

**Puget Sound Partnership
DRAFT Dashboard of Ecosystem Indicators
(20 Proposed Dashboard Measures)**

Strategic Outcome Family of Measures (& Team Champion(s))	Indicator Champion	Action Agenda Goal	HLI - Yes = X	D I M E N S I O N	M E A S U R E #	Strategic Outcome Measure Names	Operational Definitions	Data Available?	Additional Costs?	Data Source	Data Frequency	Good arrow, up or down?	Comments
Performance (John Becker & Mary Beth Brown, Puget Sound Partnership)	Jim Cahill, Puget Sound Partnership			p R O G R A M		Funding for the Sound	Federal, state and local funding allocated to the Action Agenda	Yes	No	Puget Sound Annual Partnership - Jim Cahill - jim.cahill@psp.wa.gov	Annual	Up	
	Mary Beth Brown, Puget Sound Partnership			p R O G R A M		Action Agenda Engagement	% of Action Agenda items actively being addressed	Yes	No	Puget Sound Annual Partnership - Mary Beth Brown - mary.beth.brown@psp.wa.gov	Annual	Up	
People (Trina Wellman, University of Washington; Jacques White, Long Live the Kings; & Angela Grout, Environmental Protection Agency)		Human Well-being		H U M A N		Puget Sound Trends Index	See Puget Sound Regional Council website			Puget Sound Regional Council - Rick Olsen ROlson@psrc.org	Monthly	Mixed	This index reflects what is guiding the region's economic development and sustainable growth goals; Includes four counties (King, Kitsap, Snohomish, and Pierce); there is nothing like it elsewhere that covers the geographic scale and time frame that we need

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	Dave Ward, Puget Sound Partnership	Human Well-being		H U M A N		Puget Sound Behavioral Index		Under construction	No, not until late in 2011		Puget Sound Partnership - Dave Ward - dave.ward@psp.wa.gov	Biennial	Up	This is being designed to be a series of survey questions to be asked of citizens from throughout Puget Sound starting in 2011. The nature of the survey questions is to focus on people's support for making the Sound healthy by 2020 by way of both their own behavioral change and their willingness to have their tax dollars be spent on this issue.
		Human Well-being		H U M A N		Commercial Fisheries Harvest (tribal and non-tribal)		Annual wild harvest (pounds) of tribal and non-tribal commercial fisheries (salmon, crab, shellfish, groundfish, shrimp) in Puget Sound (wild)			Pacific Fisheries Information Network - http://pacfin.psmfc.org - State of the Sound Department of Ecology and Health	Annual	Mixed	PacFin data base reported annually by Pacific Marine Fisheries Commission.
	Jessica Archer, Department of Health/ Ecology	Human Health		H U M A N		Swimming Beaches		Percent of core beaches meeting water quality standards during swim season (allowing one exceedance)			Department of Ecology and Health		Up	This measure looks at a set of core beaches, which have been monitored every year since 2004 by the Washington BEACH Program. The percent of core beaches meeting standards reflects the fecal bacteria water quality at swimming beaches and the human health risk of playing at these beaches. Ecology can report quarterly, but yearly 1/1 is more appropriate as it covers the full season. The baseline is 62% and the target is 75% by 1/1/2013.

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	Angela Grout, US Environmental Protection Agency	Human Health		H U M A N	Shellfish Beds Restored		Number of acres of shellfish bed growing areas impacted by degraded or declining water quality where harvest restrictions have been lifted	Yes	No	Department of Health		Up	
		Human Well-being		H U M A N	Recreational fishing permit sales		# of recreational fishing permits sold annually in Puget Sound			Department of Fish and Wildlife recreational fishing permit sales - data collected by license type, year issued and number of licenses – Eric Kraig- Eric.Kraig@d fw.wa.gov		Mixed	Participation rates are indicative of the quality of the recreational experience and access to the resource....lots to harvest (less management restrictions and shellfish beds closed) the greater the participation; 2006 (most recent) Outdoor Recreation Survey, Washington State Recreation and Conservation Office. Recreational regions and data collected by counties every five years; Present data in stacked form
Water (Rob Duff)	Christopher Krembs, Ecology	Water Quality	X	N A T U R A L	Marine Water Quality	Marine	Marine Water Quality Index			Department of Ecology	Annual	Up	This index has been recently formulated and presented to the Science Panel, local governments and the CERF Conference last November. No formal publication as yet. <u>Contact: Christopher Krembs</u>

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	Dave Hallock, Ecology	Water Quality	X	N A T U R A L	Freshwater Quality	Freshwater	Freshwater Water Quality Index			Department of Ecology	Monthly	Up	The Water Quality Index (WQI) is intended as a tool to summarize and report Ecology's Freshwater Monitoring Unit's routine stream monitoring data. The WQI is a unitless number ranging from 1 to 100; a higher number is indicative of better water quality. Scores are determined for temperature, pH, fecal coliform bacteria, dissolved oxygen, total suspended sediment, turbidity, total phosphorus, and total nitrogen. Constituent scores are then combined and results aggregated over time to produce a single yearly score for each sample station. This report presents the methodology behind the WQI and the results of a trend analysis on monthly WQI scores at our long-term monitoring stations. Contact: Dave Hallock

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	Brad Hopkins, Ecology	Water Quantity	X	N A T U R A L	Water Availability	Percent of monitored stream flows below critical levels			Department of Ecology & United States Geological Survey	Annual	Down	A seasonally-dependant measure of critical stream flow based on historical comparisons. Imperfect measure of water availability. While stream flows are impacted by groundwater, a more direct measure of groundwater availability is needed. An alternative measure would be % time in-stream flows met August – September. A variation of the same measure based on regulatory levels set for minimum flows as opposed to historical comparisons.
Species (Ken Currens)	Species & Food Web			N A T U R A L	Salmon	Fish Abundance	Wild Chinook salmon population counts with distribution (not hatchery salmon)		Department of Fish and Wildlife & Tribes		Up	Data are not available to calculate total salmon abundance for all 6 species, so Chinook would be a dashboard surrogate. Data available and well-vetted. Species occurs throughout the Puget Sound.
	Species & Food Web			N A T U R A L	Orcas	Orcas abundance	Southern Resident killer whale population trends		State of the Sound		Up	

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		Species & Food Web		N		Pacific Herring	Pacific Herring abundance	Pacific herring spawning biomass - status & trends			Department of Fish and Wildlife		Up	
		Species & Food Web		N		Terrestrial Bird Species	Marbled murrelets and other birds abundance; breeding bird counts for composite (index) for a variety of species or selected other terrestrial species	Birds/km2 sampled x area			Department of Fish & Wildlife - Chris Pearson		Up	Methods are well-documented in the scientific literature; ESA-listed species; Data available; Sensitive to loss of forest habitats, forestry impacts; Another potential ecotone transient species
Shorelines (Tim Quinn, Department of Fish and Wildlife; & Helen Berry, Department of Natural Resources)		Habitat		N		Shoreline Armoring		%s of freshwater and marine water shorelines armored			Department of Fish & Wildlife - HPA database		Down	
		Helen Berry, Department of Natural Resources	Habitat		N		Eelgrass		Areal extent (number of acres) of eelgrass in greater Puget Sound			Department of Natural Resources Nearshore Habitat Program	Annual	Up

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Stormwater (Rob Duff, Department of Ecology)	Jim West, Department of Fish and Wildlife	Habitat		N A T U R A L N A T U R A L	Toxics in fish	As relates to pacific herring, English sole and salmon			Department of Fish and Wildlife	Annual	Down	
	Maggie Dutch, Ecology				Toxics in sediment	Health of sediments with respect to concentrations of toxics and abundance and structure of living organisms			Department of Ecology	Sites rotated annually; Full rotation every five years	Down	A Sediment Quality Triad Index was generated from data collected throughout Puget Sound by Ecology and NOAA. This index, based on sediment chemistry, toxicity, and invertebrate community structure data, was used to classify and quantify sediment quality in six monitoring regions and five strata, and for the entire Puget Sound study area. Results were also compared with data from estuaries around the U.S. Ecology is also proposing a sediment chemistry index as an alternative to the triad. While the majority of the Puget Sound study area had sediments of high quality (68%), 31% displayed some degree of degradation, while 1% was of lowest quality. Degraded sediments were found primarily in urban areas, often near biologically sensitive habitat, which may have a disproportionate impact on the health of Puget Sound biota. Contact: Maggie Dutch

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Land (Tim Quinn, Department of Fish and Wildlife)		Habitat	X	N A T U R A L		Land Use/Land Cover	% land use/land cover; % impervious surface	Extent and condition of ecological systems (landcover by type)			National Oceanic and Atmospheric Administration CCAP data	Five to six years	Mixed	

There are currently 20 proposed dashboard indicators in total

 Dashboard Indicators