USGS National Hydrography Dataset Newsletter
Vol. 14, No. 8, June 2015
by Jeff Simley, USGS

WBD Standards Review by Karen Hanson

The WBD State Stewardship Work Group (SSWG) http://acwi.gov/spatial/wbd-huc/wbd_sswg_charter_apr1_2013.pdf met on February 16, and again on March 2, 2015 to evaluate any needed updates to the Federal Standards and Procedures for the National Watershed Boundary Dataset (WBD), edition 4 http://pubs.usgs.gov/tm/11/a3/. This current version was published on September 17, 2013 under Techniques and Methods 11-A3. Updates to edition 4 reflected the latest Data Model http://nhd.usgs.gov/WBDposter_6_30_09a.pdf so it is anticipated that edits to edition 5 will be much less extensive.

The WBD SSWG determined that the next edition update should include the following items:

(1) In progress by the SSWG and select partners having already made WBD hi res updates, is the development of a white paper on specific instruction with graphic examples on how to delineate WBD using high resolution ifsar or lidar elevation. Accompanying this white paper is the supplemental metadata form required upon submittal providing details on acquisition and processing ftp://ftpext.usgs.gov/pub/wr/ut/salt.lake.city/WBD/HI_RES/. This information will be added to edition 5.

(2) Minor consistency edits on references to square kilometers and acres will be made.

(3) Further instruction and graphic examples for delineation of non-contributing areas and coding of their 10-, 12-, 14- and 16-digit hydrologic units will be added.

(4) Updates to the Line and Poly modification fields with graphic examples will be included.

(5) Additional information on topology checks during the WBD Tool editing process will be added.

(6) Instruction on updating individual state FGDC metadata and the link to archived metadata will be included.

(7) Any updates to reflect changes to the WBD Tool/add ins/ database will be added.

(8) Overview and explanation of the new Data Model additions which include 4 feature classes hosting digital National Water Information System (NWIS) drainage area boundaries based off of WBD geometry will be added. The four new feature classes are as follows:

a. NWIS Boundary
b. NWIS Drainage Area
c. Non Contributing Drainage Boundary
d. Non Contributing Drainage Area

(9) Evaluation and updated instruction will be made for the new 14- and 16-digit delineation processes, now that some states have started to create and include these levels back into WBD.

NHDPlus-High Resolution Update

One of the great achievements of the National Hydrography Dataset will be the production of the NHDPlus-High Resolution. This will combine the outstanding characteristics of the NHDPlus to integrate hydrography with the terrain to produce drainage catchments and streamflow estimates, with the detail of the high resolution NHD. Much effort is currently underway to improve the NHDPlus software to make the production process more streamlined and automated. This investment will pay off later when full scale production of the nation gets underway to rapidly produce new data and to refresh data to correct anomalies. Currently work is underway for hydrologic region 06, the Tennessee River basin. It is expected that this data will become available in the August timeframe.

Completion of National WBD review and update of downstream codes (ToHUCs) by Karen Hanson

Over the past 9 months the USGS WBD National editing team in Salt Lake City, has been working side by side with in state WBD stewards to review and correct downstream codes (ToHUCs) in the Watershed Boundary Dataset (WBD). This field was not a requirement for certification completion in 2009, however it had become apparent that many agencies were relying on correctness and utilizations of this information in many applications. A national effort to visually review HUC12's , and also run automated check scripts developed by the USGS, provided the method to check over 86,466 hydrologic units. Lists were compiled of old and proposed new codes where errors were found, and then packaged by state for facilitation of review by the in state WBD steward. In the end 5,148 hydrologic units received an updated ToHUC code, resulting in about 150 check outs/check in's to ingest all of the updates back into the national dataset. This exercise is now complete, and in addition to corrected ToHUCs will offer increased stability to the HUC12 coding. Look for this data to be available in an updated July version either through staged products, via ftp or The National Map, or in the national seamless WBD: ftp://rockyftp.cr.usgs.gov/vdelivery/Datasets/Staged/WBD/. Alaska and Wyoming were reviewed by other methods, not included in above totals, but also available. Thank you to our fifty WBD Stewards for clearing your schedules in order to review and respond throughout this editing process. For more information, please contact Kim Jones, kjones@usgs.gov.

WBD Product & Service Lead Retiring

After 36-1/2 years of Federal service, Karen Hanson, USGS Watershed Boundary Dataset Product & Service Lead is retiring July 3, 2015. Karen studied Landscape Architecture and Civil Engineering at Utah State University, and spent several years working in private industry as a Land Survey Party Chief, prior to beginning her Federal career with Natural Resources Conservation Service as a Civil Engineering Technician. For the next 6 years, she worked designing irrigation systems for farmers and ranchers throughout northern Utah and the Uinta Basin. The following 7 years Karen worked for the Bureau of Reclamation, on the repair of Fontenelle Dam and new construction of Jordanelle Dam, logging drill core, and overseeing the instrumentation installation and monitoring. In the early 1990's Karen accepted a job with the USGS Utah Water Science Center, where she offered GIS support for water quantity and quality investigative reports, and would lead the Center as the GIS Coordinator.

In 2000 Karen became involved in the early creation of the Watershed Boundary Dataset (WBD). This role would evolve to the Utah State Steward, Regional Stewardship Support, and then the National Product and Service Lead, representing both the Water Mission Area and the National Geospatial Program. She would manage and guide the WBD to nationwide certification completion in 2009, with Alaska following a year later in the spring of 2010. Since then Karen has managed completion of the WBD across the Mexico border, and much of the Canadian border, and continues to oversee and work with teams on many national improvements and enhancements to the dataset (coastal processes standards, 14- and 16-digit, Hi res delineations using ifsar or lidar, NHD integration, and the new NWIS Drainage Area Boundaries).

NGTOC Hydrography Lead

The U.S. Geological Survey's National Geospatial Technical Operations Center (NGTOC) has named Ellen Finelli as the Senior Hydrography Project Lead. This is a senior level position to provide technical expertise and coordination for the National Hydrography Dataset/Watershed Boundary Dataset and is assigned directly to the NGTOC Director. This will facilitate the ability to coordinate all aspects of the hydrography program across the NGTOC. The NGTOC is the operational arm of the USGS National Geospatial Program (NGP). The major duties/responsibilities include coordinating national project plans, personnel, equipment, and schedules across the NGTOC and with stakeholders outside the Center. One

of the primary duties of this position will be to work with others in the Center to respond to the annual programmatic and technical guidance and requirements provided by the NGP. Ellen will also serve as a single, initial point of contact for people outside the Center who are looking for information about NGTOC NHD/WBD activities. Ellen has a long background and history within the hydrography program will provide valuable insight to efficiently support the program as we move into the future.

One of her goals is to improve all aspects of communication within the program, and looks forward to more opportunities to share the ongoing hydrography activities within the NGTOC as well as promoting the program externally. She will work closely with the NGP Hydrography Leads, Jeff Simley and Al Rea, and acting WBD Lead Sue Buto, as well as other internal & external stakeholders, NHD user community members, and potential new users as the NHD and WBD move into the future with the integrated elevation and hydrography NHDPlus-High Resolution.

Please contact Ellen directly with any concerns with the NGTOC hydrography program. She is proud of the hydrography program, glad to be in the new position, happy to work with a dedicated staff and the group of loyal dataset users. Reach Ellen at elfinelli@usgs.gov , 303-202-4288.

Hydrography Seminar Series

The next Hydrograph Seminar will be Thursday, July 30, 2015, at 2:00 PM Eastern Time. It will feature Anita Stohr of the Washington State Department of Ecology. Washington State adopted the NHD as its standard hydrography dataset in January 2011. Since that time the state has focused on associating the highest priority water resources, human health, and fisheries datasets to the NHD, correcting the largest errors in linework, and providing access to a variety of users. Washington regularly releases a version of NHD in state plane coordinates and that contains stream order as an attribute on the NHDFlowline. This webinar will touch on three areas: (1) Water Rights Diversions. Our process to site 35,000 surface water diversions as event points on the NHD, selection of the largest diversions for upload to The National Map, and integration with our Water Resources Explorer Web Map Application. (2) Fish Distribution. The SalmonScape application displays species types mapped to the NHD by the state Department of Fish and Wildlife and the Northwest Indian Fisheries Commission. An example of riparian buffer requirements using Fish Distribution along with NHD periodicity and stream type will be shown. (3) Strahler Stream Order. A demonstration of the work, which is coordinated with Oregon, to produce stream order on the high resolution NHD. This data is submitted to USGS for inclusion as an attribute to the NHDFlowlineVAA.

Anita Stohr is the National Hydrography Dataset (NHD) Steward for Washington State. She works in the Geospatial and Environmental Systems Support Unit within the state Department of Ecology and coordinates NHD use and improvements on all state and private lands. Prior to her role as steward, she worked as senior hydrologist performing water quality and quantity modeling. For more information about the Hydrography Seminar Series see http://nhd.usgs.gov/HydrographySeminarSeries.html.

June 2015 Status Report for NHD Network Improvement Project by Cynthia Ritmiller

This is a regular installment in the monthly NHD Newsletter to keep NHD users appraised on the status of NHD data run through the Network Improvement project. You can learn more about what's involved in Network Improvement in the May Newsletter.

Initial Phase Network Improvement – Remaining
Region 19 (Alaska) is being completed as part of the Hydrographic Image Update project using the 2012 Horizon Systems QA/QC check results.

Initial Network Improvement Regions Completed:
01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 21, and 22.

Double Check Phase Network Improvement- Status

- Region 01 - New pre-staged Sub-Regions were received and QA/QC checks were ran, any edits will be completed.
- Region 02 - The final edits in this region have been completed this month. Will review and sync any necessary HEM points, the region and the region will be sent to Horizon Systems for the creation of HiRes NHDPlus.
- Region 03 - The sub-regions 0309, 0310, 0311, 0315, and 0317 have been through QAQC checks. Will complete these edits working with partner's schedules.
- Region 04 - Completed double check phase in April. As new data become available it will go through QA/QC check process again.
- Region 05 - Waiting to review one sub-basin within sub-region 0514.
- Region 06 - New pre-staged Sub-Regions were received and QA/QC checks were ran any edits will be completed.
- Region 07 - completed double check phase. As new data become available it will go through QA/QC check process again.
- Region 08 - Caitlin Reusch-Zerr is completing double checks within this region. Sub-regions 0801 and 0802 are complete, edits in 0803-0809 remain.
- Region 09 - Completed double check phase in September. As new data become available it will go through QA/QC check process again.
- Region 10 - Completing double checks with only a one sub-basin remaining.
- Region 11 - The final edits in this region have been completed this month.
- Region 12 - QA/QC checks were completed in April. The data will be sent to Horizon Systems for the production of HiRes NHDPlus within the next couple months.
- Region 13 - Completed double check phase in July
- Region 14 - QA/QC checks were run.
- Region 15 - New pre-staged Sub-Regions were received and QA/QC checks were ran. Will complete QA/QC checks.
- Region 16 - Completed double checks for this region.
- Region 17 - QA/QC checks have been run and then subbasins will be ready to assign. POC's in the area were notified April 8th, 2015.
- Region 18 - completed double check phase. As new data become available it will go through QA/QC check process again.
- Region 19 (Alaska) - Initial Phase Network Improvement in progress see above.
- Region 20 - Completed double check phase in August
- Region 21 - Completed double check phase in August
- Region 22 (Pacific Islands)- Subregions 2201, 2202 and 2203 were given to Horizon Systems April 1st to begin producing HiRes NHDPlus.

Note: Regions will be edited as per the NHDPlus contract schedule. Before starting a Region the area POC will be contacted.

Analyzing High Resolution Topography Paper Out

With the backing of the National Science Foundation, the U.S. Geological Survey's Powell Center sponsored a team of 16 researchers to investigate the impact of high resolution topography on science. This stems from the widespread usage of lidar technology on earth processes. The study has

produced the article "Analyzing high resolution topography for advancing the understanding of mass and energy transfer through landscapes: A review" appearing in Earth-Science Reviewshttp://www.sciencedirect.com/science/article/pii/S0012825215300015. Jeff Simley represented the USGS National Geospatial Program on the team with emphasis on how lidar technologies can be used to discern the movement of water across the landscape.

NHD Photo of the Month

This month's photo is the South Platte River flowing through Big Springs, Nebraska on June 22, 2015. The photo was taken by Jeff Simley. See ftp://nhdftp.usgs.gov/Hydro_Images/SouthPlatte_1.JPG. You are looking at a bit over 10,000 cubic feet per second and the river is a couple of inches above flood stage. The 30-year average for this date is about 300 cubic feet per second. Why so much water now? A very wet Spring in the Colorado Front Range. Submit your photo for the NHD Photo of the Month by sending it to jdsimley@usgs.gov.

May Hydrography Quiz / New June Quiz

Alex Pellett of the South Carolina Department of Natural Resources was the first to correctly guess the May NHD quiz as the Ohio River Basin. See ftp://nhdftp.usgs.gov/Quiz/Hydrography118.jpg. Alex is working on surface water quantity assessments in South Carolina. The Hydrology section of the Department of Natural Resources (SCDNR) monitors the states hydrological resources and provides hydrology related technical guidance to legislators and stakeholders in the state.

Others with the correct answer (in order received) were: Dan Button, Jim Sherwood, Linda Davis, Matt Rehwald, Peter Cada, Bill Samuels, Steve Aichele, Dave Hockman-Wert, Dave Straub, Joanna Wood, Tom Christy, Tom Denslinger, Roger Barlow, Evan Hammer, Matt Dillon, and Phil Rufe.

This month's hydrography quiz can be found at ftp://nhdftp.usgs.gov/Quiz/Hydrography119.jpg. This is a coastal estuary at a city in a state with very little coastline. The magenta is estuary, light blue is ocean, dark blue is lake, green is marsh, and salmon is urban area. Where is it? Send your guess to jdsimley@usgs.gov.

Thanks to Karen Hanson and Cynthia Ritmiller.
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.