



National Hydrography Dataset Feature Catalog

Based on 1:24,000-scale USGS Topographic Map Content

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Relevance and Use of NHD Feature Catalog Based on 1:24,000-scale USGS Topographic Maps

Standards for the depiction of hydrography on maps have been an integral part of USGS mapping for a century. With some modifications, the hydrographic mapping standards were used as the foundation for the NHD. These standards will give way to the development of “best practices” by stewards and NHD users. Despite the transition, the information in the catalog remains a valuable resource for users, because it documents decades of thinking about hydrographic data. Similarly, sections in the individual feature templates on ‘Source Interpretation Guidelines’ can be used by data stewards to document the revision techniques they use.

In the mid 1990’s, USGS developed standards, based on Feature Templates, to describe the content revision requirements for standard USGS topographic maps. Standards were documented for all of the data themes on topographic maps, including transportation, hypsography, manmade structures, and others. The feature templates were based on the almost 100 years of topographic instructions for USGS maps. The original maps were created based on field work to identify features on the ground and photogrammetry to delineate the features. Once the maps were produced, most of the updating was based on monoscopic, black and white orthoimagery. Revision content requirements were based on features that could be updated from these black and white, mono sources, with only limited field work done.

The templates were developed using rigorous rules for describing content. A feature-based classification methodology was developed (see following section - Methodology for Identifying Features) and features and attributes were defined using this methodology. Rules for feature delineation, representation and collection (capture conditions) were defined as well as rules for revising features using a variety of sources.

The document, Template Development and Use, explains each section in the feature templates. This document was modified slightly from the 4/96 version and is included as an introduction to the NHD standards. As described in Template Development and Use:

“The capture conditions reflect the NMD Policy of cartographic collection, which restricts data content and position based on graphic limitations of scale and legibility. Only content that can be displayed on the printed map is collected and all offsets in position necessary to accommodate symbolization are performed at the time of data collection. This policy and the feature templates will change as user requirements for geographic content and position become known and as technology and resources are developed to support the implementation of product generation rules for content generalization and symbol conflict resolution.”

The feature templates for hydrography still contain much valuable information: feature and attribute definitions, rules for valuing the attributes, and the rules that describe what features were shown on USGS topographic maps, and subsequently, what features were collected in the initial population of the high-resolution NHD. These features are generally described as “map-worthy” and were defined as those suitable for a “general-purpose map;” they could be shown on a 1:24,000-scale map without sacrificing legibility. Another factor was the cost of data collection and the reliability of that collection. Features for which photointerpretation was not possible, and field-checking costs were prohibitive, were not generally included. However, as local data stewards assume responsibility for update and revision, the 1:24,000-scale map is not necessarily the benchmark for data collection. The NHD is still defined as a “general-purpose” product and some local details may not be suitable for the national holdings. The legibility concerns for map scales are not limitations for a digital product, but the level of detail may matter a great deal to data modelers and others. The cost of maintenance still applies, however. Features may be relatively easy to collect initially, but verifying the status of that feature can become costly.

The standards have been modified slightly to make them available as the foundation for the NHD. The attributes that apply to the feature classes that became part of the NHD implementation in ArcGIS are included in the attribute/attribute value list, but they are “grayed out” (ComID, FDate, Resolution, AreaSqKm, FType and Fcode). Only the attributes that were defined for the individual feature characteristics are shown in regular text color. Name and Elevation are also “grayed out” if they are NOT collected for a particular feature type. These standards will likely remain as is, with no further maintenance. In keeping with the dynamic nature of the NHD, the standards will be a starting point for the development of “best practices” guidance that the user community can help establish. However, the information in the catalog is still a valuable resource for users as a way to understand the content of the NHD, and the sections in the templates on ‘Source Interpretation Guidelines’ can be used to document the revision techniques used by the data stewards.

Using Feature Templates with the NHD

The information in the feature catalog should still be understood and described as a part of any new data collection or revision. The feature template for lake/pond is a good example of how the catalog can be useful for thinking about features in the NHD. This template has many rules for determining the edge of the lake/pond, and this information is not based on map or scale considerations.

Delineation

- The limit of LAKE/POND where STREAM/RIVER enters or leaves is determined by the conformation of the land.

- The limit of a naturally formed, perennial LAKE/POND is the position of SHORELINE when the water is at the stage that prevails for the greater part of the year (Average Water Elevation), or if this limit cannot be determined, the visible edge of the water body (Date of Photography).
- The limit of an artificially formed, perennial LAKE/POND is the position of SHORELINE when the water is at the stage that prevails for the greater part of the year (Normal Pool), or if this limit cannot be determined, the limits defined by the spillway (Spillway Elevation), or the visible edge of the water body (Date of Photography).
- The limit of an intermittent LAKE/POND is the position of SHORELINE when the water is at the stage that prevails when the feature is at or near capacity (High Water Elevation) or, if this limit cannot be determined, the visible edge of the water body (Date of Photography).

These rules may seem stilted (they were developed for an automatic, rules-based decision processes), but they do reflect information that a data steward needs to consider.

- The first rule gives general, common-sense guidance for how to decide where a lake/pond ends and a stream/river begins.
- The second rule states that the edge of a natural, perennial lake/pond is the water level that exists for most of the year and if you can't tell that, then you have to say it is the level that you could see on the imagery.
- The third rule states that the edge of an artificially formed lake/pond (created by a dam) is either the normal pool elevation or the spillway elevation. If that can't be determined, it is the level shown on the image, with a value for stage of "date of photography."
- The fourth rule states that intermittent lake/ponds are delineated at the "high" water elevation

It is not easy--but it is critical--to delineate impounded lake/ponds. USGS "topographic instructions" probably have more pages of descriptions for this than for almost any other feature. On the 1:24,000-scale topographic maps, USGS used the "normal pool" or the "spillway elevation" depending on how stable the water elevation was. The agency that managed the impounded lake/pond was contacted for this information. Because the maps were originally created using stereo photographs, the normal pool or spillway elevation was delineated as the edge of the lake/pond, *regardless of the water level in the photos*. During revision by data stewards, if elevation data is not available, and the impounded lake/pond already exists in the NHD, we recommend data stewards NOT revise the delineation, even if the water level looks different on an orthoimage. Impounded lake/ponds can be used for flood control, water supply, irrigation, and power generation, and water levels can vary several feet a day. It is more useful to delineate the lake/pond at a stage that can be maintained over time. Otherwise, the lake/pond would have to be revised every time a new photograph is taken. Various plans are underway to link the National Inventory of Dams to the NHD. Once that is complete, information on dams and impoundments will be readily available.

An example of a different delineation for lake/pond comes from Minnesota. Minnesota had an existing database that used the National Inventory of Wetlands (NWI) limits to delineate the lake/ponds. This example is used as a basis for “best practices” in associated documents.

Capture Conditions

The Capture Conditions however, were based on map and scale considerations. The lake/pond template includes two rules. The first says to collect ALL lake/ponds in an arid area, as defined in the instructions. The second rule says to collect lake/ponds that are at least 100 ft (.05in x 2000) in the shortest dimension in non-arid areas. This was both a cartographic and a resource decision. The printed line weight for the shoreline could take up 32 feet by itself (.008in x .008in x 2000), leaving very little space for the symbol fill. Anything smaller would be illegible on the map. In arid areas, because water is significant, some small lake/ponds were actually exaggerated on the printed map.

Source Interpretation Guidelines

Data Stewards and updaters need to provide similar information found in the Source Interpretation Guidelines. If the information already in the templates is acceptable, nothing needs to be done. However, if data has been revised using significantly different rules, then that methodology should be described in the Metadata.

Methodology for Identifying Features

Excerpt from: United States Geological Survey, 1990, An Enhanced Digital Line Graph Design, U.S. Geological Survey Circular 1048, p. 9-13

DEFINITION OF DLG-E FEATURES

Background

The DLG-E data model has a variety of components for representing a feature. However, before describing how those components are used to represent any given feature, the domain of features (that is, the data reality) to be described by the model should be discussed. The report “Proposed Definition of Cartographic Features for Digital Line Graph Enhanced (DLG-E)” (April 1988), by the Committee Investigating Cartographic Entities, Definitions, and Standards, defined an initial domain of features. A synopsis of that work is incorporated in this report. In preparing the set of DLG-E features, the committee reviewed related efforts including those of the Digital Cartographic Data Standards Task Force (1988), the Defense Mapping Agency (1987), the Canadian Council of Surveying and Mapping (1982), the Bureau of Land Management (1978), and the South African Natural Research Institute for Mathematical Sciences (1987).

Methodology for Identifying Features

Persons reading a map perceive features according to their needs and experiences. For example, one may be interested in the extent of a given named feature, such as the Potomac River or the Blue Ridge Mountains. Others may have a different interest and employ a different set of criteria. They may be interested in bicycling from Mount Vernon, Va., to Leesburg, Va., and would be concerned with a connected network of roads and trails between the two locations. In a digital environment, one attempts to explicitly encode information that best satisfies most users. The designers are faced with the problem of specifying a set of information in a form that can be perceived unambiguously by the majority of users. This specification process can be viewed as a process of classification. An expandable method of classification is necessary when defining features.

Classification involves the selection and grouping of phenomena into classes on the basis of common properties or relationships. The selection of a classification system has implications beyond the definition of common names for things. It is the classification scheme that defines the nature of the generalizations that are made about the phenomenon under study (Abler and others, 1971). Note the linkage between the classification of map features and the concept of the map as a model. As stated by Board (1967), “it is important to realize that they [maps] are also conceptual models containing the essence of some generalization about reality.” In the map model, the characteristics of the classification scheme and the resulting features specify this essence of the generalization of reality.

In the DLG-E feature classification process, an approach was taken that initially subdivided the world of geographic phenomena into five classes, termed views, that correspond to the major facets of a model of geographic reality as described by Geological Survey requirements and specifications. A view is defined as a systematic classification of a set of entities in which all members of the set possess a common defining characteristic. This characteristic is specified explicitly in the definition of the view. Views are similar to the geographical concepts of region and spatial system (James and Jones, 1954; James, 1972) and “geographic matrix” (Berry and Marble, 1968). Common cartographic terms such as category and overlay are related to views in derivation but lack the rigor of the defining characteristic.

While views provide a methodology for classifying features, it is the classification scheme that defines the nature of the generalizations about the phenomenon under study. These generalizations are reflected in feature definitions. For example, a road is an entity that covers a part of the Earth’s surface. In the DLG-E methodology, it is classified in a view called “cover,” a view with the defining characteristic of material at a location on or near the surface of the Earth. Other features in the view “cover” include “building,” “bridge,” “railway,” and “grassland.” A “county” is not a feature in the view “cover” because it is not covering material on the Earth’s surface. A county is in the view “division” because it is a political entity independent of the actual material on or near the Earth’s surface. Other examples of features in the view “division” include “state,” “city,” “reservation,” and “census block.”

New views are introduced in the methodology when an entity cannot be appropriately classified in existing views. For example, a contour line is an entity that does not fit the views “cover” or “division.” A contour line reflects measurement data about the Earth’s surface. The feature “contour” requires a view in which measurement data are the focus. That same view is needed to classify features such as “control station” and “spot elevation.” Thus, a new view called “geoposition” that reflects entities of measurement was created.

In an approach similar to creating views, finer divisions of a view, called subviews, may be created to further refine the concepts included in the view. The view and subview approach allows a user to fit unclassified entities into the appropriate part of the schema. It also provides a framework for comparison to other sets of features as defined by other organizations.

While the approach uses the concept of multiple views of the world and a hierarchy of subviews within each view, neither the views nor the hierarchy need be stored with feature data. Nor is it necessary to group the features into categories. The views and subviews are used only to define the domain of features. Alternative views will yield different features, and features within a single view can be modified or expanded. Users can apply other views or hierarchies to add new features to the list. Use of features in the domain and use of the data require limited information concerning the approach methodology.

This approach allows for expansion by creating a completely different view, adding new subviews, or augmenting the features within the existing five views. To classify a new entity, one would first determine whether an existing view, subview, feature, attribute, or attribute value is appropriate by comparing the characteristics of the new entity to existing definitions in the domain. After making this comparison, the new entity would be placed in the correct level of the hierarchy either by creating new views or subviews, or by expanding the list of features, attributes, or attribute values. Some examples are given below.

Large-scale mapping of base category information considers entities not currently listed in the domain as features. A specific instance is a “curb.” Examining the views, a curb would be classified as cover. Within the view “cover,” the curb is considered to be in the subview “built-up land” and a “structure.” In the subview “structure,” entities are differentiated into features based on form, examining the list of features under “structure,” a curb does not fit any of the existing feature definitions, and, thus, a new feature must be created.

A second example from a large-scale product is a single housetrailer with a permanent foundation. A housetrailer is a type of cover, built-up land, and a structure. The feature “building” encompasses house- trailers, and the attribute “text” with a value of “house- trailer” is appropriate. An alternative would be to institute a new attribute such as “building construction type” with one possible value being “housetrailer.”

Expanding the number of views can be used to encompass features such as those that occur on geologic or other thematic maps. A geologic or other thematic view would require complete generation of the hierarchy within the view and the development of a list of features and attributes for that view. The resulting set of features then becomes a part of the total list of features independent of the approach methodology and completely usable with the other features in the total set.

Five Views

The current DLG-E model classifies selected entities into five views on the basis of common defining characteristics. The five views are cover, division, ecosystem, geoposition, and morphology. The views are exclusive; each view reflects a self-contained analytical approach to world features. Because each view is independent, a single point on the surface of the Earth can be represented under multiple views, and features within any one view may coexist with features in the same or any other view.

For example, examine the entity “boundary point.” If a monument exists at the location of the boundary point, then two features will be recorded in the data. The feature “boundary point,” referring to the monumented location on a boundary, is in the view “division” while the second feature, “point monument,” denoting the structure on a boundary line, is in the view “cover.”

Brief definitions of the five views follow:

Cover: Reflects physical or material features at a location on or near the surface of the Earth. While this view is based on form, at the lowest level features it may be differentiated by function.

Division: Reflects cultural demarcations of the Earth's surface for a particular purpose or for separations resulting from human activity.

Ecosystem: Based on climate, vegetation, soils, and other controlling environmental factors that result in unique ecological units.

Geoposition: Reflects measurement data about the Earth's surface and contains points or lines on the Earth or its representation for which the location, relative to a particular datum, is well known.

Morphology: Based on the form of the land. While a strict geomorphological interpretation of landforms based on process is inherent in the contour information on Geological Survey maps, the actual features must be interpreted. However, some of the features carry names and those features must be coded in the digital data. Thus, morphological features are those landform features that are named, labeled, or symbolized as distinct entities on current map products.

Discussion of Views

The following section offers a more detailed discussion of each view and includes definitions of subviews.

Cover

The view of cover reflects physical or material features at a location on or near the surface of the Earth. This view contains a mixture of land use and land cover information. Multiple features derived from this view may occupy the same location.

Because of the diversity in the features defined by this view, additional subviews were added to clarify the distinctions between features. There are five subviews, based on the land use and land cover terms and definitions recommended by the Department of the Interior Land Use Land and Cover Common Terminology Work Group (Department of the Interior, 1985).

- **Barren land:** A surface composed of exposed bare rock, other earthen material, or ice with little or no vegetation.
- **Built-up land:** Structures and areas associated with intensive land use. This subview is further divided into network, structure, and complex.
 - Network--An interconnected set of constructions used for transportation or communication.
 - Structure--A construction having a unique form.
 - Complex--Cover of intensive use with much of the land covered by constructions.

Agricultural. A group of associated structures functioning as a unit used predominantly for the production of food and fiber, such as livestock holding areas, fish hatcheries, and other developed land.

Commercial. A group of associated structures functioning as a unit used predominantly for wholesale and (or) retail sale of goods and services.

Entertainment/Recreational/Memorial. An area or group of associated structures functioning as a unit used predominantly (1) for leisure activities, (2) for athletic or artistic events, (3) as archaeological or historic sites, or (4) for burial of the dead.

Disposal. A designated area where refuse is dumped or exists.

Extraction. An excavation or a group of excavations or drillings in the Earth for the purpose of removing earth materials.

High density building area. A congested, built-up area where all buildings cannot be represented on the map because of map scale.

Industrial. A group of associated structures functioning as a unit used predominantly for manufacturing, testing, processing, or storage.

Institutional. A group of associated structures functioning as a unit used predominantly for educational, correctional, governmental, medical, or religious purposes.

Residential. A collection of structures used for human habitation.

Transition. Area in change from one land use activity to another and characterized by a lack of information to about future or use.

Transportation. An area or group of structures that function as a unit associated with travel or conveyance of people and (or) goods, together with the necessary adjacent facilities.

Utility. An area or group of structures that function as a unit to provide a public service and are used for the generation and (or) transportation of communications, water, gas, oil, or electricity.

- **Cultivated cropland:** Areas characterized by function that are tilled and dominated by vegetation growth for the production of food and (or) fiber. Cultivated cropland includes fallow land, land in any stage of annual crop production, and land being regularly cultivated for production of crops from perennial plants.
- **Vegetation:** An area that is extensively covered with plant life.
 - Grassland--An extensive noncultivated area where vegetation is dominated by grasses or grass-like plants.
 - Shrubland--Areas covered with low-growing or stunted perennial vegetation, such as cactus, mesquite, or sagebrush, common to arid regions and usually not mixed with trees.
 - Forestland--Areas on which vegetation is dominated by woody perennial plants having a single, usually elongated main stem and generally few or no branches on its lower part.
- **Water:** Cover composed of flowing or standing water, impounded or naturally occurring, with channels or basins that are largely naturally occurring.

Division

This view includes the cultural demarcations of the Earth's water and land surfaces. Two types of features exist in this view: areal divisions and boundaries. Boundaries may either delimit the areal divisions or, for historical reasons, occur as independent features. The subviews of the division view are defined as follows:

- **Administrative:** A division under the jurisdiction of a common group for purposes such as preservation or exploitation of cultural or natural resources.
- **Boundary:** Part or all of a bounding or separating line on the Earth's surface having current or past significance.
- **Census:** Divisions of the Earth's surface established by the Bureau of the Census for enumerating and reporting the population of the United States.
- **Hydrologic unit:** Divisions of the Earth's surface established by the U.S. Geological Survey based on properties, distribution, and circulation of water.
- **Land parcel:** Divisions of the Earth's surface based upon land ownership.
- **Locale:** A named place not otherwise categorized.
- **Maritime:** Divisions of the Earth's water surface identified for the purpose of navigation or control of ship traffic.
- **Political:** Divisions of the Earth's surface based upon governmental jurisdiction and activities such as voting and taxation.
- **Survey system:** Divisions of the Earth's surface to determine and delineate the form, extent, and position of land tracts by taking linear and angular measurements.

Ecosystem

Ecosystem is a view based on climate, vegetation, soils, and other controlling environmental factors that result in unique entities. These entities are often of large extent and mapped as land use/land cover classes or as named places. Tundra, desert, and wetland are included in this view.

Geoposition

Geoposition contains features associated with the measurement of the size and shape of the Earth. The view reflects points or lines on the Earth or its representation for which the location, relative to a particular datum, is well known.

Morphology

Morphology is a view based on the form of the land surface. A domain of features has been developed that reflects morphology as presented on Survey map products. Although morphologic features appear on map graphics through hypsography, within the scale limitations of the products, only those features that are named, labeled, or otherwise symbolized as unique entities appear in the feature list. While these features may require interpretation of boundary limits, the text and symbol information distinguish them.

Attempts were made to organize morphologic features according to classical geomorphological treatments including processes such as erosion and deposition and generating agents such as glaciers, streams, wind, or volcanoes. While these approaches yield consistent features and correlate directly with geomorphological theory and practice, the information required to make these types of feature distinctions is not available on map source materials without significant effort in the interpretation of hypsography. The level of knowledge necessary to perform this interpretation requires a skilled geomorphologist. Therefore an alternate approach was taken whereby the morphology of the land surface was organized directly into a domain of features that can be readily obtained from map graphics. The feature list reflects the named and symbolized entities organized and grouped to account for aliases such as cliff and bluff, or valley and hollow.

TEMPLATE DEVELOPMENT AND USE

This information was documented as part of a comprehensive effort in the mid 1990's to develop automated rules for USGS data revision and map production. The information was originally based on the content of 1:24,000-scale USGS topographic maps. Much of the information contained in this document is still valuable for describing an NHD dataset. It has been reformatted and is being included with the documentation for the NHD. This document will not be updated, but will evolve into a "best practices" document for NHD users and data stewards. Comments in BLUE have been added to clarify current practice; otherwise the document is unchanged from the 4/96 version.

Template Development and Use describes how to use the feature templates. The sections explain what is included in each part of the template and any global rules that apply throughout the templates. If a rule applies to all features, it is a global rule. An example is a rule for how to measure a feature to determine if it meets capture conditions. The templates contain only exceptions to the global rule or additional information that is unique to the feature. If nothing appears in the template to change a global rule, then the rule applies.

Throughout the templates, if something being described meets the definition and capture conditions of a feature, the feature name appears in all CAPS. Generic descriptions of features appear in lower case type to indicate they may not meet the definition of the feature and should not be considered as that feature.

EXTRACTION SPECIFICATIONS

The data extraction specifications in the feature templates contain all the information required to collect feature data. These specifications tell what is collected as a certain feature and when and how the feature is collected. The extraction specifications include:

- Feature Definitions**
- Attribute and Attribute Values**
- Delineation**
- Representation Rules**
- Capture Conditions**
- Attribute Information**
- Source Interpretation Guidelines**

The templates are as concise and positive as possible, and each template is meant to stand alone. Therefore, definitions, attributes, and attribute values describe what the feature looks like, not what it DOES NOT look like. Similarly, capture conditions explain when to capture a feature, not when NOT TO capture the feature. If this approach had not been used, each template could be too cumbersome, and too confusing, to be useful.

The capture conditions reflect the NMD policy of cartographic collection, which restricts data content and position based on graphic limitations of scale and legibility. Only content that can be displayed on the printed map is collected and all offsets in position necessary to accommodate symbolization are performed at the time of data collection. This policy, and the feature templates, will change as user requirements for geographic content and position become known and as technology and resources are developed to support the implementation of product generation rules for content generalization and symbol conflict resolution.

This requirement for “cartographic” collection will change as data stewards begin to maintain the NHD for a variety of uses, but the necessity to describe what was collected will not.

Feature Definitions

Feature definitions are used to decide how to classify a feature. Attributes, delineation, and capture conditions limit which occurrences of a feature, from a class of features, the NMD collects. The main goal in classifying features is to define the features so that the distinctions between them are clear. The features and their definitions were developed by studying a variety of sources including; NMD documentation; the Defense Mapping Agency's Feature and Attribute Coding System; Geographic Names Information System feature classes; the Spatial Data Transfer Standard feature list; publications from other Federal agencies, including National Ocean Service, Bureau of Land Management, Forest Service, and the Fish and Wildlife Service; and the Canadian National Topographic Data Base feature list. Attempts were made to coordinate feature definitions with other organizations; however, feature selection is somewhat different from one agency to another and even between units within each agency.

The feature definitions provide the distinguishing characteristics needed to differentiate between features. Although the difference between STREAM/RIVER and LAKE/POND is obvious, the distinction between STREAM/RIVER and CANAL/DITCH may not be so obvious. In this example, a feature that could be either a STREAM/RIVER or a CANAL/DITCH can be classified by comparing the two definitions. Although both STREAM/RIVER and CANAL/DITCH are linear water bodies, the definition for CANAL/DITCH specifies that it is artificial and that it is used to transport water, to drain or irrigate land, to connect two or more water bodies, or to serve as a waterway for watercraft. Therefore, CANAL/DITCH is distinguished from STREAM/RIVER by (1) the fact that it is artificial, and (2) the fact that it has specific uses. If the feature in question does not meet these two criteria, it is not a CANAL/DITCH.

Although the feature definitions include those characteristics of a feature that the NMD uses to distinguish among features, the templates do not necessarily specify how to make the distinction. How one goes about deciding if something is artificial or natural or if it is used for some special purpose or not, is beyond the scope of the templates. Annotation guides can be developed to support the content of the templates. These guides could contain graphic examples that illustrate map and real world identification and delineation of features.

There are some cases where the distinction between features is not clear, usually because past practices do not lend themselves to the classification method used to develop the domain of features. There are also cases where the definition is clear, but, again, because of past practices in the NMD, there might be some confusion. For example, the definition of a LAKE/POND states that it is a "body of standing water," so a dry lake doesn't fit the definition. However, the NMD symbol books describe dry lakes under lakes and ponds and in the DLG-3 format they are collected as lakes with a descriptive attribute of dry. In this case, a rule is developed in Source Interpretation Guidelines to reinforce the definition. The rule in this example is: "Do not capture dry lakes as LAKE/POND. See PLAYA."

Attributes and Attribute Values

Attributes describe characteristics of features. Many of these characteristics fall into one of three groups: (1) "Type" describes the function or purpose of a feature; (2) "Category" describes the form or nature of a feature; and (3) "Status" describes the state or existence of the feature or characteristic.

Definitions for attributes and attribute values are generic. The definition for the attribute "Elevation" is "The vertical distance from a given datum." This applies whether elevation is applied to a LAKE/POND or a STREAM/RIVER or a CONTOUR.

In some cases, more than one value for a given attribute can be selected. The ability to provide multiple values for an attribute makes it unnecessary to capture multiple features. For example, if a mine produces multiple products, only one instance of the feature mine is captured and the applicable products are assigned as values to the attribute Product. Currently, the templates do not identify those attributes that can be multi-valued, although the information is stored in the standards data base. [This requirement for multi-valued attributes was dropped because of limitations in GIS software.](#)

For most features, there is a discrete list of appropriate attribute values. However, for a few features, such as RESERVATION, the number of potential descriptors is quite large and it is not possible to create an exhaustive list of values. Selecting an alphanumeric value for the attribute "Text" provides the necessary flexibility to describe a RESERVATION. [No features in the NHD have this requirement for a "text" value.](#)

Delineation

Delineation specifications describe what the limits of a feature are and what to include in the feature that meets capture conditions. The delineation generally describes real world entities.

Representation Rules

The representation rules are described in two tables. The first table lists the relationships in which a feature may participate and the second table lists the feature object types used to represent the feature.

The relationship table presents the relationship name, the cardinality, and the related feature object. The cardinality expresses the minimum and maximum number of times one instance of a feature can be involved in the relationship. However, the current design of the standards database is flawed and the cardinality cannot be entered properly, so the cardinality is not populated.

The representation conditions table presents the feature objects used to represent a feature and the criteria to determine which feature object is used. The values displayed in the columns for "AREA", "SHORTEST" and "LONGEST" are sizes based on an areal measurement, the shortest axis, or the longest axis of the feature. A feature is represented by a specific feature object when the size criteria in the appropriate column are met. If a feature can only be represented by one feature object, then the only value shown will be ">0" in one of the columns. If no values appear in any column, then special conditions must be present to indicate the appropriate feature representation. Special conditions may also exist in conjunction with values in table.

[These tables were removed in the reformatted version of the NHD standards. The actual geodatabase implementation of the features class – for example NHDPoint and NHDLine – is described in the standards and listed after the feature definition. The conditions under which a feature is represented as a point versus a line, for example, were moved to the Delineation section.](#)

Capture Conditions

The feature definitions describe what to capture, and the capture conditions describe when to capture it. Capture conditions are generally independent of source. The capture conditions currently reflect the content of a standard update product. Because primary mapping has been completed for the entire United States, most National Mapping Program activity is focused on revision. Information on data capture that pertains to specific sources or revision methods is found in the Source Interpretation Guidelines section.

The templates must contain the criteria necessary to ensure that NMD products are accurate and consistent in style and content. Therefore, the capture conditions present the requirements for the content of NMD products, not just the step-by-step decisions a user needs to make in deciding whether to capture a particular feature.

An “If...Then” format is used for the capture conditions. The basic format is as follows:

If FEATURE is CONDITION,
Then capture.

When there are multiple capture conditions, each statement stands alone. If the feature meets one of the conditions, it is captured.

Capture conditions are given in inches at map scale ([ground distance in feet can be obtained by multiplying the numbers by 2,000](#)). In general, features are measured along the longest axis (length) and/or the shortest axis (width). Square features are measured along either axis, round

features are measured by the diameter, and irregular features are measured against the axes of the best fitting rectangle (non-oriented). Linear features are measured as the accumulative measurement along the centerline of the feature for length and the predominant distance across the feature (measured perpendicular to the centerline) for width. Any specific or unique requirements for measurement are addressed separately for each feature.

For areal measurements, the capture conditions are expressed as X square inches. Square inches indicate that **the value is an areal value**. Thus, 4 square inches indicates an area equivalent in extent to a square which measures 2" by 2", or to a rectangle which measures 1" by 4.

Decimal values are handled in the same way; an area described as 0.01 square inches indicates an area equivalent in size to a square which measures 0.1" by 0.1".

Do not confuse this terminology with the usage "2 foot square", where neither the value nor the unit is areal.

The areal value terminology is used in the templates because it allows an area to be defined independently of lengths and widths. If there are minimum length or width requirements, then these values are included in the capture conditions in addition to the area value.

Attribute Information

Attribute Information describes how to value the attributes once the feature is captured. Any required conditions and/or attribute value combinations are given. All attributes must be valued. There are three global attribute values that apply to many attributes. These are "Unspecified", "Not Applicable", and "Unknown".

- Unspecified is used when the value is not known, but is not necessary. For example, a spring shown on the map with no additional label would have the value Unspecified for the attribute Water Characteristics.
- Not Applicable is used when a particular occurrence of a feature cannot have a particular attribute value. For example, if the water level of a STREAM/RIVER is not controlled for navigation, the value for Elevation = Not Applicable, because the attribute does not apply and therefore cannot be valued.
- Unknown is used when a required value is not known. For example, if the class of a road cannot be determined during collection or revision, the value would be unknown. Other sources will be required to determine the appropriate value.

Source Interpretation Guidelines

Source Interpretation Guidelines provide additional information for interpreting the capture conditions when capturing data using specific source materials or methods. They also contain any modifications to the capture conditions specific to the source or capture methods.

- **All sources**

This information helps interpret the capture conditions regardless of the source or method used in data capture. Included are such things as when to capture a coincident feature based on the capture conditions, when to capture more than one instance of the feature, and when to capture something as a different feature instead of the feature in the template. For those features that can occur in more than one theme, this section provides the guidelines for which theme should contain a specific feature instance.

- **Graphic**

This information helps interpret the capture conditions when the source is a map. Included are guidelines for interpreting the symbology for proper classification, delineation, and capture. When deciding to capture a feature from a graphic source, the capture conditions still apply. Features that do not meet the capture conditions are not captured. Generally, this reflects changing requirements. For example, a number of offshore features shown on NMD maps prior to 1961 are no longer required and should not be captured, even though they appear on the graphic.

Some capture conditions cannot be evaluated just by looking at the map. For example, when a feature is represented with a point symbol and the capture conditions state a size requirement, it is not possible to evaluate the true size of the feature from the graphic. If compliance with the capture conditions cannot be determined, then the feature is collected. Further evaluation will be done at the time of revision.

In some cases, instructions are given to collect features for which the symbology has been suppressed on the map. For example, instructions are given on how to capture PLSS information when PLSS lines are dropped from the map because they are coincident with a boundary or a road.

- **Revision**

This information helps interpret the capture conditions during revision. The term "revision" applies to the process by which data are updated to reflect changes that have occurred since the date of the existing DLG or, for simultaneous collection and revision, the Digital Raster Graphic (DRG).

Guidelines in this section are divided by the category of revision. Headings in this section are:

Revision - General
Revision - Standard
Revision – Limited

If no guidelines appear in any of these revision categories, then the guidelines in the remainder of the feature template apply.

Revision - General

Revision - Standard

Revisions - Limited - The goal for a limited update is that feature content will be current, but will include only: (1) those feature types that are photoidentifiable on a monoscopic source, supplemented with limited ancillary sources, and (2) those feature types from existing DLG's or DRG's that are not photoidentifiable but are not particularly prone to change. Some feature types are not revised at all while other feature types are revised with limited attribution. Existing data may or may not be revised. Ancillary sources may be required to revise some data. All of this information is provided in the limited update section.

If no limited update guidelines appear, the feature and all its attributes are revised using guidelines in the remainder of the template.

If a feature is not revised during a limited update, guidelines state this and give information on how to handle existing DLG data. The guideline "Do not revise. Delete existing features." means the feature is not revised and all feature instances are deleted from the DLG. The guideline "Do not Revise. Retain existing features." means the feature is not revised and features that already exist in the DLG are retained except when that feature is replaced by another instance of a feature type that is revised in a limited update.

If a feature is revised, but only under certain conditions, those conditions will be stated, as well as how to handle existing DLG data. For example, in the feature PIPELINE, the guideline states "Revise aboveground pipelines only. Retain existing features."

There are some cases where only existing DLG data are revised and only under certain conditions. The guideline "Do not add new features. Revise existing features (conditions)." applies to these cases.

Special instructions may also apply to attribution. If attribution cannot be determined in limited update, that will be noted in this section. For example, the guideline for BUILDING states that Building Type = Unspecified for limited update. In addition it will be noted whether the value applies to existing data or not. In the case of BUILDING, the guideline states “Existing buildings will be given Building Type = Unspecified.”

If data is being collected from a DRG as part of a simultaneous collection/revision project, the limited update instructions still apply. When revising data from a DRG, the term "retain" is interpreted to mean "collect" and the term "delete" is interpreted to mean "do not collect". So, the guideline "Do not revise. Retain existing features" means "Do not revise. Collect existing features". The guideline "Do not revise. Delete existing features" means “Do not revise. Do not collect existing features.”

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

AREA OF COMPLEX CHANNELS - An area where a stream or river flows in an intricate network of interlacing channels. NHDArea.

NHDAREA : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| AreaSqK m | Length 8 |
| Elevation | Length 8 |
| FType | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of AREA OF COMPLEX CHANNELS is the outer bank of the outermost channel.

DATA EXTRACTION

Capture Conditions

If AREA OF COMPLEX CHANNELS contains at least five subchannels and is $\geq 0.88''$ along the shortest axis and $\geq 2.64''$ along the longest axis,
Then capture.

Attribute Information

Source Interpretation Guidelines

All

If AREA OF COMPLEX CHANNELS coincides with SWAMP/MARSH or with a 2-dimensional STREAM/RIVER,
Then capture both AREA OF COMPLEX CHANNELS and the other feature.

Graphic

Revision – General

Revision - Standard

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

Revision - Limited

Do not add new features. Modify existing features only if there are obvious changes in the stream channels.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

AREA TO BE SUBMERGED - The known extent of the intended lake that will be created behind a dam under construction. NHDArea.

NHDAREA : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| AreaSqK m | Length 8 |
| Elevation | Length 8 |
| FType | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of AREA TO BE SUBMERGED is the line corresponding to the average water elevation of the intended lake.

DATA EXTRACTION

Capture Conditions

If AREA TO BE SUBMERGED is $\geq 0.5''$ along the shortest axis and the perimeter coincides DAM/WEIR that meets capture conditions,
Then capture.

Attribute Information

Source Interpretation Guidelines

All

All features inside of AREA TO BE SUBMERGED will be captured as they normally would, if they meet capture conditions.

Graphic

Capture all.

DAM/WEIR under construction on an existing graphic may be completed by the time it is captured digitally. Regardless, remain true to the date of the graphic and

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

capture DAM/WEIR with Operational Status = Under Construction and the intended lake as AREA TO BE SUBMERGED.

Revision – General

Revision – Standard

Revision – Limited

The limits for AREA TO BE SUBMERGED and the values for the Attributes of Elevation and Name may have to be obtained from the operating agency or other ancillary sources.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

ARTIFICIAL PATH - An abstraction used to facilitate hydrologic modeling through open water bodies and to act as a surrogate for lakes and other water bodies. NHDFlowline.

NHDFLOWLINE: ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|-------------|--|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996 Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| LengthKM | Length 8 |
| ReachCode | Unique identifier composed of two parts. The first eight digits is the Subbasin Unit Code as defined by FIPS 103. The next six digits are randomly assigned, sequential numbers that are unique within a Subbasin. |
| FlowDir | Direction of flow relative to coordinate order, Length 4 |
| WBAreaComID | Length 4 |
| FType | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of ARTIFICIAL PATH is:

the connection between the inflow and outflow points of an in-line open water body;

the line through a head or terminal open water body that connects to the inflow or outflow point.

DATA EXTRACTION

Capture Conditions

Attribute Information

Source Interpretation Guidelines

All

If ARTIFICIAL PATHS are used to model flow through an ESTUARY that also has COASTLINE around the ESTUARY, flow direction will be "with digitized" on the ARTIFICIAL PATHS and

NHD Feature Catalog

Based on 1:24,000-scale USGS Topographic Map Content

the COASTLINE around the ESTUARY will have flow direction = "uninitialized". This rule is necessary to allow network models to work properly.

Graphic

Revision – General

Revision – Standard

Revision – Limited

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

BAY/INLET - A water area that is an opening of the sea/ocean into the land, or of an estuary, lake, or river into its shore. NHDArea.

NHDAREA : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 8 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| AreaSqK m | Length 8 |
| Elevation | Length 8 |
| FType | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of BAY/INLET is edge of ESTUARY, LAKE/POND, SEA/OCEAN, or STREAM/RIVER, and the closing line needed to provide the extent of the area known by a specific name.

DATA EXTRACTION

Capture Conditions

If BAY/INLET is named,
Then capture.

Attribute Information

Source Interpretation Guidelines

All

The feature BAY/INLET is included in the GNIS feature class "bay". According to GNIS, bays can be described by about 40 generics. GNIS maintains a list of feature classes and related generics. Contact GNIS for more information.

If BAY/INLET meets capture conditions,
Then capture BAY/INLET, and ESTUARY, LAKE/POND, SEA/OCEAN, or
STREAM/RIVER.

Graphic

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

Revision – General

Revision – Standard

Revision – Limited

Do not collect new features. Modify existing features to accommodate a change in shoreline.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

BRIDGE - A structure spanning and providing passage over a waterway, railroad, or other obstacle. NHDLine and NHDArea.

NHDLINE: ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996 Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| LengthKM | Length 8 |
| Elevation | Length 8 |
| FType | Length 4 |
| FCode | Length 4 |

NHDAREA : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 8 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| AreaSqKm | Length 8 |
| Elevation | Length 8 |
| FType | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of BRIDGE is the extent of the span as defined by the edges of the deck and the end abutments.

If BRIDGE is < 0.0625" along the shortest axis, and does not meet the Representation Conditions for a 0-dimensional basic feature object,

Then BRIDGE is represented as a 1-dimensional basic feature object.

If BRIDGE IS $\geq 0.0625''$ along the shortest axis, and does not meet the Representation Conditions for a 0-dimensional basic feature object,
Then BRIDGE is represented as a 2-dimensional basic feature object.

DATA EXTRACTION

Capture Conditions

If BRIDGE is $\geq 0.12''$ along the longest axis and carries a hydrographic feature,
Then capture.

Attribute Information

Source Interpretation Guidelines

All

If BRIDGE meets capture conditions and carries CANAL/DITCH.
Then capture both BRIDGE and CANAL/DITCH.

If a bridge does not meet capture conditions and carries RAILWAY, ROAD, or TRAIL over CANAL/DITCH or STREAM/RIVER,
Then capture only RAILWAY, ROAD, or TRAIL.

If a bridge does not meet capture conditions and carries CANAL/DITCH over another CANAL/DITCH or STREAM/RIVER,
Then capture CANAL/DITCH and UNDERPASS to allow definition of the relationship between CANAL/DITCH and the feature over which it passes.

If BRIDGE carries multiple features,
Then it is delineated and represented at the greatest horizontal extent.

If BRIDGE carries a transportation feature,
Then collect in the theme Transportation.

If BRIDGE is captured,
Then also capture UNDERPASS.

Graphic

Named BRIDGES over double-line drains, symbolized without bridge wing ticks, are captured from shoreline to shoreline.

BRIDGES symbolized with bridge wing ticks are captured from wing tick to wing tick.

Revision – General
Revision – Standard
Revision – Limited

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

CANAL/DITCH - An artificial open waterway constructed to transport water, to irrigate or drain land, to connect two or more bodies of water, or to serve as a waterway for watercraft. NHDFlowline and NHDArea.

NHDFLOWLINE: ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------------|--|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996 Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| LengthKM | Length 8 |
| ReachCode | Unique identifier composed of two parts. The first eight digits is the Subbasin Unit Code as defined by FIPS 103. The next six digits are randomly assigned, sequential numbers that are unique within a Subbasin. |
| FlowDir | Direction of flow relative to coordinate order, Length 4 |
| WBAreaComID | Length 4 |
| FType | Length 4 |
| FCode | Length 4 |
| Canal/Ditch Type | Function or purpose |
| Aqueduct | A structure designed to transport domestic or industrial water from a supply source to a distribution point, often by gravity |
| Stormwater | A structure designed to convey stormwater through and from a drainage area. |

NHDAREA : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|--|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

| | |
|------------------|---|
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| AreaSqK m | Length 8 |
| Elevation | Length 8 |
| FType | Length 4 |
| FCode | Length 4 |
| Canal/Ditch Type | Function or purpose |
| Aqueduct | A structure designed to transport domestic or industrial water from a supply source to a distribution point, often by gravity |
| Stormwater | Constructed drainage courses that confine and conduct a periodic flow of water in such a way that concentrates flow. |

DELINEATION

The limit of CANAL/DITCH is the top of the banks of the artificial waterway.

To accommodate variations in the shortest axis of CANAL/DITCH:

If shortest axis of CANAL/DITCH is:

- < 0.025" but ≥0.01" for a distance < 2.64", and is connected at both ends to a 2-dimensional CANAL/DITCH, Then CANAL/DITCH is represented as a 2-dimensional basic feature object.
- < 0.025" but ≥0.01" for a distance ≥2.64", or < 0.01" regardless of distance, and is connected at both ends to a 2-dimensional CANAL/DITCH, Then CANAL/DITCH is represented as a 1-dimensional basic feature object.
- ≥0.025" but < 0.04" for a distance < 2.64", and is connected at both ends to a 1-dimensional CANAL/DITCH, Then CANAL/DITCH is represented as a 1-dimensional basic feature object.
- ≥0.025" but < 0.04" for a distance ≥2.64", or ≥0.04" regardless of distance, and is connected at both ends to a 1-dimensional CANAL/DITCH, Then CANAL/DITCH is represented as a 2-dimensional basic feature object.

DATA EXTRACTION

Capture Conditions

If CANAL/DITCH is named,
Or
If CANAL/DITCH is ≥0.005" along the shortest axis,
Then capture.

Attribute Information

NHD Feature Catalog

Based on 1:24,000-scale USGS Topographic Map Content

If water level of CANAL/DITCH is controlled by GATE with Gate Type = Lock, and CANAL/DITCH is $\geq 0.025'$ along the shortest axis and $\geq 0.5'$ along the longest axis and is not coincident with LOCK CHAMBER,
Then Elevation = (Integer Value),
Else Elevation = Not Applicable.

Source Interpretation Guidelines

All

If CANAL/DITCH meets capture conditions, and coincides with BRIDGE, LOCK CHAMBER, or TUNNEL,
Then capture both CANAL/DITCH and the other feature.

If CANAL/DITCH meets capture conditions, and coincides with a structure, but that structure does not meet the definition and capture conditions for another feature (BRIDGE, FLUME, PIPELINE with Pipeline Type = Siphon, TUNNEL),
Then capture CANAL/DITCH and, if required, capture UNDERPASS to allow definition of the relationship between CANAL/DITCH and the feature over or under which it passes.

Structures which carry CANAL/DITCH over another feature are captured as FLUME or BRIDGE.

Do not capture underground aqueducts that are not in TUNNEL as CANAL/DITCH. See PIPELINE with Product = Water, Pipeline Type = Aqueduct, and Relationship to Surface = Underground.

Do not capture rivers that have been channelized to control flooding or erosion, or to maintain flow for navigation as CANAL/DITCH. See STREAM/RIVER. Capture as CANAL/DITCH only those inland navigation waterways that are cut through land to bypass outcrops or rapids, or to connect two bodies of water.

If a canal or ditch passes through a siphon that meets capture conditions for PIPELINE with Pipeline Type = Siphon,
Then do not capture CANAL/DITCH. See PIPELINE.

Do not capture ditches associated with a cranberry bog.

If 2-dimensional CANAL/DITCH meets capture conditions, and coincides with NONEARTHEN SHORE or WALL,
Then capture both CANAL/DITCH and the other feature.

Graphic

Revision - General
Revision - Standard
Revision - Limited

Use ancillary source when the collection of Elevation is required.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

COASTLINE - A line of contact between the open sea and the land, including imaginary lines separating inland water bodies from the open sea. NHDFlowline

NHDFLOWLINE: ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|-------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996 Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| LengthKM | Length 8 |
| ReachCode | Unique identifier composed of two parts. The first eight digits are the Subbasin Unit Code as defined by FIPS 103. The next six digits are randomly assigned, sequential numbers that are unique within a Subbasin. |
| FlowDir | Direction of flow relative to coordinate order, Length 4 |
| WBAreaComID | Length 4 |
| FType | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of the **COASTLINE** is the line of contact between the open sea and the land at Mean High Water.

If **STREAM/RIVER** flows directly into the sea, the **COASTLINE** is a straight line drawn across the mouth of the **STREAM/RIVER**.

If an **ESTUARY** is formed along the coast, there are two options to allow navigation around and through the **ESTUARY**.

If the **ESTUARY** is more like “a semi-enclosed coastal body of water” and if the generic part of the name in the NOAA Coastal Assessment Framework (CAF) is “bay”, “sound” or something similar, the **ESTUARY** may be treated more like the feature **SEA/OCEAN** for modeling purposes. The feature **COASTLINE** is used to delineate the edge of the **ESTUARY** (based on Mean High Water). This **COASTLINE** could be used to navigate along the edge of the **ESTUARY**.

If the **ESTUARY** is more like the “lower end of a river” and if the generic part of the name in the NOAA CAF is “river”, the **ESTUARY** may be treated more like the feature **STREAM/RIVER** for modeling purposes. The feature **COASTLINE** is used to close off the **ESTUARY** from **SEA/OCEAN**. **ARTIFICIAL PATHS** may be added within the **ESTUARY** to allow flow to be modeled through the **ESTUARY** and to a point where the **ESTUARY** meets the sea/ocean. The

delineation of the ESTUARY would still be based on Mean High Water, although the feature COASTLINE is not collected around the ESTUARY.

DATA EXTRACTION

Capture Conditions

Attribute Information

Source Interpretation Guidelines

All

There is a continuous, navigable COASTLINE (flow direction = "with digitized") around the US along the Atlantic Ocean, the Pacific Ocean and the Gulf of Mexico. The COASTLINE may include imaginary lines across the mouths of ESTUARY and STREAM/RIVER.

If COASTLINES bound an ESTUARY that has ARTIFICIAL PATHS for modeling flow through the ESTUARY, those COASTLINES would have flow direction = "uninitialized" and there would be a COASTLINE across the mouth of the ESTUARY that has flow direction = "with digitized".

Graphic

Revision – General

Revision – Standard

Revision – Limited

Modify existing COASTLINE only if there are obvious manmade changes. Do not modify existing COASTLINE where there are natural changes, unless you can verify that the new shoreline represents approximate mean high water, using nautical charts or by determining that the photography was taken at mean high water.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

CONNECTOR - A known, but nonspecific, connection between two nonadjacent network segments. NHDFlowline.

NHDFLOWLINE: ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|-------------|--|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996 Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| LengthKM | Length 8 |
| ReachCode | Unique identifier composed of two parts. The first eight digits is the Subbasin Unit Code as defined by FIPS 103. The next six digits are randomly assigned, sequential numbers that are unique within a Subbasin. |
| FlowDir | Direction of flow relative to coordinate order, Length 4 |
| WBAreaComID | Length 4 |
| FType | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of CONNECTOR is the imaginary line connecting two nonadjacent network segments.

DATA EXTRACTION

Capture Conditions

If CONNECTOR is required to maintain connectivity between two network feature objects that Represent AREA OF COMPLEX CHANNELS, CANAL/DITCH, ESTUARY, LAKE/POND, RESERVOIR, SEA/OCEAN, or STREAM/RIVER, Then capture.

Attribute Information

N/A

Source Interpretation Guidelines

All

The following list of conditions indicates when and why the capture of CONNECTOR is important:

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

- 1) When CONNECTOR is part of a network that is represented as being connected.
- 2) When there is a gap with no collected network feature object between pieces of the network, for example, at a 2-dimensional DAM/WEIR that causes a gap between an upstream LAKE/POND and a downstream STREAM/RIVER.

Graphic

Revision – General

Revision – Standard

Revision - Limited

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

DAM/WEIR - A barrier constructed to control the flow or raise the level of water. NHDLine and NHDArea.

NHDLINE : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|-----------------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| Construction Material | Predominant material used |
| Earthen | Constructed of earth, or a combination of earth and rock |
| Nonearthen | Constructed of concrete, brick or stone |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| LengthKM | Length 8 |
| Ftype | Length 4 |
| FCode | Length 4 |

NHDAREA : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|-----------------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| Construction Material | Predominant material used |
| Earthen | Constructed of earth, or a combination of earth and rock |
| Nonearthen | Constructed of concrete, brick or stone |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| AreaSqK m | Length 8 |
| Elevation | Length 8 |
| FType | Length 4 |

FCode

Length 4

DELINEATION

The limit of DAM/WEIR is the extent of the exposed built-up barrier.

DATA EXTRACTION

Capture Conditions

If DAM/WEIR is earthen, and is named, and is ≥ 0.02 " along the shortest axis,
Or
If DAM/WEIR is nonearthen and is named,
Or
If the DAM/WEIR is nonearthen and is ≥ 0.05 " along the longest axis,
Then capture.

Attribute Information

Source Interpretation Guidelines

All

If DAM/WEIR with Construction Material = Nonearthen meets capture conditions,
Then capture DAM/WEIR and NONEARTHEN SHORE.

If a dam/weir does not meet capture conditions,
Then capture only SHORELINE.

If DAM/WEIR with Construction Material = Earthen meets capture conditions,
Then capture both DAM/WEIR and SHORELINE.

If DAM/WEIR covers part of the same area as SPILLWAY,
Then capture both DAM/WEIR and SPILLWAY where the features overlap.

If DAM/WEIR has an overflow spillway,
Then capture only DAM/WEIR (do not capture as SPILLWAY).

SPILLWAY may exist completely apart from the feature DAM/WEIR.

If DAM/WEIR meets capture conditions and carries ROAD that meets capture conditions,
Then capture both DAM/WEIR and ROAD.

Do not capture check dams as DAM/WEIR. See EMBANKMENT (Built-up theme).

If a lock and DAM/WEIR share a name, as in "Lock and Dam #6,"
Then only collect the name with DAM/WEIR.

If DAM/WEIR is 1-dimensional,
Then capture NONEARTHEN SHORE or SHORELINE only for the portion of
DAM/WEIR that separates land from water.

Graphic

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

If named earthen dams are shown by contours,
Then capture DAM/WEIR as the area defined by the portion of the shoreline that runs
parallel to the squared-off contours and the arbitrary line surrounding the built-up barrier
as indicated by the contours.

Revision - General

Revision - Standard

Revision - Limited

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

ESTUARY - The lower end of a river, or a semi enclosed coastal body of water with access to the open ocean, which is affected by the tides and where fresh and salt water mix. NHDWaterbody

NHDWATERBODY: ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|--|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| AreaSqK m | Length 8 |
| Elevation | The vertical distance from a given datum , Length 8 |
| ReachCode | Unique identifier composed of two parts. The first eight digits is the Subbasin Unit Code as defined by FIPS 103. The next six digits are randomly assigned, sequential numbers that are unique within a Subbasin. Length 14 |
| FType | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of ESTUARY is the extent of the area where fresh and salt water mix, as defined by the NOAA Coastal Assessment Framework (CAF). It includes the salinity zones identified by NOAA as the Seawater Zone and the Mixing Zone. The limit is the approximate line of Mean High Water.

DATA EXTRACTION

Capture Conditions

If ESTUARY has been identified as an estuarine area by the NOAA CAF and has been identified as either Seawater Zone or Mixing Zone in the salinity data, Then capture.

Attribute Information

Source Interpretation Guidelines

All

Estuaries identified as Tidal Fresh in the NOAA Salinity Data are captured as STREAM/RIVER.

If ESTUARY is more like “a semi-enclosed coastal body of water” and if the generic part

NHD Feature Catalog

Based on 1:24,000-scale USGS Topographic Map Content

of the name in the NOAA Coastal Assessment Framework (CAF) is “bay”, “sound” or something similar, the ESTUARY may be treated more like SEA/OCEAN for modeling purposes. The feature COASTLINE would be used to delineate the edge of the ESTUARY (based on Mean High Water). The COASTLINE would have flow direction and would be part of the network.

If the estuary is more like the “lower end of a river” and if the generic part of the name in the NOAA CAF is “river”, the estuary may be treated more like STREAM/RIVER for modeling purposes. The feature COASTLINE is used to close off the ESTUARY from SEA/OCEAN. The delineation of the ESTUARY is based on Mean High Water, although the feature COASTLINE would not be collected around the ESTUARY.

ARTIFICIAL PATHS may be added within the ESTUARY to allow flow to be modeled through the ESTUARY and to a point where the ESTUARY meets the SEA/OCEAN.

If COASTLINE is used around ESTUARY that contains ARTIFICIAL PATHS, those COASTLINES would not have flow direction and would not be part of the network.

Areas within ESTUARY that are below mean high water may be captured as SWAMP/MARSH. If SWAMP/MARSH is captured, ESTUARY is not captured. COASTLINE is not captured around the SWAMP/MARSH.

See FORESHORE for information on the area between mean high water and mean lower low water.

Graphic

Revision – General

The NOAA CAF delineations provide the list of estuaries to be captured and the general extent of the feature. Local data may be used to provide the final delineation of ESTUARY.

Revision – Standard

Revision - Limited

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

FLUME - An open, inclined, artificial channel constructed of wood, metal, or concrete; generally elevated.
NHDLine and NHDArea.

NHDLINE : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| LengthKM | Length 8 |
| Ftype | Length 4 |
| FCode | Length 4 |

NHDAREA : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| AreaSqKm | Length 8 |
| Elevation | Length 8 |
| FType | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of FLUME is the extent of the structure.

DATA EXTRACTION

Capture Conditions

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

If FLUME is ≥ 0.12 " along the longest axis,
Then capture.

Attribute Information

Source Interpretation Guidelines

All

If FLUME meets capture conditions and carries CANAL/DITCH that meets capture conditions,
Then capture FLUME, CANAL/DITCH, and UNDERPASS.

If a flume does not meet capture conditions and carries CANAL/DITCH,
Then capture CANAL/DITCH and, if required, capture UNDERPASS to allow definition of the relationship between CANAL/DITCH and the feature over which it passes.

Graphic

If a section of CANAL/DITCH is labeled "AQUEDUCT" where it passes over another feature,
Then capture that section as CANAL/DITCH, and BRIDGE or FLUME, if capture conditions are met.

Revision – General

Revision – Standard

Revision - Limited

Do not revise. Retain existing features.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

FORESHORE - The part of a seashore between high-water and low-water marks. NHD Area.

NHDAREA : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| AreaSqK m | Length 8 |
| Elevation | Length 8 |
| FType | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of FORESHORE is the approximate line of mean high water and the approximate line of mean lower low water.

DATA EXTRACTION

Capture Conditions

For a topographic/bathymetric edition only, if FORESHORE is on the final compilation provided to USGS by NOS,
Or
If FORESHORE is $\geq 0.1''$ along the longest axis and $\geq 0.04''$ along the shortest axis,
Then capture.

Attribute Information

Source Interpretation Guidelines

All

FORESHORE is the area affected by the tides. It is the area between mean high water and mean lower low water as shown on NOAA Charts. Because most NHD coastal features are captured at mean high water, FORESHORE will overlap the coastal features.

If FORESHORE is captured,
Then also capture ESTUARY, LAKE/POND, SEA/OCEAN, or STREAM/RIVER.

FORESHORE does not have to be attached to the shore.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

Graphic

All black sand stipple (USGS 17) should be captured as FORESHORE if it meets the Capture conditions. (This does not include oil sumps that are shown with the same pattern.)

Revision – General

Revision - Standard

Revision - Limited

Do not collect new features. Modify existing features to accommodate a change in shoreline.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

GAGING STATION - A structure used to measure the characteristics of a hydrographic feature. NHDPoint.

NHDPOINT: ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| ReachCode | Unique identifier composed of two parts. The first eight digits is the Subbasin Unit Code as defined by FIPS 103. The next six digits are randomly assigned, sequential numbers that are unique within a Subbasin. Length 14. |
| FType | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of GAGING STATION is the extent of the housing of the equipment.

DATA EXTRACTION

Capture Conditions

If GAGING STATION is published in the most recent "USGS Water Resources Data for (State)" report or is a tide station recognized by NOS, and it is permanent, automatic, continuous reading, and housed,
Then capture.

Attribute Information

Source Interpretation Guidelines

All

If two or more GAGING STATIONS are closely spaced,
Then capture as many as can be shown in correct position. The symbols must not overlap.

Graphic

Capture all.

A spot elevation adjacent to or on GAGING STATION is captured as SPOT

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

ELEVATION.

Revision – General

Revision – Standard

Revision – Limited

Revise only when a compilation manuscript is provided by the State of Florida. Retain Existing features.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

GATE - A structure that may be swung, drawn, or lowered to block an entrance or passageway. NHDPoint and NHDLine.

NHDPOINT: ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| ReachCode | Unique identifier composed of two parts. The first eight digits is the Subbasin Unit Code as defined by FIPS 103. The next six digits are randomly assigned, sequential numbers that are unique within a Subbasin. Length 14. |
| FType | Length 4 |
| FCode | Length 4 |

NHDLINE : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| LengthKM | Length 8 |
| Ftype | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of GATE is the extent of the structure.

If GATE is associated with a 1-dimensional feature,
Then GATE is represented as a 0-dimensional basic feature object.

If GATE is associated with a 2-dimensional feature,
Then GATE is represented as a 1-dimensional basic feature object.

DATA EXTRACTION

Capture Conditions

If GATE is a floodgate or of unspecified type and is ≥ 0.02 " along the longest axis,
Or
If GATE is a tidegate and is on a 2-dimensional STREAM/RIVER which is ≥ 1.32 " along the
Longest axis,
Or
If GATE is a drydock gate and it is associated with a non-floating DRYDOCK that meets capture
conditions,
Or
If GATE is a lockgate and is associated with a lock that is ≥ 0.025 " along the shortest axis,
Then capture.

Attribute Information

Source Interpretation Guidelines

All

If GATE is associated with a hydrographic feature,
Then collect in the theme Hydrography.

GATE is captured as a straight chain across the end of LOCK CHAMBER.
If GATE is associated with a transportation feature,
Then collect in the theme Transportation.

Graphic

If GATE has been symbolized by a single V-shaped symbol and is on a 2-dimensional feature
(such as a DRYDOCK gate),
Then capture GATE as a line from bank to bank, tangent to the apex of the symbol and
perpendicular to a line bisecting the symbol.

Revision - General

Revision - Standard

Revision - Limited

Do not revise. Retain existing features.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

HAZARD ZONE - An area identified as a danger to maritime navigation. NHDArea.

NHDAREA : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| AreaSqK m | Length 8 |
| Elevation | Length 8 |
| FType | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of HAZARD ZONE is the extent of the area that is dangerous to navigation. This extent is provided to the USGS by NOS.

DATA EXTRACTION

Capture Conditions

If HAZARD ZONE contains rocks, shoals (bars), or wreckage; and HAZARD ZONE is on an Existing NOS chart,
Or
For a topographic/bathymetric edition only, if HAZARD ZONE is on the final compilation provided to USGS by NOS,
Then capture.

Attribute Information

Source Interpretation Guidelines

All

Graphic

Capture HAZARD ZONE as the area enclosed by the dotted line symbol.

Any symbols within the dotted line are captured independently under the appropriate feature. (e.g. ROCK, REEF, WELL etc.)

NHD Feature Catalog

Based on 1:24,000-scale USGS Topographic Map Content

There will be features on topographic edition maps produced prior to 2/1/61, which do not meet capture conditions. These will not be captured. (Anchorages, barges, buoys, dolphins, duck blinds, dumping grounds, fish stakes, fish traps, foul areas, harbor limits, lightships, limiting danger lines, measured courses, pilings, project depths of channels, restricted areas, sailing lines, sewage outlets, snags, sunken rocks, sunken wrecks, tide rips, breakers, types of offshore bottom).

Revision – General

Revision – Standard

Revision – Limited

Do not revise. Retain existing features.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

ICE MASS - A field of ice, formed in regions of perennial frost. NHDWaterbody.

NHDWATERBODY : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|--|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| AreaSqK m | Length 8 |
| Elevation | The vertical distance from a given datum , Length 8 |
| ReachCode | Unique identifier composed of two parts. The first eight digits is the Subbasin Unit Code as defined by FIPS 103. The next six digits are randomly assigned, sequential numbers that are unique within a Subbasin. Length 14 |
| FType | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of ICE MASS is the extent of the ice or snow.

DATA EXTRACTION

Capture Conditions

If ICE MASS is ≥ 0.0625 square inches,
Then capture.

Attribute Information

For all ICE MASSES within the Continental United States,
Ice Mass Category = Alpine Glacier.

Source Interpretation Guidelines

All

If named Glaciers are contiguous,
Then the dividing line is the approximate line of divergence or confluence, as determined by the topography of the ice masses, or by the changes in color or texture, or both.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

Graphic

Revision - General

Revision - Standard

Revision - Limited

Do not revise. Retain existing features.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

INUNDATION AREA - An area of land subject to flooding. NHDArea.

NHDAREA : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|---------------------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| AreaSqK m | Length 8 |
| Elevation | The vertical distance from a given datum , Length 8 |
| Stage | Height of water surface |
| Flood Elevation | The stage that prevails when a natural water body is at or near capacity |
| FType | Length 4 |
| FCode | Length 4 |
| Inundation Control Status | Existence of functional control structures |
| Controlled | Structures, such as DAM/WEIR or LEVEE, exist to control the water and inundate specific areas |
| Not Controlled | No controlling structures exist. Flooding is natural and periodic |

DELINEATION

In flat coastal areas where the shoreline varies with the tide and meteorological conditions, the limit of INUNDATION AREA is the approximate mean low or mean lower low water line, and the approximate limit of flooding.

The limit of INUNDATION AREA controlled by DAM/WEIR is the average water line and the line corresponding to the highest controlling structure.

For all other controlled INUNDATION AREAS, the limit is the average water line and the crest of LEVEE or, if there is no LEVEE, the limit of flooding.

DATA EXTRACTION

Capture Conditions

If INUNDATION AREA is controlled and is $\geq 0.06''$ along the shortest axis,

Or

If INUNDATION AREA is uncontrolled, and is $\geq 0.06''$ along the shortest axis, and is along
SEA/OCEAN or ESTUARY,

Then capture.

Attribute Information

Source Interpretation Guidelines

All

All features inside INUNDATION AREA will be captured as they normally would, if
they meet capture conditions.

Graphic

Revision - General

Revision - Standard

Revision - Limited

Do not collect new features. Modify existing features to accommodate a change in
shoreline.

The limits for INUNDATION AREA and the values for the Attributes of Elevation and
Name may have to be obtained from the operating agency or other ancillary sources.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

LAKE/POND - A standing body of water with a predominantly natural shoreline surrounded by land.
NHDWaterbody.

NHDWATERBODY : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|-------------------------|--|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| AreaSqK m | Length 8 |
| Elevation | The vertical distance from a given datum , Length 8 |
| Stage | Height of water surface |
| Average Water Elevation | The stage of a natural water body that prevails for the greater part of the year |
| Date of Photography | The stage that exists at the date of photography |
| High Water Elevation | The stage that prevails when a natural water body is at or near Capacity |
| Normal Pool | The stage of an artificially impounded water body that prevails for the greater part of the year |
| Spillway Elevation | The stage of an artificially impounded water body as determined by the spillway |
| ReachCode | Unique identifier composed of two parts. The first eight digits is the Subbasin Unit Code as defined by FIPS 103. The next six digits are randomly assigned, sequential numbers that are unique within a Subbasin. Length 14 |
| FType | Length 4 |
| FCode | Length 4 |
| Hydrographic Category | Portion of the year the feature contains water |
| Intermittent | Contains water for only part of the year, but more than just after rainstorms and at snowmelt |

Perennial

Contains water throughout the year, except for infrequent periods of severe drought

DELINEATION

The limit of LAKE/POND where STREAM/RIVER enters or leaves, is determined by the conformation of the land.

The limit of a naturally formed, perennial LAKE/POND is the position of shoreline when the water is at the stage that prevails for the greater part of the year (Average Water Elevation), or if this limit cannot be determined, the visible edge of the water body (Date of Photography).

The limit of an artificially formed, perennial LAKE/POND is the position of shoreline when the water is at the stage that prevails for the greater part of the year (Normal Pool), or if this limit cannot be determined, the limits defined by the spillway (Spillway Elevation), or the visible edge of the water body (Date of Photography).

The limit of an intermittent LAKE/POND is the position of shoreline when the water is at the stage that prevails when the feature is at or near capacity (High Water Elevation) or, if this limit cannot be determined, the visible edge of the water body (Date of Photography).

DATA EXTRACTION

Capture Conditions

If LAKE/POND is in an arid area,
Or

If LAKE/POND is not in an arid area and is $\geq 0.05''$ along the shortest axis,
Then capture.

Attribute Information

If Hydrographic Category = Intermittent,
Then Stage = High Water Elevation,
Or
If High Water Elevation cannot be determined,
Then Stage = Date of Photography.

If LAKE/POND is a natural lake, and Hydrographic Category = Perennial,
Then Stage = Average Water Elevation,
Or
If Average Water Elevation cannot be determined,
Then Stage = Date of Photography.

If LAKE/POND is an artificially impounded lake, and Hydrographic Category = Perennial, and the water level is reasonably constant,
Then Stage = Normal Pool.

If LAKE/POND is an artificially impounded lake, and Hydrographic Category = Perennial, and the water level is not reasonably constant,
Then Stage = Spillway Elevation.

If LAKE/POND is an artificially impounded lake, and Hydrographic Category = Perennial, and

NHD Feature Catalog
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the Normal Pool or Spillway Elevation cannot be determined,
Then Stage = Date of Photography.

See INUNDATION AREA for capture of flood elevation.

If LAKE/POND has a printed elevation on a 1:24,000-scale graphic,
Then Elevation = (Integer Value)
Else Elevation = Unspecified.

Source Interpretation Guidelines

All

Do not capture dry lakes as LAKE/POND. See PLAYA.

Refer to the feature definition to decide how to categorize a given feature instance. Do not use the proper name of the feature as a guide. Many features that are known as "Reservoirs" or labeled on the graphic as "Reservoirs" will be captured as LAKE/PONDS. "Stock Tanks" may be RESERVOIR or LAKE/POND depending on their form. As a general rule, if a water body has a geometric shape or other information indicates it is contained by a constructed basin, capture it as RESERVOIR. If it does not appear to be contained by a constructed basin, capture it as LAKE/POND.

The minimum size for islands within LAKE/POND is 0.03" along the shortest axis.

Graphic

If Elevation shown on map is preceded by "Spillway",
Then Stage = Spillway.

If Elevation is collected from the graphic, and LAKE/POND is artificially impounded, and "Spillway (elevation)" is not printed,
Then Stage = Normal Pool.

Revision – General

If image shows lower than average water level,
Then capture LAKE/POND at a normal pool or average water level by using ancillary sources or evidence of water marks on images.

If image shows lower than average water level and the average water elevation or normal Pool elevation cannot be determined,
Then capture LAKE/POND at the visible edge of the water body.
If image shows higher than average water level,
Then capture LAKE/POND at a normal pool or average water level by using ancillary sources.

If image shows higher than average water level and the average water elevation or normal pool elevation cannot be determined,
Then capture LAKE/POND at the visible edge of the water body.

Within a newly added manmade LAKE/POND, retain contours, single and double-line

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drains, blue water tint, drain names, PLSS subdivisions, and civil boundaries. All other features are deleted.

Revision - Standard

Revision - Limited

Use ancillary source when the collection of Elevation is required.

Encode the value for Hydrographic Category by looking at the surrounding drainage.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

LEVEE - An embankment built to prevent flooding or to control or confine the flow of liquids. **NHDLINE** and **NHDAREA**.

NHDLINE: ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996 Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| LengthKM | Length 8 |
| Elevation | Length 8 |
| FType | Length 4 |
| FCode | Length 4 |

NHDAREA : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 8 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| AreaSqKm | Length 8 |
| Elevation | Length 8 |
| FType | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of LEVEE is the extent of the raised mound at the base.

DATA EXTRACTION

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

Capture Conditions

Attribute Information

Source Interpretation Guidelines

All

Graphic

Revision – General

Revision – Standard

Revision – Limited

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

LOCK CHAMBER - An enclosure on a waterway used to raise and lower vessels as they pass from one level to another. NHDPoint, NHDArea, and NHDLine.

NHDPOINT: ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| ReachCode | Unique identifier composed of two parts. The first eight digits is the Subbasin Unit Code as defined by FIPS 103. The next six digits are randomly assigned, sequential numbers that are unique within a Subbasin. Length 14. |
| FType | Length 4 |
| FCode | Length 4 |

NHDAREA : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| AreaSqK m | Length 8 |
| Elevation | Length 8 |
| FType | Length 4 |
| FCode | Length 4 |

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

NHDLINE : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| LengthKM | Length 8 |
| Ftype | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of LOCK CHAMBER is the GATE and WALL that enclose the portion of a waterway to be raised or lowered.

If LOCK CHAMBER is on a 1-dimensional STREAM/RIVER or CANAL/DITCH and LOCK CHAMBER has been symbolized on existing graphic with only one wing tick, and the graphic product is the only source used,
Then LOCK CHAMBER is represented as a 0-dimensional basic feature object.

If LOCK CHAMBER is on a 1-dimensional STREAM/RIVER or CANAL/DITCH and does not meet the conditions for a 0-dimensional LOCK CHAMBER,
Then LOCK CHAMBER is represented as a 1-dimensional basic feature object.

If LOCK CHAMBER is on a 2-dimensional STREAM/RIVER or CANAL/DITCH,
Then LOCK CHAMBER is represented as a 2-dimensional basic feature object.

DATA EXTRACTION

Capture Conditions

Capture all.

Attribute Information

Source Interpretation Guidelines

All

If LOCK CHAMBER and DAM/WEIR share a name, as in "Lock and Dam #6,"
Then only collect the name with DAM/WEIR.

NHD Feature Catalog

Based on 1:24,000-scale USGS Topographic Map Content

If a 1-dimensional or 2-dimensional LOCK CHAMBER is captured,
Then also capture STREAM/RIVER or CANAL/DITCH.

If a 2-dimensional LOCK CHAMBER and STREAM/RIVER are captured,
Then also capture SHORELINE, NONEARTHEN SHORE, or WALL along the
sidewalls of the chamber.

If a 1-dimensional or 2-dimensional LOCK CHAMBER is captured,
Then also capture GATE at each end of the LOCK CHAMBER.

Graphic

If LOCK CHAMBER has been symbolized by a single V-shaped symbol,
Then capture LOCK CHAMBER at the apex of the V-shaped symbol.

If LOCK CHAMBER has been symbolized by a pair of V-shaped symbols and is on a
single-line STREAM/RIVER or CANAL/DITCH,

Then capture LOCK CHAMBER as a line connecting the apexes of the V-shaped
symbols. If LOCK CHAMBER has been symbolized by a pair of V-shaped symbols and
is on a double-line STREAM/RIVER or CANAL/DITCH,
Then capture LOCK CHAMBER as the water area between the V-shaped symbols. The
ends of the chamber should be collected as straight lines passing through the apex of the
V-shaped symbols.

Revision - General

Revision – Standard

Revision - Limited

Revise only if LOCK CHAMBER is on a 2-dimensional CANAL/DITCH or STREAM/RIVER.
Retain existing features.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

NONEARTHEN SHORE - A structure built of stone, brick, concrete, or other building materials that borders a body of water. NHDLine.

NHDLINE : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| LengthKM | Length 8 |
| Ftype | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of NONEARTHEN SHORE is the extent of the structure.

DATA EXTRACTION

Capture Conditions

If NONEARTHEN SHORE is $\geq 0.05''$ along the longest axis and separates land from water,
Then capture.

Attribute Information

N/A

Source Interpretation Guidelines

All

The line of contact between a body of water and the land is captured as either SHORELINE or NONEARTHEN SHORE. Other structures, such as DAM/WEIR, PIER/BREAKWATER/JETTY, or WHARF may coincide with the SHORELINE or NONEARTHEN SHORE, in which case both features are captured.

If a nonearthen shore does not meet capture conditions,
Then see SHORELINE or WALL.

If NONEARTHEN SHORE meets capture conditions and coincides 2-dimensional CANAL/DITCH,
Then capture both NONEARTHEN SHORE and CANAL/DITCH.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

Graphic

Revision – General

Revision - Standard

Revision - Limited

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

PIPELINE - A closed conduit, with pumps, valves and control devices, for conveying fluids, gases, or finely divided solids. NHDFlowline.

NHDFLOWLINE: ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|-------------------------|--|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996 Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| LengthKM | Length 8 |
| ReachCode | Unique identifier composed of two parts. The first eight digits is the Subbasin Unit Code as defined by FIPS 103. The next six digits are randomly assigned, sequential numbers that are unique within a Subbasin. |
| FlowDir | Direction of flow relative to coordinate order, Length 4 |
| WBAreaComID | Length 4 |
| FType | Length 4 |
| FCode | Length 4 |
| Pipeline Type | Function or purpose |
| Aqueduct | A structure designed to transport domestic or industrial water from a supply source to a distribution point, often by gravity |
| General Case | Common use |
| Penstock | Designed to convey water into the turbine of a hydroelectric generating plant |
| Siphon | Designed to convey water by gravitational force over, or under, an obstruction |
| Stormwater | Designed to convey stormwater through and from a drainage area. |
| Relationship to Surface | Vertical location relative to the surface |
| At or near | At or slightly above the surface |
| Elevated | Supported above the earth |

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

| | |
|-------------|--|
| Underground | Buried |
| Underwater | Always submerged |
| Unspecified | The value is not known and is not required |

DELINEATION

The limit of PIPELINE that is underground is the edge of the ground scars or linear clearings.

The limit of PIPELINE that is at or near the ground or elevated is the extent of the structure.

The limit of PIPELINE that is underwater is as shown on the final compilation provided to USGS by NOS.

DATA EXTRACTION

Capture Conditions

If PIPELINE is an aqueduct,

Or

If PIPELINE is aboveground and is outside of a congested area; and is a trunk line; and is ≥ 0.25 " from a paralleling road, railway, or other linear feature,

Or

If PIPELINE is underground and surface scars are present; and is outside of a congested area; and is a trunk line; and is ≥ 0.25 " from a paralleling road, railway, or other linear feature,

Or

If PIPELINE is a penstock or siphon and is ≥ 0.12 " along the longest axis,
Then capture.

If PIPELINE is for stormwater, local data stewards will provide capture conditions.

Attribute Information

If Pipeline Type = Siphon,

Then Relationship to Surface = Unspecified.

Source Interpretation Guidelines

All

If PIPELINE, with Pipeline Type = Siphon, causes a gap in CANAL/DITCH,
Then capture PIPELINE only.

If a siphon does not meet capture conditions for PIPELINE,
Then capture CANAL/DITCH and, if required, capture UNDERPASS to allow definition of the relationship between CANAL/DITCH and the feature over or under which it passes.

If PIPELINE is elevated over a depression by a structure built for that purpose,
Then capture only PIPELINE, with Relationship to Surface = Elevated.

If PIPELINE is within TUNNEL,
Then capture both PIPELINE and TUNNEL.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

If PIPELINE conveys water,
Then collect in the theme Hydrography.

If PIPELINE conveys a product other than water,
Then collect in the theme Built-up.

Graphic

If PIPELINE is labeled "Pipeline Bridge",
Then capture PIPELINE, with Relationship to Surface = Elevated.

Revision – General

Revision – Standard

Revision – Limited

Revise aboveground pipelines only. Retain existing features.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

PLAYA - The flat area at the lowest part of an undrained desert basin, generally devoid of vegetation.
NHDWaterbody.

NHDWATERBODY : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|--|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| AreaSqK m | Length 8 |
| Elevation | The vertical distance from a given datum , Length 8 |
| ReachCode | Unique identifier composed of two parts. The first eight digits is the Subbasin Unit Code as defined by FIPS 103. The next six digits are randomly assigned, sequential numbers that are unique within a Subbasin. Length 14 |
| FType | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of PLAYA is the extent of the lowest part of the basin.

DATA EXTRACTION

Capture Conditions

If PLAYA is ≥ 0.1 " along the shortest axis,
Then capture.

Attribute Information

Source Interpretation Guidelines

All

Graphic

Lakes that are labeled "Dry" or "Alkalai" are captured as PLAYA.

Revision - General

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

The edge of a Playa may be indicated by vegetation, discoloration, or sediment line.

Revision - Standard

Revision - Limited

Do not revise. Retain existing features.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

RAPIDS - An area of swift current in a stream or river, characterized by standing waves or by boulders and rocks. NHDPoint, NHDArea, and NHDLine.

NHDPOINT: ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| ReachCode | Unique identifier composed of two parts. The first eight digits is the Subbasin Unit Code as defined by FIPS 103. The next six digits are randomly assigned, sequential numbers that are unique within a Subbasin. Length 14. |
| FType | Length 4 |
| FCode | Length 4 |

NHDAREA : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| AreaSqK m | Length 8 |
| Elevation | Length 8 |
| FType | Length 4 |
| FCode | Length 4 |

NHDLINE : ATTRIBUTE/ATTRIBUTE VALUE LIST

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

| | |
|------------|---|
| ComlD | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| LengthKM | Length 8 |
| Ftype | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of RAPIDS is the extent of the turbulent water.

If RAPIDS are on a 1-dimensional STREAM/RIVER and are < 0.02" along the STREAM/RIVER,
Then RAPIDS are represented as a 0-dimensional basic feature object.

If RAPIDS are on a 1-dimensional STREAM/RIVER and are ≥ 0.02" along the STREAM/RIVER,
Then RAPIDS are represented as a 1-dimensional basic feature object collinear with the feature object that represents STREAM/RIVER.

If RAPIDS are on a 2-dimensional STREAM/RIVER,
Then RAPIDS are represented as a 2-dimensional basic feature object.

DATA EXTRACTION

Capture Conditions

If RAPIDS are named,
Or
If RAPIDS are ≥0.01" as measured perpendicular to stream flow,
Then capture.

Attribute Information

Source Interpretation Guidelines

All

If RAPIDS are captured,
Then also capture STREAM/RIVER.

NHD Feature Catalog

Based on 1:24,000-scale USGS Topographic Map Content

If distance between RAPIDS is $\geq 0.05''$,
Then capture as separate RAPIDS.

If distance between RAPIDS is $< 0.05''$,
Then capture as one RAPIDS.

Graphic

Capture all.

If RAPIDS are symbolized by hachures,
Then capture as 2-dimensional using the extent of the hachures.

Revision – General

Revision – Standard

Revision – Limited

Do not revise. Retain existing features.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

REEF - A chain of rocks or coral at or near the surface of the water. NHDLine.

NHDLINE : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| LengthKM | Length 8 |
| Ftype | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of REEF is the edge of the rock or coral.

DATA EXTRACTION

Capture Conditions

For a topographic/bathymetric edition only, if REEF is on the final compilation provided to USGS by NOS,
Or
If REEF is on an existing NOS chart,
Then capture.

Attribute Information

Source Interpretation Guidelines

All

Numerous closely spaced ROCKS that form a chain along the coastline or close to the shore are collected as REEF. (Quantified rules are TBD)

Areas within or next to REEF may be land areas, areas that uncover, or water areas. If the Area uncovers, see FORESHORE. If the area is water, see SEA/OCEAN.

Graphic

Capture all.

NHD Feature Catalog

Based on 1:24,000-scale USGS Topographic Map Content

The area next to REEF that uncovers is shown with the brown sand pattern on topographic-bathymetric editions and with the black sand pattern on topographic editions. For collection of these areas see FORESHORE.

REEF is collected along a line that connects the high points of the closed, outer portion of the reef symbol.

Revision - General

Revision - Standard

Revision - Limited

Do not revise. Retain existing features.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

RESERVOIR - A constructed basin formed to contain water or other liquids. NHDPoint and NHDWaterbody.

NHDPOINT: ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| ReachCode | Unique identifier composed of two parts. The first eight digits is the Subbasin Unit Code as defined by FIPS 103. The next six digits are randomly assigned, sequential numbers that are unique within a Subbasin. Length 14. |
| FType | Length 4 |
| FCode | Length 4 |

NHDWATERBODY : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|--|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| AreaSqK m | Length 8 |
| Elevation | The vertical distance from a given datum, Length 8 |
| ReachCode | Unique identifier composed of two parts. The first eight digits is the Subbasin Unit Code as defined by FIPS 103. The next six digits are randomly assigned, sequential numbers that are unique within a Subbasin. Length 14 |
| FType | Length 4 |
| FCode | Length 4 |

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

| | |
|-----------------------|---|
| Construction Material | Predominant material used |
| Earthen | Constructed of earth, or a combination of earth and rock |
| Nonearthen | Constructed of concrete, brick or stone |
| Unspecified | The value is not known and is not required |
| Reservoir Type | Function or purpose |
| Aquaculture | For rearing of finfish, shellfish, or aquatic plants |
| Decorative Pool | For improving the aesthetic appearance of the landscape |
| Disposal | For disposal |
| Evaporator | For the natural evaporation of water to allow harvesting of mineral concentrates |
| Treatment | For treatment |
| Unspecified | The value is not known and is not required |
| Water Storage | For long- or short-term storage of water |
| Hydrographic Category | Portion of the year the feature contains water |
| Intermittent | Contains water for only part of the year, but more than just after rainstorms and at snowmelt |
| Perennial | Contains water throughout the year, except for infrequent periods of severe drought |
| Unspecified | The value is not known and is not required |

DELINEATION

The limit of RESERVOIR is the rim of the constructed basin.

DATA EXTRACTION

Capture Conditions

If RESERVOIR is a sewage treatment pond or a filtration pond,
Or
If RESERVOIR is for water storage and is in an arid region,
Or
If RESERVOIR is not a sewage treatment pond or filtration plant, and is $\geq 0.03''$ along the shortest axis,
Then capture.

Attribute Information

NHD Feature Catalog

Based on 1:24,000-scale USGS Topographic Map Content

If RESERVOIR has a printed elevation on a 1:24,000-scale graphic,
Then Elevation = (Integer Value),
Else Elevation = Unspecified.

If Reservoir Type = Water Storage and Cover Status = Covered,
Then Hydrographic Category = Unspecified.

If Reservoir Type = Water Storage and Construction Material = Nonearthen,
Then Hydrographic Category = Unspecified.

If Disposal Type = Tailings Pond,
Then Construction Material = Earthen.
Reservoir Type = Unspecified only in limited update. See Source Interpretation Guidelines,
Revision.

If Reservoir Type = Decorative Pool or Swimming Pool,
Then Construction Material = Nonearthen.

If Cover Status = Covered,
Then Construction Material = Nonearthen.

If Reservoir Type = Aquaculture or Treatment,
Then Construction Material = Unspecified.

If Reservoir Type = Evaporator,
Then Construction Material = Unspecified.

Source Interpretation Guidelines

All

Refer to the feature definition to decide how to categorize a given feature instance. Do not use the proper name of the feature as a guide. Many features that are known as "Reservoirs" or labeled on the graphic as "Reservoirs" will be captured as LAKE/PONDS. "Stock Tanks" may be RESERVOIR or LAKE/POND depending on their form. As a general rule, if a water body has a geometric shape or other information indicates it is contained by a constructed basin, capture it as RESERVOIR. If it does not appear to be contained by a constructed basin, capture it as LAKE/POND.

If RESERVOIR is identified as a Minnow Pond, Fish Hatchery, Rearing Pond, Fish pond, or similar facility,
Then capture RESERVOIR with Reservoir Type = Aquaculture.

Fish ponds in natural water bodies are not captured as RESERVOIR. See ESTUARY, LAKE/POND or SEA/OCEAN.

If RESERVOIR is < 0.03" along the shortest axis and is within 0.02" of another RESERVOIR with the same attribute values,
Then capture as one RESERVOIR only if the combined areas are ≥ 0.03" along the shortest axis.

If two RESERVOIRS are < 0.005" apart and have the same attribute values,
Then capture as two RESERVOIRS with a shared perimeter line.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

If two RESERVOIRS are $< 0.005''$ apart and do not have the same attribute values,
Then displace the perimeter lines equally and capture so that the perimeter lines are
 $0.005''$ apart.

If RESERVOIR is an oil sump or sludge pit,
Then collect in the theme Built-Up.

If RESERVOIR is divided by wire mesh, screens, or grates,
Then do not capture the resulting divisions as separate RESERVOIRS.

If RESERVOIR is identified as a sewage disposal pond,
Then capture RESERVOIR with Reservoir Type = Treatment and Treatment Type =
Sewage Treatment Pond.

Graphic

If RESERVOIR is symbolized with a black outline,
Then Construction Material = Nonearthen.

If RESERVOIR is symbolized with a blue or brown outline,
Then Construction Material = Earthen.

If RESERVOIR is $< 0.03''$ along the shortest axis, and shares an outline with another
RESERVOIR with the same attribute values and their combined area is $\geq 0.03''$ along
the shortest axis,
Then capture the combined areas as one RESERVOIR.

Revision – Standard

Revision - Limited

Reservoir Type = Unspecified for newly collected RESERVOIRS. Retain Reservoir Type
on existing RESERVOIRS.

Elevation = Unspecified for newly collected RESERVOIRS. Retain Elevation on existing
RESERVOIRS.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

ROCK - A concreted mass of stony material. NHDPoint.

NHDPOINT: ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|-------------------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| ReachCode | Unique identifier composed of two parts. The first eight digits is the Subbasin Unit Code as defined by FIPS 103. The next six digits are randomly assigned, sequential numbers that are unique within a Subbasin. Length 14. |
| FType | Length 4 |
| FCode | Length 4 |
| Relationship to Surface | Vertical location relative to the surface |
| Abovewater | Exposed at mean lower low water |
| Underwater | Always submerged |

DELINEATION

The limit of ROCK that is abovewater is the edge of the mass exposed at mean lower low water.

The limit of ROCK that is underwater is as shown on the final compilation provided to USGS by NOS.

DATA EXTRACTION

Capture Conditions

If ROCK is exposed at mean lower low water and is < 0.03" in the longest axis, and is on an existing NOS chart,

Or

For a topographic/bathymetric edition only, if ROCK is on the final compilation provided to USGS by NOS,

Then capture.

Attribute Information

Source Interpretation Guidelines

All

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

Do not capture exposed rocks < 0.03" as ROCK. See rules for islands within LAKE/POND, SEA/OCEAN, and STREAM/RIVER.

Groups of rocks are sometimes surrounded by limiting danger lines, as delineated by NOS. Capture individual rocks as ROCK. Capture the extent of the limiting danger line as HAZARD ZONE.

Numerous closely spaced ROCKS that form a chain along the coastline or close to the shore are collected as REEF. (Quantified rules are TBD)

Graphic

Capture all ROCKS, except submerged rocks shown on topographic maps. ROCKS on pre-1961 maps that are not consistent with current capture conditions are not captured.

Revision - General

Revision - Standard

Revision - Limited

Do not revise. Retain existing features.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

SEA/OCEAN - The great body of salt water that covers much of the earth. NHDArea.

NHDAREA : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| AreaSqK m | Length 8 |
| Elevation | Length 8 |
| FType | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of SEA/OCEAN is the approximate line of mean high water.

In an area where ESTUARY enters SEA/OCEAN, the limit is where ESTUARY ends based on the NOAA Coastal Assessment Framework (CAF).

DATA EXTRACTION

Capture Conditions

Capture all.

Attribute Information

Source Interpretation Guidelines

All

The minimum size for islands within SEA/OCEAN is 0.03" along the shortest axis.

Graphic

Revision - General

Revision - Standard

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

Revision - Limited

Do not collect new features. Modify existing features to accommodate a change in
COASTLINE.

SHORELINE - A naturally occurring line of contact between an inland body of water and the land. NHDFlowline

NHDFLOWLINE: ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|-------------|--|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| LengthKM | Length 8 |
| ReachCode | Unique identifier composed of two parts. The first eight digits is the Subbasin Unit Code as defined by FIPS 103. The next six digits are randomly assigned, sequential numbers that are unique within a Subbasin. |
| FlowDir | Direction of flow relative to coordinate order, Length 4 |
| WBAreaComID | Length 4 |
| Elevation | Length 8 |
| FType | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of SHORELINE is the line of contact between water and land. (See LAKE/POND and STREAM/RIVER for delineation of water surface area.)

DATA EXTRACTION

Capture Conditions

To be determined by resources and requirements of local data stewards

Attribute Information

Source Interpretation Guidelines

All

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

Graphic

Revision - General

Revision - Standard

Revision - Limited

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

SINK /RISE - The place at which a stream disappears underground or reappears at the surface in a karst area.
NHDPPoint and NHDLIne.

NHDPOINT: ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| ReachCode | Unique identifier composed of two parts. The first eight digits is the Subbasin Unit Code as defined by FIPS 103. The next six digits are randomly assigned, sequential numbers that are unique within a Subbasin. Length 14. |
| FType | Length 4 |
| FCode | Length 4 |

NHDLINE : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| LengthKM | Length 8 |
| Ftype | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of SINK/RISE is the extent of the hole where the stream disappears or reappears.

If SINK/RISE is on a 1-dimensional STREAM/RIVER,
Then SINK/RISE is represented as a 0-dimensional basic feature object.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

If SINK/RISE is on a 2-dimensional STREAM/RIVER,
Then SINK/RISE is represented as a 1-dimensional basic feature object.

DATA EXTRACTION

Capture Conditions

If SINK/RISE is on STREAM/RIVER,
Then capture.

Attribute Information

Source Interpretation Guidelines

All

Do not capture indeterminate points where streams dissipate into the ground as SINK/RISE. These points are indicated by the end of the feature STREAM/RIVER.

Do not capture the point where streams enter into manmade features as SINK/RISE. These points are indicated by the end of the feature STREAM/RIVER.

Graphic

Revision - General

Revision - Standard

Revision - Limited

Do not revise. Retain existing features.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

SOUNDING DATUM LINE - A line representing the tidal datum to which bathymetric contours are referenced. NHDLine.

NHDLINE : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|---------------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| LengthKM | Length 8 |
| Ftype | Length 4 |
| FCode | Length 4 |
| Positional Accuracy | The accuracy within which a feature can be confidently positioned |
| Approximate | Conditions permit the feature to be confidently positioned between 0.02" and 0.1", at map scale, of its true ground position. |
| Definite | Conditions permit the feature to be confidently positioned. Horizontal data are confidently positioned within 0.02", at map scale, of the true ground position. Vertical data are confidently positioned within one-half contour interval of the true ground position |

DELINEATION

The limit of SOUNDING DATUM LINE is the line of mean lower low water.

DATA EXTRACTION

Capture Conditions

For a topographic/bathymetric edition only, if SOUNDING DATUM LINE is on the final Compilation provided to USGS by NOS,
Then capture.

Attribute Information

Source Interpretation Guidelines

All

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

If SOUNDING DATUM LINE is not symbolized on the source (as when the position of the line is indicated by the edge of the FORESHORE tint on graphic source, rather than by a unique line symbol), Then Positional Accuracy = Approximate.

Graphic

Revision – General

Revision – Standard

Revision – Limited

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

SPECIAL USE ZONE - An area where distinctive types of maritime activities occur. NHDArea.

NHDAREA : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|-----------------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| AreaSqK m | Length 8 |
| Elevation | Length 8 |
| FType | Length 4 |
| FCode | Length 4 |
| Operational Status | State or condition |
| Abandoned | Intact but not maintained or intended for use |
| Operational | Usable and intended for use |
| Special Use Zone Type | Function or purpose |
| Dump Site | For dumping of discarded materials |
| Spoil Area | For the disposal of material obtained by dredging |

DELINEATION

The limit of SPECIAL USE ZONE is the extent of the area used for distinctive activities.

DATA EXTRACTION

Capture Conditions

For a topographic/bathymetric edition only, if SPECIAL USE ZONE is on the final compilation
Provided to USGS by NOS,
Then capture.

Attribute Information

Source Interpretation Guidelines

All

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

If SPECIAL USE ZONE is within LAKE/POND, SEA/OCEAN, or STREAM/RIVER,
Then capture both SPECIAL USE ZONE and the other feature.

SPECIAL USE ZONE may coincide with FORESHORE, SWAMP/MARSH, or land
areas.

Islands in rows, and islands that do not match the pattern of islands in adjacent non-
SPECIAL USE ZONE areas should not be included in the SPECIAL USE ZONE.

Graphic

Revision – General

Revision – Standard

Revision – Limited

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

SPECIAL USE ZONE LIMIT - The limit of an area used for distinctive types of maritime activities. NHDLine.

NHDLINE : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|---------------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| LengthKM | Length 8 |
| Ftype | Length 4 |
| FCode | Length 4 |
| Positional Accuracy | The accuracy within which a feature can be confidently positioned |
| Definite | Conditions permit the feature to be confidently positioned. Horizontal data are confidently positioned within 0.02", at map scale, of the true ground position. Vertical data are confidently positioned within one-half contour interval of the true ground position |
| Indefinite | Conditions prevent the feature from being confidently positioned. Horizontal data cannot be confidently positioned within 0.02", at map scale, of the true ground position. Vertical data cannot be confidently positioned within one-half contour interval of the true ground position |

DELINEATION

The position of SPECIAL USE ZONE LIMIT is determined by the extent of SPECIAL USE ZONE.

DATA EXTRACTION

Capture Conditions

For a topographic/bathymetric edition only, if SPECIAL USE ZONE LIMIT is on the final Compilation provided to USGS by NOS,
Then capture.

Attribute Information

If SPECIAL USE ZONE LIMIT is indicated only by a change in fill patterns on the source,
Then Positional Accuracy = Indefinite.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

If SPECIAL USE ZONE LIMIT coincides with definite SHORELINE or definite SOUNDING
DATUM LINE,
Then Positional Accuracy = Definite.

Source Interpretation Guidelines

All

Graphic

Revision - General

Revision - Standard

Revision - Limited

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

SPILLWAY - A constructed passage for surplus water to run over or around a dam. NHDArea.

NHDAREA : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| AreaSqK m | Length 8 |
| Elevation | Length 8 |
| FType | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of SPILLWAY is the extent of the structure over which water flows.

DATA EXTRACTION

Capture Conditions

If SPILLWAY is constructed of masonry and is ≥ 0.02 " along the shortest axis,
Then capture.

Attribute Information

N/A

Source Interpretation Guidelines

All

If SPILLWAY is captured,
Then also capture NONEARTHEN SHORE along the edge of any adjacent water body.

Tunnel or closed-conduit spillways, including glory-holes and risers, are not captured as SPILLWAY. See WATER INTAKE/OUTFLOW or PIPELINE.

Do not capture overflow spillways as SPILLWAY. See DAM/WEIR.

Graphic

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

Revision - General

Revision - Standard

Revision - Limited

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

SPRING/SEEP - A place where water issues from the ground naturally. NHDPoint.

NHDPOINT: ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| ReachCode | Unique identifier composed of two parts. The first eight digits is the Subbasin Unit Code as defined by FIPS 103. The next six digits are randomly assigned, sequential numbers that are unique within a Subbasin. Length 14. |
| FType | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of SPRING/SEEP is the extent of the place where water issues from the ground.

DATA EXTRACTION

Capture Conditions

If SPRING/SEEP is in an arid region,
Or
If SPRING/SEEP is not in an arid region and is large or well known,
Or
If SPRING/SEEP is within an area of closely spaced springs and is necessary to accurately represent the pattern of springs (see Source Interpretation Guidelines to determine how to accurately represent the pattern),
Then capture.

Attribute Information

Source Interpretation Guidelines

All

If SPRING/SEEP is in an area of closely spaced springs,
Then first capture named SPRING/SEEPS, then those that are on the perimeter of the area, then those that are most prominent, then finally capture a representative pattern of SPRING/SEEPS internal to the area. Capture as many as can be shown in correct position. The symbols must not overlap.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

See Appendix 2A for location of arid regions.

Graphic

Revision - General

Revision - Standard

Revision - Limited

Do not revise. Retain existing features.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

STREAM/RIVER - A body of flowing water. NHDFlowline and NHDArea.

NHDFLOWLINE: ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|-----------------------|--|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996 Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| LengthKM | Length 8 |
| ReachCode | Unique identifier composed of two parts. The first eight digits is the Subbasin Unit Code as defined by FIPS 103. The next six digits are randomly assigned, sequential numbers that are unique within a Subbasin. |
| FlowDir | Direction of flow relative to coordinate order, Length 4 |
| WBAreaComID | Length 4 |
| FType | Length 4 |
| FCode | Length 4 |
| Hydrographic Category | Portion of the year the feature contains water |
| Intermittent | Contains water for only part of the year, but more than just after rainstorms and at snowmelt |
| Perennial | Contains water throughout the year, except for infrequent periods of severe drought |
| Ephemeral | Contains water only during or after a local rainstorm or heavy snowmelt. |

NHDAREA : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|--|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |

NHD Feature Catalog

Based on 1:24,000-scale USGS Topographic Map Content

| | |
|-----------|---|
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| AreaSqK m | Length 8 |
| Elevation | Length 8 |
| FType | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of a perennial STREAM/RIVER is the position of the shoreline when the water is at the stage that prevails for the greater part of the year.

The limit of an intermittent STREAM/RIVER is the position of the shoreline when the water is at the stage that prevails when the feature is at or near capacity.

The limit of an ephemeral STREAM/RIVER is the edge of the channel.

The upper limit of STREAM/RIVER is where the feature first becomes evident as a channel.

The limit of STREAM/RIVER where it enters or leaves LAKE/POND is determined by the conformation of the land.

The limit of STREAM/RIVER where it enters ESTUARY is based on the Tidal Fresh Zone from the NOAA Coastal Assessment Framework (CAF).

To accommodate variations in the shortest axis of STREAM/RIVER:

If shortest axis of STREAM/RIVER is:

< 0.025" but ≥ 0.01 " for a distance < 2.64", and is connected at both ends to a 2-dimensional STREAM/RIVER,
Then STREAM/RIVER is represented as a 2-dimensional basic feature object.

< 0.025" but ≥ 0.01 " for a distance ≥ 2.64 ", or < 0.01" regardless of distance, and is connected at both ends to a 2-dimensional STREAM/RIVER,
Then STREAM/RIVER is represented as a 1-dimensional basic feature object.

≥ 0.025 " but < 0.04" for a distance < 2.64", and is connected at both ends to a 1-dimensional STREAM/RIVER,
Then STREAM/RIVER is represented as a 1-dimensional basic feature object.

≥ 0.025 " but < 0.04" for a distance ≥ 2.64 ", or ≥ 0.04 " regardless of distance, and is connected at both ends to a 1-dimensional STREAM/RIVER,
Then STREAM/RIVER is represented as a 2-dimensional basic feature object.

DATA EXTRACTION

3/2009

Capture Conditions

If STREAM/RIVER flows from LAKE/POND or SPRING/SEEP,
Or
If STREAM/RIVER is ≥ 1.25 " along the longest axis,
Or
If STREAM/RIVER is perennial and is in an arid region,
Then capture.

Attribute Information

If the water level of STREAM/RIVER is controlled for navigation by DAM/WEIR or GATE with
Gate Type = Lock,
Then Elevation = (Integer Value),
Else Elevation = Not Applicable.

If STREAM/RIVER coincides with LOCK CHAMBER,
Then Elevation = Not Applicable.

If STREAM/RIVER is represented as a 2-dimensional basic feature object,
Then Positional Accuracy = Not Applicable.

Source Interpretation Guidelines

All

In arid areas it is difficult to distinguish between narrow intermittent and ephemeral drains and no distinction will be made. All drainages < 0.025 " are collected as 1-dimensional intermittent streams. Thin drainage in arid areas to appropriately represent the "wetness" of the area. Rules for thinning intermittent streams in arid areas will be documented as more information becomes available.

If a portion of STREAM/RIVER flows through SWAMP/MARSH,
Then select the appropriate Hydrographic Category according to the definitions given.

Do not capture areal dry washes, arroyos, dry gulches and ephemeral streams as STREAM/RIVER. See WASH.

The minimum size for islands within STREAM/RIVER is 0.03" along the shortest axis.

If a stream flows in a braided pattern,
Then see AREA OF COMPLEX CHANNELS.

Graphic

If STREAM/RIVER flows from SPRING/SEEP,
Then capture STREAM/RIVER starting at the center of SPRING/SEEP symbol.

Revision - General

If the headwaters of STREAM/RIVER are closer than 0.5" from a saddle or divide,

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

Then capture STREAM/RIVER starting 0.5" from the saddle or divide.

If image shows lower than average water level,
Then capture STREAM/RIVER at a normal pool or average water level by using
ancillary sources or evidence of water marks on images.

If image shows lower than average water level and the average water elevation or normal
pool elevation cannot be determined,
Then capture STREAM/RIVER at the visible edge of the water body.

If image shows higher than average water level,
Then capture STREAM/RIVER at a normal pool or average water level by using
ancillary sources.

If image shows higher than average water level and the average water elevation or normal
pool elevation cannot be determined,
Then capture STREAM/RIVER at the visible edge of the water body.

Revision – Standard

Revision – Limited

Do not add new features. Modify existing features only if there are obvious changes in
the stream channel.

Use ancillary source if Elevation is required.

Value Hydrographic Category by looking at the surrounding drainage.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

SUBMERGED STREAM - An old river course inundated by an impounded water body. NHDArea.

NHDAREA : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| AreaSqK m | Length 8 |
| Elevation | Length 8 |
| FType | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of SUBMERGED STREAM is the extent of the banks as previously mapped.

DATA EXTRACTION

Capture Conditions

If SUBMERGED STREAM is published as a double-line stream on previous mapping at the same or larger scale and the stream has since been submerged by an impounded lake or stream, Then capture.

Attribute Information

Source Interpretation Guidelines

All

SUBMERGED STREAM must be coincident with LAKE/POND. Therefore, SUBMERGED STREAM cannot be collected outside of the impounded water area. If SUBMERGED STREAM is captured, Then also capture LAKE/POND.

Graphic

Capture all.

If the dashed symbol ends within 0.01" of the limits of the impounded water area, Then delineate the area using the limits of the impounded water area.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

If the end of dashed symbol is greater than 0.01" from the limits of the impounded water area,
Then delineate the area by connecting the ends of the dashed outline with a straight line.

Revision - General

Revision - Standard

Revision - Limited

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

SWAMP/MARSH - A noncultivated, vegetated area that is inundated or saturated for a significant part of the year. The vegetation is adapted for life in saturated soil conditions. NHDWaterbody.

NHDWATERBODY : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|-----------------------|--|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| AreaSqK m | Length 8 |
| Elevation | The vertical distance from a given datum , Length 8 |
| ReachCode | Unique identifier composed of two parts. The first eight digits is the Subbasin Unit Code as defined by FIPS 103. The next six digits are randomly assigned, sequential numbers that are unique within a Subbasin. Length 14 |
| FType | Length 4 |
| FCode | Length 4 |
| Hydrographic Category | Portion of the year the feature contains water |
| Intermittent | Contains water for only part of the year, but more than just after rainstorms and at snowmelt |
| Perennial | Contains water throughout the year, except for infrequent periods of severe drought |

DELINEATION

The limit of SWAMP/MARSH is the extent of the wet, spongy area.

DATA EXTRACTION

Capture Conditions

If SWAMP/MARSH is ≥ 0.1 " along the shortest axis,
Then capture.

Attribute Information

Source Interpretation Guidelines

All

Break SWAMP/MARSH for RAILWAYS and for Class 1 and Class 2 ROADS.

Break SWAMP/MARSH for clearings that are $\geq 0.05''$ along the shortest axis, or for linear clearings that are $\geq 0.025''$ along the shortest axis.

Do not capture mangrove areas as SWAMP/MARSH, see TREES (Vegetative Surface Cover theme).

SWAMP/MARSH may be coincident with AREA OF COMPLEX CHANNELS, ESTUARY, LAKE/POND, SEA/OCEAN, STREAM/RIVER. An alternate approach is to use hydrographic category to describe the water regime of the SWAMP/MARSH.

Graphic

Capture as SWAMP/MARSH any areas filled with the marsh and swamp symbol.

Revision - General

Revision - Standard

Revision - Limited

Do not revise. Retain existing features.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

TUNNEL - An underground or underwater passage. NHDLine.

NHDLINE : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| LengthKM | Length 8 |
| Ftype | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of TUNNEL is the walls of and openings to the passage.

DATA EXTRACTION

Capture Conditions

If TUNNEL provides passage for a hydrographic feature,
Then capture.

Attribute Information

Source Interpretation Guidelines

All

If TUNNEL meets capture conditions and provides passage for another feature (CANAL/DITCH, PIPELINE with Product = Water),
Then capture both TUNNEL and the other feature.

If a tunnel does not meet capture conditions and carries another feature,
Then capture that feature, and if required, capture UNDERPASS to allow definition of the relationship between that feature and any other feature over or under which it passes.

If TUNNEL provides passage for ROAD or RAILWAY,
Then collect in the theme Transportation.

If there are two TUNNEL passages and the overall width is < 100 ft,
Or

If there are two TUNNEL passages and the separation between the passages is < 20 ft,
Then capture one instance of TUNNEL.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

Graphic

If TUNNEL is symbolized by a three line symbol,
Then capture as one instance of TUNNEL.

Water tunnels in Hawaii that are shown with the edit symbol are not captured as
TUNNEL. See WELL.

Revision – General

Revision - Standard

Revision - Limited

If the alignment of TUNNEL is unknown,
Then align TUNNEL in a straight line between openings.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

UNDERGROUND CONDUIT – Subsurface drainage channels formed from the dissolution of soluble rocks in Karst terrain or in terrain similar to karst but formed in nonsoluble rocks, as by melting of permafrost or ground ice, collapse after mining, and by outflow of liquid lava from beneath its solidified crust. NHDFlowline

NHDFLOWLINE: ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|---------------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| LengthKM | Length 8 |
| Ftype | Length 4 |
| FCode | Length 4 |
| Positional Accuracy | The accuracy within which a feature can be confidently positioned |
| Definite | Conditions permit the feature to be confidently positioned. Horizontal data are confidently positioned within 0.02" (40 feet at 1:24,000 scale), at map scale, of true ground position. |
| Indefinite | Conditions prevent the feature from being confidently positioned. Horizontal data cannot be confidently positioned within 0.02", at map scale, of the true ground position. |

DELINEATION

The limit of UNDERGROUND CONDUIT is the extent of the known underground channels.

DATA EXTRACTION

Capture Conditions

If subsurface flow in Karst areas is known, generally through the use of dye studies,
Then capture.

Attribute Information

Source Interpretation Guidelines

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

All

See <http://pubs.usgs.gov/sir/2008/5023/07weary.htm> for details on potential karst areas.

Graphic

Revision – General

Revision - Standard

Revision - Limited

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

WALL - An upright structure of masonry, wood, plaster, or other building material serving to enclose, divide, or protect an area. NHDLine.

NHDLINE : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| LengthKM | Length 8 |
| Ftype | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of WALL is the edge of the structure.

DATA EXTRACTION

Capture Conditions

If WALL is a seawall,
Or
If WALL is associated with a 2-dimensional LOCK CHAMBER and WALL has water on both sides,
Or
If WALL extends into a body of water and is not a pier/breakwater/jetty or seawall,
Then capture.

Attribute Information

Source Interpretation Guidelines

All

If WALL is not associated with a hydrographic feature,
Then capture in the Built-Up theme.

If the edge of LOCK CHAMBER separates water from land,
Then do not capture WALL. See NONEARTHEN SHORE or SHORELINE.

If DAM/WEIR, NONEARTHEN SHORE, PIER/BREAKWATER/JETTY, SHORELINE, or SPILLWAY is captured,

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

Then do not capture WALL.

If WALL meets capture conditions, and coincides 2-dimensional CANAL/DITCH,
Then capture both WALL and CANAL/DITCH.

Graphic

Revision – General

Revision - Standard

Revision - Limited

Do not revise. Retain only those WALLS associated with LOCK CHAMBER.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

WASH - The usually dry portion of a stream bed that contains water only during or after a local rainstorm or heavy snowmelt. NHDArea.

NHDAREA : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| AreaSqK m | Length 8 |
| Elevation | Length 8 |
| FType | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of WASH is the cut banks of the dry channel.

DATA EXTRACTION

Capture Conditions

If WASH is $\geq 0.025'$ along the shortest axis, and is $\geq 1.25'$ along the longest axis, and is greater than or equal to two times the width of any STREAM/RIVER within the WASH,
Then capture.

Attribute Information

Source Interpretation Guidelines

All

Capture the stream bed portion of the channel that contains water more than just during or after local rainstorms or heavy snowmelt as STREAM/RIVER.

If WASH contains STREAM/RIVER,
Then capture both.

If WASH is $< 0.025'$ along the shortest axis,
Then capture as STREAM/RIVER with Hydrographic Category = Intermittent, if capture Conditions for STREAM/RIVER are met.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

Graphic

If a wash is represented as a single brown line, or as a sand area that is too small to meet Capture conditions,
Then capture STREAM/RIVER with Hydrographic Category = Intermittent if capture conditions for STREAM/RIVER are met.

Revision - General

Revision - Standard

Revision - Limited

Do not add new features. Modify existing features only if there are obvious changes in the stream.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

WATER INTAKE/OUTFLOW - A structure through which water enters or exits a conduit. NHDPoint and NHDArea.

NHDPOINT: ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| ReachCode | Unique identifier composed of two parts. The first eight digits is the Subbasin Unit Code as defined by FIPS 103. The next six digits are randomly assigned, sequential numbers that are unique within a Subbasin. Length 14. |
| FType | Length 4 |
| FCode | Length 4 |

NHDAREA : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| AreaSqK m | Length 8 |
| Elevation | Length 8 |
| FType | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of WATER INTAKE/OUTFLOW is the extent of the structure.

DATA EXTRACTION

Capture Conditions

If WATER INTAKE/OUTFLOW is an intake structure and is exposed at surface,
Or
If WATER INTAKE/OUTFLOW is an outflow structure and is $\geq 0.04'$ along the shortest axis,
Then capture.

Attribute Information

Source Interpretation Guidelines

All

Structures that provide access to a WATER INTAKE/OUTFLOW will be captured as BRIDGE, unless there is supporting evidence that they are PIER/BREAKWATER/JETTY.

If an intake structure is a tower,
Then capture as TOWER with Tower Type = Water Intake.

Graphic

Revision – General

Revision - Standard

Revision – Limited

Do not revise. Delete existing features.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

WATERFALL - A vertical or near vertical descent of water over a step or ledge in the bed of a river. NHDPoint and NHDLine.

NHDPOINT: ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| ReachCode | Unique identifier composed of two parts. The first eight digits is the Subbasin Unit Code as defined by FIPS 103. The next six digits are randomly assigned, sequential numbers that are unique within a Subbasin. Length 14. |
| FType | Length 4 |
| FCode | Length 4 |

NHDLINE : ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
| FDate | Date of last feature modification |
| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| LengthKM | Length 8 |
| Ftype | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of **WATERFALL** is the extent of the vertical or nearly vertical descent, and the **SHORELINES**.

If **WATERFALL** is on a 1-dimensional **STREAM/RIVER**,
Then **WATERFALL** is represented as a 0-dimensional basic feature object.

If WATERFALL is on a 2-dimensional STREAM/RIVER,
Then WATERFALL is represented as a 1-dimensional basic feature object.

DATA EXTRACTION

Capture Conditions

If WATERFALL is named,
Or
If WATERFALL is on a perennial STREAM/RIVER and has a vertical drop ≥ 10 ft, and extends
From SHORELINE to SHORELINE,
Or
If WATERFALL is within an area of closely spaced waterfalls and is necessary to accurately
represent the pattern of waterfalls (see Source Interpretation Guidelines to determine how to
accurately represent the pattern),
Then capture.

Attribute Information

Source Interpretation Guidelines

All

If WATERFALL is within an area of closely spaced waterfalls,
Then first capture upstream WATERFALL, and then capture as many others as can be
shown in correct position. The symbols must not overlap.

Graphic

Capture all.

Names that contain the word "Falls" may indicate the feature RAPIDS. Careful
identification of the symbol will be required to accurately determine whether the feature
should be captured as WATERFALL or RAPIDS.

If WATERFALL is on a single-line STREAM/RIVER,
Then capture at intersection of tick and STREAM/RIVER.

If WATERFALL is shown by a tick on a double-line STREAM/RIVER,
Then capture by connecting the intersection of tick and SHORELINES.

If WATERFALL is shown by hachures on a double-line STREAM/RIVER,
Then capture by connecting the upstream limit of the hachures and SHORELINES.

An elevation at the top and/or bottom of WATERFALL is captured as SPOT
ELEVATION.

Revision - General

Revision - Standard

Revision - Limited

Do not revise. Retain existing features.

NHD Feature Catalog
Based on 1:24,000-scale USGS Topographic Map Content

WELL - A pit or hole dug or bored into the earth for the extraction of oil, water, other fluids, or gases. NHDPoint.

NHDPOINT: ATTRIBUTE/ATTRIBUTE VALUE LIST

| | |
|------------|---|
| ComID | Uniquely identifies the occurrence of each feature, Length 10 |
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| Resolution | Provides the source resolution of the feature instance, Length 4 |
| GNIS_ID | The unique identifier assigned by GNIS beginning in 1996, Length 10 |
| GNIS_Name | Proper name, specific term, or expression by which a particular geographic entity is known, Length 65 |
| ReachCode | Unique identifier composed of two parts. The first eight digits is the Subbasin Unit Code as defined by FIPS 103. The next six digits are randomly assigned, sequential numbers that are unique within a Subbasin. Length 14. |
| FType | Length 4 |
| FCode | Length 4 |

DELINEATION

The limit of WELL is the extent of the hole in the ground.

DATA EXTRACTION

Capture Conditions

If WELL is a water well and is landmark,
Or
If WELL is a water well, and is in an arid area, and is ≥ 0.25 " from a building,
Or
If WELL is a water well, and is in an arid agricultural area, and is used for irrigation,
Or
If WELL is a heat well,
Or
If WELL is a producing water well, and is within an area of closely spaced wells, and is necessary
To accurately represent the pattern of wells (see Source Interpretation Guidelines to determine
how to accurately represent the pattern),
Then capture.

Attribute Information

Source Interpretation Guidelines

All

NHD Feature Catalog

Based on 1:24,000-scale USGS Topographic Map Content

If WELL is within an area of closely spaced wells,
Then first capture named WELLS, then those that are on the perimeter of the area, then those that are most prominent, then finally capture a representative pattern of WELLS internal to the area. Capture as many as can be shown in correct position. The symbols must not overlap.

If WELL is associated with WINDMILL,
Then do not capture WELL. See WINDMILL.

Irrigation wells are often enclosed in a structure and are usually found in wide areas along or at the end of field roads. They may be evidenced by a wide wet collection area leading into a linear channel.

If WELL produces a product other than water or heat,
Then collect in the theme Built-up.

Do not capture dry wells.

Graphic

Water tunnels in Hawaii, shown with the adit symbol, are captured as WELL.

Revision - General

Revision - Standard

Revision - Limited

Do not revise. Retain existing features.