

Puget Sound Ecosystem Research Initiative: Establishment of the Puget Sound Institute

A Cooperative Agreement between the United States Environmental Protection Agency and the University of Washington

Work Plan

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Overall Objectives and Strategy

The Puget Sound Ecosystem Research Initiative will conduct, coordinate, and disseminate scientific research to inform policy decisions necessary to carry out the Puget Sound Partnership Action Agenda. Ecosystem-scale restoration programs are complex and their success requires fluid and efficient communication among and between scientists, managers, policy makers, and stakeholders. Planning, executing, and evaluating the effectiveness of ecosystem restoration and preservation programs demands large quantities of information synthesized and communicated in ways useful to decision makers. Through this cooperative assistance agreement with the U.S. Environmental Protection Agency, the University of Washington will

Mission Statement. To foster an energetic and innovative environment where the best possible natural, social, economic, and engineering solutions are developed for the restoration and protection of the Puget Sound ecosystem, as guided by the Puget Sound Partnership Action Agenda.

establish the *Puget Sound Institute* (PSI). The core mission of the Puget Sound Institute is to foster vigorous, balanced, relevant, and timely analysis, review, synthesis, and integration of environmental information, thereby insuring that the best possible science informs the restoration and preservation of Puget Sound. Housed within the

Center for Urban Waters in Tacoma, the overall objective of this program is to enhance the integration of science into the restoration and preservation of the Puget Sound ecosystem.

To achieve this mission, the Puget Sound Institute (PSI) will engage the environmental science and policy communities in a range of activities, organized around the three core themes:

1. Conduct research by analyzing, synthesizing and integrating primary findings across a spectrum of disciplines, resulting in authoritative guidance to Puget Sound policy makers.
 - a. PSI will sponsor *Study Panels* comprised of leading experts charged with addressing vexing issues that challenge the restoration and preservation of the Puget Sound.
 - b. PSI will work with the Puget Sound Science Panel to identify key innovative research projects needed to fill in critical, near-term information gaps limiting the Puget Sound restoration program.
2. Coordinate science within the Puget Sound region and facilitate exchange with scientists and managers of other ecosystem restoration efforts worldwide.

- a. PSI will embed *PSI Scholars* within Puget Sound Partnership workgroups, advisory boards, and committees to bring the latest and best science to those responsible for developing and implementing the PSP Action Agenda.
 - b. PSI will catalyze the cross-discipline research and analysis required for effective ecosystem-level guidance by supporting *PSI Scholars* assigned to assist teams of leading scientists working on innovative, Puget Sound focused research.
3. Disseminate results of scientific research, providing the Puget Sound community access to comprehensive archive of technical information married to a dynamic higher-level analysis for policy makers.
 - a. PSI will create and maintain the *Encyclopedia of Puget Sound*, a web-based resource where Puget Sound scholars exchange peer-reviewed technical information and produce consensus interpretations of Puget Sound science for policy makers and stakeholders.
 - b. PSI will enhance *Information Exchange* by hosting a variety of technical seminars, public discourses, and education events throughout the region, allowing top scientists, engineers, and policy makers to engage in vigorous and transparent discussions throughout the Puget Sound community.

Puget Sound has been designated as an estuary of National Significance under section 320 of the Clean Water Act. The goal of the Puget Sound National Estuary Program is to restore and maintain the Puget Sound Estuary's estuarine environment by 2020 so that it will support balanced indigenous populations of shellfish, fish, and wildlife and support the extensive list of recognized uses of Puget Sound. One of the key objectives towards this goal is for the EPA and the Puget Sound Partnership to develop, by 2012, five-year strategic plan outcomes and targets for Puget Sound. The Scientific Studies and Technical Investigations funded by this program will help in the identification of specific environmental outcomes and also the development of tracking and evaluation approaches for implementation that together will contribute to the restoration and protection of Puget Sound by 2020.

Applicable EPA Strategic Goals and Objectives. Creation of the Puget Sound Institute complements EPA's strategic goal #2: Clean and Safe Water, especially Objective 2.2 (Protect Water Quality) and Sub-objectives 2.2.1 (Improve water quality on a watershed basis) and 2.2.2 (Improve Coastal and Ocean Waters; EPA 2003-2008 Strategic Plan).

The Puget Sound Institute is designed to be an effective pathway to link the considerable environmental expertise housed at the University of Washington and elsewhere to the Puget Sound Partnership. The recently created UW College of the Environment integrates across our historic intellectual strengths in forest resources,

fisheries, oceanography, marine policy, and atmospheric sciences, facilitating multidisciplinary approaches to complex environmental problems. With more than 200 faculty, 1200 undergraduate and graduate students, and over \$60M of external funding, the College of the Environment at its creation is one of the top academic environmental science programs in the country. While centered at UW, the Puget Sound Institute will seek broad participation from scientists worldwide, including those from academia, government, NGO's and the private sector, insuring the best possible technical products and the most interesting and useful discussions. PSI study panel participants will be chosen by an open competitive process, and resulting products will undergo thorough peer-review. PSI will devote resources to encourage exploration of high-risk and unconventional approaches to ecosystem restoration and protection, targeting underrepresented ideas and groups. Finally, PSI seeks frequent turnover of participating scientists, insuring a steady stream of fresh ideas across a range of topics while avoiding potential calcification of a core group of investigators.

The Puget Sound Institute, a cooperative agreement between the U.S. Environmental Protection Agency and the University of Washington, is initially funded by a direct appropriation through the Environmental Protection Agency, Region 10. The document *Puget Sound Action Agenda: Technical Investigations and Implementation Assistance Program* outlines the main objectives for this funding. During the first two years, the Executive Director and Advisory Board will develop a business plan creating a sustainable funding model for the Institute. Funding sources will likely include a balance of study panel commissions, foundation grants, and fee for service arrangements, and competitively awarded agency grants and contracts.

Work Plan

1. Governance (14% of requested funds)

Objectives

The objective of PSI governance is to insure efficient, transparent, and accountable management of the Institute. The key PSI activities include (1) working with partners to choose and prioritize activities, (2) soliciting and engaging the best possible technical teams, (3) facilitating interactions and communications within and among PSI activities, and (4) reviewing and publicizing PSI products. Within the governance component of the PSI budget, funds are allocated to provide required administrative support activities, including committee staffing, and communication. Resources for these activities are direct costs in the PSI budget not covered by indirect cost recovery.

Strategy

Governance structure. The Executive Director, advised by the PSI Advisory Board and the Puget Sound Science Panel, will lead the Puget Sound Institute. The role of the Advisory Board is to provide high-level guidance about the focus and direction of the Institute, insuring that strategic planning and implementation are consistent with the PSI mission statement. The Advisory Board consists of 6-8 senior leaders of environmental organizations in the Puget Sound region and is co-chaired by the Dean of the UW College of the Environment and the Chair of the Puget Sound Partnership Leadership Council. Appointment to the initial Advisory Board, terms of appointment, and overall operating procedures will be established by the co-chairs during the first quarter of PSI operations.

Example PSI Advisory Board Members		
Leadership Council Chair, Puget Sound Partnership (co-Chair)	Dean, UW College of the Environment (co-Chair)	Director, U.S. Environmental Protection Agency Region X
Director, NOAA Northwest Fisheries Science Center	Director, Washington Department of Ecology	Seattle District Commander, US Army Corps of Engineers
Washington Commissioner of Public Lands	USGS Western Region Chief Scientist	Washington State Director, The Nature Conservancy
President, Washington State Academy of Sciences	Director, Washington Department of Fish and Wildlife	Tribal representative

The Executive Director serves as the overall leader of PSI, with responsibilities for insuring program accountability, oversight of business operations, development of financial resources, and representing PSI within the Puget Sound and broader scientific and policy communities. A half-time Administrator who is responsible for the day-to-day operations of the Institute, assisted by part-time office staff, will assist the Executive Director. The Executive Director will be the Principal Investigator of the cooperative agreement, Dr. Joel Baker.

The Puget Sound Science Panel will formally serve as scientific advisors to the Institute, providing guidance to PSI activities, especially (1) identifying key innovative research projects needed to fill in critical, near-term information gaps, (2) defining specific Study Panel topics, overseeing the Panel selection process, reviewing Study Panel products, and (3) providing technical oversight to PSI research dissemination activities. The Science Panel will be responsible for developing and administering the process by which high priority research projects are solicited, chosen, and reviewed. The PSP Science Program manager will be the

liaison between the PSI Executive Director and the Science Panel chair to coordinate these efforts.

The PSI Executive Director will establish a close working relationship with the PSP senior management team to most efficiently and effectively use PSI resources. PSI and PSP leadership, including the Science Panel chair, will develop and maintain an integrated strategic plan that coordinates their respective annual science work plans, and PSI and PSP science staffs will work together to jointly implement these programs.

U.S. EPA Project Officer is responsible for overall programmatic and financial oversight of the Puget Sound Institute, coordinating reporting with the PSI Executive Director and Administrator

Outcomes. We will establish and maintain a governance structure that is transparent and efficient, and that maintains a high level of professionalism. Our goal is to have the Institute recognized as the authoritative Puget Sound resource by both the regional science and policy communities.

Year 1 milestones. In the first year, (1) the PSI Advisory Board will be created, (2) the Advisory Board and the Executive Director will complete a strategic plan, and (3) the process will be launched to establish a long-term business plan

2. Core Elements

2A. Conduct Scientific Research (37% of requested funds)

The Puget Sound Institute will achieve its 'conduct research' charge through two on-going activities: the commissioning of *study panels* to investigate targeted issues of importance to Action Agenda implementation, and the support of key research studies to fill in critical information needs and/or leverage concurrent research and monitoring studies in the Puget Sound region.

Study Panels

Objectives. The key idea behind the Puget Sound Institute is that rigorous and open examination of scientific information is critical to the success of the Puget Sound restoration. While many 'pieces' of science exist and are being continually expanded and renewed, resources are often lacking to synthesize this information around specific management questions. Many local, regional, and national programs make observations, generate data, and draw conclusions about specific issues of importance to their groups. While much of this work is well designed and of high quality, it often does not inform regional-scale policy because these individual programs are conducted with scopes or at scales not appropriate for regional questions. In essence, environment assessment programs have evolved at

local scales (i.e., Superfund site investigations) and at national scales (U.S. EPA EMAP) while the need is for information integrated across the Puget Sound scale and driven by specific regional management questions. The pressing need, therefore, is for this rich diversity of information to be brought together and critically examined and synthesized to support the Puget Sound restoration. This will require resources dedicated to targeted integrative studies, commissioned by Puget Sound leaders, led by top scientists, and evaluated by an open and rigorous peer review process.

The objective of each Puget Sound Institute Study Panel is to close the gap between the Puget Sound science and policy communities. Study Panels will explore in depth critical issues where scientific uncertainty is thought to hinder development and implementation of ecosystem restoration policies. Each panel will produce a white paper and lead public discussion of their topic, thereby translating the best available science into forms that policy makers and the interested public may use.

Strategy. The Puget Sound Institute will sponsor one Study Panel during the first year and two in each of the following years. Experience from the first study panel will be used to hone the procedures used in subsequent years. PSI will follow the model of the National Academy of Sciences National Research Council, where studies undergo four distinct phases: (1) Problem Definition, (2) Committee Selection, (3) Study Execution, and (4) Peer Review. Successful studies begin with a clearly articulated, well-defined management question. This question (or set of related questions) must not only be of importance to Puget Sound policymakers, but also be of appropriate scope and ‘ripe’ for productive enterprise by a Study Panel. During the formative first years of PSI, these driving questions will be formulated by Puget Sound Partnership in discussion with the PSI leadership. This is not a trivial exercise, and PSI staff time is budgeted to work with the Partnership to insure that the resulting studies are well conceived with clear objectives. In subsequent years, the PSI business model anticipates that other resource management agencies will also contract with PSI for Study Panels.

Possible initial studies. To initiate the Study Panel activity within PSI, we propose to choose and conduct two concurrent Panels using the procedures detailed below. The criteria for choosing these topics include (1) issues of immediate importance to the Puget Sound Partnership as identified through their Action Agenda and Open Standards process, and (2) issues that demonstrate the role and benefit of the PSI approach to the Puget Sound community. We propose the following steps to select and hone these initial studies. First, candidate study themes such as those below will be discussed by the Puget Sound Science Panel to identify two specific studies that best fit within the universe of on-going Puget Sound research and assessment, including the Integrated Ecosystem Assessment (IEA), Open Standards, and U.S. EPA-sponsored research. Second, two of these refined topics will be presented to the Puget Sound Ecosystem Coordination Board, who will be asked to address how the problem definition questions can be

sharpened so the Study Panel outcomes best meet the needs of the intended users. Finally, the proposed Study Panel charges resulting from these discussions will be presented to the Puget Sound Leadership Council and the PSI Advisory Board for approval. We anticipate that the process to identify the initial two studies will begin once the PSI advisory and administrative structures are in place, but no later than 12 months after the cooperative agreement is in place.

To illustrate the types of studies that may be commissioned, we offer the following examples of topics that could be selected as the initial PSI Study Panel projects. These are examples only, and the actual initial studies may evolve from these or from other topics raised through the process above.

Evaluating the Consequences of Increasing Nutrient and Pathogen Loadings in an Era of Landscape and Climate Changes. The bathymetry and hydrography of Puget Sound are quite varied, and it is unlikely that a single water quality issue will be equally intense across the system. Several recent studies demonstrate, however, that relatively poorly flushed reaches such as the south Sound and the Hood Canal are vulnerable to excess nutrient and pathogen loadings, resulting in reduced dissolved oxygen levels and closure of beaches and shellfish beds. In the coming decades, the increasing population will discharge more nutrients and pathogens, and the timing, quantity, and quality of freshwater inputs will change as a result of alterations to the landscape and to the climate. Engineering controls such as wastewater treatment plants are expensive and take years to design, finance, and construct. The purpose of this study is to systematically evaluate the tools available to forecast when and where Puget Sound waters will become impacted by low oxygen and the presence of pathogens. The Study Panel may (1) review and synthesize the current understanding of the issue in Puget Sound and throughout the world; (2) assess the availability and capability of predictive models, especially with respect to integrating climate, landscape, and population changes into water quality forecasts; and (3) conduct a needs assessment and gap analysis.

Understanding the Scientific, Social, Economic, and Political Barriers to Effective Shoreline Management in Puget Sound. Altered shorelines are likely a major driver of ecosystem impairment in the Puget Sound, and considerable attention is focused on this issue. Washington shoreline management policies are designed for ‘no net loss’ of ecosystem function. The Puget Sound Nearshore Ecosystem Restoration Program (PSNERP) science team’s work is centered on understanding the status and value of the near shore environment. It is difficult to imagine successfully restoring and protecting the Puget Sound without significantly changing the status of and trends in shoreline development. While shorelines are recognized as important features of the ecosystem deserving of protection and restoration, much remains unclear about ‘how much’ and ‘where’ such efforts should be conducted and how best to engage communities and stakeholders in the

region. Beginning with the current state of Puget Sound shorelines, the objectives of this Study Panel are (1) to explore what information is needed to set shoreline restoration targets consistent with PSP goals, (2) to assess the state of the science and engineering needed to manage shorelines, and (3) to examine the social, economic, legal, and political aspects of shoreline management. This Panel would likely work closely with the PSNERP science team and the NOAA IEA group.

Envisioning the Future Puget Sound. Several recent efforts have analyzed ‘future scenarios’ for the Puget Sound region, yet to date there is not a comprehensive vision that both integrates the latest population projections (updated to reflect recent economic conditions) with climate change (including important secondary effects such as ocean acidification and altered hydrology) and considers management scenarios emerging from implementation of the Action Agenda. Results of future scenario projections may be effective communication tools, but it is important that the underlying science is solid, the scenarios are realistic, and that the resulting uncertainties are understood. The objectives of this Study Panel are (1) to review the status of ‘futures modeling’ across the spectrum of ecological, landscape, climate, demographic, and economic modeling, (2) to identify challenges and opportunities in integrating these models, and (3) to develop credible multifaceted scenarios relevant to the Puget Sound region. The outcome of this Study Panel would be a detailed assessment of the available forecasting tools and a comprehensive work plan, first for model development and integration and then for scenario evaluation.

Once a Study Panel is initiated by agreement on the management question, PSI will assign a Program Officer to oversee and staff the Panel. Working in conjunction with the PSI Director, the Program Officer will broadly solicit proposals from teams of scientists with relevant expertise to form the Study Panel. Successful applicant teams will be led by an internationally recognized authority on the topic and consist of an appropriate breadth of expertise to competently address the Panel’s charge. Participant diversity in all aspects, including career stage and employment sector, will be strongly considered when evaluating the proposals. PSI reserves the right to form the strongest possible Panel by negotiating with applicants. For example, two competing teams with differing approaches to an issue may be merged to encourage lively debate and discourse within the Panel process. The PSI Advisory Board will approve the final composition of each Study Panel.

After each Study Panel is impaneled, the PSI Program Officer will facilitate their work by providing logistical support and access to resources required to conduct the study. The Program Officer will also work closely with the Panel chair to insure the study stay on task and on schedule and to resolve any conflicts or problems along the way. Depending on the nature of the study, a Panel’s work may include face-to-face meetings, teleconferences, field hearings, interviews, and study sessions. Except in rare circumstances requiring confidentiality, the Panel’s work

will be done in public meetings, and all correspondence among Panel members related to the study will be available for review. Study budgets may include honoraria for Panel members, travel expenses, support for graduate students, post-docs or other assistants, and subcontracts for additional expert services. Projects will be scoped so that they may be completed in 12-18 months from the initial problem definition meeting.

Study Panels will be encouraged to write their final report to include chapters amenable for publication as peer-reviewed journal articles, encouraging wide distribution of their results. The Panel's report will include a consensus findings section that will directly respond with clear guidance on the original problem-defining questions. Upon completion of a Panel's draft report, the Project Officer will form an external anonymous peer review group. Up to three external reviews will be solicited and provided to the Panel chair for use when revising the report. At the same time, the sponsoring agency will evaluate the draft report to insure the original questions were adequately addressed. The subsequent revised final report, modified to address the concerns identified by these two reviews, will be released for public comment. Final reports may contain 'minority' or 'dissenting' chapters if the Panel cannot reach consensus on specific findings. The PSI Director will recommend to the PSI Advisory Board whether the final report should be approved.

Findings from each PSI Study Panel will be publicized in a number of ways, including posting completed reports and supporting materials on the web site, hosting seminars and discussions led by the Panel chair, and preparing Panel summaries for use by various stakeholders. As Panel findings become available, they will be integrated into the wiki-based Sound Science Update, providing rapid access to this material within the context of overall Puget Sound science.

Support Key Research Studies

The Puget Sound Institute will support individual or group research projects that address critical information needs limiting the implementation or revision of the Action Agenda. The Puget Sound Science Panel will lead this activity, with PSI staff providing logistical support. PSI intends to use the limited resources available for this activity to complement and enhance concurrent Federal, State, local, and tribal research efforts. In particular, projects will be identified that (1) address rapidly emerging issues or opportunities not easily supported by traditional funding sources, (2) cut across the science-policy interface with innovative approaches, or (3) leverage existing research and monitoring programs resulting in significant value added information of importance to the Puget Sound restoration.

Each year the Puget Sound Science Panel will lead an effort to identify specific topics and opportunities for possible support through this program. The Panel's Biennial Science Workplan will guide these discussions. The Science Panel,

or a designated subcommittee, will serve as the technical peer reviewers of each project's work plan and quality assurance plan.

2A Outputs. Each Study Panel will produce a detailed final report that includes both the results of the investigation and an executive summary focusing on consensus-based findings that directly address policy questions. PSI staff will promote the wide dissemination of these reports, including providing updates to the Puget Sound Science Update. The primary end outcome of the Study Panel component of PSI is a sustainable framework for rigorous and transparent examination of critical scientific issues facing the Puget Sound restoration. PSI staff will assist the Science Panel in managing the key research studies, including facilitating project selection, peer review, and dissemination of study results.

Year 1 Milestones. During the first quarter of the Puget Sound Institute, the Executive Director will work with staff in collaboration with PSP and U.S. EPA to finalize the standard operating procedures for the Study Panel process. The PSI Advisory Board will be asked to approve the initial Study Panel, and a RFP will be released during the first year. It is our intent to launch two additional Study Panels within the first eighteen months of the PSI Cooperative Agreement. The PSI Executive Director will assist the Science Panel to publish the procedures to manage the key research studies.

2B. Coordinate Scientific Research (24% of requested funds)

Objectives. The objectives of the Puget Sound Institute efforts to coordinate regional scientific research are (1) to facilitate exchange of information among scientists and Puget Sound policy makers and stakeholders, and (2) to assist the Puget Sound Partnership in their important role as conveners of groups designing, implementing and evaluating the Action Agenda. The PSP is a relatively new state agency with a small initial permanent staff that relies on contributions of time and expertise from a wide variety of partners. The PSI will assist by providing additional scientists trained in relevant Puget Sound issues to participate in these on-going collaborative efforts.

Strategy. Each year the Puget Sound Institute will support up to five scientists whose primary responsibility will be to substantially assist key Puget Sound Partnership efforts. These *Puget Sound Scholars*, a combination of post-doctoral scientists who bring new ideas to the problems and agency, tribal, NGO or private sector experts who contribute their experience and expertise, will facilitate frequent exchange of information between the science community and PSP workgroups, standing committees, and staff. Post-doctoral scientists will be selected for 1-2 year terms from an internationally recruited pool of applicants, matched against the needs and opportunities of the Puget Sound Partnership. Experienced experts employed by tribes, NGO, the private sector or government agencies and selected through a similar competitive process will be retained via interagency agreements with their home institutions. A selection committee that

includes the PSI Executive Director, the PSP Science Manager, and members of the Puget Sound Science Panel will oversee the solicitation, nomination, and selection process.

Each Puget Sound Scholar will be paired with a PSP leader and a topical expert mentor (e.g., UW faculty member, senior agency or tribal scientist), and will split their time between assisting in PSP activities and pursuing their own interests related to Puget Sound restoration and protection. Scholars may be assigned to EPA-designated lead organizations assisting in the Puget Sound restoration. In many cases the Scholars may be associated with existing committees or workgroups, or may be involved in creating new peer groups, providing informed leadership and continuity to these important activities. In some cases PSI Scholars may be used to catalyze innovative multidisciplinary research through joint appointments across academic programs. Scholars may gain academic appointments through UW departments and programs.

2B Outputs. As a result of this component, the PSI scholars program will become an integral part of the science-policy interface of the Puget Sound restoration program. Success will be judged by the ability to attract highly qualified scientists into the program who become recognized equally for their contributions to the restoration effort and their own scholarship.

Year 1 Milestones. During the first year, (1) the PSI science manager will be recruited to oversee the PSI Scholars program, (2) the science manager and Executive Director will collaborate with the Science Panel to produce standard operating procedures for the Scholars program, and (3) the initial class of Scholars will be recruited.

2C. Disseminate Scientific Research (26% of requested funds)

Objectives. The objectives of the Puget Sound Institute efforts to disseminate scientific research are (1) to create and maintain a central clearinghouse for information relevant to the Puget Sound restoration program, (2) to facilitate exchange of information among scientists and Puget Sound policy makers and stakeholders. The strategy will include enhancing web-based 'knowledge portals', with a goal of providing one-stop shopping for those looking for technical information. PSI will neither duplicate nor replace similar products already in existence, but rather will work with stakeholders to build systems to streamline access while insuring quality. Of particular importance is the need to bring excellent but often poorly accessible 'historic' information into the web-based format, including a wealth of habitat and fisheries information contained in tribal, governmental, and university archives. Proceedings from workshops and conferences, including the prior Puget Sound/Georgia Basin Conferences, will be indexed and archived. As has been done with several prominent scientific journals, the PSI core support component will utilize scanning and indexing technologies to provide indexed on-line access to documents key to the evolution of Puget Sound

science and policy. This aspect of PSI will work collaboratively with the PSP information technology group and other regional and national information services.

The PSI will also enhance dialog and transparency among the Puget Sound community by sponsoring a series of technical seminars and workshops, and by partnering with education and outreach organizations to support presentations to and discussions among stakeholders and the general public. Such outreach is a critical path to build trust among all groups that a comprehensive analysis of Puget Sound science is available to the broad community and is being employed in the restoration and protection programs.

PSI Encyclopedia of Puget Sound

Objectives. The objective of the *PSI Encyclopedia of Puget Sound* (EoPS) is to insure that a comprehensive and current body of Puget Sound scientific information is accessible to a variety of users. A successful *Encyclopedia* will be viewed as the best place to access accurate, relevant, and contextualized information about the Puget Sound.

Strategy. The overall strategy is to build a web-based refereed open-source encyclopedia of information centered on the Puget Sound ecosystem. This system will bring together existing efforts, especially the Puget Sound Science Update, and will complement regional and national database programs. The *PSI Encyclopedia of Puget Sound* is modeled after the *Encyclopedia of Earth* (www.eoe.com), a comprehensive resource built and maintained by a diverse community of scholars. In addition, EoPS will foster dialog and debate within the Puget Sound region by sponsoring seminars, workshops, and other public events.

While it will likely take many years to build and fully engage scientists in a similar Puget Sound encyclopedia, we view the 2010 Sound Science Update as an excellent beginning. The highest priority task for the PSI is to build on the Sound Science Update, making sure the vision of a wiki-type 'living document' is fulfilled and maintained. Regional scientists and engineers will likely be eager to contribute their ideas and products, and be willing to review the work of others, as long as the encyclopedia is seen as a useful, dynamic, and rigorous program. Significant staff resources will be required to build the EoPS to the point where the community takes it seriously. During the initial phases of PSI, we envision engaging the founders of Encyclopedia of Earth as well as the PSP communications and data management teams to develop a specific development plan for this activity. Staffing will include editors with topical expertise (as was done in creating the Sound Science Update) as well as web designers.

PSI Videoconferencing Network and Seminar Series

A second strategy of the PSI to disseminate scientific research is to fully utilize teleconferencing and web-based broadcasting to build a network of sites around the Puget Sound where colleagues may participate in discussions, seminars, and planning sessions. This will not only encourage more frequent participation by a diversity of academic, agency, business, and NGO scientists, but also reduce the time, expense, and environmental impact of commuting. PSI resources will be used to equip and support teleconferencing operations initially at three locations, including the Center for Urban Waters, the UW College of the Environment in Seattle, and a site in Olympia. Hardware will include broadcasting and recording equipment, providing the capabilities to host interactive videoconferences and to prepare, record, edit, and archive presentations for later web-based delivery. The PSI video network will be designed to be compatible with a range of existing networks used by federal, state, and local governments.

In addition to the Puget Sound encyclopedia and the teleconferencing network, PSI will sponsor several series of seminars and discussions geared to a variety of audiences. The goals of these activities are to enhance dissemination of the latest Puget Sound research findings, to facilitate discussions within and among communities, and to promote strong science-policy linkages in the Puget Sound region. PSI will partner with regional university departments, government agencies, and NGOs to develop seminar series, supporting these activities both by providing financial support and by contributing staff support.

2C Outputs. The PSI Encyclopedia of Puget Sound will be the vehicle by which information is exchanged within and between the Puget Sound science and policy communities. Success will be judged by an increasing level of participation in creating EoPS content by the science community, and by its usage by a broad constituency. With PSI support, a number of seminars and discussions focusing on the science and policy of Puget Sound restoration will be held. While a number of organizations such as academic departments sponsor speakers who address specific aspects of Puget Sound, the PSI-supported seminars will focus on the topics of immediate interest to the Puget Sound restoration program.

Year 1 milestones. In the first year, (1) a managing editor for the Encyclopedia of Puget Sound will be recruited, (2) (3) a series of focused workshops led by the managing editor will define the work plan leading to the creation of EoPS, (4) contracts will be put in place for the initial group of contributing editors, (5) the PSI Videoconferencing Network will be installed and protocols established, and (6) two seminar series will be supported.