

Answers to Questions about NFIP Flood Insurance Datum Conversions

The Homeowners' Flood Insurance Affordability Act (HFIAA), Section 28, Clear Communications, resulted in new re-underwriting procedures for Write-Your-Own (WYO) carriers and the NFIP Direct Servicing Agent that became effective April 1, 2016. In March 2016, FEMA issued a fourth addendum requiring insurers to report all elevation data with the same datum as the current Base Flood Elevation (BFE). Older Elevation Certificates (EC) may show Mean Sea Level (MSL) or NGVD 29 datum requiring that the insurance agent convert the datum to NAVD 88, the datum from which the BFE for newer Flood Insurance Rate Maps (FIRMs) is generally referenced.

Insurance professionals, while implementing the new requirement, have presented FEMA with important questions about datum conversions. "Answers to Questions about NFIP Flood Insurance Datum Conversions" strives to answer those questions.

The Basics:

Q: What is a benchmark?

A: A benchmark is a physical marker usually registered with the National Geodetic Survey (NGS). Benchmarks indicate the elevation of a particular site referenced to a standard datum. Surveyors shoot elevations based on the datum of the benchmark. It is up to the surveyor to convert the datum to match the BFE when necessary.

Q: Why did the datum change?

A: As measurement systems improve, new datums are occasionally required to correct errors in the older systems. For example, satellite measurements of the earth, GPS technology, and better understanding of local mean sea level relationships have all resulted in major improvements in global positioning.

Q: What is NAD 83?

A: NAD 83 is a horizontal datum used to specify the location rather than the height of a location.



FEMA Original guidance for datum conversion (found in WYO bulletin W-09040), is accessible by following the links below:

<http://www.nfipiservice.com/bulletinsearch/DownloadDocument.aspx?Type=pdf&FName=w-10061>

<http://www.nfipiservice.com/bulletinsearch/DownloadDocument.aspx?Type=pdf&FName=w-09040>

Refer to the *Lowest Floor Guide of the NFIP Flood Insurance Manual*, "Guidelines for Determining the Conversion from NGVD 1929 to NAVD 1988" for procedures for datum conversion.

<http://www.fema.gov/flood-insurance-manual>

VERTCON:

Q: Is VERTCON the only tool available to use for conversions?

A: The best approach to converting older vertical datums, is to use the datum conversion information published in the FEMA Flood Insurance Study (FIS). If the conversion factor from the datum on the EC to the datum on the current BFE is included in the FIS, you can use the approach regardless of the datum used on the EC or the FIRM.

VERTCON is the authoritative tool published by the National Geodetic Survey for converting between NGVD 29 and NAVD 88 in the continental U.S.

VERTCON is accessible at:
http://www.ngs.noaa.gov/cgi-bin/VERTCON/vert_con.pr1

An older version is available for download to your system at:

http://www.ngs.noaa.gov/PC_PROD/VERTCON/

If neither the FIS nor VERTCON can be used to determine the correct conversion factor, the insurance professional may use another credible

alternative such as consultation with a community official, referenced to published conversion factors for local datums, or consultation with a surveyor. Otherwise, a new elevation certificate is required.

Q: How do I properly enter longitude and latitude numbers in VERTCON for the states of Alaska and Hawaii?

A: VERTCON does not have the ability to convert datums used outside the continental United States. Refer to the Flood Insurance Study (FIS) related to the area. Locate the conversion information used and apply it to your conversion.

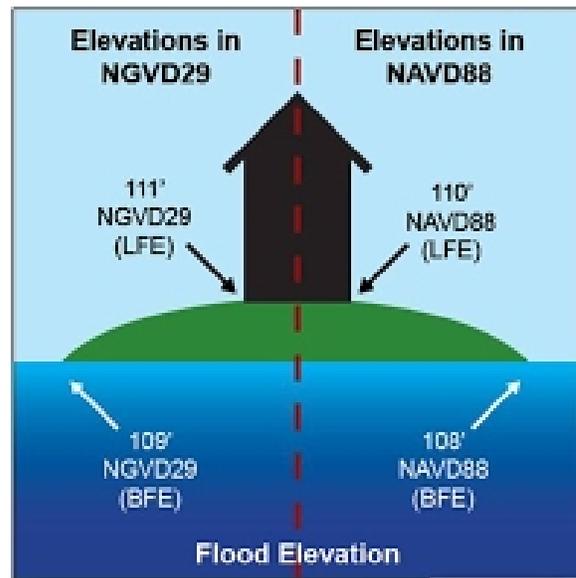
Differences in Datum:

Q: If I have an older elevation certificate, where the surveyor included a datum conversion on the elevation certificate between current BFE datum and the datum for the final elevations on the old elevation certificate, can I use the surveyor's conversion factor to convert back to the current BFE datum?

A: Yes, you can use the datum conversion factor provided by the surveyor on the original elevation certificate if it is applicable to the conversion needed. FEMA recommends checking the conversion factor against VERTCON for reasonableness and to ensure that the conversion factor is applied correctly.

Q: How do I convert datums other than NGVD 29 and NAVD 88, like MSL and Cairo (a very old datum)?

A: If the FIS contains specific datum conversion information (i.e. from MSL to NAVD 88), then that method is used. If neither the FIS nor VERTCON can be used to determine the correct conversion factor, the insurance professional may use another credible alternative such as consultation with a community official, referenced to published conversion factors for local datums, or consultation with a surveyor. Otherwise, a new EC is required.



Q: Does the conversion process differ if the BFE changes dramatically (i.e. old BFE -1 NGVD 29, new BFE 16 NAVD 88) or does the standard process apply?

A: Changes in the BFE that are the result of updated engineering techniques do not affect how the building elevations on an older EC are converted. However, they will affect the relative height of the building elevation compared to the BFE.

Q: What is the result when, after a FIRM change, the BFEs are the same but the datum differs (i.e. the current BFE is 8' NAVD 88 and the prior BFE was 8' NGVD 29)?

A: In some cases, the datum shift is small enough to be trivial. This could result in an unrevised BFE to be the same before and after a datum conversion. The datum conversion factor would be zero and the building and ground elevations would likewise be unaffected by the datum conversion.

In other cases, a revised BFE arrived at through new analysis could result in a nearly equal size shift as the datum conversion between NGVD 29 and NAVD 88 at the same location. The two changes might cancel each other out, so that the outcome could be a BFE that is the same in NAVD 88 as it is in NGVD 29. However, the relative elevation of the building to the BFE has changed and converting the building elevations will show this.

In either case, the method for converting the building elevations on the EC are not impacted.

Q: When will all FIRMs reflect the NAVD 88 datum?

A: Maps are updated based on available funding and need for updates in that area. It is likely that some areas may not receive FIRM updates anytime in the near future.

Datum Issues with New Elevation Certificates

Q: If I receive a new elevation certificate where the surveyor has included a value for the datum shift, do I need to convert the building elevations provided?

A: Unless it is clear that the EC elevations are referenced against an incorrect datum, there is no need for performing a datum conversion. See <http://www.nfipiservice.com/bulletinsearch/DownloadDocument.aspx?Type=pdf&FName=w-10061>

Q: What should I do if a new EC does not provide the surveyed elevation data in the correct datum?

A: Normally, new ECs that do not provide the surveyed elevation data in the correct datum are not acceptable. The exception is areas like portions of Louisiana that have experienced significant land subsidence without adequate maintenance of benchmarks. If the surveyor feels that they cannot provide a certified elevation referenced to the datum on the FIRM, but provides a datum conversion value, use that value to do the datum conversion. If the surveyor only provides elevations in NAVD 88, use VERTCON to convert the values to NGVD 29 to match the FIRM.

Be careful not to convert elevations provided by the surveyor unless it is clear that the elevations provided are not referenced to the datum of the BFE on the EC (see <http://www.nfipiservice.com/bulletinsearch/DownloadDocument.aspx?Type=pdf&FName=w-10061>).

FEMA is working to replace older FIRMs that reflect NGVD 29 datum. However, until a community adopts the new maps, the BFEs referenced to NGVD 29 remain the regulatory standard. Because of the impacts of ground movement on older benchmarks, in some Louisiana locations it is difficult to measure accurate heights relative to NGVD 29. In those cases, surveyors may feel they cannot provide a certified elevation relative to NGVD 29.



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