

Puget Sound Human Wellbeing Vital Signs

Draft Mar. 23, 2016

Vital Sign	Description	Scope	Indicators	Specific Metric	2020 Recovery Target
<b>GOAL: HEALTHY HUMAN POPULATION</b>					
<b>Shellfish Beds</b>	Restoring water quality at designated shellfish growing areas is an important contribution to sustaining the provisioning services of the Puget Sound ecosystem. This Vital Sign tells us about the status of harvestable shellfish beds. The closure or reopening of a shellfish bed depends on water quality. The Puget Sound nearshore is home to an amazing abundance of oysters, clams, mussels, and other shellfish that provide opportunities for recreational shellfish harvest and form the basis for a multi-million dollar industry that supports thousands of jobs. However, shoreline pollution sources, including wastewater treatment plants, individual on-site sewage systems, marinas, farms, and other activities can negatively impact the shellfish areas and lead to human health risks.	<p><b>Includes:</b> All classified shellfish beds (commercial)</p> <p><b>Does not include:</b> Any non-classified shellfish beds. See related Vital signs for coverage of other shellfish beds and related pressures: <b>On-site Sewage Systems, Outdoor Activities, Local Foods, Cultural Practices</b></p>	Acres of harvestable shellfish beds (existing indicator)	Acres of upgraded and downgraded shellfish beds in Puget Sound equating to total acres of harvestable beds. Acres that are upgraded from either the restricted or prohibited class result in gains toward the target.	A net increase of 10,800 harvestable shellfish acres, including 7,000 acres where harvest had been prohibited, between 2007 to 2020.
<b>On-site Sewage Systems</b>	A functioning, resilient Puget Sound ecosystem is defined to include management of wastewater in a manner that protects aquatic resources and human health. This Vital Sign helps us track progress on management of on-site sewage systems (OSS) and the protection measures put in place to protect nearshore areas. OSS, commonly known as septic systems, are widely used around Puget Sound to treat sewage from properties not served by sewers. Leakage of sewage from OSS into Puget Sound water, both freshwater and marine, causes poor water quality and can lead to public health risks.	<p><b>Includes:</b> All on-site sewage systems (large and small) and all areas potentially covered by Marine Recovery Areas. May also include management of wastewater discharged to sewer systems.</p> <p><b>Does not include:</b> On-site septs in areas outside of Marine Recovery Areas Sources of pathogen and other pollution from sources other than domestic and commercial wastewater.</p>	<p>(1) On-site sewage inspection and repair; (existing indicator)</p> <p>(2) Extent of Marine Recovery Areas program. (existing indicator)</p>	<p>(1) Metrics include: Percentage of inspection levels, percentage of systems inventoried and documented, percentage of failures repaired</p> <p>(2) Metric is the percentage of coverage of MRAs in unsewered shorelines.</p>	<p>(1) Inventory all on-site sewage systems in Marine Recovery Areas and other specially designated areas; be current with inspections at 95%; and fix all failures;</p> <p>(2) Phase in an expansion of Marine Recovery Areas and other specially designated areas to cover 90% of Puget Sound's unsewered marine shorelines.</p>

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<b>Outdoor Activity</b>	The <b>Outdoor Activity Vital Sign</b> tracks Puget Sound residents' participation in nature-based recreation or work activities. There are inherent physical, psychological and social health benefits to spending time outdoors in nature, whether recreating or at work. Recreational activities include wildlife-watching, nature-walking, fishing, clamming, hiking, bicycling, canoeing, kayaking, camping, art in the natural environment, etc. The original Swimming Beaches Vital Sign is now included as one of three indicators under the Outdoor Activity Vital Sign. Occupations that depend on outdoor activities include logging, fishing, aquaculture, agriculture, trail maintenance and nature-based tourism. Whether for recreational or occupational purposes, participation in nature-based outdoor activities is beneficial in multiple ways; physical movement, breathing fresher air, absorbing vitamin D, and clearing one's thoughts all contribute to improved human wellbeing. Nature-based outdoor activities often include spending time with others as well and research has shown that positive social interactions are one of the greatest contributors to human wellbeing.	<b>Includes:</b> All nature-based recreation and nature-based work activities	(1) Swimming beaches Indicator (existing indicator)  (2) Nature-based recreation (Survey Based)  (3) Nature-based work (Survey based)	(1) Percent of swimming beaches meeting fecal bacteria standards  (2), (3) Survey questions	(1) To have all monitored beaches in Puget Sound meet EPA standards for what is called enterococcus, a type of fecal bacteria.  (2), (3): TBD <sup>1</sup>
<b>Air Quality</b>	The Air Quality Vital Sign addresses the status of air quality across Puget Sound. A foundation of human wellbeing is breathing fresh air. In the Puget Sound, sources of air quality degradation include diesel exhaust, industrial emissions, and burning wood and debris. Air quality status varies by physical location and across an urban-rural gradient due to weather patterns, topography and pollution sources. Degraded air disproportionately affects young children and elderly as well as those who have respiratory diseases and asthma. Further, vulnerable communities are often disproportionately exposed to degraded air quality. An estimated 1,100 people die annually in the Puget Sound due to outdoor air pollution.	<b>Includes:</b> Air quality across all of Puget Sound, urban to rural. Specific air quality parameters TBD	Air quality indicator TBD	Specific metric TBD	TBD

<sup>1</sup> For many Human Wellbeing Vital Signs it may not be appropriate to set targets.

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Local foods	The <b>Local Foods Vital Sign</b> broadly addresses the quality and availability of Puget Sound food resources for traditional, sustenance, and recreational uses. Eating local foods provides a suite of human wellbeing benefits. High quality local foods often contain fewer or no chemical fertilizers and pesticides and tend to be higher in nutrition, thus contributing to physical health. The act of collecting, preparing and sharing such foods maintains cultural knowledge and practices and often builds social relationships. Additionally, the greater access to local foods may decrease emissions and prevent economic loss associated with importing foods from outside the region. The Puget Sound region provides an abundance of locally harvestable foods, including finfish and shellfish, animals and birds, and plant-based greens, roots, nuts and fruits.	<p><b>Includes:</b> All local marine, freshwater and terrestrial plants, fungus, and animals harvested as food for traditional, sustenance, and recreation use. Includes fish, shellfish, wild game/fowl and plants/mushrooms</p> <p><b>Does not include:</b> All farmed species and crops</p>	<p>(1) Locally harvestable foods (Survey Based)</p> <p>(2) Recreational shellfish beds (Existing data)</p>	<p>(1) Survey questions</p> <p>(2) Specific metric to be developed</p>	TBD
Drinking Water	This Vital Sign would address the quality of all drinking water systems, including large and small public and private drinking water systems. Access to safe drinking water is a critical determinant of human wellbeing. In urban areas, cities provide treated drinking water to Puget Sound residents. In more rural areas, small public water systems and wells are harder to track, but can be threatened by ground and surface water infiltration; the use of pesticides, herbicides and fertilizers; and issues with water storage and distribution systems.	TBD. Hopefully to include all drinking water systems including large and small public systems and private wells	TBD	Specific metric TBD	TBD
<b>HUMAN QUALITY OF LIFE</b>					

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<b>Economic Vitality</b>	This Vital Sign will tell us how well natural resource-based industries are doing economically over time as compared to non-natural resource-based industries. As indicated in the Legislative Statute, the Partnership is intended to manage for functioning ecosystems that support not only natural systems but social and cultural wellbeing and economic vitality as well. While some aspects of economic vitality may not be sensitive to Puget Sound recovery efforts, it is important to be aware of annual perturbations in industries that may be affected. These natural resource-based industries have a long-standing history in the region and their existence is important to residents of the area as they provide jobs, income, a sense of identity, cultural heritage and sense of place.	<p><b>Includes:</b> Natural resource-based industries including fisheries (salmon, shrimp, crab, shellfish), shellfish aquaculture, timber, non-timber products, agriculture, mining, and tourism.</p> <p><b>Does not include:</b> Industries that do not directly depend on the health of the Puget Sound ecosystem. (although they are used as the comparison for the second indicator)</p>	<p>(1) Natural resource industry output (GDP) (Likely from existing data)</p> <p>(2) Percent of GDP in natural resource-based industries to total GDP (likely from existing data)</p> <p>(3) Employment in natural resource industries (likely existing data)</p>	TBD, highly dependent on data availability	TBD
<b>Cultural Wellbeing</b>	The <b>Cultural Wellbeing Vital Sign</b> addresses the extent to which people feel able to maintain their cultural traditions. The Puget Sound region is home to human populations from diverse cultures, some with long-held connections to place and others who have more recently arrived. Cultural practices and knowledge systems are shaped by ecosystems and are critical to human wellbeing because they provide a sense of belonging, create the foundation for moral development, and define rules for social interaction. There is no question that many of the cultural traditions held by Puget Sound residents are dependent on the health of Puget Sound ecosystems.	<p><b>Includes:</b> All cultural practices and traditions related to people's engagement with the natural environment for recreational or livelihood purposes.</p>	Participation in cultural practices	Survey questions	TBD

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<b>Good Governance</b>	The Good Governance Vital Sign provides information on the health of our management process and the degree to which we are effectively engaging the Puget Sound community in the recovery effort. Measures of governance go beyond the basic functions of government to inform us about the broader formal and informal mechanisms for decision-making and policy implementation. These measures are the adjectives describing the decision-making process. According to the United Nations, “good governance has eight major characteristics. It is participatory, consensus oriented, accountable, transparent, responsive, effective and efficient, equitable, and inclusive and follows the rule of law. It assures that corruption is minimized, accounts for the views of minorities and assures that the voices of the most vulnerable in society are heard in decision-making. It is also responsive to the present and future needs of society.” Engagement with local residents through the pilot projects revealed that some of the primary sources of individual stress revolve around not feeling empowered to access and make decisions about natural resources, particularly for those in rural areas.	<p><b>Includes:</b> Governance structure and process related to natural resource protection, restoration and management</p> <p><b>Does not include:</b> Measures of government structure or governance related to non-environmental decision making</p>	<p>Index: Good Governance Index</p> <p>(1) Opportunity to influence decisions</p> <p>(2) Freedom to make decisions</p> <p>(3) Trust in government</p> <p>(4) Representation in community and government leaders</p> <p>(5) Access to information</p>	Survey Questions	TBD

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Sense of Place	Sense of place is defined as the extent to which people identify with and feel positively attached to a specific place. Several studies have demonstrated that not only does a strong sense of place contribute to human wellbeing, but that it can also contribute to a desire to protect the natural environment. Sense of place is clearly linked to other human wellbeing measures, particularly cultural and psychological measures, and is thus an informative, all-encompassing measure of wellbeing.	<p><b>Includes:</b> Sense of place as it relates to the natural environment of Puget Sound</p> <p><b>Does not include:</b> Sense of place related to any other aspects of Puget Sound</p>	<p>Index 1: Sense of place</p> <p>1a. Positive connections to the region</p> <p>1b. Sense of stewardship</p> <p>1c. Pride of place</p> <p>Index 2: Psychological wellbeing</p> <p>2a. Inspiration</p> <p>2b. Stress reduction</p> <p>3. Overall life satisfaction</p>	<p>(1) (2) Survey questions</p> <p>(3) Existing national survey data</p>	TBD

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<b>Sound Stewardship</b>	<p>The Sound Stewardship Vital Sign tells us about the effectiveness of our management actions related to outreach, education and social marketing and the degree to which engagement in stewardship contributes to people’s wellbeing. The myriad problems Puget Sound faces all have one common denominator: human practices and behaviors. Many common day-to-day household behaviors seem benign on their own, but when multiplied by 4.5 million residents their cumulative effect can significantly harm environmental health. Small behavioral changes, on the part of individuals, can negate those impacts. Likewise, when people participate collectively in actions to improve environmental health, their actions can be equally significant. Although people pose the greatest threats to the natural environment of Puget Sound, engagement of citizens in protection and restoration efforts offers the greatest opportunities for recovering Puget Sound.</p>	<p><b>Includes:</b> Activities and behaviors that positively and negatively affect the quality or extent of the Puget Sound natural environment</p>	<p>(1) Sound Behavior Index</p> <p>(2) Engagement in Stewardship Activities</p>	<p>(1) The Sound Behavior Index Value (existing indicator)</p> <p>(2) Survey question</p>	<p>(1) No target adopted</p> <p>(2) TBD</p>