

DRAFT NED Proposal for a Pilot Pacific Northwest Environmental Data Network Exchange.

The Need:

There is an important need in the Pacific Northwest to be able to relate water and water quality data and habitat data to species that inhabit or use those waters and in particular to anadromous salmonids that are listed as threatened or endangered under the ESA.

Some of the PNW waters have been identified by the EPA and others as having water quality limitations for Salmonid species, in particular elevated temperatures, sedimentation of spawning beds, and the presence of chemical and biological pollutants.

To be able to understand and make cost effective management decisions to reduce water quality and other impacts on these species it is necessary to be able to directly relate water quality data to salmonid population data and habitat data. The efficiency and quality of this type of data integration is greatly aided by the use of distributed data base management system (DDBMS) technology.

Technology Challenges and Opportunities

Currently there are technical and logistical challenges restricting the integration of disparate data sets, and this severely limits both regional scale analyses and systematic monitoring efforts. These challenges were identified in a regional data management study prepared by Science Applications International Corporation (SAIC) in 2003. In that study the SAIC recommended that the region move towards the establishment of a distributed data base management system for priority data sets. A workshop in 2005, convened by the Pacific Northwest Environmental Data Network (NED) and others also recommended the testing and evaluation of this type of technology. Water quality and salmonid population data sets were identified as high priority data sets for inclusion into a DDBMS. A 2006 regional data workshop, convened by NED and others also recommended the testing and evaluation of this type of technology.

NED has recently deployed a Portal to improve our ability to locate regional data and related information on fish, wildlife & their aquatic and terrestrial habitats. While a Portal provides knowledge of all published data it does not provide for tabular data integration. The DDBMS will manage this limitation.

Nearly all regional data sets are currently maintained in user specific data management systems operated by different entities. There is no common system in place across enough entities to allow for sharing of data across tribal, state, federal and other institutions to provide region wide views – without considerable manual data consolidation.

One partial exception to this is the Pacific Northwest Water Quality Data Exchange (PNWWQDX), which has completed a pilot project for managing water quality data sets in a DDBMS environment and proven the usefulness of the technology.

What this Proposal will do

What is being proposed is a collaborative state, tribal and federal effort to make selected fish and habitat data sets available via DDBMS technology and effectively link these data sets to the water quality data sets. The pilot level effort would be completed for selected data sets within the Columbia Basin, including some Tribal data sets that are currently not being integrated. Salmonid Trend and abundance and or escapement data could be the selected fishery data sets.

A prerequisite to success is to develop and expand the use of common exchange formats. The EPA has begun work on the development of a controlled vocabulary to describe fishery and habitat data. This project would advance that effort by testing those formats for application against existing data definitions and formats used in the Northwest region and by ensuring the addition of locational attributes to the PNWWQDX tables such that all data would be accessible through the NED Portal.

Relevant source data definitions for comparison purposes could include, the StreamNet exchange definitions, data definitions identified by PNAMP and CSMEP and ISEMP and the habitat definitions and comparisons from the NWHI. Relevant technology compatibility would include developing standard metadata and Web Map and/or Feature Services to link DDBMS data to the NED Portal.

The project would provide pilot deployment, testing and evaluation of the practical potential to deploy DDBMS technologies to Salmonid and Habitat data collection and dissemination in the Pacific Northwest – to improve regional decision making for regional resource management challenges.

Actions Needed to Complete the Pilot Effort:

- Develop a pilot project management structure.
- Identify participating partner
- Identify a common “Controlled Vocabulary” and test the applicability of the EPA draft vocabularies for habitat and fish data against PNW definitions
- Identify exchangeable Pacific Northwest salmonid, habitat and water quality data sets (Note: much of the needed water quality data has been identified and is being managed through the existing PNWWQDX)
- Develop a regional data dictionary that identifies the data that must be exchanged

- Develop data exchange formats for the data within the data dictionary
- Develop business arrangements and operating agreements between the participating partners
- Develop a pilot exchange node for the Salmonid Data, or develop a working arrangement with the PNWWQDX node, based on EPA Network Protocols and searchable through the NED Portal.
- Test operation of the system and fine tune
- Evaluate operational deployment for selected data sets
- Develop ongoing organizational and administrative arrangements for data exchange
- Develop model cost share agreement/s
- Present deployment opportunities to regional decision makers.