

The National Watershed Boundary Dataset (WBD)

**Subcommittee on Spatial Water Data
March 19, 2014**

by

***Karen Hanson-USGS, WBD Product & Service Lead
Stephen Daw-USGS, WBD POC, GISP***

WATERSHED BOUNDARY DATASET (WBD)

Large scale hydrologic unit dataset

1:24,000-scale U.S.

1:25,000-scale Caribbean

1:63,360-scale Alaska

Current numerical name	Digits in hydrologic unit code	Common name	Hydrologic unit level	Average size (square miles)	Approximate number of hydrologic units
2 digit	2	Region	1	177,560	21 (actual)
4 digit	4	Subregion	2	16,800	222
6 digit	6	Basin	3	10,596	370
8 digit	8	Subbasin	4	700	2,270
10 digit	10	Watershed	5	227	20,000
				(40,000–250,000 acres)	
12 digit	12	Subwatershed	6	40	100,000
				(10,000–40,000 acres)	
14 digit	14	(None)	7	Open	Open
16 digit	16	(None)	8	Open	Open

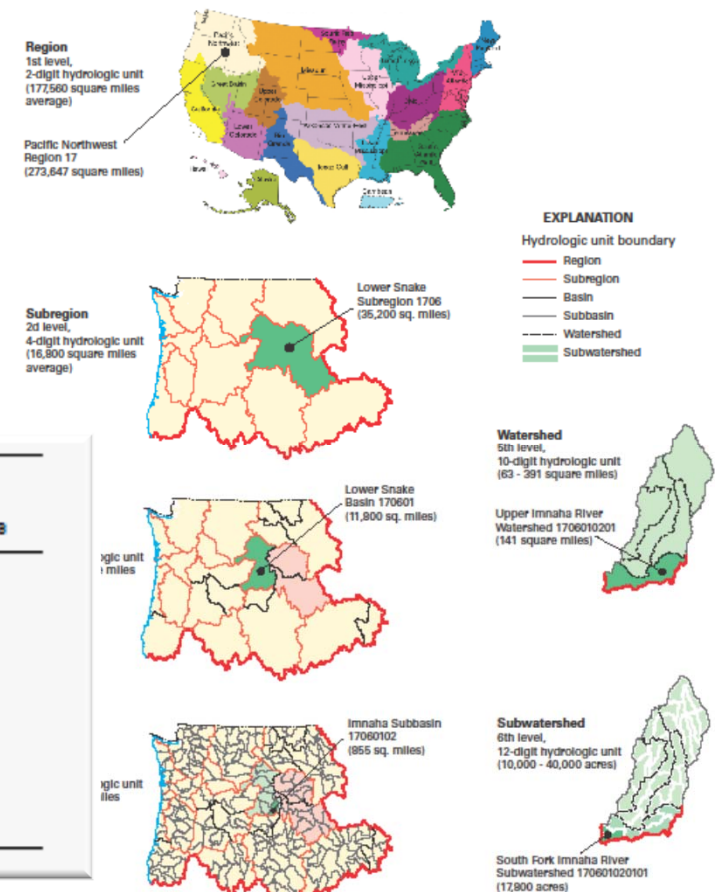


Figure 3.
draft 4-30-08

WBD STEERING COMMITTEE

USGS

- **CHAIR-Nate Booth** (*Chief Office of Water Information-Headquarters*)
- **Jeff Simley** (*NHD Program Manager*)
- **Karen Hanson** (*WBD P & S Lead- **National Technical Coordinator***)
- **Stephen Daw** (*WBD Point of Contact - **National Technical Coordinator***)
- **Vicki Lukas** (*Chief, Topographic Data Services*)
- **Stephen Aichele** (*Co-Chair SSWD, Water Liaison Coordinator*)
- **Pete Steeves** (*National StreamStats Coordinator, Water Liaison, MA WBD Steward*)

NRCS

- **CO-CHAIR-Steven Nechero** (*Geospatial Data Management Branch Chief, NGMC-Ft.Worth*)
- **Laura Davenport** (*WBD Database Administrator- **National Technical Coordinator**, NGMC-Ft. Worth*)
- **Kenneth Becker** (*Supervisor – Authoritative Data Team, NGMC-Ft. Worth*)

EPA

- **Wendy Blake-Coleman** (*Office of Environmental Information-Headquarters*)
- **Tommy Dewald** (*USEPA Office of Water-Headquarters*)

USFS

- **Mike Eberle** (*Surface Water Program Leader*)
- **Brian Sanborn** (*Natural Resource Information System, WO-EMC*)

BLM

- **Lee Koss** (*Water lead-Headquarters*)
- **Jay Stevens** (*Oregon BLM*)

Charter Steering Committee for the Watershed Boundary Dataset

I. Purpose of the Charter

This exhibit addresses the responsibilities for the coordination of activities related to the [Watershed Boundary Dataset \(WBD\)](#) at the public, state and Federal levels and among all interested parties. This exhibit establishes a mechanism to coordinate the acquisition, development, use, sharing, and dissemination of WBD financed in whole or in part by federal funds and where appropriate, non-federal partners. The Charter defines the WBD Steering Committee, the National Technical Coordinators, WBD Product and Service Lead, and WBD State Stewardship Work Group, as well as the role of the NHD Program Manager as it pertains to the WBD.

II. Authority

Under the [Office of Management and Budget Circular A-16](#), revised 2002, responsibility to coordinate the Watershed Boundary Dataset is assigned to the U.S. Department of the Interior, U.S. Geological Survey (USGS) and the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS). Government-wide leadership for the WBD is carried out, in accordance with agency program needs, under the policy guidance and oversight of the [Subcommittee for Spatial Water Data \(SSWD\)](#), reporting to both the Federal Geographic Data Committee (FGDC) and the Advisory Committee for Water information (ACWI). The SSWD is responsible for establishing vision, direction, and program goals and oversees the WBD Steering Committee.

III. Lead Agency

USGS, in collaboration with NRCS, is the lead for the development of the WBD along with the National Hydrography Dataset and is the designated long-term data steward. However, data development, WBD standards, the data generation process and data delivery is a collaborative partnership among member agencies of the WBD Steering Committee. As such, it is agreed that decisions impacting the data content and usability will be agreed to by the Steering Committee members.

IV. Organization

The WBD Steering Committee facilitates the development and availability of WBD data via standards, advanced technology and techniques, quality control, data access, and funding. The Committee promotes the adoption of standards by all partners in order to leverage available resources.

WBD Steering Committee - Open to any individual or group interested in the development and application of WBD data to support business needs. Committee is charged with 1) Coordinating resources among partner agencies, 2) Communicating unique business needs and interests to foster partnerships and ensuring implemented standards satisfy those needs 3)

A Memorandum
of Understanding
exists between
USGS and NRCS

for

Cooperative
Maintenance,
Enhancement,
Integration, and
Distribution
of the WBD with
the NHD

Recently updated
April 2013

MEMORANDUM OF UNDERSTANDING

BETWEEN THE

U.S. GEOLOGICAL SURVEY

AND

NATURAL RESOURCE CONSERVATION SERVICE

FOR

THE COOPERATIVE MAINTENANCE OF THE WATERSHED BOUNDARY

DATASET WITH THE NATIONAL HYDROGRAPHY DATASET

Memorandum of Understanding

between the

U.S. Geological Survey

and Natural Resources Conservation Service

for

**The Cooperative Maintenance of the Watershed Boundary Dataset
with the National Hydrography Dataset**

I. PURPOSE

The purpose of this memorandum of understanding is to formally continue the arrangement between the Natural Resources Conservation Service (hereinafter referred to as NRCS) and the U. S. Geological Survey (hereinafter referred to as USGS) to cooperatively enhance, maintain, integrate and distribute the Watershed Boundary Dataset (WBD) with the National Hydrography Dataset (NHD) and to include the WBD as a component of The National Map. Throughout this document, this memorandum of understanding will be referred to simply as the memorandum. This memorandum will benefit USGS and NRCS by acknowledging the mutual desire and interest to cooperatively enhance, integrate and deliver WBD and NHD to serve the respective business needs of each agency and their partners.

II. BACKGROUND

NRCS is authorized under terms of various statutes to conduct conservation planning and provide technical assistance to USDA program participants to conserve and improve soil, water, vegetation, wildlife, and related resources and reduce damage by floods and sedimentation. The USGS serves the Nation by providing reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life. The USGS maintains

WBD STATE STEWARDHIP WORK GROUP (SSWG)

Meet Bi-monthly to discuss all aspects of Stewardship:

Keith Larson

Natural Resources Conservation Service
State of Arizona

Linda Davis

Idaho Department of Water Resources
State of Idaho

Stephen Daw

WBD POC
U.S. Geological Survey

David Anderson

NHD POC
U.S. Geological Survey
Center

Paul Caffrey

WyGISC
U of Wyoming

Ian Reid

Natural Resources Conservation Service
State of Oregon

Karen Hanson

Water Resources
U.S. Geological Survey

Ann Fritz

North Dakota Department of Health

Laura Davenport

Natural Resources Conservation Service
National Geospatial Management

Ken Becker

Natural Resources Conservation Service
National Geospatial Management Center

PARTNER INVESTMENT THRU 2009 TO COMPLETE TO NATIONAL STANDARD

Estimate of WBD FUNDING BREAKDOWN	Extramural	In-kind		Total
Partner contributions prior to 2006				\$12,000,000
WBD Partner Contributions to complete first pass "certified" WBD (U.S. only) 2006-2009				
DOI/BLM	\$156,202	\$200,000		\$356,202
DOI/USBR	\$40,000	\$200,000		\$240,000
DOI/USGS -Water	\$508,245	\$1,036,500		\$1,544,745
EPA	\$2,078,687	\$127,000		\$2,205,687
USDA/FS	\$119,400	\$525,000		\$644,400
USDA/NRCS	\$400,000	\$2,960,000		\$3,360,000
State agencies	\$153,600	\$139,500		\$293,100
DOI/BLM-Alaska	\$208,000			\$208,000
DOI/NPS-AK	\$35,000			\$35,000
DOI/FWS-AK	\$50,000			\$50,000
EPA-AK	\$54,700			\$54,700
USDA/USFS-AK	\$83,500	\$30,000		\$113,500
Total				\$21,105,334

Significant - exceeding \$21 Million

ONGOING PARTNER INVESTMENT

WBD Partner Contributions - continuing

US/Canada-International Joint commission

INEGI-Mexico

Canadian Federal and Provincial

USDA/USFS

USDA/NRCS-Ft. Worth

USDA/NRCS State offices

DOI/BLM

DOI/USBR

DOI/USGS-NGP

DOI/USGS -Water HQ

DOI/USGS-Water AK and AZ

State agencies

WBD is a “Dynamic” dataset

There is an ongoing monetary investment in data improvements

Stewardship in every state

Applications

The Watershed Boundary Dataset complements the NHD and supports numerous programmatic missions and activities including:

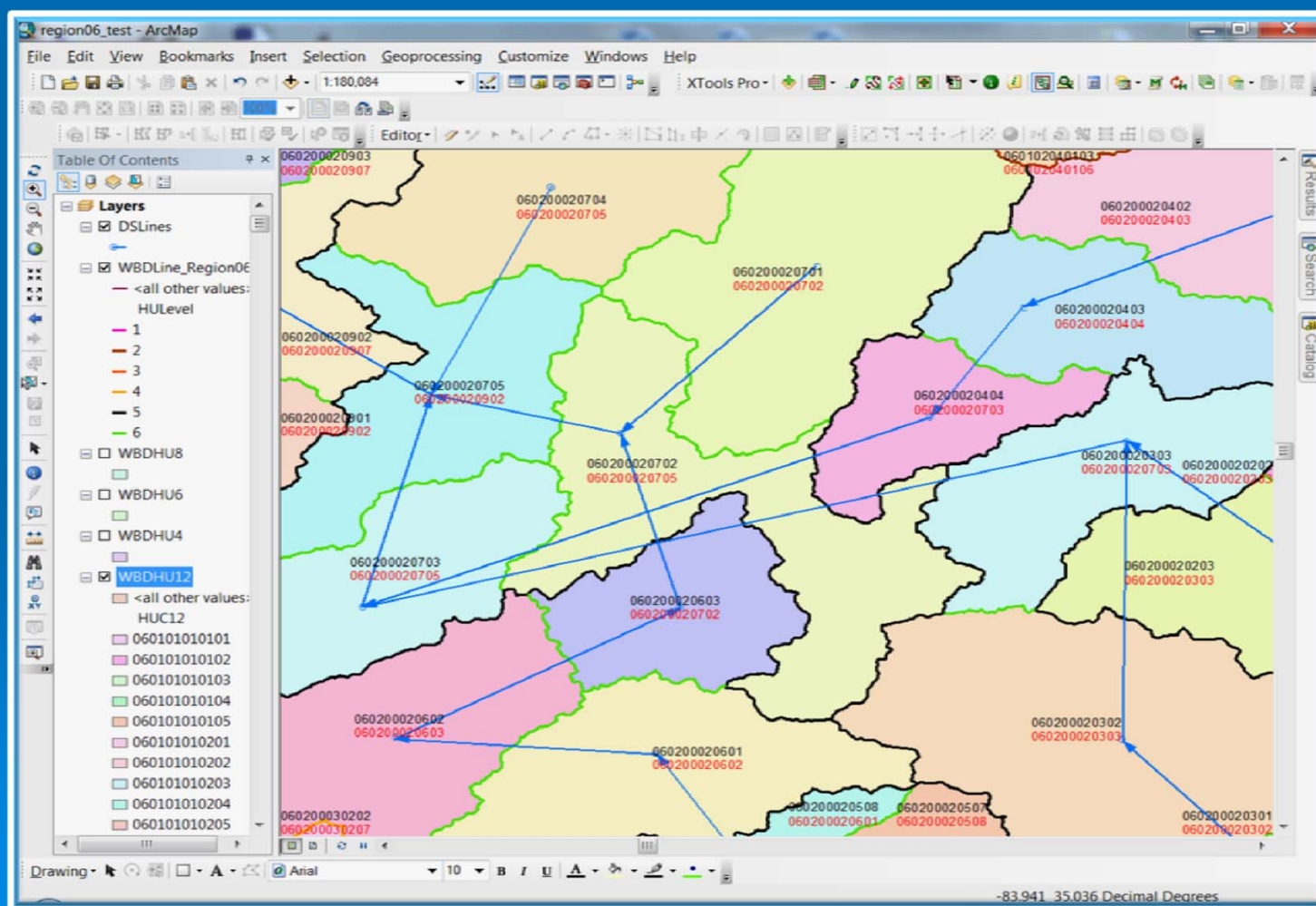
- watershed management, rehabilitation, and enhancement
- aquatic species conservation strategies
- flood plain management and flood prevention
- water-quality initiatives and programs
- dam safety programs
- fire assessment and management
- resource inventory and assessment
- water data analysis
- water census

Federal Standards and Procedures for the National Watershed Boundary Dataset *Techniques and Methods, Version 4.0*

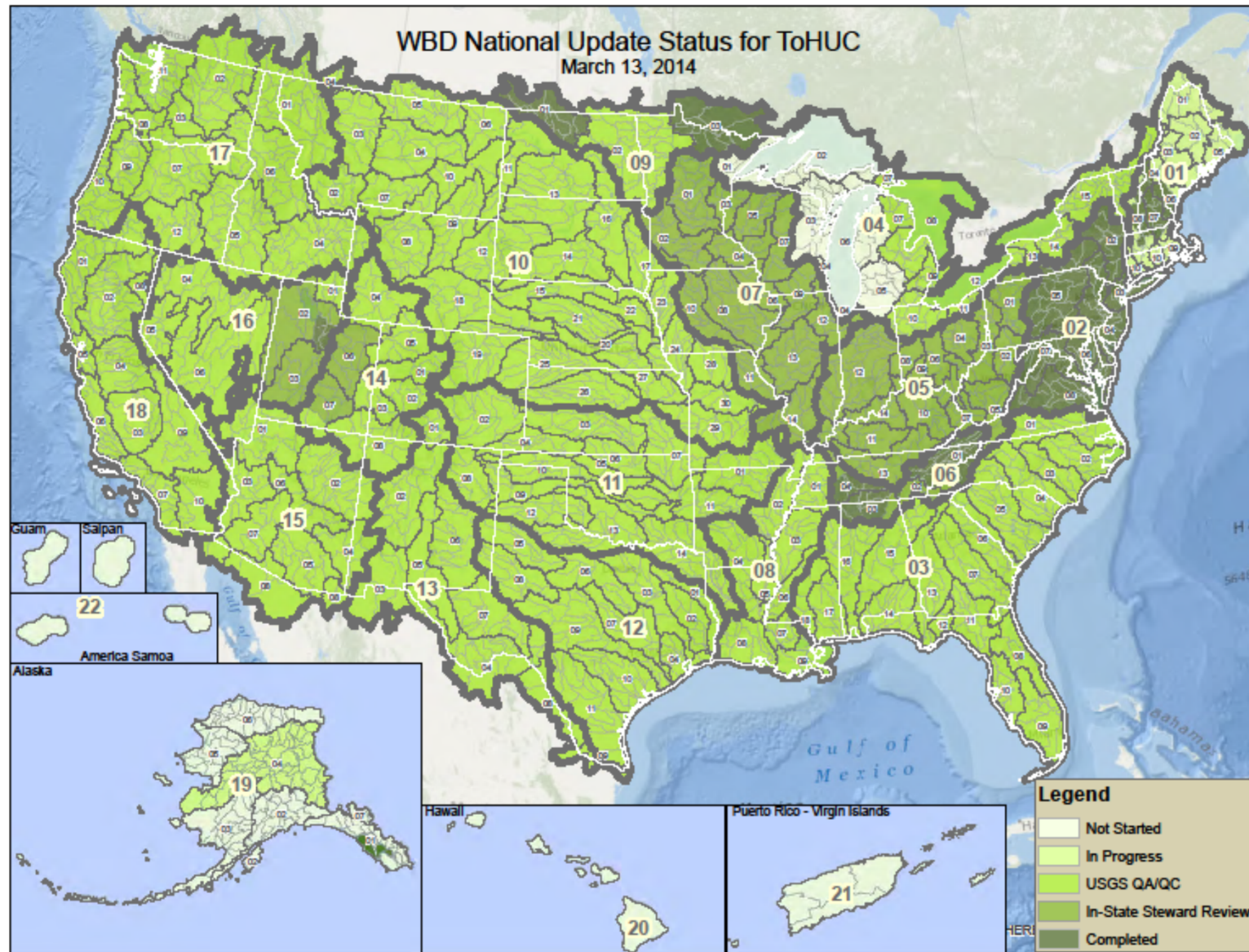
<http://pubs.usgs.gov/tm/tm/11a3>



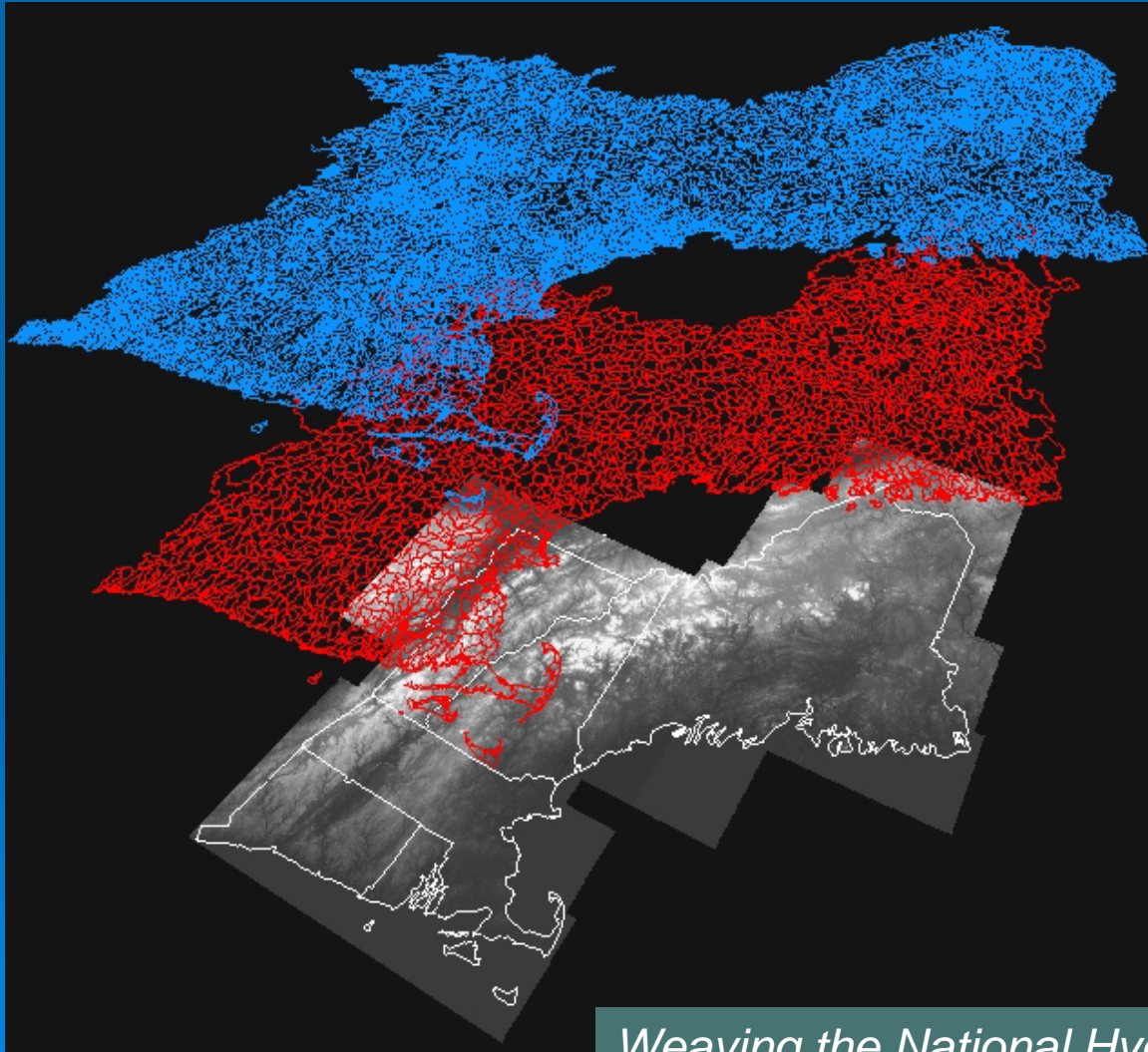
Downstream Coding Check and Update for “Natural” Surface Water Flow



WBD National Update Status for ToHUC March 13, 2014



NHD*Plus* Builds Upon and Extends the Capabilities of the NHD, WBD and NED



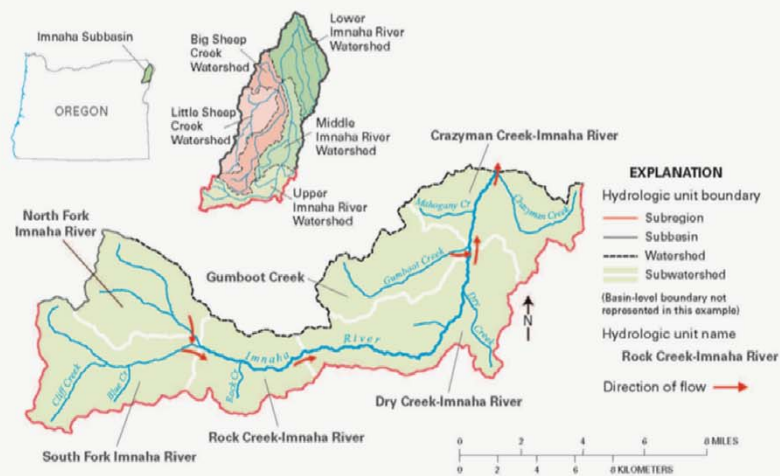
National
Hydrography
Dataset (NHD)

Watershed
Boundary
Dataset (WBD)

National
Elevation
Dataset (NED)

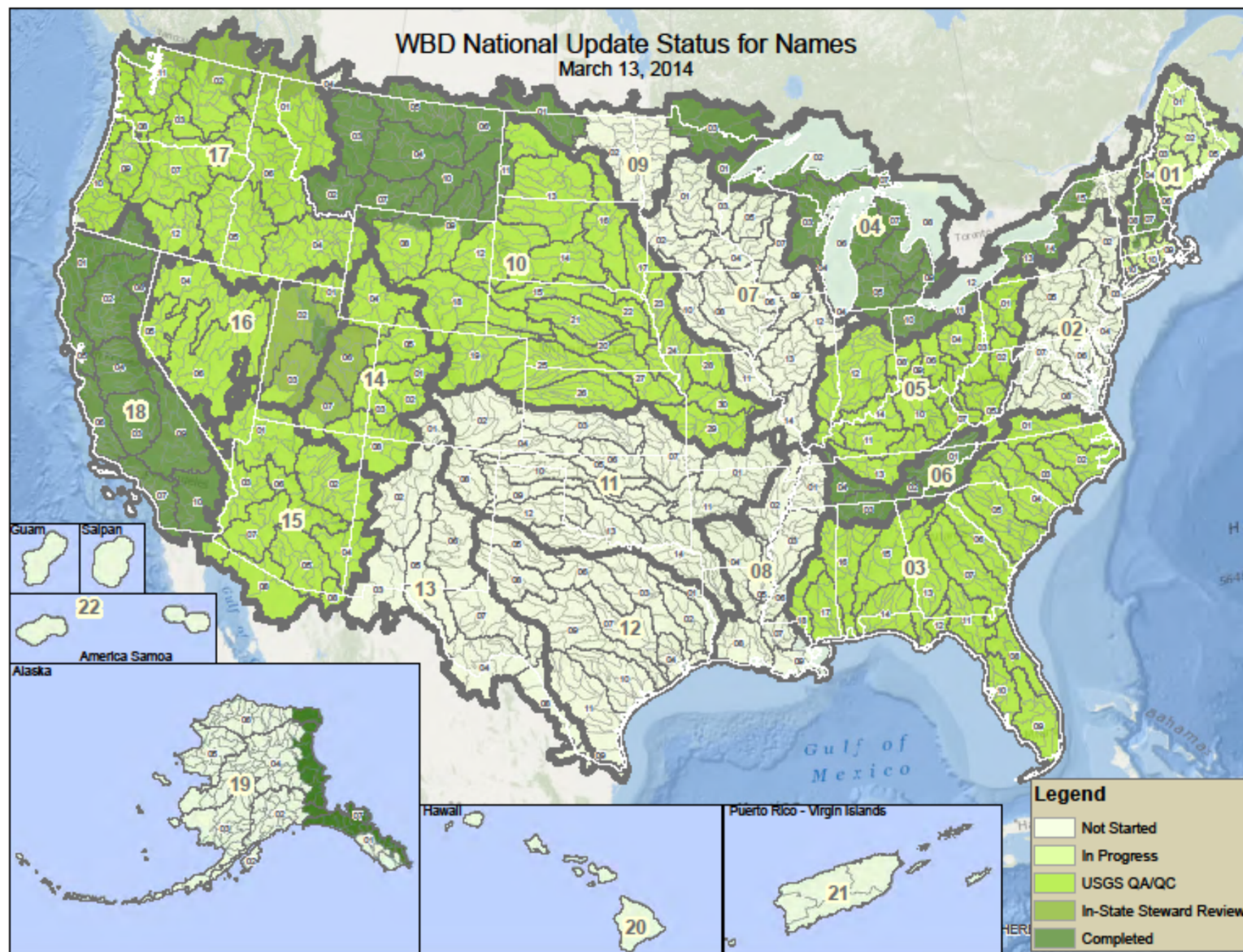
Weaving the National Hydrologic Geospatial Fabric

Integration with Geographic Names Information System (GNIS)



Generic terminology:

- Level 1: (Name) 2-digit Hydrologic Unit
- Level 2: (Name) 4-digit Hydrologic Unit
- Level 3: (Name) 6-digit Hydrologic Unit
- Level 4: (Name) 8-digit Hydrologic Unit
- Level 5: (Name) 10-digit Hydrologic Unit
- Level 6: (Name) 12-digit Hydrologic Unit



WBD Modification Field Options – V 3.0 Standards

LINE MODIFICATION OPTIONS

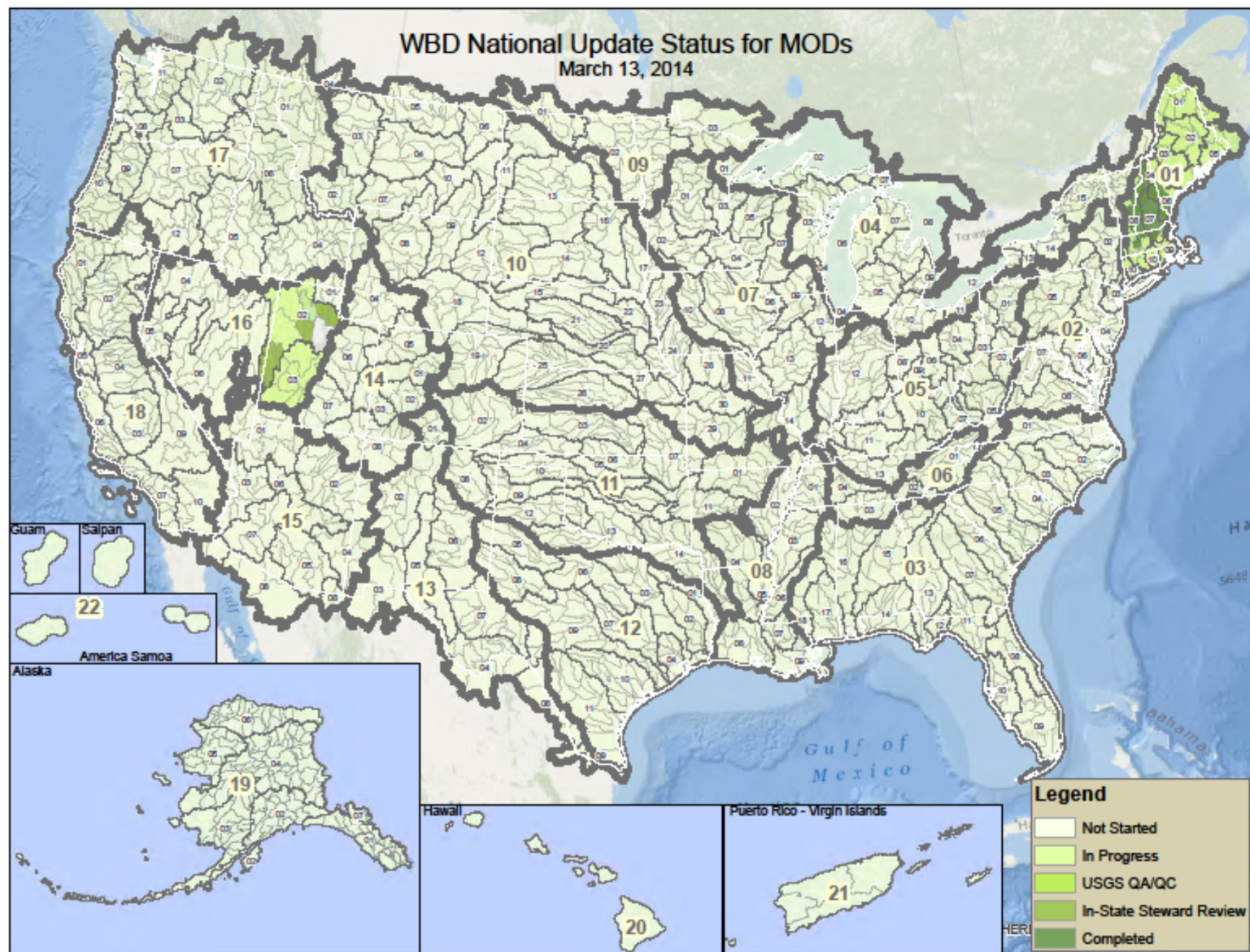
AW	Artificial Waterway
DM	Dam at Outlet
LA	Lava
LE	Levee
MA	Mining Activity
NM	No Modifications
OC	Overflow Channel or Flume
OF	Overbank Flow
PD	Pipe Diversion
PL	Playa
PS	Pumping Station
SI	Siphon
SL	Shoreline
TF	Transportation Feature
UA	Urban Area

POLYGON MODIFICATION OPTIONS

AW	Artificial Waterway
GF	Groundwater Flow
GL	Glacier
IF	Ice Field
KA	Karst
LA	Lava Field
MA	Mining Activity
NC	Noncontributing Area
NM	No Modifications
OC	Overflow Channel or Flume
OF	Overbank Flow
PD	Pipe Diversion
RC	Receiving
RS	Reservoir Playa
UA	Urban Area

WD Withdrawal

A new flow table referencing HUC 12's will provide linkage between the RC Receiving and WD Withdrawal



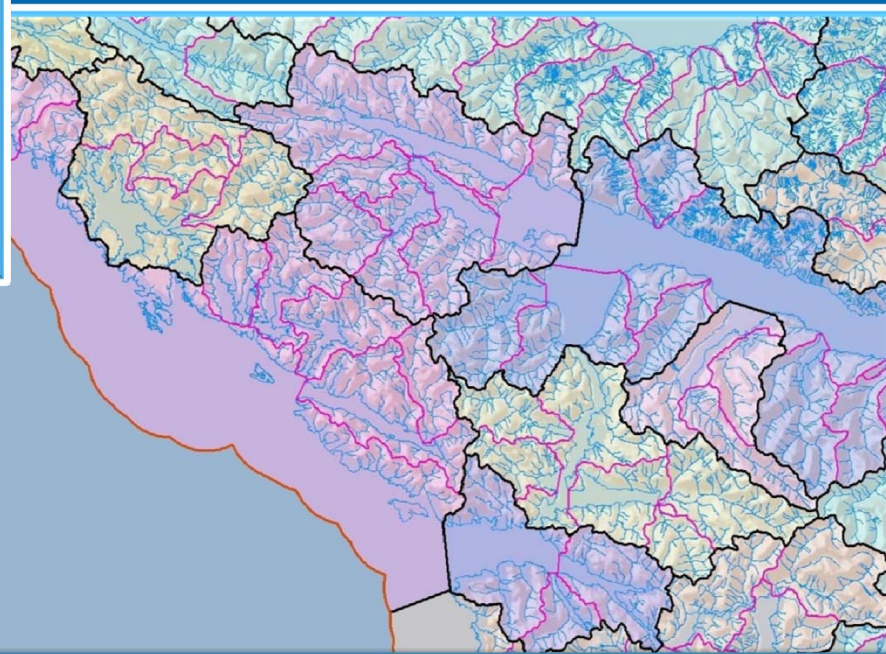
WBD COASTAL TREATMENT ACCOMMODATES DATA INTEGRATION AND MODELING APPLICATIONS



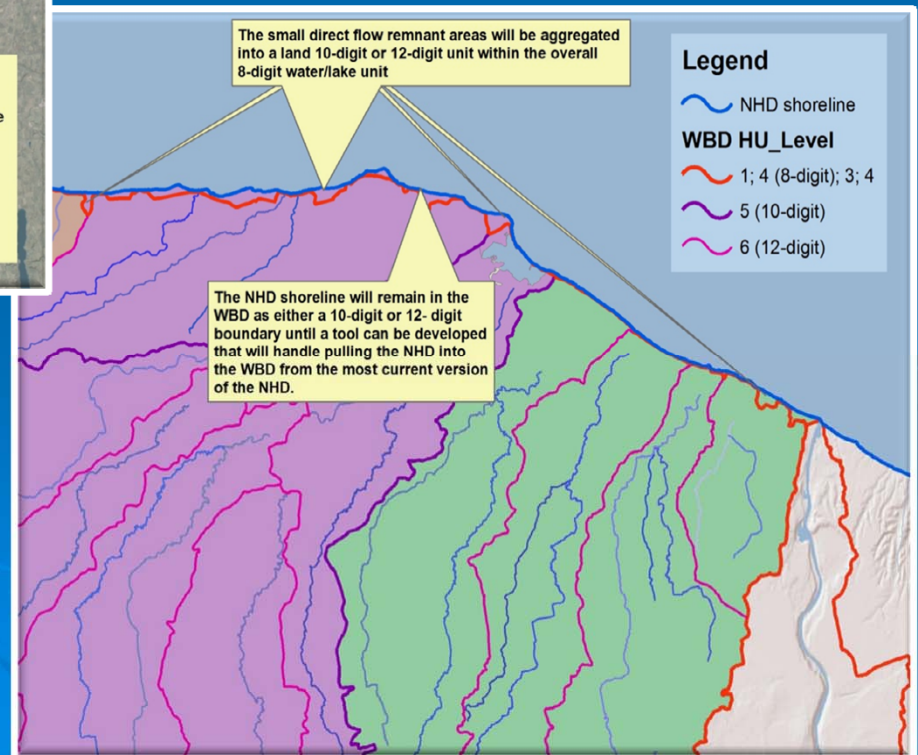
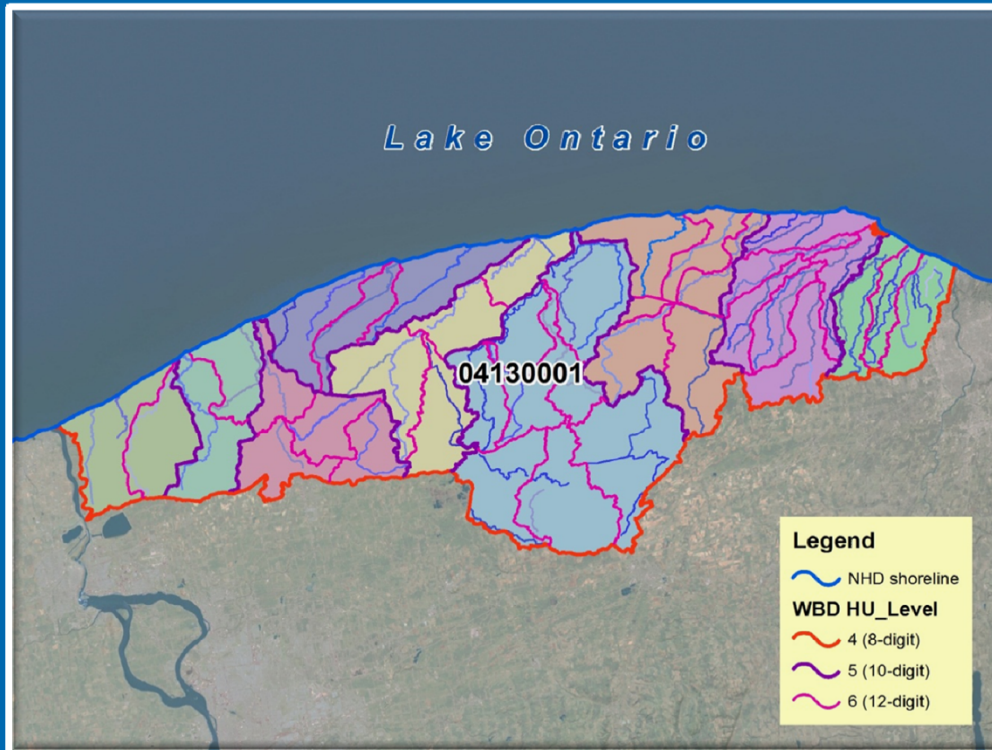
Before



After



Coastal Great Lakes



Subdividing Subregion 1904 in Alaska/Yukon

- Subregion 1904 data set is currently too large to process, which is the underlying purpose of this. This will increasingly get worse with all the densification of data, due to new LiDAR and IfSAR data and the current harmonization of data with Canada
- Split into three sections **Upper, Middle and Lower Yukon River**, with the breaks at the major confluences and not in between like they are currently
- Use Tanana River and the Porcupine River confluences as the divides
- Subregion 1904 code would be retired and 3 subregions would replace it. Subregion 1907 already exists but would be expanded. Subregions 1908 and 1909 would be new subregion numbers

Legend

— AK_CAN_boundary

— AK_subregion_In

— 1904maj_river

HUC

all other HUC

HUC_4

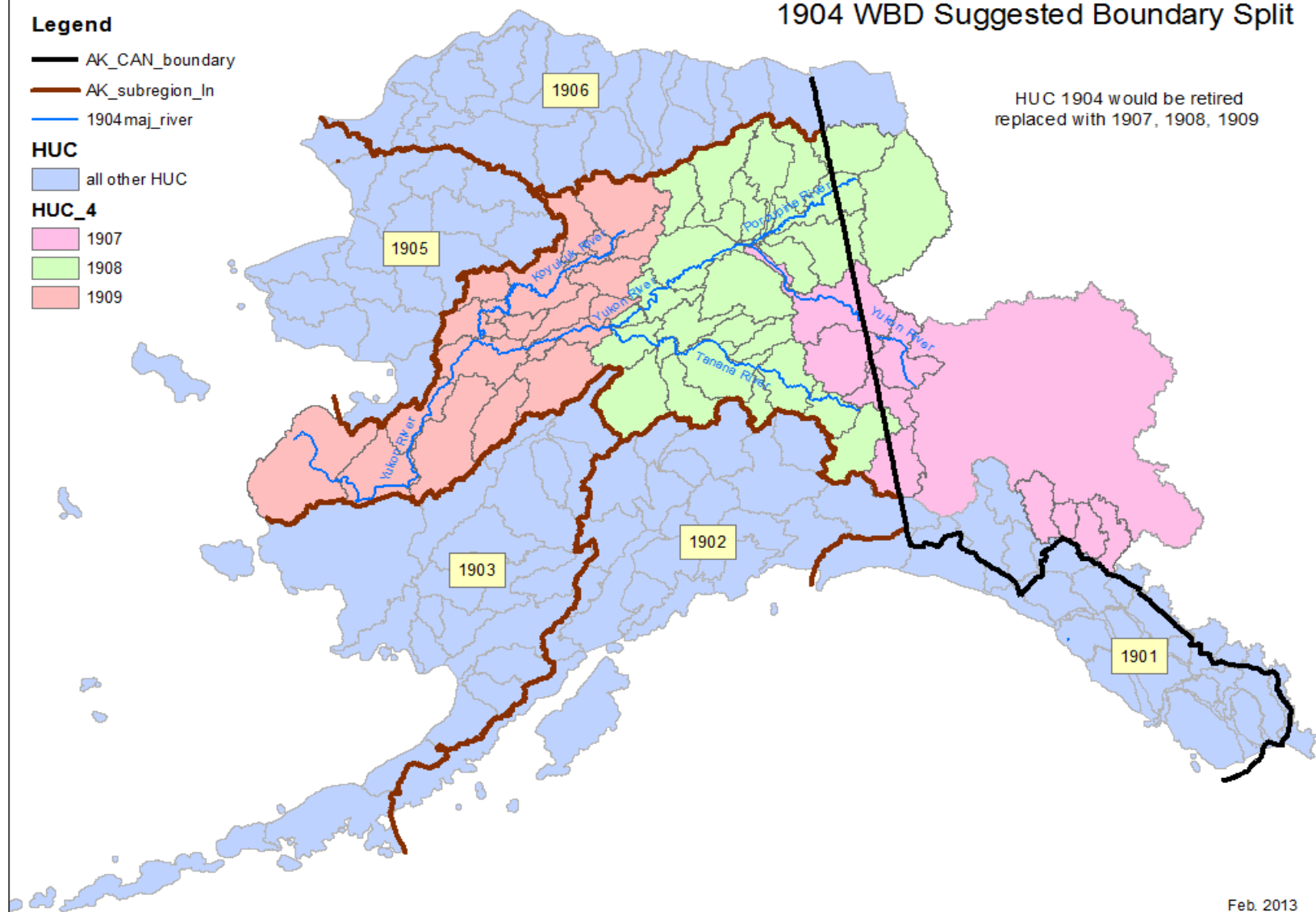
1907

1908

1909

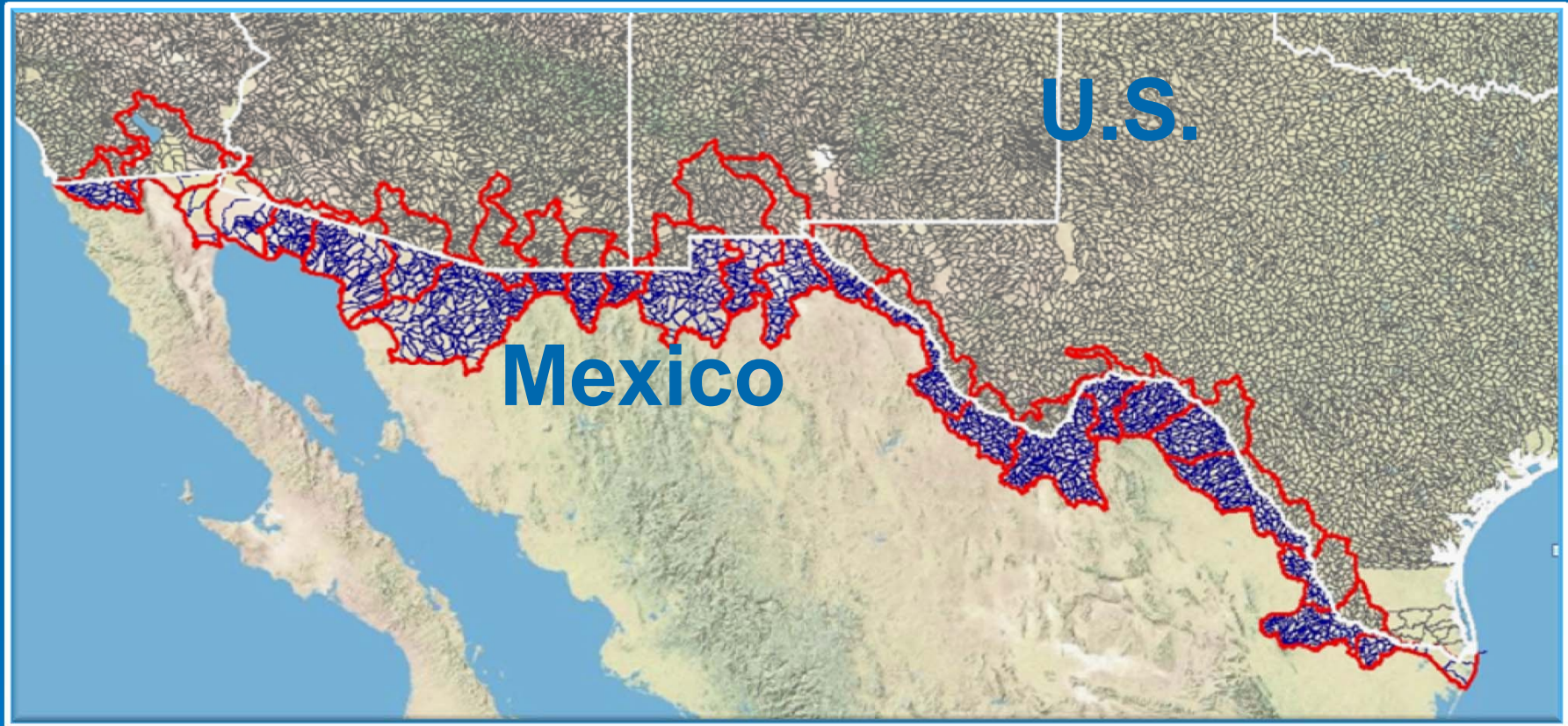
1904 WBD Suggested Boundary Split

HUC 1904 would be retired
replaced with 1907, 1908, 1909



Feb. 2013

U.S. - MEXICO TRANSBOUNDARY HYDROGRAPHIC DATA HARMONIZATION





Status of U.S.-Canadian Drainage Area Boundaries Data Harmonization: Phase III

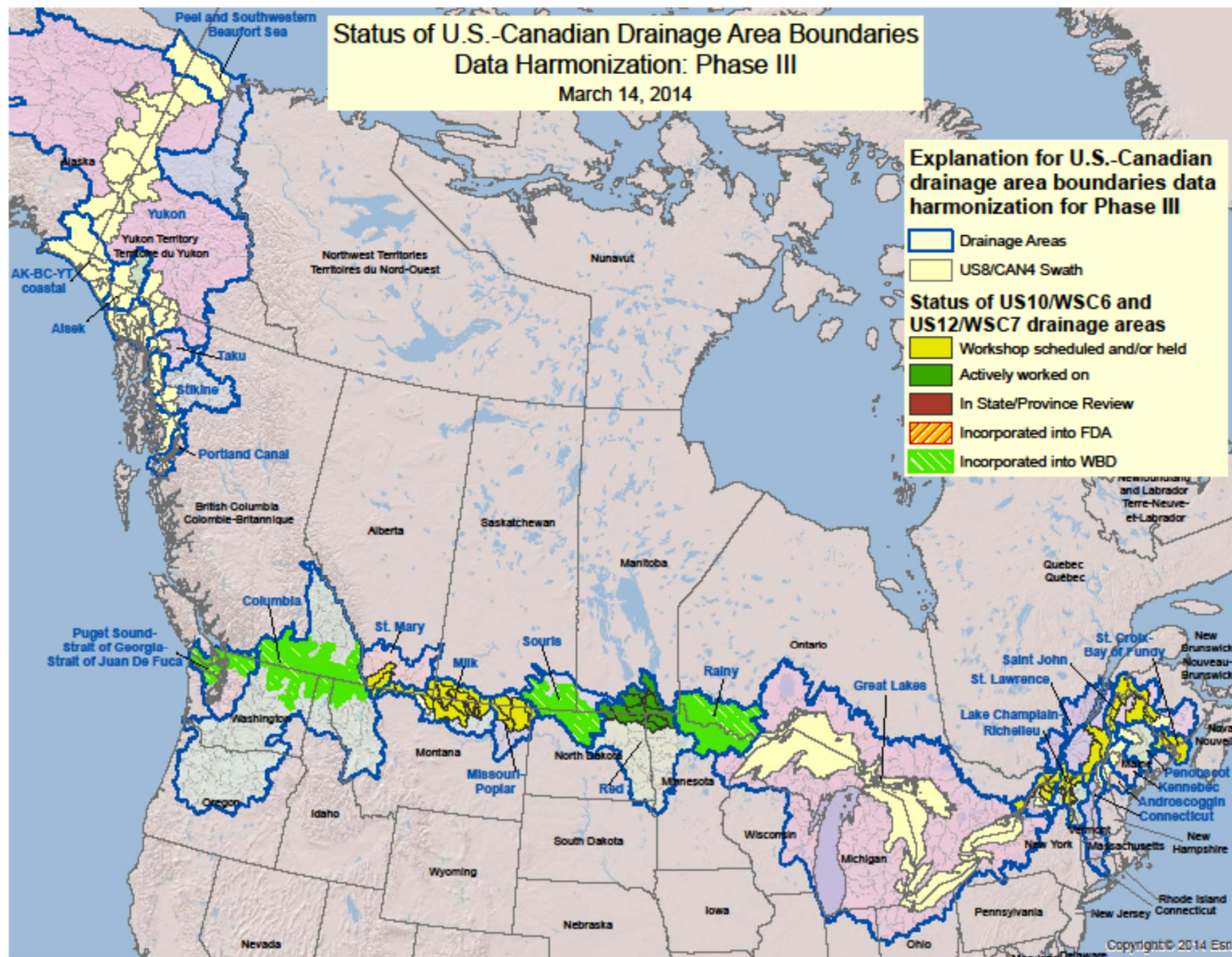
March 14, 2014

Explanation for U.S.-Canadian drainage area boundaries data harmonization for Phase III

- Drainage Areas
- US8/CAN4 Swath

Status of US10/WSC6 and US12/WSC7 drainage areas

- Workshop scheduled and/or held
- Actively worked on
- In State/Province Review
- Incorporated into FDA
- Incorporated into WBD



Copyright © 2014 Esri

Canada



Agriculture and
Agri-Food Canada

Agriculture et
Agroalimentaire Canada

Agri-Environment
Services Branch

Direction générale des services
agroenvironnementaux



Natural Resources
Canada

Ressources naturelles
Canada



Environment
Canada

Environnement
Canada

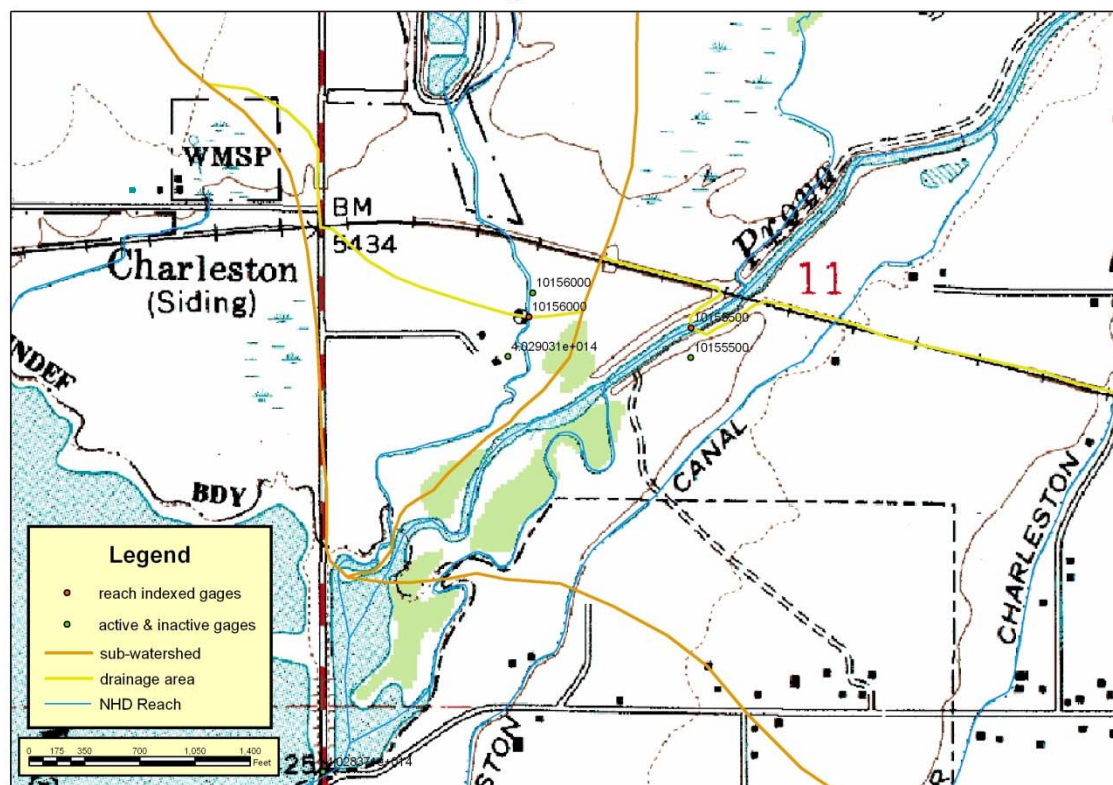
NATIONAL WATER INFORMATION SYSTEM (NWIS)

WBD used to create NWIS Drainage Area Boundaries, associated with USGS Stream Gage Network (1.5 million sites nationwide)

- Real-time data
- Site information
- Surface water
- Groundwater
- Water quality



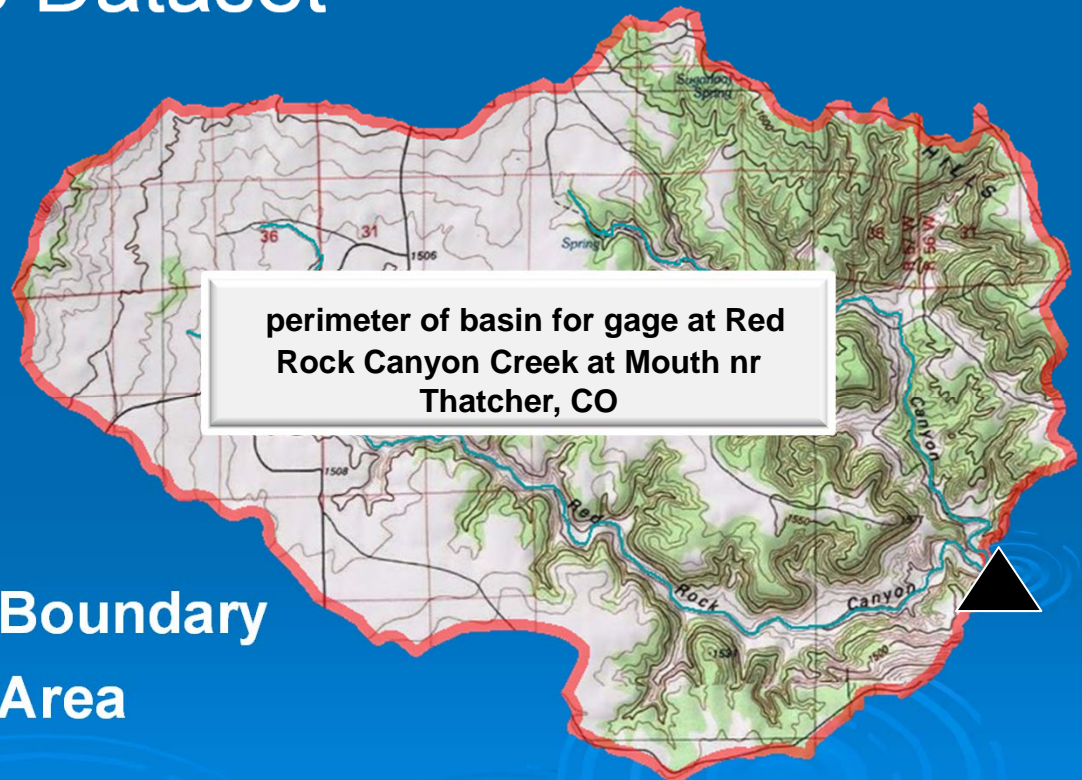
Reach Indexed Gages for Sub-basin 16020203



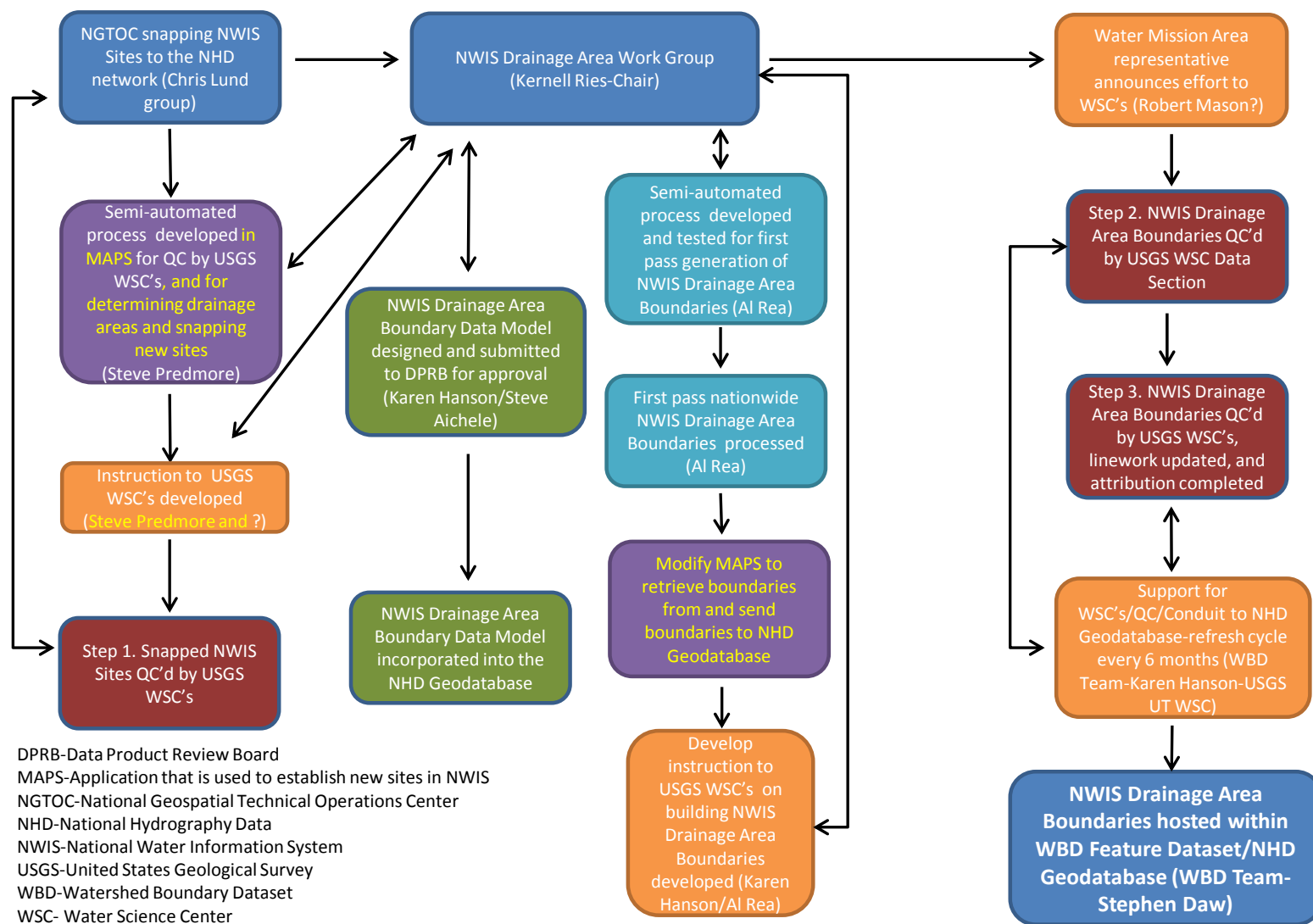
WBD-4 new Feature Classes

- Develop new NWIS Drainage Area Boundaries Feature Classes offered within the WBD Feature Dataset

NWISBoundary
NWISDrainageArea
NonContributingDrainageBoundary
NonContributingDrainageArea



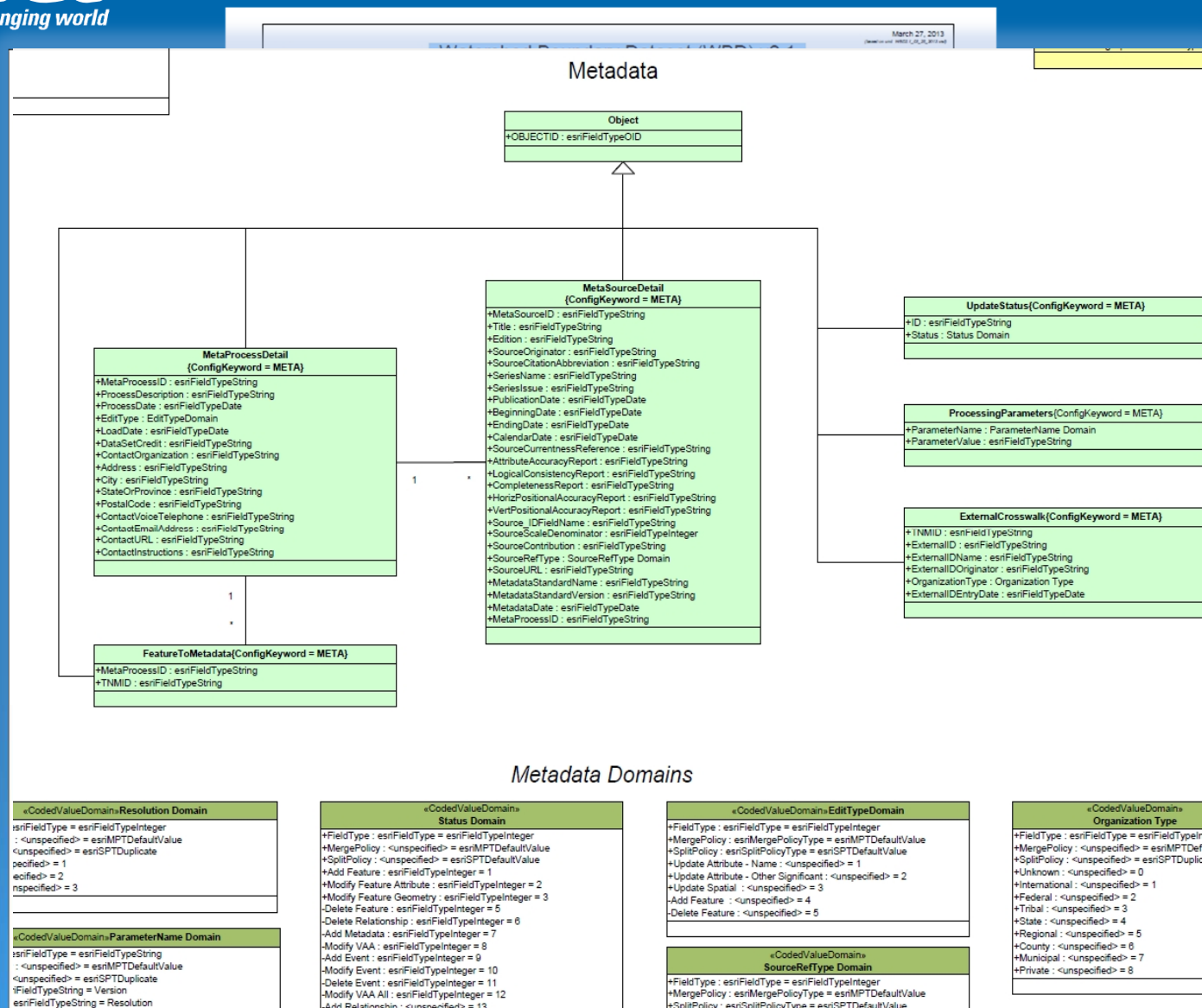
Process for Creating and Hosting NWIS Drainage Area Boundaries Version 1



The Watershed Boundary Dataset

Data Model,
Stewardship
&
Custom Tools







WBD Stewardship

NHD/WBD Stewardship Website

NHD/WBD Stewardship

Welcome Stephen!

[See my profile](#)

[Log out](#)

[Home](#)

[Training Schedule](#)

[Announcements](#)

[User Guide](#)

[Download Software](#)

[Report Bugs](#)

[Control Panel](#)

Layers:

☒ Subbasin Boundaries

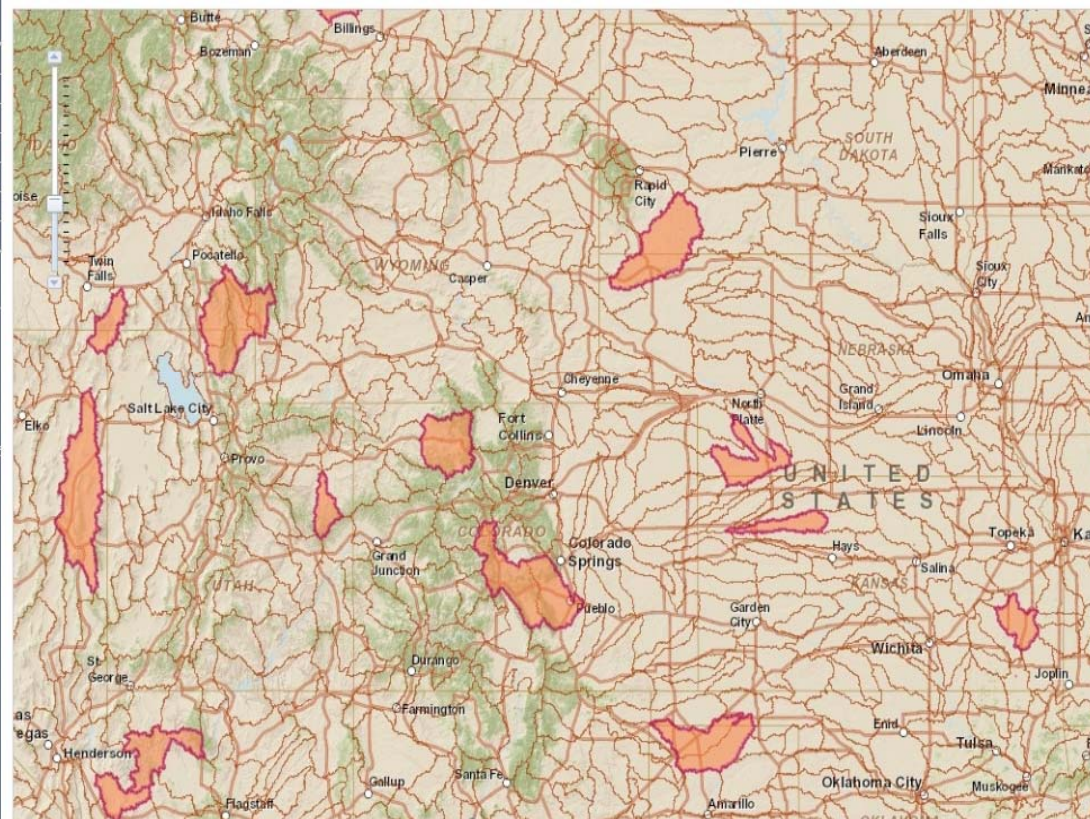
☒ NHD Revision

☒ WBD Revision

[show more layers](#)

This is STEWARDBETA

Revision Status



Checking out data for edit

WBD Stewardship

NHD/WBD Stewardship Website

WBD Stewardship

NHD/WBD Stewardship

Welcome Stephen!

[See my profile](#)
[Log out](#)

[Home](#)
[Training Schedule](#)
[Announcements](#)
[User Guide](#)
[Download Software](#)
[Report Bugs](#)
[Control Panel](#)

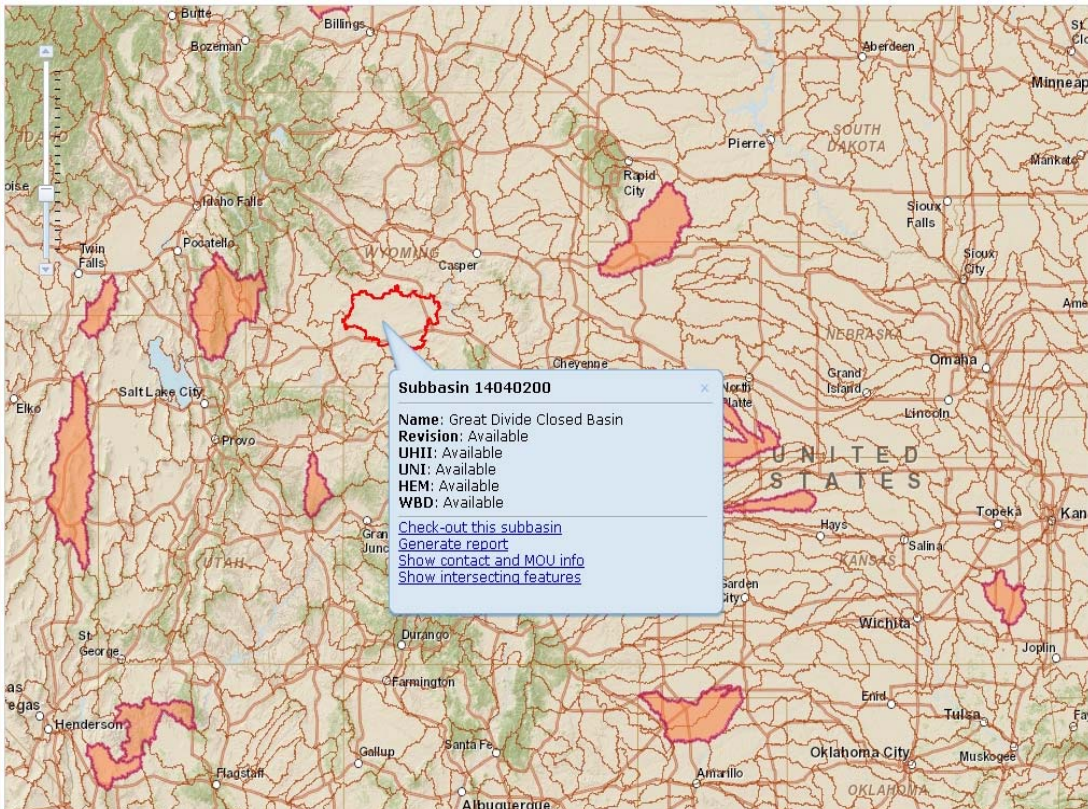
Layers:

- ☒ Subbasin Boundaries
- ☒ NHD Revision
- ☒ WBD Revision

[show more layers](#)

This is STEWARDBETA

Revision Status



Subbasin 14040200

Name: Great Divide Closed Basin
Revision: Available
UHII: Available
UNI: Available
HEM: Available
WBD: Available

[Check-out this subbasin](#)
[Generate report](#)
[Show contact and MOU info](#)
[Show intersecting features](#)

Checking out data for edit

NHD/WBD Stewardship Website

NHD/WBD Stewardship

Welcome Stephen!

[See my profile](#)

[Log out](#)

[Home](#)

[Training Schedule](#)

[Announcements](#)

[User Guide](#)

[Download Software](#)

[Report Bugs](#)

[Control Panel](#)

Layers:

☒ Subbasin Boundaries

☒ NHD Revision

☒ WBD Revision

[show more layers](#)

This is STEWARDBETA

Revision Status

The screenshot shows a web application interface for NHD/WBD Stewardship. On the left is a dark sidebar with navigation links. The main content area features a map of the Great Divide Closed Basin (Subbasin 14040200) with various subbasins outlined. Overlaid on the map is a 'Subbasin Checkout' form. The form includes fields for 'Subbasin' (14040200), 'Work type' (WBD Revision), 'Format' (Personal Geodatabase), and 'Planned completion date' (7/24/2012). It also has a section for 'Other subbasins in the same subregion' with checkboxes for 0101 through 0200, where 0200 is selected. A 'Check-out !' button is at the bottom right of the form. A red banner at the top of the main content area reads 'This is STEWARDBETA'.

Subbasin Checkout

Subbasin: 14040200 (Great Divide Closed Basin)

Work type: WBD Revision

Format: Personal Geodatabase

Planned completion date: 7/24/2012

The completion date is restricted to be within the next 90 days.

Select one or more available subbasins in this subregion from the list below. The subbasins grayed out are already checked out.

Other subbasins in the same subregion:

☐ 0101 ☐ 0102 ☐ 0103 ☐ 0104 ☐ 0105 ☐ 0106
☐ 0107 ☐ 0108 ☐ 0109 ☒ 0200

☐ Select all subbasins available in this subregion

Description of work to be performed:

Updates from LIDAR

Check-out !

Checking out data for edit

WBD Stewardship

NHD/WBD Stewardship Website

NHD/WBD Stewardship

Welcome Stephen!

[See my profile](#)

[Log out](#)

[Home](#)

[Training Schedule](#)

[Announcements](#)

[User Guide](#)

[Download Software](#)

[Report Bugs](#)

[Control Panel](#)

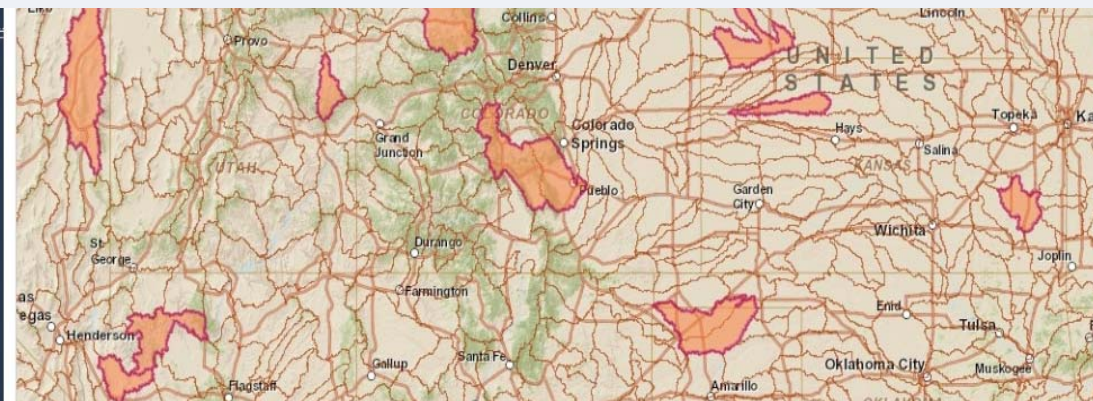
This is STEWARDBETA

Revision Status



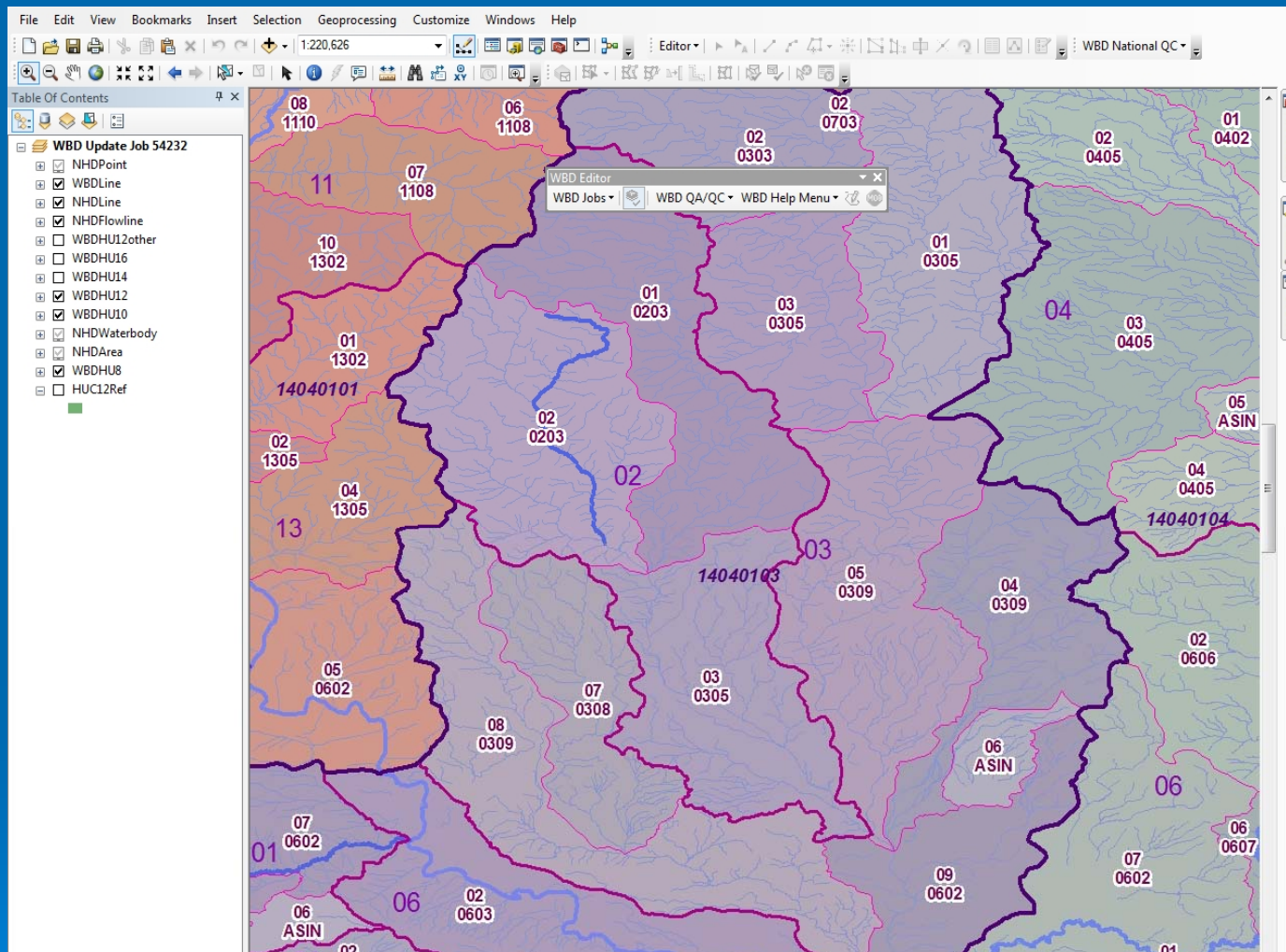
<http://usgs-mrs.cr.usgs.gov/stewweb/>

[show more layers](#)



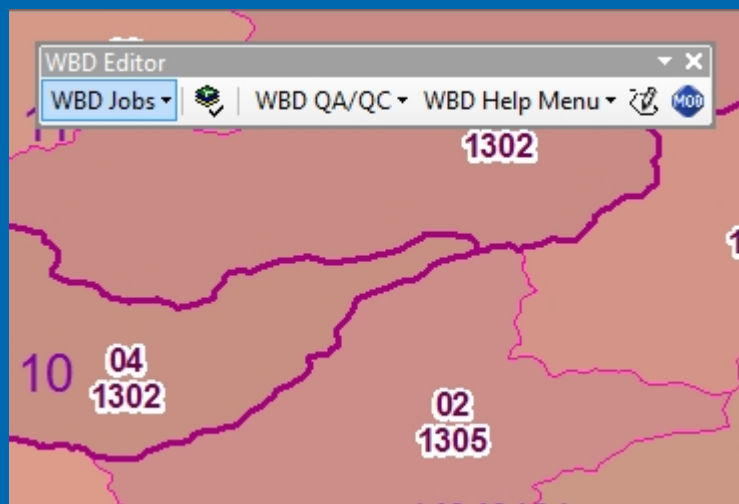
Checking out data for edit

WBD Stewardship

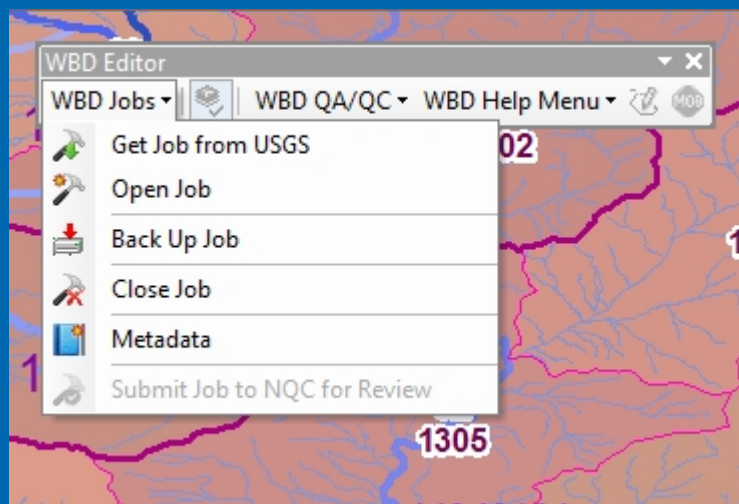


ArcGIS 10.0 & 10.1 (10.2 coming soon)

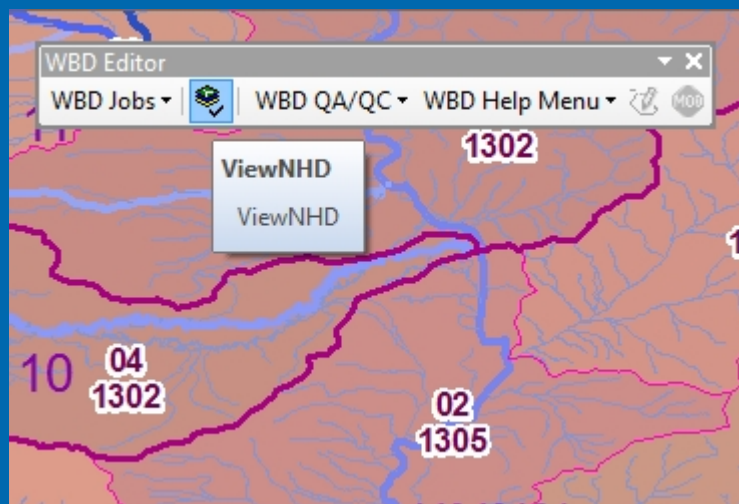
WBD Edit Tools



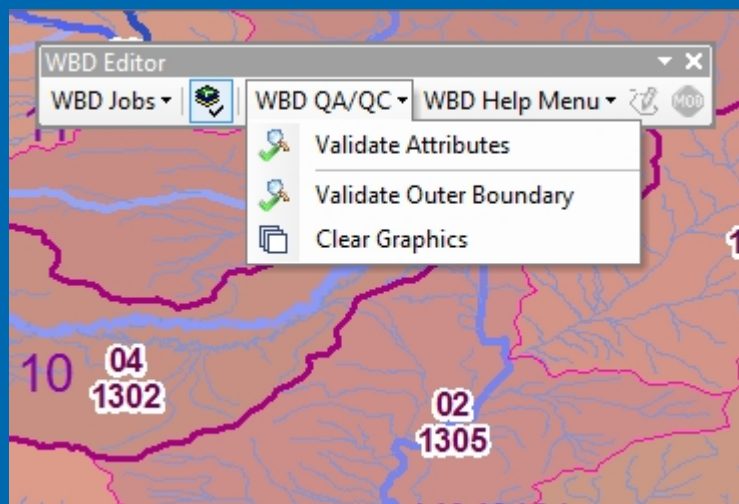
Toolbar



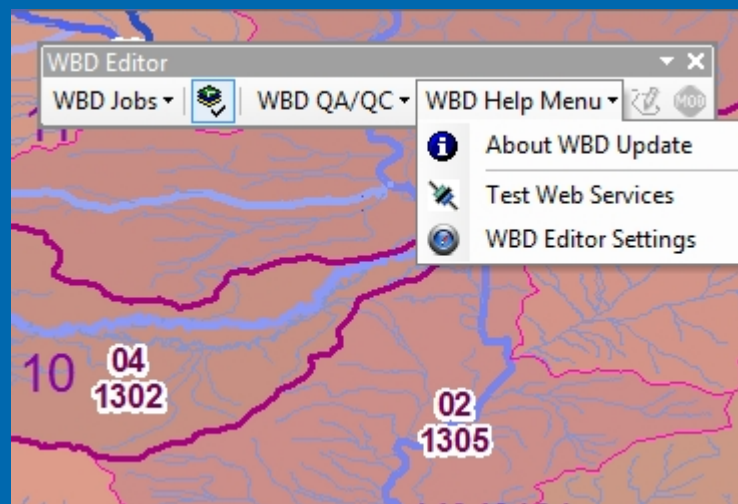
Toolbar



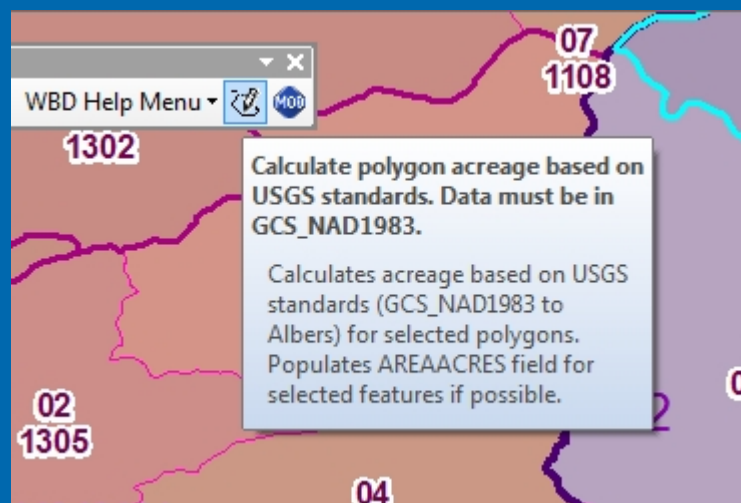
Toolbar



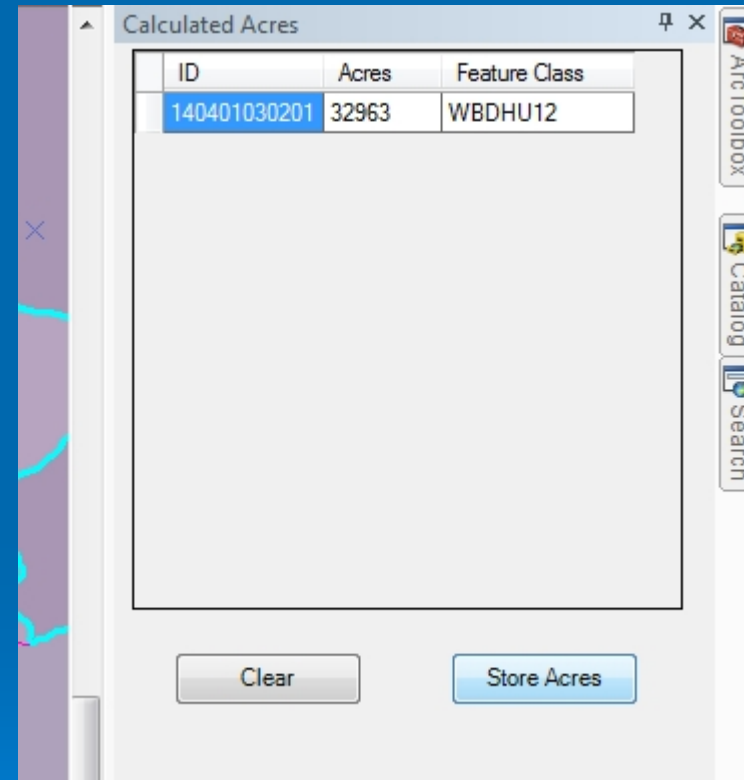
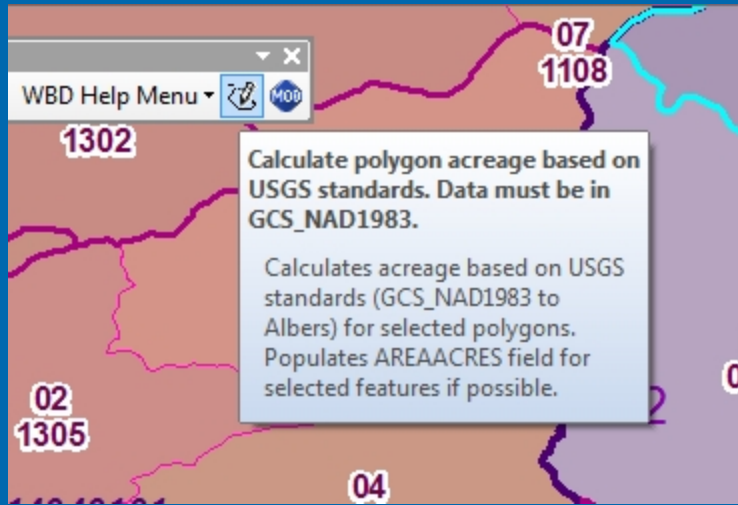
Toolbar

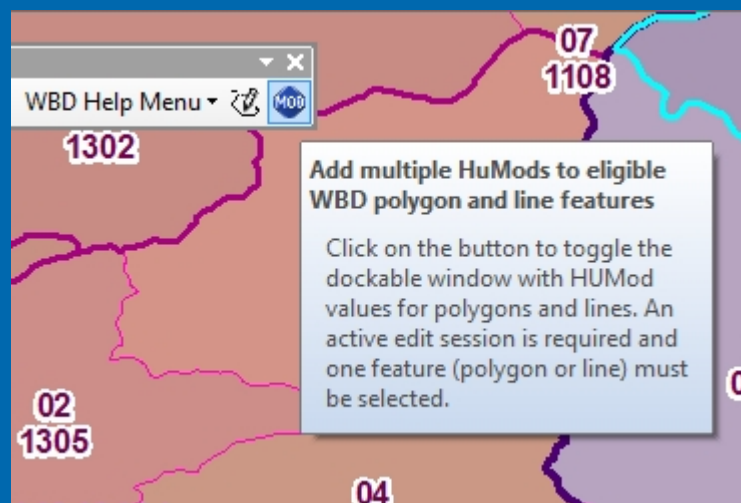


Toolbar

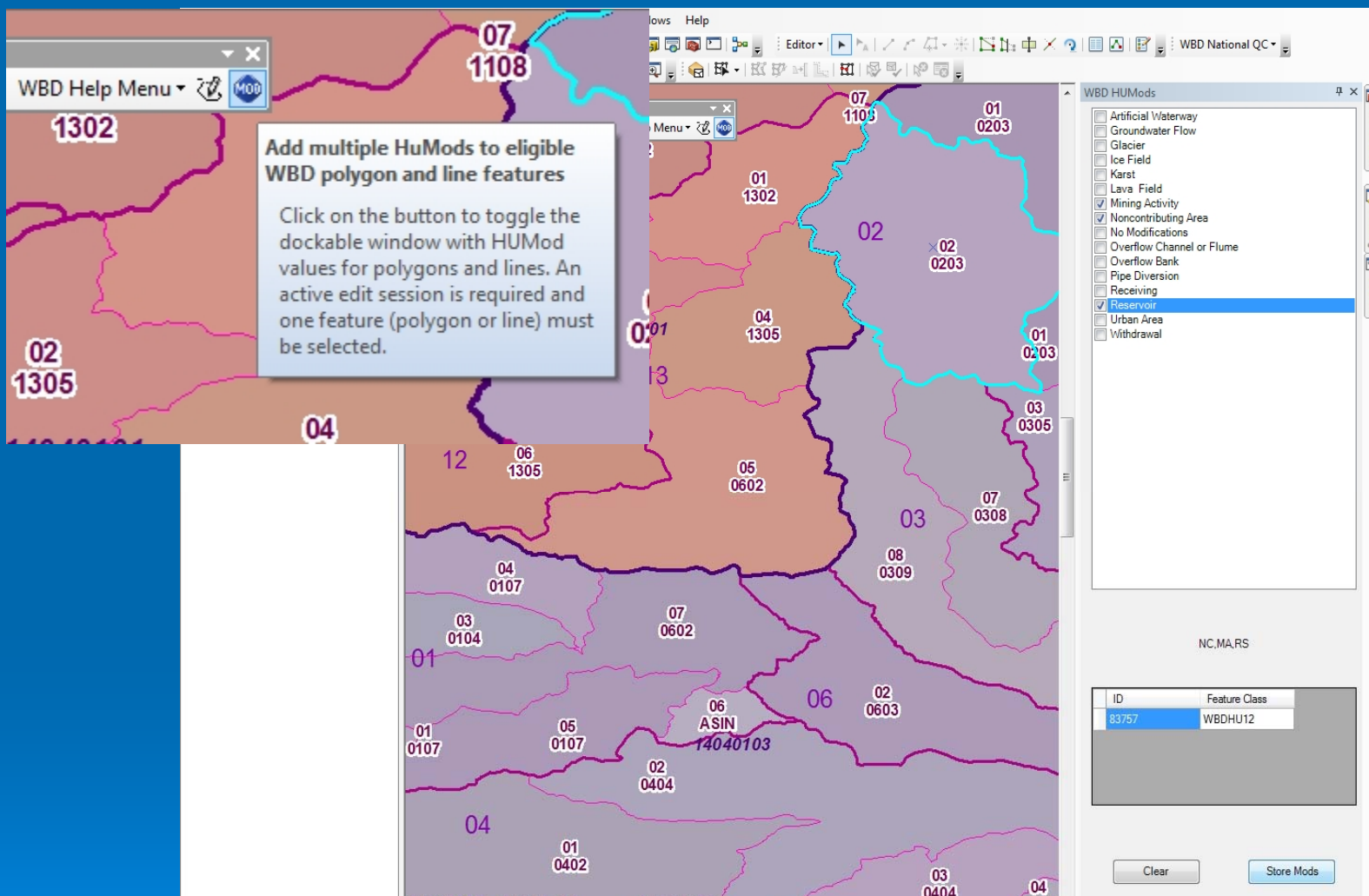


Toolbar





Toolbar



Toolbar

WBD Edit Tools



WBD Edit Tools

Toolbar

The screenshot shows the USGS Hydrography website. The header includes the USGS logo and a navigation bar with links to Home, News, Get Data, Stewardship, User Resources, Tools, Applications, Contact Us, and Watershed Boundary Dataset. The main content area is titled "Hydrography" and "National Hydrography Dataset Watershed Boundary Dataset". It features a large map of the United States with a blue river network. Below the map, there are links to "Download NHD Data", "Go to NHD Viewer", "Go to Pre-Staged Subregions", and "Go to NHD Extracts by State". To the right of the map, there is a text block explaining the NHD and WBD datasets. On the far right, there is a sidebar with a search bar, a "National Hydrography Dataset" section with tweets, and a "Join us on Facebook" button.

U.S. Geological Survey - N x
nhd.usgs.gov

Did you mean to go to <http://nhd/>?

USGS science for a changing world
The National Map

USGS Home
Contact USGS
Search USGS

Hydrography

Home
News
Get Data
Stewardship
User Resources
Tools
Applications
Contact Us
Watershed Boundary Dataset

Hydrography
National Hydrography Dataset
Watershed Boundary Dataset

Search NHD

Download NHD Data

[Go to NHD Viewer](#)
[Go to Pre-Staged Subregions](#)
[Go to NHD Extracts by State](#)

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.

National Hydrography Dataset
@USGSNHD

Tweets

NHD @USGSNHD 6 Mar
NHD Photo of the Month: Sloans Lake, Denver Colorado. Submit your photos to nhd@usgs.gov! pic.twitter.com/XYFRdOK7i0
[Show Photo](#)

NHD @USGSNHD 6 Mar
The NHD February Newsletter has been posted to our website! Check it out. nhd.usgs.gov/newsletters/Ne...
[Expand](#)

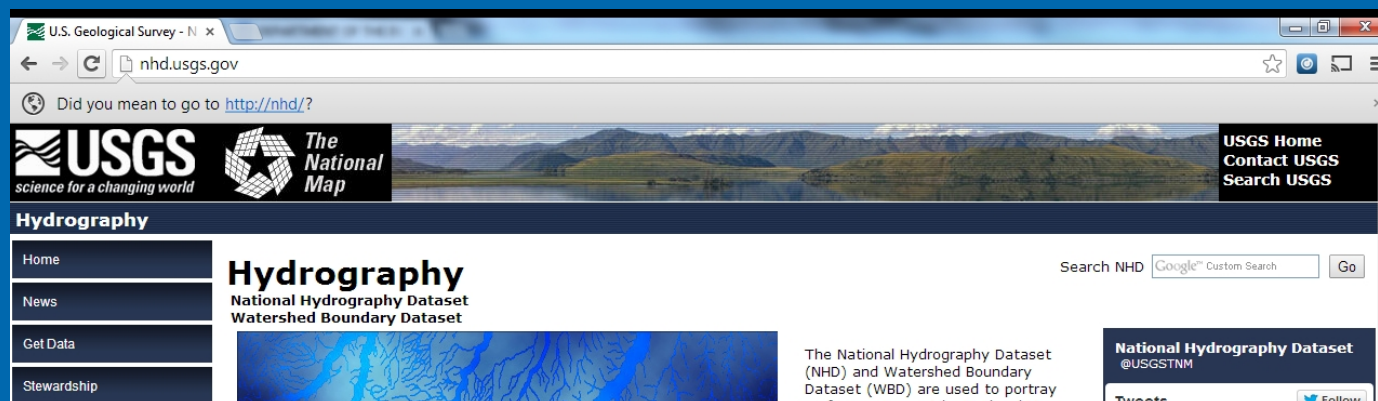
NHD @USGSNHD 24 Feb
In preparation for NHD Model 2.2 release, all HEM stewardship checkouts will be suspended until further notice. Updates will be tweeted.
[Expand](#)

NHD @USGSNHD 21 Feb
Linking U.S. and Canadian Border Waters usgs.gov/newsroom/artic...

[Join us on Facebook](#)

Hydrography Website

WBD Data & Information



<http://nhd.usgs.gov/>

Contact Us

Watershed Boundary Dataset

Go to Pre-Staged Subregions

Go to NHD Extracts by State

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.

Show Photo

NHD @USGSNHD 6 Mar
The NHD February Newsletter has been posted to our website! Check it out. [nhd.usgs.gov/newsletters/Ne...](#)
Expand

NHD @USGSNHD 24 Feb
In preparation for NHD Model 2.2 release, all HEM stewardship checkouts will be suspended until further notice. Updates will be tweeted.
Expand

NHD @USGSNHD 21 Feb
Linking U.S. and Canadian Border Waters [usgs.gov/newsroom/artic...](#)

Join us on Facebook

Hydrography Website

WBD Data & Information

U.S. Geological Survey - N x
nhd.usgs.gov/wbd.html

USGS The National Map
science for a changing world

Hydrography

- Home
- News
- Get Data
- Stewardship
- User Resources
- Tools
- Applications
- Contact Us
- Watershed Boundary Dataset

What is the WBD?

The Watershed Boundary Dataset (WBD) defines the areal extent of surface water drainage to a point, accounting for all land and surface areas. Watershed Boundaries are determined solely upon science-based hydrologic principles, not favoring any administrative boundaries or special projects, nor particular program or agency. The intent of defining Hydrologic Units (HU) for the Watershed Boundary Dataset is to establish a base-line drainage boundary framework, accounting for all land and surface areas. At a minimum, the WBD is being delineated and georeferenced to the USGS 1:24,000 scale topographic base map meeting National Map Accuracy Standards (NMAS). Hydrologic units are given a Hydrologic Unit Code (HUC). For example, a hydrologic region has a 2-digit HUC. A HUC describes where the unit is in the country and the level of the unit.

"A hydrologic unit is a drainage area delineated to nest in a multi-level, hierarchical drainage system. Its boundaries are defined by hydrographic and topographic criteria that delineate an area of land upstream from a specific point on a river, stream or similar surface waters. A hydrologic unit can accept surface water directly from upstream drainage areas, and indirectly from associated surface areas such as remnant, non-contributing, and diversions to form a drainage area with single or multiple outlet points. Hydrologic units are only synonymous with classic watersheds when their boundaries include all the source area contributing surface water to a single defined outlet point."

The Watershed Boundary Dataset is being developed under the leadership of the [Subcommittee on Spatial Water Data](#), which is part of the [Advisory Committee on Water Information](#) (ACWI) and the [Federal Geographic Data Committee](#) (FGDC). The USDA Natural Resources Conservation Service (NRCS), along with many other federal agencies and national associations, have representatives on the Subcommittee on Spatial Water Data.

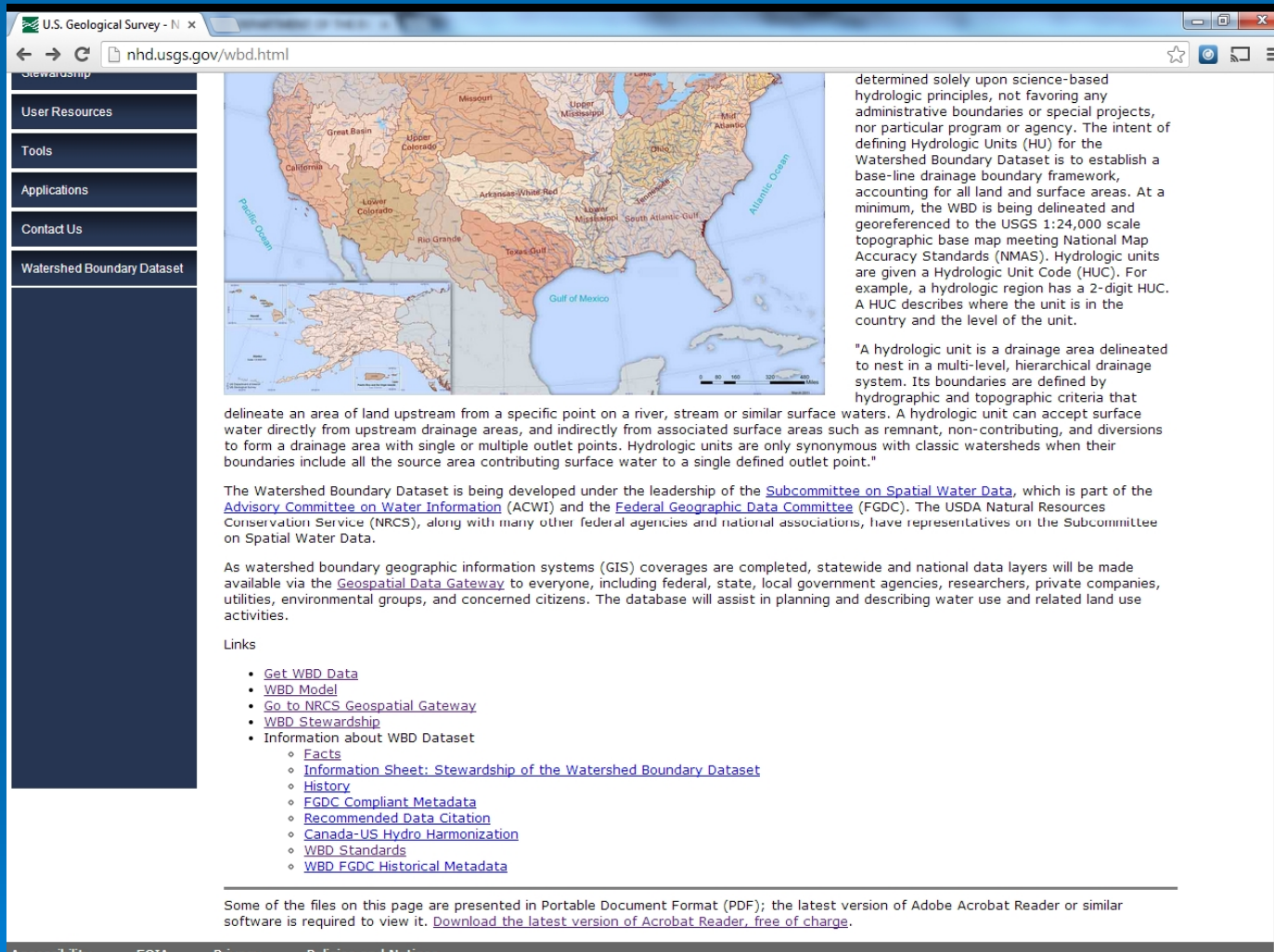
As watershed boundary geographic information systems (GIS) coverages are completed, statewide and national data layers will be made available via the [Geospatial Data Gateway](#) to everyone, including federal, state, local government agencies, researchers, private companies, utilities, environmental groups, and concerned citizens. The database will assist in planning and describing water use and related land use activities.

Links

- [Get WBD Data](#)
- [WBD Model](#)
- [Go to NRCS Geospatial Gateway](#)

USGS Home
Contact USGS
Search USGS

Hydrography Website



U.S. Geological Survey - N x
nhd.usgs.gov/wbd.html

Stewardship
User Resources
Tools
Applications
Contact Us
Watershed Boundary Dataset

delineate an area of land upstream from a specific point on a river, stream or similar surface waters. A hydrologic unit can accept surface water directly from upstream drainage areas, and indirectly from associated surface areas such as remnant, non-contributing, and diversions to form a drainage area with single or multiple outlet points. Hydrologic units are only synonymous with classic watersheds when their boundaries include all the source area contributing surface water to a single defined outlet point."

The Watershed Boundary Dataset is being developed under the leadership of the [Subcommittee on Spatial Water Data](#), which is part of the [Advisory Committee on Water Information](#) (ACWI) and the [Federal Geographic Data Committee](#) (FGDC). The USDA Natural Resources Conservation Service (NRCS), along with many other federal agencies and national associations, have representatives on the Subcommittee on Spatial Water Data.

As watershed boundary geographic information systems (GIS) coverages are completed, statewide and national data layers will be made available via the [Geospatial Data Gateway](#) to everyone, including federal, state, local government agencies, researchers, private companies, utilities, environmental groups, and concerned citizens. The database will assist in planning and describing water use and related land use activities.

Links

- [Get WBD Data](#)
- [WBD Model](#)
- [Go to NRCS Geospatial Gateway](#)
- [WBD Stewardship](#)
- Information about WBD Dataset
 - [Facts](#)
 - [Information Sheet: Stewardship of the Watershed Boundary Dataset](#)
 - [History](#)
 - [FGDC Compliant Metadata](#)
 - [Recommended Data Citation](#)
 - [Canada-US Hydro Harmonization](#)
 - [WBD Standards](#)
 - [WBD FGDC Historical Metadata](#)

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.](#)

Accessibility: FOIA Privacy Policy and Notices

Hydrography Website

The screenshot shows the USGS Hydrography website. The header includes the USGS logo and 'The National Map'. The main navigation menu on the left lists: Home, News, Get Data, Stewardship, User Resources, Tools, Applications, Contact Us, and Watershed Boundary Dataset. The 'Watershed Boundary Dataset' section is expanded, showing a list of links: Hydrography Data Overview, Go to the Hydrography Viewer, Go to REST MapService Endpoint, Go to Pre-staged Subregions, Go to NHD Extracts by State, Go to Streamgages and Dams, Go to WBD Viewer on NRCS, and NHD Model Template GDB (v 2.1). The main content area is titled 'What is the WBD?' and features a map of the United States with watershed boundaries. To the right of the map, there is a text box explaining the WBD: 'The Watershed Boundary Dataset (WBD) defines the areal extent of surface water drainage to a point, accounting for all land and surface areas. Watershed Boundaries are determined solely upon science-based hydrologic principles, not favoring any administrative boundaries or special projects, nor particular program or agency. The intent of defining Hydrologic Units (HU) for the Watershed Boundary Dataset is to establish a base-line drainage boundary framework, accounting for all land and surface areas. At a minimum, the WBD is being delineated and georeferenced to the USGS 1:24,000 scale topographic base map meeting National Map Accuracy Standards (NMAS). Hydrologic units are given a Hydrologic Unit Code (HUC). For example, a hydrologic region has a 2-digit HUC. A HUC describes where the unit is in the country and the level of the unit.' Below this, a quote states: 'A hydrologic unit is a drainage area delineated to nest in a multi-level, hierarchical drainage system. Its boundaries are defined by hydrographic and topographic criteria that delineate an area of land upstream from a specific point on a river, stream or similar surface waters. A hydrologic unit can accept surface water directly from upstream drainage areas, and indirectly from associated surface areas such as remnant, non-contributing, and diversions to form a drainage area with single or multiple outlet points. Hydrologic units are only synonymous with classic watersheds when their boundaries include all the source area contributing surface water to a single defined outlet point.' Further down, it mentions that the WBD is being developed under the leadership of the Subcommittee on Spatial Water Data, which is part of the Advisory Committee on Water Information (ACWI) and the Federal Geographic Data Committee (FGDC). The USDA Natural Resources Conservation Service (NRCS), along with many other federal agencies and national associations, have representatives on the Subcommittee on Spatial Water Data. It also states that as watershed boundary geographic information systems (GIS) coverages are completed, statewide and national data layers will be made available via the Geospatial Data Gateway to everyone, including federal, state, local government agencies, researchers, private companies, utilities, environmental groups, and concerned citizens. The database will assist in planning and describing water use and related land use activities. At the bottom, there is a 'Links' section with three links: Get WBD Data, WBD Model, and Go to NRCS Geospatial Gateway.

Hydrography Website

Index of /DataSets/Staged/

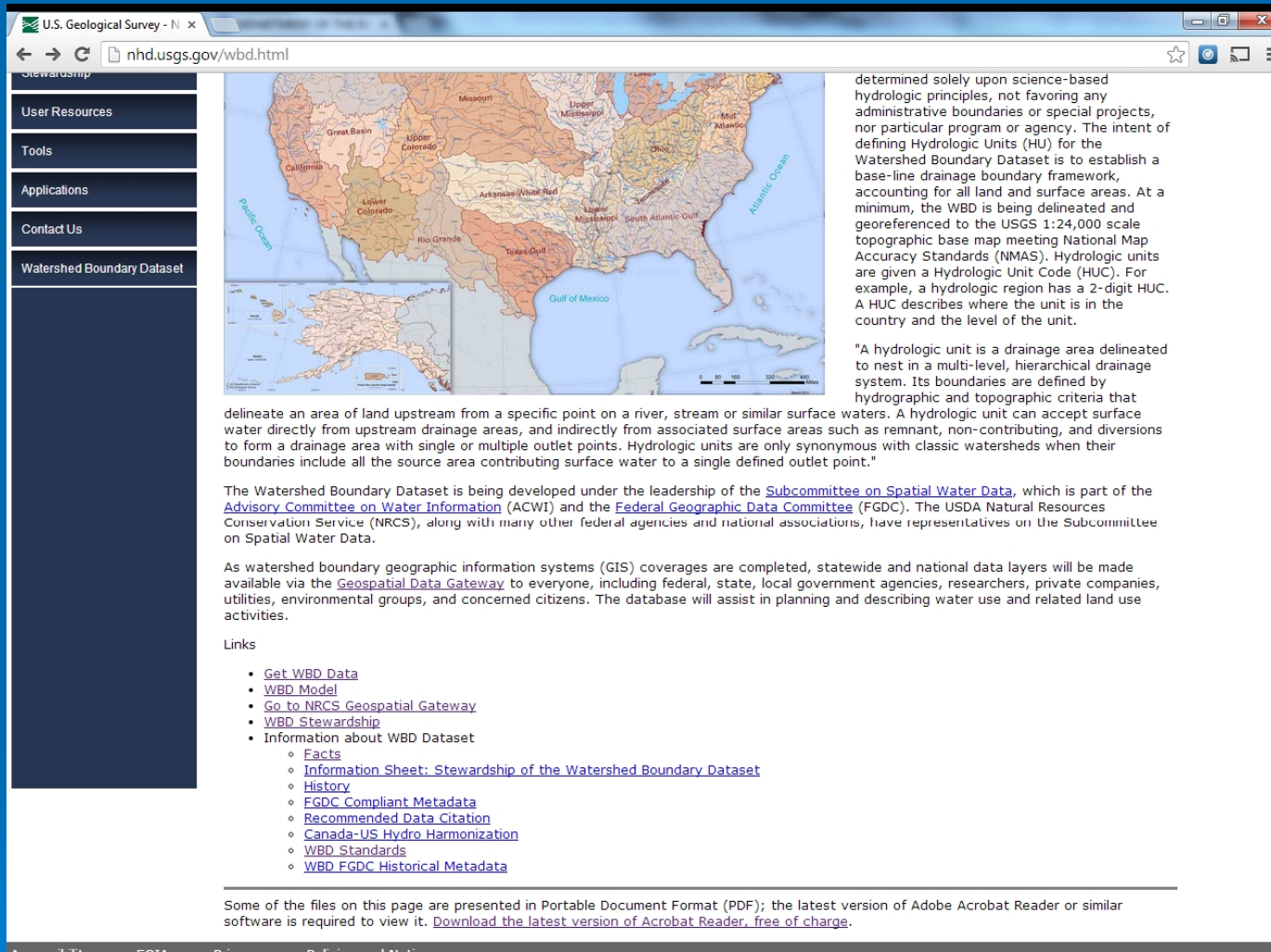
ftp://nhdftp.usgs.gov/DataSets/Staged/SubRegions/FileGDB/HighResolution/

Index of /DataSets/Staged/SubRegions/FileGDB/HighResolution/

Name	Size	Date Modified
[parent directory]		
NHDH0101_931v210.zip	31.2 MB	2/14/14 5:11:00 AM
NHDH0102_931v210.zip	29.8 MB	2/14/14 10:12:00 AM
NHDH0103_931v210.zip	30.0 MB	2/14/14 10:20:00 AM
NHDH0104_931v210.zip	12.9 MB	2/15/14 8:31:00 PM
NHDH0105_931v210.zip	34.7 MB	2/12/14 6:06:00 PM
NHDH0106_931v210.zip	20.5 MB	2/15/14 8:47:00 PM
NHDH0107_931v210.zip	22.5 MB	2/13/14 2:28:00 PM
NHDH0108_931v210.zip	65.7 MB	2/14/14 1:26:00 AM
NHDH0109_931v210.zip	35.7 MB	2/13/14 8:23:00 AM
NHDH0110_931v210.zip	34.0 MB	2/13/14 3:10:00 PM
NHDH0202_931v210.zip	69.9 MB	2/12/14 7:06:00 PM
NHDH0203_931v210.zip	64.5 MB	2/16/14 12:20:00 AM
NHDH0204_931v210.zip	191 MB	2/16/14 3:46:00 AM
NHDH0205_931v210.zip	72.2 MB	2/13/14 11:34:00 PM
NHDH0206_931v210.zip	20.4 MB	2/13/14 8:38:00 AM
NHDH0207_931v210.zip	48.3 MB	2/12/14 2:12:00 PM
NHDH0208_931v210.zip	92.4 MB	2/14/14 2:47:00 PM
NHDH0301_931v210.zip	83.5 MB	2/13/14 9:45:00 AM
NHDH0302_931v210.zip	65.6 MB	2/14/14 2:38:00 AM
NHDH0303_931v210.zip	52.4 MB	2/21/14 1:44:00 AM
NHDH0304_931v210.zip	87.9 MB	2/21/14 9:25:00 AM
NHDH0305_931v210.zip	120 MB	2/15/14 6:15:00 PM
NHDH0306_931v210.zip	74.9 MB	2/13/14 10:32:00 PM
NHDH0307_931v210.zip	93.5 MB	2/13/14 12:56:00 PM
NHDH0308_931v210.zip	59.9 MB	2/15/14 6:41:00 AM
NHDH0309_931v210.zip	86.5 MB	2/14/14 1:06:00 AM
NHDH0310_931v210.zip	71.3 MB	2/13/14 10:36:00 PM
NHDH0311_931v210.zip	67.7 MB	2/13/14 1:33:00 PM
NHDH0312_931v210.zip	15.9 MB	2/15/14 3:46:00 PM
NHDH0313_931v210.zip	75.2 MB	2/13/14 11:56:00 PM
NHDH0314_931v210.zip	66.4 MB	2/14/14 6:20:00 AM
NHDH0315_931v210.zip	97.2 MB	2/13/14 12:43:00 PM
NHDH0316_931v210.zip	92.6 MB	2/15/14 1:19:00 PM
NHDH0317_931v210.zip	64.4 MB	2/14/14 9:53:00 AM

Hydrography Website

WBD Data & Information



U.S. Geological Survey - N x
nhd.usgs.gov/wbd.html

Stewardship
User Resources
Tools
Applications
Contact Us
Watershed Boundary Dataset

delineate an area of land upstream from a specific point on a river, stream or similar surface waters. A hydrologic unit can accept surface water directly from upstream drainage areas, and indirectly from associated surface areas such as remnant, non-contributing, and diversions to form a drainage area with single or multiple outlet points. Hydrologic units are only synonymous with classic watersheds when their boundaries include all the source area contributing surface water to a single defined outlet point."

The Watershed Boundary Dataset is being developed under the leadership of the [Subcommittee on Spatial Water Data](#), which is part of the [Advisory Committee on Water Information](#) (ACWI) and the [Federal Geographic Data Committee](#) (FGDC). The USDA Natural Resources Conservation Service (NRCS), along with many other federal agencies and national associations, have representatives on the Subcommittee on Spatial Water Data.

As watershed boundary geographic information systems (GIS) coverages are completed, statewide and national data layers will be made available via the [Geospatial Data Gateway](#) to everyone, including federal, state, local government agencies, researchers, private companies, utilities, environmental groups, and concerned citizens. The database will assist in planning and describing water use and related land use activities.

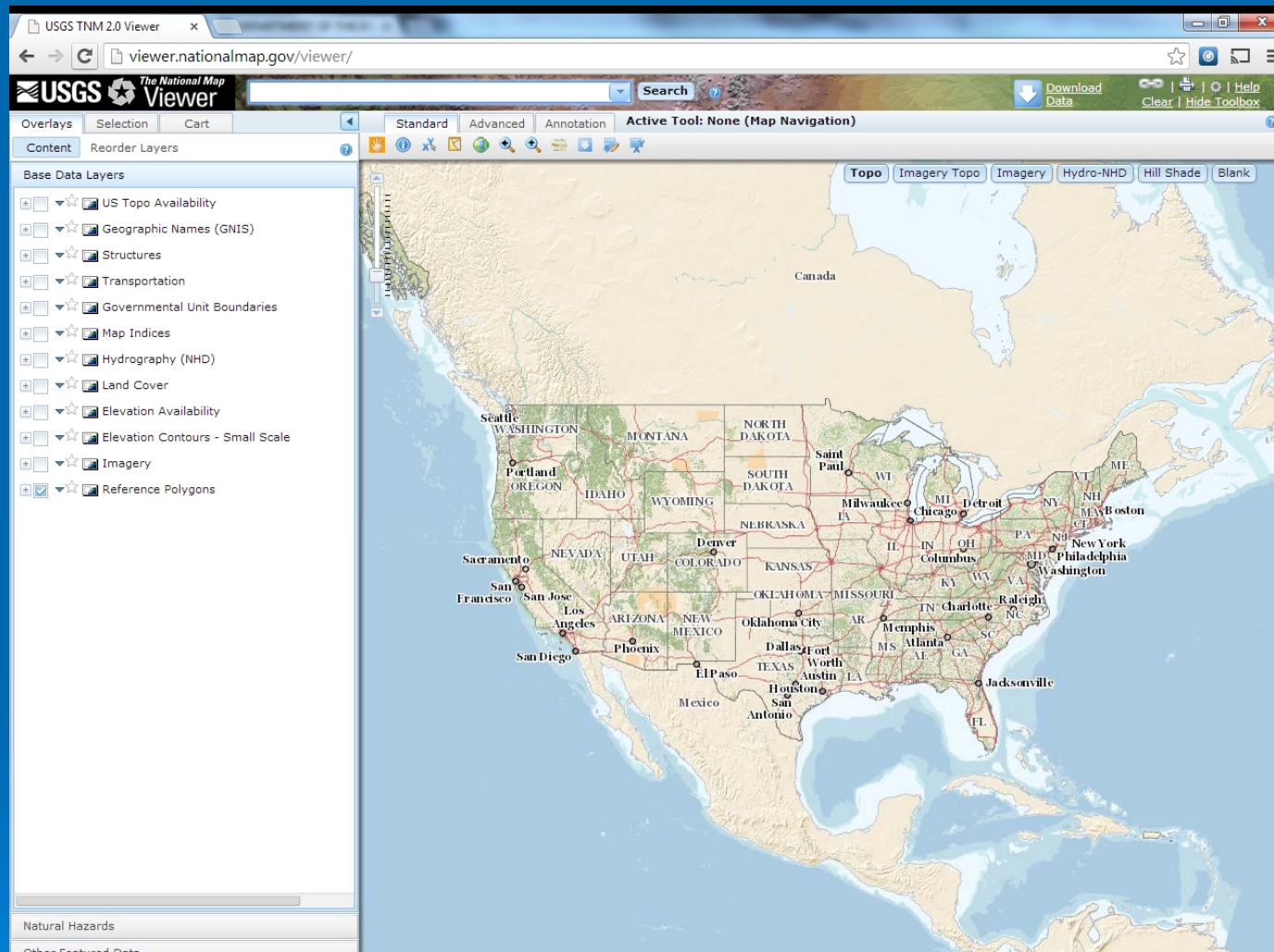
Links

- [Get WBD Data](#)
- [WBD Model](#)
- [Go to NRCS Geospatial Gateway](#)
- [WBD Stewardship](#)
- Information about WBD Dataset
 - [Facts](#)
 - [Information Sheet: Stewardship of the Watershed Boundary Dataset](#)
 - [History](#)
 - [FGDC Compliant Metadata](#)
 - [Recommended Data Citation](#)
 - [Canada-US Hydro Harmonization](#)
 - [WBD Standards](#)
 - [WBD FGDC Historical Metadata](#)

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.](#)

Accessibility: FOIA Privacy Policy and Notices

Hydrography Website



Hydrography Website

Future-WBD

- NWIS Drainage Areas Boundaries
- Semi-automation of LiDAR/IfSAR processing
 - Smoothing algorithms
- Consistent spatial scales to support hydrologic modeling
- Deliver catchments as part of extracts
- Web Edit Tools
- Improved open source technology and edit tools to effectively support stewardship and continuous maintenance
- Hydro (NHD and WBD)-Elevation integration products and services to support science and COU needs

Future-WBD cont'd

- Ever increasing integration of water science information referenced with the WBD
- Maintain current information through a mix of USGS internal expertise and stewardship
- Staged product delivery from the public cloud augmented with robust web services
- Maintain the solid framework established for WBD

PUBLIC DOWNLOAD OF WBD

USGS

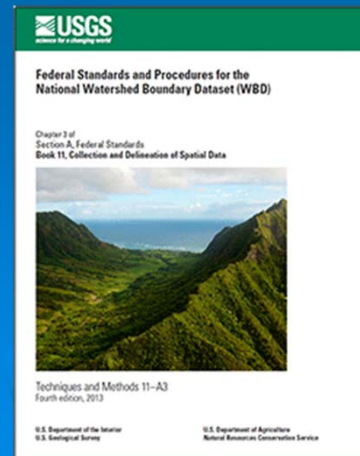
The National Map (refreshed every 2-6 weeks):
8-digit (all content within) <http://nationalmap.gov/viewers.html>



National seamless (refresh monthly), aiming for auto repeat on set date): <ftp://rockyftp.cr.usgs.gov/vdelivery/Datasets/Staged/WBD/>

National WBD Standards:

<http://pubs.usgs.gov/tm/tm/11/a3/>



PUBLIC DOWNLOAD OF WBD

NRCS

Geospatial Data Gateway (refreshed Oct 1 and Apr 1):
State, County, Area <http://datagateway.nrcs.usda.gov/>



National seamless <ftp://ftp.ftw.nrcs.usda.gov/wbd/>
FGDC Metadata <ftp://ftp.ftw.nrcs.usda.gov/wbd/>



Feel free to contact:

Karen Hanson

khanson@usgs.gov

801-908-5039

Stephen Daw

sgdaw@usgs.gov

303-202-4418