two years after Round 1 and 2 projects were funded. Projects are identified by their primary sub-strategy or NTAs; projects that address multiple sub-strategies are only listed once.

Strat -egy C	Sub-Strategy and Near-Term Action (NTA)	Sub-Strategy Rank / Strategic Initiative NTA?	Round 1-3 Projects and Round 4 Projects in Bold	Potential Round 5 and 6 Projects
1.1	Implement and strengthen authorities and programs to prevent toxic chemicals from entering the Puget Sound environment.	2	Derelict Piling Removal. Puget Sound Creosote Removal Project. Expansion of Wood Stove Removal Program. Pesticide Use Survey. Development of a Fish Consumption Rate. Fish Consumption Rate Rule-Making. Implementing Chemical Action Plans (CAPs): Cleaner Wood-Burning Stoves. Reducing toxic releases from automobiles. Biomonitoring for Emerging Contaminants. PAHs in Sensitive Freshwater Aquatic Habitat near Railroads in Puget Sound. Chemicals of Emerging Concern – Exposure and Effects in Puget Sound Biota. Measurement of PPCPs and PFASs in Urban Bay Sediments (Elliott Bay).	X
1.1 NTA 1	PAH and PFOS Chemical Action Plans. Ecology, working with its partners, will complete a PAH CAP by 2012 and a CAP for PFOS or all perfluorinated compounds (PFCs) by 2014, and begin to implement the recommendations from the Plans. (Wood smoke actions in the PAH CAP will build from the control strategies outlined in the Tacoma SIP for fine particulates. The PAH CAP may also include recommendations to reduce PAHs from incomplete combustion and/or other sources. The PFOS/ PFC CAP will include an evaluation of safer alternatives and recommendations for reducing use of PFOS and/or PFCs.)		Derelict Piling Removal. Puget Sound Creosote Removal Project. Expansion of Wood Stove Removal Program. Implementing Chemical Action Plans (CAPs): Cleaner Wood-Burning Stoves. PAHs in Sensitive Freshwater Aquatic Habitat near Railroads in Puget Sound.	
1.1 NTA 2	Mercury Lamp Product Stewardship. Ecology will establish a mercury lamp product stewardship program by 2013.			
1.1 NTA 3	Fish Consumption Rates. Ecology will, as soon as possible, establish accurate default fish consumption rates that are reflective of actual consumption rates of vulnerable populations who consume fish and shellfish from the Sound at a subsistence level and children who, by virtue of lower body mass may be disproportionately affected by toxins in their food supply. Ecology will complete the rulemaking processes for Sediment Management Standards, incorporating the revised and accurate fish consumption rate, no later than the end of 2013; the water quality rule shall be guided by Ecology's September 2011 draft Fish Consumption Rates – Technical Support Document and other appropriate relevant information as it becomes available. Ecology will report to the Leadership Council at least quarterly, beginning in October 2012, on the plan and progress towards adoption of a fish consumption rate.	Yes	Development of a Fish Consumption Rate. Fish Consumption Rate Rule-Making.	
1.1 NTA 4	Estimates of Copper in Pesticides. The Washington Department of Agriculture will work with Ecology to review and refine estimates of the agricultural and non-agricultural release of copper from pesticide use in the Puget Sound basin and publish a summary report by December 2012. This report is one element as part of a process to evaluate copper loading in Puget Sound.			
1.1 NTA 5	Pesticide Use Survey. By December, 2013, Washington Department of Agriculture, in partnership with the USDA National Agricultural Statistics Service and coordination with PSP, will complete survey work and publish a report of refined estimates of primary releases of copper from non-agricultural pesticide use in the Puget Sound basin. This includes conducting a pesticide use survey of homeowners within the Puget Sound basin. In addition, WSDA will survey commercial and public applicators to provide a more complete profile of urban pesticide use. The results will be used to further refine the estimates for urban pesticide use (including copper compounds) as a source of toxic chemicals released to the Puget Sound environment This work is one element as part of a process to evaluate copper loading in Puget Sound.		Pesticide Use Survey.	
1.1 NTA 6	Emerging Contaminants. Ecology and PSP will assemble information on chemicals of emerging concern, beyond the 17 chemicals of concern in the Puget Sound Toxics Loading Studies, including PBTs, endocrine disruptors, other chemicals, and nanotechnology and nanomaterials, and will recommend actions to (1) better understand the threats to Puget Sound and (2) address the highest priority problems.		Biomonitoring for Emerging Contaminants. Chemicals of Emerging Concern – Exposure and Effects in Puget Sound Biota. Measurement of PPCPs and PFASs in Urban Bay Sediments (Elliott Bay).	
1.2	Promote the development and use of safer alternatives to toxic chemicals.	13	Safer Alternatives Assessment. Technical Writer for Alternative Assessment Guidance. Development of a Chemical Hazard-Based Technical Alternative Assessment Guidance (TAAG) Document. Establishing a Green Chemistry Center. Roofing Project.	
1.2 NTA 1	Chemical Alternatives Assessments. By 2013, Ecology will work with the Interstate Chemicals Clearinghouse (IC2) to develop a guidance document on chemical alternatives assessment and, depending on funding availability, will complete assessments of five chemicals to identify safer alternatives.		Safer Alternatives Assessment. Technical Writer for Alternative Assessment Guidance. Development of a Chemical Hazard-Based Technical Alternative Assessment Guidance (TAAG) Document.	
1.2 NTA 2	Toxics in Roofing Materials. By 2013, Ecology will establish a task force that will oversee a study evaluating toxic materials (including toxic metals and, possibly, phthalates) in roofing materials and recommend strategies for promoting less-toxic alternatives or ways to use materials that minimize releases of toxic materials to receiving waters. To support the task force's work, Ecology will solicit information from manufacturers on the presence of toxic chemicals in roofing materials. Using any data from manufacturers or previously published studies, Ecology will create and implement a sampling strategy to assess the release of contaminants from different roofing materials. The task force will use this information to develop its recommendations.		Roofing Project.	
1.2 NTA 3	Green Chemistry Road Map. In 2012, Ecology and business, government, and academic stakeholders will finalize and begin implementing a green chemistry road map for Washington, including efforts to establish a Washington State green chemistry center. By 2013, Ecology will host a green chemistry conference in the region		Establishing a Green Chemistry Center.	
1.3	Adopt and implement plans and control strategies to reduce pollutant releases into Puget Sound from air emissions.	9		
1.3 NTA	No near-term actions. Work is focused on implementation of ongoing programs.			
1.4	Provide education and technical assistance to prevent and reduce releases of pollution.	12	Landscaper Accreditation. Local Source Control 1-3. Local Source Control. Nutrient Bioextraction: Shellfish at Work.	
1.4 NTA 1	Landscaper Accreditation. The landscape industry, in cooperation with other stakeholders, will establish a sustainable landscaper accreditation program to promote environmentally friendly landscape development and maintenance practices. Ecology will support this effort by providing start-up funding. The industry-led program will be designed to improve habitat and water quality by reducing the use of pesticides containing toxic chemicals, reducing the use of fertilizers, reducing use of water for irrigation, reducing runoff from landscaped properties, increasing natural stormwater filtration, reducing emissions from landscape equipment, and encouraging the use of native or other plants that provide riparian shade, support native pollinators, and require less pesticide, fertilizer, and water.		Landscaper Accreditation.	

Strat -egy C	Sub-Strategy and Near-Term Action (NTA)	Sub- Strategy Rank / Strategic Initiative NTA?	Round 1-3 Projects and Round 4 Projects in Bold	Potential Round 5 and 6 Projects
1.4 NTA 2	Environmentally Preferable Purchasing. By 2013, Ecology will work with the new Washington Department of Enterprise Services to develop environmental opportunity assessments for 6–10 contracts; these assessments will identify environmentally preferable purchases that could help reduce toxic pollution while seeking best value for the state. Best value includes looking at price, performance, availability and environmental considerations when developing and awarding contracts.			
1.4 NTA 3	Conduct Local Source Control Business Assistance Visits. By July 2013, local governments, under contract with Ecology, will conduct at least 5,000 local source control visits to help small businesses reduce stormwater pollution and improve hazardous waste management.			
1.5	Control wastewater and other sources of pollution such as oil and toxics from boats and vessels.	24		
1.5 NTA 1	No Discharge Zone Evaluation and Petition. Ecology, in collaboration with State Parks and EPA, will administer grants to fund the development of a petition to EPA to establish a No Discharge Zone to prohibit recreational and commercial vessels from discharging sewage in all or parts of Puget Sound.	Yes	{Pathogen LO}	
1.5 NTA 2	Pump-Out Station Improvements. Ecology and DOH, with National Estuary Program grant funding, will coordinate with Washington State Parks' Clean Vessel Program to assist in construction, repair and monitoring of pump-out stations to meet requirements of the NDZ petition.			
1.5 NTA WS 9	West Sound Pump Out Stations. By January 2013, Kitsap Public Health will identify potential pump out stations and develop needs assessment to address marine vessel sewage			
1.6	Increase compliance with and enforcement of environmental laws, regulations, and permits.	4	PBDE Enforcement. Inspection and Implementation: Nonpoint Pollution Sources.	
1.6 NTA 1	Hazardous Waste, Wastewater, and Air Quality Compliance and Enforcement. Increase Ecology's hazardous waste, and wastewater compliance inspection and enforcement programs in the Puget Sound.			
1.6 NTA 2	Compliance for Use of Toxics in Products. Ecology will conduct compliance activities for state laws banning the use of toxic materials (e.g., PBDEs) in products, including taking appropriate enforcement actions against noncompliant products.		PBDE Enforcement.	
1.6 NTA 3	Water Quality Enforcement. Ecology, working with DOH, will increase the capacity for enforcement, and enforce all regulations pertaining to pathogens and contaminants that pollute waters of the state to ensure achievement of approved shellfish growing water certification.	Yes	Inspection and Implementation: Nonpoint Pollution Sources.	X
2.1	Manage urban runoff at the basin and watershed scale.	5	Stormwater Center.	
2.1 NTA 1	Watershed Based Stormwater Management. To ensure all funds (existing and new) are used efficiently and effectively, Puget Sound Partnership (PSP) will work with the ECB to commission an evaluation of the feasibility, cost, and effectiveness of transitioning the existing municipal stormwater jurisdiction by jurisdiction permit approach using "general permits," to watershed-based municipal stormwater management. PSP will work with interested parties, particularly Ecology and local governments, to ensure their perspectives and concerns are addressed and accounted for when developing the scope of work for their evaluation.	Yes		
2.1 NTA 2	Protect Best Remaining Streams.			
2.1 NTA 3	Stormwater System Mapping.			
2.2	Prevent problems from new development at the site and subdivision scale.	1	{Watersheds LO}	
2.2 NTA 1	NPDES Municipal Permits.	Yes		
2.2 NTA 2	Stormwater Treatment Standards.			
2.2 NTA 3	Stormwater Management Outside Permitted Areas.	Yes		
2.2 NTA 4	New Development Under Earlier Stormwater Programs.			
2.2 NTA SJI 3	SJ Improve Stormwater Permit Review.			
2.2 NTA STRT 5	Straits Stormwater Management Programs.			
2.3	Fix problems caused by existing development.	6	South Landers Street Storm Drain Cleaning. Johns Creek Estuary Conservation. Phosphorus Management for Lake Whatcom. Box Model and Storm Data.	
2.3 NTA 1	Stormwater Retrofit Projects. Ecology will lead a process to identify high priority retrofit projects that will contribute to the recovery of Puget Sound and complete conceptual design to a stage sufficient to seek project implementation funding. The work will build on retrofit prioritization work by WSDOT, King County and others, and will be replicable in other urban and suburban areas around the Sound.	Yes	Phosphorus Management for Lake Whatcom.	
2.3 NTA 2	Map, Prioritize, and Restore Degraded Streams. King County, in cooperation with agencies populating the Puget Sound Stream Benthos database, will identify and map stream drainages with "fair" B-IBI scores, and develops a prioritized list, strategies and actions to improve scores of 30 of these streams.			
2.3 NTA 3	Legacy Pollutant Removal. Ecology, in cooperation with local governments, will provide guidance and financial assistance to local governments to help them remove legacy pollutant loads from their stormwater systems.		South Landers Street Storm Drain Cleaning.	
2.3 NTA HC 4	HCCC Stormwater Retrofit Program. HCCC will develop the Hood Canal Regional Stormwater Retrofit Plan to coordinate stormwater and low impact development retrofit efforts on a regional scale. Stormwater retrofit and LID practices improve water quality, help protect shellfish beds, decrease flooding risks and increase aquifer recharge.			
2.3 NTA WS 5	West Sound Stormwater Retrofit Projects. By December 2015, Kitsap County Surface and Stormwater Management Program, in coordination with jurisdictions and other partners, will design and construct high priority retrofit projects treating 10 acres of pollution generating impervious surfaces.			
2.4	Control sources of pollutants.	7	Preventing Automobile Leaks. Sectors Go Green.	
2.4 NTA 1	Compliance Assurance Program. Ecology and local governments will increase inspection, technical assistance, and enforcement programs for high-priority businesses and at construction sites.	Yes	Local Source Control.	X
2.4 NTA 2	Vehicle Leak Detection Program. King County, in cooperation with Seattle, WSDOT, the STORM advisory committee, and PSP will lead a regional discussion to develop options and recommendations for a new program to inspect and eliminate privately owned vehicle drips and leaks by June 2014. This work builds on the related work of existing grants to STORM and Seattle on vehicle leaks and drips.			
2.4 NTA SJI 5	SJI Coordinated Best Management Practices. San Juan County Public Works will convene Community Development and Planning Department (CDPD), Department of Health and Community Services (DHCS), and the San Juan Islands Conservation District (CD) to identify and coordinate best management practices for stormwater, on-site septic systems, and animal wastes with community participation by 2013.			
2.4 NTA SJI 6	SJI Stormwater Monitoring. San Juan County Public Works Stormwater Utility will lead and work jointly with the Stormwater Committee, the Water Resources Committee, the Marine Resources Committee, and the Town of Friday Harbor to implement an annual strategic monitoring plan by 2013 to measure levels of fecals, heavy metals, POPs, and PAHs in priority			

Strat -egy C	Sub-Strategy and Near-Term Action (NTA)	Sub- Strategy Rank / Strategic Initiative NTA?	Round 1-3 Projects and Round 4 Projects in Bold	Potential Round 5 and 6 Projects
	basins.			
2.5	Provide focused stormwater-related education, training, and assistance.	19		
2.5 NTA 1	LID Training and Certification.	Yes		
2.5 NTA 2	Education for the Next Generation of Stormwater Professionals.	Yes		
2.5 NTA WS 4	West Sound LID Training.			
3.1	Target voluntary and incentive-based programs that help working farms contribute to Puget Sound recovery.	23		
3.1 NTA 1	Water Quality Best Management Practices. By December 2012, the Department of Ecology, Department of Agriculture and State Conservation Commission, after conferring with federal, tribal, and local partners will work on a solution to improved implementation of best management practices that protect water quality.			
3.1 NTA 2	Effectiveness of Incentive Programs. By December 2013, the State Conservation Commission, in consultation with Ecology and the Washington State Departments of Agriculture and Health, Conservation Districts, Federal agencies and Tribes, will report to the Governor and the Legislature on the effectiveness of incentive programs to achieve resource objectives. The report will include a section from Ecology on compliance with water quality standards.		Non-Point Inspectors. Agriculture BMP Effectiveness Monitoring.	
3.1 NTA 3	Voluntary Stewardship Program. The Conservation Commission, Ecology, and WSDA should support implementation, funding, and assistance to those Counties participating in the Voluntary Stewardship program, as well as new capacity for enforcement of state and federal water quality regulations.			
3.2	Ensure compliance with regulatory programs designed to reduce, control, or eliminate pollution from working farms.	16	Clean Water BMPs for Agricultural Activities. Non-Point Inspectors. Agriculture BMP Effectiveness Monitoring.	
3.2 NTA 1	Priority Areas for Voluntary Incentive and Regulatory Programs. The State Conservation Commission and the Washington State Departments of Agriculture, Ecology, and Health will identify priority areas to better target and coordinate implementation of voluntary incentive and regulatory programs for rural landowners, small-acreage landowners, and working farms.	Yes	Clean Water BMPs for Agricultural Activities.	X
3.2 NTA 2	Dairy Lagoon Assessment. By July 2013, WSDA will complete the current NRCS-funded lagoon assessment of all known dairy waste storage ponds, finalize risk based evaluations and prioritize lagoons based on the findings. The assessment ranks lagoons on potential risk to water resources. Lagoons identified as high risk will be provided technical assistance to address the problem.			
3.2 NTA 3	Dairy Rule Final Agronomic Applications. By December 2012, WSDA will adopt a final rule defining records required by dairies to show agronomic applications (Chapter 90.64.010(17)) and create a penalty matrix for both discharge and records violations. Rule adoption supports efficient program implementation by clarifying for dairies and stakeholders the expectations for recordkeeping as well as the basis for penalties.			
3.2 NTA 4	CAFO Permit. By December 2012, Ecology will issue an updated CAFO permit.			
4.1	Achieve water quality standards on state and privately owned working forests through implementation of the Forest and Fish Report.	8		
4.1 NTA 1	Forest Practices Adaptive Management Program Review.			
4.1 NTA 2	Forest Practices Adaptive Management Program.			
4.2	Maintain forest roads and implement road abandonment plans for working forest lands subject to the Forest Practices Rules on schedule, and ensure federal forest managers meet or exceed state standards for road maintenance and abandonment on federal lands.	11		
4.2 NTA 1	Risk Assessment of Small Forest Landowner Roads.			
4.2 NTA 2	Accelerate Family Forest Fish Passage Program Implementation.			
4.2 NTA 3	Fish Passage Barriers.			
4.2 NTA 4	Enhance RMAP Database:			
4.2 NTA 5	RMAP Coordination with Federal Partners.			
5.1	Effectively manage and control pollution from on-site sewage systems.	17	OSS Denitrification Verification.	
5.1 NTA 1	Effectiveness of OSS Rule. DOH, in consultation with local health jurisdictions (LHJs) and other interests, will evaluate the effectiveness of the state OSS rule, identify potential changes, and outline recommendations to the State Board of Health by December 2013.			
5.1 NTA 2	OSS O&M Program Best Practices. DOH will work with LHJs to identify successes and best practices, develop common performance standards, and recommend approaches to improve core functions of local O&M programs.			
5.1 NTA 3	OSS Nitrogen Treatment Technologies. DOH will evaluate public domain OSS treatment technologies for nitrogen reduction and develop standards and guidance for their use if testing results indicate the technologies are effective and reliable. The evaluation will be completed by December 2014 and work on standards and guidance, if needed, will begin after that.		OSS Denitrification Verification.	
5.1 NTA 4	Centralized Treatment Outside UGAs. Commerce, in partnership Ecology and DOH, will identify shoreline areas outside urban growth boundaries where residential densities are great enough that it may be appropriate to extend centralized wastewater collection systems and that are in close enough proximity to centralized treatment that extension of infrastructure may be feasible. The goal of this effort is completion of design of the at a least one pilot project by 2014 and construction of a least one pilot project by 2016.			
5.1 NTA SJI 4	San Juan County OSS Program. San Juan County Health and Community Services will fully implement the On-site Sewage System (OSS) Operation and Maintenance Program Plan.			
5.1 NTA WS 7	West Sound OSS repairs. Kitsap Public Health will report on the number of OSS failures repaired using funds from the Craft3 septic loan program by December 2013			
5.2	Effectively manage and control pollution from large on-site sewage systems.	32		
5.2 NTA WS 6	West Sound Sewer Feasibility. Kitsap Public Health together with the municipality will conduct sewer infrastructure feasibility study for sewers in areas such as Ostrich and Phinney Bay by December 2013.			
5.3	Improve and expand funding for on-site sewage systems and local OSS programs.	28		
5.3 NTA 1	Regional OSS Homeowner Loan Program.	Yes		
5.3 NTA 2	Regional OSS Program Funding Source.	Yes		
5.3 NTA 3	Funding Mechanism for Local OSS Programs.			
6.1	Reduce the concentrations of contaminant sources of pollution conveyed to wastewater treatment plants through education and appropriate regulations, including improving pre-treatment requirements.	22		
6.1 NTA	No near-term actions. Work is focused on implementation of ongoing programs.			
6.2	Reduce pollution loading to Puget Sound by preventing and reducing combined sewer overflows.	27		
6.2	Integrated Municipal Stormwater and Wastewater Plans.			

Strat -egy C	Sub-Strategy and Near-Term Action (NTA)	Sub- Strategy Rank / Strategic Initiative NTA?	Round 1-3 Projects and Round 4 Projects in Bold	Potential Round 5 and 6 Projects
NTA 1				
6.3	Implement priority upgrades of municipal and industrial wastewater facilities.	18		
6.3 NTA	No near-term actions. Work is focused on implementation of ongoing programs.			
6.4	Ensure all centralized wastewater treatment plants meet discharge permit limits through compliance monitoring, technical assistance, and enforcement where needed.	29		
6.4 NTA 1	Water Quality Standards Update. Ecology has initiated rule making to amend the Water Quality Standards to update and develop predictable regulatory compliance tools that address short and long-term source control programs. The proposed changes will provide predictable regulatory tools to help entities comply with existing and new source control requirements or discharge limits. The changes will allow compliance with requirements while they effectively work toward meeting permit limits and control sources of pollutants.			
6.5	Promote appropriate reclaimed water projects to reduce pollutant loading to Puget Sound.	25		
6.5 NTA	No near-term actions. Work is focused on implementation of ongoing programs.			
7.1	Improve water quality to prevent downgrade and achieve upgrades of important current tribal, commercial and recreational shellfish harvesting areas.	10		
7.1 NTA 1	Shellfish Best Practices Library. DOH will work with the Partnership, Ecology, the Conservation Commission, and Conservation Districts and local governments to create a best practices library or menu highlighting successful locally-driven efforts to assist in the development of shellfish protection districts, shellfish protection programs, and shellfish growing area restoration activities, such as the Henderson Inlet, Oakland Bay, and Samish Bay efforts.			
7.1 NTA 2	Annual evaluation of shellfish restoration efforts. The Partnership will convene an annual meeting of the Departments of Health, Ecology, Agriculture, Conservation Commission and EPA to evaluate restoration efforts in shellfish growing areas in Puget sound and report the results to the region.			
7.1 NTA 3	Pollution Control Action Team. Ecology, working with DOH, WSDA, EPA and the Tribes will form a Pollution Control Action Team (PCAT) to respond quickly when areas are identified where water quality problems threaten shellfish areas. They will initiate community outreach and education, pollution identification, inspection, technical assistance to local agencies and landowners and finally, enforcement. The team will focus its work in priority areas and support PIC programs where they are established. The first effort will be in Drayton Harbor and Portage Bay.	Yes	Non-Point Inspectors	
7.2	Restore and enhance native shellfish populations.	34		
7.2 NTA WS 13	West Sound Shellfish Gardening.			
7.3	Ensure environmentally responsible shellfish aquaculture based on sound science.	30	State of the Science for Shellfish Processes, Sediment Interactions, and Watershed Attenuation of Nitrogen in the Puget Sound Ecosystem.	
7.3 NTA 1	Aquaculture Shoreline Master Program Handbook. Ecology will publish an aquaculture Shoreline Master Program Handbook section with special emphasis on geoduck aquaculture and finfish net pen operations, update its aquaculture web resources to make them more comprehensive, and provide direct assistance and training to local governments on the aquaculture handbook When the final findings of the Sea Grant geoduck aquaculture research are available, Ecology will review them and other appropriate, betted sound science, to determine if amendments to WAC 173-26 are warranted.			
7.3 NTA 2	Areas Suitable for Future Shellfish Aquaculture. Ecology will coordinate with interested local governments, DNR, and stakeholders to support pre-planning and implementation of marine spatial planning and local shoreline master program updates by: gathering, compiling an ground-truthing baseline information on current aquaculture and filling data gaps and completing research to identify areas that are suitable and unsuitable for future shellfish aquaculture. Ecology will support marine spatial planning related to aquaculture by coordinating with interested local governments, DNT, and stakeholders on gathering, compiling and ground-truthing baseline information on current aquaculture and filing data gaps.			
7.3 NTA 3	Shellfish Model Permitting Program. The Department of Ecology will work with the Governor's Office of Regulatory Assistance (ORA) to lead and facilitate a state team to develop and implement a Model Permitting Program that ensures early and continued coordination among state and federal agencies, tribes and local governments for permitting and licensing of shellfish aquaculture.	Yes		
7.3 NTA 4	Nitrogen Control Pilots Using Shellfish. Ecology will work with DNR, the shellfish industry and researchers to create pilot projects testing the use of mussel culture or other suspended or beach culture to help address nitrogen pollution in sensitive areas, such as Quartermaster Harbor.			
7.4	Enhance the publics' connection to shellfish and increase recreational harvest opportunities.	35		
7.4 NTA 1	Shellfish Interpretive Programs and Events.			
7.4 NTA 2	Shellfish Messages, Events, and Materials. Washington Sea Grant will partner with state and federal agencies on a planning process to develop shellfish-related messages, publicize events, and develop materials.			
7.5	Answer key shellfish safety research questions and fill information gaps.	33	WA Shellfish Initiative Ocean Acidification Blue Ribbon Panel.	
7.5 NTA 1	Point Source Dilution Analyses Modeling. The Departments of Ecology and Health will work cooperatively under an existing EPA grant to evaluate use of Ecology environmental models for point source dilution analyses in Health's commercial shellfish area classification program.			
7.5 NTA 2	Expand Biotxin Monitoring. Expand biotoxin monitoring to address the marine toxin causing "Diarrhetic Shellfish Poisoning" (DSP). This involves including DSP into our Marine Biotxin Monitoring Program. In addition, we must purchase and install special testing equipment to analyze shellfish extracts for this and other biotoxins. The instrument will also be used to develop alternate detection methods for Paralytic Shellfish Poisons (PSP) that eliminates the sacrifice of live test animals.			
7.5 NTA 3	Water Quality and Seasonal Harvest Restrictions. DOH, in cooperation with NOAA's Northwest Fisheries Science Center, will conduct water quality studies of selected shellfish "wet storage" areas in Puget Sound to better correlate environmental conditions with potential causes of illness that seasonally restricts harvest.			
7.5 NTA 4	Ocean Acidification Blue Ribbon Panel. Ecology, as part of the Washington Shellfish Initiative, will manage the Governor appointed Blue Ribbon Panel on Ocean Acidification to develop clear, actionable recommendations on understanding, monitoring, adapting and mitigation ocean acidification in Puget sound and Washington waters.		WA Shellfish Initiative Ocean Acidification Blue Ribbon Panel.	
8.1	Prevent and reduce the risk of oil spills.	15		
8.1 NTA 1	Traffic and Incident Trends.			
8.1 NTA 2	Evaluate Risk Assessments for Update Needs.	Yes		
8.1 NTA SJI 1	SJI Marine Manager Workshop.			
8.2	Strengthen and integrate spill response readiness of the state, tribes, and local government.	20		
8.2 NTA STRT 2	Straits Spill Prevention, Preparedness, and Response. Implement and promote improvements in oil spill prevention, preparedness, and response programs and capabilities for the benefit of the Strait of Juan de Fuca and adjacent waters a. Improve transboundary coordination on oil spills b. Establish Vessel of Opportunity Program in Neah Bay c. Expand oil spill drills along Strait of Juan de Fuca and Coast			

Strat -egy C	Sub-Strategy and Near-Term Action (NTA)	Sub- Strategy Rank / Strategic Initiative NTA?	Round 1-3 Projects and Round 4 Projects in Bold	Potential Round 5 and 6 Projects
8.3	Respond to spills and seek restoration using the best available science and technology.	26		
8.3 NTA 1	WAC 173-182 Revision to Achieve Protection from Spills.			
8.3 NTA 3	Increase Natural Resource Damage Assessment Values.			
8.3 NTA 4	Identify Species and Locations at Risk in Spills.			
8.3 NTA SJI 2	Island Oil Spill Association Spill Readiness and Response.			
9.1	Complete Total Maximum Daily Load (TMDL) studies and other necessary water cleanup plans for Puget Sound to set pollution discharge limits and determine response strategies to address water quality impairments.	3	Implementing Local Projects to Reduce Nutrients.	X
9.1 NTA	No near-term actions. Work is focused on implementation of ongoing programs.			
9.2	Clean up contaminated sites within and near Puget Sound.	21		
9.2 NTA	No near-term actions. Work is focused on implementation of ongoing programs.			
9.3	Restore and protect water quality at swimming beaches and recreational areas.	31		
9.3 NTA 1	Freshwater Swimming Beach Program. By 2014, Ecology and DOH will develop a proposal to coordinate a monitoring and notification freshwater swimming beach program for the Puget Sound region.			
9.3 NTA 2	Correct Pollution Problems at Marine Beaches. Ecology and DOH will develop a plan to conduct pollution source surveys and correct pollution problems at marine beaches used for swimming, surfing, diving and other recreational uses. Ecology and DOH will coordinate with local, state and tribal programs that address point source and nonpoint source pollution to assure that activities are not duplicative			
9.4	Develop and implement local and tribal pollution identification and correction programs.	14	Nutrient Reduction PIC: Murden Cove. Snohomish County PIC (Pollution Identification and Correction) Program.	
9.4 NTA 1	Pollution Identification and Correction Programs. DOH and Ecology will administer EPA grants to help counties and tribes set up sustainable programs to identify and correct nonpoint pollution sources to improve and protect water quality in shellfish growing areas and at marine swimming beaches. These sustainable programs will have ongoing monitoring to identify pollution sources and assess effectiveness of efforts, a local sustainable funding source, and a compliance assurance component.	Yes	Nutrient Reduction PIC: Murden Cove. Snohomish County PIC (Pollution Identification and Correction) Program.	
9.4 NTA HC 3	Hood Canal PIC Program. By April 2014, HCCC will complete Phase I of a regional Hood Canal Pollution Identification and Correction program to determine the needs for a comprehensive regional program and advance funding proposal(s) for implementation. The program will provide information about the sources of pollution, including failing septic systems.			
9.4 NTA WS 8	West Sound Septic System Repairs Using PIC. Kitsap Public Health will report on the number of failing septic systems identified using PIC methodology, the number repaired and associated improvements in water quality by December 2013.			
BSWP	Biennial Science Work Plan	NA	Box Model and Storm Data. State of the Science for Shellfish Processes, Sediment Interactions, and Watershed Attenuation of Nitrogen in the Puget Sound Ecosystem. Nutrient Synopsis. Puget Sound Crab and Shrimp Assessment. Ferry-Based Monitoring. Juvenile Chinook Salmon Contaminant Monitoring (Sample Collection). High Resolution Marine Water Quality Monitoring. SoundToxins Partnership Harmful Algal Blooms Monitoring. Juvenile Chinook Salmon Contaminant Monitoring. pH Model Scope.	X
1	Implement studies on persistent, bioaccumulative chemicals to understand transport, trophic transfer, and associated ecological and human health risk and to ensure that Washington State's water quality standards and sediment management standards are protective of both fish and wildlife and allow human and wildlife consumption.		Puget Sound Crab and Shrimp Assessment.	
1	Describe the availability, feasibility, and safety of alternatives to products and processes that use and release toxic chemicals of concern into the Puget Sound ecosystem.		Safer Alternatives. Green Chemistry.	
1	Develop integrated monitoring and assessment of toxic chemical sources, exposure, and effects.		Box Model. Juvenile Chinook Salmon Contaminant Monitoring.	
1	Synthesize information on emerging contaminants of concern.		Biomonitoring for Emerging Contaminants. Measurement of PPCPs and PFASs in Urban Bay Sediments (Elliot Bay).	
2	Develop monitoring and assessment of benthic invertebrates in small streams to evaluate stormwater management and other efforts to protect and restore streams.			
2	Evaluate the effectiveness of low impact development (LID) projects and stormwater management best management practices and programs.			
2	Evaluate land uses and associated pollutants that would require treatment beyond sediment removal.			
2	Evaluate projected environmental benefits of structural stormwater retrofits given varying levels of effort to guide the extent of structural retrofits needed to help meet 2020 ecosystem recovery targets.			
2	Evaluate individual and combined effects of commonly used pesticides on salmonids, other fish, and their foods.			
5/6	Evaluate nitrogen reduction in public domain on-site system treatment technologies.		OSS Denitrification Verification.	
5/6	Implement studies of human-related contributions of nitrogen to dissolved oxygen impairments in sensitive Puget Sound marine waters.		State of the Science for Shellfish Processes, Sediment Interactions, and Watershed Attenuation of Nitrogen in the Puget Sound Ecosystem. Nutrient Synopsis. Ferry-Based Monitoring. High Resolution Marine Water Quality Monitoring. Model sediment-water interactions in Puget Sound	
7	Establish and sustain pollution identification and correction (PIC) programs to identify and fix nonpoint pollution problems.			
7	Research and implement monitoring to understand the specific environmental conditions that produce toxic harmful algal blooms (HABs) and pathogen events.		SoundToxins Partnership Harmful Algal Blooms Monitoring.	
8	Evaluate existing oil spill risk assessments and complete additional risk analyses of higher risk industry sectors to ensure there are appropriate levels of investment in reducing risk.			
8	Evaluate information on baseline conditions for key species at risk from oil spills and improve these as necessary so that baselines exist that can be used in assessments of natural resource damages.			
9	Expand monitoring of freshwater and marine water areas to assess human exposures to pollution during water contact recreation.			
OA	Design and implement monitoring for ocean acidification variables across the Puget Sound to understand the status, diversity and range of conditions.		pH Model Scope.	
OA	Develop and implement studies to assess the risk and vulnerability of Puget Sound species to ocean acidification.			
OA	Develop adaptation strategies given assessed vulnerability to ocean acidification.			

This strategy is also designed to be linked to the Washington Shellfish Initiative. For example, the Toxics and Nutrients NEP grant is funding the Ocean Acidification Blue Ribbon Panel. Many of the nutrient projects will also help prevent pathogen pollution from harming shellfish beds.

While the focus of this funding is on toxics and nutrients, it also supports salmon recovery. Two of the toxics / science projects directly monitor salmon health. Reducing nutrients improves dissolved oxygen concentrations that improve habitat. Similarly, reducing loading of toxics to Puget Sound improves salmon health.

This work will directly support four of the twenty recovery objectives identified for Puget Sound (marine water quality, freshwater quality, toxics in sediments, and toxics in fish) and indirectly support many others. The outputs and/or outcomes of each sub-award will be assessed for their relative contribution to these recovery objectives and the findings will be documented through FEATS reporting.

Evaluating and Adapting Toxics and Nutrients Programs

Decision Process for Funding

This draft implementation strategy was written by Ecology with significant support from EPA, DOH, and PSP. We solicited input on themes and specific projects from the Leadership Council, Ecosystem Coordination Board, Puget Sound Science Panel, the Cross-Partnership Strategic Advisory Committee, and the NWIFC and Tribes.

Individual awards are made within the context of the implementation strategy. In some cases, the strategy points to a specific project and Ecology will work directly with a lead entity to conduct that work. In other cases, Ecology will announce a competitive process where project proponents submit proposals and Ecology funds the best proposal. Both competitive and directed sub-awards may be made under this work plan based on the guidance that has been established by the Lead Organizations for this purpose.

Reporting of Program Accomplishments

Information Dissemination

Information on all Toxics and Nutrients NEP projects are available on our website at http://www.ecy.wa.gov/puget_sound/grants_fed_toxics.html.

Measuring Programmatic Success

Implementation of Programs

Effectiveness of the NEP Program is measured in numerous ways. Ecology reports on effectiveness measures to EPA as part of the grant (see table below). EPA is also evaluating the success of the current NEP program.

#	Description	Unit	Target (Rounds 1 -3)	Status (Rounds 1-3)
1	Six-year strategy on how to prevent, reduce, and control toxics and nutrient loadings to Puget Sound, including project prioritization schemes and sub-award selection criteria.	Complete six-year strategy	1	Completed. Strategy is updated annually
2	Fund prioritized subawards to prevent, reduce, and control toxics and nutrients.	Number of implementation projects funded	20	27 projects funded
3	Complete prioritized subawards to prevent, reduce, and control toxics and nutrients.	Number of implementation projects completed	15	2 projects completed
4	Fund scientific data gaps in our understanding of the sources, pathways, loadings, and impacts from toxics and nutrients.	Number of scientific investigation projects funded	10	13 projects funded
5	Fill scientific data gaps in our understanding of the sources, pathways, loadings, and impacts from toxics and nutrients.	Number of scientific investigation projects completed	10	1 project completed
6	Write state guidance for developing safer alternatives assessments for products that contain or release toxics. Complete high-priority alternatives assessments.	Projects completed (guidance and alternatives assessments)	3	1 project (the guidance) is in draft for public review
7	Inspections of businesses that use toxic chemicals to provide technical assistance and compliance to prevent release of those toxics to the environment (funding local source control specialists in Everett, Puyallup, and Port Angeles to complement state funding elsewhere).	Number of businesses inspected	800	635
8	Prevent polycyclic aromatic hydrocarbon (PAH) pollution from entering the environment.	Estimated pounds of PAH pollution prevented	700	0 (projects still in planning stage)
9	Test products to enforce the ban on PBDEs.	Number of products tested	150	Products still being tested
10	Best Management Practices (BMPs) installed on agricultural land to prevent nutrient and pathogen pollution.	Number of agriculture BMPs installed	40	In progress
11	Evaluation (and approval if supported by evaluation) of non-proprietary technologies for removing nitrogen in septic systems.	Number of technologies evaluated	3	In progress

Section B. Overview of Round 4 (FFY 13)⁶ Projects

EPA is providing \$3,320,582 for the Round 4 (FFY 2013) toxics and nutrients grant. The themes were selected primarily by analyzing the priorities of 2012 Action Agenda (strategic initiative and ranked sub-strategies). The themes are:

A. Toxics

1. Stormwater Strategic Initiative C2.4 NTA 1 “Compliance Assurance Program”
2. The second-ranked sub-strategy C1.1 “Implement and strengthen authorities and programs to prevent toxic chemicals from entering the Puget Sound environment”

B. Nutrients

1. Shellfish Strategic Initiative C1.6 NTA 3 “Priority Areas for Voluntary Incentive and Regulatory Programs”. Note: this theme will not be funded through the toxics and nutrients grant if EPA separately funds a riparian buffer project.
2. Shellfish Strategic Initiative C9.4 NTA 4 “Pollution Identification and Control (PIC) Program”
3. Shellfish Strategic Initiative C1.6 NTA 3 “Water Quality Enforcement”
4. The third-ranked sub-strategy C9.1 “Complete Total Maximum Daily Load (TMDL) studies and other necessary water cleanup plans for Puget Sound to set pollution discharge limits and determine response strategies to address water quality impairments.”

C. Scientific Investigations

1. Characterization of Emerging Contaminants (especially biological impacts from EDCs)
2. Develop links between productivity, sediment processes, and sediment fluxes

The specific projects for Round 4 funding were based on additional stakeholder input and are described below.

⁶ Clean Water Act Program (CWA) linkages:

1. Establishing water quality standards.
2. Identifying polluted waters and developing plans to restore them (total maximum daily loads).
3. Permitting discharges of pollutants from point sources (national pollutant discharge elimination system permits).
4. Addressing diffuse, nonpoint sources of pollution.
5. Protecting wetlands.
6. Protecting coastal waters and large aquatic ecosystems through the national estuary program.

Summary of One-Page Descriptions of Projects

	Theme	Title	Funding Amount
Toxics	C2.4 NTA 1 Compliance Assurance	<u>Sectors Go Green</u>	\$205,000
	C2.4 NTA 1 Compliance Assurance	<u>Local Source Control Partnership</u>	\$600,000
	C1.1 “Implement and strengthen authorities....”	<u>Reducing toxic releases from automobiles</u>	\$112,050
	C1.1 “Implement and strengthen authorities....”	<u>Implementing Chemical Action Plans (CAPs): Cleaner Wood-Burning Stoves</u>	\$250,000
	C1.1 “Implement and strengthen authorities....”	<u>PAHs and Railroads</u>	\$169,000
Nutrients	C3.2 NTA 1 Riparian Buffers	<u>Riparian Buffers on Agricultural Land</u>	\$0
	C9.4 NTA 4 PIC	<u>Snohomish County PIC (Pollution Identification and Correction) Program</u>	\$100,000
	C1.6 NTA 3 Enforcement	<u>Inspection and Implementation: Nonpoint Pollution Sources</u>	\$714,000 ⁷
	C9.1 TMDLs	<u>Implementing Local Projects to Reduce Nutrients</u>	\$560,000
Science	CECs	<u>Fund a portion of the WDFW/NOAA proposal: Chemicals of Emerging Concern – Exposure and Effects in Puget Sound Biota</u>	\$220,000
	CECs	<u>Measurement of PPCPs and PFASs in Urban Bay Sediments (Elliot Bay)</u>	\$102,000
	Develop links between productivity, sediment processes, and fluxes	<u>Model sediment-water interactions in Puget Sound</u>	\$340,000
	ORCA Buoy (R3 continuation)	Fund ORCA Buoys (a continuation of the Round 3 ambient monitoring project) until PSEMP identifies priorities.	\$70,000

Total	\$3,320,582
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⁷ Includes \$121,468 in reallocated Round 3 Funds. This \$121,458 is not included in the total.

Toxics: C2.4 NTA 1 Compliance Assurance

Project Title	Sectors Go Green & Compliance Assurance Workshops
New or Ongoing?	New
Project Objective	Best Management Practices (BMPs) for Puget Sound region small businesses to use safer chemical solvents and reduce spills. Conduct dangerous waste compliance assistance and pollution prevention workshops throughout the Puget Sound region.
Project Description	Conduct competitive grants and/or RFPs to: 1) provide safer solvent alternatives and spray efficiency technical assistance to at least 30 auto body and repair shops to encourage them to switch to non-solvent cleaning systems. Provide shops with a free three-month trial of safer brake cleaning products or paint gun washing systems, a before and after air monitoring study and technical support; 2) provide secondary containment information and spill kit equipment to businesses that develop a voluntary spill prevention plan; and 3) conduct dangerous waste compliance and pollution prevention workshops to improve regulatory compliance.
Action Agenda	Strategic Initiative: C2.4 NTA 1 Compliance Assurance
Potential Partners (and Roles)	Local source control partners, private sector service providers, non-governmental organizations.
Milestones	Conduct and award competitive grant or RFP by 12/31/2013; Conduct BMP Sector Projects by 09/30/2015; Evaluate results and promote case studies by 09/30/2016.
Budget	\$205,000 total budget, including auto body and repair; secondary containment BMPs information and spill kit equipment; and compliance assurance workshops.
Outputs / Deliverables	<ol style="list-style-type: none"> 1. At least 30 autobody and repair shop demonstration projects. 2. At least 10,000 secondary containment BMPs distributed and 2,000 spill kits distributed. 3. At least 3 dangerous waste workshops, webinars or other innovative training methods conducted.
Intermediate Outcomes	<ul style="list-style-type: none"> • Report and evaluation of project and recommendations for sector-wide implementation • Number of auto body and repair shops reached to address use of toxic spray gun washing chemicals — toluene and acetone — that are known to cause damage to the central nervous system. Brake cleaning aerosol products typically contain perchloroethylene, a toxic chemical that is classified as a probable human carcinogen by the International Agency for Research on Cancer. • Increased dangerous waste generators compliance and actions taken to reduce toxic threats.
Long-Term Outcomes	Sector-wide implementation of safer solvents and best management practices. Reduced chance of finding a significant environmental threat to Puget Sound during compliance inspection.
CWA Programs	4 and 6

Toxics: C2.4 NTA 1 Compliance Assurance

Project Title	Local Source Control Partnership
New or Ongoing?	Ongoing
Project Objective	Expand local source control jurisdictions in the Puget Sound Region to improve water quality, including a focus on shellfish bed protection. The interagency agreements are typically for a four year period.
Project Description	This request will add at least 100 – 150 local source control site visits per year in the Puget Sound Region for a total of 1,200 site visits over a four year period. The \$600,000 will expand 1.5 local source control specialists in the Puget Sound Region. Local government jurisdictions provide onsite small business assistance to identify and eliminate pollution at the source. The program provides technical assistance to small businesses to make timely and effective corrective actions involving dangerous wastes, stormwater, solid waste, nutrients and spills.
Action Agenda	Strategic Initiative: C2.4 NTA 1 Compliance Assurance
Potential Partners (and Roles)	Local source control partners, private sector service providers, and nongovernmental organizations. Each Local Source Control Specialist conducts approximately 100 site visits per year for multiple business sectors. The program provides networking between local programs, departments, and jurisdictions, increasing collaboration and coordination on many agency issues, including but not limited to: hazardous waste, industrial wastewater, stormwater and spills. These funds will support the Snohomish County, Port Angeles, Puyallup, and Bothell programs.
Milestones	Conduct and award competitive grant or RFP by 12/31/2013; Conduct LSC site visits by 09/30/2017.
Budget	\$600,000
Outputs / Deliverables	<ol style="list-style-type: none"> 1. At least 100 site assistance visits per year. 2. Number and types of issues found during initial visits 3. Number and percent of issues resolved 4. Number of referrals.
Intermediate Outcomes	Types of corrective actions taken to resolve dangerous waste, stormwater, industrial wastewater and spills.
Long-Term Outcomes	Improved water quality in the Puget Sound region.
CWA Programs	4 and 6

Toxics: C1.1 “Implement and strengthen authorities....”

Project Title	Reducing toxic releases from automobiles
New or Ongoing?	New
Project Objective	To succeed at reducing toxic threats in Washington we must address pollution from automobiles, yet Ecology has a small investment in this area, limited to some technical assistance for Ecology’s mercury switch collection program and web information and educational workshops on car maintenance.
Project Description	This proposal would fund a RFP that independently evaluates the most efficient and effective ways to address the threat of polluted stormwater coming from automobiles. Petroleum from runoff is one of the largest pollution sources for Puget Sound. Automobiles also contain many toxic fluids and components, such as batteries, mercury switches and antifreeze, that need to be safely managed and kept out of the environment to avoid additional contamination, both during and after the useful life of the car.
Action Agenda	C1.1 “Implement and strengthen authorities....”
Potential Partners (and Roles)	PPRC, Washington Stormwater Center
Milestones	RFP solicitation, draft paper, final paper
Budget	\$112,050
Outputs / Deliverables	This proposal would fund a RFP leading to a report that independently evaluates the most efficient and effective ways to address the threat of polluted stormwater coming from automobiles. Examples of the types of approaches to consider include but are not limited to: 1) a drips and leaks certification program where auto owners in Puget Sound are required to pass an annual inspection at a certified mechanic in order to get their registration renewed; 2) a Puget Sound auto recycling certification program to help auto recyclers safely manage toxic auto wastes and produce cleaner auto shred residue, prior to vehicle crushing/recycling; 3) an approach that teams the auto repair and/or auto parts industry to incentivize car maintenance to minimize drips and leaks, and 4) a program that invests in local governments’ ability to clean up road contaminants before they enter water bodies through more street sweeping and/or retrofitting stormwater drains with contaminate-catching filters; 5) an analysis on the potential for an end-of-life vehicle program in Puget Sound based on the European Union’s directive.
Intermediate Outcomes	Top recommendations are integrated into Ecology’s work and/or develop sustainable budget adds to support, and share with appropriate stakeholders/service deliverers.
Long-Term Outcomes	Recommendations are implemented and there is a measurable decrease in drips and leaks from automobiles impacting Puget Sound stormwater.
CWA Programs	4 and 6

Toxics: C1.1 “Implement and strengthen authorities...”

Project Title	Implementing Chemical Action Plans (CAPs): Cleaner Wood-Burning Stoves
New or Ongoing?	New
Project Objective	Develop retrofit technology for wood-burning stoves that reduces pollution, particularly PAHs
Project Description	Ecology and Puget Sound Clean Air Agency will initiate an open competition for PAH-reducing retrofit technology designed for use on uncertified wood stoves. Preliminary agency sponsored research has shown that PAH emissions from wood-burning residential heating devices can be reduced by 75% to 90% through the application of such retrofit technology.
Action Agenda	C1.1 NTA 1 Support engineering costs and comprehensive lab and/or real-world emission testing of competitively selected retrofit technology(ies).
Potential Partners (and Roles)	Puget Sound Clean Air agency would administer the project, including a competitive technology-selection process.
Milestones	<ul style="list-style-type: none"> - Jun-Aug 2013: develop RFP and program specifics, criteria, etc. - Aug-Sept 2013: issue RFP, close by end of September - October 2013: select technology(ies) - Dec 2013 – Feb 2014: conduct comprehensive bench-top testing for effectiveness of emission reductions and ease of use. - Mar-Apr 2014: evaluate testing results - May 2014: report results, and if testing successful, begin developing pilot program to further evaluate any devices that met testing criteria
Budget	\$250,000
Outputs / Deliverables	<p>A. Quarterly progress reports. Emissions test analyses reports.</p> <p>B. Summary report including projected PAH reduction from application of the selected retrofit device(s) to wood smoke PAH sources within the Puget Sound area.</p>
Intermediate Outcomes	Fabrication of refined prototype(s). Identification of path towards commercial production.
Long-Term Outcomes	Ecology’s air quality program will team with other air agencies to deploy a pilot project utilizing this technology, with the goal of adding retrofit devices to the current suite of programs aimed at reducing PM and PAH emissions in Tacoma and the other at-risk areas.
CWA Programs	4 and 6

Toxics: C1.1 “Implement and strengthen authorities...”

Project Title	PAHs in Sensitive Freshwater Aquatic Habitat near Railroads in Puget Sound
New or Ongoing?	New
Project Objective	Determine baseline concentrations of PAHs near railroads in freshwater aquatic habitats in the Puget Sound basin. Evaluate if elevated levels of PAHs are present in sensitive freshwater aquatic habitats near railroads in Puget Sound.
Project Description	The Puget Sound Toxics Loading Assessment estimated that creosote treated wood accounted for over one-third of the total PAH release in the Puget Sound basin. Marine pilings, railroad ties and utility poles represent the major sources. Statewide, railroad ties were estimated as the largest single source in the PAH Chemical Action Plan. While marine pilings represent a clear and direct pathway for entering Puget Sound, it is unclear whether migration into sensitive aquatic habitats is occurring for railroad ties and utility poles. This project would use the results of a recently-completed GIS mapping project to select sensitive aquatic sites near railroads for environmental testing to determine if elevated levels of PAHs are present. The data could also be used to help establish baseline conditions near railroads prior to future traffic expansion related to coal or petroleum transport. Approximately 10 potentially impacted sites and 2 reference areas would be sampled as part of the project. Water, tissue and soil/sediments would be collected and analyzed for PAHs.
Action Agenda	C1.1 Implement and strengthen authorities and programs to prevent toxic chemicals from entering Puget Sound environment (C1.1 NTA 1: Implement PAH CAP).
Potential Partners	Ecology would do the work and information would be useful to railroad companies and landowners and general Puget Sound community.
Milestones	<ol style="list-style-type: none"> 1. Prepare draft and final QAPP 2. Conduct sampling 3. Conduct laboratory analysis 4. Prepare draft and final reports 5. Prepare reduction strategies
Budget	\$169,000 for Puget Sound portion. Could be expanded statewide with non-NEP funding.
Outputs / Deliverables	<ul style="list-style-type: none"> • Evaluate if elevated levels of PAHs are present in sensitive freshwater areas near railroads. • Establish baseline conditions for PAHs near railroad lines. These data will be helpful in assessing future impacts from increased railroad traffic. • Develop strategies to reduce the release of PAHs from this source.
Intermediate Outcomes	Implement strategies to reduce the release of PAHs from this source.
Long-Term Outcomes	<ul style="list-style-type: none"> • Reduce levels of PAHs in the Puget Sound basin • Reduce biological impairments from PAHs in the Puget Sound basin
CWA	4 and 6

Nutrients: C3.2 NTA 1 – Riparian Buffers

Project Title	Riparian Buffers on Agricultural Land
New or Ongoing?	New
Project Objective	Install riparian buffers on agricultural land that are larger than the typical minimum amount through incentive programs.
Project Description	In consultation with stakeholders, Ecology would develop a program to install riparian buffers on agricultural land that would meet the NOAA recommendations. Ecology would consider various options for distributing money based on likelihood of successfully installing and maintaining buffers, costs per mile, and location. All existing NEP requirements for project tracking would apply, see http://www.ecy.wa.gov/puget_sound/docs/NEP_Ag_BMP_Funds_Guidance_2012.pdf . Options could include competitive grants and/or direct awards. Funding would focus on the actual implementation of the buffer, but would also included addressing basic questions about how to implement the NOAA buffer matrix. (For example, the guidelines say the buffer needs to be “As wide as necessary to meet water quality standards; can be determined by FOTGs”; however, the FOTGs don’t address WQS. We would need to determine an actual buffer width number).
Action Agenda	Strategic Initiative: C3.2 NTA 1 - Buffers
Potential Partners (and Roles)	Ecology, EPA, NWIFC, Tribes, CDs, WACD, SCC, WSDA, PSP
Milestones	Develop common understanding of the NOAA matrix: September 2013 Develop competitive grant or finalize direct award: October 2013 Install buffers: Begin in 2013, complete by December 2015.
Budget	\$0. EPA is planning to fund riparian buffers separately; however, this project is available to be funded as needed.
Outputs / Deliverables	<ol style="list-style-type: none"> 1. Document interpretation of NOAA matrix. 2. Riparian buffers installed on agricultural lands.
Intermediate Outcomes	Project determines the feasibility of larger buffers and improves water quality and habitat in areas where the buffer is installed.
Long-Term Outcomes	Improved water quality (including nutrients and pathogens) and habitat.
CWA Programs	4 and 6

Nutrients: C9.4 NTA 4 PIC

Project Title	Snohomish County PIC (Pollution Identification and Correction) Program
New or Ongoing?	New (but ongoing for DOH Pathogen grant)
Project Objective	Reduce nutrient pollution to Puget Sound through the Snohomish County-led Pollution Identification and Correction (PIC) program
Project Description	PIC programs monitor watersheds for fecal coliform bacteria. Pollution hot spots trigger community outreach and property surveys to identify and correct sources such as onsite sewage systems and livestock. Investigators work with property owners to correct problems by providing technical assistance, incentives and if necessary, enforcement. The Snohomish County PIC program would focus on the lower Stillaguamish River (south of Stanwood and north of Marysville). Ecology (toxics and nutrients) and the Department of Health (pathogens) would jointly fund this program. Normally, DOH funds PIC Programs. Ecology is proposing to partially fund this project because (a) it is a priority of the action agenda and (b) the Snohomish County PIC program has a stronger nutrient nexus and a weaker shellfish nexus than other PIC programs.
Action Agenda	Shellfish Strategic Initiative C9.4 NTA 4 “Pollution Identification and Correction Programs”
Potential Partners (and Roles)	Tribes, Snohomish County, Snohomish Conservation District, DOH (Will coordinate with DOH to avoid any duplicative admin)
Milestones	Within 6 months of project start date: prioritized work plans. Within 9 months of project start date: monitor and identify pollution sources. Within 12 months of project start date: work with landowners to correct problems. Project completion in three years.
Budget	\$100,000 from the Toxics/Nutrients NEP grant to supplement \$300,000 in Pathogen NEP grant funding.
Outputs / Deliverables	Pollution sources will be identified and corrected. Deliverables include monitoring data, outreach activities to engage the public, technical assistance site visits, and BMPs installed to correct problems.
Intermediate Outcomes	Outcomes will be coordinated with the DOH Pathogens grant.
Long-Term Outcomes	Outcomes will be coordinated with the DOH Pathogens grant.
CWA Programs	4 and 6

Nutrients: C1.6 NTA 3 Water Quality Enforcement

Project Title	Inspection and Implementation: Nonpoint Pollution Sources
New or Ongoing?	New
Project Objective	Reduce nutrient loading to Puget Sound by identifying sources of pollution and providing comprehensive implementation support to install best management practices (BMPs)
Project Description	Ecology will use half the funds (one FTE) to conduct inspections of non-point sources of pollution primarily in agricultural areas. These inspections will, parcel-by-parcel, identify the BMPs that need to be implemented to achieve clean water. The other half of the fund (one FTE) will provide parallel, comprehensive implementation support. This implementation support will augment other existing implementation efforts. Ecology will work with landowners through the entire process to install BMPs. The implementation support will help the landowner tap into existing funding sources (NRCS funds, CD funds, NEP Clean Water BMPs on Agricultural Land Fund, 319 funds, and others) for cost reimbursement when necessary. Ecology can also use other resources (e.g. Puget Sound Conservation Corps) as needed. Through this funding, Ecology will take responsibility to promptly overcome obstacles that otherwise prevent, discourage, or unnecessarily slow down the process of installing BMPs. Ecology will track the status of its own implementation work in real time of every parcel at each step on the path towards complete implementation. Implementation will usually, but not always, be a direct result of the inspections. Both the inspection and implementation piece of the project will focus on the primary agricultural counties of Puget Sound (Snohomish, Skagit, and Whatcom) but may provide assistance in other Puget Sound areas as needed.
Action Agenda	Strategic Initiative: C1.6 NTA 3 Water Quality Enforcement
Potential Partners (and Roles)	CDs, NRCS, DOH, and A Rocha USA: Ecology will work with CDs, NRCS and others to provide cost share and any available technical support to implement BMPs to achieve clean water.
Milestones	<ol style="list-style-type: none"> 1) Staff hired December 31, 2013 2) Staff trained and program at full speed by March 31, 2014. 3) Project complete by December 31, 2016.
Budget	\$714,000 (2 ES4s for 3 years plus \$28,169 supplemental monitoring)
Outputs / Deliverables	<ol style="list-style-type: none"> 1) 75 inspections per year. 2) Complete the implementation of 25 BMP projects per year.
Intermediate Outcomes	Reduced nutrient and fecal coliform pollution to rivers, streams, and Puget Sound.
Long-Term Outcomes	Shellfish beds are open and dissolved oxygen is not impacted by excessive nutrients.
CWA Programs	4 and 6

Nutrients: C9.1 TMDLs

Project Title	Implementing Local Projects to Reduce Nutrients
New or Ongoing?	Ongoing
Project Objective	Reduce nutrient loading in a basin with a total maximum daily load (TMDL) or similar plan while also addressing other pollution or habitat issues.
Project Description	Ecology will competitively select and fund one or two projects in a local area to address nutrients in Puget Sound. Ecology will select one or two projects that implement a TMDL or similar plan for nutrients. The TMDL can be a TMDL in progress or a TMDL that has been completed. Examples include the South Puget Sound Dissolved Oxygen Study, the Quartermaster Harbor Dissolved Oxygen Study, Hood Canal, Campbell and Erie Lakes, Lake Sammamish, Lake Ballinger, Cottage Lake, Lake Sawyer, Lake Whatcom, Fenwick Lake, Budd Inlet/Deschutes River, Clark's Creek and others. Additional points will be awarded for projects that are supported by LIOs, that implement Local Near Term Actions, and that address multiple parameters. The projects would address low dissolved oxygen concentrations and other nutrient-related impacts.
Action Agenda	The third-ranked sub-strategy C9.1 "Complete Total Maximum Daily Load (TMDL) studies and other necessary water cleanup plans for Puget Sound to set pollution discharge limits and determine response strategies to address water quality impairments."
Potential Partners (and Roles)	Partners are dependent on the project chosen through the competitive process.
Milestones	Run the competitive grant process in summer 2013, sign the grant fall 2013, complete the work by end of 2016.
Budget	\$560,000 (one or two projects)
Outputs / Deliverables	Outputs and deliverables are dependent on the project chosen through the competitive process.
Intermediate Outcomes	Intermediate outcomes are dependent on the project chosen through the competitive process.
Long-Term Outcomes	Long-term outcomes are dependent on the project chosen through the competitive process, but will need to include lower nutrient input and increased dissolved oxygen concentrations.
CWA Programs	3 and/or 4, 6

Science: Chemicals of Emerging Concern

Project Title	Chemicals of Emerging Concern – Exposure and Effects in Puget Sound Biota
New or Ongoing?	New (Complements a different Chemicals of Emerging Concern project from Round 3)
Project Objective	This project provides a Sound-wide assessment of the presence and biological impact of a broad range of CECs in multiple fish and shellfish species, representing several important conveyance pathways, across a broad expanse of Puget Sound.
Project Description	The project provides a current picture of the extent and magnitude of contamination of Puget Sound biota, and develops cost-effective bioeffects endpoints for targeted CECs. The ultimate goal of this project is to provide Puget Sound recovery targets based on CEC-related health endpoints in indicator species, as well as CEC tools for monitoring Puget Sound ecosystem health. Study objectives are to (1) provide data on two major classes of CECs, xenoestrogens and pharmaceutical antidepressants, in organism tissues via a Puget Sound-wide reconnaissance survey of five major species, representing freshwater, nearshore and marine habitats and multiple conveyance pathways, and (2) develop widely accepted biological indicators of EDC-effects including vitellogenin induction, and alterations in endocrine hormones, steroidogenesis, and altered growth, for English sole and juvenile Chinook salmon. Establishing vitellogenin induction as a monitoring tool for English sole and juvenile Chinook salmon will fill critical gaps in the Puget Sound Partnership’s Toxics in Fish Vital Sign. Combining results from this project with existing PSEMP efforts to monitor a wide range of other contaminants will provide a balanced perspective for prioritizing contaminant-related recovery efforts in Puget Sound.
Action Agenda	Biennial Science Work Plan and C1.1 NTA 6
Potential Partners	This is a joint project between WDFW and NOAA Fisheries.
Milestones	Dates would be determined in conjunction with WDFW: QAPP, Sample Collection, Chemical Analyses, Effects of Xenoestrogens, and Final Report
Budget	\$220,000 (just under half the original project amount)
Outputs / Deliverables	<ol style="list-style-type: none"> 1) an assessment of the extent and magnitude of exposure in two classes of CECs in multiple fish and shellfish species throughout major Puget Sound basins: estrogenic chemicals with endocrine disrupting properties associated with waste water and stormwater and surface runoff, and anti-depressants routinely detected in effluent from WWTPs; 2) the development of genetic biological indicators of estrogenic EDC exposure for English sole; and 3) use of existing genetic biological indicators to assess estrogenic EDC exposure and associated impairments to reproductive health of juvenile Chinook salmon.

Intermediate Outcomes	<ol style="list-style-type: none"> 1) Fill important data gaps in our understanding of the biological impacts or occurrence from currently used CECs that can be used to develop a more comprehensive effects-based monitoring program for Puget Sound. 2) Develop biological characteristics/indicators that are predictive of contaminant exposure. 3) Provide EDC bioeffects indicators to complete the Puget Sound Toxics in Fish Vital Sign.
Long-Term Outcomes	Increased ability to address CECs in Puget Sound
CWA Programs	6

Science: Chemicals of Emerging Concern

Project Title	Measurement of PPCPs and PFASs in Urban Bay Sediments (Elliot Bay)
New or Ongoing?	New
Project Objective	Quantify baseline concentrations of 119 PPCPs and 13 PFASs in sediments collected from 30 stations in Elliot Bay.
Project Description	Concentrations of 119 pharmaceuticals and personal care products (PPCPs) and 13 perfluorinated alkylated substances (PFASs) will be measured in sediment collected from 30 monitoring stations in Elliott Bay for Ecology’s Urban Waters Initiative. These data will be summarized to establish baseline levels of these chemicals, and allow comparison with levels measured in a similar study in Bellingham Bay in 2010.
Action Agenda Near-Term Actions or Ranked Sub- strategy	“C1.1 NTA 6: Monitoring and Assessment: PSP and the agencies involved in toxics source-reduction programs in the Puget Sound region—including air, stormwater, wastewater, and toxics reduction programs at Ecology, DNR, DOH, and local jurisdictions—will develop a long-term Puget Sound toxics monitoring and assessment program that will cover (1) status and trends monitoring of toxics in and released to Puget Sound...” from 2012 Action Agenda. Emerging contaminants and ambient monitoring were identified as the top two priorities for toxic science needs under the round 4 funding cycle.
Potential Partners (and Roles)	WDFW and/or NOAA/NMFS personnel may be interested in a joint study comparing levels in sediments and responses measured in biota.
Milestones	Establish baseline data for emerging contaminants in a major Puget Sound urban bay
Budget	\$102,000
Outputs / Deliverables	Data will be summarized, analyzed, and posted to the Ecology web as: raw data, summary tables and distribution maps, posters and peer-reviewed report.
Intermediate Outcomes	Establish baseline conditions for PFC and PPCPs in a major Puget Sound Urban embayment Prioritize the need to develop source control strategies for PFCs and PPCPs in Puget Sound
Long-Term Outcomes	Reduce levels of PFCs and PPCPs in Puget Sound Reduce biological impairments from PFC and PPCPs in Puget Sound
CWA Programs	2, 3, 4 and 6

Science: Model Sediment-Water Interactions in Puget Sound

Project Title	Model sediment-water interactions in Puget Sound
New or Ongoing?	New
Project Objective	Update dissolved oxygen model to simulate the interactions between the water column and the sediment
Project Description	Ecology proposes to build a sediment diagenesis component to the Puget Sound Dissolved Oxygen Model developed by PNNL. Dissolved oxygen modeling efforts are indicating that sediment-water interactions strongly influence primary productivity, particularly in shallow embayments. These regions are where human impacts on dissolved oxygen could be greatest. The current efforts prescribe sediment oxygen demand and nutrient releases and adjust these fluxes based on alternative external loading. Where nutrient loads decrease, the sediment-water interactions also weaken. The relationship is externally specified, but a sediment diagenesis component would couple those fluxes to changes in external loading. A sediment diagenesis model would allow us to understand the timing of sediment interactions. This could improve model performance through better seasonal variability, and it would allow us to understand how differences in winter discharges carryover to summer dissolved oxygen impacts.
Action Agenda	Biennial Science Work Plan
Potential Partners (and Roles)	Pacific Northwest National Laboratory – contractor. Role: update the Puget Sound Georgia Basin dissolved oxygen model software, test, and apply to current conditions and future scenarios.
Milestones	Modeling Plan – 6 months from start Draft model and draft project report – 21 months from start Final model and final project report – 24 months from start
Budget	\$340,000 total (\$100,000 for Ecology staffing and \$240,000 for contract with PNNL)
Outputs / Deliverables	<ul style="list-style-type: none"> • Draft and final Quality Assurance Project Plan • Revised Puget Sound Georgia Basin Dissolved Oxygen Model • Draft and final project reports
Intermediate Outcomes	<ul style="list-style-type: none"> • Reduce uncertainty in dissolved oxygen impacts from humans. • Improve information driving regulatory decisions. • Quantify the linkage between nutrients from natural sources (e.g. the Pacific Ocean) and human sources and dissolved oxygen impacts that accounts for the effect of sediment processes.
Long-Term Outcomes	<ul style="list-style-type: none"> • Reduce dissolved oxygen impacts from humans to meet the water quality standards into the future
CWA Programs	2, 3, 4, and 6

Section C. Summary of Six-Year Strategy

	Project Name (Organized by Investment Area)	Description	Action Agenda Strategies / NTAs Supported	Freshwater Quality	Marine Water Quality	Shellfish Beds	Toxics in Fish	Marine Sediment Quality	Lead Entity & Partners Completing Work	Estimated Timeframe	Output	Outcome	FFY 10/11/12 (Rounds 1-3) Funding	FFY 13 (Round 4) Funding	FFY 14/15 (Round 5/6) Funding
Toxics	Safer Alternatives Assessment	With the assistance of two consultants, Ecology is leading a collaborative process with stakeholders to define elements of and finalize a method for conducting safer alternative assessments, using existing models as a starting point for discussion. Based on the results of the Puget Sound Toxics Assessment, Ecology will identify chemicals or products that are good candidates for scientifically defensible assessment and work with partners to conduct alternatives assessments.	C 1.2 -- Promote the development and use of safer alternatives to toxic chemicals; C 1.2 NTA 1 -- Chemical Alternatives Assessments				X	X	Ecology	12/30/2012	Final Alternative Assessment Guidance document vetted through stakeholder process and posted to website. Conduct safer alternatives assessment on at least one chemical or product.	Businesses and governments will use the Alternative Assessment Guidance to conduct alternative assessments on chemicals they are using. The annual pounds of hazardous materials are reduced. By 2015, increase the use of safer chemicals cumulatively by 40%.	\$ 232,550		
	Technical Writer for Alternative Assessment Guidance	With the assistance of two consultants, Ecology is leading a collaborative process with stakeholders to define elements of and finalize a method for conducting safer alternative assessments, using existing models as a starting point for discussion. Based on the results of the Puget Sound Toxics Assessment, Ecology will identify chemicals or products that are good candidates for scientifically defensible assessment and work with partners to conduct alternatives assessments.	C 1.2 -- Promote the development and use of safer alternatives to toxic chemicals; C 1.2 NTA 1 -- Chemical Alternatives Assessments				X	X	Pure Strategies, Inc	6/30/2013	Final Alternative Assessment Guidance document vetted through stakeholder process and posted to website. Conduct safer alternatives assessment on at least one chemical or product.	Businesses and governments will use the Alternative Assessment Guidance to conduct alternative assessments on chemicals they are using. The annual pounds of hazardous materials are reduced. By 2015, increase the use of safer chemicals cumulatively by 40%.	\$ 69,450		
	Development of a Chemical Hazard-Based Technical Alternative Assessment Guidance (TAAG) Document	With the assistance of two consultants, Ecology is leading a collaborative process with stakeholders to define elements of and finalize a method for conducting safer alternative assessments, using existing models as a starting point for discussion. Based on the results of the Puget Sound Toxics Assessment, Ecology will identify chemicals or products that are good candidates for scientifically defensible assessment and work with partners to conduct alternatives assessments.	C 1.2 -- Promote the development and use of safer alternatives to toxic chemicals; C 1.2 NTA 1 -- Chemical Alternatives Assessments				X	X	Clean Production Action	6/30/2013	Final Alternative Assessment Guidance document vetted through stakeholder process and posted to website. Conduct safer alternatives assessment on at least one chemical or product.	Businesses and governments will use the Alternative Assessment Guidance to conduct alternative assessments on chemicals they are using. The annual pounds of hazardous materials are reduced. By 2015, increase the use of safer chemicals cumulatively by 40%.	\$ 27,000		
	Landscaper Accreditation	Through a competitive process, Ecology funded the Cascadia Consulting Group to establish a Landscaper Accreditation Program. The program will reduce nutrients, toxics, and pathogens from reaching Puget Sound and improve habitat. Currently, there are not enough land care professionals in our region with practical knowledge about green infrastructure, restoration horticulture, and other sustainable practices. The program will comprehensively address all aspects of sustainable, ecological land care, provide practical knowledge for people in the field, recognize individuals for their knowledge, and help create a "green sector" of professionals focused on sustainable land care.	C 1.4 -- Provide education and technical assistance to prevent and reduce releases of pollution; C 1.4 NTA 1 -- Landscaper Accreditation	X	X		X		Cascadia Consulting Group	10/31/2014	Develop a program in Washington that comprehensively addresses all aspects of sustainable, ecological land care, provides practical knowledge for people in the field, recognizes individuals for their knowledge, and helps create a "green sector" of professionals focused on sustainable land care.	Help reduce the overall use of pesticides and synthetic fertilizers in the soil and water. Help reduce PAH and particulate emissions from two-stroke engines. Increase natural stormwater filtration and reduce stormwater run-off through cutting edge landscape design, development, and maintenance.	\$ 280,000		
	Landscaper Certification	Through a competitive process, Ecology funded the Cascadia Consulting Group to establish a Landscaper Accreditation Program. The program will reduce nutrients, toxics, and pathogens from reaching Puget Sound and improve habitat. Currently, there are not enough land care professionals in our region with practical knowledge about green infrastructure, restoration horticulture, and other sustainable practices. The program will comprehensively address all aspects of sustainable, ecological land care, provide practical knowledge for people in the field, recognize individuals for their knowledge, and help create a "green sector" of professionals focused on sustainable land care.	C 1.4 -- Provide education and technical assistance to prevent and reduce releases of pollution; C 1.4 NTA 1 -- Landscaper Accreditation	X	X		X		Ecology	6/30/2014	Develop a program in Washington that comprehensively addresses all aspects of sustainable, ecological land care, provides practical knowledge for people in the field, recognizes individuals for their knowledge, and helps create a "green sector" of professionals focused on sustainable land care.	Help reduce the overall use of pesticides and synthetic fertilizers in the soil and water. Help reduce PAH and particulate emissions from two-stroke engines. Increase natural stormwater filtration and reduce stormwater run-off through cutting edge landscape design, development, and maintenance.	\$ 20,000		

Project Name (Organized by Investment Area)	Description	Action Agenda Strategies / NTAs Supported	Freshwater Quality	Marine Water Quality	Shellfish Beds	Toxics in Fish	Marine Sediment Quality	Lead Entity & Partners Completing Work	Estimated Timeframe	Output	Outcome	FFY 10/11/12 (Rounds 1-3) Funding	FFY 13 (Round 4) Funding	FFY 14/15 (Round 5/6) Funding
Preventing Automobile Leaks	Seattle Public Utilities and Ecology will coordinate hands-on workshops addressing vehicle leaks in and around Seattle. There will be about 100 workshops where participants will learn how to detect oil and other fluid leaks, identify the sources of the leaks, repair common minor leaks, clean up spills, and properly dispose of auto fluids. Seattle Public Utilities and Ecology will conduct post-workshop surveys to assess behavior change.	C 2.4 -- Control sources of pollutants;				X	X	Seattle Public Utilities	7/1/2014	Host at least 98 hands-on workshops in the Seattle area to will teach participants how to detect oil and other fluid leaks, identify the sources of the leaks, repair common minor leaks, clean up spills, and properly dispose of auto fluids. Conduct evaluation of overall effectiveness of the program	Reduce drips and leaks of oils and other fluids from automobiles, the leading source of these pollutants. Reduced oil and fuel loading to Puget Sound results in cleaner water and healthier ecosystems.	\$ 200,000		
Derelict Piling Removal	Creosote pilings are a leading cause of Polycyclic Aromatic Hydrocarbon (PAH) pollution in Puget Sound; as the pilings remain submerged, they release toxics both into the sediment and directly into water as the creosote degrades over time. With an Ecology grant, Pierce County will remove about 120 derelict creosote pilings along the shoreline near Chambers Creek. This project is part of the Pierce County Master Site Plan.	C 1.1 -- Implement and strengthen authorities and programs to prevent toxic chemicals from entering the Puget Sound environment; C 1.1 NTA 1 -- PAH and PFOS Chemical Action Plans				X	X	Pierce County Public Works and Utilities	6/30/2013	Remove 120 creosote-treated pilings that are leading contributors of PAH pollution.	Prevent PAH pollution to Puget Sound. Reduced pollution load leads to cleaner water quality and a healthier ecosystem.	\$ 160,000		
Puget Sound Creosote Removal Project	The Department of Natural Resources (DNR) will use \$500,000 to remove creosote pilings to reduce PAH inputs and improve habitat within Puget Sound. DNR will also conduct effectiveness monitoring. Piling removal will occur in Hood Canal.	C 1.1 -- Implement and strengthen authorities and programs to prevent toxic chemicals from entering the Puget Sound environment; C 1.1 NTA 1 -- PAH and PFOS Chemical Action Plans				X	X	Department of Natural Resources (DNR)	12/31/2014	1) Remove approximately 675 piling and 4,400 square feet of overwater structure from five sites. 2) Remove approximately 785 tons of creosote-treated debris from piling and beach debris removals Reduce PAH inputs of 324 kg per year (0.35 tons) in Puget Sound.	1) Reduction in PAH sediment, water, and air concentration and potential future inputs through the removal of creosote pilings. 2) Improved nearshore habitat (increased light penetration, decreased debris. Improved herring spawning habitat. 3) Accurate assessment of total number of creosote-treated pilings remaining in Puget Sound. 4) Estimated total of PAH input to Puget Sound based on number of pilings remaining.	\$ 700,000		
Expansion of Wood Stove Removal Program	Puget Sound Clean Air Agency (PSCAA) will extend and complement the existing Wood Smoke Reduction Program (WSRP) in Pierce County. Wood burning is a major source of PAHs and fine particle emissions in Pierce County. PSCAA will expand the "on the ground" wood stove replacement program. Under the grant, PSCAA will 1) increase the capital funds available for incentives and 2) to recruit and enroll households in the expanded WSRP.	C 1.1 -- Implement and strengthen authorities and programs to prevent toxic chemicals from entering the Puget Sound environment; C 1.1 NTA 1 -- PAH and PFOS Chemical Action Plans				X	X	Puget Sound Clean Air Agency	6/30/2014	This project will expand and improve the efficacy of previous wood stove replacement programs. We expect that it will enable the removal, replacement or retrofitting of about 1000 wood stoves and fireplaces, which will significantly reduce them, or completely and permanently eliminate them as PAH sources.	This project is expected to reduce PAH emissions by more than 800 pounds annually. Since the PAH emissions are directly dependent on the fuel consumption, the PAH emissions from these devices would have remained relatively constant for many years to come.	\$ 334,387		
Pesticide Use Survey	When pesticides reach waterbodies they cause problems, and the Puget Sound Toxics Assessment found that urban pesticide use was the leading source of copper. The Washington State Department of Agriculture (WSDA) will conduct a survey of typical urban pesticide use. Assessment WSDA will mail surveys to 6,000-8,000 homeowners and complete in-person surveys of professional commercial and public applicators. Results will drive future education and outreach efforts.	C 1.1 -- Implement and strengthen authorities and programs to prevent toxic chemicals from entering the Puget Sound environment; C 1.1 NTA 5 -- Pesticide Use Survey				X	X	Washington State Department of Agriculture	12/31/2013	(1) Establish stakeholder advisory committee. (2) Draft and final QAPP. (3) Survey designed and executed. (4) Draft and final Report.	WSDA and USDA NASS will provide an overview of pesticide use in urban areas. (1) Increased knowledge of pesticide use in urban areas, (2) developed and approved survey protocol for gathering pesticide use information in urban areas, and (3) identification of education and outreach opportunities leading to a potential decrease in urban pesticide use and pesticide loading to Puget Sound.	\$ 73,985		
PBDE Enforcement	Numerous persistent, bioaccumulative toxics (PBTs) and other toxics have been recently banned for certain uses in Washington: While it is illegal to sell the specified products containing these toxics, there was no active enforcement to check if the bans are working. This project includes purchasing items likely to contain PBDEs, sampling the products, and communicating with retailers and manufacturers if PBDEs are found.	C 1.6 -- Increase compliance with and enforcement of environmental laws, regulations, and permits; C 1.6 NTA 2 -- Compliance for Use of Toxics in Products				X	X	Ecology	7/31/2013	Sample products offered for sale to Washington consumers for specific banned chemicals, and work to ensure that any manufacturer found to violate the law is brought into compliance. Expand the amount of knowledge available on the prevalence of other halogenated flame retardants (especially PBT flame retardants) used as substitutes in applications where PBDEs have been banned.	Reduce the use of banned PBDEs in Washington State.	\$ 255,144		

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Development of a Fish Consumption Rate	Under our state's Clean Water Act authorities, Washington is revising its fish consumption rates to better protect people who eat its fish, and also to protect our environment and restore Puget Sound. The state's fish consumption rates are important because they drive regulatory standards about how clean the state requires our waters and sediments to be. The current fish consumption rates, developed in the 1980s and 1990s, are not accurate. New rates are necessary to protect high consumers of fish. The fish consumption rate is part of the equation that is used to calculate chemical criteria for toxics, and is an important driver in establishing water quality permit conditions and limits, and regulating the discharge of toxics into the aquatic environment. EPA has changed its default fish consumption rate. Ecology and the Northwest Indian Fisheries Commission (NWIFC) entered into an interagency agreement (IAA, pdf) to determine a state fish consumption rate acceptable to NWIFC member tribes.	C 1.1 -- Implement and strengthen authorities and programs to prevent toxic chemicals from entering the Puget Sound environment; C 1.1 NTA 3 -- Fish Consumption Rates and Management Standards				X		Northwest Indian Fisheries Commission	6/30/2012	Determine a state fish consumption rate acceptable to NWIFC member tribes for Washington clean-up and water quality criteria development,	Ecology can adopt a more appropriate fish consumption rate.	\$ 100,000		
Local Source Control	Local Source Control (LSC) partnerships focus directly on assisting small businesses to prevent polluted runoff from entering Puget Sound. The LSC partnership works with local jurisdictions to preserve waters in Puget Sound through source control. By addressing possible causes of pollution at the source of use, technical assistance to small businesses is making a difference. This approach is expected to save businesses money while protecting our water quality. The NEP funds are being spent through the existing LSC program and are funding four new municipal programs in Puyallup, Port Angeles, Everett and Bothell.	C 1.4 -- Provide education and technical assistance to prevent and reduce releases of pollution; C 2.4 NTA 1 -- Compliance Assurance Programs				X		Bothell, Everett, Port Angeles, Puyallup, and Ecology	10/10/2015	Each source control specialist will conduct between 100-300 source control site visits per full time equivalent per year, depending on the type of source control technical assistance provided and the number of small businesses located in the jurisdiction.	Businesses prevent, manage and control waste in a way that reduces the likelihood and amount of toxics reaching the sanitary sewer and stormwater system. Less stormwater pollution resulting in improved water quality.	\$ 1,188,108		
Fish Consumption Rate Rule- Making	This project funds one part of the multi-year Department of Ecology effort to update the fish consumption rate part of the water quality standards.	C 1.1 -- Implement and strengthen authorities and programs to prevent toxic chemicals from entering the Puget Sound environment; C 1.1 NTA 3 -- Fish Consumption Rates and Management Standards				X	X	Ecology	1/19/2017	Progress updating the Human Health Criteria in the state's water quality standards.	Updated Human Health Criteria in the state's water quality standards.	\$ 62,000		
Stormwater Center	Stormwater, or polluted runoff, is the leading cause of water pollution in urban areas across the nation. As rain and snow melt runs off rooftops, paved streets, highways, and parking lots, it picks up pollution such as oil, fertilizers, pesticides, soil, trash, and animal waste. Then the runoff carries that pollution into storm drains and downstream waters. Water in storm drains is usually not treated and flows into our lakes, rivers and Puget Sound. For this project, the Washington Stormwater Center will assemble information from a variety of local, regional, and state-wide sources into a web-based information system.	C 2.1 -- Manage urban runoff at the basin and watershed scale;				X	X	University of Washington	11/1/2012	Prepare for the creation of a Stormwater Information Repository (annotated literature review, IDDE manual and repository, and white paper on recommended next steps).	Creation of a Stormwater Information Repository.	\$ 27,062		
Establishing a Green Chemistry Center	TechLaw will form Green Chemistry Center as a point-of-contact and catalyst for collaborative green chemistry research and development, education and technical assistance. To achieve the goal, TechLaw will 1) create the green chemistry center from a diverse group representing the interests of cleaning Puget Sound; 2) establish the initial operating budget using NEP and other funds, and develop a framework for financial self-sustenance; and 3) support green chemistry with continued relationship-building and networking, identifying funding opportunities, and bringing the work of the center to academia and industry.	C 1.2 -- Promote the development and use of safer alternatives to toxic chemicals; C 1.2 NTA 3 -- Green Chemistry Road Map	X	X		X		TechLaw, Inc	9/30/2016	Establish a Green Chemistry Center in Puget Sound.	TBD	\$ 550,000		

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Local Source Control Round 3	The Local Source Control (LSC) partnership focuses directly on assisting small businesses to prevent polluted runoff from entering Puget Sound. The NEP funds are being spent through the existing LS Control program and are funding four new municipal programs in Puyallup, Port Angeles, Everett and Bothell. Additional Round 3 funds would pay for years 3 and 4 for the Bothell program.	C 1.4 -- Provide education and technical assistance to prevent and reduce releases of pollution; C 2.4 NTA 1 --Compliance Assurance Programs				X		Bothell	10/10/2015	See other "Local Source Control" project	See other "Local Source Control" project	\$ 200,000		
South Landers Street Storm Drain Cleaning	Through a competitive process, Ecology is funding the Seattle Public Utilities to remove legacy pollutant loads from their stormwater systems. The S Lander Street storm drain cleaning will reduce pollution loads to the East Waterway superfund site. Established pollution prevention programs are designed to prevent recontamination of the stormwater system.	C 2.3 -- Fix problems caused by existing development; C 2.3 NTA 3 -- Legacy Pollutant Removal				X	X	Seattle Public Utilities	12/31/2014	A total of approximately 24,800 linear feet of storm drain pipe will be cleaned in the S Lander St S storm drain systems. Material removed from the lines will be dewatered and disposed in accordance with local, state, and federal regulations. The proposed line cleaning will remove sediment that contains elevated levels of lead, mercury, zinc, PCBs, bis(2-ethylhexyl)phthalates, butylbenzylphthalates, HPAH, benzyl alcohol, and benzoic acid. Most of these chemicals are the contaminants of concern identified for the East Waterway sediments.	It is difficult to predict load reductions that can be achieved through line cleaning. Based on data from previous line cleaning efforts, approximately 30 - 150 lbs of contaminated sediment have been removed per linear foot of line cleaned. With 28,400 feet of line proposed to be cleaned, approximately 400 - 2,100 tons of contaminated material will be removed from the storm drain system that could otherwise be discharged to the East Waterway.	\$ 550,000		
Implementing Chemical Action Plans (CAPs): Cleaner Wood-Burning Stoves	Ecology and Puget Sound Clean Air Agency will initiate an open competition for PAH-reducing retrofit technology designed for use on uncertified wood stoves. Preliminary agency sponsored research has shown that PAH emissions from wood-burning residential heating devices can be reduced by 75% to 90% through the application of such retrofit technology.	C 1.1 -- Implement and strengthen authorities and programs to prevent toxic chemicals from entering the Puget Sound environment; C 1.1 NTA 1 -- PAH and PFOS Chemical Action Plans				X	X	External	6/1/2014	A. Quarterly progress reports. Emissions test analyses reports. B. Summary report including projected PAH reduction from application of the selected retrofit device(s) to wood smoke PAH sources within the Puget Sound area.	Fabrication of refined prototype(s). Identification of path towards commercial production. Ecology's air quality program will team with other air agencies to deploy a pilot project utilizing this technology, with the goal of adding retrofit devices to the current suite of programs aimed at reducing PM and PAH emissions in Tacoma and the other at-risk areas.		\$ 250,000	
Sectors Go Green	Conduct competitive grants and/or RFPs to: 1) provide safer solvent alternatives and spray efficiency technical assistance to at least 30 auto body and repair shops to encourage them to switch to non-solvent cleaning systems. Provide shops with a free three-month trial of safer brake cleaning products or paint gun washing systems, a before and after air monitoring study and technical support; 2) provide secondary containment information and spill kit equipment to businesses that develop a voluntary spill prevention plan; and 3) conduct dangerous waste compliance and pollution prevention workshops to improved regulatory compliance.	C 2.4 -- Control sources of pollutants; C 2.4 NTA 1 --Compliance Assurance Programs				X	X	External	9/30/2016	1. At least 30 auto body and repair shop demonstration projects. 2. At least 10,000 secondary containment BMPs distributed and 2,000 spill kits distributed. 3. At least 3 dangerous waste workshops, webinars or other innovative training methods conducted.	1. Report and evaluation of project and recommendations for sector-wide implementation 2. Number of auto body and repair shops reached to address use of toxic spray gun washing chemicals — toluene and acetone — that are known to cause damage to the central nervous system. Brake cleaning aerosol products typically contain perchloroethylene, a toxic chemical that is classified as a probable human carcinogen by the International Agency for Research on Cancer. 3. Increased dangerous waste generators compliance and actions taken to reduce toxic threats. 4. Sector-wide implementation of safer solvents and best management practices. Reduced chance of finding a significant environmental threat to Puget Sound during compliance inspection.		\$ 205,000	
Local Source Control	This request will add at least 100 – 150 local source control site visits per year in the Puget Sound Region for a total of 1,200 site visits over a four year period. The \$600,000 in proposed fund will expand 1.5 local source control specialists in the Puget Sound Region. Local government jurisdictions provide onsite small business assistance to identify and eliminate pollution at the source. The program provides technical assistance to small businesses to make timely and effective corrective actions involving dangerous wastes, stormwater, solid waste, nutrients and spills.	C 2.4 -- Control sources of pollutants; C 2.4 NTA 1 --Compliance Assurance Programs				X	X	External	9/30/2017	1. At least 100 site assistance visits per year. 2. Number and types of issues found during initial visits 3. Number and percent of issues resolved 4. Number of referrals.	Types of corrective actions taken to resolve dangerous waste, stormwater, industrial wastewater and spills. Improved water quality in the Puget Sound region.		\$ 600,000	

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	Reducing toxic releases from automobiles	This proposal would fund a RFP that independently evaluates the most efficient and effective ways to address the threat of polluted stormwater coming from automobiles. Petroleum from runoff is one of the largest pollution sources for Puget Sound. Automobiles also contain many toxic fluids and components, such as batteries, mercury switches and antifreeze, that need to be safely managed and kept out of the environment to avoid additional contamination, both during and after the useful life of the car.	C 1.1 -- Implement and strengthen authorities and programs to prevent toxic chemicals from entering the Puget Sound environment; 0				X	X	External	9/30/2014	This proposal would fund a RFP leading to a report that independently evaluates the most efficient and effective ways to address the threat of polluted stormwater coming from automobiles.	Top recommendations are integrated into Ecology's work and/or develop sustainable budget adds to support, and share with appropriate stakeholders/service deliverers. Recommendations are implemented and there is a measurable decrease in drips and leaks from automobiles impacting Puget Sound stormwater.		\$ 112,050	
Nutrients	Clean Water BMPs for Agricultural Activities	The Agricultural Best Management Practices Fund to Control Nutrient and Pathogen Pollution (Agriculture BMP Fund) is a fund to pay for the installation of agricultural BMPs to address nutrient and pathogen pollution. The fund will pay for eligible agricultural BMPs including fencing to protect waters from livestock, off-stream watering, and livestock feeding. Interested land owners must work through a conservation district, local government, tribe, or other governmental entity. The Agricultural BMP Fund is specifically designed so smaller landowners are eligible. Ecology's 319 Funding Guidelines are the basis for the NEP Agriculture BMP Guidance; the only provisions added were specific to the NEP grant requirements.	C 3.2 -- Ensure compliance with regulatory programs designed to reduce, control or eliminate pollution from working farms; C 3.2 NTA 1 -- Priority Areas for Voluntary Incentive and Regulatory Programs	X	X	X			Ecology	10/10/2016	Annual reports describing the BMPs installed and in progress, total amount spent, and locations of projects.	Short-term outcome: BMPs to reduce pathogen and nutrient pollutants installed. Long-term outcomes: (1) reductions in nitrogen and pathogen loading from agricultural areas, (2) improvements to dissolved oxygen concentrations in sensitive areas of Puget Sound, and (3) improvements in fecal coliform concentrations in shellfish growing areas.	\$ 772,650		
	Nutrient Bioextraction: Shellfish at Work	This project will mitigate anthropogenic nutrient loads and support habitat renewal in Budd Inlet through the establishment of a community-based shellfish gardening and bioextraction program.	C 1.4 -- Provide education and technical assistance to prevent and reduce releases of pollution; 0		X				Pacific Shellfish Institute	12/31/2014	Mussel aquaculture can 1) augment other strategies for removing excess nutrients from the marine system; 2) utilize the natural system to produce a compost product that is useful to the local community; 3) spur pollution control efforts; and 4) get the community engaged in learning about their local marine system and developing community-based solutions to wastewater issues in urban areas.	Project outputs will contribute to a fishable and swimmable Budd Inlet by mitigating nutrient enrichment while educating the community about local water quality processes and alternative nutrient removal strategies.	\$ 65,276		
	OSS Denitrification Verification	The goal of the study is to evaluate and verify new technologies to reduce nitrogen in domestic wastewater. Ecology entered into interagency agreements (IAAs) with the Department of Health (DOH) and the University of Washington (UW) to provide technical expertise to field test three innovative public domain technologies. If the field testing in the Puget Sound basin shows the technologies are effective and reliable, DOH will take the appropriate steps to develop standards for these nitrogen-removal technologies for use in Washington.	C 5.1 -- Effectively manage and control pollution from on-site sewage systems; C 5.1 NTA 3 -- OSS Nitrogen Treatment Technologies				X	X	Department of Health	12/31/2013	(1) Establish stakeholder advisory committee. (2) Draft and final QAPP. (3) Selection and installation of treatment technologies to be evaluated. (4) Draft and final Report.	DOH will approve (if appropriate) up to two new on-site sewage system technologies. (1) Increased use (either voluntary or regulatory) of nitrogen-removing systems in areas suffering from low dissolved oxygen levels, (2) reductions in nitrogen loading from on-site sewage systems, and (3) improve dissolved oxygen concentrations in sensitive areas of Puget Sound	\$ 312,863		
	Non-Point Inspectors	This project funds two Department of Ecology inspectors for the Whatcom Pollution Control Action Team (PCAT). The PCAT is an important facet of the Washington Shellfish Initiative and is designed to identify and address pollution from a variety of point and nonpoint sources, including on-site sewage systems, farm animals, pets, and stormwater runoff. Due to persistent and growing concerns over vulnerable shellfish resources in Portage Bay and Drayton Harbor, Whatcom County was identified as an initial focus area for a PCAT. The team includes and is dependent on several other agency and tribal partners at both the operations and field level.	C 3.2 -- Ensure compliance with regulatory programs designed to reduce, control or eliminate pollution from working farms; C 3.1 NTA 2 -- Effectiveness of Incentive Programs	X	X	X			Ecology	10/10/2016	(1) _00 site inspections per year, (2) Every parcel inspected installs necessary best management practices to protect water quality	(1) Decreased nitrogen concentrations in streams, rivers, and groundwater as shown by ongoing monitoring programs. (2) Meet fecal coliform standards in shellfish areas. (1) Meet drinking water quality standards in groundwater (2) Meet dissolved oxygen standards in marine waters. (3) Continue meeting fecal coliform standards in shellfish areas long-term.	\$ 850,137		
	OSS Denitrification Verification	The goal of the study is to evaluate and verify new technologies to reduce nitrogen in domestic wastewater. Ecology entered into interagency agreements (IAAs) with the Department of Health (DOH) and the University of Washington (UW) to provide technical expertise to field test three innovative public domain technologies. If the field testing in the Puget Sound basin shows the technologies are effective and reliable, DOH will take the appropriate steps to develop standards for these nitrogen-	C 5.1 -- Effectively manage and control pollution from on-site sewage systems; C 5.1 NTA 3 -- OSS Nitrogen Treatment Technologies			X		X	University of Washington	8/31/2013	(1) Establish stakeholder advisory committee. (2) Draft and final QAPP. (3) Selection and installation of treatment technologies to be evaluated. (4) Draft and final Report.	DOH will approve (if appropriate) up to two new on-site sewage system technologies. (1) Increased use (either voluntary or regulatory) of nitrogen-removing systems in areas suffering from low dissolved oxygen levels, (2) reductions in nitrogen loading from on-site sewage systems, and (3) improve dissolved oxygen concentrations in sensitive areas of Puget Sound	\$ 317,267		

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	removal technologies for use in Washington.													
Agriculture BMP Effectiveness Monitoring	Ecology, local partners, and stakeholders will work to improve water quality at a sub-watershed scale by 1) prioritizing agricultural areas for Best Management Practices (BMPs) implementation, 2) providing baseline data for identifying pollution sources and measuring water quality improvements, and 3) determining both programmatic effectiveness and water quality improvements. Effectiveness of BMPs will be measured from both a water quality standards and a watershed health prospective.	C 3.2 -- Ensure compliance with regulatory programs designed to reduce, control or eliminate pollution from working farms; C 3.1 NTA 2 -- Effectiveness of Incentive Programs	X	X	X			Ecology	10/1/2016	Information generated from this project can be used to guide implementation of BMPs and track the effectiveness of actions.	Improved use of BMPs on agricultural land.	\$ 150,000		
Solutions for 5 Director Talks	The directors of the Washington State Departments of Agriculture and Ecology and the Conservation Commission have initiated a process to more efficiently and effectively address water quality on agricultural lands. Project(s) will be determined based on the outcome of the 5-Director talks. Example: Ensure BMPs being used on agricultural land are adequately addressing nutrients.	TBD; TBD						External Direct	to be determined	To be determined based on project selected	To be determined based on project selected	\$ 14,000		
Johns Creek Estuary Conservation	Capitol Land Trust will purchase the 47-acre Bayshore Golf Course which occupies most of the Johns Creek delta in Oakland Bay. The project will eliminate the input of nitrogen and lawn chemicals into Johns Creek and Oakland Bay and retire water rights that reduce instream flow in Johns Creek during critical summer months.	C 2.3 -- Fix problems caused by existing development; 0		X	X			Capitol Land Trust	12/1/2014	Acquire a 47-acre golf course on Oakland Bay and Johns Creek. Cease operation of the golf course, stop irrigation and nitrogen/lawn chemical application, and begin restoring property.	A source of fertilizers and lawn chemicals will be removed, and summer irrigation water will be returned to instream flow, resulting in increased water quality and quantity in Johns Creek and Oakland Bay. • Decreased concentrations of nitrogen and/or phosphorus in marine and freshwater. • Improved dissolved oxygen concentrations in marine or freshwater. • Improved aquatic life health due to lower pollution pressures. • Improved summer flow in Johns Creek.	\$ 251,247		
Phosphorus Management for Lake Whatcom	Lake Whatcom has seen a marked decline in water quality as a result of residential development in its watershed. Scientific analysis has identified the conversion of land from a "forested condition" to a "developed condition" as the primary driver of this decline. The City of Bellingham will retrofit grassy ditches and an unpaved roadway section, installing enhanced treatment and infiltration systems designed specifically for phosphorus removal. This project will treat runoff from 18 acres of residential development which currently adds over 18 pounds of dissolved phosphorus to the lake annually. The City of Bellingham will monitor system effectiveness, and will use this information to improve subsequent retrofit projects and infrastructure improvements.	C 2.3 -- Fix problems caused by existing development; C 2.3 NTA 1 -- Stormwater Retrofit Projects	X	X				City of Bellingham	12/31/2015	<ul style="list-style-type: none"> Retrofit 1,200 lineal feet of grassy ditches, converting them into enhanced treatment and infiltration systems. This would produce a total of 7,200ft² of infiltrative area. Install 9,650ft² of native planting to replace grassy ditch slopes. Plant selection will focus on plants that maximize phosphorus uptake and provide year-round evapotranspiration. Retrofit 3,060ft² of gravel alleyway, converting it into a self-mitigating pervious pavement section. Manage runoff from 17 acres of residential development, including about 6 acres which lies in adjacent Whatcom County but drains into the City of Bellingham 	In totality, the upgraded facilities will be able to manage runoff from 18.02 acres of development which currently discharges more than 18 pounds of phosphorus per year into Lake Whatcom. According to Ecology-approved stormwater modeling software, the engineered treatment and infiltration systems will remove at least 15 pounds of this phosphorus, and route the remainder through adjacent treatment systems associated with previous improvements. This would represent 9% of the TMDL recommended reduction in total loading.	\$ 432,560		
Nutrient Reduction PIC: Murden Cove	The Kitsap Public Health District will assess, identify and correct residential nutrient non-point pollution sources in the Murden Cove watershed through a Pollution Identification and Correction (PIC) program. These improvements in water quality will protect critical shellfish and aquatic habitat and public health.	C 9.4 -- Develop and implement local and tribal pollution identification and correction (PIC) programs; C 9.4 NTA 1 -- Pollution Identification and Correction Programs	X	X		X		Kitsap Public Health District	12/31/2015	Complete 175 PIC property inspections. Ensure correction of 100% of nutrient and fecal bacteria sources. Complete monthly water quality monitoring for fecal bacteria, pH, temperature, dissolved oxygen and nutrients.	Show a statistically significant reduction in nutrient loading and fecal bacteria, with improvements in dissolved oxygen, pH and temperature. These improvements in water quality will provide protection of public health and critical aquatic habitat.	\$ 255,802		

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Inspection and Implementation: Nonpoint Pollution Sources	Ecology will use half the funds (one FTE) to conduct inspections of non-point sources of pollution primarily in agricultural areas. These inspections will, parcel-by-parcel, identify the BMPs that need to be implemented to achieve clean water. The other half of the fund (one FTE) will provide parallel, comprehensive implementation support. Ecology will work with landowners through the entire process to install BMPs. The implementation support will help the landowner tap into existing funding sources (NRCS funds, CD funds, NEP Clean Water BMPs on Agricultural Land Fund, 319 funds, and others) for cost reimbursement when necessary.	C 1.6 -- Increase compliance with and enforcement of environmental laws, regulations, and permits; C 1.6 NTA 3 -- Water Quality Enforcement	X	X	X			Ecology	11/30/2016	1)75 inspections per year. 2)Complete the implementation of 25 BMP projects per year.	Reduced nutrient and fecal coliform pollution to rivers, streams, and Puget Sound. Shellfish beds are open and dissolved oxygen is not impacted by excessive nutrients.		\$ 714,000	
Riparian Buffers on Agricultural Land	In consultation with stakeholders, Ecology would develop a program to install riparian buffers on agricultural land that would meet the NOAA recommendations. Ecology would consider various options for distributing money based on likelihood of successfully installing and maintaining buffers, costs per mile, and location. All existing NEP requirements for project tracking would apply, see http://www.ecy.wa.gov/puget_sound/docs/NEP_Ag_BMP_Funds_Guidance_2012.pdf . Options could include competitive grants and/or direct awards. Funding would focus on the actual implementation of the buffer, but would also included addressing basic questions about how to implement the NOAA buffer matrix. (For example, the guidelines say the buffer needs to be "As wide as necessary to meet water quality standards; can be determined by FOTGs"; however, the FOTGs don't address WQS. We would need to determine an actual buffer width number).	C 3.2 -- Ensure compliance with regulatory programs designed to reduce, control or eliminate pollution from working farms; C 3.2 NTA 1 -- Priority Areas for Voluntary Incentive and Regulatory Programs	X	X	X			Ecology	12/31/2015	1. Document interpretation of NOAA matrix. 2. Riparian buffers installed on agricultural lands.	1. Project determines the feasibility of larger buffers and improves water quality and habitat in areas where the buffer is installed. 2. Improved water quality (including nutrients and pathogens) and habitat.		\$ 0	
Snohomish County PIC (Pollution Identification and Correction) Program	PIC programs monitor watersheds for fecal coliform bacteria. Pollution hot spots trigger community outreach and property surveys to identify and correct sources such as onsite sewage systems and livestock. Investigators work with property owners to correct problems by providing technical assistance, incentives and if necessary, enforcement. The Snohomish County PIC program would focus on the lower Stillaguamish River (south of Stanwood and north of Marysville). Ecology (toxics and nutrients) and the Department of Health (pathogens) would jointly fund this program. Normally, DOH funds PIC Programs. Ecology is proposing to partially fund this project because (a) it is a priority of the action agenda and (b) the Snohomish County PIC program has a stronger nutrient nexus and a weaker shellfish nexus than other PIC programs.	C 9.4 -- Develop and implement local and tribal pollution identification and correction (PIC) programs; C 9.4 NTA 1 -- Pollution Identification and Correction Programs	X	X	X			Snohomish County	9/30/2015	Pollution sources will be identified and corrected. Deliverables include monitoring data, outreach activities to engage the public, technical assistance site visits, and BMPs installed to correct problems.	{Will need to coordinate with DOH Pathogens grant}		\$ 100,000	
Implementing Local Projects to Reduce Nutrients	Ecology will competitively select and fund one or two projects in a local area to address nutrients. Ecology will select one or two projects that implement a TMDL or similar plan for nutrients. The TMDL can be a TMDL in progress or a TMDL that has been completed. Examples include the South Puget Sound Dissolved Oxygen Study, the Quartermaster Harbor Dissolved Oxygen Study, Hood Canal, Campbell and Erie Lakes, Lake Sammamish, Lake Ballinger, Cottage Lake, Lake Sawyer, Lake Whatcom, Fenwick Lake, Budd Inlet/Deschutes River, Clark's Creek and others. Additional points will be awarded for projects that implement Local Near Term Actions. Projects that address multiple parameters will also receive additional points. The projects would address low dissolved oxygen concentrations and other nutrient-related impacts.	C 9.1 -- Complete Total Maximum Daily Load (TMDL) studies and other necessary water cleanup plans for Puget Sound to set pollution discharge limits and determine response strategies to address water quality impairments.; 0	X	X	X			External	12/31/2016	Outputs and deliverables are dependent on the project chosen through the competitive process.	Intermediate outcomes are dependent on the project chosen through the competitive process. Long-term outcomes are dependent on the project chosen through the competitive process, but will need to include lower nutrient input and increased dissolved oxygen concentrations.		\$ 560,000	

	Project Name (Organized by Investment Area)	Description	Action Agenda Strategies / NTAs Supported	Freshwater Quality	Marine Water Quality	Shellfish Beds	Toxics in Fish	Marine Sediment Quality	Lead Entity & Partners Completing Work	Estimated Timeframe	Output	Outcome	FFY 10/11/12 (Rounds 1-3) Funding	FFY 13 (Round 4) Funding	FFY 14/15 (Round 5/6) Funding
Science	Box Model and Storm Data	"Box Model" Analysis of PAHs in Puget Sound: Ecology will update the computerized prediction tool called the "Box Model" with new information and will analyze polycyclic aromatic hydrocarbons (PAHs) and reanalyze polychlorinated biphenyls (PCBs). The model will be used to help develop an overall source reduction strategy to protect aquatic life in Puget Sound and meet Puget Sound Partnership targets for toxics. Assessing Stormwater Data: Cities and counties currently collect water quality data on discharges of polluted runoff (stormwater). These discharges are the largest pathway for toxic chemicals entering Puget Sound. Ecology will compile and analyze the monitoring data from the eight "Phase 1" stormwater jurisdictions to provide an integrated analysis of stormwater. This information will be useful in managing stormwater inputs to Puget Sound.	C 2.3 -- Fix problems caused by existing development; Biennial Science Work Plan	X	X		X		Ecology	12/31/2013	Box Model: Final QAPP. Final Report. PSTLA data in EIM. Established reduction targets for modeled contaminants needed to meet environmental quality targets. Stormwater: (1)Final QAPP (2) Final Report(3) Preliminary regional analysis of Phase 1 permittee contaminant information (2009-2012)	Box Model: Prioritized costs needed to achieve reductions. Impacts of reductions in non-urban areas evaluated. Educational tool for public and managers on impacts, recovery timeframes, and management options. Stormwater: Information to inform regional stormwater managers Box Model: No adverse impacts on PS ecosystem when targets achieved. Stormwater: Reduce toxic and nutrient inputs to Puget Sound from stormwater. Improve nearshore habitat by reducing threats from toxic chemicals.	\$ 160,475		
	WA Shellfish Initiative Ocean Acidification Blue Ribbon Panel	Washington Sea Grant provided administrative support for the Ocean Acidification Blue Ribbon Panel. Puget Sound is particularly vulnerable to ocean acidification. Washington's coastal waters experience seasonal upwelling where waters that are naturally low in oxygen and rich in carbon dioxide rise to the surface. These upwelled waters are naturally more acidic. Coastal waters also receive excess nitrogen from human activities that can stimulate algae blooms. As these blooms die and sink, bacteria decompose them, depleting oxygen from the surrounding water.	C 7.5 -- Answer key shellfish safety research questions and fill information gaps; C 7.5 NTA 4 -- Ocean Acidification Blue Ribbon Panel						University of Washington	10/31/2012	The Panel will make recommendations to the Governor, NOAA, EPA and regional research groups, and other policy-makers, regarding additional research and monitoring needs and actions to understand, prevent/mitigate, and adapt to acidification of Puget Sound.	The Panel will point the way to advancing our scientific understanding of the effects of ocean acidification and will help shape our response to this pressing problem, strengthening the link between science and effective management of our natural resources. Prevent, mitigate, and / or adapt to acidification of Puget Sound	\$ 20,000		
	State of the Science for Shellfish Processes, Sediment Interactions, and Watershed Attenuation of Nitrogen in the Puget Sound Ecosystem	USGS will evaluate the state of science for shellfish processes, sediment interactions, and watershed attenuation of nitrogen in the Puget Sound ecosystem.	C 7.3 -- Ensure environmentally responsible shellfish aquaculture based on sound science; Biennial Science Work Plan	X	X				USGS	12/31/2013	Develop reports compiling the current state of the science on shellfish nutrient dynamics, quantifying nutrient fluxes from Puget Sound sediments, and characterizing the nutrient attenuation potential of the Puget Sound Watershed	Increased knowledge of key nutrient processes. More effective and tailored management actions that are more likely to solve nutrient problems.	\$ 301,500		
	Nutrient Synopsis	Ecology will combine already summarized information into a web site targeting the general public and local governments. The purpose is to highlight elements of various publications that have quantified nitrogen from various sources and pathways to Puget Sound.	Biennial Science Work Plan; Biennial Science Work Plan	X					Ecology	6/30/2014	Draft and final compilation of nitrogen in the Puget Sound ecosystem as web page. Draft and final report summarizing recent field observations to better understand how water is exchanged between Puget Sound and the Strait of Juan de Fuca through Admiralty Inlet.	Qualitative and quantitative information on nitrogen in the Puget Sound ecosystem. Improved communication to both technical and general audiences.	\$ 130,256		
	Roofing Project	The Puget Sound Toxics Loading Assessment identified roofing materials as one of the largest potential sources of cadmium, copper, and zinc in the Puget Sound Basin. This study will evaluate leaching of metals and phthalates from various roofing materials in common use in the Puget Sound region.	C 1.2 -- Promote the development and use of safer alternatives to toxic chemicals; C 1.2 NTA 2 -- Toxics in Roofing Materials				X	X	Ecology	2/28/2014	(1) Final QAPP. (2) Final Report. (3) Data on metals and phthalates found in various roofing materials. (4) Data on metals and phthalates in runoff from various roofing materials.	(1) Alternatives assessment for roofing materials. (2) Better alternatives implemented for roofing materials. (3) Educational outreach to inform consumers on lower impact roofing materials. (4) Metals and phthalate inputs to Puget Sound reduced. (5) Biological impairments to Puget Sound from metals and phthalates reduced.	\$ 472,839		
	Puget Sound Crab and Shrimp Assessment	Current toxics monitoring programs do not adequately address Dungeness crabs and spot prawns. These species are important because of their abundance, their role in the food web, and because people eat them. Ecology signed an Inter-Agency Agreement (IAA) with the Washington Department of Fish and Wildlife (WDFW) to analyze these species for chemical contamination. The Department of Health (DOH) will analyze the	Biennial Science Work Plan; Biennial Science Work Plan					X	WA State Department of Fish and Wildlife	5/31/2013	Final QAPP- Final Report- Data on crab and spot prawn in Puget Sound as support for a human health risk assessment from consumption of these species	Data to assess contaminant levels in crab and spot prawn. Baseline information to assess effectiveness of actions to reduce toxics in seafood Reduced risk to consumers from consumption of crab and spot prawn	\$ 189,387		

Project Name (Organized by Investment Area)	Description	Action Agenda Strategies / NTAs Supported	Freshwater Quality	Marine Water Quality	Shellfish Beds	Toxics in Fish	Marine Sediment Quality	Lead Entity & Partners Completing Work	Estimated Timeframe	Output	Outcome	FFY 10/11/12 (Rounds 1-3) Funding	FFY 13 (Round 4) Funding	FFY 14/15 (Round 5/6) Funding
	results for seafood safety.													
Ferry-Based Monitoring	To improve data on Puget Sound water quality, Ecology will expand the ferry monitoring network beyond the Victoria Clipper to include public ferries run by the Department of Transportation. Installation of automated instruments on select ferries will allow Ecology to record measurements continuously as ferries make their multiple daily runs. Ferries occupy strategic cross-sections in Puget Sound – often at the very constriction points between basins that would let us most easily measure water exchange and circulation between those basins. These measurements are key to understanding overall water quality and for improving the performance of numerical models in Puget Sound.	Biennial Science Work Plan; Biennial Science Work Plan		X			X	Ecology	4/30/2015	Draft and Final report summarizing the data obtained and its use in improving our understanding of Puget Sound water quality and incorporation into PS models. Improved understanding of the exchange of water between Puget Sound and the Strait of Juan de Fuca through Admiralty Inlet; a key driver of water quality in Puget Sound. Improved numerical models of Puget Sound that can be used for TMDLs and subsequent setting of NPDES permit limits and load allocations for diffuse pollution sources as appropriate.	Cleaner water in Puget Sound.	\$ 261,107		
Biomonitoring for Emerging Contaminants	There are a wide range of chemicals in use in the Puget Sound basin which information is lacking on occurrence, exposure and biological impacts. Many of these chemical have characteristics that make them potentially persistent, bioaccumulative and/or endocrine disrupting. Through a competitive grant process, Ecology selected a University of Washington proposal for funding.	C 1.1 -- Implement and strengthen authorities and programs to prevent toxic chemicals from entering the Puget Sound environment; C 1.1 NTA 6 -- Emerging Contaminants	X	X		X		University of Washington	3/30/2015	Information on occurrence, exposure and biological impacts from endocrine disrupting compounds. Data to support development and improvement of Puget Sound toxics indicators for protection of biological resources. Final reports summarizing results of individual studies.	Prioritize source control strategies to reduce impacts from endocrine disrupting compounds on Puget Sound ecosystem. Support development of toxics related indicators and benchmarks to assess the health of Puget Sound. Reduce impacts from endocrine disrupting compounds on the Puget Sound ecosystem.	\$ 500,000		
Juvenile Chinook Salmon Contaminant Monitoring (Sample Collection)	WDFW will sample juvenile Chinook salmon for measuring exposure to known chemicals of concern entering Puget Sound via stormwater, wastewater treatment facilities, atmospheric deposition to marine waters, and groundwater. WDFW will sample fish sound-wide from four Puget Sound embayments in 2013. Within each embayment, sampling sites will include the river mouth and two adjacent marine shorelines. This sampling augments previous sampling initiated as early as 1998, and will be used to establish a solid time series of contaminant conditions in juvenile Chinook salmon that can be used to fulfill the Toxics in Fish goal of tracking time trends of fish health.	Biennial Science Work Plan; Biennial Science Work Plan				X		Washington Department of Fish and Wildlife	8/31/2014	The primary output of the proposed project will be a current measurement of the extent and magnitude of toxic contaminant exposure in wild juvenile Chinook salmon from four major Puget Sound river mouths and embayments encompassing a wide gradient of contaminant inputs.	Outcomes associated with providing an assessment of the extent and magnitude of toxic contaminant exposure in wild juvenile Chinook salmon include: 1) an assessment of progress towards 2020 recovery goals for toxic in fish, 2) a measure of the effectiveness of current strategies and near term actions outlined in the 2012 Action Agenda to reduce the toxics threat to juvenile Chinook salmon, and 3) guidance on toxics reduction strategies.	\$ 49,624		
High Resolution Marine Water Quality Monitoring	This project supports six profiling buoys for a comprehensive view of water, oxygen, and nutrient dynamics. The buoys provide high-resolution, near-real time, on-line and calibrated water quality data for Admiralty Reach, South Puget Sound, Hood Canal, the Main Basin, and Dabob Bay.	Biennial Science Work Plan; Biennial Science Work Plan		X				University of Washington	12/31/2013	Our major output is the high-resolution, near-real time, on-line and calibrated oxygen and water quality data from six profiling buoys throughout Puget Sound, with public access from a variety of sources.	Effective regulation and restoration of Puget Sound water quality demands an understanding of oxygen changes due to anthropogenic effects distinct from oceanic input. The use of the high-resolution data in major basins, in concert with other monitoring approaches, facilitates that understanding and optimizes Ecology's ability to make effective water quality regulation and enhances the Puget Sound Partnership's ability to direct effective restoration actions.	\$ 125,000	\$70,000	
SoundToxins Partnership Harmful Algal Blooms Monitoring	SoundToxins responds to an increasing threat of harmful algal blooms (HABs) in Puget Sound. This project will standardize methods and results, create a science advisory group to guide future program direction, and deliver an effective, robust citizen science monitoring program providing critical information to federal and state agencies, tribal harvesters, fish and shellfish farmers, community members and academia for decision-making and resource allocation.	Biennial Science Work Plan; Biennial Science Work Plan			X			University of Washington	8/31/2014	<ul style="list-style-type: none"> On-site training sessions for newly established or expanded SoundToxins monitoring sites. SoundToxins database with all data from the project period, as well as historical program data. 150 samples analyzed for nutrient, chlorophyll a and toxin data (Cellular domoic acid, dinophysistoxins (DSP toxins), and saxitoxin) from comprehensive sites. Timely alerts to resource managers when HAB species are detected above preset thresholds. An Ecology-approved QAPP. 	<ul style="list-style-type: none"> Protection of public health by minimizing the risks from HABs tainted seafood harvested from Puget Sound. Reduction of potential economic losses to Puget Sound fisheries caused by product recalls and inability to harvest. Increased efficiency of HABs monitoring by WDOH. Enhanced volunteer engagement and expertise. Institutionalization of SoundToxins within NWFS and WSG 	\$ 86,777		

Project Name (Organized by Investment Area)	Description	Action Agenda Strategies / NTAs Supported	Freshwater Quality	Marine Water Quality	Shellfish Beds	Toxics in Fish	Marine Sediment Quality	Lead Entity & Partners Completing Work	Estimated Timeframe	Output	Outcome	FFY 10/11/12 (Rounds 1-3) Funding	FFY 13 (Round 4) Funding	FFY 14/15 (Round 5/6) Funding
Juvenile Chinook Salmon Contaminant Monitoring	WDFW will sample juvenile Chinook salmon for measuring exposure to known chemicals of concern entering Puget Sound via stormwater, wastewater treatment facilities, atmospheric deposition to marine waters, and groundwater. WDFW will sample fish sound-wide from four Puget Sound embayments in 2013. Within each embayment, sampling sites will include the river mouth and two adjacent marine shorelines. This sampling augments previous sampling initiated as early as 1998, and will be used to establish a solid time series of contaminant conditions in juvenile Chinook salmon that can be used to fulfill the Toxics in Fish goal of tracking time trends of fish health.	Biennial Science Work Plan; Biennial Science Work Plan		X		X		Northwest Fisheries Science Center (NOAA Fisheries)	1/31/2014	The primary output of the proposed project will be a current measurement of the extent and magnitude of toxic contaminant exposure in wild juvenile Chinook salmon from four major Puget Sound river mouths and embayments encompassing a wide gradient of contaminant inputs.	Outcomes associated with providing an assessment of the extent and magnitude of toxic contaminant exposure in wild juvenile Chinook salmon include: 1) an assessment of progress towards 2020 recovery goals for toxic in fish, 2) a measure of the effectiveness of current strategies and near term actions outlined in the 2012 Action Agenda to reduce the toxics threat to juvenile Chinook salmon, and 3) guidance on toxics reduction strategies.	\$ 87,376		
pH Model Scope	Pacific Northwest National Laboratory (PNNL) will scope a model for addressing pH in Puget Sound. It will 1) define monitoring needs to support pH modeling, 2) assess alternative pH modeling frameworks and identify the preferred alternative, and 3) define how key modeling rates and coefficients will be determined.	Biennial Science Work Plan; Biennial Science Work Plan		X	X			Ecology	6/30/2013	Plan for simulating pH with the Puget Sound Water Quality model. Better understanding of human nutrient loading effects on low pH in Puget Sound. Therefore, better understanding of how potential nutrient load reductions could improve pH levels.	Healthier pH levels in Puget Sound waters.	\$ 40,000		
PAHs in Sensitive Freshwater Aquatic Habitat near Railroads in Puget Sound	The Puget Sound Toxics Loading Assessment estimated that creosote treated wood accounted for over one-third of the total PAH release in the Puget Sound basin. Marine pilings, railroad ties and utility poles represent the major sources. Statewide, railroad ties were estimated as the largest single source in the PAH Chemical Action Plan. While marine pilings represent a clear and direct pathway for entering Puget Sound, it is unclear whether migration into sensitive aquatic habitats is occurring for railroad ties and utility poles. This project would use the results of a recently-completed GIS mapping project to select sensitive aquatic sites near railroads for environmental testing to determine if elevated levels of PAHs are present. The data could also be used to help establish baseline conditions near railroads prior to future traffic expansion related to coal or petroleum transport. Approximately 10 potentially impacted sites and 2 reference areas would be sampled as part of the project. Water, tissue and soil/sediments would be collected and analyzed for PAHs.	C 1.1 -- Implement and strengthen authorities and programs to prevent toxic chemicals from entering the Puget Sound environment; C 1.1 NTA 1 -- PAH and PFOS Chemical Action Plans				X	X	Ecology	6/30/2015	<ul style="list-style-type: none"> Evaluate if elevated levels of PAHs are present in sensitive freshwater areas near railroads. Establish baseline conditions for PAHs near railroad lines. These data will be helpful in assessing future impacts from increased railroad traffic. 	<ol style="list-style-type: none"> Develop strategies to reduce the release of PAHs from this source. Reduce levels of PAHs in the Puget Sound basin. Reduce biological impairments from PAHs in the Puget Sound basin. 		\$ 169,000	
Chemicals of Emerging Concern – Exposure and Effects in Puget Sound Biota	{This is the description for the full \$500,000 project. We would need to scale it back.} The project provides a current picture of the extent and magnitude of contamination of Puget Sound biota, and develops cost-effective bioeffects endpoints for targeted CECs. The ultimate goal of this project is to provide Puget Sound recovery targets based on CEC-related health endpoints in indicator species, as well as CEC tools for monitoring Puget Sound ecosystem health. Study objectives are to (1) provide data on two major classes of CECs, xenoestrogens and pharmaceutical antidepressants, in organism tissues via a Puget Sound-wide reconnaissance survey of five major species, representing freshwater, nearshore and marine habitats and multiple conveyance pathways, and (2) develop widely accepted biological indicators of EDC-effects including vitellogenin induction, and alterations in endocrine hormones, steroidogenesis, and altered growth, for English sole and juvenile Chinook salmon. Establishing vitellogenin induction as a monitoring tool for English sole and juvenile Chinook salmon will fill critical gaps in the Puget Sound Partnership's Toxics in Fish Vital Sign. Combining results from this project with existing PSEMP efforts to monitor a wide range of other contaminants will provide a balanced perspective for prioritizing contaminant-related recovery efforts in Puget Sound.	C 1.1 -- Implement and strengthen authorities and programs to prevent toxic chemicals from entering the Puget Sound environment; C 1.1 NTA 6 -- Emerging Contaminants				X		WDFW / NOAA	12/31/2015	Final Report	Fill important data gaps in our understanding of the biological impacts or occurrence from currently used CECs that can be used to develop a more comprehensive effects-based monitoring program for Puget Sound.		\$ 220,000	

	Project Name (Organized by Investment Area)	Description	Action Agenda Strategies / NTAs Supported	Freshwater Quality	Marine Water Quality	Shellfish Beds	Toxics in Fish	Marine Sediment Quality	Lead Entity & Partners Completing Work	Estimated Timeframe	Output	Outcome	FFY 10/11/12 (Rounds 1-3) Funding	FFY 13 (Round 4) Funding	FFY 14/15 (Round 5/6) Funding
	Measurement of PPCPs and PFASs in Urban Bay Sediments (Elliott Bay)	Concentrations of 119 pharmaceuticals and personal care products (PPCPs) and 13 perfluorinated alkylated substances (PFASs) will be measured in sediment collected from 30 monitoring stations in Elliott Bay for Ecology's Urban Waters Initiative. These data will be summarized to establish baseline levels of these chemicals, and allow comparison with levels measured in a similar study in Bellingham Bay in 2010.	C 1.1 -- Implement and strengthen authorities and programs to prevent toxic chemicals from entering the Puget Sound environment; C 1.1 NTA 6 -- Emerging Contaminants					X	Ecology	12/31/2015	Data will be summarized, analyzed, and posted to the Ecology web as: raw data, summary tables and distribution maps, posters and peer-reviewed report.	1. Establish baseline conditions for PFC and PPCPs in a major Puget Sound Urban embayment 2. Prioritize the need to develop source control strategies for PFCs and PPCPs in Puget Sound 3. Reduce levels of PFCs and PPCPs in Puget Sound 4. Reduce biological impairments from PFC and PPCPs in Puget Sound		\$ 102,000	
	Model sediment- water interactions in Puget Sound	Ecology proposes to build a sediment diagenesis component to the Puget Sound Dissolved Oxygen Model developed by PNNL. Dissolved oxygen modeling efforts are indicating that sediment-water interactions strongly influence primary productivity, particularly in shallow embayments. These regions are where human impacts on dissolved oxygen could be greatest. The current efforts prescribe sediment oxygen demand and nutrient releases and adjust these fluxes based on alternative external loading. Where nutrient loads decrease, the sediment-water interactions also weaken. The relationship is externally specified, but a sediment diagenesis component would couple those fluxes to changes in external loading. A sediment diagenesis model would allow us to understand the timing of sediment interactions. This could improve model performance through better seasonal variability, and it would allow us to understand how differences in winter discharges carryover to summer dissolved oxygen impacts.	Biennial Science Work Plan; 0	X	X	X		X	PNNL	9/30/2015	<ul style="list-style-type: none"> Draft and final Quality Assurance Project Plan Revised Puget Sound Georgia Basin Dissolved Oxygen Model Draft and final project reports 	<ul style="list-style-type: none"> Reduce uncertainty in dissolved oxygen impacts from humans. Improve information driving regulatory decisions. Quantify the linkage between nutrients from natural sources (e.g. the Pacific Ocean) and human sources and dissolved oxygen impacts that accounts for the effect of sediment processes. Reduce dissolved oxygen impacts from humans to meet the water quality standards into the future 		\$ 340,000	
Administration	Administration	The Department of Ecology administers the Toxics and Nutrients NEP Grant. Ecology is working with the Environmental Protection Agency, the Puget Sound Partnership, the other state entities with NEP grants, and numerous other partners at the federal, tribal, state, and local levels and non-governmental organizations, academia, and business to develop and implement projects.	Multiple	X	X		X		Ecology	1/19/2017	Administer all aspects of the toxics and nutrients NEP grant including determining funding priorities, budgets, outreach, and technical assistance.	Reduced amounts of toxics and nutrients in fish, water, and sediment.	\$ 961,833		
	Administration	The Department of Ecology administers the Toxics and Nutrients NEP Grant. Ecology is working with the Environmental Protection Agency, the Puget Sound Partnership, the other state entities with NEP grants, and numerous other partners at the federal, tribal, state, and local levels and non-governmental organizations, academia, and business to develop and implement projects.	Multiple	X	X		X		Ecology	1/19/2017	See other "Administration" project	See other "Administration" project	\$ 340,491		

Section D. Major Accomplishments

Ecology is currently managing 43 projects in Rounds 1-3 to prevent and manage toxics and nutrient pollution in Puget Sound. Through this document, we have identified spending priorities for toxics and nutrients for Round 4. While funding lower-priority, less-controversial projects would have been more expedient in the near-term, the long-term outcome from the selected projects is expected to be greater.

With these funds, local and state governments, academia, and other entities are:

- Hiring inspectors to address non-point sources of pollution.
- Providing technical assistance to small businesses that use toxic chemicals.
- Studying new nitrogen-removing septic system technologies.
- Identifying safer alternatives to common-used toxic chemicals.
- Removing derelict pilings the leach toxics chemicals.
- Conducting other work essential to address toxics and nutrients.

Summary of grant administration for Rounds 1-3:

Budget Information			
NEP Funds Allocated	\$	12,264,153	99.99%
Total NEP Project Cost in Agreement or Award Internally	\$	11,246,467	92%
Total Expenditures to Date (AFRS)	\$	1,492,831	12%

Status			
Category	Total Amount	Percent	No. of Projects
Completed	\$ 147,062	1%	3
Pending	\$ 650,000	5%	2
Canceled	\$ -	0%	0
In progress and Current	\$ 9,605,726	78%	28
In progress but Behind Schedule	\$ 1,861,365	15%	10
	\$ 12,264,153		

Framework			
Category	Total Amount	Percent	No. of Projects
A (Science)	\$ 2,424,341	20%	13
B (Prevention)	\$ 2,902,516	24%	12
C (Manage / Control)	\$ 5,484,972	45%	15
D (Clean Up)	\$ -	0%	0
E (Effectiveness Monitoring)	\$ 150,000	1%	1
F (Administration)	\$ 1,302,324	11%	2
	\$ 12,264,153		

Toxics or Nutrients?		
Category	Total Amount	Percent
Toxics	\$ 6,913,173	56%
Nutrients	\$ 5,350,980	44%
	\$ 12,264,153	

Competitive, Internal, or Direct?		
Category	Total Amount	Percent
Competitive	\$ 5,752,607	47%
Internal	\$ 4,709,482	38%
Direct	\$ 1,702,064	14%
	\$ 12,164,153	

Regional (Sound-Wide) or Local (City, County, Watershed, HUC)?		
Category	Total Amount	Percent
Regional	\$ 6,926,636	56%
Local	\$ 5,337,517	44%
	\$ 12,264,153	

Section E. Budgets

General Budget Breakdown by Object for Rounds 1-3

Object	Description	Total
Personnel	Ecology personnel costs (grant administration* and projects)	\$ 1,680,119
Fringe Benefits	Agency standard (varies by year)	\$ 557,126
Travel	Agency standard (varies by year)	\$ 29,258
Equipment	XRF Analyzer	\$ 50,000
Supplies	Agency standard (varies by year)	\$ 132,969
Contracts	Sub-Awards (Contract Projects)	\$ 0
Other (Subaward)	Sub-Awards (Grant Projects)	\$ 9,041,360
Subtotal Direct Costs		\$ 11,490,832
Indirect Costs	Agency standard (varies by year)	\$ 773,321
Total Costs		\$ 12,264,153

General Budget Breakdown by Object for Round 4 (FFY 2013)

Object	Description	Total
Personnel	Ecology personnel costs of 6.5 FTEs (projects)	\$ 396,279
Fringe Benefits	Agency standard of 32% of salary	\$ 126,809
Travel	Agency standard of \$1156 per FTE (times 6.5 FTEs)	\$ 7,514
Equipment		\$ 0
Supplies	Agency standard of \$5127 per FTE (times 6.5 FTEs)	\$ 33,326
Contracts		\$ 0
Other (Subaward)	Sub-Awards (Projects – see Section B)	\$2,573,050
Subtotal Direct Costs		\$3,136,978
Indirect Costs	Agency standard of 35.1% of salary plus benefits	\$ 183,604
Total Costs		\$3,320,582

Budget Details for Round 4

Round 4 does not contain any administrative expenses since Rounds 1-3 funded five years of administration staff.

Personnel: The personnel object for Round 4 is predominantly for the “C1.6 NTA 3 Enforcement Inspection and Implementation: Nonpoint Pollution Sources” project. It funds two Environmental Specialists 4 (ES4) positions for three years (6 FTE total). It also funds 0.5 FTE of an ES4 shared between the “Measurement of PPCPs and PFASs in Urban Bay Sediments (Elliot Bay)” and “PAHs and Railroads” projects. Combined, the 6.5 FTE times \$60,966 annual salary is \$396,279.

Fringe Benefits: Ecology calculated fringe benefits as a percentage of salaries. These approved agency standards are based on FY2013 actual expenses. Fringe benefits are set at 32% of salaries. Fringe benefits include social security, retirement, Medicare, workers compensations, and health insurance. Fringe benefits are $\$396,279 \times 32\% = \$126,809$.

Travel: Travel costs are estimated based on likely travel costs. Inspections and site visits are difficult to predict and are often more expensive than agency standards. Ecology estimates 6.5 FTEs driving 13,300 miles driven for inspections times \$0.565 per mile for a total of \$7,514.

Equipment: There are no expected equipment costs for Round 4.

Supplies: Ecology calculated supplies as a standard cost per FTE. The standard cost is \$5,127 per FTE and is based on the actual cost per FTE in FY 2013. Office supplies include items such as paper, pens, printer toner, etc. For Round 4, the supply costs are 6.5 FTEs times \$5,127 per FTE for a total of \$33,326.

Other (Subaward): The subawards Ecology makes to other entities as part of this toxics and nutrients grant are placed in the “Other” object. These awards total \$2,573,050 and are summarized and described in Section B of this document.

Indirect Costs: Ecology calculates indirect costs as a percentage of salaries plus benefits. This federally-approved indirect rate is 35.1%. Salaries (\$396,279) plus benefit (\$126,809) is \$523,088. This total multiplied by 35.1% equals \$183,604.

Match Funding for Rounds 1-4

Ecology is providing \$3,320,582 in match through State Toxics Control Account grants (“other” budget category) for Round 4. The total amount of match for Rounds 1-4 is \$15,584,835.

Appendix 1

Response to Comments

Compilation of Comments and Responses Projects

From April 10, 2013 – May 8, 2013, the Lead Organizations (LOs) solicited feedback on potential projects for funding under Round 4 of the Puget Sound National Estuary Program. This comment period followed the comment period on themes described later. The LOs meet with the Puget Sound Tribes and an Advisory Group. LOs received a number of comments on the proposed projects. This appendix is a compilation of the comments related to toxics and nutrients and Ecology's proposed changes based on the comments.

Major changes to the projects include:

- Significantly modified the "C1.6 NTA 3 Enforcement" project.
- Riparian Buffers: EPA tentatively decided to address riparian buffers through a separate fund. If this approach is not used and additional funds are provided to the toxics and nutrients grant, Ecology will address riparian buffers as described in this document.

Other changes, and responses to individual comments, are included below.

Toxics

Page 22, Local Source Control Partnership Project – We support the continued funding of existing Local Source Control Projects such as the one with the City of Port Angeles. Further, we request that the geographic coverage for these projects be extended to include adjacent areas, where deemed appropriate and beneficial, that might also need this type of assistance.

(Straits ERN)

Response: LSC will continue to receive funding in Round 4. The geographic coverage is entirely up to the entities applying for the funds (and the entities whose jurisdiction they would cover).

Regarding the toxics section of the Toxics and Nutrients LO draft work plan, we would like to thank the department of Ecology staff for providing the opportunity to meet and discuss implementation opportunities through this LO. One key issue identified at our meeting, is that Washington’s current toxic monitoring efforts, while progressive, are limited in geographic scope. As noted in our meeting, tribal water quality programs are well suited to support a broader ambient monitoring net for toxics and other chemicals of concern impacting human health and the aquatic environment. In time, Tribal water quality programs should be supported by the LOs to help address some of the gaps in overall monitoring efforts for both legacy and emerging toxics issues. Also, understanding the presence of toxic pollutants in the tribes’ watersheds facilitates understanding toxics (and other chemicals of concern) issues, and also positions the tribes to play an important role in the overall effort to controls these pollutants at the source. However, the current capacity of tribal programs to implement costly monitoring is limited.

After careful consideration of the broader monitoring context and various funding cycles, we understand that the tribes intend to more closely assess capacity and potential to engage in toxics monitoring. They also intend to develop a monitoring plan, and clearly articulate how tribal programs could facilitate more comprehensive understanding of toxics monitoring. After this evaluation is complete, we anticipate that the tribes may well resume discussions with Ecology on coordinated implementation of toxics monitoring through the NEP funded toxics LO. We therefore request that Ecology revisit this discussion with tribes in the course of developing the next round of funding determinations. We also request that Ecology anticipate the need to support both the tribes’ planning efforts and the PSEMP’s gap analysis, by ensuring that adequate funding is allocated to the “science” section of the toxics LO to implement these plans. Again, we thank you for your efforts to work collaboratively with the tribes on these complex issues.

(NWIFC)

Response: We look forward to continuing these discussions in the future. There will be many high-priority competing demands during the last two years of NEP funding under this grant while the level of funding will likely be lower.

Nutrients

In the event EPA does not establish a separate riparian buffer set-aside fund, the PSCDs would be most willing to collaborate with the *Toxics & Nutrients LO* as well as the *Watershed Protection & Restoration LO* on a project that addresses riparian buffers on agricultural lands. The PSCDs encourage both LOs to integrate flexibility into riparian buffer project descriptions to capitalize on the long and successful history of conservation districts to engage private land managers in adopting natural resource stewardship practices. In the case of riparian buffers on agricultural lands, such flexibility would include a path that invests in whole-property natural

resource management guidance through progressive implementation of progressive planning processes that are rooted in the sound science of NRCS FOTG standards and practices.
(PSCD)

Response: EPA tentatively decided to address riparian buffers through a separate fund. If this approach is not used and additional funds are provided to the toxics and nutrients grant, Ecology will address riparian buffers as described in this document.

Page 27, Riparian Buffers on Agricultural Land Project – We support a program to install riparian buffers on agricultural land that would meet the NOAA NMFS recommendations.
(Straits ERN)

Response: EPA tentatively decided to address riparian buffers through a separate fund. If this approach is not used and additional funds are provided to the toxics and nutrients grant, Ecology will address riparian buffers as described in this document.

Implementing Local Projects to Reduce Nutrients – Include Dungeness Bay among the Total Maximum Daily Load (TMDL) examples for this project.
(Straits ERN)

Response: The Dungeness Bay TMDL is a fecal coliform TMDL, not a nutrient TMDL. See <http://www.ecy.wa.gov/programs/wq/tmdl/dungeness/index.html>.

The PSCDs strongly recommend investing R4 funding for PIC Programs throughout Puget Sound, and not just in Snohomish County. The PSCDs encourage the LO to coordinate with the Washington State Conservation Commission and the PSCDs to identify priority basins where voluntary stewardship programs can be implemented for rural and small acreage landowners and working farms. We are confident that with close collaboration between our respective agencies and the Department of Health, PSCDs can successfully deploy their service delivery model of education, site specific technical assistance, and implementation incentives to achieve on-the-ground improvements in water resource conditions.
(PSCD)

Response: The Department of Health has funded PIC programs in most counties through its NEP grant for Pathogens. While the DOH Pathogen grant is the lead for funding PIC, Ecology and the NEP toxics/nutrients grant support it wherever possible. It is very important to point out that PIC goes well beyond “voluntary stewardship programs.” While these voluntary programs are essential and often effective, we require PIC programs to have a regulatory component as well. We encourage CDs to work closely with their county partners that are the lead for PIC.

Nutrients Riparian Buffer Project – This project proposes to fund actions that install riparian buffers on agricultural land that reflect the buffer size and composition recommended by NMFS as meeting the needs of salmon. First, we appreciate that the LO has taken a significant step in the direction the tribes have been urging as part of their Treaty Rights at Risk initiative. As the LO’s draft work plan notes, this project is in flux and depends upon a number of variables.¹ We would appreciate being able to work with the LO to help make its clearly positive intent more fully reflect the objectives and requests coming from the Treaty Rights at Risk (TRAR) initiative.

TRAR seeks assurance that all federal funds being expended to improve land management be conditioned to require consistency with meeting state water quality standards, salmon recovery, and treaty-reserved rights. We believe this is fully consistent with the letter and spirit of the Action Agenda, not to mention applicable state and federal law. We believe this approach also respects efficiency and cost effectiveness. This approach supports land management and outreach that more comprehensively addresses making land management more compatible with achieving salmon, shellfish, and Puget Sound clean-up goals. Stated differently, why should any NEP funds incentivize voluntary actions that are not adequate to meet the needs of species that are required to be protected by federal law?²

While soliciting applications to implement incentive projects that use the buffers recommended by NMFS is a good start, a significant number of landowners may opt for incentive programs that allow smaller buffers, if those programs are available. Incentive programs need to be aligned to encourage the results that are sought.³ As Ecology and EPA are aware, pathogens and nutrients are only some of the nonpoint source pollutants for which buffers are needed to address Action Agenda goals. Riparian buffers are also needed to provide, among other things, large woody debris, shade for temperature control, and food for salmonids, and some protection from toxic chemicals.

The Toxics and Nutrients LO’s agricultural riparian buffer project is also noteworthy in that it demonstrates an interest in breaking out of the funding “silos” that have stood in the way of using NEP funds more efficiently to achieve multiple Action Agenda benefits.⁴ The NMFS recommended buffers are intended to achieve multiple benefits that address the needs of both salmon and shellfish. They go beyond the artificial limits of just pathogens and nutrients that have characterized previous iterations of the Toxics and Nutrients and Pathogens LOs up to this time.

The Commission supports the LO’s attempt to generate riparian buffer projects that address multiple parameters. We also note that the Pathogens LO is willing to support addressing multiple parameters, but stated in its response to comments on work plan themes that it is deferring to EPA to provide guidance on what is needed to accomplish this.⁵ Positive EPA leadership on this issue is needed now. Again, the Commission stands ready to work with EPA and the LOs to use NEP funds in a more comprehensive and efficient manner. In fact, we think that this should be at the heart of any “watershed-based” approach.

¹ Toxics and Nutrients LO Draft Work Plan at 27.

² The three independent sources of federal law that require protection of salmon include the Clean Water Act, the Endangered Species Act, and the tribes' treaty reserved rights to take fish and shellfish. The recent letter from EPA and NOAA OCRM declining to approve the state's Coastal Nonpoint Source Program underscores the need for NEP and §319 funds to implement water quality standards and support salmon recovery and treaty rights. *See* Letter from Margaret Davidson (NOAA OCRM) and Dennis McLerran (EPA) to Maia Bellon (WDOE) (April 23, 2013).

³ For example, there is an opportunity to assure that unallocated and/or unspent funds from the Ag BMP pot of money are used to support correcting pathogen and nutrient sources and also providing riparian conditions that meet salmon needs. We would like to work with you to make sure that these funding decisions are aligned with the objectives set forth in the CZARA letter from EPA and NOAA OCRM.

1

(NWIFC)

Response: EPA tentatively decided to address riparian buffers through a separate fund. If this approach is not used and additional funds are provided to the toxics and nutrients grant, Ecology will address riparian buffers as described in this document.

Snohomish County PIC Program – This project appears intended to supplement funding already provided to Snohomish County by the Pathogens LO. The rationale for additional funding from the Toxics and Nutrients LO is that the PIC (Pollution Identification and Correction) program currently has a stronger nexus with nutrient impacts than pathogens problems.⁶ It is not clear from the project description how well coordinated this PIC program is with the Tulalip Tribes and the Stillaguamish Tribe. We strongly encourage close coordination. We also recommend that the LO explore with the county and the Tulalip and Stillaguamish tribes whether there are opportunities to make this PIC program more consistent with salmon recovery plans. For example, this PIC program explicitly includes outreach and technical assistance on BMPs. Would it make sense to address outreach for not just pathogens and nutrients, but also temperature and large woody debris, given that all these important parameters require riparian buffers of varying sizes and composition?

(NWIFC)

Response: We agree that close coordination is critical. DOH will take the lead in setting up a Snohomish PIC program. See the upcoming PIC program guidance for more information on PIC.

Water Quality Enforcement – While this project is entitled “enforcement,” the description of the project indicates that there is very little enforcement contemplated. It calls for hiring 1 FTE with 70% allocated to nonpoint source technical assistance and 30% to GIS support.⁷ The tribes and even LOs (e.g., Pathogens LO) have identified the need for more WDOE enforcement. As drafted, this proposal simply provides outreach, not enforcement. More enforcement is definitely needed. There is already a great deal of outreach. Unfortunately, little is known as to whether that outreach actually reflects the practices needed to achieve Action Agenda goals, including achievement of water quality standards, salmon recovery, and consistency with treaty-reserved rights.⁸

(NWIFC)

Response: We agreed that the proposal as written did not contain sufficient inspection/enforcement activities. The proposal was re-written to re-focus it on the intended priorities of the action agenda.

TMDLs – The LO proposes to fund one or two TMDL (Total Maximum Daily Load) implementation projects that address nutrients and other pollutants or habitat parameters.⁹ Still, the project (because of the artificial nutrient silo discussed earlier) purports to limit its focus to nutrients, dissolved oxygen, or other nutrient related impacts. Temperature is a parameter of keen importance to salmon that also interacts with nutrients to affect dissolved oxygen. In the context of the riparian buffer project, the LO has begun the process of discarding the unnecessary silo psychology that prevents it from funding truly multi-purpose approaches. We encourage the LO to allow the boundaries of this particular project to expand enough so that it could address watersheds that have both nutrient-related and temperature TMDLs. We note that the Deschutes River is just one example of a watershed that has major issues with phosphorus, dissolved oxygen, temperature, fecal coliform, and PCBs and it is cited as a potential candidate for funding under this project.¹⁰ Again, more efficient use of federal funds to address both salmon and water quality issues is a key theme in the federal government’s finding that the state has not developed an approvable Coastal Nonpoint Source Program.

⁹ *Id.* at 30.

¹⁰ See <http://www.ecy.wa.gov/programs/wq/tmdl/deschutes/index.html> (accessed May 2, 2013) for a description of the multiple pollution problems confronting the Deschutes watershed. Since the Deschutes River is also one of the examples listed as a potential candidate for the Toxics and Nutrients LO TMDL project, why not list temperature as one of the parameters that can be addressed under this project? Why not take the extra step and give extra weight to projects that address both temperature and nutrients? Arbitrary divisions between LOs should not stand in the way of implementing water quality standards and salmon recovery.

(NWIFC)

*Response: The proposal was specifically designed to address parameters beyond nutrients. See the description in this document (and the previous review draft) where it states: Additional points will be awarded for projects that are supported by LIOs, that implement Local Near Term Actions, **and that address multiple parameters**” (emphasis added). The brief nature of the work plan write-up limits the depth of the discussion, but we generally support the goals the commenter presents.*

Science

There were no comments for this section.

General

The twelve conservation districts serving the Puget Sound region seek to support the *Toxics & Nutrients Prevention, Reduction & Control LO* in implementing its R4 funding priorities wherever there is a nexus with our unique capacity to consider the socio-economic elements of stewardship adoption rates and to engage private land managers. We also desire our State and local agency partners to know and trust that the PSCDs are poised to address, in a greatly increased capacity, regional natural resource management priorities. To that end, the PSCDs recently signed an ILA to increase regional stewardship. The ILA enables participating Conservation Districts to share staff, develop a joint work plan, and collaborate on regional priorities with local, state, federal, and tribal stakeholders. Below is an announcement with details on the agreement, including links to the Puget Sound Conservation District Caucus website and to the full text of the ILA. Further, we extend an invitation to the LO to have a longer discussion with the PSCD Caucus about our common interests, goals and aspirations to thereby better collaborate with one another towards their achievement through better knowledge of both our strengths and limitations of influence with our clientele. (PSCD)

Response: We greatly appreciate the willingness to help. We encourage PSCD to have longer discussions with Ecology and EPA holistically (not just within the NEP LO context).

LIO Local Near Term Action (NTA) Allocations – Directly allocate a significant portion of the LO National Estuary Program (NEP) funding to LIO organizations to help local project sponsors implement local specific actions cited within the Action Agenda. The Salmon Recovery Funding Board / Puget Sound Acquisition and Restoration (SRFB/PSAR) funding allocations to salmon recovery Lead Entities, that are known in advance of each funding cycle, is one example of this kind of approach.

Directed Funding - Moving more toward a “directed” LO approach for NEP funding of local specific actions.

Both of these ideas would focus on implementing those local specific actions cited within the Action Agenda that are not readily funded through salmon recovery Lead Entity processes. In addition, these ideas would help foster collaboration between the LIOs and LOs, both in the identification of the highest priority (or next in sequence) local specific actions for a particular funding period and, subsequently, development of mutually agreed upon “scopes of work”. We believe that these ideas have the potential to help reduce the overall workload involved in developing and evaluating numerous proposals through competitive processes, most of which, ultimately, will not be funded. When offering competitive Requests for Proposals (RFP) for funding, incorporate (or continue to incorporate) the following:

- No Match - Don't require a match,
- Extended Lead Time - Provide three months lead time for submission of proposals, and
- Simplified RFP Process - Simplify the RFP as much as possible to minimize time required for development.
- Targeted Awareness and Education - Allow public awareness and education, that's targeted toward the proposed implementation of the specific action, to be an allowable component for funding within each RFP. Local ECO Net organizations around Puget Sound, and their respective members, are perhaps

in the best position to provide this targeted awareness and education component as partners on proposals.

(Strait ERN)

Response: Competitive grant opportunities do not provide certainty of funding. By receiving more project proposal than we are able to fund, we are able to fund only the best proposals, therefore using our limited funds more effectively. While applying for funds but not receiving funding is time consuming and frustrating, we believe the trade-offs are worthwhile. Back in 2010, EPA decided to fund implementation of the Action Agenda through Lead Organizations instead of Local Integrating Organizations. EPA is committed to the Lead Organization model through the six years of the grant. We strongly encourage LIOs to identify specific projects that are priorities and feed those priorities into the Action Agenda. The local priorities should then be weighed in the Action Agenda with Sound-wide priorities. The toxics/nutrients had provided multiple opportunities for local entities to receive funding for local priorities around toxics and nutrient priorities (see the Wood Stove Removal Program – PSCAA; Preventing Automobile Leaks – SPU; Nutrient Bioextraction: Shellfish at Work – PSI; Clean Water BMPs for Agricultural Activities; Local Source Control – Bothell, Everett, Port Angeles, and Puyallup; Nutrient Reduction PIC: Murden Cove – KPHD; Phosphorus Management for Lake Whatcom – Bellingham; Johns Creek Estuary Conservation – Capitol Land Trust partnering with Squaxin Island Tribe; and South Landers Street Storm Drain Cleaning – SPU.) Toxics/Nutrient grants do not require match (with the partial exception of the agriculture BMP fund that covers 75% of the costs and is a quasi match requirement). Ecology has already used state funds to provide the match required by EPA. We do try to simplify our competitive grant proposals; they require a few pages of project descriptions plus a minimal amount of budget and other information. Feedback from applicants indicates the forms are easy to use and not time-consuming to complete. We usually do not provide a full three months of lead time for each proposal. There is a fine balance between providing lead time and allocating the money in a timely manner. While we have allowed for additional time on more complicated projects, our typical lead time is two months. We encourage entities to visit the PSP website (<http://www.psp.wa.gov/epafunding.php>) that lists upcoming funding opportunities. We do have direct awards when we believe only one entity is qualified to complete the work. Behavior change activities are eligible in our upcoming Round 4 TMDL grant.

As included in our previous comments on the Work Themes, we continued to advocate for inclusion of the following crosscutting projects in Year 4:

- *Local Oil Spill Preparedness Projects* – Given the unprecedented changes in oil spill risk associated with expanding exports of fossil fuels to Asian markets, in Year 4, establish a crosscutting Local Oil Spill Preparedness Project utilizing a portion of the funds from both the Marine and Nearshore Protection and Restoration and the Toxics and Nutrients Prevention, Management, and Control LO programs. In partnership with the two Programs, oil spill staff from state agencies, and the USCG, work with local and tribal project sponsors to develop appropriate scopes of work for "directed funds" to accomplish local oil spill

preparedness Near Term Actions (and ongoing funding needs) from the Strait Action Area and the San Juan Islands due to the high risk of exposure from this growing threat to the ecosystem and economies of these two areas. The local oil spill preparedness Near Term Actions are those cited within the 2012-2013 Puget Sound Action Agenda for the Strait Action Area and San Juan Islands by their respective LIOs.

- *Local Ambient Monitoring and Data Analysis Projects* – In Year 4, establish a crosscutting project among the four Lead Organizations that would work strategically to integrate and support local volunteer ambient monitoring (*i.e.*, of freshwater and marine ecosystems) and data analysis programs into the regional Coordinated Ecosystem Monitoring Program being developed by the Puget Sound Partnership. One example of such a volunteer effort is the long-running and successful Streamkeepers program operated by Clallam County within the Strait Action Area. Results from ambient monitoring and data analysis could help local leaders distinguish anthropogenic from natural background effects to allow more informed support for implementation of actions. Also, local monitoring programs could help assist the regional programs where there are shortcomings.

(Strait ERN)

Response: See previous response to these comments. The type of work proposed for oil spills are clearly within the jurisdiction of the marine / nearshore grant; that grant could fund these activities without making it a cross-cutting project. We support funding of monitoring projects and have funded ambient monitoring projects in the past. However, they were not determined to be a higher priority than other activities and we do not have sufficient funding.

Compilation of Comments and Responses on Themes

In January 2013 – March 7, 2013, the Lead Organizations (LOs) solicited feedback on potential themes for funding under Round 4 of the Puget Sound National Estuary Program. During January and February, the LOs meet with the Ecosystem Coordination Board (ECB), the Science Panel (SP), Leadership Council (LC), Northwest Indian Fisheries Commission (NWIFC) and Puget Sound Tribes, and a separate Advisory Group. LOs received a number of comments on the proposed themes. This document is a compilation of the comments related to toxics and nutrients and Ecology's proposed changes based on the comments.

Many of the comments influenced the *specific projects* we are proposing. The proposed specific projects are now out for review and comment. Major changes to the *themes* include:

- Replaced the “Pollution Control Action Team” strategic initiative C7.1 NTA 3 with the “Water Quality Enforcement” strategic initiative C1.6 NTA 3.
- Kept the tight connection to the Action Agenda priorities.
- Limited TMDL theme to implementation of TMDLs.
- Added a buffer theme (C3.2 NTA1) pending additional conversations with EPA.
- Kept the funding for scientific investigations.

Other changes, and responses to individual comments, are included below.

Toxics

Toxics themes: Yes, the Stormwater Strategic Initiative themes seem appropriate, as they appear to be integral to local stormwater management. Also, see the two new crosscutting work themes requested below.

(Straits ERN LIO)

Response: We agree and will keep the stormwater strategic initiative theme. Cross-cutting is addressed later in this document.

In comparing the Investment Themes for the Toxics and Nutrients LO and the Pathogen LO, it appears that both programs are providing funding for the PIC programs. We fully support funding for the PIC program, but we would like to see some of the Toxics and Nutrients funding allocated for Oil Spill Preparedness, Readiness, and Response. We would also like to see funding appropriated for oil spill preparedness and response in the high risk areas. This should be included in the Toxics category. (San Juan)

Response: Oil spills, and specifically the strategic initiative near-term action 8.1 NTA 2 is under the purview of the marine / nearshore NEP grant. They funded this NTA in previous rounds in a \$200,000 project to assess key threats to Puget Sound from large oil spills, using and expanding on an existing risk model, in order to identify effective management strategies. The toxics / nutrients NEP grant covers smaller oil spills, such as the automotive drips and leaks project.

When you come to us again about projects KC SW folks suggest that a Regional Spill Response Program should be considered as a project to be funded.
(King County)

Response: Oil spills, and specifically the strategic initiative near-term action 8.1 NTA 2 is under the purview of the marine / nearshore NEP grant. They funded this NTA in previous rounds in a \$200,000 project to assess key threats to Puget Sound from large oil spills, using and expanding on an existing risk model, in order to identify effective management strategies. The toxics / nutrients NEP grant covers smaller oil spills, such as the automotive drips and leaks project.

ID – Squaxin: I see that you are throwing money at a kind of state institutional level. What do you have to suggest that that is the limiting factor? You are throwing more money at the compliance assurance program, which is a program that the agency is already authorized to do. The issue is that you aren't willing to enforce the current laws – throwing more money at this issue isn't going to fix it if the agency is unwilling to enforce its laws.

(Squaxin Tribe)

Response: Over half of the funds (56%) for Rounds 1-3 go to local projects, not regional/state efforts. We anticipate that Round 4 would follow historic trends and address local projects. Much of our compliance assurance efforts to date (mainly the Local Source Control) are done at the county or city level. We agree that adding more funds towards enforcement would be ineffective if agencies are unwilling to enforce their laws. We believe that agencies are willing to enforce their laws in most situations and adding additional compliance assurance programs will help Puget Sound recovery. The Action Agenda identified compliance assurance programs as one of the highest priorities and is a strategic initiative.

Toxics – The Toxics and Nutrients LO has proposed two themes to address toxic loading in Puget Sound. The first is a narrowly tailored theme which seeks to support a Stormwater Compliance Assurance program. The second is an overbroad call to “implement and strengthen authorities and programs to prevent toxic chemicals from entering the Puget Sound.” While both themes appear to be important pieces in the toxic control puzzle, it is difficult to tell whether or not they will ultimately address key tribal priorities such as protecting salmon and the health of tribal communities. We also note that a key tribal priority, Fish Consumption Rates, is not slotted for funding.

We therefore respectfully request that the Toxics LO further define their themes, and emphasize toxic control efforts that will protect both human health and aquatic resources. We suggest a twofold approach to better accomplish this. First, we would like to meet with the LO and key toxics staff to discuss additional options for better defining toxic control efforts and understand key limiting factors for toxic controls. Second, we suggest that both the theme and the aforementioned meeting should be centered around implementing the new human health criteria in state water quality standards. With new, more protective rules slotted – NEP funding efforts should be oriented toward ensuring swift and effective implementation. Potential ideas to facilitate implementation could include additional toxics monitoring to support 303(d) listing, stormwater outfall end of pipe monitoring to determine permit compliance with water quality standards, research to advance detection methods and quantitation limits, marine and fresh water toxics TMDLs, or updating EPA NPDES permitting protocols to conform with best available science.

(NWIFC)

Response: We agree that the themes need to be narrowed to specific projects. During the second phase of outreach on Round 4, we will take specific project proposals out to the Puget Sound management conference in April. We meting specifically with NWIFC to discuss some project proposals. We agree that funding implementation of the new human health criteria is a good idea; however the timing would be more appropriate for Round 5. According to our current schedule, new human health criteria in the state’s water quality standards will be finalized in mid-2014. Round 4 funds need to be spent starting in summer of 2013.

Nutrients

Would prefer to see more of 3 [C9.1 TMDLs] and less of 1 [PCAT] & 2 [PIC]. (Snohomish)

Response: See other comments in this section suggesting the opposite approach. Given the disparate comments on these issues, we will carefully analyze projects proposed under these themes to determine funding levels.

Allocate most of the funding for the Nutrient portion of the Year 4 Investment to local PIC programs.

Funding effective local PIC programs are of the highest priority for the Strait Action Area.

(Straits ERN LIO)

Response: See other comments in this section suggesting the opposite approach. Given the disparate comments on these issues, we will carefully analyze projects proposed under these themes to determine funding levels. Most of the PIC funding comes from the Pathogen NEP grant.

JD – Squaxin: You are spending money on TMDLs, which you've already had 40 plus years to do this, but you haven't done it. You are fighting enforcement of TMDLs, this is not a money shortage problem. Why are you throwing money at this when it's a willingness issue?

(Squaxin)

Response: See other comments in this section suggesting the opposite approach. Given the disparate comments on these issues, we will carefully analyze projects proposed under these themes to determine funding levels. Under the TMDL theme, as proposed, funds would address local projects, not Ecology staff. We believe there are enough willing partners to implement existing and ongoing TMDLs.

Thanks for the notice on Round 4 NEP Puget Sound funding. I am disappointed to see that, because you have been unable to spend much of the agricultural BMP funds already received from EPA over the last few years, you are not seeking additional available BMP funds from EPA in Round 4. This represents a further loss of potential on-the-ground conservation projects under the process you have tried to put in place, when you could have directed the funding through the Washington State Conservation Commission and conservation districts to work with private landowners and working lands managers to get projects implemented. Therefore, I restate my earlier recommendation that you re-direct the agricultural BMP funding accordingly to the Commission. In these times of severely limited funding for conservation work, it is troubling to see your department cling to a failed delivery strategy for the agricultural BMP aspect of this project, and to fail to capture all available funding to put conservation on the ground to help solve problems in Puget Sound. I am certain that the Commission and its staff can work with your department to develop an agreeable process to get this moving. By copy to Commission Chair Jim Peters, and Commission Acting Executive Director Ray Ledgerwood, I am soliciting their suggestions as to how this could best be done. This would be a good topic for discussion at a future Commission public meeting. If an agreement can be developed, would your department be able to revise its request for further Round 4 funds, to make additional BMP funding available to conservation districts and area landowners and managers? (WACD)

Response: We added a theme on buffers: see the proposal in this document. While the mechanics haven't been determined, if the Washington State Conservation Commission and

Conservation Districts were willing to encourage and implement the larger buffers that will now be required, it seems that funding the CDs would be a logical choice.

The funding to local OSS and PIC programs should be increased.

- o Afford greater autonomy and local control in their design and implementation. The top-down paradigm is ineffective and unsustainable long term.

- o Unlink salmon recovery from pathogen control efforts. The coupling has unduly complicated programs resulting in dissention, lost time and deterioration of working relationships that have been examples of non-point pollution success stories in the past.

Existing TMDL DIPs should be funded while resisting the urge to develop new programs, relationships, BMPs or performance measures

Continue funding development of tools/methods to quickly identify and respond to control sources of bacteria. (PSCDs)

Response: See other comments in this section suggesting the opposite approach to PIC funding. Given the disparate comments on these issues, we will carefully analyze projects proposed under these themes to determine funding levels. We agree that the focus for Round 4 NEP TMDLs funds should be on funding existing TMDLs, not new TMDLs. There is a fine balance between local autonomy / control and meeting certain transparency and effectiveness assurances with state/federal funds. See other comments in this section for differing viewpoints on this issue.

Funding should be eliminated for new TMDL studies. There are already numerous nutrient and pathogen TMDLs along with their detailed implementation plans (“DIPs”) that have languished unfunded for years. These provide a clear path towards eliminating these sources of pollution. If there is any sense of urgency to recovering the Sound their implementation must take precedence over the conduct of more studies. Additionally, it is our understanding that EPA provides funding for the development of TMDLs at a pace that currently exceeds our collective ability to implement. (PSCDs)

Response: We agree that the focus for Round 4 NEP TMDLs funds should be on funding implementation of existing TMDLs, not new TMDLs.

Each of your previous investment themes included support for Pollution Identification and Correction (“PIC”) programs. The importance of your continued close coordination cannot be overstated if we are to successfully remediate these contaminants. (PSCDs)

Response: See other comments in this section suggesting the opposite approach. Given the disparate comments on these issues, we will carefully analyze projects proposed under these themes to determine funding levels. We do believe PIC funding is important; most PIC funds come from the Pathogen NEP grant. We think it is very important for CDs to work closely with counties in implementing these PIC programs.

Re-opening shellfish beds has been identified as one of the three state strategic initiatives and a priority goal in the Action Agenda. Since each watershed features unique challenges and land uses, we believe that further investments in the Pollution Identification and Control programs is a high priority and critical to obtaining the detailed information that communities need to create the targeted local solutions for shellfish recovery. Our suggestions for the funding are as follows:

- Continue to fund PIC in shellfish recovery priority areas; existing programs that need funds for completion should be the highest priority.
- Funding for new PIC programs should target watersheds identified in the Shellfish Recovery Plan that have the greatest potential for shellfish recovery and productivity.

(TNC)

Response: See other comments in this section suggesting the opposite approach. Given the disparate comments on these issues, we will carefully analyze projects proposed under these themes to determine funding levels. We do believe PIC funding is important; most PIC funds come from the Pathogen NEP grant.

- The strategies identified by this lead organization focus on Shellfish exclusively, however we feel that the LO should have themes broad enough to cover all components of the Clean Water Act, including salmon recovery. The Lead Organization should consult with the Local Integrating Organizations to better understand the balance between salmon recovery actions and shellfish protection as this is different between regions and local areas.
- The stormwater retrofit strategies should be focused on utilizing local areas to prioritize what action needs to occur and its relative importance to other pressing environmental concerns.
- We believe there needs to be an integration of riparian issues as well as nutrient loading and run-off within the strategies and that these should begin to address early action steps that can help mitigate ocean acidification issues.
- Ecology should not use these funds to support the Total Maximum Daily Load work as this program should be supported by other funding sources. Action agenda implementation funding is scarce and should not be used for this program.

(Tulalip Tribes)

Response: We strongly encourage Local Integrating Organizations to work with PSP to ensure their priorities are prioritized in the Action Agenda. See other comments in this section suggesting the opposite approach regarding TMDL funding. Given the disparate comments on these issues, we will carefully analyze projects proposed under these themes to determine funding levels. Under the TMDL theme, as proposed, funds would address local projects not Ecology staff. We believe there are enough willing partners to implement existing and ongoing TMDLs. We support funding projects implementing larger buffers. While the approach is still being determined, if EPA or other LOs do not fund a larger buffer project, the toxics/nutrients grant is proposing to do so.

Problems with PIC Programs -- PIC programs are reputed to be effective at addressing pathogen problems stemming from onsite sewage systems.⁶ The other primary source of pathogens in Puget Sound is agricultural run-off. However, as currently implemented, it is not clear that PIC programs are effective at addressing nonpoint source pollution from agricultural sources, of which pathogens are only one pollutant.⁷ As conceded by Ecology at the February 28th meeting, WDOE and WDOH are well behind schedule at developing PIC program implementation guidance. As a result, PIC programs are being funded and implemented without effective guidance regarding accountability, BMP selection, or enforcement relative to agricultural nonpoint sources. This is significant as it is not clear that all counties implementing PIC programs have the authority and the political will to require agricultural landowners to implement practices needed to correct pollution problems identified by PIC programs.

In addition, Ecology's commitment in the Washington Shellfish Initiative to develop guidance for agricultural BMPs to assure compliance with state water quality standards has not been met. The original deadline of December 2012 has passed and the January 2013 report regarding the 3 Directors Talks suggests a new deadline of June 2013. Ecology's current §319 funding guidelines specify a 35 foot buffer regardless of stream class, riparian condition, or land use. We note that the 3 Directors Report also refers to a 35 foot buffer, but without any analysis. We also note that this 35 foot recommendation has not been accepted by a number of Conservation Districts (who consider it too large), some of whom are supposed to play significant roles in helping landowners implement practices that protect both salmon and shellfish.⁸ The

⁶ We have not seen data demonstrating this.

⁷ Other pollutants include: nutrients, pesticides, sediment, high stream temperatures, and hydro-modification. See e.g., Spence, B.C, G.A. Lomnický, R.M. Hughes, R.P. Novitzki. 1996. An Ecosystem Approach to Salmonid Conservation. TR-4501-96-6057. ManTech Environmental Research Services Corp., Corvallis, Oregon. (December 1996) at Chapter 1, page 10, §1.5.3.

⁸ For example, according to EPA staff, both Whatcom and Skagit Conservation Districts have political/ideological objections to accepting federal funds that contain minimum riparian buffer requirements.

Commission has repeatedly identified the need for Ecology to provide guidance on the agricultural best management practices needed to comply with its various water quality standards.⁹ Despite ample scientific studies and recommendations that provide technical justification for BMPs to address pollutants including pathogens, nutrients, and temperature, Ecology continues to delay providing technically sound guidance for addressing pathogens and nutrients.

Pollution Control Action Team – To the best of our knowledge, the PCAT is still a work in progress. It is our understanding that the genesis of the PCAT was the desire to do something to address pathogen problems affecting shellfish beds in Portage Bay and Drayton Harbor, in the face of Whatcom County's failure to commit to doing the enforcement that WDOH believed necessary to implement a PIC Program. It is our understanding that, to date, WDOE has hired two inspectors, but the PCAT is still not yet functional. Recent statements from Lummi indicate that enforcement in the Nooksack watershed remains inadequate.

Increasing Enforcement to Incentivize Landowner Participation – The pathogens LO (and the rest of the LOs) should fund additional enforcement as a means of encouraging greater landowner participation in reducing nonpoint source pollution, including pathogens, nutrients, sediment, and temperature. If landowners understood that their options were to either face enforcement actions and pay for their own BMPs or volunteer to have BMPs addressing all pollutants largely paid for by NEP funds, the cost/benefit analysis would be clear. The current significant backlog of unspent funds for implementing BMPs provides strong evidence that doing nothing is considered by many landowners to be the best option.

One of the tribal comments at the February 28 meeting was: "Either fix the PIC programs or stop funding them." We recommend that you fix the programs. The following are among the fixes necessary:

- 1) Assure adequate enforcement – The LO needs to make sure that PIC grantees have the legal authority and the political commitment to actually require the correction of pollution sources identified by the program. Inadequate enforcement has been identified by tribes as a problem in Whatcom County, Skagit County, and Mason County. It may be that counties are only able to implement the onsite sewage system portion of the PIC program and that WDOE may have to take over implementation of the agricultural nonpoint source correction portion.
- 2) Develop and adopt PIC Program Guidance – (See above discussion)
- 3) Adopt BMP Guidance – (See above discussion)
- 4) Performance audit of PIC programs, particularly the Clean Samish Initiative – In its comments on the 3 Directors Talks, the Commission noted that the involved state and federal agencies have never examined the effectiveness of existing voluntary processes, programs, and criteria at achieving state water quality standards and salmon recovery

⁹ See e.g., Letter from Billy Frank, Jr., NWIFC, to Ted Sturdevant, WDOE (May 18, 2012) (providing citations to BMP recommendations and additional proposed agricultural riparian buffer requirements); see also Memo from Jim Weber, NWIFC, to Melissa Gildersleeve (WDOE) and Jerrod Davis (WDOH) (October 2, 2012) (comments on draft PIC program guidance).

goals. The Commission's comments also identified information that needs to be collected/disclosed in order to assess the adequacy of activities intended to address agricultural nonpoint source pollution.¹⁰

- 5) Re-design PIC programs so that they effectively address not only pathogens, but also other nonpoint source pollutants that affect shellfish and/or salmon. , WDOE and some counties have the legal authority to address all nonpoint source pollution, including those pollutants that affect both shellfish and salmon. It is basic common sense that contacts with landowners should take a holistic, comprehensive approach to addressing nonpoint source pollution rather than focusing on one pollutant, turning a blind eye to any others, and likely necessitating future less congenial contacts with landowners.¹¹ Where county enforcement cannot implement the water quality standards, then WDOE should be the responsible party.

¹⁰ See Letter from Mike Grayum (NWIFC) to Mark Clark (WA State Conservation Commission), Dan Newhouse (WA Dept. of Ag.), and Ted Sturdevant (WDOE) (January 2, 2013).

¹¹ BMPs designed to address pathogens generally fail to fully address problems from nutrients, or pesticides, or dissolved oxygen, or temperature, or hydro-modification. See e.g., WDOE, Clean Water Practices for Agricultural Lands (February 12, 2010 Draft) at 27 (Discussing riparian buffer sizes needed to address various pollutants). See also *id.* at 26: "Osborne and Kovacic evaluated small streams and found buffer widths between 30 and 100 feet, depending on site conditions, could maintain stream temperature. Other studies suggest that riparian buffer widths of up to 180 feet grown out to site potential tree height were necessary to maintain stream temperature. An evaluation of 15 studies on buffer width and water temperature suggested an average recommended buffer width of 77 feet was needed to control temperature. USDA guidelines for conservation buffers recommend buffers of between 150 to 1000 feet to maintain microclimatic factors which also affect stream temperature."

Nutrients – PIC -- All of the comments regarding the problems with the PIC programs under the Pathogens LO also apply here. We note that PIC programs appear to have been designed to address pathogens, not nutrients. It is not clear to what extent, if any, PIC programs are even monitoring for nutrients, let alone implementing corrective actions to eliminate nutrient sources (other than poorly operating onsite sewage systems). As currently managed, this portion of the nutrients and toxics LO is redundant of the pathogens LO. Either these funds should have been simply allocated to the pathogens LO to begin with or they should be used in a manner that actually addresses nutrients that aren't being dealt with by the current PIC programs. Why pay overhead to two LOs to do one job?

Nutrients – PCAT – All of the comments regarding the PCAT under the pathogens LO also apply here. Also, why is the nutrients and toxics LO devoting a significant portion of its funds to projects that are already being funded by the pathogens LO and are being used to address pathogens and not nutrients? Either these funds should have been simply allocated to the pathogens LO to begin with or they should be used in a manner that actually addresses nutrients

that aren't being dealt with by the pathogens PCAT. Why pay overhead to two LOs to do one job?

The nutrients and toxics LO is treating nutrients and pathogens pollutants as if they are identical. This is incorrect. While human and animal waste are the sources of pathogens, nutrients stem from human and animal waste, fertilizers, and other sources. BMPs that address pathogens do not necessarily address nutrients. Significantly larger riparian buffers are required to address nutrients versus pathogens.¹² And while manure processed by manure digesters may address pathogen problems, it does not eliminate nutrients. The output of manure digesters – digestate – is rich in nutrients that, depending upon application, can find their way into surface waters or leach into groundwater.

(NWIFC)

Response: We agree that the effectiveness of PIC in addressing basin-wide agricultural sources of pollution is still unknown. Combining PIC funding with Ecology inspectors (PCAT) and incentives (Ag BMP Fund) allows us address these sources on all three fronts. We are working to make PIC as effective as possible, while also funding other strategies as well. Development of the PIC guidance is behind schedule and we are working towards finishing it. Part of the guidance is out for review now. The Ecology piece has been delayed multiple times but will be out soon.

We support funding projects implementing larger buffers called for in the NOAA AFW guidance. While the approach is still being determined, if EPA or other LOs do not fund a larger buffer project, the toxics/nutrients grant is proposing to do so. See the \$200,000 project proposal on buffers. We encourage your comments on how to structure a buffer program that will be successful.

As noted in the comments, PCAT is still a work in progress. Given the current PCAT program in Whatcom County is fully funded, we do not see a need for additional PCAT funding at this time; we could add non-point inspectors but there are no plans to form a formal new PCAT program. Funding for NEP comes in one-year increments (or less) but it takes many years to determine if programs are effective. There is a fine balance between continuing to fund programs that are still in progress and funding new programs.

See the response from DOH on performance audits for PIC. We believe performance audits would be a good idea in the future, but the programs are just now getting up-and-running. Some PIC programs do monitor for nutrients. Many BMPs are the same or similar for nutrients and pathogens – fixing failing septic systems and keeping the manure out the water will help address both pathogens and nutrients. Addressing some nutrient sources (wastewater treatment plants, chemical fertilizers, and septic systems that are functional at removing pathogens but not nutrients) will take additional programs and resources. We are focusing first on the pollution sources that affect both pathogens and nutrients. When Pathogens and Toxics/Nutrients jointly fund PIC or PCAT, the two agencies work together very closely to prevent increases in overhead. In most situations, joint funding is more efficient as each LO can fund pieces of PIC/PCAT within their respective agencies.

Nutrient themes: Yes these themes seem appropriate, but the following are requested:

- Pollution Control Action Team (PCAT) - Assure that the work of the PCAT is well coordinated with local Pollution Identification and Correction (PIC) programs efforts, including responding with enhanced compliance teams to supplement actions taken by local health departments or clean water districts.
- Pollution Identification and Correction - Work in partnership with WDOH and local health departments to establish sustainably funded local PIC programs that will benefit shellfish growing areas and swimming beaches. Adequate enforcement is also required and the LO needs to make sure that PIC grantees have the legal authority and the political commitment to actually require the correction of pollution sources identified by the program. Development of PIC program implementation guidance and Best Management Practice guidance are considerably behind schedule and need to be finalized by WDOE and WDOH. Otherwise, some believe that PIC programs could be funded and implemented, but not be effective.

(Straits ERN LIO)

Response: We concur that all overlap between PCAT and PIC needs to be well-coordinated. All PIC work funded by toxics and nutrients would be done in partnership with the larger DOH Pathogen NEP grant PIC program. DOH and Ecology have worked in partnership on PIC over the past two years. Ecology and DOH have been working with counties and legal and political support for the corrective action piece of PIC; both agencies have also funded Ecology inspection/enforcement capabilities as well. We agree that the PIC guidance is behind schedule and we continue to work towards finishing it.

Science:

If the funding received to address the investment themes is less than requested or anticipated, The PSCD Caucus recommendation is to reduce the allocations to the scientific investigation themes. And, above all honor all the work that has been done to develop existing TMDLs and their DIPs by funding their implementation. (PSCDs)

Response: See other comments in this section that advocate for additional funding for science. We agree that implementation funding is the most important piece of NEP funding and will keep the percentage of funds going towards implementation well above 50%. Funding levels are still unknown as of April 2013.

The Toxic Work Group of the PSEMP is still working through a prioritization scheme. That work is on-going. It appears premature to focus funding on CECs in this round. Particularly since we are already dicing down limited resources I suggest that the portion for “science – CEC” should perhaps be reprioritized for this round to the other work needed (SW) which would support the Strategic Initiatives. While the proposal to look more closely at sediment flux modeling effectiveness is a laudable goal, the description of this work was vague. The support presented was not strong. Those funds may be better focused on the SW work or to a crosscutting project.

(King County)

Response: See other comments in this section that advocate for additional funding for science. While having the results of the PSEMP prioritization scheme would have been extremely useful in funding projects, we do not think we should eliminate science funding because we lack the PSEMP product. Scientific investigations will be critical to future implementation activities. Additional details on the projects are included in this document and we encourage you to review and comment on the details.

Align NEP toxic/nutrients funds with the state’s three strategic initiatives (shellfish recovery, salmon habitat restoration, and urban runoff). The Conservancy recommends that the NEP funds currently allocated for scientific investigations be allocated to PIC and PCAT so that they are in alignment with the strategic initiatives and communities can obtain the detailed information needed to develop action plans and reopen shellfish beds.

(NC)

Response: See other comments in this section that advocate for additional funding for science. We agree that implementation funding is the most important piece of NEP funding and will keep the percentage of funds going towards implementation well above 50%. At this time, we do not think eliminating science funding is the best approach for protecting Puget Sound or would be consistent with the intent of the Action Agenda.

Regarding the Funding priority set-aside for Scientific Investigations: the table presented four priorities (1) characterizing CECs, (2) ambient monitoring, (3) effectiveness monitoring of SCAs and (4) identification of sources from developed lands. Mr. Kolosseus indicated that (1) was selected as the top priority. However, it should be noted that existing ambient (status and trends) monitoring programs are already working on CECs and are well poised to leverage new resources to most efficiently address this issue. For example, the Puget Sound Ecosystem

Monitoring Program (PSEMP) Toxics in Biota unit has already collected (and will collect) hundreds of tissue samples for the specific purpose of evaluating the extent and magnitude of CEC contamination in Puget Sound biota. PSEMP staff are coordinating with NOAA Fisheries chemists at the Northwest Fisheries Science Center to develop assay methods for CECs in tissues collected from PSEMP monitoring. A well-designed framework for discovery and evaluation of CECs has already been vetted and proposed in the form of the Toxics-Focused Biological Observing System for Puget Sound, or TBIOS (Johnson et al. 2010). Although not yet implemented, the plan was funded with EPA support via a grant from Ecology. It outlines a systematic approach to evaluating CECs and other toxics in Puget Sound's ecosystem. The TBIOS approach recognizes the value of existing ("ambient") monitoring programs as foundational support for not only field studies to collect new samples, but also (a) a food-web based context for predicting and understanding where chemicals may enter the system, (b) how chemicals might move about within the system (their fate and transport), and (c) to what degree they may harm organisms. Hence I suggest the following: a. priorities (1) and (2) be merged to fund CEC characterization in Puget Sound, b. use the TBIOS approach to focus CEC work on biological matrices (tissues), with the aim of identifying where the most CEC-related injury may be occurring, and c. provide direct grant money for this effort to maximize investment returns and minimize efforts spent re-creating existing strategies. (WDFW)

Consultation and coordination with existing monitoring programs makes good sense when evaluating investment priorities. Whereas priority Items 3 (effectiveness monitoring) and 4 (source identification) will not receive funding in the upcoming FFY, advances could be leveraged with a small investment. For example, the PSEMP Toxics in Biota unit added two stations to its biennial survey of toxics in bottomfish to evaluate effectiveness of sediment remediation activities at Superfund sites. Monitoring data generated from these efforts represent long-term, consistent effectiveness monitoring for both the Duwamish River and Eagle Harbor (the latter in partnership with NOAA Fisheries). Additionally, current monitoring of blue mussels is designed to help identify terrestrial sources of toxic contaminants entering Puget Sound from stormwater and other conveyance pathways. A relatively small investment in this activity could leverage important information for priority #4. Hence, I recommend staff consider partnering with existing long-term monitoring projects to identify potential opportunities for leveraging existing work, to meet EPA and others' goals for Puget Sound recovery. (WDFW)

Response: We concur that this can be significant overlap between the four potential themes that were identified. As written, Priority 2 – ambient monitoring – could include CECs and/or non-CECs. While we agree with the proposed rationale for choosing specific projects under these themes, there is equally valid rationale for other projects. The next phase of collecting input from the management conference will address project-level proposals.

- Scientific Investigations (*i.e.*, sediment models for influential shallow bays) - Include Sequim and Dungeness Bays within the Strait Action Area as one of the shallow bays to be investigated. Also, work to develop a better understanding of nutrient inputs from non-point source impacts (*e.g.*, on-site wastewater systems).

(Straits ERN LIO)

Response: The sediment modeling work could help the region understand Sequim and Dungeness Bays better, and the current model domain includes both of these. Additional work on quantifying non-point sources of pollution is currently not being proposed. We believe the sediment work was a higher priority and do not have funding for more than one project.

Although LOs propose to fund science projects to support their areas of emphasis, we encourage LOs to set aside additional funding to support specific science priorities identified in the Biennial Science Work Plan. Good science supports the implementation of the Action Agenda; builds capacity to support recovery and addresses the highest priority threats; and enhances our ability to protect and restore the Puget Sound ecosystem. (PSP)

Response: See other comments in this section advocating reducing funding for science. The toxics and nutrients grant does set aside funding specifically to address science priorities. To assist LOs in funding science projects in the future, we recommend that PSP prioritize the projects identified in the BSWP and identify how those priorities rank compared to implementation priorities in the Action Agenda.

One of the fundamental tenants of the Action Agenda is to use scientific input – about the effectiveness of actions and programs; and monitoring and adaptation – to design, implement and evaluate strategies. We suggest that LOs continue and increase investments to monitor the effectiveness of programs that address their areas of emphasis. LOs need this information to improve and adapt their programs to more effectively recover Puget Sound. We also suggest that the results of effectiveness monitoring be reported to the Region. (PSP)

Response: See other comments in this section advocating reducing funding for science. We agree that effectiveness monitoring is important – not just in the work the LO funds but also in the vast majority of Puget Sound funding that is not part of the NEP program. Many of our larger projects (PAH prevention, nutrients in a watershed, etc.) have effectiveness monitoring built into them. Unfortunately, the costs of valid effectiveness monitoring can be too costly for some of the smaller programs, so we do not have a full-scale effectiveness monitoring in every project. We support the idea of reporting effectiveness of all Puget Sound programs (not just NEP) at a regional scale.

The ecosystem recovery targets adopted by the Leadership Council are the metrics against which we measure the collective efforts of all to protect and recover Puget Sound. We appreciate the fact that most of the LOs do require monitoring for projects that they fund. However, we encourage LOs to invest in specific monitoring programs that support and track our progress in meeting the 2020 performance targets. These monitoring programs are critical elements in our reporting on progress in the State of the Sound as well as informing decision-makers at all government levels. (PSP)

Response: See other comments in this section advocating reducing funding for science. We agree that monitoring programs for addressing targets is important and have funded them in the past. To assist LOs in funding science projects in the future, we recommend that PSP prioritize the projects identified in the BSWP and identify how those priorities rank compared to implementation priorities in the Action Agenda.

Cross-Cutting

Still concerned that the idea of funding cross-cutting projects has been dropped. Would suggest that funding consideration should be given to tying some funding more closely to either monitoring or “science panel” priorities and glean this funding from all LOs as described before as Crosscutting issues. Ocean acidification may also be an important item to look at though a crosscut effort. (King County)

Response: At this point, we believe the science priorities can be funded out of the individual LOs and do not need to be pooled into a harder-to-manage cross-cutting bucket. If, over the next year, the science panel and/or PSEMP process determines priorities that are truly cross-cutting, we would be open to developing a cross-cutting fund for these highest-priority projects. At this point, it appears that scientific investigation of ocean acidification will get money at the state level.

Two new crosscutting work themes are specifically requested for a portion of these LO funds. Please see the descriptions of the LO Crosscutting Work Themes requested below, including both the “Local Oil Spill Preparedness Work Theme” and “Local Ambient Monitoring and Data Analysis”. Regarding the “Local Oil Spill Preparedness Theme, the allocation for this Crosscutting Work Theme should come from the Toxics portion of this Year 4 LO funding proposal, not the Nutrient portion.

Local Oil Spill Preparedness Work Theme – Given the unprecedented changes in oil spill risk associated with expanding exports of fossil fuels to Asian markets, in Year 4, establish a crosscutting Local Oil Spill Preparedness Work Theme utilizing a portion of the funds from both the Marine and Nearshore Protection and Restoration and the Toxics and Nutrients Prevention, Management, and Control Lead Organization programs. In partnership with the two Programs, oil spill staff from state agencies, and the USCG, work with local and tribal project sponsors to develop appropriate scopes of work for "directed funds" to accomplish local oil spill preparedness Near Term Actions (and ongoing funding needs) from the Strait Action Area and the San Juan Islands due to the high risk of exposure from this growing threat to the ecosystem and economies of these two areas. The local oil spill preparedness Near Term Actions are those cited within the 2012-2013 Puget Sound Action Agenda for the Strait Action Area and San Juan Islands by their respective Local Integrating Organizations.

Local Ambient Monitoring and Data Analysis – In Year 4, establish a crosscutting work theme among the four Lead Organizations that would work strategically to integrate and support local volunteer ambient monitoring and data analysis programs into the regional Coordinated Ecosystem Monitoring Program being developed by the Puget Sound Partnership. One example of such a volunteer effort is the long-running and successful Streamkeepers program operated by Clallam County within the Strait Action Area. Results from ambient monitoring and data analysis could help local leaders be more informed and provide support for implementation decisions as part of the Watershed Framework Plan. Also, local monitoring programs could help assist the regional programs where there are shortcomings.

(Straits ERN LIO)

Response: Oil spills, and specifically the strategic initiative near-term action 8.1 NTA 2 is under the purview of the marine / nearshore NEP grant. They funded this NTA in previous rounds in a \$200,000 project to assess key threats to Puget Sound from large oil spills, using and expanding on an existing risk model, in order to identify effective management strategies. The toxics / nutrients NEP grant covers smaller oil spills, such as the automotive drips and leaks project. Ambient monitoring was proposed as the second highest priority for toxics and nutrients. However, there was also support for our proposed highest priority (chemicals of emerging concern), and given limited funding we will not be able to fund ambient monitoring with Round 4 funds. Conceptually, ambient monitoring should be part of a stable, ongoing funding source. NEP funds are highly variable and tenuous, making them more appropriate for short-duration projects, not ongoing programs.

Over the past decade there have been significant public investments in recovery plans for salmon, shellfish, and Puget Sound. There is a strong knowledge base that can direct agencies, NGOs and local communities to the most important places to implement restoration,

protection and stewardship practices needed to achieve water quality and habitat restoration goals.

However, the pace and scale of recovery has been stalled because of stakeholder and community opposition that views conservation as a threat to their culture, business viability or way of life. Existing funding mechanisms and strategies do not take into account the landowner and community issues/priorities that need to be addressed in order to mobilize their support. In the end, all conservation is local and there is no silver bullet or one-size-fits-all approach. We liked the thinking that was presented by the Nearshore-Marine team around developing an incentives toolkit for shoreline landowners, but we don't think these issues or this approach need be limited to marine shorelines. We recommend that a pool of funds be dedicated for the development of new and innovative incentives for watershed landowners as well. This funding would enable communities to bring together the key stakeholders and assess the social and economic barriers to recovery in their watersheds and use that information to develop customized approaches and incentive toolkits that will mobilize landowners and the communities to implement priority actions for the local recovery plans. The end products will provide a broader constituency of support for recovery and provide Lead Organizations with opportunities to implement a coordinated investment approach that will advance recovery actions at an accelerated pace and scale. (TNC)

Response: The Puget Sound Partnership is conducting some of the work suggested. We currently have an incentive program for installing best management practices on agricultural land. Many entities are working at making these, and similar incentive programs, more effective. The toxics/nutrients NEP grant generally funds projects that are at the implementation phase (e.g. implementing priority actions rather than developing the approaching to implementing the actions). This is consistent with our funding of TMDLs (the actions, not the writing) and CAPs (funding PAH-related projects, not the writing). As PSP and others complete the planning steps, we hope to be able to fund the actions they identify.

General

Funding for Toxics should be eliminated, and reprioritized and focused on the implementation of on-the-ground projects with private landowners. The State's toxic fund which was created for this specific purpose and has grown markedly over the past few years. It can more than take up the slack. (PSCDs)

Response: See next comment that suggests increasing funding for toxics. Since both commenters make valid points, and our cooperative agreement with EPA is for both toxics and nutrients, we believe we should fund both.

1. Regarding the proposed distribution of money across three areas, Nutrients (36%), Toxics (36%) and Scientific Studies (19%).

- a. Although allotting identical shares to Toxics and Nutrients seems equitable, Toxics studies are inherently more expensive than Nutrient studies. Hence, equal dollar investment does not equate to equal return. I suggest this distribution of funds be reconsidered to account for this.
- b. The same comment applies to work funded within the Scientific Studies allocation; studies involving analytical chemistry of many pollutants are more expensive to implement than analogous studies on nutrients. (WDFW)

Response: See previous comment that suggests decreasing funding for toxics. There are projects for toxics and nutrients that can either cost very little or a considerable amount. In both cases, the needs outweigh the funds available by multiple orders of magnitude. While otherwise identical studies would be more expensive for toxics than nutrients, the current state of the science for the two forms of pollution are at much different places. For nutrients, we are conducting Sound-wide detailed computer modeling that is quite technically complicated and expensive. Considering the divergent opinions on this issue, we feel that a roughly even split (between 40/60 and 60/40) is appropriate.

What this effort/theme prioritization highlighted very strongly is that the work that is most important to do is known work, work that unfunded programs would be doing if there was a consistent and stable funding of programs today (e.g. local source control programs). Since this work is vitally important, these grant funds should be deployed now to do this work but since the work is vital we should be communicating to the PSP Funding Subcommittee which existing (known programs) are the most critical for enhanced funding. (King County)

Response: We agree. For the most part, existing programs are the most important work – that is why we have funded them in the past and they are now existing programs. NEP funds can also be used to supplement existing programs and add other high-priority programs that might have fallen through the cracks of existing efforts.

Funding allocation: This LO is anticipating that it will receive funds ranging from \$2.4 to \$3.6 million. About 36% percent of these funds would be allocated to the toxics category to be split evenly between the two themes. Another 36% would be allocated to the nutrients category. The split between the three nutrient themes is unclear. About 19% would be allocated to the science category, and the remaining 9% would go to administration. We appreciate this transparency regarding proposed allocations.

(NWIFC)

Response: Comment noted. Final allocations may change slightly and will be based on the amount of funding available and the projects selected.

One of the overarching comments made by the tribes at the February 28th LO presentations at the Commission is that a significant portion of the NEP funds needs to be directed to implement strategic high priority actions identified by the Local Integrating Organizations (LIOs) ; these actions are often identified as Local Near Term Actions in the PSP Action Agenda. There was also interest in allocation of some NEP funds to the Salmon Recovery Funding Board (SRFB) to

address the lengthy backlog of worthy salmon recovery projects identified in the Lead Entity 3-year work plans. There is also concern that NEP funds are being used to compensate for recent cuts in state natural resource agency budgets. These federal funds should not be used to compensate for the state's failure to meet its natural resource management obligations, but instead should be applied in a manner that propels resource protection beyond the status quo.

(NWIFC)

Response: NEP funds have not been used to compensate for cuts within Ecology. All of the programs with Ecology funded by NEP are new programs. Back in 2010, EPA decided to fund implementation of the Action Agenda through Lead Organizations instead of Local Integrating Organizations. EPA is committed to the Lead Organization model through the six years of the grant. We strongly encourage LIOs to identify specific projects that are priorities and feed those priorities into the Action Agenda. The local priorities should then be weighed in the Action Agenda with Sound-wide priorities. The toxics/nutrients had provided multiple opportunities for local entities to receive funding for local priorities around toxics and nutrient priorities (see the Wood Stove Removal Program – PSCAA; Preventing Automobile Leaks – SPU; Nutrient Bioextraction: Shellfish at Work – PSI; Clean Water BMPs for Agricultural Activities; Local Source Control – Bothell, Everett, Port Angeles, and Puyallup; Nutrient Reduction PIC: Murden Cove – KPHD; Phosphorus Management for Lake Whatcom – Bellingham; Johns Creek Estuary Conservation – Capitol Land Trust partnering with Squaxin Island Tribe; and South Landers Street Storm Drain Cleaning – SPU.) We would strongly support a mechanism for LIOs to help identify or prioritize projects submitted to Ecology; your comments are encouraged.

We understand that LOs for this round of NEP funding seek feedback on high-level investment themes. In order to maximize the use of NEP funds towards the most effective outcomes, we recommend that LOs direct funds to implement specific near-term actions (NTAs) before activities or actions that may broadly fit under sub-strategies but which are not articulated in the Action Agenda. Emphasis should be placed on NTAs associated with Strategic initiatives and sub-strategies ranked highest for ecological impacts. These associated NTAs are the areas where we intend to focus time and resources, to increase funding, to seek changes that improve policy, to report success and apply lessons learned, and to educate and engage citizens in the recovery effort that the region has agreed should be our priority. An example that we especially commend is the Toxic/Nutrients Lead Organization decision process for selecting funding priorities and we encourage other LOs to use a similar model as they provide further a detail in the work plans to implement their investment themes. The Toxics/Nutrients LO placed their highest priority on:

a. NTAs specifically listed in one of the three strategic initiatives as the highest priority for funding; actions specifically listed in the biennial science work plan; actions that directly

implement one of the LIO priorities for one or more LIOs; or directly supports one of the 2014 or 2016 milestones and/or outputs;

b. Followed by sub-strategies according to rank, actions that generally support the biennial science work plan; or indirectly implements or assists LIOs with priorities;

c. Followed by lower-ranked sub-strategies or NTAs; and actions that do not support a LIO priority.

d. As noted above, we would add a funding criteria that provides additional “credit” to LIO proposed near term actions in the Action Agenda

Alternatively, we note NTAs B2.1.1 (protection of bluff-backed beaches) and C2.1.1 (watershed based stormwater management), which are both strategic initiative NTAs as well as implement highly ranked sub-strategies, would not be supported under the Marine and Nearshore and Watershed Lead Organizations’ investment strategies, respectively. While we generally support their overall investment themes we would suggest they reconsider supporting these NTAs. (PSP)

Response: Comment noted. We attempted to follow the action agenda as much as possible. We do recommend the future versions of the action agenda do a better job of integrating local priorities and responsibilities.

Other considerations: Don’t require a match. Provide three months lead time for proposals. Simplify RFP as much as possible to minimize time required for development. (San Juan)

Response: Toxics/Nutrient grants do not require match (with the partial exception of the agriculture BMP fund that covers 75% of the costs and is a quasi match requirement). Ecology has already used state funds to provide the match required by EPA. We do try to simplify our competitive grant proposals; they require a few pages of project descriptions plus a minimal amount of budget and other information. Feedback from applicants indicates the forms are easy to use and not time-consuming to complete. We usually do not provide a full three months of lead time for each proposal. There is a fine balance between providing lead time and allocating the money in a timely manner. While we have allowed for additional time on more complicated projects, our typical lead time is two months. We encourage entities to visit the PSP website (<http://www.psp.wa.gov/epafunding.php>) that lists upcoming funding opportunities.

In reviewing the Lead Organization proposed investment themes for the upcoming grant rounds, we would like to provide the following comments on the entire funding package as it relates to the Local Integrating Organization priorities for San Juan County: An enormous amount of time and energy is allocated to developing funding proposals with no certainty of funding. We would like to propose a more strategic and efficient approach, similar to the block grant Lead Entity salmon recovery funding program. We would like to see a LO block grant program for each Local Integrating Organization, based on the Near-term Actions in the Action Agenda. (San Juan)

Response: Competitive grant opportunities do not provide certainty of funding. By receiving more project proposals than we are able to fund, we are able to fund only the best proposals, therefore using our limited funds more effectively. While applying for funds but not receiving funding is time consuming and frustrating, we believe the trade-offs are worthwhile. Back in 2010, EPA decided to fund implementation of the Action Agenda through Lead Organizations instead of Local Integrating Organizations. EPA is committed to the Lead Organization model through the six years of the grant. We strongly encourage LIOs to identify specific projects that are priorities and feed those priorities into the Action Agenda. The local priorities should then be weighed in the Action Agenda with Sound-wide priorities. The toxics/nutrients had provided multiple opportunities for local entities to receive funding for local priorities around toxics and nutrient priorities (see the Wood Stove Removal Program – PSCAA; Preventing Automobile Leaks – SPU; Nutrient Bioextraction: Shellfish at Work – PSI; Clean Water BMPs for Agricultural Activities; Local Source Control – Bothell, Everett, Port Angeles, and Puyallup; Nutrient Reduction PIC: Murden Cove – KPHD; Phosphorus Management for Lake Whatcom – Bellingham; Johns Creek Estuary Conservation – Capitol Land Trust partnering with Squaxin Island Tribe; and South Landers Street Storm Drain Cleaning – SPU.) We would strongly support a mechanism for LIOs to help identify or prioritize projects submitted to Ecology; your comments are encouraged.

In seeking a balance between local and regional investments, we ask that EPA and LOs develop incentives or scoring criteria to give priority to proposals that are under the aegis of Local Integrating Organizations (LIOs) when making competitive awards. Specifically, scoring should support and give priority to local near-term actions identified in the Action Agenda that have local agency ownership. Projects are unlikely to be specifically proposed by an LIO, but our LIOs are playing an important convening and coordination role with their members to identify and propose projects that the region should support. (PSP)

Response: We agree that this is a good idea and will include it in future toxics/nutrients grant opportunities.

Several commenters at the public meetings noted that they would like to be included in LO meetings and on LO review panels. While we recognize that these meetings are open and that there is information on the LO website, we believe that each LO should engage in more specific outreach to include organizations that have expressed an interest but have not been included in our process. (PSP)

Response: We verbally invited WDFW and NWIFC to join our group of Ecology, PSP, EPA, and DOH. Participating in the core group is time intensive, so it is unknown if they will be able to join the group.

Lacking more detailed information from upcoming draft Year 4 work plans, the following set of compiled comments were initially drafted based on an analysis of how the “themes” proposed by the four LOs may or may not help support implementation of the local specific actions cited for each of the six LNTAs within the 2012 Action Agenda for the Strait Action Area. Half of the themes proposed for the Toxics / Nutrients and Pathogen Year 4 LO funding proposals may support, to some degree, implementation of the Clean Water District Plans for Clallam and Jefferson counties that are also cited within the Action Agenda. (Strait ERN LIO)

Response: More detailed information and the Round 4 work plans will be available in the second phase of management conference engagement in April.

Year 4 LO funding proposals were a topic of discussion at the February 22, 2013 Winter Quarterly Meeting of the Strait ERN LIO. Two ideas were discussed at that meeting, including:

- Directly allocating (e.g., block grants) a significant portion of the Lead Organization (LO) National Estuary Program (NEP) funding to LIO organizations to help implement local specific actions cited within the Action Agenda. The SRFB/PSAR funding allocations that are known in advance of each salmon recovery funding cycle was discussed as one example for this kind of approach.
- Moving more toward a “directed” LO approach for NEP funding of local specific actions via collaboratively developed “scopes of work” thereby reducing the overall workload involved in developing and evaluating proposals through competitive processes.

Feedback from the LOs and the Puget Sound Partnership on these two ideas would be appreciated.

When offering competitive Requests for Proposals (RFP) for funding, incorporate (or continue to incorporate) the following:

- Don’t require a match,
- Provide three months lead time for submission of proposals,
- Simplify the RFP as much as possible to minimize time required for development.

(Strait ERN LIO)

Response: See previous responses to block grants, match, lead time, and simplifying RFPs. The toxics / nutrients grant does fund some projects directly (about 15% in Rounds 1-3). We have done direct awards when there is only one entity with the mandate or ability to conduct the desired work. However, for projects where multiple entities could do the work, we believe that a competitive process is generally desirable for funding the best projects. By receiving more project proposal than we are able to fund, we are able to fund only the best proposals, therefore using our limited funds more effectively. While applying for funds but not receiving funding is time consuming and frustrating, we believe the trade-offs are worthwhile.

Is the distribution of funding appropriate? Response: Yes

If we get less funding, should we cut lower priorities or give everything less? Response: Give everything less.

(San Juan)

Response: Comment noted. Funding allocations are still unknown as of April 2013.

Tulalip Tribes would like to see a change to the overall approach to distributing the Action Agenda NEP funding so that local areas are more able to exercise control in directing resources toward the most important ecosystem recovery actions. In addition, we would like to see a more integrated funding approach that moves away from the silos of funding so that we can truly create an ecosystem recovery system that protects and restores natural resources. We suggest the following actions:

- Lead Organizations direct funding to local priorities identified in the Action Agenda local profiles and directly utilize the local integrating organizations to identify the work that needs to occur. For those areas that do not have local near term actions identified work with them to establish priorities and clear sequencing that aligns with their planning documents.
- Begin to remove the Lead Organization silos of funding (i.e. Pathogens, Nutrients and Toxics, Watersheds, Marine/Nearshore) that do not provide for localized tailoring of needs and approaches. Instead, provide a block grant of funds to local areas and allow for the local prioritization to allocate resources to each recovery theme.
- Strike a better balance between planning/refining information and direct implementation of on the ground action that implements existing plans and agreements to recover Puget Sound.
- Coordinate and simplify the application processes so that there is a more streamlined approach to distributing funding. Local areas and tribes do not have capacity to apply for multiple grants without the certainty of success.
- Lead Organizations should not only be working with Tribes but also with local areas along with the Tribes to define the local priorities.

The following are suggestions regarding the round 4 strategies discussed at the NWIFC meeting 2/28. We recognize that the likelihood of establishing a new process at this point in the year is highly unlikely. The Tulalip Tribes would like to work with the Lead Organizations, LIO's and the Puget Sound Partnership over the next year to establish a more locally guided system for these funds. Given that, we provide the following comments on each lead organizations approach.

(Tulalip Tribes)

Response: Back in 2010, EPA decided to fund implementation of the Action Agenda through Lead Organizations instead of Local Integrating Organizations. EPA is committed to the Lead Organization model through the six years of the grant. We strongly encourage LIOs to identify specific projects that are priorities and feed those priorities into the Action Agenda. The local priorities should then be weighed in the Action Agenda with Sound-wide priorities. The toxics/nutrients had provided multiple opportunities for local entities to receive funding for local priorities around toxics and nutrient priorities (see the Wood Stove Removal Program – PSCAA; Preventing Automobile Leaks – SPU; Nutrient Bioextraction: Shellfish at Work – PSI; Clean Water BMPs for Agricultural Activities; Local Source Control – Bothell, Everett, Port Angeles, and Puyallup; Nutrient Reduction PIC: Murden Cove – KPHD; Phosphorus Management for Lake

Whatcom – Bellingham; Johns Creek Estuary Conservation – Capitol Land Trust partnering with Squaxin Island Tribe; and South Landers Street Storm Drain Cleaning – SPU.) We would strongly support a mechanism for LIOs to help identify or prioritize projects submitted to Ecology; your comments are encouraged.

Appendix 2

Overlap with Pathogens and Watersheds NEP Grant

Overlap with Pathogens and Watersheds NEP Grant

There is considerable overlap with the Pathogens and Watersheds grants and the Toxics / Nutrients grants. The Pathogen and Toxics / Nutrients grants are jointly funding the clean water best management practices on agricultural land. The best management practices are expected to address both nutrient and pathogen pollution (and to a lesser extent, toxic pollution). The Pathogen-funded Pollution Identification and Correction (PIC) grant will also help focus on and resolve nutrient problems. Lastly, the Pathogen grant and the Toxics / Nutrients grant are both funding non-point inspectors at Ecology. Those inspectors will address both pathogen and nutrient issues.

The primary overlap with the Watershed Grant is for stormwater and nonpoint pollution issues. Both grants are funding projects related to both issues. The Watershed Grant strategy includes the following stormwater pieces:

- In areas of existing development, expand stormwater facility retrofits and effective stormwater source control programs. These activities will be coordinated with strategies in the Pathogens and Toxics and Nutrients proposals.
- In priority sub-basins, use finer scale watershed characterization through hydrologic modeling to establish targets for limiting impervious area and preserving vegetation. These efforts will integrate water quality, habitat, groundwater recharge, and instream flow goals. Priority activities will develop and demonstrate tools, guidance, and templates to develop and implement sub-basin goals.
- Throughout Puget Sound, accelerate the shift in stormwater management from traditional approaches to innovative low impact development (LID). Expand and improve incentive and water cleanup programs to address runoff in rural and agricultural lands. Ecology and Commerce will coordinate this work with related tasks in the Pathogens proposal.

All three grants must coordinate on water quality programs in rural areas.

Appendix 3

Supplemental Information on the Toxics Strategy

The key recommendations from the Puget Sound Toxics Assessment (http://www.ecy.wa.gov/puget_sound/toxicchemicals/index.html) are:

- Copper. Find ways to reduce the amount of copper that gets washed into our streams and rivers.
- Roofs. Rethink our roofs since roofing materials appear to be a significant source of copper, cadmium, zinc, and phthalates.
- Creosote-treated wood. Increase efforts to remove creosote-treated wood – a significant source of PAH – from Puget Sound.
- Petroleum. Keep working on developing strategies to reduce petroleum releases – particularly chronic spills, drips, and leaks from our cars and trucks as well as our recreational boats and small commercial vessels.

In its toxic roadmap Ecology identified prevention as the smartest, cheapest, and healthiest approach to reducing toxics threats. The focus of prevention efforts is in products and stormwater. Six identified steps are:

1. Identify chemicals of concern.
2. Gather and manage data on chemicals of concern.
3. Phase out persistent, bioaccumulative toxins (PBTs).
4. Spur use of safer alternatives.
5. Promote green chemistry and design.
6. Improve prevention tools and authorities.

In January – March 7, 2013, the Ecology solicited feedback on potential themes for funding under Round 4 of the Puget Sound National Estuary Program. During January and February, the LOs meet with the Ecosystem Coordination Board (ECB), the Science Panel (SP), Leadership Council (LC), Northwest Indian Fisheries Commission (NWIFC) and Puget Sound Tribes, and a separate Advisory Group. Ecology received a number of comments on the proposed themes. The comments and responses are included in Appendix 1. Comments on this draft work plan will be included in a future appendix.

Conceptual Model

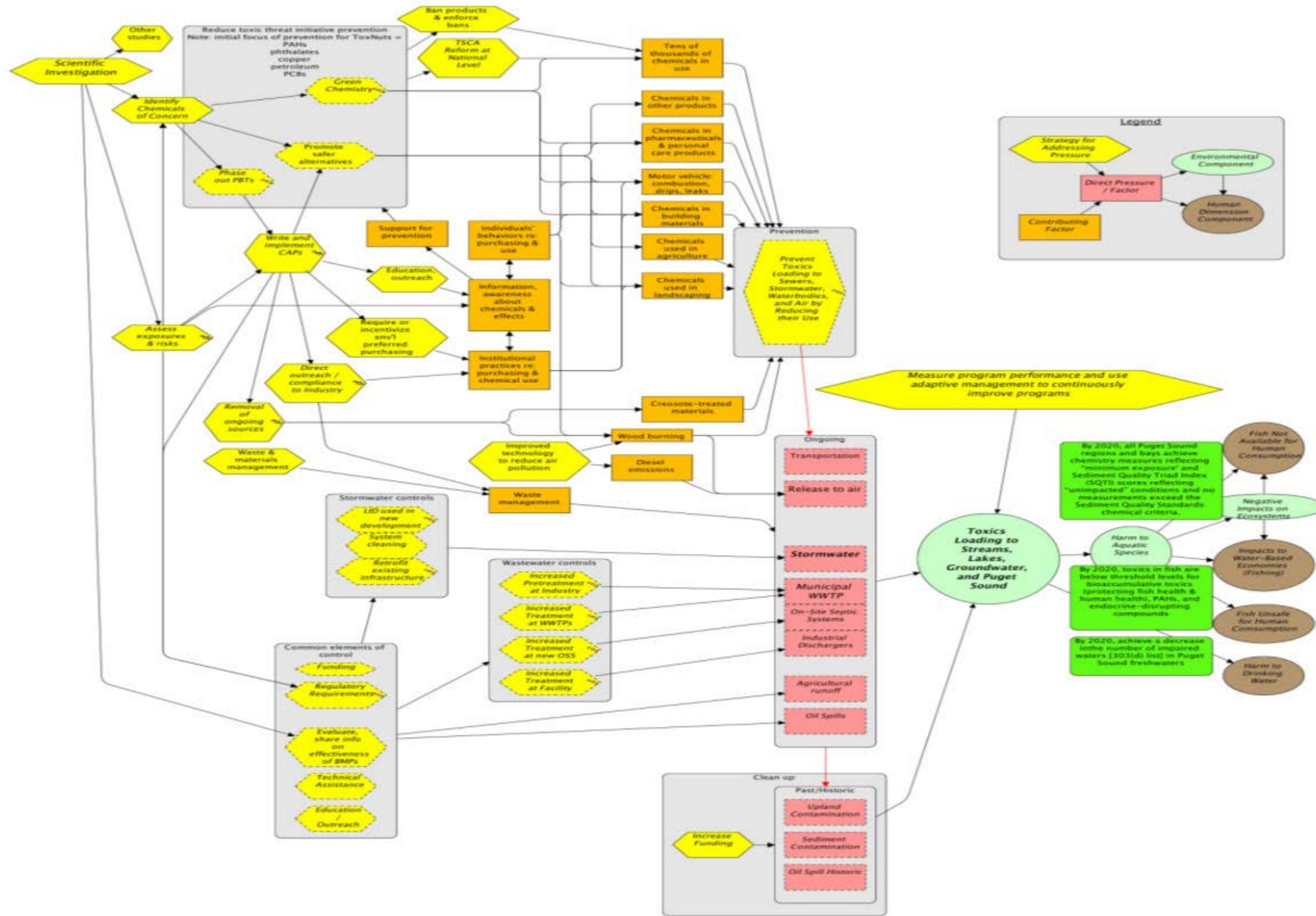
Ecology developed a conceptual model to visually display the numerous components of the toxics strategy. While the complete conceptual model with all components would be much larger, this conceptual model highlights key components that could be funded by NEP.

The following conceptual model mimics the Puget Sound Partnership's models and uses the Open Standards for the Practice of Conservation. The conceptual model identifies the environmental and human components we are interested in protecting (green and brown

circles), the targets for measuring success (bright green boxes), the pressures (red boxes) that contribute to toxics loading, the contributing factors (orange boxes) that affect the pressures, and the individual strategies (orange hexagons) to address the pressures and contributing factors.

In the toxics conceptual model, the top third of the model are the prevention components that affect the pressures. The middle third are the management and control activities. At the bottom are the cleanup activities.

Figure 1 - Toxics Conceptual Model



Indicator Targets for Toxics

Specific Puget Sound Partnership ecosystem recovery targets related to preventing the introduction or release of contaminants to the water, air, and lands of the Puget Sound basin include ensuring that by 2020:

- The levels of specific toxic chemicals, including PCBs, PDBEs, and polycyclic aromatic hydrocarbons (PAHs), and other endocrine-disrupting compounds, are below threshold levels in fish tested in Puget Sound.
- Marine sediments in Puget Sound bays and regions show minimal impacts from toxic chemicals in marine sediment quality indicators.
- The number of impaired freshwater bodies decreases.

More information about these targets is available at:
<http://www.psp.wa.gov/vitalsigns/index.php>.

Main Pressures Affecting Toxics

The PSP has identified pressures that may affect toxics. As described in the conceptual model, the main pressures affecting toxics loading are:

- Activities related to agriculture and livestock grazing.
- Transportation-related sources including toxics released from automobile use.
- Releases to air including wood smoke, automobile exhaust, and other sources of air pollution that either directly or indirectly reaches Puget Sound.
- Stormwater conveyance of pollution from land to waterbodies. The Puget Sound Toxics Loading Assessment found that stormwater “contributed the largest loads to Puget Sound, typically accounting for more than one-half of the total loads from all pathways combined” (page 14).
- Municipal Wastewater Treatment Plants discharge toxics from households and industries. According to the Puget Sound Toxics Loading Assessment, WWTPs “generally accounted for less than one-tenth of the delivery to Puget Sound for each of the [toxics] assessed”, although there were exceptions (page 14).
- On-site septic systems also discharge toxics from households and some businesses.
- Industrial discharges treat and then discharge wastewater. Some industries discharge to a WWTP while others discharge directly to waterbody.
- Oil spills are a direct source of oil and petroleum products to Puget Sound and other waterbodies.
- Already polluted sediment and soil is a source of toxics downstream.

Other pressures identified by PSP that do not affect toxics loadings to the same degree include: timber production; shoreline infrastructure; recreational activities; fin and shellfish aquaculture; exotic and nuisance species; dredging and dredged material; and military exercises.

Existing Programs Controlling Toxics

There are numerous existing programs and programs that are just starting to control toxics. Programs highlighted in the action agenda include:

Prevention

- Implementation of the state law limiting copper (and other toxic chemicals) in vehicle brake friction material
- Reviewing the PBT list and prioritizing the next PBTs for chemical action plans
- Developing and implementing a green chemistry road map
- Developing guidance to conduct chemical alternative assessments
- Completing an assessment of alternatives to commercial uses of phthalates
- Completing development of a state implementation plan for particulate air pollution in the Tacoma/Pierce County non-attainment area

Limit or Manage

- Management of the residue from auto shredding
- Local source control programs
- Stewardship programs, including those managed by the Puget Sound Partnership, stormwater permittees, and NGOs
- Hazardous waste compliance activities: inspections and responding to complaints.

Clean-up

- State and federal site cleanup activities: site identification, investigation, clean up, and monitoring

Chemicals of Concern

The Toxics and Nutrients NEP grant will focus most of its work on a short list of chemicals of concern. While there are numerous toxic chemicals that need to be addressed, focusing on a selected list of top-priority chemicals allows a more strategic, targeting approach. The chemicals of concern were chosen based on Action Agenda targets and the findings of the Puget Sound Toxics Assessment. Other chemicals can also be addressed on a case-by-case basis when there are unique opportunities to make a significant impact.

<i>Parameter</i>	<i>Reason for Selection</i>
PAHs	Identified in the Puget Sound Toxics Assessment; Toxics in Fish threshold for liver disease and PAH metabolites in bile of English sole.
Phthalates	Identified in the Puget Sound Toxics Assessment; Toxics in Fish threshold for reproductive impairment in English sole
Copper	Identified in the Puget Sound Toxics Assessment. Reports indicating impairment on juvenile salmonids.
Petroleum	Identified in the Puget Sound Toxics Assessment; source of PAH release

PCBs	Target in the Action Agenda; Toxics in Fish thresholds for human health and fish health risks from contaminants in the pelagic food web
PBDEs	Identified in the Puget Sound Toxics Assessment

How do emerging contaminants fit in?

Emerging contaminants can often be overlooked when focusing on specific chemicals of concern. Emerging contaminants for this strategy include endocrine disrupting compounds (EDCs) and pharmaceuticals and personal care products (PPCPs). The chemicals of concern tend to be the chemicals that have been used extensively and have been the subject of many scientific investigations. The Toxics and Nutrients NEP Grant has and will be used to conduct focused studies on emerging contaminants. The purpose of this work is to identify problematic chemicals as soon as possible and address these problems before they become a widespread chemical of concern.

Focus on Prevention

Prevention is the primary focus for toxics in the NEP Grant. Ecology identified prevention as the smartest, cheapest, and healthiest approach to reducing toxics threats. Since prevention efforts tend to focus on long-term solutions, we also recognize the need for shorter-term management of current releases to the environment. Managing/controlling toxics is the secondary focus. Part of the NEP grant will also address scientific investigations and adaptive management and detailed in a later section of this strategy. This strategy will not focus on cleaning up substances that have polluted air, land, and water. While this is clearly important, Ecology and EPA have clean-up programs to address these problems. NEP funds could be targeted for specific projects such as source control at these sites, but in general NEP funds will not be directed to clean up.

Geographic Focus

In most cases, prevention efforts are Sound-wide. However, some projects have a geographic focus. While many factors are involved in selecting a geographic focus for a given project, the Toxics NEP grant will focus on those areas with the most significant problems. These areas tend to be the areas with the greatest human impact such as urban bays. In some cases, such as pesticide use, it may be areas dominated by one particular land use.

Water Quality Standards

Both the marine water of Puget Sound and the fresh water tributaries have water quality standards for some, but not all, toxics. Where these standards exist, they provide a numeric target for prevention and management activities. Ecology uses Total Maximum Daily Loads (TMDLs) to determine how to meet standards. While there have only been a few TMDLs for toxics in Puget Sound to date, we expect more toxics TMDLs in the future. Future NEP funds will likely be able to help fund activities identified in a TMDL.

Gaps

Missing Programs/Activities to Control Toxics

One frequently-identified gap is that water quality regulatory programs only address a short list of specific toxics. Few implementation programs have sufficient funding to fully address every issue, but every identified pressure and strategy has at least some ongoing work to address it. Historically, more funding focuses on cleanup and control than prevention. While they have received more funding, much more is needed to address contaminated sites, stormwater treatment, and other cleanup and control programs. While prevention programs, such as green chemistry, can be a less-expensive way to address toxics, they are relatively new and have also been underfunded.

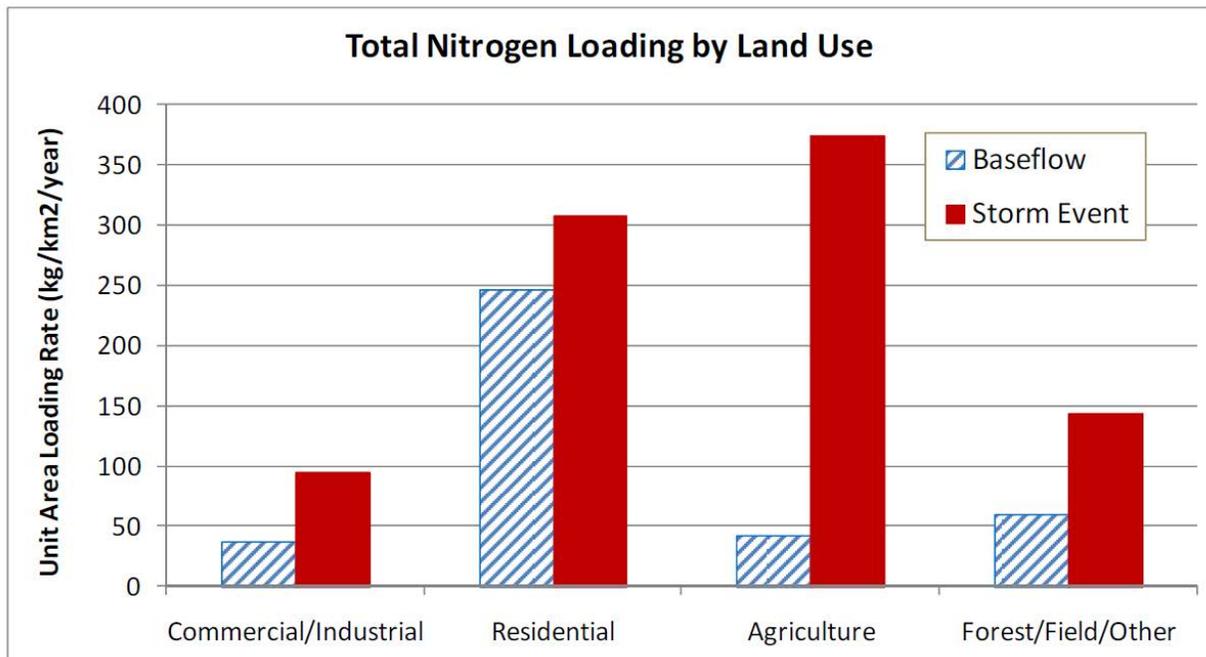
Criteria to Evaluate and Make Decisions on Programs and Activities

Funding decisions are based on the priorities identified in this document. Within a given priority, specific project details are determined based on project outputs and outcomes, feasibility, and cost. Feasibility includes issues such as schedule, previous experiences, likelihood of success, local and regional support, and ability to leverage other projects. These criteria are formally evaluated during a competitive process. The application specifically lists the criteria used for scoring individual proposals. The criteria are informally evaluated for direct awards where there is only one identified project and one lead entity.

Appendix 4 Supplemental Information on the Nutrient Strategy

According to the *Puget Sound Dissolved Oxygen Model – Nutrient Load Summary for 1999-2008*, about 75 percent of the human sources of nitrogen to Puget Sound come from WWTPs. Likewise, in South Puget Sound (south of the Tacoma Narrows), about half of the human sources of nitrogen to Puget Sound come from WWTPs according to the *South Puget Sound Dissolved Oxygen Study Interim Nutrient Load Summary for 2006-2007*. These two studies found that most of the remaining human sources of nitrogen entered Puget Sound via rivers and streams. The key finding from the *Toxics in Surface Runoff to Puget Sound: Phase 3 Data and Load Estimates* are that residential and agricultural sources of nitrogen are a significant amount of the non-point nutrient loading to Puget Sound’s rivers and streams. Unit-area loading rates for nitrogen were generally higher for the residential and agricultural sub-basins. For storm events, the median unit-area loading rates for the residential and agricultural sub-basins were 308 and 374 kg/km²/yr, respectively. In comparison, the median storm-event unit-area loading rate for the commercial/ industrial sub-basins was 94.5 kg/km²/yr, and 144 kg/km²/yr for the forested sub-basins.

Figure 2 - Nitrogen Loading by Land Use



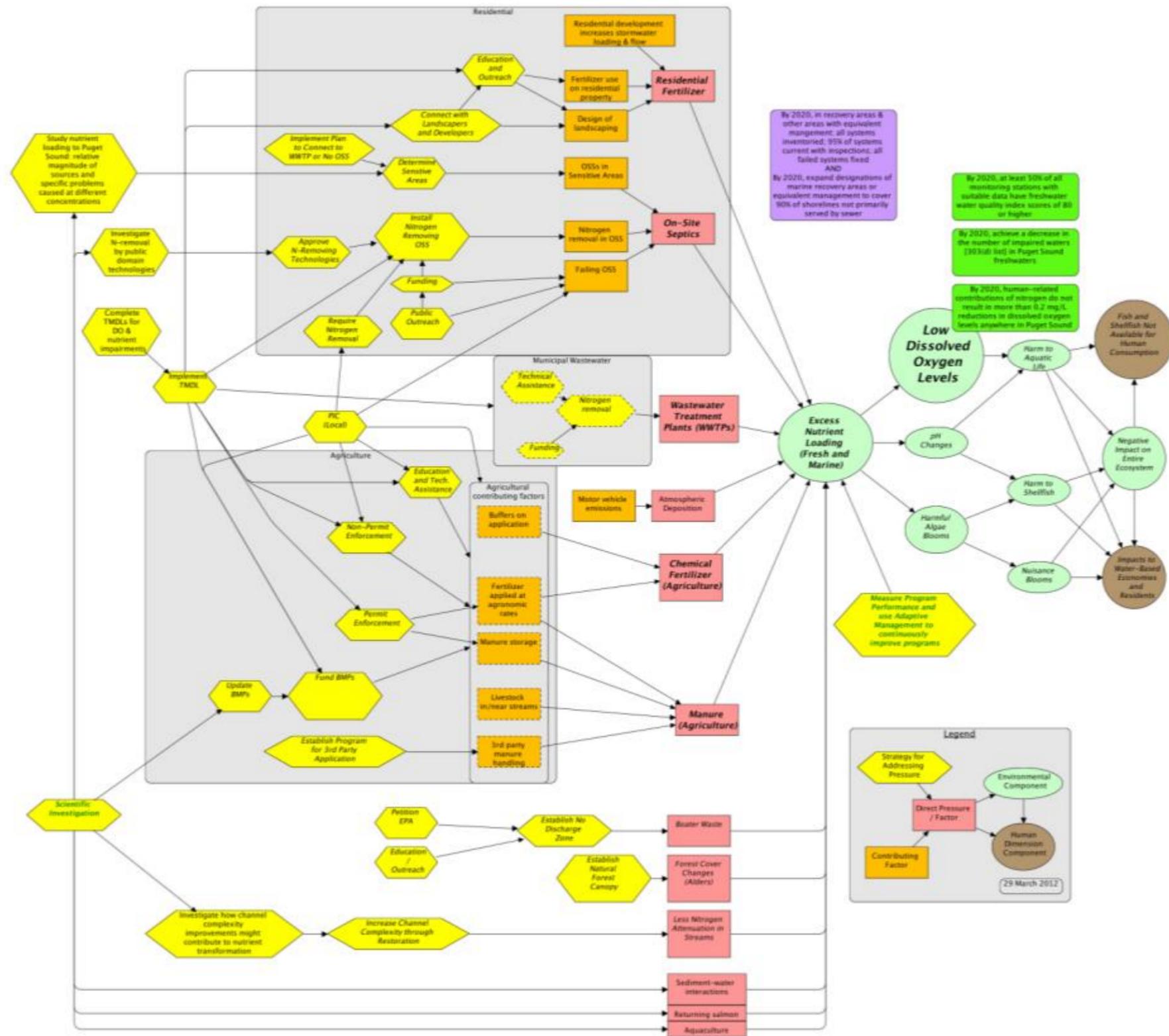
Conceptual Model

Ecology developed a conceptual model to visually display the numerous components of the nutrient strategy. While the complete conceptual model with all components would be much larger, this conceptual model highlights key components that could be funded by NEP.

The following conceptual model mimics the Puget Sound Partnership's models and uses the Open Standards for the Practice of Conservation. The conceptual model identifies the environmental and human components we are interested in protecting (green and brown circles), the targets for measuring success (bright green boxes), the pressures (red boxes) that contribute to nutrient loading, the contributing factors (orange boxes) that affect the pressures, and the individual strategies (orange hexagons) to address the pressures and contributing factors.

In the toxics conceptual model, the top grey box describes residential sources of nutrients. The middle box describes municipal WWTPs, and the lower box describes agricultural sources of nutrients. Additional sources of nutrients are included at the bottom.

Figure 3 - Nutrients Conceptual Model



Indicator Targets for Nutrients

Specific Puget Sound Partnership ecosystem recovery targets related to nutrients include ensuring that by 2020:

- Human-related contributions of nitrogen do not result in more than 0.2 mg/L reductions in dissolved oxygen.
- At least 50 percent of all monitoring stations with suitable data have Freshwater Water Quality Index scores of 80 or higher.
- The number of impaired freshwater bodies decreases.

Main Pressures Affecting Nutrients

The main pressures that affect nutrient loadings into Puget Sound are:

1. Wastewater Treatment Plants (WWTPs) discharge treated water that usually still has high levels of nutrients. Only a few plants in the Puget Sound region are designed to remove a considerable amount of the incoming nutrient load.
2. Residential sources of nutrients include septic systems and fertilizer use. Most septic systems are designed to remove pathogens but not nutrients. Inappropriate fertilizer use can lead to nutrients reach surface and ground waters.
3. Agricultural sources nutrients include chemical fertilizers and manure. If either chemical fertilizers or manure are misapplied, nutrients can reach surface and ground water.

Existing Programs Controlling Nutrients

There are numerous existing programs to control nutrients. The action agenda highlighted:

- Stormwater management programs (permit and beyond) that emphasize source control and infiltration.
- Voluntary and regulatory management of runoff from agricultural lands.
- Voluntary and regulatory management of runoff from working forests.
- Programs to improve the siting, design, operation, and maintenance of on-site sewage systems.
- Municipal wastewater management programs that emphasize advanced treatment.
- Development and implementation of water quality clean up plans related to nutrient and dissolved oxygen impairments.
- Local and tribal pollution identification and correction programs.

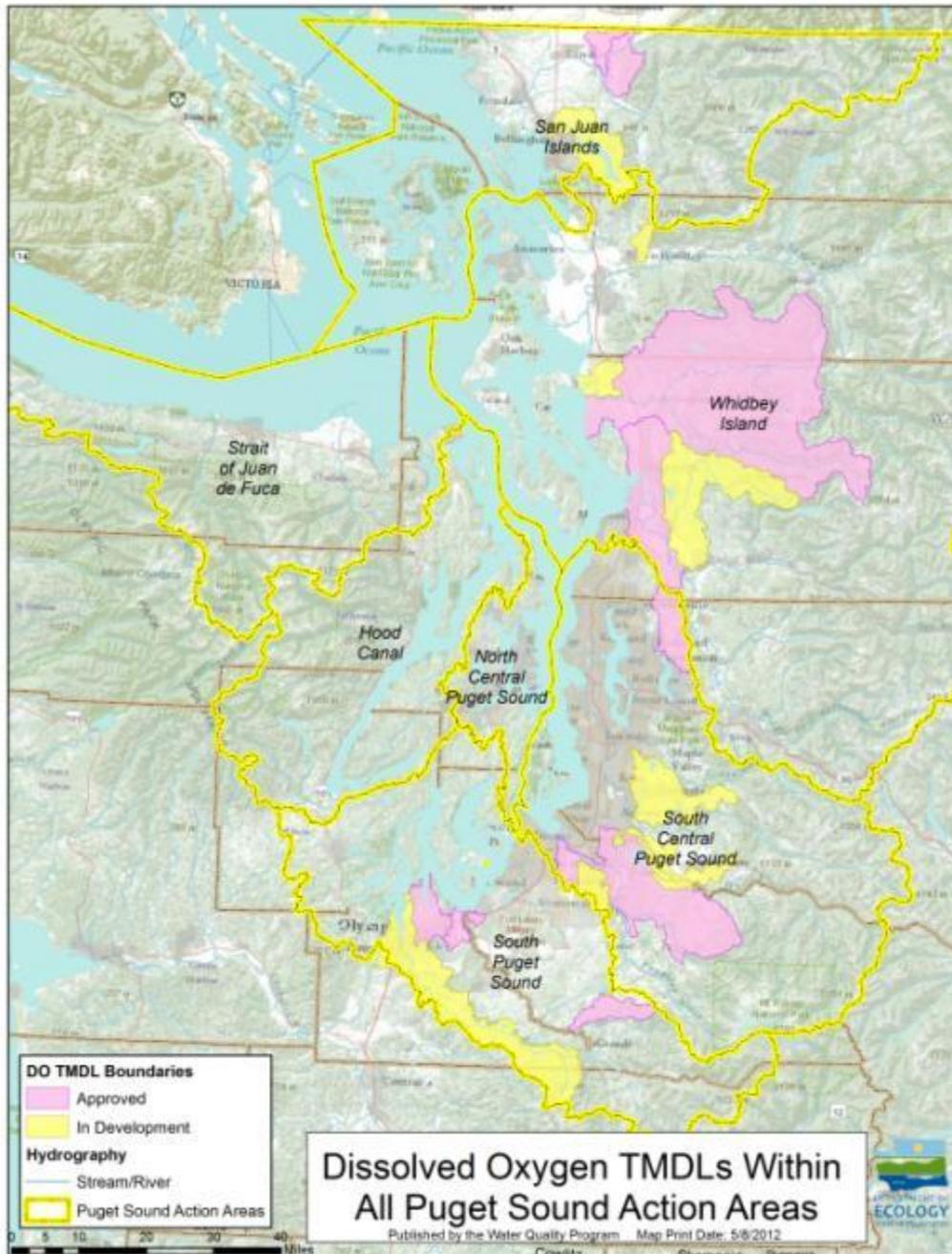
Chemicals of Concern

The toxics and nutrients NEP grant will address both phosphorus (typically the nutrient of concern in freshwater) and nitrogen (typically the nutrient of concern in marine waters). While some programs address only one of the two (such as the phosphorus detergent ban), other programs address both (such as best management practices to keep livestock away from waterways).

Geographic Focus

There are many areas in Puget Sound with nutrient issues. Within the marine water portions of Puget Sound, key areas to focus are Lynch Cove (Hood Canal - lowest dissolved oxygen levels), South Puget Sound and especially Budd Inlet (low dissolved oxygen levels), and Whidbey Basin (high loads of nutrients). In freshwater, the key areas to focus are in watersheds with TMDLs for nutrients including Lake Whatcom, Deschutes River, White River, and others.

Figure 4 - Dissolved Oxygen TMDLs



Gaps

What programs/activities are missing to control nutrients when appropriate?

Every identified pressure and strategy has at least some ongoing work to address it. Likewise, few programs have sufficient funding to fully address every issue. Wastewater treatment plants are the most heavily regulated and have the most funding, but most plants do not focus on nutrient removal. There are many ongoing programs for residential and agricultural sources of nutrients, but most of them are underfunded and focus solely on educational efforts and voluntary measures.

What criteria did we use to evaluate and make decisions on programs and activities?

Funding decisions are based on the priorities identified in this document. Within a given priority, specific project details are determined based on project outputs and outcomes, feasibility, and cost. Feasibility includes issues such as schedule, previous experiences, likelihood of success, local and regional support, and ability to leverage other projects. These criteria are formally evaluated during a competitive process. The application specifically lists the criteria used for scoring individual proposals. The criteria are informally evaluated for direct awards where there is only one identified project and one lead entity.

Appendix 5

Nutrient Science Strategy – Additional Information

Refine Estimates of Nutrient Sources

Nutrients enter Puget Sound from both external and internal sources. Based on compilations for the entire Salish Sea, the largest external contribution is the nutrient influx associated with ocean exchanges, including the influence of Pacific Ocean upwelling. The largest local sources vary by location and season, but may be either wastewater treatment plants discharging to marine waters or freshwater rivers and streams flowing into Puget Sound. Atmospheric deposition also contributes. Boater waste has not been quantified but could discharge nutrients directly to marine waters. Internal sources include nutrient fluxes between the sediments and the water column. While each pathway has been estimated, some include large uncertainty or others simply large magnitude where small changes translate to large loads.

Rivers, streams, and lakes receive inputs from natural, point, and nonpoint sources of nutrients from upstream watersheds. These sources include natural forested or undeveloped land cover; spawning salmon; or natural components of atmospheric deposition. Point sources include any upstream domestic or industrial wastewater treatment plant discharges as well as regulated stormwater runoff from permitted facilities or municipal management areas. Nonpoint sources may include contributions from disturbed forest or land cover; onsite sewage systems; fertilizer in residential, agricultural, or commercial applications; or human contributions to atmospheric deposition. Natural, nonpoint, and point sources also may influence groundwater, which in turn can affect fresh or marine water systems (described below with rate processes).

Quantify Transport, Transformation, and Fate of Nutrients

Once nutrients enter fresh or marine waters, a variety of physical, chemical, and biological processes transport and transform them and influence their eventual fate in the ecosystem. Some processes attenuate the influence on ecological endpoints such as dissolved oxygen, while others may exacerbate the influence. In general, less is known about these processes than about the sources themselves.

In both freshwater and marine ecosystems, primary producers use photosynthesis to transform dissolved nutrients into particulate biological forms. These processes vary seasonally because of the variation in light and temperature and nutrient availability. Vertical mixing in marine waters controls the amount of nutrients from lower water layers supplied to surface layers where primary producers grow. Algae blooms also display great variability in time and space. Higher trophic levels influence primary producers by grazing as primary consumers. Bacteria decompose dead algae and other organic matter and consume oxygen in the process. Each process transforms nutrients between various dissolved and particulate forms. Existing

programs characterize algae biomass, productivity rates, or proxies, but none capture the tremendous variability in fresh or marine waters. Little site-specific information exists to characterize the rate processes – growth and death rates, respiration rates, or remineralization rates, for example.

The interannual variability of dissolved oxygen in the Salish Sea appears driven by variability in nutrients advected from the Pacific Ocean through the lower layers of the Strait of Juan de Fuca. Vertical advection of this oceanic source may be the dominant nutrient pathway in at least portions of Puget Sound. Quantifying this exchange, as well as understanding the circulation and residence time (described under Models below) in marine areas will decrease the uncertainty in linking human contributions to ecological endpoints. Vertical advection of nutrients from lower layers to upper layers is enhanced at the sills that define the various basins within Puget Sound, including Admiralty Inlet, the Tacoma Narrows, and Hood Canal. In addition, density stratification of the water column by increasing freshwater flows and warming temperatures can reduce vertical advection of nutrients.

Sediment-water interactions, particularly in shallow-water and nearshore environments, can control nutrient dynamics in marine waters. Intense biogeochemical activity within the sediment layers can release nutrients back to the water column and depress near-bottom oxygen levels in both fresh and marine waters. The few measurements that exist exhibit high variability in both time and space.

Natural shellfish populations and aquaculture may influence nutrient cycling at the local level. Filtering may sequester particulate nutrients in shellfish tissues and affect water clarity. Shellfish harvested from marine areas could represent a nutrient sink. Harvesting may enhance sediment releases in the short term.

Eelgrass and other submerged aquatic vegetation take up nutrients from sediments, water column, or both. Eelgrass beds have declined over time in various areas of Puget Sound, which could affect nutrient dynamics locally or seasonally.

Harmful algae blooms can produce toxins that adversely affect human health if ingested. To date harmful algal bloom research in Puget Sound has focused on the climatic conditions associated with blooms. Research from other regions suggests that eutrophication can lead to population shifts that could favor harmful algal blooms. However, few local efforts have considered the link between human nutrient contributions and harmful algae blooms.

In river and stream systems, benthic algae and biofilms exert a stronger influence on dissolved oxygen than phytoplankton, since phytoplankton growth is slow in comparison to riverine travel times. Lake systems often have both phytoplankton and macrophyte (rooted plant) growth that affect nutrients and dissolved oxygen and vary seasonally. Macrophytes take up nutrients from sediments, the water column, or both.

Nutrient concentrations and loads follow seasonal patterns in all major rivers discharging to the Salish Sea. Higher concentrations occur in winter months due to some combination of rainfall, lack of biological uptake, or release of seasonally sequestered nutrients. Summer concentrations vary among rivers and streams and may reflect differences in nutrient attenuation within the watershed and freshwater systems.

Groundwater often contains higher concentrations of nutrients than surface waters do. However, these nutrients can undergo rapid transformation, which attenuates the influence on fresh or marine water quality. Extremely high variability has been noted in the few locations where groundwater attenuation has been evaluated.

Wastewater and stormwater infrastructure may enhance or attenuate the transport and transformation of nutrients. Effluent from centralized wastewater treatment plants typically varies from 10 to 30 mg/L of dissolved inorganic nitrogen and 2 to 5 mg/L of orthophosphate, but concentrations vary from plant to plant based on the technology employed and how the plant operates. Levels also vary seasonally since wastewater treatment largely relies on biological processes. The location of the discharge influences the level of environmental effect.

Effluent from onsite sewage systems typically ranges from 50 to 60 mg/L of DIN, but concentrations also vary depending on the technology used and the strength of wastewater treated. The greatest variability, however, is in the attenuation of these nutrients released to leach fields. Leach fields in saturated, coarse soils provide very little attenuation, while releases to unsaturated, loamy soils can provide high levels of attenuation. Previous efforts have identified landscape characteristics associated with high groundwater nitrogen levels and have estimated nutrient contributions from OSS, but the high variability in subsurface attenuation coupled with intense biogeochemical processing between anoxic and oxic waters leads to very high uncertainty in estimates extrapolated from various studies.

Traditional stormwater infrastructure often focuses on controlling particulates, which would control phosphorus more than nitrogen. More information is needed on BMP performance in controlling the forms of nitrogen and phosphorus, particularly with low impact development technologies.

Supplement Monitoring of Key Processes and Locations

In addition to the component- or process-specific monitoring described above, several innovative monitoring programs may enhance our ability to describe ecosystem components influenced by the complex interplay among physical, chemical, and biological factors related to nutrient dynamics. Recent improvements in sensor technologies offer economical options for continuous measurements to describe highly patchy or highly sporadic ecosystem attributes.

Remote sensing offers measurements over the entire Salish Sea. These snapshots are often limited to surface and near-surface processes and may not be available every day or when

clouds interfere. Ferry-based deployments offer transects in key regions but may be limited to surface and near-surface environments. Finally, moorings are being used to increase the frequency of measurements and to produce detailed observations throughout the water column rather than at discrete depths. These have been used in shallow waters as well as deeper marine waters, and also in freshwater environments.

Develop Modeling Tools and Apply to Management Questions

Models inform decision makers about the relative influence of different natural and human factors on ecological endpoints such as dissolved oxygen. These tools always represent simplifications of the remarkably complex environments of the Salish Sea ecosystem. Ecosystem health must be assessed at different spatial and temporal scales, and no one modeling tool can be used to address all management questions.

Models reflect the extent of or limitations of our collective knowledge of the Puget Sound ecosystem. The component or process data gaps described above decrease our ability to forecast how the Puget Sound ecosystem responds to pressures today and to manage its health into the future. Modeling tools provide a framework for leveraging our collective knowledge to forecast the management activities that may have the greatest influence on Puget Sound health. Models can also refine monitoring programs.

Circulation, residence time, and vertical mixing strongly influence dissolved oxygen concentrations and determine the overall sensitivity of portions of Puget Sound to natural and human nutrient inputs. Additional modeling efforts should refine simple box models and should also improve the performance of complex models, focusing on processes most important to nutrient dynamics. Water quality models are needed to forecast large-scale phenomenon decades into the future as well as small-scale processes over short time frames. Ongoing efforts have improved our understanding of Puget Sound circulation and nutrient dynamics, but further development will be needed in specific regions or at smaller time scales, depending on the outcome of these existing efforts. These modeling tools must be developed in phases, drawing from the collective knowledge gained across many efforts and responding to evolving management questions.

Recent management questions extend beyond the capabilities of tools currently in development. Additional tool development is needed to evaluate areas where existing or future shellfish may influence local or regional nutrient dynamics. In addition, developed lands produce higher nutrients than undeveloped lands. As reductions are identified, tools are needed to optimize where and when to apply BMPs to reduce or otherwise attenuate nutrient impacts to downstream water bodies.

Appendix 6

Effectiveness Monitoring

Monitoring how effective an effort is at restoring or improving ecosystem health is a critical component which can improve the likelihood that activities will be successful. Effectiveness monitoring determines whether programs, strategies, or projects that have been implemented to improve water quality or ecosystem health are working. It tests not only whether the strategy worked, it also determines if the effort is cost-effective and provides information on how can the effort be improved. It is an important tool that can be used in the adaptive management process allowing restoration strategies to be modified if project goals are not being achieved. Ultimately, the goal of effectiveness monitoring is to increase efficiency in making management decisions when planning and implementing best management practices to restore ecosystem health

In general, an effectiveness monitoring program should be able to answer questions at multiple levels. At a higher- or program-level, effectiveness can be evaluated by tracking if projects are resulting in cleaner water. At an individual plan level, effectiveness is determined by tracking trends in water quality in the study area, knowing if established water quality targets or standards are being met, and determining if additional implementation or planning is needed. At the lowest level, effectiveness of individual best management practices can be evaluated.

Any effectiveness monitoring effort needs a plan which identifies specific monitoring goals and objectives and describes the process of how data will be generated and analyzed to answer them. Without proper planning, effectiveness monitoring might not produce the type and quantity of data needed to detect water quality changes. Oftentimes, the need for planning is not apparent until a monitoring project is underway or complete. The steps for developing an effectiveness monitoring plan include:

- Characterization of Study Area
- Site and Parameter Selection
- Indicator Selection
- Study Design Selection

Indicators should be selected based on the goals of the study and how they are expected to respond to restoration efforts. The frequency in which the parameter is collected will depend on the level of confidence needed and what type of monitoring strategy will be used to meet the study goals. Sampling frequency should be calculated using standard statistical measures and will also depend on the type of study design used.

Question	Type of Monitoring
What are current water quality conditions?	Baseline
Overall status of water in the watershed?	Status
Are conditions changing over time?	Trend

Are water quality standards and targets being met?	Compliance
Where BMPs installed and are they being maintained?	Implementation
Are additional source control needed?	Source Identification
Are the original assumptions of the water quality model correct?	Validation
Are changes in water quality link to implementation of pollution control measures?	Effectiveness

Appendix 7

Overview of the Puget Sound National Estuary Program Management Conference and Funding Agreements under CWA Section 320

Puget Sound Management Conference

For the purposes of the National Estuary Program, the Puget Sound Management Conference includes: the statutorily-described Partnership including the Puget Sound Partnership state agency, Leadership Council, Ecosystem Coordination Board, and Science Panel; and the broader partnership coalition that includes tribal governments, the Puget Sound caucuses affiliated with the Ecosystem Coordination Board, the Salmon Recovery Council, Northwest Straits Commission, implementing networks, formal and informal interest groups, watershed groups, individual local governments, and representatives from Canadian agencies.

As created, the Partnership is intended to be a multi-disciplinary, networked regional coalition. To fulfill this role, structures have evolved to provide specific coordination, advice, implementation and collaboration. Some elements, like the Education, Communication and Outreach Network (ECO Net) and Local Integrating Organizations were created by the Partnership. Other coalitions and groups existed prior to the Partnership or have been developed by partners engaged in Puget Sound recovery. These include but are not limited to the Puget Sound Institute, Puget Sound caucuses (federal, state, environmental, tribes), the Northwest Straits Commission, Lead Organizations which support implementation efforts across key topic areas, formal and informal interest groups, watershed groups, local government coalitions, and trans-boundary (US/Canada) work groups. The salmon recovery program includes the Salmon Recovery Council and its affiliated Recovery Implementation Technical Team (RITT), and watershed Lead Entities. The general composition and organization of the Management Conference relationship is shown in the following figure.

For more information about the management conference structure and decision-making roles within the conference, please refer to Appendix C of the 2012 Puget Sound Action Agenda.

Lead Organizations for supporting implementation of the Action Agenda

Beginning in 2010, EPA has provided Puget Sound Geographic Program funding to Washington state agencies and the Northwest Indian Fisheries Commission to serve as 'Lead Organizations' to develop and implement multi-year strategies for supporting implementation of the Action Agenda through both directed and competitive sub-awards. The Lead Organizations include:

- Marine and Nearshore Protection and Restoration (Departments of Fish and Wildlife and Natural Resources)
- Watershed Protection and Restoration (Departments of Ecology and Commerce)

- Toxics and Nutrients Prevention, Reduction and Control (Department of Ecology)
- Pathogen Prevention, Reduction and Control (Departments of Health and Ecology)
- Managing Implementation of the Action Agenda (Puget Sound Partnership)
- Outreach , Education and Stewardship (Puget Sound Partnership)
- Tribal Capacity and Implementation (Northwest Indian Fisheries Commission)

Work plans for each of these Lead Organizations are updated annually and submitted to EPA for approval of funds under CWA section 320 along with the National Estuary Program Base Grant.

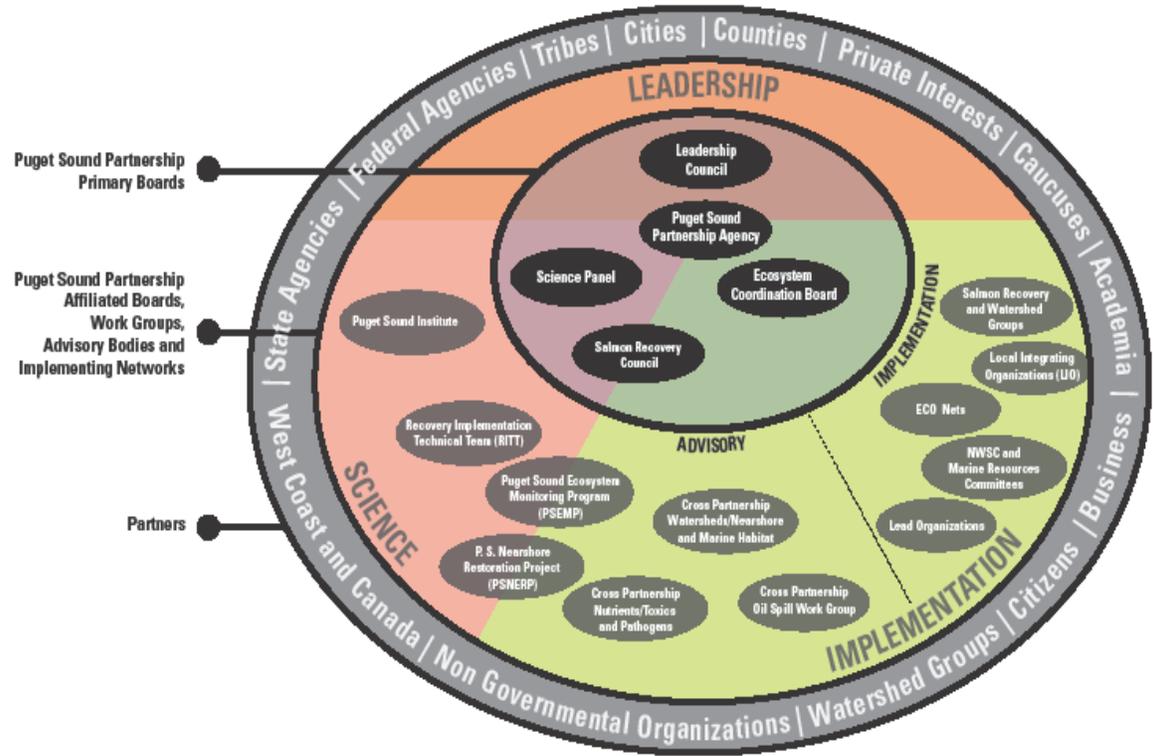
Federal Inter-Agency Agreements for supporting implementation of the Puget Sound Action Agenda

The federal caucus promotes information sharing, development of joint work priorities, and collaboration among federal agency leadership and staff to support implementation of the Action Agenda. Thirteen federal agencies have signed a Memorandum of Understanding to commit to these working principles, and all federal agencies with Puget Sound interests are welcome to participate. Agencies include those with environmental and natural resource responsibilities such as NOAA, the Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Forest Service, U.S. Geological Survey, U.S. Army Corps of Engineers, as well as those with local defense and security responsibilities such as the Coast Guard, Army, and Navy. The federal caucus has a work plan to guide their engagement with Puget Sound recovery efforts and many federal agencies have been assigned actions in the Puget Sound Action Agenda.

For certain topics, federal roles and activities are necessary to support implementation of the Puget Sound Action Agenda. In some cases, EPA cooperates with and supports other federal agencies where additional federal coordination, involvement or federal program support is needed to accomplish identified actions and produce important outputs or help achieve outcomes that are unique to federal agencies or programs and where additional capacity is necessary to do so. In such cases, CWA Section 320 funds are used to support Federal Inter-Agency Agreements to conduct necessary work in a timely or particular manner.

Puget Sound Partnership Management Conference

Conceptual diagram of organization and partner structure



05/22/2012

Appendix 8

Formal Grant Amendment #4

Puget Sound Estuary Ecosystem Restoration and Protection Cooperative Agreement PC – 00J20101-3

EPA Lead Organization Grant – Toxics/Nutrients

Grant Amendment # 4
May 30, 2013

Purpose

The purposes of this amendment are to:

- Request incremental funding of \$3,320,582 (Round 4) in support of this agreement.
- Respond to the requirements found within EPA's FFY2012 Funding Guidance.

Introduction

Cooperative Agreement PC-00J0101-1 was awarded to Ecology in February 2011 establishing a Lead Organization (LO) for Toxics / Nutrients Prevention, Reduction, and Control. Ecology was to receive funding in annual increments called Rounds so that it could implement a six-year strategy. Amendment #1 requested approval of Round 2 funding. On July 21, 2011, EPA awarded Ecology the amount of \$5,470,000 for Round 2. Amendment #2 was submitted to EPA on December 23, 2011 and was approved January 11, 2012 adding \$160,000 hometown incremental funding and reestablished the State Matching projects. On July 16, 2012, in Amendment #3 EPA awarded an additional \$3,545,000 for Round 3.

Summary of Changes

See attached work plan.

Request EPA approve the above adjustments and award the Round 4 incremental funding.