BLM OR Hydrography Publication Dataset Guide

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Overview

Purpose

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 Resources Information System (ARIMS) database provides BLM-stewarded data used in planning. These BLM attributes include such attributes as flow information, fish presence/absence, riparian condition, district office stream identifiers, and local names. The dataset and production process is designed to accommodate frequent refresh to reflect updates to the NHD and ARIMS databases.

Spatial Extent

The Hydro Publication Dataset is presented in three different spatial extents: a seamless format covering Oregon and Washington, seamless data clipped to BLM district boundaries, and individual files corresponding to 8 digit hydrologic units (subbasins) as described in the National Watershed Boundary Dataset (WBD).

The individual subbasin files contain species-specific, fish presence/absence information corresponding to the species surveyed in the particular subbasin. Species-specific presence/absence information is not included in the seamless, statewide coverage due to the large numbers of species present across the full data extent.

Much of the hydrography in the state of Washington does not have corresponding ARIMS/BLM attribution but the data structure will be the same as Oregon despite the empty attributes.

Process Summary

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 from ARIMS and prepared for event overlay. Species-specific fish and PFC data are processed to bring most recent events forward where overlapping events occur. An additional event table is prepared from the intersection of BLM's ownership polygon layer with NHD Flowlines. 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. For individual subbasin files, a topology is built to show overlapping segments.

File Structure and Naming Conventions

Each file representing a subbasin will use the following naming conventions. The sample below shows names used for subbasin 17100309 followed by a brief description of the entities.

Hydrography_Publication_17100309----Geodatabase name

Hydrography_Publication_17100309----Feature Dataset Name

HYD_PUB _17100309_ Area----Featureclass containing NHD area features (double line streams, oceans, etc.)

HYD_PUB _17100309_Flowline----Featureclass containing NHD Flowlines

HYD_PUB_17100309_TPLGY----Topology built on HYD_PUB_Flowline featureclass showing cases where conflicting attribute values resulted in two or more overlapping segments of geometry.

HYD_PUB _17100309_Point----Featureclass containing NHD point features (wells, springs, etc.)

HYD_PUB _17100309_ Waterbody----Featureclass containing NHD Waterbody features (Lakes/Ponds,Swamp/Marsh)

The statewide seamless formats use the same naming conventions but will not include a subbasin code. The topology is not included in statewide seamless distributions.

Data Quality

The NHD hydrography that forms the base of this dataset contains best available data collected from a variety of sources at different scales; as a result, disparities in density of the drainage network are apparent at the regional scale. No thinning processes were performed on this dataset to achieve hydrologic equity or to enhance the data for cartographic purposes.

Attributes from the ARIMS database that are stored as linear events on the NHD route system may contain conflicting values. These value conflicts show up as duplicated segments of geometry in the HYD_PUB_FLOWLINE featureclasses of this dataset. An ESRI topology is built on the subbasin-based distribution of this dataset to show where these overlaps occur. The topology build may also pick up very small geometry overlaps due to rounding errors in event measures . These tiny errors are statistically insignificant and can be ignored.

Changes from previous versions of this dataset

Process Changes

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 subbasins with species-specific fish and seamless without species-specific fish) will have subbasins refreshed as-needed in response to edits in ARIMS and the NHD.

PFC and Species-Specific Fish are now processed to show the most recent value collected where multiple values occur along the same section of stream/route. This will eliminate the duplicate depictions of stream geometry in the output where multiple PFC, resident fish , or anadromous fish records were present in the same location in ARIMS.

Data Structure/Content Changes

Previous versions of the hydro publication dataset were based on Pacific Northwest Hydrography Framework data before the data was incorporated into the NHD. The ARIMS application has also been updated since the last version of the hyd pub. The following is a list of data content and field name changes associated with the transition to NHD and new version of ARIMS.

1) FTYPE and FCODE attributes are used to classify hydrographic features in the NHD. FTYPES are three digit codes that define subtypes. FCODE extends the FTYPE another three digits to further define features. In the example of Stream/River FTYPE(460), the FCODE defines the hydrographic category (Perennial(46006), Intermittent(46003), Ephemeral(46007). The FCODE and FTYPE replace the hydrographic and cartographic featurecodes of old dataset.
2) NHD_FLOW is a derived field added to give easy access to a periodicity attribute based on an interpretation of the NHD FCODES. It is designed to approximate the old "PERIODICITY" field that was stored on the LLID-based PNW Hydro Framework Dataset. It is populated as part of the hydro publication process. Streams that are designated 'Artificial path' by their NHD FCODE inherit the periodicity of the polygon feature that they are within. The rule-set is documented in the crosswalk table "FCODES and NHD_FLOW Crosswalk" located in the appendices of this document.
3) Double-line streams are in separate featureclass (eg. Hyd_Pub_17100309_area) separate from Lakes, Ponds, Wetlands, etc. which are stored in 'waterbodies'. This just follows the way the features are broken out in the NHD. Both polygon featureclasses have the NHD_FLOW attribute calculated from NHD FCodes in the same way the flowlines do.
4) NHD_FLOW_META is a the field that contains source information for original flow information that was submitted to PNW Framework Dataset and to NHD
5) A field called DIST_RCH_NO was added to hold RCH_NO from the ARIMS > RCH_DISTRICT table. This allows for linkage to district-specific data that may not be in ARIMS.

6) Fishbarriers are not included in hydro pub as they were previously. Since Fishbarriers are now represented as a point featureclass in ARIMS, they are easy to access and use in their current form. They will also be replicated to districts along with other separate ARIMS featureclasses.
7) Stnd_wtr_type is a waterbody attribute that was not migrated to new ARIMS data model, it is not included in the new hydro pub.
8) Fed_buf_dist was not migrated to new version of ARIMS and is not included in this version of Hyd Pub. There is some recent interest in bringing this data forward.
9) Fish Use information was simplified in the migration to new ARIMS. This resulted in some changes to the way the fish columns were constructed. See Species-Specific Fish description at end of Data Dictionary.
10) Additional metadata fields are included in this version of Hyd Pub. These data elements(ftr_organization,ftr_interpretation,ftr_sourcescale,ftr_source_dt) have been parsed out of the NHD metadata and source citation tables and included for convenience in using Hyd Pub as a source for feeding NHD edit templates.

Information Resources

The High Resolution NHD in Oregon and Washington is stewarded by the Pacific Northwest Hydrography Framework (PNWHF). The PNWHF is a regional partnership of federal and state agencies that provides cooperative stewardship and technical assistance in the maintenance of the NHD.

For more information on the Pacific Northwest Hydrography Framework(PNWHF) please refer to the following website:

http://hydro.psmfc.org/

For more information about the National Hydrography Dataset (NHD) please refer to the following website:

http://nhd.usgs.gov/

For more information about the Aquatic Resources Information Management System (ARIMS) please refer to the following website:

http://web.or.blm.gov/gis/projects/arims.asp

NHD Edit Templates and instructions for BLM District/Field offices are located here:

P:\oso\Hydrography\District_Update_Instructions

Appendices

Data Elements and Data Sources

Table			
Field Name	**NHD Source(Table > Field)**	**ARIMS Source (Table > Field)**	**OtherSource**
HYD_PUB_XXXXXXXX_FLOWLINE			
REACHCODE	NHDFlowline > REACHCODE		
FMEASURE			Route System Address
TMEASURE			Route System Address
COMID	NHDFlowline > ComId		
FTYPE	NHDFlowline > FTYPE		
FCODE	NHDFlowline > FCODE		
GNIS_ID	NHDFlowline > GNIS_ID		
GNIS_NAME	NHDFlowline > GNIS_NAME		
LOCAL_NAME		RCH_LOCAL_NAME> RCH_TYPE	
NHD_FLOW			Periodicity attribute derived from NHDFlowline.Fcode
PLANFLOW		RCH_PLAN_FLOW> RCH_TYPE	
FISHBEARING		RCH_FISHBEARING> RCH_TYPE	
CONTINUITY		RCH_CONTINUITY> RCH_TYPE	
STREAMORDER		RCH_STRM_ORDER> RCH_TYPE_DESC	
PFC		RCH_PFC>RCH_TYPE	
PFC_RCH_NO		RCH_PFC>RCH_NO	
PFC_DATE		RCH_PFC>RCH_DATE	
DIST_RCH_NO		RCH_DISTRICT> RCH_NO	
DIST_RCH_DT		RCH_DISTRICT> RCH_DATE	
FLD_VER_DT		RCH_FIELD_VERIFICATION>RCH_DATE	

Table			
Field Name	**NHD Source(Table > Field)**	**ARIMS Source (Table > Field)**	**OtherSource**
PROPERTY_STATUS			osodba.ownership_poly>Property_Status
JURIS_NAME			osodba.ownership_poly>JURIS_NAME
WBAREACOMID	NHDFlowline > WBAREACOMID		
NHD_FLOW_METADATA		RCH_NHD_FLOW_METADATA> RCH_TYPE_DESC	
FTR_ORGANIZATION	NHDSourceCitation >Originator		
FTR_SOURCE	NHDSourceCitation >TypeOfSourceMedia(most recent calendardate)		
FTR_INTERPRETATION	NHDSourceCitation >TypeOfSourceMedia(most recent calendardate)		
FTR_SOURCE_DT	NHDSourceCitation >PublicationDate		
FTR_SOURCESCALE	NHDSourceCitation >SourceScaleDenominator		
PUB_DATE			Hydro Pub Processing Date
SUBBASIN			8 digit hydrologic unit
SPECIES_ANXX		RCH_FISH_ANADROMOUS>RCH_TYPE AND FISH_USE EMBEDDED IN FIELD NAME, RCH_TYPE_DESC IN VALUE (PV,PNV,AV,ANV) See Data Dictionary	
SPECIES_ANXX_DT		RCH_FISH_ANADROMOUS>RCH_DATE	

Table			
Field Name	**NHD Source(Table > Field)**	**ARIMS Source (Table > Field)**	**OtherSource**
SPECIES_REXX		RCH_FISH_RESIDENT> RCH_TYPE AND FISH_USE EMBEDDED IN FIELD NAME, RCH_TYPE_DESC IN VALUE (PV,PNV,AV,ANV) See Data Dictionary	
SPECIES_REXX_DT		RCH_FISH_RESIDENT> RCH_DATE	
HYD_PUB_XXXXXXXX_WATERBODY			
COMID	NHDWaterbody > COMID		
GNIS_ID	NHDWaterbody > GNIS_ID		
GNIS_NAME	NHDWaterbody > GNIS_NAME		
ELEVATION	NHDWate rbody > ELEVATION		
REACHCODE	NHDWaterbody > REACHCODE		
FTYPE	NHDWaterbody > FTYPE		
FCODE	NHDWaterbody > FCODE		
NHD_FLOW			Periodicity attribute derived from NHDFlowline.Fcode
FTR_ORGANIZATION	NHDSourceCitation >Originator		
FTR_SOURCE	NHDSourceCitation >TypeOfSourceMedia(most recent calendardate)		
FTR_SOURCE_DT	NHDSourceCitation >PublicationDate		
FTR_INTERPRETATION	NHDSourceCitation >TypeOfSourceMedia(most recent calendardate)		
FTR_SOURCESCALE	NHDSourceCitation >SourceScaleDenominator		

Table			
Field Name	**NHD Source(Table > Field)**	**ARIMS Source (Table > Field)**	**OtherSource**
PUB_DATE			Hydro Pub processing date
SUBBASIN			8 digit hydrologic unit
HYD_PUB_XXXXXXXX_AREA			
REACHCODE	NHDArea > REACHCODE		
COMID	NHDArea > COMID		
GNIS_ID	NHDArea > GNIS_ID		
GNIS_NAME	NHDArea > GNIS_NAME		
ELEVATION	NHDArea > ELEVATION		
FTYPE	NHDArea > FTYPE		
FCODE	NHDArea > FCODE		
NHD_FLOW			Periodicity attribute derived from NHDFlowline.Fcode
FTR_ORGANIZATION	NHDSourceCitation >Originator		
FTR_SOURCE	NHDSourceCitation >TypeOfSourceMedia(most recent calendardate)		
FTR_SOURCE_DT	NHDSourceCitation >PublicationDate		
FTR_INTERPRETATION	NHDSourceCitation >TypeOfSourceMedia(most recent calendardate)		
PUB_DATE			Hydro Pub processing date
SUBBASIN			8 digit hydrologic unit
HYD_PUB_XXXXXXXX_POINT			
COMID	NHDArea > COMID		
GNIS_ID	NHDArea > GNIS_ID		
GNIS_NAME	NHDArea > GNIS_NAME		
REACHCODE	NHDArea > REACHCODE		
FTYPE	NHDArea > FTYPE		
FCODE	NHDArea > FCODE		

Table			
Field Name	**NHD Source(Table > Field)**	**ARIMS Source (Table > Field)**	**OtherSource**
NHD_FLOW	Periodicity attribute derived from NHDFlowline.Fcode		
FTR_ORGANIZATION	NHDSourceCitation >Originator		
FTR_SOURCE	NHDSourceCitation >TypeOfSourceMedia(most recent calendardate)		
FTR_SOURCE_DT	NHDSourceCitation >PublicationDate		
FTR_INTERPRETATION	NHDSourceCitation >TypeOfSourceMedia(most recent calendardate)		
FTR_SOURCESCALE	NHDSourceCitation >SourceScaleDenominator		
PUB_DATE			Hydro Pub Processing Date
SUBBASIN			8 digit Hydrologic Unit

Data Dictionary (by order of field appearance in datasets)

REACHCODE
NHD Flowlines and Waterbodies have a reachcode assigned to them when they are created. On the NHD Flowline, the reachcode serves as a route system identifier. One or more flowlines may be assigned to the same reach/route. NHD reaches or routes are measured from 0 to 100 from downstream to upstream end. Data from the ARIMS system is attached to the NHD based on reach codes and measures stored in ARIMS.

FMEASURE
Begin measure of segment. The NHD route system is measured as percentage from 0 to 100 along a reach or route.

TMEASURE
End measure of segment.

COMID
System-assigned NHD unique feature identifier.

GNIS_ID
Geographic Names Information System (GNIS) Feature Id

GNISNAME
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.

ELEVATION
Elevation of feature in meters.

WBAREACOMID
For Artificial paths, the Comid of the overlying NHDArea or NHDWaterbody feature

LOCALNAME
Local water feature name, for internal BLM use only. This name *may* or *may not* be in the Geographic Names Information System (GNIS).

NHD_FLOW
Water feature periodicity code. This is a classification for water features in terms of the seasonal behavior of the feature over time or in terms of its surface flow. The values were derived from the NHD FCODE based on the crosswalk included in the appendices (Fcodes and NHD_FLOW crosswalk)

Available values:

Code	Domain description
eph	Ephemeral
int	Intermittent/seasonal
per	Perennial
unk	Unknown/unclassified

PLANFLOW
Characteristics of the flow pattern of a stream over space as defined by the Northwest Forest Plan. Northwest Forest Plan definitions for ephemeral vs intermittent streams differ from definitions used in the NHD. Specifically, streams that are defined as ephemeral in the NHD dataset may be classified as intermittent by the Northwest Forest Plan definition.

Code	Domain description
I	Intermittent
P	Perennial
X	No special mgmt
Z	ICBEMP Intermittent

FISHBEARING
Actual or modeled fish presence.

Code	Domain description
PV	Presence verified
PNV	Presence not verified
AV	Absence verified
ANV	Absence not verified

CONTINUITY
Water feature continuity code. This is a classification of stream flow primarily in relation to its expression at the earth's surface. The most common condition is that a stream is continuous in space. A value of 'C' is assigned by default. Other values are assigned from ARIMS

Attribute domain assignment: dom_Continuity
Available values:

Code	Domain description
C	C- Continuous
I	I - Interrupted
S	S - Sub-Surface
U	U - Unknown

STREAMORDER
A dimensionless measure of the position of a stream in the hierarchy of tributaries. Where two n-order streams join, a segment of n+1 order is formed. This data is not complete over the PNW.

PFC
The most recently collected Proper Functioning Condition attribute for the stream segment. Characteristics of the lotic riparian wetland areas adjacent to "flowing water" aquatic sites.

Code	Domain description
PFC	Proper functioning condition
FARU	Functional-at-risk upward trend
FARD	Functional-at-risk downward trend
FARN	Functional-at-risk trend not apparent
NF	Nonfunctional
U	Unknown

PFC_RCH_NO
User assigned identifier for PFC record

PFC_DATE
Date PFC information was collected.

DIST_RCH_NO
BLM district or field office identifier

DIST_RCH_DT
Date corresponding to BLM district or field office identifier

FLD_VER_DATE
Used to track the ground-truthing of stream channels, this is the date on which the stream was actually verified to exist on the ground. No entry indicates no field verification has been done.

PROPERTY_STATUS

The entity that administers the surface rights.

CODE	DESCRIPTION
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BPA	Bonneville Power Administration
BR	Bureau of Reclamation
COE	Corps of Engineers
DOD	U.S. Dept. of Defense (except Corps of Engineers)
DOE	U.S. Dept. of Energy
FAA	Federal Aviation Administration
FWS	U.S. Fish and Wildlife Service
GSA	General Services Administration
LG	Local Government
NPS	National Park Service
PV	Private Individual or Company
PVI	Lands Managed by Private Industry
PVN	Private Non-Industrial Owner
PVU	Private Urban Lands
ST	State Agency
STF	State Dept. of Forestry
STL	Division of State Lands
STP	State Dept. of Parks and Recreation
STW	State Dept. of Fish and Wildlife
UND	Undetermined
USCG	U.S. Coast Guard
USDA	U.S. Dept. of Agriculture (except Forest Service)

CODE	DESCRIPTION
USFS	U.S. Forest Service
WATER	Water

JURIS_NAME
Name of Sub-entity ownership (eg. Name of Forest if USFS)

WBAREACOMID
For NHD Flowline artificial paths, the comid of the waterbody or area feature that the artificial path is a centerline in.

FTR_ORGANIZATION
The organization that compiled, entered, updated or deleted the hydrography watercourse data.

FTR_SOURCE
The compilation map or image source used when adding or updating hydrography data

FTR_SOURCE_DT
The compilation map or image source date used for the addition or update of hydrography watercourse data.

FTR_INTERPRETATION
The methodology used to compose the hydrography watercourse information and how it was derived prior to data entry into the spatial coverage.

FTR_SOURCESCALE
The scale denominator of the feature data source

PUB_DATE
The date when the Hydrography Publication data was generated.

SUBBASIN
The 8 digit hydrologic unit number that the data is contained in

SPECIES-SPECIFIC FISH Fields – Field names are a concatenation of species and use codes
Presence absence information for specific fish species and uses

Species/Presence/Absence/Use – *3 Character code*

Code	Domain description
PV	Presence verified
PNV	Presence not verified
AV	Absence verified
ANV	Absence not verified

While this field's presence/absence/use code values are straightforward, the actual field name concatenation is a little more complex. This naming consists of two distinct parts – the first half before the underscore includes the fish species code; the second half contains the residency/anadromous/use that defines the category of the field. The two sections are detailed below.

Taking this field name example: **ONCLCLE_ANMR**

The first part before the underscore follows this formula:

First 2 letters of Genus (Oncorhynchus) + first 2 letters of species (clarkii) + first 2 letters of subspecies (clarkii) + 1 character (e) from the ARIMS species code.

See the Fish Species Code Crosswalk table in the appendices for *all* species codes presently tracked in ARIMS with their corresponding Hyd Pub classification.

Taking this same field name example: **ONCLCLE_ANMR**

The second part after the underscore follows this formula:

The first 2 letters of anadromous + first 2 letters of fish use code if present.

Population information	Abbreviation
Anadromous	AN
Resident	RE

Seasonal or Use Activity	Abbreviation
Migratory	M
Migratory/Rearing	MR
Spawning/Rearing	SR

Fish Species Code Crosswalk

Hyd Pub Code	ARIMS Code	Description
AMME	164039	Ameiurus melas / Black Bullhead
AMNA	164041	Ameiurus natalis / Yellow Bullhead
AMNE	164043	Ameiurus nebulosus / Brown Bullhead
AMSPP	164034	Ameiurus spp. / Bullhead
ARIN	168175	Ameiurus interruptus / Sacramento Perch
CAAU	163350	Carassius auratus / Goldfish
CACA	163894	Catostomus catostomus / Longnose Sucker
CACO	163897	Catostomus columbianus / Bridgelip Sucker
CAMA	163896	Catostomus macrocheilus / Largescale Sucker
CAMI	163907	Catostomus microps / Modoc Sucker
CAOC	163908	Catostomus occidentalis / Sacramento Sucker
CAOCLAA	163908/A	Catostomus occidentalis lacusanserinus / Goose Lake Sucker
CAPL	163909	Catostomus platyrhynchus / Mountain Sucker
CARI	163911	Catostomus rimiculus / Klamath Smallscale Sucker
CARISSPA	163911/A	Catostomus rimiculus ssp / Jenny Creek Sucker
CASN	163913	Catostomus snyderi / Klamath Largescale Sucker
CATA	163914	Catostomus tahoensis / Tahoe Sucker
CAWA	163915	Catostomus warnerensis / Warner Sucker
CHBR	163961	Chasmistes brevirostris / Shortnose Sucker
CHGU	168139	Chaenobryttus gulosus / Warmouth
COAL	167230	Cottus aleuticus / Coast Range Sculpin
COAS	167233	Cottus asper / Prickly Sculpin
COBA	167237	Cottus bairdii / Mottled Sculpin
COBAA	167237/A	Cottus bairdii / Malheur Mottled Sculpin
COBE	167238	Cottus beldingii / Paiute Sculpin
COCO2	167240	Cottus confusus / Shorthead Sculpin
COGU	167234	Cottus gulosus / Riffle Sculpin
COKL	167245	Cottus klamathensis / Marbled Sculpin
COMA	167247	Cottus marginatus / Margined Sculpin
COPE	167248	Cottus perplexus / Reticulate Sculpin
COPI	167249	Cottus pitensis / Pit Sculpin
COPL	163535	Couesius plumbeus / Lake Chub
COPR	167250	Cottus princeps / Klamath Lake Sculpin
CORH	167252	Cottus rhotheus / Torrent Sculpin
COSPP	167229	Cottus spp. / Freshwater sculpins

Hyd Pub Code	ARIMS Code	Description
COTE	167254	Cottus tenuis / Slender Sculpin
CYCA	163344	Cyprinus carpio / Common Carp
DELU	163970	Deltistes luxatus / Lost River Sucker
ESAMVE	162142	Esox americanus vermiculatus / Grass Pickerel
ESLUMAA	162139/A	Esox lucius masquinongy / Tiger Muskellunge
GAAC	166365	Gasterosteus aculeatus / Threespine Stickleback
GAAF	165878	Gambusia affinis / Mosquitofish
GIAL	163542	Gila alvordensis / Alvord Chub
GIAT	163543	Gila atraria / Utah Chub
GIBI	163544	Gila bicolor / Tui Chub
GIBIA	163544/A	Gila bicolor / Warner Basin Tui Chub
GIBIE	163544/E	Gila bicolor / Summer Basin Tui Chub
GIBIEUC	163544/C	Gila bicolor eurysoma / Sheldon Tui Chub
GIBIF	163544/F	Gila bicolor / Hutton Springs Tui Chub
GIBIG	163544/G	Gila bicolor / Catlow Tui Chub
GIBIORB	163544/B	Gila bicolor oregonensis / Oregon Lakes Tui Chub
GIBITHD	163544/D	Gila bicolor thalassina / Goose Lake Tui Chub
GIBO	163547	Gila boraxobius / Borax Lake Chub
GICO	163548	Gila coerulea / Blue Chub
HESYMIA	163565/A	Hesperoleucus symmetricus mitrulus / Pit Roach
HYHA	163363	Hybognathus hankinsoni / Brassy Minnow
ICPU	163998	Ictalurus punctatus / Channel Catfish
LAAY	159704	Lampetra ayresi / River Lamprey
LALE	159710	Lampetra lethophaga / Pit-Klamath Brook Lamprey
LAMI	159711	Lampetra minima / Miller Lake Lamprey
LARI	159707	Lampetra richardsoni / Western Brook Lamprey (Pacific Brook Lamprey)
LASI	201892	Lampetra similis / Klamath Lamprey
LASP	159700	Lampetra spp. / Lampreys
LATR	159713	Lampetra tridentata / Pacific Lamprey
LATRA	159713/A	Lampetra tridentata / Goose Lake Lamprey
LATRB	159713/B	Lampetra tridentata / Upper Klamath Basin Pacific Lamprey
LECY	168132	Lepomis cyanellus / Green Sunfish
LEGI	168144	Lepomis gibbosus / Pumpkinseed
LEMA	168141	Lepomis macrochirus / Bluegill
LEMI	168154	Lepomis microlophus / Redear Sunfish
MIDO	168159	Micropterus dolomieui / Smallmouth Bass

Hyd Pub Code	ARIMS Code	Description
MISA	168160	Micropterus salmoides / Largemouth Bass
MOCH	167682	Morone chrysops / White Bass
MOSA	167680	Morone saxatilis / Striped Bass
MOSACHA	167680/A	Morone saxatilis chrysops / Whiper (Bass)
MYCA	163521	Mylocheilus caurinus / Peamouth
NOCR	163368	Notemigonus crysoleucas / Golden Shiner
NOGY	164003	Noturus gyrinus / Tadpole Madtom
NOHU	162161	Novumbra hubbsi / Olympic Mudminnow
ONCLCL	201900	Oncorhynchus clarkii clarkii / Coastal Cutthroat Trout
ONCLHE	201902	Oncorhynchus clarkii henshawi / Lahontan Cutthroat Trout
ONCLLE	553415	Oncorhynchus clarkii lewisi / Westslope Cutthroat Trout
ONGO	161975	Oncorhynchus gorbuscha / Pink Salmon
ONKE	161976	Oncorhynchus keta / Chum Salmon
ONKI	161977	Oncorhynchus kisutch / Coho Salmon
ONMYH	161989/H	Oncorhynchus mykiss / Inland Columbia Basin Redband Trout
ONMYI	161989/I	Oncorhynchus mykiss / Oregon Basin Redband Trout
ONMYJ	161989/J	Oncorhynchus mykiss / Rainbow Trout
ONMYK	161989/K	Oncorhynchus mykiss / Winter Steelhead
ONMYL	161989/L	Oncorhynchus mykiss / Summer Steelhead
ONNE	161979	Oncorhynchus nerka / Sockeye Salmon
ONNEC	161979/C	Oncorhynchus nerka / Kokanee Salmon
ONSPP	161974	Oncorhynchus spp. ssp / Unknown Trout
ONSPPSSPB	161974/B	Oncorhynchus spp. ssp / Unknown Salmon
ONSPPSSPD	161974/D	Oncorhynchus spp. ssp / Unknown Trout
ONSSP	161983	Oncorhynchus clarkii
ONSSPC	161983/C	Oncorhynchus clarkii / Cutthroat Trout Hybrid
ONTS	161980	Oncorhynchus tshawytscha
ONTSM	161980/M	Oncorhynchus tshawytscha / Spring Chinook Salmon
ONTSN	161980/N	Oncorhynchus tshawytscha / Fall Chinook Salmon
ORCR	163879	Oregonichthys crameri / Oregon Chub
ORKA	201929	Oregonichthys kalawatseti / Umpqua Chub
PEFL	168469	Perca flavescens / Yellow Perch
PEOM	164409	Percopsis omiscomaycus / Trout-Perch
PETR	164410	Percopsis transmontana / Sand Roller
PHCU	163591	Phoxinus cumberlandensis / Blackside Dace
PIPR	163517	Pimephales promelas / Fathead Minnow

Hyd Pub Code	ARIMS Code	Description
PLST	172893	Platichthys stellatus / Starry Flounder
POAN	168166	Pomoxis annularis / White Crappie
PONI	168167	Pomoxis nigromaculatus / Black Crappie
PRCO	162011	Prosopium coulteri / Pygmy Whitefish
PRWI	162009	Prosopium williamsoni / Mountain Whitefish
PTOR	163523	Ptychocheilus oregonensis / Northern Pikeminnow
PTUM	163526	Ptychocheilus umpquae / Umpqua Pikeminnow
RHCA	163384	Rhinichthys cataractae / Longnose Dace
RHCASSP	163384/A	Rhinichthys cataractae ssp / Millacoma Dace
RHEV	163385	Rhinichthys evermanni / Umpqua Dace
RHFA	163386	Rhinichthys falcatus / Leopard Dace
RHOS	163387	Rhinichthys osculus / Speckled Dace
RHOSA	163387/A	Rhinichthys osculus / Foskett Speckled Dace
RHOSKLB	163387/B	Rhinichthys osculus klamathensis / Speckled Dace (Klamath Basin)
RHUM	201910	Rhinichthys umatilla / Umatilla dace
RIBA	163528	Richardsonius balteatus / Redside Shiner
RIBAHYA	163528/A	Richardsonius balteatus hydrophlox / Columbia Redside Shiner
RIEG	163529	Richardsonius egregius / Lahontan Redside Shiner
SACO	162004	Salvelinus confluentus / Bull Trout
SACOE	162004/E	Salvelinus confluentus / Bull Trout Hybrid
SAFO	162003	Salvelinus fontinalis / Brook Trout
SATR	161997	Salmo trutta / Brown Trout
STVI	168508	Stizostedion vitreum vitreum / Walleye

FCODES and NHD_FLOW Crosswalk

FCODE	DESCRIPTION	NHD_FLOW
30700	Area to be Submerged	N/A
31200	Bay/Inlet	per
31800	Bridge	N/A
33400	Connector	N/A
33600	Canal/Ditch	N/A
33601	Canal/Ditch: Canal/Ditch Type = Aqueduct	N/A
33603	Canal Ditch: Canal Ditch Type = Stormwater	N/A
34300	Dam/Weir	N/A
34305	Dam/Weir: Construction Material = Earthen	N/A
34306	Dam/Weir: Construction Material = Nonearthen	N/A
36100	Playa	int
36200	Flume	N/A
36400	Foreshore	N/A
36700	Gaging Station	N/A
36900	Gate	N/A
37300	Hazard Zone	N/A
37800	Ice Mass	int
39000	Lake/Pond	unk
39001	Lake/Pond: Hydrographic Category = Intermittent	int
39004	Lake/Pond: Hydrographic Category = Perennial	per
39005	Lake/Pond: Hydrographic Category = Intermittent; Stage = High Water Elevation	int
39006	Lake/Pond: Hydrographic Category = Intermittent; Stage = Date of Photography	int
39009	Lake/Pond: Hydrographic Category = Perennial; Stage = Average Water Elevation	per
39010	Lake/Pond: Hydrographic Category = Perennial; Stage = Normal Pool	per
39011	Lake/Pond: Hydrographic Category = Perennial; Stage = Date of Photography	per
39012	Lake/Pond: Hydrographic Category = Perennial; Stage = Spillway Elevation	per
39800	Lock Chamber	per
40300	Inundation Area	unk
40307	Inundation Area: Inundation Control Status = Not Controlled	unk
40308	Inundation Area: Inundation Control Status = Controlled	unk
40309	Inundation Area: Inundation Control Status = Controlled; Stage = Flood Elevation	unk
41100	Nonearthen Shore	N/A
42000	Underground Conduit	N/A
42001	Underground Conduit: Positional Accuracy = Definite	N/A
42002	Underground Conduit: Positional Accuracy = Indefinite	N/A
42003	Underground Conduit: Positional Accuracy = Approximate	N/A

FCODE	DESCRIPTION	NHD_FLOW
42800	Pipeline	N/A
42801	Pipeline: Pipeline Type = Aqueduct; Relationship to Surface = At or Near	N/A
42802	Pipeline: Pipeline Type = Aqueduct; Relationship to Surface = Elevated	N/A
42803	Pipeline: Pipeline Type = Aqueduct; Relationship to Surface = Underground	N/A
42804	Pipeline: Pipeline Type = Aqueduct; Relationship to Surface = Underwater	N/A
42805	Pipeline: Pipeline Type = General Case; Relationship to Surface = At or Near	N/A
42806	Pipeline: Pipeline Type = General Case; Relationship to Surface = Elevated	N/A
42807	Pipeline: Pipeline Type = General Case; Relationship to Surface = Underground	N/A
42808	Pipeline: Pipeline Type = General Case; Relationship to Surface = Underwater	N/A
42809	Pipeline: Pipeline Type = Penstock; Relationship to Surface = At or Near	N/A
42810	Pipeline: Pipeline Type = Penstock; Relationship to Surface = Elevated	N/A
42811	Pipeline: Pipeline Type = Penstock; Relationship to Surface = Underground	N/A
42812	Pipeline: Pipeline Type = Penstock; Relationship to Surface = Underwater	N/A
42813	Pipeline: Pipeline Type = Siphon	N/A
42814	Pipeline: Pipeline Type = General Case	N/A
42815	Pipeline: Pipeline Type = Penstock	N/A
42816	Pipeline: Pipeline Type = Aqueduct	N/A
42820	Pipeline: Pipeline Type = Stormwater	N/A
42821	Pipeline: Pipeline Type = Stormwater; Relationship to Surface = At or Near	N/A
42822	Pipeline: Pipeline Type = Stormwater; Relationship to Surface = Elevated	N/A
42823	Pipeline: Pipeline Type = Stormwater; Relationship to Surface = Underground	N/A
42824	Pipeline: Pipeline Type = Stormwater; Relationship to Surface = Underwater	N/A
43100	Rapids	per
43400	Reef	N/A
43600	Reservoir	unk
43601	Reservoir: Reservoir Type = Aquaculture	unk
43603	Reservoir: Reservoir Type = Decorative Pool	unk
43604	Reservoir: Reservoir Type = Tailings Pond; Construction Material = Earthen	unk
43605	Reservoir: Reservoir Type = Tailings Pond	unk
43606	Reservoir: Reservoir Type = Disposal	unk
43607	Reservoir: Reservoir Type = Evaporator	unk
43608	Reservoir: Reservoir Type = Swimming Pool	unk
43609	Reservoir: Reservoir Type = Cooling Pond	unk
43610	Reservoir: Reservoir Type = Filtration Pond	unk
43611	Reservoir: Reservoir Type = Settling Pond	unk
43612	Reservoir: Reservoir Type = Sewage Treatment Pond	unk
43613	Reservoir: Reservoir Type = Water Storage; Construction Material = Nonearthen	per

FCODE	DESCRIPTION	NHD_FLOW
43614	Reservoir: Reservoir Type = Water Storage; Construction Material = Earthen; Hydrographic Category = Intermittent	int
43615	Reservoir: Reservoir Type = Water Storage; Construction Material = Earthen; Hydrographic Category = Perennial	per
43617	Reservoir: Reservoir Type = Water Storage	per
43618	Reservoir: Construction Material = Earthen	per
43619	Reservoir: Construction Material = Nonearthen	per
43621	Reservoir: Reservoir Type = Water Storage; Hydrographic Category = Perennial	per
43623	Reservoir: Reservoir Type = Evaporator; Construction Material = Earthen	unk
43624	Reservoir; Reservoir Type = Treatment	unk
43625	Reservoir: Reservoir Type = Disposal; Construction Material = Earthen	unk
43626	Reservoir: Reservoir Type = Disposal; Construction Material = Nonearthen	unk
44100	Rock	N/A
44101	Rock: Relationship to Surface = Abovewater	N/A
44102	Rock: Relationship to Surface = Underwater	N/A
44500	Sea/Ocean	per
45000	Sink/Rise	N/A
45400	Special Use Zone	unk
45401	Special Use Zone: Special Use Zone Type = Dump Site; Operational Status = Operational	unk
45402	Special Use Zone: Special Use Zone Type = Dump Site; Operational Status = Abandoned	unk
45403	Special Use Zone: Special Use Zone Type = Spoil Area; Operational Status = Operational	unk
45404	Special Use Zone: Special Use Zone Type = Spoil Area; Operational Status = Abandoned	unk
45500	Spillway	unk
45800	Spring/Seep	unk
46000	Stream/River	unk
46003	Stream/River: Hydrographic Category = Intermittent	int
46006	Stream/River: Hydrographic Category = Perennial	per
46007	Stream/River: Hydrographic Category = Ephemeral	eph
46100	Submerged Stream	per
46600	Swamp/Marsh	unk
46601	Swamp/Marsh: Hydrographic Category = Intermittent	int
46602	Swamp/Marsh: Hydrographic Category = Perennial	per
47800	Tunnel	N/A
48300	Wall	N/A
48400	Wash	unk

FCODE	DESCRIPTION	NHD_FLOW
48500	Water Intake/Outflow	N/A
48700	Waterfall	unk
48800	Well	unk
49300	Estuary	per
50300	Sounding Datum Line	N/A
50301	Sounding Datum Line: Positional Accuracy = Approximate	N/A
50302	Sounding Datum Line: Positional Accuracy = Definite	N/A
53300	Special Use Zone Limit	N/A
53301	Special Use Zone Limit: Positional Accuracy = Definite	N/A
53302	Special Use Zone Limit: Positional Accuracy = Indefinite	N/A
53700	Area of Complex Channels	per
55800	Artificial Path	N/A
56600	Coastline	N/A
56700	Shoreline	N/A
56800	Levee	N/A