

USGS National Hydrography Dataset Newsletter  
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## **The NHD and ArcGIS 9.2**

ESRI's new ArcGIS 9.2 will have some impact on the National Hydrography Dataset as can be expected with any new version release. The big news or course is the use of the File Geodatabase, which allows larger files sizes, enhanced performance of large files, better exploitation of geodatabase design, and reduced storage requirements for a given amount of data. ESRI claims that hydrography database sizes can be cut in half. Moving to the File Geodatabase will enhance performance of the main NHD database operations at the USGS, which means better service to customers. Providing File Geodatabase downloads of the NHD means users can work with larger datasets and experience better performance, particularly over 500 MB. With regard to File Geodatabase, two things will happen: (1) USGS plans move its main database to the File Geodatabase in the September, 2007 timeframe pending good test results, and (2) data downloads will become available in File Geodatabase. To assure that customers operating in the Access-based personal geodatabase environment are supported, this format will continue to be available for users. Personal geodatabases will support 8.3 through 9.2 systems. When the NHD Geo Edit Tool moves from a 9.1 to 9.2 implementation, personal geodatabases and file geodatabases will be supported. There are some disadvantages of ArcGIS 9.2, some of which are related to ArcGIS and some related to the file-based system: (1) SQL type queries are not yet supported for File Geodatabase, (2) Tools such as NHD Geo Edit face some risk that needs to be evaluated and issues addressed, (3) Utilities such as XML extract and network rebuild do not work in ArcGIS 9.2 requiring upgrades, and (4) Custom user executables need to be evaluated. The issues should be minor with an incremental change from 9.1 to 9.2, but everything has to be tested and upgraded as necessary.

## **The NHD at the 2007 ESRI User Conference**

Stewardship of the National Hydrography Dataset - This session consisted of a four member panel providing various viewpoints on NHD stewardship followed by a general discussion on the subject. Presenting on the panel were Jeff Simley of the USGS providing an overview of stewardship philosophy and structure; Sandi Kuitunen of the Minnesota Land Management Information Center providing an overview of stewardship successes, challenges, and recommendations from her agency; Dan Wickwire of the Bureau of Land Management providing an overview of stewardship in the Pacific NorthWest Hydrography Framework; and Sibyl Govan of the Montana State Library Natural Resource Information Center providing an overview of the state's Hydrography Working Group's involvement in stewardship. Sandi, Dan, and Sibyl all pointed out the importance of the NHD to multiple agencies in their work environment and that stewardship was not simply a relationship between their agency and the USGS. As stewards of the NHD, they acted as a pivotal interface between the needs of many users of the data and the needs of the USGS to create a level of uniformity in the data and the stewardship processes. Their agency commitment to the NHD was very strong, but to some degree they had to wrestle with making sure all members of their consortium were aligned with that commitment. The level of maintenance needed in the NHD ranged from simple network improvements, to temporal updates, to significant densification efforts. None of these data improvements have been simple to implement and involve frustrations as the USGS and its partners strive to turn the stewardship concept into a working program. Some concerns identified were: (1) whether this was really just an experiment, (2) the need for a strong USGS IT infrastructure to support the throughput of data, (3) the availability of funding needed to make the program work, (4) the high level of complexity in maintaining a robust dataset like the NHD, (5) the necessity for high levels of training, (6) the need for the USGS to adequately staff a team of people to interface with the states, (7) the inevitable shift to even higher resolutions of data demanded by the science, and (8) the impact of LIDAR technology as a new source for stream networks. Following the

formal presentations, questions and answers were exchanged between the panel and the audience. The major theme of this discussion, largely presented by the audience, was that the stewardship of the NHD was an important development in how geospatial data is managed in the United States. This initiative is widely supported, with great interest throughout the user community. The implementation has generated a large degree of momentum supported by many users. The danger is that the complexity of making the maintenance work, both technically and administratively, will break the momentum and weaken the essential support of the community. People are enthused about the stewardship of the NHD and that enthusiasm is essential to generating commitment. Once lost, getting people to recommit will be extremely difficult. Stewardship will succeed, but the USGS has to back up this initiative with performance.

### **NHD Web Site Activity**

One way of gauging interest in the National Hydrography Dataset is to look at how often the NHD web site is accessed in a typical day. A good measure of this is to look at how many web pages are displayed to users. Normally about 4,600 pages are displayed in a day composed of 310 megabytes of information. Within these pages, users click on various options generating requests to the web site for more or more specific data averaging 53,000 requests processed per day.

### **Subregion Update Problems**

The staged NHD subregion files available for immediate download from <ftp://nhdftp.usgs.gov/SubRegions> may not be synchronized with the latest data from the main database as designed. Users are cautioned to be aware of this situation until a software fix is made.

### **What to do if you find an error in the NHD**

A service is now available to make it easier to note an error in the NHD that requires consideration for correction. To access this, go to <http://nhd.usgs.gov> and click on the Stewardship tab. Then click on the link at the bottom which will take you to the stewardship website <http://webhosts.cr.usgs.gov/steward/>. A tab on the left side of the stewardship page allows you to Request Maintenance. Enter information about yourself so you can be contacted. Then enter the hydrologic unit or the ReachCode where the problem exists. A free text space then allows you to describe the problem. Whenever possible use a ReachCode to identify exactly where the problem exists, and also name the state. Typical problem descriptions might be: "No flow connection from ReachCode 03080402008932 to ReachCode 03080402008931 in North Carolina", or "River containing ReachCode 17010002000349 in Oregon should be named Johnson Creek, GNIS ID 629356."

### **Names of NHD Features**

The naming of geographic features in the NHD is based on a hierarchal basis where multiple names may exist for a feature. For example, Mobile Bay on the coast of Alabama is a subset of the Gulf of Mexico. Likewise, the Gulf of Mexico is superseded in the hierarchy by the Atlantic Ocean. In the NHD, features are named based on the highest level name in the order of names. So when using the NHD, Mobile Bay is actually named Atlantic Ocean. This may cause difficulty for some NHD users.

### **Completion of the High Resolution NHD**

The final subbasin to be completed in the high resolution NHD program will be Broad-St. Helena, South Carolina, 03050208. It is located on the Atlantic coast at the southern tip of South Carolina. The area is

known for the Paris Island Marine Corps training facility and for Hilton Head Island. The subbasin should be completed on July 31, 2007.

### **NHD Documentation**

Look for a new and revised set of NHD documentation in draft form available for your review and comments. The documents: (1) [Standards for National Hydrography Dataset – High Resolution](#), (2) [Best Practices for the Revision of the National Hydrography Dataset](#), (3) [The National Hydrography Dataset Concepts and Contents](#), (4) [Introducing the NHDinGeo](#), and (5) [Stewardship of The National Hydrography Dataset](#) can be found at <ftp://nhdftp.usgs.gov/Docs>.

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

Jim Sherwood, a hydrologist with USGS Ohio Water Science Center, was the first to correctly guess last month's hydrography quiz <ftp://nhdftp.usgs.gov/Quiz/Hydrography24.pdf> as the Cuyahoga River, subbasin 04110002. Cuyahoga is a native-American word meaning "crooked river." Jim had just recently completed a study on the Cuyahoga River. His office uses the NHD extensively for various surface-water and geomorphic studies in Ohio. The flow connectivity information contained within the NHD makes it particularly useful for streamflow-modeling studies. The U-shape of the Cuyahoga River basin as a result of glacial advances and retreats during the Wisconsin glaciation makes it rather easy to identify. The Cuyahoga River deserves major credit toward the creation of the Clean Water Act and the Environmental Protection Agency as a result of it's catching fire in 1969 (see [ftp://nhdftp.usgs.gov/Quiz/Cuyahoga\\_Burning.doc](ftp://nhdftp.usgs.gov/Quiz/Cuyahoga_Burning.doc). Jim swam across the river several times last summer while surveying stream-channel cross sections and is happy to report that it was clean and cool. Jim's USGS office is one of 400 throughout the U.S. employing 10,000 scientists, technicians, and support staff. The USGS is a scientific bureau of the United States Department of the Interior, where the scientists study the landscape of the United States, its natural resources, and the natural hazards that threaten it. Others with the correct answer were Laurie Morgan, Bill Samuels, Cher Salley, Dean Tucker, Joanna Wood, James Seay, Ann Pitchford, Ken Koch, Greta Resch, David Ashbury, David Anderson, Sandra Kosek-Sills, Roger Barlow, Guy Whitaker, Calvin Meyer, Jim McDonald, and Alan Springett.

This month's hydrography quiz can be found at <ftp://nhdftp.usgs.gov/Quiz/Hydrography25.pdf>. This is a famous lake. Some very amazing photographs have been made of this lake. One clue is to look at the flow network. The lake is really a sink, so the artificial path running out of the lake to the East may be a little misleading.

### **Upcoming NHD Geo Edit Tool Training**

July 17-19, 2007 San Diego, CA, Contact Steve Char [sjchar@usgs.gov](mailto:sjchar@usgs.gov) or Carol Ostergren at [costergren@usgs.gov](mailto:costergren@usgs.gov)

August, 2007, Lansing, MI, Contact Hank Nelson [hpnelson@usgs.gov](mailto:hpnelson@usgs.gov) or Steven Aichele at [saichele@usgs.gov](mailto:saichele@usgs.gov)

September 18-20, 2007 San Diego, CA, Contact Steve Char [sjchar@usgs.gov](mailto:sjchar@usgs.gov) or Carol Ostergren at [costergren@usgs.gov](mailto:costergren@usgs.gov)

September, 2007 Columbus, Ohio, Contact Hank Nelson [hpnelson@usgs.gov](mailto:hpnelson@usgs.gov) or Charles Hickman at [chickman@usgs.gov](mailto:chickman@usgs.gov)

October, 15-19 Tallahassee, Florida, Contact Carl Nelson [cwnelson@usgs.gov](mailto:cwnelson@usgs.gov) or David Anderson at [David.S.Anderson@dep.state.fl.us](mailto:David.S.Anderson@dep.state.fl.us)

Fall, 2007 (Possibility), Anchorage, AK, Contact Paul Kimsey or Carl Markon [markon@usgs.gov](mailto:markon@usgs.gov)

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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.