Puget Sound Partnership
Defining a Healthy Puget Sound
August 30-31, 2007 Leadership Council Meeting

Purpose: Defining a healthy Puget Sound will tell us where we are going. The definition work was started by the 2006 Partnership, with assistance from their Science Working Group. This work will be continued and refined over the next year through the development of the Action Agenda. This handout summarizes the definitions of a healthy Puget Sound and reprints the problem statement. This information is in the 2006 Partnership report (outcomes are primarily in Appendix A).

A few notes:

- The definitions used will need to be reconfirmed during the creation of the 2020 Action Agenda.

- The Partnership statute uses the same six goal categories as the 2006 Partnership, although the language for the goals is slightly different.

- An "outcome" more specifically describes what will be achieved for the goal and can be measured. "Benchmarks" are measurable targets used to show progress towards an outcome. The 2006 report identifies types of measures that could be used and example benchmarks that could be considered (not included in the handout).

Overall properties of a healthy ecosystem

A healthy Puget Sound supports sufficient quantity and quality of habitats to provide ecosystem goods and services upon which all species, including humans, depend. A healthy ecosystem has three key properties:

(1) it is *resilient* to changes in natural- and human-caused changes in environmental conditions;
(2) has built-in *redundancy in its parts* so that not all members of a species or habitat type are limited to a single location. Spreading the risk of catastrophic losses of species or habitats improves the ability of the ecosystem to withstand localized losses of key components; and
(3) has a *representative* sample of the diversity of species and habitat types that characterized its historical state.

A healthy ecosystem does not necessarily need to exist as it once did, but maintaining representatives of key components increases the chances that it will persist into the future.

<u>Goal</u>: A healthy and prosperous human population supported by a healthy Puget Sound that is not threatened by changes in the ecosystem

This means that human health is not threatened by changes in the ecosystem such that:

- Fish and shellfish are safe for people to eat.
- Marine and fresh waters are clean for swimming, fishing, and other human uses and enjoyment.

Outcomes and measures were not identified by the 2006 Partnership. Initial work conducted by a 2006 work group can be used to identify outcomes and benchmarks.

<u>Goal</u>: A quality of life that is sustained by a functioning ecosystem.

This means that a functioning ecosystem supports social and cultural well-being and economic vitality such that:

- Aesthetic values, opportunities for recreation, and access for the enjoyment of Puget Sound are continued and preserved.
- Terrestrial and marine resources are adequate to sustain the treaty rights, as well as the cultural, spiritual, subsistence, ceremonial, medicinal needs, and economic endeavors of the tribal communities of Puget Sound.
- The Puget Sound ecosystem supports thriving natural resource and marine industry uses such as agriculture, aquaculture, fisheries, forestry, and tourism.
- The Puget Sound's economic prosperity is supported by and compatible with the protection and restoration of the ecosystem.

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<u>Goal</u>: Healthy and sustaining populations of native species in Puget Sound, including a robust food web

This means that the numbers, productivity, condition, distribution, and composition of species ensure that their populations thrive, biodiversity is naturally maintained, and the food web functions to support ecosystem needs such that the outcomes below are achieved.

- **Species/food web outcome 1**: Terrestrial, aquatic, and marine species exist at viable levels in the future and biodiversity of the overall ecosystem is naturally maintained.

  Measures for this outcome will include:
  - Species with numerical targets (e.g., Chinook salmon, orca, and few others, although over time, these targets will need to be evaluated in terms of providing ecosystem function rather population sustainability or other purpose such as harvest quotas), and
  - Species without numerical targets would have a narrative outcome such as "*species support ecosystem functions in the Puget Sound ecosystem when they have sufficient abundance, productivity, diversity, and spatial distribution so*

that the species persist in the face of future environmental changes, and the needs of other species and humans are met".

- **Species/food web outcome 2:** Invasive species do not significantly reduce the viability of native species and the functioning of the food web.

- **Species/food web outcome 3:** The harvest of fish, wildlife, shellfish and plants is balanced, viable, and ecosystem based.

<u>Goal</u>: A healthy Puget Sound where freshwater, estuary, nearshore, marine, and upland habitats are protected, restored, and maintained.

- **Habitat outcome 1:** The amount, quality, and location of marine, nearshore, freshwater, and upland habitats sustain the diverse species and food webs of Puget Sound lands and waters.

- **Habitat outcome 2:** The amount, quality, and location of marine, nearshore, freshwater, and upland habitats are formed and maintained by natural processes and human stewardship so that ecosystem functions are sustained.

- **Habitat outcome 3:** The abundance and distribution of invasive species do not significantly impair habitat quality, quantity, or the processes that form and maintain habitats.

<u>Goal</u>: An ecosystem that is supported by groundwater levels as well as river and stream flow levels sufficient to sustain people, fish, and wildlife, and the natural functions of the environment.

- **Water quantity outcome 1:** Freshwater quantity is sufficient to support freshwater and terrestrial food webs and human uses and enjoyment.

  Measurable attributes of this outcome include:
  - The hydrological connections within stream systems (e.g., off channel habitats, sloughs, tributaries) are sufficient to provide freshwater flow levels to support ecosystem function, flood control, and other human uses such as agriculture, development, etc.
  - Surface and ground water supplies are sufficient for municipal, agricultural, industrial, and recreational uses.
  - The magnitudes of freshwater flows during all seasons (e.g., peak flows and summer low flows, etc.) are adequate to support salmonid and other key aquatic species and their habitats.
  - The timing and duration of freshwater low flows and peak flows are adequate to support salmonid and other key aquatic species and their habitats.

- The seasonal and year-to-year variability in stream flows is adequate to support salmonid and other key aquatic species and their habitats.
- Surface and groundwater flows and their inter-connections are maintained throughout the Puget Sound basin so that ecosystem functions are supported.

- **Water quantity outcome 2**: Freshwater quantity is sufficient to support estuarine, nearshore and marine food webs and the habitats upon which they depend.

  Measurable attributes of this outcome include:
  - Freshwater quantity and stream flows are sufficient to deliver important nutrients, food sources, and sediments for habitats and organisms in the estuarine/nearshore/marine ecosystem.
  - The freshwater flows affecting circulation in Puget Sound support habitats and the estuarine/nearshore and marine food webs.
  - Freshwater quantity is sufficient to maintain the salinity and temperature balance in estuaries and nearshore marine environments necessary to support habitats and food webs.
  - The location of freshwater surface and groundwater inputs support habitats and the estuarine/nearshore and marine food webs.

<u>Goal</u>: Fresh and marine waters and sediments of sufficient quality so that the waters in the region are safe for drinking, swimming, shellfish harvest and consumption, and other human uses and are not harmful to the native marine mammals, fish, birds, and shellfish of the region.

- **Water quality outcome 1**: Toxics and pathogen levels in marine mammals, fish, birds, shellfish, and plants do not harm the persistence and health of these species.

- **Water quality outcome 2:** Loadings of toxics, nutrients, and pathogens do not exceed levels consistent with healthy ecosystem functions.

- **Water quality outcome 3**: The waters in Puget Sound region are safe for drinking, swimming, and other human uses and enjoyment. Measurable attributes of this outcome include:
  - Human health indicators for exposure and consumption
  - Human use indicators
  - Human enjoyment indicators