PROGRESS REPORT

- EPA DATA DEVELOPMENT -

APRIL, 1999

Objective 6 - EPA Environmental Data Development. *Expand, management, and maintain the StreamNet database to meet several high priority data needs identified by the Environmental Protection Agency.*

Task 6.1 Salmonid Species Data.

a) Distribution

OREGON: A series of updates are being undertaken, addressing all anadromous species in specific areas.   7.5 minute quad maps are being used to allow for inclusion of distribution beyond the resolution of the 100k hydrography.   Updates to the base hydrography will also be made to integrate updates into system.

These updates will consist of additions to the existing 1:100k hydrography.   The base topology will be taken from existing 1:24k data where available, and use standard USGS DLG hydrography otherwise.   Arcs will be added with unique id's, routes will be created and assigned new LLID identifiers.   These arcs and routes will be flagged to show their source and other information so other hydro users can identify them. Only streams with new distribution information will be added in this fashion. Updated coverages will be posted to the StreamNet website with appropriate documentation and explanation of changes made.

The Rogue and parts of the Umpqua Basin have been completed, and in coordination with a separate GWEB grant from the state of Oregon, the John Day, the balance of the Umpqua, and Willamette will be updated this year.

IDAHO: Additional data derived from written reports and other existing data sources, as well as updates from reviews from of current data by district biologists has been incorporated into the current event data table.

WASHINGTON: Current distribution maps have been resubmitted to district biologists for update and corrections. Specific areas where life history information was incomplete or missing were targeted to complete population of this attribute for all areas and species. Maps are currently being compiled, and information converted into event tables in exchange format. Completion expected by June 1999.

b) Legal status (state and federal)

All states are working on populating this attribute. Discussions have taken place to create common definitions of status between states. The regional staff is working with NMFS personnel to create a more unified and consistent system to define ESU boundaries, and to tie these definitions to StreamNet distribution event data.

c) Population delineation (where available)

This task involves identifying existing population, metapopulation, and related species subgrouping delinations as defined by fish management agencies and linking this to the StreamNet hydrography and data system. (This task does not determine population groupings based on genetic data..) The purpose for this is to make existing agency information available to the StreamNet user community and potentially provide means to query data using these delineations. Currently we are aware of three such delineations. These are 1) the National Marine Fisheries Service Evolutionarily Significant Units, 2) the Oregon Department of Fish and Wildlife's wild salmonid report (which defines populations for salmonids by drainage), and 3) the Washington Department of Fish and Wildlife's SASSII dataset.

NMFS. We are currently providing technical support (and encouragement) to NMFS GIS staff in their effort to create an accurate digital data layer of ESU groupings for all listed anadromous species. Our role is to ensure that this is accomplished in a way that conforms to the 1:100,000-scale hydrography and other StreamNet protocol. We have supplied NMFS with the 1:100,000-scale hydrography and provided instructions on its use. We have a verbal agreement with NMFS that we will be supplied a copy when complete. We had originally planned to do this on our own but learned that NMFS had hired GIS staff and that NMFS needed to develop this for their own purposes. We concluded that this provided a good opportunity to collaborate and therefore settled on the course of action described above. While we are dependent on NMFS, we are confident that this will be available prior to the end of September 1999.

ODFW and WDFW. We have postponed working on this due to the need to complete distribution (which forms the basis for population delineations). It is on our schedule for June/July to develop protocol for adding both population delineations and state-designated risk status (state threatened, etc.) to the StreamNet. We have secured the available data. Note that WDFW has stated that SASSII is to be cornerstone of the state's salmon recovery effort. We will be anticipating their needs as we created and maintained the datasets. It will therefore be a straightforward matter to integrate WDFW's SASSII data. There are no real problems anticipated with ODFW information. The major issue is deciding on a consistent format. Note, however, that a consistent format does not mean consistent data. ODFW defines populations more narrowly than does WDFW. Both ODFW and WDFW are planning to integrate these data within the contract period.

Task 6.2 Field Stream Survey Data.

ODFW - Staff in Corvallis have been working to georeference existing stream survey data to 1:100k hydrography layer.   StreamNet ODFW and regional staff will work to convert this data to format compatible with StreamNet hydrography and event tables systems.

Task 6.3 Stream Temperature Summary Data.

a) Existing data linked to PNW hydrography.
b) List of summary statistics.

A large number of potential sources for lotic and lentic water temperature data have been identified. These are described under task 6.5. We have consulted with Mr. Stuart McKenzie (USGS - retired consultant), Mr. Bruce Rieman (USFS Intermountain Research Center, Boise), and others to find sources of temperature data.

We are also consulting with Mr. McKenzie to ensure our two efforts are not duplicative, and to discuss data quality control issues. We are working with the IRICC group to define minimum data and metadata collection standards, and have proposed a standard methodology for their use.

We are consulting with the IRICC group, USFS, USFWS, NMFS, the state DEQ agencies, and others to determine the types of summary statistics that, if made available, would be of use to them.

We have identified three major challenges that must be addressed in order for temperature data to flow into StreamNet. First is georeferencing temperature data locations with the LLID system. Because there are thousands of temperature data collection sites and many data sources, we are investigating the most efficient method for determining LLIDs and river-foot measurements for each site. Near the top of the list for solving this problem is for data collectors to use a StreamNet utility to determine these data before submitting them to StreamNet. However, this is a solution which can not be implemented this fiscal year. Therefore we will use a combination of 1) GIS programming and a data technician to produce the georeferencing data for temperature sampling sites. The second challenge we have identified is to create an organized hierarchy for moving data sets to StreamNet from the large number of people collecting these data. Recently we have discovered that the state DEQ agencies may have done much of this already. Our third challenge is to make the enormous quantity of data we will collect, and which will be frequently queried, available on the StreamNet web site. The difficulty will be to provide reasonably fast access to what we expect will be many gigabytes of data. We plan to collect instantaneous (hourly) temperature data, then create tables with already-summarized data which can be queried via StreamNet. These tables will reflect the

summary statistics which are requested by USFS, USFWS, NMFS, EPA, DEQs, and others.

We have no firm date planned for when temperature data will begin to arrive at StreamNet. We wish to solve the first and second challenges described above, and also to set data format and quality standards, before accepting data. However, it is also recognized that problems are identified and solutions developed during the data gathering process. With that in mind, we will attempt to begin collecting data sets from one or more sources by July 15; these sources will most likely be Mr. McKenzie, Mr. Rieman, IDFG, the USFS, BLM, and ODEQ. Collection of these data will allow us to inspect the data formats which we can expect each organization to have (including georeferencing formats), and will also give an indication of the duplication of data which we receive and thus help us to address the second challenge listed above.

Task 6.4 Macroinvertibrate Sampling Data.

We have been working closely with the Xerces Society and to a lesser extent with ODEQ to create a database structure which will be compatible with the StreamNet database. Several iterations have been performed, and the final structure is nearly complete. When a final structure is agreed on, data from the Xerces Society, which originated at various states and federal agencies and other contributors, will populate the database.

As with water temperatures, one of the major challenges will be georeferencing using the LLID system. There has been great interest from several people in a utility which would determine LLID and measurements, and this is the preferred way to produce these location data going into the future. StreamNet is working on this utility under a separate contract, and it will likely be ready for use in the next fiscal year. As with the temperature data, for this fiscal year a combination of GIS programming and a data technician will be used to determine these values.

The person at the Xerces Society we have been working with has taken a position with ODFW. He and we are both interested in finishing the database structure and moving the existing data into StreamNet at the earliest time possible. We expect data from the Xerces Society will be submitted to StreamNet before July; they will be available to query on the StreamNet system after georeferencing and query programming are completed. This is expected to occur before the end of FY 1999.

Task 6.5 Water Quality Data.

a) Data exchange format for spatial 303d data

Data from 1996 and currently available 1998 data has been collected and compared. Draft exchange format will be available June 99.

b) Conversion of existing data to new format, referencing to regional 100k hydrography.

Programming for conversion underway. Will be customized to fit varying state formats. Work will begin when data tech begins in June 99

Task 6.6 Remote Access to Spatial Data. And **Task 6.7** Data Compilation Processes

A stand alone program (meaning one not dependent on ARC/INFO or other GIS software to run) has been prototyped and will be tested with StreamNet staff throughout the region in the next few months. The program allows for the display and query of existing event data tied to the hydrographic network, as well as the creation of new events. New events could be added to existing data, or to new themes.

The program runs off of a CD which includes shape files of the 1:100k hydrography, and allows a user to zoom into their area of interest, and select a stream to associate event data to. Once a stream is identified and selected, a wizard will guide the user through the process of defining the geographic extent of the object they are describing, in this initial case mitigation projects. Once the extent has been determined, attribute associated with the object will be input, using picklists to ensure data consistency and conformity to exchange formats. The end result will be event data tied to the 1:100k hydrography using the LLID stream identifier usable in ARC/INFO or ARCVIEW with no conversion, and in standardized exchange formats.

New data structures for the hydrography were established to allow for access by MapObjects and Delphi programming components, and the data was converted to this new format. Initial application will be designed to accommodate input of mitigation project data, but use of DirectCom programming model will allow for use of code in a variety of Windows programs. This will mean other agencies can use the underlying mechanism of selecting routes and defining linear or point events along them visually as a data entry tool for a wide variety of data associated with the stream network. Once tool is complete, the source code and documentation will be made available on the StreamNet website to assist others in creating programs which produce event data which can be easily transferred between agencies using the 1:100k hydrography.

Task 6.8 IRICC Web Page

Enhance and maintain WWW page for the Interagency Resource Information Coordinating Council.

An initial redesign of the IRICC website was completed and presented to the IRICC members on April 21, 1999. Comments and suggestions were solicited and a revised website will be presented to the IRICC members for approval at their next meeting on May 27, 1999.