Northwest Power and Conservation Council

December 2, 2003

MEMORANDUM

TO: Council Members

FROM: Peter Paquet, Council Staff
Stewart Toshach, NOAA Fisheries Staff

SUBJECT: Data Management Projects

Attached you will find a document describing current data management projects. The first (Attachment 1) describes the proposed mechanism to implement a regional data management network for fish, wildlife and water data. This product was produced in response to the Council's request at its May, 2003 meeting for staff to develop a workplan and budget for proceeding with regional data management. The proposal was discussed with the Fish and Wildlife Committee at its October, 2003 meeting and was recommended for full Council approval by the Committee.

The second (Attachment 2) project involves the development of protocols for counting salmonids, resident fish, and lampreys in the Pacific Northwest. The Council approved the project and it's funding for FY 03 at its July 2003 meeting, but deferred approving the FY 04 portion of the budget until the FY 02 data management budget placeholder had been determined. Funding for both of these projects would come from the $250,000 "Data Management" placeholder in the FY 2004 Bonneville Fish and Wildlife Program Budget.

851 S.W. Sixth Avenue, Suite 1100
Portland, Oregon 97204-1348

Telephone: 503-222-5161
Toll free: 800-452-5161

Fax: 503-820-2370
Web site: www.nwcouncil.org

Attachment 1

FEASIBILITY OF A REGIONAL DATA NETWORK FOR FISH, WILDLIFE AND WATER DATA: REPORT TO THE NWPCC AND NOAA FISHERIES

Dr. Tom Karier and Dr. John Stein[1]

1. Executive Summary

NOAA Fisheries and the NWPCC consider that it is necessary to urgently develop a regional data network, taking advantage of existing databases, for improved data management and data sharing: for subbasin planning, salmonid recovery under the FCRPS BiOp, and other purposes.

This conclusion has been supported within the region by the Independent Scientific Review Panel[2], from independent analysis by Science Applications International Corporation (SAIC)[3], and in comments received from the public.

To further this objective the staff[4] seeks the Council's approval to complete Phase I and begin Phase II as follows:

- Distribute and discuss the draft MOA with regional stakeholders to gather input with a goal of expanding participation and creating agreement on a common regional MOA.
- Distribute and discuss the draft administrative framework with regional stakeholders with a goal of reaching agreement on an accountable regional administrative mechanism for a regional data network.
- Arrange for the existing Project Team and Coordinating Committee to be consolidated into one Project Team.
- Complete further coordination with other programs serving regional information management needs.
- Make information about the proposal for a regional data network publicly available and continue to solicit public input.
- Proceed to develop a detailed work plan and costs for Phase II (to adopt/develop data network protocols and standards).

[1] Co-chairs of the NWPCC and NOAA Fisheries *Memorandum of Agreement for Cooperative Information System Development for the Columbia Basin, April 2002.*

[2] Independent Scientific Review Panel. *Report of Databases Funded through the Columbia River Basin Fish and Wildlife Program*. ISRP 2000-3. May 11, 2000.

[3] Science Applications International Corporation. *Recommendations for a Comprehensive and Cooperative Columbia River Information Management System.* Report to the NWPCC, April 30, 2003

[4] NWPCC and NOAA Fisheries staff operating under the MOA.

Attachment 1

2. Background:

The history of information system development in the Columbia basin is, for the most part, ad-hoc. Typically, as different agencies, institutions or projects needed to manage information they mostly went about it independently, creating for example, their own databases, collection methods and reports[5]. While there were some efforts at consolidation or standardization they have not succeeded across the basin as a whole. These individual information systems are called disparate systems because they often don't share the same operating system or language, don't collect data of uniform quality or description and usually cannot "talk" directly to each other.

Over the last 15 years the Internet, geographical information systems, geographical positioning systems and advances in database technology have created ways to knit information from these disparate databases into common systems. With effort, organization and the adoption of information system standards and protocols it is now possible to create information systems that can "connect the dots".

The potential of these connected systems to inform and improve regional decision making and outreach is very high for: subbasin planning, project planning, salmonid recovery, water allocation and power generation and many other purposes. Many organizations and corporations have already recognized the benefits from adopting a "corporate" approach to information management. While the task is more difficult for a region, the longer-term benefits from improved decision-making and program accountability are expected to be substantial. There is, however, an important note of caution. Our institutional and organizational arrangements for using these technologies have not kept pace with the technology advances. To take full regional advantage of the technologies we also need organizational development, for example to develop agreements for system standards/protocols agreements, data sharing and a regional information system plan (or architecture).

2.1 Existing Memorandum of Agreement between NPPC (now Northwest Power Planning and Conservation Council) and NMFS (now NOAA Fisheries)

In April 2002, the NPPC and the NOAA Fisheries signed a *Memorandum of Agreement for Cooperative Information System Development for the Columbia Basin.*

The NPPC and the NOAA Fisheries agreed to a cooperative approach, to plan and develop an information system…believing that the region is best served by a unified approach to meeting all data and information needs. The overall goal is to "materially and demonstrably improve the quality, quantity and availability of data and related information in the Columbia Basin…."

2.2 Contract with Science Applications International Corporation (SAIC)

The Council, with input from the NOAA Fisheries, engaged Science Applications International Corporation (SAIC) a consultant group with expertise in regional information system

development to: survey relevant stakeholders in the region, identify their existing information system capabilities and recommend the steps that would be necessary to produce a cooperative information management system for the region.

2.3 Project Team, Coordinating Committee and Stakeholder Input

A Project Team (PT) to represent stakeholder types was established with membership as follows: NPPC (Cochair), NOAA Fisheries (Cochair), PSMFC, EPA Region 10, CBFWA, BPA, USFWS, USFS-REO, CRITFC, WDFW and Colville Tribe. A Coordinating Committee[6] was also established. During 2002 SAIC worked with the Project Team and completed surveys and interviews across the basin with many stakeholder groups. In January of 2003 SAIC provided a draft final report to the Project Team and the Coordinating Committee. SAIC provided a final report *Recommendations for a Comprehensive and Cooperative Columbia River Information Management System* to the Council's May 2003 meeting. The SAIC report included 43 detailed recommendations for development of a cooperative information system.

Overall, SAIC interviewed some 120 people with knowledge of regional information systems. Nearly all supported the need for the development of a Columbia Basin Cooperative Information System (CBCIS). At the Project Team meetings and at the joint meeting of the Project Team and the Coordinating Committee there was consensus on the need for CBCIS.

2.4 Council's May 2003 request for additional input:

During the May 2003 Council Meeting the Council asked NPPC and NOAA Fisheries staff to report back to the Council and NOAA Fisheries on the feasibility of a regional information system by:

- Making the SAIC report available for public comment, collect and review comments.
- Re-convening and reforming the existing Project Team and Coordinating Committee to provide input and guidance to this process.
- Developing a summary work plan including:
    - A draft MOA to accommodate the interests of other parties;
    - A draft administrative framework; and,
    - A draft cost-sharing proposal.

[6] The Coordinating Committee comprised representatives from BPA, NOAA Fisheries (region), regional timber, USFWS, Canadian DFO, Montana DFWP, NPPC, Washington DFW, Lower Columbia Regional Estuary Program, Washington Department of Ecology, Oregon Department of Environmental Quality, Bureau of Land Management, Columbia-Snake River Irrigators Association, Columbia Basin Trust, US BLM, DART, OWEB, Tribal Caucus CBFWA, Utility Consultant, Oregon Natural Heritage Program, Columbia Basin Trust, US BUREC, USACE, Idaho Office of Species Conservation, Oregon Governor's Natural Resources Office, PSMFC, USGS, USFS-NRIS, Defenders of Wildlife, Northwest Habitat Institute, and Save Our Wild Salmon. While all were contacted during the SAIC study, and we received no negative feedback concerning the need for CBCIS, we do not have responses from all stakeholders. It is important, therefore, to continue outreach.

- Making recommendations to the Council and NOAA Fisheries on the next steps including further consultation and coordination.

3.0 Findings

3.1 Review of public comments on the SAIC report.

Following the May 2003 Council meeting, the Council and NOAA Fisheries issued a press release seeking public comment on the SAIC report. The report and its summary were made available electronically on the Council's web site. Although few comments were received (22 comments) all were supportive of the process. In general, commentators were very supportive of the concept of a regional data management system. More specifically, most comments made suggestions for either adding additional data sets or links or for ensuring that the system will have the widest distribution possible.

3.2 Re-convening and reforming the existing Project Team and Coordinating Committee as necessary to provide input and guidance to this process.

Two subsequent meetings of the project team have been convened: on 8/13/03 to develop a general approach to completing this report and on 9/29/03 to review drafts of this report to the Council and NOAA Fisheries.

The Project Team has reviewed the extent of participation and coverage in the Project Team and Coordinating Committee. The need for the *ad hoc* Project Team/Coordinating Committee created to support the SAIC study now depends on decisions of regional leaders. If a decision is made for a more formal the immediate need would be to provide transition advice on the establishment of a regional data network entity, to support the development of work groups, and to develop plans for the entity.

If high-level regional support for a regional data network entity is not forthcoming, the NOAA Fisheries and the Council will complete the existing MOA. For this task ongoing participation of current Project Team/Coordinating Committee members and Coordinating Committee will be sought.

In either event, the Project Team recommends that the Project Team and the Coordinating Teams be folded into a single Project Team. The Project Team has completed an initial review of current participation and representation, has concluded that an effective core group of 10-15 could be established, and is ready to make specific recommendations to NOAA Fisheries and the Council depending on the overall decision.

3.3 Developing a work plan

3.3.1 Naming the needed regional network effort:

Attachment 1

The SAIC study identified the needed effort as the *Columbia Basin Cooperative Information System Development (CBCIS)*. Following review of the study by the Project Team, comments received and the necessity to define both the topical and the geographical scope of needed work, the Project Team recommends renaming this effort. Until it is formally renamed, the recommendation is to use the term: Regional Data Network.

3.3.2 Setting task priorities

The Project Team began this task by considering the detailed recommendations from the SAIC study.

The Project Team considered the SAIC recommendations from two broad perspectives.

- Data administration and structural issues. What administrative functions need to be created/provided? What sort of structure is necessary to deliver those functions? And, what sort of agreements is necessary to formalize the functions?

- Scope of effort. Scope has been considered in two ways. Geographic scope, what is the region; and topical scope, what it the extent of needed work?

3.3.2.1 Geographic Scope

An information management and sharing system responsive to the needs of fish, wildlife and habitat management and restoration in the Columbia River Basin must ultimately have the participation or cooperation of entities that collect and use a broad range of fish, wildlife, and habitat information. Their mandates range across local (Conservation Districts, Counties, etc.), regional (States and some Tribal organizations) and national (Federal agencies) spatial scales. Some inter-agency programs (e.g. Pacific Coast Salmon Recovery Fund, Pacific Salmon Treaty) also extend across several spatial scales. It is unrealistic to expect these agencies and programs to adopt multiple information management protocols to meet their needs at various spatial scales.

Therefore, information management and sharing protocols meeting the needs of the Columbia Basin must also meet the needs of entities and programs operating at other spatial scales. Fortunately, this does not appear to be a significant problem. For instance, standards for quality control, metadata, data security, etc. are generic in nature. Standards meeting local needs may also be able to meet regional and national needs as well and *vice versa*. The SAIC report recommendations, while containing details that are specific to the Columbia Basin, are also generic in nature and could be applied to larger or smaller scales.

To meet the needs of the current signatories to the MOA it is necessary to expand the regional focus beyond the boundaries of the Columbia Basin. Since State, Federal, Tribal and Canadian interests in data management already extend beyond the boundaries of the region there is no reason to restrict a data management effort to a single spatial scale. Rather, the Project Team considers that the effective regional boundary will, ultimately be defined by the willingness of participants to contribute to a regional effort. Success, however, should not be defined by an all or nothing criteria. Given the current paucity of common approaches, the adoption of common

standards and protocols between any of the major partners would be viewed as significant progress.

3.3.2.2 Topical scope

This concerns the question - What is a regional information system? Without definition this means very different things to different people. Often the main difference is whether the end-goal is to consolidate existing databases into what is called a repository, or to connect (or network) many different databases, into what is called a distributed database management system. The project team recognizes the current need for the consolidation of databases and the creation of new databases as the immediate ongoing reality for a regional information network.

What is more important to the project team is whether there is a consistent set of standards and protocols for information system networking that will allow more efficient and effective collection, sharing and analysis of data, regardless of whether the data is destined for a distributed database system or a repository. Currently there is no set of standards or a regional system in place to develop and support standards/protocols. This then, is the immediate topical scope of the effort proposed by the project team. The project team also notes that in many instances the task is not to develop new standards and protocols. Workable standards and protocols exist across the spectrum of needs. The immediate needs are: 1) to develop or agree on standards and protocols; 2) obtain inter-agency support and commitment, and 3) integrate the standards and protocols into data management programs. Examples of needed standards include those for data reporting, data sharing, quality assurance, metadata, document deliverables, locational data (ie. points, lines and polygons) and spatial data (projections), names (e.g. sampling stations), calendar/date, etc.

In addition to protocols and standards, the Project Team recognizes that it would be beneficial to put in place some regional network tools to fill gaps that are currently not being met. For example, SAIC recommended that the Columbia region would benefit from the development of a single repository for a dynamic directory of all data. This is also true for the wider region. For example, a planner with an interest in information about an endangered salmon species in a particular area, or across the region, could access most information through a single Internet query.

Given this background the Project Team has identified a Phase I (or short term) work plan that identifies Tasks 1 through 3 in the Work Plan Table in ATTACHMENT A below. Tasks 1 through 3 are designed to establish the administrative, working and financial arrangements that are considered essential for subsequent efforts. Tasks 4 through 6 are considered to be Phase II (or medium term) tasks that would result in substantial improvements to a regional information network. Tasks 7 through 13 are considered, at this time, to be reasonable but require further planning and the prior completion of tasks 1 through 6. Tasks beyond 13 need further review and ranking.

The fundamental emphasis is to provide consistent network resources that are currently missing from the regional data management environment. The proposal is not to collect, warehouse or manage primary data or secondary data. It is to provide resources that improve the capability of

regional databases to do a better job of integrating and sharing data. In addition, the effort is designed to help the region as a whole make more effective investments in regional network resources.

3.3.4 A Draft Administrative Framework for Regional Data Network.

Both the ISRP review of databases in the Columbia Basin and the SAIC CBCIS study concluded that no entity or organization currently has full responsibility for data related issues in the Columbia Basin. The same is true for the wider region embracing the NOAA Fisheries region of interest for the recovery of endangered salmon.

The SAIC study recommended that success would require a formal and accountable administrative framework. The Project Team considered possible administrative approaches to developing a formal and accountable administrative framework. The Project Team recommends that a formal approach, regardless of the detail of its creation, will need to satisfy certain key organizational, management and decision-making functions. These key functions are described below and are illustrated in the following Regional Data Network – Roles and Coordination diagram:

- A regional data network entity function. The entity would review draft network protocols and standards, short and long term plans for regional network programs and proposals to fund regional network capability. A separate charter for the entity would define the role of this group and identify the central mission of supporting consistent data networking across programs and agencies in the region.

- An Executive Co-chair function, which would be responsible for meeting agreements under MOA/s including approval of regional network funding, regional plans, standards and protocols.

- A dedicated staffing function, primarily to coordinate/support work groups, to manage contracts and complete essential coordination.

- A work group function, comprising key individuals from the public, stakeholder groups and agencies to work with staff and contractors to develop needed network components.

3.3.5 Coordination with existing programs:

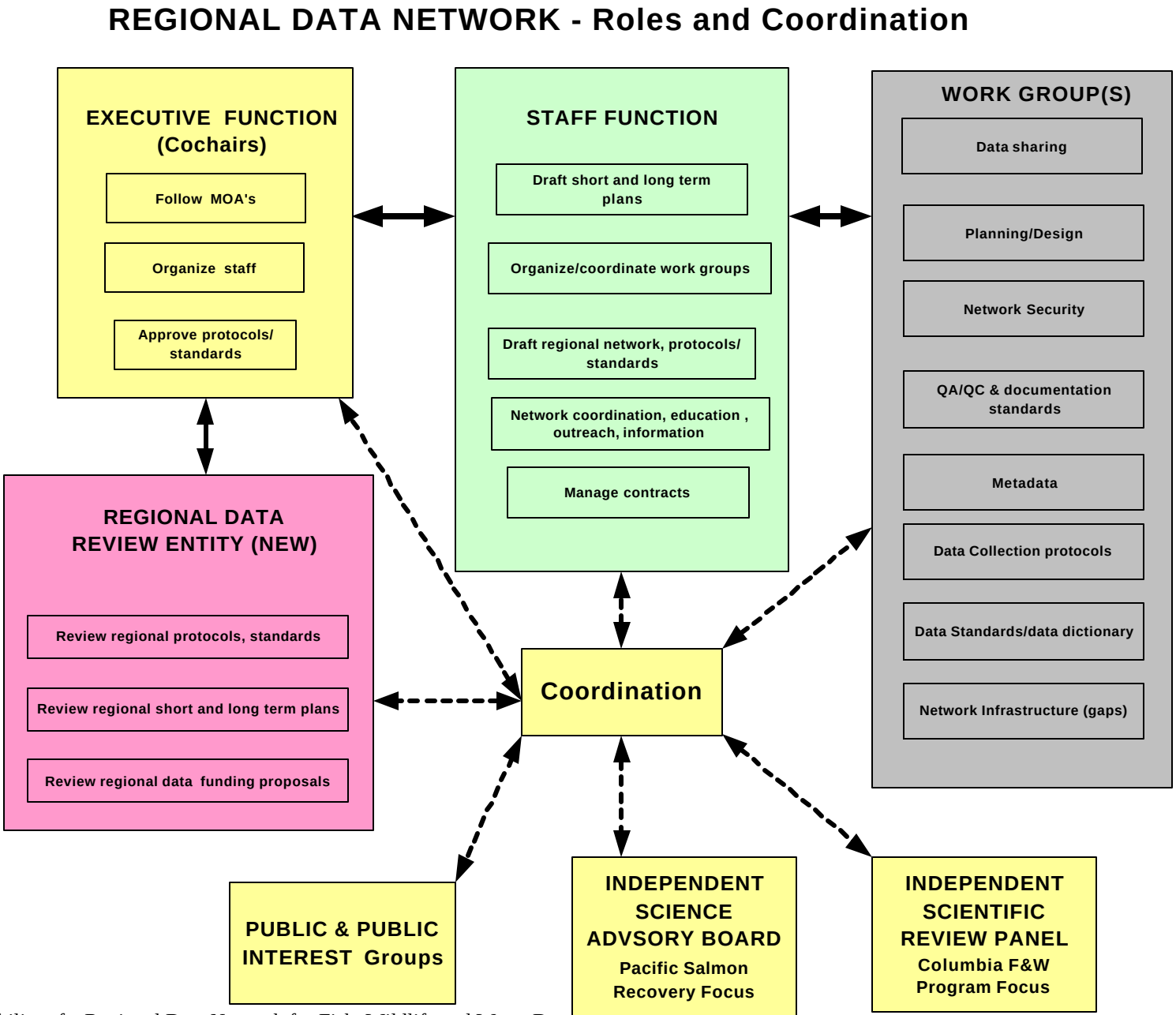
Some of the more time critical ongoing programs include: Research Monitoring and Evaluation for the FCRPS, Subbasin Planning, The Federal Caucus Habitat Team, Intergovernmental Resource Information Coordinating Council (which may no longer be funded), Oregon Watershed Enhancement Board, Washington Comprehensive Monitoring Strategy, the Pacific Coast Salmon Recovery Fund, the StreamNet program, the Fish Passage Center program and other programs.

Attachment 1

It is important to look at new and existing programs with respect to opportunities to support needed network features and functions. While some programs have developed internal standards or policies for data management, most have not. Other newer programs have requirements for regional consistency but have not yet achieved it. For example, under RPA 198 in the FCRPS 2000 BiOp there is a requirement to develop a common data management system for water quality, fish and habitat data. Since this proposal has not yet been funded there may be cost efficient opportunities to develop protocols and standards as pilot efforts for these or similar programs. Whatever the status of current programs, it is important that all stakeholders in the region recognize that the current common practice of funding data collection without standards and protocols for data management (including collection and reporting) is not in the region's best interest and that standards and protocols should be developed and implemented as soon as possible.

There are also other new initiatives such as the Pacific Northwest Aquatic Monitoring Partnership. This new effort began after the SAIC project was completed with a narrower focus on protocols for collection, statistical design and analysis of data. Initiatives such as these, depending on their viability, could provide a portion of needed standards and protocols.

Attachment 1



Attachment 1

3.3.5 Draft Cost-Sharing Proposal.

Detailed costs of completing the tasks necessary to develop and deploy regional standards and protocols compared to the benefits are not known at this point. However, there is consensus, within this region and in other regions that the cost is outweighed by the benefits. SAIC provided estimates of the number of hours of both agency staff and contract work necessary to complete many tasks. The total estimate, when translated into dollars, amounted to approximately $5M, over a period of 18 months to two years.

Because this proposal potentially affects many related programs, it needs to be considered in relation to total funding for related programs. For example, the total amount spent on fish and wildlife and salmon recovery projects in the region (Columbia Basin and PCSRF funds) during 2003 totaled $705m. By this measure, an expenditure of $2.5M/yr on data network standards and protocols over two years would be less than one half of one percent of the total expenditure.

The Project team also recognizes that there will be significant potential savings and benefits from having consistent data management across the region. These savings will come from reduced duplication of effort, improved efficiency and improved quality assurance and control. Moreover, common standards and protocols make it likely that agencies and programs can improve accountability of project expenditure and relate project expenditure to performance in order to meet Congressional and other mandates. This is particularly important when the region has objectives where there are many contributing partners and programs.

The Project Team recommends that the next work effort focus on the willingness of stakeholders, agencies and entities to participate in a regional effort as part of a joint work program, to enter into MOA's and to commit in-kind and/or other resources to the proposed effort.

The Project Team also recommends that the next stage of the effort develop a more detailed accounting of the costs of the individual work tasks, using as necessary, consultant input to refine and validate the work plan estimates. The potential contribution from existing projects and programs versus the need for new funding should be identified.

Typically regional data projects require 'jump start' funding, while ongoing standards and protocol updates can be supported from saved efficiencies in existing programs. It is important to understand that success requires an up front investment and that there are a number of ways to do this. The proposed work plan will identify the total annual costs of each portion of the effort and the willingness of stakeholder entities to participate and to contribute. The work plan will also summarize stakeholder proposals to meet costs: through cost-sharing by participants, reallocation of budgets from existing efforts, or new funding.

3.3.5.1 Costs

Attachment 1

Phase I (tasks 1 through 3 in Attachment A). It is estimated that the cost for completing Phase I during FY 2004 will be in the range of $200,000 to $300,000. The FY 2004 budget contains a placeholder for data management activities estimated at $250,000 and is likely, with cost-shares and reprogramming of existing data management, to meet funding needs for the current year.

Phase II (tasks 4.1 through 6.0 in Attachment A). Costs and needed resources will be estimated during the Phase I effort.

Phase III (tasks 6.0 through 13 in Attachment A). To be determined.

4.0 Recommendations:

4.1 Draft Memorandum of Agreement.

A copy of a draft MOA is attached (ATTACHMENT B). It is recommended that staff distribute and discuss the draft MOA with regional stakeholders to gather input with a goal of creating agreement on a common regional MOA.

4.2 Draft administrative framework.

It is recommended that staff distribute the administrative framework functional outline and discuss it with regional stakeholders with a goal of reaching agreement on an accountable administrative mechanism for a regional data network.

4.3 Ongoing coordination with existing programs.

It is recommended that staff complete further coordination as needed with other programs serving regional information management needs with respect to the development of the proposed regional data network.

4.4 Work plan development and detailed costs.

It is recommended that staff proceed to develop, with some support from consultants, a detailed work plan and costs for Phases II.

4.5 Public outreach.

It is recommended that staff make information about the proposal for a regional data network publicly available and continue to solicit public input.

4.6 Project Team.

It is recommended that staff arrange for the existing SAIC Project Team and Coordinating Committee arrangements be consolidated into one Project Team.

Attachment 1

4.7 Timing. Parts 4.1 through 4.6 should be completed within 9 months.

Attachment 1

ATTACHMENT A: Workplan Tasks From the SAIC Report

TASKS from SAIC Recommendations	PROJECT PHASE	PROJECT TEAM TASK Priority	Project Team Comment
PHASE I. Establishing agreements, administrative structure and funding arrangements			
Establish a high-level agreement (MOU or stronger document) endorsing a regional data network and pledging signatory support.	I	1.1	NOAA Fisheries and the NWPCC have signed a cooperative agreement. The project team is recommending that the MOA be expanded through direct consultation to extend the cooperative effort and to add other organizations when and if they are willing to participate. See draft MOU.
Develop the regional data network as a base-funding category, not to be recompeted for on an annual basis.	I	1.2	See funding. Consultation is needed to develop further understanding on the willingness and ways that stakeholders are willing to contribute to a regional system.
Expand outreach efforts to seek buy-in from other key decision-makers and stakeholders in the region. Develop targeted outreach and education materials for key regional data network participants and supporters that clearly outline the need for a regional data network and describe the benefits and costs for such an endeavor. Ensure this outreach approach addresses the need for long-term support for a regional data network to succeed.	I	1.3	The first emphasis here is on executive level consultation with stakeholders on plans, obligations and expectations. At the same time, further public outreach is essential to raise awareness.
Formalize an accountable regional data network administrative framework.	I	1.4	Currently this element does not exist at a regional level. The project team is proposing an approach that recognizes the critical importance of data networking and management while building on current institutional arrangements and decision-making, processes.

Attachment 1

Identify a regional data network Coordinator and Project Manager.	I	2	In progress: Program Coordinator. Technical Project planner/manager should be involved when needed. To date the NOAA Fisheries and the NWPPC have provided support for coordination functions under the existing MOA. A ½ time FTE is planned, but not yet funded for FY 2004. Some consultant support is also needed.
Develop communication and coordination hub of regional data network.	I	3	Web site
PHASE II. Developing adopting and deploying regional standards and protocols			
Research and post inventory(ies) of existing standards and protocols in the region.	II	4.1	
Develop and post regional data network standards for reporting geographic data: locations and projections	II	4.2	
Incorporate regional data network requirements into future grants and contracts.	II	4.3	Yes. As soon as they become available, across participating funding agencies
Develop regional data network monitoring protocols and data standards addressing data collection, storage and analysis.	II	4.4	Monitoring protocols is mostly being done by other groups, however regional coordination is still necessary.
Develop and post regional Quality Assurance and Quality Control procedures and protocols.	II	4.5	Detailed Quality Assurance and Quality Control procedures can be jointly developed by data staff and data collection entities. QA/QC is missing in many of the existing programs.
Develop and implement region-specific metadata tools.	II	4.6	This is potential demonstration.
Complete the preliminary inventory of information resources in the region.	II	4.7	
Develop and post a regional data network guidance manual that documents everything needed to become a regional data network participant.	II	5	
Develop regional data network	II	6	This is important as a part of all

Attachment 1

technical assistance.			projects. While technical capability is not uniformly spread across the region, the regional system is as weak as the weakest link.
Phase III. Planning, supporting and maintaining regional network capability			
Write a long-term regional information system development plan.	III	7	A long-term plan is needed to guide investment and staffing decisions. Organizational investments in IT will return more in a more certain and planned environment. The plan however, needs to deal with issues that support the development in the region, of a distributed database management system. It is critical to understand that regardless of individual agency efforts, improvements to the overall network require base level efforts on protocols and standards – all the elements in 1-6 above.
Develop a process for evaluating proposed project relevance to goals as part of the grant and contract process.	III	8	Longer term
Develop a long-term resource plan (staff and dollars) for the regional data network.	III	9	Meet critical short-term objectives first.
Develop a strong operations and maintenance plan.	III	10	
Develop a regional data network using a distributed system architecture based on an enterprise approach.	III	11	Regardless of whether the region targets a distributed system architecture or repositories (and the region is currently using both), regional efficiencies and data quality will be improved with the adoption of regional standards and protocols.
Develop tools that will enable searching, accessing, acquiring, sharing, and contributing information resources about the regional resource management efforts.	III	11.1	Possibly as a demonstration.
Establish guidelines for	III	12	

Attachment 1

becoming a regional data network node.			
Potential tasks that require further review and ranking			
Redirect resources to support development of regional data network nodes at originating data sources.		Review need & rank	
Develop a funding and resource support workgroup.		Review need & rank	
Develop regional data network conceptual design and demonstration package (interactive presentation).		Review need & rank	
Develop a regional data network working prototype. (metadata server)		Review need & rank	A regional metadata server is one needed part a regional information system. It could first be developed as a prototype.
Develop regional goals, objectives and measures (e.g., performance measures, indicators) that cut across and integrate individual agency missions and mandates.		Review need & rank	Subbasin Planning/other planning entities have this role
Develop an overall regional management strategy.		Review need & rank	Not a data network responsibility
Further evaluate regional information needs against available information resources to develop acquisition strategy.		Review need & rank	
Establish a regional research and monitoring strategy.		Review need & rank	This is an important goal, but it is a goal that scientific staff in RM&E groups should lead
Develop an online, interactive research and monitoring inventory.		Review need & rank	
Develop documentation standards for data processing and analysis.		Review need & rank	
Develop system security protocols.		Review need & rank	
Develop and post common database designs for similar information types.		Review need & rank	
Develop management and public information/communications work groups as part of the		Review need & rank	

Attachment 1

regional administrative structure.			
Expand regional outreach and investigation to other segments of the regional community not included in the original requirements analysis.		Review need & rank	
Conduct regionwide public workshops to advertise and seek feedback on recommendations.		Review need & rank	
Develop a regional public data outreach strategy.		Review need & rank	
Support regional data network using financial arrangements and participation incentives.		Review need & rank	
Conduct an annual regional data network workshop.		Review need & rank	
Develop regional data network data repositories.		Review need & rank	It is not clear that this is needed other than for specific mandates. The challenges (political and financial) are substantial. If many of the preceding recommendations are satisfied the need for data repositories will be reduced.
Develop a means to compile historic metadata.		Review need & rank	
The regional data network should provide access to modeling information and basic analytical tools to perform user-defined queries, simple statistics, and trend analyses against databases.		Review need & rank	Long term if at all. Needed tools should be clearly defined before action is taken.
Develop WWW-enabled interactive mapping tool.		Review need & rank	Other entities have this capability. The region should define what information would be conveyed with an interactive mapping tool.
Conduct periodic evaluations of regional data network implementation.		Review need & rank	
Conduct periodic evaluation of the relationship between goals and information management		Review need & rank	

Attachment 1

ATTACHMENT B: Draft MOA for Regional Information Network Participants

MEMORANDUM OF AGREEMENT FOR COOPERATIVE REGIONAL INFORMATION NETWORK FOR THE REGION

The Northwest Power and Conservation Council (Council), NOAA Fisheries, (*insert names of other parties*) agree to a cooperative approach to plan and develop an information network for the region. The parties identified above believe that the region is best served by a unified approach to meeting all data and information needs.

This agreement provides for the creation of a process to develop an information network co-chaired by the Council and NOAA Fisheries.

1. Need for Cooperative Information System Planning and Development.

The identified parties have specific legal mandates and/or obligations to develop plans to recover, rebuild, restore, protect and enhance fish and wildlife and their habitats in the Columbia River basin. These mandates are largely carried out through Bonneville's implementation of the Council's Fish and Wildlife Program and NOAA Fisheries' implementation of the federal Endangered Species Act as well as through a large number of state, tribal and other federal programs which complement them. All of these activities are highly dependent on the quality, quantity, and timeliness of data and information.

Data used for these interrelated but essentially separate decision making processes are often the same. As a result there are considerable benefits to be gained by cooperative development and implementation of a comprehensive information system. This should include at a minimum: 1) adoption of common protocols for collecting, reporting and sharing information; 2) development of meta-data standards for clearly identifying information about data so it can be easily recovered and understood; and 3) development of a common framework for information system development to guide investment towards the most cost effective approaches and outcomes, and optimize system performance and access.

There is a lot at stake for the region. Improvements in collecting, managing and making necessary data and information available to better inform decision makers is likely to have significant regional and even national consequences. Many other organizations will also be relying directly and indirectly on the outcome.

The interests of NOAA Fisheries relate to anadromous fish conservation and management, while those of the Council include all fish and wildlife populations affected by operation and development of the Federal Columbia River Power System (FCRPS).

Attachment 1

Tribes, States, and other federal agencies have overlapping jurisdiction and management authority for the same fish and wildlife populations.

2. Committees.

The co-chairs of the regional data entity will establish work groups and a regional data entity as necessary to provide regional input and guidance for the development of the cooperative information system. It is essential that states, tribes, other federal agencies, local governments, citizens, and all interested parties have an opportunity to participate in the development of this information resource.

3. Funding and Administrative Support.

Funding requests to Bonneville and other sources must be adequate to support the development of an efficient and effective data system. First year tasks are expected to include a phased in project plan, focused needs analysis, data inventory, support of various sub-studies, and development of a memorandum of understanding among data participants and other tasks. Additional budget requests may be needed to fund approved projects. Funding recommendations will proceed jointly from the Council and NOAA Fisheries.

4. Overall Goal and Timelines.

Phase I (9 months)

1.0 Establish a high-level agreement (MOU or stronger document) endorsing the regional data network and pledging signatory support.

1.1 Develop the regional data network as a base funding category, not to be recompeted for on an annual basis.

1.2 Expand outreach efforts to seek buy-in from other key decision-makers and stakeholders in the region. Develop targeted outreach and education materials for key regional data network participants and supporters that clearly outline the need for the regional data network and describe the benefits and costs for such an endeavor. Ensure this outreach approach addresses the need for long-term support for regional data network to succeed.

1.3 Formalize an accountable regional data network administrative framework.

2.0 Identify a regional data network Coordinator and Project Manager.

3.0 Develop communication and coordination hub for the regional data network.

Attachment 1

Phase II (18-24 months)

4.0 Incorporate the regional data network requirements into future grants and contracts.

5.0 Develop/adopt regional monitoring protocols and data standards addressing data collection, storage and analysis.

6.0 Develop/adopt and post on regional Quality Assurance and Quality Control procedures and protocols.

7.0 Develop/adopt and implement region-specific metadata tools.

8.0 Complete the preliminary inventory of information resources in the region.

9.0 Develop and post a regional data network guidance manual that documents everything needed to become a regional network participant.

10.0 Develop regional data network technical assistance.

PHASE III (time line and budget to be determined)

11.0 Write a long-term regional information system development plan.

12.0 Develop a process for evaluating proposed project relevance to goals as part of the grant and contract process.

13.0 Develop a long-term data network resource plan (staff and dollars) for the region.

14.0 Develop a strong operations and maintenance plan.

15.0 Develop a regional data network using a distributed system architecture based on an enterprise approach that links existing repositories.

16.0 Develop tools that will enable searching, accessing, acquiring, sharing, and contributing information resources about the Columbia River Basin resource management efforts.

17.0 Establish guidelines for becoming a regional data network node.

Attachment 1

While the time lines specified here are relatively short, there is an urgent need to improve the information management system to support critical short as well as long-term decisions. During the same time there is likely to be further change in emerging information system technologies. These factors combine to require an urgent, yet staged, programmatic approach to information system development in the region.

5. Consultation.

The co-chairs shall ensure that the regional data network is developed in an open and public manner, using where possible existing outreach and coordination groups.

Termination: This Memorandum Of Agreement terminates ---------- or by request of any party.

D. Robert Lohn

Regional Administrator
NOAA Fisheries
Council
Northwest Region

Judi Danielson

Chair
Northwest Power Planning

States, Tribes, Bonneville, US Fish and Wildlife Service, CBFWA, Others

Date:

Attachment 2

Protocols for Counting and Collecting Salmonids, Resident Fish, and Lamprey in the Pacific Northwest[1]

Directory and Synthesis of Recommended Protocols for Management and Research in Washington, Oregon, Idaho, Montana, and British Columbia

David H. Johnson[2], Jennifer O'Neal, John Knutzen, Brianna M. Shrier,
Xan Augerot, Brad C. Mason, Phil Roger, Thomas A. O'Neil

Project Briefing Paper – 18 November 2003 version

Introduction

Work under this project will assemble, organize by fish species and sampling method, scientifically review, and publish a directory of recommended protocols for counting the 125+ species of salmonids, resident fish, and lampreys in the Pacific Northwest. The primary objectives tied to the protocols herein reflect 1) establishing baseline presence/absence and distribution data, 2) estimating population size, 3) monitoring population trends, and 4) strengthening fish-habitat relationships. Having scientifically robust fish population data is a prerequisite for sound management. Guidance on consistent inventory and monitoring sampling designs, data collection techniques, and analysis of fish and lamprey data is needed so that the utility of acquired information will be maximized. The primary audience for products from this effort is managers, researchers, educators, and others concerned with fish and lamprey population management, recovery planning, and habitat actions. Having products from this project available in hardcopy (for field use) and digital formats (e.g., CD/Internet) will enhance the overall utility, and strengthen the conservation efforts of users.

Methods

Staff from Washington Dept. of Fish and Wildlife, Tetra Tech FW, Columbia River Intertribal Fish Commission, the Wild Salmon Center, Northwest Habitat Institute, Oregon Dept. of Fish and Wildlife, British Columbia Ministry of Environment, Canadian Dept. of Fisheries and Oceans, Alaska Dept. of Fish and Game, Columbia Basin Fish and Wildlife Authority, NOAA Fisheries, and other organizations, will assemble a wide array of protocols and assist with a March 9-12, 2004 workshop. These protocols and data collection guidelines are from Washington, Oregon, British Columbia, Idaho, Montana, Wyoming, Utah, Nevada, Alaska, California, and elsewhere. Each protocol will be reviewed, and an outline of features such as the intent, methods, applications, training requirements, data flow, blank and example data forms, source, and related elements recorded (for similar example, see http://www.wa.gov/wdfw/hab/sshiap/dataptcl.htm). We will hold a workshop from 9-12 March 2004, during which biometricians, experienced field workers, and database managers will assist in reviewing and prioritizing the draft list of recommended protocols.

Together with introductory chapters on monitoring fish populations and how to use the directory, there will be a section linking the protocols to an array of specific *sampling methods* (e.g., Angling, Counts, Electrofishing,

---

1 Project Partners: Northwest Power and Conservation Council; Oregon Department of Fish and Wildlife; Northwest Habitat Institute; Columbia River Intertribal Fish Commission Washington; Wild Salmon Center; Ministry of Environment – British Columbia; Columbia Basin Fish and Wildlife Authority. The Washington Department of Fish and Wildlife is the lead on this effort.

2 Washington Department of Fish and Wildlife, 600 Capitol Way North, Olympia, WA 98501-1091. (360)-902-2603; FAX: (360)-902-2951; E-mail: johnsdhj@dfw.wa.gov.

Attachment 2

Hydroacoustics, Mark-Recapture Estimation, Nets, Seines, Spawner Surveys, Snorkeling, Traps, Video). These sampling methods reflect commonly practiced fish habitat restoration and conservation management actions. By cross-referencing the protocols to their respective species and sampling methods, the intent is to provide a framework so that users have clearer guidance on which protocols should be used for the projects and monitoring efforts they are intending to undertake.

Personnel from the WA Dept. of Fish and Wildlife, Tetra Tech FW, and the Wild Salmon Center are responsible for primary project oversight, development and coordination of the narratives, layout of the document, acquisition of photographs and illustrations, and development of database. The Columbia River Intertribal Fish Commission is responsible for providing library-based access to the final (recommended) protocols. Partners and Sponsors support the project through submission and review of protocols, workshop assistance, funding support, in-kind technical assistance in database and document preparation, and printing costs of the final products. The publication will be peer-reviewed and probably published through the American Fisheries Society. Following publication, the package of protocols will be submitted for formal regional adoption through the Northwest Power and Conservation Council, the State-Tribal-Federal Partnership, and state-based programs.

Timeline

This project began in September 2003, and is to be completed by the end of June 2004.

Products

Following the workshop and subsequent formal peer review, we will recommend a subset of protocols for consistent use across the Pacific Northwest. The main products being delivered are the publication (web access and hardcopies) which will contain a synthesis of each protocol, tables linking the arrays of project types to corresponding protocol(s), and web access (i.e., hot-link) to the full and downloadable text and data forms for the recommended protocols themselves. The general layout of the final products will reflect:

1. Executive Summary
2. Acknowledgements
3. Organization of this Report
4. Introduction
5. History of Fish Counting Methods in the Pacific Northwest
6. The Fish Counting Protocols:
    a. Methods and Analysis Used in this Report
    b. Sampling Design Aspects
    c. Comparative Studies and Evaluations
    d. Data Management Issues – Acceptability and Compatibility
7. Finding the Protocol for You - Protocol Reference Guide – a cross reference table reflecting protocols organized by fish species (and life-stage) and sampling technique (capture/collection methods).
8. Directory of the Protocols (1-page summary sheets)
9. Literature Cited
10. Appendix 1. Glossary of Terms
11. Appendix 2. Links to Related Information and Resources

For inquiries about this project, contact: David H. Johnson, WDFW, 600 Capitol Way N., Olympia, WA 98502 USA. johnsdhj@dfw.wa.gov 360-902-2603 (w).

For submitting hardcopies of protocols or methods (published or unpublished), please mail them to: Jennifer O'Neal, Tetra Tech FW, 12100 NE 195th St. Suite 200, Bothell, WA 98011. 425-482-7779 (w); JONeal@ttfwi.com

A digital version of our proposal can be viewed at: http://www.cbfwa.org/cfsite/ResultProposal.cfm?PPID=WY2003000036001

Attachment 2

BUDGET

BPA Project Number: 36001

Title: *Protocols for Counting Salmonids, Resident Fish, and Lampreys in the Pacific Northwest*

Timeframe: February 1, 2003 through June 30, 2004

Principal Investigator: David H. Johnson, Washington Department of Fish and Wildlife, 600 Capitol Way North, Olympia, WA 98501-1091. 360-902-2603 johnsdhj@dfw.wa.gov

As this project extends across the FFY timeline, and because of the FFY accrual process, this project will receive two installments of funding (FFY 2003 and FFY 2004). Work under this project will continue under two existing BPA contracts:

a) WDFW - David H. Johnson, Washington Department of Fish and Wildlife, 600 Capitol Way North, Olympia, WA 98501-1091. 360-902-2603 johnsdhj@dfw.wa.gov

b) Tetra Tech WF - Jennifer S. O'Neal, Tetra Tech WF, 12100 NE 195th St., Suite 200, Bothell, WA 98011. 425-482-7805. JONeal@ttfwi.com

FFY 2004 portion of Budget: $80,000

WDFW - Fish & Wildlife Research Sci 1: 3 mo @ 5000/mo		**15,000**	
- Scientific Panel Workshops and Peer Review Process:			**10,000**
- Supplies (printing)		**5,900**	
- Indirect (overhead) @ 0.25%		**7,725**	
	Subtotal WDFW	**38,625**	
CRITFC - Library Technician	**5 mo @ 2630/mo**	**13,150**	
- Indirect (overhead) $13,150 x 0.359%		**4,725**	
CRITFC (subcontract under WDFW):		**17,875**	
Total WDFW:		56,500	
Tetra Tech FW Inc. – 3 Scientists; 6 mo @ 3917/mo		**23,500**	
Total Tetra Tech		23,500	
DFO – Fish Data Systems Team Leader	**1.0 mo @ 6000/mo**	**6,000**	
	Total DFO	**6,000 (in-kind)**	