



# HYDROGRAPHY

## SPATIAL DATA STANDARD



*South Fork John Day River. Photo by Greg Shine, OR/WA BLM*

**DOCUMENT REVISIONS**

<b>Revision</b>	<b>Date</b>	<b>Author</b>	<b>Description</b>	<b>Affected Pages</b>
1.0	8/16/2018	Dana Baker-Allum, Shelley Moore, Jay Stevens	Initial Version	All

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# 1. GENERAL INFORMATION

Dataset (Theme) Name: HYDROGRAPHY

Dataset (Feature Classes): HYD\_FLOWLINE, HYD\_FLOWLINE\_DEL, HYD\_POINT, HYD\_POINT\_DEL, HYD\_POLY, HYD\_POLY\_DEL, HYD\_FISH\_TBL, LOCAL\_NAME\_ARC, LOCAL\_NAME\_POLY, LOCAL\_NAME\_PT, STRM\_CONTINUITY\_ARC, STRM\_PLANFLOW\_ARC, STRM\_VER\_ARC

## 1.1 ROLES AND RESPONSIBILITIES

Roles	Responsibilities
State Data Steward	The <a href="#">State Data Steward</a> is responsible for approving data standards and business rules, developing Quality Assurance/Quality Control procedures, identifying potential privacy issues, and ensuring that data is managed as a corporate resource. The State Data Steward coordinates with field office data stewards, the state data administrator, Geographic Information System (GIS) coordinators, and national data stewards. The State Data Steward also reviews geospatial metadata for completeness and quality.
GIS Technical Lead	The <a href="#">GIS Technical Lead</a> works with data stewards to convert business needs into GIS applications and derive data requirements and participates in the development of data standards. The GIS Technical Lead coordinates with system administrators and GIS coordinators to manage the GIS databases. The GIS Technical Lead works with data editors to make sure data is being input into the enterprise Spatial Database Engine (SDE) database consistently and in accordance with the established data standard. The GIS Technical Lead provides technical assistance and advice on GIS analysis, query and display of the dataset.
State Data Administrator	The <a href="#">State Data Administrator</a> provides information management leadership, data modeling expertise, and custodianship of the state data models. The State Data Administrator ensures that defined processes for development of data standards and metadata are followed, and that they are consistent and complete. The State Data Administrator is responsible for making data standards and metadata accessible to all users. The State Data Administrator also coordinates with data stewards and GIS coordinators to respond to national spatial data requests.
State Records Administrator	The <a href="#">State Records Administrator</a> assists the State Data Steward to identify any privacy issues related to spatial data. The State Records Administrator also provides direction and guidance on data release and fees. The State Records Administrator also ensures that data has been classified under the proper records retention schedule and determines appropriate Freedom of Information Act category.

**Table 1 Role and Responsibilities**

Current personnel assigned these Roles, can be found at the following link:

<https://www.blm.gov/about/data/oregon-data-management>

## 1.2 FOIA CATEGORY

Public

## 1.3 RECORDS RETENTION SCHEDULE

The DRS/GRS/BLM Combined Records Schedule under Schedule 20/52a3 (Electronic Records/Geographic Information Systems) lists this theme as one of the system-centric themes that are significant for BLM's mission that must be permanently retained.

"PERMANENT. Cutoff at the end of each Fiscal Year (FY), or, when significant changes and additions have been made, before and after the change. Use BLM 20/52a. Transfer to the National Archives every three years after cutoff. Under the instruction in 36 CFR 1235.44-50, or whichever guidance is in place at the time of the transfer. Submissions are full datasets and are in addition to, not replacements, of earlier submissions."

Oregon/Washington (OR/WA) Bureau of Land Management (BLM) Guidebook for Management of Geospatial Data (v1) Section 15.2 - Corporate Data Online Archives prescribes:

"Vector annual archives are retained online for 12 years. Each year, data that has reached 12 years old is copied off-line, to be retained until no longer needed (determined by data stewards and program leads), with format and readability maintained in a five (5) year "tech refresh" update cycle."

## 1.4 SECURITY/ACCESS/SENSITIVITY

The Hydrography set of themes do not require any additional security other than that provided by the General Support System (the hardware/software infrastructure of the Oregon/Washington (OR/WA) Bureau of Land Management (BLM)).

This dataset is not sensitive and there are no restrictions on access to this data from either within the BLM or external to the BLM. This dataset falls under the standard Records Access Category 1A-Public Data.

There are or no privacy issues or concerns associated with these data themes.

## 1.5 KEYWORDS

Keywords used to locate this dataset include:

- BLM Thesaurus Keywords: Hydrology
- ISO Thesaurus Keywords: environment, inlandWaters, oceans

- Additional Keywords: Hydrography

## 1.6 SUBJECT FUNCTION CODES

BLM Subject Function codes used to describe this dataset include:

1283 - Data Administration  
7000 – Soil, Water, and Air Management  
6720 – Aquatic Resource Management  
6762 – Stream Management  
9167 – Geography and Mapping

## 2. DATASET OVERVIEW

### 2.1 DESCRIPTION

The USGS National Hydrography dataset (NHD) is the designated dataset for tracking the water drainage network of the United States with features such as rivers, streams, canals, lakes, ponds, coastline, and springs. OR/WA BLM submits edits to all hydrography data to the NHD. This designation is established in OMB Circular A-16: <https://www.fgdc.gov/policyandplanning/a-16/index.html>.

The purpose of this dataset is to:

- Provide a temporary location for recording pending edits not yet implemented in the NHD.
- Provide datasets to record OR/WA BLM specific attributes that are not captured in the NHD data standard.
- Provide a publication dataset that combines NHD and BLM data into a usable format.

Dataset objects used for recording pending edits to the NHD:

- HYD\_FLOWLINE – Stores an accumulation of linear hydrography features that need to be added or modified in the USGS NHD Flowline dataset and or the OR/WA BLM event feature classes. Once edits have been completed, these temporary features will be removed from the dataset.
- HYD\_FLOWLINE\_DEL – Stores an accumulation of linear hydrography features that need to be removed from the USGS NHD Flowline dataset and/or the OR/WA BLM event feature classes. Once edits have been completed, these temporary features will be removed from the dataset.
- HYD\_POINT – Stores an accumulation of point hydrography features that need to be added or modified in the USGS NHD Point dataset and or the OR/WA BLM event feature classes. Once edits have been completed, these temporary features will be removed from the dataset.
- HYD\_POINT\_DEL – Stores an accumulation of point hydrography features that need to be removed from the USGS NHD Flowline dataset and/or the OR/WA BLM event feature classes. Once edits have been completed, these temporary features will be removed from the dataset.



- HYD\_POLY – Stores an accumulation of polygon hydrography features that need to be added or modified in the USGS NHD Area or Waterbody datasets and or the OR/WA BLM event feature classes. Once edits have been completed, these temporary features will be removed from the dataset.
- HYD\_POLY\_DEL – Stores an accumulation of polygon hydrography features that need to be removed from the USGS NHD Area or Waterbody datasets and/or the OR/WA BLM event feature classes. Once edits have been completed, these temporary features will be removed from the dataset.

Dataset objects used for recording OR/WA BLM specific attributes:

- LOCAL\_NAME\_ARC – Contains unofficial or local names for linear features, such as rivers.
- LOCAL\_NAME\_POLY – Contains unofficial or local names for polygon features, such as lakes.
- LOCAL\_NAME\_PT – Contains unofficial or local names for point features, such as springs.
- STRM\_CONTINUITY\_ARC - Linear hydrographic features that classify stream flow in relation to the expression of flow at the ground surface. The most common condition is that a stream is continuous in space. With respect to continuity, streams may be divided into continuous streams and interrupted streams. An interrupted stream is one that contains (a) perennial stretches with intervening intermittent or ephemeral stretches or (b) intermittent stretches with intervening ephemeral stretches. These two classes of interrupted streams are designated respectively, perennial interrupted streams and intermittent interrupted streams. A continuous stream is one that does not have interruptions in space. All streams are assumed continuous and only data is recorded in this dataset where it is NOT continuous.
- STRM\_PLANFLOW\_ARC – Contains legacy BLM flow data where the rules for determining flow were determined by resource management plan and may differ from the NHD rules for determining flow. This is a legacy dataset that will be retired as NHD periodicity data is updated as part of the LIDAR redelineation project.
- STRM\_VER\_ARC – Linear features that record when a stream was spatially verified in the field.
- HYD\_FISH\_TBL- A table that records fish presence by species for hydrography line and polygon features. A record in HYD\_FLOWLINE or HYD\_POLY may be related to many records in the HYD\_FISH\_TBL as a record is created in the fish table for each species associated with the hyd feature.

See [section 8](#) of this document for descriptions of the publication dataset objects.

## 2.2 USAGE

This dataset is used for planning, analysis, and cartography.

## 2.3 SPONSOR/AFFECTED PARTIES

The sponsor for this data set is the Deputy State Director for the Division of Resources, Lands, Mineral and Fire.

## 2.4 RELATIONSHIP TO OTHER DATASETS, DATABASES or FILES

All data in this dataset has a relationship to the USGS National Hydrography Dataset (NHD) high-resolution dataset. For more information about the NHD, see their website at <https://nhd.usgs.gov/>.

The following feature classes are used to store pending edits that need to be made to the NHD.

- HYD\_FLOWLINE
- HYD\_FLOWLINE\_DEL
- HYD\_POINT
- HYD\_POINT\_DEL
- HYD\_POLY
- HYD\_POLY\_DEL

Features in the following feature classes inherit their geometry and some attributes from the NHD. These feature classes are considered event feature classes and are referenced to the NHD using the Hydrography Event Management (HEM) Tools.

- LOCAL\_NAME\_ARC
- LOCAL\_NAME\_PT
- LOCAL\_NAME\_POLY
- STRM\_PLANFLOW\_ARC
- STRM\_CONTINUITY\_ARC
- STRM\_VER\_ARC

Features in the STRM\_CONTINUITY\_ARC and STRM\_VER\_ARC are related to the ODF Stream Location Points dataset. Field collected data in the Stream Location Points dataset can be used to update the data in these two feature classes.

Data recorded in the HYD\_FISH\_TBL are related to the ODF Fish Distribution dataset. New data entered into the HYD\_FISH\_TBL can be used to update the Fish Distribution data.

## 2.5 DATA CATEGORY/ARCHITECTURE LINK

These data themes are a portion of the Oregon Data Framework (ODF). The ODF utilizes the concept of inheritance to define specific instances of data. All OR/WA resource-related data are divided into three general categories: Activities, Resources, and Boundaries. These general categories are broken into sub-categories that inherit spatial characteristics and attributes from their parent category. These sub-categories may be further broken into more specific groups until the basic data set that cannot be further sub-divided. Those basic data sets inherit all characteristics of all groups/categories above them. The basic data sets are where physical data gets populated (those groups/categories above them do not contain actual data, but set parameters that all data of that type must follow). See the ODF Overview (figure 2) for a simplified schematic of the entire ODF showing the overall organization and entity inheritance. The Hydrography entities are highlighted. For additional information about the ODF, contact the [State Data Administrator](#). The State Data Administrator's contact information can be found at the following link:

<https://www.blm.gov/about/data/oregon-data-management>

In the ODF, Hydrography is considered a natural resource and categorized as follows:

ODF

Resources

Water

Hydrography

HYD\_FLOWLINE

HYD\_FLOWLINE\_DEL

HYD\_POINT

HYD\_POINT\_DEL

HYD\_POLY

HYD\_POLY\_DEL

HYD\_FISH\_TBL

LOCAL\_NAME\_ARC

LOCAL\_NAME\_PT

LOCAL\_NAME\_POLY

STRM\_CONTINUITY\_ARC

STRM\_PLANFLOW\_ARC

STRM\_VER\_ARC

Figure 1 provides a graphic representation of the entities and hierarchical relationships.

## **2.6 RELATIONSHIP TO THE DEPARTMENT OF THE INTERIOR ENTERPRISE ARCHITECTURE - DATA RESOURCE MODEL**

The Department of the Interior (DOI) Enterprise Architecture contains a component called the Data Resource Model. This model addresses the concepts of data sharing, data description, and data context. This data standard provides information needed to address each of those areas. Data sharing is addressed through complete documentation and simple data structures which make sharing easier. Data description is addressed through the section on Attribute Descriptions. Data context is addressed through the data organization and structure portions of this document. In addition, the DOI Data Resource Model categorizes data by use of standardized Data Subject Areas and Information Classes. For this data set, the Data Subject Area and Information Class are:

- Data Subject Area: Geospatial
- Information Class: Location

Remainder of page left intentionally blank.

## 2.7 HYDROGRAPHY DATA ORGANIZATION / STRUCTURE

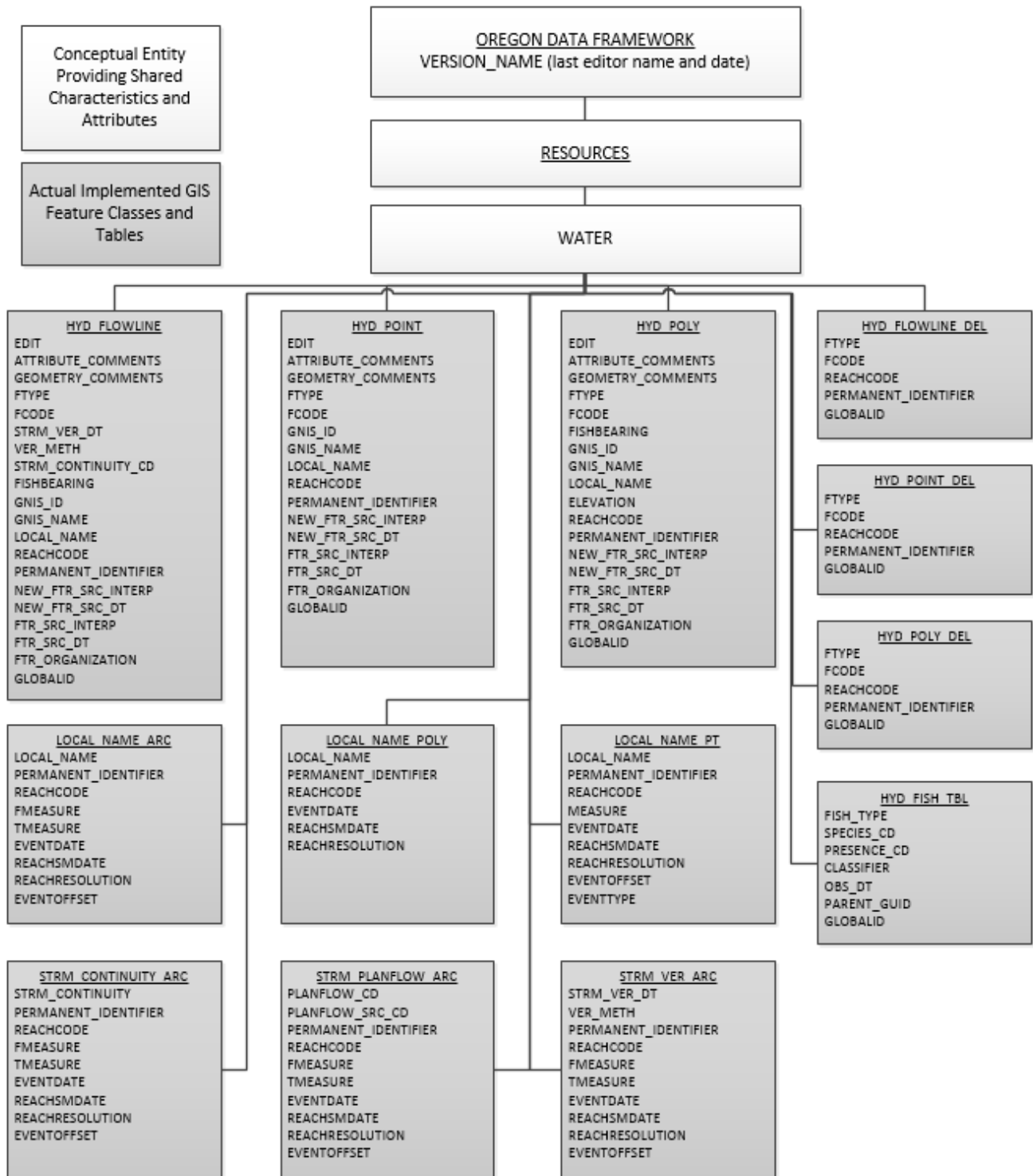


Figure 1 Data Organization Structure

### 3. DATA MANAGEMENT PROTOCOLS

#### 3.1 ACCURACY REQUIREMENTS

The NHD High Resolution dataset is mapped at a scale of 1:24,000 or better. On-going efforts to redelineate hydrography using LIDAR data will improve the accuracy and quality of the data over time.

Users are able to document when a line feature has been field verified in the STRM\_VER\_ARC feature class.

#### 3.2 COLLECTION, INPUT, AND MAINTENANCE PROTOCOLS

Data will be created, as needed, by natural resource and GIS staff using GIS software. Trained editors will use the BLM SDE Version Management tools to automatically load the correct editable layers to the user's map document and perform a wide range of valuable background processes to improve data integrity. The version check-in process leverages the Data Reviewer extension for ArcGIS.

Editors are required to edit the spatial features in the event feature classes using the Hydrography Event Management (HEM) tools. These feature classes include LOCAL\_NAME\_ARC, LOCAL\_NAME\_POLY, LOCAL\_NAME\_PT, STRM\_CONTINUITY\_ARC, STRM\_PLANFLOW\_ARC, and STRM\_VER\_ARC. These tools ensure that the features remain coincident with the NHD and that route identifier, start measure and end measure attributes are correctly maintained. Maintenance of the datasets using the HEM tools is critical to ensure the Hydro Publication datasets can be derived from this dataset.

Editors are required to edit the data in this dataset using the steps documented in the edit guide located at <http://teamspace/or/sites/aquatics/Pages/Training.aspx>. Tools are provided on the BLM Hyd Editing toolbar to assist with the edit process. Maintenance of the datasets using this process is important to ensure that State Office hydrography editors can easily transfer edits from the HYD layers to the USGS National Hydrography Dataset.

#### 3.3 UPDATE FREQUENCY AND ARCHIVAL PROTOCOLS

Data is updated as needed, but at least annually so that updates to the NHD performed by other agencies are reflected in the hydro publication dataset. In addition, it is archived annually at the end of the fiscal year.

#### 3.4 STATEWIDE MONITORING

Each year, the Resource Science Data team of the BLM Division of Resources Planning, Use, and Protection meets with the state data stewards for every corporate geospatial theme to conduct an annual review of the data. During the annual review, geospatial staff present the state data stewards with a report detailing QAQC results performed on the data. The QAQC checks include:

- All attribute values conform to the range or coded-value domains to which they are applied
- All attributes marked as required in the data standard have values
- Multipart polygons and polylines, if they are forbidden by the data standard

- Duplicate features which have the same geometry and attributes
- Overlapping features.
- Invalid geometry (such as self-intersections)
- Slivers
- Other checks, as necessary (can be customized according to the data standard)

In addition to this report, geospatial staff conduct a qualitative needs assessment with the data steward to identify any unmet needs or problems with the current status of the data. At the conclusion of the review, the team records the data steward's approval of the datasets reviewed. This approval is then added to the corporate metadata.

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#### 4. HYDROGRAPHY SCHEMA (simplified)

General Information: Attributes are listed in the order they appear in the geodatabase feature class. The order is an indication of the importance of the attribute for theme definition and use. There are no aliases unless specifically noted. The domains used in this data standard can be found in Appendix A. These are the domains at the time the data standard was approved. Domains can be changed without a re-issue of the data standard. Current domains are found on the internal OR/WA SharePoint data management page. Some of the domains used in this data standard are also available at the following web site: <https://www.blm.gov/about/data/oregon-data-management>

For additional information about the ODF, contact the [State Data Administrator](#). The State Data Administrator's contact information can be found at the following link: <https://www.blm.gov/about/data/oregon-data-management>.

##### 4.1 HYD\_FLOWLINE (Hydrography Flowline Arcs)

Attribute Name	Data Type	Length	Default Value	Required?	Domain
EDIT	String	10		Yes	<a href="#">dom_HYD_EDIT_TYPE</a>
ATTRIBUTE_COMMENTS	String	255		Cond	
GEOMETRY_COMMENTS	String	255		No	
FTYPE	Long Integer			Yes	<a href="#">dom_NHD_FTYPE_FLOWLINE</a>
FCODE	Long Integer			Yes	<a href="#">dom_NHD_FCODE_FLOWLINE</a>
STRM_VER_DT	Date			No	
STRM_CONTINUITY	String	20		No	<a href="#">dom_STRM_CONTINUITY</a>
FISHBEARING	String	3		No	<a href="#">dom_FISH_PRESENCE</a>
GNIS_ID	String	10		No	
GNIS_NAME	String	65		No	
LOCAL_NAME	String	50		No	
REACHCODE	String	14		No+	
PERMANENT_IDENTIFIER	String	40		No+	
NEW_FTR_SRC_INTERP	String	50		Cond	<a href="#">dom_HYD_FTR_SRC_INTERP</a>
NEW_FTR_SRC_DT	Date			Cond	
FTR_SRC_INTERP	String	255		No+	
FTR_SRC_DT	Date			No+	
FTR_ORGANIZATION	String	255		No+	
VERSION_NAME	String	50	InitialLoad	Yes*	
GLOBALID	GUID			Yes*	

\* Values automatically generated

\*\* Enforced during quality control

+ Values populated from hyd-pub if applicable

**4.2 HYD\_FLOWLINE\_DEL (Hydrography Flowline Delete Arcs)**

Attribute Name	Data Type	Length	Default Value	Required?	Domain
FTYPE	Long Integer			No	<a href="#">dom_NHD_FTYPE_FLOWLINE</a>
FCODE	Long Integer			No	<a href="#">dom_NHD_FCODE_FLOWLINE</a>
REACHCODE	String	14		No	
PERMANENT_IDENTIFIER	String	40		No	
VERSION_NAME	String	50	InitialLoad	Yes*	
GLOBALID	GUID			Yes*	

\* Values automatically generated

\*\* Enforced during quality control

**4.3 HYD\_POINT (Hydrography Points)**

Attribute Name	Data Type	Length	Default Value	Required?	Domain
EDIT	String	10		Yes	<a href="#">dom_HYD_EDIT_TYPE</a>
ATTRIBUTE_COMMENTS	String	255		Cond	
GEOMETRY_COMMENTS	String	255		No	
FTYPE	Long Integer			Yes	<a href="#">dom_NHD_FTYPE_POINT</a>
FCODE	Long Integer			Yes	<a href="#">dom_NHD_FCODE_POINT</a>
GNIS_ID	String	10		No	
GNIS_NAME	String	65		No	
LOCAL_NAME	String	50		No	
REACHCODE	String	14		No+	
PERMANENT_IDENTIFIER	String	40		No+	
NEW_FTR_SRC_INTERP	String	50		Cond	<a href="#">dom_HYD_FTR_SRC_INTERP</a>
NEW_FTR_SRC_DT	Date			Cond	
FTR_SRC_INTERP	String	255		No+	
FTR_SRC_DT	Date			No+	
FTR_ORGANIZATION	String	255		No+	
VERSION_NAME	String	50	InitialLoad	Yes*	
GLOBALID	GUID			Yes*	

\* Values automatically generated

\*\* Enforced during quality control

+Values populated from hyd-pub if applicable

**4.4 HYD\_POINT\_DEL (Hydrography Delete Points)**

Attribute Name	Data Type	Length	Default Value	Required?	Domain
FTYPE	Long Integer			No	<a href="#">dom_NHD_FTYPE_POINT</a>
FCODE	Long Integer			No	<a href="#">dom_NHD_FCODE_POINT</a>
REACHCODE	String	14		No	
PERMANENT_IDENTIFIER	String	40		No	
VERSION_NAME	String	50	InitialLoad	Yes*	



GLOBALID	GUID			Yes*	
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\* Values automatically generated

\*\* Enforced during quality control

#### 4.5 HYD\_POLY (Hydrography Polygons)

Attribute Name	Data Type	Length	Default Value	Required?	Domain
EDIT	String	10		Yes	<a href="#">dom HYD EDIT TYPE</a>
ATTRIBUTE_COMMENTS	String	255		Cond	
GEOMETRY_COMMENTS	String	255		No	
FTYPE	Long Integer			Yes	<a href="#">dom NHD FTYPE POLY</a>
FCODE	Long Integer			Yes	<a href="#">dom NHD FCODE POLY</a>
FISHBEARING	String	3		No	<a href="#">dom FISH PRESENCE</a>
GNIS_ID	String	10		No	
GNIS_NAME	String	65		No	
LOCAL_NAME	String	50		No	
ELEVATION	Double	8		No	
REACHCODE	String	14		No	
PERMANENT_IDENTIFIER	String	40		No	
NEW_FTR_SRC_INTERP	String	50		Cond	<a href="#">dom HYD FTR_SRC_INTERP</a>
NEW_FTR_SRC_DT	Date			Cond	
FTR_SRC_INTERP	String	255		No+	
FTR_SRC_DT	Date			No+	
FTR_ORGANIZATION	String	255		No+	
VERSION_NAME	String	50	InitialLoad	Yes*	
GLOBALID	GUID			Yes*	

\* Values automatically generated

\*\* Enforced during quality control

+Values populated from hyd-pub if applicable

#### 4.6 HYD\_POLY\_DEL (Hydrography Delete Polygons)

Attribute Name	Data Type	Length	Default Value	Required?	Domain
FTYPE	Long Integer			No	<a href="#">dom NHD FTYPE POLY</a>
FCODE	Long Integer			No	<a href="#">dom NHD FCODE POLY</a>
REACHCODE	String	14		No	
PERMANENT_IDENTIFIER	String	40		No	
VERSION_NAME	String	50	InitialLoad	Yes*	
GLOBALID	GUID			Yes*	

\* Values automatically generated

\*\* Enforced during quality control

#### 4.7 HYD\_FISH\_TBL (Hydrography Fish Table)

Attribute Name	Data Type	Length	Default Value	Required?	Domain
FISH_TYPE	Short		1	Yes	<a href="#">dom_FISH_TYPE</a>
SPECIES_CD	String	10		Yes	<a href="#">dom_FISH_ALL</a>
PRESENCE_CD	String	3		Yes	<a href="#">dom_FISH_PRESENCE</a>
CLASSIFIER	String	30		Yes	
OBS_DT	Date			No	
PARENT_GUID	GUID			Yes	
VERSION_NAME	String	50	InitialLoad	Yes*	
GLOBALID	GUID			Yes*	

\* Values automatically generated

\*\* Enforced during quality control

#### 4.8 LOCAL\_NAME\_ARC (Hydrography Local Name Lines)

Attribute Name	Data Type	Length	Default Value	Required?	Domain
LOCAL_NAME	String	50		Yes	
VERSION_NAME	String	50	InitialLoad	Yes*	
PERMANENT_IDENTIFIER	String	40		Yes***	
REACHCODE	String	14		Yes***	
FMEASURE	Double			Yes***	
TMEASURE	Double			Yes***	
EVENTDATE	Date			Yes***	
REACHSMDATE	Date			Yes***	
REACHRESOLUTION	Long Integer			Yes***	<a href="#">dom_NHD_RESOLUTION</a>
EVENTOFFSET	Double		0	Yes***	

\* Values automatically generated

\*\* Enforced during quality control

\*\*\*Values automatically assigned by the HEM tools

#### 4.9 LOCAL\_NAME\_POLY (Hydrography Local Name Polygons)

Attribute Name	Data Type	Length	Default Value	Required?	Domain
LOCAL_NAME	String	50		Yes	
VERSION_NAME	String	50	InitialLoad	Yes*	
PERMANENT_IDENTIFIER	String	40		Yes***	
REACHCODE	String	14		Yes***	
EVENTDATE	Date			Yes***	
REACHSMDATE	Date			Yes***	
REACHRESOLUTION	Long Integer			Yes***	<a href="#">dom_NHD_RESOLUTION</a>

\* Values automatically generated

\*\* Enforced during quality control

\*\*\*Values automatically assigned by the HEM tools

**4.10 LOCAL\_NAME\_PT (Hydrography Local Name Points)**

Attribute Name	Data Type	Length	Default Value	Required?	Domain
LOCAL_NAME	String	50		Yes	
VERSION_NAME	String	50	InitialLoad	Yes*	
PERMANENT_IDENTIFIER	String	40		Yes***	
REACHCODE	String	14		Yes***	
MEASURE	Double			Yes***	
EVENTDATE	Date			Yes***	
REACHSMDATE	Date			Yes***	
REACHRESOLUTION	Long Integer			Yes***	<a href="#">dom_NHD_RESOLUTION</a>
EVENTOFFSET	Double		0	Yes***	
EVENTTYPE	Long Integer			Yes***	

\* Values automatically generated

\*\* Enforced during quality control

\*\*\*Values automatically assigned by the HEM tools

**4.11 STRM\_CONTINUITY\_ARC (Stream Continuity Lines)**

Attribute Name	Data Type	Length	Default Value	Required?	Domain
STRM_CONTINUITY	String	20		Yes	<a href="#">dom_STRM_CONTINUITY</a>
VERSION_NAME	String	50	InitialLoad	Yes*	
PERMANENT_IDENTIFIER	String	40		Yes***	
REACHCODE	String	14		Yes***	
FMEASURE	Double			Yes***	
TMEASURE	Double			Yes***	
EVENTDATE	Date			Yes***	
REACHSMDATE	Date			Yes***	
REACHRESOLUTION	Long Integer			Yes***	<a href="#">dom_NHD_RESOLUTION</a>
EVENTOFFSET	Double		0	Yes***	

\* Values automatically generated

\*\* Enforced during quality control

\*\*\*Values automatically assigned by the HEM tools

**4.12 STRM\_PLANFLOW\_ARC (Stream Flow Metadata Lines)**

Attribute Name	Data Type	Length	Default Value	Required?	Domain
PLANFLOW_CD	String	1		Yes	<a href="#">dom_HYD_PLANFLOW</a>
PLANFLOW_SRC_CD	String	2		Yes	<a href="#">dom_HYD_PLANFLOW_SRC</a>
VERSION_NAME	String	50	InitialLoad	Yes*	
PERMANENT_IDENTIFIER	String	40		Yes***	
REACHCODE	String	14		Yes***	
FMEASURE	Double			Yes***	
TMEASURE	Double			Yes***	

EVENTDATE	Date			Yes***	
REACHSMDATE	Date			Yes***	
REACHRESOLUTION	Long Integer			Yes***	<a href="#">dom NHD RESOLUTION</a>
EVENTOFFSET	Double		0	Yes***	

- \* Values automatically generated
- \*\* Enforced during quality control
- \*\*\* Values automatically assigned by the HEM tools

**4.13 STRM\_VER\_ARC (Stream Verification Lines)**

Attribute Name	Data Type	Length	Default Value	Required?	Domain
STRM_VER_DT	Date			Yes	
VERSION_NAME	String	50	InitialLoad	Yes*	
PERMANENT_IDENTIFIER	String	40		Yes***	
REACHCODE	String	14		Yes***	
FMEASURE	Double			Yes***	
TMEASURE	Double			Yes***	
EVENTDATE	Date			Yes***	
REACHSMDATE	Date			Yes***	
REACHRESOLUTION	Long Integer			Yes***	<a href="#">dom NHD RESOLUTION</a>
EVENTOFFSET	Double		0	Yes***	

- \* Values automatically generated
- \*\* Enforced during quality control
- \*\*\* Values automatically assigned by the HEM tools

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## 5. PROJECTION AND SPATIAL EXTENT

All feature classes and feature datasets are in Geographic, North American Datum 83. Units are decimal degrees. Spatial extent (area of coverage) includes all lands managed by the BLM OR/WA, bordered on the North by Latitude 49.5, on the South by Latitude 41.5, on the East by Longitude -116 and on the West by Longitude -125.

## 6. SPATIAL ENTITY CHARACTERISTICS

### HYD\_FLOWLINE

Feature class alias:

Description: Instance of Water within the Resources group.

Geometry: Line

Topology: No topology enforced. However, overlapping features are not allowed.

Integration Requirements: None

### HYD\_FLOWLINE\_DEL

Feature class alias:

Description: Instance of Water within the Resources group.

Geometry: Line

Topology: No topology enforced. However, overlapping features are not allowed.

Integration Requirements: None

### HYD\_POINT

Feature class alias:

Description: Instance of Water within the Resources group.

Geometry: Point

Topology: No topology enforced. However, overlapping features are not allowed.

Integration Requirements: None

### HYD\_POINT\_DEL

Feature class alias:

Description: Instance of Water within the Resources group.

Geometry: Point

Topology: No topology enforced. However, overlapping features are not allowed.

Integration Requirements: None

### HYD\_POLY

Feature class alias:

Description: Instance of Water within the Resources group.

Geometry: Polygon

Topology: No topology enforced. However, overlapping features are not allowed.

Integration Requirements: None

### HYD\_POLY\_DEL

Feature class alias:

Description: Instance of Water within the Resources group.

Geometry: Polygon

Topology: No topology enforced. However, overlapping features are not allowed.

Integration Requirements: None

#### LOCAL\_NAME\_ARC

Feature class alias:

Description: Instance of Water within the Resources group.

Geometry: Line

Topology: No topology enforced. However, overlapping features are not allowed.

Integration Requirements: Features must overlap an NHD Flowline feature. Coincidence is maintained using the HEM Tools.

#### LOCAL\_NAME\_POLY

Feature class alias:

Description: Instance of Water within the Resources group.

Geometry: Polygon

Topology: No topology enforced. However, overlapping features are not allowed.

Integration Requirements: Features must overlap an NHD Waterbody feature. Coincidence is maintained using the HEM Tools.

#### LOCAL\_NAME\_PT

Feature class alias:

Description: Instance of Water within the Resources group.

Geometry: Line

Topology: No topology enforced. However, overlapping features are not allowed.

Integration Requirements: Features must overlap an NHD Point feature. Coincidence is maintained using the HEM Tools.

#### STRM\_CONTINUITY\_ARC

Feature class alias:

Description: Instance of Water within the Resources group.

Geometry: Line

Topology: No topology enforced. However, overlapping features are not allowed.

Integration Requirements: Features must overlap an NHD Flowline feature. Coincidence is maintained using the HEM Tools.

#### STRM\_PLANFLOW\_ARC

Feature class alias:

Description: Instance of Water within the Resources group.

Geometry: Line

Topology: No topology enforced. However, overlapping features are not allowed.

Integration Requirements: Features must overlap an NHD Flowline feature. Coincidence is maintained using the HEM Tools.

**STRM\_VER\_ARC**

Feature class alias:

Description: Instance of Water within the Resources group.

Geometry: Line

Topology: No topology enforced. However, overlapping features are not allowed.

Integration Requirements: Features must overlap an NHD Flowline feature. Coincidence is maintained using the HEM Tools.

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## 7. ATTRIBUTE CHARACTERISTICS AND DEFINITION (In alphabetical order)

### 7.1 ATTRIBUTE\_COMMENTS

Geodatabase Name	ATTRIBUTE_COMMENTS
BLM Structured Name	Hydrography_Attribute_Comments_Text
Alias Name	None
Inheritance	Not Inherited
Feature Class Use/Entity Table	HYD_FLOWLINE, HYD_POINT, HYD_POLY
Definition	Notes to help clarify attribute edits. List any fields requiring an attribute change. This field is required if attribute changes have been made to the record.
Required/Optional	Conditional
Domain (Valid Values)	No domain. Example: “Changed: ftr_source, ftr_Source_dt, ftr_interpretation”
Data Type	String (255)

### 7.2 EDIT

Geodatabase Name	EDIT
BLM Structured Name	Hydrography_Edit_Code
Alias Name	None
Inheritance	Not Inherited
Feature Class Use/Entity Table	HYD_FLOWLINE, HYD_POINT, HYD_POLY
Definition	Describes the edit action that needs to be applied to the NHD or hyd event.
Required/Optional	Required
Domain (Valid Values)	<a href="#">dom HYD EDIT TYPE</a>
Data Type	String (10)

### 7.3 ELEVATION

Geodatabase Name	ELEVATION
BLM Structured Name	Hydrography_Elevation_Number
Alias Name	None
Inheritance	Inherited from entity NHD
Feature Class Use/Entity Table	HYD_POLY
Definition	Elevation of the feature in meters.
Required/Optional	Optional



Domain (Valid Values)	No domain. Examples: 50, 100
Data Type	Double

**7.4 EVENTDATE**

Geodatabase Name	EVENTDATE
BLM Structured Name	National_Hydrography_Dataset_Event_Date
Alias Name	None
Inheritance	Inherited from entity NHD
Feature Class Use/Entity Table	LOCAL_NAME_ARC, LOCAL_NAME_POLY, LOCAL_NAME_PT, STRM_PLANFLOW_ARC, STRM_CONTINUITY_ARC, STRM_VER_ARC
Definition	The date the event record was created or last modified by the HEM tools. Inherited from the NHD data model. Auto-populated by the HEM tools.
Required/Optional	Required
Domain (Valid Values)	No domain. Examples: 5/1/2018, 12/30/2010
Data Type	Date

**7.5 EVENTOFFSET**

Geodatabase Name	EVENTOFFSET
BLM Structured Name	National_Hydrography_Dataset_Event_Offset_Number
Alias Name	None
Inheritance	Inherited from NHD
Feature Class Use/Entity Table	LOCAL_NAME_ARC, LOCAL_NAME_PT, STRM_PLANFLOW_ARC, STRM_CONTINUITY_ARC, STRM_VER_ARC
Definition	The distance from the stream network to be used to display the event. Negative offsets display the event to the left of the network and positive offsets display the event to the right of the line. Offsets are useful for displaying overlapping events. Inherited from the NHD data model.  The default value for this field is 0 (zero).
Required/Optional	Required
Domain (Valid Values)	No domain. Examples: 0, 1
Data Type	Double

**7.6 EVENTTYPE**

Geodatabase Name	EVENTTYPE
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BLM Structured Name	National_Hydrography_Dataset_Event_Type_Number
Alias Name	None
Inheritance	Inherited from NHD
Feature Class Use/Entity Table	LOCAL_NAME_PT
Definition	Type of entity in an event. Auto-populated by the HEM tools.
Required/Optional	Required
Domain (Valid Values)	No domain. Examples: 1
Data Type	Long Integer

### 7.7 FCODE

Geodatabase Name	FCODE
BLM Structured Name	National_Hydrography_Dataset_Feature_Code
Alias Name	None
Inheritance	Inherited from NHD
Feature Class Use/Entity Table	HYD_FLOWLINE, HYD_FLOWLINE_DEL, HYD_POINT, HYD_POINT_DEL, HYD_POLY, HYD_POLY_DEL
Definition	Five-digit integer value; comprised of the feature type and combinations of characteristics and values. The FCODE extends the FTYPE another three digits to further define features. For example for Stream/Rivers, the FTYPE 460 is extended to define the hydrography category (Perennial (46006), Intermittent (46003), and Ephemeral (46007)).
Required/Optional	Required
Domain (Valid Values)	<a href="#">dom_NHD_FCODE_FLOWLINE</a> <a href="#">dom_NHD_FCODE_POINT</a> <a href="#">dom_NHD_FCODE_POLY</a>
Data Type	Long Integer

### 7.8 FISH\_TYPE

Geodatabase Name	FISH_TYPE
BLM Structured Name	Fish_Type_Code
Alias Name	None
Inheritance	Inherited from entity FISH SAMPLE
Feature Class Use/Entity Table	HYD_FISH_TBL
Definition	The type of fish species being recorded. This is a subtype field and will determine which domain is used by the SPECIES_CD field.
Required/Optional	Required

Domain (Valid Values)	<a href="#">dom_FISH_TYPE</a>
Data Type	Short Integer

## 7.9 FISHBEARING

Geodatabase Name	FISHBEARING
BLM Structured Name	Hydrography_Fishbearing_Code
Alias Name	None
Inheritance	Not Inherited
Feature Class Use/Entity Table	HYD_FLOWLINE, HYD_POLY
Definition	<p>The overall presence of any species of native fish. This value is always set to the presence value most protective that exists in the data for that hydrography feature. The order of values is:</p> <ol style="list-style-type: none"> <li>1. Presence Verified (most protective)</li> <li>2. Presence Not Verified (second most protective)</li> <li>3. Absence Verified (least protective).</li> </ol> <p>Records are left null if there are no native fish data on the stream or waterbody.</p>
Required/Optional	Optional
Domain (Valid Values)	<a href="#">dom_FISH_PRESENCE</a>
Data Type	String (3)

## 7.10 FMEASURE

Geodatabase Name	FMEASURE
BLM Structured Name	National_Hydrography_Dataset_From_Measure_Number
Alias Name	None
Inheritance	Inherited from NHD
Feature Class Use/Entity Table	LOCAL_NAME_ARC, STRM_PLANFLOW_ARC, STRM_CONTINUITY_ARC, STRM_VER_ARC
Definition	<p>Measure along the NHD Flowline, in percent from downstream end, where the event feature begins (from). Values are rounded to five decimal places. Auto-populated by the HEM Tools.</p> <p>See the graphic below for an illustration of the measure fields.</p>

Required/Optional	Required
Domain (Valid Values)	No domain. Examples: “0”, “5.75415”
Data Type	Double

**7.11 FTR\_ORGANIZATION**

Geodatabase Name	FTR_ORGANIZATION
BLM Structured Name	National_Hydrography_Dataset_Feature_Organization_Code
Alias Name	None
Inheritance	Inherited from NHD
Feature Class Use/Entity Table	HYD_FLOWLINE, HYD_POINT, HYD_POLY
Definition	<p>The organization that compiled, entered, updated or deleted the hydrography data.</p> <p>This field is only populated when copying existing records from the Hyd Pub dataset that need to be updated. State Office editors will populate the NHD with the BLM resource area.</p>
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: “Washington State Department of Natural Resources”, “U.S. Forest Service - Wenatchee NF”
Data Type	String (255)

**7.12 FTR\_SRC\_DT**

Geodatabase Name	FTR_SOURCE_DT
BLM Structured Name	National_Hydrography_Dataset_Feature_Source_Date
Alias Name	None
Inheritance	Inherited from NHD

Feature Class Use/Entity Table	HYD_FLOWLINE, HYD_POINT, HYD_POLY
Definition	The compilation map or image source date used for the addition or update of hydrography watercourse data.  This field is only populated when copying existing records from the Hyd Pub dataset that need to be updated. Values for new or modified features should be recorded in the NEW_FTR_SRC_DT field.
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: 4/1/2018, 12/10/1999
Data Type	Date

### 7.13 FTR\_SRC\_INTERP

Geodatabase Name	FTR_SRC_INTERP
BLM Structured Name	National_Hydrography_Dataset_Feature_Source_Interpretation_Code
Alias Name	None
Inheritance	Inherited from NHD
Feature Class Use/Entity Table	HYD_FLOWLINE, HYD_POINT, HYD_POLY
Definition	The compilation map or image source and method used when adding or updating hydrography data.  This field is only populated when copying existing records from the Hyd Pub dataset that need to be updated. Values for new or modified features should be recorded in the NEW_FTR_SRC_INTERP field.
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: "Photogrammetric interpretation", "Unknown"
Data Type	String (255)

### 7.14 FTYPE

Geodatabase Name	FTYPE
BLM Structured Name	National_Hydrography_Dataset_Feature_Type_Code
Alias Name	None
Inheritance	Inherited from NHD
Feature Class Use/Entity Table	HYD_FLOWLINE, HYD_FLOWLINE_DEL, HYD_POINT, HYD_POINT_DEL, HYD_POLY, HYD_POLY_DEL
Definition	The FTYPE is a three-digit integer attribute used to classify hydrography features in the NHD and define subtypes. For example, FTYPE defines the feature as a Stream/River.

Required/Optional	Required
Domain (Valid Values)	<a href="#">dom_NHD_FTYPE_FLOWLINE</a> <a href="#">dom_NHD_FTYPE_POINT</a> <a href="#">dom_NHD_FTYPE_POLY</a>
Data Type	Long Integer

### 7.15 GEOMETRY\_COMMENTS

Geodatabase Name	GEOMETRY_COMMENTS
BLM Structured Name	Hydrography_Geometry_Comments_Text
Alias Name	None
Inheritance	Not Inherited
Feature Class Use/Entity Table	HYD_FLOWLINE, HYD_POINT, HYD_POLY
Definition	Notes to help clarify the geometry edit.
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: “Delete to inception point at road.”, “Delete to main trib”
Data Type	String (255)

### 7.16 GLOBALID

Geodatabase Name	GLOBALID
BLM Structured Name	Global_Identifier
Alias Name	None
Inheritance	Not Inherited
Feature Class Use/Entity Table	All feature classes and tables.
Definition	Unique identifier managed by the geodatabase.
Required/Optional	Required
Domain (Valid Values)	No domain. Example: “{E37EF156-4C20-4A78-A9BE-9EB4E6F00544}”
Data Type	GUID

### 7.17 GNIS\_ID

Geodatabase Name	GNIS_ID
BLM Structured Name	Geographic_Names_Information_System_Identifier
Alias Name	None
Inheritance	Inherited from NHD
Feature Class Use/Entity Table	HYD_FLOWLINE, HYD_POINT, HYD_POLY

Definition	Geographic Names Information System (GNIS) Feature Id. The USGS is the mandated source of this information. Not all features contained with the feature class will have GNIS names.
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: 01127106, 01154527
Data Type	String (10)


### 7.18 GNIS\_NAME

Geodatabase Name	GNIS_NAME
BLM Structured Name	Geographic_Names_Information_System_Name_Text
Alias Name	None
Inheritance	Inherited from NHD
Feature Class Use/Entity Table	HYD_FLOWLINE, HYD_POINT, HYD_POLY
Definition	Water feature name from Geographic Name Information System (GNIS). The name of the feature as represented within the GNIS. The USGS is the mandated source of this information. Not all features contained with the feature class will have GNIS names.
Required/Optional	Optional
Domain (Valid Values)	No domain. Examples: “Cedar Creek”, “Smith Creek”
Data Type	String (65)

### 7.19 LOCAL\_NAME

Geodatabase Name	LOCAL_NAME
BLM Structured Name	Hydrography_Local_Name_Text
Alias Name	None
Inheritance	Not Inherited
Feature Class Use/Entity Table	HYD_FLOWLINE, HYD_POINT, HYD_POLY, LOCAL_NAME_ARC, LOCAL_NAME_PT, LOCAL_NAME_POLY
Definition	The unofficial or local name for a feature.  This is a required attribute in the LOCAL_NAME_ARC, LOCAL_NAME_POLY, and LOCAL_NAME_PT feature classes. This is an optional attribute in the HYD_FLOWLINE, HYD_POINT, and HYD_POLY feature classes.
Required/Optional	Conditional
Domain (Valid Values)	No domain. Examples: “Warner Lake”, “Mosby Creek”, “Mohawk River Trib*”
Data Type	String (50)

### 7.20 MEASURE

Geodatabase Name	MEASURE
BLM Structured Name	National_Hydrography_Dataset_Measure_Number
Alias Name	None
Inheritance	Inherited from NHD
Feature Class Use/Entity Table	LOCAL_NAME_PT
Definition	<p>Measure along the NHD Flowline, in percent from downstream end, where the event feature occurs. Values are rounded to five decimal places. See the graphic below for an illustration of the measure fields.</p> 
Required/Optional	Required
Domain (Valid Values)	No domain. Examples: “0”, “5.75415”
Data Type	Double

### 7.21 NEW\_FTR\_SRC\_DT

Geodatabase Name	NEW_FTR_SOURCE_DT
BLM Structured Name	National_Hydrography_Dataset_New_Feature_Source_Date
Alias Name	None
Inheritance	Inherited from NHD
Feature Class Use/Entity Table	HYD_FLOWLINE, HYD_POINT, HYD_POLY
Definition	The compilation map or image source date used for the addition or update of hydrography watercourse data.



	This field is required for new or modified features.
Required/Optional	Conditional
Domain (Valid Values)	No domain. Examples: 4/1/2018, 12/10/1999
Data Type	Date

### 7.22 NEW\_FTR\_SRC\_INTERP

Geodatabase Name	NEW_FTR_SRC_INTERP
BLM Structured Name	National_Hydrography_Dataset_New_Feature_Source_Interpretation_Code
Alias Name	None
Inheritance	Inherited from NHD
Feature Class Use/Entity Table	HYD_FLOWLINE, HYD_POINT, HYD_POLY
Definition	The compilation map or image source and method used when adding or updating hydrography data.  This field is required for new or modified features.
Required/Optional	Conditional
Domain (Valid Values)	<a href="#">dom HYD_FTR_SRC_INTERP</a>
Data Type	String (50)

### 7.23 OBS\_DT

Geodatabase Name	FISH_DT
BLM Structured Name	Fish_Distribution_Observation_Date
Alias Name	None
Inheritance	Inherited from entity FISH_DISTRIBUTION
Feature Class Use/Entity Table	HYD_FISH_TBL
Definition	The date the information was collected. For values that can only be described to the month, enter MM/01/YYYY. For values that can only be described to the year, enter 01/01/YYYY.
Required/Optional	Required
Domain (Valid Values)	No domain. Example: 5/1/2017
Data Type	Date

### 7.24 PARENT\_GUID

Geodatabase Name	PARENT_GUID
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BLM Structured Name	Hydrography_Parent_Global_Identifier
Alias Name	None
Inheritance	Not Inherited
Feature Class Use/Entity Table	HYD_FISH_TBL
Definition	Field that links the Fish table record to the parent hydrography feature.
Required/Optional	Required
Domain (Valid Values)	No domain. Example: “{E37EF156-4C20-4A78-A9BE-9EB4E6F00544}”
Data Type	GUID

### 7.25 PERMANENT\_IDENTIFIER

Geodatabase Name	PERMANENT_IDENTIFIER
BLM Structured Name	National_Hydrography_Permanent_Global_Unique_Identifier
Alias Name	None
Inheritance	Inherited from NHD
Feature Class Use/Entity Table	All feature classes
Definition	40-char GUID value that uniquely identifies the occurrence of each NHD feature. Inherited from the NHD data model. This field may not be unique in the hyd pub dataset due to the process used to overlay events.
Required/Optional	Varies by dataset
Domain (Valid Values)	No domain. Example: “{E37EF156-4C20-4A78-A9BE-9EB4E6F00544}”
Data Type	String (40)

### 7.26 PLANFLOW\_CD

Geodatabase Name	PLANFLOW_CD
BLM Structured Name	Hydrography_Plan_Flow_Code
Alias Name	None
Inheritance	Not Inherited
Feature Class Use/Entity Table	STRM_PLANFLOW_ARC
Definition	Contains legacy BLM flow codes where the rules for determining flow were determined by resource management plan and may differ from the NHD rules for determining flow. This is a legacy data that will be retired as NHD periodicity data is updated as part of the LIDAR redelineation project.
Required/Optional	Required
Domain (Valid Values)	<a href="#">dom HYD PLANFLOW</a>

Data Type	String (1)
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**7.27 PLANFLOW\_SRC\_CD**

Geodatabase Name	PLANFLOW_SRC_CD
BLM Structured Name	Hydrography_Plan_Flow_Source_Code
Alias Name	None
Inheritance	Not Inherited
Feature Class Use/Entity Table	STRM_PLANFLOW_ARC
Definition	The source data that was used to determine the Plan Flow code.
Required/Optional	Required
Domain (Valid Values)	<a href="#">dom_HYD_PLANFLOW_SRC</a>
Data Type	String (3)

**7.28 PRESENCE\_CD**

Geodatabase Name	PRESENCE_CD
BLM Structured Name	Fish_Distribution_Presence_Code
Alias Name	None
Inheritance	Inherited from Fish Distribution
Feature Class Use/Entity Table	HYD_FISH_TBL
Definition	Indicates if the fish species is present or absent at the sampling point.
Required/Optional	Required
Domain (Valid Values)	<a href="#">dom_FISH_PRESENCE</a>
Data Type	String (3)

**7.29 REACHCODE**

Geodatabase Name	REACHCODE
BLM Structured Name	National_Hydrography_Dataset_Reach_Code
Alias Name	None
Inheritance	Inherited from NHD
Feature Class Use/Entity Table	All feature classes
Definition	NHD features have a reach code assigned to them when they are created. On the NHD Flowline dataset, the reach code serves as a route system identifier. One or more Flowlines may be assigned to the same reach/route.

	<p>For hyd edit feature classes, the reach code is populated with a value if the feature exists in the NHD. This includes HYD_FLOWLINE, HYD_FLOWLINE_DEL, HYD_POINT, HYD_POINT_DEL, HYD_POLY, and HYD_POLY_DEL. This field is optional in these datasets because the edit feature may not yet exist in the NHD. Editors should not enter a value into this field.</p> <p>For point, line, or polygon event feature classes, the reach code for the underlying NHD feature is assigned to the record. This includes LOCAL_NAME_ARC, LOCAL_NAME_PT, LOCAL_NAME_POLY, STRM_CONTINUITY_ARC, STRM_PLANFLOW_ARC, and STRM_VER_ARC. This field is required in these datasets because an event cannot be created that does not reference an NHD feature.</p>
Required/Optional	Conditional
Domain (Valid Values)	No domain. Examples: “17100311007609”, “17100306002623”
Data Type	String (14)

### 7.30 REACHRESOLUTION

Geodatabase Name	REACHRESOLUTION
BLM Structured Name	National_Hydrography_Dataset_Reach_Resolution_Code
Alias Name	None
Inheritance	Inherited from NHD
Feature Class Use/Entity Table	LOCAL_NAME_ARC, LOCAL_NAME_POLY, LOCAL_NAME_PT, STRM_CONTINUITY_ARC, STRM_PLANFLOW_ARC, STRM_VER_ARC
Definition	Code to indicate the resolution of the source NHD feature. Auto-populated by the HEM Tools.
Required/Optional	Required
Domain (Valid Values)	<a href="#">dom_NHD_RESOLUTION</a>
Data Type	Long Integer

### 7.31 REACHSMDATE

Geodatabase Name	REACHSMDATE
BLM Structured Name	National_Hydrography_Dataset_Reach_Spatial_Modification_Date
Alias Name	None
Inheritance	Inherited from NHD

Feature Class Use/Entity Table	LOCAL_NAME_ARC, LOCAL_NAME_POLY, LOCAL_NAME_PT, STRM_CONTINUITY_ARC, STRM_PLANFLOW_ARC, STRM_VER_ARC
Definition	The version date tracks the last time that the NHD feature represented by ReachCode experienced a change in geometry. When the ReachSMDate in the event record and the ReachSMDate in the NHDReachCode_ComID table disagree, the position of the event along the network may need to be updated. Auto-populated by the HEM Tools.
Required/Optional	Required
Domain (Valid Values)	No domain. Examples: 5/1/2010, 12/31/2017
Data Type	Date

### 7.32 SPECIES\_CD

Geodatabase Name	SPECIES_CD
BLM Structured Name	Fish_Distribution_Species_Code
Alias Name	None
Inheritance	Inherited from Fish Distribution
Feature Class Use/Entity Table	HYD_FISH_TBL
Definition	The code for the fish species associated with the record. The value in the subtype field FISH_TYPE, determines which domain is available to the user during editing.
Required/Optional	Required
Domain (Valid Values)	<a href="#">dom FISH ALL</a> <a href="#">dom FISH ANADROMOUS</a> <a href="#">dom FISH NONNATIVE</a> <a href="#">dom FISH RESIDENT</a>
Data Type	String (10)

### 7.33 STRM\_CONTINUITY

Geodatabase Name	STRM_CONTINUITY
BLM Structured Name	Stream_Continuity_Code
Alias Name	None
Inheritance	Inherited from entity Stream Location Points
Feature Class Use/Entity Table	STRM_CONTINUITY_ARC
Definition	Captures the spatial expression of a stream channel. A stream channel can be either continuous or interrupted. Continuous channels are well-defined throughout the reach; interrupted channels have portions where a defined channel is not evident. Although continuity can change on the microscale


	<p>(feet), the continuity of a channel is determined by the dominant or most representative expression in the reach (usually tens or hundreds of feet).</p> <p>In a continuous perennial stream, a majority of the stream flows at or above the stream bed. In a continuous intermittent stream, a majority of the stream expresses channel characteristics (evidence of flow and/or deposition) on the stream bed. Water, or evidence of water, may be found flowing or in pools. Continuous flow in a reach may go subsurface for short distances at certain times of the year.</p> <p>The majority of an interrupted stream is expressed beneath the ground's surface. Perennial or intermittent flow, if spatially interrupted, is nearly or entirely subsurface. Evidence of scour and/or deposition is nearly or entirely absent. Headwater streams with dramatic changes in gradient (high to low) or highly permeable substrate can flow subsurface and reappear downstream when the gradient increases again or ground water surfaces. Channels with well-defined beds and banks, and bed-forms showing annual scour or deposition may not be present in areas of spatial interruption, but these areas connect defined upstream and downstream channels. Spatial interruption can be caused by both natural and artificial disruptions.</p>
Required/Optional	Required
Domain (Valid Values)	<a href="#">dom_STRM_CONTINUITY</a>
Data Type	String (20)

### 7.34 STRM\_VER\_DT

Geodatabase Name	STRM_VER_DT
BLM Structured Name	Hydrography_Stream_Verification_Date
Alias Name	None
Inheritance	Not Inherited
Feature Class Use/Entity Table	HYD_FLOWLINE, STRM_VER_ARC
Definition	The date a hydrological stream characteristic, included spatial extent, was verified. This field is optional data entry in HYD_FLOWLINE and required data entry in STRM_VER_ARC.
Required/Optional	Conditional
Domain (Valid Values)	No domain. Examples: 1/29/2018, 12/6/2017
Data Type	Date

### 7.35 TMEASURE

Geodatabase Name	TMEASURE
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BLM Structured Name	National_Hydrography_Dataset_To_Measure_Number
Alias Name	None
Inheritance	Inherited from NHD
Feature Class Use/Entity Table	LOCAL_NAME_ARC, STRM_CONTINUITY_ARC, STRM_PLANFLOW_ARC, STRM_VER_ARC
Definition	<p>The Measure along the NHD Flowline, in percent from downstream end, where the event line feature ends (to). Values are rounded to five decimal places. Auto-populated by the HEM Tools. See the graphic below for an illustration of the measure fields.</p> 
Required/Optional	Required
Domain (Valid Values)	No domain. Examples: "100", "29.73511"
Data Type	Double

**7.36 VERSION\_NAME**

Geodatabase Name	VERSION_NAME
BLM Structured Name	Geodatabase_Version_Text
Alias Name	None
Inheritance	Inherited from Entity ODF
Feature Class Use/Entity Table	All feature classes and tables
Definition	<p>Name of the corporate geodatabase version previously used to edit the record.</p> <p>InitialLoad = feature has not been edited in ArcSDE.</p> <p>Format: username.XXX-mmddy-hhmmss = version name of last edit (hours might be a single digit; leading zeros are trimmed for hours only).</p>

	XXX=theme abbreviation.  Example: sfrazier.FIRE_POLY-121210-111034 Only appears in the transactional (edit) version. Public version (which is also the version used internally for mapping or analysis) does not contain this attribute.
Required/Optional	Required (automatically generated)
Domain (Valid Values)	No domain
Data Type	String (50)

Remainder of page left intentionally blank.



## 8. PUBLICATION VIEWS

### 8.1 PUBLICATION DATASET PROCESS

The Bureau of Land Management (BLM) Oregon State Office produces the Hydrography Publication Dataset (Hyd Pub) for use in planning, analysis, and cartography. The most commonly used attributes from multiple data sources are brought together in this dataset to simplify access to information associated with hydrographic features. The USGS National Hydrography Dataset (NHD) contributes basic feature information including feature geometry, feature-type, hydrographic category, and feature-level metadata. BLM's aquatic datasets provide BLM-stewarded data used in planning. These BLM attributes include such attributes as flow information, fish presence/absence, and local names. The dataset and production process is designed to accommodate frequent refresh to reflect updates to the source datasets.

The Hydrography Publication production process begins with NHD data as the source for base geometry, route system, and feature attributes. Linear event tables are queried and prepared for event overlay. Species-specific fish are processed to bring most recent events forward where overlapping events occur. All the event tables are combined through the process of event overlay to bring all attributes in to one event table. The combined event table is coupled with the NHD route system to write out segments of stream geometry for each unique combination of attributes. Feature-level metadata information is derived/calculated from NHD metadata and source citation tables. Hydrographic category is derived from NHD Fcodes. One of the last steps of the publication process is to remove features, based on the reach code, from the Hydrography Publication Dataset that appear in the Hydrography delete feature classes (HYD\_FLOWLINE\_DEL, HYD\_POINT\_DEL, HYD\_POLY\_DEL). Then new or modified features in the add feature classes (HYD\_FLOWLINE, HYD\_POINT, HYD\_POLY) are appended to the Hydro Publication Dataset. For individual subbasin files, a topology is then built to show overlapping segments.

This publication format is intended to improve the usability of the High Resolution NHD and aquatic data by combining attributes from both sources into one dataset with a simplified structure. The publication format includes the most commonly used attribute information.

The publication dataset will now be refreshed on an as-needed basis by individual subbasin. This will allow the dataset to be kept more up-to-date (the last version required a whole-state refresh that could only be run a couple times a year). Both formats (individual sub-basins with species-specific fish and seamless without species-specific fish) will have subbasins refreshed as-needed in response to edits in aquatic attributes and the NHD.

### 8.2 PUBLICATION DATASET STRUCTURE

#### **HYD\_PUB\_AREA**

This dataset contains area features from the US Geologic Survey (USGS) High Resolution National Hydrography Dataset (NHD). NHD Area features show polygon representations of oceans, rivers, rapids, etc. Additional attributes have been added from OR/WA BLM aquatic datasets. This data will be refreshed as-needed to reflect updates to the source data.

Attribute Name	Source	Comments
PERMANENT_IDENTIFIER	NHD	Pending features will have the permanent identifier for the modified features. For new features, the field will be empty.
GNIS_ID	NHD	
GNIS_NAME	NHD	
ELEVATION	NHD	
FTYPE	NHD	
FCODE	NHD	
NHD_FLOW	Derived	Derived field to give easy access to a periodicity attribute based on an interpretation of the NHD FCODES.
FTR_ORGANIZATION	NHD	
FTR_SOURCE_INTERP	NHD	
FTR_SOURCE_DT	NHD	
PUB_DATE	Derived	The date when the dataset was generated. May vary over the extent of the dataset.
SUBBASIN	Derived	The 8 digit hydrologic unit number that the data is contained in.
EDIT_PENDING	Derived	Yes/No field to indicate that the publication feature contains pending geometry or attribute edits that have not yet been made to the NHD data or the event feature classes.

### HYD\_PUB\_FLOWLINE

This dataset contains flowline features from the US Geologic Survey (USGS) High Resolution National Hydrography Dataset (NHD). NHD Flowline features are linear depictions of streams and centerlines of rivers. Additional attributes have been added from OR/WA BLM aquatic datasets. The statewide version of this dataset does not include species-specific fish distribution information. Species-specific fish data is only included on the individual subbasin distributions of the data. This data will be refreshed as-needed to reflect updates to the source data. Warning: pending features may not have the correct flow direction applied to the arcs.

Attribute Name	Source	Comments
REACHCODE	NHD	Pending features will have the reach code for the modified features. For new features, the field will be empty.
FMEASURE	NHD	Pending features (features not yet edited in the NHD) will have a blank FMEASURE.
TMEASURE	NHD	Pending features (features not yet edited in the NHD) will have a blank TMEASURE.
PERMANENT_IDENTIFIER	NHD	Pending features will have the permanent identifier for the modified features. For new features, the field will be empty.
FTYPE	NHD	

FCODE	NHD	
GNIS_ID	NHD	
GNIS_NAME	NHD	
LOCAL_NAME	LOCAL_NAME_ARC	
NHD_FLOW	Derived	Water feature periodicity code. This is a classification for water features in terms of seasonal behavior. Derived from the NHD FCODE value.
PLANFLOW	STRM_PLANFLOW_ARC	If there is no plan flow data for a stream, this field is populated with NHD periodicity information.
FISHBEARING	Derived	This data is derived from the ODF Fish Distribution Anadromous and Resident linear data. A process is run that lifts the highest fish presence from coincident data. For example, if there are two spatially coincident Fish Distribution records one with presence "Presence Verified" and one with presence "Present Not Verified", the derived Fishbearing value will be "Presence Verified." When deriving the fish-bearing attribute, non-native data is not considered.
STRM_CONTINUITY	STRM_CONTINUITY_ARC	Flowlines with an FType of Stream/River or Artificial Path are assigned a Continuity code of 'Continuous' by default, unless otherwise designated in the STRM_CONTINUITY_ARC feature class.
STREAMORDER	Derived	A dimensionless measure of the position of a stream in the hierarchy of tributaries. This attribute is calculated using data from the NHD Flow table and the Stahler process. See paper: <a href="https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1752-1688.2004.tb01057.x">https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1752-1688.2004.tb01057.x</a> for more information. Stream order is recalculated by subbasin each time new data is downloaded from NHD.
STRM_VER_DT	STRM_VER_ARC	
WBAREA_PERMANENT_ID	NHD	
FTR_ORGANIZATION	NHD	
FTR_SOURCE_INTERP	NHD	
FTR_SOURCE_DT	NHD	
PUB_DATE	Derived	The date when the dataset was generated. May vary over the extent of the dataset.
SUBBASIN	Derived	The 8 digit hydrologic unit number that the data is contained in.

EDIT_PENDING	Derived	Yes/No field to indicate that the publication feature contains pending geometry or attribute edits that have not yet been made to the NHD data or the event feature classes.
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### HYD\_PUB\_FLOWLINE\_FISH

This dataset contains all of the same attributes as HYD\_PUB\_FLOWLINE and also includes a column for each fish species that appears in the Fish Distribution datasets. Only those features that have fish distribution data are included in this dataset.

### HYD\_PUB\_POINT

This dataset contains point features from the US Geologic Survey (USGS) High Resolution National Hydrography Dataset (NHD). NHD point features include springs, seeps, wells, etc. Additional attributes have been added from OR/WA BLM aquatic datasets. This data will be refreshed as-needed to reflect updates to the source data.

Attribute Name	Source	Comments
PERMANENT_IDENTIFIER	NHD	Pending features will have the permanent identifier for the modified features. For new features, the field will be empty.
GNIS_ID	NHD	
GNIS_NAME	NHD	
LOCAL_NAME	LOCAL_NAME_PT	
REACHCODE	NHD	Pending features will have the reach code for the modified features. For new features, the field will be empty.
FTYPE	NHD	
FCODE	NHD	
NHD_FLOW	Derived	Water feature periodicity code. This is a classification for water features in terms of seasonal behavior. Derived from the NHD FCODE value.
FTR_ORGANIZATION	NHD	
FTR_SOURCE_INTERP	NHD	
FTR_SOURCE_DT	NHD	
PUB_DATE	Derived	The date when the dataset was generated. May vary over the extent of the dataset.
SUBBASIN	Derived	The 8 digit hydrologic unit number that the data is contained in.
EDIT_PENDING	Derived	Yes/No field to indicate that the publication feature contains pending geometry or attribute edits that have not yet been made to the NHD data or the event feature classes.

**HYD\_PUB\_WATERBODY**

This dataset contains waterbody features from the US Geologic Survey (USGS) High Resolution National Hydrography Dataset (NHD). NHD waterbody features include polygons depicting Lake/Ponds, swamp/marsh, estuaries, etc. Additional attributes have been added from OR/WA BLM aquatic datasets. This data will be refreshed as-needed to reflect updates to the source data.

Attribute Name	Source	Comments
PERMANENT_IDENTIFIER	NHD	Pending features will have the permanent identifier for the modified features. For new features, the field will be empty.
GNIS_ID	NHD	
GNIS_NAME	NHD	
LOCAL_NAME	LOCAL_NAME_POLY	
FTYPE	NHD	
FCODE	NHD	
NHD_FLOW	Derived	Water feature periodicity code. This is a classification for water features in terms of seasonal behavior. Derived from the NHD FCODE value.
FISHBEARING	FISH_ANADROMOUS_POLY, FISH_RESIDENT_POLY	Derived field using an event overlay of the Fish Distribution polygon data.
ELEVATION	NHD	
REACHCODE	NHD	Pending features will have the reach code for the modified features. For new features, the field will be empty.
FTR_ORGANIZATION	NHD	
FTR_SOURCE_INTERP	NHD	
FTR_SOURCE_DT	NHD	
PUB_DATE	Derived	The date when the dataset was generated. May vary over the extent of the dataset.
SUBBASIN	Derived	The 8 digit hydrologic unit number that the data is contained in.
EDIT_PENDING	Derived	Yes/No field to indicate that the publication feature contains pending geometry or attribute edits that have not yet been made to the NHD data or the event feature classes.

## 9. EDITING PROCEDURES

A separate edit guide has been developed for this theme. This document is available at:  
[http://teamspace/or/sites/aquatics/Training/Hydrography\\_Edit\\_User\\_Guide.pdf](http://teamspace/or/sites/aquatics/Training/Hydrography_Edit_User_Guide.pdf).

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# 10. OREGON/WASHINGTON DATA FRAMEWORK OVERVIEW

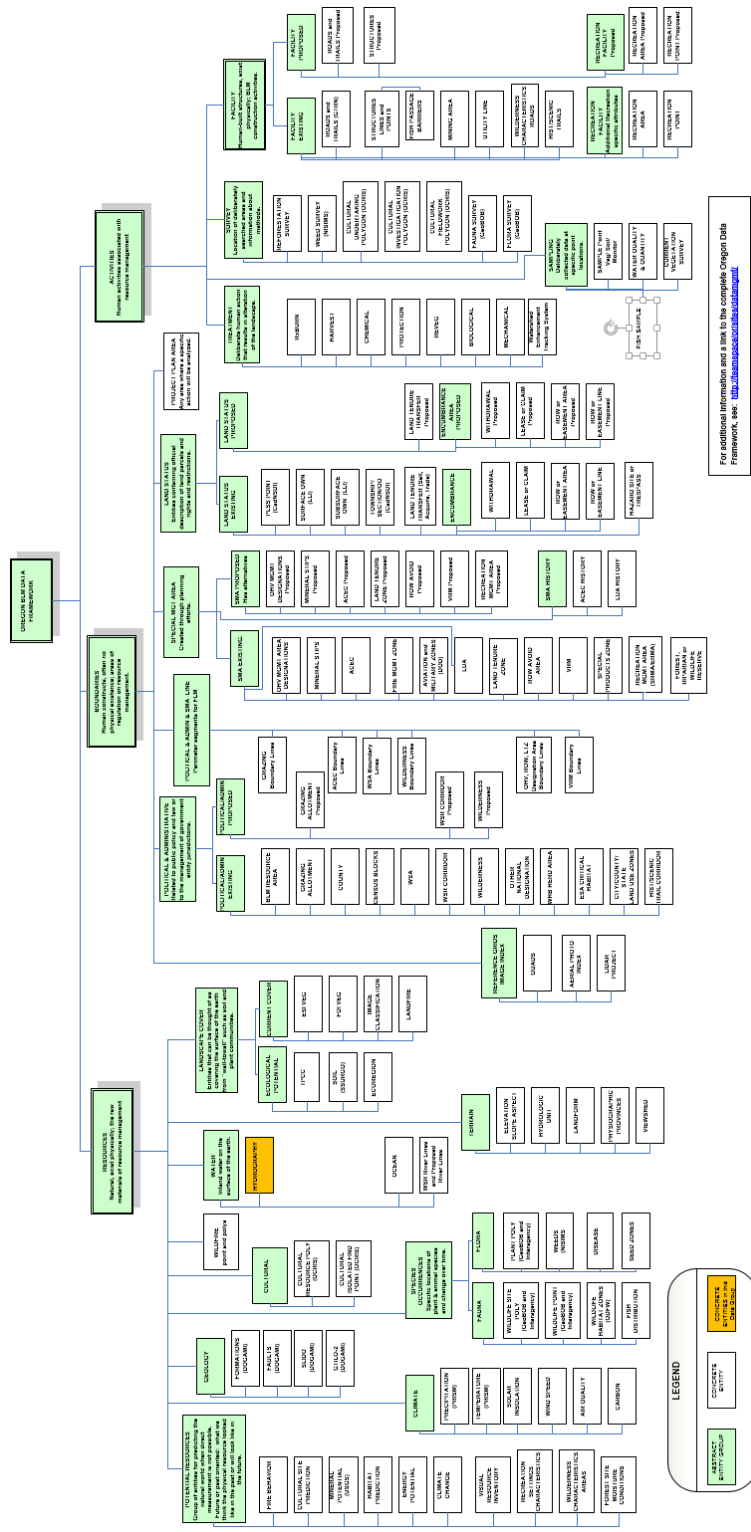


Figure 2 Oregon Data Framework Overview

## 11. ABBREVIATIONS AND ACRONYMS USED

(Does not include abbreviations/acronyms used as codes for particular data attributes or domain values)

Abbreviations	Descriptions
ARC	GIS line feature
BLM	Bureau of Land Management, U.S. Department of the Interior
CADNSDI	Cadastral National Spatial Data Infrastructure
DEM	Digital Elevation Model
DLG	Digital Line Graphs
FOIA	Freedom of Information Act
GIS	Geographic Information System
GPS	Global Positioning System
GTRN	Ground Transportation GIS dataset
IDP	Interdisciplinary
NAD	North American Datum
NARA	National Archives and Records Administration
NEPA	National Environmental Policy Act
NHD	National Hydrography Dataset
POLY	GIS polygon feature
PUB	Publication
RMP	Resource Management Plan
ODF	Oregon Data Framework
OR/WA	Oregon/Washington BLM Administrative State
USFS	United States Forest Service, U.S. Department of Agriculture
USGS	United States Geological Survey, U.S. Department of the Interior
SDE	Spatial Database Engine
WEB	Worldwide Web (internet)

**Table 2 Abbreviations/Acronyms Used**

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## APPENDIX DOMAINS (VALID VALUES)

These are the domains at the time the data standard was approved. Domains can be changed without a re-issue of the data standard. Some of the domains used in this data standard are also available at the following web site: <https://www.blm.gov/about/data/oregon-data-management>.

For domains not listed at that site contact the [State Data Administrator](#) for current lists. The State Data Administrator's contact information can be found at: <https://www.blm.gov/about/data/oregon-data-management>.

### A.1 dom\_FISH\_ALL

**All Fish Species Codes.** Fish species codes for all fish. The code is an alpha short code and the display value is the Scientific Name and Common Name.

See Fish Distribution for domain.

### A.2 dom\_FISH\_ANADROMOUS

**Fish Anadromous Species Code.** Fish species codes for anadromous fish. The code is an alpha short code and the display value is the Scientific Name and Common Name.

See Fish Distribution data standard for domain.

### A.3 dom\_FISH\_PRESENCE

**Fish Presence Code.** The code to indicate if the species is present at the geographic extent of the feature.

PV	PV – Presence Verified
PNV	PNV – Presence Suspected, Not Verified
AV	AV – Absence Verified

### A.4 dom\_FISH\_NONNATIVE

**Fish Non-Native Species Code.** Fish species codes for non-native species of fish. The code is an alpha short code and the display value is the Scientific Name and Common Name.

See Fish Distribution data standard for domain.

### A.5 dom\_FISH\_RESIDENT

**Fish Resident Species Code.** Fish species codes for resident species of fish. The code is an alpha short code and the display value is the Scientific Name and Common Name.

See Fish Distribution data standard for domain.

**A.6 dom\_FISH\_TYPE**

**Fish Type Subtype Code.** A code that defines the type of fish and controls which species appear in the Species domain in the Fish table.

1	Anadromous
2	Resident
3	Non-Native

**A.7 dom\_HYD\_EDIT\_TYPE**

**Hyd Edit Type Code.** Describes the edit action that needs to be applied to the NHD.

No Change	No Change
Gmtry_Attr	Geometry and Attribute Edit
Geometry	Geometry Edit
Attribute	Attribute Edit
New	New Feature

**A.8 dom\_HYD\_FTR\_SRC\_INTERP**

**Hyd NHD Metadata Feature Source Interpretation Code.** The compilation map or image source and method used when adding or updating hydrography data.

Aerial Imagery Photointerpretation
LIDAR DEM Surface Flow Modeling
LIDAR DEM Terrain Interpretation
Field Survey GPS

**A.9 dom\_HYD\_PLANFLOW**

**Plan Flow Code.**

P	P – Perennial
I	I – Intermittent NWFP
X	X – No Plan

**A.10 dom\_HYD\_PLANFLOW\_SRC**

**Plan Flow Source Code.**

FS	FS - PLANFLOW is attributed with Forest Service data
AP	AP - PLANFLOW is estimated from aerial photos.
GS	GS - PLANFLOW is estimated from USGS topographic maps (solid blue stream lines - perennial, dashed blue stream lines -intermittent, and no stream lines - ephemeral) or Digital Raster Graphics (DRG).
AG	AG - PLANFLOW is estimated using a combination of aerial photos and topographic maps or DRGs.

SS	SS - PLANFLOW is determined from a standard field stream survey.
NS	NS - PLANFLOW is determined using field observations outside a standard field stream survey.
SO	SO - PLANFLOW is estimated based on a stream order model (e.g. 3rd order and greater - perennial, 2nd order - intermittent and 1st order - ephemeral).
CS	CS - PLANFLOW is estimated based on catchment size.
FI	FI - PLANFLOW is estimated based on fish species present.
U	U - Unknown
MP	MP - PLANFLOW is mass populated with a specific PLANFLOW code such as P. These entries should be considered for revision.

### A.11 dom\_NHD\_FCODE\_FLOWLINE

#### NHD Feature Code List for Flowlines.

55800	Artificial Path
33600	Canal Ditch
33601	Canal Ditch: Canal Ditch Type = Aqueduct
33603	Canal Ditch: Canal Ditch Type = Aqueduct
56600	Coastline
33400	Connector
42800	Pipeline
42801	Pipeline: Pipeline Type = Aqueduct; Relationship to Surface = At or Near
42802	Pipeline: Pipeline Type = Aqueduct; Relationship to Surface = Elevated
42803	Pipeline: Pipeline Type = Aqueduct; Relationship to Surface = Underground
42804	Pipeline: Pipeline Type = Aqueduct; Relationship to Surface = Underwater
42805	Pipeline: Pipeline Type = General Case; Relationship to Surface = At or Near
42806	Pipeline: Pipeline Type = General Case; Relationship to Surface = Elevated
42807	Pipeline: Pipeline Type = General Case; Relationship to Surface = Underground
42808	Pipeline: Pipeline Type = General Case; Relationship to Surface = Underwater
42809	Pipeline: Pipeline Type = Penstock; Relationship to Surface = At or Near
42810	Pipeline: Pipeline Type = Penstock; Relationship to Surface = Elevated
42811	Pipeline: Pipeline Type = Penstock; Relationship to Surface = Underground
42812	Pipeline: Pipeline Type = Penstock; Relationship to Surface = Underwater
42813	Pipeline: Pipeline Type = Siphon
42814	Pipeline: Pipeline Type = General Case
42815	Pipeline: Pipeline Type = Penstock
42816	Pipeline: Pipeline Type = Aqueduct
42820	Pipeline: Pipeline Type = Stormwater
42821	Pipeline: Pipeline Type = Stormwater; Relationship to Surface = At or Near
42822	Pipeline: Pipeline Type = Stormwater; Relationship to Surface = Elevated
42823	Pipeline: Pipeline Type = Stormwater; Relationship to Surface = Underground
42824	Pipeline: Pipeline Type = Stormwater; Relationship to Surface = Underwater
46000	Stream/River
46003	Stream/River: Hydrographic Category = Intermittent

46006	Stream/River: Hydrographic Category = Perennial
46007	Stream/River: Hydrographic Category = Ephemeral
42000	Underground Conduit
42001	Underground Conduit: Positional Accuracy = Definite
42002	Underground Conduit: Positional Accuracy = Indefinite
42003	Underground Conduit: Positional Accuracy = Approximate

## A.12 dom\_NHD\_FCODE\_POINT

### NHD Feature Code List for Points.

34300	Dam/Weir
34305	Dam/Weir: Construction Material = Earthen
34306	Dam/Weir: Construction Material = Nonearthen
36700	Gaging Station
36900	Gate
39800	Lock Chamber
43100	Rapids
43600	feature type only: no attributes
43600	Reservoir
43618	Reservoir: Construction Material = Earthen
43619	Reservoir: Construction Material = Nonearthen
43601	Reservoir: Reservoir Type = Aquaculture
43609	Reservoir: Reservoir Type = Cooling Pond
43603	Reservoir: Reservoir Type = Decorative Pool
43606	Reservoir: Reservoir Type = Disposal
43625	Reservoir: Reservoir Type = Disposal; Construction Material = Earthen
43626	Reservoir: Reservoir Type = Disposal; Construction Material = Nonearthen
43607	Reservoir: Reservoir Type = Evaporator
43623	Reservoir: Reservoir Type = Evaporator; Construction Material = Earthen
43610	Reservoir: Reservoir Type = Filtration Pond
43611	Reservoir: Reservoir Type = Settling Pond
43612	Reservoir: Reservoir Type = Sewage Treatment Pond
43608	Reservoir: Reservoir Type = Swimming Pool
43605	Reservoir: Reservoir Type = Tailings Pond
43604	Reservoir: Reservoir Type = Tailings Pond; Construction Material = Earthen
43624	Reservoir: Reservoir Type = Treatment
43617	Reservoir: Reservoir Type = Water Storage
43614	Reservoir: Reservoir Type = Water Storage; Construction Material = Earthen; Hydrographic Category = Intermittent
43615	Reservoir: Reservoir Type = Water Storage; Construction Material = Earthen; Hydrographic Category = Perennial
43613	Reservoir: Reservoir Type = Water Storage; Construction Material = Nonearthen
44100	Rock
44101	Rock: Relationship to Surface = Abovewater

44102	Rock: Relationship to Surface = Underwater
45000	Sink/Rise
45800	Spring/Seep
48500	Water Intake/Outflow
48700	Waterfall
48800	Well

### A.13 dom\_NHD\_FCODE\_POLY

#### NHD Feature Code List for Polygons (Waterbodies and Areas).

53700	Area of Complex Channels
30700	Area to be Submerged
31200	Bay/Inlet
31800	Bridge
33600	Canal Ditch
33601	Canal Ditch: Canal Ditch Type = Aqueduct
33603	Canal Ditch: Canal Ditch Type = Stormwater
34300	Dam/Weir
34305	Dam/Weir: Construction Material = Earthen
34306	Dam/Weir: Construction Material = Nonearthen
49300	Estuary
36200	Flume
36400	Foreshore
37800	Ice Mass
40300	Inundation Area
40308	Inundation Area; Inundation Control Status = Controlled
40309	Inundation Area; Inundation Control Status = Controlled; Stage = Flood Elevation
40307	Inundation Area; Inundation Control Status = Not Controlled
39000	Lake/Pond
39001	Lake/Pond: Hydrographic Category = Intermittent
39006	Lake/Pond: Hydrographic Category = Intermittent; Stage = Date of Photography
39005	Lake/Pond: Hydrographic Category = Intermittent; Stage = High Water Elevation
39004	Lake/Pond: Hydrographic Category = Perennial
39009	Lake/Pond: Hydrographic Category = Perennial; Stage = Average Water Elevation
39011	Lake/Pond: Hydrographic Category = Perennial; Stage = Date of Photography
39010	Lake/Pond: Hydrographic Category = Perennial; Stage = Normal Pool
39012	Lake/Pond: Hydrographic Category = Perennial; Stage = Spillway
56800	Levee
39800	Lock Chamber
36100	Playa
43100	Rapids
43600	Reservoir
43618	Reservoir: Construction Material = Earthen
43619	Reservoir: Construction Material = Nonearthen

43601	Reservoir: Reservoir Type = Aquaculture
43609	Reservoir: Reservoir Type = Cooling Pond
43603	Reservoir: Reservoir Type = Decorative Pool
43606	Reservoir: Reservoir Type = Disposal
43625	Reservoir: Reservoir Type = Disposal; Construction Material = Earthen
43626	Reservoir: Reservoir Type = Disposal; Construction Material = Nonearthen
43607	Reservoir: Reservoir Type = Evaporator
43623	Reservoir: Reservoir Type = Evaporator; Construction Material = Earthen
43610	Reservoir: Reservoir Type = Filtration Pond
43611	Reservoir: Reservoir Type = Settling Pond
43612	Reservoir: Reservoir Type = Sewage Treatment Pond
43608	Reservoir: Reservoir Type = Swimming Pool
43605	Reservoir: Reservoir Type = Tailings Pond
43604	Reservoir: Reservoir Type = Tailings Pond; Construction Material = Earthen
43624	Reservoir: Reservoir Type = Treatment
43617	Reservoir: Reservoir Type = Water Storage
43614	Reservoir: Reservoir Type = Water Storage; Construction Material = Earthen; Hydrographic Category = Intermittent
43615	Reservoir: Reservoir Type = Water Storage; Construction Material = Earthen; Hydrographic Category = Perennial
43613	Reservoir: Reservoir Type = Water Storage; Construction Material = Nonearthen
43621	Reservoir: Reservoir Type = Water Storage; Hydrographic Category = Perennial
44500	Sea Ocean
45500	Spillway
46000	Stream/River
46007	Stream/River: Hydrographic Category = Ephemeral
46003	Stream/River: Hydrographic Category = Intermittent
46006	Stream/River: Hydrographic Category = Perennial
46100	Submerged Stream
46600	Swamp/Marsh
46601	Swamp/Marsh: Hydrographic Category: Intermittent
46602	Swamp/Marsh: Hydrographic Category: Perennial
48400	Wash
48500	Water Intake/Outflow

#### A.14 dom\_NHD\_FTYPE\_FLOWLINE

##### NHD Feature Type List for Flowlines.

558	ARTIFICIAL PATH
336	CANAL/DITCH
566	COASTLINE
334	CONNECTOR
428	PIPELINE
460	STREAM/RIVER

420	UNDERGROUND CONDUIT
-----	---------------------

**A.15 dom\_NHD\_FTYPE\_POINT****NHD Feature Type List for Points.**

343	DAM/WEIR
367	GAGING STATION
369	GATE
398	LOCK CHAMBER
431	RAPIDS
436	RESERVOIR
441	ROCK
450	SINK/RISE
458	SPRING/SEEP
485	WATER INTAKE/OUTFLOW
487	WATERFALL
488	WELL

**A.16 dom\_NHD\_FTYPE\_POLY****NHD Feature Type List for Waterbodies.**

537	AREA OF COMPLEX CHANNELS
307	AREA TO BE SUBMERGED
312	BAY/INLET
318	BRIDGE
336	CANAL/DITCH
343	DAM/WEIR
493	ESTUARY
362	FLUME
364	FORESHORE
378	ICE MASS
403	INUNDATION AREA
390	LAKE/POND
568	LEVEE
398	LOCK CHAMBER
361	PLAYA
431	RAPIDS
436	RESERVOIR
445	SEA/OCEAN
455	SPILLWAY
460	STREAM/RIVER
461	SUBMERGED STREAM

466	SWAMP/MARSH
484	WASH
485	WATER INTAKE/OUTFLOW

### A.17 dom\_NHD\_RESOLUTION

**NHD Resolution Code.** Indicates the resolution of the NHD data. This domain is inherited from the National Hydrography Dataset data model.

1	Local
2	High
3	Medium

### A.18 dom\_STRM\_CONTINUITY

**Stream Continuity Code.** Spatial expression of a stream channel.

Continuous	Continuous – channels have well-defined beds and banks and bed forms annuals scour and deposition
Interrupted	Interrupted – portions of the channel are not evident