US Geological Survey
3D National Topography Model Data Collaboration Announcement
3D Hydrography Program

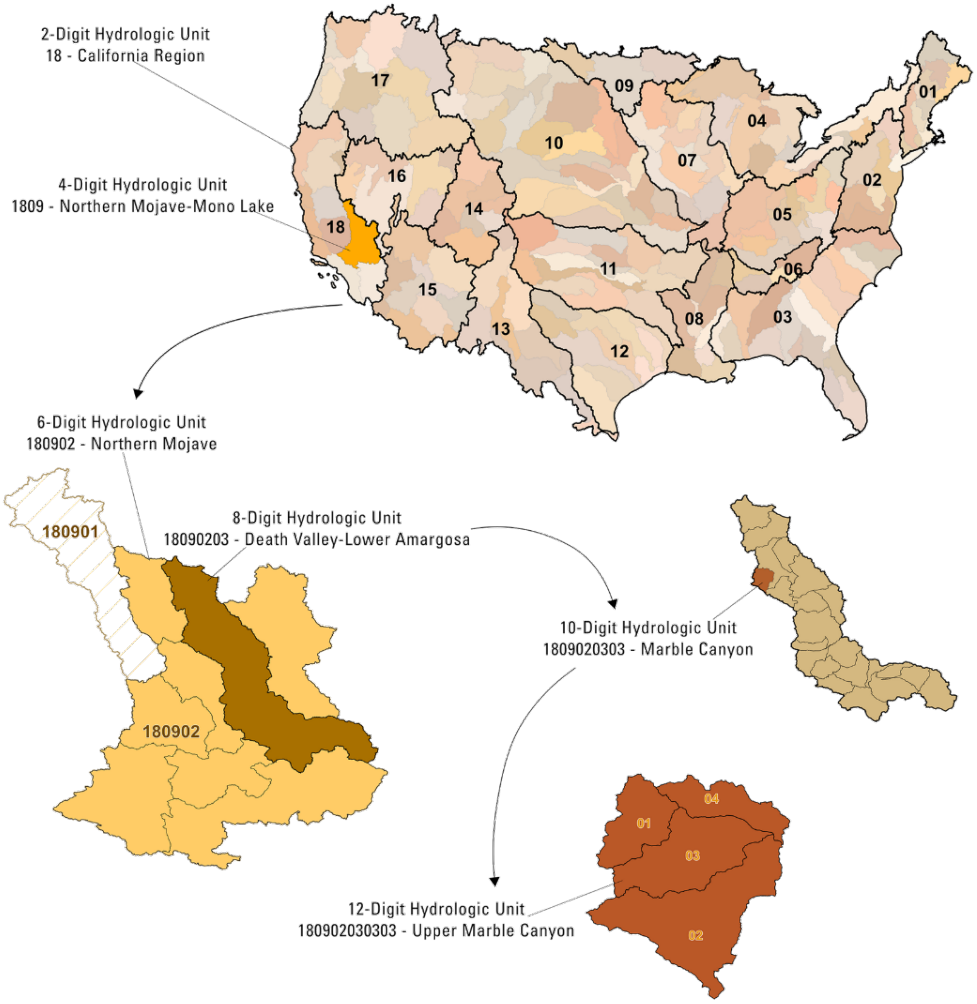
3DHP-B: Instructions for Creating 3DHP Project Boundaries

Collection of data for 3DHP data must be follow a set of collection requirements to achieve a consistent national dataset. These requirements include:

1. Hydrographic features will be collected within whole hydrologic units (HU) as defined by the Watershed Boundary Dataset (WBD)
2. The hydrologic unit(s) that form the Defined Project Area (DPA) must be whole 10-digit or larger HU (e.g 8-digit HU) from the final, static published version of the WBD.
3. DPA comprised of or including stand-alone 12-digit HU are discouraged and must be approved in advance by the 3DHP Data Acquisition Lead by emailing 3dhp_dca@usgs.gov .
4. The DPA must be whole HU and must not be clipped to administrative or political boundaries except where HU cross over the international boundary with Canada or Mexico or to remove areas of open water area where a HU extends to the NOAA 3 Nautical Mile Line.
5. The DPA attribute table must include the following fields: LoadDate, AreaAcres, AreaSqKm, States, HU# (where # is the HU level 2,4,6,8, or 10), and Name.
6. Data collection is required for the full extent of the DPA. However, the WBD is created from base data of varying scales and vintages and may contain delineation errors which could result in the actual data collection area expanding or contracting.
7. 3DHP will be produced in NAD 1983 (2011) Contiguous USA Albers (EPSG 6350).

Background

The WBD is comprised of HU polygons arranged in a nested, hierarchical system with each polygon identified by a unique hydrologic unit code (HUC). The number of digits in the code denote the hydrologic unit's place in the hierarchy. For each successive level in the hierarchy, two digits are added to the HUC in which the smaller unit is nested so that more digits in a HU code identify smaller HU.

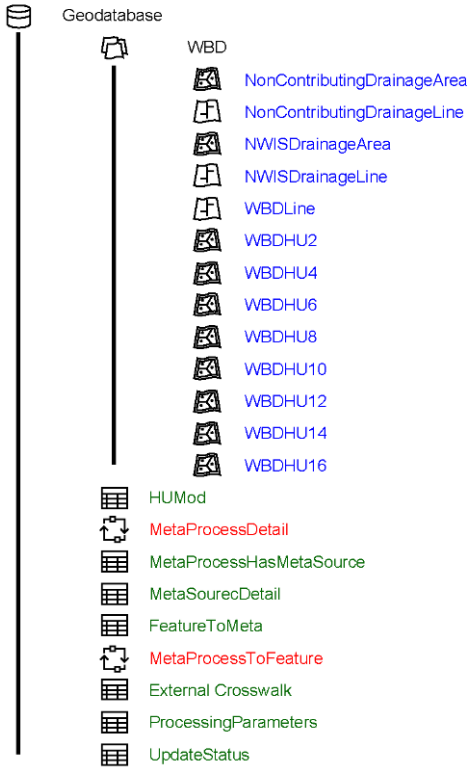


An HU may represent all or only part of the total drainage area to its outlet so that multiple HUs may be required to define the entire drainage area to a given outlet. More detailed information about the WBD is available in the most recent version of the WBD Standards.

Information about DPA for 3DHP can be found under the "Collection Area" heading of the Elevation-Derived Hydrography Acquisition Specification available at: www.usgs.gov/3DHP/HydroAcquisitionSpecs

Acquire current WBD data

The WBD is available as a map service for visualization and is also available for download as a File Geodatabase, a Shapefile, or a GeoPackage by either HU2 or for the entire Nation. WBD downloads contain a separate polygon dataset for each HU level in the nested system as shown below.



Geoprocessing Steps

Step 1: Extract all hydrologic units that make up the DPA from a current version of the WBD, using the appropriate HU level polygon dataset. The DPA should be a polygon vector GIS file in shapefile, geopackage, or KML/KMZ format. If submitted as a shapefile, the dataset must include the following components: .shp, .sbx, .dbf, and .prj.

If the project area will be made up of HU from different levels, the DPA should be based on the smallest hydrologic unit division present. For example, if the project area will be defined by both 8- and 10-digit HU, the DPA should be based on the "WBDHU10" polygon dataset.

Where the DPA extends into Canada or Mexico or where it contains coastal HU that include the NOAA 3 Nautical Mile buffer, either clip or intersect the DPA to a current version of 1:500,000-

scale US Census Cartographic State Boundary file to calculate the area of the HU where terrestrial hydrography will be delineated in step 4. Recent Cartographic Boundary Files can be downloaded from https://www.census.gov/geographies/mapping-files/time-series/geo/cartographic-boundary.2022.html#list-tab-1883739534

Step 2: Name the vector GIS file using the following naming convention: ST_Geographic_Description where: ST= State Abbreviation (ex. AL or UT). The geographic description can represent the primary drainage system like "LowerGreenRiver" or a general geographic location like "Eastern_Utah".

Step 3: Project the DPA into NAD 1983 (2011) Contiguous USA Albers (EPSG 6350).

Step 4: Add an "AreaSqMi" field to the DPA attribute table and calculate the area in square miles in the coordinate system defined in step 3 (EPSG 6350)

The final DPA table must include the following attributes from WBD in addition to the AreaSqMi attribute added in step 4:

- LoadDate
- AreaAcres
- AreaSqKm
- States
- HU# (where # is the HU level 2,4,6,8, or 10)
- Name

	LoadDate	AreaAcres	AreaSqKm	AreaSqMi	States	HUC8	Name
1	10/22/2020	1283147.01	5192.72	2004.92	PA	02050106	Upper Susquehanna-Tunkhannock
2	10/22/2020	1157854.12	4685.67	1809.15	PA	02050206	Lower West Branch Susquehanna
3	10/28/2020	926844.62	3750.81	1448.19	PA	02050301	Lower Susquehanna-Penns