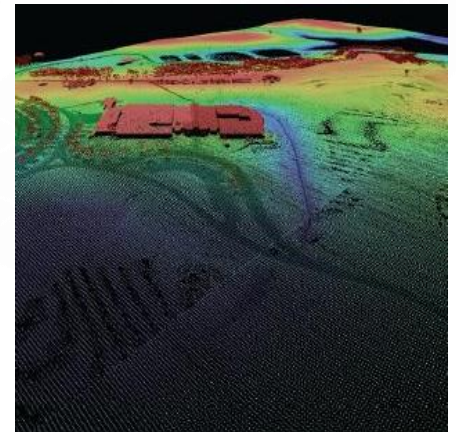
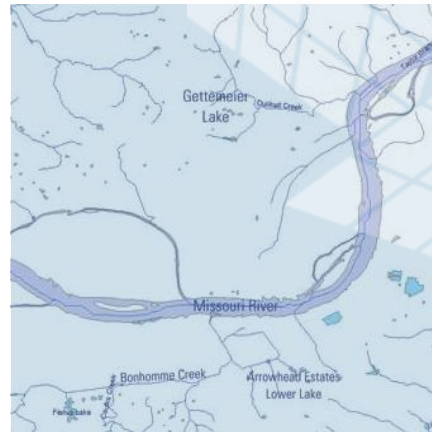
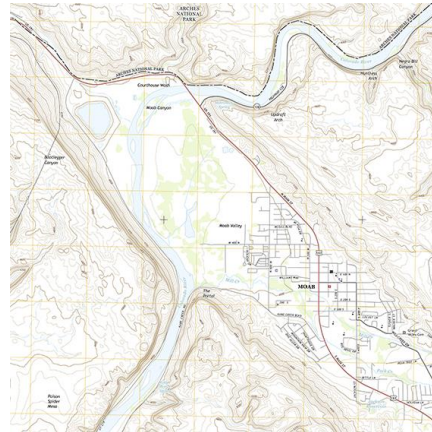


Introduction to the National Hydrography Dataset (NHD)



April 13, 2016

Alan Rea

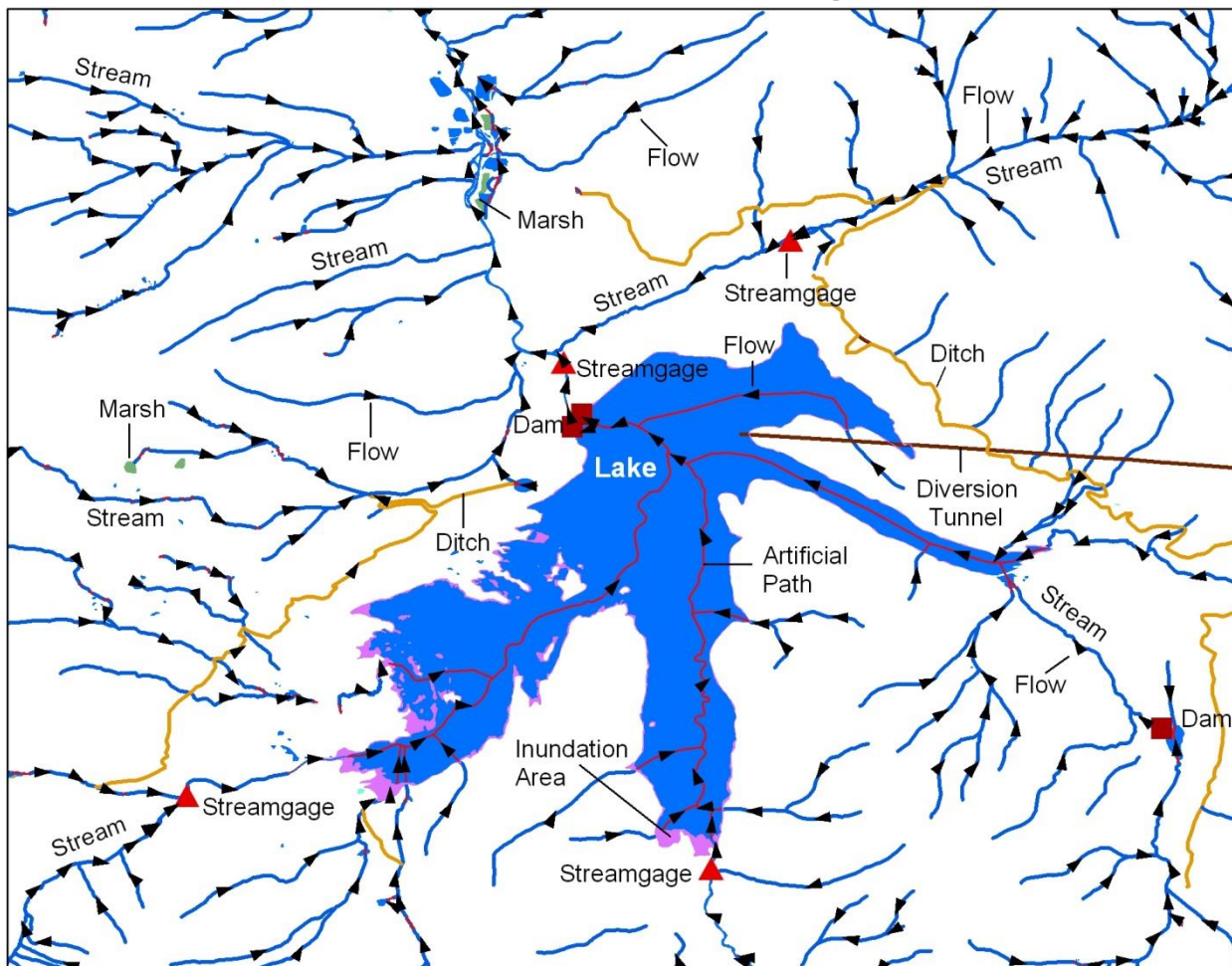


+

What is the National Hydrography Dataset?

Surface water features found on topographic maps

2

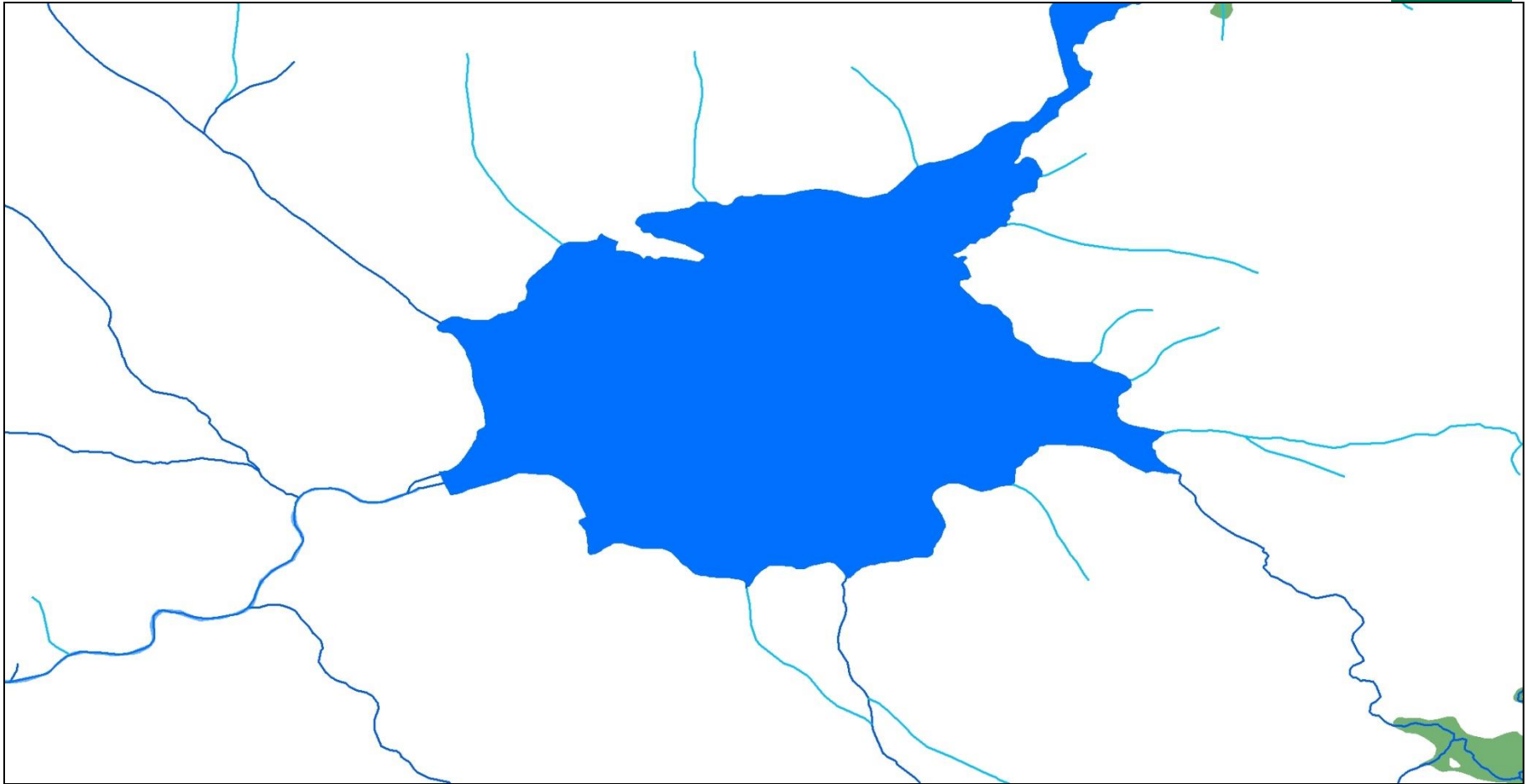


+ Drainage network of rivers and streams

8.5-million mile network

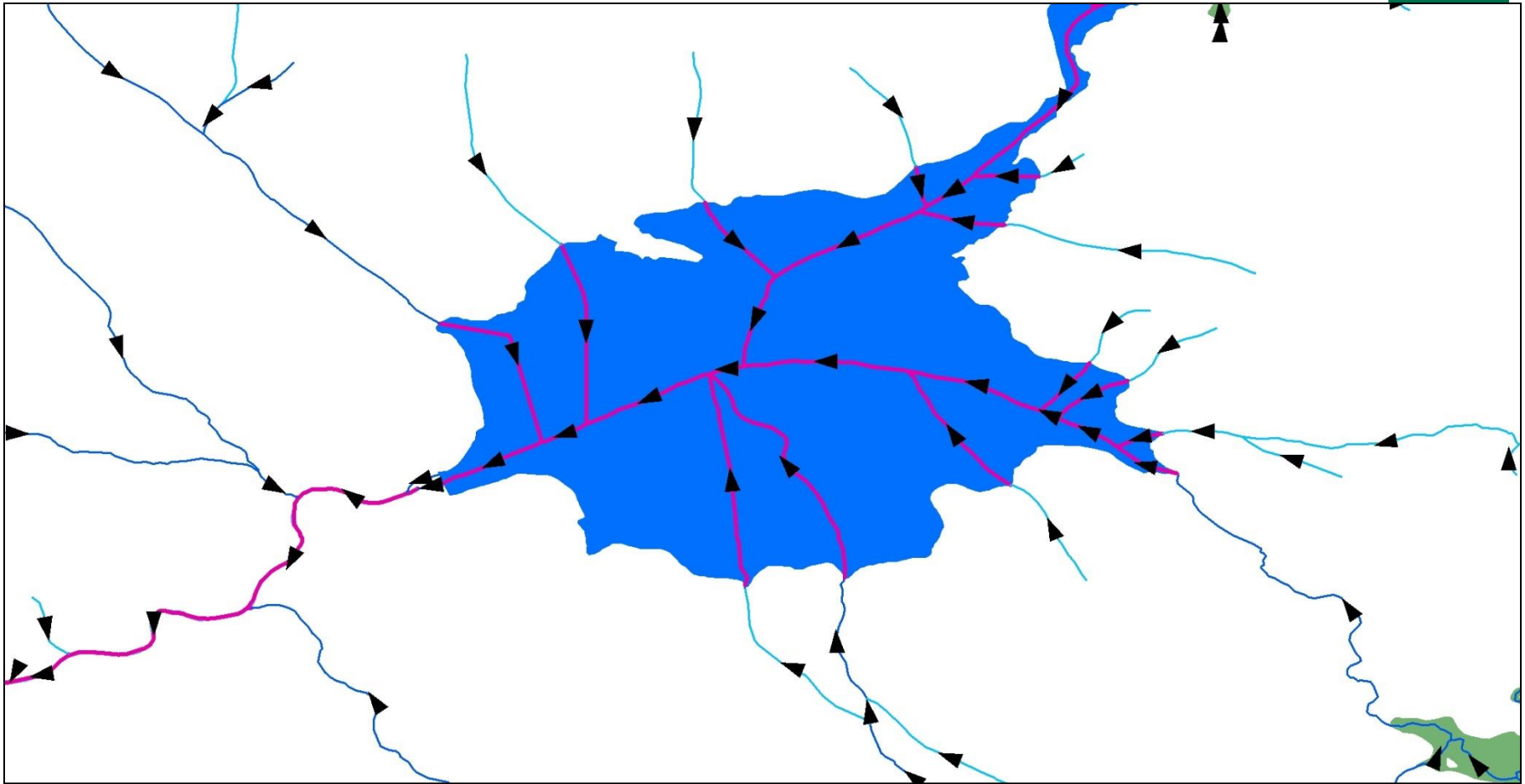


+ Completing the network through waterbodies

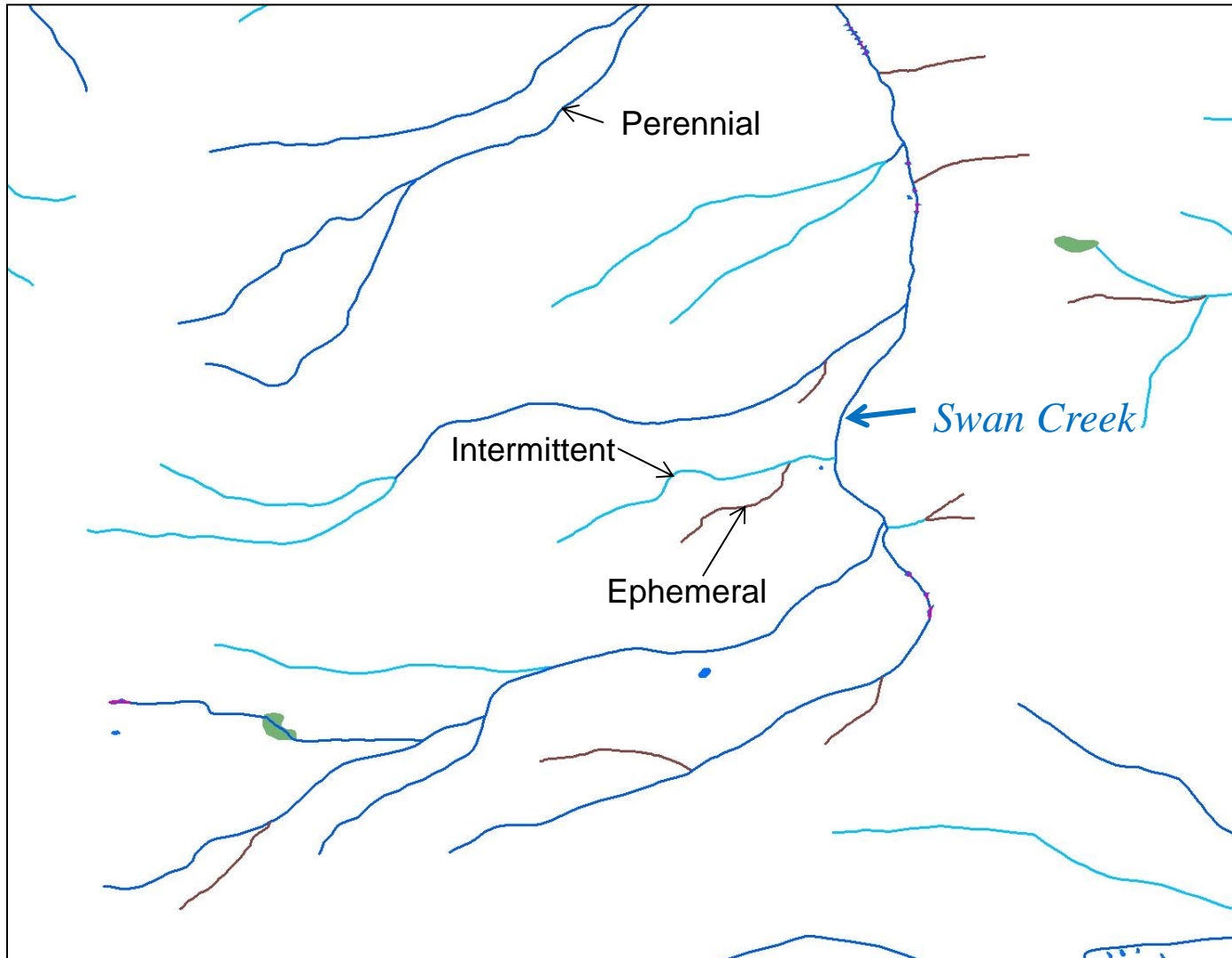


+ Completing the network through waterbodies with artificial paths

7.8 million waterbodies



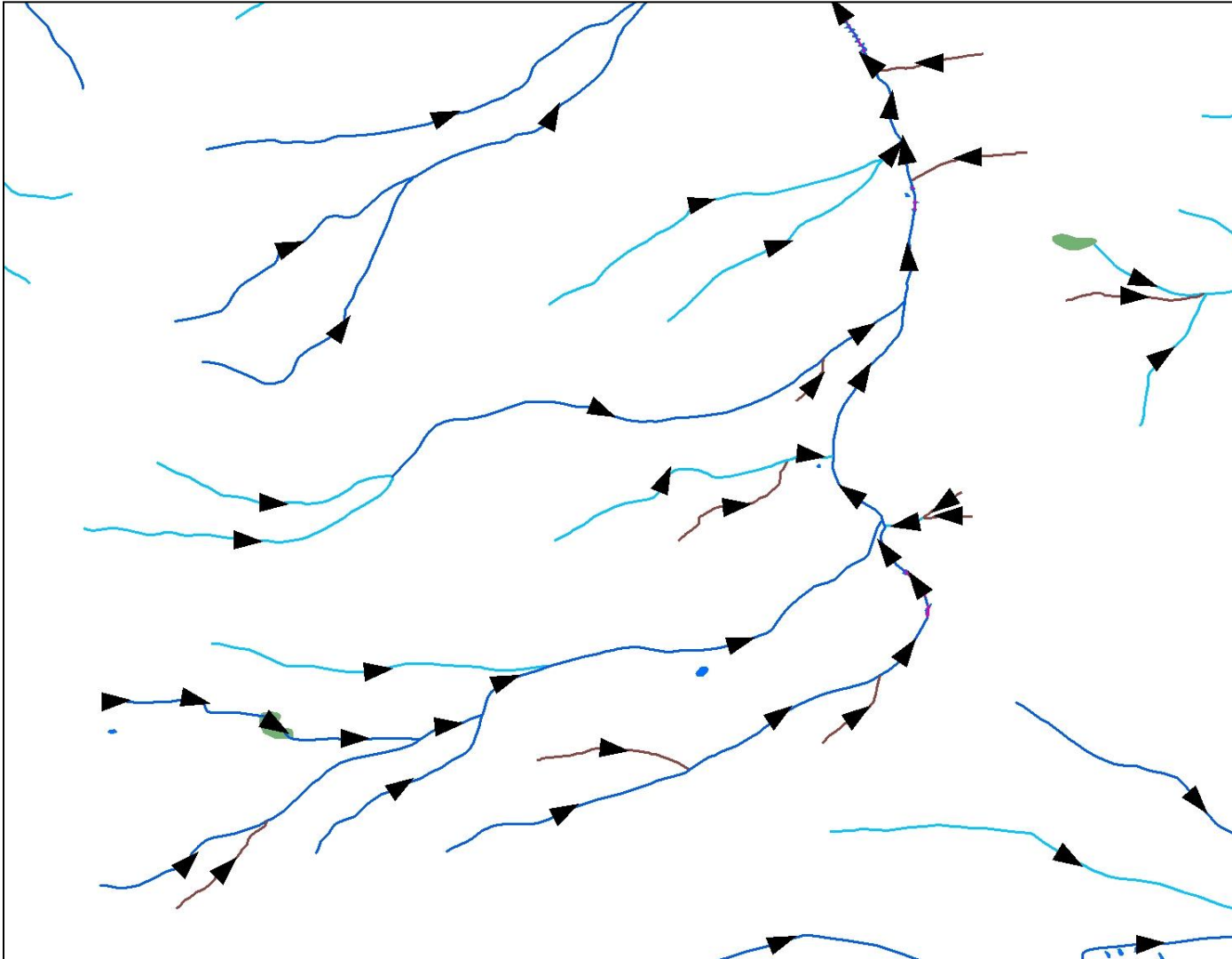
+ Attributes provide basic intelligence



+

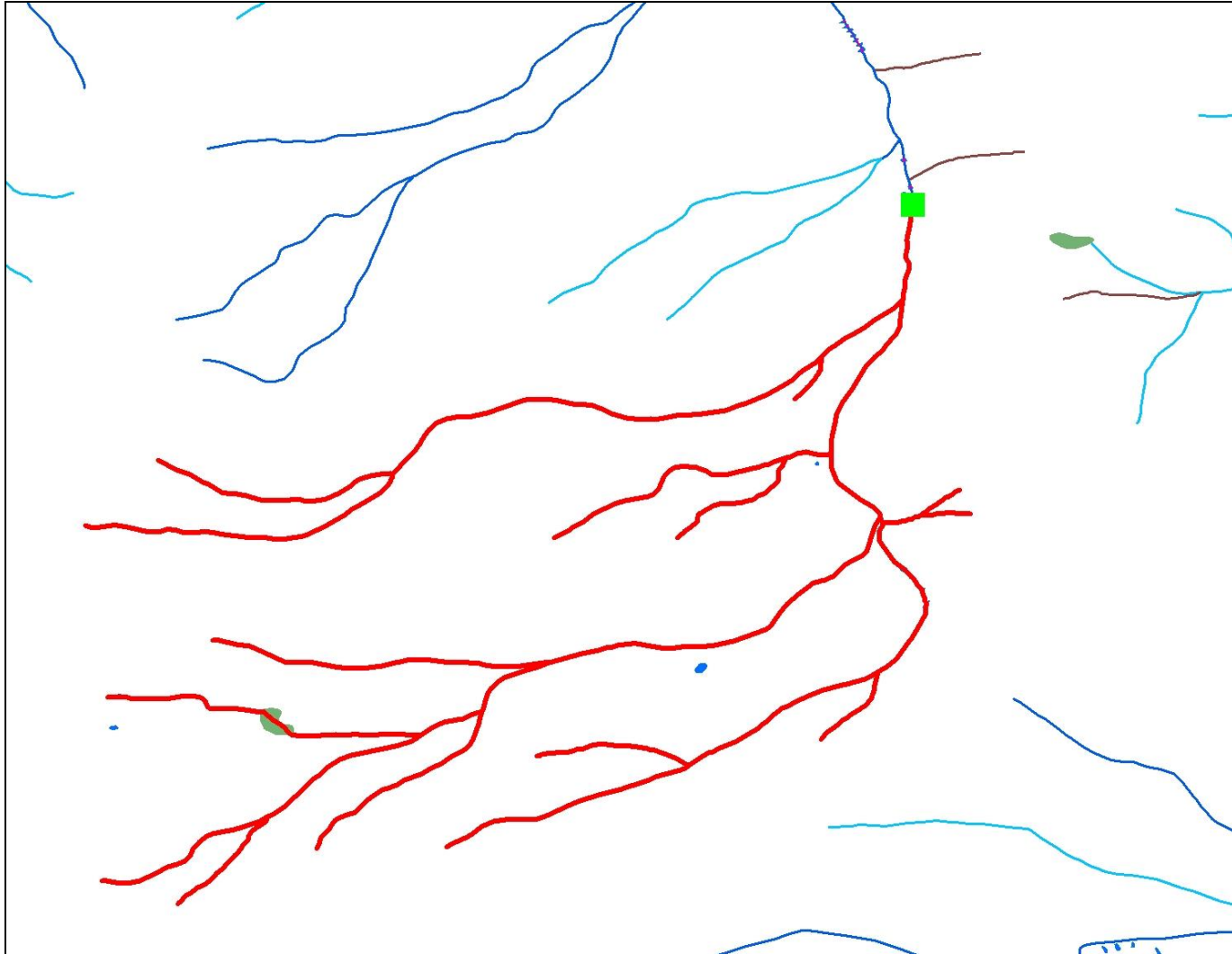
Flow Direction – A key piece of intelligence

7

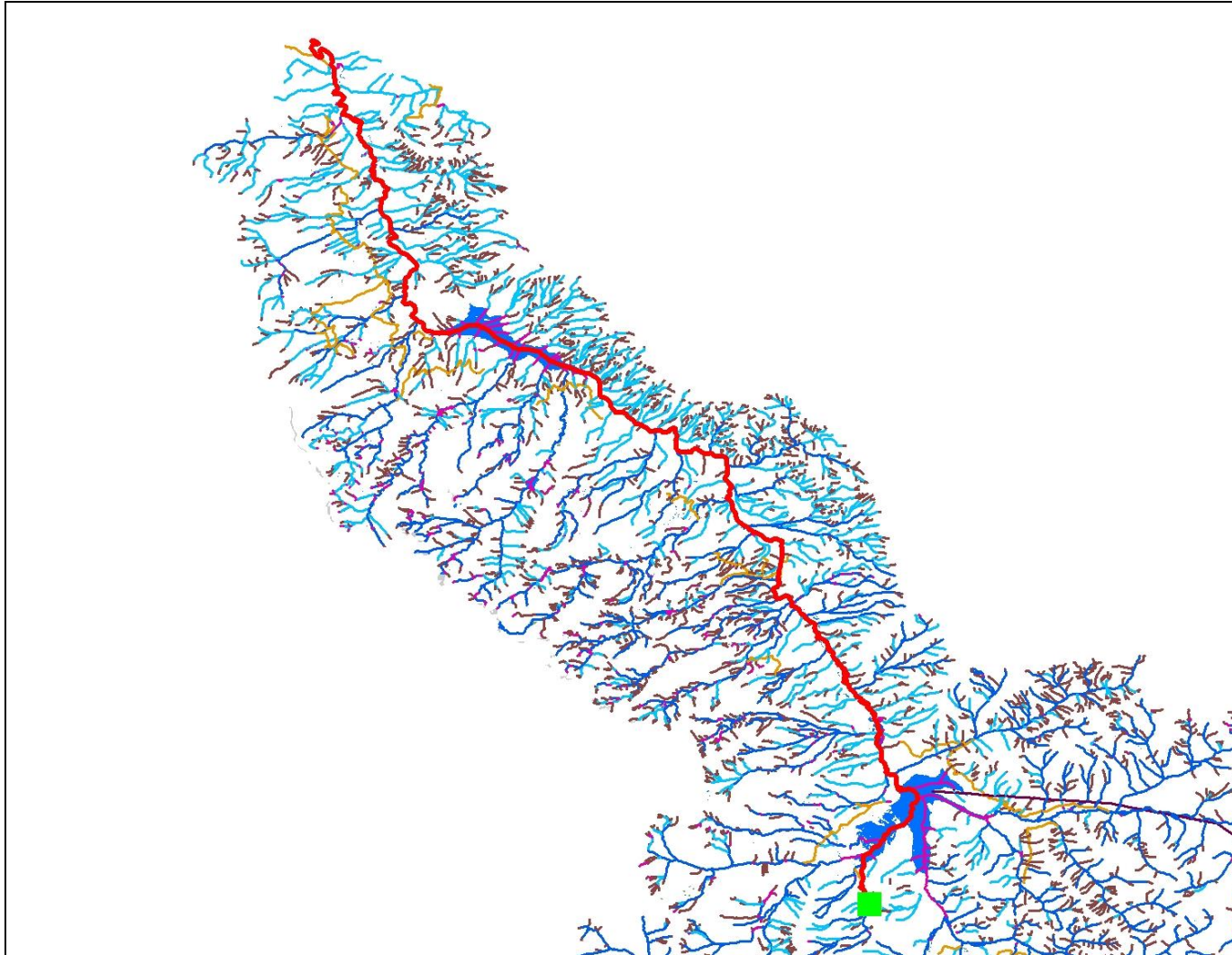


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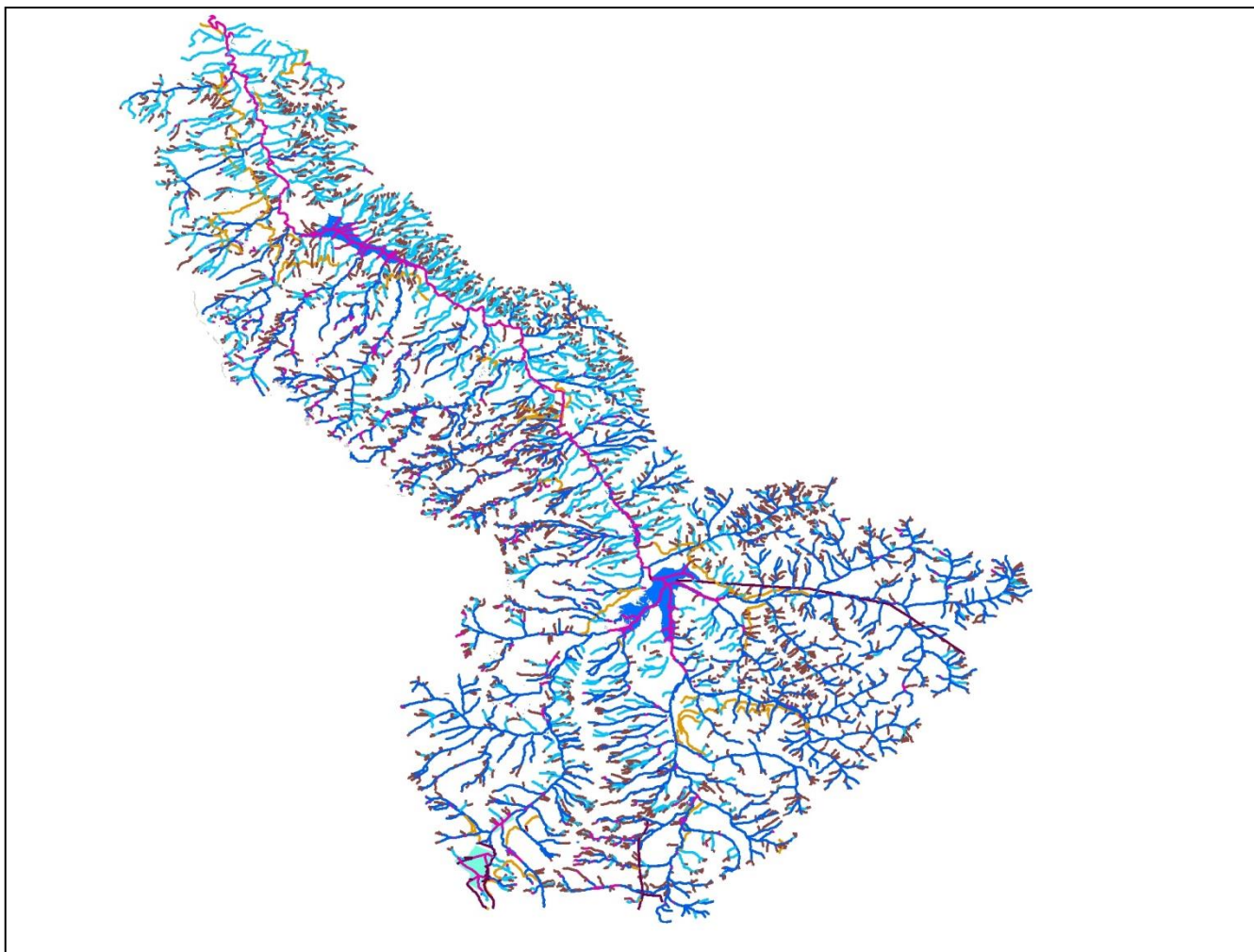
Navigation – The basis for analysis



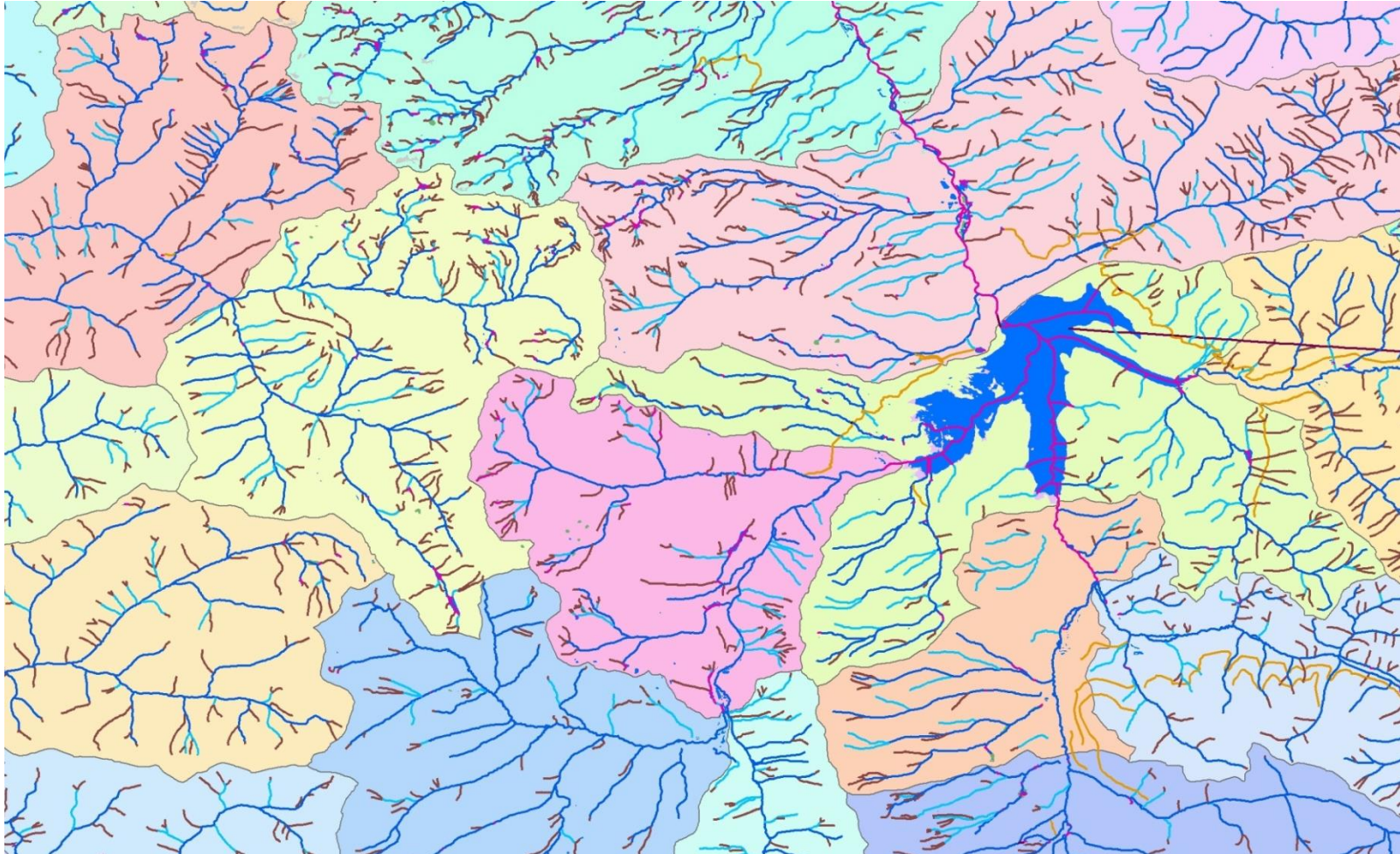
+ Navigation – Where does a toxic spill go?



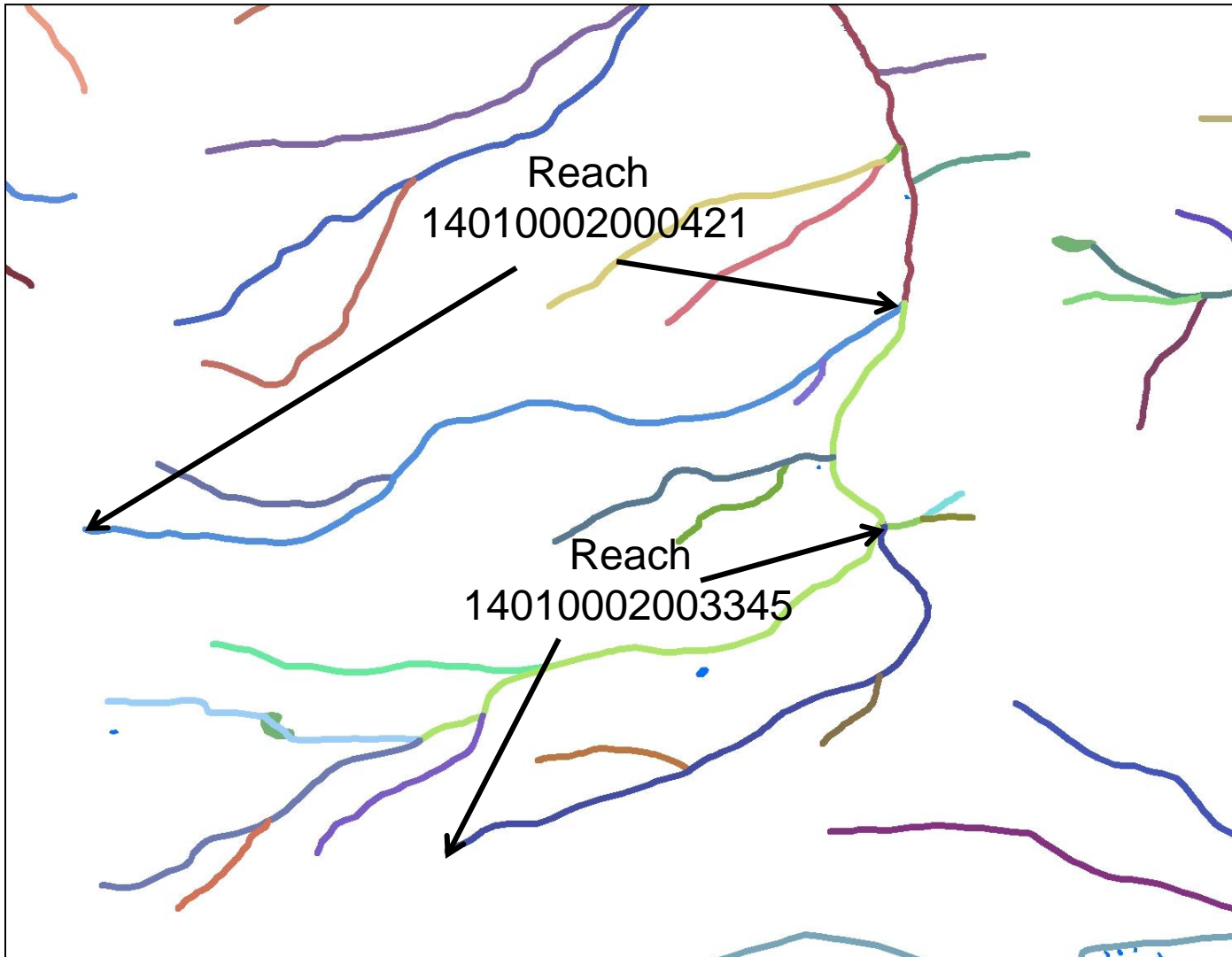
+ NHD is organized by Hydrologic Units



+ Network integrated with hydrologic units

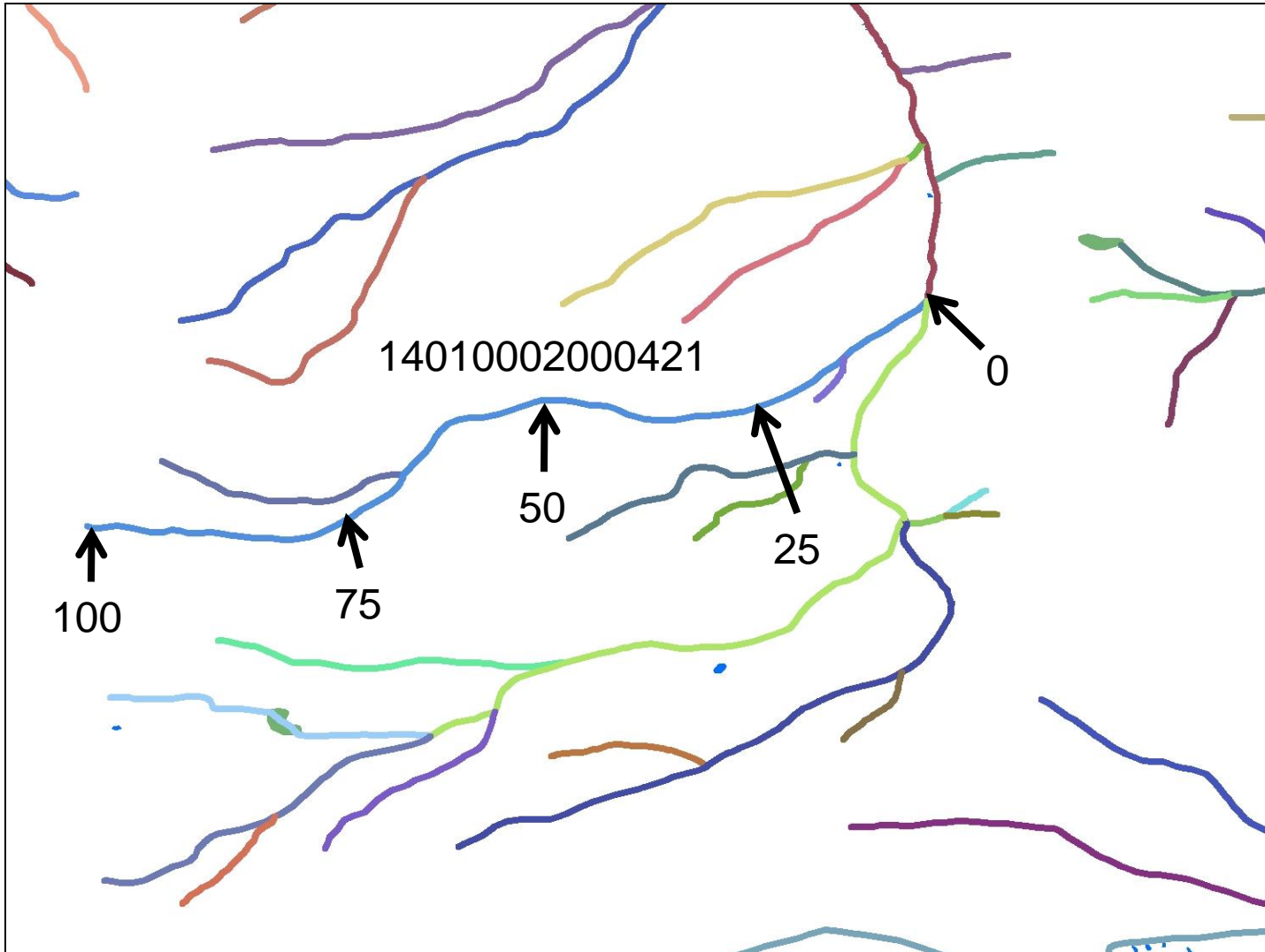


+ Linear Referencing – Stream “Reaches”

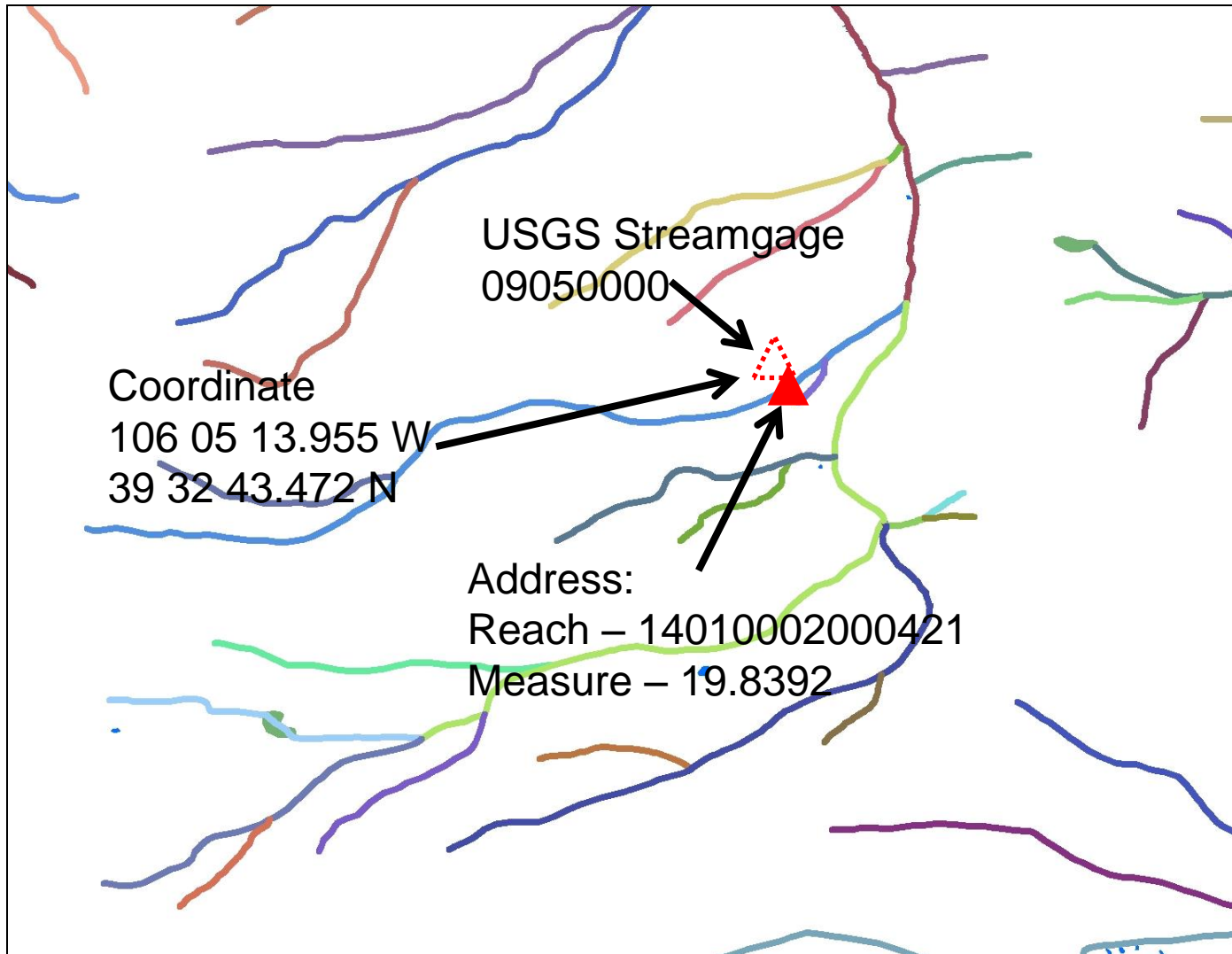


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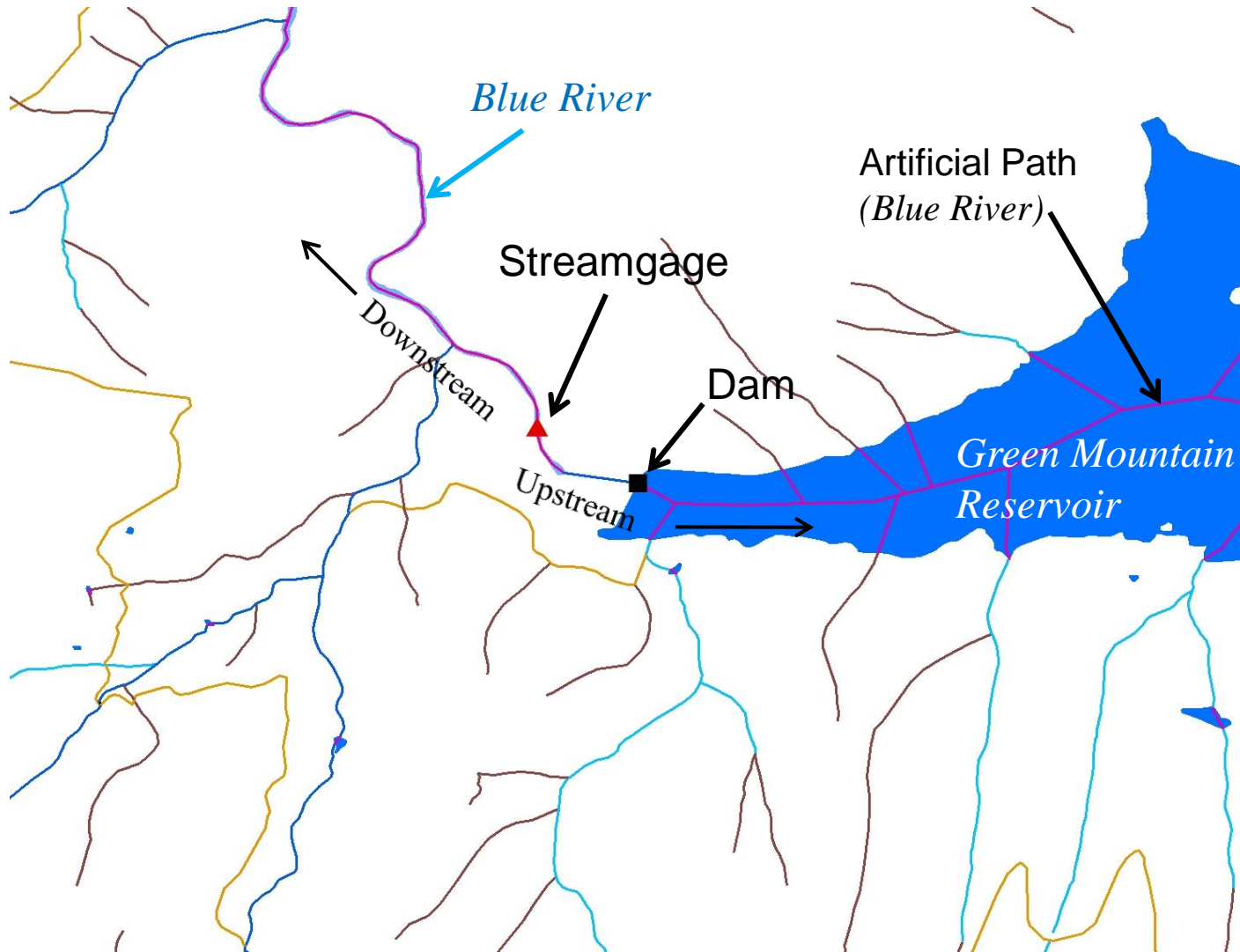
Linear Referencing – Stream addresses



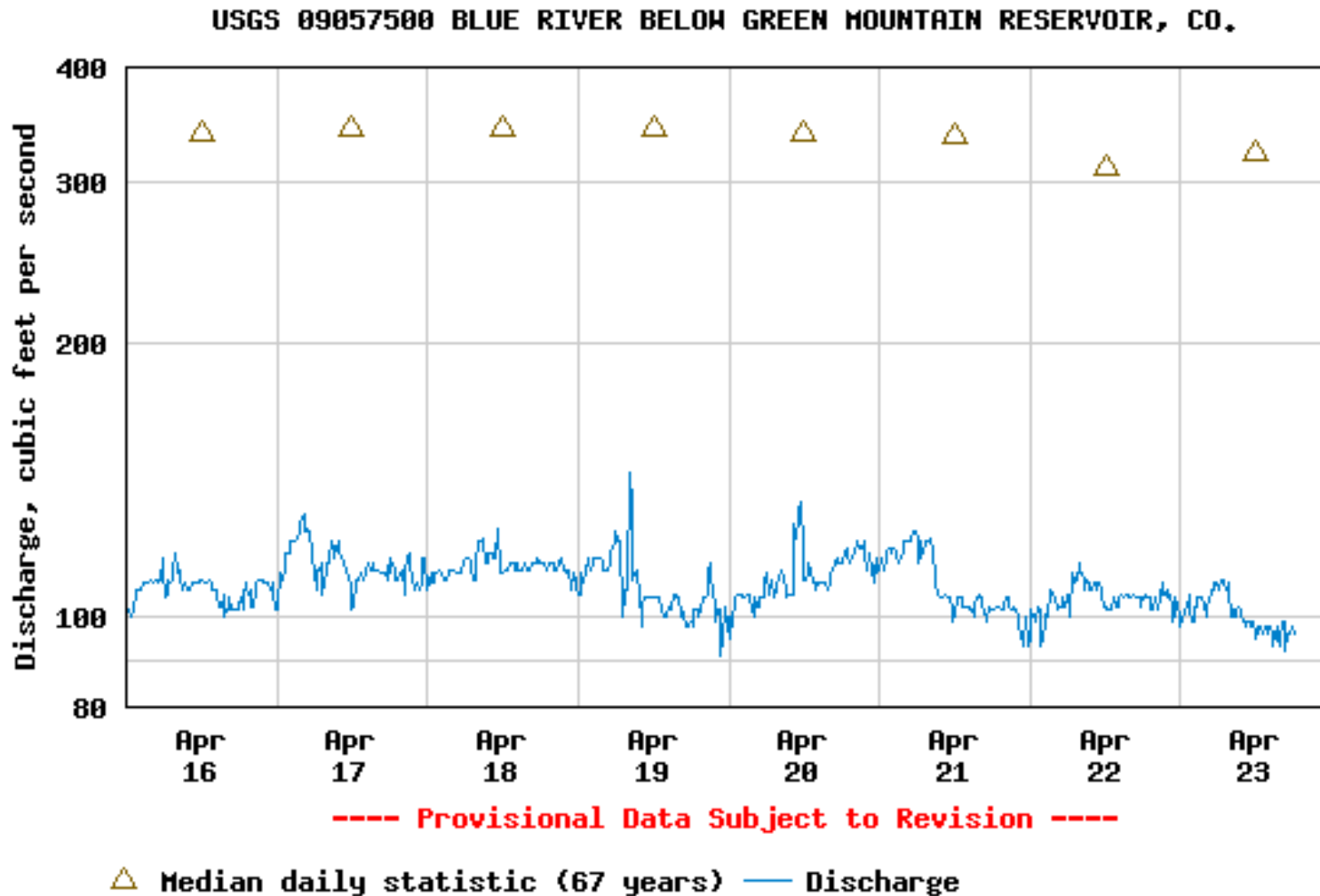
+ Linear Referencing – Data “Events”



+ Connecting the streamgauge to the network

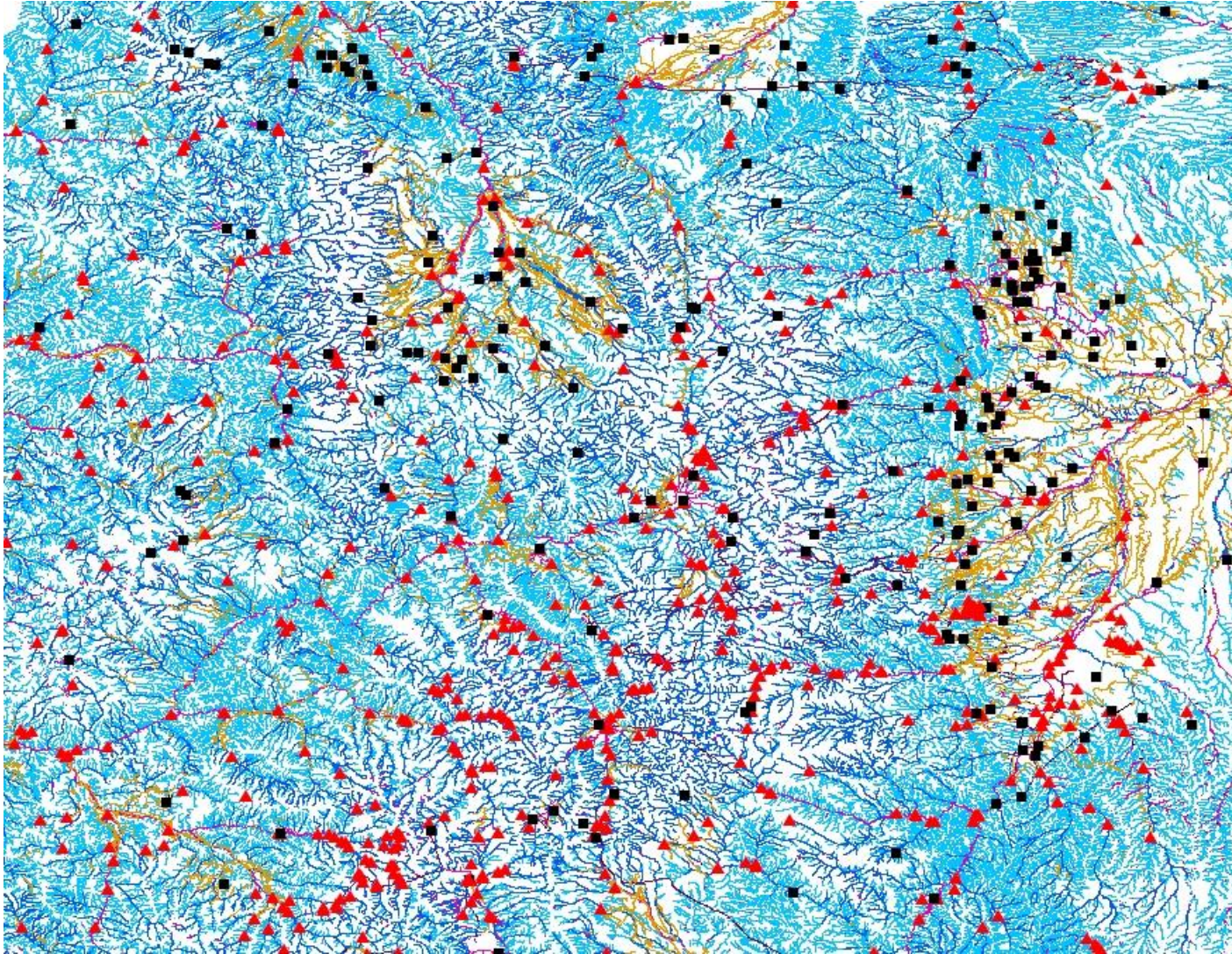


+ Adding geospatial context to streamflow data



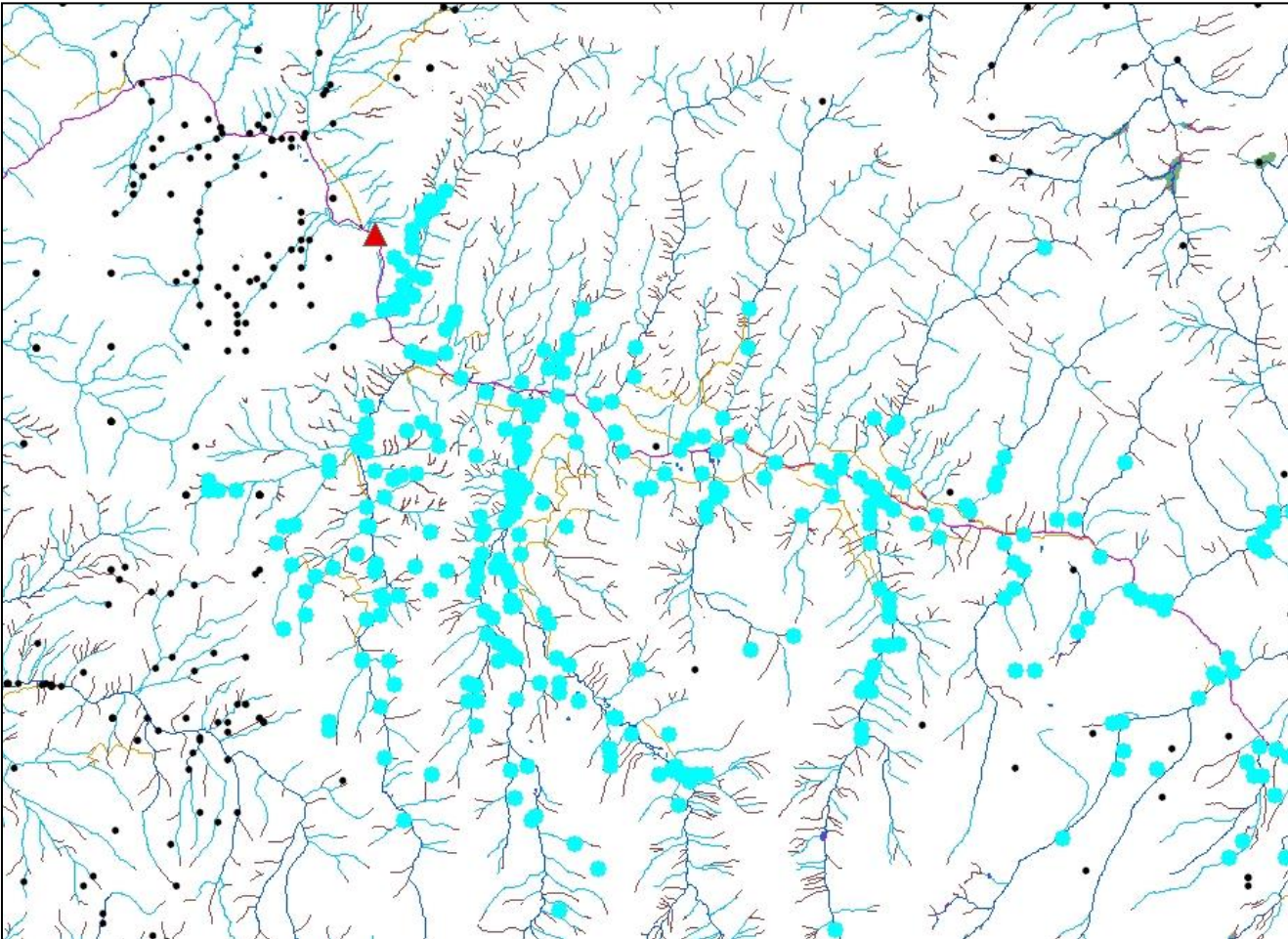
+

Dams and Streamgages Integrated with the NHD



+ Analyzing Relationships

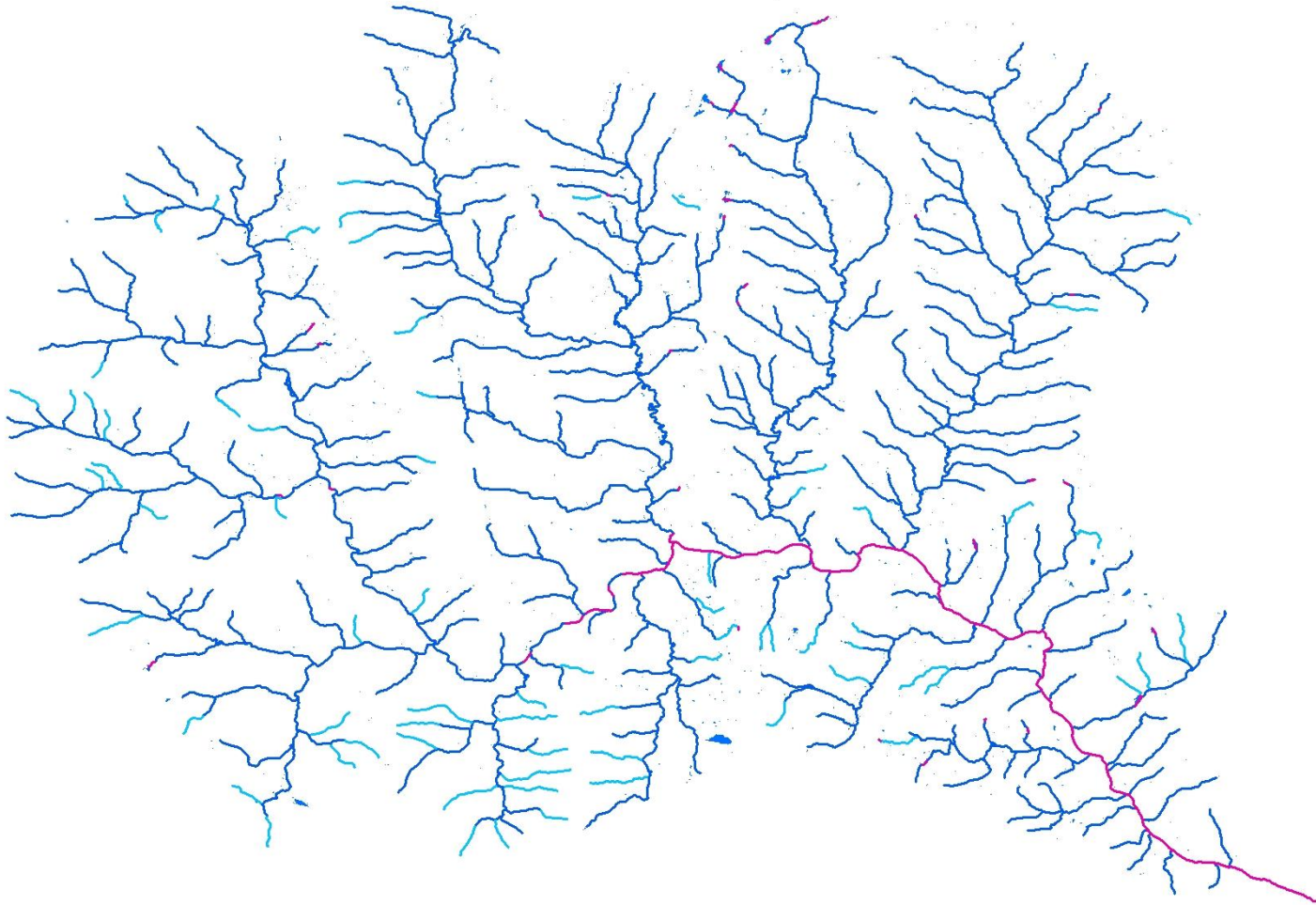
Identifying diversions upstream of a streamgage



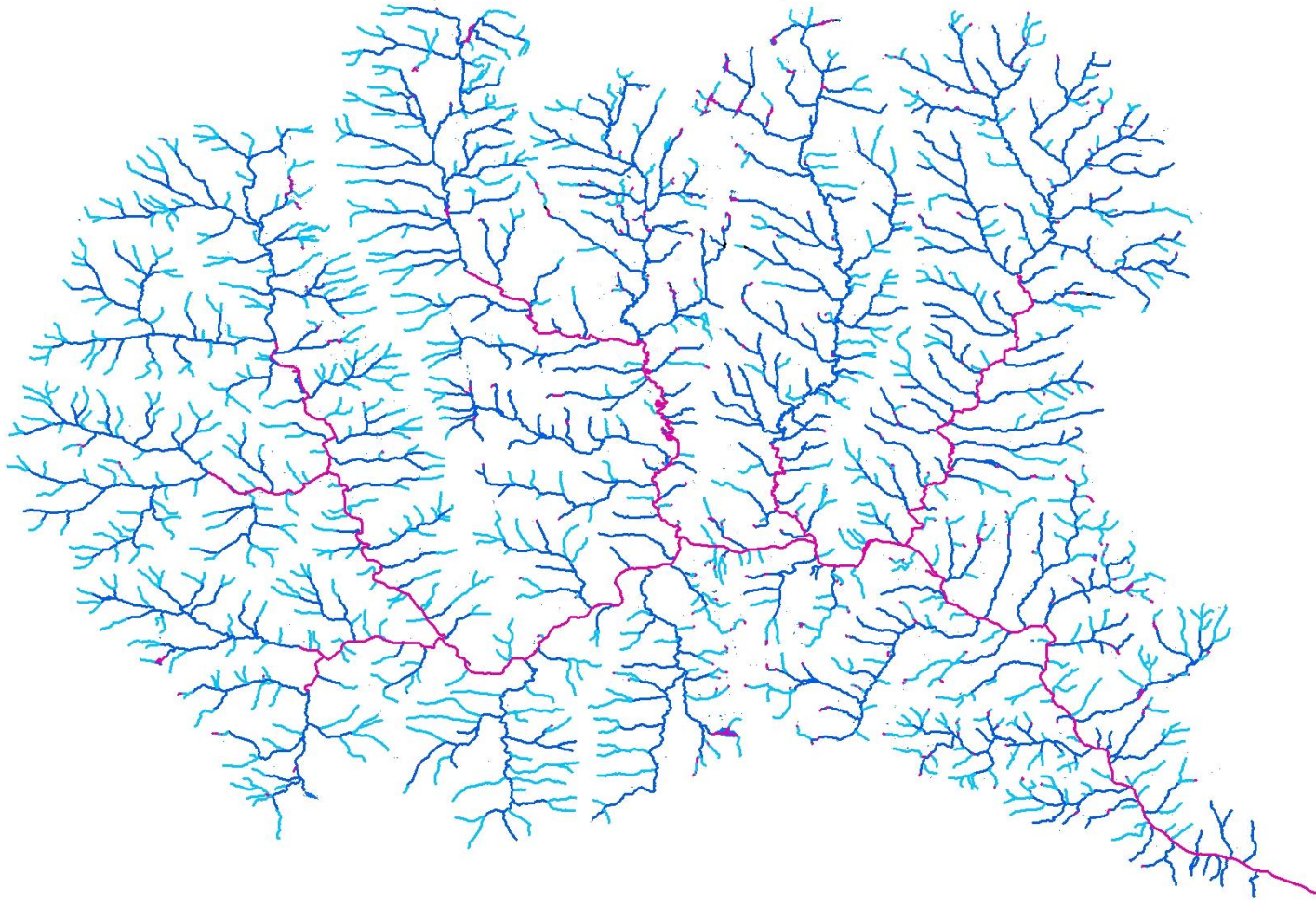
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Medium Resolution NHD(1:100K)

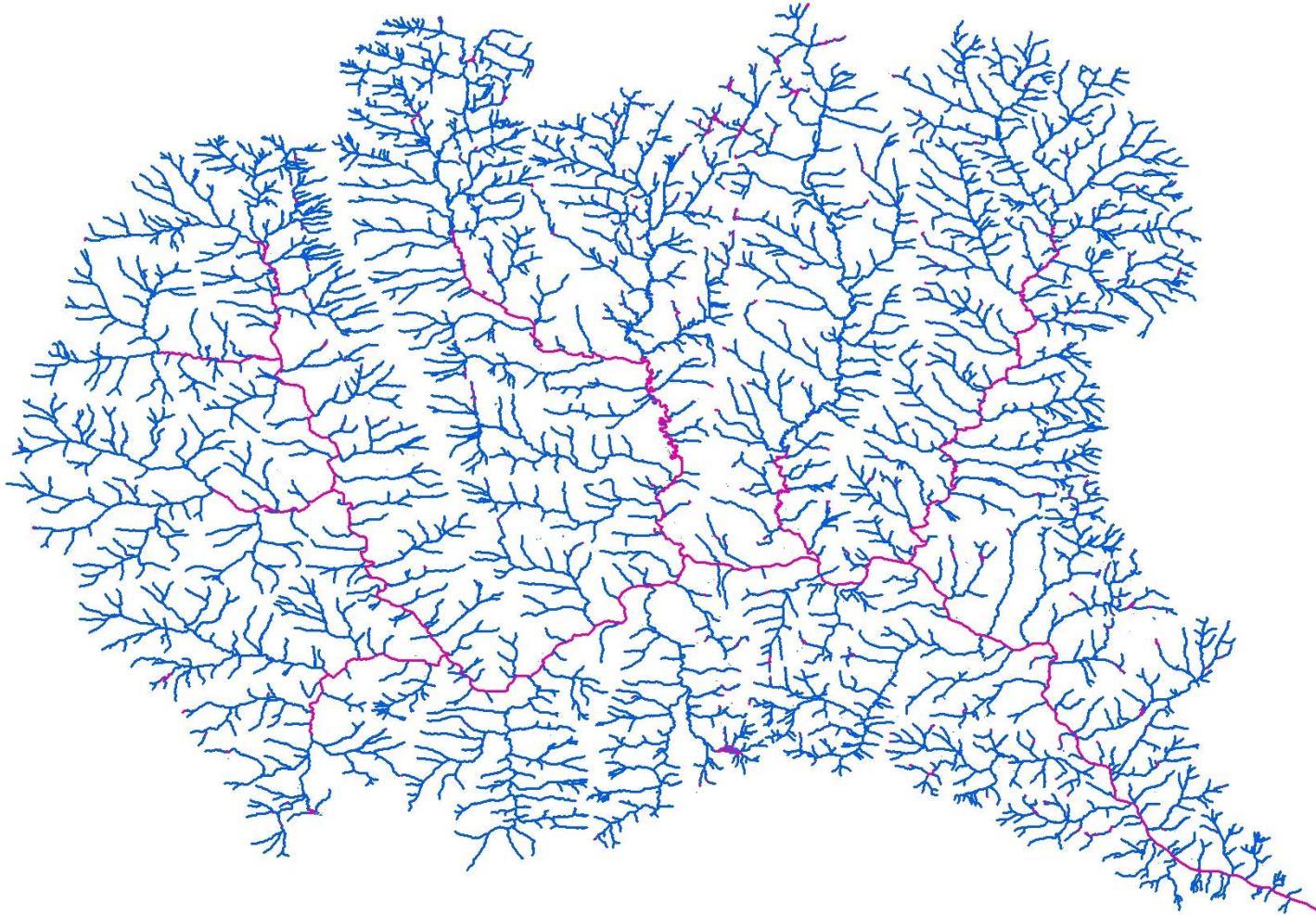
19



+ High Resolution NHD (1:24K)



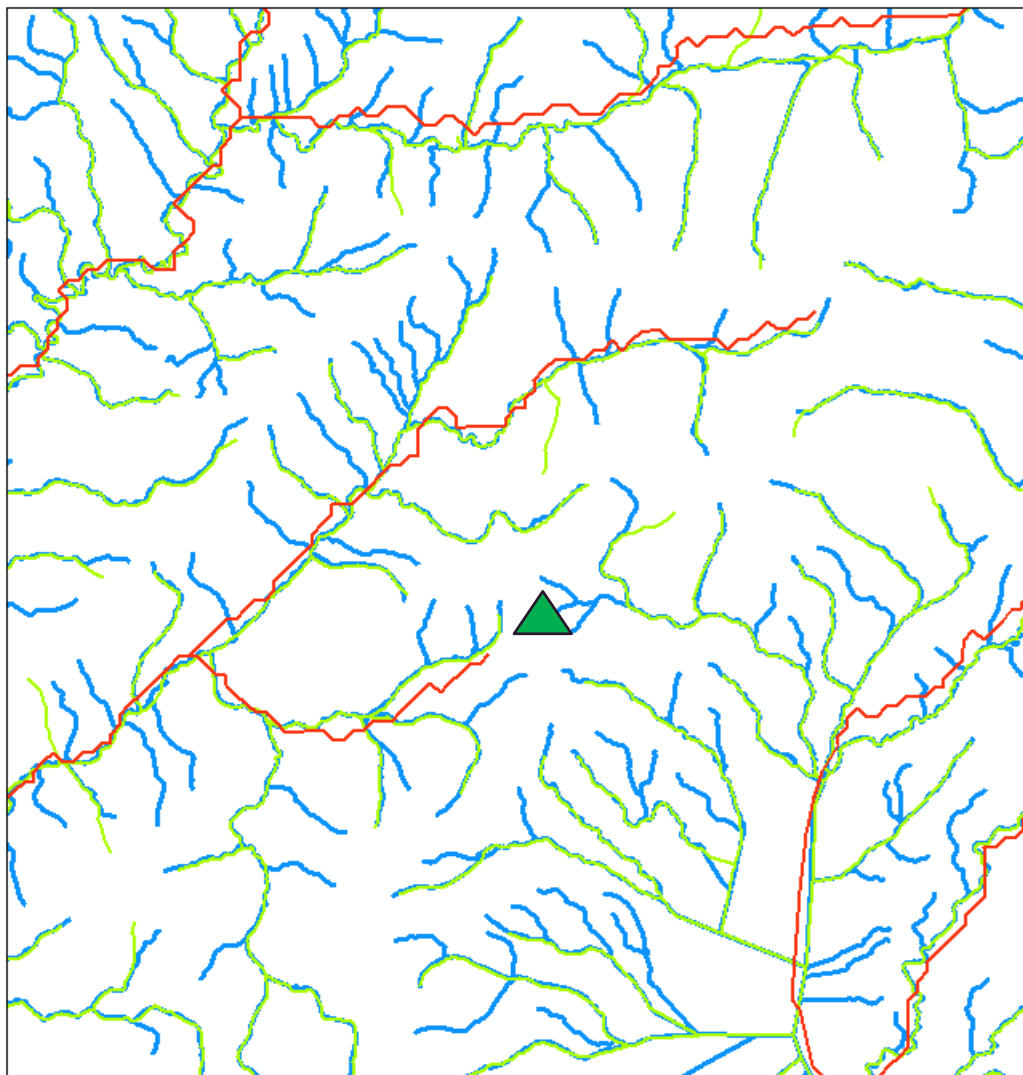
+ Local Resolution NHD (in HiRes)



+

Linking to different networks

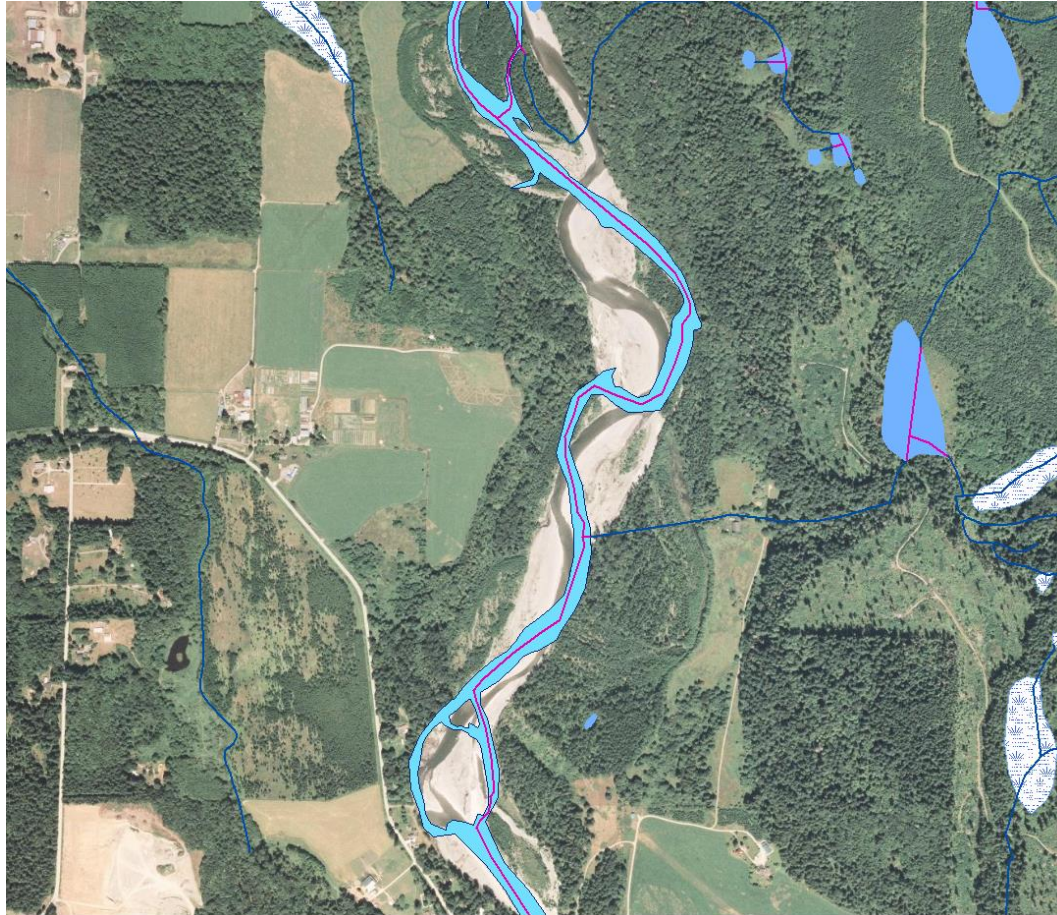
22



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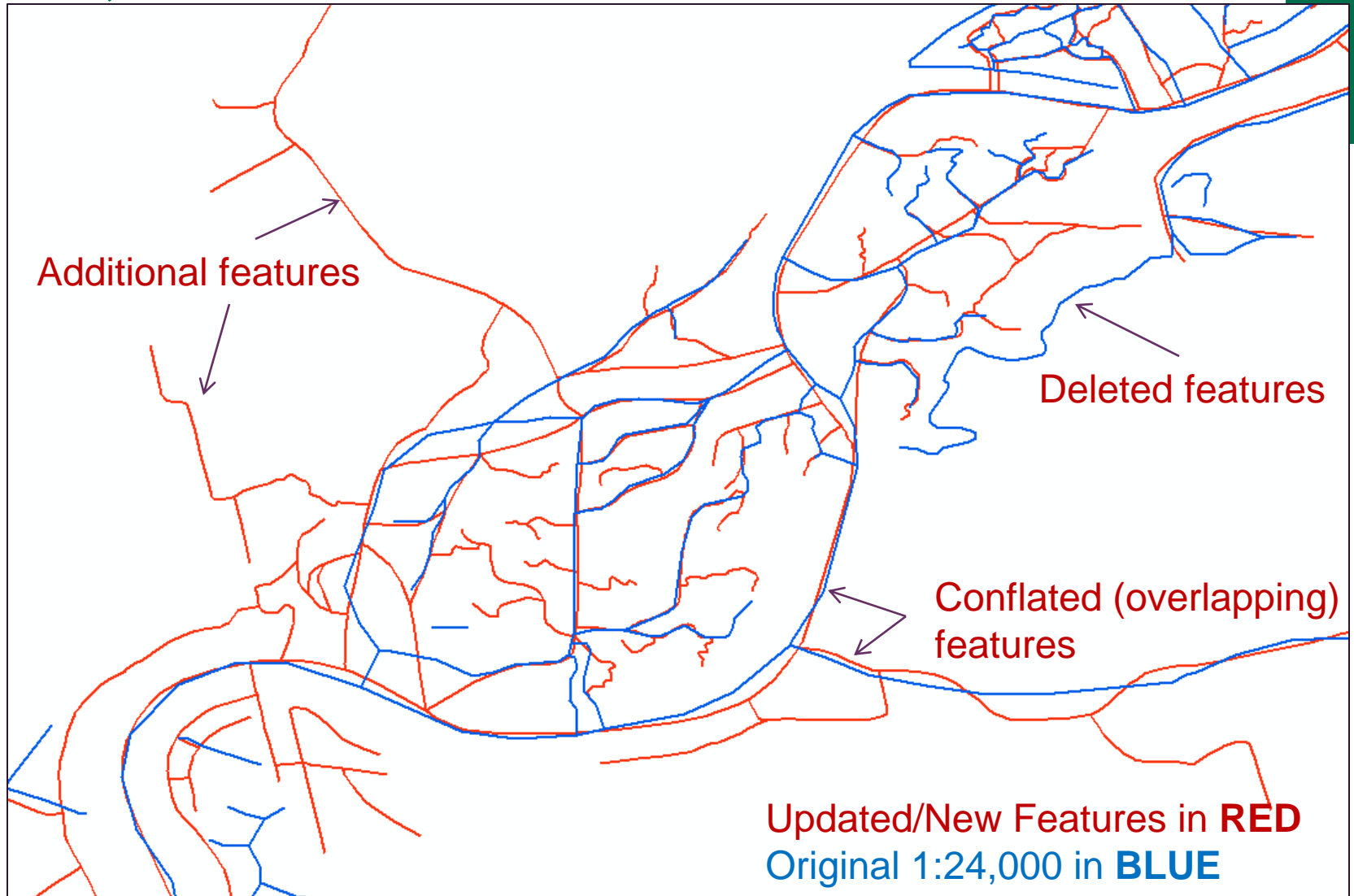
Editing the NHD to keep up with change

How to maintain constantly changing features in the NHD



+

New Jersey – Conflation 1:24,000 to 1:2,400-scale





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3D Elevation Program

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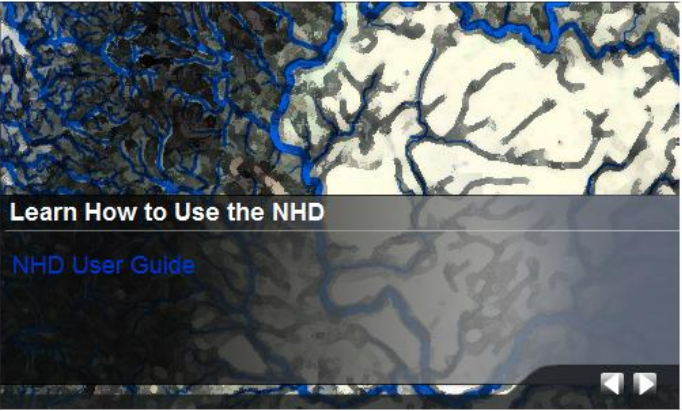
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Hydrography

National Hydrography Dataset Watershed Boundary Dataset

Search NHD



The National Hydrography Dataset (NHD) and Watershed Boundary Dataset (WBD) are used to portray surface water on The National Map. The NHD represents the drainage network with features such as rivers, streams, canals, lakes, ponds, coastline, dams, and streamgages. The WBD represents drainage basins as enclosed areas in eight different size categories. Both datasets represent the real world at a nominal scale of 1:24,000-scale, which means that one inch of The National Map data equals 2,000 feet on the ground. To maintain mapping clarity not all water features are represented and those that are use a moderate level of detail.

The NHD and WBD are digital vector datasets used by geographic information systems (GIS). These data are designed to be used in general mapping and in the analysis of surface water systems. In order to make a map these data must be used by a GIS to render the

data and then print a map or make an image. The NHD is portrayed on the [US Topo](#) map product produced by the USGS and the NHD and WBD can be viewed on the [Hydrography Viewer](#) or the general mapping oriented [The National Map Viewer](#).

In mapping, the NHD and WBD are used with other data themes such as elevation, boundaries, transportation, and structures to produce general reference maps. The NHD and WBD are often used by scientists using GIS. GIS technologies take advantage of a rich set of attributes imbedded in the data to generate specialized information. These analyses are possible because the NHD contains a flow network that allows for tracing water downstream or upstream. The NHD and WBD use an addressing system based on reach codes and linear referencing to link specific information about the water such as water discharge rates, water quality, and fish population.

The WBD exists in six levels of a nested hierarchy permitting the analysis to determine which drainage basin a particular location is enclosed in. This makes it possible to determine which rivers and lakes could be affected by an event such as a toxic spill. Using basic NHD features like flow network, linked information, and other characteristics, along with one of the six levels of WBD areas, it is possible to study cause and effect relationships, such as how a source of poor water quality upstream might affect a fish population downstream.

Some of the files on this page are presented in Portable Document Format (PDF); the latest version of Adobe Acrobat Reader or similar software is required to view it. [Download the latest version of Acrobat Reader, free of charge.](#)

National Hydrography Dataset @USGSTNM

Tweets by @USGSNHD

NHD @USGSNHD
The October 2015 NHD Newsletter is now available at nhd.usgs.gov/newsletters/Ne...
16 Nov

NHD @USGSNHD
GeoConflation tool (v2.0) released for NHD 2.2 on February 25th. Contact NHD-GCT@usgs.gov for more information. No ESRI ArcInfo requirement.
10 Mar

NHD @USGSNHD
The October 2014 NHD Newsletter has been published and is available here: nhd.usgs.gov/newsletter_lis...
17 Nov

NHD @USGSNHD
The Hydrography Stewardship Fact Sheet is now available from pull-out of Stewardship tab on the NHD web site: nhd.usgs.gov
31 Oct



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Data Download and Visualization Services

Maps

- Download Maps
- Explore Historical Topo Maps and Download
- Buy a Printed Map
- CSV of Map Products

GIS Data

- Download GIS Data
- **Cloud Browse**
- FTP Access
- Historical Data Archives
- Hazards Events

Visualization

- TNM Viewer (legacy)
- List of Map Services
- How to Use Map Services
- Map Service Status
- Viewer Prototypes

Applications

- **TNM Download Client**
- TNM Download Manager
- **TNM Mobile (new)**
- USGS Streamer
- Application List

Tools

- Elevation Tools
- Point Query Service (PQS)
- Raster Conversion Tools
- **Topo TNM Style Template**
- Other API Example Demos

More Information

- **How To Videos**
- FAQs
- List of Datasets
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What's New

2016-02-19 00:00:00 **TNM Viewer Download Discontinued**
Removed Download capability from the TNM Viewer. Updated Help pages to include How-to Videos for downloading with new Download Client.

2016-02-19 00:00:00 **FWS Wetlands Service Added**
Added a new service from Fish & Wildlife Service (FWS) highlighting Wetlands using TNM Topo symbols.

2016-02-09 00:00:00 **NEXRAD Weather Service Update**
Updated the NEXRAD Weather service listed under the Natural Hazards section of the TNMViewer with a service from NOAA's Nowcoast service (https://nowcoast.noaa.gov/arcgis/rest/services/nowcoast/radar_meteo_imagery_nexrad_time/MapServer).

2016-02-05 00:00:00 **Launch Page Update**
Renamed the 'Web Services' category to 'Visualization' to better represent the purpose of our Base Map and Overlay services as well as distinguish Viewer/Visualization from download capabilities.

2016-02-05 00:00:00 **Elevation Conversion Scripts**
Added instructions to the conversion tools page (<http://viewer.nationalmap.gov/tools/rasterconversion/>) for converting Elevation data to XYZ format.

2016-01-28 00:00:00 **Dynamic Download Disabled**
Removed the ability to do dynamic extracts for download.

2016-01-27 00:00:00 **Bulk Point Query Fixes**
Fixed an issue when encountering No Data areas when processing user files or points.

2016-01-27 00:00:00 **Download Client Fix**
Fixed an issue where the 'Clear Point' action wasn't resetting

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Hydrography (NHD) and Watersheds (WBD) Save as CSV **21** results

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Filter displayed products: <input type="text" value="Type in keyword & Enter."/>			
Actions for all displayed products: Show Footprints / Show Thumbnails			
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	USGS National Hydrography Dataset (NHD) Best Resolution for HU8-18040012 20160407 HU-8 Subbasin FileGDB 10.1 Published Date: 2016-04-07 Metadata Updated: 2016-04-08 Format: FileGDB 10.1 (17.53 MB), Extent: HU-8 Subbasin	Footprint Thumbnail Zoom To Info/Metadata Download	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
	USGS National Hydrography Dataset (NHD) Best Resolution for HU8-18020161 20160406 HU-8 Subbasin FileGDB 10.1 Published Date: 2016-04-06 Metadata Updated: 2016-04-08 Format: FileGDB 10.1 (3.57 MB), Extent: HU-8 Subbasin	Footprint Thumbnail Zoom To Info/Metadata Download	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
	USGS National Hydrography Dataset (NHD) Best Resolution for HU8-18020130 20160406 HU-8 Subbasin FileGDB 10.1	Footprint Thumbnail	<input type="checkbox"/> <input type="checkbox"/>

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Your 3DEP and NHD California contacts

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