

Fiscal Year 1998 Statement of Work

StreamNet:

The Northwest Aquatic Resource Information Network

(October 1, 1997 - September 30, 1998)

Introduction

Project Summary. StreamNet provides data services and other technical support for activities associated with the Northwest Power Planning Council's (Council) Fish and Wildlife Program, as well as Endangered Species Act activities (ESA) and other state and regional-level planning, policy, and management activities that complement the Program. In doing this StreamNet works in close consultation with the Bonneville Power Administration (BPA), the Council, the Columbia Basin Fish and Wildlife Authority (CBFWA), the Independent Science Advisory Board (ISAB)/Independent Science Review Panel (ISRP), and applicable federal, state, and tribal resource managers.

The StreamNet data system consists of a series of databases and reference materials concerning aquatic resources in the four state Pacific Northwest region. Included are data on fish production (both natural and hatchery), fish and wildlife distribution, habitat characteristics and condition, source material references, stream hydrography, and other environmental factors. A project data plan identifies additions and enhancements planned for the future. StreamNet utilizes the Internet as a principal means to deliver data. Data are also available via a stand-alone distributed system and custom products and services. Source materials are available through the StreamNet Library housed and maintained at the Columbia River Inter-Tribal Fish Commission in Portland, Oregon.

StreamNet Goals and Objectives. The overall goal of the project is to create, maintain, enhance, and provide public access to a regionally consistent set of fish, wildlife, and related resource data. These data are to be directly applicable to policy, planning, and management activities aimed at the protection and restoration of fish and wildlife resources. Specific objectives include:

1. Fish and Wildlife Program. Serve as the primary mechanism for managing fish and wildlife data related to the Northwest Power Planning Council's Fish and Wildlife Program by maintaining and providing public access to essential existing data, supplying Program projects with data and computer-generated maps, serving as a repository for data collected through these projects, and providing information services to assist the Council, BPA, CBFWA, and the ISAB/ISRP in tracking projects and, ultimately, evaluating their effectiveness through the regional monitoring and evaluation process.
2. Other Fish and Wildlife Initiatives. Provide data and services to activities within the

region that are related to the conservation of fish and wildlife resources and that complement the Fish and Wildlife Program, including Endangered Species Act activities, regional environmental analyses, tribal resource management, state-level policy and planning, and federal land and resource management agency activities.

Project Organization. The StreamNet project is a cooperative effort on the part of the region's fish and wildlife management agencies. The project is managed by the Pacific States Marine Fisheries Commission (PSMFC), under contract to the Bonneville Power Administration (BPA). The Northwest Power Planning Council (Council) provides policy oversight. Other agencies with a contractual commitment to the project include:

- Columbia River Inter-Tribal Fish Commission (CRITFC)
- Idaho Department of Fish and Game (IDFG)
- Montana Fish, Wildlife and Parks (MFWP)
- Oregon Department of Fish and Wildlife (ODFW)
- Shoshone-Bannock Tribes (SBT)
- U.S. Fish and Wildlife Service (USFWS)
- Washington Department of Fish and Wildlife (WDFW)

Additional agencies that participate in certain aspects of the project, contribute financial resources, and/or are significant beneficiaries of project products, include:

- Bureau of Land Management (BLM)
- Environmental Protection Agency (EPA)
- National Marine Fisheries Service (NMFS)
- U.S. Geological Survey (USGS)
- U.S. Forest Service (USFS)

PSMFC's project management team includes a project manager responsible for overall project coordination, a data manager responsible for overseeing development of the StreamNet data system, and a GIS manager. Participating agencies have designated a project coordinator who serves as the principal contact person within the organization and is responsible for ensuring that the agency meets its obligations regarding the project work statement. Much of the actual data development occurs at the agency level. Project coordinators within each of the participating agencies oversee this and ensure that appropriate agency-level data services are provided.

A Steering Committee consisting of representatives from BPA, CRITFC, IDFG, MFWP, ODFW, PSMFC, SBT, USFWS, USFS, and WDFW oversees the project. The Committee provides the principal means for interagency coordination and communication and for ensuring the needs of the various participating organizations are being addressed. It is the Steering Committee's

responsibility to approve major decisions regarding project direction and products.

BPA has assigned a Contracting Officer's Technical Representative (COTR) to oversee the StreamNet contract. The COTR has responsibility for ensuring that the project work statement adequately addresses Fish and Wildlife Program requirements in a cost effective manner, and that satisfactory progress is made toward producing work statement deliverables. It is understood that situations may arise that require a change in project deliverables, as, for example, when the project must respond to new laws and regulations, or regional priorities. In these cases, project managers and the Steering Committee may request a modification of the contract or otherwise gain concurrence from BPA.

Funding. The project is a component of the Council's Fish and Wildlife Program and receives funding through the BPA. The project is also supported through contributed services on the part of participating agencies and through limited contracts and other forms of financial support from participating agencies and others.

The NMFS is contributing funds through a separate contract to allow for the compilation of anadromous fish data for coastal Oregon and Washington. This arrangement provides the opportunity to expand the StreamNet data system to anadromous fish zones outside of the Basin, thus providing a broader context for decisions. In the past year additional funds have come from the USFS and the EPA. These funds have assisted in the development of the 1:100,000-scale river reach system, the purchase of computer equipment, and other activities that have directly supported the core mission of the project. Project participants will continue to pursue cooperative funding to support data development activities that complement overall StreamNet goals - especially for data development outside of the Columbia Basin, for the development of data on habitat, and for maintenance of the 1:100,000-scale river reach system.

PSMFC works with all west coast states on fisheries issues. By virtue of these relationships StreamNet will also be able to provide Northwest natural resource managers with select data from California, Alaska, and British Columbia. The StreamNet team intends to maintain active contacts with data development efforts in California, Alaska, and British Columbia in order to promote the development of StreamNet-type data and data systems coast-wide.

This statement of work addresses only those tasks that will be performed during FY 1998 using BPA-administered Fish and Wildlife Program funds.

Work Plan Summary

Overview of Tasks. The work plan which follows identifies six primary objectives that the StreamNet project will address in FY 1998. For each objective the work plan identifies a number of tasks that will be completed during the fiscal year. Tasks are divided into sub-tasks as appropriate. For each task one or more products are identified. Attachment I presents a proposed budget for the project for FY 1998. Included are an overall budget and a budget for each participating organization.

The work statement is the product of a concerted effort on the part of participating agencies to target high priority data in light of current and projected needs. The work statement links directly to the StreamNet Data Plan, which identifies data currently in the system, data that should be compiled over the next five years, and, within this, data that should receive priority for FY 1998. (The StreamNet Data Plan may be viewed by going to the "management" section of the StreamNet home page and, within that, scrolling to "data development.") For FY 1998, updating of anadromous fish productivity trends will continue to be a priority, as will identification of resident and anadromous fish distribution and life stage use (for species not completed in FY 97). Available anadromous fish age and population data will be incorporated as will biological data on resident fish. Additional areas that will receive attention are aquatic habitat and tracking of fish and wildlife projects. The new 1:100,000-scale river reach system will be available in early FY 1998 and considerable effort will be made during the year to attach existing data to that coverage. Substantial effort will continue to be given to enhancing the project's data management and data delivery services, with development of interagency data exchange formats and Internet access receiving significant attention. The StreamNet Library's ability to provide services to the fish and wildlife management community will likewise be enhanced. The library will place emphasis on enhancing the collection through cooperative arrangements with others having relevant collections.

The geographic scope for data development will be the four state region, with the Columbia River Basin being the principal focus. Data related to areas in the region but outside of the Basin may be incorporated if this does not add to the overall cost and produces information that directly supports Fish and Wildlife Program activities.

The work that each subcontractor will perform may vary depending on ecological considerations, data availability, and other factors. Participating agencies have each prepared individual work statements that correspond to this work statement but that focus directly on the tasks that the agency will undertake. These work statements are available at PSMFC.

Project Record. The FY 1998 work statement includes tasks that involve the preparation of internal strategy reports. These reports provide a means to explore specific issues or opportunities and to create consensus regarding how these might best be addressed. They also provide a mechanism for documenting decisions regarding project direction and proposed expenditure of funds. Typically, strategy reports will address issues related to either 1) changing and expanding demands within the region for fish and wildlife data, or 2) advancements in data management and delivery technology. These reports are considered to be internal working documents that generally are not appropriate for wide circulation or formal review.

The procedure for preparing and reviewing project reports will be as follows:

Assignments for preparing reports will be made by the project manager in consultation with the Steering Committee. They will range in length from a single page to several. To the extent possible, papers will follow a common format with the most important component being a recommended course of action. Draft papers will be distributed to the Steering Committee and BPA's COTR for review and comment, typically via the StreamNet internal home page. Particularly important or complex issues will be discussed at Steering Committee meetings; others may be handled in a less formal manner. Steering Committee members and the COTR may, at their discretion, solicit additional review from others in their respective organizations.

All draft products will also be made available to the public upon request. Depending on the issue, the Steering Committee may also wish to solicit comments from the Council, the agencies and tribes, or others.

Following review, draft reports will be revised, made final, and posted to the management section of the StreamNet web site. For matters that may be of broader interest, or that are particularly controversial, the Steering Committee may determine that additional public review is warranted.

Finally, all final reports will be assembled into a "project record" that will be presented as a formal project deliverable. The project record provides both a convenient means for compiling internal reports and an efficient way to allow for more formal review by BPA, the Council, and others wishing to do so. Upon completion, appropriate recommendations from the project report will be integrated into the project's data plan and/or the next year's work statement.

StreamNet FY 1998 Work Statement

Overall FY 1998 Goal: StreamNet seeks to contribute to the region's efforts to protect and restore aquatic resources by 1) acquiring the most current data and source materials available concerning fish and wildlife life history, production, habitat, and restoration efforts, 2) incorporating these data and materials into a regionally consistent whole, and 3) providing critical data to managers and the interested public via the Internet, library services, and custom products. During FY 1998 StreamNet will specifically focus on providing data services that can assist in 1) monitoring the effectiveness of Fish and Wildlife Program projects, 2) implementing ESA recovery plans, 3) responding to concerns raised in the Independent Scientific Review Panel report, and 4) facilitating fish and wildlife resource management decisions by - and especially among - federal, state, and tribal resource agencies.

Objective 1 - Data Acquisition: Increase the knowledge base concerning the region's fish and wildlife resources through the acquisition of new, high priority information, and the update and enhancement of existing information.

The data elements described in Tasks 1.1 through 1.8 represent the range of resource data to be compiled in FY 1998. Within this range, the various project participants have identified specific data elements to be compiled, based on regional and state-level priorities and the availability of data. Specifics regarding data development responsibilities of each participating agency are detailed in subcontractor work statements. Data will be compiled and delivered to the Regional Data Manager using prescribed data exchange formats in Access-compatible database files for tabular data and ARC/INFO format for spatial data. Data will be referenced to source and

geographical location, with the 1:100,000-scale river reach system used as the standard referencing system for aquatic data. Data reports will be developed as appropriate to describe data, sources, and methods.

ANADROMOUS FISH

Task 1.1 Prepare and maintain standardized data on anadromous salmonids and, where data are readily available, other anadromous fish, to include:

- a. Ocean range and distribution by species and, where possible, by stock. (This is a long range objective, the focus in FY 1998 will be on identifying potential data sources and capturing readily available data. This work will proceed in cooperation with the NMFS "essential fish habitat" initiative.)
- b. Freshwater distribution, life history, and barriers.
- c. Adult abundance (escapement, redd counts, trap counts, dam counts).
- d. Juvenile abundance (smolt monitoring, index of abundance, hatchery/wild ratio).
- e. Harvest (ocean, in-river, terminal).
- f. Natural production (survival, production factors, spawner recruit numbers).
- g. Hatchery production (releases, exploitation, maturation, returns, and disposition).
- h. Age (composition at return).
- i. Genetic origin, production type, stock and population identification. (This is a long-term goal. In FY 1998 emphasis will be on 1) compilation of existing information including agency designated gene groups (examples: WDFW Salmon and Steelhead Stock Identification (SASSI) data and NMFS evolutionary significant units (ESUs)), 2) development of regionally consistent exchange formats for future data collection, and 3) identification of stream areas where genetics data is known to exist and the source of these data).
- j. Historic range (areas previously used for migration, spawning, and/or rearing).
- k. Data and appropriate analytical results derived from the regional Process for Analyzing and Testing Hypotheses (PATH) process.

Products: Regionally consistent data sets for salmon and steelhead gathered and forwarded to PSMFC in exchange format and incorporated into the StreamNet system.

RESIDENT FISH AND OTHER AQUATIC SPECIES

Task 1.2 Prepare and maintain standardized data on resident fish and other aquatic species, to include:

a. Distribution and, when known, life history. It will not be possible to compile these data for all species in all states during FY 1998. Bull trout (char) is the highest priority. The second priority is other native salmonids including redband and cutthroat subspecies. The third priority is fish and aquatic vertebrate and invertebrate species that are either listed or candidates for listing under either federal or state sensitive species programs. The fourth priority is key competitor/predator species, both native and non-native. The fifth priority is other native species. The intent is to have completed products for at least the first two priorities region-wide by the end of FY 1998. At a minimum, this means transferring existing 250K distribution data to 100K hydrography.

b. Hatchery production (releases and outplants) for salmonids (other species may be included if data is readily available). Data compilation will proceed according to a StreamNet white paper on this subject prepared during FY 97.

c. Natural production (Emphasis during FY 1998 will be on design of a data exchange format and coordination with ongoing efforts by the states and tribes).

d. Genetic origin, production type, stock and population identification (emphasis on compilation of existing information - including agency designated gene groups and ESA-related ESUs - and the identification of regionally consistent exchange formats for future data collection).

E. Historic range (as available, may require aggregation at polygon rather than stream level).

Products: 1) Regionally consistent data exchange standards
2) Data available through existing sources incorporated.

HABITAT

Task 1.3 Prepare and maintain standardized data relating to fish and aquatic habitat, to include:

a. In collaboration with the federal Inter-organizational Resource Information Coordinating Council (IRICC) process, prepare data exchange formats consistent with interagency "core variables" and coordinate with agencies and tribes to encourage use of these formats.

b. Incorporate applicable Interior Columbia Basin Environmental Management Plan (ICBEMP) and comparable westside datasets; in consultation with the USFS and BLM develop a long-term strategy for maintaining these datasets.

c. Incorporate locations of proposed and final critical habitats for fish and aquatic wildlife in accordance with the Endangered Species Act.

d. Incorporate existing Clean Water Act 303(d) data.

e. Identify available and applicable information on estuary and ocean habitat and devise a strategy for future incorporation of these data.

f. Identify and - where feasible and appropriate - incorporate information available from other sources that can contribute to a meaningful characterization of the state of the region's aquatic habitat.

Products: 1) Applicable data incorporated into the StreamNet system.

2) Strategy paper on estuary and ocean habitat.

FACILITIES

Task 1.4 Maintain standardized data relating to facilities affecting fish and aquatic habitat.

a. Enhance the existing StreamNet dams dataset by integrating relevant data from the Pacific Northwest Hydropower Data Base and Analysis System (NWHS) and the National Inventory of Dams. The resultant dataset will include data on location, physical and hydrological characteristics, licensing status, and/or other features that have a direct bearing on the management of fish resources.

b. Prepare data exchange formats and conduct a prototype test of data on irrigation diversions that might impact fish, potentially to include diversion location, type, and screening status.

c. Develop data exchange formats and initiate compilation of available data on man-made blockages and fish passage facilities, including location, character, and status.

d. Maintain a dataset on anadromous and resident hatchery facilities containing information on location, design, management, authorization, etc.

Products: 1) Data exchange formats for dams, diversions, fish passage facilities, and hatcheries.

- 2) Acquire available and applicable data on dams, irrigation structures, blockages and passage facilities, and hatchery facilities.

AQUATIC MITIGATION AND RESTORATION PROJECTS

Task 1.5 Prepare and maintain standardized data relating to the tracking of aquatic management and restoration projects, to include:

- a. Maintain and make available standardized data that tracks fish and wildlife enhancement projects funded through the Fish and Wildlife Program. (StreamNet's role is to provide technical support to BPA, Council, and CBFWA.)
- b. Develop procedures for tracking aquatic restoration projects funded in accordance with the 1996 interagency MOA on this subject. Incorporate data provided by these agencies. (Work on this is contingent upon establishment of an agreement among applicable agencies to participate. StreamNet will play a support role to BPA and the Council in securing such an agreement.)
- c. Evaluate the potential for compiling similar data on other fish and aquatic habitat restoration, protection, and mitigation projects sponsored by federal land managers, states, tribes, and/or others and that complement the Fish and Wildlife Program and/or regional ESA activities. Prepare data exchange formats and compile readily available data.

- Products:
- 1) Data exchange formats.
 - 2) Applicable data compiled and incorporated.

DATA REFERENCE

Task 1.6 Document data incorporated into StreamNet with reference number and source; collect applicable source documents and provide same to the StreamNet Library.

- Products:
- 1) References and sources in electronic format and integrated into system.
 - 2) Documents in physical possession at StreamNet Library.

RIVER SYSTEM OPERATIONS

Task 1.7 Compile available historic data on mainstem hydro and storage dam operations including spill flow, turbine flow, screening and fish guidance efficiency (FGE), temperature, juvenile transport, and dissolved gases.

Product: Data incorporated into StreamNet.

Task 1.8 Participate in applicable regional discussions on the issue of providing available in-season fishery, hydrologic, water quality, and dam operations data not being provided through other sources and determine the appropriate role - if any - for StreamNet in this activity.

Product: Draft and final recommendation regarding the advisability and feasibility of incorporating migration season fishery, hydrologic, water quality, and/or dam operations data into StreamNet.

Objective 2 - Data Management: Provide high quality data management services, with specific emphasis on the creation of regionally consistent data sets.

Task 2.1 Design, develop, and maintain standard codes and data exchange formats for data being compiled as part of the StreamNet project, and for similar data development initiatives. At the regional level, provide technical assistance regarding standard codes and exchange formats for Fish and Wildlife Program and ESA-related projects, and for applicable tribal data compilation activities. At the state level provide similar technical assistance for state agency data activities applicable to StreamNet. The extent of this technical assistance will be determined by data manager work load.

Products: Proposed and adopted data exchange formats for specific data items as described under Objective 1.

Task 2.2 Update the existing data exchange format report.

Products: Data exchange format report posted to the StreamNet web site containing formats for data types that are either components of StreamNet or in the process of being incorporated.

Task 2.3 At both the regional and state levels, provide database management and administration necessary for accomplishing StreamNet objectives, to include: 1) maintaining regional and state-level StreamNet data sets, 2) processing exchange data into the regional database, 3) transporting data to SQL environment, 4) enhancing StreamNet database structures and capabilities, and 5) providing programming services to project participants to allow for efficient data entry and transfer.

Products: Summary of services in quarterly status and annual reports.

Task 2.4 Designate and maintain a metadata format for spatial data.

Product: Catalog report posted to web site and updated as necessary.

Task 2.5 Establish and implement procedures for coordination of StreamNet-related spatial data activities among participating organizations, to include regular meetings and or other communication links among participating GIS specialists.

Product: Activities summarized in quarterly and annual reports.

Task 2.6 Update and maintain a project data plan that identifies 1) current data holdings at the regional level, 2) data items to be incorporated in the current contract period and in future years, and 3) expectations for data development and delivery from participating organizations within the current contract period.

Product: Data plan updates posted to the StreamNet web site.

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Objective 3 - Library / Reference Services: Provide high quality library services targeted to meeting the needs of the region's decision-makers, planners, managers, and the public in the areas of fish, wildlife, and aquatic habitat. This includes continuing to acquire and catalog relevant research reports and other documents and providing open and efficient access to these materials.

Task 3.1 Continue to develop a collection of materials applicable to the mission of StreamNet. These include, but are not limited to, the following:

- a. Documents used as source materials for data compiled in Objective 1.
- b. Documents prepared by Fish and Wildlife Program contractors, including final products published by BPA and draft documents suitable for public release.
- c. Documents from the Council's Fish and Wildlife Program-related collection.
- d. Additional books, journals, agency reports, gray literature, research reports, and documents that are applicable to management of the region's aquatic resources.
- e. Documents related to NMFS ESA activities. (Scope to be determined in consultation with NMFS.)

Products: A collection of relevant materials, with collection efforts summarized in quarterly and final reports.

Task 3.2 Provide improved user access to the materials described in Task 3.1, including:

- a. Maintain an appropriate facility for the storage and use of the physical collection.
- b. Organize and maintain the collection for appropriate on-site use.
- C. Provide access to the StreamNet Library Catalog via the Internet.
- d. Implement a plan for the construction of a useful keyword thesaurus/subject heading list.

Product: Activities described in quarterly and final reports.

Task 3.3 Catalog, index, and prepare a summary (abstract) of materials acquired in Task 3.1a; catalog and index materials acquired in Task 3.1b; catalog materials acquired in Task 3.1c and d.

Products: Progress described in quarterly and final reports.

Task 3.4 Manage the StreamNet Library and provide library services to the StreamNet user community. Services will include reference and referral, document delivery, inter-library lending and borrowing, and on-line search services. A specific service will be to display for public use draft and final copies of important decision documents related to the Fish and Wildlife Program and ESA.

Products: 1) Summary of activities in quarterly and final status reports.

2) Revised versions of the library access guide which includes an articulation of policies and a description of services.

Task 3.5 Engage in networking activities with other agency and regional library service providers including:

- a. Collect information about other regional fish and wildlife library collections and access policies.
- b. Provide consultations for agencies and groups on ways to coordinate catalogs and services.
- c. Coordinate with users, agencies, and regional libraries to improve services and avoid unnecessary duplication.
- d. Facilitate communications between agency library service providers.

Products: 1) Updated file of information on agency fish and wildlife library collections and services).

2) Summary of activities in quarterly and final reports

Objective 4 - River Reach System / Hydrologic Referencing: Create and maintain the means to link StreamNet data to hydrologic units, streams, and specific locations and to analyze and display this information using database and geographic information system technologies.

Notes:

1. Fulfillment of objective 4 tasks will require funding beyond the current Fish and Wildlife Program contract. Funding from outside of the Fish and Wildlife Program will be sought to assist in full implementation of these tasks. The Fish and Wildlife Program budget will fund between .2 to .4 FTE in each of the four states to participate in the completion of these tasks. Outside funding, if secured, will be used to fund overall coordination and possibly additional work at the state level.

2. The U.S. EPA and USGS are seeking to create a nationally-standard 1:100,000-scale hydrographic data system - the National Hydrographic Dataset (NHD). StreamNet is cooperating with this effort with the intent of merging the existing PNW river reach system and the NHD. A decision to adopt the NHD product will be made following a review of that product by StreamNet participants. The deadline for completion of the NHD has been moved back. Steps to improve the 1:100,000-scale PNW hydrography - including integrating StreamNet data with that system - will proceed regardless of progress on the NHD.

Task 4.1 Maintain active coordination with the NHD team, providing comments and technical assistance as necessary.

Product: Activities summarized in quarterly and final reports.

Task 4.2 Assess the status of the 1:100,000-scale hydrography in terms of its treatment of lakes and reservoirs. As necessary, establish graphic links and provide regionally consistent unique numbers for stream-linked water bodies. Prepare a recommendation regarding if and how high mountain lakes should be integrated into the system.

Products: 1) Lakes and reservoirs in system.

2) High lakes recommendation.

Task 4.3 When it becomes available, evaluate the NHD product in terms of accuracy and applicability to StreamNet. Make appropriate corrections to the NHD. (Major corrections would require funds from another source.)

Product: Preliminary evaluation findings and corrected

graphic files.

Task 4.4 Implement the river reach system maintenance strategy described in the FY 97 white paper. (Full implementation will require securing funding from another source.) Steps that will be undertaken regardless of additional funding include:

- a. Establish regionally consistent maintenance and enhancement protocol and procedures.
- b. Aggregate route and ID coverage's into one library.
- c. In accordance with protocol, assign names to unnamed streams, create routes, and add unique stream ID. (Protocol will establish the type and extent of unnamed streams to be included).

Products: 1) Brief report describing protocol and procedures
2) 1:100,000-scale hydrography modified as per protocol.

Task 4.5 Port applicable StreamNet data to the new 1:100,000-scale hydrography.

Product: Progress summarized in data holdings report.

Task 4.6 To the extent resources will allow, provide technical assistance regarding use of the 1,000,000-scale river reach system to others involved in the Fish and Wildlife Program and activities that support Program goals and objectives. These services may include providing access to data via the Internet, providing AMLs and methods for using routed coverage's, integrating the event tables, etc.

Product: Activities described in quarterly and final reports.

Objective 5 - Data Delivery / Information Systems: Provide StreamNet data to users in formats that meets their policy, planning, and management needs.

Task 5.1 Receive and respond to requests for data, source materials, and custom products. Response to requests will be honored within the limits of available resources, with priority given to information requests having direct relevance to the Fish and Wildlife Program. Other priorities will include implementation of the Endangered Species Act and federal, state, and tribal natural resource management activities.

Product: Services summarized in quarterly and final status

reports.

Task 5.2 Continue to maintain and enhance the existing client-server system to provide access to StreamNet data products through the Internet. The StreamNet home page will continue to be recognized as the project's primary data delivery vehicle. Priority will be given to incorporating data developed through Objective 1 and providing access to reference materials secured through Objective 3.

Product: Products summarized in the "what's new" section of the StreamNet home page and in quarterly and final status reports.

Task 5.3 Maintain and enhance other components of the StreamNet home page and incorporate new features that complement existing components. Possibilities include but are not limited to educational materials, visual materials including photographs, links to related projects and activities, information concerning project administration, and enhanced project participant communications capabilities.

Product: Enhancements described in the "what's new" section of the StreamNet home page and in quarterly and final status reports.

Task 5.4 Develop and implement a strategy for providing electronic access to StreamNet data through means other than the Internet. If technically feasible, and achievable within budgetary limits, the strategy will include a CD-ROM "distributed system" that mirrors some or all data available via the StreamNet home page. Back-up possibilities include 1) an ACCESS-based system with a simple front-end and 2) adding data to the existing windows-based distributed system.

Products: 1) Brief report describing the proposed implementation strategy.

2) Draft and final product.

Task 5.5 Provide training and orientation for users of the StreamNet data delivery systems upon request.

Products: Activities described in quarterly and final reports.

Task 5.6 Prepare data development strategies and products in support of Fish and Wildlife program monitoring and evaluation activities. Decisions regarding specific products will be made in consultation with the Council, BPA, the Independent Scientific Advisory Board (and Review Panel), the CBFWA, and/or any official Program committee that may be formed to address monitoring and evaluation issues.

Product: To be determined. At a minimum, a draft and final report containing recommendations for using StreamNet data in the

regional monitoring and evaluation efforts.

Task 5.7 Prepare map products (e.g., map atlases) in hardcopy and/or electronic format for use in aquatic resource policy, planning, and management.

Product: Activities described in quarterly and final reports.

Task 5.8 Prepare appropriate topical reports that describe content, methods used, and sources of select large datasets compiled and incorporated into StreamNet databases.

Products: Draft and final report(s).

Task 5.9 To the extent resources will allow, provide technical assistance to others involved in the Fish and Wildlife Program and activities that support Program goals and objectives.

Product: Activities described in quarterly and final reports.

Objective 6 - Project Management / Coordination: Provide effective leadership that ensures the production of high quality products targeted at critical applications and the development of these products in a timely, cost-effective manner.

Task 6.1 Administer all aspects of the project at the regional and sub-contractor levels, including oversight of budget and personnel and monitoring of project activities.

Product: Activities recorded in quarterly and annual reports.

Task 6.2 Organize, facilitate, and/or participate in appropriate coordination meetings with the steering committee, BPA, CBFWA, the Council, ESA officials, ISAB/ISRP, and/or staff and management of participating organizations.

Products: 1) Four steering committee meetings, with minutes.

2) At least one on-site coordination meeting with each participating organization.

3) At least one coordination meeting with each of the Council and NMFS.

4) At least one briefing/coordination meeting with BPA fish and wildlife staff beyond normal COTR contacts.

Task 6.3 Prepare project administration reports including:

a. Brief quarterly reports that describe progress being made toward meeting work plan deliverables and summarizes the use being made of the project home page, library, and custom services.

b. A final report that describes project accomplishments.

Products: 1) Quarterly reports within one month after the end of each quarter.

2) Final report within two months of the end of the contract period.

Task 6.4 As needed, produce public information materials including updated versions of the project brochure, computer demonstration materials, and/or other appropriate materials.

Products: 1) Revised brochure.

2) Draft and final computer demonstration.

Task 6.5 Participate in appropriate state, regional, and national educational and professional conferences, including, where applicable, giving presentations, preparing poster session materials, and contributing to conference proceedings.

Products: Activities recorded in quarterly and annual reports.

Task 6.6 Maintain communications between StreamNet and other applicable regional and state-level fish and wildlife activities in order to identify means for collaborative data collection, storage, and dissemination. Collaborative data activities will specifically target tribal fishery programs within the Columbia Basin, federal land managers' fishery programs, state fish and wildlife agencies, and, with respect to water use and stream development, state water resource management agencies. Collaboration with coast-wide and private data collection/compilation efforts will be pursued when this supports overall project goals. Areas of particular emphasis are 1) participation in Fish and Wildlife Program monitoring and evaluation activities, and 2) exploring opportunities for integration of StreamNet data exchange formats into Fish and Wildlife Program contract terms and conditions.

Products: Summary of activities in quarterly and final reports and, if applicable, narratives summarizing interagency agreements.

Task 6.7 Participate in Fish and Wildlife Program advisory groups and other regional and/or state forums directly applicable to project goals and objectives.

Products: Activities summarized in quarterly and final reports.

Task 6.8 Update the StreamNet data plan based on an evaluation of 1) the extent to which current data needs are being met, 2) emerging needs for data and StreamNet's capacity to meet these needs, and 3) applicable legal, administrative, social, and biological trends.

Products: Draft and final plan.

Task 6.9 Compile a project record consisting of final versions of all significant written materials that are prepared during the contract period. Distribute this to BPA, the Council, and members of the Steering Committee for review and revise accordingly.

Products: Draft and final project record.