Pilot Project - Creating Point of Diversion (POD) Events Will Improve Insight into Water Delivery and Water Use

Partner: Idaho Department of Water Resources (IDWR)

Introduction

Water, a scarce resource in Idaho and through the Western U.S., needs to be carefully distributed among competing water users in the agricultural, urban, recreational and fisheries sectors. Being able to view all diversions, including irrigation, fish propagation and gage diversions, addressed to the same route and in the correct sequence, will provide an unprecedented opportunity to compare and model all competing water uses at the same time and considerably improve IDWR's insight into water delivery and water use.

Although Idaho has nearly completed an extensive adjudication covering nearly two thirds of the state, some water rights are nominally located based on the public land survey (PLS). An important component of this proposal is developing ways to address those water rights to the NHD. In general, the water rights spatial location represents the legal location and in some cases is geographically removed from the corresponding stream.

The geographic representation of diversions in IDWR databases can not be easily adjusted due to legal restrictions. Therefore, representing Points of Diversion (POD) as events tied to the NHD that can be adjusted to a better location along the stream, rather than as points is the best way to more accurately represent relationships among various diversions. Idaho has tens of thousands of surface water diversions within the state. Adding these diversions as events would allow us to store, query, and analyze this information along the hydrographic network.

Idaho would be an ideal candidate to help pioneer some of those efforts given the large amount of work this State has done adjudicating water rights in the past 20 years. The proposed dataset will benefit water accounting, and water use modeling of Idaho's waterways. One or more pilot hydrologic unit/subbasins will be used to test these processes.

Benefits to the USGS and NHD community

- The work flowing out of this proposal will help other States identify procedures and processes to use and provide tools that can be exported to other States.
- Developing the ability to tie a POD location and the associated IDWR business process information with its source stream in the NHD would allow for many important analyses both by IDWR and cooperators. With networking ability, interested parties can sum diversion rates, rates of in-stream stock water and irrigation diversions, and model potential effects of diversion removal or adjustment.
- By incorporating the NHD into more of our day-to-day processes at IDWR we become more reliant on, and thus more committed to support the NHD.
- In the long term Idaho may develop a Safe Yield Estimator, similar to what has been done in Massachusetts, Maryland and Pennsylvania. Having the proposed event themes in place is an important first step towards creating Estimator.

Proposed Work

The Idaho Department of Water Resources proposes to accomplish the following:

- Update NHD in a selected sub-basin prior to event addressing using National Agriculture Imagery (NAIP) and other data sources.
- Identify data sources of PODs in IDWRs databases and their relative sequence along the NHD.
- Reference all PODs to the NHD. This will be done is several stages:
    - Use HEM or ArcGIS tools to create a route event layer for the PODs using increasing search radius.

    - Inspect events that required a larger search radius
    - Compare stream name of POD with the stream name it has been referenced to.
    - Send out POD event layer to local experts for QA/QC.
    - IDWR will attempt to automate this process wherever possible.
    - Once the POD event theme is completed applicable data will be send to the USGS for inclusion into the NHDPointEventFC.
- Define data elements required in the IDWR database for creating POD event themes in the future. Establish procedures for updating those events.
- Use knowledge acquired during this project to estimate the resources necessary to apply this process to all the sub-basins in Idaho.

Deliverables

- Improved NHD data in the sub-basin considered in this project
- Event table and event feature layer showing PODs referenced to the NHD
- A report describing
    - Data sources and procedures used tie PODs to the NHD
    - Challenges that are encountered in the event theme creation process and ways in which those challenges are dealt with in the pilot subbasin
    - an estimation of the resources required to create those event themes for the entire State of Idaho.