

# South Central Action Area Caucus Group Caucus Meeting

Wednesday, May 1, 2019

12:30 PM – 3:30 PM

Puget Sound Regional Council Board Room

1011 Western Avenue, Suite 500, Seattle, WA 98104-1035

## AGENDA

### Meeting Purposes:

- Hear updates on LIO engagement with EPA
- Member updates
- Discuss opportunities for LIO engagement in performance measurement efforts
- Deep Dive: Shoreline Armoring

Time	Topic	Lead/Action
12:30 – 12:40	Welcome & Introductions	Chair
12:40 – 12:45	Review and Approve March 6 Meeting Summary	Chair <i>Decision</i>
12:45 – 12:55	LIO/EPA Engagement Update	Gretchen Muller, Marie Novak <i>Information and discussion</i>
12:55 – 1:10	Good of the Order <ul style="list-style-type: none"><li>• PSP updates</li><li>• ECB Update</li><li>• Member updates</li></ul>	Alexandra Doty, Caucus Members <i>Information and discussion</i>
1:10 – 1:50	LIO Performance Measurement Integration & Work Plan	Chair, Janne Kaje, Gretchen Muller <i>Information and discussion</i>
1:50 – 2:00	BREAK	
2:00 – 3:25	Deep Dive: Shoreline Armoring <ul style="list-style-type: none"><li>• Jennifer Griffiths, WDFW – Shoreline Armoring Implementation Strategy</li><li>• Kollin Higgins, King County – WRIA 9 Shoreline Armoring Assessment</li><li>• Greg Rabourn, King County – Vashon Habitat Restoration Program</li><li>• Maggie Glowacki, City of Seattle – Green Shores for Homes Program</li></ul>	Gretchen Muller, Jennifer Griffiths, Kollin Higgins, Greg Rabourn, Maggie Glowacki <i>Information and discussion</i>
3:25 – 3:30	Wrap-Up & Adjourn	Chair

### Upcoming Caucus Meeting Dates:

1. Wednesday, July 3, 2019 TBD (Puget Sound Regional Council Office)

# South Central Action Area Caucus Group Meeting Summary

March 6, 2019 | 12:30 - 2:30 p.m.

King Conservation District, 800 SW 39<sup>th</sup> St., Renton, WA

## Attendees:

### Members and Alternates

Name	Affiliation	Name	Affiliation
Josh Baldi	King County	Blair Scott	King County
Jason Mulvihill-Kuntz	WRIA 8	Janne Kaje	King County
Doug Osterman	WRIA 9	Kathy Minsch	City of Seattle
Brandy Reed	King Conservation District		

### Other Attendees

Name	Affiliation	Name	Affiliation
Marie Novak	Cascadia Consulting Group	Laura Blackmore	Puget Sound Partnership
Andrea Lai	Cascadia Consulting Group	Kari Stiles	Puget Sound Partnership
Alexandra Doty	Puget Sound Partnership	Scott Redman	Puget Sound Partnership

## Welcome and Introductions

Josh Baldi welcomed everyone to the meeting and reviewed the agenda.

## Review January 2019 Meeting Summary

Doug Osterman moved to approve the meeting summary, Kathy Minsch seconded, and all approved. The January meeting summary was approved as written.

## Ecosystem Coordination Board Representation & Engagement

At a recent ECB meeting there was discussion about how they can better support local elected officials to protect Puget Sound. They plan to convene a subcommittee of ECB members and potentially LIO members. Tristan Contesse is developing a framework before soliciting members including details on subcommittee goals, time commitment, etc. Contact him if you are interested in being involved.

## Puget Sound Regional Performance Management Initiatives

Kari Stiles and Scott Redman from the Partnership gave a [presentation](#) on performance measurement and management efforts underway at the regional level to track progress towards recovery. The Partnership is currently leading three initiatives:

- **Progress Measures:** reporting framework to track progress toward recovery and better understand implementation. It is intended to provide information beyond Vital Signs to measure progress on Action Agenda and Implementation Strategies, provide information to prioritize actions, aggregate NTA information to tell a larger story of recovery work, and reduce duplicative reporting requirements. Measures will include three types of metrics: **activity measures, intermediate progress measures, and Vital Signs**. Working group will share 20-30 candidate progress measures with Science Panel in April and incorporate into the Puget Sound Info website. In phase 2, the Partnership will work with Implementation Strategy leads and PSEMP to develop intermediate progress measures. Common indicator work is being incorporated into this project, and there will be partner engagement opportunities.

- **Vital Signs revision project:** refreshing Vital signs to integrate with progress measures, develop a more selective set of measures (50 currently), as well as integrate climate change measures. A new set of Vital Signs will be presented for Leadership Council approval in June 2020.
- **Puget Sound Info:** Open source database with an online portal that will serve as a repository for all things Puget Sound recovery-related. It currently has modules for Vital Signs, an Action Agenda tracker, and NTA information, and will allow for future modules to be developed or integrated (e.g., DNR's forest health tracker, salmon recovery, Stewardship Partners' Sound Impacts, RCO, etc.). Members are interested in this being a common repository for information beyond the Action Agenda or NTAs since most of the funding and recovery work occurs outside the Action Agenda. Building a robust system that integrates other programs will also help encourage partner commitment. PSP will launch the site in April and evaluate further development priorities and work with EPA on next phases and funding.

Members are interested in engaging with the Partnership on this effort and to help develop intermediate progress measures so metrics developed are useful to the LIO. The Partnership will share activity progress measures in April and work with LIO coordinators to engage with LIO.

### **Action Agenda Updates & NTA Funding Recommendations**

Action Agenda Coordination Group are proposing to send a letter to EPA about lack of decision-making influence and funding, their impacts to participation and engagement, and the potential to develop a different engagement model. They requested LIO Coordinators gauge LIO member interest in signing on.

- LIO members are interested in engaging with state and federal regulators at the watershed level in a way that adds collective impact to local work. Members would like to hear from EPA and the State about how they value interaction at the LIO and watershed scale, and what, beyond funding, can they do to empower and engage with local efforts. However, members are not interested in further discussing the lack of funding provided for capacity or NTAs.

Strategic Initiative Leads distributed their funding recommendation packages on Feb. 15 and hosted an all-Boards [webinar](#) about their evaluation process. SI Leads are interested in feedback on the process and welcome questions or input. Funding packages and process narratives are available at the following links:

- [Habitat SIAT Funding Recommendations](#)
- [Stormwater SIAT Funding Recommendations](#)
- [Shellfish SIAT Funding Recommendations](#)

### **Puyallup-White River & South Central LIO Boundaries**

Alexandra Doty and Janne Kaje shared updates from discussion with PWR LIO leadership about representation for communities that fall in areas with different Lead Entity or LIO boundaries, such as Federal Way, Pacific, Boise and Hylebos Creeks, etc. Both LIOs agree that each community should have the choice to engage with and be served by whichever group makes sense for them. South Central and PWR LIOs will be reaching out to communities to inform them of the LIO division and options for engaging their city in the Lead Entity and LIO processes and will follow up again to share findings.

## Good of the Order

### PSP Updates

- Alexandra will send updates via email.

### Member Updates

- WRIA 9 is producing a video on nearshore armoring and what local governments can do in the next six months and will share when it is completed.
- The Lower Green River will be included on American Rivers' most endangered rivers list in April. King County will draft a response letter.
- King County's science team developed a technical paper estimating 140 billion gallons of stormwater runoff throughout King County, 120 billion gallons of which is untreated. King County is using this information to develop a Regional Clean Water Plan, a 30-year master plan to guide water quality investments. The plan will include a causal model to understand the costs and benefits of suites of water quality investments and a connection to water quality outcomes. King County is working with multiple partners including other jurisdictions, regulators, Tribes, NGOs. This will be a future deep dive topic, and Gretchen will send the memo to LIO members.
- WRIA 8 is beginning a project in early summer to evaluate elevated dissolved oxygen and water temperatures in the Ship Canal, beginning with a state of the knowledge synthesis report and then working on how to address it. This could integrate with the Regional Water Quality Plan.

### Wrap-up & Adjourn

Meeting adjourned at 2:40 pm.

DRAFT

VITAL SIGN	DESCRIPTION	PUGET-SOUND WIDE VITAL SIGN 2020 ECOSYSTEM RECOVERYTARGET, IDENTIFIED BY PSP	LIO GOALS AND/OR CONTRIBUTION TOWARD VITAL SIGN TARGET	DATA SOURCE
<b>Chinook</b>	The South Central LIO has a longstanding regional commitment to recovering chinook that is reflected by its widespread local participation in WRIA salmon recovery plans. Pressures affecting chinook recovery are consistent with the pressures for summer stream flows and shoreline armoring, primarily adverse impacts arising from new and existing development. The South Central LIO recognizes that this Vital Sign requires a multi-faceted approach that includes implementation of approaches to address shoreline armoring, floodplain restoration, and land development and cover, summer stream flows, and freshwater quality. In addition, recovery of chinook will require completion of the restoration projects identified in the WRIA 8 & 9 salmon recovery plans and amelioration of the impacts of large infrastructure (such as Ballard Locks, Howard Hansen Dam, and Mud Mountain Dam).	By 2020, stop the overall decline and start seeing improvements in wild chinook abundance in 2-4 populations in each biogeographic region	<b>WRIA 8 (Cedar &amp; Sammamish Chinook populations):</b> <ul style="list-style-type: none"> <li>• Abundance of natural-origin spawners</li> <li>• Adult Chinook productivity (returns/spawner) &amp; egg-to-migrant survival rate</li> <li>• Juvenile abundance</li> <li>• Juvenile productivity (egg-to-migrant survival rate)</li> </ul>	<ul style="list-style-type: none"> <li>• WDFW, King County, Seattle Public Utilities, Muckleshoot Indian Tribe, City of Bellevue</li> <li>• NOAA Fisheries 5-Year Status Reviews</li> <li>• WDFW</li> <li>• WDFW</li> </ul>
<b>Eelgrass</b>	Sediment transport issues from the interruption of transport, overwater coverage, toxins and nutrients, and shoreline armoring are the pressures most affecting eelgrass health in the Action Area. Similar to those for estuaries, the approaches for addressing this Vital Sign include restoration projects and other efforts to address shoreline armoring and improve water quality in shoreline areas.	Eelgrass extent in 2020 is 120 percent of area measured in the 2000-2008 baseline period.	Not yet developed.	
<b>Estuaries</b>	While the South Central Action Area is heavily urbanized and may not be able to contribute substantially to the Sound-wide aggregate target for increased acres of restored estuarine wetlands, estuarine wetland restoration is important in select areas within the Action Area and will contribute to the quality of life for many residents and economic health of the area. Development is the single biggest priority pressure affecting estuarine health within the Action Area. Other pressures include impacts from agriculture, shoreline armoring, and the presence of dams (e.g., the Ballard Locks) which adversely impact fish passage. Key approaches to alleviating these pressures include addressing shoreline armoring (e.g., by enforcing existing regulations that increase removal of armoring and encourage its	By 2020, all Chinook 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) and 7,380 quality acres are restored basin-wide, which is 20 percent of restoration need.	Not yet developed.	

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	replacement with soft armoring), carrying out priority restoration projects including land acquisition, engaging landowners so that protection and restoration can occur on private properties, and reducing or preventing pollution in the Duwamish estuary and other highly industrialized areas.			
<b>Floodplains</b>	New and existing development, as well as redevelopment, affects floodplain health within the Action Area. The South Central LIO's approach emphasizes the implementation of high priority floodplain restoration projects. Many of these projects are multi-objective in nature, providing benefits to habitat, flood hazard reduction, recreation, and/or agricultural resilience. With such a prevalence of levees, other hard armoring, and loss of riparian vegetation within the Action Area, projects such as the Cedar River Floodplain Acquisition that enable adequate levy setbacks and the Green River System-Wide Improvement Framework can serve as successful models for floodplain restoration. Additional approaches include supporting outreach and education programs that result in behavior change, and actions that reduce shoreline armoring including incentive-based programs that address conflicting land uses between farms and fish.	By 2020, 15 percent of degraded floodplain areas are restored or floodplain projects to achieve that outcome are underway across Puget Sound and there is no additional loss of floodplain function in any Puget Sound watershed relative to a 2011 baseline.	<p>By 2021:</p> <ul style="list-style-type: none"> <li>Restore 430 acres of floodplain and complete 4 miles of levee setbacks.</li> <li>Conduct assessments to identify future needs and priorities.</li> <li>Have floodplain landowner engagement programs in place in each of the three major watersheds, including targeted tree planting on 1,200 acres in WRIA 9's Lower Green River sub-watershed.</li> </ul> <p>WRIA 8:</p> <ul style="list-style-type: none"> <li>Floodplain acres reconnected/restored on the Cedar River</li> <li>Miles of levees removed or setback</li> <li>Wood volume (rivers)</li> <li>Wood volume (streams)</li> </ul>	<p>King County GIS layers; flood facilities inventory; as-builts from project sponsors</p> <p>WRIA 8 capital project implementation monitoring</p> <p>Contracted inventory (every five years)</p>

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<b>Freshwater Quality</b>	<p>Increased development, wastewater discharge, and stormwater and agricultural runoff are the main pressures affecting freshwater quality—the same pressures that also affect marine water quality. Freshwater concerns are prevalent throughout the Action Area (B-IBI scores, freshwater quality index, TMDLs, and listings of 303d impaired waters); given the extent and diversity of the problems, a multi-faceted approach that uses sub-strategies contained in both the PSP’s stormwater and habitat strategic initiatives is needed. This includes enforcing point-source and non-point-source regulations (including onsite septic regulations), improving source control, taking action to address problems from existing development, protecting or restoring riparian corridors, and coordinating watershed-based approaches such as the Newaukum Creek project. This project represents a coordinated investment strategy managed by King Conservation District that delivers targeted programming and relies on citizen scientists to conduct monitoring. King County has been a regional and national leader in utilizing B-IBI as a very good indicator of fish health in streams and is currently leading an effort to identify the streams to target to improve in order to achieve the 2020 target set by the Puget Sound Leadership Council.</p>	<p>By 2020, at least 50 percent of all monitoring stations with suitable data have Freshwater Water Quality Index scores of 80 or higher.</p> <ul style="list-style-type: none"> <li>• By 2020, achieve a decrease in the number of impaired waters (303(d) list) in Puget Sound freshwaters.</li> <li>• Insects in Small Streams</li> <li>• By 2020, 100 percent of Puget Sound lowland stream drainage areas monitored with baseline B-IBI scores of 42-46 or better retain these “excellent” scores and mean B-IBI scores of 30 Puget Sound lowland drainage areas improve from “fair” to “good.”</li> </ul>	<p>By 2021:</p> <ul style="list-style-type: none"> <li>• Reduce toxics loading by treating 200 acres through retrofits.</li> <li>• Seek (e.g., through a future NTA) to develop a program to routinely sweep arterial streets with high efficiency sweepers and enroll jurisdictions in the South Central LIO in it. Develop specific targets, including effectiveness/adaptive management monitoring.</li> <li>• Improve flashiness and low flows in small streams through implementation of infiltration techniques and private landowner and contractor education to 100 contractors and 1,000 landowners (&gt;75% of contractors) on green stormwater infrastructure techniques.</li> <li>• Transition current Puget Sound Starts Here to conduct more targeted outreach that results in measurable behavior change.</li> </ul>	

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			<ul style="list-style-type: none"> <li>• Survey local governments to identify which have active or completed projects &amp; plans to restore creek reaches; consider which might be appropriate for using B-IBI as an indicator of restoration effectiveness and lend support by seeking funding for more projects and restoration plans.</li> <li>• Further develop the Stream Benthos Database.</li> </ul> <p>WRIA 8:</p> <ul style="list-style-type: none"> <li>• Number of cold water sources/refuges protected and/or created</li> <li>• Water Quality Index (streams and rivers)</li> <li>• B-IBI</li> </ul> <p>Our Green Duwamish:</p> <ul style="list-style-type: none"> <li>• Partner with OGD efforts to track progress on stormwater management actions happening in the Green/Duwamish watershed. <ul style="list-style-type: none"> <li>○ E.g. Acres treated through stormwater retrofit projects, miles</li> </ul> </li> </ul>	<p>WRIA 8 project implementation monitoring</p> <p>King County</p>



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			<p style="text-align: right;">of roadway swept, etc.</p> <p>King Conservation District</p> <ul style="list-style-type: none"> <li>Landowner education and incentives for riparian restoration projects, # of workshops and # of participants.</li> </ul>	King Conservation District
<b>Land Cover and Development</b>	<p>Pressures resulting from new and existing development affect not only floodplains and estuaries, but also land development and cover. This Vital Sign is important in populated areas—and its management will become more challenging over time as significant population growth is projected for the Action Area and land continues to be developed. The approach to this target includes prioritizing areas for protection, enforcing existing critical area regulations, continuing to direct development to urban areas, protecting existing forested and agricultural land, and increasing tree planting (reforestation). Additional approaches include building new and maintaining existing green stormwater infrastructure (GSI).</p>	<p>By 2020, average annual loss of forested land cover to developed land-cover in non-federal lands does not exceed 1,000 acres per year and 268 miles of riparian vegetation are restored or restoration projects are underway.</p> <ul style="list-style-type: none"> <li>By 2020, the proportion of basin-wide growth occurring within Urban Growth Areas is at least 86.5% (equivalent to all counties exceeding goal by 3%) and all counties show an increase over their 2000-2010 percentage.</li> <li>Basin-wide, by 2020, loss of vegetation cover on indicator land base over a 5-year period does not exceed 0.15% of the 2011 baseline land area.</li> </ul>	<p>By 2021:</p> <ul style="list-style-type: none"> <li>Restore 31 net miles of riparian habitat, including marine shoreline riparian habitat.</li> <li>Maintain UGA line and ensure that ≥87% of growth occurs within UGA.</li> <li>Achieve no net loss of forest cover.</li> <li>Retain 120 acres in forested condition and active stewardship through technical and financial assistance programs, engaging 6 parcels/landowners per year.</li> </ul> <p>WRIA 8:</p> <ul style="list-style-type: none"> <li>% forest within 200' of rivers</li> <li>% forest within 200' of anadromous streams</li> <li>% natural riparian within 25' of lake shoreline</li> </ul>	<p>NOAA high resolution land cover</p> <p>King County aerial</p>

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			<ul style="list-style-type: none"> <li>• Linear feet of 'natural' lake shoreline (un-hardened)</li> </ul> <p>King Conservation District</p> <ul style="list-style-type: none"> <li>• Investment in urban forest stewardship projects</li> <li>• # of urban forestry stewardship workshops and # of participants</li> <li>• # of landowner site visits</li> <li>• # of forest stewardship projects</li> <li>• # of acres treated and enhanced</li> </ul>	<p>and oblique photography</p> <p>King Conservation District</p>
<b>Marine Sediment Quality</b>	<p>Many of the same pressures that adversely impact water quality (development, wastewater discharge, and runoff) also affect marine sediment quality, although sediment quality is also affected by historical (legacy) activities. This Vital Sign is important to the South Central LIO because contaminated sediments may be present in parts of the Action Area such as Elliot Bay, which has been listed as Superfund sites. The South Central LIO's approach to addressing this Vital Sign emphasizes the enforcement of existing regulations and programs, noting that regulatory-driven cleanup of contaminated sediments is underway in many parts of the Action Area and more is needed in the future. Other priority approaches include increasing attention to source control and fixing problems caused by existing development to protect sediment quality and prevent recontamination of cleaned-up areas. The City of Tacoma's program of monitoring, source identification, and stormwater system cleaning has garnered national attention and is a good model.</p>	<p>By 2020, all Puget Sound regions and bays achieve the following: Chemistry measures reflect "minimum exposure" (i.e., mSQS is &lt;0.1 and the SCI is &gt;93.3), Sediment Quality Triad Index (SQT1) scores reflect "unimpacted" conditions (i.e., SQT1 values &gt;83), and no measurements exceed the Sediment Quality Standards chemical criteria set in the Washington State sediment management standards.</p>	<p>Not yet developed.</p>	
<b>Marine Water Quality</b>	<p>Increased development, wastewater discharge, and stormwater and agricultural runoff are the main pressures affecting marine water quality. The Vital Sign target for marine water quality is dissolved oxygen caused by human impacts. Though marine</p>	<p>By 2020, human-related contributions of nitrogen do not result in more than 0.2 mg/L reductions in dissolved</p>	<p>Not yet developed.</p>	

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	<p>water quality is not a significant problem in the Action Area at present, it is a priority Vital Sign for the South Central LIO because it is highly valued, and activity in the Action Area may adversely impact dissolved oxygen in other parts of Puget Sound where marine water quality is a major problem. The South Central LIO recommends that this Vital Sign be expanded to include toxins, pathogens, and water temperature. The approach to managing this Vital Sign is to continue to enforce existing regulations, support TMDLs that address these problems, and continue monitoring to ensure problems do not arise.</p>	<p>oxygen levels anywhere in Puget Sound.</p>		
<p><b>Shoreline Armoring</b></p>	<p>Addressing shoreline armoring is very important to the LIO, as it is a pressure that affects several Vital Signs and much of the marine shoreline is armored [2]. Shoreline armoring also affects many of the LIO's freshwater ecosystems as well. The approach toward this target includes efforts to increase compliance with existing regulations (e.g., through education and increased enforcement), the capacity of local jurisdictions to protect shorelines, and awareness in the private sector. Additional approaches include specific shoreline restoration projects and programs that promote voluntary removal or reduction of shoreline armor by landowners. The LIO is also considering revitalizing the Green Shorelines program, which uses vegetation and natural materials to reduce negative impacts on nearshore habitat for plants, fish, and wildlife while protecting property from erosion. In Lake Washington and Lake Sammamish, alternative development options such as green shorelines are considered an essential step for salmon recovery. Opportunities to promote green shorelines may appear during initial development or during shoreline re-development.</p>	<p>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).</p> <p>Feeder bluffs receive strategic attention for removal of armoring and avoidance of new armoring</p> <p>Soft shore techniques use for all new and replacement armoring, unless it is demonstrably infeasible.</p>	<p>By 2021:</p> <ul style="list-style-type: none"> <li>Remove a greater amount of shoreline armoring than new armoring added in the LIO's marine nearshore, and shorelines of Lake Washington, and Lake Sammamish.</li> <li>Restore 10,700 feet of marine shoreline and 7 pocket estuaries, and protect 4 miles of marine shoreline.</li> <li>Improve implementation, compliance, and enforcement of updated Shoreline Master Plans.</li> </ul> <p>WRIA 8:</p> <ul style="list-style-type: none"> <li>Linear feet of 'natural' lake shoreline (un-hardened)</li> <li>Miles of marine shoreline treated for armor</li> </ul>	<p>King County aerial and oblique photography</p>

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			<p style="color: red;">modification/removal</p> <ul style="list-style-type: none"> <li>• Miles of marine shoreline treated for beach nourishment</li> <li>• % natural riparian within 25' of lake shoreline</li> <li>• % nearshore stream mouths accessible to juvenile chinook (nearshore)</li> </ul> <p style="color: green;">King Conservation District</p> <ul style="list-style-type: none"> <li>• Restoration projects completed</li> <li>• Bulkheads removed</li> <li>• Landowner site visits</li> <li>• # of workshops and # of participants</li> </ul>	<p style="color: red;">WRIA 8 capital project implementation monitoring</p> <p style="color: green;">King Conservation District</p>
<b>Summer Stream flows</b>	<p>The single largest pressure that affects summer stream flows is development, and the Action Area is heavily urbanized with projected growth rates promising even more development in upcoming years. Another pressure is climate change. The approaches toward achieving the Vital Sign target are shared with several other Vital Signs and include addressing land development and cover and removing bank armoring to allow rivers to reconnect to sources of cool groundwater. Additional approaches include emphasizing education and working with the agricultural community, maintaining existing regulations (such as instream flow rules), and reducing consumptive water use (which will likely become more important with climate change and increased population pressure).</p>	<p>Increase, maintain, monitor, and/or restore summer flows in 12 key rivers, including those regulated by dams (Nisqually, Cedar, Skokomish, Skagit, and Green Rivers), and those that are not (Puyallup, Dungeness, Nooksack, Snohomish, Deschutes, North Fork Stillaguamish, and Issaquah Rivers).</p>	<p>Not yet developed.</p>	
<b>Toxics in Fish</b>	<p>Many of the same pressures that adversely impact freshwater quality (development, wastewater discharge, and runoff) also affect toxics in fish. Studies have shown that eliminating fish consumption advisories (due to toxic contamination) in</p>	<p>By 2020, toxics in fish are below threshold levels. Target is achieved if each of the following conditions is</p>	<p>Not yet developed.</p>	

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	<p>freshwater systems such as Lake Washington will require a significant reduction in stormwater runoff. The South Central LIO has prioritized approaches that address source control such as street sweeping, increased research on contaminants, and removal of legacy pollutants. Addressing problems from existing development is a top priority for the South Central LIO since it is the most populated and developed Action Area in the Puget Sound. Studies have shown that eliminating fish consumption advisories (due to toxic contamination) in freshwater systems such as Lake Washington will require significant reduction of contaminated stormwater runoff. Fish consumption advisories present an equity and social justice issue and negatively impact quality of life and recreational opportunities. Seattle Public Utilities' GSI Program, which has led to numerous innovative street redesigns and retrofits to reduce stormwater contamination, has won a national award and is a national model for reducing contaminated runoff.</p>	<p>observed in monitoring results from 2019 or 2020:</p> <ul style="list-style-type: none"> <li>• Bioaccumulative toxics – 95 percent of samples meet the following thresholds:</li> <li>• Concentrations of PCBs and PBDEs in Puget Sound herring, English sole, salmon and steelhead are below adverse effects thresholds (e.g., 2,400 ng PCB/g lipid and 1,400 ng PBDE/g lipid).</li> <li>• Concentrations of PCBs and other bioaccumulative toxics in Puget Sound herring, English sole, salmon, and steelhead are below human-health screening levels (e.g., Department of Health screening levels for recreational or subsistence consumption rates, currently 33 ng PCB/g and 10 ng PCB/g fish tissue, respectively for a non-cancer endpoint).</li> <li>• PAHs and endocrine disrupting compounds – all samples meet the following thresholds: <ul style="list-style-type: none"> <li>• English sole in Puget Sound exhibit no PAH-related liver disease.</li> <li>• English sole in Puget Sound exhibit no toxics-related reproductive impairment.</li> </ul> </li> <li>• PAHs in herring are below an effects threshold.</li> </ul>		
<p><b>Onsite Sewage Systems</b></p>	<p>This Vital Sign is prioritized by the South Central LIO because of the unknown but potentially significant impact of onsite septic systems (OSS) in the region. It is estimated that there may be as many as 100,000 onsite septic systems located in the Action Area, and the location, status, and extent of the problems caused by these systems are not known. As a result, the approaches emphasize additional capacity for inventorying OSS systems, enforcement of existing regulations for inspection and maintenance, other resources (such as revolving loan programs) to support increased compliance, ongoing</p>	<p>By 2020, all on-site sewage systems in marine recovery areas and other areas with equivalent enhanced operation and maintenance programs are inventoried, 95 percent are current with inspections, and all failed systems are fixed.</p> <p>Designations of marine recovery areas or designation of other areas with equivalent enhanced operation and</p>	<p>By 2021:</p> <ul style="list-style-type: none"> <li>• Continue work in Vashon Marine Recovery Area, make measurable progress toward potentially expanding Vashon Marine Recovery Area.</li> </ul>	

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	maintenance, and education and outreach to private residents and businesses.	maintenance are expanded to 90 percent of marine shorelines not primarily served by sewers.	<ul style="list-style-type: none"> <li>• Expand septic system management in priority TMDL areas.</li> <li>• Make measurable progress towards fixing all onsite sewage systems in marine recovery areas and other areas, with equivalent enhanced operation and maintenance programs within our LIO until systems are inventoried and all failed systems are fixed.</li> </ul>	
<b>OTHER</b>				