Oregon
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MEMORANDUM

TO: Water Resources Commission

FROM: Kenneth Smith, Information Technology Manager
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SUBJECT: Agenda Item Q, November 20, 2015
Water Resources Commission Meeting

Routing Water Right Data on Stream Networks

I. Introduction

During this agenda item, staff will provide an update on the Department's efforts to map water rights using the National Hydrologic Data (NHD) digital stream network. This digital stream network provides advanced information such as direction of flow, stream confluences, and measures of distance. Staff will provide a historical look at the systems developed to associate water rights with specific streams; discuss new capabilities and advantages of using NHD; and demonstrate two pilot applications employing this technology.

II. History of the Process to Link Water Rights to Streams

In the past, the Department assigned codes to streams and tributaries so that they could be easily identified. These codes were based upon old basin maps, which were not very precise nor were they a complete representation of the stream network. While the codes make it easy to identify the list of tributaries for a stream, it is not possible to determine where along the stream those tributaries may exist. This means that under this method, it was not possible to easily query what water rights existed above or below a certain point. As a result, staff had to do additional research on stream reaches and water rights for Department activities relating to field responsibilities and water right transactions.

III. Move to National Hydrologic Data (NHD)

In 2012, the State adopted the NHD as a standard for mapping and coding a stream network. The Department started a project to move to this standard shortly thereafter. The Klamath Basin was used as the pilot for this data migration and was completed in 2014. Data migration for the rest of the state was completed on July 1, 2015.

The primary new capability provided by moving to the NHD is the ability to determine direction of flow and distance along a stream network. Once a feature or point (e.g. point of diversion, dam, gage, etc.) is located on the NHD network, it is easy to identify items upstream and/or downstream along the stream network. Using this technology, we can now run queries to answer questions such as:

- What junior rights are upstream from a point of diversion?
- What senior rights might be downstream from a point of diversion?
- What is downstream of a dam?
- What is between two gages?
- What rights are in a certain stretch of a stream?
- What is the cumulative appropriation of diversions on a certain reach?

Being able to conduct these queries through our databases instead of having to conduct time consuming research will result in more efficient use of staff resources. These questions are often asked in field activities and processing water right transactions. In addition, once this tool becomes public, individuals will be able to better understand the water rights landscape.

IV. Pilot Applications

The Information Services Section has created two pilot applications to demonstrate the use of this new technology. The first is an updated version of the Water Rights Query tool that allows users to perform water right queries and get a list of results based upon stream locations. The second is an Interactive Water Rights Mapping Tool that allows for water rights to be identified by stream reach. Users can pick points on the map to define the stream reach where they are interested in searching for water rights.

V. Next Steps

These pilot applications will be released to WRD staff for testing this fall, which will continue through the end of the year. After that, the plan is to provide this tool to the public in the first quarter of 2016. The Information Services Section will also continue to update and improve the data associated with water rights.

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