

**NATIONAL WEATHER SERVICE INSTRUCTION 10-940**  
**APRIL 2, 2009**

**Operations and Services**  
**Hydrologic Services Program, NWSPD 10-9**

**HYDROLOGIC DATA NETWORK SERVICES**

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**NOTICE:** This publication is available at: <http://www.nws.noaa.gov/directives/>

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**SUMMARY OF REVISIONS:** This directive supersedes NWS Instruction 10-940 “Hydrologic Data Network Services,” dated March 2, 2007. The following revisions were made to this instruction:

- 1) Expands Section 3.2.1, *Gage Datum*, to provide more detailed instructions on changes in vertical datum.
- 2) Adds a new Section 3.2.2, *Horizontal Datum*, to address importance of this information to the proper geo-referencing stream gage locations.
- 3) In Section 3.2.2, recommends hydrology program managers conduct an annual review of latitudes and longitudes for all stream gaging stations stored in NWS databases (including the IHFS-DB, the NWS location identifier database, and the database used by the NWS’s hydrology web presence) to ensure they are consistent and up-to-date.
- 4) Adds Section 3.2.5 to provide general instructions on the handling of various stream gaging station related situations not specifically addressed in this directive.
- 5) In Sections 3.2.1 and 3.2.3 and Appendices B and C, highlights the importance of using service change notices in providing advance notification for any change in vertical datum, flood stage, and/or flood categories affecting the automated parsing of hydrologic products in partner/user systems.
- 6) Adds appendix B to provide detailed instructions on the actions necessary to prepare for and accommodate vertical datum changes.
- 7) Adds appendix C to provide examples of service change notices for flood category changes.
- 8) Makes numerous minor revisions to improve readability, without changing the underlying policy and procedures.

(signed)

March 19, 2009

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David B. Caldwell  
Director, Office of Climate,  
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Date

**Hydrologic Data Network Services**

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1. Introduction. This directive provides instructions specific to the hydrologic/ hydro-meteorologic network concerns of the Hydrologic Services Program in the National Oceanic and Atmospheric Administration's (NOAA) National Weather Service (NWS).

2. Network Management Responsibilities. All NWS offices, including the National Centers for Environmental Prediction (NCEP), Office of Science & Technology, Office of Operational Systems, and Office of Hydrologic Development (OHD), whose activities affect the operation of networks operated and/or used by the NWS, should account for river forecast center (RFC) and weather forecast office (WFO) data requirements. When appropriate, RFCs and WFOs should coordinate surface data network-related issues, including the design, development, and maintenance of these data networks. RFCs and WFOs rely on hydrometeorological data from networks operated by the NWS and agencies such as the U.S. Geological Survey (USGS), U.S. Army Corps of Engineers, Bureau of Reclamation, Natural Resources Conservation Service (NRCS) as well as state and local cooperators. Data from these networks are, in many cases, received simultaneously at RFCs and WFOs through real-time distribution mechanisms. The operation and maintenance of NWS data distribution networks is the shared responsibility of NWS Headquarters and field office personnel.

2.1 Weather Forecast Office Responsibilities. WFOs are responsible for maintaining the portion of the NWS Cooperative Observer Network within their area of responsibility. The service hydrologist or hydrology focal point (herein collectively referred to as the hydrology program manager, or HPM) should ensure that the Cooperative Observer Network is meeting the requirements of the hydrology program through periodic monitoring of data; notifying the observing program leader (OPL) of problems; and coordinating with partners, other users, and supporting RFC(s). Responsibilities for management, operation, and maintenance of the NWS Cooperative Observing Program, its networks and observation sites, and associated databases are provided in [NWS Instruction 10-1307 - Cooperative Station Management](#).

If a WFO serves as a central data collection site for a local data acquisition network, including but not limited to automated flood warning systems (AFWS), the WFO should forward the data to supported offices, including RFCs which need the data for operations, in as timely a manner as possible.

2.2 River Forecast Center Responsibilities. To support their hydrologic modeling operations, RFCs ingest large volumes of data from networks operated by the NWS (including the NWS Cooperative Observer Network) and external partners (e.g. Geostationary Operational Environmental Satellite [GOES] data collection platforms [DCP], SNOwpack TELEmetry [SNOTEL], and AFWS). While WFOs or outside partners are responsible for maintaining these networks, RFCs should monitor incoming data, notify WFOs or partners of problems, and provide input when networks are being implemented or improved.

If an RFC serves as a central collection location for any type of local data acquisition network, including but not limited to automated AFWS, the RFC should forward the data to supported offices, including WFOs which need the data for operations, in as timely a manner as possible.

3. Stream Gaging Network. In this directive, "stream gage" or "gaging station" is a generic term for any water level measuring device providing data which is used in hydrologic forecast

and warning services. Therefore, “stream gage” can include reservoir elevation gages and even a gage at the mouth of a river where tidal influences may be greater than upstream flow, so long as the data is used in hydrologic forecast and warning services.

The NWS relies on other government agencies; primarily the USGS, but also other federal, regional, state, and local agencies; to operate most of the automated and manual stream gaging stations required for hydrologic forecast and warning operations. However, some forecast points are not supported by other agencies, but sufficient demand exists to have NWS river and flood forecasts provided for them using whatever observation and forecasting resources can be developed in coordination with users and provided by WFOs and RFCs. For example, Alaska Region operates about 40 percent of the river gages in its statewide network.

3.1 Stream Gage Closures. The NWS should work with the USGS and other gaging station operators at all agency levels to ensure that it obtains information on potential gaging station closures as early in the process as possible. Through their ongoing interactions with partners, HPMs should be on the alert for potential gaging station closures in their hydrologic service areas (HSA). When the potential for stream gage closures becomes known, HPMs will notify hydrologic services personnel in regional headquarters. Once the potential for the closure of one or more gaging stations has been identified, the impacts of the closure on NWS hydrologic services will be documented. This documentation will normally involve collaboration between the WFO, RFC, and hydrologic services personnel in regional headquarters. The documentation will be shared between all levels of the NWS Hydrologic Services Program, including the Office of Climate, Water and Weather Services Hydrologic Services Division (OCWWS HSD). The documentation will also be shared with the operating agencies, other cooperating agencies, and affected emergency managers/local officials. Along with this impact documentation, the NWS should use letters, meetings and other contacts to encourage operators and partners to keep critical gaging stations operational. HPMs may work with local partners and the operating agency to assist in the identification of new or collaborative sources of funding to operate and maintain the stream gage.

The USGS is dependent on funds from 850+ partners and federal appropriations for the USGS Cooperative Stream gage Program and the National Streamflow Information Program to keep the stream gaging program in operation (see <http://water.usgs.gov/nsjp/funding.html>). There are, however, times when it becomes necessary to discontinue operation of a stream gage(s). If the USGS determines that support for one or more gaging stations is insufficient, they inform the appropriate hydrologic services personnel in NWS regional headquarters, WFO(s), and/or RFC(s). Hydrologic services personnel in regional headquarters will coordinate with affected field office(s) to assess the potential impact of closing each USGS stream gaging station used in NWS hydrologic forecast and warning operations. If NWS hydrologic forecast services will be degraded, hydrologic services personnel in regional headquarters and/or affected field office(s) will write a letter to the appropriate USGS State Water Science Center office and/or federal/state/local cooperator describing the impact of the closure(s) (see Appendix A for template). The following procedures will be used to determine the coordination path and signature authority for this letter:

- a. If the cooperator is a sister agency of the USGS in the Department of the Interior, the letter should be developed at the regional headquarters level, coordinated with OCWWS HSD, and signed and sent by the appropriate manager in regional headquarters to the USGS State Water Science Center office with local responsibility for the stream gage. The letter will include a request to the USGS to forward the letter to the funding cooperator in the Department of the Interior.
- b. If the cooperator is not a sister agency of the USGS, the letter may be written and signed at the WFO level and sent directly to the cooperator with a cc: to the USGS State Water Science Center that has local responsibility for the stream gage. However, the letter will be coordinated with hydrologic services personnel in regional headquarters before it is sent.
- c. In all cases, the grade or managerial level of the NWS individual signing the letter will, at a minimum, be comparable to that of the recipient.

Copies of this letter will be sent to the Chief, OCWWS HSD. Before the letter is written, OCWWS HSD should be notified of the situation so that action can be taken at the National level as well to support the integrity of the stream gaging network used in NWS hydrologic forecast and warning operations.

Closure of a stream gaging station may necessitate a change in NWS service for the forecast point that is no longer supported. Hydrologic services personnel in regional headquarters, in collaboration with the appropriate field office personnel, will assess whether a change in service is necessary. Such service changes could include providing categorical forecasts (e.g., no flooding, flooding, major flooding) instead of numerical forecast values or completely discontinuing services.

### 3.2 Stream Gage Station Information.

3.2.1 Gage Datum. Gage datum, which is synonymous with “gage zero,” is defined in [NWS Instruction 10-950 - Definitions and General Terminology](#). The definition in NWSI 10-950 is the same used by the USGS. A tutorial providing a more in-depth explanation of datums can be found at: <http://vdatum.noaa.gov/docs/datumtutorial.html>. The NWS relies on the USGS and other government operators of stream gaging stations to establish and maintain a gage datum for each location where point-specific hydrologic forecast and warning services are provided.

When the gage datum for any stream gaging station used in NWS hydrologic operations is provided in a product such as a web page, RSS feed, or shapefile, the issuing WFO or RFC will ensure the:

- a. Reference gage datum is the same as the gage datum currently used by the entity operating the stream gaging station (e.g., USGS);
- b. Title of the gage datum is always included after its numerical value – e.g., as “National Geodetic Vertical Datum of 1929 (NGVD 29)” or “North American

Vertical Datum of 1988 (NAVD 88)” (abbreviations may be used where space is limited); and

- c. Full precision for the gage datum used by the stream gaging station operator is provided in the NWS product.

A second unofficial gage datum and title may also be included in an NWS product, but the primary gage datum must be clearly affixed to the product without exception.

With increasing use of elevation-sensitive hydraulic modeling and geo-referencing technologies, gage datum provided in NWS products such as web pages can be critical to partners and other users. A change in gage datum may sometimes be necessary when the National Spatial Reference System (<http://www.ngs.noaa.gov/INFO/OnePagers/NSRS.html>) is updated, a gaging station is relocated, or the previous gage datum is destroyed by a significant hydrologic event. Changes in vertical datum require more actions at the national, regional, and local field office level than may initially be realized. These include:

- a. Coordinating with the USGS or other gage owners when datum are being revised – e.g., from NGVD 29 to NAVD 88.
- b. Making revisions to WFO and RFC databases, as needed,
- c. Updating databases and other files used in the NWS’s hydrology web presence, as necessary, and
- d. Conducting outreach to educate partners and other users about datum changes and their possible effects on NWS hydrologic products and services. If a change in gage datum will affect the ability of partner/user systems to parse observed and forecast data in hydrologic products, advance notification (in this case, through a service change notice) of 120 days will be required in keeping with the procedures in *NWS Instruction 10-1805, National Service Change and Technical Implementation Notices* (see Appendix B).

NAVD 88 was affirmed as the official vertical datum for the United States by a notice in the Federal Register (Volume 58, Number 120, page 34325) on June 24, 1993. This means many stream gaging stations used by the NWS, most of which are operated by the USGS, will need to have their gage datum revised. However, the NWS provides the same gage datum in its products as the one used by the stream gage operator, even if that datum is for an old system. Even though an on-line program exists for converting from NGVD 29 to NAVD 88, NWS personnel will not make unilateral changes to a datum without collaborating with the gaging station operator (e.g., USGS). NWS personnel will wait for gaging station operators to develop accurate conversions to NAVD 88 for each stream gage location.

HPMs should develop working relationships with personnel at the USGS Water Science Centers supporting the stream gaging network in the hydrologic service area and should emphasize the need to be notified when a gage datum is being changed. A change in gage datum will affect the elevations reported in NWS products and databases as well as the elevations provided in

products such as web pages. Procedures for adjustments to gage datum for existing forecast points are described in Appendix B.

3.2.2 Horizontal Datum. The horizontal datum of a stream gage is its location or coordinates in terms of latitude and longitude. Similar to gage datum, the NWS relies on the USGS and other stream gaging station operators to establish and maintain the horizontal datum for each location where point-specific hydrologic forecast and warning services are provided. Whenever the location of a stream gage is provided in a NWS product, WFOs and RFCs should ensure the:

- a. Referenced horizontal datum is the same as the horizontal datum currently used by the entity operating the stream gaging station (e.g., USGS);
- b. Referenced horizontal datum (e.g., National American Datum of 1927 [NAD 27] or North American Datum of 1983 [NAD 83]) is affixed to the site geospatial location of the latitude and longitude; and
- c. Full level of precision used by the stream gaging station operator for the latitude and longitude, at least four decimal places, is provided in the product. Four decimal places works out to a precision of about 11 meters for latitude (precision for longitude will vary with latitude).

Increasing use of technologies requiring precise geo-referencing of locations makes it critical to provide the most up-to-date horizontal datum in NWS products. NAD 83 was affirmed as the official horizontal datum for the United States by a notice in the Federal Register (Volume 54, Number 113, page 25318) on June 14, 1989. Adoption of NAD 83 facilitated calculation of latitudes and longitudes that were much more compatible with modern survey techniques and removed significant local distortions which had accumulated over the years with the older system. Given the requirement to provide latitude and longitude to four decimal places, for NWS purposes World Geodetic System 1984 (WGS 84) can be considered equivalent to NAD 83. If a requirement surfaces for higher precision information (6 meters or less), the reference datum should be NAD 83.

Because of the new Federal policy, horizontal datum may need to be updated for some NWS data and forecast locations, most of which are in the USGS stream gaging network. For a river/stream gage operated by an external partner such as the USGS, NWS personnel will not make unilateral changes to latitude, longitude, and horizontal datum without first checking the official information store by the gaging station operator and then coordinating as necessary.

On an annual basis, HPMs should ensure NWS databases are up-to-date by checking latitude/longitude in gaging station operator databases for any changes that might have been made during the past year due to changes in horizontal datum, relocation of the stream gage, etc. This annual review should include:

- a. Ensuring the latitude/longitude stored in the WFO database (i.e., IHFS-DB) is identical to the coordinates stored in the NWS Location Identifier (NWSLI) database (see [https://ops13web.nws.noaa.gov/nwslimain/nwsl\\_home.main](https://ops13web.nws.noaa.gov/nwslimain/nwsl_home.main)). The HPM should coordinate with the WFO staff member responsible for local input to



the NWSLI database (e.g., observing program leader [OPL]) to ensure consistency between the two databases. Changes should be made to the NWSLI database as necessary. In the event of a discrepancy between the IHFS-DB and the NWSLI databases, the latitude/longitude used by the gaging station operator should be used in both NWS databases. If the NWS personnel have a valid reason to believe their coordinates are more correct, the NWS personnel should coordinate with the partnering entity to correct the discrepancy. For more information on the NWS Location Identifier System, see [NWS Instruction 30-1204 – Site Identifiers](#) .

- b. Ensuring the latitude/longitude stored in the database used by the NWS’s hydrology web presence (A.K.A. AHPS change management system [CMS] database) is identical to that in the IHFS-DB in terms of both accuracy and precision.
- c. Ensuring revisions made to the WFO databases are passed on to backup WFOs and supporting RFCs.

HPMs should use their working relationships with the USGS Water Science Centers and other gaging station operators to keep apprised of any changes in horizontal datum and update NWS databases when necessary.

3.2.3 Flood Stage. Flood stage is defined in [NWS Instruction 10-950](#). Changes in flood stage may be necessary at times, such as when significant channel changes occur, development (e.g., urbanization) encroaches on the floodplain, the gaging station is relocated, and/or it is recognized as necessary to improve NWS flood warning services. Changing a flood stage can be a highly sensitive and potentially controversial matter, since political and/or economic interests may be affected. Changes in flood stage, including those proposed by the NWS, will be coordinated with the appropriate local public officials and communicated to partners and other users as well as the general public. All changes will be approved by hydrologic services personnel in regional headquarters. These changes and associated flood impact information will be updated in the WFO hydrologic database and shared with the appropriate RFC(s).

A change in flood stage may require some NWS partners and other users to make revisions to their databases. Since flood stage is included in a shapefile that can be downloaded through the NWS’s hydrology web presence, 30 days notification in advance of the change through issuance of a local service change notice is sufficient and will be given. Sample service change notices announcing a change in flood stage (with no change in gage datum) are provided in Appendix C.

3.2.4 Flood Categories. Flood categories are defined in [NWS Instruction 10-950](#). A change in flood stage may also involve revisions to a stream location’s flood categories. Changes in flood categories may require some NWS partners and other users to make revisions to their databases. Since flood categories are included in a shapefile that can be downloaded through the NWS’s hydrology web presence, 30 days notification in advance of the change through issuance of a local service change notice is sufficient and will be given. Sample service change notices announcing a change in flood categories (along with a change in gage datum) are provided in



appendix B. A sample service change notice announcing a change in flood categories (with no change in gage datum) is provided in Appendix C.

3.2.5 Miscellaneous Stream Gaging Station Changes. Various situations may arise requiring a change in flood stage/categories, gage datum, and/or observation/forecast values for a forecast point, such as complete reestablishment of a gaging station at a location due to a major change in channel geometry. When these occur, the HPM will determine what needs to be done to address each situation in coordination with regional headquarters. He/she will draw from the relevant material Appendices B and C to develop an appropriately worded service change notice and make the necessary modifications to the IHFS-DB and databases used by the NWS's web presence.

4. Hydrometeorological Networks. Hydrometeorological networks used by the NWS consist of a combination of NWS- and cooperator-owned sites. This section provides policies on selected operational aspects of these networks. WFOs should pursue access to new sources of hydrometeorological data, including automated data (precipitation and streamflow) from mesonets.

4.1 Automated Surface Observing System. General procedures covering the operations and services aspects of Automated Surface Observing System (ASOS) are provided in several directives under NWS Policy Directive 10-13. Each WFO will be responsible for defining the onset and termination thresholds used in the ASOS precipitation products for each ASOS in its HSA.

4.2 GOES Data Collection Platforms. Some DCPs are owned and operated by the NWS, but most are operated by cooperators. WFOs and RFCs regularly use data from these systems in their hydrologic forecast and warning operations. HPMs should coordinate with DCP owners and/or operators to maximize the availability of DCP data in meeting the requirements of the NWS Hydrologic Services Program.

The NWS supported system for processing and distributing GOES data is the Hydrometeorological Automated Data System (HADS). HADS is an Office of Hydrologic Development supported system which interfaces with other computer systems to obtain real-time hydro-meteorological data from GOES DCPs (<http://www.nws.noaa.gov/oh/hads/>). HADS decodes the data and then distributes it to NWS field offices. Field offices should utilize the HADS, request additional data types, and recommend other changes in HADS processes through procedures outlined in the HADS Handbook (<http://www.nws.noaa.gov/oh/hads/internal/>). All requirements for changes to the HADS will be coordinated with the Office of Hydrologic Development.

4.3 NWS Cooperative Observer Network. Daily and criteria precipitation values from the cooperative observer network are required to support the hydrologic modeling operations at WFOs and RFCs. *NWS Instruction 10-1307, Cooperative Program Management and Operations*, contains procedures for the Cooperative Observer Program. Additional details on this program can be found at: <http://www.nws.noaa.gov/om/coop/index.htm>.

4.4 SNOTEL and Snow Course Networks. The SNOwpack TELemetry (SNOTEL) and manual snow course networks are operated by the NRCS. Each day, the NRCS provides real-

time data from the SNOTEL network to the NWS. Snow course data is supplied to RFCs when the manual snow course measurements are taken by NRCS snow surveyors during the winter months. Issues regarding location and placement of SNOTEL and snow courses should be directed to the NRCS. Additional details on SNOTELs and snow courses can be found at: <http://www.wcc.nrcs.usda.gov/>.

4.5 Limited Automated Remote Collectors. Limited Automated Remote Collectors (LARC) allow the NWS to access data from a hydrometeorological sensor via a telephone line. Often, but not always, the sensor(s) are maintained by another agency. In the CONUS, LARCs are polled by the Centralized Acquisition and Dissemination System (CADAS) to obtain stream elevation and/or precipitation amounts. The Pacific Region operates an independent LARC network with offices in the State of Hawaii polling sites in their respective areas of responsibility. Collection intervals can be set by the WFO to be anywhere from every 15 minutes to 6 hours. CADAS system is maintained at NWS headquarters. Polling by an individual office may provide more parameters and/or more frequent data.

4.6 Supplementary Climatological Data Network. The Supplementary Climatological Data (SCD) network provides data every six hours from every WFO. WFOs and RFCs should use this data in their forecasts and warnings when appropriate.

**Appendix A - Template for Letter on Impacts of Stream Gage Closures**

Name

Address

Dear Name,

The proposed discontinuation of funding for stream gages operated by the U.S. Geological Survey (USGS) is expected to have a major impact on the National Weather Service (NWS) river and flood forecasting capabilities for the state of state name. If this action is taken, NWS services will be seriously affected, including our ability to provide timely and accurate warnings and forecasts of floods for the city of Name of city as well as additional communities downstream, including Name of city and Name of city.

*[Discuss a recent hydrologic event when the USGS stream gage(s) proposed for closure were instrumental in providing NWS forecast and warning services. Describe the causes for the event, where the flooding occurred (e.g., basins), the magnitude of the event, and how data from the threatened stream gages were used to provide timely and accurate flood forecasts.]*

Stream gaging stations operated by the USGS include Number official NWS forecast points in State. This is slightly more than Fraction of the total number of forecast points in the entire state. There are also Number additional stream gages which are used in forecast procedures. These locations are identified on the enclosed chart. They affect the issuance of river forecasts at Number NWS forecast offices. They also impact forecast operations at Number river forecast centers.

Real-time streamflow data is essential to the issuance of accurate river, flood stage, and water supply forecasts that are issued by the NWS. Without real-time data from these stream gages that are scheduled to be closed, the NWS will be forced to discontinue the issuance of site-specific river forecast products with stage forecast values. We will then only be able to provide limited services such as categorical forecasts for minor, moderate, and major flooding, because forecasts will be based on precipitation data alone rather than both precipitation data and observed river stage.

I urge you to continue supporting the operation of the USGS stream gaging network in state. If you require additional information about the effect of discontinuing these gages and what it would mean to the people in your state, please feel free to contact me at Phone number.

Sincerely yours,

Meteorologist In Charge, Name of WFO

or

Manager's Title in Regional HQ, Name of NWS Region HQ

## Appendix B

### Procedures for Adjustments to Gage Datum for Existing Forecast Points

Changes to the gage datum (gage zero) may affect existing national, regional, and local databases. NWS field offices must ensure that local systems and the NWS hydrology web presence report the same and correct information. Most importantly, since any physical changes made at the gaging station, such as shift in a staff gage, gage tape, orifice, or data collection platform (DCP) offset, may affect subsequent gage readings and reported stages, field offices must take action to ensure the NWS's hydrology web presence provides the same information as reported by the USGS National Water Information System (NWIS). This appendix covers the various actions to be taken when gage datum adjustments are being implemented.

This appendix describes three situations or cases where products and information provided through the NWS's hydrology web presence will be impacted to varying degrees by the conversion of datum from NGVD 29 to NAVD 88:

- **Case A** – stations where river observations are reported as stage values (e.g. 10.0 feet) above gage datum (gage zero).
- **Case B** – stations where river, tailwater, or pool observations are reported as absolute elevations above specified datum (e.g. 103.1 feet above NGVD 29).
- **Case C** – stations where river, tailwater, or pool observations will change from being reported as stage values (e.g. 10.0 feet) to absolute elevations above a specified datum (e.g. 103.1 feet above NAVD 88). Such changes are made at the cooperator's request.

HPMs should evaluate the forecast and data points in their hydrologic service area to determine which case is applicable to each station. Beginning early FY09 and continuing for the next several years, the USGS will change gage datum references from NGVD 29 to NAVD 88 to comply with policies in the Federal Register. To determine the timeframe for changes in gage datum at forecast and data points, the HPM at each WFO should regularly coordinate with their local USGS water science center and any other gaging station operator(s) in the hydrologic service area. If flooding threatens or is occurring at a station, it is recommended the HPM coordinate a postponement in the gage datum change, especially for Case B or C situations.

When the gage datum is officially changed, the gaging station operator and the NWS will make appropriate changes to their database. Changes to the USGS's NWIS reference database will be reflected in the information provided with their station site map (see example in Figure B-1). Although the impacts to products provided through the NWS's hydrology web presence will be minimal at many sites (Case A locations), they will be significant at some sites and appropriate steps need to be taken for all forecast and data points to accommodate this conversion. Changes to the NWS's hydrology web presence, coordination with partners and other users, and other steps to be taken for each of the three cases are described in the following sections.

Gage datum may be revised at multiple stream locations on the same date. This increases the complexity of coordination activities and NWS/partner system changes over the short term, but has the advantage of completing the process for multiple sites on the same date and eliminating the need to repeat everything for each site as described in the following sections.

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**National Water Information System: Web Interface**

USGS Water Resources

Data Category: Site Information  
Geographic Area: United States  
GO

News: [Recent changes](#)

## Site Map for the Nation

### USGS 02089000 NEUSE RIVER NEAR GOLDSBORO, NC

Available data for this site: Site map GO

Wayne County, North Carolina  
Hydrologic Unit Code 03020202  
Latitude 35°20'15", Longitude 77°59'51" NAD83  
Drainage area 2,390 square miles  
Gage datum ~~42.95 feet above sea level NGVD29~~ **41.93 NAVD 88**

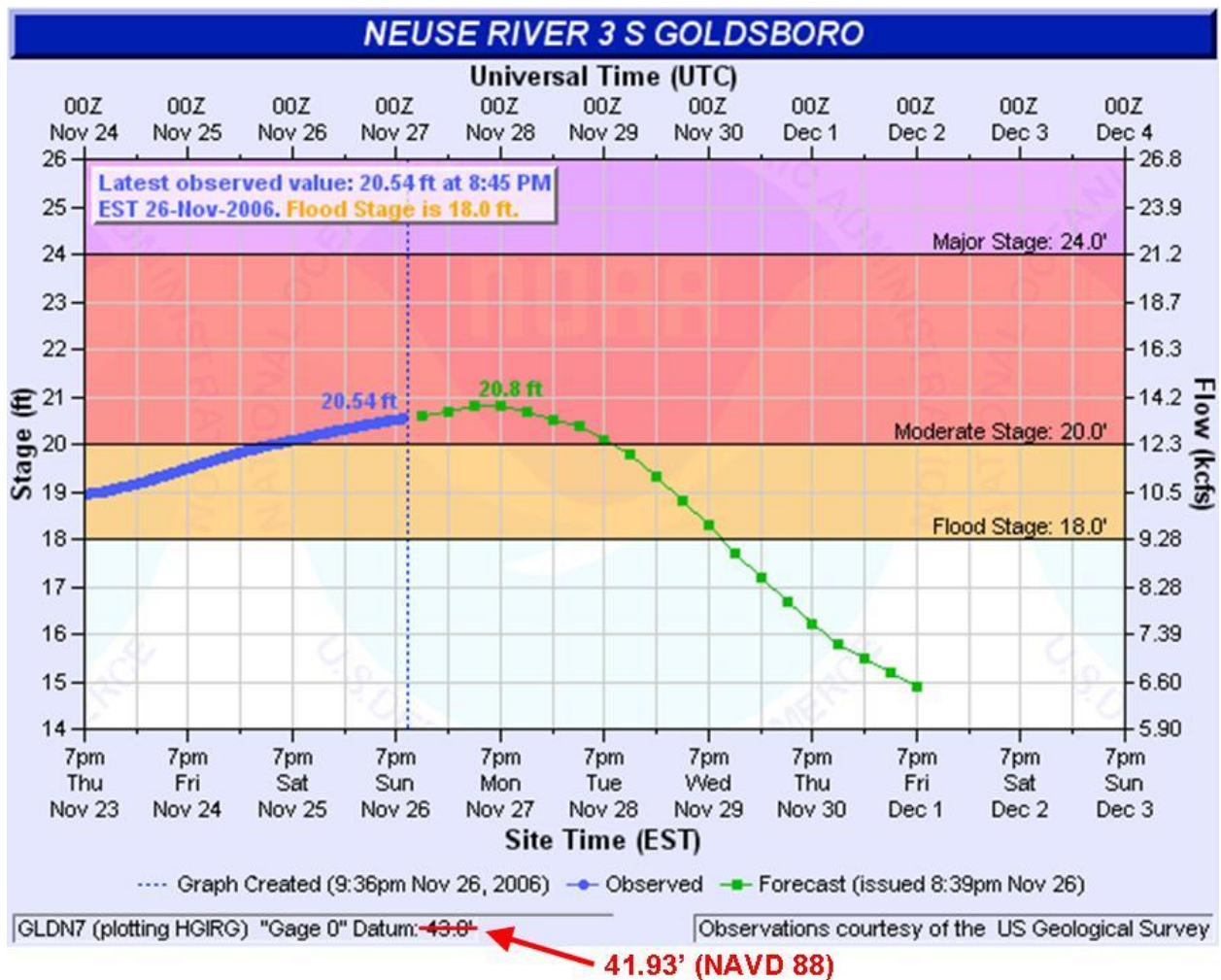
Location of the site in USA.	Site map.

Figure B-1. Sample USGS site map showing current gage datum in use for a station.



1. Case A Considerations. In Case A, the gage datum is changed, but stage values are not affected because they are still reported as heights in feet above gage zero. However, a change in gage datum is important to elevation-sensitive applications such as hydraulic modeling, so the gage datum and elevation references will need to be revised wherever they are stored in files or databases used in the NWS's hydrology web presence. When the USGS officially makes a Case A gage datum change as reflected in the NWIS, the following changes will be made to files and databases used by the NWS's hydrology web presence:

- Change the "Gage 0" Datum and reference in the bottom left corner of the hydrograph plot in the NWS's hydrology web presence (see Figure B-2).
- Change all affected values within the "About This Location" table (see Figure B-3). In the NAVD 88 row, the elevation under "gage height = 0" will need to be filled in with the new gage datum in feet above NAVD 88 and the elevation under "gage height = flood stage" will need to be filled in with the flood elevation in feet above NAVD 88.



**Figure B-2.** Sample hydrograph plot for a Case A location in the NWS's hydrology web presence. Red text shows how the gage datum should appear after conversion from 42.95 feet NGVD 29 to 41.93 feet NAVD 88.



About This Location



Latitude: 35.33700° N, Longitude: 77.998000° W, Horizontal Datum: NAD 1983

River Stage Reference Frame	Gage Height	Flood Stage	Uses
NWS stage	0 ft	18 ft	Interpreting hydrographs and NWS watch, warnings, and forecasts, and inundation maps
Vertical Datum	Elevation (gage height = 0)	Elevation (gage height = flood stage)	Elevation information source
NAVD 88	N/A 41.93 ft (NAVD 88)	N/A 59.93 ft (NAVD 88)	Survey grade GPS equipment, FEMA flood plain maps, newer USGS topographic maps
NGVD 29	42.95 ft NGVD 29	60.95 ft NGVD 29	Older USGS topographic maps, NGVD 29 benchmarks
Other	42.95 ft N/A	60.95 ft N/A	

**Figure B-3.** Sample “About This Location” table below the hydrograph plot in the NWS’s hydrology web presence. For Case A locations, the elevation fields highlighted in yellow will require revision when a gage datum is changed from 42.95 feet NGVD 29 to 41.93 feet NAVD 88. Note: do not include a row in the table for MSL (mean sea level) – MSL is not a fixed datum.

Although a Case A datum change does not affect reported stage values, WFOs should still notify partners and other users the change has occurred by issuing local service change notices. This will ensure partners and other users know that the gage datum values have been revised in the various displays and tables provided through the NWS’s hydrology web presence. With a Case A change, the content of products transmitted via NOAAPORT or NOAA Weather Wire is unaffected and there is no change to the issuance time, frequency, or schedule of any product. Therefore, the rules for notification lead time in [NWS Instruction 10-1805, National Service Change and Technical Implementation Notices](#), do not apply, but issuance of a local service change notice 30 days before the datum revision is recommended. Examples B-1 and B-2 are two templates for possible local service change notices for Case A datum changes.

It is possible for a WFO to revise the flood stage and/or flood categories at the same time as a Class A datum change, even though the two are not linked together. This is not a recommended practice, but WFOs may make the two changes simultaneously with the approval of regional headquarters. Examples B-3 and B-4 are two templates that could be used for local service change notices for the situation when flood stage and/or flood categories are being revised simultaneously with a Case A datum change. Even though the flood category stages are not mentioned in flood warning and other products transmitted via NOAAPORT or NOAA Weather Wire, changes in flood stage and/or flood categories would require partners to revise the category definitions within their systems. Therefore, partners will be given 30 day notification through issuance of a service change notice when a change in flood stage or any flood category is made in addition to a Class A datum change.

Example B-1 - Template for a possible service change notice for a Case A datum change.

NOUS42 K[WFO Id] DDHHMM  
PNS[xxx]

SERVICE CHANGE NOTICE  
NATIONAL WEATHER SERVICE [WFO Name]  
[hhmm] [AM/PM] [Time zone] [Day] [Month] [Day] [Year]

TO: SUBSCRIBERS:  
-FAMILY OF SERVICES  
-NOAA WEATHER WIRE SERVICE  
-EMERGENCY MANAGERS WEATHER INFORMATION NETWORK  
OTHER NWS PARTNERS...USERS AND EMPLOYEES

FROM: [MIC Name]  
METEOROLOGIST IN CHARGE  
WEATHER FORECAST OFFICE [WFO Location] [State]

SUBJECT: CHANGE IN GAGE ZERO ELEVATION FOR THE RIVER GAGE [AT/NEAR]  
[Gage Location] ON THE [River Name] /nwsli/

EFFECTIVE AT [HHMM] COORDINATED UNIVERSAL TIME ON [Day] [Date]...THE  
[gage operator (e.g., USGS)] WILL CHANGE THE GAGE ZERO /GAGE DATUM/  
ELEVATION FOR THE RIVER GAGE [AT/NEAR] [River Gage Name] ON THE  
[River Name] FROM [yyy.yy] FEET ABOVE NATIONAL GEODETIC VERTICAL  
DATUM OF 1929 /NGVD 29/ TO [xxx.xx] FEET ABOVE NORTH AMERICAN  
VERTICAL DATUM OF 1988 /NAVD 88/. FOR THIS LOCATION...GAGE ZERO IS  
THE ELEVATION AT WHICH RIVER STAGE IS ZERO FEET. THE GAGE WILL REMAIN  
AT THE SAME PHYSICAL LOCATION. ONLY THE ELEVATION OF THE GAGE ZERO  
WILL CHANGE.

THIS CHANGE IS BEING MADE AS PART OF A RECENT INITIATIVE TO MODERNIZE  
VERTICAL DATUMS ASSOCIATED WITH STREAM GAGING EQUIPMENT. THIS CHANGE  
IN THE GAGE ZERO WILL NOT REQUIRE A CHANGE IN FLOOD STAGE...FLOOD  
CATEGORIES OR FLOOD IMPACT STAGE LEVELS.

OBSERVATIONS AND FORECASTS WILL REMAIN AS STAGE REPORTS IN FEET ABOVE  
GAGE ZERO FOR THE STREAM GAGE AT [River Gage Name] ON THE [River  
Name] AND CAN BE USED BY PERSONS BETWEEN [Upstream Town Name] AND  
[Downstream Town Name].

THE NATIONAL WEATHER SERVICE WELCOMES PUBLIC FEEDBACK. IF YOU HAVE  
ANY QUESTIONS OR COMMENTS ON THIS CHANGE...PLEASE CONTACT:

[Name]  
[Title]  
NATIONAL WEATHER SERVICE FORECAST OFFICE  
[Address]

PHONE: [zzz.zzz.zzzz]  
E-MAIL: [firstname.lastname]@NOAA.GOV

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Example B-2 - Template for a possible service change notice for a Case A situation with a lower level of detail than Example B-1.

NOUS42 K[WFO Id] DDHHMM  
PNS[xxx]

SERVICE CHANGE NOTICE  
NATIONAL WEATHER SERVICE [WFO Name]  
[hhmm] [AM/PM] [Time zone] [Day] [Month] [Day] [Year]

TO: SUBSCRIBERS:  
-FAMILY OF SERVICES  
-NOAA WEATHER WIRE SERVICE  
-EMERGENCY MANAGERS WEATHER INFORMATION NETWORK  
OTHER NWS PARTNERS...USERS AND EMPLOYEES

FROM: [MIC Name]  
METEOROLOGIST IN CHARGE  
WEATHER FORECAST OFFICE [WFO Location] [State]

SUBJECT: CHANGE IN GAGE ZERO ELEVATION FOR THE RIVER GAGE [AT/NEAR]  
[Gage Location] ON THE [River Name] /nwsli/

EFFECTIVE AT [HHMM] COORDINATED UNIVERSAL TIME ON [Day] [Date]...THE  
[gage operator (e.g., USGS)] WILL CHANGE THE GAGE ZERO /GAGE DATUM/  
FOR THE RIVER GAGE AT [River Gage Location] ON [River Name] FROM  
[yyy.yy] FEET ABOVE NATIONAL GEODETIC VERTICAL DATUM OF 1929 /NGVD  
29/ TO [xxx.xx] FEET ABOVE NORTH AMERICAN VERTICAL DATUM OF 1988  
/NAVD 88/. THE GAGE WILL REMAIN AT THE SAME PHYSICAL LOCATION. ONLY  
THE ELEVATION OF THE GAGE ZERO WILL CHANGE.

THIS CHANGE IN GAGE DATUM WILL REQUIRE NO CHANGE IN THE FLOOD STAGE  
FOR THE RIVER GAGE NEAR [River Gage Location] ON THE [River Name].  
THE FLOOD STAGE WILL REMAIN AT [xx.x] FEET ABOVE GAGE ZERO.

THE NATIONAL WEATHER SERVICE WELCOMES PUBLIC FEEDBACK. IF YOU HAVE  
ANY QUESTIONS OR COMMENTS ON THIS CHANGE...PLEASE CONTACT:

[Name]  
[Title]  
NATIONAL WEATHER SERVICE FORECAST OFFICE  
[Address]

PHONE: [zzz.zzz.zzzz]  
E-MAIL: [firstname.lastname]@NOAA.GOV

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Example B-3 – Template for a possible service change notice for a Case A situation when flood category stages are also being changed.

NOUS42 K[WFO Id] DDHHMM  
PNS[xxx]

SERVICE CHANGE NOTICE  
NATIONAL WEATHER SERVICE [WFO Name]  
[hhmm] [AM/PM] [Time zone] [Day] [Month] [Day] [Year]

TO: SUBSCRIBERS:  
-FAMILY OF SERVICES  
-NOAA WEATHER WIRE SERVICE  
-EMERGENCY MANAGERS WEATHER INFORMATION NETWORK  
OTHER NWS PARTNERS...USERS AND EMPLOYEES

FROM: [MIC Name]  
METEOROLOGIST IN CHARGE  
WEATHER FORECAST OFFICE [WFO Location] [State]

SUBJECT: CHANGES IN GAGE ZERO AND FLOOD CATEGORIES FOR THE RIVER GAGE  
[AT/NEAR] [Gage Location] ON THE [River Name] /nwsli/

EFFECTIVE AT [HHMM] COORDINATED UNIVERSAL TIME ON [Day] [Date]...THE  
[gage operator (e.g., USGS)] WILL CHANGE THE GAGE ZERO /GAGE DATUM/  
ELEVATION FOR THE RIVER GAGE [AT/NEAR] [River Gage Name] ON THE  
[River Name] FROM [yyy.yy] FEET ABOVE NATIONAL GEODETIC VERTICAL  
DATUM OF 1929 (NGVD 29/ TO [xxx.xx] FEET ABOVE NORTH AMERICAN  
VERTICAL DATUM OF 1988 /NAVD 88/. FOR THIS LOCATION... GAGE ZERO IS  
THE ELEVATION AT WHICH RIVER STAGE IS ZERO FEET. THE GAGE WILL REMAIN  
AT THE SAME PHYSICAL LOCATION. ONLY THE ELEVATION OF THE GAGE ZERO  
WILL CHANGE.

ON THE SAME DATE...DUE TO SIGNIFICANT [EROSION...SEDIMENTATION...  
AND/OR LAND USE CHANGES] ON THE RIVER CHANNEL...FLOOD CATEGORY STAGES  
CITED IN NWS FORECAST PRODUCTS FOR THE [River Name] NEAR [River Gage  
Name] WILL BE CHANGED AS FOLLOWS:

1. FLOOD STAGE WILL BE [xx.x] FEET ABOVE GAGE ZERO. PREVIOUS FLOOD  
STAGE WAS [yy.y] FEET ABOVE GAGE ZERO.
2. MODERATE FLOOD STAGE WILL BE [xx.x] FEET ABOVE GAGE ZERO.  
PREVIOUS MODERATE FLOOD STAGE WAS [yy.y] FEET ABOVE GAGE ZERO.
3. MAJOR FLOOD STAGE WILL BE [xx.x] FEET ABOVE GAGE ZERO. PREVIOUS  
MAJOR FLOOD STAGE WAS [yy.y] FEET ABOVE GAGE ZERO.

OBSERVATIONS AND FORECASTS EXPRESSED AS FEET ABOVE GAGE ZERO FOR THE  
STREAM GAGE AT/NEAR [River Gage Name] ON THE [River Name] CAN BE USED  
BY PERSONS BETWEEN [Upstream Town Name] AND [Downstream Town Name].

THE NATIONAL WEATHER SERVICE WELCOMES PUBLIC FEEDBACK. IF YOU HAVE  
ANY QUESTIONS OR COMMENTS ON THIS CHANGE...PLEASE CONTACT:

[Name]  
[Title]  
NATIONAL WEATHER SERVICE FORECAST OFFICE  
[Address]  
PHONE: [zzz.zzz.zzzz]  
E-MAIL: [firstname.lastname]@NOAA.GOV

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Example B-4 – Template for a possible service change notice for a Case A situation when the flood stage is also being changed. This template has a lower level of detail than Example B-3.

NOUS42 K[WFO Id] DDHHMM  
PNS[xxx]

SERVICE CHANGE NOTICE  
NATIONAL WEATHER SERVICE [WFO Name]  
[hhmm] [AM/PM] [Time zone] [Day] [Month] [Day] [Year]

TO: SUBSCRIBERS:  
-FAMILY OF SERVICES  
-NOAA WEATHER WIRE SERVICE  
-EMERGENCY MANAGERS WEATHER INFORMATION NETWORK  
OTHER NWS PARTNERS...USERS AND EMPLOYEES

FROM: [MIC Name]  
METEOROLOGIST IN CHARGE  
WEATHER FORECAST OFFICE [WFO Location] [State]

SUBJECT: CHANGES IN GAGE ZERO AND FLOOD STAGE FOR THE RIVER GAGE  
[AT/NEAR] [Gage Location] ON THE [River Name] /nwsli/

EFFECTIVE AT [HHMM] COORDINATED UNIVERSAL TIME ON [Day] [Date]...THE  
[gage operator (e.g., USGS)] WILL CHANGE THE GAGE ZERO /GAGE DATUM/  
FOR THE RIVER GAGE [AT/NEAR] [River Gage Location] ON [River Name]  
FROM [yyy.yy] FEET ABOVE NATIONAL GEODETIC VERTICAL DATUM OF 1929  
/NGVD 29/ TO [xxx.xx] FEET ABOVE NORTH AMERICAN VERTICAL DATUM OF  
1988 /NAVD 88/. THE GAGE WILL REMAIN AT THE SAME PHYSICAL LOCATION.  
ONLY THE ELEVATION OF THE GAGE ZERO WILL CHANGE.

ON THE SAME DATE...NWS WILL ALSO ADJUST THE FLOOD STAGE FOR THE RIVER  
GAGE NEAR [River Gage Location] ON [River Name]. THE NEW FLOOD STAGE  
WILL BE SET AT [xx.x] FEET ABOVE THE NEW GAGE ZERO /[xxx.x] FEET  
NAVD 88/. THE PREVIOUS FLOOD STAGE WAS [yy.y] FEET ABOVE THE OLD GAGE  
ZERO /[yyy.y] FEET NGVD 29/.

THE NATIONAL WEATHER SERVICE WELCOMES PUBLIC FEEDBACK. IF YOU HAVE  
ANY QUESTIONS OR COMMENTS ON THIS CHANGE...PLEASE CONTACT:

[Name]  
[Title]  
NATIONAL WEATHER SERVICE FORECAST OFFICE  
[ADDRESS]

PHONE: [zzz.zzz.zzzz]  
E-MAIL: [firstname.lastname]@NOAA.GOV

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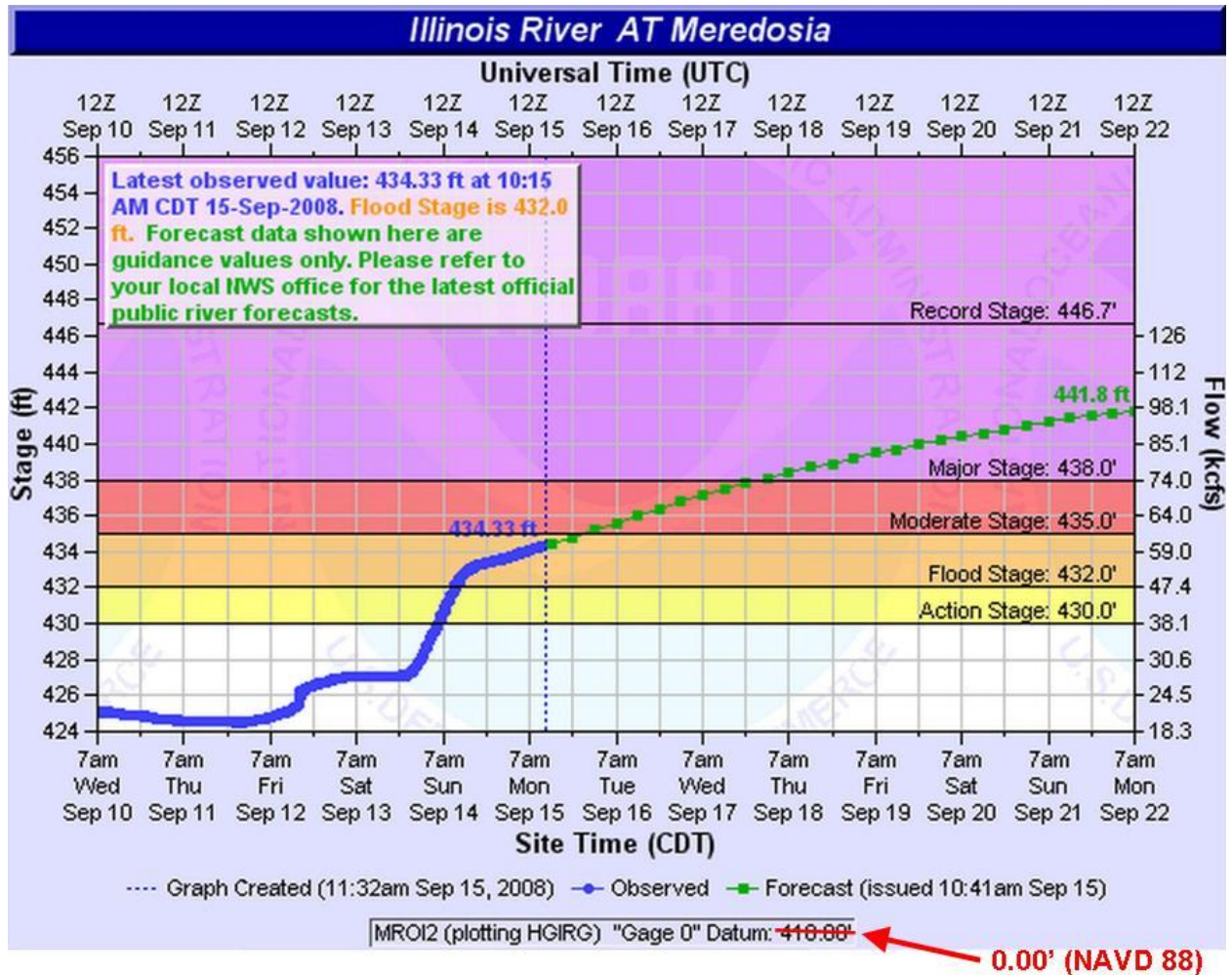
2. Case B Considerations. In Case B situations, gage datum is being changed for a station which reports stage as an elevation above a specified datum, such as NGVD 29. With this type of datum change, river, pool, or tailwater stage reports will switch from elevation in feet above NGVD 29 to elevation in feet above NAVD 88. Conversion to NAVD 88 will result in a change for every observation taken at the station. For example, if the conversion to NAVD 88 resulted in a change of 3.10 feet, a reading of 100.0 feet above NGVD 29 would be 103.1 feet above NAVD 88. Because every gage reading will be affected by a Case B datum change, it is particularly important to collaborate with the appropriate USGS water science center to determine the precise date of the datum change.

When the USGS officially makes a Case B gage datum change as reflected in the NWIS, the following changes will simultaneously be made to files and databases used by the NWS's hydrology web presence:

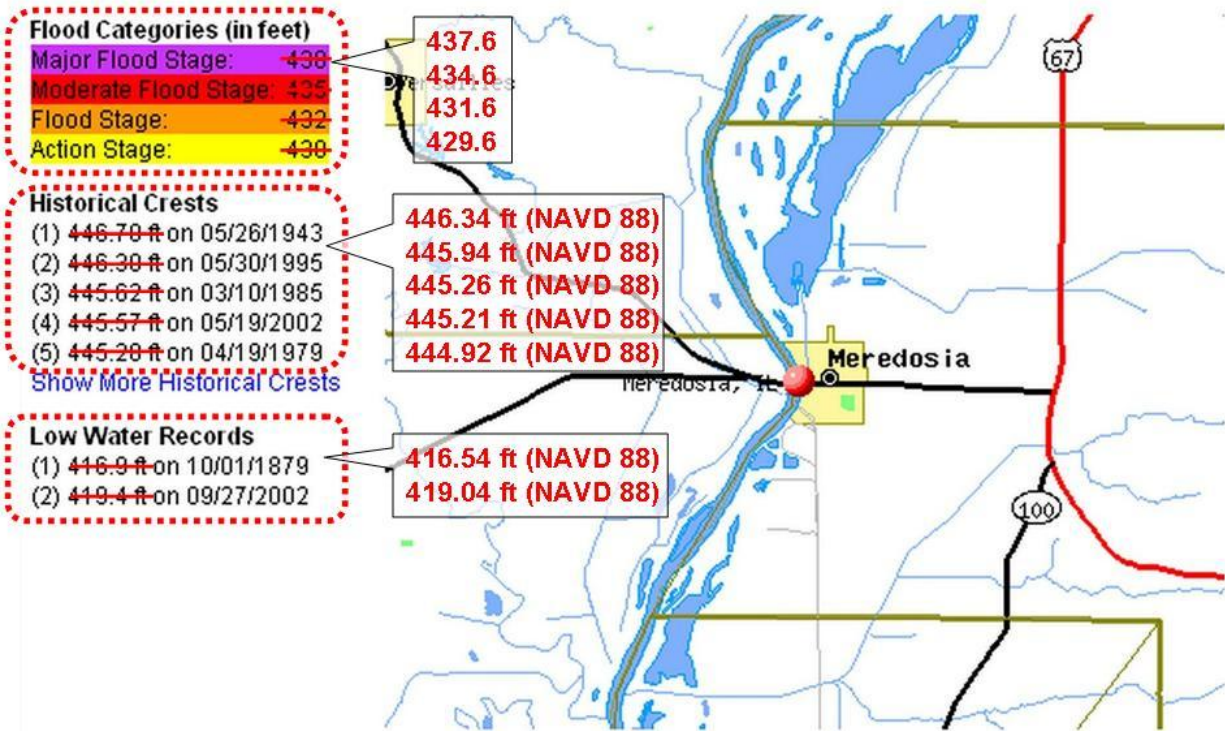
- Revise the “Gage 0” Datum information in the bottom left corner of the hydrograph plot in the NWS's hydrology web presence (see Figure B-4). Past NWS practice has been to use “Gage 0” Datum N/A’ for stations reporting stage as absolute elevation above sea level. For every Case B station, the change to NAVD 88 should be used as an opportunity to change the bottom left corner to read “Gage 0” Datum 0.00’ NAVD 88.
- Revise all historical crest and low water records as shown in Figure B-5.
- Revise all flood impact and low water impact information as shown in Figure B-6.
- In the “About this Location” table (see Figure B-7), insert elevation data related to NAVD 88 across the NAVD 88 row.
- In the “About this Location” table, convert historical information in any other row from NGVD 29 or any other fixed datum to NAVD 88.
- Plan and coordinate as further defined in sections 4, 5 and 6.

Because a Case B datum change affects every reported and historical stage value, it is very important for WFOs to notify partners and other users the change will occur by issuing one or more local service change notices. This will ensure partners and other users know the precise time when observations and forecasts will be reported differently in text hydrologic products and when the various displays and tables provided through the NWS's hydrology web presence will be revised. According to [NWS Instruction 10-1805](#), a significant change to a product or its content which affects the automated parsing of the product requires an advance notification (in this case, via service a change notice) of 120 days. Examples B-5 and B-6 are two templates for possible local service change notices for Case B datum changes. A second follow-up service change notice is recommended when the date of the change is approaching.





**Figure B-4.** Sample hydrograph plot for a Case B location in the NWS’s hydrology web presence. Red text shows how the gage datum should appear after conversion from 418 feet NGVD 29 to 417.64 feet NAVD 88. Note: correct format is “Gage 0” Datum 0.00’ NAVD 88.



**Figure B-5.** Example of changes to flood categories and historical crests in the NWS’s hydrology web presence for a Case B datum change from 418 feet NGVD 29 to 417.64 feet NAVD 88. Information in red will need to be revised.

Flood Impacts		Collapse
All elevations in feet <del>NGVD 29</del> above <b>NAVD 88</b>		
<del>456.0</del>	<b>455.6</b>	Coon Run Levee is overtopped.
<del>451.5</del>	<b>451.1</b>	McGee Creek Levee is overtopped.
<del>450.0</del>	<b>449.6</b>	Mauvaise Terre Levee is overtopped.
<del>449.0</del>	<b>448.6</b>	Meredoisa Lake Levee is overtopped.
<del>447.8</del>	<b>447.4</b>	Burlington Northern Railroad tracks and Levee at route 104 overtop.
<del>446.0</del>	<b>445.6</b>	At levels above 445.64 feet (NAVD 88), Scott County and Northern Meredosia Levees are overtopped and flood fighting activities begin at Willow Creek Lake and Dam. Also this level normally has a 5 percent annual chance of occurring or being exceeded in any given year.
<del>445.0</del>	<b>444.6</b>	Flood fighting begins at Scott County... Coon Run... and Meredosia Lakes and Dams.
<del>444.4</del>	<b>444.0</b>	Flood fighting begins at Valley City Lake and Dam and floodwaters overtop Little Creek Levee.
<del>444.0</del>	<b>443.6</b>	Damage begins to buildings in Meredosia.
<del>443.4</del>	<b>443.0</b>	Flood fighting begins at Little Creek Lake and Dam.
<del>442.2</del>	<b>441.8</b>	Damage begins to buildings in Montezuma.
<del>441.8</del>	<b>441.4</b>	Damage begins to buildings and main access roads overtopped in Florence.
<del>441.0</del>	<b>440.6</b>	Flood fighting activities begin at Big Swan Lake and Dam.
<del>440.4</del>	<b>440.0</b>	Meredosia Lake Road overtopped.
<del>440.2</del>	<b>439.8</b>	Low roads in Florence overtopped.
<del>440.0</del>	<b>439.6</b>	Cargill Company in Florence begins flood fighting activities.
<del>438.0</del>	<b>437.6</b>	Main road in Valley City overtopped.
<del>436.0</del>	<b>435.6</b>	City of Meredosia plugs storm sewer outlets. Also this level normally has a 50 percent annual chance of occurring or being exceeded in any given year.
<del>435.4</del>	<b>435.0</b>	Meredosia boat dock floods.

**Figure B-6.** Sample “Flood Impacts” table below the hydrograph plot in the NWS’s hydrology web presence, showing the elevation fields requiring revision for a Case B datum change from 418 feet NGVD 29 to 417.64 feet NAVD 88..

About This Location



Latitude: 39.823000° N, Longitude: 90.568000° W, Horizontal Datum: NAD83

River Stage Reference Frame	Gage Height	Flood Stage	Uses
NWS stage	417.64 ft	431.64 ft	Interpreting hydrographs and NWS watch, warnings, and forecasts, and inundation maps
Vertical Datum	Elevation (gage height = 417.64)	Elevation (gage height = flood stage)	Elevation information source
NAVD 88	<del>N/A</del> 417.64 ft NAVD 88	<del>N/A</del> 431.64 ft NAVD 88	Survey grade GPS equipment, FEMA flood plain maps, newer USGS topographic maps
NGVD 29	418 ft NGVD 29	432 ft NGVD 29	Older USGS topographic maps, NGVD 29 benchmarks
Other	Null	Null	

**Figure B-7.** Sample “About This Location” table below the hydrograph plot in the NWS’s hydrology web presence. For a Case B datum change from 418 feet NGVD 29 to 417.64 feet NAVD 88, elevation fields highlighted in yellow will require revision. Note: do not include a row in the table for MSL -(mean sea level) – MSL is not a fixed datum.

Example B-5 - Sample template for a possible service change notice for a Case B situation.

NOUS42 K[WFO Id] DDHHMM  
PNS[xxx]

SERVICE CHANGE NOTICE

NATIONAL WEATHER SERVICE [WFO Name]  
[hhmm] [AM/PM] [Time zone] [Day] [Month] [Day] [Year]

TO: SUBSCRIBERS:  
-FAMILY OF SERVICES  
-NOAA WEATHER WIRE SERVICE  
-EMERGENCY MANAGERS WEATHER INFORMATION NETWORK  
OTHER NWS PARTNERS...USERS AND EMPLOYEES

FROM: [MIC Name]  
METEOROLOGIST IN CHARGE  
WEATHER FORECAST OFFICE [WFO Location] [State]

SUBJECT: CHANGES IN GAGE REPORTING AND FLOOD CATEGORIES FOR STREAM  
GAGE AT/NEAR [Gage Location] ON THE [River Name] /nwsli/

EFFECTIVE AT [HHMM] COORDINATED UNIVERSAL TIME ON [Day] [Date]...THE  
[gage operator (e.g., USGS)] WILL CHANGE THE GAGE ZERO /GAGE DATUM/  
FOR THE STREAM GAGE AT/NEAR [River Gage Name] ON THE [River Name]  
FROM [yyy.yy] FEET ABOVE NATIONAL GEODETIC VERTICAL DATUM OF 1929  
/NGVD 29/ TO [xxx.xx] FEET ABOVE NORTH AMERICAN VERTICAL DATUM OF  
1988 /NAVD 88/.

BECAUSE OF THIS CHANGE... STARTING ON [Day of Week] [Month] [Day]  
[Year]...EVERY STAGE OBSERVATION WILL BE [z.zz] FEET [HIGHER/LOWER]  
THAN IT WOULD HAVE BEEN UNDER THE OLD NGVD 29 SYSTEM. THIS CHANGE IS  
BEING MADE AS PART OF A RECENT USGS INITIATIVE TO MODERNIZE VERTICAL  
DATUMS ASSOCIATED WITH STREAM GAGING EQUIPMENT.

TO ENSURE CONSISTENCY IN NWS FORECAST AND WARNING SERVICES...THIS  
CHANGE ALSO REQUIRES AN ADJUSTMENT TO FLOOD CATEGORY ELEVATIONS. THE  
NEW FLOOD CATEGORY STAGES WILL BE AS FOLLOWS:

1. NEW FLOOD STAGE IS [xxx.x] FEET ABOVE NAVD 88. PREVIOUS FLOOD  
STAGE WAS [yyy.y] FEET ABOVE NGVD 29.
2. NEW MODERATE FLOOD STAGE IS [xxx.x] FEET ABOVE NAVD 88. PREVIOUS  
MODERATE FLOOD STAGE WAS [yyy.y] FEET ABOVE NGVD 29.
3. NEW MAJOR FLOOD STAGE IS [xxx.x] FEET ABOVE NAVD 88. PREVIOUS  
MAJOR FLOOD STAGE WAS [yyy.y] FEET ABOVE NGVD 29.

OBSERVATIONS AND FORECASTS FOR THE STREAM GAGE AT/NEAR [River Gage  
Name] ON THE [River Name] CAN BE USED BY PERSONS BETWEEN [Upstream  
Town Name] AND [Downstream Town Name].

THE NATIONAL WEATHER SERVICE WELCOMES PUBLIC FEEDBACK. IF YOU HAVE  
ANY QUESTIONS OR COMMENTS ON THIS CHANGE...PLEASE CONTACT:

[Name]  
[Title]  
NATIONAL WEATHER SERVICE FORECAST OFFICE  
[Address]

PHONE: [zzz.zzz.zzzz]  
E-MAIL: [firstname.lastname]@NOAA.GOV

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Example B-6 – Sample template for a possible service change notice for a Case B situation with less descriptive information than Example B-5.

NOUS42 K[WFO Id] DDHHMM  
PNS[xxx]

SERVICE CHANGE NOTICE  
NATIONAL WEATHER SERVICE [WFO Name]  
[hhmm] [AM/PM] [Time zone] [Day] [Month] [Day] [Year]

TO: SUBSCRIBERS:  
-FAMILY OF SERVICES  
-NOAA WEATHER WIRE SERVICE  
-EMERGENCY MANAGERS WEATHER INFORMATION NETWORK  
OTHER NWS PARTNERS...USERS AND EMPLOYEES

FROM: [MIC Name]  
METEOROLOGIST IN CHARGE  
WEATHER FORECAST OFFICE [WFO Location], [State]

SUBJECT: CHANGES IN GAGE REPORTING AND FLOOD CATEGORIES FOR STREAM  
GAGE AT/NEAR [Gage Location] ON THE [River Name] /nwsli/

EFFECTIVE AT [HHMM] COORDINATED UNIVERSAL TIME ON [Day] [Date]...THE  
[gage operator (e.g., USGS)] WILL CHANGE THE GAGE ZERO /GAGE DATUM/  
ON THE STREAM GAGE AT/NEAR [River Gage Location] ON THE [River Name]  
FROM [yyy.yy] FEET ABOVE NATIONAL GEODETIC VERTICAL DATUM OF 1929  
/NGVD 29/ TO [xxx.xx] FEET ABOVE NORTH AMERICAN VERTICAL DATUM OF  
1988 /NAVD 88/. AS A RESULT...EVERY STAGE OBSERVATION WILL BE [z.zz]  
FEET [HIGHER/LOWER] THAN IT WOULD HAVE BEEN UNDER THE OLD NGVD 29  
SYSTEM.

THE CHANGE IN THE GAGE DATUM REFERENCE WILL ALSO REQUIRE A CHANGE TO  
FLOOD STAGE TO ENSURE CONSISTENCY IN NWS FORECAST AND WARNING  
SERVICES. THE NEW FLOOD STAGE WILL BE SET AT [xx.x] FEET ABOVE  
NAVD 88. THE PREVIOUS FLOOD STAGE WAS [yy.y] FEET ABOVE NGVD 29. ALL  
OTHER FLOOD CATEGORIES WILL BE ADJUSTED ACCORDINGLY.

THE NATIONAL WEATHER SERVICE WELCOMES PUBLIC FEEDBACK. IF YOU HAVE  
ANY QUESTIONS OR COMMENTS ON THIS CHANGE...PLEASE CONTACT:

[Name]  
[Title]  
NATIONAL WEATHER SERVICE FORECAST OFFICE  
[ADDRESS]

PHONE: [zzz.zzz.zzzz]  
E-MAIL: [firstname.lastname]@NOAA.GOV

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3. Case C Considerations. In Case C situations, the gage datum is being changed and simultaneously, by request of a local cooperator, the reporting of river, pool, or tailwater stage is being changed from height above a gage zero to an elevation above a specified datum, i.e. NAVD 88. This is the most radical change of the three cases because a relatively small change caused by switching from NGVD 29 to NAVD 88 can easily be dwarfed by the large change caused by switching from stage-based readings to elevation-based readings. Implementing these two changes at the same time will result in a significant change for every river stage observation taken at the station. For example, a stage reading of 15.0 feet above gage zero might be 108.5 feet above NAVD 88. Because every stage reading will be significantly affected by a Case C datum change, it is extremely important to collaborate with the appropriate USGS water science center to determine the precise date of the “double change.”

A Case C gage datum change requires several changes in the NWS’s hydrology web presence. When the USGS officially makes a Case C gage datum change as reflected in the NWIS, the following changes will simultaneously be made to files and databases used by the NWS’s hydrology web presence:

- Revise the “Gage 0” Datum information in the bottom left corner of the hydrograph plot in the NWS’s hydrology web presence as shown previously in Figure B-4. The correct format for this information in a Case C situation is: “Gage 0” Datum 0.00’ NAVD 88.
- Revise all historical crest and low water records as highlighted previously in Figure B-5.
- Revise all flood impact and low water impact information as illustrated previously in Figure B-6.
- Revise gage datum and all values affected by that change in the “About This Location” table as illustrated previously in Figure B-7. Note: do not include a row in the table for MSL (mean sea level) – MSL is not a fixed datum.
- Convert any other historical information from NGVD 29 or any other fixed datum to elevation-based stages in NAVD 88.

Because a Case C datum change affects every reported stage observation, it is especially important for WFOs to notify partners and other users the change will occur by issuing one or more local service change notices. This will ensure partners and other users know the precise time when observations and forecasts will be reported differently in text hydrologic products and when the various displays and tables provided through the NWS’s hydrology web presence will be revised. According to [NWS Instruction 10-1805](#), a significant change to a product or its content which affects the automated parsing of that product requires an advance notification (in this case, via service a change notice) of 120 days. Examples B-7 and B-8 are two templates for possible local service change notices for Case C datum changes. A second follow-up service change notice is highly recommended when the date of the change is approaching.

Example B-7 - Sample template for a possible service change notice for a Case C situation.

NOUS42 K[WFO Id] DDHHMM  
PNS[xxx]

SERVICE CHANGE NOTICE

NATIONAL WEATHER SERVICE [WFO Name]  
[hhmm] [AM/PM] [Time zone] [Day] [Month] [Day] [Year]

TO: SUBSCRIBERS:  
-FAMILY OF SERVICES  
-NOAA WEATHER WIRE SERVICE  
-EMERGENCY MANAGERS WEATHER INFORMATION NETWORK  
OTHER NWS PARTNERS...USERS AND EMPLOYEES

FROM: [MIC Name]  
METEOROLOGIST IN CHARGE  
WEATHER FORECAST OFFICE [WFO Location], [State]

SUBJECT: CHANGES IN GAGE REPORTING AND FLOOD CATEGORIES FOR STREAM  
GAGE AT/NEAR [Gage Location] ON THE [River Name] /nwsli/

EFFECTIVE AT [HHMM] COORDINATED UNIVERSAL TIME ON [Day] [Date]...THE  
[gage operator (e.g., USGS)] WILL CHANGE THE REPORTING OF OBSERVATIONS  
FOR THE STREAM GAGE AT [River Gage Location] ON THE [River Name] FROM  
A STAGE VALUE IN FEET ABOVE GAGE ZERO /GAGE DATUM/ TO AN ELEVATION  
HEIGHT IN FEET NORTH AMERICAN VERTICAL DATUM OF 1988 /NAVD 88/.

BECAUSE OF THIS CHANGE...STARTING ON [Day of Week] [Month] [Day]  
[Year]...EVERY OBSERVATION WILL BE [z.zz] FEET [HIGHER/LOWER] THAN IT  
WOULD HAVE BEEN AS A STAGE EXPRESSED IN FEET ABOVE GAGE ZERO. THIS  
CHANGE IS PART OF A RECENT U.S. GEOLOGICAL SURVEY INITIATIVE TO  
MODERNIZE VERTICAL DATUMS ASSOCIATED WITH STREAM GAGING EQUIPMENT AND  
IS BEING MADE PER A REQUEST OF THE COOPERATOR FUNDING THIS GAGE.

CHANGING THE REPORTING OF OBSERVATIONS TO ABSOLUTE ELEVATION IN FEET  
NAVD 88 WILL REQUIRE NEW STAGES TO BE ASSIGNED FOR NATIONAL WEATHER  
SERVICE /NWS/ FLOOD CATEGORIES TO ENSURE CONSISTENCY IN NWS FORECAST  
AND WARNING SERVICES. THE NEW FLOOD CATEGORIES WILL BE AS FOLLOWS:

1. NEW FLOOD STAGE IS [xxx.x] FEET ABOVE NAVD 88. THE PREVIOUS  
FLOOD STAGE WAS [yy.y] FEET ABOVE GAGE ZERO.
2. NEW MODERATE FLOOD STAGE IS [xxx.x] FEET ABOVE NAVD 88. PREVIOUS  
MODERATE FLOOD STAGE WAS [yy.y] FEET ABOVE GAGE ZERO.
3. NEW MAJOR FLOOD STAGE IS [xxx.x] FEET ABOVE NAVD 88. PREVIOUS  
MAJOR FLOOD STAGE WAS [yy.y] FEET ABOVE GAGE ZERO.

OBSERVATIONS AND FORECASTS FOR THE STREAM GAGE AT/NEAR [River Gage  
Name] ON THE [River Name] CAN BE USED BY PERSONS BETWEEN [Upstream  
Town Name] AND [Downstream Town Name].

THE NATIONAL WEATHER SERVICE WELCOMES PUBLIC FEEDBACK. IF YOU HAVE  
ANY QUESTIONS OR COMMENTS ON THIS CHANGE...PLEASE CONTACT:

[Name]  
[Title]  
NATIONAL WEATHER SERVICE FORECAST OFFICE  
[Address]

PHONE: [zzz.zzz.zzzz]  
E-MAIL: [firstname.lastname]@NOAA.GOV

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Example B-8 - Sample template for a possible service change notice for a Case C situation with less descriptive information than Example B-7.

NOUS42 K[WFO Id] DDHHMM  
PNS[xxx]

SERVICE CHANGE NOTICE  
NATIONAL WEATHER SERVICE [WFO Name]  
[hhmm] [AM/PM] [Time zone] [Day] [Month] [Day] [Year]

TO: SUBSCRIBERS:  
-FAMILY OF SERVICES  
-NOAA WEATHER WIRE SERVICE  
-EMERGENCY MANAGERS WEATHER INFORMATION NETWORK  
OTHER NWS PARTNERS...USERS AND EMPLOYEES

FROM: [MIC Name]  
METEOROLOGIST IN CHARGE  
WEATHER FORECAST OFFICE [WFO Location], [State]

SUBJECT: CHANGES IN GAGE REPORTING AND FLOOD CATEGORIES FOR STREAM  
GAGE AT/NEAR [Gage Location] ON THE [River Name] /nwsli/

EFFECTIVE AT [HHMM] COORDINATED UNIVERSAL TIME ON [Day] [Date]...THE  
[gauge operator (e.g., USGS)] WILL CHANGE THE REPORTING OF  
OBSERVATIONS FOR THE STREAM GAGE AT/NEAR [River Gage Location] ON THE  
[River Name] FROM A STAGE VALUE IN FEET ABOVE GAGE ZERO /GAGE DATUM/  
NATIONAL GEODETIC VERTICAL DATUM OF 1929 /NGVD 29/ TO AN ELEVATION  
HEIGHT IN FEET ABOVE NORTH AMERICAN VERTICAL DATUM OF 1988 /NAVD 88/.  
THIS CHANGE IS BEING MADE AT THE REQUEST OF LOCAL GAGE COOPERATORS.

THE CHANGE IN THE GAGE REPORTING AND ASSOCIATED GAGE DATUM REFERENCE  
WILL ALSO REQUIRE A CHANGE TO THE FLOOD STAGE TO ENSURE CONSISTENCY  
IN NWS FORECAST AND WARNING SERVICES FOR THE RIVER GAGE AT/NEAR  
[River Gage Location] ON THE [River Name].

THE NEW FLOOD STAGE WILL BE SET AT [xx.x] FEET ABOVE NAVD 88. THE  
PREVIOUS FLOOD STAGE WAS [yy.y] FEET ABOVE GAGE ZERO. ALL OTHER FLOOD  
CATEGORIES WILL BE ADJUSTED ACCORDINGLY.

THE NATIONAL WEATHER SERVICE WELCOMES PUBLIC FEEDBACK. IF YOU HAVE  
ANY QUESTIONS OR COMMENTS ON THIS CHANGE...PLEASE CONTACT:

[Name]  
[Title]  
NATIONAL WEATHER SERVICE FORECAST OFFICE  
[Address]

PHONE: [zzz.zzz.zzzz]  
E-MAIL: [firstname.lastname]@NOAA.GOV

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4 Special Case B and Case C Considerations. For both Case B and Case C situations, a few changes in addition to those described in Sections 2 and 3 must be made which are dependent on whether the USGS makes the adjustment internally at the database level or in the field at the data collection platform (DCP) level. Note: several other changes, such as rating curve updates, will be required for RFC operational forecast systems and the WFO Hydrologic Forecast System (WHFS), but these changes are out of the scope of this directive.

4.1 Web-Based Hydrograph Headlines. For Case B and Case C situations, a recommended practice is to place a headline above the web-based hydrograph plot for a few weeks before and after the datum change to help ensure customers and other users are aware of the change. This should also be done for Case A situations when flood stage/categories are changed.

4.2 Change in Datum Offset in NWIS Database. If the USGS internally adjusts the datum offset inside their database such that this offset is added to the raw values they receive from the DCP, NWS will need to make its own changes to Base Elevation within OHD's Hydrometeorological Automated Data System (HADS) database (see <http://www.nws.noaa.gov/oh/hads/>) and any internal NWS database where an offset is added to the raw values (See HADS metadata table, Figure 8). The field office must coordinate this change with the HADS team ([hadsteam@nws.noaa.gov](mailto:hadsteam@nws.noaa.gov)).

4.3 Change in Transmitted Data. It is important for the WFO to coordinate with the USGS and HADS support team during Case B and Case C situations, because the USGS could make an unanticipated change in data transmission at the gage. If the USGS physically adjusts the DCP or any attached field equipment to directly report the elevation stages without the need for any further translation, NWS will not need an offset value in the Base Elevation element of the HADS database, but will need to change the static information for the NWS hydrology web presence as previously described as well as any internal NWS database.

Since human nature favors whole number offsets, the USGS may adjust the wire weight gage or add a correction factor in the gaging station's pressure transducer. Alternatively, the USGS may insert a correction factor within the gaging station's DCP. Most importantly, the USGS's intent would be to ensure readings obtained via the wire weight (reading + offset), DCP (display readout or display + offset), and staff gage (staff reading, or staff reading + offset) provide the correct elevation in NAVD 88. The manner in which the USGS accomplishes this may or may not affect the numbers transmitted by HADS. Therefore, it is critical to coordinate how any changes will be made in data transmissions with both the USGS and the HADS team.

5. Planning and Coordination. Prior to any gage datum conversion, in any of the three cases noted previously, the NWS field offices should reconfirm with their local USGS office on the timeframe when the change will be applied, ensure an understanding of the net effects, and coordinate efforts to minimize impacts to operations. The field office must also coordinate with NWS partners and other users as previously described.

As early as possible, the field office shall also coordinate with their respective river forecast center (RFC) concerning the pending changes. The RFC will also need to make adjustments to its IHFS database and other local databases. When elevation-based data locations are involved

Meta Data													
NESDIS ID	CE484870			NWS Location ID				MROI2					
Location	ILLINOIS RIVER AT MEREDOSIA												
Latitude	N 39°49'35"			Longitude				W 90°33'53"		HSA	LSX	State	IL
Owner	CEORL1	Chanel	73	Initial Transmit Time (HHMM)				0018		Transmission Interval (min)			60
Transmission Times	GMT 00:18 01:18 02:18 03:18 04:18 05:18 06:18 07:18 08:18 09:18 10:18 11:18												
	GMT 12:18 13:18 14:18 15:18 16:18 17:18 18:18 19:18 20:18 21:18 22:18 23:18												

Decode Information								
NWSLI	Data Interval(min) Self-time	Data Interval(min) Random	SHEF Code	Time Offset(min)	Base Elevation(ft)	Coefficient Self-time	Coefficient Random	Constant
MROI2	15		HGIRG	3	418	1		0
MROI2	15		PCIRG	3	0	1		0
MROI2	15		TAIRG	3	0	1		0

Today Decoded Data

Coordinate with USGS on the appropriate offset.

**Figure B-8.** Sample metadata table from HADS. The appropriate base elevation offset, circled in red, should be coordinated with the USGS.

(i.e., Case B or C situations), particular attention should be paid to rating tables and elevation storage curves. For elevation-based data locations where manual observations are taken by observers (either for routine or backup purposes), the observers will need to be trained on how to appropriately translate a staff gage reading to the correct elevation above NAVD 88.

6. Post-Conversion Confirmation. Immediately after the gage datum conversion, the WFO should monitor the outcome and take corrective actions as necessary. Actions taken by WFOs after the official transition date in the service change notice should include the following:

- Ensure readings are being reported as elevation heights according to the new gage datum (for Case B situations) or ensure readings are no longer being reported as stage above gage zero and are now being reported as elevation heights according to the new gage datum (for Case C situations).
- Ensure all observations and/or static data in the NWS’s hydrology web presence are reflecting the new gage datum.
- For any stations receiving manual observations, ensure measurements are appropriately reported as a stage above gage zero or an elevation feet above NAVD 88.
- Continue the coordination process with partners and other users to make them aware of how to correctly interpret observations according to the new gage datum (mainly important for Case B and C situations) and provide assistance as necessary.
- Continue the coordination process with supporting RFC(s) to make them aware of the need to make adjustments to the IHFS database and other local databases.
- Ensure that forecast products are being provided with appropriate stage values above gage zero or elevation heights above NAVD 88.

**Appendix C**  
**Sample Public Information Statements for Changes to Flood Category Stages**

Example C-1 - Sample template for change in flood stage reported above gage zero (i.e., a stage-based station). No changes made to other flood categories.

NOUS42 K[WFO Id] DDHHMM  
PNS[xxx]

SERVICE CHANGE NOTICE  
NATIONAL WEATHER SERVICE [WFO Name]  
[hhmm] [AM/PM] [Time zone] [Day] [Month] [Day] [Year]

TO:           SUBSCRIBERS:  
              -FAMILY OF SERVICES  
              -NOAA WEATHER WIRE SERVICE  
              -EMERGENCY MANAGERS WEATHER INFORMATION NETWORK  
              OTHER NWS PARTNERS...USERS AND EMPLOYEES

FROM:        [MIC Name]  
              METEOROLOGIST IN CHARGE  
              WEATHER FORECAST OFFICE [WFO Location], [State]

SUBJECT: CHANGES IN FLOOD CATEGORIES FOR STREAM GAGE AT/NEAR  
          [Gage Location] ON THE [River Name] /nwsli/

EFFECTIVE AT [HHMM] COORDINATED UNIVERSAL TIME ON [Day] [Date]...THE  
NATIONAL WEATHER SERVICE WILL CHANGE THE FLOOD STAGE FOR THE STREAM  
GAGE AT [River Gage Location] ON THE [River Name].

THE NEW FLOOD STAGE REFERENCED IN FLOOD WARNINGS, FLOOD STATEMENTS,  
AND FLOOD ADVISORIES WILL BE [xxx.x] FEET ABOVE GAGE ZERO. THE  
PREVIOUS FLOOD STAGE WAS [yy.y] FEET ABOVE GAGE ZERO. THIS CHANGE IS  
PART OF A RECENT RE-EVALUATION OF THE FLOOD PLAIN WITH LOCAL  
EMERGENCY MANAGERS. OTHER FLOOD CATEGORY STAGES AT THIS STREAM GAGE  
WILL REMAIN UNCHANGED.

THE NATIONAL WEATHER SERVICE WELCOMES PUBLIC FEEDBACK. IF YOU HAVE  
ANY QUESTIONS OR COMMENTS ON THIS CHANGE...PLEASE CONTACT:

          [Name]  
          [Title]  
          NATIONAL WEATHER SERVICE FORECAST OFFICE  
          [Address]

PHONE:    [zzz.zzz.zzzz]  
E-MAIL:   [firstname.lastname]@NOAA.GOV

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Example C-2 - Sample template for changes in flood category stages reported above gage zero (i.e., a stage-based station).

NOUS42 K[WFO Id] DDHHMM  
PNS[xxx]

SERVICE CHANGE NOTICE

NATIONAL WEATHER SERVICE [WFO Name]  
[hhmm] [AM/PM] [Time zone] [Day] [Month] [Day] [Year]

TO: SUBSCRIBERS:  
-FAMILY OF SERVICES  
-NOAA WEATHER WIRE SERVICE  
-EMERGENCY MANAGERS WEATHER INFORMATION NETWORK  
OTHER NWS PARTNERS...USERS AND EMPLOYEES

FROM: [MIC Name]  
METEOROLOGIST IN CHARGE  
WEATHER FORECAST OFFICE [WFO Location], [State]

SUBJECT: CHANGES IN FLOOD CATEGORIES FOR STREAM GAGE AT/NEAR  
[Gage Location] ON THE [River Name] /nwsli/

EFFECTIVE AT [HHMM] COORDINATED UNIVERSAL TIME ON [Day] [Date]...THE NATIONAL WEATHER SERVICE WILL CHANGE THE FLOOD CATEGORY STAGES AS FOR THE STREAM GAGE AT [River Gage Location] ON THE [River Name].

BECAUSE OF THIS CHANGE...STARTING ON [Day of Week] [Month] [Day] [Year]...FLOOD WARNINGS...FLOOD STATEMENTS AND FLOOD ADVISORIES WILL REFERENCE THE NEW CATEGORY LEVELS. THIS CHANGE IS PART OF A RECENT RE-EVALUATION OF THE FLOOD PLAIN WITH LOCAL EMERGENCY MANAGERS.

THE NEW FLOOD CATEGORIES WILL BE AS FOLLOWS:

1. NEW FLOOD STAGE IS [xxx.x] FEET ABOVE GAGE ZERO. THE PREVIOUS FLOOD STAGE WAS [yy.y] FEET ABOVE GAGE ZERO.
2. NEW MODERATE FLOOD STAGE IS [xxx.x] FEET ABOVE GAGE ZERO. THE PREVIOUS MODERATE FLOOD STAGE WAS [yy.y] FEET ABOVE GAGE ZERO.
3. NEW MAJOR FLOOD STAGE IS [xxx.x] FEET ABOVE GAGE ZERO. THE PREVIOUS MAJOR FLOOD STAGE WAS [yy.y] FEET ABOVE GAGE ZERO.

THE NATIONAL WEATHER SERVICE WELCOMES PUBLIC FEEDBACK. IF YOU HAVE ANY QUESTIONS OR COMMENTS ON THIS CHANGE...PLEASE CONTACT:

[Name]  
[Title]  
NATIONAL WEATHER SERVICE FORECAST OFFICE  
[Address]

PHONE: [zzz.zzz.zzzz]  
E-MAIL: [firstname.lastname]@NOAA.GOV

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Example C-3 - Sample template for changes in flood stages reported above the NAVD 88 reference datum.

NOUS42 K[WFO Id] DDHHMM  
PNS[xxx]

SERVICE CHANGE NOTICE  
NATIONAL WEATHER SERVICE [WFO Name]  
[hhmm] [AM/PM] [Time zone] [Day] [Month] [Day] [Year]

TO: SUBSCRIBERS:  
-FAMILY OF SERVICES  
-NOAA WEATHER WIRE SERVICE  
-EMERGENCY MANAGERS WEATHER INFORMATION NETWORK  
OTHER NWS PARTNERS...USERS AND EMPLOYEES

FROM: [MIC Name]  
METEOROLOGIST IN CHARGE  
WEATHER FORECAST OFFICE [WFO Location], [State]

SUBJECT: CHANGES IN FLOOD CATEGORIES FOR STREAM GAGE AT/NEAR  
[Gage Location] ON THE [River Name] /nwsli/

EFFECTIVE AT [HHMM] COORDINATED UNIVERSAL TIME ON [Day] [Date]...THE  
NATIONAL WEATHER SERVICE WILL CHANGE THE FLOOD CATEGORY STAGES FOR  
THE STREAM GAGE AT [River Gage Location] ON THE [River Name].

BECAUSE OF THIS CHANGE...STARTING ON [Day of Week] [Month] [Day]  
[Year]...FLOOD WARNINGS...FLOOD STATEMENTS AND FLOOD ADVISORIES WILL  
REFERENCE THE NEW FLOOD CATEGORY LEVELS. THIS CHANGE IS PART OF A  
RECENT RE-EVALUATION OF THE FLOOD PLAIN WITH LOCAL EMERGENCY  
MANAGERS.

THE NEW FLOOD CATEGORIES WILL BE AS FOLLOWS:

1. NEW FLOOD STAGE IS [xxx.x] FEET ABOVE NORTH AMERICAN VERTICAL  
DATUM OF 1988 /NAVD 88/. THE PREVIOUS FLOOD STAGE WAS [yy.y]  
FEET ABOVE NAVD 88.
2. NEW MODERATE FLOOD STAGE IS [xxx.x] FEET ABOVE NAVD 88. THE  
PREVIOUS MODERATE FLOOD STAGE WAS [yy.y] FEET ABOVE NAVD 88.
3. NEW MAJOR FLOOD STAGE IS [xxx.x] FEET ABOVE NAVD 88. THE  
PREVIOUS MAJOR FLOOD STAGE WAS [yy.y] FEET ABOVE NAVD 88.

THE NATIONAL WEATHER SERVICE WELCOMES PUBLIC FEEDBACK. IF YOU HAVE  
ANY QUESTIONS OR COMMENTS ON THIS CHANGE...PLEASE CONTACT:

[Name]  
[Title]  
NATIONAL WEATHER SERVICE FORECAST OFFICE  
[Address]

PHONE: [zzz.zzz.zzzz]  
E-MAIL: [firstname.lastname]@NOAA.GOV

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