Briefing Sheet

Washington Academy of Sciences Review of Partnership's Indicators

What is the Intent of Statute?

The enabling legislation that created the Partnership (RCW 90.71) sets the overall context for the Partnership's choice of indicators. Specifically, the legislation directed the Partnership to develop an Action Agenda that is "the comprehensive schedule of projects, programs, and other activities designed to achieve a healthy Puget Sound ecosystem". The Action Agenda would "include near-term and long-term benchmarks designed to ensure continuous progress needed to reach the goals, objectives, and designated outcomes by 2020." These benchmarks were defined as "measurable interim milestones or achievements established to demonstrate progress towards a goal, objective, or outcome" and the legislation further defined "environmental indicators as… a physical, biological, or chemical measurement, statistic, or value that provides a proximate gauge, or evidence of, the state or condition of Puget Sound." The Science Panel was charged with identifying the environmental indicators and the Puget Sound Science Update (PSSU) was supposed to describe the scientific basis for selecting indicators. The *2009 Action Agenda* is included as background for this review.

How Did the Partnership Refine Its Understanding of Indicators?

- **Integrated Ecosystem Assessment (IEA)**- The clear focus of the legislation on integrating the selection of indicators into a comprehensive management strategy for recovering the Puget Sound led the Partnership to review conservation planning frameworks that could be used as tools. The Partnership adopted the principles of Integrated Ecosystem Assessment (IEA, Levin et al. 2008) as a framework to analyze ecosystem drivers, pressures, states, indicators, and responses. In parallel, the National Marine Fisheries Service (NMFS) began evaluating existing ecosystem indicators that would support the IEA framework. These evaluations are summarized in O'Neill et al. (2008), "Environmental Indicators for the Puget Sound Partnership: A Regional Effort to Select Provisional Indicators," an accompanying spreadsheet, and Schneidler & Plummer (2009) "Human Well-being Indicators: Background and Applications for the Puget Sound Partnership." Indicators from these evaluations were used later to identify the Dashboard of Ecosystem Indicators.
- **Open Standards -** Although the IEA is useful, the Partnership also needed a broader strategic planning tool that could include IEA and integrate scientific information into the Partnership's policy evaluations and decisions. The Partnership subsequently selected the Open Standards for the Practice of Conservation (https://miradi.org/openstandards) as such a framework. *Open Standards for the Practice of Conservation 2.0 is* a general description of the framework. Pages 8-18 describe the strategic context for selecting indicators. Chapter 7 of the *Conservation Action Planning Handbook* developed by The

Nature Conservancy provides a more detailed description of how choices of measures can be implemented under the Open Standards framework.

- **Leadership Council Guidance -** As early as June 2008 the Leadership Council in discussions with the Science Panel showed strong support for selecting different suites of indicators that would 1) provide for scientific analyses to describe the status of the ecosystem and diagnose cause-and-effect relationships for making better management decisions and 2) communicate and engage the public and stakeholders. This latter suite of indicators to engage the public was referred to as "dashboard indicators" because they were intended to be general and easy to understand.
- **Science Panel** – The Science Panel adopted the IEA framework in the *2009-2011 Biennial Science Work Plan*. They acknowledged the work of O'Neill et al. (2008) in evaluating existing indicators and recommended a second phase of indicator analysis that would focus on new or potential indicators including review of human dimension indicators. In the *Puget Sound Partnership Strategic Science Plan* the Science Panel adopted the Open Standards framework and described its complementary role with IEA.

What Did the Puget Sound Science Update Describe?

As directed by legislation, Chapter 1a (Levin et al.; "What is Our Desired Future and How Do We Measure Progress Along the Way?" and Chapter 1b (Plummer and Schneidler; "The Puget Sound Ecosystem: Incorporating Human Well-Being into Ecosystem-Based Management") describe considerations for selecting indicators. In general, the development of conceptual frameworks, selection criteria, and evaluations of potential human well-being indicators has lagged behind ecological indicators. Other guidance on human well-being indicators developed for the Partnership includes "Steps Towards a Human Well-Being Framework" (Cassin et al. 2009).

What Indicators Have Been Selected So Far?

- To meet the initial legislative deadlines for indicators the Science Panel identified and reported on preliminary indicators in the *2009 State of the Sound* document (http://www.psp.wa.gov/sos2009.php, pp. 7-54) before the PSSU was completed. The Science Panel's selection of indicators for reporting in the *2009 State of the Sound* is described in Neuman et al. (2009), "Identification of Ecosystem Components and Their Indicators and Targets"
- In 2010, as working drafts of the PSSU became available for guidance, the Partnership formed an Indicators Action Team to specifically select a "Dashboard of Ecosystem Indicators." This addressed one of the desires of the Leadership Council for indicators. The methods for selecting these indicators are described in "Development of the Dashboard of Ecosystem Indicators for Puget Sound." The Leadership Council adopted a set of Dashboard Indicators in July 2010.

What Other Indicators Will Be Selected?

The Partnership anticipates adopting a suite of additional indicators that are consistent with the IEA framework for diagnosing relationships and detecting trends and the Open Standards framework for setting conservation objectives (or benchmarks) for tracking recovery. Examples of benchmarks include the "2020 targets" recently adopted by the Leadership Council that build on most indicators from the Dashboard of Ecosystem Indicators and a few additional indicators representing additional components of the Puget Sound ecosytem (e.g., extent of estuarine wetlands, extent of functional floodplain, condition of benthic invertebrate communities in small streams). Two indicator briefing sheets that were developed to support the Leadership Council's consideration of targets – one for eelgrass and another for shellfish beds – were included as background material for the Washington Academy of Sciences review.

Levin, P.S. M.J. Fogarty, G.C. Matlock, and M. Ernst. 2008. Integrated ecosystem assessments. U.S. Dept. Commerce, NOAA Technical Memorandum NMFS-NWFSC 92. National Marine Fisheries Service, Northwest Fisheries Science Center, Seattle, WA.

Neuman, M., D St. John, S. Redman, K. Stiles, N. Salafsky, J. Knauer, M.B. Brown. Identification of Ecosystem Components and Their Indicators and Targets. Puget Sound Partnership, Olympia, WA. Available online at: http://www.psp.wa.gov/downloads/2009_tech_memos/SOS_2009_Tech_Memo_components_2009_06_11_FINAL.pdf