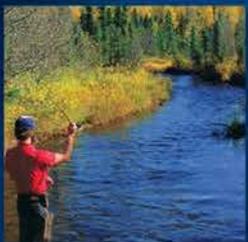




# Hydrography TWG

March 9, 2017





# Hydrography TWG

March 9, 2017

## AGENDA

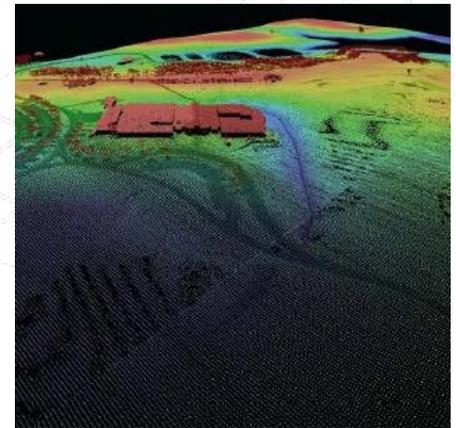
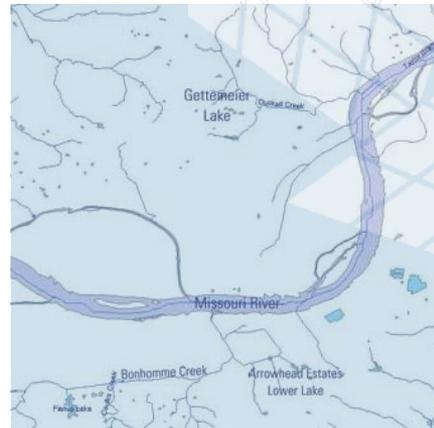
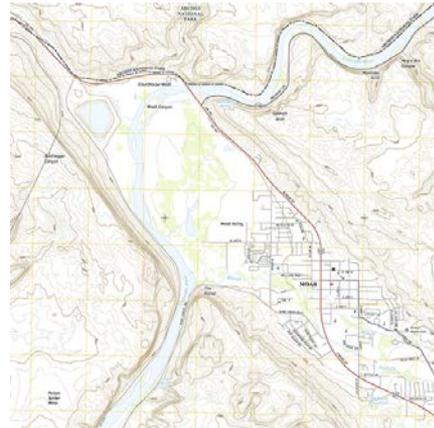
- **USGS Hydro. Related Products**
  - Al Rea, USGS
- **NHD Provisional Name Tool**
  - Mike Tinker, USGS
- **Other Updates**
- **Other Business**
- **Upcoming Events**
- **Next TWG**

Sept. 14. 2017



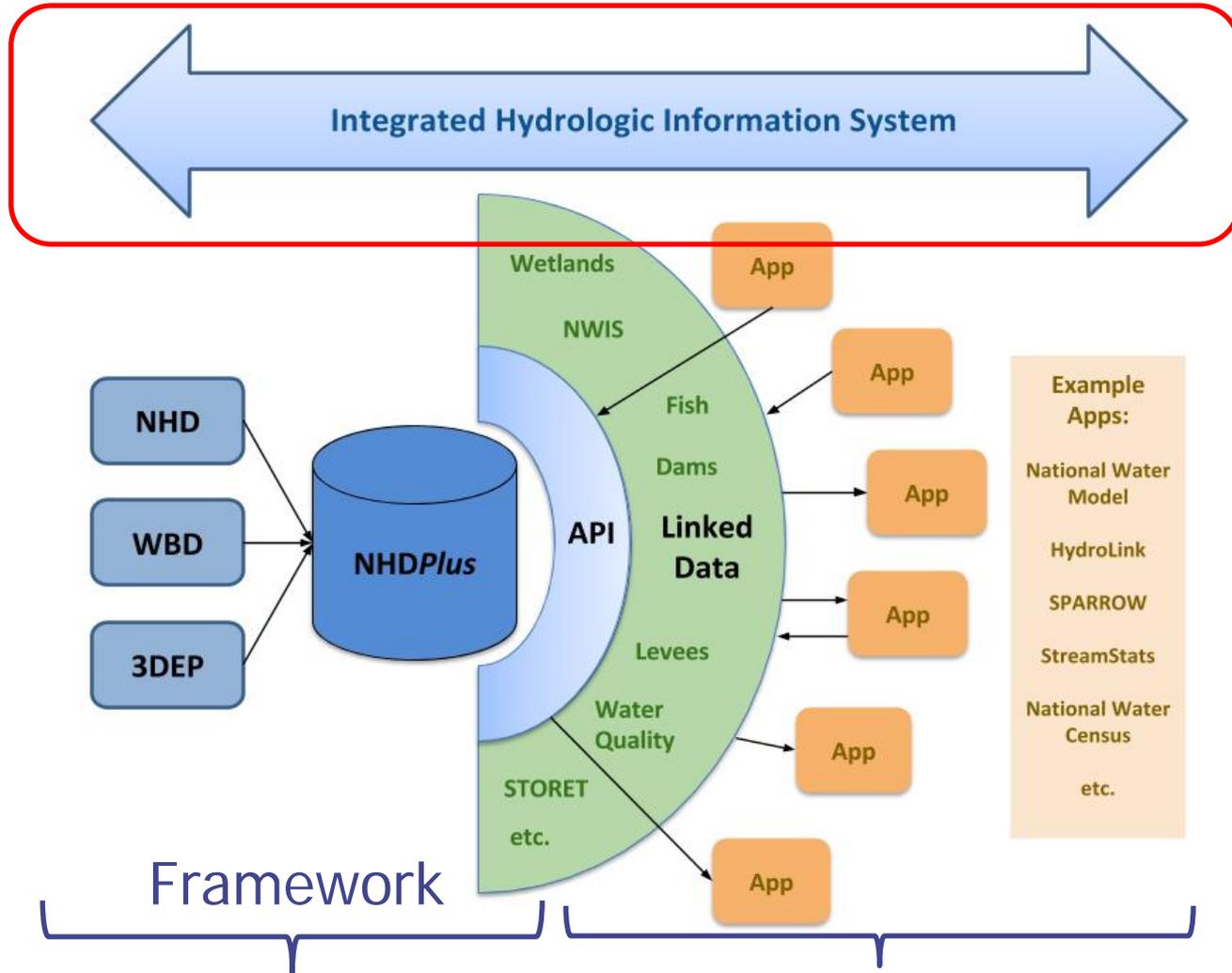
# The Hydrography Alphabet Soup:

NHD, WBD, 3DEP,  
NHDPlus, NWIS, HEM,  
NLDI, and Ele-Hydro

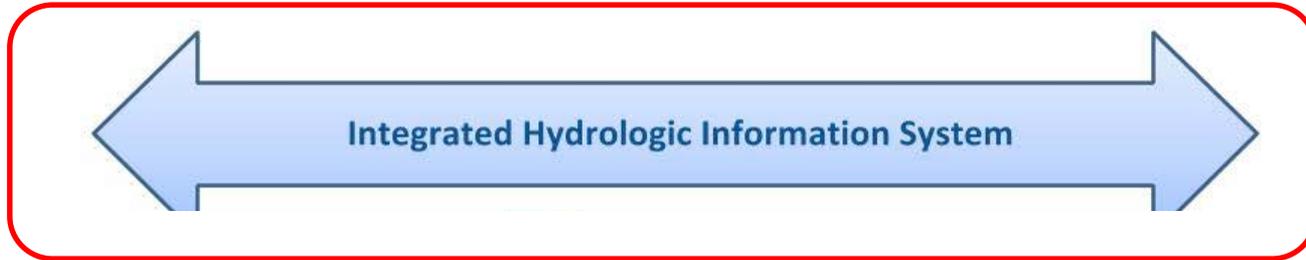


AI Rea  
USGS National Hydrography Co-Lead  
March 9, 2017

# + National Hydrography Mapping



# + National Hydrography Mapping



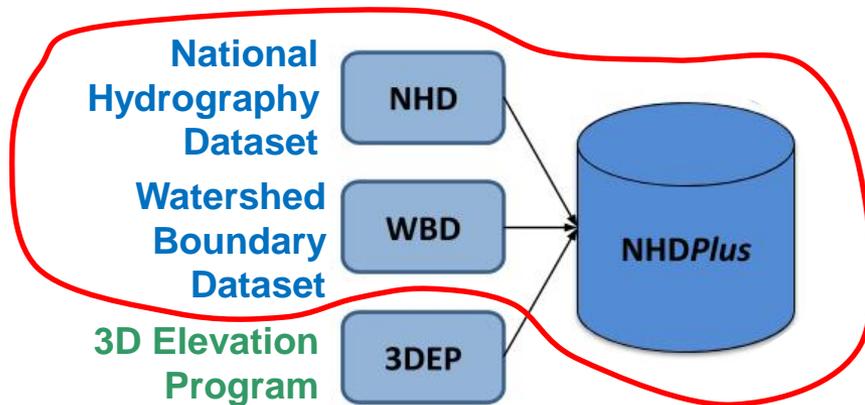
- ◆ Provides a networked foundation for **Big Data** analysis of water information
- ◆ Analogous to the **street addressing system** used to deliver a package
- ◆ Similarly, we need **one standard** addressing system for all water in the nation that is:
  - ◆ Non-proprietary, Public domain, Authoritative = **Open for Everyone**
  - ◆ Usable by and useful for **government, businesses, citizens**
- ◆ **Data can be linked** to the framework
- ◆ **Applications** can be built on the framework
- ◆ Tools can **navigate the framework** to discover related data

# + National Hydrography Mapping



## National Geospatial Program

- Topographic Data Services
- National Geospatial Technical Operation Center



## Hydrography Program



- ◆ NGDA Water Inland Theme (NHD, WBD, NWI, Dams, Levees)
- ◆ Subcommittee on Spatial Water Data
  - Open Water Data Initiative



# + National Hydrography Mapping

Who is who?

## The Core National Hydrography Team

Co-manage hydro data

**Becci Anderson** – National Hydrography Co-Lead (NHD)

**Al Rea** – National Hydrography Co-Lead (NHD)

**Sue Buto** – National WBD Team Lead

**Steve Aichele** – Water COU Lead / HRBS *Data needs and req*

**Ellen Finelli** – Technical Operational Lead *Making the data*

**Paul Kimsey** – Partner Support Section Chief *Supporting the data*

**Stewards!**



# National Hydrography Mapping Stewardship

The screenshot shows the USGS National Hydrography Mapping Stewardship website. The page title is "NHD Stewardship". The main content area contains the following text:

The National Hydrography Dataset (NHD) contains detailed geospatial information about the Nation's surface water. Making these data accurate will be an ongoing task as the landscape changes and users demand greater accuracy. Just as building the NHD required a large partnership across the nation, maintaining the NHD also requires an extensive partnership, and can best be accomplished by those closest to the hydrography. Users within the states and federal lands understand the hydrography around them and are motivated to ensure the accuracy of the NHD to meet their business needs; therefore, they are ideally suited to become the stewards of the data; an agency in each state will manage the maintenance activities within the state. The maintenance will be performed by that agency or other agencies in the state. The United States Geological Survey (USGS) will facilitate the overall process, providing national management, coordination, tools, standards, documentation, training, quality assurance, data archival, and data distribution. Updates to the NHD will be made by the stewards, transmitted to the USGS, processed, and made available in the national dataset distribution.

Learn more about NHD Stewardship [here](#).

**Locate your area's stewardship POC**

The map shows the United States with various states highlighted in different colors, representing different stewardship POC locations. The map is titled "Locate your area's stewardship POC".

Below the map, there are social media sharing icons for Facebook, Twitter, LinkedIn, Email, and Print, along with a share count of 36.

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.](#)

The footer of the page includes links for Accessibility, FOIA, Privacy, and Policies and Notices, as well as the USGS logo and the text "U.S. Department of the Interior | U.S. Geological Survey".

- The NHD data have relied on cooperative mapping through stewardship
- Many states have a stewardship program

# + NHD/WBD Stewardship

<b>2007 Totals</b>	<b>5,874,622</b>
USGS	5,843,504
Stewards	31,118
<b>2008 Totals</b>	<b>7,181,651</b>
USGS	6,734,423
Stewards	447,228
<b>2009 Totals</b>	<b>4,400,029</b>
USGS	3,875,399
Stewards	524,630
<b>2010 Totals</b>	<b>2,302,403</b>
USGS	1,740,244
Stewards	562,159
<b>2011 Totals</b>	<b>2,993,610</b>
USGS	2,457,811
Stewards	535,799
<b>2012 Totals</b>	<b>3,258,054</b>
USGS	2,330,993
Stewards	927,061
<b>2013 Totals</b>	<b>3,561,570</b>
USGS	772,152
Stewards	2,789,418
<b>2014 Totals</b>	<b>5,828,657</b>
USGS	1,859,958
Stewards	3,968,699
<b>2015 Totals</b>	<b>2,502,973</b>
USGS	1,136,268
Stewards	1,366,705
<b>2016 Totals</b>	<b>3,544,313</b>
USGS	2,404,210
Stewards	1,140,103
<b>Grand Total</b>	<b>41,447,882</b>

2007 - Three partner agencies editing

2008 - Nine partner agencies editing

2009 - Thirteen partner agencies editing

2010 - Eighteen partner agencies editing

2011 - Sixteen partner agencies editing

2012 - Twenty partner agencies editing

2013 - Twenty Five partner agencies editing

2014 - Twenty Six partner agencies editing

2015 - Twenty Two partner agencies editing

2016 - Twenty Six partner agencies editing

## Why is this important?

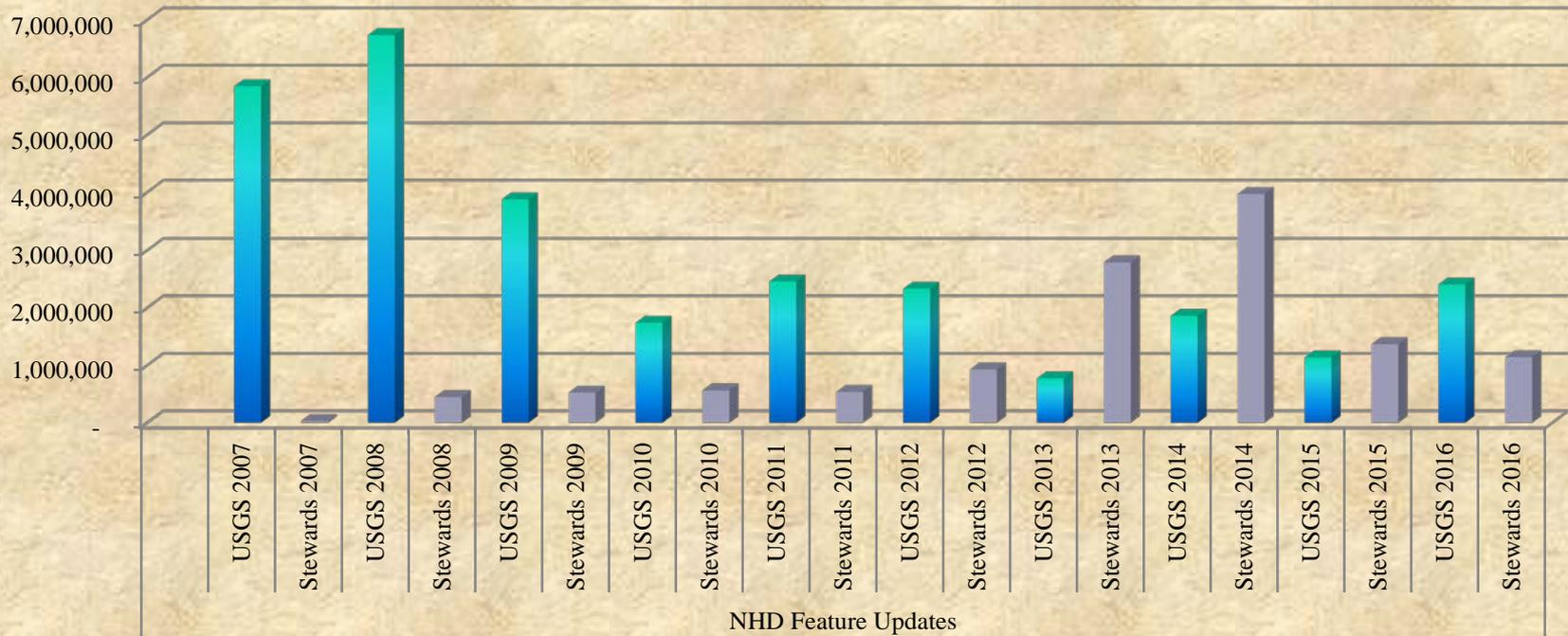
Partner contributions 2007-present 12,292,920 accounting for (30%) of the total feature edits.

Maintaining and improving a national dataset requires the combined resources of many agencies

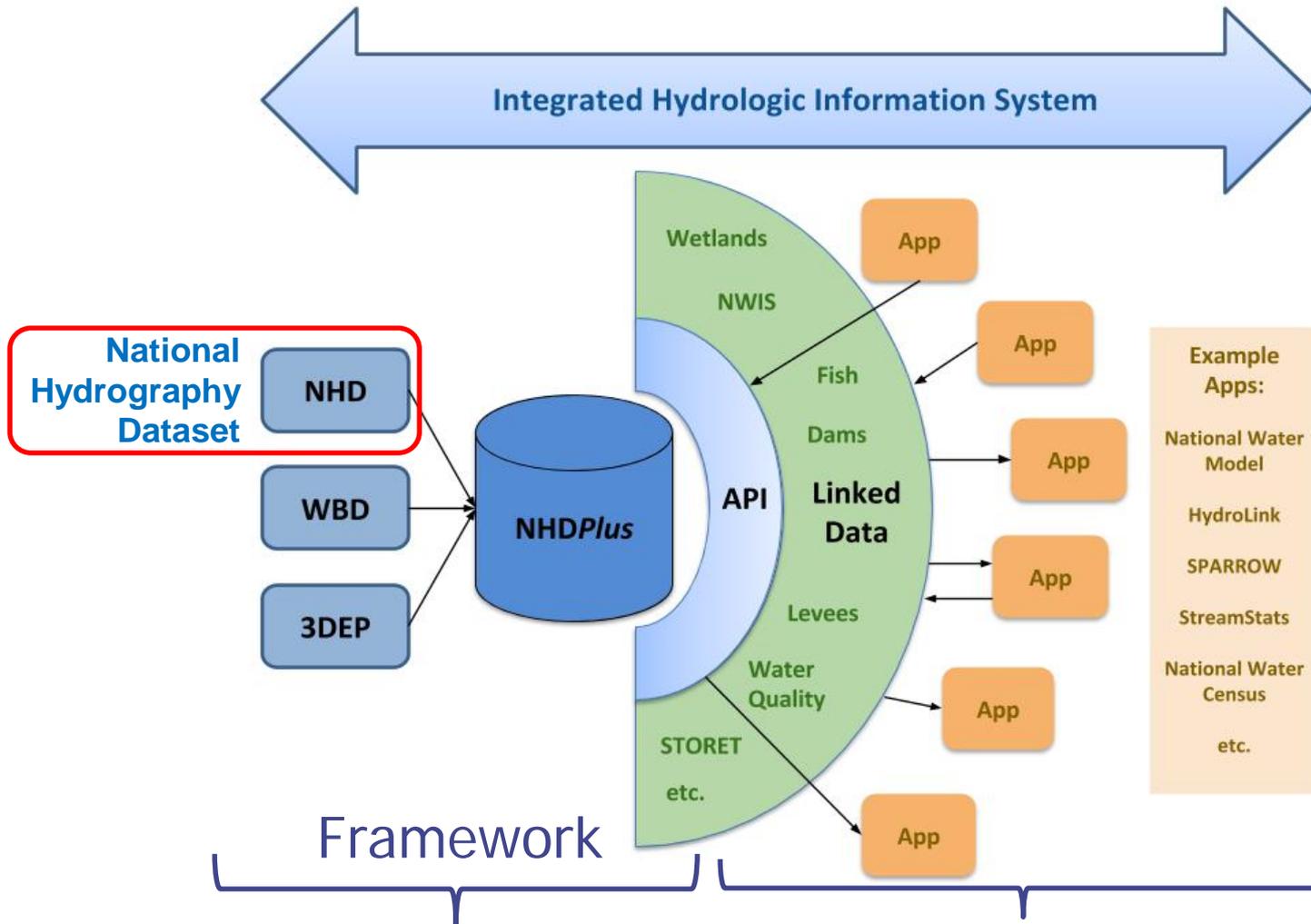
USGS edits 2007-present 29,154,962 (70%)

# + NHD/WBD Stewardship

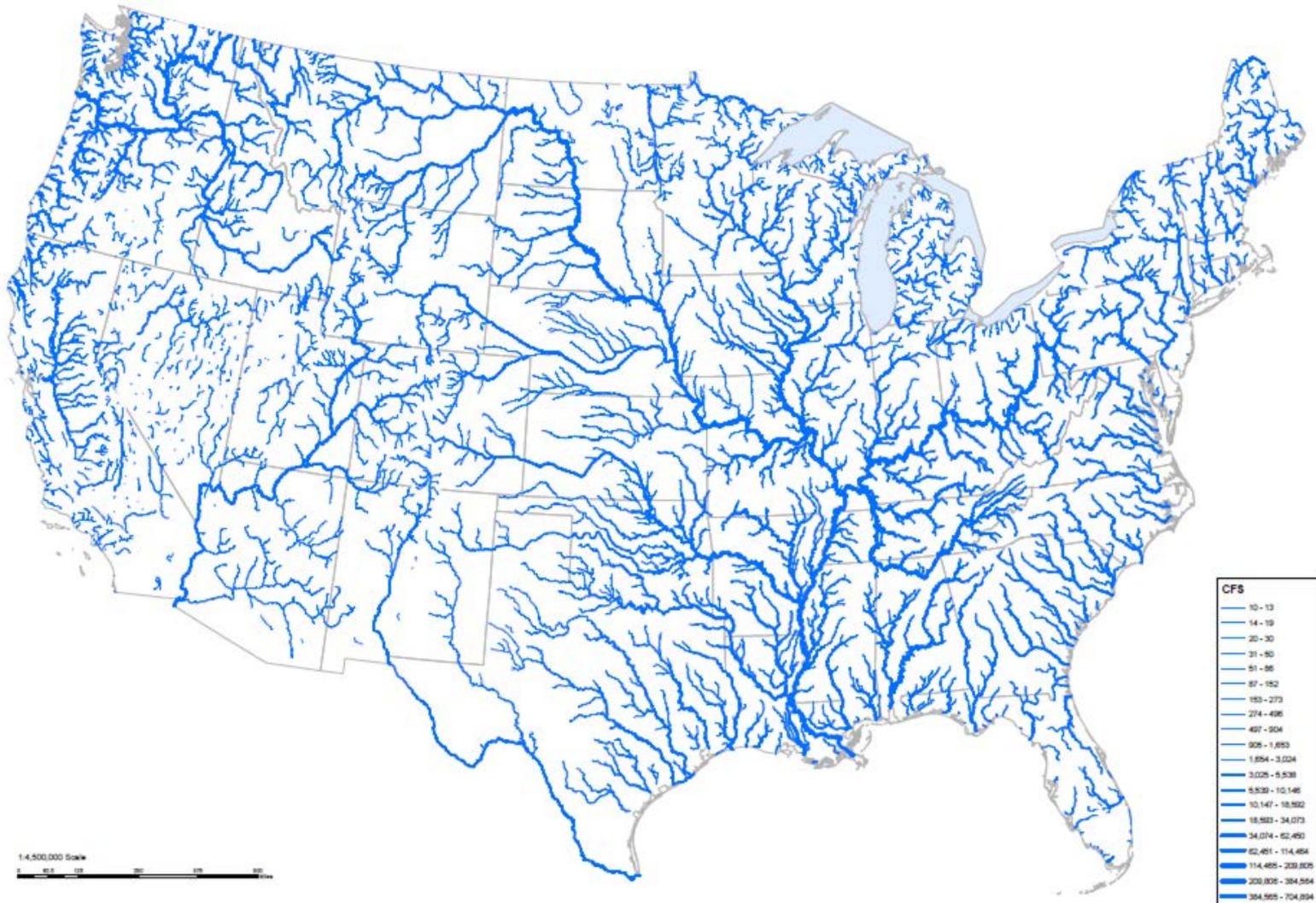
## NHD Feature Updates 2007 - 2016



# + National Hydrography Dataset



# + National Hydrography Dataset





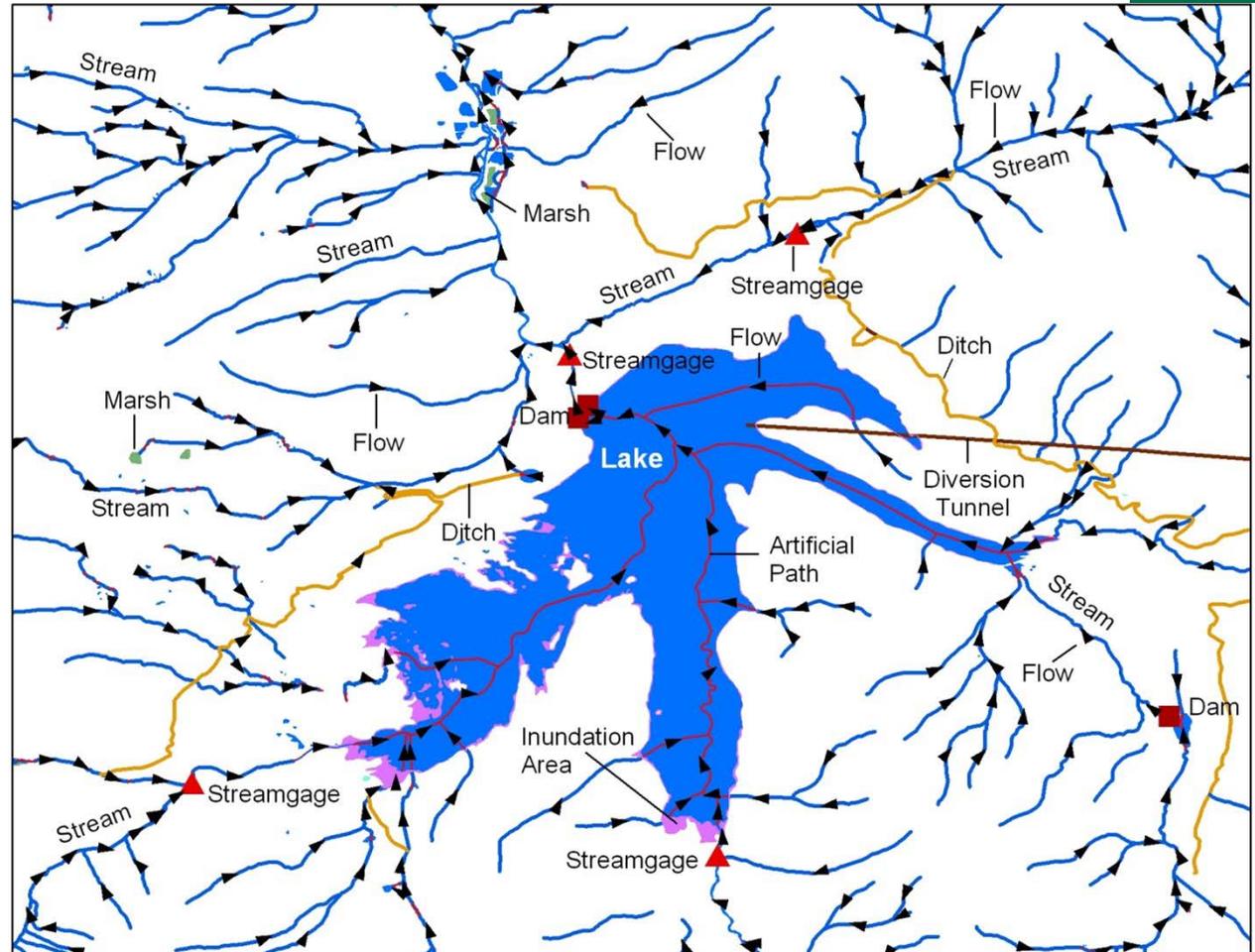
# What is the National Hydrography Dataset?

Surface water features found on topographic maps

National drainage network of rivers and streams, plus other hydro info

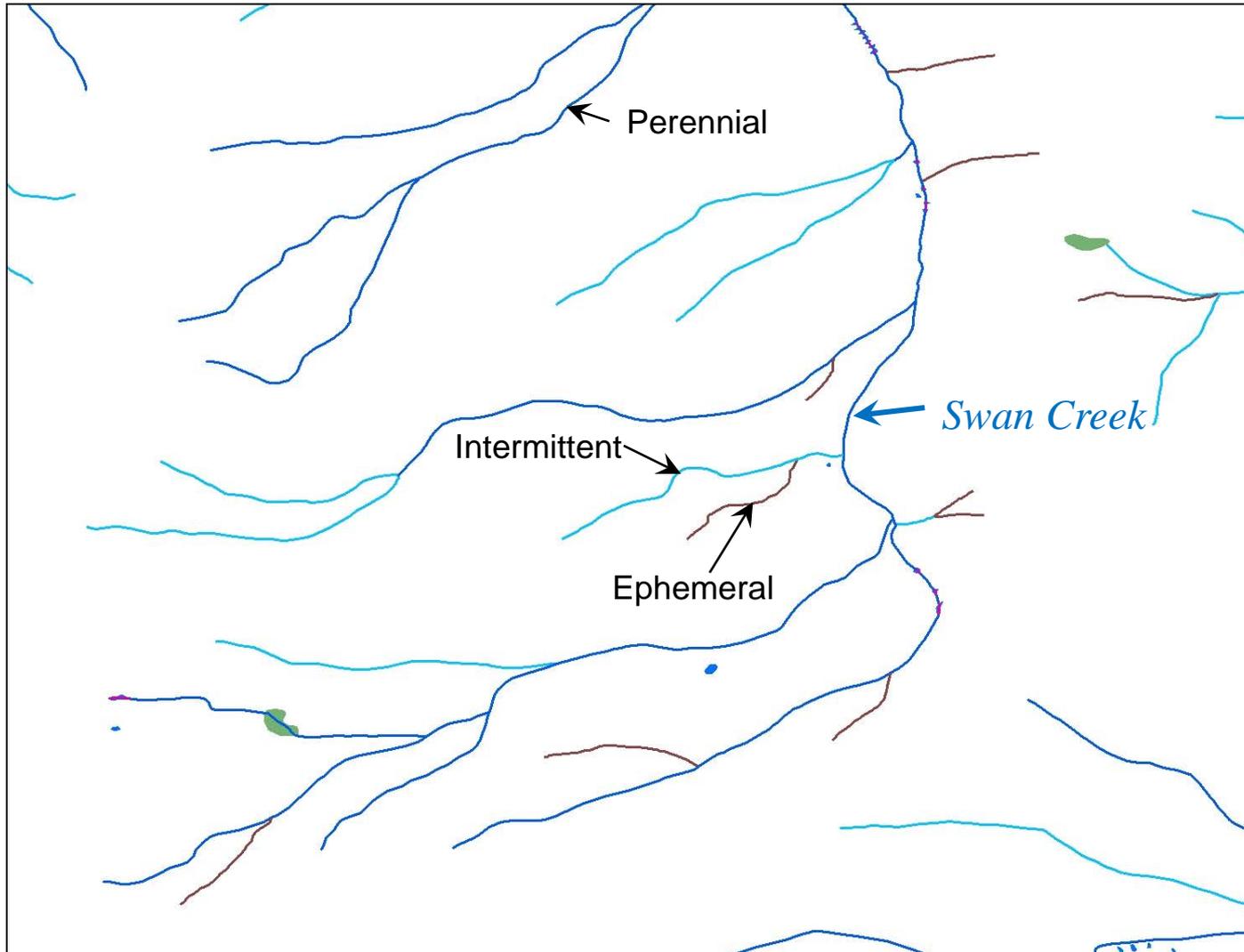
Currently maintain 24k  
– Local Res Version  
(63k – 24k in AK)

Shapefile and GDB  
downloads plus  
services



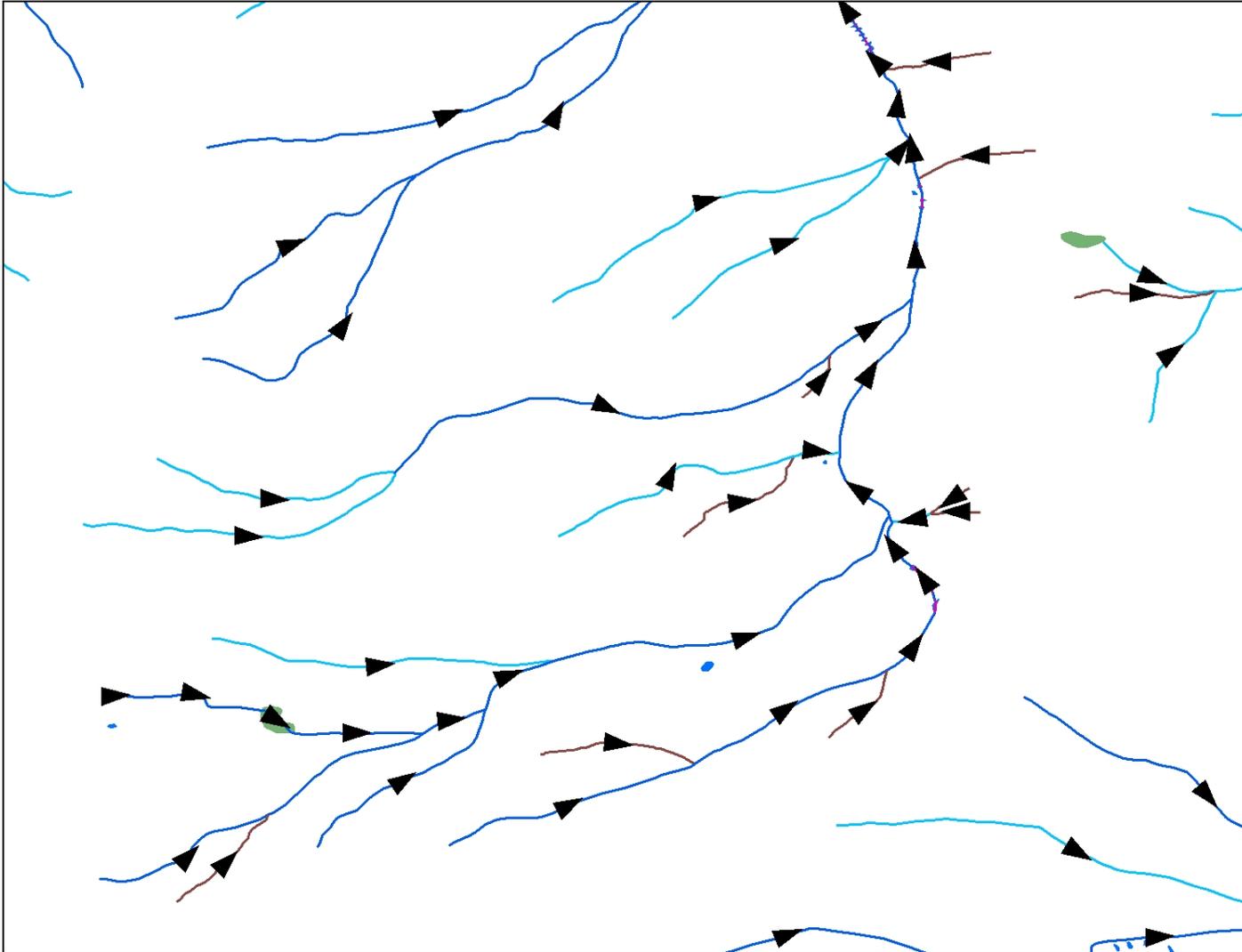


# Attributes Provide Basic Intelligence



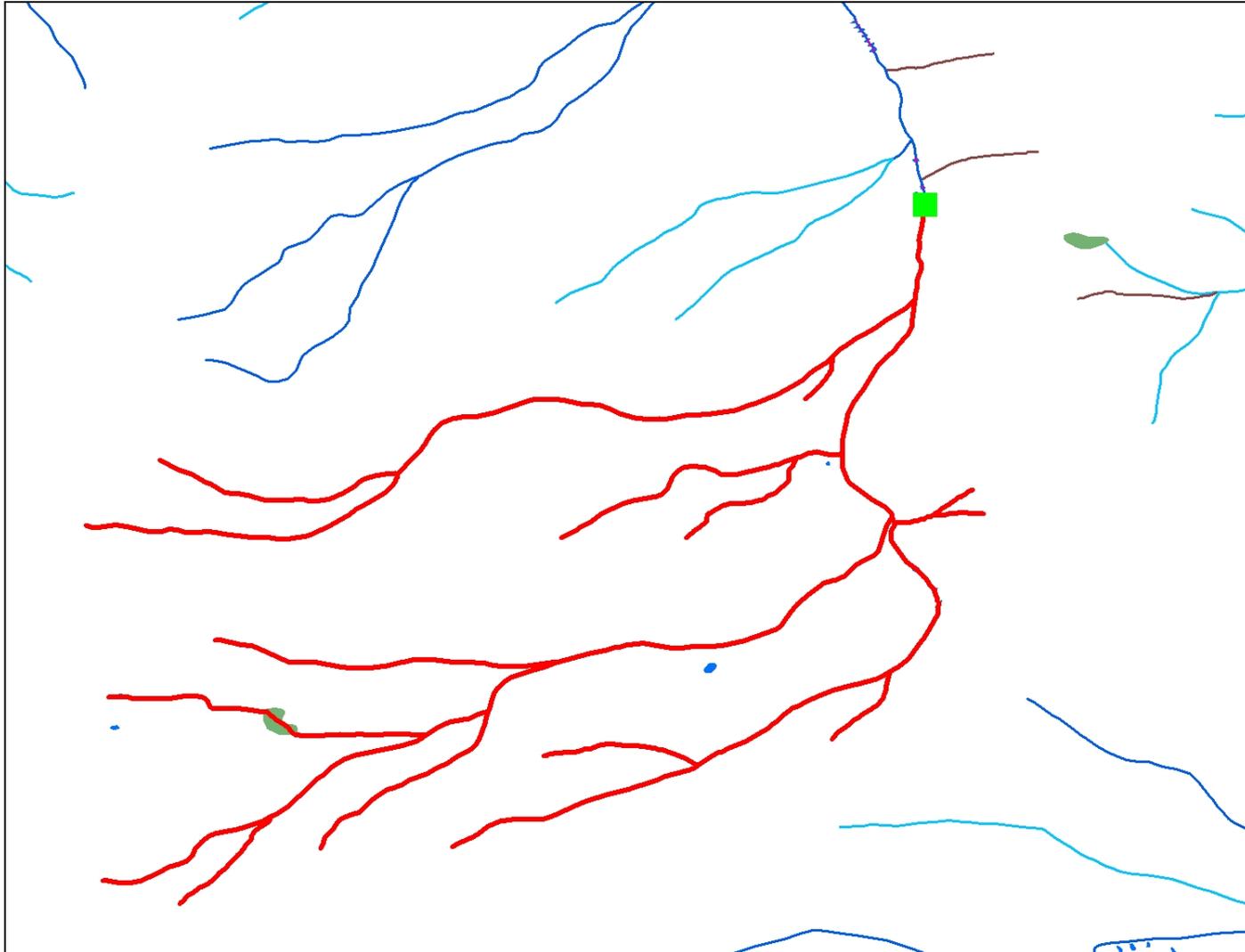
+

# Flow Direction – A Key Piece of Intelligence



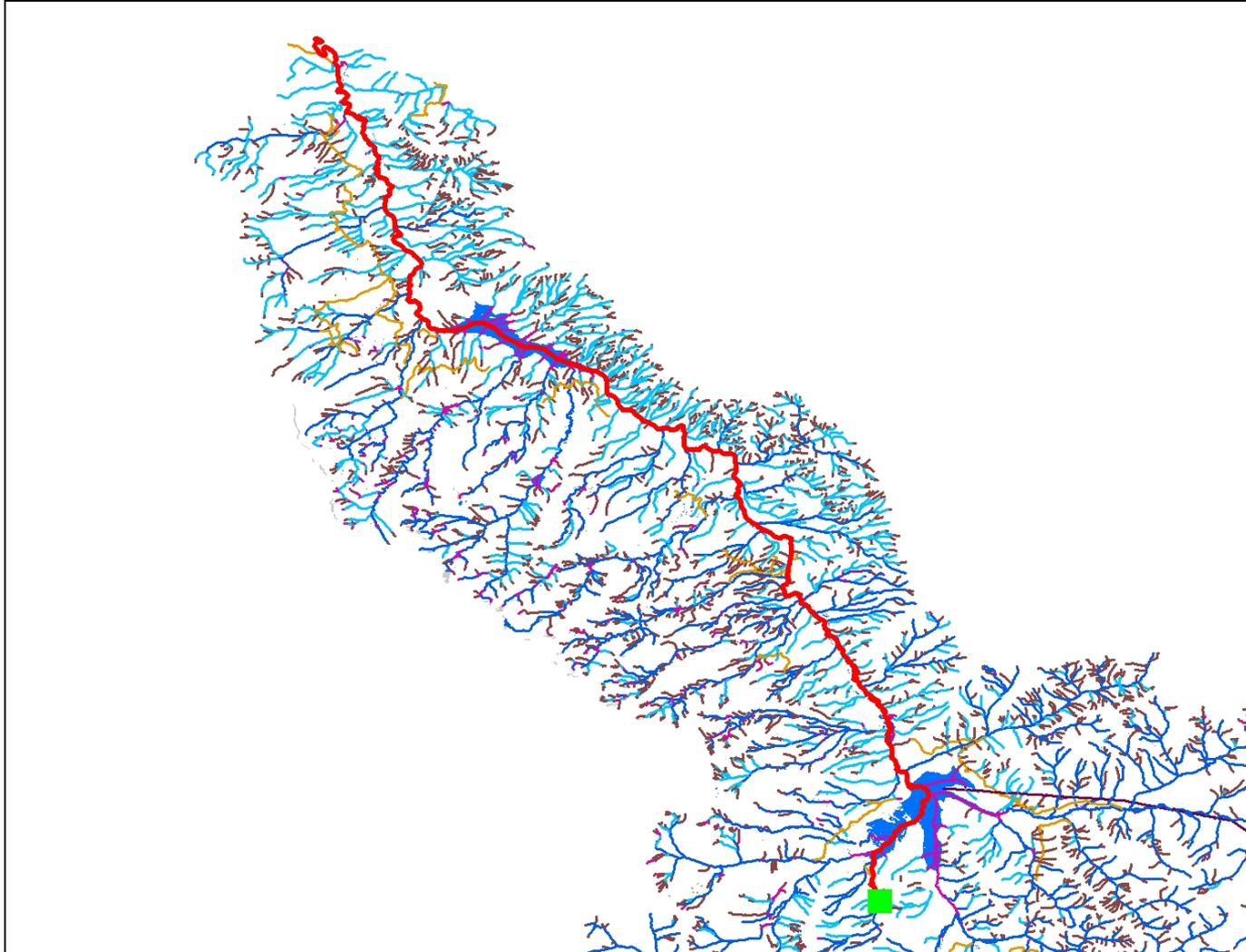
+

# Navigation – The Basis for Analysis



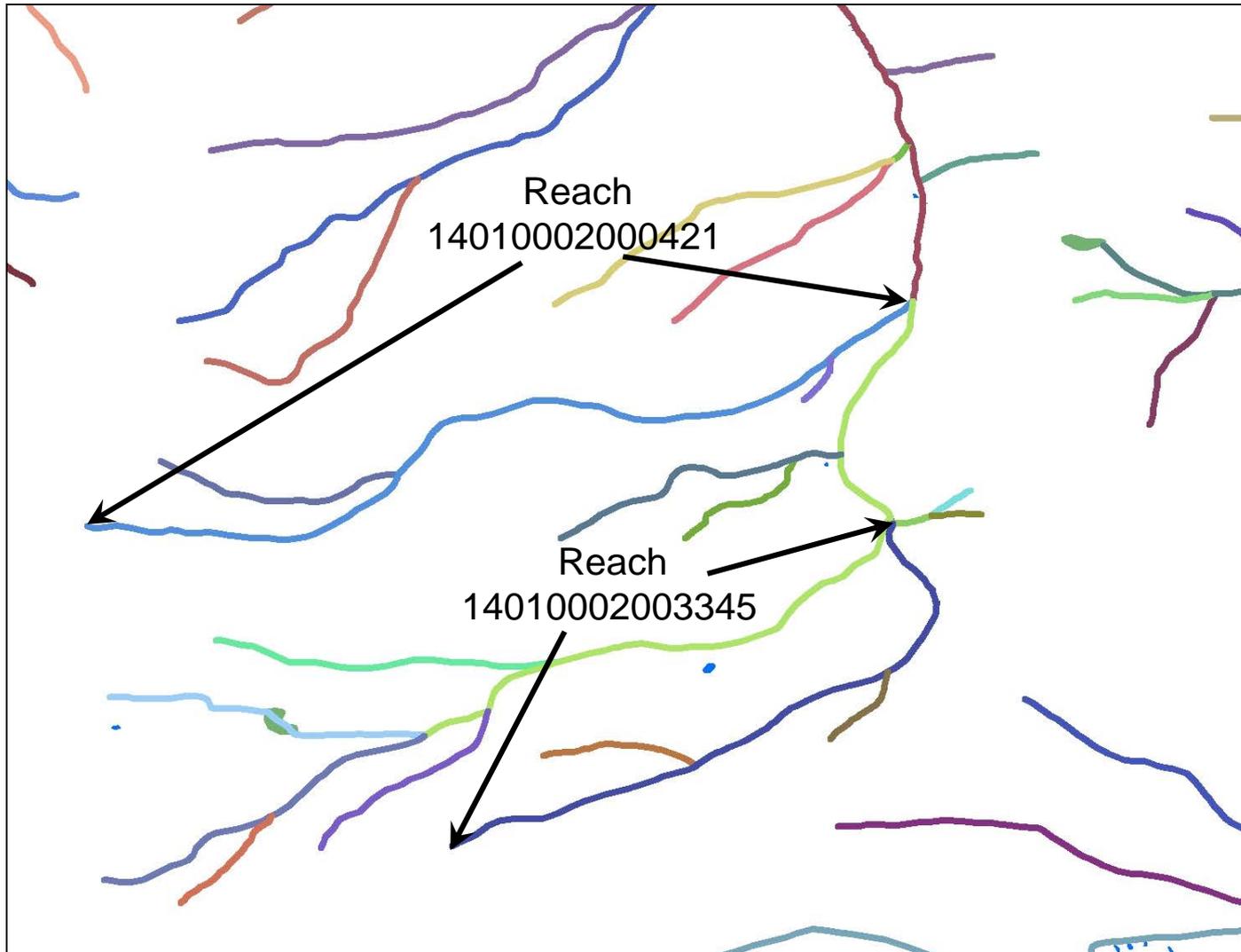
+

# Navigation – Where Does a Toxic Spill Go?



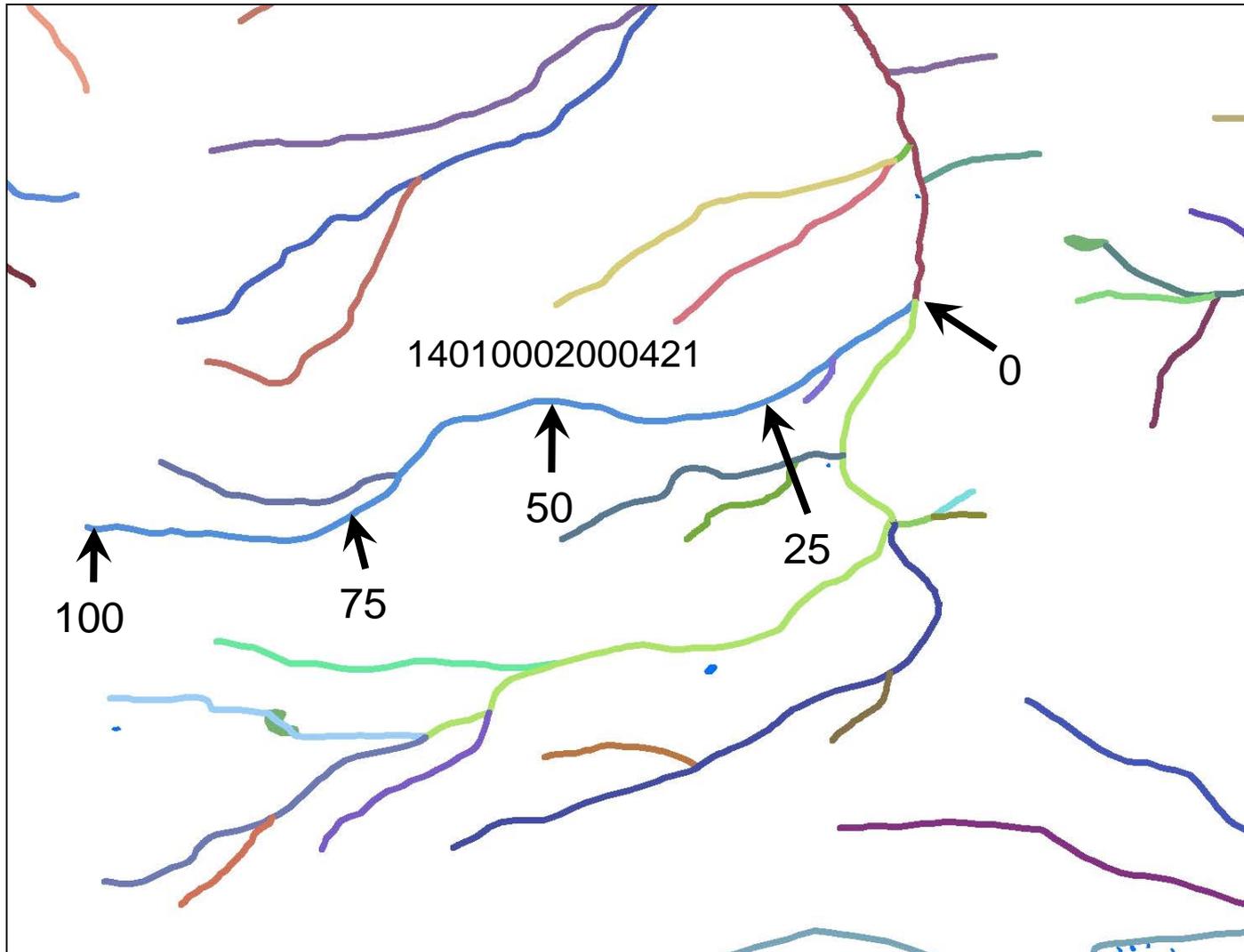
+

# Linear Referencing – Stream “Reaches”



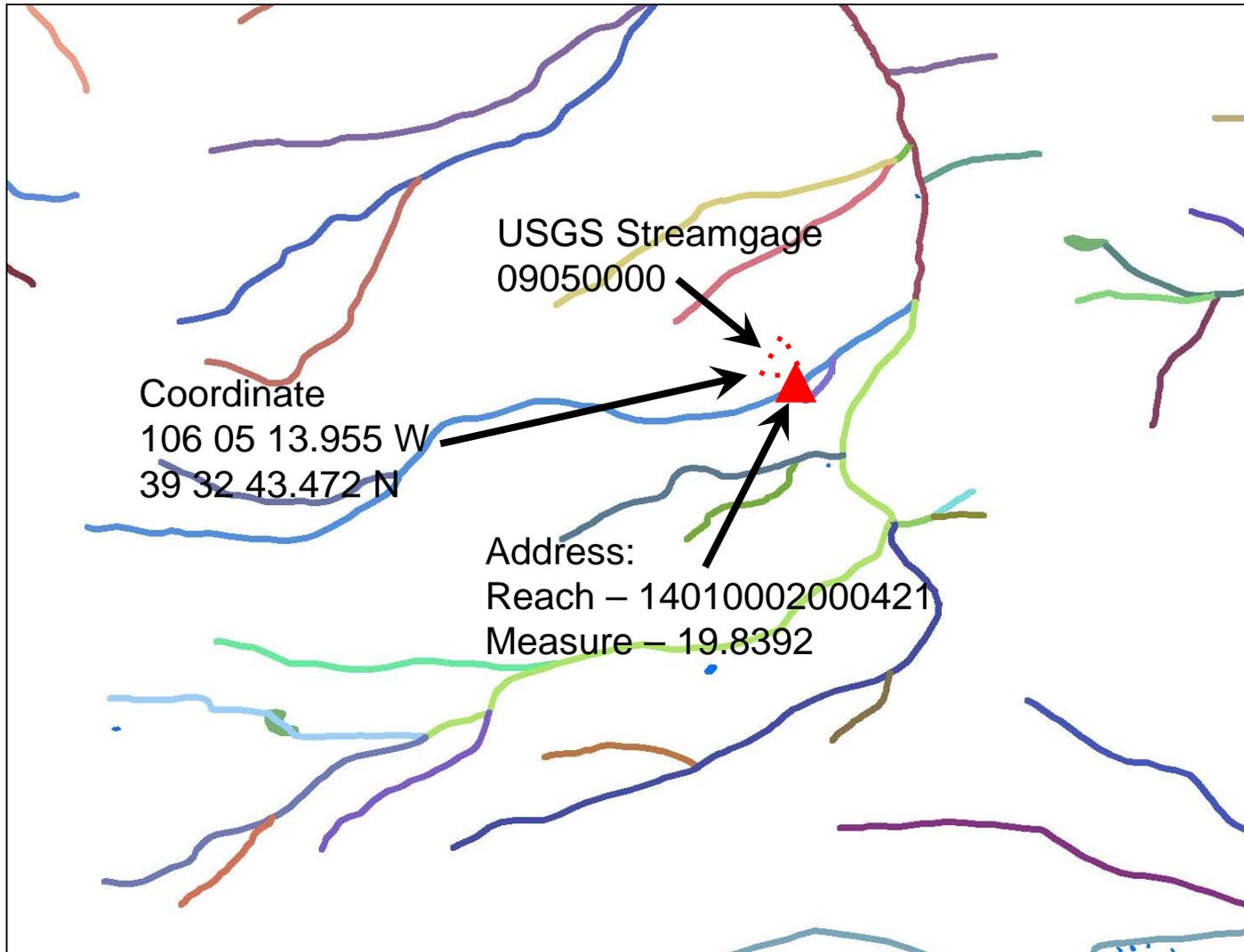
+

# Linear Referencing – Stream Addresses





## Linear Referencing – Data “Events”



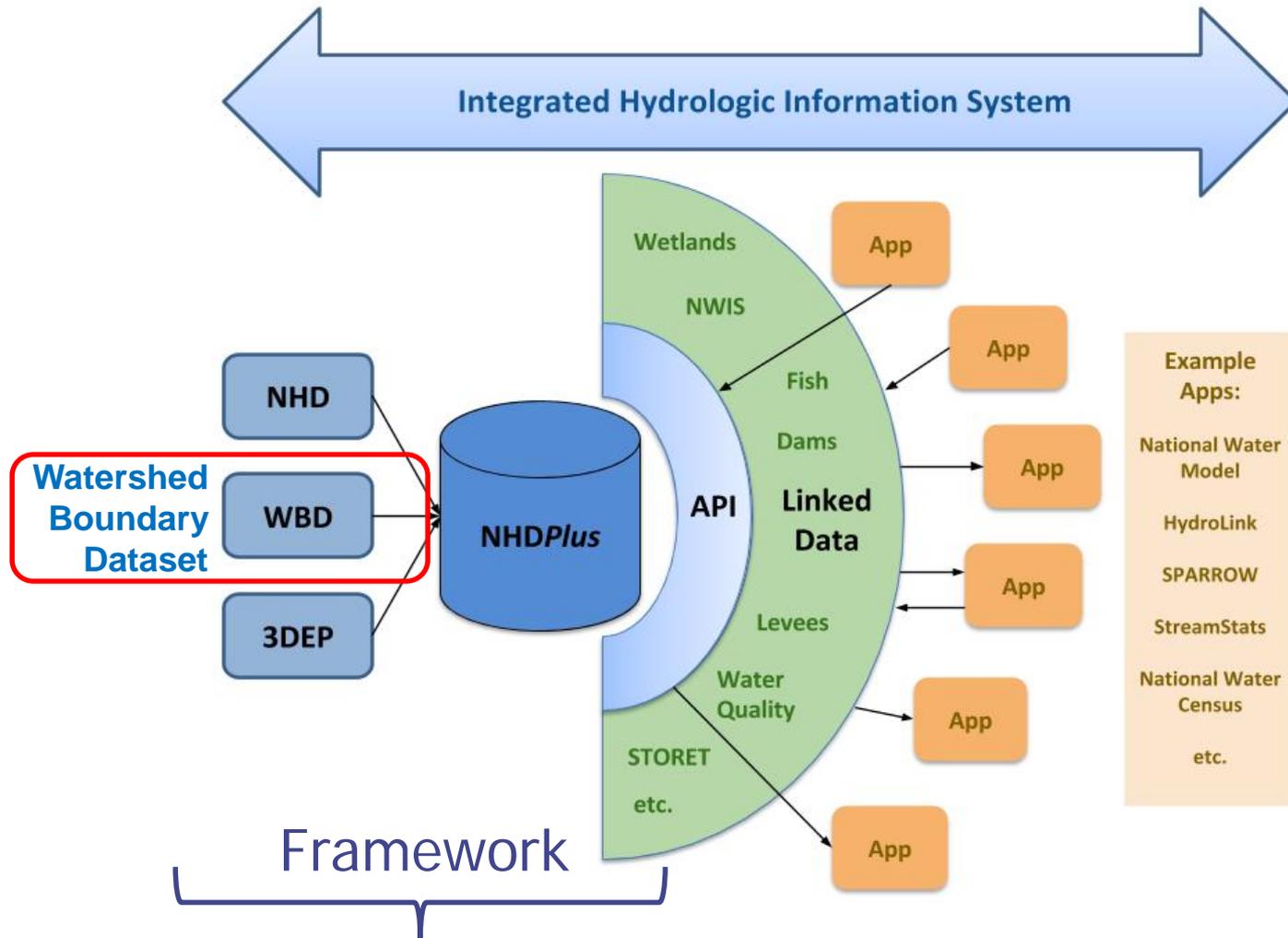
+

# Editing the NHD to Keep Up with Change

Maintaining constantly changing features in the NHD



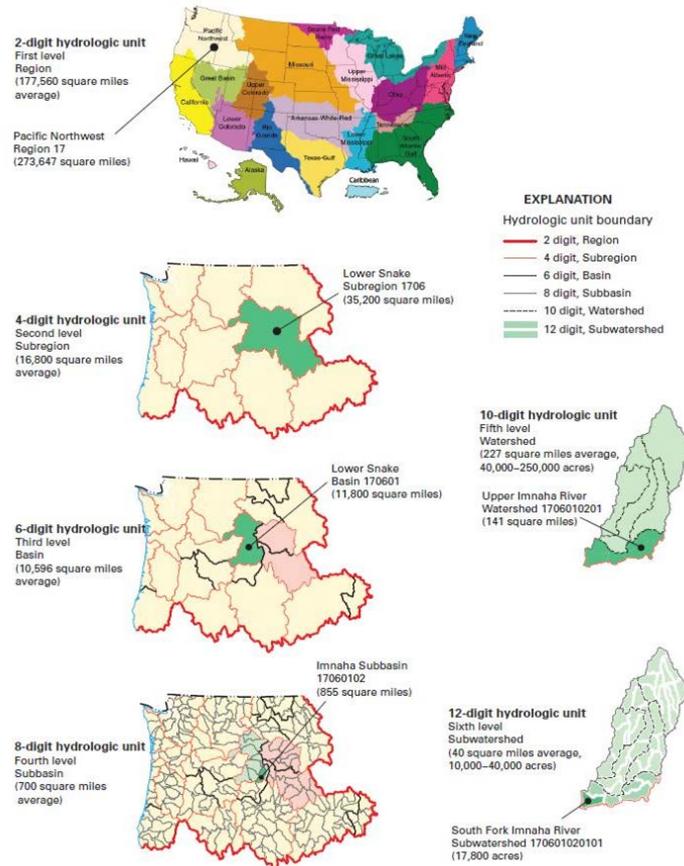
# + National Hydrography Mapping



# + Watershed Boundary Dataset

## Overview

- WBD is a seamless baseline drainage area framework for the Nation
- Boundaries are defined by hydrographic and topographic criteria with no regard for administrative boundaries
- Delineated in a nested multi-level, hierarchical drainage system.
- Each level assigned a progressive 2-digit Hydrologic Unit Code (HUC) which describes where the unit is in the country and the “level” of the unit



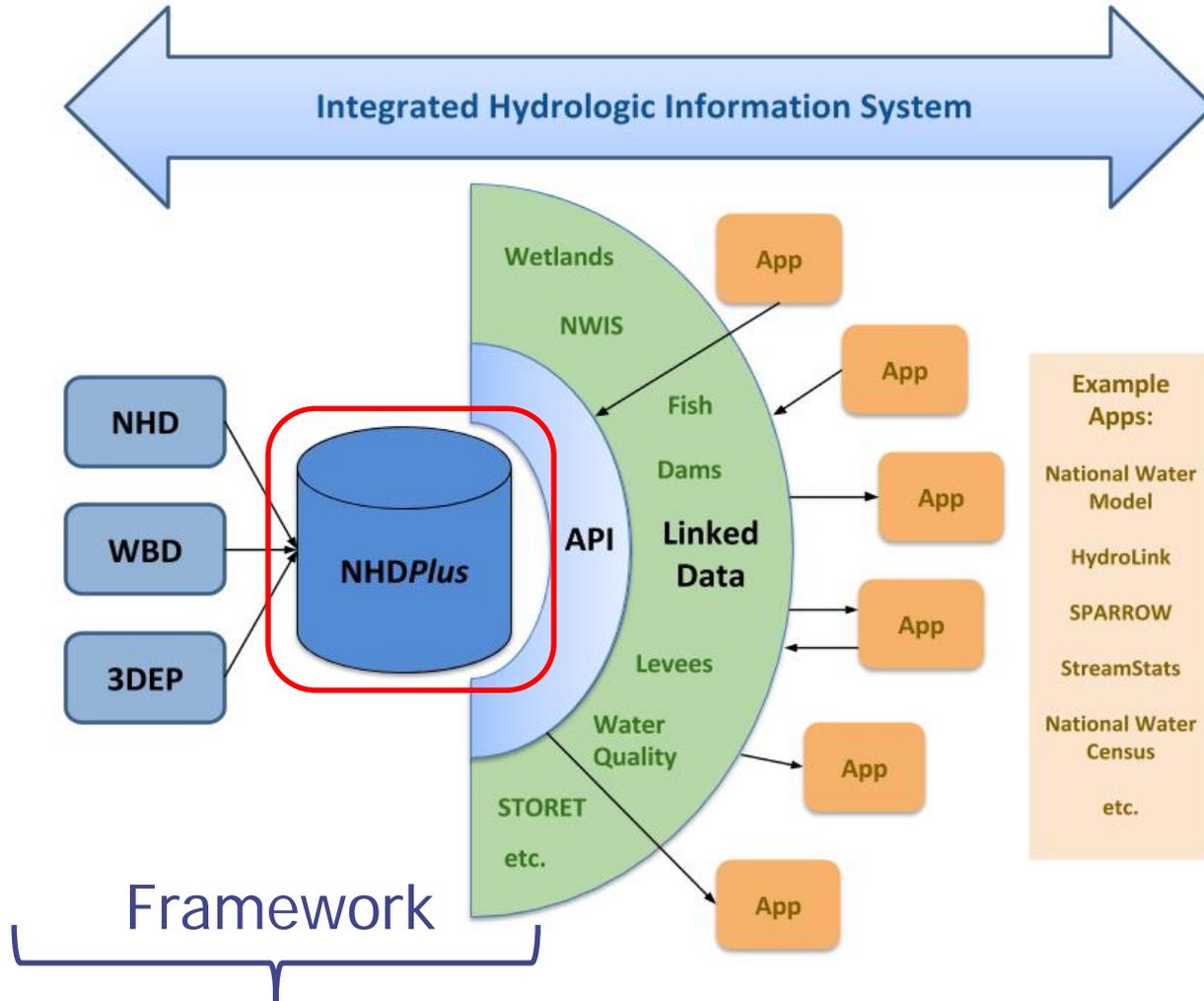
# + What's Next for WBD?

## Current and Future WBD Line Source

- Hand delineated, dated source material
- The WBD team is evaluating how and where WBD and NHDPlusHR catchments don't align
- Lessons from automated delineation work in MatSu
- **HUs that are defined as an accumulation or collection of whole catchments**



# + National Hydrography Mapping

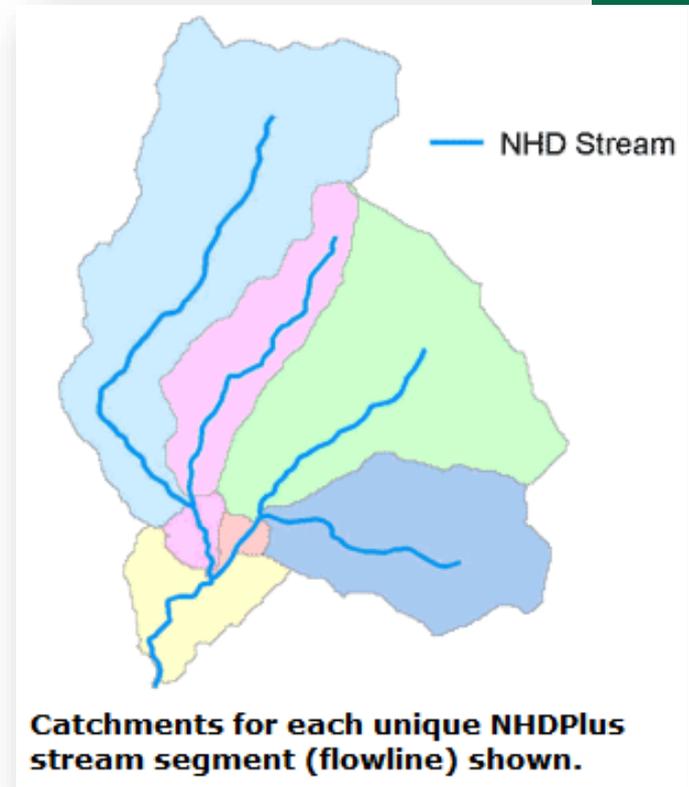
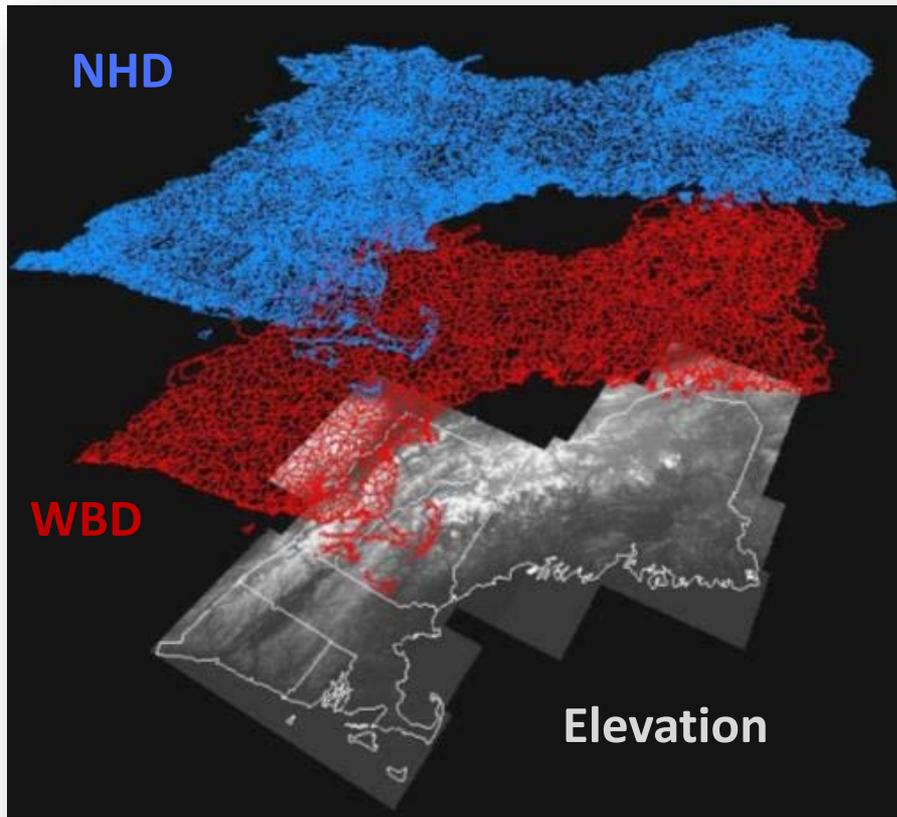




# National Hydrography Dataset Plus - NHDPlus

Medium Resolution created for CONUS

High Resolution in work for CONUS and AK



## Incorporates

- Hydrography
- Boundaries
- Elevation

# + NHDPlus v2 (Medium Resolution)

## Components

- Greatly improved 1:100K National Hydrography Dataset (**NHD**)
- Greatly improved 1 arc-second (approximately 30 meter ground spacing) National Elevation Dataset (NED)
- Nationally complete Watershed Boundary Dataset (**WBD**)
- A set of value added attributes (**VAA**) to enhance stream network navigation, analysis and display (inc. stream order)
- An elevation-based **catchment** for each flowline in the stream network
- Catchment characteristics
- Headwater node areas
- Cumulative drainage area characteristics
- **Flow direction, flow accumulation and elevation grids**
- Flowline min/max elevations and slopes
- Flow volume & velocity estimates for each flowline in the stream network
- Catchment attributes and network accumulated attributes
- Various grids from the hydro-enforcement process including the hydro-enforced DEM

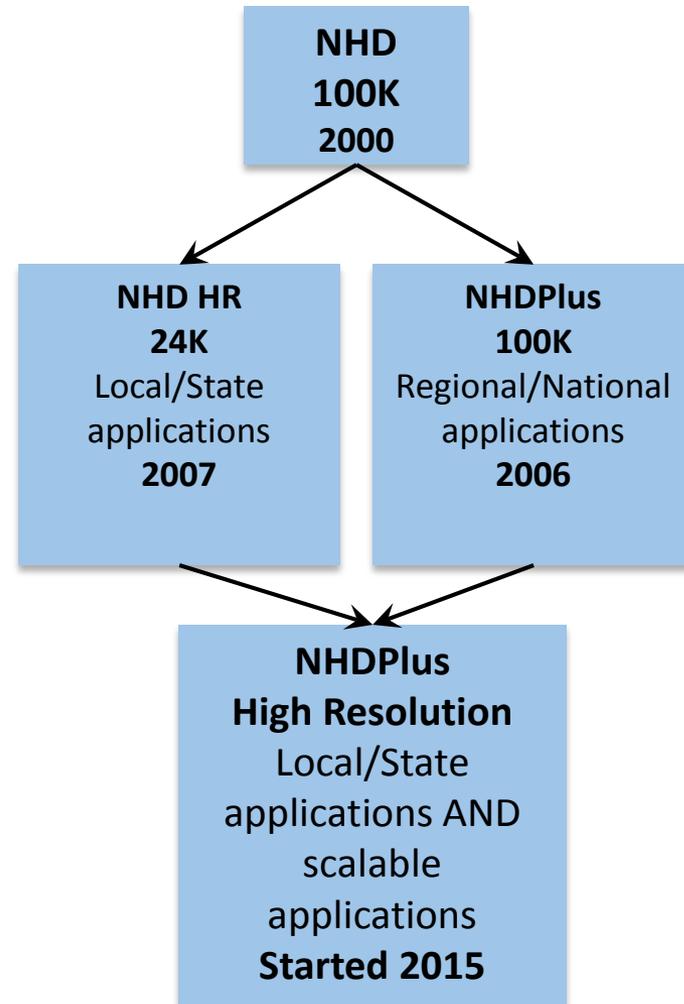
# + NHDPlusHR

Taking NHDPlus v2 (MedRes) to a new level

The best of 24K+ data  
and NHDPlus

Addresses the need for  
a single hydrographic  
frame of reference

Link data to one  
network and generalize  
to many different scales



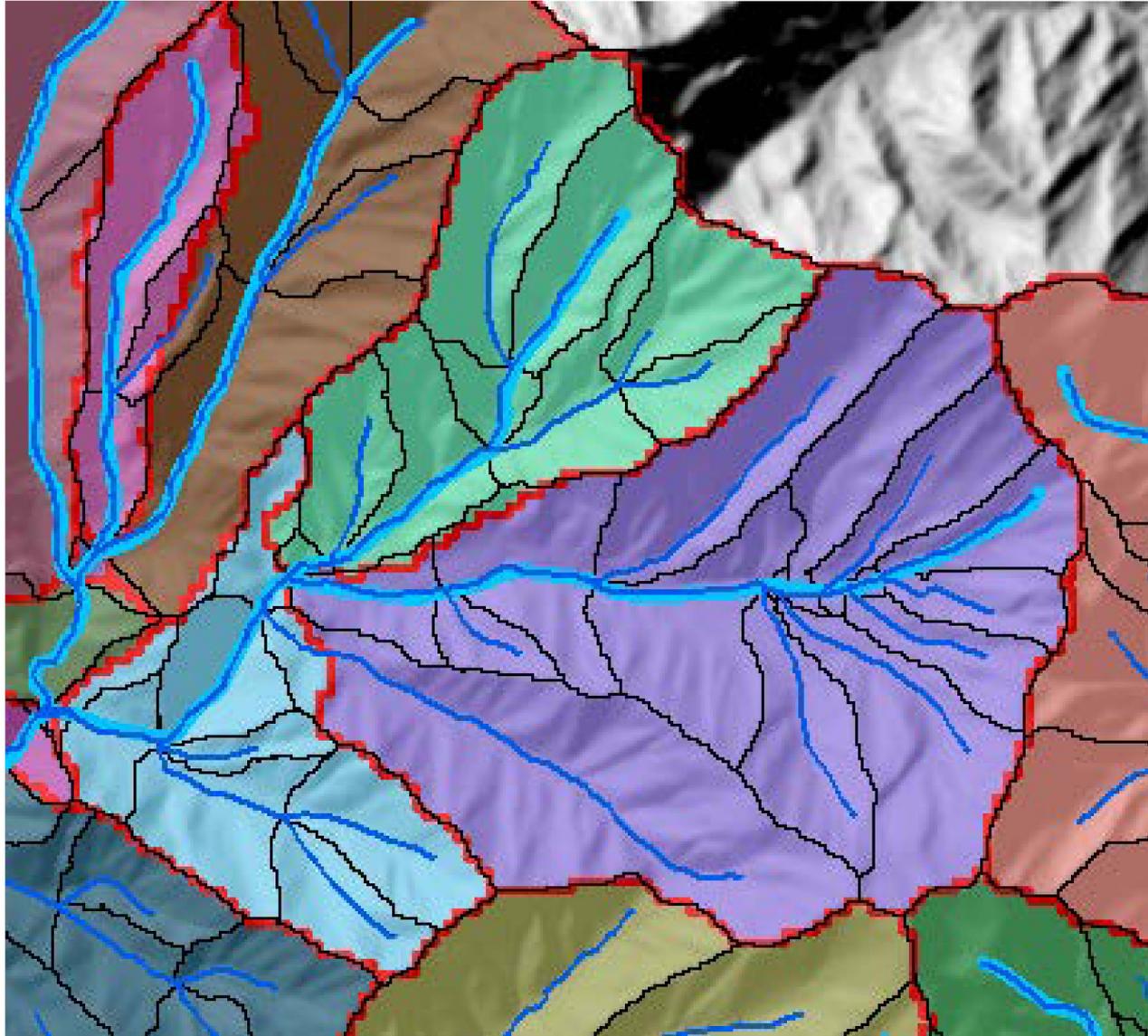
# + NHD Data Suite Comparison

- NHDPlus (both resolutions) is made from the combination of elevation data, hydrography data (NHD), and watershed boundaries (WBD)
- NHDPlusHR uses higher resolution input data

	<b>NHDPlus v2 (Med Res)</b>	<b>NHDPlus - High Res</b>	
<b>Number of features</b>	3 Million nationally	33 Million nationally	
<b>Component Datasets</b>	<b>Elevation Input</b>	National 1 Arc-Second Seamless DEM (30 meters)	National 1/3 Arc-Second Seamless DEM (10 meters)
	<b>NHD Input</b>	Medium Resolution NHD 100K	High Resolution NHD 24K - Local
	<b>WBD Input</b>	Composite 2010-2012	Updated WBD
<b>Tile size</b>	HUC-2 (with exceptions) (avg. XX square miles)	HUC-4 (avg. XX square miles)	
<b>Flow estimates</b>	Mean annual, mean monthly	Mean annual	
<b>File Formats</b>	Shapefile and ESRI Grid	File Geodatabase and TIFF	

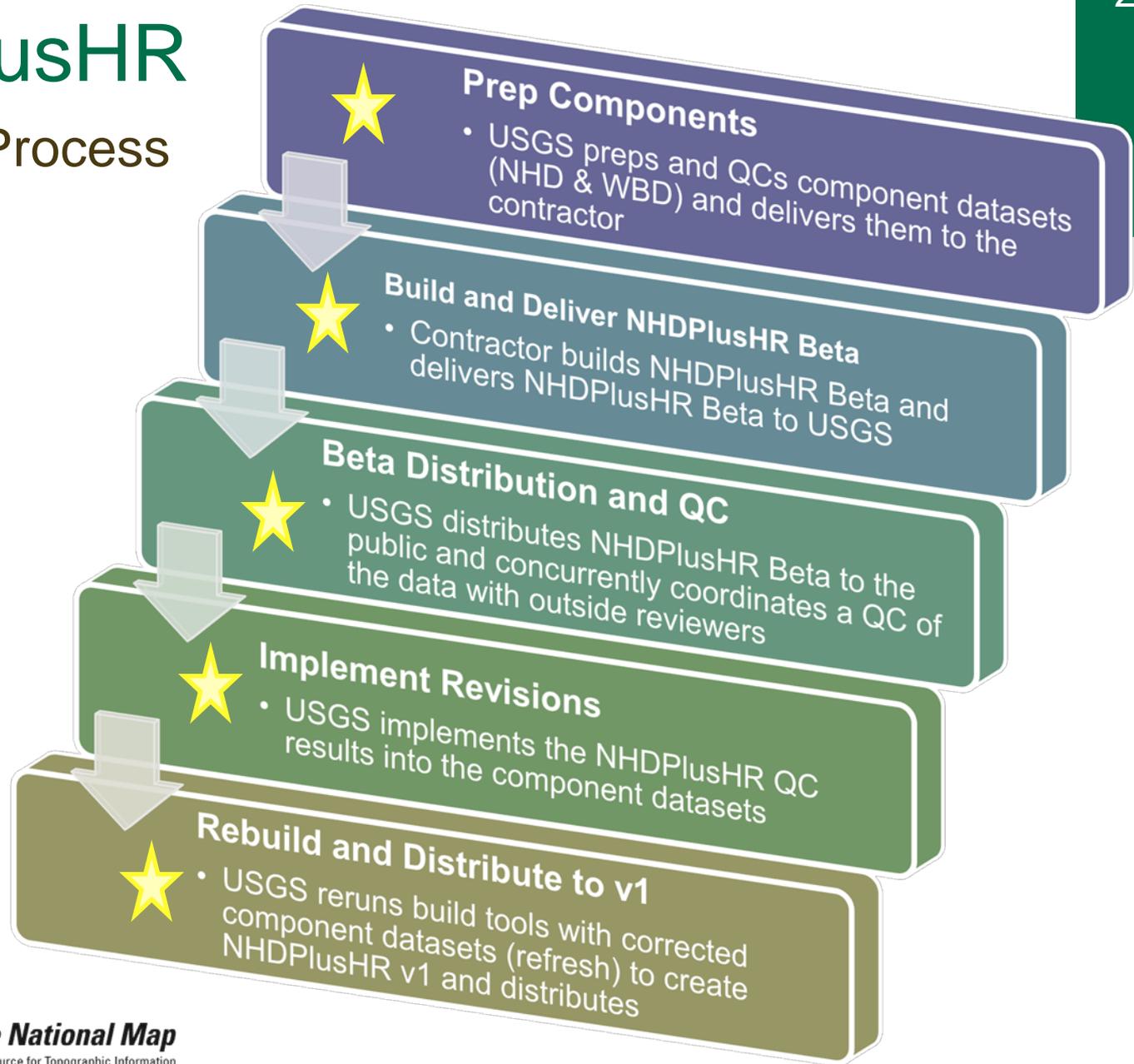
# + NHDPlusHR Adds Local Detail

28



# + NHDPlusHR

## Workflow Process

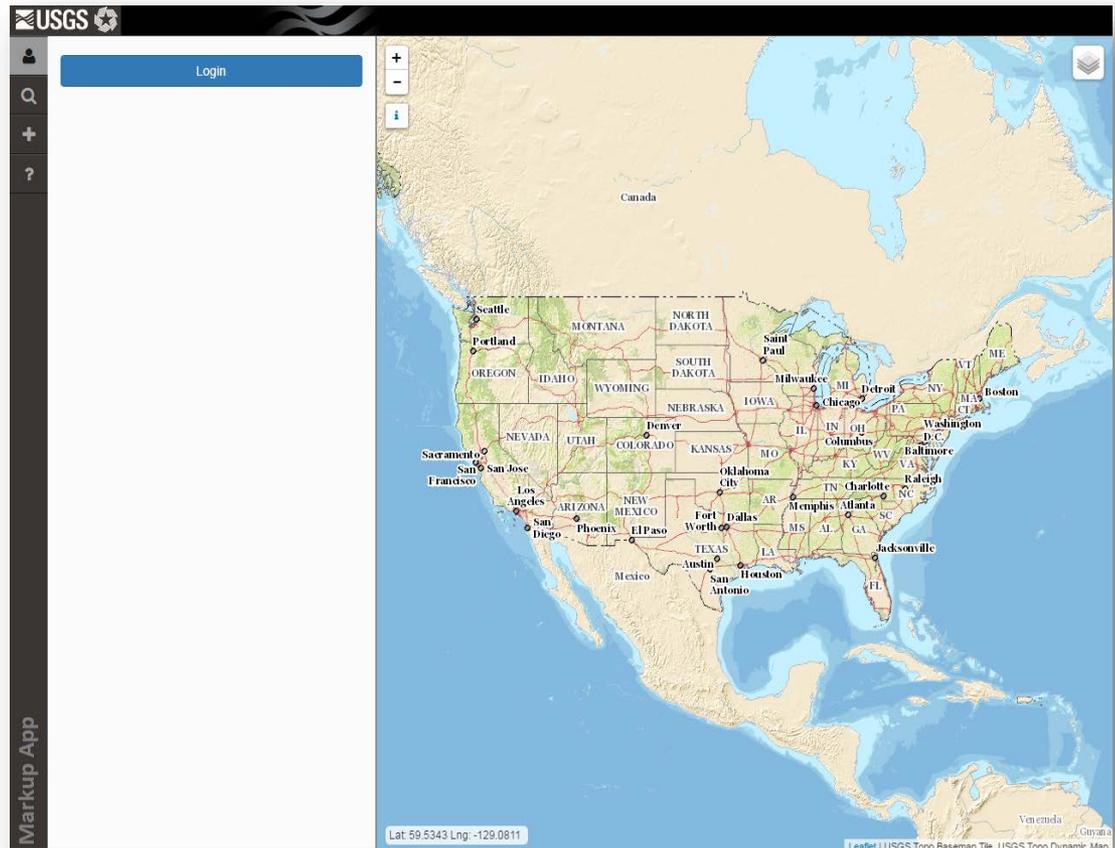


# + QC Markup Application

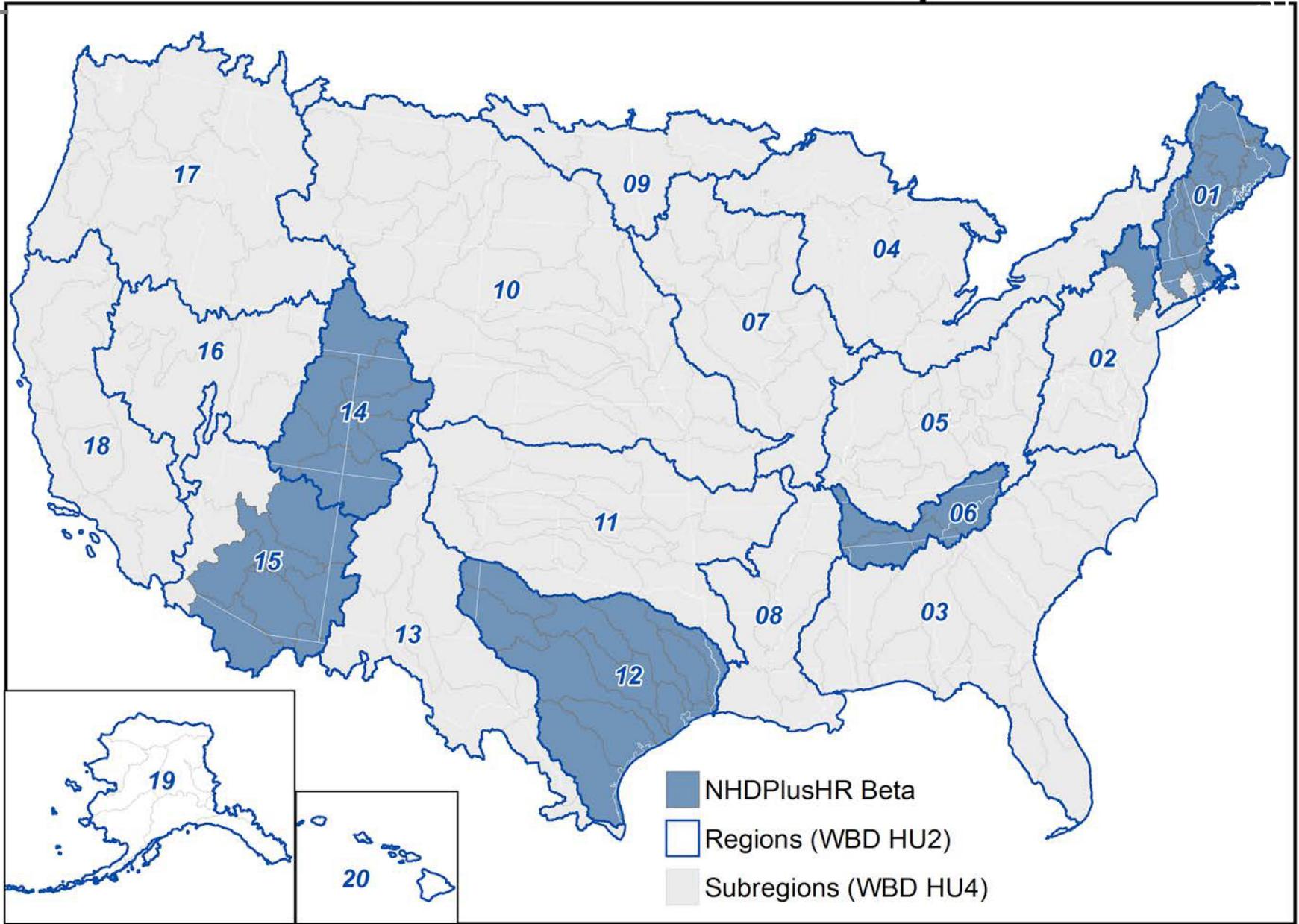
User friendly web communication tool for reporting data errors

## Will play a key role in

- BetaQC of NHDPlusHR by partners
- Data corrections by stewards, partners, and general public
- Ensuring integration of edits between NHD, WBD and NHDPlusHR



# NHDPlusHR FY16 Goal Accomplished



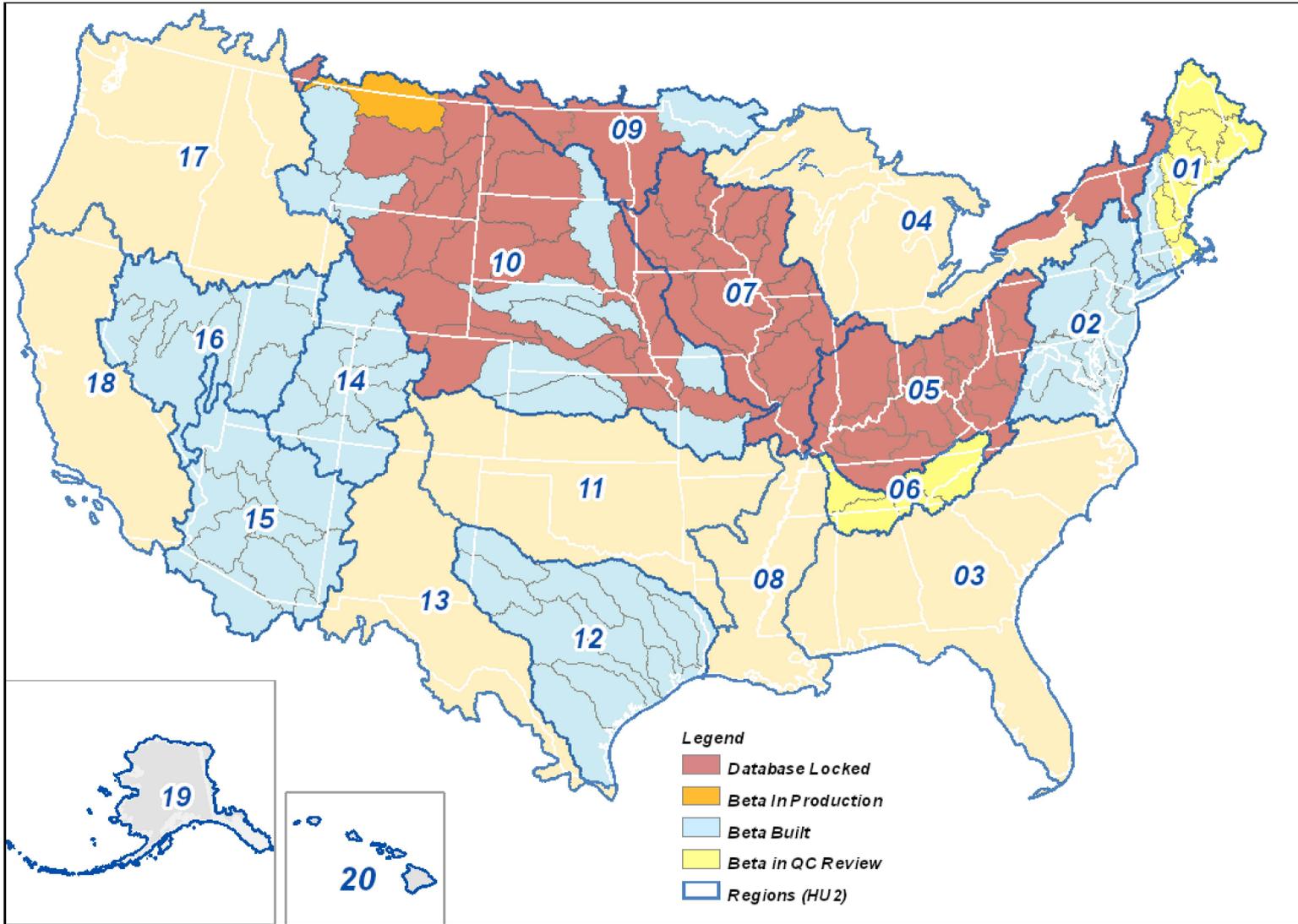
Goal = 1/4 CONUS (4.5 Hydrologic Regions) Complete  
Accomplished = 4.8 Hydrologic Regions

# NHDPlusHR Prioritization

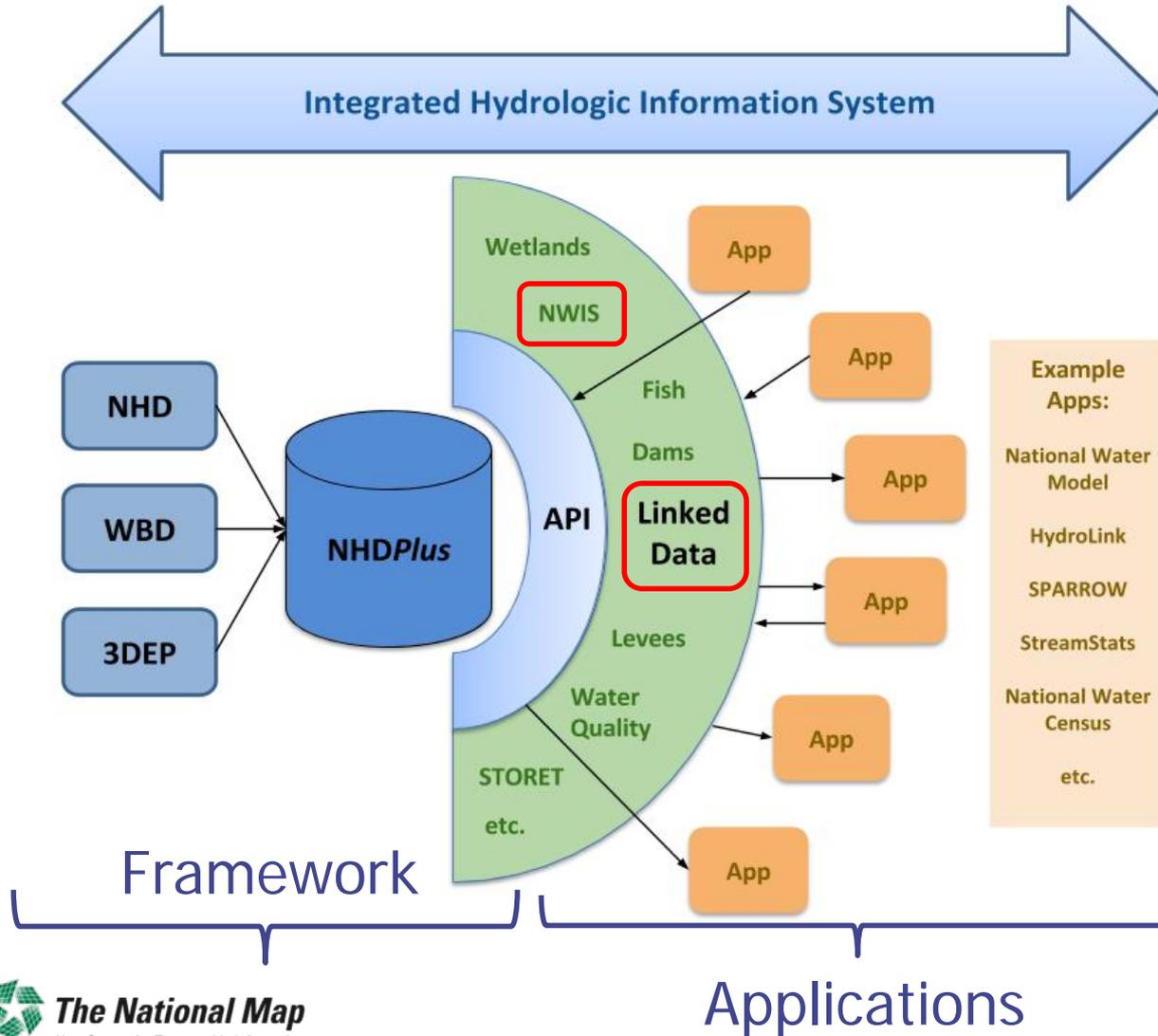
Region	Hydrologic Region	Sequence	Hydrologic Network	# of HU4s	Data Delivery	NHDPlus BETA	USGS Refresh
06	Tennessee	1	Mississippi 1 of 6	4	FY16	FY16 - Q2	FY17-Q2
01	Northeast	2	Complete Drainage Area	10	FY16	FY16 - Q2	FY17-Q3
12	Texas	3	Complete Drainage Area	11	FY16	FY16 - Q3	FY17-Q3
14	Upper Colorado	4	Colorado 1 of 2	8	FY16	FY16 - Q4	FY17-Q4
15	Lower Colorado	5	Colorado 2 of 2	8	FY16	FY16 - Q4	FY17-Q4
02	Mid-Atlantic	6	Complete Drainage Area	6	FY16	FY17-Q1	FY18
09	Canadian Pilot (0903)	7	Pilot (Rainy River Lake of the Woods)	1	FY17-Q1	FY17-Q1	FY18
10	Missouri	8	Mississippi 2 of 6	29	FY17-Q1	FY17_Q2	FY18
07	Upper Mississippi	9	Mississippi 3 of 6	14	FY17-Q2	FY17-Q3	FY18
16	Great Basin	10	Complete Drainage Area	6	FY17-Q2	FY17-Q3	FY18
04	Canadian Pilot (041504)	11	Pilot (Lake Champlain)	1	FY17-Q2	FY17-Q3	FY18
09	Souris, Red, Rainy	12	Complete Drainage Area (less pilot)	3	FY17-Q2	FY17-Q3	FY18
05	Ohio	13	Mississippi 4 of 6	14	FY17-Q3	FY17-Q4	
1902	Alaska Pilot (1902)	14	Pilot (MatSu)	1	FY17-Q3	FY17-Q4	
11	Arkansas, Red, White	15	Mississippi 5 of 6	14	10 FY17-Q4 4 FY17-Q4	5 FY17-Q4 9 FY18-Q1	
03	South Atlantic	16	Complete Drainage Area	18	FY17-Q4	FY18	
17	Pacific Northwest	17	Complete Drainage Area	12	FY18	FY18	
13	Rio Grande	18	Complete Drainage Area	9	FY18	FY18	
04	Great Lakes	19	Complete Drainage Area	15	FY18	FY18	
8	Mississippi	20	Mississippi 6 of 6	9	FY18	FY18	
18	California	21	Complete Drainage Area	10	FY18	FY18	
19	Alaska	22	Alaska	TBD	FY18		
20	Hawaii	TBD	Complete Drainage Area	TBD	TBD		
		TBD	Complete Drainage Area	TBD	TBD		



# NHD+HiRes Status 3/7/17



# + National Hydrography Mapping



File Edit View Favorites Tools Help




**USGS Home**  
**Contact USGS**  
**Search USGS**

**National Water Information System: Mapper**
Help Info

Sites Map

Search

Search by Street Address:  
 →

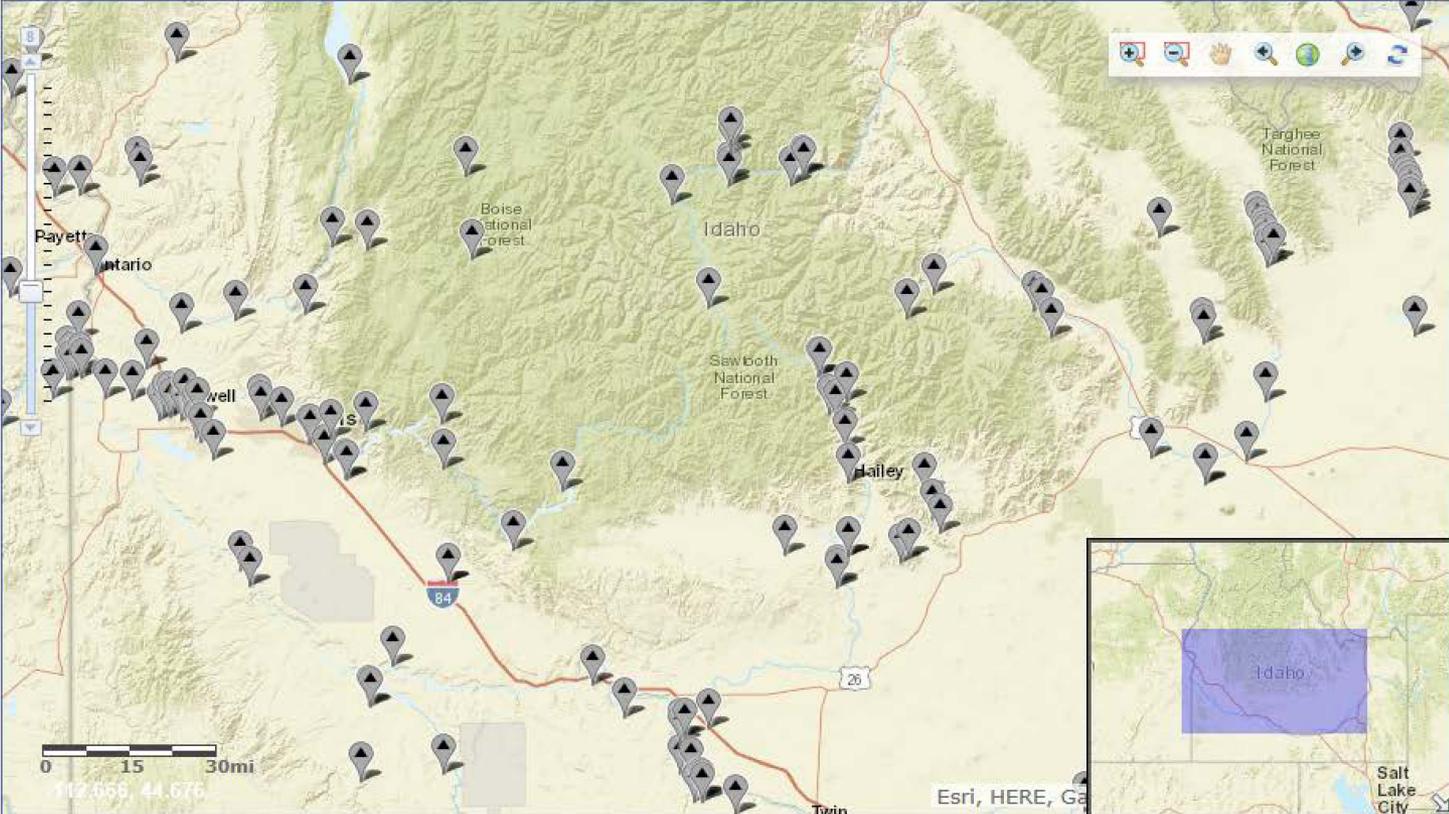
Search by Place Name:  
 →

Search by Site Number(s):  
 →

Search by State/Territory:  
 ▾

Search by Watershed Region:  
 ▾

- ▲ Surface-Water Sites
- Groundwater Sites
- Springs
- Atmospheric Sites
- Other Sites



0 15 30mi

112,656, 44,676

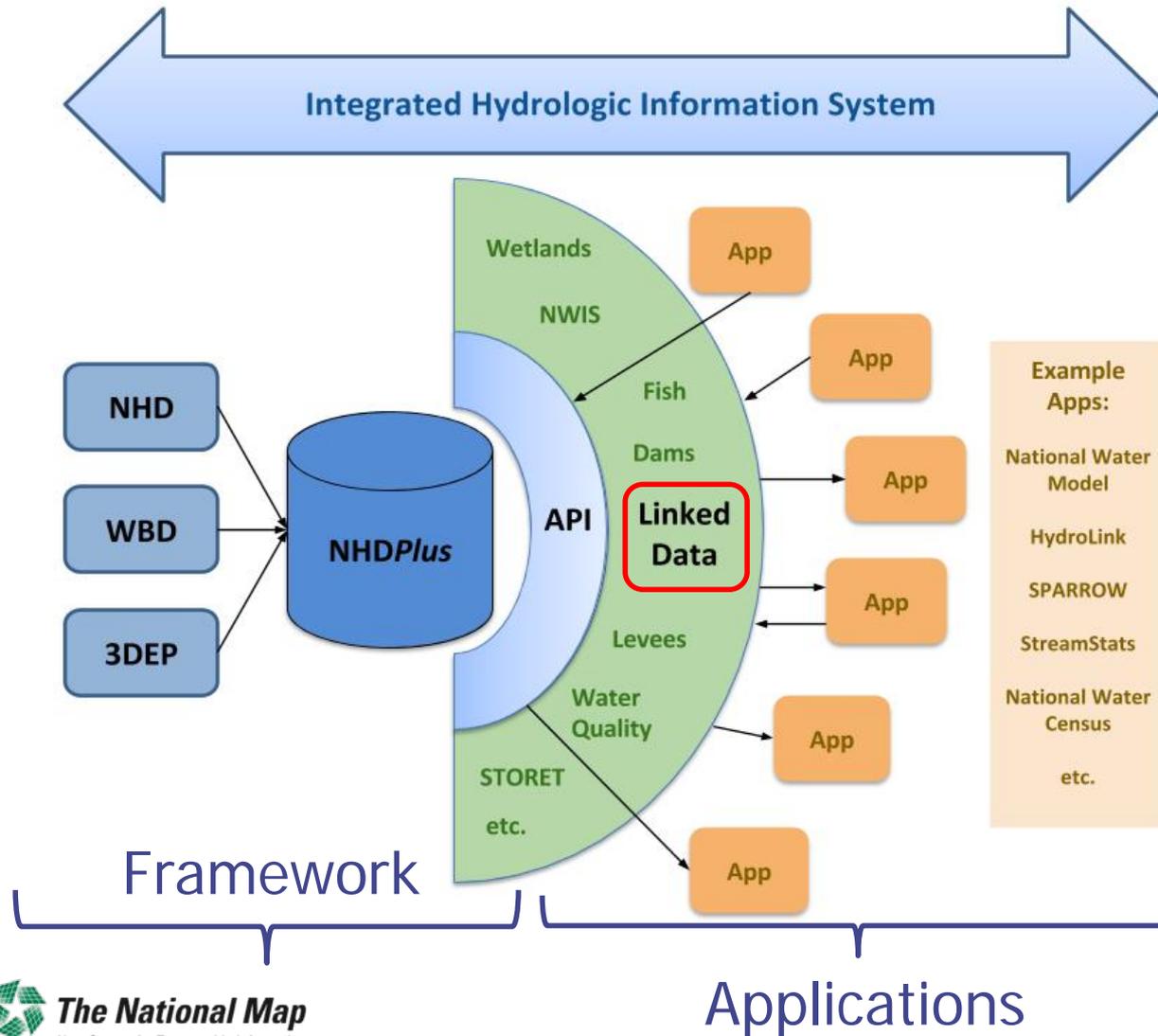
Esri, HERE, Ga

Twin

Salt Lake City

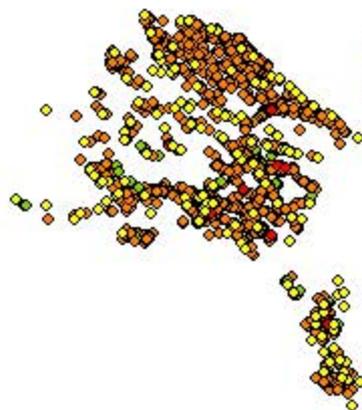
Site Information

# + National Hydrography Mapping



# + Linking Data to NHD

- Hydrography Event Management (HEM) Tool
  - Desktop ArcGIS tool
  - Point, Line, Area “Events” (hydro linked data)
  - Batch mode
  - “Sync” of events linked to NHD Flowlines that have been edited
  
- “Built in events” in NHD
  - Dams
  - HUC-8 outlets
  - Streamgages
  - Water Quality Stations
  
- USGS ScienceBase for sharing linked data
  - “NHD Linked Data Registry”
  - Can host linked data services
  - Can reference your linked data services
  - Contact [mdtinker@usgs.gov](mailto:mdtinker@usgs.gov) for info



**NHDPointEvent**

286,005, EventType

- ◆ 60,439, Dam
- ◆ 40, Flow Alteration Unknown
- ◆ 66, Flow Alteration=Addition
- ◆ 1,283, Flow Alteration=Removal
- ◆ 2,207 Hydrologic Unit Outlet 8
- ◆ 9,036, Streamgage: Streamgage Status=Active; Record=Continuous
- ◆ 1,005, Streamgage: Streamgage Status=Active; Record=Partial
- ◆ 118,149, Streamgage: Streamgage Status=Inactive
- ◆ 93,780, Water Quality Station





hydro linked data Search Advanced Search 37 results (25ms)

**Filters**

**Date Range**

- Past year (33)
- Past month (27)
- Past week (26)
- Past day (0)
- Custom range...

**Extensions**

- BASIS Plus (18)
- Citation (5)
- Shapefile (5)
- Project (4)
- ArcGIS Service Definition (3)
- Budget (1)
- Community (1)

**Types**

- BASIS+ Task (14)
- OGC WFS Layer (10)
- Citation (9)
- Downloadable (7)
- Map Service (7)
- More...

**Categories**

- Project (20)
- Data (12)
- Publication (5)

**Contacts**

- U.S. Geological Survey, National Geospatial Technical Operations Center
- Cynthia Miller-Corbett
- U.S. Geological Survey
- U.S. Geological Survey, National Geospatial Program
- [Jones, Susan P.](#)
- More...

**Tag Types**

**National Hydrography Dataset Linked Data Registry**

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. An important use of the NHD is the analysis of surface-water systems. This analysis is possible because many types of location information can be linked to the NHD, such as flow-volume, velocity, temperature, water chemistry, pollution control classifications, aquatic species habitat, recreation designations, or water rights. Such network-linked data is typically maintained by various organizations at Federal, State, and local levels, as well as research,...

Tags: Catchment indexing, Linear referencing, NHDPLUS, Polygonal event, Polygon event, All tags...

**National Recreation Rivers Database**

Categories: Data; Types: ArcGIS Service Definition, Downloadable, OGC WFS Layer, OGC WMS Service, Shapefile; Tags: Recreational, Rivers, Linear referenced, Hydrographically linked data, Linear event, All tags...

**Wild and Scenic Rivers (Snapshot from 12/15/15)**

This polyline feature class depicts the classification of each wild and scenic river segment designated by Congress and the Secretary of the Interior for the United States and Puerto Rico. This layer was created by a multi-agency effort including the US Forest Service, National Park Service, Bureau of Land Management and the Fish and Wildlife Service. The spatial data were referenced to the latest High Resolution National Hydrological Data Layer (NHD 1:24,000 Scale or better), published by United States Geological Survey (USGS). "Wild" rivers are free of dams, generally inaccessible except by trail, and represent vestiges of primitive America. "Scenic" rivers are free of dams, with shorelines or watersheds still...

Categories: Data; Types: ArcGIS REST Map Service, OGC WFS Layer, OGC WMS Service; Tags: Rivers, Linear referencing, Scenic, Linear referenced, Hydrographically linked data, All tags...

**NHD Point Events (Snapshot from 4/12/2016)**

The NHD is a national framework for assigning reach addresses to water-related entities, such as industrial discharges, drinking water supplies, fish habitat areas, wild and scenic rivers. Reach addresses establish the locations of these entities relative to one another within the NHD surface water drainage network, much like addresses on streets. Once linked to the NHD by their reach addresses, the upstream/downstream relationships of these water-related entities--and any associated information about them--can be analyzed using software tools ranging from spreadsheets to geographic information systems (GIS). GIS can also be used to combine NHD-based network analysis with other data layers, such as soils, land use...

Categories: Data; Types: ArcGIS Service Definition, Downloadable, OGC WFS Layer, OGC WMS Service; Tags: Linear referencing, Linear referenced, Hydrographically linked data, Linear event, NHD, All tags...

**Gage Locations (GageLoc.shp) indexed to the NHDPlus Version 2.1 stream network**

The locations of approximately 26,000 current and historical U.S. Geological Survey (USGS) surface-water monitoring gaging stations have been indexed to the NHDPlus Version 2.1 stream network. Part of the USGS National Water Information System (NWIS), these gaging stations measure water flow and water levels in streams and lakes. The NHDPlus V2 stream network locations for these gaging stations differ from stations' latitude/longitude provided in NWIS. The NWIS coordinates are frequently not coincident with the NHDPlus stream network.

Categories: Data; Types: Citation, Downloadable, Map Service, OGC WFS Layer, OGC WMS Layer, Shapefile; Tags: hydrographic structures, structure, NHD, HEM, Hydro linked data, All tags...

**Coastal geomorphology and vulnerability to sea level rise at the National Hydrography Dataset Coastline**

Coastal Mean High Water (MHW) is contoured in intertidal zones open to oceans, behind barrier coasts in bays, lagoons, and estuaries, and sometimes where tidal currents reach upstream (landward) of the embayed foreshore water bodies. In the National Geospatial Program (NGP) surface water hydrography maintained in the National Hydrography Dataset (NHD) Flowline Network projects Mean High Water level (MHW) as the linear-referenced 1:24,000-scale resolution NHD Coastline (<http://nhd.usgs.gov/>). NHD Coastline Geomorphology and associated Risk line-event feature classes that rank the relative risk of horizontal erosion on a scale of 1 to 5 (least to most risk, respectively) have been developed using the Hydrography Event...



Communities → National Hydrography Datas...

# National Hydrography Dataset Linked Data Registry

Go to View Manage

## Dates

Start Date : 2002  
End Date : 2016

## Citation

National Hydrography Dataset, U.S. Geological Survey, Reston, Virginia. 2002-2016

## Summary

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. An important use of the NHD is the analysis of surface-water systems. This analysis is possible because many types of location information can be linked to the NHD, such as flow-volume, velocity, temperature, water chemistry, pollution control classifications, aquatic species habitat, recreation designations, or water rights. Such network-linked data is typically maintained by various organizations at Federal, State, and local levels, as well as research, conservation, academic, and industry organizations. USGS encourages organizations who link their data to the NHD to share their data. To that end, we now encourage organizations to post their network-linked data to the USGS ScienceBase, National Hydrography Dataset Linked Data Registry.

## Child Items (6)

- Coastal geomorphology and vulnerability to sea level rise at the National Hydrography Dataset Coastline Gage Locations (GageLoc.shp) indexed to the NHDPlus Version 2.1 stream network
- National Recreation Rivers Database
- NHD Point Events (Snapshot from 4/12/2016)
- WBD HU12 Pour Points derived from NHDPlus
- Wild and Scenic Rivers (Snapshot from 12/15/15)

## Map >>

## Spatial Services

ScienceBase WMS :  
<https://www.sciencebase.gov/catal>

## Associated Items

- related to MetadataWizard
- related National Wild and Scenic Rivers in the U.S.
- View Associated Items
- Associate an Item

## Tags

Theme : Area event, Catchment based indexing, Catchment indexing, Gaging station, HEM, Hydro linked data, Hydrographically linked data, Hydrologically linked data, Line event, Linear event, Linear referenced, Linear referencing, Linked data, NHD, NHDPlus, National Hydrography Dataset, Point event, Polygon event, Polygonal event, Stream gages

## Provenance

Data source : Input directly  
National Hydrography Dataset, U.S. Geological Survey, Reston, Virginia. 2002-2016

# National Hydrography Dataset Linked Data Regis...

levels, as well as research, conservation, academic, and industry organizations. USGS encourages organizations who link their data to the NHD to share their data. To that end, we now encourage organizations to post their network-linked data to the USGS ScienceBase, *National Hydrography Dataset Linked Data Registry*.

## Child Items (6)

- Coastal geomorphology and vulnerability to sea level rise at the National Hydrography Dataset Coastline
- Gage Locations (GageLoc.shp) indexed to the NHDPlus Version 2.1 stream network
- National Recreation Rivers Database
- NHD Point Events (Snapshot from 4/12/2016)
- WBD HU12 Pour Points derived from NHDPlus
- Wild and Scenic Rivers (Snapshot from 12/15/15)

## Contacts

Contact: Alan H Rea, Michael D Tinker  
Editor: Michael D. Tinker

## Attached Files

Click on title to download individual files attached to this item or [download](#) all files listed below as a compressed file.

<a href="#">HydroLinkedStarterTemplate_FGDC.xml</a> "Suggested Tags for Hydro Linked Data Metadata; Sample FGDC metadata template XML" <i>Original Metadata</i>	<a href="#">View</a>	2016-07-03 12:28	mdtinker@usgs.gov	3.33 KB
<a href="#">suggested hydro linked data tags.txt</a>		2016-07-03 12:58	mdtinker@usgs.gov	385 Bytes

## Related External Resources

Type: Web Link

USGS Online Metadata Editor (OME) <https://www1.usgs.gov/csas/ome/editor.htm>

## Purpose

U.S. Geological Survey has placed these hydro linked datasets here in to demonstrate use of FGDC compliant metadata and searchable tags suitable for other hydro linked datasets. If you have data linked to the NHD or NHDPlus, we suggest that you tag your data with keyword themes in the item's metadata similar to how we have tagged the datasets in this community. There are several ways to create metadata for your items for use in ScienceBase: 1) Directly enter the tags in ScienceBase as free text. 2) The Esri metadata editor native to ArcCatalog. 3) The USGS Online Metadata Editor at <https://www1.usgs.gov/csas/ome/editor.htm>. 3) The USGS MetadataWizard, a python script with graphical user interface that can be used in ArcCatalog. This tool is downloadable from ScienceBase, and also linked to this community as an associated item. 4) Other commercial XML editors, such as XML Notepad. 5) Finally, we have attached a text file with suggested hydro linked data tags, as well as a metadata template, HydroLinkedStarterTemplate\_FGDC.xml.

## Additional Information

Community Extension

Go to ▾

View ▾

Manage ▾

## Tags

Theme : Area event, Catchment based indexing, Catchment indexing, Gaging station, HEM, Hydro linked data, Hydrographically linked data, Hydrologically linked data, Line event, Linear event, Linear referenced, Linear referencing, Linked data, NHD, NHDPLUS, National Hydrography Dataset, Point event, Polygon event, Polygonal event, Stream gages

## Provenance

Data source : Input directly

National Hydrography Dataset, U.S. Geological Survey, Reston, Virginia. 2002-2016

## Audit History

Created : by nlatysh@usgs.gov  
on Tue Feb 25 13:46:13 MST 2014  
Updated : by mdtinker@usgs.gov  
on Sun Jul 03 13:14:17 MDT 2016

## Permissions

Readable By: (INHERITED)

- PUBLIC

Writable By:

- ROLE:NHDEvents\_Authors
- USER:ahrea@usgs.gov
- USER:mdtinker@usgs.gov
- USER:saichele@usgs.gov



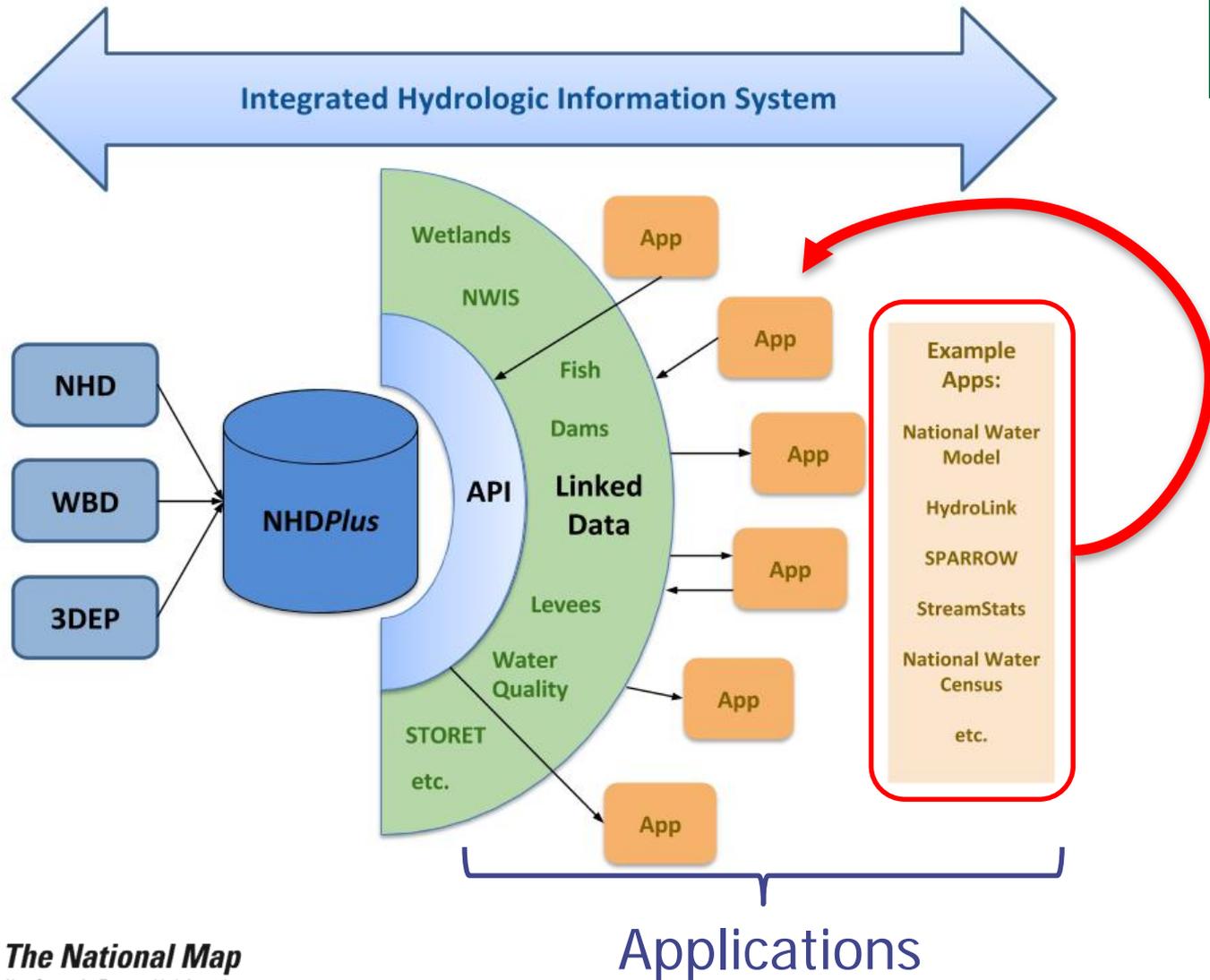
**WE WANT YOU  
TO SHARE  
HYDRO-LINKED  
DATA**

# + Linking Data Online

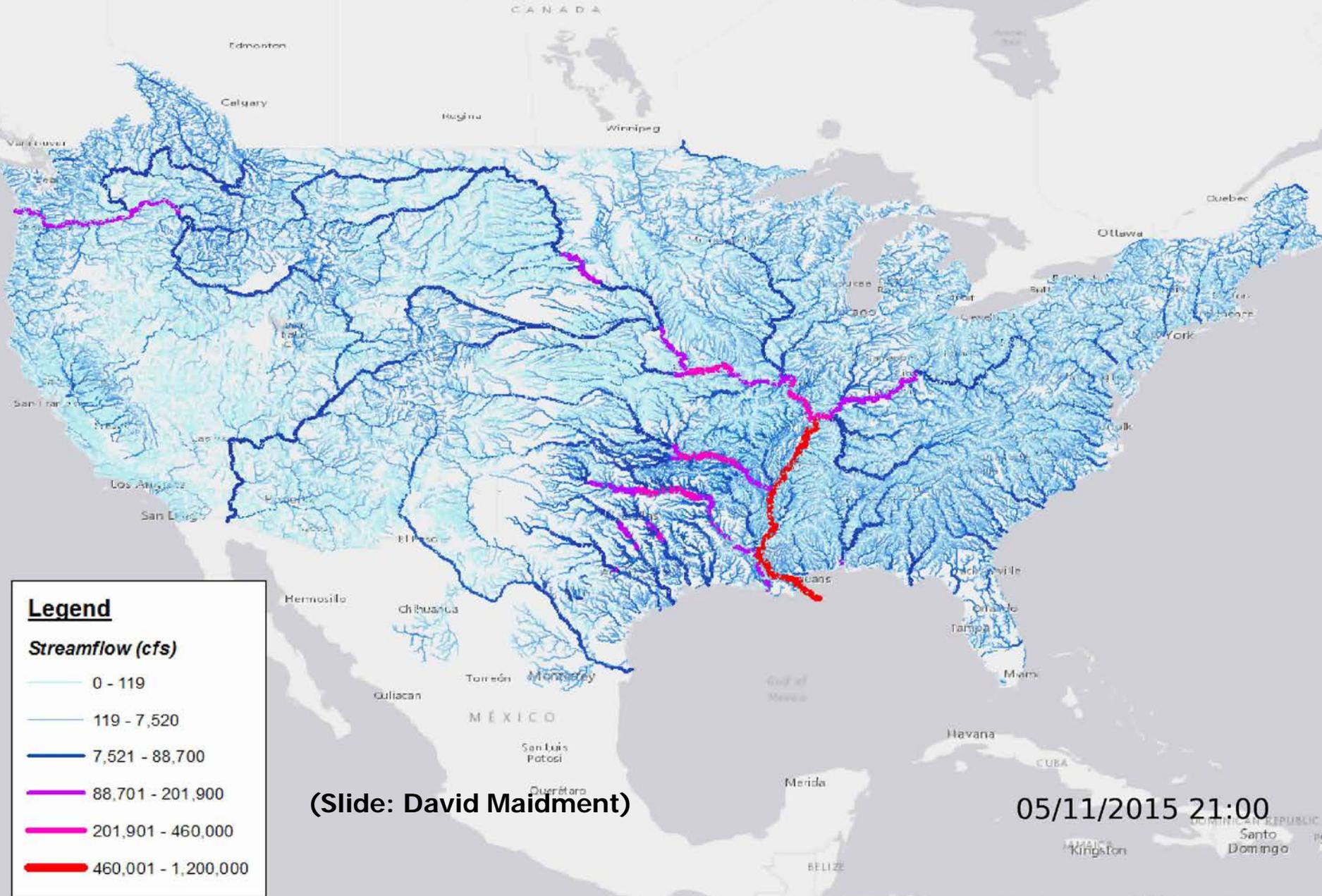
## HydroLink Tool – future “Web-HEM”

The screenshot shows a web browser window displaying the USGS HydroLink Tool. The browser's address bar shows the URL <https://maps.usgs.gov/edna/>. The page header features the USGS logo with the tagline "science for a changing world" and navigation links for "USGS Home", "Contact USGS", and "Search USGS". Below the header, a blue banner reads "U.S. Geological Survey - Core Science Analytics, Synthesis, and Libraries - HydroLink Tool". The main content area includes a breadcrumb trail "CSAS&L Home / HydroLink Tool Login" and a "Need help? Service Desk" link. The "HydroLink Tool" section contains a descriptive paragraph: "Generate a hydrologic linear reference for point data representing locations of geographic features or field samples using the HydroLink Tool. This web-based GIS application allows for upload of a shapefile for easy linkage of spatial data records to the National Hydrography Dataset (NHD) Plus Medium Resolution and NHD High Resolution hydrology layers. The outputted value-added dataset can be associated with NHD parameters and other data linked to the NHD." Below this is another paragraph: "The application accesses, and modifies feature services stored in your USGS ArcGIS Online account. Use the 'Login' button below to sign into the HydroLink Tool using your ArcGIS Online credentials or 'Request a ArcGIS Online Account' if one is needed." Three buttons are provided: "Login" (blue), "Request a USGS ArcGIS Online Account" (orange), and "Service Desk" (green). To the right, a photograph of a concrete culvert structure with three pipes discharging into a stream is shown, with a blue circular icon containing a globe below it. The text "HydroLink Structure Locations" is overlaid on the bottom of the image. The footer includes links for "Accessibility", "FOIA", "Privacy", and "Policies and Notices", along with "U.S. Department of the Interior" and "U.S. Geological Survey" links. A "File Explorer" button is visible in the bottom right corner.

# + National Hydrography Mapping



# National Water Model



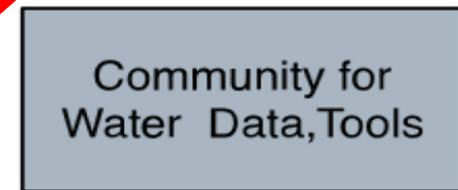
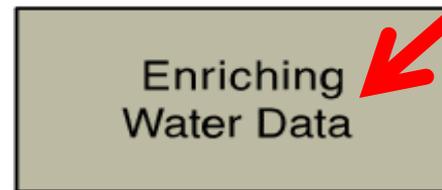
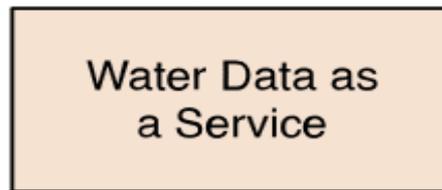
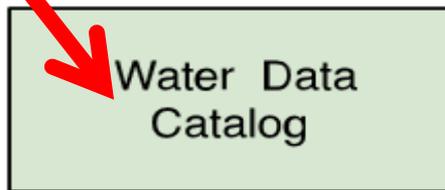
(Slide: David Maidment)

05/11/2015 21:00

# + What is NLDI?

- Network Linked Data Index
- It's a search engine for hydro network-linked data (like Google, but more powerful!)
- Queries using stream network (NHDPlus)
- Extensible design—any surface-water data can be linked and shared via web services
- Developed by USGS, in collaboration with EPA, as part of the Open Water Data Initiative (OWDI)
- Open source: <https://github.com/ACWI-SSWD>

## Open Water Web



<https://cida.usgs.gov/nldi/huc12pp/030801011008>

**Hydrologic Unit Code**

030801011008

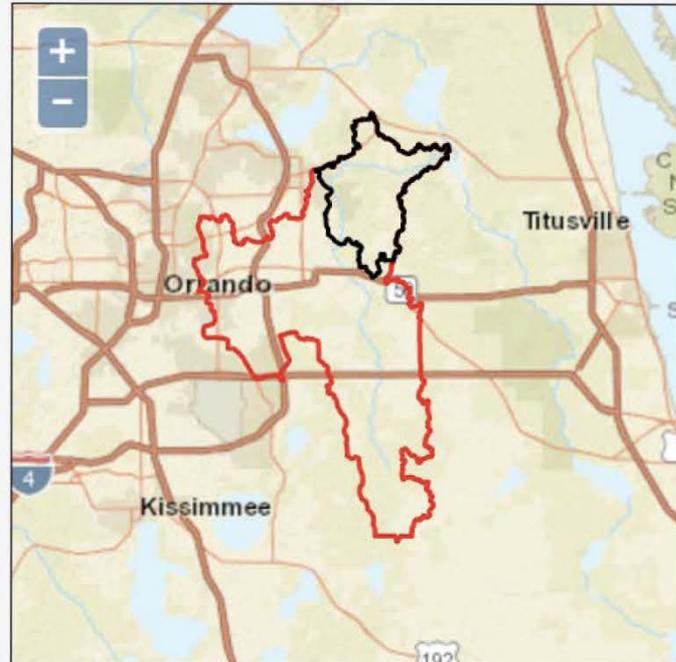
**Watershed Name**

Lower Econolockhatchee River

**HUC Watershed Drainage Area (km<sup>2</sup>)**

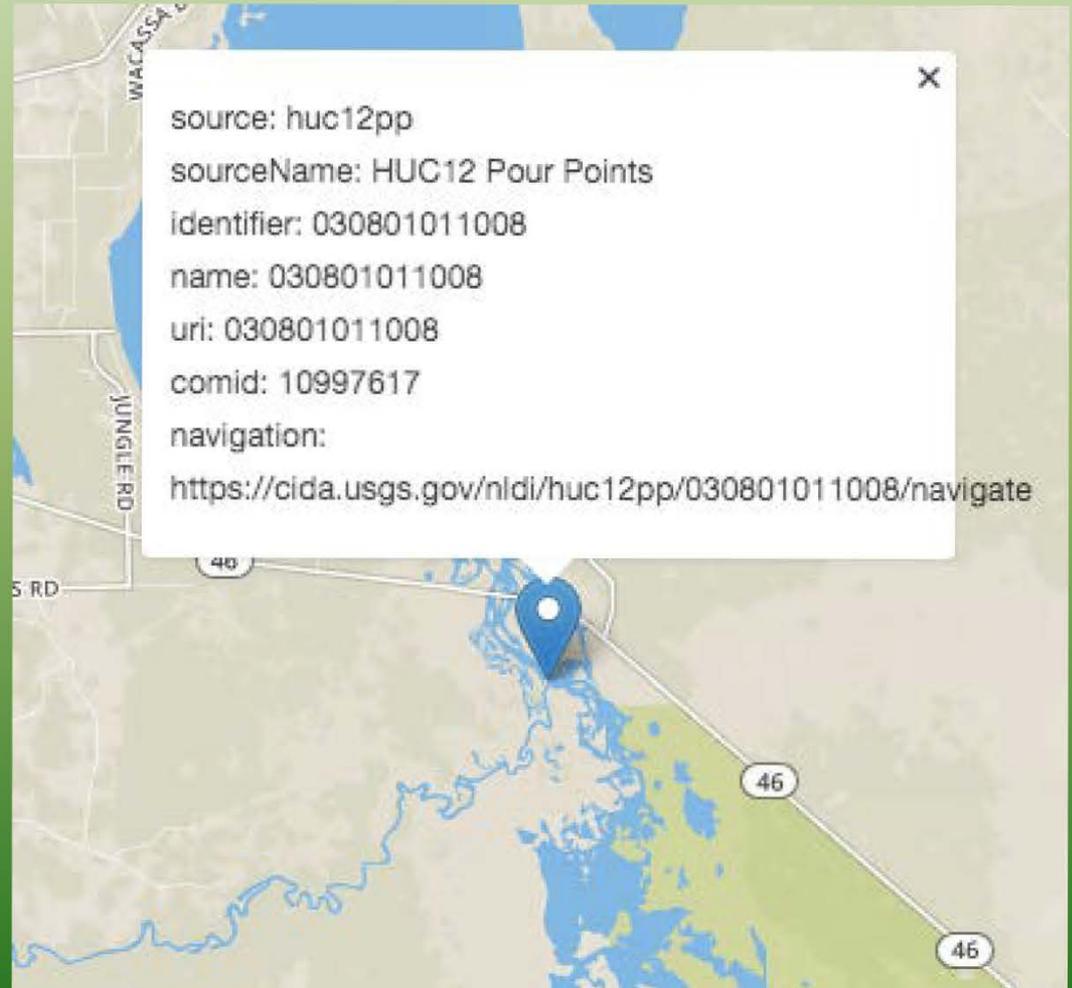
Local Incremental: 138.05

Total Upstream: 691.64



Local Incremental Watershed: —

Total Upstream Watershed: —

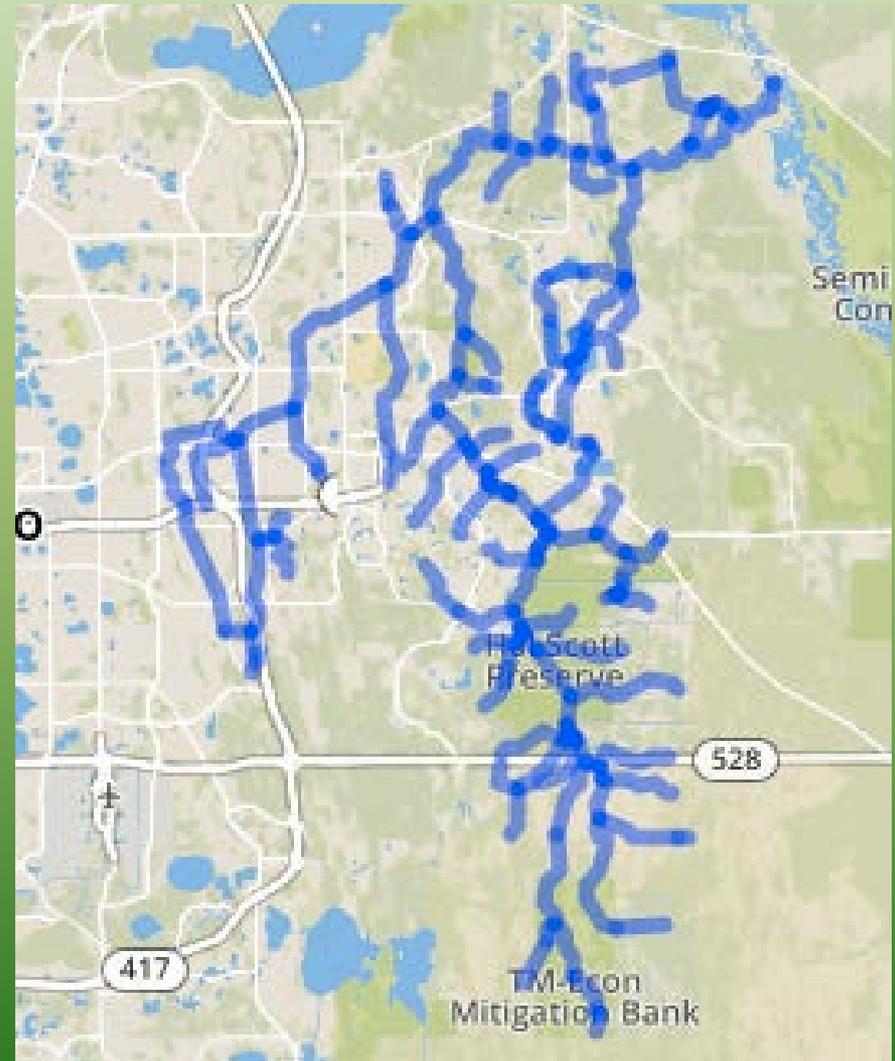
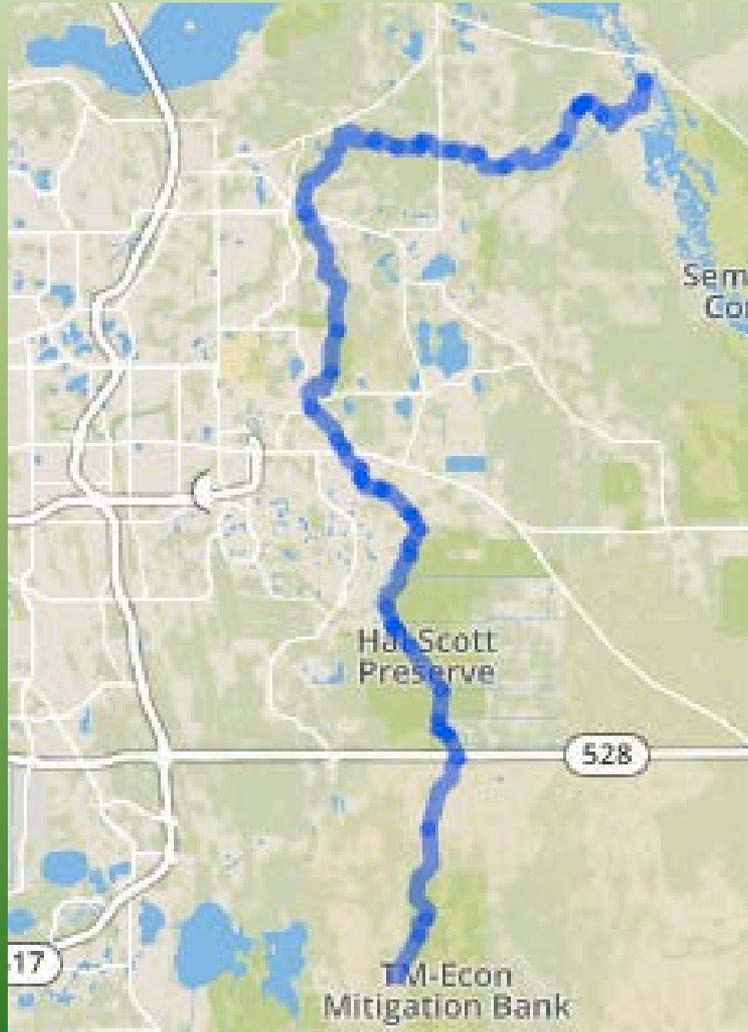


(Slide: Dave Blodgett)

<https://cida.usgs.gov/nldi/huc12pp/030801011008>

... navigate/UM

... navigate/UT



<https://cida.usgs.gov/nldi/huc12pp/030801011008>

... navigate/DD

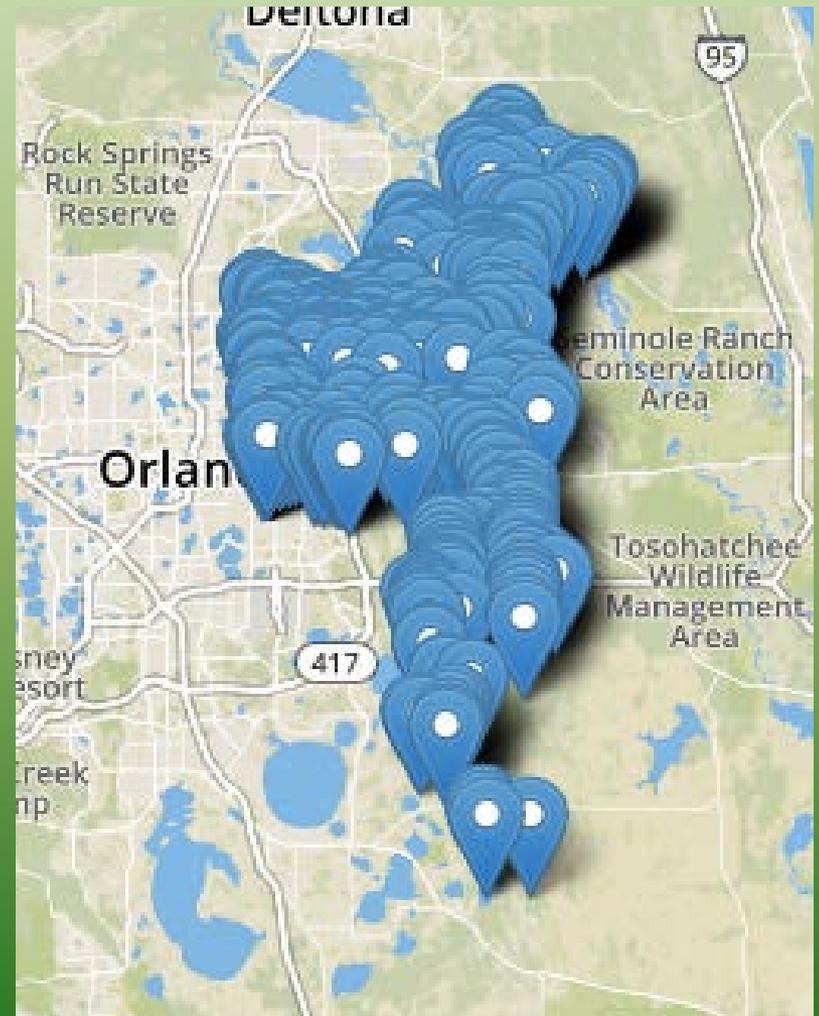
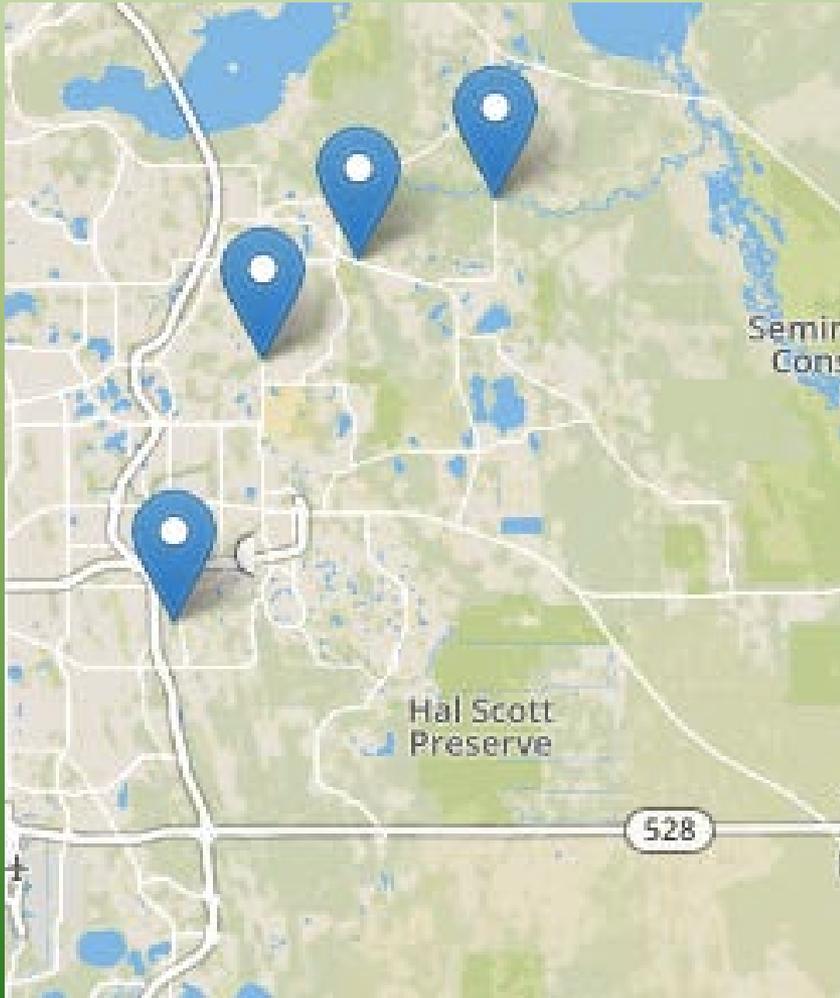
Zoomed In



<https://cida.usgs.gov/nldi/huc12pp/030801011008>

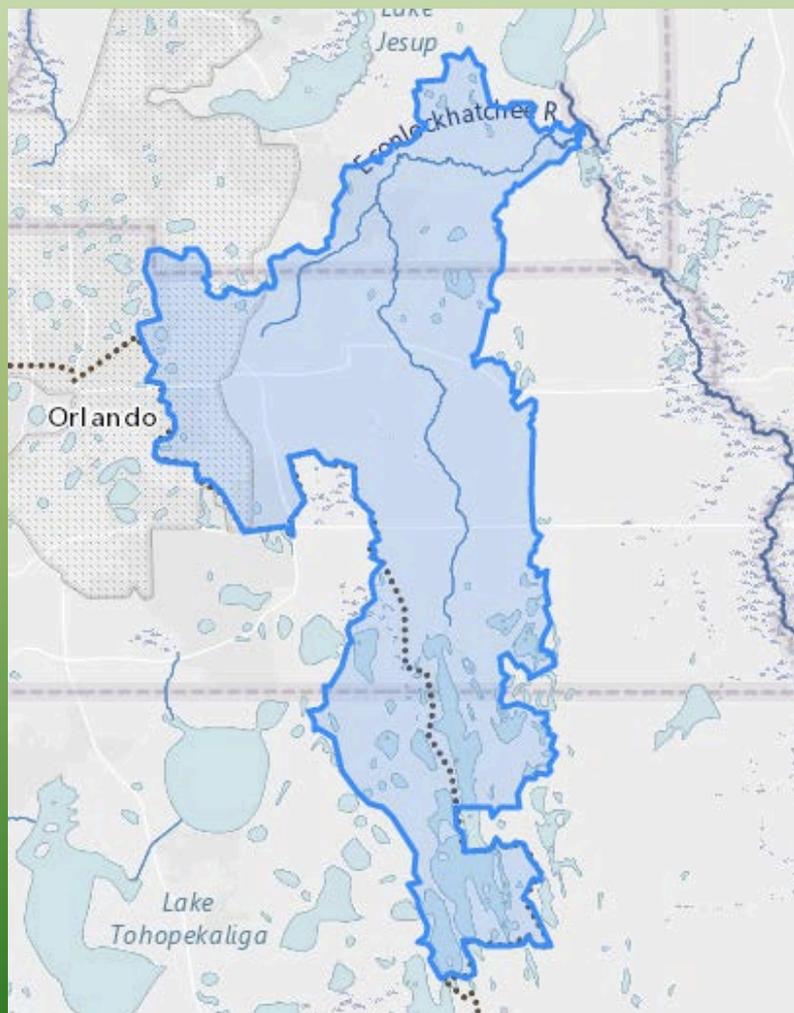
... navigate/UT/nwissite

... navigate/UT/wqp



<https://DEV/nldi/huc12pp/030801011008>

... [navigate/UT/basin](#)



Future possibilities...

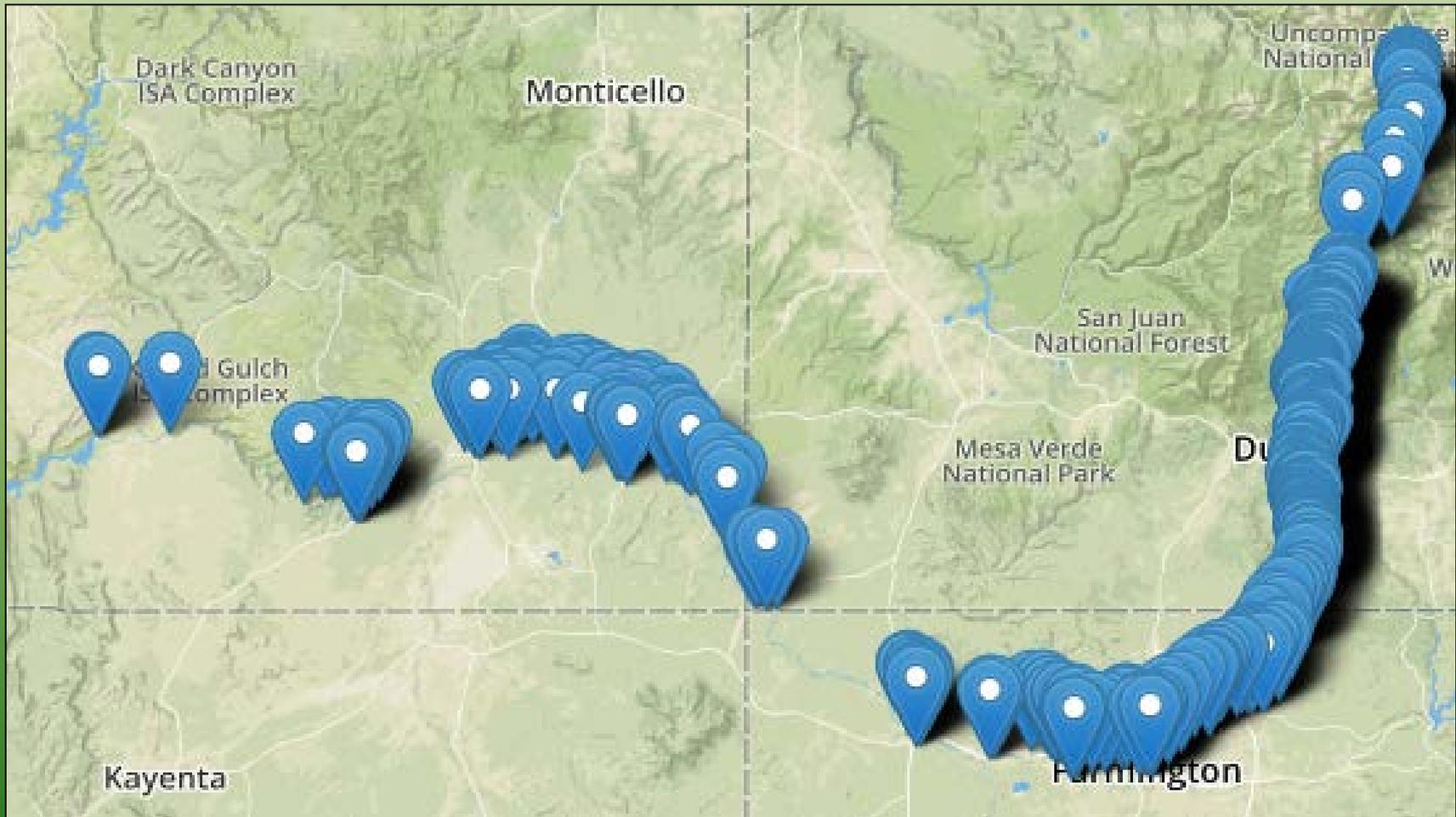
.../navigate/UT/characteristics

Local and accumulated catchment characteristics!

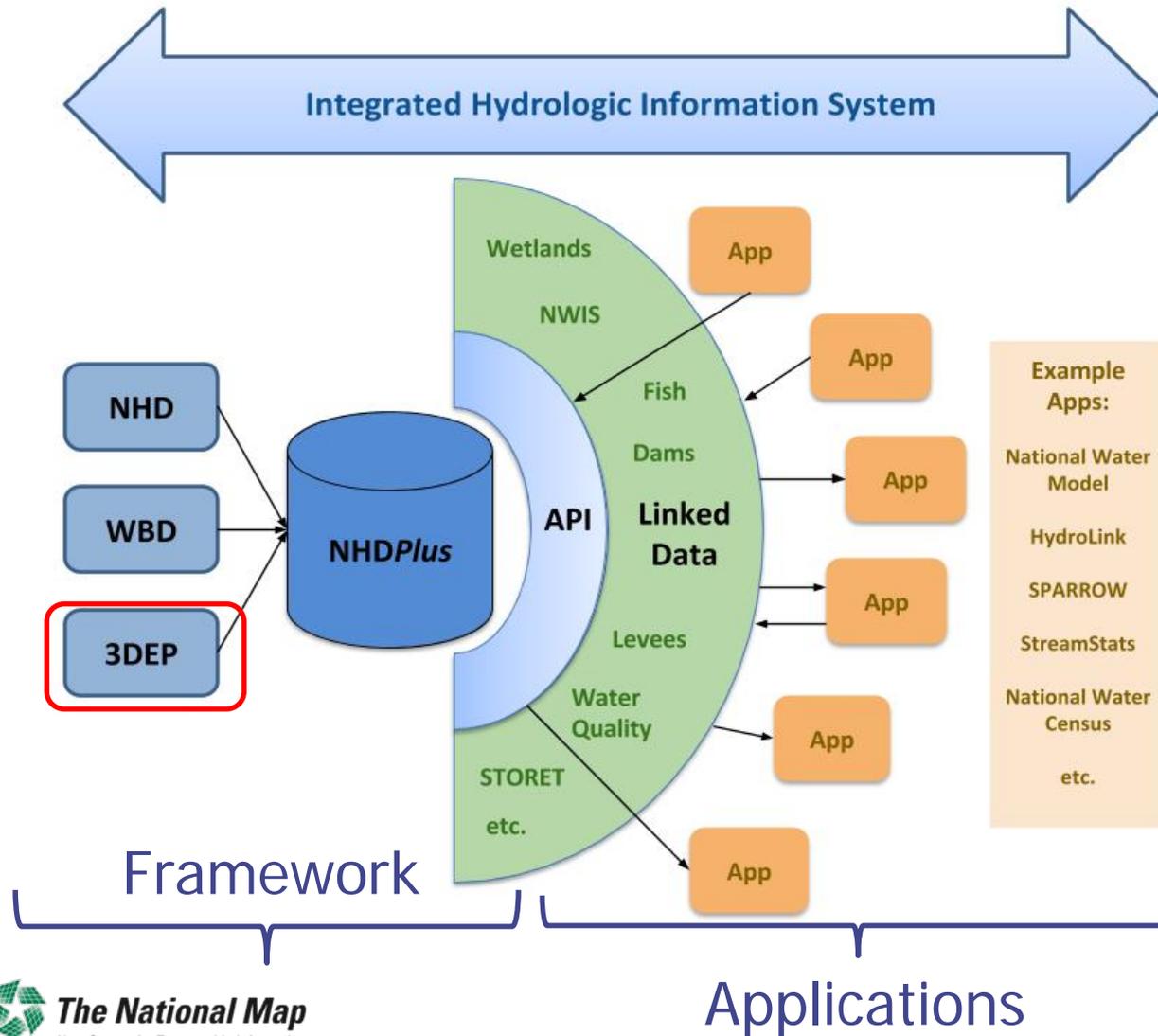
.../navigate/UT/nwm

URL to NWM forecasts and other information products!

<https://cida.usgs.gov/nldi/huc12pp/140801040102/navigate/DD/wqp?distance=500>  
(WQP sites 500 km downstream of Gold King Mine)



# + National Hydrography Mapping



# + What is the 3D Elevation Program?

3DEP is a call for community action to...

- Accelerate the acquisition of high quality light detection and ranging (lidar) data in the conterminous U.S., Hawaii, and the U.S. Territories; and interferometric synthetic aperture radar (ifsar) data in Alaska
- Increase the overall investment in 3D elevation from about \$50 million to \$146 million annually to return more than \$690 million annually in new benefits
- Leverage collaboration among Federal, states, local and tribal partners to systematically complete national 3D elevation data coverage in eight years



Natural Resource  
Conservation



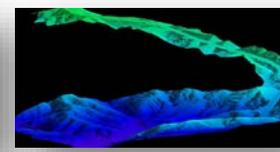
Infrastructure  
Management



Flood Risk Mitigation



Precision Farming

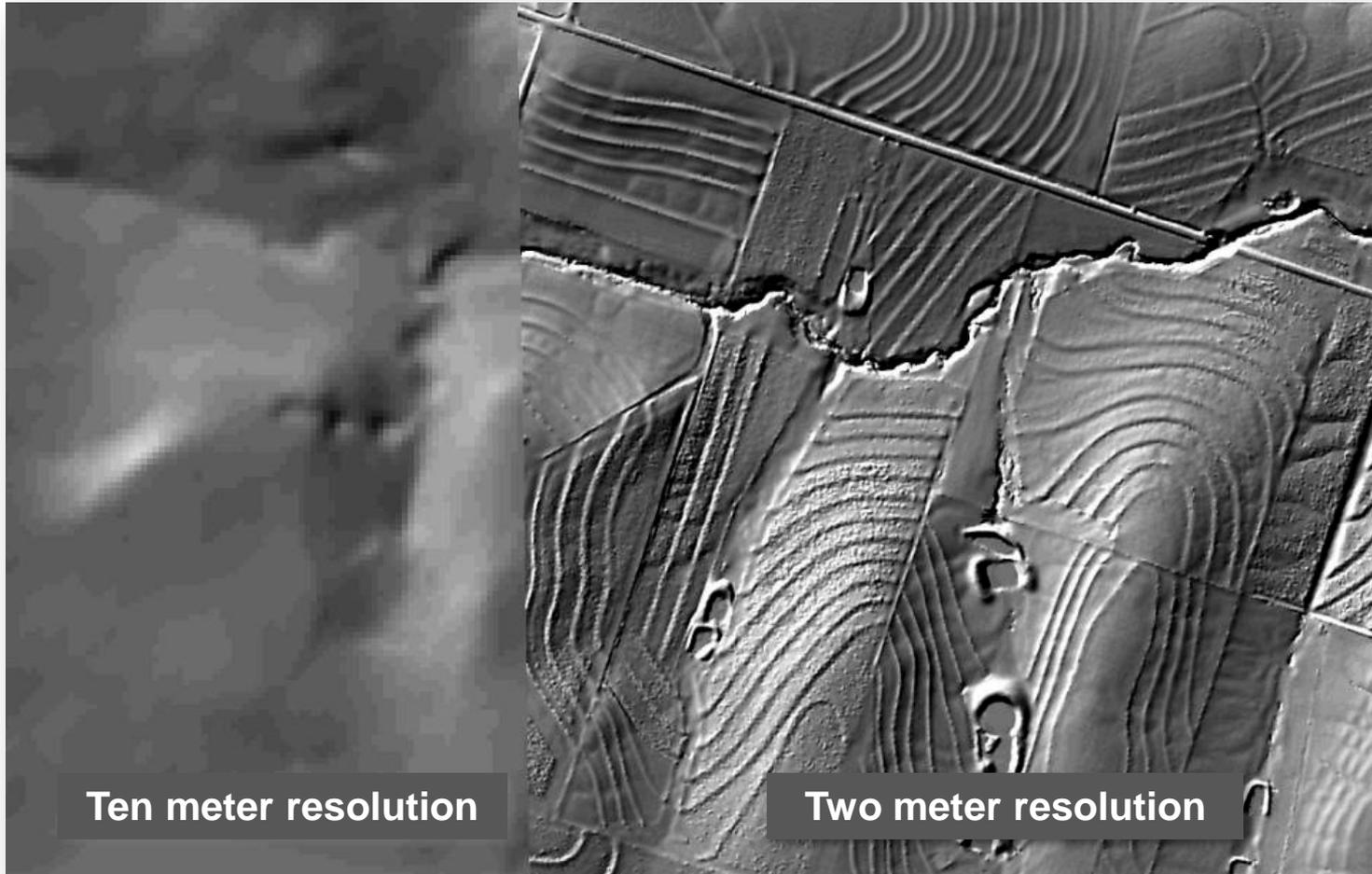


Land Navigation  
and Safety



Geologic Resources  
and Hazards Mitigation

# + Lidar Improves Data Quality



Ten meter resolution

Two meter resolution

Courtesy of NRCS

# + 3DEP: The Next Generation

3DEP is designed to...

- Address the mission-critical requirements of 34 Federal agencies, 50 states, and a sampling of local governments, tribes, private and not-for profit organizations documented in the **National Enhanced Elevation Assessment (NEEA)**
- Increase the quality level of lidar data being acquired to meet 58% of the documented needs instead of the 10% of needs being met with lower quality data
- Achieve a 25% cost efficiency gain by collecting data in larger projects
- Provide more consistent data through standardized data specifications
- Completely refresh the National Elevation Dataset (NED) with new lidar and ifsar elevation data products and services

# + 3D Elevation Program

## Quality Levels – A New “Floor”

Quality Level	Source	Vertical Accuracy RMSEz	Nominal Pulse Spacing (NPS)	Nominal Pulse Density (NPD)	DEM Post Spacing
QL1	Lidar	10 cm	0.35 m	8 points/sq. meter	1 meter
QL2	Lidar	10 cm	0.7 m	2 points/sq. meter	1 meter
QL3	Lidar	20 cm	2.0 m	0.7 points/sq. meter	3 meters
QL4	Imagery	139 cm	5 m	0.04 points/sq. meter	5 meters
QL5	lfsar	185 cm	5 m	0.04 points/sq. meter	5 meters



3DEP



Before  
3DEP



3DEP  
Alaska

As of 7/01/2016

# 3D Elevation Program - FY16 Partnerships

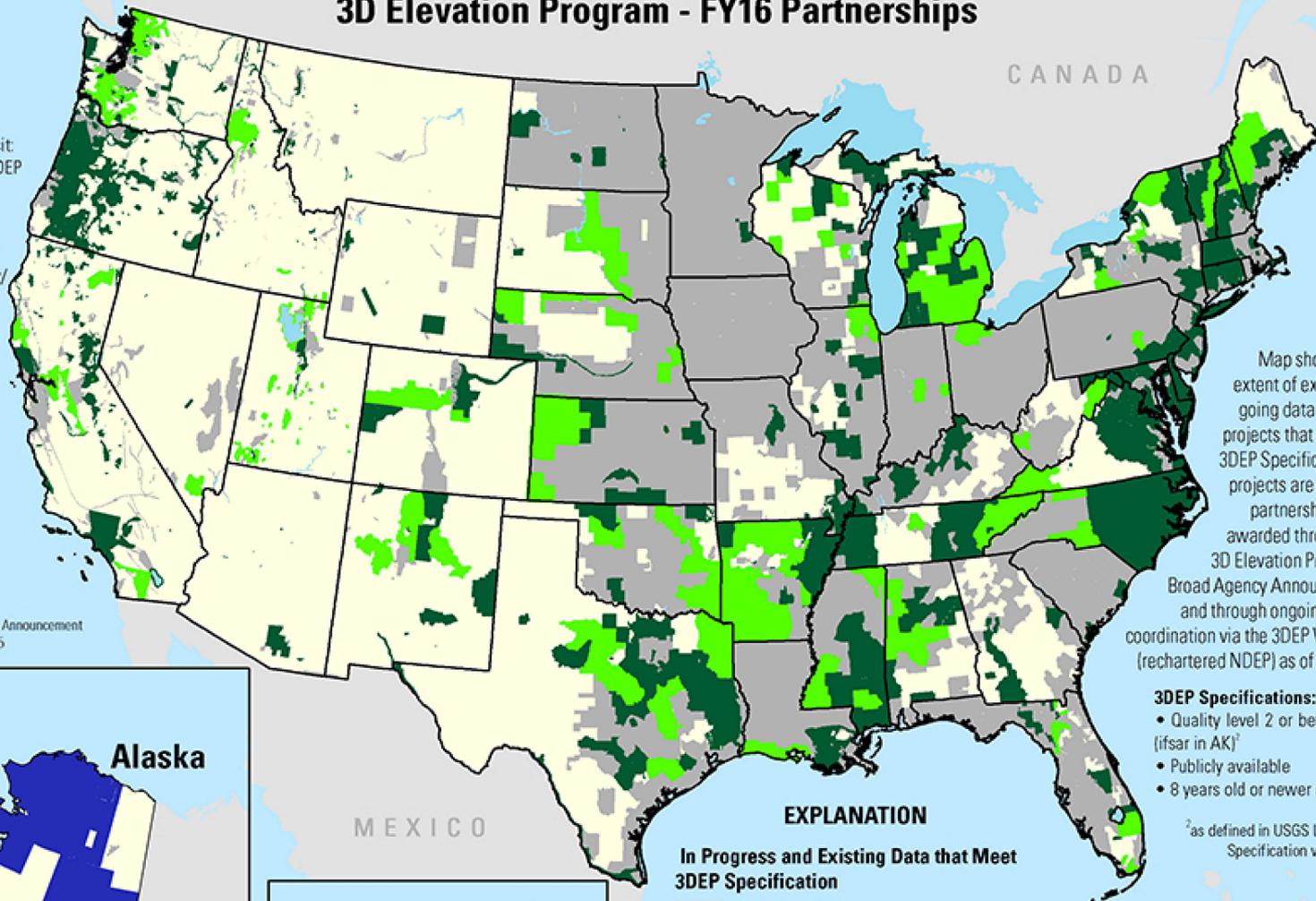
For more on the 3D Elevation Program (3DEP) visit: <http://www.nationalmap.gov/3DEP>

Visit the US Interagency Elevation Inventory (USIEI) at: <http://coast.noaa.gov/inventory/>

Pacific Ocean



Sources:  
3DEP FY15/16 Broad Agency Announcement  
USIEI data from October 2015



CANADA

Atlantic Ocean

Map shows geographic extent of existing and on-going data acquisition projects that meet current 3DEP Specifications. FY16 projects are the result of partnership projects awarded through the FY16 3D Elevation Program (3DEP) Broad Agency Announcement (BAA) and through ongoing Federal coordination via the 3DEP Working Group (rechartered NDEP) as of July 2016.

**3DEP Specifications:**

- Quality level 2 or better lidar data (ifsar in AK)<sup>2</sup>
- Publicly available
- 8 years old or newer as of 2016

<sup>2</sup>as defined in USGS Lidar Base Specification v1.2

**EXPLANATION**

**In Progress and Existing Data that Meet 3DEP Specification**

- FY16 partnership projects
- lidar
- ifsar (Alaska)

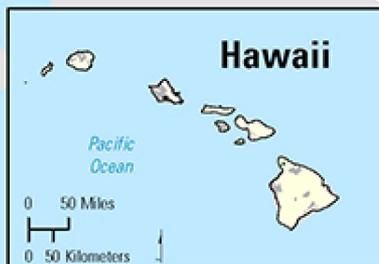
**Data that Do NOT Meet 3DEP Specification**

- Other lidar data
- No publicly available lidar data (ifsar in Alaska)

Gulf of Mexico



Alaska



Hawaii



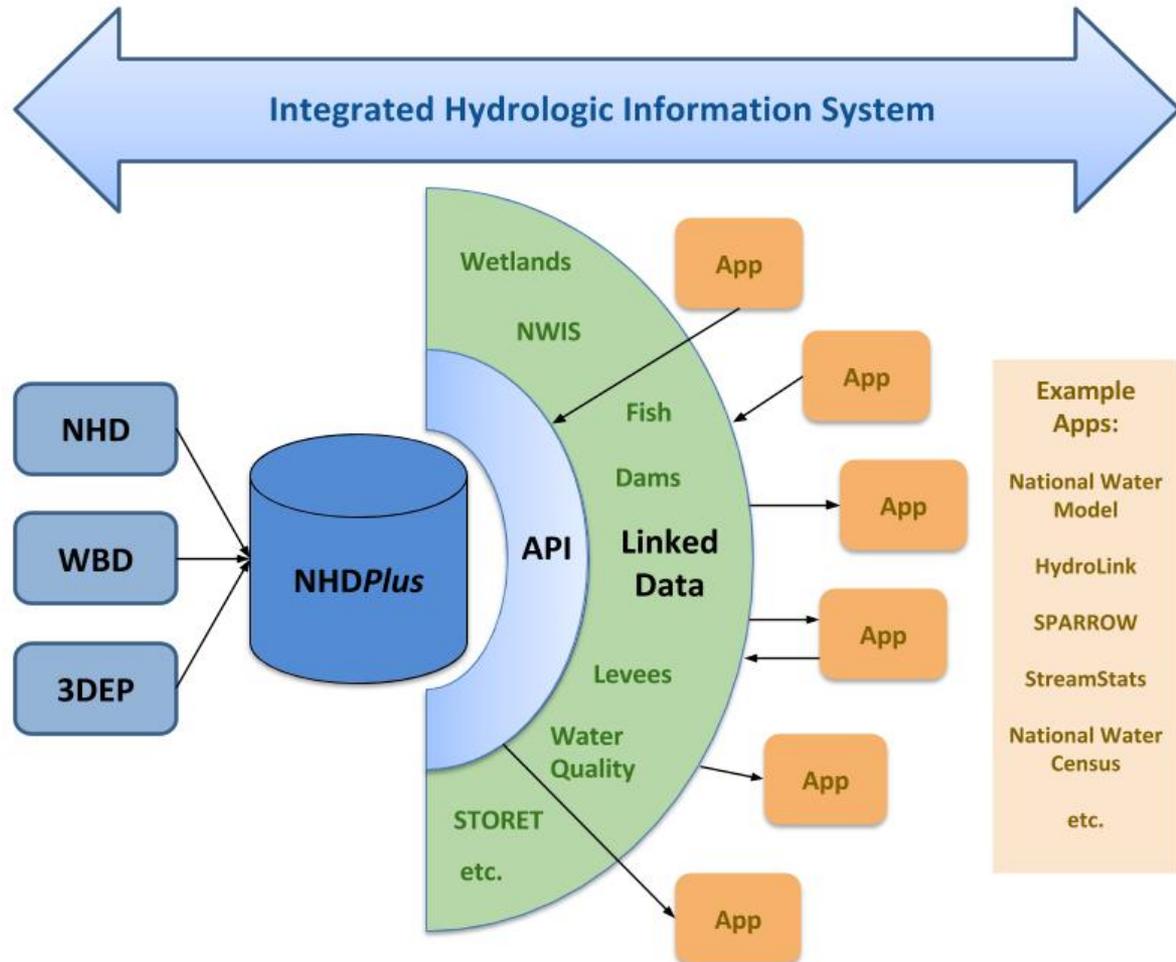
Puerto Rico / US Virgin Islands

Caribbean Sea

# + National Hydrography Mapping

What's coming next?

- HRBS and Program Plan
- Visibility Filter (Generalization)
- Data Model
- Cloud Computing

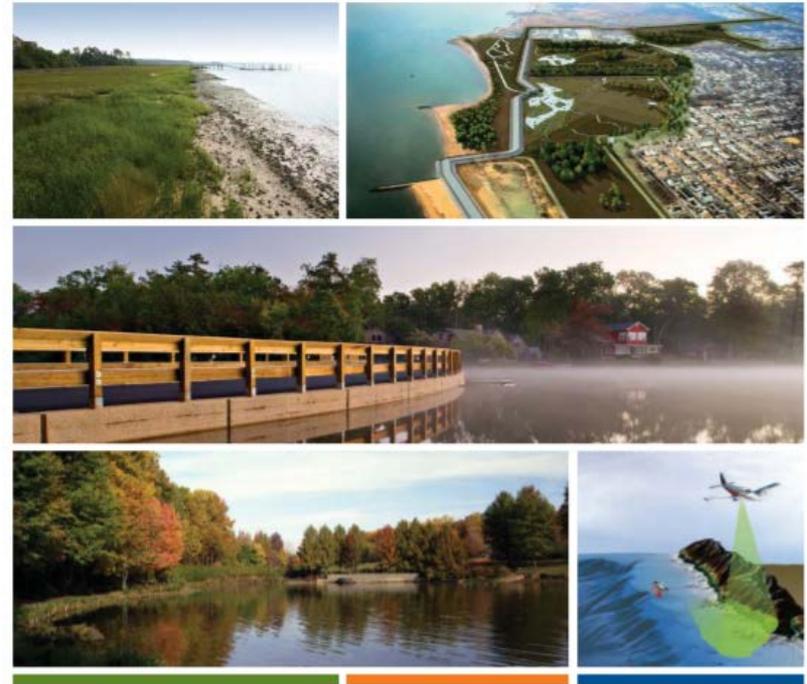


# + Documented Requirements and Benefits

## Ingredients for Success

- Critical for gaining acceptance and active support
- Defines value to each agency and their executives
- Helps us to link to Administration, Department and stakeholder priorities
- Provides a tool for executive outreach

 Dewberry



## National Hydrography Requirements and Benefits Study

Preliminary Results  
May 20, 2016

SUBMITTED BY:

Dewberry  
8401 Arlington Boulevard  
Fairfax, Virginia 22031-4666

SUBMITTED TO:

U.S. Geological Survey  
12201 Sunrise Valley Drive  
Reston, VA 20192

# + Hydrography Requirements and Benefits Study

We asked users what they need to know about water in order to accomplish their missions

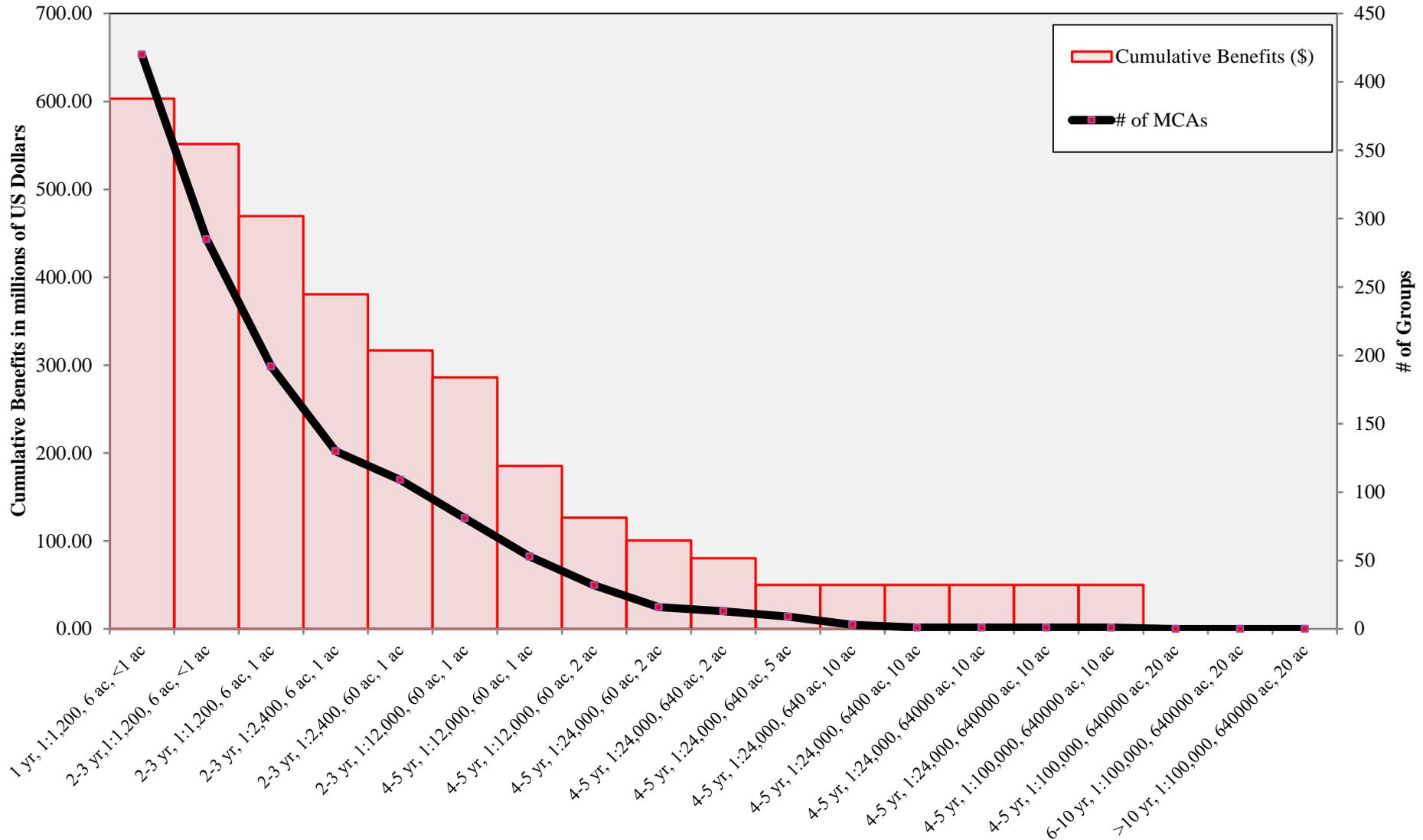
We asked what the benefits would be in terms of efficiency or better customer service if they had data that met their needs.

Results available at  
<http://www.nationalmap.gov/HRBS>

# + Benefits by Business Use

BU	Business Use	Estimated Annual Program Budget	Estimated Current Annual Benefits	Estimated Future Annual Benefits	Weighted Qualitative Benefits
BU 1	River and Stream Flow Management	\$763,580,000	\$220,070,000	\$154,730,000	243
BU 4	Water Quality	\$1,672,410,000	\$115,460,000	\$121,480,000	511
BU 3	Water Resource Planning and Management	\$988,880,000	\$98,110,000	\$115,880,000	393
BU 15	Flood Risk Management	\$636,110,000	\$56,130,000	\$75,860,000	425
BU 5	River and Stream Ecosystem Management	\$1,000,720,000	\$13,960,000	\$67,000,000	214
BU 2	Natural Resources Conservation	\$6,956,800,000	\$10,170,000	\$17,760,000	214
BU 9	Wildlife and Habitat Management	\$1,041,450,000	\$180,000	\$10,080,000	58
BU 20	Infrastructure and Construction Management	\$1,088,720,000	\$1,650,000	\$8,730,000	139

# + Potential annual benefits by requirement suite

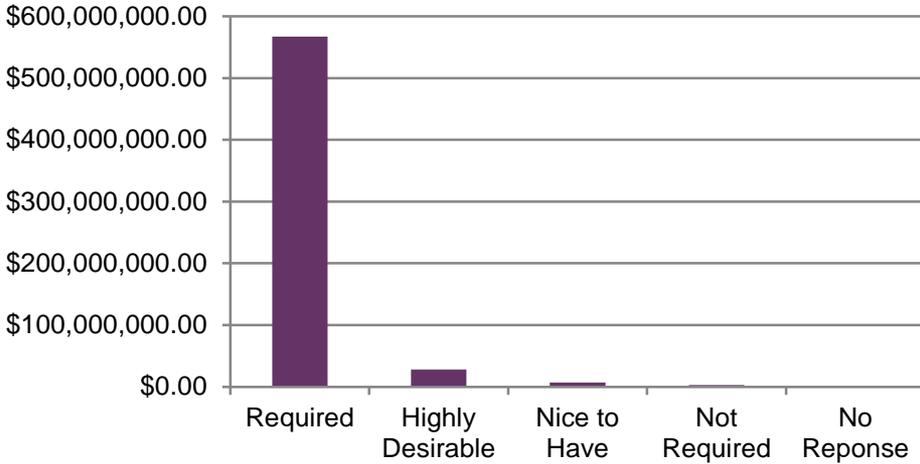




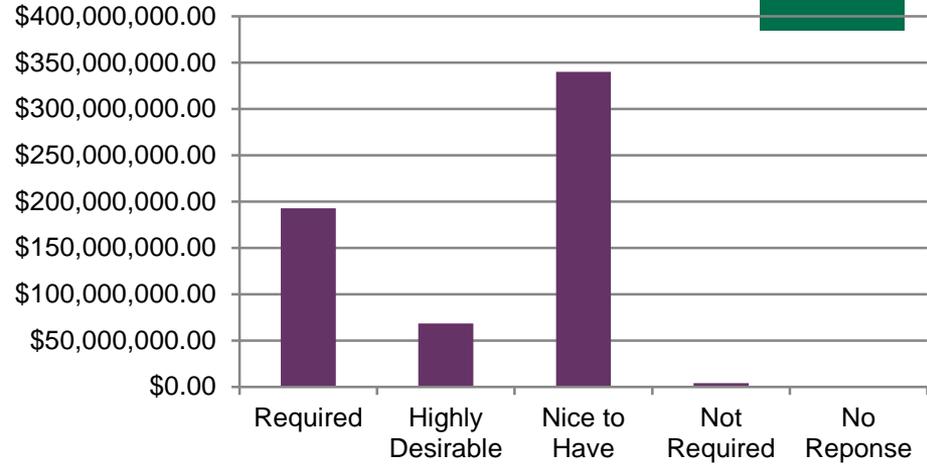
# Integration with specific data sets

64<sup>64</sup>

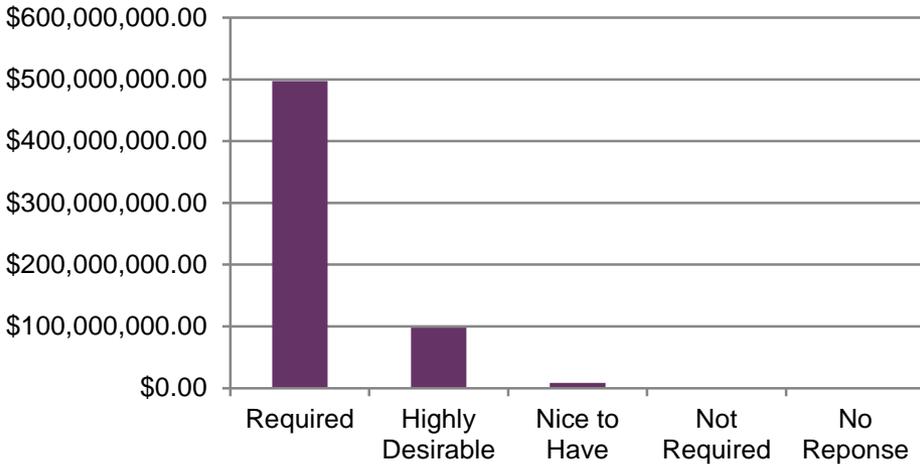
## Elevation



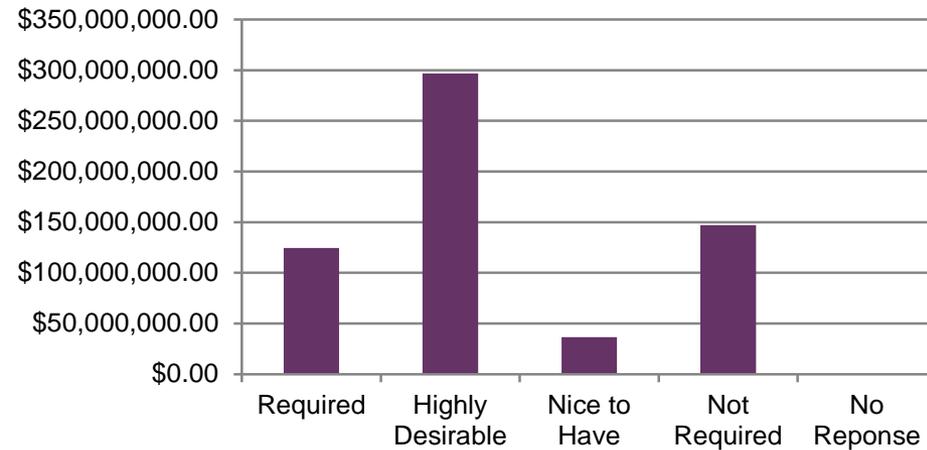
## NWI



## Streamflow

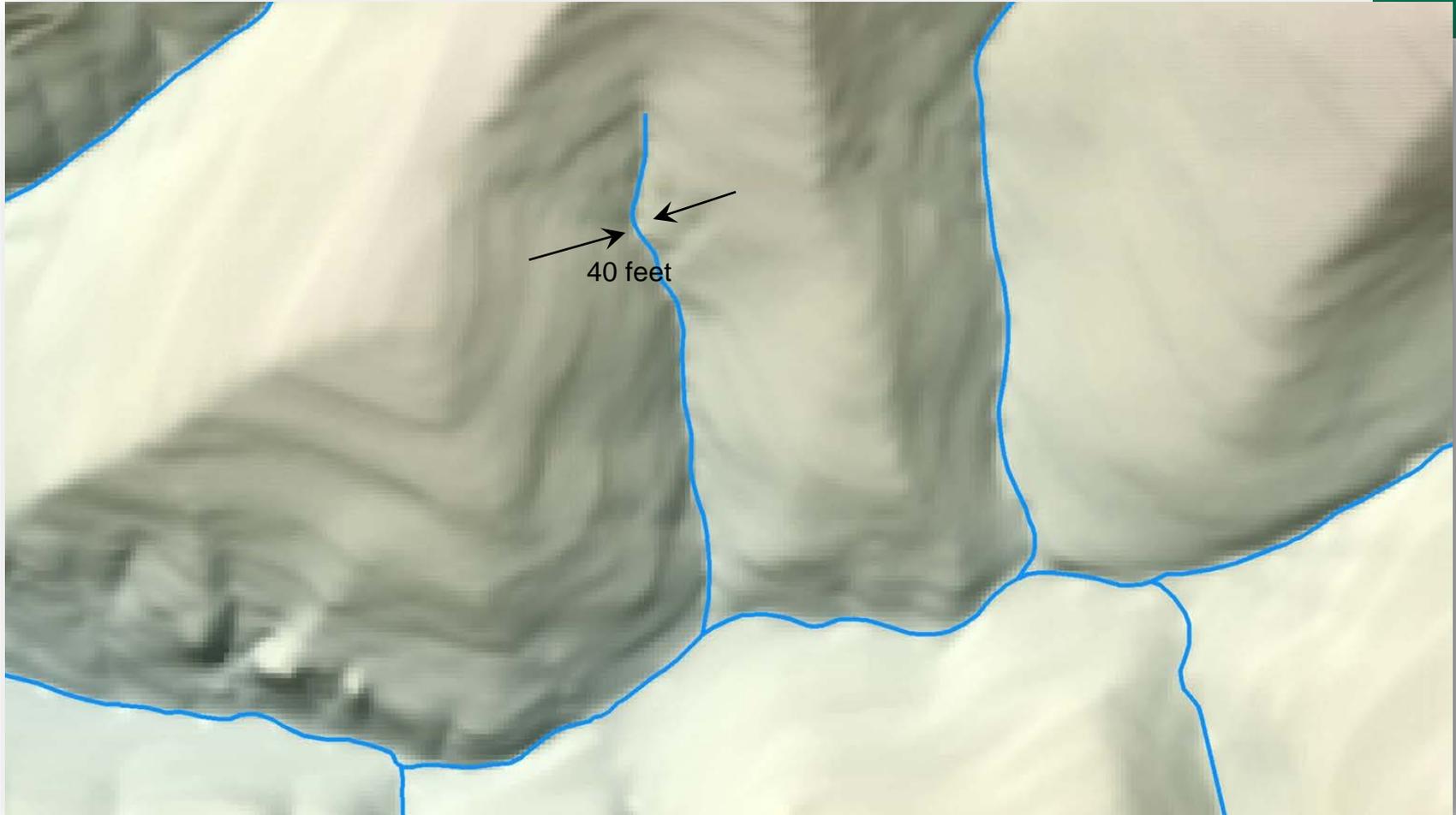


## Bathymetry



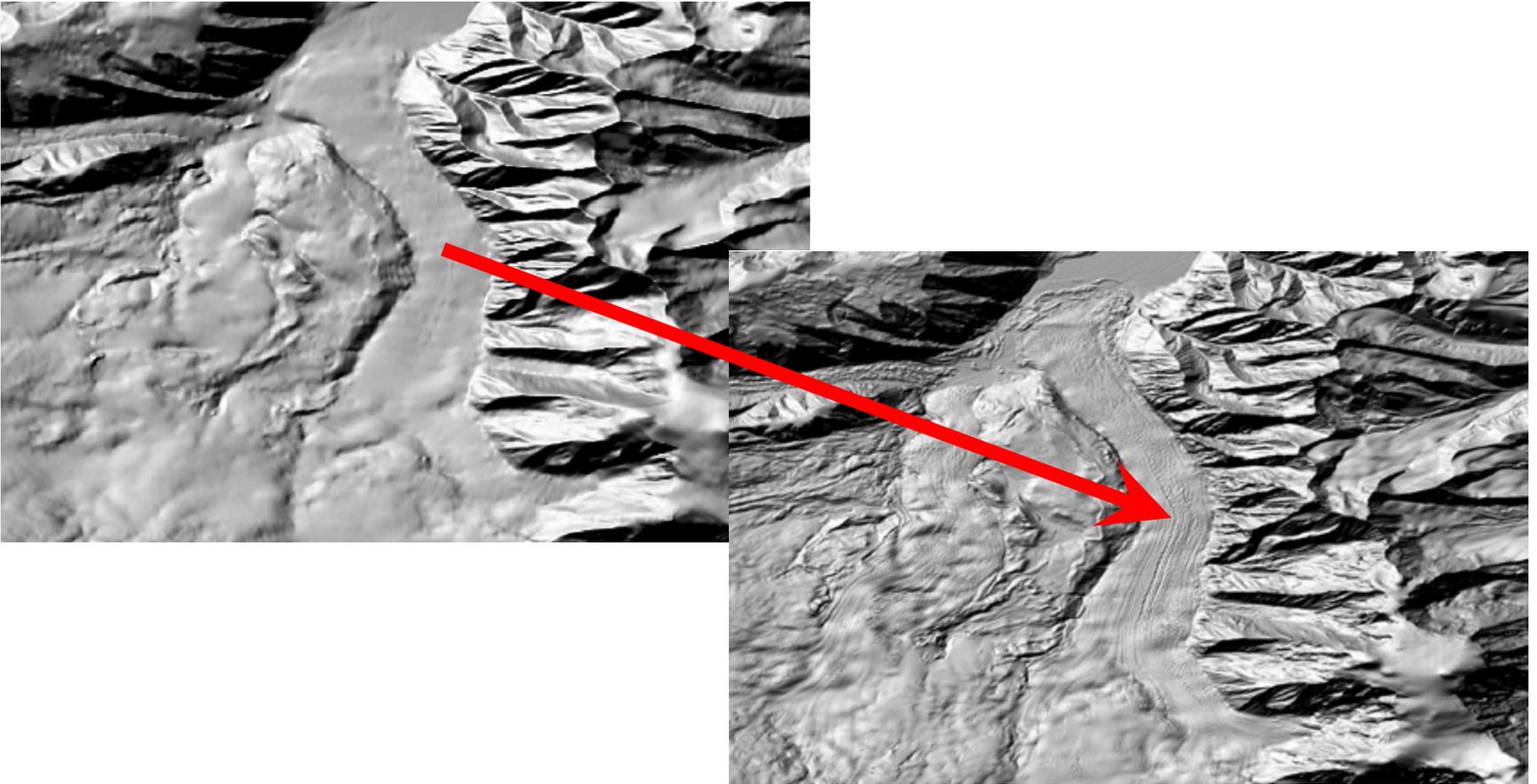
# + Data with 24K Mapping Origins

Integration error is in the 40 foot range



# + 3D Elevation Program

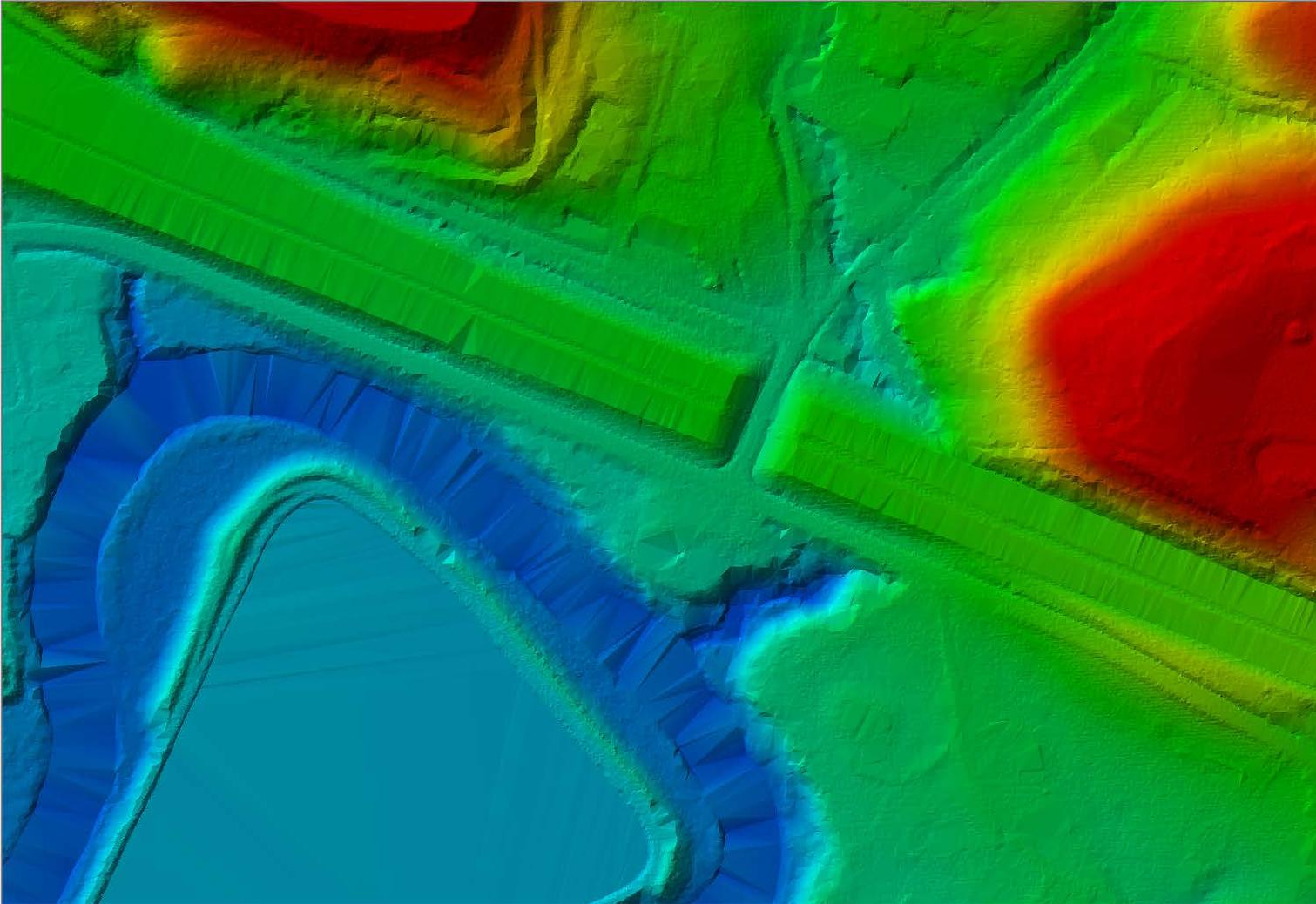
No longer a 40-foot paradigm!



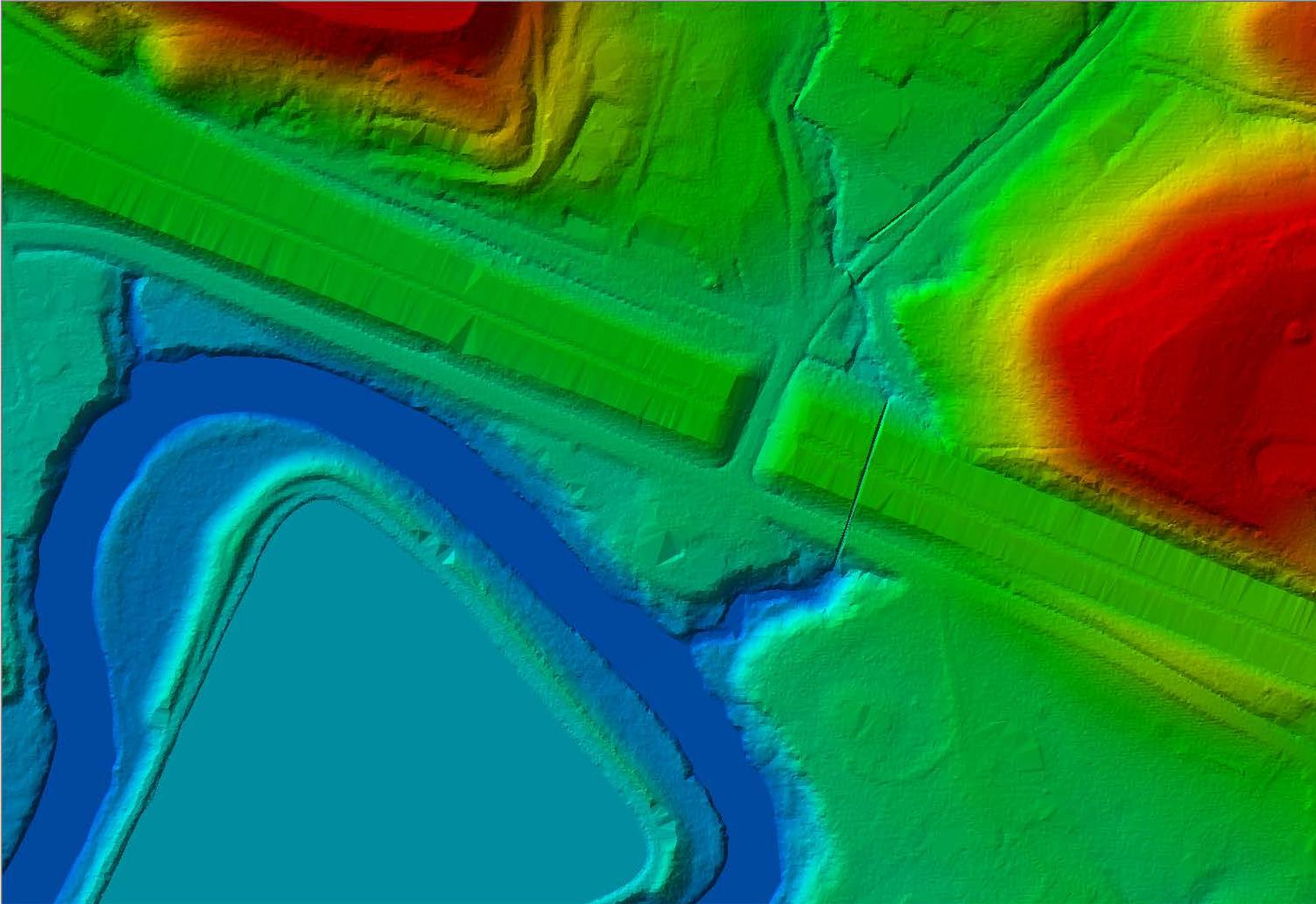
# + The “Ele-Hydro” Concept

- Lidar is coming
- Lidar will be the standard against which hydrography is judged
- Therefore – Derive hydrography from lidar
- Issues:
  - Culverts
  - Processing speed
  - Conflation with NHD
  - Frequent replacement of lidar/hydrography
- Solutions:
  - GeoNet, BotHat, others
  - Cloud/Cyber GIS computing platforms

# + Lidar Topographic Surface



# + Hydro-Enforced





## Questions....

### **Alan Rea, P.E., Hydrologist**

National Hydrography Dataset

National Geospatial Program

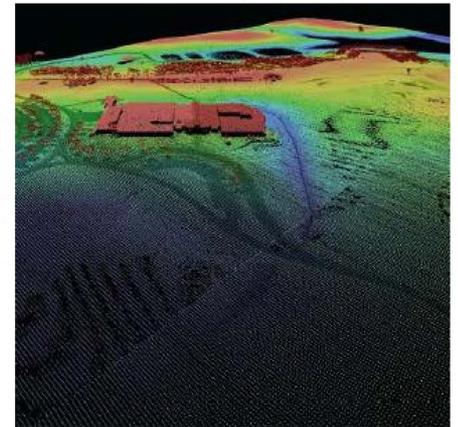
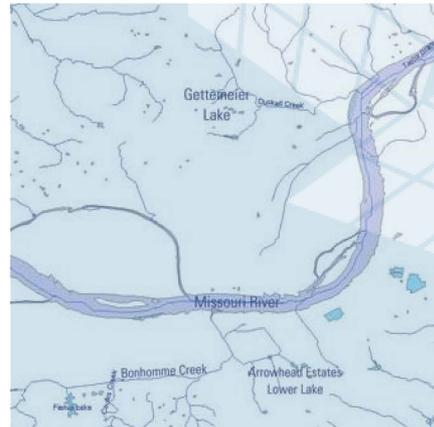
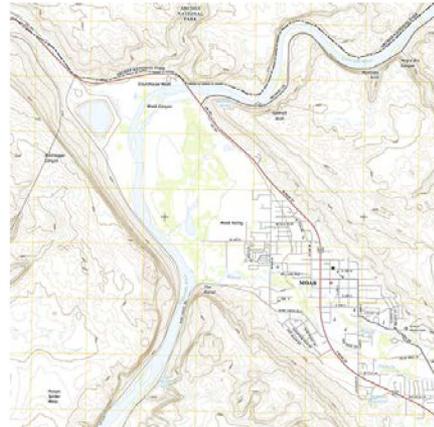
U.S. Geological Survey

Boise, Idaho

(208)387-1323 [ahrea@usgs.gov](mailto:ahrea@usgs.gov)

# Provisional Names Tool

California NHD/WBD Training  
September 2016



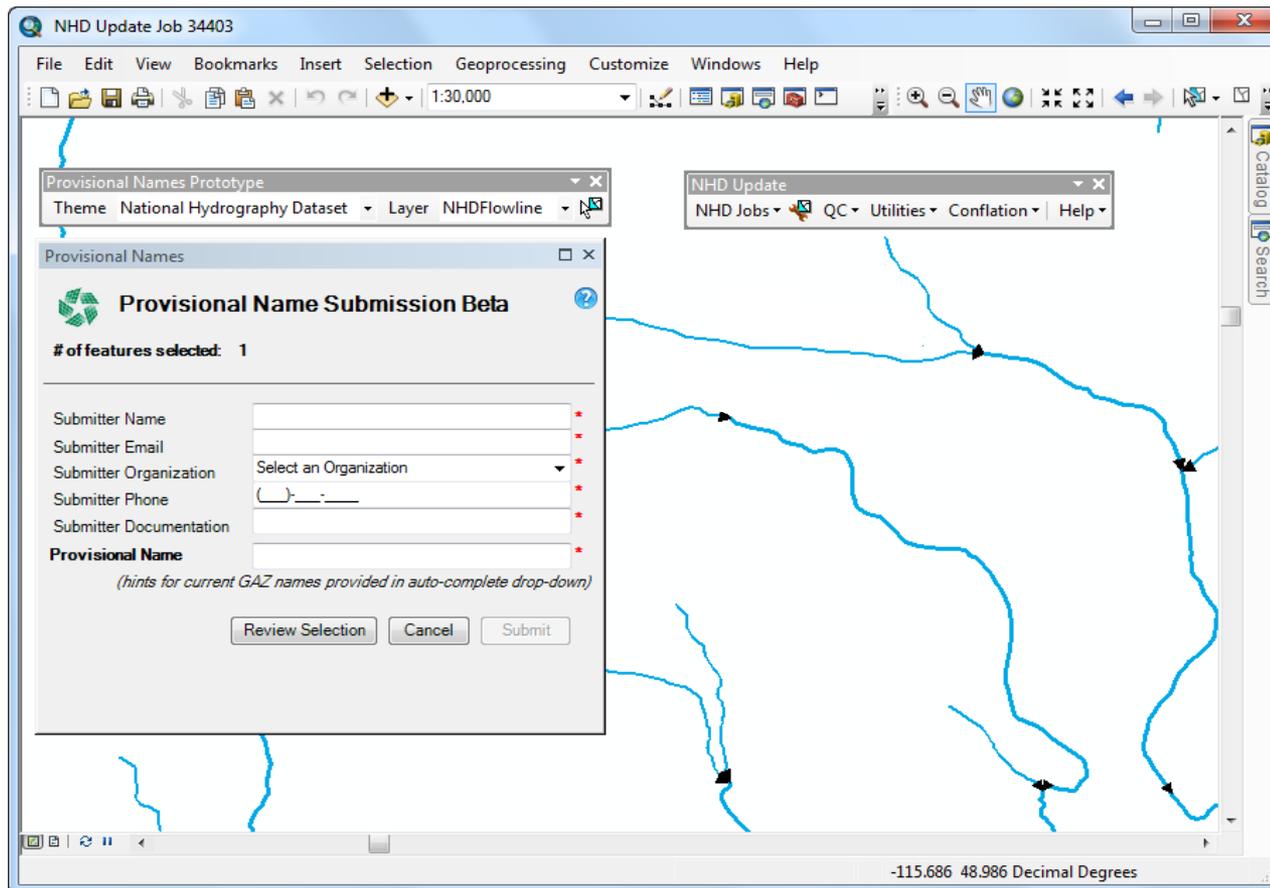
**Kristiana Elite, Michael Tinker**  
National Geospatial Technical Operations Center (NGTOC)

# Presentation Overview

1. Provisional Names Tool
2. The National Map (TNM)
3. U.S. Board on Geographic Names (BGN)
4. Geographic Names Information System (GNIS)
5. Current process to add a new geographic name
6. New process via the Provisional Names tool
7. DEMO!
8. Additional functionality

# Provisional Names tool

Streamlined mechanism that will enable state NHD stewards to bring provisional geographic names into the NHD



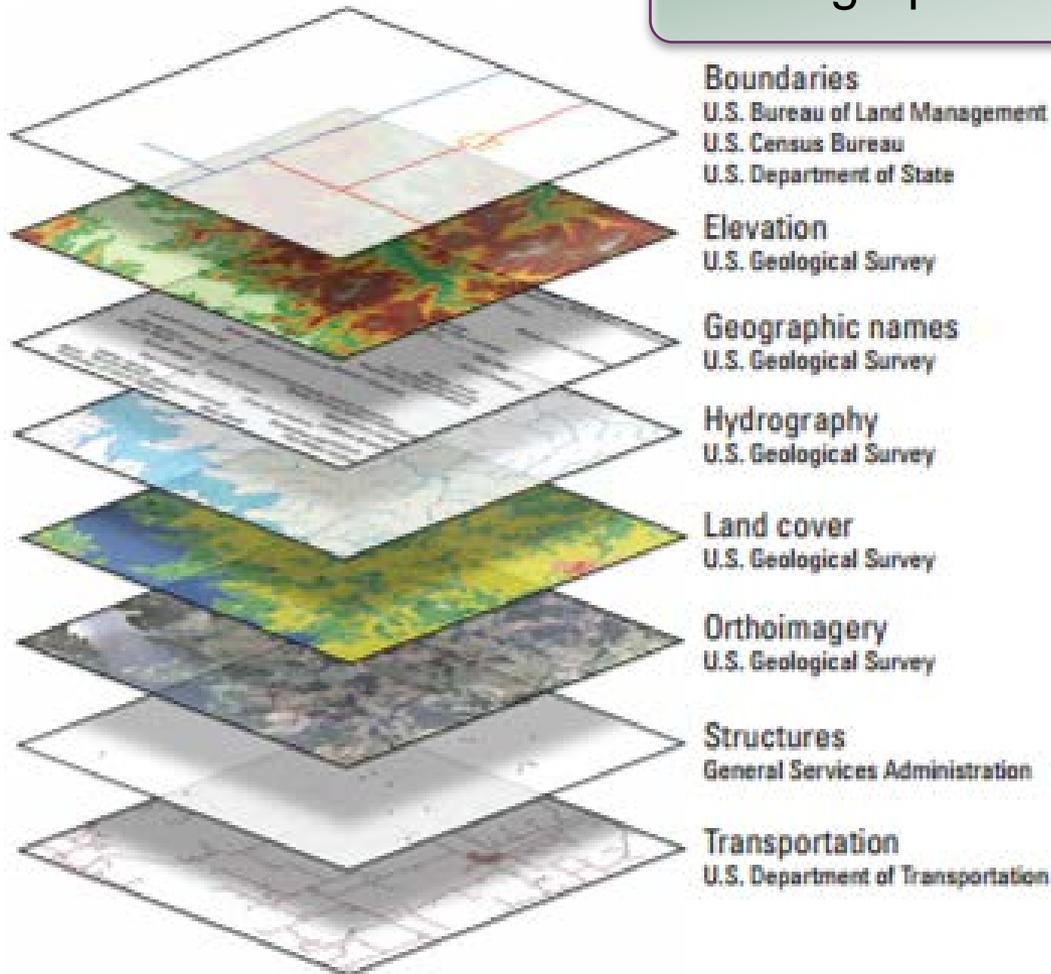
# The National Map (TNM)

A collaborative effort among the USGS and other Federal, State, and local partners to improve and deliver topographic information for the Nation.



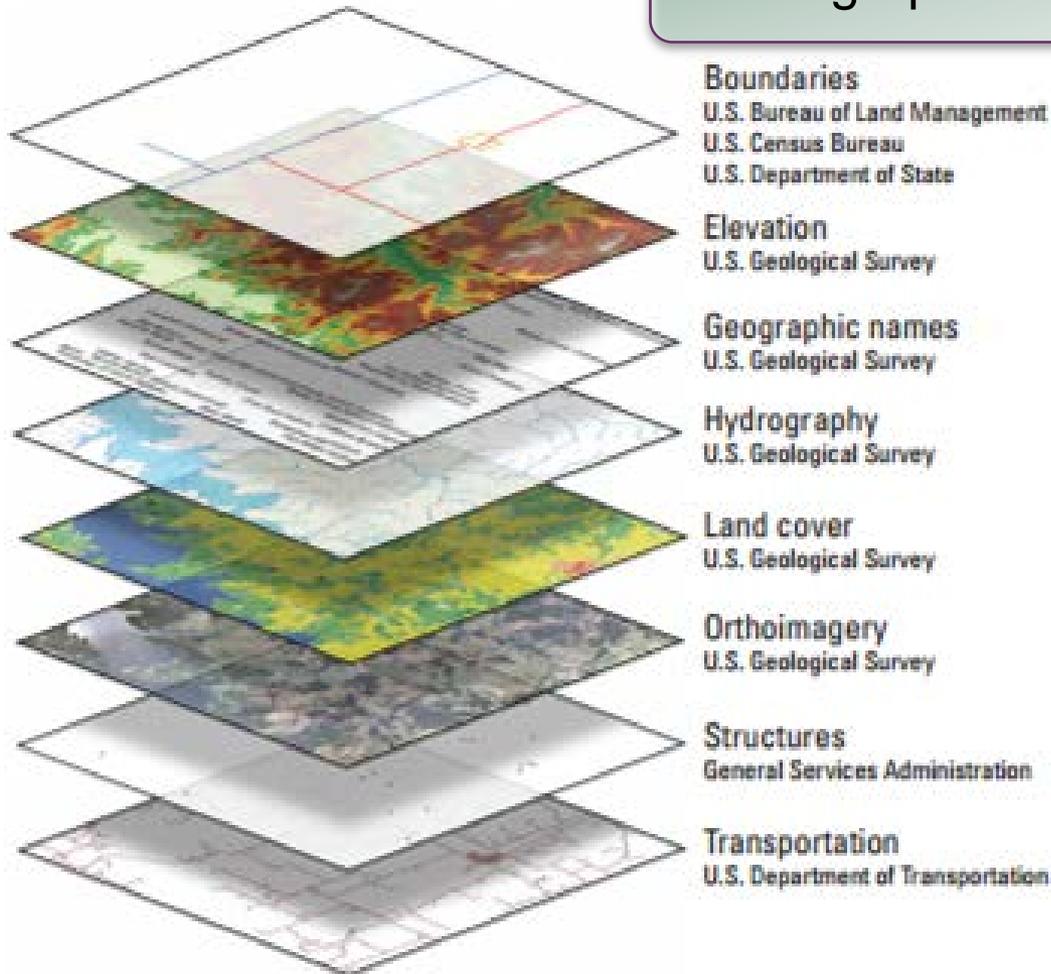
# The National Map (TNM)

## 8 Geographic Layers:



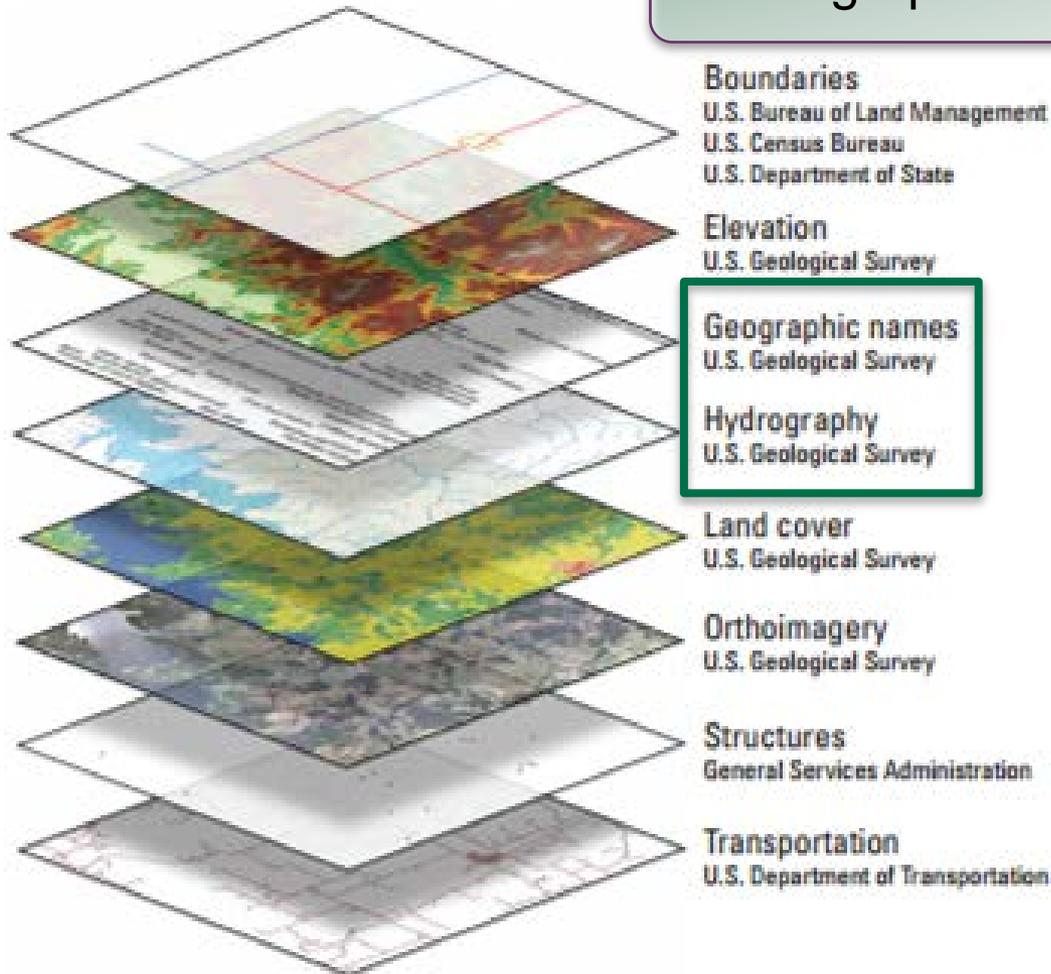
# The National Map (TNM)

## 8 Geographic Layers:

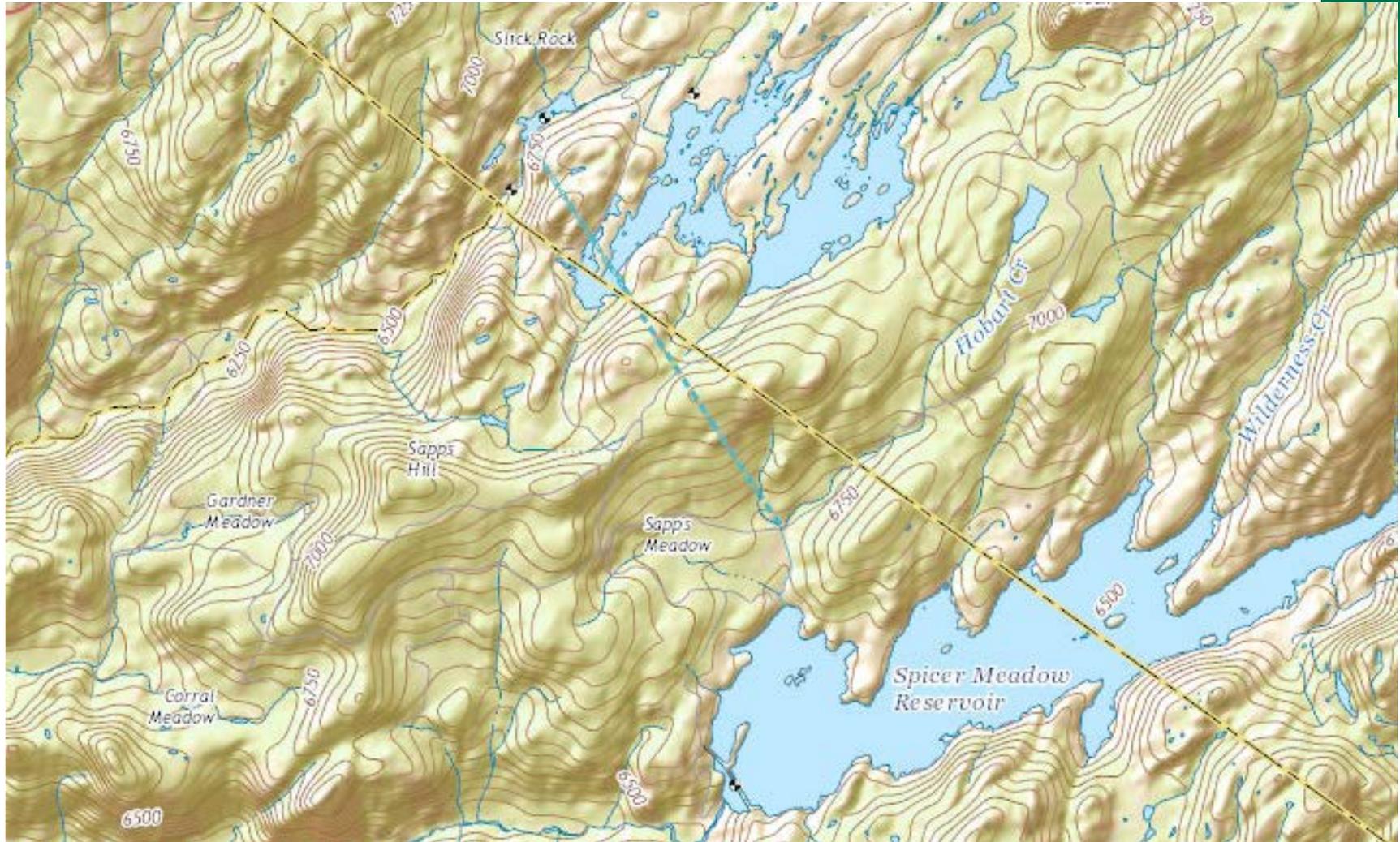


# The National Map (TNM)

## 8 Geographic Layers:



# Geographic Names



# Geographic Names – BGN & GNIS

## U.S. Board on Geographic Names (**BGN**)

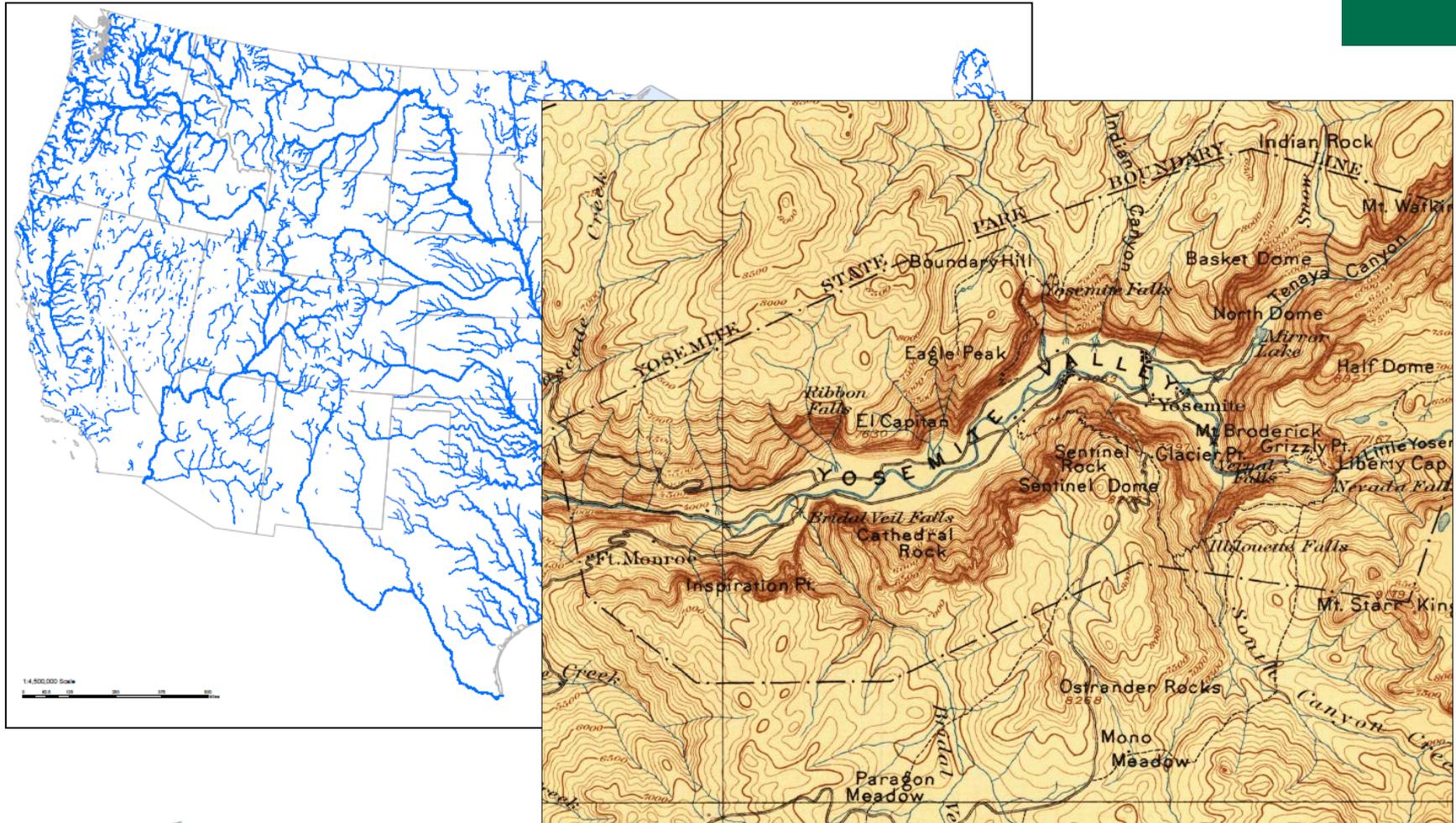
*Approves and standardizes geographic names for the Federal Government*

## The Geographic Names Information System (**GNIS**)

*Repository of domestic geographic names data*

# NHD and GNIS

USGS owns and manages both NHD and GNIS



# All named features in NHD are already in GNIS

NHD Update Job 34403

File Edit View Bookmarks Insert Selection Geoprocessing Customize Windows Help

1:25,000

NHD Jobs QC Utilities Conflation Help

Catalog Search

**Koo Koo Creek**

Table

NHDFlowline

OBJECTID *	PERMANENT_IDE	FDATE	Resolution	GNIS_ID *	GNIS_NAME	LENGTHKM	REACHCODE *
3664823	58050546	1/17/2012 2:04:25 AM	High	00785830	Koo Koo Creek	1.678	17010103000286
9469458	58050786	1/17/2012 2:04:25 AM	High	00785830	Koo Koo Creek	1.995	17010103000286
20206617	58050620	1/17/2012 2:04:25 AM	High	00785830	Koo Koo Creek	1.106	17010103000286

(3 out of 1958 Selected)

NHDFlowline

-115.671 48.981 Decimal Degrees

1

Research  
& Create  
Documentation

2

Submit  
Documentation

3

Wait for  
Approval

4

Add name to  
NHD features

## Current process for new names

**4 Steps  
Process**

1

Research & Create Documentation

2

Submit Documentation

3

Wait for Approval

4

Add name to NHD features

GNIS Feature Search

geonames.usgs.gov/apex/f?p=136:1:0::NO::P1\_COUNTY%P1\_COUNTY



Geographic Names Information System (GNIS)

Query Form For The United States And Its Territories

Feature Name:  Feature ID:

Exact Match  Exclude Variants

State:

County:

Feature Class:  [Press Ctrl to select more than one.](#)

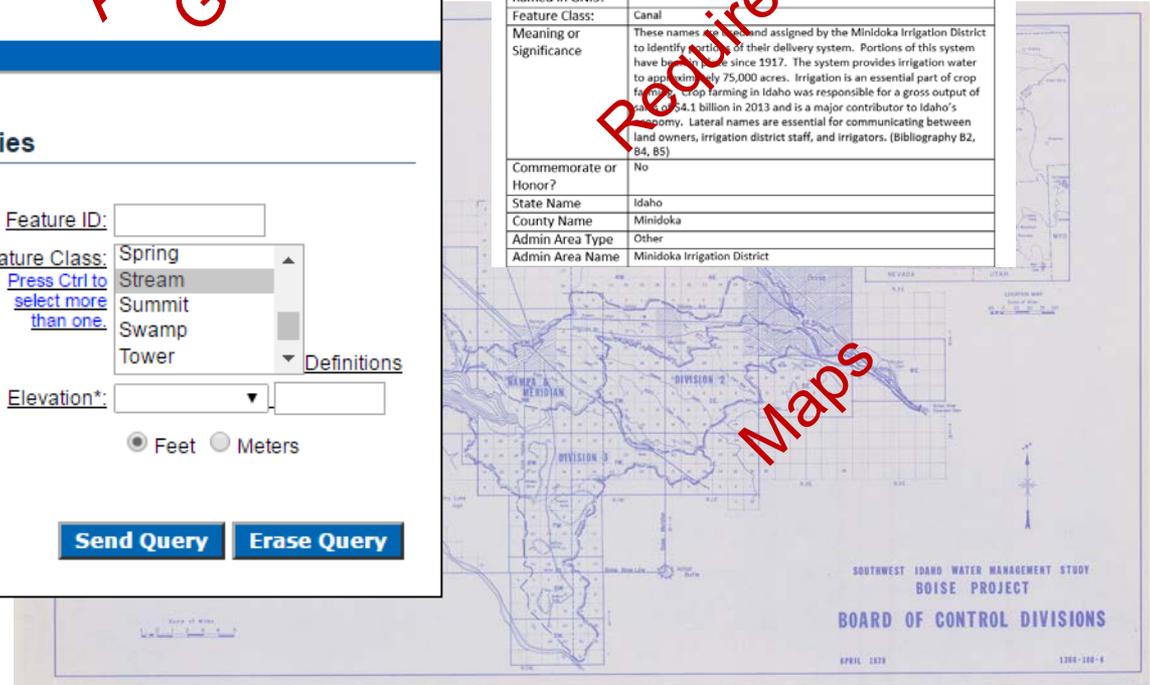
Elevation\*:

Feet  Meters

Already in GNIS?

General BGN Information	
HUC8	17040209
Proposed Names:	See Table 1
Action Requested:	Name an Unnamed Feature
Evidence Feature is Unnamed?	1) Reviewed downloaded GNIS statewide file (Download Date: 09/24/2015 ) 2) Text based search for individual canal name at: <a href="http://geonames.usgs.gov/apex/f?p=136:1:0::NO::P1_COUNTY%P1_COUNTY">http://geonames.usgs.gov/apex/f?p=136:1:0::NO::P1_COUNTY%P1_COUNTY</a> (Conducted 02/01/2015) 3) Feature Unnamed in National Hydrography Database
Evidence proposed name in local use?	1) Map provided by Bureau of Reclamation (Bibliography B1) 2) GIS Data provided by Minidoka Irrigation District (Bibliography B3)
Any local conflict	No
Is this feature named in GNIS?	No
Feature Class:	Canal
Meaning or Significance	These names are used and assigned by the Minidoka Irrigation District to identify portions of their delivery system. Portions of this system have been in use since 1917. The system provides irrigation water to approximately 75,000 acres. Irrigation is an essential part of crop farming. Crop farming in Idaho was responsible for a gross output of \$4.1 billion in 2013 and is a major contributor to Idaho's economy. Lateral names are essential for communicating between land owners, irrigation district staff, and irrigators. (Bibliography B2, B4, B5)
Commemorate or Honor?	No
State Name	Idaho
County Name	Minidoka
Admin Area Type	Other
Admin Area Name	Minidoka Irrigation District

Required Info  
Maps



1

Research  
& Create  
Documentation

2

Submit  
Documentation

3

Wait for  
Approval

4

Add name to  
NHD features

The screenshot shows a web browser window with the URL `geonames.usgs.gov/apex/f?p=132:71:5306018124646`. The page header features the United States Board on Geographic Names logo and the text "United States Board on Geographic Names". A "Logout" link is visible in the top right corner. The main content area is titled "U.S. Board on Geographic Names - - Domestic Geographic Name Proposal" and contains a prominent red warning: "PLEASE READ BEFORE PROCEEDING !!!". Below this, the text explains the Board's Commemorative Names Policy, stating that natural features cannot be named for living people and that honorees must be deceased for at least five years. It also advises checking the Geographic Names Information System (GNIS) for existing names. A "NOTE" states that proposals are public information with no privacy. At the bottom, there are four certification statements, each followed by a "No" dropdown menu:

- I certify that my proposal and its contents is public information and may be viewable by any interested party.
- I certify that I am not proposing the name for a living person, or an intended honoree deceased less than five years.
- I certify that I have checked GNIS to see if the feature is already named.
- I understand that ownership of the land (if applicable) does not convey naming rights to geographic features.

1

Research  
& Create  
Documentation

2

Submit  
Documentation

3

Wait for  
Approval

4

Add name to  
NHD features



1

Research & Create Documentation

2

Submit Documentation

3

Wait for Approval

4

Add name to NHD features

The screenshot shows the National Hydrography Dataset Editor (Job #34403) interface. The main map displays a stream network with a yellow stream segment highlighted. An 'Edit Attributes: NHDFlowline' dialog box is open, showing the following fields:

- FType: StreamRiver
- FCode: Hydrographic Category = Perennial
- Elevation: meters
- WB Area Permanent ID
- Flow Direction: WithDigitized
- GNIS ID: 00989342 (highlighted with an orange box)
- GNIS Name: Jungle Creek (highlighted with an orange box)

Below the fields is a table with the following data:

Length KM	Reach Code	FlowDir	WB Area PermID	PermID	FType	FCode
1.379	17010103000278	WithDigitized		58050340	StreamRiver	Stream/River: Hydrographic Catego
2.168	17010103000290	WithDigitized		58050398	StreamRiver	Stream/River: Hydrographic Catego
0.723	17010103000278	WithDigitized		58050320	StreamRiver	Stream/River: Hydrographic Catego

At the bottom of the dialog box, there are buttons for 'Apply Edits', 'Commit', 'Commit and Exit', and 'Close'. The status bar indicates 'Records (3 out of 3 Selected)'.

# Provisional Names tool process

1

Research  
& Create  
Documentation

2

Create  
Provisional  
Names

3

Approval  
Process

4

Name added  
to GNIS

GNIS Feature Search

geonames.usgs.gov/apex/f?p=136:1:0::NO::P1\_COUNTY%00P1\_COUNTY

**USGS**  
Geographic Names Information System (GNIS)

**Query Form For The United States And Its Territories**

Feature Name:  Feature ID:

Exact Match  Exclude Variants

State:

County:

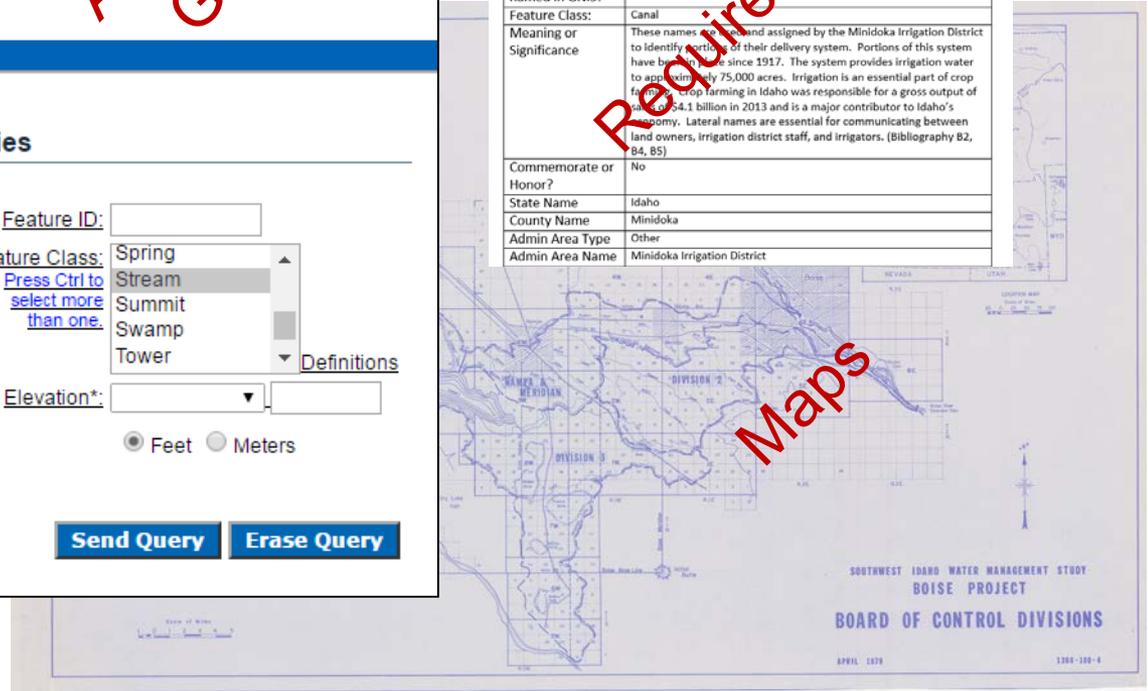
Feature Class:  [Definitions](#)

Elevation\*:   Feet  Meters

Already in  
GNIS?

General BGN Information	
HUC8	17040209
Proposed Names:	See Table 1
Action Requested:	Name an Unnamed Feature
Evidence Feature is Unnamed?	1) Reviewed downloaded GNIS statewide file (Download Date: 09/24/2015 ) 2) Text based search for individual canal name at: <a href="http://geonames.usgs.gov/apex/f?p=gnlspg">http://geonames.usgs.gov/apex/f?p=gnlspg</a> (Conducted 02/01/2015) 3) Feature Unnamed in National Hydrography Database
Evidence proposed name in local use?	1) Map provided by Bureau of Reclamation (Bibliography B1) 2) GIS Data provided by Minidoka Irrigation District (Bibliography B3)
Any local conflict	No
Is this feature named in GNIS?	No
Feature Class:	Canal
Meaning or Significance	These names were developed and assigned by the Minidoka Irrigation District to identify portions of their delivery system. Portions of this system have been in use since 1917. The system provides irrigation water to approximately 75,000 acres. Irrigation is an essential part of crop farming in Idaho was responsible for a gross output of \$4.1 billion in 2013 and is a major contributor to Idaho's economy. Lateral names are essential for communicating between land owners, irrigation district staff, and irrigators. (Bibliography B2, B4, B5)
Commemorate or Honor?	No
State Name	Idaho
County Name	Minidoka
Admin Area Type	Other
Admin Area Name	Minidoka Irrigation District

Required Info  
Maps



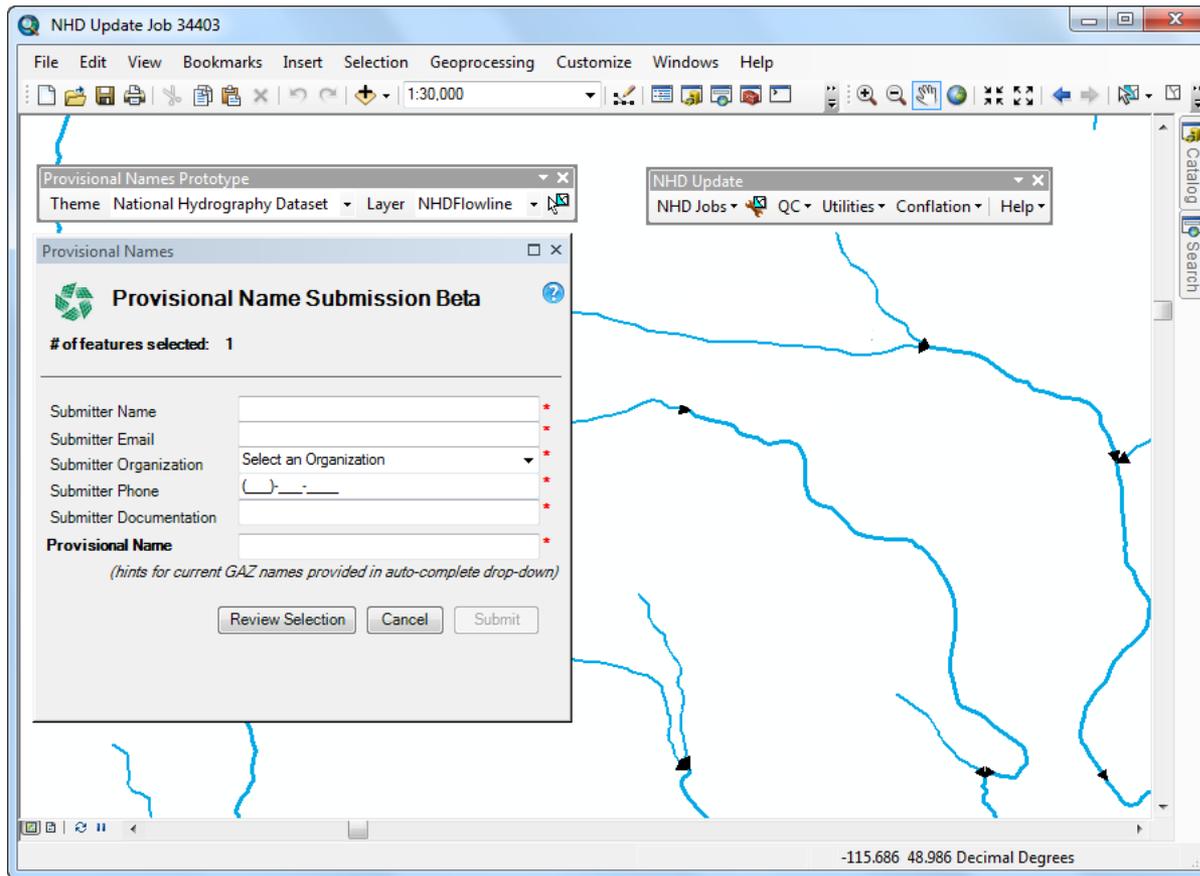
**1**  
Research & Create Documentation

**2**  
Create Provisional Names

**3**  
Approval Process

**4**  
Name added to GNIS

# Within NHD Update Workflow



1

Research  
& Create  
Documentation

2

Create  
Provisional  
Names

3

Approval  
Process

4

Name added  
to GNIS



1

Research  
& Create  
Documentation

2

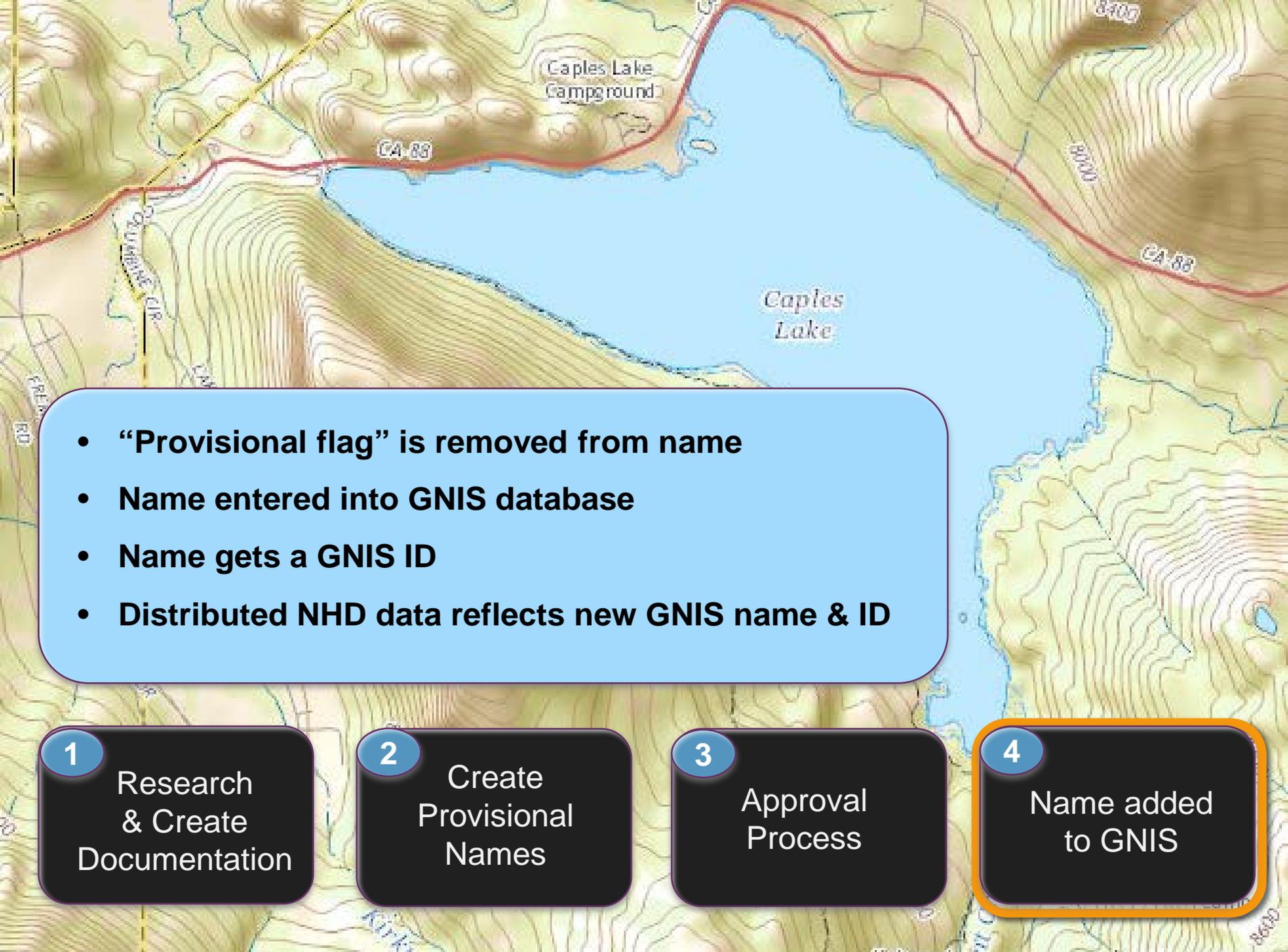
Create  
Provisional  
Names

3

Approval  
Process

4

Name added  
to GNIS



Caples Lake  
Campground

CA-88

Caples  
Lake

8400

CA-88

- **“Provisional flag” is removed from name**
- **Name entered into GNIS database**
- **Name gets a GNIS ID**
- **Distributed NHD data reflects new GNIS name & ID**

1

Research  
& Create  
Documentation

2

Create  
Provisional  
Names

3

Approval  
Process

4

Name added  
to GNIS

# DEMO

The screenshot displays the 'NHD Update Job 34403' application window. The interface includes a menu bar (File, Edit, View, Bookmarks, Insert, Selection, Geoprocessing, Customize, Windows, Help) and a toolbar with various GIS tools. A scale bar indicates 1:30,000. The main map area shows a network of blue lines representing water features, with 'Pete Creek' and 'Garver Creek' labeled. A 'Provisional Names Prototype' layer is active, showing a blue and orange highlighted section of Pete Creek. A 'Provisional Name Submission Beta' dialog box is open, showing a form with the following fields: Submitter Name, Submitter Email, Submitter Organization (a dropdown menu), Submitter Phone, Submitter Documentation, and Provisional Name. The dialog also indicates '# of features selected: 1' and includes 'Review Selection', 'Cancel', and 'Submit' buttons. The status bar at the bottom shows coordinates: -115.823 48.983 Decimal Degrees.

# The Provisional Name tables

Table

PROVNAME.PROVISIONALNAME

PROVISIONALNAMEID	PROVISIONALNAME	TNMTHHEME	DECISIONSTATUS	DECISIONDATE	SUBMITDATE	SUBMITERNAME	SUBMITTERCONTACT
80	Lateral 113	National Hydrography Dataset	0 <Null>		8/4/2016 3:07:44 PM	Danielle Favreau	Idaho Department of Water Resources
81	Lateral 127	National Hydrography Dataset	0 <Null>		8/4/2016 3:08:56 PM	Danielle Favreau	Idaho Department of Water Resources
82	B-2 Canal	National Hydrography Dataset	0 <Null>		8/4/2016 3:10:12 PM	Danielle Favreau	Idaho Department of Water Resources
90	Lateral 1710	National Hydrography Dataset	0 <Null>		8/4/2016 3:35:57 PM	Danielle Favreau	Idaho Department of Water Resources
91	Lateral 1710	National Hydrography Dataset	0 <Null>		8/4/2016 3:36:41 PM	Danielle Favreau	Idaho Department of Water Resources
92	Lateral 1710	National Hydrography Dataset	0 <Null>		8/4/2016 3:37:21 PM	Danielle Favreau	Idaho Department of Water Resources
93	Lateral 179	National Hydrography Dataset	0 <Null>		8/4/2016 3:54:34 PM	Danielle Favreau	Idaho Department of Water Resources
94	Lateral 178	National Hydrography Dataset	0 <Null>		8/4/2016 3:55:44 PM	Danielle Favreau	Idaho Department of Water Resources
102	Lateral 419	National Hydrography Dataset	0 <Null>		8/4/2016 4:57:26 PM	Danielle Favreau	Idaho Department of Water Resources
103	Lateral 420	National Hydrography Dataset	0 <Null>		8/4/2016 4:58:27 PM	Danielle Favreau	Idaho Department of Water Resources
104	Lateral 74	National Hydrography Dataset	0 <Null>		8/4/2016 4:59:51 PM	Danielle Favreau	Idaho Department of Water Resources
105	Lateral 77	National Hydrography Dataset	0 <Null>		8/4/2016 5:00:47 PM	Danielle Favreau	Idaho Department of Water Resources
106	Lateral 421	National Hydrography Dataset	0 <Null>		8/4/2016 5:01:38 PM	Danielle Favreau	Idaho Department of Water Resources

SUBMITTERCONTACTORGANIZATION	SUBMITTERCONTACTPHONE	SUBMITTERCONTACTEMAIL	SUPPORTINGDOCUMENTATION
Department of Water Resources ( IDHYDRO )	<Null>	NHD.WBD@idwr.idaho.gov	<a href="http://idwr.idaho.gov/files/gis/specia/MinidokaIDNames.zip">http://idwr.idaho.gov/files/gis/specia/MinidokaIDNames.zip</a>
Department of Water Resources ( IDHYDRO )	<Null>	NHD.WBD@idwr.idaho.gov	<a href="http://idwr.idaho.gov/files/gis/specia/MinidokaIDNames.zip">http://idwr.idaho.gov/files/gis/specia/MinidokaIDNames.zip</a>
Department of Water Resources ( IDHYDRO )	<Null>	NHD.WBD@idwr.idaho.gov	<a href="http://idwr.idaho.gov/files/gis/specia/MinidokaIDNames.zip">http://idwr.idaho.gov/files/gis/specia/MinidokaIDNames.zip</a>
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Department of Water Resources ( IDHYDRO )	<Null>	NHD.WBD@idwr.idaho.gov	<a href="http://idwr.idaho.gov/files/gis/specia/MinidokaIDNames.zip">http://idwr.idaho.gov/files/gis/specia/MinidokaIDNames.zip</a>
Department of Water Resources ( IDHYDRO )	<Null>	NHD.WBD@idwr.idaho.gov	<a href="http://idwr.idaho.gov/files/gis/specia/MinidokaID_Names2.zip">http://idwr.idaho.gov/files/gis/specia/MinidokaID_Names2.zip</a>
Department of Water Resources ( IDHYDRO )	<Null>	NHD.WBD@idwr.idaho.gov	<a href="http://idwr.idaho.gov/files/gis/specia/MinidokaID_Names2.zip">http://idwr.idaho.gov/files/gis/specia/MinidokaID_Names2.zip</a>
Department of Water Resources ( IDHYDRO )	<Null>	NHD.WBD@idwr.idaho.gov	<a href="http://idwr.idaho.gov/files/gis/specia/MinidokaID_Names2.zip">http://idwr.idaho.gov/files/gis/specia/MinidokaID_Names2.zip</a>
Department of Water Resources ( IDHYDRO )	<Null>	NHD.WBD@idwr.idaho.gov	<a href="http://idwr.idaho.gov/files/gis/specia/MinidokaID_Names2.zip">http://idwr.idaho.gov/files/gis/specia/MinidokaID_Names2.zip</a>
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Department of Water Resources ( IDHYDRO )	<Null>	NHD.WBD@idwr.idaho.gov	<a href="http://idwr.idaho.gov/files/gis/specia/MinidokaID_Names2.zip">http://idwr.idaho.gov/files/gis/specia/MinidokaID_Names2.zip</a>

# The Provisional Name tables

“TNM Feature to Provisional Name”

Table

PROVNAME.TNMFEATURETOPROVISIONALNAME

	TNMFEATURETOPROVISIONALNAMEID	PROVISIONALNAMEID	PERMANENT_IDENTIFIER
▶	262	41	158117344
	263	41	158117343
	266	44	58050892
	267	44	58050954
	268	44	58050956
	269	44	58050988
	270	45	58052748
	271	46	58052748
	272	47	58052458
	273	47	58052070
	274	47	58052424
	275	47	58052530
	276	47	58052554
	277	47	58052638
	278	48	58054354
	279	49	58054278
	280	50	58054458
	287	53	58050892
	288	53	58050954

# Changes being implemented now

- New fields added to the Provisional Name table:
  - GNIS\_ID
  - GNIS\_NAME
  
- New domain added to “Decision Status” field:
  - Submitted = 0
  - Approved = 1
  - Rejected = 2
  - BGN Case = 3
  - Applied = 4
  
- ArcMap SQL interface for Names team to manipulate the “Decision Status” field
  
- This changes allows:
  - Names team to approve records directly in the Provisional Name table
  - Data Management team to harvest the approved transactions from the Provisional Names table, and apply them to the NHD features.

# Still to build

- Web interface for GNIS staff review
- Documentation format and guidelines

# Questions?

**Michael Tinker**  
NHD Point of Contact  
[mdtinker@usgs.gov](mailto:mdtinker@usgs.gov)



# Other Updates

- Watershed Boundary Dataset
  - Provisional Gaged Drainage Areas
  - WBD and NHDPlus HR Catchments Comparison Project

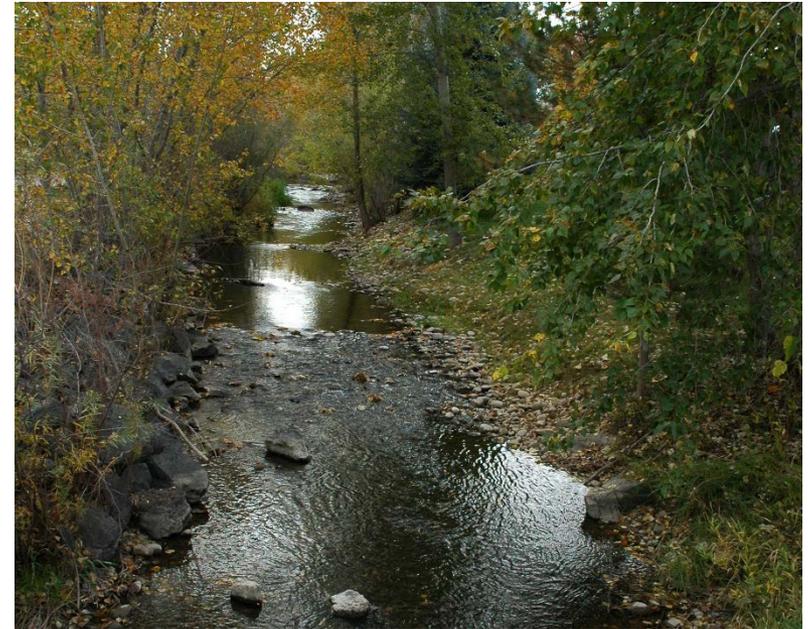


- Danielle Favreau, IDWR



# Other Updates

- National Hydrography Dataset
  - NHD Network Improvement Project
  - Naming of Staged Products



Product	Current Naming Convention (ex.)	Proposed Naming Convention (ex.)
NHD HU8	NHD_H_17050122_GDB	NHD_H_17050122_HU8_GDB
NHD HU4	NHD_H_1701_Shape	NHD_H_1701_HU4_Shape
NHD State	NHD_H_17_Idaho_GDB	NHD_H_Idaho_State_GDB
WBD HU2	WBD_16_GDB	WBD_16_HU2_GDB
NHDPlus HR HU4	NHDPlus_H_1704_GDB	NHDPlus_H_1704_HU4_GDB





# Other Updates

- NHD/WBD Tools Status

Editor Tools: All require ArcGIS 10.3.x

- NHD: version 6.3.3.2
- WBD: version 2.5.0.0
- GeoConflation: available from USGS

Tools available from  
NHD.usgs.gov

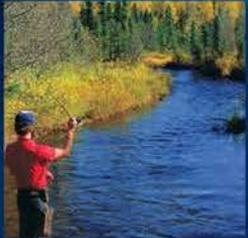
- HEM: version 2.8.1.0
- Utilities: version 3.0.4.0
  - Network Builder Requires ArcGIS Standard or Advanced License
- Metadata Viewer: version 1.0.0.4



- Danielle Favreau, IDWR

# Other Business?





# Upcoming Events

- **Intermountain GIS Conference**
  - April 18-21, 2017 West Yellowstone MT
- **IGC Spring Meeting**
  - April 20, 2017 at Intermountain GIS Conf.
- **AWRA Spring Conference**
  - April 30 – May 3, 2017 Snowbird, UT
- **Northwest GIS Conference**
  - October 9-13, 2017 Boise, ID



Contact Information:

Danielle Favreau, Idaho WBD & NHD Technical Point of Contact [Danielle.Favreau@idwr.idaho.gov](mailto:Danielle.Favreau@idwr.idaho.gov)

Linda Davis, Idaho Principal Data Steward [Linda.Davis@idwr.idaho.gov](mailto:Linda.Davis@idwr.idaho.gov)

[NHD.WBD@idwr.Idaho.gov](mailto:NHD.WBD@idwr.Idaho.gov)

Website Information: <http://idwr.idaho.gov/GIS/NHD/>

**NEXT TWG MEETING: Sept. 14, 2017**

