

USGS National Hydrography Dataset Newsletter
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by Jeff Simley, USGS

NHD Update tool for ArcGIS 10.X by Paul Kimsey

NHD Update tool v5.0.0 for ArcGIS 10.0 was released on December 21, 2012. Recently, a major bug with the NHD Update tool v5.0.0 - QC functionality was discovered. We have identified and corrected the issue and are actively testing a new build (v5.0.1 for ArcGIS 10.0). The new release should be available for distribution soon, hopefully no later than the first week of February. We are balancing the need for a quick release with the overriding goal of providing sound tools – after completing comprehensive testing.

NHD Update tool v6.0.0 for ArcGIS 10.1 is in the final testing phase and will be officially released in February. Subsequent versions of the ArcGIS 10.1 tool (v.6.0+) will include enhancements submitted by the stewardship community. Release date for the first v6.0+ will be one-two months out from the February v6.0.0 release. Note that only the most recent version of the NHD edit tool will be maintained/enhanced. Issues reported regarding earlier versions, will be tested in the latest Beta version and resolved as necessary.

Watershed Boundary Dataset by Stephen Daw

This month a beta test was conducted to test the WBD Tools prior to full stewardship of the WBD beginning in February. Four state organizations and four federal agencies tested the tools for a week in January. These tests provided valuable feedback not only to the WBD tools but to the entire WBD stewardship process from the website all the way to distribution of the edited data. In the end, the USGS discovered over 53 different issues that need to be resolved prior to going live with the WBD tools and stewardship. The issues related to the WBD tools have now been solved and we are conducting a second round of beta testing for any and all who wish to participate.

Issues related to the stewardship website have mostly been addressed at this time. There were a number of concerns about the WBD data model and the WBD data format as it was loaded into the model. This week the USGS met with the WBD State Stewardship Work Group (SSWG) to review the WBD model as it now stands. The process for changing and updating the model was also discussed with the SSWG. Currently the WBD data model is under review by members of the SSWG. To review the model, see the model change process or have any questions about the WBD data model please contact Stephen Daw at sgdaw@usgs.gov. Once the WBD data model is approved by the SSWG, the WBD data will be loaded into the new model and reviewed by the SSWG. After this final data review, the WBD data will be loaded into the NHD production and distribution databases and propagated from there. The USGS hopes to finally roll out the WBD Tools and stewardship process in late February.

NHD Conflation by Elizabeth McCartney

Conflation in the NHD is a process that assists the transfer of attributes (reachcodes and GNIS IDs) from the source NHD to new target geometry. Conflation projects are ongoing in Indiana (AECOM), Louisiana (GDM), Mississippi, and Alaska with good success.

The NHD GeoConflation tools have been updated to work with Windows 7, ArcGIS 9.3.1. The number of steps has been reduced and several enhancements have been implemented including pop up warnings and reminders. The Windows 7, ArcGIS 10.1 version is in the process of being tested and will be ready

in February. Tools and documentation are available upon request, but it is strongly recommended to take the training before beginning a conflation project.

Training via WebEx is offered on a quarterly basis and custom training sessions are also available. Training consists of two 4-hour sessions which walk the user through the pre-conflation process (preparing subbasins for conflation), conflation, post-conflation QC and load into the National Database.

Please contact Elizabeth McCartney (emccartney@usgs.gov) or Joel Skalet (jjaskalet@usgs.gov) if you are interested in taking the training or becoming part of the MyUSGS GeoConflation Community.

NHD Social Media Update by Kathy Isham

The NHD Twitter Feed started 2013 right by adding new followers and tweeting valuable NHD news. The NHD now has 741 followers that range from government agencies, to individuals interested in geography and GIS to water resources experts. Twitter has been a successful platform for sharing program information. For example, one NHD tweet about new NHD Utilities available on the website was retweeted by five different followers. Another tweet about the New NHD Feature Application: Stream Stats Stream Network Navigation was retweeted by 3 different followers. You can see the featured application [here](#). You can follow the NHD by searching for USGSNHD on twitter. Additionally, the NHD twitter feed can be found on the NHD [homepage](#).

The NHD program is also working with the ESRI Hydro Team to publish posts on their blog. The USGS recently published a post that had previously appeared in the NHD Newsletter by Cynthia Deischer and Ray Postolovski on [Hydro Feature Names Inspection](#). This article was shared on Facebook 31 times, tweeted about 12 times, and shared using other social networking tools (Email, Reddit, Tumblr, etc.) 59 times. To date, there have been 989 views.

FGDC Metadata in ArcCatalog v 10.0 and 10.1 by Kathy Isham

ESRI eliminated the functionality to view and edit FGDC metadata with out-of-the-box ArcCatalog Version 10.0 tools. They have instead provided a plugin tool that can be installed and used for this purpose. You can read more about this issue, and download the tool [here](#). This issue has been corrected in ArcCatalog Version 10.1.

Can't get enough Metadata? Stay tuned for a tutorial on accessing NHD metadata coming soon!

January 2013 Status Report for NHD Network Improvements by David Kraemer

Monthly Status

There are four Regions completed for the Network Improvement project; Regions 9, 16, 17, and 18.

The State of Minnesota was completed in November, 2012 (parts of Regions 4, 7, and 9).

The entire team is now working on Region 3. Regions 7, 10, 11, 12, 13, and 14 are mostly complete, but cannot be finished due to various reasons; including sub-basins checked-out by others (majority), jobs with problems, and QC on hold until 2/1.

Region Completion Percentages

01 – 24%	03 – 01%	04 – 06%	07 – 84%	09 – 100%	10 – 96%
11 – 97%	12 – 88%	13 – 94%	14 – 86%	16 – 100%	17 – 100%
18 – 100%					

Current Issues

Version 5.0 of NHD Tools has issues producing valid Final QC results; so all job submittals are on hold until a new version of the tools are released. There are 75 jobs that will need to be re-run. State partners are working in some areas that are not allowing completion of Regions: Florida – Region 3; Illinois – Region 7; Missouri – Region 10; Louisiana – Region 11; Utah – Region 14. Other NGTOC projects are also impacting the completion of Region 3. As these groups check-in their jobs then the Network Improvement project will go back into those areas.

The latest NHD Tools became available on December 21, 2012. JTX software cannot process jobs with high density networks, so the Network Improvement jobs are 3-6 sub-basins. This allows the jobs to process, but is increasing the number of jobs to complete the project. Coastal areas have many high density sub-basins with many errors; so to expedite the Network Improvement project these areas are being set aside until the rest of the project is completed and NHD Tools has available a line to polygon snapping function.

Partners who want to know what is done in Network Improvements the list of checks can be seen by clicking on the descriptive text of Network Improvement Status on the NHD web page under News > NHD Project Status http://nhd.usgs.gov/project_status.html.

Vector Specialist Greg Matthews

The USGS announced the selection of Greg Matthews for the position of Vector Specialist within the National Geospatial Technical Operations Center. Greg will join Kevin McNinch in this role effective January 13. Because Greg has been leading The National Map Volunteer Geographic Information (VGI) activities, he will continue to support that activity, but at a lesser degree, until a replacement can be put in place.

Greg Matthews has been with the USGS since 2008 working on both the Transportation National Partner Support and leading *The National Map* Corps activities and investigations. Previous professional GIS work includes the City of Castle Rock as a database analyst and Parsons Engineering as a GIS Analyst. Greg has a Master's graduate certificate in GIS from University of Colorado at Denver, and a BS degree in Park Resource Management from Kansas State University.

NHD Acquisition of Alaska Glacier Inventory by Cynthia Miller-Corbett

The NHD is acquiring a new geospatial data set to update delineation of Alaska glaciers included in the NHD as a subset of the NHD Hydrography Water-body feature class. The glacier data is from the Alaska Randolph Glacier Inventory (the RGI). Produced as a supplement to the Global Land Ice Measurements from Space initiative (GLIMS), the RGI is a combination of both new and existing published GLIMS glacier outlines. The GLIMS began in 1995 as a U.S. Geological Survey, Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) team project. The ASTER instrument was launched into Earth orbit by NASA in 1999, and is flown on the NASA Earth Observing System (EOS) AM-1 Satellite. The instrument provides high-resolution images running different bands of the electromagnetic spectrum ranging from visible to thermal infrared light. Resolution ranges between 15 to 90 meters.

RGI V.2 released in April 2012 provides glacier outline updates in shapefiles for Alaska in six sub-regions. Glacier outlines are updated by assessing overlays of outlines on modern satellite imagery (http://www.glims.org/RGI/RGI_Tech_Report_V2.0.pdf). The modern imagery is acquired from Landsat TM, IKONOS, 2010 pan-sharpened 5m resolution Landsat 7 ETM+scenes, and SPOT SPIRIT 5m resolution instruments. In several regions the outlines already in GLIMS are used for RGI. Research and a preliminary assessment of the RGI geospatial data indicate the RGI meets NHD criteria for integrating data from an accurate, authoritative source. The only issue found during the assessment is for areas

where the Alaska RGI appears to have delineated glacier outlines using raster cell boundaries. Based on a representative sampling of glaciers in the Alaska RGI shape file, this appears to account for a small percentage of the inventory.

Using a GIS, comparisons of existing NHD ice mass data with the Alaska RGI for glaciers in the Brooks Range, Alaska Range, and glacier fields in five other mountain ranges in south and southeast Alaska were used to visually assess changes in the areal extent of glaciers and the relation of NHD Stream/River vectors and Lake/Pond polygons to new glacier outlines. Where possible, the agreement between RGI glacier outlines and the 2012 SPOT Imagery for USTopo maps was also evaluated. Initial results show places where ice mass outlines match and other places where there is a relatively large difference. For example, southwest of Mt. Blackburn in the Wrangell Mountains, there are no changes or minimal changes to glacier outlines that measure 45m or less. At other sites such as the Bering Glacier along the Saint Elias Mountains and the Columbia Glacier in the Chugach Mountains, comparisons of outlines show changes in glacier outlines measuring as much as 6.5 and 7 km.

For some regions, changes in the areal extent of an ice mass result in disconnects between previously associated NHD Stream/River vectors or Lake/Pond polygons. These changes can be resolved using photo interpretation of SPOT imagery. However, the imagery is not always available or may be difficult to interpret because of weather conditions and cloud cover that prevent collection of imagery or result in imagery that is not clear and cannot be used to identify ground surface features. The lack of good SPOT imagery at some sites made it difficult to evaluate Alaska RGI glacier outlines; however, for glacier sites where SPOT imagery is available and clear, there is very good agreement between the two sources. This provides confirmation of apparent change in the extent of glaciers, and is an indication that RGI glacier outlines generally correspond with the most recent SPOT imagery for USTopo map production.

Call for Abstracts: The National Map Users Conference

Pending approval by the Secretary of the Department of the Interior for this event, the USGS announces a joint meeting of the second The National Map Users Conference and fourth Community for Data Integration Workshop and Training “Future Directions: Collaborate, Integrate, Innovate.” to be held May 21-24, 2013, in Denver, Colorado. The afternoon of May 20 is also available for training and work group informal sessions. The National Map Users Conference and Community for Data Integration collaboration will bring together scientists, managers, and data users to share accomplishments and progress through presentations, panels, posters, online demonstrations, and informal gatherings. The goal is to enhance communication among USGS scientists and the Department of the Interior (DOI) bureaus as well as to tap into geospatial, science, and resource management communities from other Federal agencies, State and local governments, researchers, industry, and other organizations. Representatives from DOI, USGS, and other organizations will provide their perspectives on goals, strategic directions, priority user communities, science needs, and training for USGS geospatial, data integration, and related activities.

The focus of the combined The National Map Users Conference and CDI Workshop includes, interacting with priority communities of use, the role of The National Map in supporting science initiatives, and future status and plans. Presentations should address (1) experiences based on use of The National Map data theme or application and (2) data integration issues, planning, and execution in support of science, including products and tools to help our scientists find, get, and use data for conducting interdisciplinary studies.

Please consider participating by submitting an abstract that addresses one of the session themes. The descriptions of the themes can be found at: http://nationalmap.gov/tnmuc_cdiworkshop/

OpenGeo Presentation on NHD Editing

The NHD is a large, nation-wide dataset that relies on the input of organizations knowledgeable about their local hydrography. The current tool used for editing the NHD requires significant expertise—particularly GIS expertise. OpenGeo created a prototype for the USGS as an example of a web-based alternative that would allow a broader range of stewards to engage in editing NHD data in a way that respects the topology rules inherent to the NHD. An additional demonstration with better view of the application, but no narration is available: [USGS National Hydrography Database](http://www.youtube.com/watch?v=zNR8xKyDbMw&feature=youtu.be). You can see a talk on the subject at: <http://www.youtube.com/watch?v=zNR8xKyDbMw&feature=youtu.be>

Delaware, Maryland, and Washington D.C. NHD Cooperation by Dave Arnold

NHD Editor Tool 4.0.3 training for ArcMap 9.3.1 was provided in Baltimore, Maryland on December 13–14, 2012 at the Maryland Department of the Environment offices. The State of Delaware sent two editors to the training, Washington D.C. sent two editors, and Maryland had eight editors present, representing several different state and federal government organizations. The high resolution NHD in Delaware has not been updated by the state in the last two years, while the NHD in Maryland and D.C. have not seen steward based updates for upwards of five years. The various states and organizations agreed to work together to coordinate updates and scales so that the entire NHD region will match. The initial conversation indicated the desire to create local resolution at a scale of 1:2,400, however, a final decision has not yet been made. Work is expected to begin in the first quarter of 2013. For questions or more information, contact Dave Arnold at darnold@usgs.gov.

NHD Photo of the Month

This month's photo features the San Miguel River in the Ilium Valley of Telluride Colorado. The Ilium Valley is a popular recreational destination. This photo was submitted by Michael Tinker of the USGS. To see the photo of the month go to ftp://nhdftp.usgs.gov/Hydro_Images/SanMiguel.jpeg. Submit your photo for the NHD Photo of the Month by sending it to krisham@usgs.gov. This will allow the program to build a library of real-world photos linked to the NHD.

December Hydrography Quiz / New January Quiz

Evan Hammer of the Montana State Library was the first to guess the December NHD Quiz as Mount McKinley in Denali National Park in Alaska. See <ftp://nhdftp.usgs.gov/Quiz/Hydrography89.pdf>

Evan is the Digital Information Manager/CIO at the Montana State Library and also manager of the Montana Natural Resource Information System. It is the statutory mission of the State Library to be a neutral, non-regulatory source for water information - <http://data.opi.mt.gov/bills/mca/90/15/90-15-305.htm>. Along with Duane Lund (also at the State Library) and employees from the Montana Departments of Natural Resources and Conservation, Environmental Quality, and Fish Wildlife and Parks Evan has been working very hard over the last several years to establish the NHD as a common reference base for water information within Montana state government.

Others with the correct answer (in order received) were: Bob Denouden, Linda Davis, David Asbury, Greg Winters, Ken Koch, Al Rea, Mike Wiedmer, Kitty Kolb, Matt Rehwald, Amy Prues, David Straub, Claire DeVaughan, Richard Patton, Janet Brewster, Daniel Button, Jim McDonald, John Kosovich, Jim Mitchell, Steve Shivers, and Brent Thelen.

This month's hydrography quiz can be found at <ftp://nhdftp.usgs.gov/Quiz/Hydrography90.pdf> . What is the name of the large lake in the center of the image. It looks like a flooded river valley. In fact, the valley has been inundated by a dam at the north end. Note that there is a parallel ridge just to the east of the lake. This ridge rises to a height of 7,995 feet. Normal pool elevation of the lake is 3,360 feet. However, in the NHD it is listed as the equivalent 1,085.1 meters. The lake is listed as an FType of Reservoir, which is incorrect, it should be a Lake/Pond. Send your guess to jdsimley@usgs.gov.

Any use of trade, product, or firm names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

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The NHD Newsletter is published monthly. Get on the mailing list by contacting jdsimley@usgs.gov.

You can view past NHD Newsletters at http://nhd.usgs.gov/newsletter_list.html

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