Routing Water Right Data on Stream Networks

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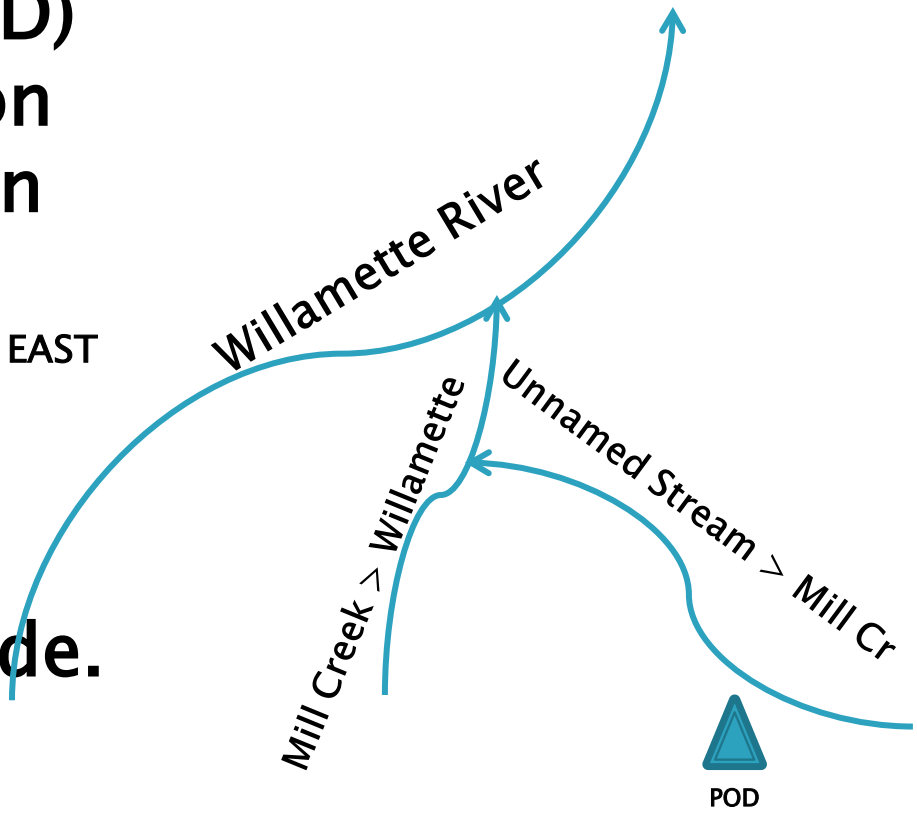
Agenda

- How do we tie water rights to streams?
- What is a stream code and how it is used?
- The history of stream coding and its limitations.
- Project to move to National Hydrography Data with flow direction, confluences, and measures.
- Demonstrate Pilot of a new Web Query tool using this technology.
- Future Plans.
- Questions?

How do we tie water rights to streams?

- Points of diversion (POD) are mapped based upon the location specified in the document.
  - Example: 260 FEET NORTH AND 20 FEET EAST FROM NW CORNER, DLC 37
- POD is assigned to a stream via a stream code.

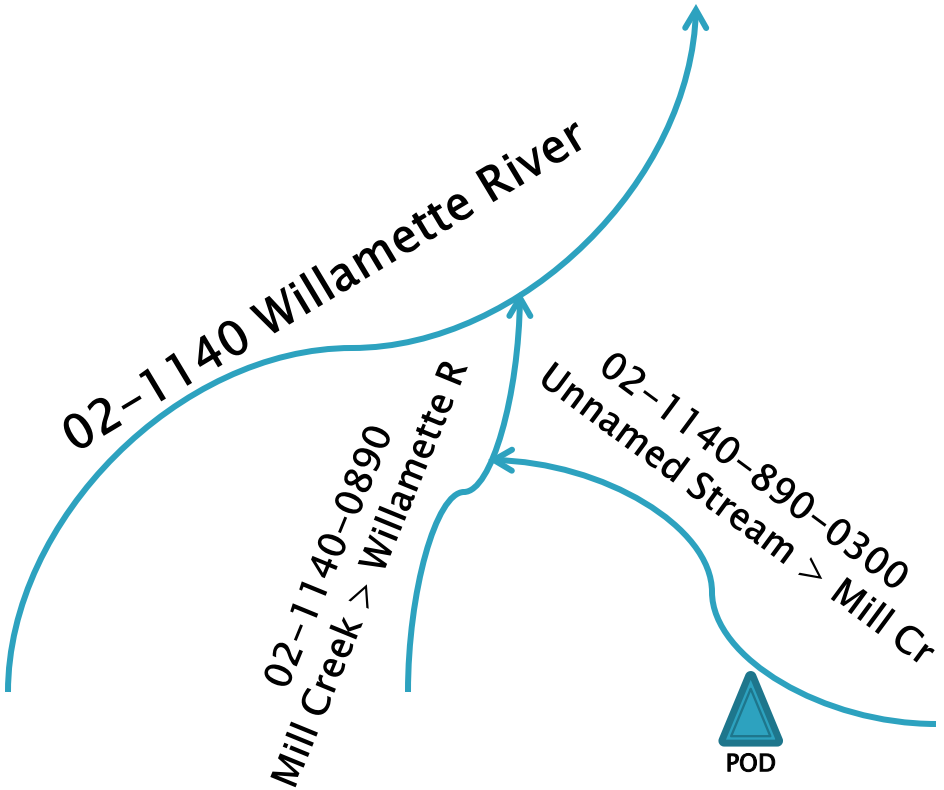


What is a Stream Code

- **Describes the relationship of that stream to all streams in it's downstream path.**

Example:
Unnamed Stream > Mill Cr:
02-1140-890-0300

02 – Basin 2
1140 – Willamette River
0890 – Mill Creek
0300 – Unnamed Stream



Stream Code Usage

- Find rights for a stream system:
  - Searching for rights with a stream code that start with *02-1140* would return all rights on the Willamette River and all of it's tributaries.

- Limitations
  - Can not limit it to a section of the Willamette River – it is like only having a street name without an address.
  - Computer can not tell if a right is upstream or downstream of other rights.
  - When staff needed this level of resolution, it would take hours of manual effort to determine.

Stream Code/Mapping History Early 1980s – Basin Maps

- Manually determined and written on a basin map.
- This basin map was about 1:126,000 scale.

Only streams with water rights were coded.

Stream Code/Mapping Mid 1990's – 100k

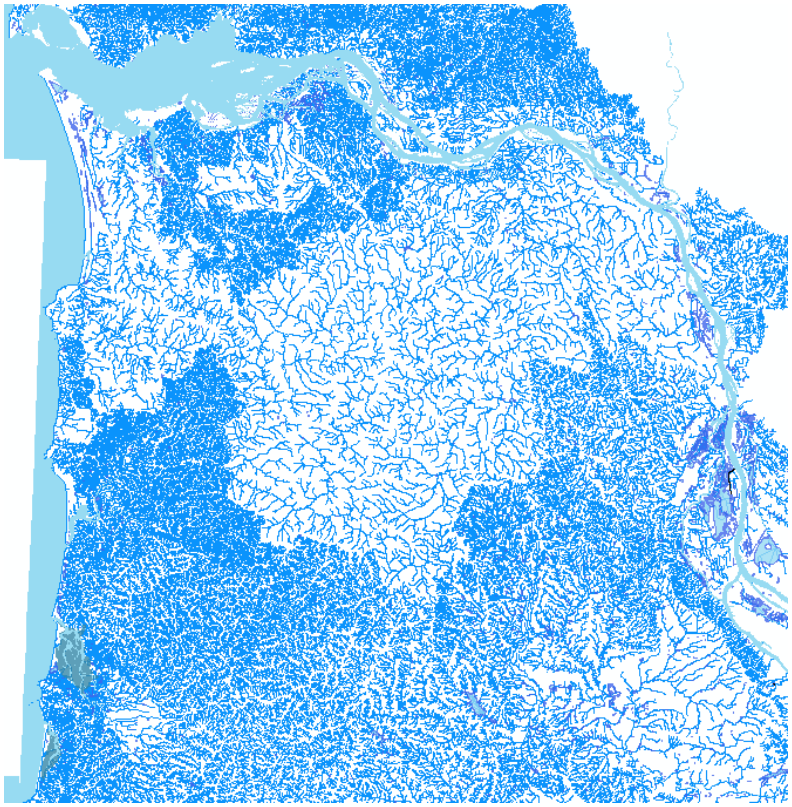
- Stream codes were manually assigned from the paper basin maps to 1:100,000 scale stream data.
- Not all basin stream codes were able to be mapped onto the 100k data.

Not all 100K streams have stream codes.

Total: 82,000 streams
Stream coded: 23,880 streams

Stream Code/Mapping Mid 2000 – 24k

- 100k stream data was conflated to 1:24,000 scale stream data.
- More accurate representation of the streams.
- More streams in 24k data.

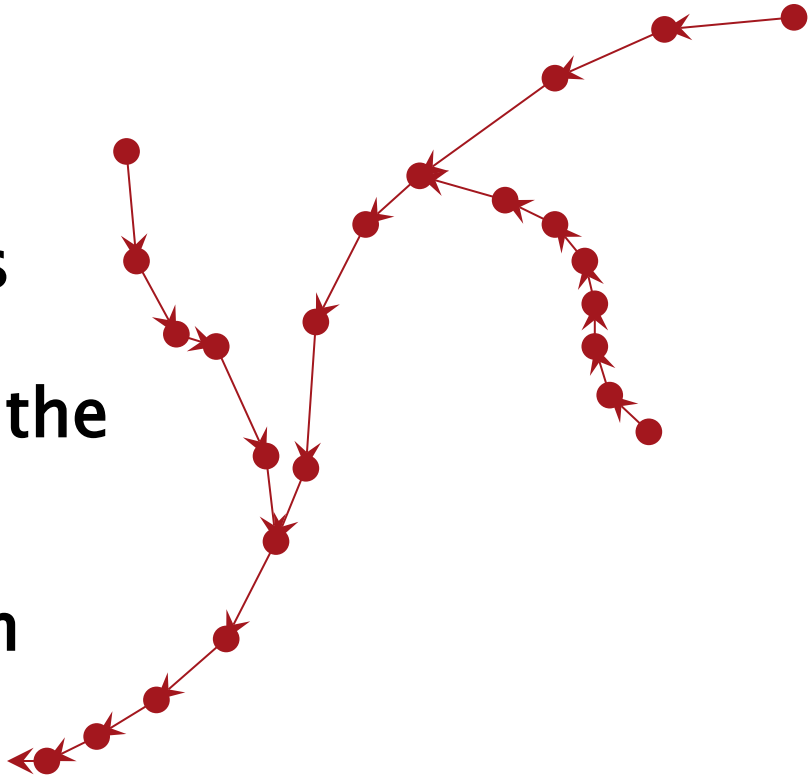


Not all 24K streams have stream codes.

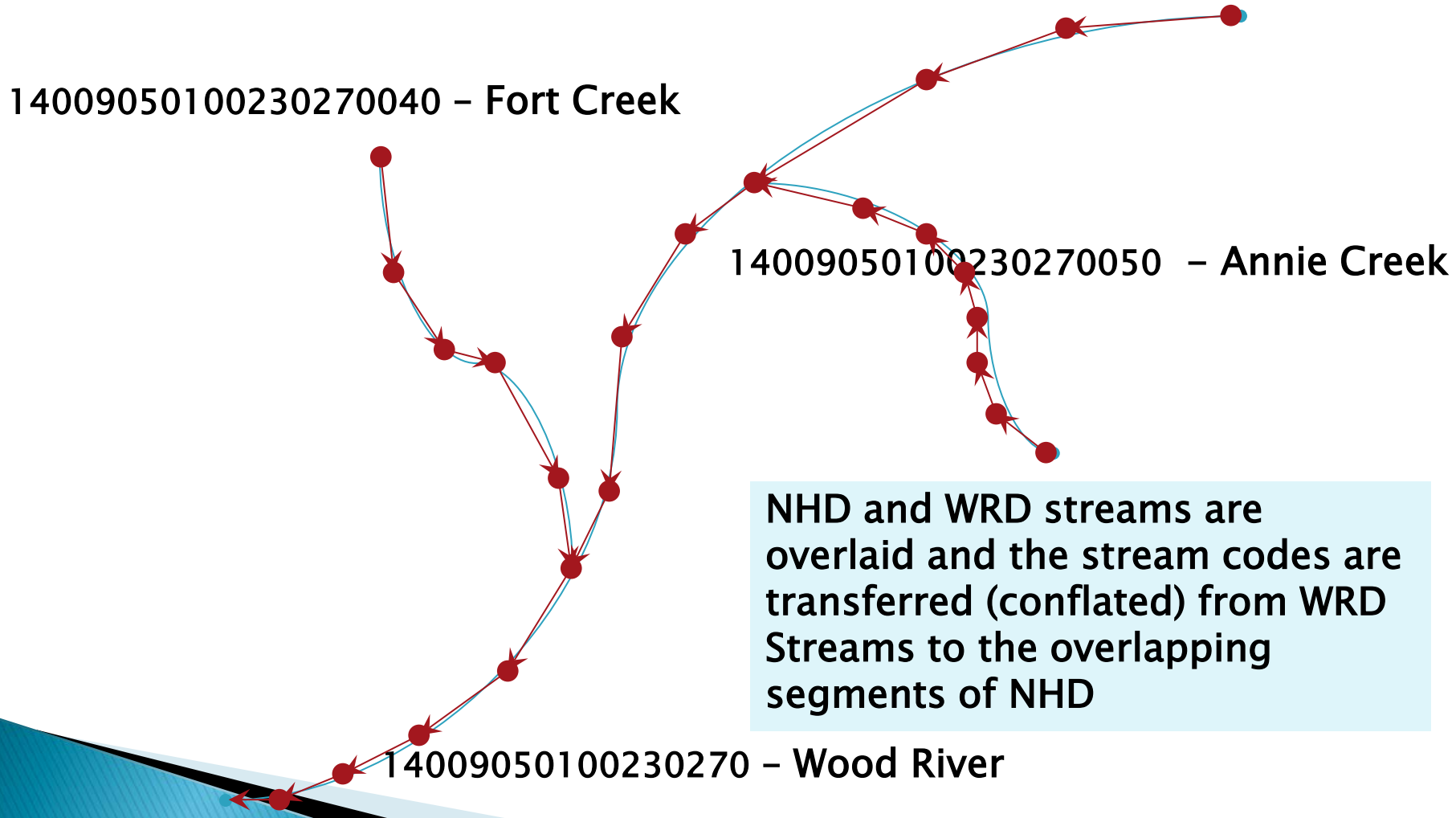
Total: 710,984 streams
Stream coded: 26,790

Stream Code/Mapping
2015 – National Hydrography Dataset

- National standard
- Based on 24k stream data
- Includes flow direction lines
- Includes measurements for the lines
- In 2014 we started a pilot in the Klamath to test NHD

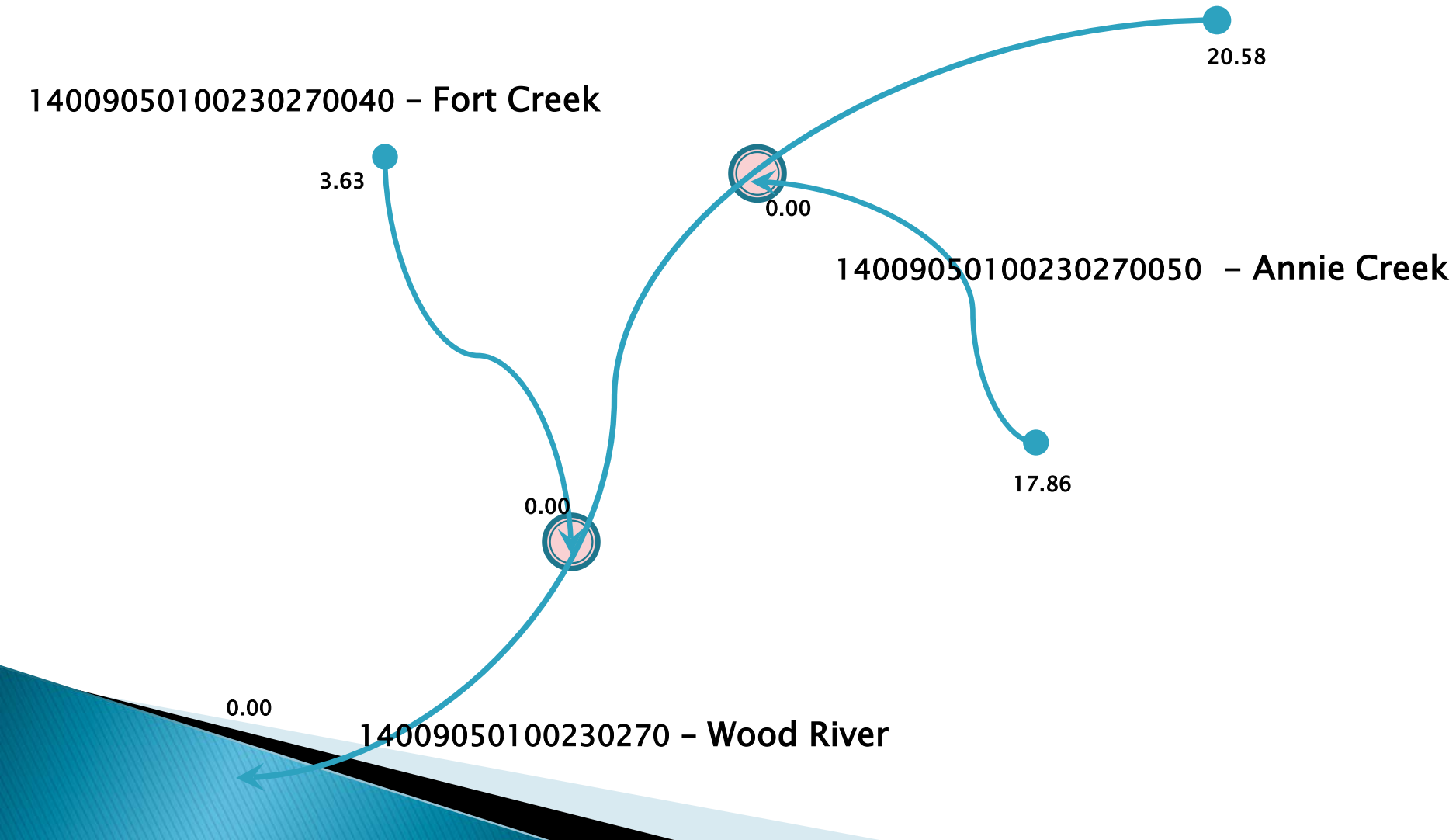


Conflate NHD & WRD Streams

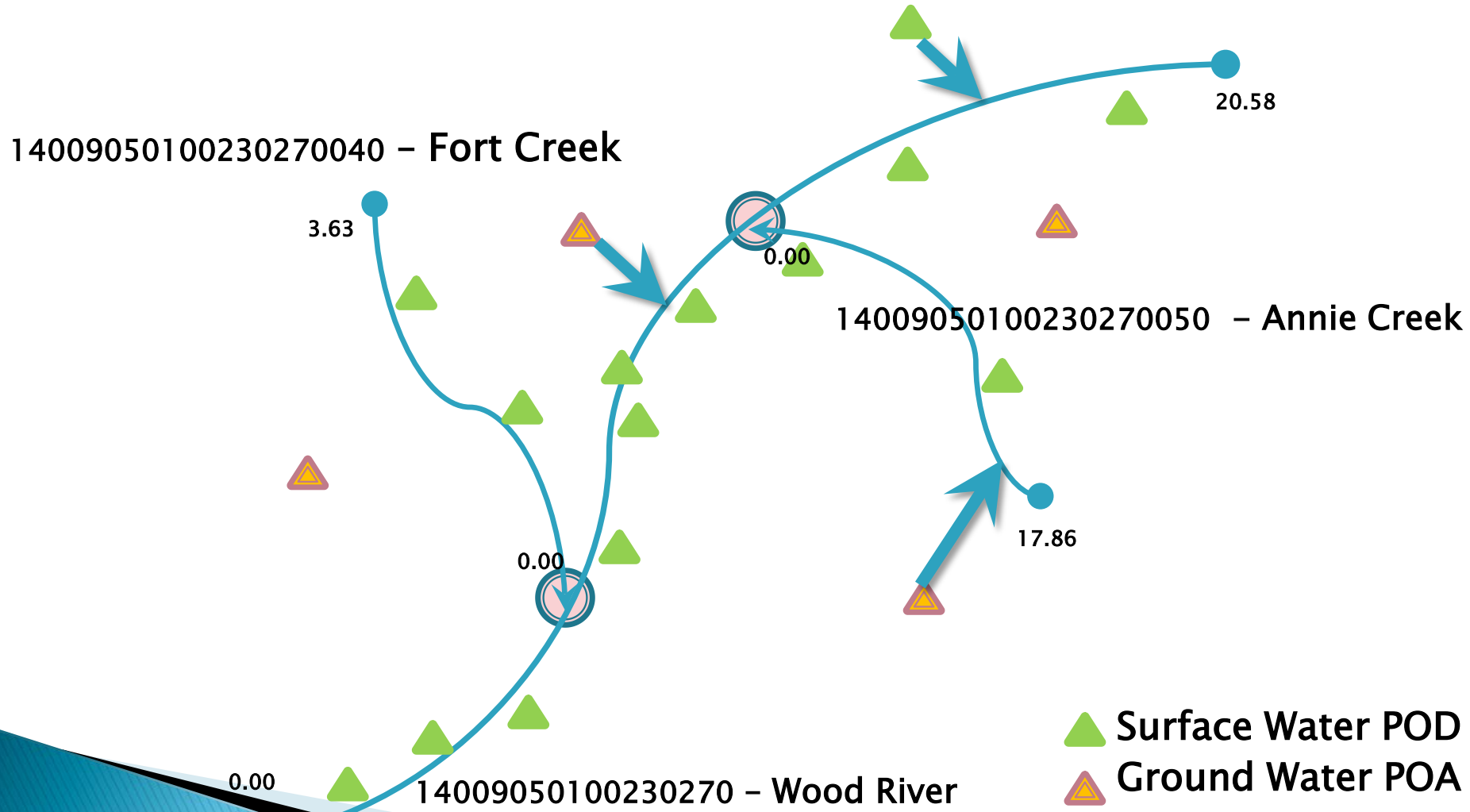


NHD and WRD streams are overlaid and the stream codes are transferred (conflated) from WRD Streams to the overlapping segments of NHD

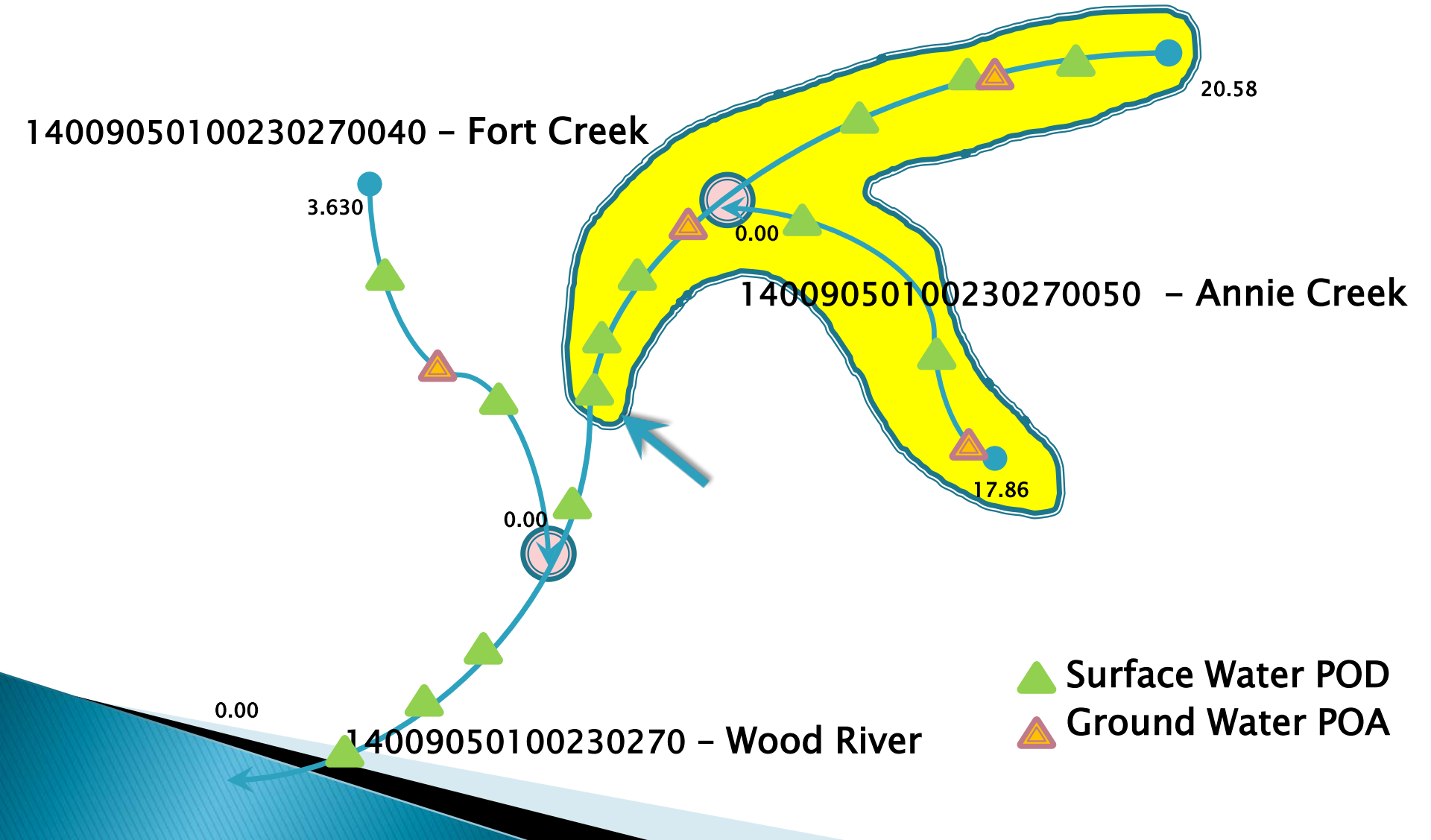
WRD Coded NHD Streams with Directionality and Measures



POD Indexes are Calculated from the WRD Coded NHD Streams



Possible to Select Rights Based on their Location on the Stream



NHD Pilot Status

- Klamath testing complete
- Statewide conflation of WRD stream codes to NHD is complete
  - For the entire state, all streams that have a surface water point of diversion have been conflated to NHD.
- Water Right Updates – Ongoing
  - Changed procedure for new rights to add stream codes as needed.
  - Fixing issues where PODs are mapped more than 10 miles away from the stream they are coded to.

How can we use this data?

- We can now perform queries and analysis based upon the stream network. Here are just a few samples:
  - What junior rights are upstream from a POD?
  - What rights might be injured downstream for a transfer review?
  - What is downstream of a dam?
  - What is between two gages?
  - What rights are in the Middle Deschutes?
- Demonstration of beta version of WRIS Query and Mapping

Future Plans

- Winter 2015 –Beta version of WRIS (internal staff only) for review has been released
  - Soliciting feedback and bug testing
- Early 2016– Release public version of WRIS
- Develop other uses:
  - Water Availability
  - Deschutes Mitigation
  - Place Based Planning
  - And more…

Summary

- Being able to query features based on their stream location *fundamentally* changes the way we can use water related data.
- This will allow the Agency to streamline the process for water right transactions and field staff research.
- This will provide tools for external customers to get the information they require.

Questions?

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