

USGS National Hydrography Dataset Newsletter  
Vol. 11, No. 9, July, 2012  
by Jeff Simley, USGS

**NHD Network Improvement Project** – by Dave Kraemer

The Network Improvement project was chartered in June, 2011 with the goal to identify and correct network problems existing in the high resolution NHD. The scope of this project covers the complete high resolution NHD, including sub-basins extending into Canada and Mexico, for the conterminous U.S., Alaska, Hawaii, and the U.S. territories. Horizon Systems was tasked to analyze the network by NHD Region and determine the location of network breaks. The NGTOC is then taking action to rectify breaks in the network, with input from NHD POCs and data stewards.

Project Objectives include:

- Identify non-linear named paths
- Identify that Canada and Mexico outflow and inflow connections are correct (no changes to Canada and Mexico geometry unless coordinated with Canada and Mexico)
- Identify all disconnects in the high resolution NHD network
- Identify logical connections that are not made
- Identify enclosed basins
- Identify isolated network of flowlines with no logical connection
- Identify water diversion network flow errors
- Edit the high resolution NHD to resolve the network connection errors (with edits made in coordination with the NHD POC and State partners)
- Create appropriate metadata to document actions

To date, analysis has been completed for all regions for the conterminous United States. With the release of the new GeoEdit tools in March, 2012 the NGTOC began edits to the high resolution NHD, but has experienced some issues with being able to complete all of the Final QC checks. Some datasets are being held in anticipation of an updated version of the tool scheduled for release in early August. The USGS is currently performing edits for regions 01, 17, 18, with 16 now completed.

**NHD Update toolbar 4.0.3**

The USGS will release NHD Update toolbar v4.0.3 (v4.0.2 was internal beta version only) by no later than August 10, 2012.

**WBD Stewardship Report** – by Stephen Daw

In early July, the latest version of the WBD was loaded into the NHD and distributed to the National Map. This update completes the process of integrating the WBD with the NHD moving the WBD database of record from our partners at the NRCS to the USGS. Stewardship of the WBD through the USGS will begin soon.

Development of the WBD Edit tool began in late 2009 with a bold vision to provide a tool that guides the editor/steward and simplifies the editing process in the WBD. The goal was to ensure that all edited WBD data was correct to standards at the time the edits were made. Original specifications called for a tool in ArcGIS 9.3.1 in a Windows XP environment. The initial requirements were overly ambitious given the level of resources and importance of providing a workable tool in a timely manner. Tool

development was delayed. Now the WBD community needs a tool that runs in ArcGIS 10.1 with the operating system at Windows 7.

After much discussion and consideration by the WBD State Stewardship Work Group (SSWG), a new WBD direction for WBD stewardship is underway. This direction calls for development of the stewardship tools using ArcGIS 10.1 in a Windows 7 environment. The tool is greatly simplified so that it only assists the steward in retrieving checked out data, creating proper metadata records and after editing is complete, sending the data on to the National Technical Coordinators for final QC and submittal to the WBD national database. While not as fancy as the old tool, the new tool will allow stewardship of the WBD to resume in September or October at the latest. Future versions of the tool will include additions to assist the steward in validation and other tasks as requested by the stewardship community.

An update on the development, testing and status of the new WBD tool will appear in next month's Newsletter. Any questions or concerns feel free to contact me, Stephen Daw, [sgdaw@usgs.gov](mailto:sgdaw@usgs.gov), 303-202-4418.

### **Positional Accuracy Video**

The USGS has produced a video series looking at the positional accuracy of the high resolution NHD. Part I of the video looks at lateral offsets on the South Platte River in Colorado and Black Earth Creek in Wisconsin. It concludes that streams in the NHD deviate from the position on contemporary imagery by about 10 to 30 feet with a mean of about 25 feet. The standard deviation is about 25 feet and the 90<sup>th</sup>-percentile is about 50 feet. Part II of the video looks at lateral offsets of streams in Montana. Then it compares the legacy high resolution NHD to new local resolution NHD in Arkansas, Iowa, Vermont, and New Jersey. View Part I of the video at <http://gallery.usgs.gov/videos/554> and Part II at <http://gallery.usgs.gov/videos/555>.

### **National Hydrography Dataset Applications Page – by Kathy Isham**

The U.S. Geological Survey (USGS) has redesigned its applications page for the National Hydrography Dataset (NHD). The new applications page is organized into the eight different types of applications that highlight how USGS and other organizations use the NHD. These eight types include (1) Fisheries Management, (2) Hydrologic Modeling, (3) Environmental Protection, (4) Resources Management, (5) Mapping, (6) Emergency Response, (7) WBD, and (8) HEM (Hydrography Event Management). In addition to these various types of applications, the NHD will also highlight a featured application that will change on a quarterly basis. The application that is currently being featured discusses how scientists at the USGS are using the HEM Tools to create seafloor drainage systems. Visit the NHD applications page here [http://nhd.usgs.gov/applications.html#UAQIH\\_Vf\\_7F](http://nhd.usgs.gov/applications.html#UAQIH_Vf_7F). If your organization has an NHD application that you would like to see featured, send a short description, graphic if available, and website url to [nhd@usgs.gov](mailto:nhd@usgs.gov).

### **NHD GeoConflation Tool - by Elizabeth McCartney**

The NHD GeoConflation tool provides a mechanism to bring completely new geometry into the NHD while maintaining and tracking original data characteristics such as reachcode and name information. The USGS has made major strides over the last few months (1) updating the GeoConflation tool, (2) improving documentation, (3) training, and (4) communication. The tool now runs smoothly using the NHD Model 2.1 schema, ArcMap 9.3.1, and Windows XP. Henry Hunt, the developer has converted the tool from VBA to .NET and along the way has greatly enhanced the usability and stability of the tool. Documentation has been updated to reflect changes in the installation and use of the tool, and we are continuing to improve documentation on post conflation steps.

In response to shrinking travel budgets, the USGS is providing more training via WebEx. Last month the USGS held the first NHDGeoConflation Tool Training via WebEx. The training was a success for the, but the USGS now realize this training needs to be completed in two or more sessions. Training will be offered on a quarterly basis with the next training scheduled for September 19th and 26th. In addition, the USGS is in the process of recording specific steps in the conflation process including pre-conflation QA, conflation steps in general, error queues, and post conflation (XML process, QA, final QA, and load into the NHD).

In an effort to improve and encourage communication among members of the NHD conflation community, the USGS has created a space on MyUSGS called NHD GeoConflation Tool (GCT). With stakeholder participation this forum can be a great success. The latest version of the tool, current documentation, supporting software, video tutorials, discussion forums, and news posts will all be available on the MyUSGS NHD GeoConflation Tool (GCT).

Next steps include: (1) improved documentation on post conflation (QA) ; (2) ability to run the tool on Windows 7, and (3) a "final" version that works with Windows 7 and ArcMap 10.1. If stakeholders are interested in training or becoming a member of the NHD GeoConflation Tool Community, please email [nhd-gct@usgs.gov](mailto:nhd-gct@usgs.gov) or contact Elizabeth McCartney at [emccartney@usgs.gov](mailto:emccartney@usgs.gov).

### **NHD Photo of the Month**

This month's photo was submitted by Ray Postolovski of the USGS and it features the headwaters of the Mississippi River. The Mississippi Headwaters is located in Itasca State Park in northern Minnesota. The Mississippi River begins at Lake Itasca, a small glacial lake located 1,475 feet above sea level, and flows 2,552 miles to the Gulf of Mexico. The Mississippi River drains 32 states and its watershed covers more than 40% of the nation. To see the photo of the month go to <ftp://nhdftp.usgs.gov/Hydro/Images/Mississippiheadwaters.JPG>. Submit your photo for the NHD Photo of the Month by sending it to [krisham@usgs.gov](mailto:krisham@usgs.gov). This will allow the program to build a library of real-world photos linked to the NHD.

### **June Hydrography Quiz / New July Quiz**

Mike Tinker of the USGS was the first to guess the June NHD Quiz as Walden Pond in Massachusetts. See <ftp://nhdftp.usgs.gov/Quiz/Hydrography83.pdf>. Michael Tinker has been working in the NHD production team in Denver since May, 2011. He works on linear referencing point events, such as gages, water quality stations, and dams, to the NHD network. He earned a B.A. in Biology from Metropolitan State University of Denver in 2009, and an M.S. in Environmental Science from the University of Colorado Denver in 2012.

Others with the correct answer (in order received) were Ken Koch, Dan Saul, Florence Thompson, Bill Samuels, Tom Denslinger, David Asbury, Jim Mitchell, Jon Labie, Jim Sherwood, Richard Patton, Anji Auger, David Anderson, Amy Prues, Roger Barlow, Katy Hattenhauer, Stephanie Kula, Joesph Miller, Ellen Lesch, Gary Penn, Al Rea, Greg Overtoom, Jim McDonald, Steve Shivers, Meredith Webster, David Straub, Jim Breck, Evan Hammer, and Dan Morse.

From David Anderson: "Walden Pond is a remnant of glacial activity in the area. A deep 103 ft. kettle pond dug out by glacial surge. Massachusetts has state park surrounding the north shore and a dedication to Henry David Thoreau because he lived on the north bank for many years before the civil war."

From Al Rea: “In the fall of 2010, the StreamStats team had their annual meeting in the Massachusetts Water Science Center, in nearby Northborough. We actually convened our meeting one fine fall afternoon at Walden Pond, and discussed NHD trace web services while walking around the pond.”

This month’s hydrography quiz can be found at <ftp://nhdftp.usgs.gov/Quiz/Hydrography84.pdf> . Name the lake which is impounded by a dam (commonly called a reservoir). Water flow is from north to south. Almost all the streams draining into the lake are intermittent, so it’s a dry climate. The horizontal line is a state line. Send your guess to [jdsimley@usgs.gov](mailto:jdsimley@usgs.gov).

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Thanks to Dave Kraemer, Paul Kimsey, Stephen Daw, Elizabeth McCartney, and Kathy Isham.

The NHD Newsletter is published monthly. Get on the mailing list by contacting [jdsimley@usgs.gov](mailto:jdsimley@usgs.gov).

You can view past NHD Newsletters at [http://nhd.usgs.gov/newsletter\\_list.html](http://nhd.usgs.gov/newsletter_list.html)

Jeff Simley, USGS, assumes full responsibility for the content of this newsletter.