

**USDA Service Center Agencies  
Geospatial Data Management Team  
Data Management Plan For  
National Hydrography Dataset (NHD)  
High Resolution (24K)**

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**I. Purpose and Scope (business case)**

**A. Purpose**

The U.S. Geological Survey has developed a National Hydrography Dataset (NHD). The NHD is a comprehensive set of digital spatial data that contains information about surface water features such as lakes, ponds, streams, rivers, springs and wells. Within the NHD, surface water features are combined to form "reaches," which provide the framework for linking water-related data to the NHD surface water drainage network. These linkages enable the analysis and display of these water-related data in upstream and downstream order.

The NHD is based upon the content of USGS Digital Line Graph (DLG) hydrography data integrated with reach-related information from the EPA Reach File Version 3 (RF3). The NHD supersedes DLG and RF3 by incorporating them, not by replacing them. Users of DLG or RF3 will find the National Hydrography Dataset both familiar and greatly expanded and refined.

The NHD is a national framework for assigning reach addresses to water-related entities, such as industrial discharges, drinking water supplies, fish habitat areas, wild and scenic rivers. Reach addresses establish the locations of these entities relative to one another within the NHD surface water drainage network, much like addresses on streets. Once linked to the NHD by their reach addresses, the upstream/downstream relationships of these water-related entities--and any associated information about them--can be analyzed using software tools ranging from spreadsheets to geographic information systems (GIS). GIS can also be used to combine NHD-based network analysis with other data layers, such as soils, land use and population, to help understand and display their respective effects upon one another. Furthermore, because the NHD provides a nationally consistent framework for addressing and analysis, water-related information linked to reach addresses by one organization (national, state, local) can be shared with other organizations and easily integrated into many different types of applications to the benefit of all.

While initially based on 1:100,000-scale data, the NHD is designed to incorporate and encourage the development of higher resolution data required by many users. The specifications for the data are: Geographic coordinate system Horizontal datum of NAD83. The NHD is a living dataset that is updated bimonthly to incorporate the "best available" data. The NHD also incorporates the National Spatial Data Infrastructure framework criteria established by the Federal Geographic Data Committee.

The dataset is provided in essentially two resolutions at this time. The first is the "medium" resolution based on the 100K scale data; the second is the "high" resolution based on the 24K scale data. As higher resolution data becomes available from state and local governments and other sources, a third category will become more and more common -- "local" resolution data.

The NHD home, <http://nhd.usgs.gov/> provides a great deal of information about the NHD.

## **B. Scope**

The scope is the United States, Hawaii and the Virgin Islands, and Puerto Rico. Not all areas are completed at the high resolution scale as of the date of this plan.

## **II. Acquisition**

### **A. Data Source**

#### **1. Producer Information**

##### a. Name

USGS

##### b. Location of Headquarters

U.S. Geological Survey  
Bldg. 810 – Denver Federal Center  
Box 25046  
Denver, Co. 80225

##### c. Internet Address

<http://nhd.usgs.gov/>

#### **2. Publisher Information**

##### a. Name

USGS

##### b. Location of Headquarters

U.S. Geological Survey  
Bldg. 810 – Denver Federal Center  
Box 25046  
Denver, Co. 80225

##### c. Internet Address

<http://nhd.usgs.gov/>

#### **3. Acquisition Information**

##### a. Delivery Media

DVD

##### b. Download URL

<http://nhdgeo.usgs.gov/viewer.htm>

##### c. Projected Data Availability Schedule

Currently available

## **B. Standards Information**

### **1. Geospatial Data Standard**

#### a. Standard Name and Steward Information

The National Hydrography Dataset (NHD) is built upon the most current applicable standards for geospatial data and metadata. In particular, NHD's foundation is an assembly of Digital Hydrography files from USGS topo maps and other sources that conform to the USGS's National Mapping Program standards.

#### b. Standard Version

None

#### c. Standard URL

<http://rockyweb.cr.usgs.gov/nmpstds/nhdstds.html>

### **2. Metadata Standard**

#### a. Standard Name and Steward Information

Metadata are compliant with:  
Federal Geographic Data Committee (FGDC)  
Content Standard for Digital Geographic Metadata FGDC  
STD-001-1998 Version 2 revised June 1998

NHD is documented using the Federal Geographic Data Committee (FGDC) content standard for geospatial metadata, and will be kept in conformance with a future ISO metadata standard. NHD is a searchable collection through the National Spatial Data Infrastructure (NSDI) and its network of distributed clearinghouse nodes. NHD will be offered using the Spatial Data Transfer Standard, an FGDC endorsed (FGDC-STD-002.5) profile of the ANSI and FGDC endorsed SDTS (ANSI NCITS 320:1998, FGDC-STD-002, FIPS 173-1). NHD is provided in formats that are fully compliant with Executive Order 12906, OMB Circular A130, and OMB Circular A-119.

#### b. Description of Metadata Captured

The Federal Geographic Data Committee's content standard for digital geospatial metadata (<http://www.fgdc.gov/metadata/geospatial-metadata-standards>) is used to document NHD data.

For a template (spatial coverage information added when data is extracted) see the National Hydrography Dataset FGDC compliant metadata:

[http://nhdgeo.usgs.gov/metadata/nhd\\_high.htm](http://nhdgeo.usgs.gov/metadata/nhd_high.htm)

#### c. Metadata Accuracy and Completeness Assessment

The metadata is very complete.

## **C. Acquired Data Structure**

### **1. Geospatial Data Format**

#### a. Format

Vector

#### b. Format Name

## ESRI Arc SDE Export

### c. Data Extent

The data extent is the coterminous United States, Hawaii the Virgin Islands, and Puerto Rico. High resolution (24K) data is not yet available for the entire area however.

### d. Horizontal and Vertical Resolution

None stated but probably no more than one meter.

### e. Absolute Horizontal and Vertical Accuracy

Statements of horizontal positional accuracy are based on accuracy statements made for U.S. Geological Survey topographic quadrangle maps. These maps were compiled to meet National Map Accuracy Standards.

### f. Nominal Scale

1:24,000

### g. Horizontal and Vertical Datum

The horizontal datum for all areas is NAD83. The vertical datum for all areas is NAVD29.

### h. Projection

Geographic

### i. Coordinate Units

Decimal Degrees.

### j. Average Data Set Size

The full dataset, including lower 48, HI, AK, the Virgin Islands and Puerto Rico is about 6 GB and getting bigger with each update of new data.

### k. Symbology

None

## 2. Attribute Data Format

### a. Format Name

ArcSDE export files.

### b. Database Size

N/A

## 3. Data Model

### a. Geospatial Data Structure

Data is delivered in ArcSDE internal ESRI proprietary format.

b. Attribute Data Structure

ESRI ArcSDE

c. Database Table Definition

Varies by layer.

See <http://rockyweb.cr.usgs.gov/nmpstds/acrodocs/draft/dlg-f/nhd/NHDH0799.PDF>

for definition of the fields in each layer.

d. Data Relationship Definition

Varies by layer.

See <http://rockyweb.cr.usgs.gov/nmpstds/acrodocs/draft/dlg-f/nhd/NHDH0799.PDF>

for definition of the fields in each layer.

e. Data Dictionary

A data dictionary (NHDinGEO Feature Codes (FCodes) by layer) is located at:

[http://nhd.usgs.gov/NHDinGEO\\_FCodes\\_by\\_layer.pdf](http://nhd.usgs.gov/NHDinGEO_FCodes_by_layer.pdf)

## **D. Policies**

### **1. Restrictions**

a. Use Constraints

None. Acknowledgment of the originating agencies would be appreciated in products derived from these data.

b. Access Constraints

None

c. Certification Issues

None

### **2. Maintenance**

a. Temporal Information

The NHD is designed to accommodate both the higher resolution data that many users need, and the 1:100,000 scale data. The higher resolution data is incorporated into the NHD through the participation of users at the national, State, and local levels. The common identifiers for the features are the basis for tracking and sharing deletions, additions, and modifications of features during maintenance. They are used to communicate and share corrections among organizations. The NHD will improve the integration of hydrographically related data in support of the varied applications of a growing national user community, and it will also enable shared maintenance and enhancement.

b. Average Update Cycle

The NHD is updated continually. A visual index is located at <http://nhdgeo.usgs.gov/viewer.htm>. Click on NHD Status in the right hand side of the display, then click the “High” Button. In the upper right, click “Legend”.

## **E. Acquisition Cost**

### **1. Cooperative Agreement**

#### **a. Description of Agreement**

There is an agreement with the USGS. The NHD database will be sent to NCGC quarterly. There is no coup agreement.

#### **b. Status of Agreement**

A coup agreement is desired.

### **2. Cost to Acquire Data**

None

As of the date of this document, the USGS is providing the entire database to NCGC on DVD's, free of charge.

## **III. Integration**

### **A. Value Added Process**

#### **1. Benefit to the Service Center**

The database is shipped from USGS and loaded on a NCGC DBMS server, which facilitates storage, access and backup as a DBMS database.

A process must be run to assign HUC\_8 codes to the three layers. HUC\_8 codes can be assigned, if a REACHCODE is present, by calc'ing the left 8 digits of the REACHCODE = to the HUC\_8 value.

First, the process as described below is run on all 3 layers. Then the above described field calculation is run on all 3 layers. This ensures that wherever there IS a REACHCODE present, the HUC\_8 number matches the REACHCODE information. Where there is no REACHCODE, the process as described below has already populated the HUC\_8 values. Subsequent to this processing, all the themes can then be ordered by county, state or minimum bounding rectangle, and delivered by HUC\_8.

#### **2. Process Model**

##### **a. Flow Diagram**

See Process Description

##### **b. Process Description**

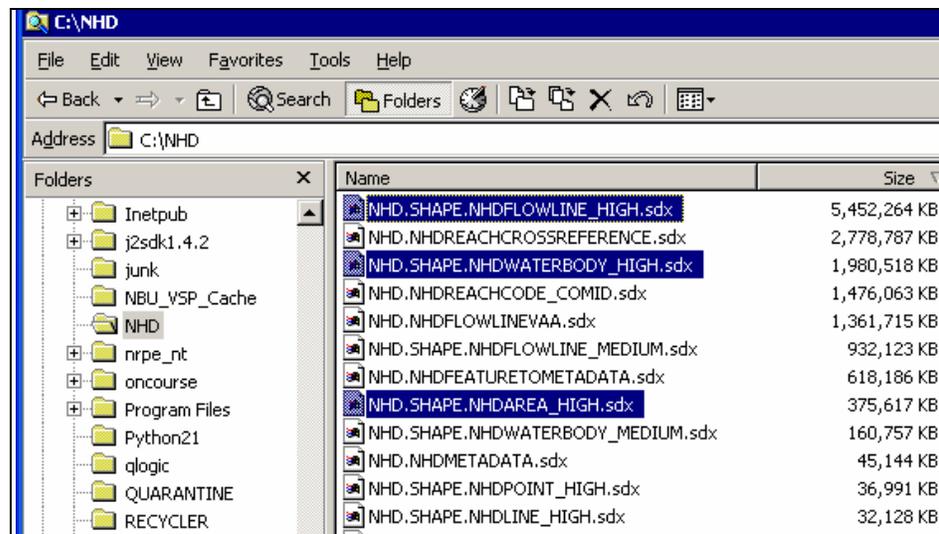
###### **1. Setting up SQL Server**

a. Install Microsoft's SQL Server on a Windows operating system server and apply the latest service packs for Windows operating system and for the version of SQL Server. Instructions to install SQL server can be found at:

[http://msdn2.microsoft.com/en-us/library/aa197926\(SQL.80\).aspx](http://msdn2.microsoft.com/en-us/library/aa197926(SQL.80).aspx) – usually infrastructure support will install the software for the end users.

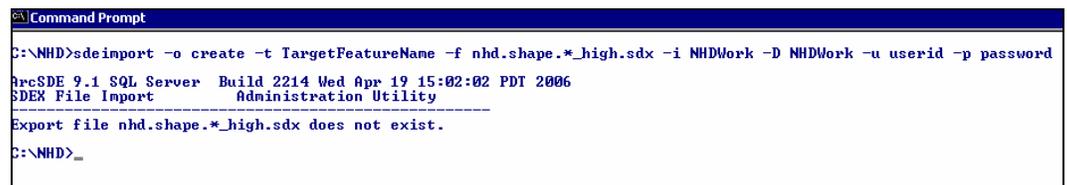
b. Create a new database in SQL Server 2000 using Enterprise Manager as shown in: [http://msdn2.microsoft.com/en-us/library/aa176819\(SQL.80\).aspx](http://msdn2.microsoft.com/en-us/library/aa176819(SQL.80).aspx).

- c. Install ArcSDE on the same server using install DVD or CD media provided.
  - d. Perform post install as shown in:  
<http://support.esri.com/index.cfm?fa=knowledgebase.techarticles.articleShow&d=29320>.
  - e. Enter services name and port number in service file located in  
 <Windows>\system32\drivers\etc\ folder.
2. Data Load Process Overview
    - a. The data is delivered as SDE layers on DVD's.
    - b. Three layers are extracted from the DVD's for serving on the Data Gateway:  
 NHDFLOWLINEHIGH  
 NHDAREAREACHHIGH  
 NHDWATERBODYHIGH
    - c. Since the data is served by HUC\_8, this field is created and populated for each of the 3 layers.
    - d. The following instructions are for populating these layers with the identifiers (HUC\_8).
  3. Data Loading Steps
    - a. Copy desired layers (NHDFLOWLINEHIGH, NHDAREAREACHHIGH, and NHDWATERBODYHIGH) from DVD to a folder on a server that has Spatial Database Engine (SDE). Figure 1 shows the files copied to NHD folder in the c:\ drive.



**Figure 1 Three NHD layers to be loaded into SDE**

- b. Open a command prompt and navigate to the folder where the .SDX export files are present (in this case c:\NHD).
- c. Run the SDE Import command as indicated with the options in Figure 2. The name of export file was made to be generic to indicate that this command needs to be run for each export file.



**Figure 2 Sdeimport command to import it as a feature layer in SDE**

- d. Verify data has been imported into the feature layer by testing at random.
  - e. Download reference layer for populating NHD\_HUC8 layers for HUC\_8 codes.
4. Populate Feature Classes with Index values
- Since the data is served by HUC\_8, this field is created and populated for each of the 3 layers. See instructions below.
- a. Add HUC\_8 column to each layer. More information as to how to add field can be found at:  
<http://webhelp.esri.com/arcgisdesktop/9.2/index.cfm?TopicName=Adding%20and%20deleting%20fields%20in%20shapefiles>.
  - b. Ensure that target layers are not registered as version in Spatial Database Engine (SDE). If it is versioned, click on unregister as version.
  - c. Right click on each target layer, open attribute table, choose options button, and choose 'Add Field' command to add the identifier field HUC\_8. Set the new column to be text and a width of at least 250 characters (Figure 3).

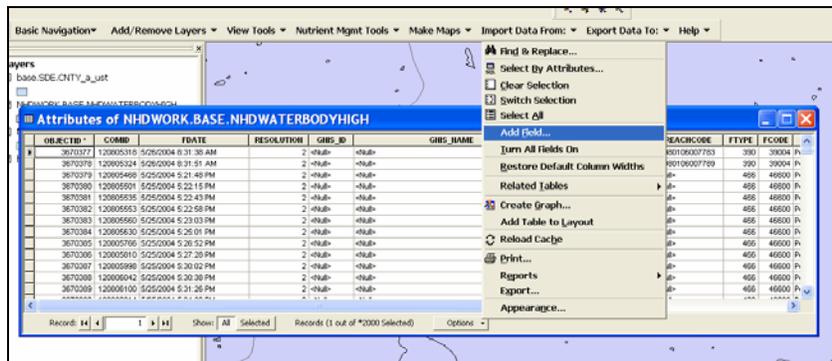
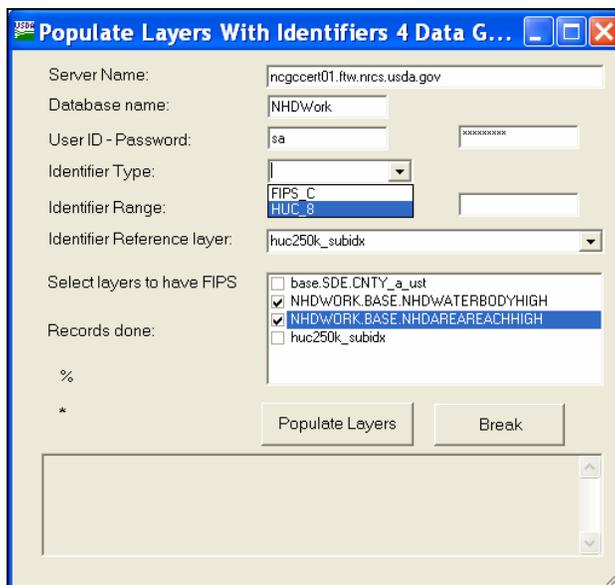


Figure 3 Adding identifier field to target layer (NHD water body layer)

- d. To begin, click on 'IDS for GDW' command button to open 'Populate Layers with Identifiers 4 Data Gateway' gateway window (Figure ).



**Figure 6 Populating the layers with HUC\_8**

e. Enter information in ‘Populate Layers with Identifiers 4 Data Gateway’ as indicated. Identifier range text boxes are provided to provide the ability to populate target layers into different batches of FIPS or HUC\_8 codes.

f. Select the identifier reference layer from the drop down. Examples of identifier reference layer are county layer with FIPS code, NHD reference layer from USGS with HUC\_8 codes and the like.

g. Select one or more target layers that require the identifiers to be populated. It is possible to populate more than one target layer in a sequential order with an identifier code of choice.

h. Click on ‘Populate Layers’ button to begin the population process. The process could take a long time depending on the number of records. Random counts on the approximate number of records populated per second were to the tune of 300 to 325. This could vary depending on network connectivity.

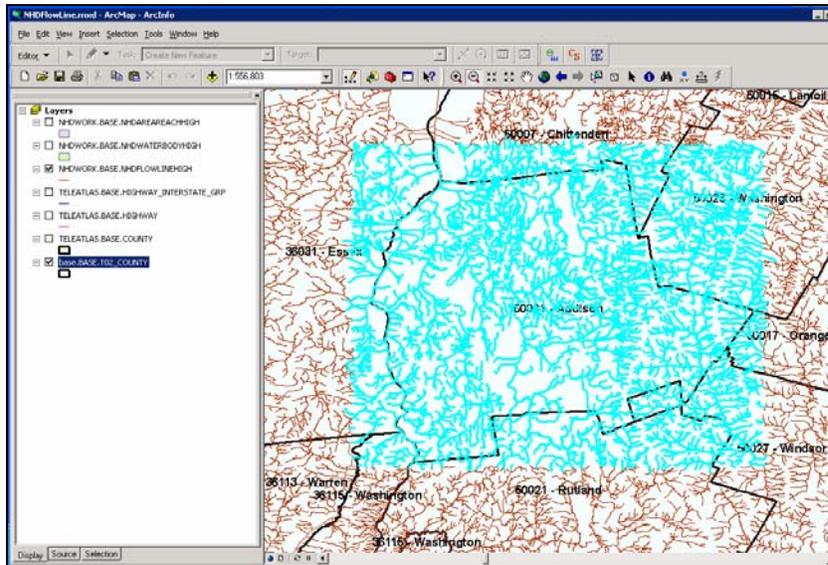
Following the above steps could result in almost all records getting populated with identifiers such as HUC8 codes.

For reasons beyond the control of the application developed, some records do not get populated. Number of records populated is usually less than 1 percent of the total number of records in target layer. Procedure to populate this small fraction of records is explained in the next section.

### **Manual Steps**

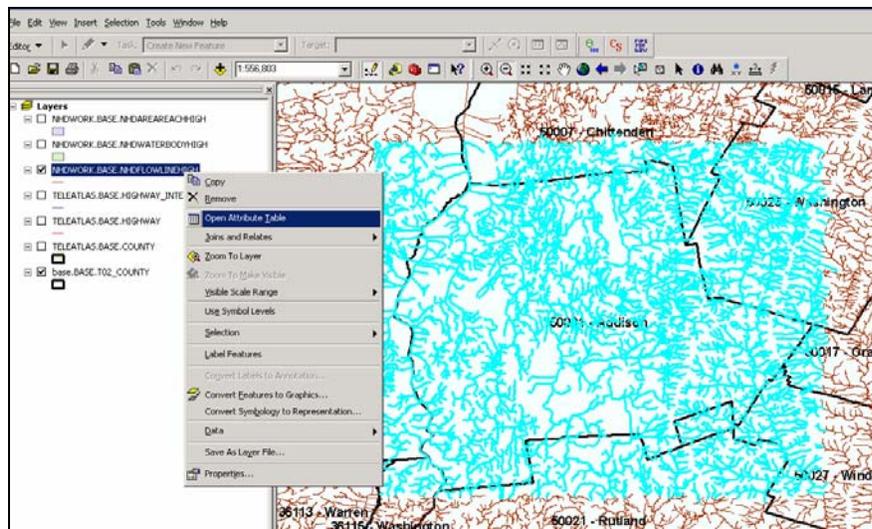
Steps to populate HUC\_8 code are explained in this section. The same procedure can be followed for populating target layers with other identifying codes.

a. Select features by drawing a rectangle around the records of interest. The features will be highlighted in the map control window (Figure 7).



**Figure 7 Highlighted features that need to be populated with HUC\_8 code**

b. Select the layer of interest, right click on its name and choose 'Open Attribute Window' option to examine its attributes (Figure 8).



**Figure 8 Opening attribute table to make changes**

c. Right click on HUC\_8 code column to identify records with HUC\_8 code by sorting them in descending order (Figure 99).

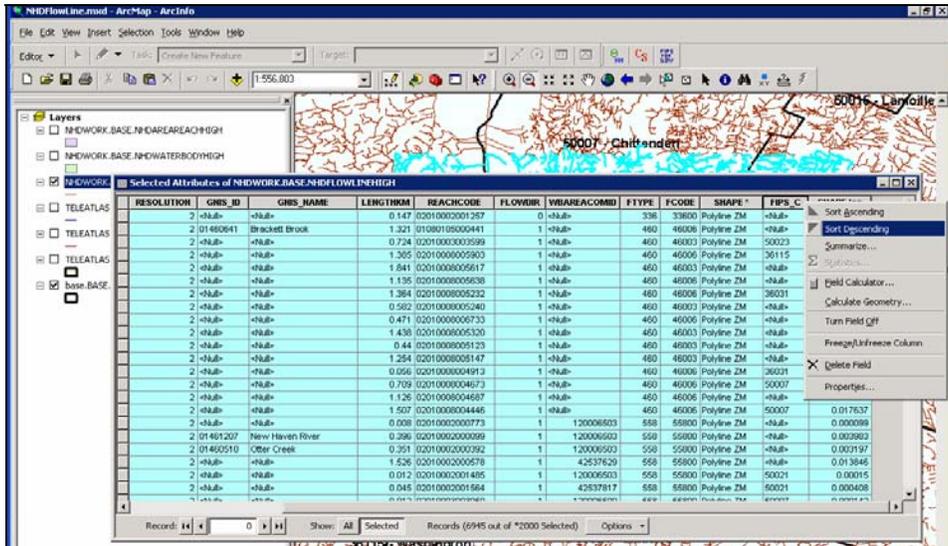


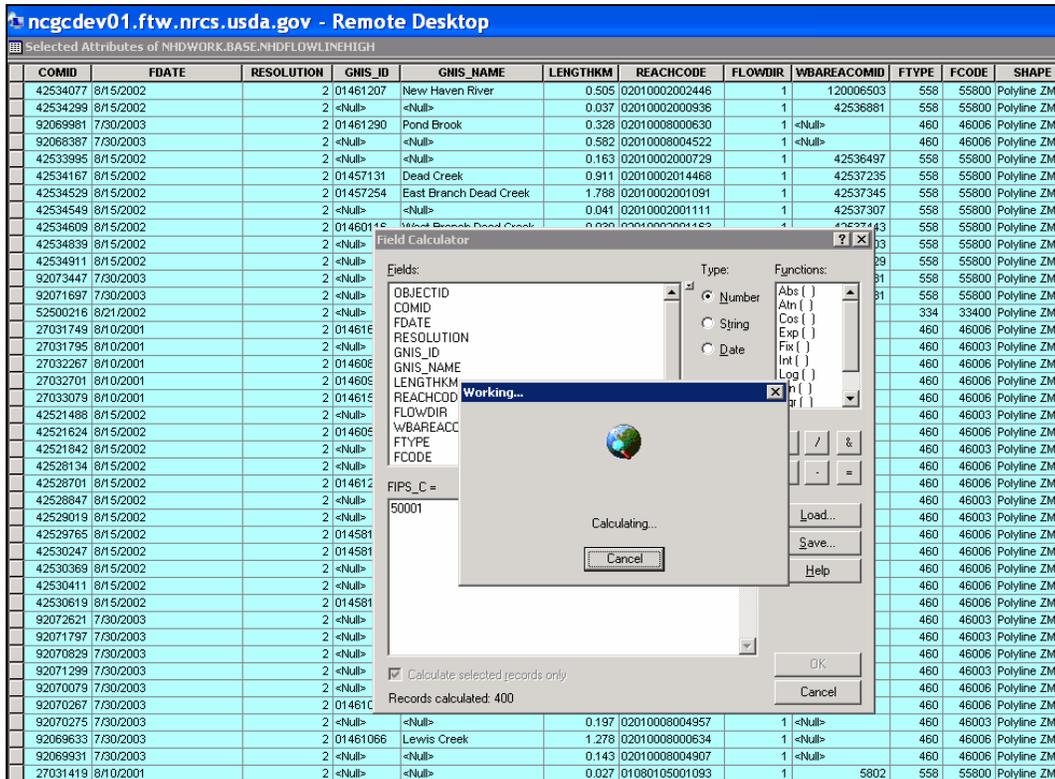
Figure 9 Sorting selected records to identify non-null values in FIPS column

d. Select all records (Figure 40) that have HUC\_8 code (yellow colored records) and right click on the records and choose 'Unselect highlighted' (Figure 5).

OBJECTID *	COMID	FOATE	RESOLUTION	GMS_ID	GMS_NAME	LENGTHM	REACHCODE	FLOWDIR	WBARACOMD	FTYPE	FCODE	SHAPE *	FIPS
1384440	82073887	7/30/2003	2	-Null-	-Null-	1.092	02010000005694	1	-Null-	460	46006	Polyline 2M	38031
14006653	82074725	7/30/2003	2	-Null-	-Null-	0.821	02010000005695	1	-Null-	460	46006	Polyline 2M	36031
14214073	82073027	7/30/2003	2	-Null-	-Null-	2.051	02010000005696	1	-Null-	460	46006	Polyline 2M	36021
14214075	82073028	7/30/2003	2	-Null-	-Null-	0.263	02010000005697	1	-Null-	460	46006	Polyline 2M	36031
14214079	82071193	7/30/2003	2	-Null-	-Null-	0.296	02010000005212	1	-Null-	460	46003	Polyline 2M	36021
14239812	82074571	7/30/2003	2	-Null-	-Null-	0.138	02010000000302	1	82083318	558	55800	Polyline 2M	38031
14239914	82071609	7/30/2003	2	-Null-	-Null-	1.670	02010000001768	1	-Null-	460	46003	Polyline 2M	36031
14239109	82072097	7/30/2003	2	-Null-	-Null-	0.523	02010000005222	1	-Null-	460	46003	Polyline 2M	36021
14239192	82071879	7/30/2003	2	-Null-	-Null-	1.228	02010000005283	1	-Null-	460	46003	Polyline 2M	38031
14329184	82074475	7/30/2003	2	-Null-	-Null-	0.942	02010000005503	1	-Null-	460	46006	Polyline 2M	36031
14329204	82072001	7/30/2003	2	-Null-	-Null-	0.094	02010000000025	1	92002901	559	55900	Polyline 2M	36021
14332075	82072733	7/30/2003	2	-Null-	-Null-	0.144	02010000017785	1	-Null-	558	55800	Polyline 2M	38031
964133	82070421	7/30/2003	2	-Null-	-Null-	2.416	02010000000469	1	-Null-	460	46003	Polyline 2M	36031
907105	82074019	7/30/2003	2	-Null-	-Null-	1.502	02010000001701	1	92002567	559	55900	Polyline 2M	36021
1079610	82073685	7/30/2003	2	-Null-	-Null-	0.448	02010000000427	1	-Null-	460	46006	Polyline 2M	38031
1079611	82073953	7/30/2003	2	-Null-	-Null-	0.521	02010000005600	1	-Null-	460	46006	Polyline 2M	36021
1079618	82070387	7/30/2003	2	-Null-	-Null-	0.318	02010000005058	1	-Null-	460	46003	Polyline 2M	36031
14444163	82068757	7/30/2003	2	-Null-	-Null-	2.005	02010000000450	1	-Null-	460	46003	Polyline 2M	36031
14444155	82071677	7/30/2003	2	-Null-	-Null-	0.599	02010000005225	1	-Null-	460	46006	Polyline 2M	36021
14444156	82071731	7/30/2003	2	-Null-	-Null-	0.889	02010000005248	1	-Null-	460	46006	Polyline 2M	38031
14559230	82070287	7/30/2003	2	-Null-	-Null-	1.247	02010000000462	1	-Null-	460	46003	Polyline 2M	36031
14559229	82074631	7/30/2003	2	-Null-	-Null-	0.5	02010000005633	1	-Null-	460	46006	Polyline 2M	36021
14559230	82074735	7/30/2003	2	-Null-	-Null-	0.078	02010000005858	1	-Null-	460	46006	Polyline 2M	38031
14559236	82072015	7/30/2003	2	-Null-	-Null-	1.552	02010000005305	1	-Null-	460	46003	Polyline 2M	36031
948124	82071655	7/30/2003	2	-Null-	-Null-	1.409	02010000000220	1	-Null-	460	46003	Polyline 2M	36021
871488	82074757	7/30/2003	2	-Null-	-Null-	0.093	02010000001606	1	82083769	558	55800	Polyline 2M	38031
848867	82073740	7/30/2003	2	-Null-	-Null-	1.375	02010000000564	1	-Null-	460	46006	Polyline 2M	36031
848870	82072889	7/30/2003	2	-Null-	-Null-	0.892	02010000000510	1	-Null-	460	46003	Polyline 2M	38031
848873	82072569	7/30/2003	2	-Null-	-Null-	1.505	020100000005419	1	-Null-	460	46006	Polyline 2M	-Null-
848074	82071993	7/30/2003	2	-Null-	-Null-	0.629	02010000005200	1	-Null-	460	46006	Polyline 2M	-Null-
848877	82070149	7/30/2003	2	-Null-	-Null-	0.572	020100000004923	1	-Null-	460	46006	Polyline 2M	-Null-
848878	82070289	7/30/2003	2	-Null-	-Null-	0.534	020100000004650	1	-Null-	460	46006	Polyline 2M	-Null-
917140	82072907	7/30/2003	2	-Null-	-Null-	0.012	02010000005500	1	92003059	559	55900	Polyline 2M	-Null-

Figure 40 Highlighting and selecting records that have HUC\_8 values (yellow color records)





**Figure 73 Calculating (populating) records with appropriate HUC\_8 code**

This step can be repeated to populate all the missing HUC\_8 values.

**5. Field Calculation on HUC\_8 field.**

- a. Once the HUC\_8 field is populated by the above method(s), if there is already a REACHCODE value present for the feature, we want the HUC\_8 value to be equal to the left 8 digits of the REACHCODE. Calculate the left 8 digits of the REACHCODE = to the HUC\_8 value for the NHDFLOWLINEHIGH and NHDWATERBODYHIGH layers. The NHDAREAREACHHIGH layer does not have a REACHCODE field.

**6. Gateway Preparation and Loading**

- a. Write or revise the Product Description file (link from "Status Maps" page)
- b. Generate shape files for each product with the DataServices\_Driver. Normally the button 'All states using current product' is used to generate the shape files. Because NHD is so large and because NHD crosses county boundaries and would cause duplicate processing, this button is not used. Instead put in \* for county and \* for state. Also put in NHD24K for the Order ID and Item ID then press the 'Web' button.
- c. Run CatalogFP\_Maker for each product and generate the catalog shape files for each product.
- d. Create the Status Maps (link from "Status Maps" page) for each product.
- e. Run MakePreviews for each product to generate the preview images for step 2 of the gateway ordering process. There is no metadata for NHD24K so that button is not used. The DataServices\_Driver generates shapes for streams, area reach and water bodies. CatalogFP\_Maker totals the size of all three shape files. However, it puts the stream map name in the record for previews. Once CatalogFP\_Maker is complete and prior to running MakePreviews all the water body and area reach maps should be removed from the destination directory so that MakePreviews doesn't waste time make .jpg files that will never be used.
- f. Notify gateway Fort Collins team to load the catalogs, status maps and news.

### 3. Technical Issues

#### a. Tiling

Variable as needed during an extract.

#### b. Compression

LZ77

#### c. Scale

1:24,000

#### d. Tonal Matching

None

#### e. Edge-matching

None

### 4. Quality Control

#### a. Procedures

Visual quality check

#### b. Acceptance Criteria

Visual quality check

### 5. Data Steward

#### a. Name and Organization

Currently, the data steward for the integrated data is:  
National Cartography and Geospatial Center  
Natural Resources Conservation Service  
US Department of Agriculture  
501 Felix Street, Building 23  
P. O. Box 6567  
Fort Worth, Texas 76115-0567 USA

#### b. Responsibilities

Storage and access of the data.

## **B. Integrated Data Structure**

### 1. Geospatial Data Format

#### a. Format (raster, vector, etc.)

ArcSDE Data Layers in Oracle Database

#### b. Format Name

ESRI SDE

#### c. Data Extent

Same as source data

d. Horizontal and Vertical Resolution

Same as source data

e. Absolute Horizontal and Vertical Accuracy

Same as source data

f. Nominal Scale

1:24,000

g. Horizontal and Vertical Datum

Same as source data

h. Projection

Geographic

i. Coordinate Units

Degrees

j. Symbology

None

**2. Attribute Data Format**

a. Format Name

N/A Raster data

b. Database Size

~ 6 GB

**3. Data Model**

a. Geospatial Data Structure

ESRI ArcSDE

b. Attribute Data Structure

ESRI ArcSDE

c. Database Table Definition

Varies by layer.

See <http://rockyweb.cr.usgs.gov/nmpstds/acrodocs/draft/dlg-f/nhd/NHDH0799.PDF>  
for definition of the fields in each layer.

- d. Data Relationship Definition
- e. Varies by layer.  
See <http://rockyweb.cr.usgs.gov/nmpstds/acrodocs/draft/dlg-f/nhd/NHDH0799.PDF> for definition of the fields in each layer.

- f. Data Dictionary

A data dictionary (NHDinGEO Feature Codes (FCodes) by layer) is located at:

[http://nhd.usgs.gov/NHDinGEO\\_FCodes\\_by\\_layer.pdf](http://nhd.usgs.gov/NHDinGEO_FCodes_by_layer.pdf)

### C. Resource Requirements

- 1. Hardware and Software

This is unknown at this time.

- 2. Staffing

This is unknown at this time.

### D. Integration Cost

- 1. Hardware and Software

This is unknown at this time.

- 2. Staffing

This is unknown at this time.

## IV. Delivery

### A. Specifications

- 1. Directory Structure

- a. Folder Theme Data is Stored In

F:/geodata

- 2. File Naming Convention

<http://www.itc.nrcs.usda.gov/scdm/scgdm.htm>

- a. List of Theme Files and The File Naming Convention

nhd24kst_1_<xxxxxxx>	1:24,000 USGS/EPA National Hydrography Dataset <b>streams</b> line data by 8 digit sub basin
nhd24kar_a_<xxxxxxx>	1:24,000 USGS/EPA National Hydrography Dataset polygon <b>area reach</b> data by 8 digit sub basin
nhd24kwb_a_<xxxxxxx>	1:24,000 USGS/EPA National Hydrography Dataset polygon <b>water body</b> data by 8 digit sub basin

## **B. User Information**

### **1. Accuracy Assessment**

#### a. Alignment with Other Theme Geospatial Data

The data is captured at scales of 1:24,000. This elevation data should be considered not sufficiently detailed for the purpose of analysis at large scales. Alignment with the other data layers will not be perfect due to the fact that the data is captured at different scales and at different dates from other data.

#### b. Content

This data should be considered not sufficiently detailed for the purpose of analysis at scales larger than 1:24,000.

### **2. Appropriate Uses of the Geospatial Data**

#### a. Display Scale

The original data source scale or smaller, usually 1:24,000.

#### b. Plot Scale

The original data source scale or smaller, usually 1:24,000.

#### c. Area Calculations

Area Calculations are as accurate as the source data and capture scale and the algorithm used by ESRI software.

#### d. Decision Making

The data is as accurate as the source data and capture scale and the algorithm used by ESRI software

## **C. Maintenance and Updating**

### **1. Recommendations and Guidelines**

#### a. Original data location and structure

The integrated database is at NCGC and the data is delivered to the Service Center.

#### b. Update Cycle

The updates from the USGS should be applied periodically. The current thought is quarterly would be sufficient.

#### c. Availability

When the source data is updated.

#### d. Change Control

This is to be determined.