# A PROPOSAL TO ESTABLISH A COOPERATIVE ECOSYSTEM STUDIES UNIT IN THE PACIFIC NORTHWEST WITH UNIVERSITY OF WASHINGTON, SEATTLE AS HOST UNIVERSITY

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**Approved on Behalf of**
**the University of Washington**
**by**

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## 1. EXECUTIVE SUMMARY

Centrally located in the Pacific Northwest biographic region (PNW), The University of Washington (UW) is an ideal location for the newly proposed Cooperative Ecosystem Studies Unit (CESU) to serve the PNW. Located in Seattle, Washington, within minutes of an international airport, the UW is in close proximity to seven units of the National Park System, including three major national parks, the NPS Columbia Cascades Systems Support Office, six national forests and reservations of several Native American nations in the state of Washington alone. This location, combined with other strategic advantages, suggests that CESU administration would be very cost efficient at the UW.

UW's aggregate programs of research, education and support facilities relevant to federal land management, environmental and research agencies are unsurpassed in the Pacific Northwest bioregion (PNW). The number and strength of these academic programs suggest the UW as the ideal host for a PNW CESU. The quality of UW's academic expertise and facilities is reflected in its rank as the number two recipient of federal research funds in the U.S. Of particular relevance to the proposed CESU, the UW's forestry, oceanography, and fisheries programs are among the world's finest. Also important are strong programs in social sciences, history, architecture and urban planning, zoology, engineering and several others.

However, no single university can efficiently meet the entire spectrum of federal agency needs for academic and technical services. To that end, the UW has organized a network of 11 partners. These partners are located throughout the PNW and collectively offer federal agencies optimal opportunity and flexibility to organize innovative multidisciplinary teams to meet federal agency needs for research, technical assistance and education.

The UW has the broadest-based university minority support system in the U.S., and large numbers of minority students on campus. Combined with several programs specifically designed to recruit minority group members into natural resource science areas, the UW CESU offers substantial potential to involve minority students as student and research assistants, perhaps ultimately encouraging more minority employment in federal resource management programs.

The UW has a successful history of interaction and cooperative activities with federal land management, environmental and research agencies. For example, in 1970, the National Park Service (NPS) established the first university-based research unit in the country at the UW, College of Forest Resources (CFR). This Cooperative Park Studies Unit (CPSU), now named the Cascadia Field Station (CFS) and administered under the USGS/BRD/Forest and Rangeland Ecosystem Science Center has two federal scientists who are assisted with several staff and students. This unit was given a national award from the National Biological Service in 1996 for outstanding science and has experienced nearly 30 continuous years of mutually beneficial interaction with the CFR (and the UW at large), while providing research, technical assistance and extension/education services to several land management agencies. The CFS represents an asset for the proposed CESU with space available for CESU staff nearby CFS offices in Anderson Hall. The CFS interacts administratively with Dean Thorud, who would be the key contact person for the proposed CESU.

In summary, the UW offers a wide-spectrum of excellent resources combined with an ideal location that will contribute greatly to the success of the PNW CESU.

## 2. INTRODUCTION

Several regions of the Pacific Northwest bioregion (PNW) - the Puget Sound area in particular - are experiencing rapid population and economic growth by ethnically and racially diverse peoples. These rapid changes have caused serious challenges in making federal resource management decisions, many of which have multi-dimensional implications across both social and natural systems. A significant number of University of Washington (UW) faculty are carrying out interdisciplinary research and education dealing with natural and cultural resource management issues at landscape levels. An emerging vision among UW faculty emphasizes the necessity of comprehensive networks of partners with multi-disciplinary perspectives.

In aggregate, the UW's programs of research and education relevant to federal land management, environmental and research agencies (and specifically to natural and cultural resource management) are unsurpassed in the Pacific Northwest bioregion (PNW). The number and strength of these academic programs suggest the UW as the ideal host for a PNW CESU. However, no university alone can efficiently meet the entire spectrum of needs for academic and technical services that are emerging as federal land management and research agencies engage the complex challenges of the 21st century. To that end, the UW has organized a network of partners located throughout the PNW region.

Our vision for the PNW CESU includes an institutionalized program of interaction that regularly brings federal program managers to the UW and partner campuses to create a synergistic dialogue in an interdisciplinary forum. Academic participants will include biological and earth scientists, social scientists, archeologists, landscape architects, historians, engineers and others. The UW would encourage participation of cultural resource managers on the CESU managers committee.

Direct benefits from the proposed UW PNW CESU will:

- provide an interdisciplinary forum to accomplish ongoing reciprocal interaction between the UW, its partner institutions and federal agencies. Participating agencies will have access to diverse faculty, research centers, and other academic programs that provide ecosystem studies and interdisciplinary perspectives throughout the PNW. The result will be innovative interdisciplinary solutions to federal needs for research and technical assistance relating to integrated resource management at ecosystem levels. Because it potentially includes social scientists, archeologists, landscape architects, planners, and historians, the UW CESU will facilitate interaction between natural and cultural resource management programs and also encourage articulation of social science and culturally-oriented perspectives in discussions of ecosystem management.

- encourage collaboration among the UW's community of faculty, staff, students and administrators. This will enhance the strong existing trend to think beyond political and disciplinary boundaries when responding to the needs of federal public land management, environmental and research agencies.

- complement several university-federal programs emphasizing research, technical assistance and education in the biological and social sciences, and other academic disciplines such as landscape architecture, planning, history and various fields of engineering. The UW CESU will benefit from the network of existing cooperative programs that include the National Park Service (NPS), United States Forest Service (USFS), Washington Department of Wildlife, U.S. Fish and Wildlife Service (USFWS), U.S. Department of Energy (DOE), United States Geological Survey (USGS), and U.S. Environmental Protection Agency (EPA).

- provide an extensive network of faculty, staff, and students from multiple disciplines. This network may assist federal agencies adapting to fiscal constraints caused by federal deficit reduction programs.

- provide CESU staff access to some of the outstanding university support facilities and services in the PNW. Examples include: the UW Libraries, Burke Museum, UW Fish Collection, Washington Park Arboretum, Friday Harbor Laboratories, conference facilities, various geospatial and remote sensing technology programs, the Pacific Northwest Seismograph Network, and state-of-the-art computing facilities.

- provide interdisciplinary expertise. Among the most important environmental sustainability issues in PNW are: forest management, conservation of salmon, water resources issues, invasive species, riparian resources, urban growth, arid lands management, global climate change, interaction with Native American and rural communities and integration of multi-cultural perspectives into ecosystem management regimes. All have implications for ecosystem management in other bioregions.

- will deliver cost-effective products through reduced indirect costs, economies of scale and other strategic advantages. The UW CESU could help consolidate current research and education programs throughout the PNW and across federal and state agencies, thereby reducing costly redundancy.

- provide a straightforward means for federal program managers to access the UW community and partner institutions and to easily organize interdisciplinary teams composed of the PNW's most talented experts. Current efforts are often fragmented and focused on individual departments at specific institutions.

- will both benefit from and help to expand continuing education opportunities for natural resource professionals at UW and CESU partner institutions.

- will help integrate minority group people (e.g., Native, African, Asian and Hispanic Americans) into highly visible federal programs – perhaps ultimately encouraging more diverse minority employment by participating agencies.

**3. UNIVERSITY ROLE AND MISSION STATEMENT**

The UW is the pre-eminent PNW public university. Employing over 16,500 faculty and staff and educating over 35,000 students on the Seattle campus, UW has an international reputation in such fields as health services, astronomy, computer science, molecular biotechnology, oceanography, forestry, biostatistics, physiology, geography, and sociology. Since 1969, the UW has ranked in the top five U.S. universities for research funding, putting it in the first tier of research institutions in the US. In 1999 the UW received 601 million dollars in total research funding, of which nearly 450 million dollars were from federal sources. It is now the number-two university recipient of federal research funds. UW is one of the world's leading institutions in environmental and earth sciences. The UW Mission statement explains its role in the local and regional community:

*…As one of the nation's outstanding teaching and research institutions, the University is committed to maintaining an environment for objectivity and imaginative inquiry and for the original scholarship and research that ensure the production of new knowledge in the free exchange of diverse facts, theories, and ideas. As an integral part of a large and diverse community, the university seeks broad representation of and encourages sustained participation in that community by its students, its faculty, and its staff….*

*Through its three-campus system and through educational outreach, evening degree and distance learning programs, it extends educational opportunities to many who would not otherwise have access to them.... Programs in law, medicine, forest resources, oceanography and fisheries… are offered exclusively (in accord with state law) by the University of Washington.*

Within UW, the mission statements of several colleges, schools, and departments support natural and cultural resource management, environmental and ecosystem research and education**.** Thus:

The **College of Forest Resources** (CFR) (www.cfr.washington.edu) is dedicated to generating and disseminating knowledge for the stewardship of natural and managed environments and the use of their products and services through teaching, research, and professional and public outreach. Its vision is to be pre-eminent in teaching and advancing the frontiers of knowledge in integrated resource stewardship and utilization in natural and managed environments. It is one of the world's finest forestry programs with the number one graduate program in the nation. The College's goals are:

> *(1) to provide students with a premier educational and training experience in integrated natural resource management, utilization and environmental sciences and stewardship; and (2) in a timely and efficient manner, develop and deliver educational information and findings from the College's applied and basic research programs to the public and the professions throughout the state, region, and world.*

The **College of Ocean and Fisheries Science** (COFS) (www.cofs.washington.edu) is a national leader in these topics. It is the leading institution for research on salmon populations and management of PNW marine and freshwater resources. The following COFS mission and goals relate to the proposed CESU:

- *The School of Fisheries is concerned with wise management of fish and shellfish stocks; ecological relationships between aquatic organisms and their environment; culture of aquatic plants and animals; and impacts of human population pressures on the aquatic environment.*
- *The School of Oceanography studies the physical, chemical, geological and geophysical, and biological processes in the ocean, and interactions of the ocean with the earth, the biosphere, and the atmosphere.*
- *The School of Marine Affairs is concerned with policy and institutional issues related to the ocean.*
- *Washington Sea Grant Program seeks to enhance the wise use and protection of the nation's marine resources through coordinated efforts in research, education, and public service.*

The **Anthropology Department** (www.anthro.washington.edu) offers graduate studies in archaeology, biocultural anthropology, environmental anthropology, and sociocultural anthropology. The recently formed interdisciplinary environmental anthropology (EA) graduate program is one of three programs of its kind in the nation. EA is growing rapidly with the addition of three new faculty members and a number of new graduate students. The mission of EA is:

- *EA focuses on human-environment interactions and endeavors to understand environmental problems not only from a western scientific standpoint, but also from the multiple and often conflicting perspectives of members of various local or indigenous cultural systems.*

The **College of Architecture and Urban Planning** (CAUP) (www.caup.washington.edu) includes four departments: Architecture, Construction Management, Landscape Architecture, and Urban Design and Planning. All curricula include broad social, economic, and cultural issues fundamental to understanding, preserving, and enriching our built and natural environments. The College sponsors two interdisciplinary graduate programs particularly relevant to this proposal -- the Preservation Planning and Design and the Urban Design Programs. CAUP can make significant contributions in: planning, design, sustainability, environmental impact assessment, cultural resource management, historic preservation, ecological

infrastructure analysis, public process and community participation, public history and ecosystem management. The mission of CAUP is:

- *to provide high quality research, professional and graduate education in the fields of Architecture, Construction Management, Landscape Architecture and Urban Design and Planning. …actively engage in public service and provide specialized research and education emphasis in Urban Design and Preservation Planning and Design….*

The **History Department** (HD) (depts.washington.edu/clio/) studies human affairs and seeks to understand change rather than the state of things at a given moment. HD maintains a **Center for the Study of the Pacific Northwest (CSPN)** in which faculty members draw upon expertise in some combination of western American history, environmental history, and history of Native Americans. It regularly hosts conferences on topics in regional history, publishes scholarship on the Pacific Northwest and the American West; supports graduate and undergraduate courses and research on regional history at the University. HD interacts with many partners such as: UW American Indian Studies Program, Burke Museum, Canadian Studies Center, and Center for Labor Studies. Off-campus HD partners include: Canadian Consulate, Museum of Flight, Museum of History and Industry, Washington Commission for the Humanities, and the Washington State Historical Society. CSPN publishes *PACIFIC NORTHWEST QUARTERLY*, the leading scholarly journal of regional history. The mission of CSPN is as follows:

- *CSPN promotes scholarly research and study related to the Pacific Northwest, chiefly from historical perspectives, and also to promote the dissemination of knowledge about the history of the Pacific Northwest inside and outside of the classroom.*

The **Department of Zoology** (ZD ) (www.zoology.washington.edu) is organized into three overlapping "caucuses", one of which is entitled "Ecology and Evolution". Faculty and graduate students within this caucus conduct research in the areas of animal behavior, conservation biology, ecology, evolutionary mechanisms, and mathematical biology. Several faculty hold joint appointments with the Burke Museum.

Many other UW units are relevant to and will participate in the CESU. In 1997, UW established a new unit charged with the coordination and enhancement of environmental studies: The **Program on the Environment** (PoE- depts.washington.edu/poeweb/). PoE's main focus has been on undergraduate education, but it also houses graduate certificate programs in environmental management and conservation biology. The UW also has strong departments in **Botany, Atmospheric Sciences**, **Geology, Geophysics, Economics and Public Affairs**. The **Department of Environmental Health** focuses on discovering and analyzing the links between human health and the environment. The **Department of Mechanical Engineering** has a strong history of involvement with conversion management of energy, and energy conservation.

## 4. DESCRIPTION OF COOPERATORS

**A. HOST UNIVERSITY:** University of Washington, Seattle, Washington, 98195

**B. CONTACT PERSON:** Dr. David Thorud, Dean, College of Forest Resources, University of Washington

### C. MINORITY SUPPORT AND RECRUITMENT

The UW is committed to bringing minority perspectives into the classroom and engaging in research that reflects the concerns and needs of women, underrepresented racial and ethnic minorities and persons of disability. The UW currently has the broadest-based minority support system in the U.S. Undergraduate minority enrollment is nearly 30% (~ 8000 students). Graduate and professional minority enrollment stands at 17% (~1500) students. The Office of Minority Affairs oversees almost a dozen programs

including early scholars outreach, a counseling center, and an ethnic cultural center. In natural resource management and environmental research and education, the UW has several existing programs that will benefit the UW CESU.

In 1997, UW partnered with Heritage College (HC) in Toppenish, WA to develop and expand educational opportunities in the under-served Hispanic and Native American communities of the Yakima Valley. One primary objective is for HC faculty to collaborate with UW faculty in developing curricula in a minority cultural context, particularly in natural resources disciplines. HC has access to Yakima Valley sites and resources, many of which are important places for studying declining Pacific salmon runs. Faculty from both institutions have agreed to create opportunities for teaching or research residences for MA and PhD students, specifically in the area of tribal natural resources management.

The UW is a member of a consortium of Washington State colleges (WSU, CWU, EWU, Heritage, Evergreen State College, WWU, and select community colleges including Northwest Indian College) in partnership with the Confederated Tribes of the Colville Reservation and the Chehalis Reservation. This group addresses needs (identified by tribal leaders) in the area of distance learning technologies. Proposed degree programs include Business Administration with supporting course concentrations in several natural resource science areas designed to provide Native American students with education in the management of natural resources.

UW's CFR has a cooperative program with the Forest Resources Department at Tuskegee University (TU). It allows TU students in Forest Science/Management and Fisheries Science with three years of completed study to transfer to the UW to complete their B.S (granted by TU). Students then continue for a Master's and/or Doctorate degree at the UW. CFR is also a member of the UW Diversity Scale-Up Project at UW that works to recruit, prepare and retain students from underrepresented groups in science, engineering, mathematics, and technology.

The ONRC (Olympic Natural Resources Center), jointly operated by UW's College of Forest Resources and College of Ocean and Fishery Sciences, has an agreement with the Quileute Indian Tribe to collaborate on innovative approaches to resolve natural resource issues.

**D. FACULTY EXPERTISE**

UW faculty has a long history of active involvement with federal natural resource agencies. Space limitations prevent us from providing a complete list of faculty degrees, disciplines, and expertise, but Section 4.F lists some key faculty members who have been involved in cooperative research with federal land management agencies (with example project titles).

**E. UW DEGREE PROGRAMS**

UW has some of the most sought-after graduate and professional programs in the country. Below we list graduate degrees granted in 1998-99 related to the mission of a CESU.

| Program | Degree | Number | Program | Degree | Number |
|---|---|---|---|---|---|
| Anthropology | MA & PhD | 27 | History | MA & PhD | 17 |
| Atmospheric Sciences | MS & PhD | 8 | Landscape Architecture | MA | 12 |
| Architecture | MA | 52 | Marine Affairs | MA | 19 |

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|---|---|---|---|---|---|
| Biochemistry | MS & PhD | 7 | Mechanical Engineering | MS & PhD | 60 |
| Biostatistics | MS & PhD | 17 | Molecular & Cellular Biology | MS & PhD | 8 |
| Botany | MS & PhD | 7 | Oceanography | MS & PhD | 23 |
| Chemistry | MS & PhD | 37 | Philosophy | MA & PhD | 5 |
| Civil Engineering | MS & PhD | 76 | Physics | MS & PhD | 37 |
| Computer Science | MS & PhD | 52 | Political Science | MA & PhD | 11 |
| Economics | MA & PhD | 26 | Psychology | MS & PhD | 22 |
| Environmental Health | MS & PhD | 19 | Public Affairs | MA | 72 |
| Epidemiology | MS & PhD | 48 | Quantitative Ecology | MS & PhD | 3 |
| Fisheries | MS & PhD | 32 | Sociology | MA & PhD | 19 |
| Forestry | MS & PhD | 33 | Statistics | MS & PhD | 13 |
| Geography | MA & PhD | 14 | Urban Design & Planning | MA & PhD | 17 |
| Geological Sciences | MS & PhD | 12 | Zoology | MS & PhD | 6 |
| Geophysics | MS & PhD | 8 | | | |

**F. RELEVANT RESEARCH**

An increasing amount of both internal and external funding for UW research is being directed toward ecosystem management, natural and cultural resource management, environmental sustainability and ecological restoration. A few examples are provided below.

INTERNALLY FUNDED RESEARCH – The UW has recently funded several projects related to land management, environmental and research agencies. Two prominent examples are the PRISM project ($900,000 for the first biennium, University Initiatives Fund) and the UW Restoration Ecology Network (REN) ($365,000 in 1999). The REN will serve as a regional center to integrate student, faculty and community interests in ecological restoration and conservation.

EXTERNALLY FUNDED RESEARCH – Examples of funded projects at the UW in the past three years relevant to the mission of the CESU include:

Exxon Corporation

**Dr. Ray Hilborn**, College of Fisheries: The Prince William sound pink Salmon Hatcheries-Have They Worked?

US Environmental Protection Agency

**Dr. Susan Bolton,** College of Forest Resources: Stream Habitat Restoration in a Large River Basin
**Dr. John M. Wallace,** Atmospheric Sciences: Climate Prediction and Ecological Impact

U.S. Department of Energy

**Dr. John M. Findlay**, History: Nuclear Technologies and Nuclear Communities: A History of Hanford and the Tri-Cities, 1943-1993
**Dr. Robert G. Lee,** College of Forest Resources: Dungeness River Historic Water Use
**Dr. Stuart Strand,** College of Forest Resources: Using Trees to Remediate Groundwaters Contaminated with Chlorinated Hydrocarbons

**Dr. Philip C. Malte,** Mechanical Engineering: Control of Emissions in Wood-burners and Wood-dryers

U.S. Fish and Wildlife Service

**Dr. Sam Wasser**, Zoology: Deer Population Census for Olympic Peninsula Wolf reintroduction EIA (jointly funded by WA Dept of Fish and Wildlife)

National Oceanographic and Atmospheric Administration

**Dr. Robert C. Francis**, College of Fisheries: Effects of Interdecadal Climate Variability on the Oceanic Ecosystems of the Northeast Pacific
**Dr. Ray Hilborn,** School of Fisheries: Analysis of Interaction between Habitat, Ocean Conditions and Harvest in Chinook Salmon.
**Dr. Daniel Huppert,** School of Marine Affairs: Economics of Snake River Salmon Recovery
**Dr. Nathan Mantua,** JISAO Climate Impacts Group: A Pacific Interdecadal Climate Oscillation with Impacts on Salmon Production
**Dr. Thomas Quinn,** School of Fisheries: Salmon Ecology and Conservation

USGS Biological Research Division

**Dr. David L. Peterson,** Cascadia Field Station**,** and **Dr. Dan Fagre:** Climate Variability, Ecosystem Dynamics, and Disturbance in Mountain Protected Areas
**Dr. Paul Sommers,** Northwest Policy Center: Socioeconomic Effectiveness Monitoring of the Northwest Forest Plan

National Park Service

**Dr. James K. Agee,** College of Forest Resources and **Dr. Eugene Hunn**, Anthropology: A Study of Subsistence Uses Associated with Alaska Units of the National Park System (with Darryll Johnson, USGS/BRD/FRESC/Cascadia Field Station)
**Dr. Gail Dubrow**, Urban Design and Planning: National Historic Landmarks Associated with Women's History
**Dr. Philip Malte,** Mechanical Engineering: Sustainable Energy Practices for Crater Lake National Park
**Dr. David L. Peterson,** Cascadia Field Station: Elwha River Ecosystem Restoration
**Dr. Robert Edmonds**, College of Forest Resources: Precipitation Chemistry and Ecosystem Function in Olympic National Park

USDA Forest Service

**Dr. James K. Agee**, College of Forest Resources: Fire in Managing Ecosystems
**Dr. Gordon A. Bradley,** College of Forest Resources: Stakeholder Perspectives: A Cognitive Approach to Assessing the Human Dimensions of Forest Management
**Dr. Robert L. Edmonds**, College of Forest Resources: Relationships between Forest Management, Soil Organic Matter and Long-Term Forest Productivity in Western Washington
**Dr. Charles B. Halpern**, College of Forest Resources: Long-Term Ecosystem Productivity Project
**Dr. David R. Montgomery,** Geological Sciences: Disturbance Ecology of Mountain Watersheds
**Dr. Chadwick D. Oliver,** College of Forest Resources: Managing Forest Stand Structures and Landscape Patterns for Commodity and Non-Commodity Ecosystem Values

**Dr. Stephen D. West,** College of Forest Resources: Demonstration of Ecosystem Management Options-Wildlife

## G. RELEVANT EXISTING MULTIDISCIPLINARY CENTERS

UW houses many centers, consortia and programs that are engaged in multidisciplinary research and education relevant to federal land management, environmental and research agencies.

*Olympic Natural Resources Center (Forks, Washington) (*ONRC): Created by the Washington State legislature as part of the UW, ONRC is charged with stimulating interaction, communications and partnerships with industry, government, tribes, communities and other educational institutions.

*Center for Quantitative Science in Forestry, Fisheries and Wildlife* (CQS): As an inter-college interdisciplinary academic unit, CQS provides high quality instruction in mathematical and applied statistical methods for undergraduate students in the biological sciences, renewable resources management, and environmental studies.

*Center for Streamside Studies* (CSS): CSS operates from the premise that the riparian forest is the key regulator of the ecological health of watersheds. CSS promotes an interdisciplinary approach to understanding the complexity of stream and river ecosystems in both forested and urban areas. It provides information for the resolution of management issues related to the production and protection of forest, fish, wildlife, and water resources associated with the streams and rivers in the Pacific Northwest. CSS was created in response to escalating controversy concerning management of natural resources. It involves a unique partnership of state and federal agencies, Native American tribes, forest products organizations, and the UW under the auspices of the Colleges of Forest Resources and Ocean and Fishery Sciences.

*Washington Sea Grant Program* (WSGP*)*: WSGP is a component of the National Sea Grant Program created to enhance wise use and protection of marine resources through coordinated efforts in research, education, and public service. It is administered as a division of the College of Ocean and Fisheries Sciences, but has additional statewide and multi-institutional responsibilities. The UW was one of the first four universities in the U.S. designated in 1971 as Sea Grant Colleges in recognition of outstanding sustained programs in research, education, and advisory services in the marine area.

*Consortium for Risk Evaluation with Stakeholder Participation (*CRESP): CRESP is part of the Institute for Risk Analysis and Risk Communication within the Department of Environmental Health. CRESP works to advance cost-effective cleanup and greater stakeholder understanding of nuclear weapons production facility waste sites by improving the scientific and technical basis of environmental management decisions.

*Pacific Northwest Agricultural Safety and Health Center* (PNASHC*)*: PNASHC is one of nine regional centers funded in part by the National Institute for Occupational Health. It focuses on the prevention of occupational disease and injury among farming, fishing, and forestry operators, workers, and their families in Alaska, Idaho, Oregon and Washington.

*Superfund Basic Research Program* (SBRP): SBRP is an interdisciplinary program involving faculty and graduate students from the Department of Environmental Health, Civil Engineering, Biochemistry, Forestry and Microbiology. Its goals are to develop biological markers to assess peoples' exposure to toxicants and susceptibility to disease, to assess physiological damage in humans and wildlife, and to develop new technology to remediate contaminated sites.

*Center for Urban Water Resources Management* (CUWRM*):* CUWRM, housed within Civil and Environmental Engineering, conducts research on watershed management, urban storm water runoff, protection of aquatic resources, groundwater movement and contamination, wastewater treatment, and water supply. Current projects include urban stream rehabilitation, classification of land cover through automated LANDSAT interpretation, and remote sensing of stream temperatures.

*Quaternary Research Center* (QRC): QRC promotes cooperative, interdisciplinary, and interdepartmental research focusing on processes that shape the natural environment and that have operated during the Quaternary, the recent period of glacial ages. Research includes studies of eutrophication of fresh-water lakes and of surging and calving glaciers in coastal Alaska.
*Conservation Biology Institute* (CBI): Currently under development, the CBI will be a hub for ecological research and teaching. It will address the evolving need for tools to monitor human and other environmental impacts on threatened and endangered species. Emphasis is on noninvasive genetic and endocrine approaches to these problems.

**H. RELEVANT FACILITIES**
The following are selected support facilities available to faculty at UW**.** CESU staff would have access to these facilities.

The *UW Libraries* (www.lib.washington.edu) system is one of the largest research libraries in North America. Its collections exceed 5 million catalogued volumes, an equal number in microform, several million items in other formats, and more than 50,000 serials. The Libraries system is a part of one of the most innovative and well-integrated electronic campus information networks in the world. Among the Libraries' nationally ranked collections are the fisheries and forestry holdings. The Libraries system serves not only the campus community but also business, industry, and the professions.

*Burke Museum,* located on the UW Seattle campus, is a major national resource for information on the natural and cultural history of the Pacific Northwest. Exhibits include extensive displays of Washington State's geological and biological evolution, personal stories, photographs, interactive displays and artifacts exploring the preservation of the language, stories, and ceremonies of the native ancestors and elders of the region. Permanent and temporary exhibits on Pacific Northwest salmon are central components of the museums' educational mission.

*Charles Lathrop Pack Demonstration Forest (~4000 acres)* is located near Mt. Rainier National Park. It serves as a teaching and research laboratory for the CFR and is actively managed as a demonstration area, exploring effects of new management strategies. It provides extensive outreach opportunities to the local community. The facilities at Pack Forest lend themselves well to conferences, retreats and workshops.

The *UW Fish Collection* is a facility of the School of Fisheries. It supports teaching and research in the areas of ichthyology, fisheries biology, aquatic biology, conservation, and biodiversity, and provides a source of ichthyology information for the public. The collection is of preserved fishes from the Pacific Northwest and around the world.

*Washington Park Arboretum* is a living plant museum emphasizing trees and shrubs hardy in the maritime Pacific Northwest. Collections are selected and arranged to display their beauty and function in urban landscapes, to demonstrate their natural ecology and diversity, and to conserve important species for the future. It is managed by the Center for Urban Horticulture through the UW CFR.

*Teaching and Research Fish Hatchery* is located in the School of Fisheries. Students, alumni, and visitors learn about salmon and trout by observing and participating in the events that occur at the facility each year. Adult chinook and coho salmon return to the hatchery pond to complete their life cycles. Students enrolled in a fish reproduction course strip eggs and milt from the returning fish, fertilize the eggs, and place them in incubators to develop and hatch.

*Columbia Basin Research* (CBR) investigates issues surrounding salmon biology in the Columbia and Snake River Basins. CBR research has produced computer models that simulate and predict salmon migration and survival in the Columbia Basin and salmon harvest in the North Pacific. Columbia River DART (Data Access in Real Time) provides an interactive data resource designed for research and management of the Columbia Basin salmon populations and river environment.

*Friday Harbor Laboratories* are located on San Juan Island, part of the archipelago that lies between the mainland of Washington and Vancouver Island. Ideally situated for research on many aspects of marine biology and oceanography, Friday Harbor labs have extensive resources for research including marine equipment, diving facilities and a library.

*Geospatial Technology:* The UW has many geospatial and remote sensing technology programs, organized into the UW Consortium for Geographic Information and Analysis (wa-node.gis.washington.edu/uwgia/). UW has site licenses for ESRI's ArcInfo and ArcView GIS software and two major remote sensing softwares, Imagine and ENVI. Four computer labs, in the departments of Geography and Geological Sciences and the Colleges of Forest Resources and Architecture and Urban Planning are dedicated to GIS and remote sensing teaching and research. The Map Collection at the University Libraries also has a full-time GIS librarian on staff.

The *Seismology Lab* analyzes information on earthquake activity and hazards from the Pacific Northwest Seismograph Network (PNSN), which operates seismograph stations and locates earthquakes in Washington. PNSN is operated jointly by the UW and several other northwest institutions. It is funded by the USGS, the Department of Energy (DOE) and the State of Washington. PNSN is based at the Geophysics Program at the UW and is a member of the Council of the National Seismic Systems, a group of regional network operators who cooperate to locate earthquakes throughout the United States.

*Computing:* UW has extensive computing facilities. All major campus buildings are wired to the campus Ethernet network, which includes almost 600 subnets, approximately 28,000 wired rooms and 38,000 connected devices, and operates at speeds up to 1 Gbit. Internet connectivity is provided via Gigabit fiber to the Pacific NorthWest Gigapop, an organization operated and maintained by UW. UW is also a member of the Internet-2 consortium and is using the Internet-2 in the Research TV high bandwidth communication project. There are eight general access computer labs on campus, plus dozens of departmental labs. The Locke Visualization Lab is a specialized facility with special capabilities for data visualization of large datasets, flow analysis, 3D modeling, and video capture and playback.

*Continuing Education:* The Forestry Continuing Education Program (ForestCE) is a self-sustaining unit within the CFR responsible for developing, conducting and facilitating continuing education opportunities for natural resources professionals in the PNW. Continuing education events are accredited by the Society of American Foresters and other professional societies. CFR's centers and programs are free to sponsor continuing education events and use ForestCE for advice, assistance, or as a consulting group. ForestCE is a member of the Continuing Education Coordinating Committee working in conjunction with WSU and OSU on regional continuing education, offering opportunities in forestry and range management including emphasis on ecosystem management and systems approaches to natural resource management. The ForestCE program sponsored the NPS "Servicewide Intake Trainee Program" in 1999.

## I. LIST OF EXAMPLE FORMAL AGREEMENTS WITH LAND MANAGEMENT, ENVIRONMENTAL, AND RESEARCH AGENCIES

**National Park Service:** NPS, through its Natural Resource Management and Science Divisions, has a 30-year relationship with the UW in a highly successful program of cooperative research and technical assistance. For the first 23 years, it stationed two federal scientists in the College of Forest Resources. The cooperative agreement between the NPS and the UW was continued after the CPSU re-organization and has been active with several social science projects. The NPS Cultural Resource Management Division also has a long history of cooperative relationships with the College of Landscape Architecture and Urban Planning, and Departments of History and Mechanical Engineering.

**National Oceanic and Atmospheric Administration:** The Joint Institute for Study of the Atmosphere and Ocean (JISAO) was established by NOAA and the UW to promote close multidisciplinary collaboration. Principal players in JISAO include the Department of Atmospheric Sciences and the UW School of Oceanography, NOAA's Pacific Marine Environmental Laboratory, the National Weather Service, and the National Marine Fisheries Service.

**National Oceanic and Atmospheric Administration:** The Pacific Northwest Climate Impacts Group (CIG) at UW is sponsored by NOAA's Office of Global Programs and NASA's Office of Earth Science. CIG's mission is (1) to understand how natural climate variability and human-caused climate change in the PNW affects natural resources and (2) how human socio-economic and political systems respond to and modify the variability of climate and natural resources. CIG's four main sectors are currently studying hydrology and water resources, marine ecosystems (chiefly salmon), forest resources, and coastal processes. CIG will soon add studies on agriculture, energy, and human health sectors. Current research includes correlation between El Niño and salmon production and the relationship between climate variations and forest fires.

**U.S. Department of Energy (DOE):** DOE recently provided funding to NPS for research into sustainable energy practices. NPS, in turn, has worked with the UW Mechanical Engineering Department on several projects pertaining to energy conservation in Crater Lake National Park. Research into improving energy use at the North Cascades National Park ranger station is just underway.

**United States Environmental Protection Agency (EPA):** The National Research Center for Statistics and the Environment was established in 1997 at the UW through a cooperative agreement with USEPA. It provides a platform for multi-disciplinary interaction focused on statistical analysis of environmental concerns. Currently, research projects include hydrological effects of forest management practices and statistical aspects of air quality standards. EPA also funds the EPA-Northwest Center for Particulate Matter and Health (one of five centers studying the effects of particulate air pollution on human health).

**U.S. Fish and Wildlife Service (USFWS):** Under a UW /USFWS cooperative agreement, three researchers from the USFWS and their programs are housed at the Washington Cooperative Fish and Wildlife Research Unit (WACFWRU). This is one of 40 such units established to facilitate cooperation between the Federal Government, colleges and universities, the states, and private organizations in improving the management of the nation's fish and wildlife resources. Research focuses on management of anadromous salmonids, effects of habitat alterations (physical and chemical) on populations and communities, and fish/wildlife interactions. Staff members have expertise in both terrestrial and aquatic wildlife associated with croplands, forests, and near-coastal habitats.

**USDA Forest Service Pacific Northwest Research Station:** The Forest Service has a

cooperative agreement with the UW to study the effects of fire on forest ecosystems in the PNW and beyond. Cooperative research includes investigation of various aspects of fire modeling, prescribed burning, and large-scale applications in fire management and planning.

**United States Geological Survey**: The USGS currently has a cooperative agreement establishing the USGS/BRD/FRESC/Cascadia Field Station (CFS). The CFS was created out of the NPS CPSU in 1993 when Department of Interior research was reorganized. The CFS directs several long-term studies and assists federal land management agencies with research, technical assistance and continuing education. Many research efforts involve cooperation with federal and state agencies. Recent research has emphasized interdisciplinary perspectives including the social sciences and ecosystem management. This unit houses biologists and social scientists; it has a 25-year history of work in Alaska.

**USDA Natural Resource Conservation Service (NRCS):** NRCS maintains the Watershed Science Institute on the UW campus. The institute incorporates ecological principles into field-based resource management applications and accelerates the development and transfer of appropriate technology in response to comprehensive watershed needs and environmental sustainability.

**Washington State Department of Natural Resources (DNR):** DNR conducts cooperative research with UW scientists on long-term resource management issues. Emphasis is on the development of sustainable forest practices, improved forest management techniques, and enhancement of wildlife and fish habitat.

## J. OTHER COLLEGE AND UNIVERSITY PARTNERS IN THE PROPOSED UW CESU

UW faculty members collaborate with faculty from other universities regionally, nationally and internationally offering potential for informal interaction with the proposed CESU. UW faculty doing research in ecosystem management and natural and cultural resource management have worked collaboratively with colleagues from major universities outside the PNW including University of California (Berkley), University of Missouri, University of Massachusetts, University of California, Berkeley, Simon Fraser University, University of Vermont, Michigan State, and the University of Utah.

The following universities and colleges have agreed to partner in the UW CESU. Space constraints prevent listing of individual faculty in these institutions. In the following list, and in the attached letters, academic areas in which these institutions have expertise especially relevant to the UW CESU are cited.

**Heritage College (HC)**
HC is on the Yakama Reservation in central Washington and has a mission to provide quality college education to Native Americans and Hispanics. HC students are pursuing careers in forestry, fisheries, natural resources and environmental sciences. (See attached letter for contact information.)

**Oregon State University (OSU)**
OSU is Oregon's Land Grant University. It provides outstanding capabilities for research, education and outreach related to the needs of participating CESU agencies. It has outstanding programs in aquatic ecology, terrestrial ecology and coastal ecology. The OSU Extension Service provides a comprehensive set of educational services throughout the state of Oregon. (See attached letter for contact information.)

**Tuskegee University (TU)**
TU is a leader among Historically Black Colleges and Universities. It is strong in the sciences, engineering, architecture, business health and many other professions. TU has several programs of

specific relevance to the PNW CESU including B.S. and M.S. programs in Environmental Sciences, Evolution and Ecology, Forest Science/Management, Wildlife Science/Ecology and Conservation, and Fisheries Science. TU also hosts a USFS Research Unit and has a Cooperative Agreement with the UW CFR. (See attached letter for contact information.)

**University of Alaska, Anchorage (UAA)**
The UAA brings several strengths to the CESU and has a record of cooperative activities with federal agencies. The Institute of Social and Economic Research (ISER) analyzes major public policy issues in Alaska. It has performed large-scale social surveys pertaining to Alaska natural resource management. The Environment and Natural Resources Institute is a multidisciplinary center that focuses on public policy issues related to natural resources including fisheries management, Native socio-cultural and subsistence issues, and atmospheric air quality monitoring. (See attached letter for contact information.)

**University of Alaska-Southeast (UAS)**
UAS, located in the heart of southeast Alaska, has a history of cooperative relationships with federal agencies, especially NPS and USFS. UAS programs in Environmental Science, Marine Science and Anthropology will be important to the PNW CESU. (See attached letter for contact information.)

**University of British Columbia (UBC)**
Potential UBC participation in the PNW CESU is important because of trans-boundary implications inherent in organizing ecosystem management studies of natural systems on the Pacific Coast. UBC has many strong programs that will be helpful to the PNW CESU, including forest ecology, wildlife and fisheries. (See attached letter for contact information.)

**University of Idaho (UI)**
UI is Idaho's Land Grant University. Through the College of Natural Resources, UI provides several strengths to the CESU partnership: aquatic and fisheries ecology, avian, forest, riparian, fire and landscape ecology, hydrology and watershed management, natural resource communications, natural history interpretation, tourism, recreation management, resource economics, wilderness management, and game management. UI is a partner in the Rocky Mountain CESU hosted by the University of Montana. (See attached letter for contact information.)

**University of Oregon (UO)**
UO has a long history of activities associated with environmental and ecosystem issues. It has good cooperative relationships with federal agencies, especially the NPS. The UW CESU will especially benefit from strong programs in the School of Architecture and Allied Arts and the Oregon Institute of Marine Biology. (See attached letter for contact information.)

**Washington State University (WSU)**
WSU is Washington's Land Grant University and so the coordinating institution for the Higher Education for Northwest Reservations program. WSU's Department of Natural Resource Sciences brings several programmatic strengths to the CESU, including wildlife, forest and rangeland ecology and management, ecological restoration, wild-land recreation management, natural resource sociology and economics. Other WSU academic areas of particular relevance to the CESU include rural sociology, soil, water and atmospheric sciences, zoology, and applied animal sciences. The WSU Cooperative Extension system provides a nationally recognized set of services across the state. WSU is also a partner in the Rocky Mountain CESU hosted by the University of Montana. (See attached letter for contact information.)

**Western Washington University (WWU)**

The Huxley College of Environmental Studies at WWU, one of the oldest environmental colleges in the nation, has an impressive history of cooperation with several federal agencies. Currently 500 undergraduate and 100 graduate students are in this program. Research at Huxley presently emphasizes water conservation issues and salmon habitat restoration. (See attached letter for contact information)

**K. NON-UNIVERSITY PARTNER IN THE PROPOSED PNW CESU**

**Alaska Department of Fish and Game (ADF&G)**
ADF&G is uniquely qualified to provide expertise in fisheries, wildlife, resource management, and public uses of resources in the Pacific Gulf areas of Alaska. It has a long history of successful cooperative research with NPS, U.S. Forest Service, and the U.S Fish and Wildlife Service. ADF&G Division of Subsistence has conducted collaborative research pertaining to subsistence uses in rural Alaska with the UW CFR. (See attached letter for contact information.)

## L. OTHER UW PARTNERSHIPS OF RELEVANCE TO A CESU

The UW has many active research and education partnerships organized for specific projects relevant to a CESU. An example is the Puget Sound Regional Synthesis Model (PRISM) (www.prism.washington.edu). This is an interdisciplinary research effort spanning many different UW departments, plus several outside organizations. Its central theme is to describe and analyze the interactions of the human population with the natural environment of the Puget Sound Basin. Once these interactions have been identified, PRISM attempts to "capture" or model the dynamics in the form of a "Virtual Puget Sound" (VPS). Hydrology is the key linkage in VPS' four modules: a physical template; a coupled atmosphere-hydrology model; a Puget Sound circulation, water quality, and near-shore habitat module; and, uniquely, a human dimension -- including the impacts of human action on the biophysical system and the socio-economic effects of environmental change. Because climate and land use practices restructure the water cycle and have major impacts on the economy, biological productivity, and habitability of the region, VPS can serve as the vehicle for research and education programs and can be applied to regional problem-solving. The U. S Forest Service is a PRISM partner. Informal partners include USGS Water Division, U.S. Fish and Wildlife Service, NOAA, and the Northwest Indian Fisheries Commission, state, city and county agencies, and citizens' action groups.

**M. SERVICES TO FEDERAL EMPLOYEES**
UW will provide CESU employees duty-stationed at UW access to the campus and its extensive facilities and services identical to its paid employees (except for fringe benefits only available to paid employees). CESU employees will also be provided computer network access and basic telephone service. Qualified CESU personnel will be considered for appointment to the faculty and accorded all faculty privileges appropriate to their rank and position. The rank and position of such individuals will be determined by the UW in accordance with its usual policies and procedures. Such appointments will be without tenure, compensation or other financial benefits from the UW.

**N. OVERHEAD RATE**
UW will accept an indirect rate of 15% of Total Direct Costs for all activities conducted through the CESU including facilitating transfer of funding or subcontracting to CESU partners without any charge above the base 15%. The indirect rate will apply to all direct costs excluding capital equipment. CESU annual administrative and support funds will be charged no indirect costs.

**O. ADMINISTRATIVE SUPPORT**
The CESU will be administratively associated with the CFR through Dr. David Thorud, Dean. He will assist the CESU personnel establish themselves on campus and will coordinate planning efforts associated

with the UW including the annual CESU work plan and annual report. CESU personnel will have access to CFR clerical services and computer systems engineers. Work-study support will also be available.

Without knowledge of the number and type of employees to be stationed at the UW, it is difficult to precisely describe the space available at the UW. There is space now in the CFR complex for two professionals with an administrative support person. Space for additional people is possible but this issue should be negotiated when more details are known.

The UW in general and the CFR specifically have a 30-year history of extremely successful collaboration and cooperative interaction with a resident research unit supported by the Department of Interior. During that time, CFR has provided excellent support to this unit – whether it involves use of facilities, or partnerships regarding technical and administrative support. We anticipate working in the same positive and cooperative mode with the CESU at the UW.

## 5. SPECIFIC BENEFITS OF THE PROPOSED CESU

**Breadth and Strength of Academic Resources on the UW Campus**
As the largest public university in the PNW and one of the leading research institutions in the US, the aggregate UW programs of research and education pertinent to the missions of federal land management, environmental and research agencies are unsurpassed in the PNW. Few universities anywhere have outstanding academic programs in such varied areas as forestry, fisheries, zoology, anthropology, landscape architecture and urban planning, history, and many other disciplines in the social sciences and engineering. These excellent academic resources and the enthusiastic interest of many UW faculty, combined with the varied strengths of our diverse partners, offer an unprecedented opportunity to create of a unique program that serves both natural and cultural resource managers in participating land management agencies.

**Breadth and Quality of Easily Accessible Services and Facilities on UW Campus**
UW offers the excellent support facilities and services of a world-class university. CESU staff at UW will have these services conveniently available, on the same basis as paid University employees. These services include access to one of the largest research libraries in the US, conference centers, the Burke Museum and state-of-the art computing systems and geospatial technology. Other selected outstanding support services and facilities were described in section 4.H.

**Breadth and Strength of the UW CESU Partners**
No single university can meet all the complex needs for research, technical assistance and education now facing potential participating federal agencies. The proposed UW CESU offers federal agencies unprecedented access to academic resources in the PNW via partners located throughout the bioregion. This access will allow federal agencies optimal opportunity to place projects with most qualified personnel and the flexibility to design innovative interdisciplinary project teams. The UW is committed to fostering cooperation among the partners identified in this proposal. We will continue to develop partners to deliver an optimal set of interdisciplinary academic resources to participating federal agencies. The proposed CESU represents an opportunity to create a valuable forum for interdisciplinary interaction among the UW community and the CESU partners that is intrinsically important to the UW.

**UW History of Cooperation with and Responsiveness to Federal Agency Needs**
The list of cooperative activities and involvement between federal agencies and UW document a long history of highly successful interaction. Several outstanding cooperative programs involving scientists from the NPS, U.S Forest Service, U.S. Fish and Wildlife Service, and USGS have been established at the UW. From a UW perspective, federal scientists housed on the UW campus have made major

contributions to the UW community. A substantial number of UW faculty members, across several disciplines, are involved in applied research applicable to problems facing federal managers. The selected list of federally sponsored projects ongoing at the UW in 4.F. illustrates this interest and the broad capacity of UW faculty to meet agency needs. UW faculty members recognize the important opportunity that federal agency sponsored research brings to involve students in the application of research methods to real-world problems.

The UW College of Forest Resources (CFR) provides an outstanding location for CESU administration because of CFR's interdisciplinary orientation, applied focus, emphasis on continuing education and a long history of successful cooperation with federal land management and research agencies. The USGS/BRD/FRESC/Cascadia Field Station (CFS) provides instant opportunity for CESU staff to collaborate with federal-state cooperative research unit personnel whose programs have involved faculty and students from across the UW campus including the College of Landscape Architecture and Urban Planning, History, Anthropology, Social Psychology, Sociology, Economics, Zoology and Botany Departments, and the Graduate School of Public Affairs. The CFS also has a long history of cooperative federally sponsored work in Alaska that includes interaction with faculty at University of Alaska, Southeast, University of Alaska, Anchorage, University of Alaska, Fairbanks and with researchers employed by the Alaska Department of Fish and Game.

**Potential Contribution to Multidisciplinary, Interagency Ecosystem Research**
There are strong affiliations within the UW focused on multidisciplinary research at the local and regional levels. Sustainable management of natural resources on public lands - including forests, water, and fish - is a topic of ongoing cooperation between the College of Forest Resources, College of Ocean and Fishery Sciences, Department of Geological Sciences, and the Department of Geography. Multidisciplinary teams often conduct research, monitoring, and educational activities on the same administrative units in local national forests and national parks. Having both biological and social components in these multidisciplinary studies facilitates interaction with local communities and stakeholders.

**Potential Contribution to Increasing Minority Participation in the Scientific Workforce**
The large and diverse pool of students, especially graduate students, from which to recruit assistants at the UW is unsurpassed in the PNW. This large group of highly talented individuals includes significant minority group membership, thereby increasing the potential for successful recruitment of minority participation in CESU activities. Two of the university partners recruited into the CESU partnership are recognized as minority-serving institutions, increasing further the opportunity to recruit minority students into CESU programs. The UW has an excellent record of supporting programs to recruit minority students and will work diligently with the CESU to identify minority students for internships, project-related employment, and research assistantships on CESU projects.

**Potential to Provide Cost Efficient Research, Technical Assistance and Education**
Apart from low indirect costs, the proposed UW CESU has strategic advantages in providing cost efficient products to federal agencies. First, it would be centrally located in the PNW bioregion and on the campus with the most concentrated set of academic assets relevant to potential participating federal agencies. Second, the UW is only a short distance from an international airport. These two factors will reduce the costs of administering the unit and many of its program activities. An NPS support office is also located in Seattle making interaction with that group of federal managers easy and cost effective. The extensive group of cooperating universities that has been organized for the proposed UW CESU will allow federal agencies to straightforwardly access university resources throughout the PNW that are pertinent to both natural and cultural resource management issues. The combination of these factors will

enhance CESU administrative efficiency, reduce redundancy and duplication of effort, minimize administrative costs and reduce the costs of programs conducted through the CESU.

## 6. LETTERS OF INTEREST AND SUPPORT FROM PARTNER INSTITUTIONS

A. Heritage College
B. Oregon State University
C. Tuskegee University
D. University of Alaska, Anchorage
E. University of Alaska, Southeast
F. University of British Columbia
G. University of Idaho
H. University of Oregon
I. Washington State University
J. Western Washington University
K. Alaska Department of Fish and Game
L. University of Washington

## 7. PNW CESU PROPOSAL ADDENDUM -- April 10, 2000

In a letter dated 28 February 2000, the CESU Council Coordinator suggested several topics for elaboration or addition to: "A Proposal to Establish a Cooperative Ecosystem Studies Unit in the Pacific Northwest with University of Washington, Seattle as Host University." These were all discussed during the site visit on 13 March 2000 at the University of Washington, College of Forest Resources, Seattle. In response to the above letter and in light of the site visit discussion, the following items are officially added to the PNW CESU proposal.

**Change requested 1:**
*Additional elaboration is needed on the involvement of Alaskan institutions in the CESU so that the research, technical assistance and education capabilities of the CESU fully address the needs of the Alaskan portion of the PNW biogeographic region*

**UW response:**
The Alaska portion of the PNW biogeographic region is important. Because of the geographical separation with the host university and the lower-48 partners, extra effort is indeed warranted to assure that the PNW CESU meets the needs of this area. In addition to the inclusion of the University of Alaska Southeast, University of Alaska Anchorage, and the Alaska Department of Fish and Game, within 60 days of the receipt of the initial funds provided at the signing of the PNW CESU Cooperative Agreement, we will solicit a working association with the Alaska Land Manager's Forum (ALMF). The ALMF has a comprehensive membership of representatives from all federal agencies managing land in Alaska, the Lieutenant Governor and other State Representatives, representatives from the Alaska Federation of Natives and Native Regional Corporations, and a Special Assistant to the Secretary of Interior. This group has informal responsibilities related to coordination of research among the Alaska land management agencies. Therefore, ALMF will be an excellent communication vehicle through which to solicit Alaska agency needs for research, technical assistance and education, and also to transmit information about the PNW CESU program. In addition, we will create an ad hoc committee drawn from the Executive Committee (described below) to annually evaluate the effectiveness of the CESU services to Alaska and, if necessary, to make suggestions on how these services can be improved.

**Change requested 2:**
*Partner institutions that bring additional and complementary strengths to the CESU are critical to the CESU "vision." Additional Native American partner institutions (not necessarily universities), especially those in the Alaska portion of the PNW biogeographic region, should be considered for inclusion in the CESU, and their role explicitly defined.*

**UW response**:
The UW appreciates the importance of Native American participation in the proposed PNW CESU. Although relevant throughout the biogeographic region, this participation is particularly important in Alaska because of the large areas of land owned and managed by Native entities. Within 60 days of receipt of monies associated with the signing of the PNW CESU Cooperative Agreement, we will meet with the appropriate executive officer, or their corporate board, to invite participation of the Alaska Native Science Commission as a partner in the PNW CESU. A primary role of the Alaska Native Science Commission will be to review proposals and CESU activities from Alaska Native perspectives and to advise the CESU on opportunities to integrate Native traditional ecological knowledge and western scientific paradigms. Should the Alaska Native Science Commission decline to participate as a partner in the PNW CESU, we will promptly invite another appropriate Alaska Native organization to be a partner in the CESU.

**Change requested 3:**
*Federal partnerships are critical to an effective, well-functioning CESU. The CESU should be closely aligned with ongoing federal agency activities. A description of current and potential*

*activities relevant to the BLM should be provided.*

The UW welcomes the opportunity to enhance its relationship with the BLM. We perceive the proposed CESU as an appropriate and excellent vehicle through which to evolve this interaction. Current research projects funded by BLM at the UW are limited. Examples include Dr. Henry Chappell's work on stand management and Dr. Peter Kareiva's research on restoring Bender's Blue Butterfly. Very notably, Dr. Linda Brubaker, CFR, is a member of the Science Advisory Board for the BLM.

Potential research topics of interest to BLM resource managers and to researchers at UW and several of the CESU partner university faculty members include restoration of riparian areas, affects of invasive species, changing fire regimes and threatened and endangered species. The proposed PNW CESU will offer a forum for discussion and funding of interagency, interdisciplinary research and knowledge distribution on diverse topics of interest to BLM managers.

**Change Requested 4:**
*The relationships and roles of the host university and partner institutions should be explicitly and specifically defined.*

**UW response (relations and roles in general):**
Over time, we conceptualize the PNW CESU organization as necessarily fluid and adaptive – constantly evolving to optimally operationalize efficient interaction between participating federal agencies and CESU partners in a dynamic and changing environment. In general, however, as the host university the UW will:

- conduct a program of research, technical assistance and education related to the PNW CESU objectives;
- provide space and fundamental administrative and clerical support for federal personnel stationed at the host university as appropriate;
- provide access for PNW CESU staff to campus facilities as appropriate;
- encourage students and employees to participate in the activities of the CESU
- provide release time for employees to participate in CESU activities as appropriate;
- as necessary receive and transfer federal monies to partner institutions within the parameters established by CESU agreement at no overhead cost (with the understanding and expectation that federal funds for CESU activities can and will go directly to partner institutions most of the time);
- with federal personnel stationed on campus, provide co-leadership and coordination for CESU activities including:
    - hosting routine meetings of partners and representatives from participating agencies;
    - coordinating drafting of the role and mission statement with partner institutions and participating federal agencies;
    - organizing and hosting the PNW CESU managers' committee;
    - preparing with partners an annual work plan; and
    - preparing with partners the multi-year strategic work plan.

In general, partner institutions will:

- conduct with Host University and participating federal agencies a program of research, technical assistance and education;
- will receive, transfer and administer project funds as agreed under the CESU agreement;
- participate and contribute in a timely manner to the operations and tasks associated with the PNW CESU; and
- as appropriate, encourage students and employees to participate in the activities of the PNW CESU.

**UW response (CESU leadership):**
Creative, responsible and determined leadership will be essential to the PNW CESU's success and viability. Accordingly, we conceptualize CESU leadership as shared between the University and the participating federal agencies with personnel duty stationed on campus. The UW will initially appoint Gordon Bradley, Associate Dean, CFR, as the CESU co-leader from the UW. Dr. Bradley will work with the other CESU co-leader to be chosen in cooperation with federal participating agencies among their personnel stationed at the UW. The CESU co-leaders will be charged with organizing and coordinating the formative tasks of establishing the PNW CESU. These include development of the PNW CESU role and mission statement, developing an annual work plan, and developing a multi-year strategic plan in cooperation with all participating federal agencies and partner institutions. Other crucial tasks to be accomplished during the PNW CESU formative period are: (1) establishment of a Manager's Committee to provide general advice and guidance to the CESU and to assist in its evaluation; and (2) coordinate initial activities with the CESU partners and development of administrative policies for partners' interactions. The co-leaders will also interact with liaisons from federal participating agencies that do not have personnel stationed at the UW to develop administrative policies with these agencies for interaction with the CESU Host and partners. If selected as the PNW CESU Host University, the UW anticipates using a portion of the initial cooperative agreement award to purchase faculty time to accomplish the formative tasks described above.

**UW response (administrative policies for cooperator's interactions):**
These policies can only be crafted in detail with consensus among the cooperators. To develop these policies, we propose the creation of a PNW CESU Cooperator's Executive Committee to be composed of single representatives from each of the partner institutions and the participating federal agencies. (Members to be appointed by their organizations.) This committee will be convened as necessary to discuss policies pertaining to coordination of cooperator's activities, and other issues pertaining to the CESU. Initially, members of this committee will meet to adopt a PNW CESU role and mission statement and to provide suggestions to the CESU co-leaders in developing the first annual work plan. Members of the PNW CESU Cooperator's Executive Committee will serve as primary contacts for CESU interaction with their institutions -- by both other partners and participating federal agencies. If necessary, a sub-committee of only the CESU partners can be created from the membership of the Executive Committee. Agency members on the CESU Executive Committee should also be appointed to the Manager's Committee.

**UW response (interactions between participating federal agencies with no representation on UW campus and the CESU):**

To more efficiently organize interaction between the PNW CESU and the participating federal agencies with no representation on campus, we will expect these agencies to appoint a CESU liaison to also serve on the Manager's Committee. This individual will have the responsibility of coordinating inquiries from their agency to the CESU co-leaders and to representatives of the partner institutions.