

USGS National Hydrography Dataset Newsletter

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[NHDPlus High Resolution \(NHDPlusHR\)](#)

[NHDPlusHR Status](#)

[NHDPlusHR Production Priorities](#)

[Opportunities to Engage with NHDPlusHR Development and Beta QC](#)

[NHDPlusHR Ingredient Dataset Update - Network Improvement](#)

[NHDPlusHR Workflow](#)

[Opportunity to Test the Markup Web Application](#)

[NHD Linked Data Registry in USGS ScienceBase](#)

[NHD Stewardship in California](#)

[NHD Photo](#)

[NHD Quiz](#)

After a successful first year of NHDPlus High Resolution (NHDPlusHR) production, we are excited to have a focus in this month's newsletter on updates on production status, prioritization, and processes, and to invite you to participate in the process. Also of note this month, don't miss news on how to help test the Markup Web Application, exciting information about the NHD linked data catalog in ScienceBase, updates on the great progress made in California on NHD stewardship, and of course the NHD photo and quiz.

NHDPlus High Resolution (NHDPlusHR)

Contact: [Ellen Finelli \(elfinelli@usgs.gov\)](mailto:elfinelli@usgs.gov), [Al Rea \(ahrea@usgs.gov\)](mailto:ahrea@usgs.gov)

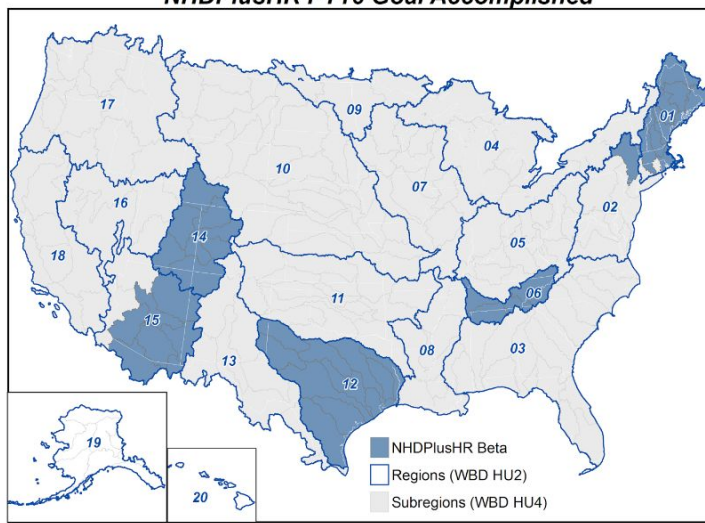
Below are updates on many areas of the NHDPlusHR program. For a quick background on NHDPlusHR terminology and processes, please see the NHDPlusHR Workflow article on page 4 below. USGS staff will continue to provide updates on these activities in future newsletters.

NHDPlusHR Status

Contact: [Ellen Finelli \(elfinelli@usgs.gov\)](mailto:elfinelli@usgs.gov)

The NHDPlusHR Beta production has been completed for several regions, accomplishing the goal to complete 4.5 regions in FY16. Regions 06, 12, and 14 are complete; Regions 01, 02 and 15 are in work at Horizon Systems (contractor for USGS). An announcement will be made as soon as these data are available via The National Map (<http://nationalmap.gov/>).

NHDPlusHR FY16 Goal Accomplished



Goal = 1/4 CONUS (4.5 Hydrologic Regions) Complete
Accomplished = 4.8 Hydrologic Regions



NHDPlusHR Production Priorities

Contact: Al Rea (ahrea@usgs.gov)

The table below contains the current priority order for creating and refreshing NHDPlusHR datasets over the next few years.

NHDPlusHR Re-Prioritization - FY17 FINAL

Region	Hydrologic Region	Sequence	Hydrologic Network	# of HU4s	NHDPlus BETA	USGS Refresh
6	Tennessee	1	Mississippi 1 of 6	4	FY16 - Q2	FY17
1	Northeast	2	Complete Drainage Area	10	FY16 - Q2	FY17
12	Texas	3	Complete Drainage Area	11	FY16 - Q3	FY17
14	Upper Colorado	5	Colorado 1 of 2	8	FY16 - Q4	FY17
15	Lower Colorado	6	Colorado 2 of 2	8	FY16 - Q4	FY17
2	Mid-Atlantic	4	Complete Drainage Area	6	FY17	
10	Missouri	7	Mississippi 2 of 6	29	FY17	
7	Upper Mississippi	8	Mississippi 3 of 6	14	FY17	
16	Great Basin	9	Complete Drainage Area	6	FY17	
9	Souris, Red, Rainy	10	Complete Drainage Area	4	FY17	
5	Ohio	13	Mississippi 4 of 6	14	FY17	
1902	Alaska - MatSu	12	Complete Drainage Area	~ 1 partial	FY17	
3	South Atlantic	11	Complete Drainage Area	18	FY17	
11	Arkansas, Red, White	14	Mississippi 5 of 6	14	FY17	
17	Pacific Northwest	15	Complete Drainage Area	12	FY18	
13	Rio Grande	16	Complete Drainage Area	9	FY18	
4	Great Lakes	17	Complete Drainage Area	15	FY18	
8	Mississippi	18	Mississippi 6 of 6	9	FY18	
18	California	19	Complete Drainage Area	10	FY18	
19	Alaska	20	Alaska	TBD	FY18	
20	Hawaii	TBD	Complete Drainage Area			
21 & 22	VI, PR	TBD	Complete Drainage Area			

Opportunities to Engage with NHDPlusHR Development and Beta QC

Contacts: Paul Kimsey (pjkimsey@usgs.gov), Karen Adkins (kadkins@usgs.gov)

There are existing and new opportunities for users to engage in improving hydrography data. These opportunities are based on NHDPlusHR Production Priorities shown above.

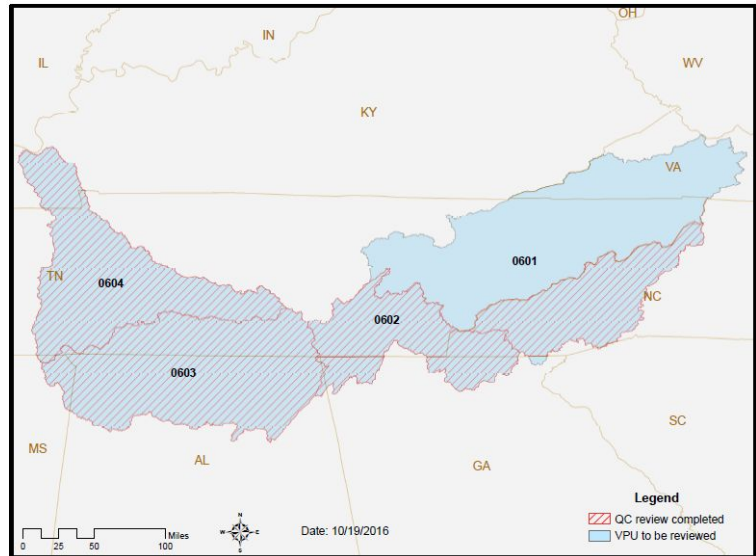
Existing Opportunity for NHD Stewards: *Ingredient Dataset Editing for NHDPlusHR and Post-NHDPlusHR Beta QC / Pre-NHDPlusHR Refresh.* For more information on NHD editing, please contact Paul Kimsey (pjkimsey@usgs.gov) or the NHD Stewardship POC in your area: <http://nhd.usgs.gov/stewardship.html#.WBkeziOrKUI>. For more information on WBD editing, please contact Elizabeth Stevens-Klein (estevens-klein@usgs.gov).

New Opportunity for All Users: *NHDPlusHR Beta QC.* Region 6 NHDPlusHR is undergoing review by a select group of people with hydrographic expertise and local knowledge of the hydrologic conditions in the region. NGTOC is utilizing Esri map packages and the USGS ArcGIS Online organizational account to manage transfer of the map packages with reviewers. NGTOC prepares the packages, which contain vector and raster data of NHDPlusHR, reference layers to support the review, and edit feature classes to which the reviewer adds points, lines and polygons identifying corrections to the data. This has proven to be an efficient, effective

method of sharing the NHDPlus data and managing the reviewer edits. The graphic to the right displays the QC process and the progress to date.

The next QC effort will focus on Region 1. **USGS is seeking volunteers to perform QC of the NHDPlusHR in Region 1.** This opportunity is ideal for users with previous NHDPlus experience, and most importantly, local knowledge. If you are interested in participating in QC of the NHDPlusHR, please contact Karen Adkins (kadkins@usgs.gov).

NHDPlusHR - Region 6 QC Status



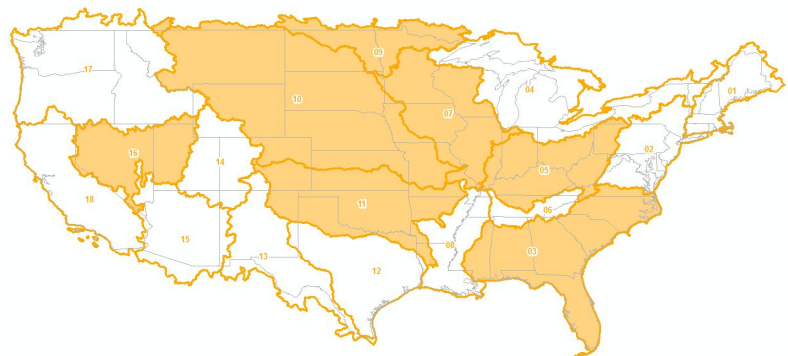
NHDPlusHR Ingredient Dataset Update - Network Improvement

Contact: [Cynthia Ritmiller \(critmiller@usgs.gov\)](mailto:critmiller@usgs.gov), [Hannah Boggs \(hboggs@usgs.gov\)](mailto:hboggs@usgs.gov)

The USGS continues its work on the Network Improvement Project to identify and correct network and data quality issues existing in the high resolution NHD. One of the key drivers for this effort is the need to provide ingredient datasets (NHD, WBD & elevation) to use for the production of NHDPlusHR. Data is being reviewed and edited to support the production schedule for NHDPlusHR. Coordination with appropriate NHD POC's will begin prior to review. As new data becomes available it will go through the QA/QC process before data is sent to Horizon Systems, USGS contractor.

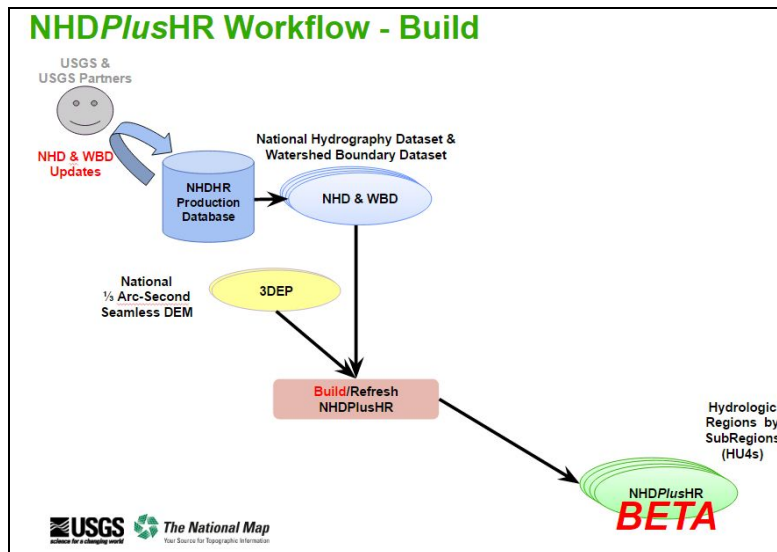
Network Improvement Status (as of October 26, 2016) with Priority Regions map:

- Network Improvement Regions In Work: 05, 07, 10, 11, and 16
- Planned Network Improvement Regions: 03, 09, and 1902
- Network Improvement Regions Remaining: 04, 08, 17, 18, and 19 (remainder)



NHDPlusHR Workflow

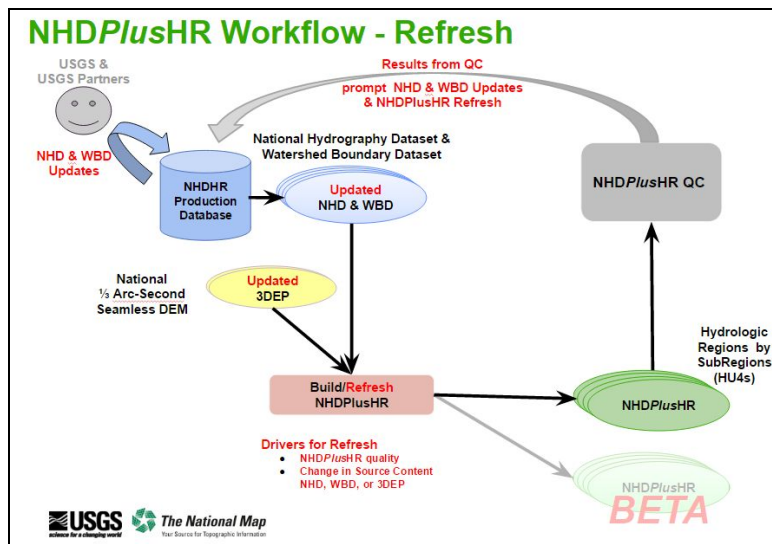
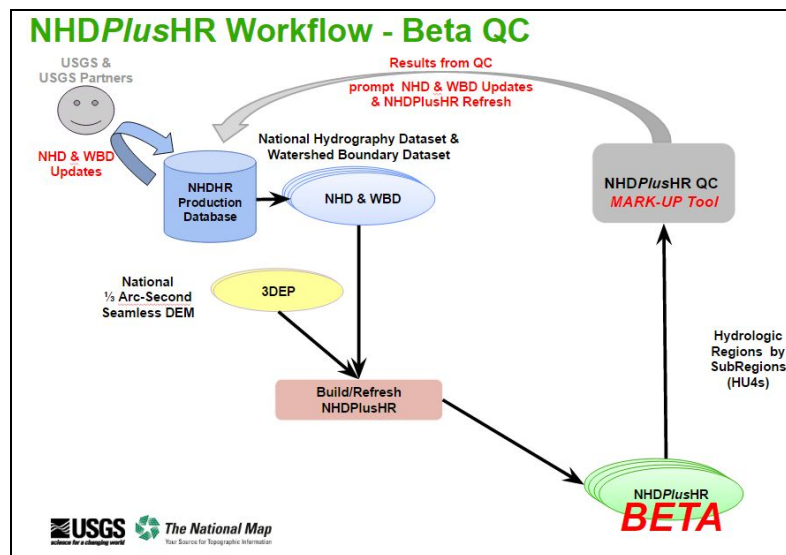
Contact: Ellen Finelli (elfinelli@usgs.gov)



Below is an overview of the three key steps in the creation of the NHDPlusHR:

1) To build the NHDPlusHR, three key ingredient datasets are required, NHD, WBD, and 3DEP Elevation. The Build/Refresh software developed by Horizon System through a USGS Contract, integrates these ingredient datasets to produce the NHDPlusHR Beta dataset for each Hydrologic Region by SubRegions (HU4).

2) Following the initial build of a NHDPlusHR Beta, a quick and timely review (QC) will prompt NHD & WBD updates. Initially the NHDPlusHR Beta QC has utilized map packages, however future QC efforts will utilize the web-based Markup application. These suggested NHD and WBD edits will be accomplished using the usual processes, via the NHDUpdate or WBD Edit tool, by either existing stewards or USGS personnel. Please see additional articles below.



3) After NHDPlusHR Beta QC, source edits, the updated ingredient datasets are processed through the Build/Refresh tool resulting in an updated ("refreshed") NHDPlusHR dataset. Based on the NHDPlusHR quality, USGS's intent is a quick refresh producing an updated NHDPlusHR.

Opportunity to Test the Markup Web Application

Contact: Tatyana DiMascio (tdimascio@usgs.gov)

NGTOC is preparing to release a new web application for marking up suggested edits for NHD, NHDPlusHR, and WBD. Prior to the public release, we would like the application to go through a limited release with a small group of users to collect further feedback for refinements. Thus we are offering an opportunity for stakeholders to sign up for this round of testing. Although our initial implementation is focused on NHDPlusHR QC, we would like a group of about ten people with diverse levels of expertise in NHD, NHDPlusHR, and WBD. ***If you would like to volunteer, please contact Tatyana DiMascio (tdimascio@usgs.gov).***

NHD Linked Data Registry in USGS ScienceBase

Contact: Michael Tinker (mdtinker@usgs.gov)

USGS has created a community at ScienceBase for NHD users to share their Hydro Linked Data. <https://www.sciencebase.gov/catalog/item/530d0115e4b08f991722dce3>

ScienceBase is a platform for data sharing, cataloging, and discovery. One of the main features of ScienceBase is that it automatically generates free Web Mapping and Web Feature services.

ScienceBase is a creation of the USGS Core Science Analytics Synthesis and Libraries group. It was designed as a platform for scientists to share data. ScienceBase serves as a catalog for data and metadata, and automatically generates web services for files that users upload, such as Web Mapping Services, or Web Feature Services. These services can be used in a web map, such as ArcGIS Online, or may be used by any number of web applications. ScienceBase also serves as a search and discovery application for scientific data. Items in ScienceBase can be discovered by searching within ScienceBase, or by searching from an internet search engine. A ScienceBase metadata item also can be created to point to web services that are hosted externally, for example NHD-linked event features that a state agency hosts on their own web portal.

Items in ScienceBase are organized in communities. A community is a designated project space in ScienceBase. It appears in ScienceBase as a folder, and can contain any number of child items: individual records, folders, and links to ScienceBase items outside the community. A community can be private or visible to the public. Editing permissions are limited to users associated with the community.

Hydro linked data (aka events) can be nearly any kind of data you can link to the NHD such as flow-volume, velocity, temperature, water chemistry, pollution control classifications, aquatic species habitat, recreation designations, or water rights. If your organization has hydro linked

data referenced to the NHD, the ScienceBase NHD Linked Data Registry allows you to share it with the world.

USGS encourages organizations that link their data to the NHD to share their data. To that end, we now encourage organizations to post their hydro linked data to our community, the National Hydrography Dataset Linked Data Registry. Another option is that your organization can create your own community in ScienceBase, which would allow you to curate your own data and community. We designed our community with examples of FGDC-compliant metadata for hydro linked data, recommended keywords and tags to make your hydro linked data discoverable, links to other communities related to the NHD, as well as links to tools for creating FGDC-compliant XML metadata documents.

If you would like to learn more about sharing your hydro linked data in ScienceBase, please contact mdtinker@usgs.gov.

NHD Stewardship in California

Contact: Carol Ostergren (costergren@usgs.gov)

The USGS National Geospatial Program (NGP) is pleased to announce the State of California, Department of Water Resources (DWR), has embraced NHD and WBD stewardship in a comprehensive and systematic effort, thanks to new funding in the state budget. USGS National Geospatial Technical Operations Center and User Engagement staff (Bill Smith, Elizabeth Stevens-Klein, Kristiana Elite, David Anderson, Carol Ostergren and Drew Decker) joined the Center for Geographical Studies at California State University Northridge and the Geographical Information Center at California State University Chico; Natural Resources Conservation Service (CA GIS manager); and USFS (Fire and Aviation GIS manager) to provide two consecutive and comprehensive NHD/WBD stewardship trainings in late September, 2016.

The event was hosted by the USFS Wildland Fire Training Center at McClellan (Sacramento) CA. Fifty students from all over the state representing CA DWR, CA Department of Fish and Wildlife, CA State Water Resources Control Board, DOI Bureau of Indian Affairs and National Park Service, and US Forest Service are now trained and ready to edit the NHD and WBD. These trainings represent a huge milestone for the NGP and the various CA agencies that NGP has been working with over the years regarding a formalized NHD and WBD stewardship plan for the state. This milestone provides a great example of the many stakeholders the NHD and WBD have and how those stakeholders come together under a single state stewardship model. The training included various topics such as USGS stewardship resources, the NHD Update Tool, the Provisional Names Tool, CA-centric Business Rules for editing NHD, and WBD Editor Tools and standards - the first time all of these things have come together under one training umbrella.

Next on deck for stewardship in California:

- Ensure student success with editing software and protocols

- Draft, review, and signatures for a Memorandum of Understanding between USGS, USFS, and State of California for NHD and WBD stewardship
- Modification of the CA-centric rules and procedures to encompass WBD editing
- Adoption of the CA-centric rules and procedures by the USFS Region 5
- Upcoming NHD/WBD improvement for the Plumas, Tahoe, Eldorado, and Stanislaus National Forests
- Pilot of the Provisional Names add-on tool
- 1:4,000-scale NHD improvement for the California Bay-Delta (Central Valley)
- Completion of 45 HUC-8 subbasins in progress
- Development of a California-specific website for information sharing and status

For questions about the NHD/WBD effort in California, please contact Kristiana Elite, Elizabeth Stevens-Klein, Carol Ostergren, Drew Decker, or Jane Schafer-Kramer, NHD Stewardship Program Technical Lead for California, at jane.schafer-kramer@water.ca.gov.

NHD Photo

This month's hydro photo was taken after the AWRA GIS Specialty Conference from the summit of Dana Peak (13,053') at the eastern entrance to Yosemite NP looking NE to Mono Lake, CA by Roger Barlow.

Check it out at http://nhd.usgs.gov/photo_month.html

We'd love to see photos of the hydrology near you or from your travels! Please send submissions to Becci Anderson (rdanderson@usgs.gov).

NHD Quiz

Congratulations to James Simard as the first to respond to last month's quiz with the correct answer - Columbia Glacier. Thanks to the many others who also replied with the correct answer: Linda Davis, Michael Wiedmer, Curtis Price, Barbara Rosenbaum, Sheryl Boyack, Daniel Button, John Kosovich, Jim McDonald, Becca Conklin, Matt Rehwald, Erin Sobel, Stephanie Kula, Brad McMillan, Joni Piercy, and Roger Barlow.

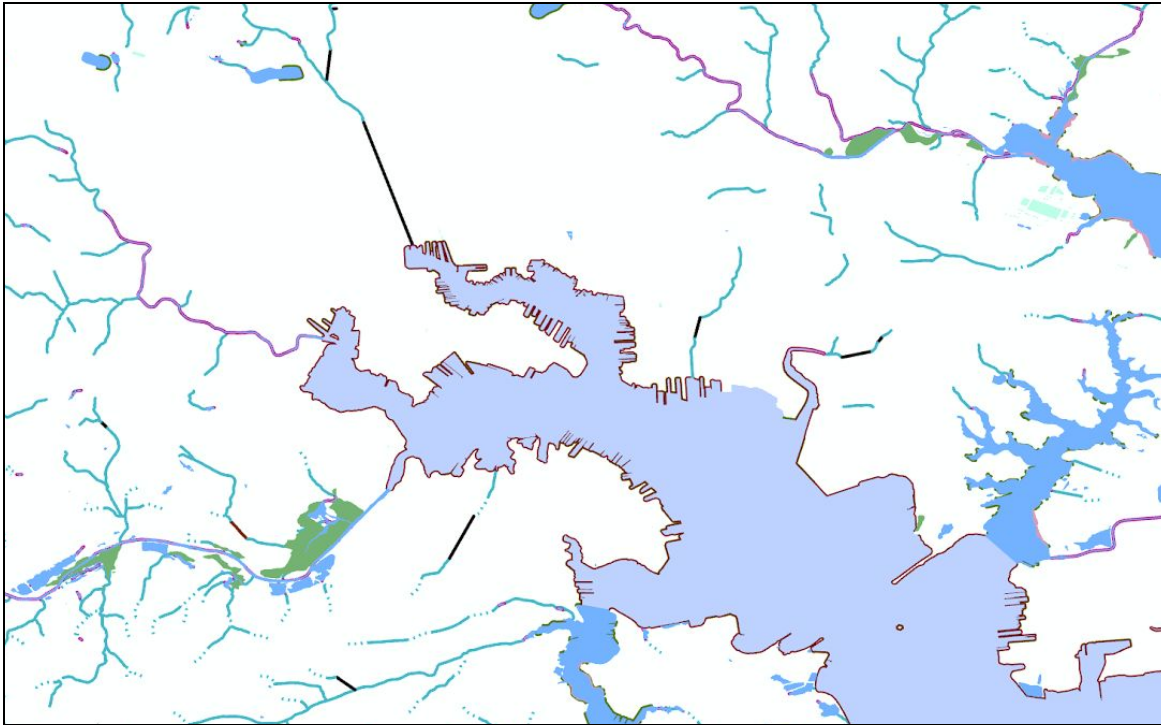
For an amazing time-animated look at the retreat of Columbia Glacier, check out NASA's Earth Observatory:

http://earthobservatory.nasa.gov/Features/WorldOfChange/columbia_glacier.php

This month's quiz was inspired by the upcoming exercise in democracy, and more specifically, two symbols of the United States:

This bay is home to a star-shaped fort for known for a historic event during the War of 1812, when Francis Scott Key was inspired to write a poem that would later become the U.S. national anthem. What is the name of this bay, and for a bonus in honor of the National Park Service's 100th birthday this year, name the place associated with this event.

Send your answers with an email subject including the word "Quiz" to Becci Anderson (rdanderson@usgs.gov). Happy hydro hunting!



Thank you to the October 2016 USGS National Hydrography Dataset Newsletter contributors: Ellen Finelli, Al Rea, Cynthia Ritmiller, Hannah Boggs, Karen Adkins, Tatyana Dismascio, Michael Tinker, and Carol Ostergren.

Join Our Community!

For more information, to sign up for the newsletter, or to contribute, please contact the newsletter editor Becci Anderson, USGS National Hydrography Co-Lead, at rdanderson@usgs.gov, and visit us anytime at nhd.usgs.gov.