

USGS National Hydrography Dataset Newsletter
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By Jeff Simley, USGS

The NHD in Alaska

It's time to revisit the progress of the National Hydrography Dataset in Alaska and reviewing the attached Alaska graphic can best do this. The production of Alaskan NHD is a hybrid of medium resolution and high-resolution NHD techniques and therefore requires a unique approach. At the bottom of the graphic you will see a flow chart of the Alaskan process. Starting from the right and working backwards, we can see that 23 of Alaska's 136 subbasins are complete. In the previous stage, phase 5, there are 51 subbasins waiting to have the flow validation completed. The principle holdup has been a limitation on server capacity needed to support production seats, an issue recently resolved. There should see a breakthrough soon. There are currently 12 subbasins in FOD Load/Unload, a phase that is running fairly smoothly with only some minor delays. Prior to this, there are two phases that run in parallel. Phase 3, data conversion, is running smoothly, but phase 2, the creation of RF3-Alpha data, is creating some challenges. A number of subbasins are too large for processing and must be split in order to reduce the amount of data. A new contract was required to provide the necessary software for this. Also, a number of various errors related to the unique characteristics of the Alaska data size and complexity are being resolved. In addition, some source data in Southeast Alaska was late in delivery and required unique Phase 1 processes. Finally, 3 subbasins remain in the data preparation phase while minor errors are fixed. Note that three subbasins are indicated as having no source. There are currently no plans to produce the NHD for these areas. The big question, of course, is when will all of this be done? That largely depends on the success of the phase 2 and phase 5 solutions. The current goal is to have 50% of the work done by December 31, 2002, with the remaining work completed by the end of March 2003. For more on the Alaska NHD process, see vol. 1. nos. 4 and 7 of the NHD Newsletter.

Redcon

Redcon is one of several contractors that form a vital industry component of the National Hydrography Dataset program. The company, based near Salt Lake City, Utah, has produced digital data for the USGS and other federal agencies for over 20 years, winning a number of awards recognizing its outstanding performance in the process. Redcon contributes to the NHD program in a number of ways. One is in its role as a member of the SAIC team serving the USGS Cartographic Services Contract – II, producing the NHD using the NHD-Create software system. Second, it works under contract to the State of Utah to produce the NHD, and to digitize and revise DLG-3 hydrography data used as a source for the NHD. Utah is well on its way to achieving statewide NHD coverage, thanks to the vision of the State of Utah's Automated Geographic Reference System agency, and cooperation from the U. S. Forest Service and the USGS. Third, the company served as a contractor for the Department of Interior's former Digitizing Services Contract where it produced thousands of DLG data sets throughout the country, including much hydrography used today by numerous NHD producers. Redcon's expertise in the NHD is rooted in the company's vast experience in automated cartography and GIS services. It built a strong knowledge of hydrography from DLG production and added yet another dimension through work in the photogrammetric revision of hydrography. With much involvement in hydrography, Redcon took an early interest in the NHD and soon became a producer, receiving extensive training from the USGS. Its experience in the NHD has developed over time and has given the company the capability to meet customer requirements of timeliness, quality, and cost. Redcon has a peak staff of 8 NHD producers with an additional 5 staff members involved in other various stages of hydrography. The firm remains committed to quality through ISO-9000 compliant production plans and processes. Redcon is eager to continue to play a major role in the Nation's NHD program and has built the necessary capacity to make this possible. More company information may be obtained on the web at www.redcon.com.

The NHD in Wyoming

Wyoming is covered by 83 subbasins, 35 of which are either in-work or have been completed under the U.S Forest Service-U.S. Geological Survey partnership, which covers about one third of the State. Seven more subbasins are in-work or have been completed by the Bureau of Land Management (BLM) Wyoming state office using a contract with the University of Wyoming's Wyoming Geographic Information Science Center (WyGISC). The USGS Rocky Mountain Mapping Center will produce additional subbasins in partnership with the BLM WyGISC program and the USGS homeland security program, leading to coverage for about half of the State. An additional ten subbasins were planned to be produced under the USGS DOI High Priority Lands program in Fiscal Year 2003 and an additional number in FY 2004. However, this program is on hold because the funding that was allocated is being used for homeland security programs. Alternative plans for the affected subbasins are being studied. The BLM state office will continue to fund the WyGISC in FY 2003 to produce the NHD for subbasins of concern to the BLM. The Wyoming BLM is having the WyGISC add riparian data to the NHD for use in their Resource Management Plans. A plan for a national BLM funded NHD program is under consideration, which if approved could make a major contribution to NHD work in Wyoming. A new Wyoming I-Team subcommittee has been formed for the hydrography layer, which will consist of the NHD. It will be a function of this group to form a plan for the completion of NHD for the State.

NHD Geodatabase Development Tasks

Several development tasks are currently in work for the transition to the NHD geodatabase system. These developments are distributed to various Centers at the USGS. The NHD geodatabase development tasks include:

Data Migration – Converting the NHD to Geodatabase: The Rocky Mountain Mapping Center (RMMC) will host the new NHD geodatabase repository. RMMC developers, working with Feature Operational Database (FOD) support personnel at the EROS Data Center (EDC), have run through two test conversions of the entire NHD holdings. These test runs are used to evaluate the procedures and output from the conversion process. At least one more test run will be executed prior to a final conversion.

Input Interface – Validate and Manage: The ESRI geodatabase system cannot become operational until there is an interface available to validate input data and manage the updates. Change management will be implemented using the ESRI ArcSDE versioning capability, but several custom developments still must be built for a distributed data update environment. The developers at EDC, who are already familiar with most of these requirements from their FOD support efforts, will develop this functionality to the new ESRI ArcGIS geodatabase environment. RMMC development personnel will assist with the design and database support for this activity.

ArcIMS Interface – Access to the NHD: Having data in the geodatabase is only part of the story. There also must have an effective interface to view and distribute the data. The NHD development will support *The National Map* look and feel, but will also include custom capabilities for queries, extracts, and change management that are currently beyond the scope of *The National Map* portal development. The ESRI ArcIMS system will be used and RMMC will lead this effort.

Edit Interface – Better Toolset: The U.S. Forest Service (USFS) has a need for an edit system to maintain the NHD data over the lands that they manage. To support this requirement, a new toolset is being developed under a USGS/USFS contract to ESRI using the geodatabase model in ArcGIS. The capabilities developed under this contract are limited to basic interactive edits of NHD data in the geodatabase format. Until this capability and the following pre-processing developments are available,

the NHD will continue to rely on existing ESRI ArcInfo and ArcView toolsets to maintain the NHD through a backward compatibility capability with Feature Communication Protocol and NHDinARC.

Edit Pre-processing Tools – Additional Capabilities: Although an interactive edit system is being developed by ESRI, additional preprocessing capabilities must be built to support conflation, centerlining, and translations requirements. The developers at the Mid-Continent Mapping Center (MCMC), who are familiar with these requirements from their work on NHDCreate, are migrating this functionality to ArcGIS in geodatabase. These components will compliment the edit tools being developed by ESRI.

Data Model – Ongoing Development: With input from ESRI, the USFS, the Environmental Protection Agency, the Federal Geographic Data Committee, and others, the data model for NHD is still in development. The model is an extension of the hydrography data from the ESRI ArcHydro design that the NHD development group helped develop with ESRI and the University of Texas. Although mostly complete, expect minor modifications up to the final conversion to geodatabase.

User Review – New Data Model and System Design: The USGS will be releasing a user review page with test data, documentation, and user feedback forms to the primary users of the NHD. This forum will be used to gather input from users on the new data model and system design. MCMC is leading this effort with development of the web page and with technical support from RMMC.

Second Year of Newsletter

This issue marks the start of the second year of the USGS NHD Newsletter. The purpose of this newsletter is to keep those interested in the NHD up-to-date on what is happening with the NHD from a USGS perspective, and currently with an emphasis on production. Please forward this newsletter on to your colleagues and send the email addresses of those you would like to see added to the distribution. Please send your requests for articles and feel free to send in articles of your own.

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