

APPENDIX A. 2018–2022 ACTION AGENDA DRAFT REGIONAL PRIORITIES

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Background

The Puget Sound Partnership (Partnership) began the process of prioritizing recovery efforts for the 2018–2022 Action Agenda update by working with partners to define the Area of Focus Vital Signs to be used in soliciting Near Term Actions (NTA). The Area of Focus Vital Signs, adopted in May 2017 by the Leadership Council, encompass the following 10 Vital Signs for which we most want to accelerate recovery over the next 4 years based on factors such as Management Conference near term priorities indicated by the selection of Implementation Strategies for development, local near time priorities identified in Local Integrating Organization (LIO) ecosystem recovery plans, tribal near-term priorities, and indicator status. More detail on the Area of Focus is available [here](#) (2018 Action Agenda Update Memo and Attachments).

- Chinook Salmon (and other salmon)
- Land Cover and Development
- Marine Water Quality
- Shellfish Beds
- Freshwater Quality
- Shoreline Armoring
- Summer Stream Flows
- Floodplains
- Estuaries
- Toxics in Fish

Subsequently, the Strategic Initiative Leads (SI Leads) (Habitat, Shellfish, and Stormwater), together with their respective Strategic Initiative Advisory Teams (SIATs), began the process of identifying regional priorities identified for each of these 10 Vital Signs, using source material such as Implementation Strategies, LIO ecosystem recovery plans, and tribal priorities, among other information. Regional priorities are intended to describe the specific approaches, desired outcomes, and action ideas that are a priority for recovery of the Area of Focus Vital Signs over the next 4 years. LIOs will add more local context to the regional priorities to customize how Regional Priority Approaches are implemented in each LIO planning area. These regional priorities are described in detail throughout this appendix. In addition, more detail on the process used to develop regional priorities is summarized [here](#). The section below provides an overview of how to use this appendix.

How to Navigate This Appendix

The Regional Priorities Appendix allows navigation to the following information, enabling a potential NTA proponent to quickly identify the regional priority or priorities and associated approaches that best align with the potential NTA.

[Table 1 \(Summary of the 2018–2022 Action Agenda Regional Priorities\)](#) summarizes the regional priorities (along with approaches and desired outcomes) for the 2018–2022 Action Agenda. Each regional priority is hyperlinked to more detailed information (including example actions, proposal guidance, and local context) provided in later tables.

[Table 2 \(Vital Sign and Regional Priority Approaches Crosswalk\)](#) notes where the Regional Priority Approaches are common among Vital Signs or where approaches for a given Vital Sign are anticipated to have an effect on other Vital Signs within the Area of Focus.

Summary descriptions of each Area of Focus Vital Sign follow Tables 1 and 2. Each Vital Sign description includes information on the target, a short narrative describing the intent of the regional priorities overall, and a detailed table that provides the material necessary to develop an NTA proposal for a given regional priority. Each Area of Focus Vital Sign table (Tables 3 through 12), notes the applicable regional priority along with the following:

- Priority approaches (what an NTA should do)
- Desired outcomes (why the NTA should be carried out)
- Example actions to address the regional priority
- Proposal guidance (things to consider and be sure to address in an NTA proposal)
- Local context (additional specificity on how a regional priority should be implemented if a more localized NTA is proposed [such as sequencing, partners to consider, critical areas, etc.]

In general, the level of specificity is increased at the Regional Priority Approach level, moving left to right through each table, and the strength of an NTA proposal will be based on how well it addresses all the items listed above. Therefore, the NTA proponent should carefully read the information associated with the regional priority and approach, and be sure to address the proposal considerations and local context provided in the table. As noted in the [Solicitation for Near Term Actions for the 2018–2022 Implementation Plan](#), NTAs will be prioritized into four (4) tiers based on the criteria listed below. The purpose of this prioritization is to bin the NTAs relative to how much they will advance recovery over the next 4 years for each of the Regional Priority Approaches. NTAs that make it into the three highest tiers will be recommended for adoption. NTAs in the bottom tier will not be recommended for adoption.

Criteria	Considerations for NTA Owners
Alignment with Regional Priority Approach	This criteria will be used to evaluate how well the scope of the NTA aligns with the scope of the Regional Priority Approach (including local context for applicable LIOs). NTAs will be evaluated against the full row of content for the Regional Priority Approach, which increases in detail as you read from left to right. NTA owners should only select and align their NTA to those Regional Priority Approaches that best fit the NTA. Selecting Regional Priority Approaches that poorly align with the NTA could negatively affect the prioritization of the NTA.
Outcome	This criteria will be used to evaluate how much the NTA will contribute to the outcomes specified for the Regional Priority Approach. NTA factsheets should clearly articulate how the NTA will contribute to the desired outcomes specified for each Regional Priority Approach selected.
Likelihood of Success	This criteria will be used to evaluate uncertainties associated with implementing the NTA and achieving the outcomes specified for the Regional Priority Approach. NTA owners should consider the following when preparing their NTA Factsheet: <ul style="list-style-type: none"> • Have you demonstrated the expertise and experience to implement the NTA at the scale and complexity proposed? • Have you engaged critical partners? Did you coordinate with the LIOs where your NTA will be implemented? Are there potential conflicts with LIO 5-year Ecosystem Recovery Plans? Are there potential conflicts with tribal treaty rights? • Does your NTA depend on other key actions or processes being addressed first? If so, have you demonstrated how those key actions or processes will be completed before implementing the NTA? • Are you using a proven and effective approach? If an alternative approach is being used, have you addressed uncertainties?

Cross-cutting Issues

Much of the recovery work identified in the following pages is oriented toward making progress on the [Puget Sound Vital Signs](#) (Vital Signs) [ecosystem recovery targets](#) (targets) by using the strategic planning framework of Implementation Strategies, in addition to other strategic planning efforts, such as LIO ecosystem recovery plans, tribal priorities, and the Science Work plan, among others. Vital Signs help to tell the story of how we are improving the health of Puget Sound, and the targets serve as the specific and measurable metrics therein. Implementation Strategies are specific plans for accelerating progress toward those targets. As such, the wider Partnership community has observed that, at times, issues that are broader in nature or that may affect multiple Vital Signs, such as ocean acidification or oil spill prevention, may not be explicitly identified in a given Implementation Strategy. Those issues that span multiple Vital Signs are termed “cross-cutting issues.”

In Tables 1 through 12, cross-cutting issues, such as climate change, ocean acidification, and oil spill prevention, are addressed as approaches where applicable to specific Vital Signs. For example, the Habitat SIAT included climate change considerations for all of their regional priorities. However, it is recognized that these issues, in particular, are relevant and potentially affect all Area of Focus Vital Signs. In light of this, an overarching priority for the 2018-2022 Action Agenda will be the development, continued work, and/or use of salient, multi-stakeholder, regional and federal strategies that address these cross-cutting issues. An example would be supporting the continued work of the [Washington Blue Ribbon Panel on Ocean Acidification](#), convened by the Governor. The panel’s role to document the current state of scientific knowledge; identify ways to advance our scientific understanding of the effects of ocean acidification; recommend actions to respond to increasing ocean

acidification and reduce harmful effects on Washington’s shellfish and other marine resources; and adapt to the impacts of acidified waters. Similarly, oil spill prevention is a trans-boundary issue that should be addressed through multi-nation, multi-agency efforts. For the 2018–2022 Action Agenda solicitation, NTAs should only be submitted that address a specific approach identified in Tables 1 through 12 (for example, embrace strategies to address the effect of ocean acidification on shellfish). Other efforts that aim to address these issues more broadly than the Vital Sign scope are anticipated to be carried forward through existing platforms (such as the Washington Blue Ribbon Panel on Ocean Acidification), or through the development of multi-nation, multi-agency efforts to address these issues.

Table 1. Summary of the 2018–2022 Action Agenda Regional Priorities

VITAL SIGNS	SI LEAD	REGIONAL PRIORITIES	APPROACHES	DESIRED OUTCOMES
Marine Water Quality (Page 14)	NA	MWQ1. Develop (or adapt) an Implementation Strategy for Marine Water Quality.	MWQ1.1 Develop (or adapt) an Implementation Strategy for Marine Water Quality.	Water quality is improved and human-related contributions of nitrogen are reduced.
Summer Stream Flows (Page 15)	NA	SSF.1 Develop (or adapt) an Implementation Strategy for Summer Stream Flows.	SSF.1.1 Develop (or adapt) an Implementation Strategy for Summer Stream Flows.	Stable flows are maintained where they already occur, and low flows are restored where needed.
Chinook Salmon (& other Salmon) (Page 16)	Partnership (w/ Habitat SI Lead)	<i>Draft Regional Priorities for the Chinook Vital Sign are still being finalized. The Draft Solicitation will be updated as soon as the Chinook Regional Priorities are available. Comments on other sections of the Solicitation can still be submitted in the interim.</i>		
Floodplains (Page 17)	Habitat	FP1. Enable greater local planning capacity to address restoration and protection.	FP1.1 Identify ecologically important areas.	Reach-scale planning will prioritize protecting and restoring ecologically important areas in floodplains.
			FP1.2 Overlay existing rules, regulations, land uses, ownership, and authorities across the landscape.	Multi-benefit floodplain planning is grounded in local regulatory and land-use context.
			FP1.3 Identify and address barriers to existing regulation implementation and enforcement.	Existing mechanisms to reduce development in floodplains are used more effectively.
			FP1.4 Assess where population and urban growth is projected to occur.	Multi-benefit planning will be able to address and account for regional population growth.
			FP1.5 Use climate change projections to predict changes to landscape-scale processes and to assess vulnerabilities.	Planners and stakeholders have access to improved flood-risk information.
			FP1.6 Increase staff capacity.	Local communities have the technical expertise and time to facilitate multi-benefit, reach-scale planning in floodplains.
			FP1.7 Address political will.	Regulatory staff are supported and encouraged to develop and implement multi-benefit solutions and make protective decisions about floodplain development.
			FP2.1 Convene collaborative, multi-benefit planning groups.	Stakeholders within the floodplain are engaged in reach-sale planning.

VITAL SIGNS	SI LEAD	REGIONAL PRIORITIES	APPROACHES	DESIRED OUTCOMES
		FP2. Design and identify multiple-benefit solutions and strategies	FP2.2 Analyze data to prioritize locations to restore or protect habitat.	Reach-scale planning will prioritize protecting and restoring ecologically important areas in floodplains.
			FP2.3 Develop and write a local plan.	Multi-benefit, reach-scale floodplain plans guide socially, environmentally, and economically optimal protection of intact floodplains and restoration of floodplain function.
			FP2.4 Align implementation or revision of regulations.	Regulatory decisions concerning floodplains are transparent, effective, consistent, and clearly communicated.
			FP2.5 Develop and implement outreach, education, and/or incentive programs.	The public and key decision makers have shared knowledge of the integrated floodplain plan, including costs, benefits, and risks of future floodplain development.
		FP3. Implement multiple-benefit projects developed through reach-scale planning processes.	FP3.1 Implement plans and priorities to protect habitat.	Intact areas of functioning floodplain are prioritized and protected.
			FP3.2 Implement plans and priorities to restore habitat.	Floodplain function is restored in priority locations.
			FP3.3 Develop and implement outreach, education, and/or incentive programs.	Land owners become stewards of their property and take actions that are protective of floodplains.
			FP3.4 Direct growth away from priority areas.	Growth, conversion, and development are reduced in floodplains.
			FP3.5 Collect and analyze data to adaptively manage restoration practices.	Monitoring informs long-term stewardship of projects and adaptive management of multi-benefit plans.
			EST1. Enable greater local planning capacity to develop and implement delta-scale, multi-benefit estuary restoration.	EST1.1 Use climate change projections to predict changes to landscape-scale processes and to assess vulnerabilities.
EST1.2 Improve guidance on management practices and the costs of alternative management approaches.	Multi-benefit plans in estuaries and adjacent lands are based on improved understanding of social, ecological, and economic tradeoffs.			
EST1.3 Increase staff capacity.	Local estuary planning teams have the expertise, local and regional support structure, and regional vision to enable planning and solution development.			
EST1.4 Address political will.	Local decision makers make policy, communication, staffing, and budgetary decisions that devote resources to developing multi-benefit solutions.			
EST2. Design delta-scale, multi-benefit solutions for estuary restoration.	EST2.1 Convene collaborative multi-benefit planning groups.	Multi-benefit estuary plans resulting from collaborative processes have broad support from all relevant stakeholders.		
Estuaries (Page 23)	Habitat			

VITAL SIGNS	SI LEAD	REGIONAL PRIORITIES	APPROACHES	DESIRED OUTCOMES
			Analyze data to prioritize locations to restore or protect.	Delta-scale analysis will prioritize areas suitable for estuary restoration and agricultural protection.
			EST2.2 Develop and write the plan.	Delta-scale plans guide socially, environmentally, and economically optimal prioritization of locations to restore tidal inundation or estuary function.
			EST2.3 Align implementation or revision of regulations.	Estuary restoration and agricultural land conservation programs are better aligned and integrated.
			EST2.4 Develop and implement outreach, education, and/or incentive programs.	Local stakeholders participate in and/or trust the outcome of the multi-benefit estuary planning process.
		EST3. Implement delta-scale estuary restoration plans to increase tidally inundated areas while meeting the needs of diverse stakeholders.	EST3.1 Develop and implement outreach, education, and/or incentive programs.	The public and key decision makers understand the value of estuary protection and restoration, and land owners take actions that restore estuaries or protect existing functions.
			EST3.2 Implement plans and priorities to restore estuaries.	Increase estuary area by increasing areas with tidal inundation.
			EST3.3 Direct growth away from priority areas.	Existing land-use regulations are implemented to reduce land conversion, and opportunities for estuary restoration in major river deltas are increased.
			EST3.4 Collect and analyze data to adaptively manage restoration practices.	Conduct ecological, economic, and social monitoring and effectiveness evaluations to learn about project and planning successes and failures of past projects.
Land Cover & Development (Page 28)	Habitat	LCLD1. Enable protection and planning by addressing information needs about the most ecologically important areas.	LCLD1.1 Identify ecologically important areas.	Planners and decision-makers improve clarity and implementation of policies and programs that protect ecologically important lands.
			LCLD1.2 Overlay existing rules, regulations, land uses, ownership, and authorities across the landscape.	Regulations and programs for ecologically important lands are clarified, harmonized, and informed by land use, population growth, and land conversion information. .
			LCLD1.3 Identify and address barriers to existing regulation implementation and enforcement.	Implementation of existing policy reduces conversion of ecologically important lands.
			LCLD1.4 Assess where population and urban growth is projected to occur.	Identification of areas under pressure for conversion to development informs strategic, multi-benefit planning and prioritization.
			LCLD1.5 Increase staff capacity.	Dedicated local government staff are resourced and empowered to monitor and adaptively manage the effectiveness of land use regulations.

VITAL SIGNS	SI LEAD	REGIONAL PRIORITIES	APPROACHES	DESIRED OUTCOMES
		LCLD2. Design integrated strategies that protect and restore critical ecological functions.	LCLD1.6 Address political will.	Local decision-makers are empowered to protect ecologically important areas.
			LCLD2.1 Convene collaborative, multi-benefit planning groups.	Shared strategies for protection of ecologically important lands resulting from collaborative processes have broad support from all relevant stakeholders.
			LCLD2.2 Analyze data to prioritize locations to restore or protect habitat.	Protection policies and programs for ecological important lands are based on data-driven prioritization and decision support.
			LCLD2.3 Develop and write a plan.	Landscape-scale strategies prioritize ecologically important lands for protection.
		LCLD2.4 Align implementation or revision of regulations.	Alignment of regional and local applications of the regulations for growth management improves protection of ecologically important areas.	
		LCLD3. Implement integrated strategies and policies to protect and restore ecologically important lands.	LCLD3.1 Develop and implement outreach, education, and/or incentive programs.	The public and key decision-makers understand why it is important to protect ecologically important lands and the value of landscape-scale strategies and policies.
			LCLD3.2 Implement plans and priorities to protect ecologically important land.	Existing regulations are implemented to protect ecologically important lands.
			LCLD3.3 Implement plans and priorities to restore ecologically important land.	Functional riparian habitat is improved based on implementation of integrated planning efforts.
			LCLD3.4 Direct growth away from priority areas.	Tax and infrastructure incentives for infill and redevelopment decrease land development in ecologically important areas.
			LCLD3.5 Collect and analyze data to adaptively manage restoration practices.	Local governments are able to assess effectiveness of land use regulations.
Shoreline Armoring (Page 33)	Habitat	SA1. Enable and support more effective implementation of existing regulations to protect and restore healthy shorelines.	SA1.1 Identify and address barriers to existing regulation implementation and enforcement.	Illegal shoreline armor is decreased, and permits achieve the most protective outcomes via compliance monitoring and enforcement.
			SA1.2 Increase staff capacity.	Regulatory staff have training and access to technical resources and experts to efficiently implement and enforce existing regulations.
			SA1.3 Align implementation of or revise regulations.	Regulatory decisions on shoreline armoring permits are transparent, effective, consistent, and clearly communicated.
			SA1.4 Address political will.	Regulatory staff are supported and encouraged to require the most protective outcomes for nearshore ecosystems.

VITAL SIGNS	SI LEAD	REGIONAL PRIORITIES	APPROACHES	DESIRED OUTCOMES
		SA2. Enable, design, and implement coastal processes-based design and technical training.	SA2.1 Improve guidance on management practices and the costs of alternative management approaches.	Shoreline armoring removal and soft-shore protection projects are more feasible for implementation.
			SA2.2 Develop and implement outreach, education, and/or incentive programs.	Increased practitioner expertise in site assessment, shoreline armoring removal, and soft-shore design increases implementation of the most protective shoreline management options.
			SA2.3 Implement plans and priorities to protect shorelines.	Practitioners use alternative management practices that protect infrastructure without shoreline armoring.
			SA2.4 Implement plans and priorities to restore shorelines.	Practitioners implement shoreline armoring removal projects and, if needed, replace with soft-shore protection.
			SA2.5 Collect and analyze data to adaptively manage restoration practices.	Improved shoreline armoring removal and soft-shore designs produce better ecosystem and human outcomes.
		SA3. Enable stewardship of healthy shorelines through incentives and education for homeowners.	SA3.1 Develop and implement outreach, education, and/or incentive programs.	Homeowners become stewards of their property and take actions to support healthy shorelines.
			SA3.2 Implement plans and priorities to protect shorelines.	Agreements are implemented that protect unarmored shorelines from armoring.
			SA3.3 Implement plans and priorities to restore shorelines.	Shoreline armoring removal and soft-shore replacement projects are implemented.
		SA4. Enable, design, and implement long-term regional strategic plans for shoreline protection and shoreline armoring removal.	SA4.1 Identify ecologically important areas.	Nearshore protection and restoration projects will prioritize protecting and restoring ecologically important areas.
			SA4.2 Overlay existing rules, regulations, land uses, ownership, and authorities across the landscape.	Existing shoreline use and regulation is integrated with ecosystem information to support planning processes.
			SA4.3 Use climate change projections to predict changes to landscape-scale processes and to assess vulnerabilities.	Decision-makers can use the best available science to help plan for longer-term impacts along the shoreline.
			SA4.4 Convene collaborative, multi-benefit planning groups.	Regional and local partners are able to leverage planned nearshore restoration projects to remove more shoreline armoring or replace with soft-shore alternatives.
			SA4.5 Analyze data to prioritize locations to restore or protect shorelines.	Complete and consistent mapping of Puget Sound shoreline attributes allows for regional prioritization of nearshore projects.
			SA4.6 Implement plans and priorities to protect shorelines.	Un-modified nearshore areas are protected and remain intact.

VITAL SIGNS	SI LEAD	REGIONAL PRIORITIES	APPROACHES	DESIRED OUTCOMES
			SA4.7 Implement plans and priorities to restore shorelines.	Armor removal or the use of habitat improvement techniques restores the processes and function of the nearshore ecosystem.
Shellfish Beds (Page 40)	Shellfish	<p>SHELL1. Upgrade the Samish Bay or Portage Bay shellfish growing areas.</p> <p>Re-open or upgrade previously downgraded shellfish growing areas.</p> <p>Reverse the declining trends in water quality and protection of water quality in shellfish growing areas that are in “threatened” or “concerned” status.</p> <p>Maintain the status of open shellfish beds classified as “approved” or “conditionally approved.”</p> <p>Prevent and control fecal pollution from humans (via onsite septic systems) and animals (livestock), which are the priority targeted pollution sources.</p>	SHELL1.1 Protect intact marine ecosystems, particularly in sensitive areas and for sensitive species.	Conservation of marine environments that provide sensitive, rare, or unique habitats; culturally and historically important sites; recreational and commercial fisheries; and recreational enjoyment of Puget Sound
			SHELL1.2 Control wastewater and other sources of pollution, such as oil and toxics from boats and vessels.	Establish No Discharge Zones, undertake the associated rule-making process, provide sufficient and convenient pump-out capacity, and promote effective outreach and education programs that reduce pollution from vessels.
			SHELL1.3 Increase compliance with and enforcement of environmental laws, regulations, and permits.	Ensure compliance with environmental laws intended to prevent and control pollution from human and animal fecal pollution sources.
			SHELL1.4 Target voluntary and incentive-based programs that help working farms contribute to Puget Sound recovery.	Programs, guidelines, and technical assistance opportunities will help farmers identify potential pollution impacts from farming activities and implement best management practices (BMPs) to reduce, control, or eliminate pollution.
			SHELL1.5 Ensure compliance with regulatory programs designed to reduce, control, or eliminate pollution from working farms.	Programs that control and prevent water pollution from farming activities will help to reduce and/or eliminate nutrient and bacteria discharges from pastures, manure storage facilities, and land application of manure and processed waste water into surface water and/or to minimize these from leaching into groundwater.
			SHELL1.6 Effectively manage and control pollution from small, onsite sewage systems.	Programs for onsite sewage systems (OSS) and state requirements for local health jurisdictions to carry out comprehensive plans that ensure OSS are properly managed to protect public health and sensitive waters. This approach also addresses marine recovery areas with existing OSS that are degrading shellfish growing areas or marine waters where low dissolved-oxygen levels or fecal coliform are a concern, or where nitrogen has been identified as a contaminant of concern.
			SHELL1.7 Improve and expand funding for small, onsite sewage systems (OSS) and local OSS programs.	Reliable sources of funding to support local OSS programs and homeowner assistance programs for repair or replacement of failing OSS are developed.

VITAL SIGNS	SI LEAD	REGIONAL PRIORITIES	APPROACHES	DESIRED OUTCOMES
			SHELL1.8 Improve water quality to prevent downgrade and achieve upgrades of important current tribal, commercial, and recreational shellfish harvesting areas.	Regional and local programs that protect and improve water quality and control pollution are in place, helping to prevent the degradation of healthy shellfish beds and achieve upgrades of degraded shellfish beds.
			SHELL1.9 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.	TMDLs are implemented.
			SHELL1.10 Develop and implement local and tribal pollution identification and correction (PIC) programs.	Local PIC programs that determine the causes and sources of water pollution in specific geographical areas, ensure corrective actions are taken to address the pollution sources, and protect Puget Sound marine and fresh water health are implemented.
			SHELL1.11 Effectively manage and control pollution from large OSS.	The state Department of Health's permit regulations for large OSS systems with flows between 3,500 and 100,000 gallons per day are supported, as are requirements for protection of public health and the environment.
		SHELL2. (See Strategy Justification and Shellfish priority table)	SHELL2.1 Restore and enhance native shellfish populations.	Support efforts to protect and restore native shellfish species, focusing on two species: native Olympia oysters and pinto abalone.
			SHELL2.2 Ensure environmentally sustainable shellfish aquaculture that is based on sound science.	Efforts to clarify the potential impacts of shellfish aquaculture are supported, and communities are helped to build consensus and collaboration about the role of shellfish aquaculture in Puget Sound.
			SHELL2.3 Research and implement monitoring to understand the specific environmental conditions that produce harmful algal blooms (HABs) and pathogen events.	The risks to human health are minimized, and economic losses to Puget sound fisheries are reduced.
			SHELL2.4 Support and expand marine bio-toxin monitoring.	The risks to human health are minimized, and the economic losses to Puget Sound fisheries are reduced.
			SHELL2.5 Embrace strategies to address the impact of ocean acidifications on shellfish.	The risks to human health are minimized, and the economic losses to Puget Sound fisheries are reduced.

VITAL SIGNS	SI LEAD	REGIONAL PRIORITIES	APPROACHES	DESIRED OUTCOMES
Freshwater Quality (represented by Benthic Index of Biotic Integrity [BIBI] indicator) (Page 44)	Stormwater	BIB1. Increase local capacity to manage stormwater programs.	BIBI1.1 Increase local capacity to manage stormwater programs.	More support for funding local stormwater programs is created, or the burden of managing programs is decreased.
		BIB2. Provide education and incentives for legacy retrofits.	BIBI1.2 Education and incentives for legacy retrofits	Strategies to incentivize stormwater retrofits to better match natural hydrologic and water chemistry are implemented.
		BIB3. Facilitate the increased use or performance of best management practices in working/rural lands	BIBI1.3 Facilitate the increased use or performance of best management practices in working/rural lands.	The impact of runoff from working lands is reduced.
		BIB4. Identify strategies and approaches to reduce the impacts from forestry on freshwater quality.	BIBI1.4 Identify strategies and approaches to reduce the impacts from forestry on freshwater quality.	Runoff and other hydrologic impacts from forestry production are reduced.
		BIB5. Carry out watershed-scale planning to protect and restore water quality.	BIBI1.5 Carry out watershed-scale planning to protect and restore water quality.	Local land use plans that better protect freshwater quality are developed, and the how and where to place restoration efforts are considered.
Freshwater Quality (Toxics in Fish) (Page 47)	Stormwater	TIF1. Enhance pollutant reduction programs, corrective measures specifically for pollution source contaminants, and stronger authorities and programs to prevent toxic chemicals from entering Puget Sound.	TIF1.1 Enhance pollutant reduction programs, corrective measures and increase authorities and programs to prevent toxic chemicals from entering Puget Sound.	Reduce loading to Puget Sound of TIF target contaminants, and explore opportunities to develop chemical action plans for endocrine disrupting target contaminants
		TIF2. Address stormwater treatment.	TIF2.1 Address stormwater treatment.	Innovative treatment approaches are researched or implemented.
		TIF3. Provide infrastructure and incentives to accommodate re-development within	TIF3.1 Provide the infrastructure and incentives to accommodate re-development within designated urban centers in urban growth areas.	Infill to protect water quality is increased, as is the likelihood that developed areas will meet new, stricter stormwater management requirements.

VITAL SIGNS	SI LEAD	REGIONAL PRIORITIES	APPROACHES	DESIRED OUTCOMES
		designated urban centers in urban growth areas.		
		TIF4. Use a source control approach to assess and regulate local sources of air pollution.	TIF4.1 Use a source-control approach to assess and regulate.	Air deposition from stationary air pollution sources is reduced.
		TIF5. Continue developing an Implementation Strategy for the Toxics in Fish Vital Sign.	TIF5.1 Continue developing an Implementation Strategy for the Toxics in Fish Vital Sign.	Priority strategies to achieve the targets for Toxics in Fish indicators are identified.

Vital Sign and Regional Priority Approaches

[We are currently evaluating the merits of including the following table and welcome your input. We felt that it may be helpful to identify where NTA owners could develop an NTA that has multi-benefit outcomes that affect more than one Vital Sign. To illustrate, we have included an example from the Habitat Strategic Initiative. If we receive feedback that this is a useful table, the other Vital Signs will be incorporated. Currently, the table below is solely for illustrative purposes. There are many details to be worked out to make this meaningful and fair; therefore, we are currently evaluating the following issues associated with this: Is including this table valuable to a potential NTA proponent? If so, how and why? Should this table be used to evaluate the value of NTA proposals? If so, how?]

This following table is designed to assist NTA owners in developing projects that can achieve progress on multiple Vital Signs. Approaches may be similar (i.e. Identify ecologically important areas) across Vital Signs, but the associated NTA proposal guidance and considerations are specific to each Vital Sign. If an NTA owner indicated that their NTA addressed the needs of multiple Vital Signs within a given approach then, that NTA would be evaluated based on how well the NTA was able to align itself with the proposal guidance and consideration listed for each selected Vital Sign. To be successful, an NTA proponent would have to meaningfully respond and incorporate all the needs listed in the NTA proposal guidance and considerations listed for each selected Vital Sign. For example, if an NTA proponent developed an NTA to “identify ecologically important areas” that would help make progress toward the listed outcomes for both Floodplains and Land Cover Land Development, the NTA owner would have to clearly show in their NTA proposal how their project is able to satisfactorily achieve the needs for both Vital Signs. This potentially means that NTAs are being reviewed by multiple SIATs if they check Vital Signs that are in more than one Strategic Initiative. In this case, we are considering averaging the reviews to obtain one score for the NTA. None of this would preclude an NTA owner from submitting a proposal that is specific to the needs of one specific Vital Sign and one associated approach. If an NTA owner thought that their NTA would nominally improve other Vital Sign targets but does not wholly address the specific needs listed for another Vital Sign, the NTA proponent would be encouraged to clearly state this in their NTA proposal but to not select multiple Vital Signs upon submission. In this way, NTAs would only be judged against the criteria for which the NTA was developed for.

Table 2. Vital Sign and Regional Priority Approaches Crosswalk

REGIONAL PRIORITY APPROACHES (HABITAT ONLY FOR THIS EXAMPLE)	MWQ	SSF	CHIN	FP	EST	LCLD	SA	SHELL	BIBI	TIF
Identify ecologically important areas.				FP1.1		LCLD1.1	SA4.1			
Overlay existing rules, regulations, land uses, ownership, and authorities across the landscape.				FP1.2		LCLD1.2	SA4.2			
Identify and address barriers to existing regulation implementation and enforcement.				FP1.3		LCLD1.3	SA1.1			
Assess where population and urban growth is projected to occur.				FP1.4		LCLD1.4				
Use climate change projections to predict changes to landscape-scale processes and to assess vulnerabilities.				FP1.5	EST1.1		SA4.3			
Improve guidance on management practices and the costs of alternative management approaches.					EST1.2		SA2.1			
Increase staff capacity.				FP1.6	EST1.3	LCLD1.5	SA1.2			
Address political will.				FP1.7	EST1.4	LCLD1.6	SA1.4			
Convene collaborative, multi-benefit planning groups.				FP2.1	EST2.1	LCLD2.1	SA4.4			
Analyze data to prioritize locations to restore or protect habitat.				FP2.2	EST2.2	LCLD2.2	SA4.5			
Develop and write a plan.				FP2.3	EST2.3	LCLD2.3				
Align implementation or revision of regulations.				FP2.4	EST2.4	LCLD2.4	SA1.3			
Develop and implement outreach, education, and/or incentive programs.				FP2.5	EST2.5	LCLD3.1	SA2.2			
Implement plans and priorities to protect habitat				FP3.1		LCLD3.2	SA2.3			
Implement plans and priorities to restore habitat				FP3.2	EST3.2	LCLD3.3	SA2.4			
Direct growth away from priority areas.				FP3.4	EST3.3	LCLD3.4				
Collect and analyze data to adaptively manage restoration practices.				FP3.5	EST3.4	LCLD3.5	SA2.5			

Marine Water Quality Vital Sign: Regional Priorities

Vital Sign Indicator Target

- There is no 2020 target for the Marine Water Condition Index. However, since the index is designed to show changes in water quality, positive values indicate improved marine water quality, and negative values indicate worse marine water quality relative to the baseline.
- Human-related contributions of nitrogen do not result in more than 0.2 mg/L reductions in dissolved oxygen levels anywhere in Puget Sound.

Strategy Justification

While substantial reference material exists from which to identify priorities associated with Marine Water Quality (MWQ), no administrative structure (such as a Strategic Initiative Lead) currently exists or is funded that would enable an external group of partners to collaboratively identify these priorities from source material and vet them in time for inclusion in the 2018–2022 Action Agenda. In addition, there are other partners who may have an interest in or may be best suited to lead in the development of the MWQ Vital Sign, and there is a regional desire to ensure that the most appropriate people are convened to determine the right approach. In addition, there is a desire to make Implementation Strategies the standard pathway for generating Action Agenda regional priorities. Therefore, it has been determined that the regional priority for MWQ will be to develop (or adapt) an Implementation Strategy. **In addition, NTA owners are encouraged to submit NTAs for priorities associated with the rest of the Area of Focus Vital Signs that would also have a positive impact on MWQ.** It is assumed and expected that the development or adaptation of the MWQ Implementation Strategy will occur in close collaboration with our LIO and tribal partners, as well as with the SI Leads, the EPA, and many others. In addition, it is assumed and expected that this work will incorporate and consider the robust planning efforts of LIOs and tribes, as well as SI Leads, the EPA, and others.

For more information on the considerations and rationale that supported this decision, please refer to the Partnership’s [“Director’s Decision Regarding Regional Priorities for Marine Water Quality and Summer Stream Flow Vital Signs.”](#)

Marine Water Quality Vital Sign Regional Priority

MWQ1. Develop or adapt an Implementation Strategy for Summer Stream Flows.

Table 3. Regional Priorities for the Marine Water Quality Vital Sign

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
MWQ1. DEVELOP OR ADAPT AN IMPLEMENTATION STRATEGY FOR MARINE WATER QUALITY					
MWQ1.1 Develop (or adapt) an Implementation Strategy for Marine Water Quality.	Water quality is improved and human-related contributions of nitrogen are reduced.	It is assumed and expected that the development or adaptation of an Implementation Strategy would occur in close collaboration with LIO and tribal partners, as well as with the SI Leads, the EPA, and many others. In addition, it is assumed and expected that work would incorporate and consider the robust planning efforts of LIOs and tribes, as well as that of the SI Leads, the EPA, and others.			

Summer Stream Flows Vital Sign: Regional Priorities

Vital Sign Indicator Targets

By 2020, meet the following river-specific targets:

- Maintain stable or increasing flows in highly regulated rivers: Nisqually, Cedar, Skokomish, Skagit, Green.
- Maintain stable flows in unregulated rivers that currently are stable: Puyallup, Dungeness, Nooksack.
- Monitor low flow in the Elwha River after dam removal.
- Restore low flows to bring the Snohomish River from a weakly decreasing trend to no trend.
- Restore low flows to bring the Deschutes River, North Fork Stillaguamish River, and Issaquah Creek from a strongly decreasing trend to a weakly decreasing trend.

Strategy Justification

While substantial reference material exists from which to identify priorities associated with Summer Stream Flows (SSF), no administrative structure (such as a Strategic Initiative Lead) currently exists or is funded that would enable an external group of partners to collaboratively identify these priorities from source material and vet them in time for inclusion in the 2018–2022 Action Agenda. In addition, there are other partners who may have an interest in or may be best suited to lead in the development of the SSF Vital Sign, and there is a regional desire to ensure that the most appropriate people are convened to determine the right approach. In addition, there is a desire to make Implementation Strategies the standard pathway for generating Action Agenda regional priorities. Therefore, it has been determined that the regional priority for SSF will to be develop (or adapt) an Implementation Strategy. **In addition, NTA owners are encouraged to submit NTAs for priorities associated with the rest of the Area of Focus that would also have a positive impact on SSF.** It is assumed and expected that the development or adaptation of this Implementation Strategy will occur in close collaboration with our LIO and tribal partners, as well as with the SI Leads, the EPA, and many others. In addition, it is assumed and expected that this work will incorporate and consider the robust planning efforts of LIOs and tribes, as well as SI Leads, the EPA, and others.

For more information on the considerations and rationale that supported this decision, please refer to the Partnership’s [“Director’s Decision Regarding Regional Priorities for Marine Water Quality and Summer Stream Flow Vital Signs.”](#)

Summer Stream Flow Vital Sign Regional Priority

SSF1. Develop or adapt an Implementation Strategy for Summer Stream Flows.

Table 4. Summer Stream Flows Regional Priorities

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT	
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE		
MWQ2. DEVELOP OR ADAPT AN IMPLEMENTATION STRATEGY FOR SUMMER STREAM FLOWS						
SSF1.1	Develop (or adapt) an Implementation Strategy for Summer Stream Flows.	Stable flows are maintained where they already occur, and low flows are restored where needed.	It is assumed and expected that the development or adaptation of an Implementation Strategy would occur in close collaboration with LIO and tribal partners, as well as with the SI Leads, the EPA, and many others. In addition, it is assumed and expected that work would incorporate and consider the robust planning efforts of LIOs and tribes, as well as SI Leads, the EPA, and others.			

Chinook Salmon (and other Salmon) Vital Sign: Regional Priorities

“Draft Regional Priorities for the Chinook Vital Sign are still being finalized. The Draft Solicitation will be updated as soon as the Chinook Regional Priorities are available. Comments on other sections of the Solicitation can still be submitted in the interim.”

Vital Sign Indicator Target

- Stop the overall decline and start seeing improvements in wild Chinook abundance in two to four populations in each biogeographic region.

Strategy Justification

Coming soon.

Chinook Salmon (and other salmon) Vital Sign Regional Priorities

Coming soon.

Table 5. Regional Priorities for the Chinook Salmon (and other Salmon) Vital Sign

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
CHIN1.					
<i>Coming soon.</i>					

Floodplains Vital Sign: Regional Priorities

Vital Sign Indicator Targets

- Restore, or have projects underway to restore, 15 percent of degraded Puget Sound floodplain area.
- Have no net loss of floodplain function in any watershed relative to a 2011 baseline

Strategy Justification

Floodplains are ecologically important areas in the Puget Sound region. It is the intent of this strategy to restore and protect floodplain functions whenever possible to maintain the standard of fishable, swimmable, drinkable waterways. The priority strategies listed below attempt to guide floodplains work at a regional level while providing flexibility for local implementation. In this stepwise structure, the strategy to decrease floodplain conversion to development is best achieved by creating the enabling conditions necessary for strategic work, then designing solutions and strategies on a project level, and finally implementing those solutions. This structure allows communities to discuss the balance between ecological and economic services provided in the area and develop strategic and collaborative solutions.

The Floodplains Implementation Strategy **prioritizes 17 floodplains** contributing to the Vital Sign target for protecting existing floodplain function and restoring lost function to maintain the standard of fishable, swimmable, drinkable waterways. These 17 largest river channels are the: Cedar, Deschutes, Dungeness, Elwha, Green-Duwamish, Hood Canal, Nisqually, Nooksack, Puyallup, Sammamish, Sauk, Skagit, Skokomish, Skykomish, Snohomish, Snoqualmie, and Stillaguamish. **Projects proposed within the 17 priority floodplains will be prioritized because they can contribute the most to the regional Vital Sign.**

Floodplain Vital Sign Regional Priorities

- FP1.** Enable greater local planning capacity to address restoration and protection.
- FP2.** Design and identify multiple-benefit solutions and strategies.
- FP3.** Implement multiple-benefit projects developed through reach-scale planning processes.

Table 6. Regional Priorities for the Floodplains Vital Sign

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
FP1. ENABLE GREATER LOCAL PLANNING CAPACITY TO ADDRESS RESTORATION AND PROTECTION					
FP1.1 Identify ecologically important areas.	Reach-scale planning will prioritize protecting and restoring ecologically important areas in floodplains.	<ul style="list-style-type: none"> • Develop a shared definition of “ecologically important areas” as it relates to floodplains. 	<ul style="list-style-type: none"> • Identify important local hydrology and geomorphological processes and supporting areas. • Create a vision for which reaches to prioritize further study and assess for high impact ecological value where work can occur. 	<ul style="list-style-type: none"> • Cite datasets and protocols that will be used. • Consider using 2015 NAIP or LIDAR data • Work with the Partnership to delineate tiers of degradation within a shared dataset. 	

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
FP1.2 Overlay existing rules, regulations, land uses, ownership, and authorities across the landscape.	Multi-benefit floodplain planning is grounded in local regulatory and land-use context.		<ul style="list-style-type: none"> Verify and map existing land use designations. 	<ul style="list-style-type: none"> Reference and crosswalk local plans or regulations and how they deal differently with floodplains. If applicable, use the state Department of Commerce zoning data to delineate land use areas. 	
FP1.3 Identify and address barriers to existing regulation implementation and enforcement.	Existing mechanisms to reduce development in floodplains are used more effectively.	<ul style="list-style-type: none"> Improve stringency, efficiency, and effectiveness of regional permitting processes in floodplains. 	<ul style="list-style-type: none"> Investigate the role of state and federal standards on the incentives and regulations in floodplain development. Investigate the long-term cost of disaster response and levee repairs. Integrate floodplain planning guidance on Nation Flood Insurance Program, Clean Water Act Section 404, levee standards, Shoreline Management Act, and Growth Management Act. 	<ul style="list-style-type: none"> Include citations of existing plans, permitting processes, or regulations that will be discussed and proposed opportunities for alignment or efficiencies. 	
FP1.4 Assess where population and urban growth is projected to occur.	Multi-benefit planning will be able to address and account for regional population growth.		<ul style="list-style-type: none"> Develop population growth projections in floodplains. 	<ul style="list-style-type: none"> Consider partnerships that bundle data analysis with an application or implementation effort. Coordinate, as appropriate, with the state Department of Commerce to use appropriate base datasets. Consider environmental justice, transportation, and housing affordability implications of urban infill. 	
FP1.5 Use climate change projections to predict changes to landscape-scale processes and to assess vulnerabilities.	Planners and stakeholders have access to improved flood risk information.	<ul style="list-style-type: none"> Update the definition of the flood risk to include future probabilities. 	<ul style="list-style-type: none"> Update climate change projections to strengthen identification of areas at high risk for flooding. 	<ul style="list-style-type: none"> Consider partnerships that bundle data analysis with an application or implementation effort. Ensure the information needs of target audience is defined 	

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
FP1.6 Increase staff capacity.	Local communities have the technical expertise and time to facilitate multi-benefit reach-scale planning in floodplains.	<ul style="list-style-type: none"> Develop a centralized application process for all floodplain funding sources with regionally supported metrics, goals, and application requirements. 	<ul style="list-style-type: none"> Increase staffing or human capital with adequate training and access to data, research, etc. <p>Identify, synchronize, and grow funding mechanisms to support local planning.</p>		
FP1.7 Address political will.	Regulatory staff are supported and encouraged to develop and implement multi-benefit solutions and make protective decisions about floodplain development.	<ul style="list-style-type: none"> Regional bodies develop strategies to engage local political actors in supporting regulatory enforcement and implementation. 	<ul style="list-style-type: none"> Educate local leaders on flood and flood risk tolerance projections. <p>Develop cost subsidy analyses that show the true cost of developing in a floodplain.</p>	<ul style="list-style-type: none"> Include those local leaders who will be targeted, why, and what strategy will be used to engage them. Reference the data sources of projections to be communicated. Incorporate climate change projections in flood risk analyses. 	
FP2. DESIGN AND IDENTIFY MULTIPLE-BENEFIT SOLUTIONS AND STRATEGIES					
FP2.1 Convene collaborative multi-benefit planning groups.	Stakeholders within the floodplain are engaged in reach-scale planning.		<ul style="list-style-type: none"> Develop watershed farm, fish, and flood task forces. 	<ul style="list-style-type: none"> Ensure all relevant stakeholders and tribes are engaged. Use Floodplains by Design guidance to convene the group. Include facilitation plan and approach for conflict resolution. Discuss how enabling factors and barriers have been addressed to allow for successful planning. 	
FP2.2 Analyze data to prioritize locations to restore or protect habitat.	Reach-scale planning will prioritize protecting and restoring ecologically important areas in floodplains.		<ul style="list-style-type: none"> Create analysis of ecologically important lands in floodplains overlaid with lands at high risk for development. Identify vulnerable lands to flooding within a city and county to aid in protection and restoration of floodplains. Estimate effects of planned build-out on drainage and potential flooding. 	<ul style="list-style-type: none"> Incorporate climate change projections in planning efforts. Include citations of existing plans or data that will be used to help prioritize locations within the floodplain. Consider partnerships that bundle data analysis with a local implementation effort. 	

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
FP2.3 Develop and write a local plan.	Multi-benefit, reach-scale floodplain plans guide socially, environmentally, and economically optimal protection of intact floodplains and restoration of floodplain function.	<ul style="list-style-type: none"> Establish land use goals and needs for each watershed. 	<ul style="list-style-type: none"> Identify the most important areas to restore or reconnect floodplains or estuaries. Consider agriculture protection, restoration, and flood protection, and other major stakeholder values within the plan. 	<ul style="list-style-type: none"> Incorporate climate change projections and identified vulnerabilities in planning effort. Include citations of existing plans or data that will be used to help prioritize locations within the floodplain. Discuss how enabling factors and barriers have been addressed to allow for successful planning. Discuss how lands suitable for restoration or protection will be identified. 	
FP2.4 Align implementation or revision of regulations.	Regulatory decisions concerning floodplains are transparent, effective, consistent, and clearly communicated.	<ul style="list-style-type: none"> Evaluate opportunities to coordinate permit applications and reviews across regulatory agencies. Local, state, and federal governments facilitate and support inter- and intra-agency communication and collaboration. 	<ul style="list-style-type: none"> Develop forums for regulatory agencies to share information. 	<ul style="list-style-type: none"> Include citations of existing plans, permitting processes, or regulations that will be discussed and proposed opportunities for alignment. Discuss how the proposed project will add efficiencies or reduce barriers to implementation in floodplains. 	
FP2.5 Develop and implement outreach, education, and/or incentive programs. (12)	The public and key decision makers have shared knowledge of the integrated floodplain plan, including costs, benefits, and risks of future floodplain development.		<ul style="list-style-type: none"> Develop training for planning, public works, and public officials on integrated planning guidelines, benefits, and support groups. Create and steward monitoring and effectiveness guidance. Create infrastructure for regional decision support tools to display and communicate a plan's effectiveness. 	<ul style="list-style-type: none"> Include citations of existing plans that will be communicated and how success or effectiveness of work will be measured. Consider using risk tolerance analysis and cost subsidy analysis to target audiences and foster support. Include an effectiveness assessment strategy. 	
FP3. IMPLEMENT DELTA-SCALE ESTUARY RESTORATION PLANS TO INCREASE TIDALLY INUNDATED AREAS WHILE MEETING THE NEEDS OF DIVERSE STAKEHOLDERS					

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
EST3.1 Implement plans and priorities to protect habitat.	Intact areas of functioning floodplain are prioritized and protected.	<ul style="list-style-type: none"> Explore opportunities for flexible funding that enables opportunistic acquisitions. 	<ul style="list-style-type: none"> Consider land acquisition and conservation easements. Communicate effectiveness data and success stories and learning from plan implementation. 	<ul style="list-style-type: none"> Cite reach-scale plan used to identify project. Focus on protection of agricultural floodplains that have not been converted. Link acquisitions to a cost subsidy analysis that prioritizes critical buy-outs in flood prone areas. 	
EST3.2 Implement plans and priorities to restore habitat.	Floodplain function is restored in priority locations.		<ul style="list-style-type: none"> Remove hard shoreline infrastructure in floodplains. Monitor and evaluate effectiveness of solutions identified and implemented from plans. Communicate effectiveness data and success stories and learning from plan implementation. <p>Identify opportunities to use soft shoreline techniques, including river deltas.</p>	<ul style="list-style-type: none"> Cite reach-scale plan used to identify project. 	
EST3.3 Develop and implement outreach, education, and/or incentive programs.	Land owners become stewards of their property and take actions that are protective of floodplains.		<ul style="list-style-type: none"> Use social marketing campaign/incentive program to influence land owners to move flood-vulnerable land out of production. Offer payments for ecosystem services programs targeting floodplain acreage or function. 	<ul style="list-style-type: none"> Cite reach-scale plan used to identify audience and target activities. Consider using a social marketing approach that includes target audience analysis, a clear behavior ask, and an effectiveness assessment strategy. 	
EST3.4 Direct growth away from priority areas.	Growth, conversion, and development are reduced in floodplains.	<ul style="list-style-type: none"> Create preferential tax incentives for open land versus new development in floodplains. 	<ul style="list-style-type: none"> Improve the implementation of existing regulations and permitting processes regarding Critical Area Ordinances, frequently flooded areas, Shoreline Management Act, and Growth Management Act. Include the full cost of emergency measures in the development costs. 	<ul style="list-style-type: none"> For acquisitions, cite reach-scale plan used to identify project. 	

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
			<ul style="list-style-type: none"> • Acquire and remove development rights in floodplain areas and support programs that do so. • Direct growth away from intact floodplains through regulations and market forces. 		
EST3.5 Collect and analyze data to adaptively manage restoration practices.	Monitoring informs long-term stewardship of projects and adaptive management of multi-benefit plans.		<ul style="list-style-type: none"> • Evaluate habitat response and restoration outcomes to specific design approaches to improve critical design decisions and cost assessments for levee removal. 	<ul style="list-style-type: none"> • Use and refer to Floodplains by Design for regional metrics for monitoring. • In the project budget, consider including funds for watershed councils or conservation districts to conduct long-term stewardship. • Monitoring efforts should consider ecological, economic, and social outcomes of plans and projects. 	

DRAFT

Estuary Vital Sign: Regional Priorities

Vital Sign Indicator Targets

- 7,380 quality acres of estuarine wetlands are restored basin-wide, which is 20 percent of total estimated restoration need.
- By 2020, all Chinook salmon natal river deltas meet 10-year salmon recovery goals (or 10 percent of restoration need as proxy for river deltas lacking quantitative acreage goals in salmon recovery plans).

Strategy Justification

River delta estuaries form where river floodplains meet the sea, creating a unique and important environment where freshwater mixes with salt water and sediments collect. Estuaries are home to a diverse array of specially adapted plants and animals, which take advantage of the fertility there, moving in and out with the tides. Estuaries provide important feeding and resting habitat for young salmon, migratory birds, and many other species that cannot find these unique benefits in any other place in our landscape. Young salmon that spend time in delta estuaries grow faster and are more likely to survive their ocean migration.

The Estuaries Vital Sign indicator target is measured across the 16 large river delta estuaries in Puget Sound. Most estuary habitat in Puget Sound was lost many decades ago with conversion to farmland by developing and maintaining drainage infrastructure. Historically, agricultural deltas were the largest estuaries and are now the greatest opportunity for large additions of estuary acreage of high habitat quality potential (Nooksack, Samish, Skagit, Snohomish, Stillaguamish rivers). The Implementation Strategy for the Estuaries Vital Sign indicator target prioritizes these large agricultural deltas and aims to enable and accelerate tidal inundation of land in major agricultural river deltas while minimizing impact and maximizing benefits to farming communities and other stakeholders. Nearshore habitats outside of river deltas (embayments, beaches, etc.) are not included in the Estuaries Vital Sign indicator. However, the regional priorities for the Shoreline Armoring Vital Sign addresses nearshore habitats outside of the major river deltas. Projects proposed within the 16 priority estuaries will be prioritized because they can contribute the most to the regional Vital Sign.

Estuary Vital Sign Regional Priorities

- EST1.** Enable greater local planning capacity to develop and implement multi-benefit, delta-scale estuary restoration.
- EST2.** Design delta-scale, multi-benefit solutions for estuary restoration.
- EST3.** Implement delta-scale estuary restoration plans to increase tidally inundated areas while meeting the needs of diverse stakeholders.

Table 7. Regional Priorities for the Estuaries Vital Sign

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
EST1. ENABLE GREATER LOCAL PLANNING CAPACITY TO DEVELOP AND IMPLEMENT MULTI-BENEFIT, DELTA-SCALE ESTUARY RESTORATION					
EST1.1 Use climate change projections to predict changes to landscape-scale processes	Delta-scale understanding of sediment is improved, and climate change dynamics inform more resilient estuary recovery planning.		<ul style="list-style-type: none"> • Map and model salt water intrusion in context of climate change. • Map and model sediment deposition in the context of climate change. • Develop a delta-wide interactive geospatial platform for each large agricultural river delta. 	<ul style="list-style-type: none"> • Conduct research and syntheses at the time and space scales that are relevant to informing delta-scale planning. • Indicate who the intended user of the final product will be and include them as a project partner. 	

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
and to assess vulnerabilities.				<ul style="list-style-type: none"> Consider partnerships that bundle data analysis with a local planning effort. 	
EST1.2 Improve guidance on management practices and the costs of alternative management approaches.	Multi-benefit plans in estuaries and adjacent lands are based on improved understanding of social, ecological, and economic tradeoffs.	<ul style="list-style-type: none"> Develop a combination of quantity and quality targets for farmland that can be used to establish trade-offs between agriculture and conservation goals. 	<ul style="list-style-type: none"> Conduct social, economic, physical, and ecological analyses of delta landscape management alternatives. Evaluate flood and drainage effects of delta landscape management alternatives. Conduct research to improve technical guidance and design decisions of estuary restoration. 	<ul style="list-style-type: none"> Consider partnerships that bundle guidance with a management decision or planning effort. 	
EST1.3 Increase staff capacity.	Local estuary planning teams have the expertise, local and regional support structure, and regional vision to enable planning and solution development.	<ul style="list-style-type: none"> Develop local, state, and federal funding mechanisms to support multi-stakeholder forums. 	<ul style="list-style-type: none"> Develop local estuary teams for planning and solution support. Fund staff in rural counties to help interpret and educate potential partners on estuary restoration and protection opportunities. 	<ul style="list-style-type: none"> Address how staff working at the regional level can support and engage in local planning efforts. 	
EST1.4 Address political will.	Local decision makers make policy, communication, staffing, and budgetary decisions that devote resources to developing multi-benefit solutions.	<ul style="list-style-type: none"> Local, state, and federal agencies develop and communicate a coordinated vision for delta landscape management Regional bodies develop strategies to engage local political actors in supporting regulatory enforcement and implementation. 	<ul style="list-style-type: none"> Educate local leaders on potential benefits of estuary restoration for agricultural communities. 	<ul style="list-style-type: none"> Include those local leaders who will be targeted, why, and what strategy will be used to engage them. Reference the data sources of projections to be communicated. 	
EST2. DESIGN DELTA-SCALE, MULTI-BENEFIT SOLUTIONS FOR ESTUARY RESTORATION					
EST2.1 Convene collaborative multi-benefit planning groups.	Multi-benefit estuary plans resulting from collaborative processes have broad support from all relevant stakeholders.		<ul style="list-style-type: none"> Develop multi-stakeholder forums. (Note: Existing forums should be sustained and used as model for deltas without existing forums.) 	<ul style="list-style-type: none"> Discuss how enabling factors and barriers have been addressed to allow for successful planning. 	

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
				<ul style="list-style-type: none"> Address how conflicts between different stakeholder objectives (such as farmland preservation and estuary restoration) can be reduced. Include a facilitation plan and approach for conflict resolution. 	
EST2.2 Analyze data to prioritize locations to restore or protect.	Delta-scale analysis will prioritize areas suitable for estuary restoration and agricultural protection.		<ul style="list-style-type: none"> Identify lands that are at risk for conversion to non-agricultural uses. Identify estuary restoration opportunities that have multi-benefit outcomes, and develop a prioritized list suitable for long-term planning. 	<ul style="list-style-type: none"> Plans should be developed at the delta-scale. Incorporate climate change projections in the planning effort. Include citations of existing plans or data that will be used to help prioritize restoration work. Consider partnerships that bundle data analysis with a local implementation effort. 	
EST2.3 Develop and write the plan.	Delta-scale plans guide socially, environmentally, and economically optimal prioritization of locations to restore tidal inundation or estuary function.		<ul style="list-style-type: none"> Working with local stakeholder groups and existing environmental plans, identify lands suitable for acquisition and restoration that have the capacity to serve as functional estuarine habitat. 	<ul style="list-style-type: none"> Plans should be developed at the delta-scale. Climate change dynamics should be explicitly incorporated into delta-scale plans, including sea level rise, river flow, and sediment delivery and deposition dynamics. Evaluate alternative projects and solutions based on how restoration actions will affect local infrastructure and operations. 	
EST2.4 Align implementation or revision of regulations.	Estuary restoration and agricultural land conservation programs have better alignment and integration.	<ul style="list-style-type: none"> Develop new and/or revise existing funding streams to support multi-benefit projects rather than single benefit outcomes. 	<ul style="list-style-type: none"> Develop reciprocal consultation agreements between farmland protection programs and restoration programs to ensure that funding and activities do not inhibit one another. Develop mechanisms to improve the efficiency of the project permitting process for restoration. 	<ul style="list-style-type: none"> Include citations of existing plans, permitting processes, or regulations that will be discussed and proposed opportunities for alignment or efficiencies. 	

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
EST2.5 Develop and implement outreach, education, and/or incentive programs.	Local stakeholders participate in and/or trust the outcome of the multi-benefit estuary planning process.	<ul style="list-style-type: none"> Leverage existing state and federal programs (such as conservation districts) to engage the agricultural community. 	<ul style="list-style-type: none"> Develop and deliver communications on the specifics of how restoration actions will affect local infrastructure and operations. 	<ul style="list-style-type: none"> Ensure that the information needs of target audience are defined. 	
EST3. IMPLEMENT DELTA-SCALE ESTUARY RESTORATION PLANS TO INCREASE TIDALLY INUNDATED AREAS WHILE MEETING THE NEEDS OF DIVERSE STAKEHOLDERS					
EST3.1 Develop and implement outreach, education, and/or incentive programs.	The public and key decision makers understand the value of estuary protection and restoration, and land owners take actions that restore estuaries or protect existing functions.		<ul style="list-style-type: none"> Develop and implement local education and outreach on restoration plans and prioritization. Develop and implement a social marketing campaign/incentive program to influence land owners to move climate- and salinity-vulnerable land out of production. 	<ul style="list-style-type: none"> Include citations of existing plans that will be communicated and how success or effectiveness of the education/outreach effort will be measured. Explain the rationale used to identify audience and target activities. Consider using a social marketing approach that includes target audience analysis, a clear behavior ask, and an effectiveness assessment strategy. 	
EST3.2 Implement plans and priorities to restore estuaries.	Increase estuary area by increasing areas with tidal inundation.	<ul style="list-style-type: none"> Develop conservation easements for restoration that makes restored estuary habitat a valuable asset for land owners. Define problems and develop solutions faced by practitioners trying to leverage diverse funding tools. 	<ul style="list-style-type: none"> Implement or acquire land for restoration projects. Develop mechanisms to increase flexibility of acquisition approaches. Monitor and evaluate effectiveness of restoration projects at both the parcel scale and larger. 	<ul style="list-style-type: none"> Include citation of the plans being used to select the project. Include climate change impacts in the restoration design. Project and delta-scale monitoring programs should apply standardized regional metrics to evaluate effectiveness, if they exist. 	
EST3.3 Direct growth away from priority areas.	Existing land-use regulations are implemented to reduce land conversion and increase	<ul style="list-style-type: none"> Create a funding pool and mechanism to value conversion of private 	<ul style="list-style-type: none"> Preserve farmland from development in select locations without precluding restoration opportunities in the future. 	<ul style="list-style-type: none"> Include citation of the plans being used to select the project. 	

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
	opportunities for estuary restoration in major river deltas.	property to functional estuary habitat.	<ul style="list-style-type: none"> • Develop payments for ecosystem services programs targeting estuary acreage and function. 		
EST3.4 Collect and analyze data to adaptively manage restoration practices.	Conduct ecological, economic and social monitoring and effectiveness evaluation to learn about project and planning successes and failures of past projects.		<ul style="list-style-type: none"> • Monitor eelgrass response to tidal wetland restoration projects to evaluate effects of estuary restoration on eelgrass recovery. • Evaluate habitat response and restoration outcomes to specific design approaches to improve critical design decisions and cost assessments for levee removal. 	<ul style="list-style-type: none"> • Project and delta-scale monitoring programs should apply standardized regional metrics to evaluate effectiveness, if they exist. • Monitoring efforts should consider ecological, economic, and social outcomes of plans and projects. 	

DRAFT

Land Cover and Development Vital Sign: Regional Priorities

Vital Sign Indicator Targets

- **Conversion of ecologically important lands:** Loss of vegetation cover on indicator land base over a 5-year period does not exceed 0.15 percent of the 2011 baseline land area.
- **Forest Loss:** The average annual loss of forested land cover to developed land cover in non-federal lands does not exceed 1,000 acres per year, as measured with Landsat-based change detection.
- **Riparian vegetation restoration:** Restore 268 miles of riparian vegetation or have an equivalent extent of restoration projects under way.
- **Growth in Urban Growth Areas (UGAs):** The proportion of basin-wide growth occurring within urban growth areas is at least 86.5 percent (equivalent to all counties exceeding their population growth goals by 3 percent), with all counties showing an increase over their 2000–2010 percentage.

Strategy Justification

The land surrounding Puget Sound is home to 4 million people. The need for homes, businesses, roads, and agriculture must be balanced with ecosystem protection. Forest and riparian areas provide important habitat for many species and reduce the rate of polluted runoff flowing into Puget Sound. Land development and cover indicators measure how well we are directing our region’s ongoing growth to protect our best remaining natural areas and working forests.

Land Cover and Development Vital Sign Regional Priorities

- LCLD1.** Enable protection and planning by addressing information needs on the most ecologically important areas.
- LCLD2.** Design integrated strategies that protect and restore critical ecological functions.
- LCLD3.** Implement integrated strategies and policies to protect and restore ecologically important lands.

Table 8. Regional Priorities for the Land Cover and Development Vital Sign

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
LCLD1. ENABLE PROTECTION AND PLANNING BY ADDRESSING INFORMATION NEEDS ABOUT THE MOST ECOLOGICALLY IMPORTANT AREAS					
LCLD1.1 Identify ecologically important areas.	Planners and decision-makers improve clarity and implementation of policies and programs that protect ecologically important lands.	<ul style="list-style-type: none"> • Develop a shared definition of “ecologically important areas.” 	<ul style="list-style-type: none"> • Develop policy and planning approaches to reconcile and simplify efforts to effectively use and define critical areas, sensitive lands, and ecologically important lands. 	<ul style="list-style-type: none"> • Identify interpretations or definitions of critical areas and ecologically important lands. • Consider using a multidisciplinary approach to characterize ecologically important areas by incorporating existing definitions of “ecologically important.” 	
LCLD1.2 Overlay existing rules, regulations, land uses, ownership,	Regulations and programs for ecologically important lands are clarified, harmonized, and informed by land use, population		<ul style="list-style-type: none"> • Determine the lands at risk of conversion by aligning the Urban Growth Areas with watershed characterization data and salmon 	<ul style="list-style-type: none"> • Consider mapping areas of land cover under high pressure for development (High Resolution Change Detection data available via state Department of Fish and Wildlife) with watershed 	

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
and authorities across the landscape	growth, and land conversion information. .		<p>recovery planning to identify solutions to various risks.</p> <ul style="list-style-type: none"> • Compile and contrast how different jurisdictions interpret, analyze, and apply critical areas. 	<p>characterization and population growth projections.</p> <ul style="list-style-type: none"> • Consider applying existing tools jointly such as the Ecology PS Watershed Characterization and Commerce Permit Mapping. 	
LCLD1.3 Identify and address barriers to existing regulation implementation and enforcement.	Implementation of existing policy reduces conversion of ecologically important lands.	<ul style="list-style-type: none"> • Identify barriers to urban infill. 	<ul style="list-style-type: none"> • Develop recommendations on how to improve the local implementation of the Growth Management Act (GMA), especially the requirement to identify open space corridors within and between Urban Growth Areas. • Analyze and communicate the implementation of GMA to improve the local process. 	<ul style="list-style-type: none"> • Consider supporting co-ownership of growth management between local and state entities. 	
LCLD1.4 Assess where population and urban growth is projected to occur.	Identification of areas under pressure for conversion to development informs strategic multi-benefit planning and prioritization.		<ul style="list-style-type: none"> • Develop population growth projections outside of Urban Growth Areas. • Identify and map areas suitable for development within Urban Growth Areas. 	<ul style="list-style-type: none"> • Consider partnerships that bundle data analysis with an application or implementation effort. • Coordinate as appropriate with the state Department of Commerce to use appropriate base datasets. • Consider environmental justice, transportation, and housing affordability implications of urban infill. 	
LCLD1.5 Increase staff capacity.	Dedicated local government staff are resourced and empowered to monitor and adaptively manage the effectiveness of land use regulations.	<ul style="list-style-type: none"> • Funding is made available to support dedicated staff time for monitoring and adaptive management. • Governments implement state Department of Commerce adaptive management chapter guidance. 	<ul style="list-style-type: none"> • Develop and deliver trainings to local staff about tools to assess and monitor land use patterns. • 	<ul style="list-style-type: none"> • Refer to state Department of Commerce adaptive management guidance. 	

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
LCLD1.6 Address political will.	Local decision makers are empowered to protect ecologically important areas.		<ul style="list-style-type: none"> Educate decision makers about ecosystem services of ecologically important areas. Quantify the ecosystem services of ecologically important areas. 	<ul style="list-style-type: none"> Include what local leaders will be targeted, why, and what strategy will be used to engage them. Reference the data sources to be communicated. 	
LCLD2. DESIGN INTEGRATED STRATEGIES THAT PROTECT AND RESTORE CRITICAL ECOLOGICAL FUNCTIONS					
LCLD2.1 Convene collaborative multi-benefit planning groups.	Shared strategies for protection of ecologically important lands resulting from collaborative processes have broad support from all relevant stakeholders.		<ul style="list-style-type: none"> Develop multi-stakeholder forums. 	<ul style="list-style-type: none"> Discuss how enabling factors and barriers have been addressed to allow for successful planning. Existing forums should be sustained and used as model for areas without existing forums. All relevant stakeholders affected by the plan should be engaged in the planning process. 	
LCLD2.2 Analyze data to prioritize locations to restore or protect habitat.	Protection policies and programs for ecological important lands are based on data-driven prioritization and decision support.		<ul style="list-style-type: none"> Develop decision support tools to understand drivers of past, present and future land-use change. Consolidate and share data on ecologically important lands and water among local, state, and federal planning agencies and natural resource managers. Develop a natural resources asset management program. 	<ul style="list-style-type: none"> Consider including current conditions data (Regional Open Space Strategy data), land use change data, land cover change (High Resolution Change Detection data available via state Department of Fish and Wildlife), designated areas of growth, ecologically important lands, conservation models, climate change projections, and identification of local law protection needs in the analysis. Consider partnerships that bundle data analysis with a local implementation effort (for example, incorporating prioritized areas in the Shoreline Management Plan update). 	
LCLD2.3 Develop and write a plan.	Landscape-scale strategies prioritize ecologically important lands for protection.		<ul style="list-style-type: none"> Develop ecosystem services metrics and values. 	<ul style="list-style-type: none"> Reference and describe the multi-stakeholder planning process used to generate the plan. Consider areas sensitive for retaining vegetation. Consider creating protections for ecological functions. 	
LCLD2.4 Align implementation	Alignment of regional and local applications of the	<ul style="list-style-type: none"> Revise/update Critical Areas Ordinance based 	<ul style="list-style-type: none"> Use Transfer Development Rights (TDP) and Protect Development 	<ul style="list-style-type: none"> Consider protecting the quality and extent of ecologically important lands using Critical Area 	

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
on or revision of regulations.	regulations on growth management improves protection of ecologically important areas.	<p>on plan or recommendations.</p> <ul style="list-style-type: none"> Enact recommendations on improving Growth Management Act implementation, such as restore funding to support county GMA planning. 	Rights (PDR) programs to target the objectives.	Ordinances, Shoreline Master Programs, Growth Management Act, and current regulations.	
LCLD3. IMPLEMENT INTEGRATED STRATEGIES AND POLICIES TO PROTECT AND RESTORE ECOLOGICALLY IMPORTANT LANDS					
LCLD3.1 Develop and implement outreach, education, and/or incentive programs.	The public and key decision makers understand why it is important to protect ecologically important lands and the value of landscape-scale strategies and policies.		<ul style="list-style-type: none"> Create communication materials (such as a story map) of places where land cover change is monitored and permit compliance is improved. Support and protect working lands, including incentives for forest and farmland landowners. Use a social marketing campaign/incentive program to shape market forces and societal behavioral change. 	<ul style="list-style-type: none"> Include how success or effectiveness of work will be measured. Consider using a social marketing approach that includes target audience analysis, a clear behavior ask, and an effectiveness assessment strategy. 	
LCLD3.2 Implement plans and priorities to protect ecologically important land.	Existing regulations are implemented to protect ecologically important lands.	<ul style="list-style-type: none"> State and federal agencies develop mechanisms to provide regulatory assistance to local governments for compliance and enforcement of current regulations. 	<ul style="list-style-type: none"> Support the development and implementation of Voluntary Stewardship Programs (VSP) to protect and enhance critical areas while preserving the long-term viability of agricultural lands. 	<ul style="list-style-type: none"> Consider a no-waiver policy. Consider future growth and climate projections. Cite plan/report that will be used. Reference integrated planning process, partners engaged, and resulting strategic plan that prioritize the proposed activity in the proposed geography. 	
LCLD3.3 Implement plans and	Functional riparian habitat is improved based on		<ul style="list-style-type: none"> Plant trees or shrubs in riparian corridors 	<ul style="list-style-type: none"> Address at the catchment or sub-basin scale. 	

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
priorities to restore ecologically important land.	implementation of integrated planning efforts.		<ul style="list-style-type: none"> Establish conservation easements or acquire priority riparian habitat. 	<ul style="list-style-type: none"> Reference integrated planning process, partners engaged, and resulting strategic plan that prioritize the proposed activity in the proposed geography. 	
LCLD3.4 Direct growth away from priority areas.	Tax and infrastructure incentives for infill and redevelopment decrease land development in ecologically important areas.	<ul style="list-style-type: none"> Increase affordable housing availability working with land trusts and non-profit housing coalitions. 	<ul style="list-style-type: none"> Establish large-scale urban renewal projects to accommodate higher populations 	<ul style="list-style-type: none"> Coordinate with transit planning. Consider how to expand existing models of targeted growth centers Sound-wide. Discuss how social, racial, and environmental justice implications of housing availability and affordability will be addressed. 	
LCLD3.5 Collect and analyze data to adaptively manage restoration practices.	Local governments are able to assess effectiveness of land use regulations.	<ul style="list-style-type: none"> Develop a regional accountability framework for land use regulation effectiveness. 	<ul style="list-style-type: none"> Develop a data clearinghouse suitable for assessing land-use patterns. Develop a decision-support tool to assess and communicate effectiveness of land-use regulations based on land-use change patterns. Evaluate existing watershed-scale plans for lessons learned. 	<ul style="list-style-type: none"> Use state Department of Commerce’s adaptive management guidance to inform data collection and adaptive management. Use High Resolution Change Detection data available via the state Department of Fish and Wildlife. 	

Shoreline Armoring Vital Sign: Regional Priorities

Vital Sign Indicator Targets

- From 2011 to 2020, the total amount of armoring removed should be greater than the total amount of new armoring in Puget Sound (total miles removed is greater than the total miles added).
- Feeder bluffs receive strategic attention for removal of existing armoring and avoidance of new armoring.
- Soft shore techniques are used for all new and replacement armoring, unless it is demonstrably infeasible.

Strategy Justification

Puget Sound's 2,500 miles of shoreline are among the most valuable and fragile of our natural resources. A dynamic area where land and marine ecosystems meet, the shoreline is constantly changing with the action of wind, waves, tides, and erosion. These same shaping forces are also the reason why people often build bulkheads or other structures to harden the shoreline. Indeed, more than 25 percent of the shoreline has been armored to protect public and private property, ports and marinas, roads and railways, and other uses. Shoreline armoring, the practice of constructing bulkheads (also known as seawalls) and rock revetments, disrupts the natural process of erosion, which supplies much of the sand and gravel that forms and maintains our beaches. Erosion also creates habitat for herring, surf smelt, salmon, and many other species in Puget Sound. Over time, shoreline armoring may cause once sandy beaches to become rocky and sediment starved, making them inhospitable to many of our native species. The Shoreline Armoring Vital Sign indicator tracks changes in the total amount of shoreline armor in the nearshore, marine environment.

Shoreline Armoring Vital Sign Regional Priorities

1. Enable and support more effective implementation of existing regulations to protect and restore healthy shorelines.
2. Enable, design, and implement coastal processes-based design and technical training.
3. Enable stewardship of healthy shorelines through incentives and education for homeowners.
4. Enable, design, and implement long-term regional strategic plans for shoreline protection and armor removal.

Table 9. Regional Priorities for the Shoreline Armoring Vital Sign

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
SA1. ENABLE AND SUPPORT MORE EFFECTIVE IMPLEMENTATION OF EXISTING REGULATIONS TO PROTECT AND RESTORE HEALTHY SHORELINES					
SA1.1 Identify and address barriers to existing regulation implementation and enforcement.	Illegal shoreline armor is decreased, and permits achieve the most protective outcomes via compliance monitoring and enforcement.		<ul style="list-style-type: none"> • Implement compliance monitoring and enforcement programs. • Develop multi-agency partnerships to improve field review of projects before, during, and after construction. • Establish mobile, regional, technical teams able to assist in local permitting decisions. • Design and implement monitoring protocols able to broadly assess the efficacy of recently 	<ul style="list-style-type: none"> • Use and implement existing recommendations (such as TACT report). • Use successful pilot projects as a model (such as TACT report checklists for permit review; King County WRIA 9 compliance monitoring project). • Compliance monitoring should consider what questions are most relevant to improving implementation and enforcement 	

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
			<p>updated Shoreline Management Plans at achieving no net loss.</p> <ul style="list-style-type: none"> • Conduct shoreline armor baseline inventories. 	(such as quantifying type of permit violation and impact of permit violation).	
SA1.2 Increase staff capacity.	Regulatory staff have training and access to technical resources and experts to efficiently implement and enforce existing regulations.	<ul style="list-style-type: none"> • Local governments are adequately staffed and able to encourage and support protective permitting decisions. 	<ul style="list-style-type: none"> • Increase training and technical support for local regulatory staff. • Develop peer-to-peer forums to share information and lessons. • Establish mobile, regional, technical teams able to assist in local permitting decisions. 	<ul style="list-style-type: none"> • Consider opportunities to collaborate across jurisdictions and regulatory agencies. • Use existing programs as a model (such as the Coastal Training Program). • Use best available guidance (such as Soft Shore Stabilization; Ecology guidance for SMP planning; Marine Shoreline Design Guidelines). 	
SA1.3 Align implementation of or revise regulations.	Regulatory decisions on shoreline permits are transparent, effective, consistent, and clearly communicated.	<ul style="list-style-type: none"> • Update the hydraulic code to be consistent with the Shoreline Management Act language regarding single family residences. 	<ul style="list-style-type: none"> • Develop forums for regulatory agencies to share information. • Local, state, and federal governments facilitate and support inter- and intra-agency communication and collaboration. • Develop a restoration permitting process. • Evaluate opportunities to coordinate permit applications and reviews across regulatory agencies. 	<ul style="list-style-type: none"> • Consider engaging existing policy advisory bodies to develop policy solutions. 	
SA1.4 Address political will.	Regulatory staff are supported and encouraged to require most protective outcomes for nearshore ecosystems.	<ul style="list-style-type: none"> • Regional bodies develop strategies to engage local political actors in supporting regulatory enforcement and implementation. 			
SA2. ENABLE, DESIGN, AND IMPLEMENT COASTAL PROCESSES-BASED DESIGN AND TECHNICAL TRAINING					
SA2.1 Improve guidance on management practices and the costs of	Shoreline armoring removal and soft shore protection projects are more		<ul style="list-style-type: none"> • Develop complementary and supporting guidance to the Marine Shoreline Design Guidelines, such as guidance to support geotechnical assessments, protocols for adaptive management, a framework to 	<ul style="list-style-type: none"> • Ensure both the audience/intended users are engaged to develop the guidance. • Develop technical and practical guidance. 	

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
alternative management approaches.	feasible for implementation.		evaluate economic costs of alternative shoreline design options, or risk criteria to assess alternative designs.	<ul style="list-style-type: none"> • If proposing an economic study, consider both the immediate construction and lifetime maintenance costs. 	
SA2.2 Develop and implement outreach, education, and/or incentive programs.	Increased practitioner expertise in site assessment, shoreline armoring removal, and soft shore design increases implementation of the most protective shoreline management options.	<ul style="list-style-type: none"> • Develop certification and liability standards for training programs. 	<ul style="list-style-type: none"> • Develop programmatic framework for technical trainings. • Deliver technical trainings to target audiences. 	<ul style="list-style-type: none"> • If developing training materials, consider a partnership to pilot use of the materials. • Consider incentives for target audience to participate, such as developing a certification program. • Consider liability concerns and ongoing technical support needs. • Include a plan to measure effectiveness and adaptively update training program based on results. 	
SA2.3 Implement plans and priorities to protect shorelines.	Practitioners use alternative management practices that protect infrastructure without shoreline armoring.		<ul style="list-style-type: none"> • Develop and implement management plans for public and private lands that protect natural shoreline while addressing existing infrastructure and safety concerns. 	<ul style="list-style-type: none"> • Use best management practices and guidance as developed (such as Marine Shoreline Design Guidelines). • Under this priority, projects should be field tests of improved designs or practitioner fieldwork to practice/verify skills learned during trainings (such as for certification or to graduate the course). • Conduct pre- and post- monitoring on ecosystem effects, design, and property owner satisfaction. 	
SA2.4 Implement plans and priorities to restore shorelines.	Practitioners implement shoreline armoring removal projects and, if needed, replace with soft shore protection.		<ul style="list-style-type: none"> • Implement removal projects on public and private lands. 	<ul style="list-style-type: none"> • Use and reference best management practices and guidance as developed (such as Marine Shoreline Design Guidelines). • Conduct pre- and post- monitoring on ecosystem effects, design, and property owner satisfaction. • Under this priority, projects should be field tests of improved designs or practitioner fieldwork to practice/verify 	

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
				<p>skills learned during trainings (such as for certification or to graduate the course).</p> <ul style="list-style-type: none"> • Conduct pre- and post- monitoring on ecosystem effects, design, and property owner satisfaction. 	
SA2.5 Collect and analyze data to adaptively manage restoration practices.	Improved shoreline armoring removal and soft shore designs produce better ecosystem and human outcomes.		<ul style="list-style-type: none"> • Evaluate implemented shoreline armoring removal and soft shore projects in order to improve designs and design guidance. • Develop data repository for monitoring data. • Develop protocols for synthesizing data and updating design and guidance materials. 	<ul style="list-style-type: none"> • Use and reference Shoreline Monitoring Toolbox (Washington Sea Grant) protocols for measuring ecosystem responses. • Account for site attributes and design type in data repository and evaluation approach. • Focus on developing protocols suitable for assessing outcomes from a design or engineering perspective. • Discuss how data will be used to modify management decisions, update contractor trainings, or improve permitting process. Consider partnerships towards this end. 	
SA3. ENABLE STEWARDSHIP OF HEALTHY SHORELINES THROUGH INCENTIVES AND EDUCATION FOR HOMEOWNERS					
SA3.1 Develop and implement outreach, education, and/or incentive programs.	Homeowners become stewards of their property and take actions to support healthy shorelines.	<ul style="list-style-type: none"> • Develop long-term sustained funding for existing education and incentive programs. • Develop and implement financial incentives to support homeowners taking conservation or restoration actions. 	<ul style="list-style-type: none"> • Continue and expand programs focusing on homeowner site visits and technical assistance. • Continue and expand design and permit assistance for homeowners. • Develop a series of case studies to showcase armoring removal success stories that is suitable for the homeowner audience. • Conduct demonstration tours. • Promote existing green shoreline certification and recognition programs. 	<ul style="list-style-type: none"> • Use trusted organizations and individuals in the community to implement the programs. • Consider modeling new efforts after existing education and incentive programs. • Propose new programs only in areas without an existing education and incentive strategy; otherwise, build on existing efforts. • Consider implementation in neighborhood-scale, multi-parcel clusters. 	
SA3.2 Implement plans and priorities to	Agreements are implemented that protect unarmored		<ul style="list-style-type: none"> • Establish conservation easements or acquire unarmored shoreline. 	<ul style="list-style-type: none"> • Demonstrate site prioritization based on ecosystem processes at both regional and local scale. 	

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
protect shorelines.	shoreline from armoring.			<ul style="list-style-type: none"> • Consider implementation in neighborhood-scale, multi-parcel clusters. • Conduct pre- and post- monitoring on ecosystem effects, design, and property owner satisfaction. • Use best management practices and guidance as developed (such as Marine Shoreline Design Guidelines). 	
SA3.3 Implement plans and priorities to restore shorelines.	Shoreline armoring removal and soft shore replacement projects are implemented.	<ul style="list-style-type: none"> • Develop long-term, sustained funding for existing education and incentive programs. 	<ul style="list-style-type: none"> • Provided design, permit, and financial assistance incentives for homeowners to implement removal or soft shore replacement projects. 	<ul style="list-style-type: none"> • Demonstrate site prioritization based on ecosystem processes at both regional and local scale. • Consider implementation in neighborhood-scale, multi-parcel clusters. • Conduct pre- and post- monitoring on ecosystem effects, design, and property owner satisfaction. • Use best management practices and guidance as developed (such as Marine Shoreline Design Guidelines). 	
SA4. ENABLE, DESIGN, AND IMPLEMENT LONG-TERM REGIONAL STRATEGIC PLANS FOR SHORELINE PROTECTION AND SHORELINE ARMORING REMOVAL					
SA4.1 Identify ecologically important areas.	Nearshore protection and restoration projects will prioritize protecting and restoring ecologically important areas.	<ul style="list-style-type: none"> • Develop a shared definition for “ecologically important areas” as it relates to the nearshore. 	<ul style="list-style-type: none"> • Collect relevant data and overlay current and historic biological uses of the nearshore environment. • Map shoreline geomorphology and associated geologic features (feeder bluffs). • Conduct process-based monitoring at the drift cell scale related to functions of the nearshore and "thresholds" of percent armored. 	<ul style="list-style-type: none"> • Cite proposed datasets and/or protocols to be used. • Give priority to proposals that use protocols/techniques that have already been used in the region or proposals that are easily scalable. • Give priority to projects that are able to map large areas or can justify importance of a smaller area. 	
SA4.2 Overlay existing rules, regulations, land uses, ownership, and	Existing shoreline use and regulation is integrated with ecosystem		<ul style="list-style-type: none"> • Develop up-to-date, geospatial shoreline armor inventory including armor attributes (such as elevation, type) 	<ul style="list-style-type: none"> • Use protocols and criteria established through the Partnership Indicator Improvement process. 	

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
authorities across the landscape.	information to support planning processes.		<ul style="list-style-type: none"> • Overlay biological and physical attributes and shoreline armoring with SMP zoning and similar regulations. 	<ul style="list-style-type: none"> • Cite proposed datasets and/or protocols to be used. • Use existing SMP data layers when feasible. • Give priority to projects that are able to incorporate sea level rise projections. 	
SA4.3 Use climate change projections to predict changes to landscape-scale processes and to assess vulnerabilities.	Decision makers can use the best available science to help plan for longer-term impacts along the shoreline.	<ul style="list-style-type: none"> • Work with the legislature to develop a budget to remove or relocate derelict infrastructure or structures as shorelines begin to change. 	<ul style="list-style-type: none"> • Improve the resolution and accuracy of sea level rise or storm surge forecasts in Puget Sound. • Identify vulnerable and aging infrastructure that may be susceptible to sea level rise or damaged by storm surge. • Assess the vulnerability of unarmored shorelines to becoming armored as sea level rises. • Create a forum to discuss and develop an emergency preparedness plan or toolkit as it relates to abrupt sea level change due to a major earthquake or large and intense storms. 	<ul style="list-style-type: none"> • Cite proposed datasets and/or protocols to be used • Clearly identify proposed partners and how final products will be used as a communication tool. 	
SA4.4 Convene collaborative, multi-benefit planning groups.	Regional and local partners are able to leverage planned nearshore restoration projects to remove more shoreline armor or replace with soft shore alternatives.	<ul style="list-style-type: none"> • Allocate staff time and resources for participation in inter-agency and intra-agency coordination efforts. • Scale-up successful pilot projects into regional programs. 	<ul style="list-style-type: none"> • Develop or improve workshops, forums, newsletters, or websites able to promote nearshore project networking, coordination and showcase success stories throughout the region. • Develop a library of successful projects that were able to leverage resources or projects to improve the ecosystem outcomes. • Develop a communication strategy to engage large, industrial shoreline users in nearshore restoration. 	<ul style="list-style-type: none"> • Consider convening public works departments; state and federal transportation departments; private landowners; and local, state, federal, and non-profit restoration organizations 	
SA4.5 Analyze data to prioritize locations to restore or protect shorelines.	Complete and consistent mapping of Puget Sound shoreline attributes allows for	<ul style="list-style-type: none"> • Develop a regional agreement on how to prioritize nearshore habitat protection and restoration. 	<ul style="list-style-type: none"> • Quantify the impact shoreline armoring has on nearshore habitat that is, or was historically used, by protected and important species. 	<ul style="list-style-type: none"> • Cite proposed datasets and/or protocols to be used. • Consider partnerships that bundle data analysis with local implementation efforts (e.g. a social marketing strategy). 	

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
	regional prioritization of nearshore projects.			<ul style="list-style-type: none"> • Demonstrate that the necessary partners are involved for regional support of the prioritization. 	
SA4.6 Implement plans and priorities to protect shorelines.	Un-modified nearshore areas are protected and remain intact.		<ul style="list-style-type: none"> • Establish conservation easements or acquire unarmored shoreline. 	<ul style="list-style-type: none"> • Described site contribution to drift cell function and key species habitats. • Reference local or regional prioritization for the site. 	
SA4.7 Implement plans and priorities to restore shorelines.	Shoreline armoring removal or the use of habitat improvement techniques restores the processes and function of the nearshore ecosystem.		<ul style="list-style-type: none"> • Implement projects to remove armor or restore nearshore ecosystem function through soft shore protection. 	<ul style="list-style-type: none"> • Use best available guidance site assessment, project design and implementation (such as Marine Shoreline Design Guidelines) • Described site contribution to drift cell function and key species habitats. • Reference local or regional prioritization for the site. 	

DRAFT

Shellfish Beds Vital Sign: Regional Priorities

Vital Sign Indicator

- The indicator for the Shellfish Beds Vital Sign is the acres of harvestable shellfish beds.

Vital Sign Indicator Target

- A net increase of 10,800 acres of harvestable shellfish acres between 2007 and 2020, including 7,000 acres where harvest had been prohibited.

Strategy Justification

There are approximately 225,000 acres of classified commercial and recreational shellfish beds around Puget Sound. However, an estimated 16 percent are closed due to pollution, most of which comes from fecal bacterial from humans, livestock, and pets. The 10,800-acre target underscores the need to restore and upgrade areas affected by fecal pollution while also protecting those areas that are currently open for harvest. Fecal bacteria pollution is a major barrier to achieving the Shellfish Bed Vital Sign target.

The following regional priorities and approaches describe strategies intended to reduce or prevent fecal coliform bacterial pollution of shellfish beds and strategies that are more broadly important to shellfish recovery but either indirectly or not related to fecal coliform pollution and the acreage target. In keeping with that distinction, approaches SHELL1.1 through 1.11 correspond with what was previously identified as 2016 Action Agenda Tier One sub-strategies. The remaining priorities and approaches were previously identified as 2016 Action Agenda Tier Two sub-strategies and recommended by the Shellfish Strategic Initiative Advisory Team as such. They do not directly correspond to the priority approaches described in the Shellfish Bed Implementation Strategy, but are recognized as important strategies for shellfish recovery more broadly (SHELL2.1 through 2.5).

Shellfish Beds Vital Sign Regional Priority (SHELL1)

- SHELL1. An upgrade in Samish Bay or Portage Bay shellfish growing areas.
 Re-opening or upgrading previously downgraded shellfish growing areas (including commercial, tribal and recreational growing areas).
 Reversal of declining water quality trends and protection of water quality in shellfish growing areas that are in “threatened” or “concerned” status.
 Maintaining the status of open shellfish beds classified as “approved” or “conditionally approved.”
 Preventing and controlling fecal pollution from humans (via onsite septic systems) and animals (livestock) are the priority targeted pollution sources.

Table 10. Regional Priorities for the Shellfish Beds Vital Sign

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
<p>SHELL1. Upgrade the Samish Bay or Portage Bay shellfish growing areas. Re-open or upgrade previously downgraded shellfish-growing areas. Reverse the decline of water quality trends and protect the water quality in shellfish growing areas that are in “threatened” or “concerned” status. Maintaining the status of open shellfish beds classified as “approved” or “conditionally approved.” Prevent and control fecal pollution from humans (via onsite septic systems) and animals (livestock), which are the priority targeted pollution sources.</p>					
SHELL1.1	Protect intact marine ecosystems, particularly in	Conservation of marine environments that provide sensitive, rare, or unique habitats; culturally and historically important sites; recreational and			

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
sensitive areas and for sensitive species	commercial fisheries; and recreational enjoyment of Puget Sound				
SHELL1.2 Control wastewater and other sources of pollution, such as oil and toxics from boats and vessels	Establish No Discharge Zones, associated rule-making, provide sufficient and convenient pump-out capacity, and promote effective outreach and education programs that reduce pollution from vessels.		Actions should focus on fecal pollution from vessels.		
SHELL1.3 Increase compliance with and enforcement of environmental laws, regulations, and permits	Ensure compliance with environmental laws intended to prevent and control pollution from human and animal fecal pollution sources				
SHELL1.4 Target voluntary and incentive-based programs that help working farms contribute to Puget Sound recovery	Programs, guidelines, and technical assistance opportunities will help farmers identify potential pollution impacts from farming activities and implement best management practices (BMPs) to reduce, control, or eliminate pollution.		Working farms are places where agricultural activities occur and are not based on the size or number of animals.		
SHELL1.5 Ensure compliance with regulatory programs designed to reduce, control or eliminate pollution from working farms.	Programs that control and prevent water pollution from farming activities will help to reduce and/or eliminate nutrient and bacteria discharges from pastures, manure storage facilities, and land application of manure and processed waste water into surface water and/or to minimize these from leaching into groundwater.		Actions should focus on bacterial discharge. Working farms are places where agricultural activities occur and are not based on the size or number of animals. Strategies to improve compliance with water quality protection by permitted Confined Animal Feeding Operations (CAFOs) and dairies (Dairy Nutrient Management Program, or DNMP) should be considered, but non-point sources (pasture based, hobby and small livestock operations) should not be overlooked and need to be held accountable for their contributions.		
SHELL1.6 Effectively manage and control pollution from small onsite sewage systems	Programs for onsite sewage systems (OSS) and state requirements for local health jurisdictions to carry out comprehensive plans that ensure OSS are properly managed to protect public health and sensitive waters. This approach also addresses marine recovery areas with existing OSS that are degrading shellfish growing areas or marine waters where low dissolved-oxygen levels or fecal coliform are a concern, or where nitrogen has been identified as a contaminant of concern.		Actions should focus on fecal coliform concerns.		

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
SHELL1.7 Improve and expand funding for small onsite sewage systems (OSS) and local OSS programs	Reliable sources of funding to support local OSS programs and homeowner assistance programs for repair or replacement of failing OSS are developed.			<p>The intent of this approach is to encourage development of NTAs that will result in sustainable funding for the following:</p> <ul style="list-style-type: none"> Local management of OSS programs, including advancement of the OSS target (for example, document the OSS, achieve compliance with inspections, and identify and repair or replace failures in locations with shellfish growing areas). OSS financial assistance programs in areas with shellfish growing areas. Identify and designate areas where enhanced OSS management is needed. 	
SHELL1.8 Improve water quality to prevent downgrade and achieve upgrades of important current tribal, commercial and recreational shellfish harvesting areas	Regional and local programs that protect and improve water quality and control pollution, helping to prevent the degradation of healthy shellfish beds and to achieve upgrades of degraded shellfish beds.			<p>This approach can be used to address wastewater treatment plant (WWTP) upgrades, outfall changes, and other wastewater or stormwater infrastructure improvements or planning. Actions should focus on fecal coliform.</p>	
SHELL1.9 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	TMDLs are implemented.			<p>This approach helps support marine and fresh water quality through development and implementation of TMDL studies or local pollution control plans that identify pollution sources and corrective actions to address identified problems. The TMDL process complements other strategies to control sources and pathways of excess nutrients and toxic chemicals from entering Puget Sound. The priority focus is on implementation of TMDLs, not development of TMDLs.</p>	
SHELL1.10 Develop and implement local and tribal pollution identification and correction (PIC) programs	Local PIC programs that determine the causes and sources of water pollution in specific geographical areas, ensure corrective actions are taken to address the pollution sources, and protect Puget Sound marine and fresh water health are implemented.			<p>PIC programs with a high probability of success include the following essential elements:</p> <ul style="list-style-type: none"> Consistent, long-term, ambient water quality monitoring to prioritize projects and evaluate action effectiveness. Coordinated outreach about proposed PIC projects and results to increase community awareness, participation, and support. Source identification sampling. Provision of information, site inspection, technical assistance, and financial support to correct identified sources of pollution. Effective enforcement capability. Enforcement is used when compliance efforts fail. 	

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
		<ul style="list-style-type: none"> Sustainable funding to maintain long-term stability of the program 			
SHELL1.11 Effectively manage and control pollution from large OSS.	The state Department of Health’s permit regulations for large OSS systems with flows between 3,500 and 100,000 gallons per day are supported, as are requirements for protection of public health and the environment.				
SHELL2. Note the following approaches are not priority approaches in the Shellfish Bed Implementation Strategy but are important to shellfish recovery broadly (previously Tier 2 2016 Action Agenda Sub-strategies)					
SHELL2.1 Restore and enhance native shellfish populations	Support efforts to protect and restore native shellfish species, focusing on two species: native Olympia oysters and pinto abalone				
SHELL2.2 Ensure environmentally sustainable shellfish aquaculture based on sound science	Efforts to clarify the potential impacts of shellfish aquaculture are supported, and communities are helped to build consensus and collaboration about the role of shellfish aquaculture in Puget Sound.				
SHELL2.3 Research and Implement monitoring to understand the specific environmental conditions that produce harmful algal blooms (HABs) and pathogen events	The risks to human health are minimized, and economic losses to Puget sound fisheries are reduced.				
SHELL2.4 Support and expand marine bio-toxin monitoring	The risks to human health are minimized, and economic losses to Puget sound fisheries are reduced.				
SHELL2.5 Embrace strategies to address ocean acidifications impact on shellfish.	The risks to human health are minimized, and economic losses to Puget sound fisheries are reduced.		Coordinate with the Marine Resources Advisory Committee and Blue Ribbon Panel recommendations.		

Freshwater Quality Vital Sign, BIBI Indicator: Regional Priorities

Vital Sign Indicator Targets

Two freshwater targets for the BIBI indicator of the Freshwater Quality Vital Sign address both protection and restoration goals:

- Protect: 100 percent of Puget Sound lowland stream drainage areas monitored with baseline BIBI scores of 42-46 or better retain these “excellent” scores.
- Restore: Mean BIBI scores of 30 Puget Sound lowland drainage areas improve from “fair” to “good.”

Strategy Justification

As an indicator of freshwater quality the Benthic Index of Biotic Integrity uses invertebrates to measure stream health related to hydrologic conditions, water quality, and the associated impacts to habitat quality. This strategy is based on the work of the BIBI Interdisciplinary Team, who identified priority strategies to address the effects to stream health from the built environment and effects from the runoff of working, and strategies to protect healthy streams from the effects of new development.

BIBI Indicator Regional Priorities

- BIBI1. Increase local capacity to manage stormwater programs.
- BIBI2. Provide education and incentives for legacy retrofits.
- BIBI3. Facilitate the increased use or performance of best management practices in working/rural lands.
- BIBI4. Identify strategies and approaches to reduce the impacts from forestry on freshwater quality.
- BIBI5. Conduct watershed-scale planning to protect and restore water quality.

Table 11. Regional Priorities for the BIBI Indicator

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
BIBI1. INCREASE LOCAL CAPACITY TO MANAGE STORMWATER PROGRAMS					
BIBI1.1 Increase local capacity to manage stormwater programs.	More support for funding local stormwater programs is created, or the burden of managing programs is decreased.		<ul style="list-style-type: none"> • Implement a project or projects to increase the likelihood that the public would support stormwater management capacity (social marketing). Create additional political will to increase capacity. Start with barriers—explore solutions for overcoming them. • Increase capacity for and effectiveness of training, maintenance, and enforcement. 	<ul style="list-style-type: none"> • May be most important in yet to be developed areas (incl. non-permitted areas). • Stormwater fee structures don’t capture single family land base. Single family/residential are underpaying for stormwater programs. • Could also serve to increase support for protection Project Ideas <ul style="list-style-type: none"> • Peer-to-peer training networks • SW utility increase incentive 	
BIBI2. PROVIDE EDUCATION AND INCENTIVES FOR LEGACY RETROFITS					

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
BIBI2.1 Provide education and incentives for legacy retrofits.	Strategies to incentivize stormwater retrofits to better match natural hydrologic and water chemistry are implemented.	<ul style="list-style-type: none"> Change the requirements for retrofitting—no need to adhere to the Stormwater Management Manual for Western Washington in voluntary retrofits. Make changes to state (funding) and local policy (permitting). 	<ul style="list-style-type: none"> Stormwater control transfer programs Other programs to incentivize voluntary retrofits 		
BIBI3. FACILITATE THE INCREASED USE OR PERFORMANCE OF BEST MANAGEMENT PRACTICES IN WORKING/RURAL LANDS					
BIBI3.1 Facilitate the increased use or performance of best management practices in working/rural lands.	The impact of runoff from working lands is reduced.		<ul style="list-style-type: none"> Establish enabling conditions (build vision and trust). Identify the best-suited sites and BMPs. Provide technical assistance. Develop economic incentives/remove barriers. Provide education and outreach so that rural landowners don't feel as burdened and recognize the benefits that accrue to them of using BMPs. Use the following barrier reduction/increase motivators: <ul style="list-style-type: none"> Permitting Incentives Percent participation, reach-scale incentive payments Advocate for alternative agricultural approaches that are less environmentally problematic (such as working buffers). 	<ul style="list-style-type: none"> Community is important. Share the burden of achieving environmental benefits. Working lands can include forestry. Identify multi-benefit approaches. 	

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
BIBI4. IDENTIFY STRATEGIES AND APPROACHES TO REDUCE THE IMPACTS FROM FORESTRY ON FRESHWATER QUALITY					
BIBI4.1 Identify strategies and approaches to reduce the impacts from forestry on freshwater quality.	Runoff and other hydrologic impacts from forestry production are reduced.	<ul style="list-style-type: none"> Develop a BIBI forestry component of the Implementation Strategy. 		<ul style="list-style-type: none"> The Stormwater SIAT identified runoff and hydro-modification resulting from forest practices as significant challenges for achieving freshwater quality and BIBI indicator targets. The SIAT recommended that the BIBI Implementation Strategy needs to address runoff from forestry in more depth. The Stormwater SI Lead will work to build out this component of the Implementation Strategy. The SIAT recommended looking for opportunities with small forest landowners, and decommissioning federal roads. 	
BIBI5. CONDUCT WATERSHED SCALE PLANNING TO PROTECT AND RESTORE WATER QUALITY					
BIBI5.1 Conduct watershed-scale planning to protect and restore water quality.	Local land use plans that better protect freshwater quality are developed, and the how and where to place restoration efforts are considered.	<p>Implement watershed-scale BIBI planning processes:</p> <ul style="list-style-type: none"> Develop inter-local agreements for cross-jurisdictional planning. Encourage the state Department of Ecology to finalize and share watershed planning/stormwater control transfer guidance. 	<ul style="list-style-type: none"> Carry out watershed-scale BIBI planning processes. Provide enabling conditions (build trust, recognize value, pre-planning assessments, etc.) Build plan/planning structure (such as the King County BIBI planning approach): <ul style="list-style-type: none"> Develop a region-wide toolkit based on guidance from the state Department of Ecology, and incorporate opportunities for cross-jurisdictional learning. Reconcile/refine current plans. Encourage buy-in to the process and participation from locals. Develop plans. Implement the plans. 	<ul style="list-style-type: none"> Incorporate source control for pollutant load reduction where it limits BIBI. Build from existing efforts, incorporating flexibility. Consider protection versus restoration (watershed characterization can function as a tool to indicate what is relevant and where) Take advantage of opportunities to use watershed approach for addressing toxics: BIBI progress (Excellent, Fair-good), Toxics in Fish Vital Sign indicator progress (work still needed important “poor” basins—see the regional priorities for the Toxics in Fish Vital Sign) Review the Watershed LO retrofit planning as a model for planning for recovery/retrofits. 	

Toxics in Fish Vital Sign: Regional Priorities

Vital Sign Indicator Targets

By 2020, contaminant levels in fish will be below health effects thresholds (levels considered harmful to fish health, or harmful to the health of people who consume them).

The four types of contaminants in this target constitute the following:

- Polychlorinated biphenyls (PCBs)
- Flame retardants (polybrominated diphenyl ethers, or PBDEs)
- Hydrocarbons (products of petroleum or combustion; polycyclic aromatic hydrocarbons, or PAHs)
- Endocrine disrupting compounds (typically from pharmaceuticals, personal care products, but also from a wide range of other chemicals, or EDCs)

Strategy Justification

The strategies outlined below are based on the pre-work completed for the Toxics in Fish Implementation Strategy and on approaches detailed from LIO ecosystem recovery plans. The Stormwater Strategic Initiative Advisory Team identified priority approaches to reduce loading of toxic chemicals, and to better treat water that is already burdened with toxic chemicals. These approaches rely heavily on work done to develop chemical action plans developed to address the indicator target chemicals, and to explore options to ensure complete indicator target coverage through the chemical action plan process. Additionally these strategies look to address air quality that may be creating problems for water quality.

Toxics in Fish Vital Sign Regional Priorities

- TIF1. Reduce pollutants, and increase the authorities to address them. Provide education and incentives for legacy retrofits.
- TIF2. Address stormwater treatment.
- TIF3. Provide infrastructure and incentives to accommodate redevelopment within designated urban centers in urban growth areas.
- TIF4. Reduce the impact of local air pollution on stormwater toxicity.
- TIF5. Develop an Implementation Strategy for Toxics in Fish

Table 12. Regional Priorities for the Toxics in Fish Vital Sign

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
TIF1. REDUCE POLLUTANTS, AND INCREASE AUTHORITES TO ADDRESS THEM					
TIF1.1 Enhance pollutant reduction programs, corrective measures and increase authorities and programs to	Reduce loading to Puget Sound of Toxics in Fish target contaminants, and explore opportunities to develop chemical action plans for endocrine disrupting target contaminants.	<ul style="list-style-type: none"> • Explore local Business license requirements (for training) • PCBs—changes to federal regulations federal regulations (question: do these federal regulations preempt state level regulation?) 	<ul style="list-style-type: none"> • Target chemical families are top chemicals of concerns in Puget Sound, Vital Sign chemicals and existing Chemical Action Plan chemicals. • Implement Chemical Action Plans. • Change behavior through a social marketing approach (identify a polluting audience/sector). 	Consider the following when developing NTA proposals: <ul style="list-style-type: none"> • There may have enough data on toxics, need to incorporate that into the planning process. There may be questions in less well studied areas—Snohomish basin as an example. 	

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
prevent toxic chemicals from entering Puget Sound.		<ul style="list-style-type: none"> Remove legal barriers to developing chemical action plans for endocrine disruptors. 	<ul style="list-style-type: none"> Focus on source control/pollution prevention. Create Chemical Action Plan for EDCs 	<ul style="list-style-type: none"> Prioritize audiences by watershed needs. Focus on the people who don't have the resources/non-permittees. Encourage green purchasing. Tied to watershed planning—reducing impact of legacy development. Use watershed scale approaches when appropriate. 	
TIF2. ADDRESS STORMWATER TREATMENT					
TIF2.1 Address stormwater treatment	Innovative treatment approaches are researched or implemented.		<ul style="list-style-type: none"> Pilot innovative treatment approaches. Carry out research and effectiveness studies on treatment approaches/BMPs. 		
TIF3. PROVIDE INFRASTRUCTURE AND INCENTIVES TO ACCOMMODATE RE-DEVELOPMENT WITHIN DESIGNATED URBAN CENTERS IN URBAN GROWTH AREAS					
TIF3.1 Provide infrastructure and incentives to accommodate re-development within designated urban centers in urban growth areas	Infill to protect water quality is increased, as is the likelihood that developed areas will meet new, stricter stormwater management requirements.	<i>Note: Recent discussions of the Ecosystem Coordination Board indicated that there may be an opportunity to reduce barriers to brownfield re development by increasing the capacity in the state Department of Ecology Brownfields program.</i>	<ul style="list-style-type: none"> Explore Brownfields re-development as a way to both remove contaminants, and to better accommodate growth in already affected areas. 	Consider the following for NTA proposals: <ul style="list-style-type: none"> Cover in the Land Cover and Development Vital Sign and watershed planning for the BIBI indicator for the Freshwater Quality Vital Sign Density is a “BMP”—projects can be proposed under the BIBI watershed planning regional priority 	

APPROACH	DESIRED OUTCOME	DESCRIPTION/CLARIFICATIONS			LOCAL CONTEXT
		POLICY NEEDS	EXAMPLE ACTIONS	PROPOSAL GUIDANCE	
TIF4. REDUCE THE IMPACT OF LOCAL AIR POLLUTION ON STORMWATER TOXICITY					
TIF4.1 Use a source control approach to assess and regulate local sources of air pollution	Air deposition from stationary air pollution sources is reduced.	Change state air quality policy to recognize and regulate emissions that contribute to toxic loading in stormwater. Change state air quality regulatory guidance on monitoring thresholds, and consider cumulative impacts.	<ul style="list-style-type: none"> • Implement community-based air quality monitoring. • Conduct research. • Assess the impacts from changing monitoring thresholds and cumulative impacts. 	<ul style="list-style-type: none"> • The SIAT wanted to note the significant environmental justice implications of stationary sources regarding underrepresented or disadvantaged communities disproportionately bearing the burdens of industrial air pollution. 	
TIF5. DEVELOP AN IMPLEMENTATION STRATEGY FOR TOXICS IN FISH					
TIF5.1 Continue developing an Implementation Strategy for the Toxics in Fish Vital Sign	Priority strategies to achieve the targets for Toxics in Fish indicators are identified.	<ul style="list-style-type: none"> • Finish the Toxics in Fish Implementation Strategy process. 		This may be an opportunity to consider approaches to address spills, and possibly, specifically, spills on bridges.	