

# Flowlines - National Stream Internet

## Shapefile

### Tags

Stream / River, Lake / Pond, Canal / Ditch, Reservoir, Spring / Seep, Swamp / Marsh, Artificial Path, Reach, Watershed, Catchment, EARTH SCIENCE, Land Surface, Topography, Cartography, GEODATA, GIS, USGS, EPA, Elevation, National Elevation Dataset, NED, National Hydrography Dataset, NHD, NHDPlus, Stream flow, Stream velocity, Spatially Referenced Regressions on Watershed Attributes, StreamStats, Water-quality, Hydrologic modeling, River Coding Systems, Hydrography, inlandWaters, STARS, Network, National Stream Internet

### Summary

This stream layer is a modified version of the USGS NHDPlus Version 2 stream flowline data. These data are intended to be used with two spatial statistical toolsets called STARS and SSN (Peterson E.E. and Ver Hoef J.M. 2014, and Ver Hoef J.M. and Peterson E.E. 2010) . The purpose of the toolsets is to model biological and physical characteristics of stream networks using digital stream line data. To implement the toolsets it is necessary that the streams data are specifically structured to ensure that hydrologic distances and spatial relationships are calculated properly. The STARS toolbox (version 2.0.1) and ArcGIS software were used to identify and modify topological entities of this stream line network so that users may utilize the data directly with the spatial statistical tools. More information about STARS and SSN may be obtained at:

<http://www.fs.fed.us/rm/boise/AWAE/projects/SpatialStreamNetworks.shtml>

### Description

This stream layer is a modified version of the USGS NHDPlus Version 2 (NHDPlusV2) stream flowline data. The original geospatial data included in the NHDPlusV2 are intended to support a variety of water-related applications. [U.S. Environmental Protection Agency (USEPA) and the U.S. Geological Survey (USGS)]. This modified version is intended to be used with the STARS and SSN statistical toolsets (Peterson E.E. and Ver Hoef J.M. 2014, Ver Hoef J.M. and Peterson E.E. 2010). The NHDPlusV2 stream network was simplified by removing braids and diverging channels, as well as modifying confluences with more than two tributaries (complex confluences). Locations where more than 2 segments joined at a stream junction were separated and snapped to a newly created node more than 25 meters downstream. Where possible, the segment with the smallest contributing area (TotDASqKM) value was moved. Where multiple stream segments converged into sinks, the terminal end nodes were moved 25 meters apart. In addition, segments where nodes created downstream divergences or where stream flow converged were separated as deemed most appropriate. This simplification of the stream network supports statistical calculations with the STARS Toolbox while maintaining the majority of network features for modeling purposes.

Peterson E.E. and Ver Hoef J.M. (2014) STARS: An ArcGIS toolset used to calculate the spatial information needed to fit spatial statistical models to stream network data. *Journal of Statistical Software*, 56(2).

Ver Hoef J.M. and Peterson E.E. (2010). A moving average approach to spatial statistical models of stream networks. *The Journal of the American Statistical Association*, 489: 6-18

More Information: <http://www.fs.fed.us/rm/boise/AWAE/projects/NationalStreamInternet.html>

## Credits

U.S. Environmental Protection Agency (USEPA) and the U.S. Geological Survey (USGS).

[http://www.horizon-systems.com/NHDPlus/NHDPlusV2\\_data.php](http://www.horizon-systems.com/NHDPlus/NHDPlusV2_data.php)

[ftp://ftp.horizon-systems.com/nhdplus/NHDPlusV21/Documentation/NHDPlusV2\\_User\\_Guide.pdf](ftp://ftp.horizon-systems.com/nhdplus/NHDPlusV21/Documentation/NHDPlusV2_User_Guide.pdf)

U.S. Forest Service, Rocky Mountain Research Station, Air, Water, and Aquatic Environments Program, Boise, ID

## Use limitations

The USDA Forest Service makes no warranty, expressed or implied, including the warranties of merchantability and fitness for a particular purpose, nor assumes any legal liability or responsibility for the accuracy, reliability, completeness or utility of these geospatial data, or for the improper or incorrect use of these geospatial data. These geospatial data and related maps or graphics are not legal documents and are not intended to be used as such. The data and maps may not be used to determine title, ownership, legal descriptions or boundaries, legal jurisdiction, or restrictions that may be in place on either public or private land. Natural hazards may or may not be depicted on the data and maps, and land users should exercise due caution. The data are dynamic and may change over time. The user is responsible to verify the limitations of the geospatial data and to use the data accordingly.

## Extent

**West** -89.428829    **East** -77.718417

**North** 43.409141    **South** 34.623533

## Scale Range

**Maximum (zoomed in)** 1:5,000

**Minimum (zoomed out)** 1:150,000,000

## ArcGIS Metadata ►

### Topics and Keywords ►

\* CONTENT TYPE    Downloadable Data

EXPORT TO FGDC CSDGM XML FORMAT AS RESOURCE DESCRIPTION    No

PLACE KEYWORDS    United States

THEME KEYWORDS    Rivers, streams

[Hide Topics and Keywords ▲](#)

### Citation ►

TITLE    Ohio VPU 05 (MS Drainage Area ID) Flowlines - National Stream Internet

CREATION DATE    2015-01-13 00:00:00

PUBLICATION DATE    2015-02-09 00:00:00

PRESENTATION FORMATS    \* digital map

OTHER CITATION DETAILS

<http://www.fs.fed.us/rm/boise/AWAE/projects/NationalStreamInternet.html>

[Hide Citation ▲](#)

## Citation Contacts ►

### RESPONSIBLE PARTY

INDIVIDUAL'S NAME David Nagel  
 ORGANIZATION'S NAME U.S. Forest Service  
 CONTACT'S POSITION GIS Analyst  
 CONTACT'S ROLE publisher

[Hide Citation Contacts ▲](#)

## Resource Details ►

DATASET LANGUAGES \* English (UNITED STATES)  
 DATASET CHARACTER SET utf8 - 8 bit UCS Transfer Format

SPATIAL REPRESENTATION TYPE vector

### SPATIAL RESOLUTION

DATASET'S SCALE  
 SCALE DENOMINATOR 1:100,000

\* PROCESSING ENVIRONMENT Microsoft Windows 7 Version 6.1 (Build 7601) Service Pack 1; Esri ArcGIS 10.2.1.3497

### CREDITS

U.S. Environmental Protection Agency (USEPA) and the U.S. Geological Survey (USGS).

[http://www.horizon-systems.com/NHDPlus/NHDPlusV2\\_data.php](http://www.horizon-systems.com/NHDPlus/NHDPlusV2_data.php)  
[ftp://ftp.horizon-systems.com/nhdplus/NHDPlusV21/Documentation/NHDPlusV2\\_User\\_Guide.pdf](ftp://ftp.horizon-systems.com/nhdplus/NHDPlusV21/Documentation/NHDPlusV2_User_Guide.pdf)

U.S. Forest Service, Rocky Mountain Research Station, Air, Water, and Aquatic Environments Program, Boise, ID

### ARCGIS ITEM PROPERTIES

\* NAME Flowline\_MS05\_NSI  
 \* SIZE 64.950  
 \* LOCATION file://\SXBOINAS001  
 \Rdrive\Workspace\NationalStreamInternet\VPU\_Distribution\VPU\_05\Flowline\_MS05\_NSI.shp  
 \* ACCESS PROTOCOL Local Area Network

[Hide Resource Details ▲](#)

## Extents ►

### EXTENT

#### GEOGRAPHIC EXTENT

#### BOUNDING RECTANGLE

EXTENT TYPE Extent used for searching  
 \* WEST LONGITUDE -89.428829  
 \* EAST LONGITUDE -77.718417  
 \* NORTH LATITUDE 43.409141  
 \* SOUTH LATITUDE 34.623533  
 \* EXTENT CONTAINS THE RESOURCE Yes

## EXTENT IN THE ITEM'S COORDINATE SYSTEM

- \* WEST LONGITUDE 589737.559300
- \* EAST LONGITUDE 1487686.022000
- \* SOUTH LATITUDE 1413666.358900
- \* NORTH LATITUDE 2291126.725400
- \* EXTENT CONTAINS THE RESOURCE Yes

[Hide Extents ▲](#)

## Resource Maintenance ►

## RESOURCE MAINTENANCE

UPDATE FREQUENCY not planned

[Hide Resource Maintenance ▲](#)

## Resource Constraints ►

## CONSTRAINTS

## LIMITATIONS OF USE

The USDA Forest Service makes no warranty, expressed or implied, including the warranties of merchantability and fitness for a particular purpose, nor assumes any legal liability or responsibility for the accuracy, reliability, completeness or utility of these geospatial data, or for the improper or incorrect use of these geospatial data. These geospatial data and related maps or graphics are not legal documents and are not intended to be used as such. The data and maps may not be used to determine title, ownership, legal descriptions or boundaries, legal jurisdiction, or restrictions that may be in place on either public or private land. Natural hazards may or may not be depicted on the data and maps, and land users should exercise due caution. The data are dynamic and may change over time. The user is responsible to verify the limitations of the geospatial data and to use the data accordingly.

[Hide Resource Constraints ▲](#)

## Spatial Reference ►

## ARCGIS COORDINATE SYSTEM

- \* TYPE Projected
- \* GEOGRAPHIC COORDINATE REFERENCE GCS\_North\_American\_1983
- \* PROJECTION NAD\_1983\_Albers
- \* COORDINATE REFERENCE DETAILS

## PROJECTED COORDINATE SYSTEM

X ORIGIN -16901100  
 Y ORIGIN -6972200  
 XY SCALE 266467840.99085236  
 Z ORIGIN -100000  
 Z SCALE 10000  
 M ORIGIN -100000  
 M SCALE 10000  
 XY TOLERANCE 0.001  
 Z TOLERANCE 0.001  
 M TOLERANCE 0.001

HIGH PRECISION true

WELL-KNOWN TEXT PROJCS["NAD\_1983\_Albers",GEOGCS["GCS\_North\_American\_1983",DATUM["D\_North\_American\_1983",SPHEROID["GRS\_1980",6378137.0,298.257222101]],PRIMEM["Greenwich",0.0],UNIT["Degree",0.0174532925199433]],PROJECTION["Albers"],PARAMETER["False\_Easting",0.0],PARAMETER["False\_Northing",0.0],PARAMETER["Central\_Meridian",-96.0],PARAMETER["Standard\_Parallel\_1",29.5],PARAMETER["Standard\_Parallel\_2",45.5],PARAMETER["Latitude\_Of\_Origin",23.0],UNIT["Meter",1.0]]

REFERENCE SYSTEM IDENTIFIER

\* VALUE 0

[Hide Spatial Reference ▲](#)

## Spatial Data Properties ►

VECTOR ►

\* LEVEL OF TOPOLOGY FOR THIS DATASET geometry only

GEOMETRIC OBJECTS

FEATURE CLASS NAME Flowline\_MS05\_NSI

\* OBJECT TYPE composite

\* OBJECT COUNT 169463

[Hide Vector ▲](#)

ARCGIS FEATURE CLASS PROPERTIES ►

FEATURE CLASS NAME Flowline\_MS05\_NSI

\* FEATURE TYPE Simple

\* GEOMETRY TYPE Polyline

\* HAS TOPOLOGY FALSE

\* FEATURE COUNT 169463

\* SPATIAL INDEX TRUE

\* LINEAR REFERENCING FALSE

[Hide ArcGIS Feature Class Properties ▲](#)

[Hide Spatial Data Properties ▲](#)

**Distribution** ▶

## DISTRIBUTION FORMAT

\* NAME Shapefile

## TRANSFER OPTIONS

\* TRANSFER SIZE 64.950

[Hide Distribution](#) ▲**Fields** ▶DETAILS FOR OBJECT [Flowline\\_MS05\\_NSI](#) ▶

\* TYPE Feature Class

\* ROW COUNT 169463

## DEFINITION

NHD Flowline for the entire NHD Version 2 Plus 11 RPU

## DEFINITION SOURCE

USDA Forest Service RMRS Boise Aquatic Sciences Lab

FIELD [FID](#) ▶

\* ALIAS FID

\* DATA TYPE OID

\* WIDTH 4

\* PRECISION 0

\* SCALE 0

## FIELD DESCRIPTION

Internal feature number.

## DESCRIPTION SOURCE

Esri

## DESCRIPTION OF VALUES

Sequential unique whole numbers that are automatically generated.

[Hide Field FID](#) ▲FIELD [Shape](#) ▶

\* ALIAS Shape

\* DATA TYPE Geometry

\* WIDTH 0

\* PRECISION 0

\* SCALE 0

## FIELD DESCRIPTION

Feature geometry.

## DESCRIPTION SOURCE

Esri

## DESCRIPTION OF VALUES

Coordinates defining the features.

[Hide Field Shape](#) ▲

**FIELD COMID** ▶

- \* ALIAS COMID
- \* DATA TYPE Integer
- \* WIDTH 9
- \* PRECISION 9
- \* SCALE 0

**FIELD DESCRIPTION**

Native NHDPlus attribute. A unique ID for each NHD event assigned during the central NHD update process.

**DESCRIPTION SOURCE**

U.S. Environmental Protection Agency (USEPA) and the U.S. Geological Survey (USGS).

[Hide Field COMID](#) ▲

**FIELD FDATE** ▶

- \* ALIAS FDATE
- \* DATA TYPE Date
- \* WIDTH 8
- \* PRECISION 0
- \* SCALE 0

**FIELD DESCRIPTION**

NHDPlus attribute. Feature currency date. The date that the stream line location feature was updated in the NHDPlus database.

**DESCRIPTION SOURCE**

U.S. Environmental Protection Agency (USEPA) and the U.S. Geological Survey (USGS).

[Hide Field FDATE](#) ▲

**FIELD RESOLUTION** ▶

- \* ALIAS RESOLUTION
- \* DATA TYPE String
- \* WIDTH 7
- \* PRECISION 0
- \* SCALE 0

**FIELD DESCRIPTION**

NHDPlus attribute. NHD database resolution (i.e. "high", "medium" or "local")

**DESCRIPTION SOURCE**

U.S. Environmental Protection Agency (USEPA) and the U.S. Geological Survey (USGS).

[Hide Field RESOLUTION](#) ▲

**FIELD GNIS\_ID** ▶

- \* ALIAS GNIS\_ID
- \* DATA TYPE String
- \* WIDTH 10
- \* PRECISION 0
- \* SCALE 0

**FIELD DESCRIPTION**

NHDPlus attribute. Geographic Names Information System ID for the value in GNIS\_Name

**DESCRIPTION SOURCE**

U.S. Environmental Protection Agency (USEPA) and the U.S. Geological Survey (USGS).

[Hide Field GNIS\\_ID](#) ▲

**FIELD GNIS\_NAME** ▶

- \* ALIAS GNIS\_NAME
- \* DATA TYPE String
- \* WIDTH 65
- \* PRECISION 0
- \* SCALE 0

**FIELD DESCRIPTION**

NHDPlus attribute. Feature Name from the Geographic Names Information System

**DESCRIPTION SOURCE**

U.S. Environmental Protection Agency (USEPA) and the U.S. Geological Survey (USGS).

*Hide Field GNIS\_NAME* ▲

**FIELD LENGTHKM** ▶

- \* ALIAS LENGTHKM
- \* DATA TYPE Double
- \* WIDTH 19
- \* PRECISION 0
- \* SCALE 0

**FIELD DESCRIPTION**

NHDPlus attribute. Feature length in kilometers as measured in the NHDPlus database. This length reflects the feature length before the National Stream Internet reconditioning process was completed.

**DESCRIPTION SOURCE**

U.S. Environmental Protection Agency (USEPA) and the U.S. Geological Survey (USGS).

*Hide Field LENGTHKM* ▲

**FIELD REACHCODE** ▶

- \* ALIAS REACHCODE
- \* DATA TYPE String
- \* WIDTH 14
- \* PRECISION 0
- \* SCALE 0

**FIELD DESCRIPTION**

NHDPlus attribute. Reach Code assigned to feature.

**DESCRIPTION SOURCE**

U.S. Environmental Protection Agency (USEPA) and the U.S. Geological Survey (USGS).

*Hide Field REACHCODE* ▲

**FIELD FLOWDIR** ▶

- \* ALIAS FLOWDIR
- \* DATA TYPE String
- \* WIDTH 15
- \* PRECISION 0
- \* SCALE 0

**FIELD DESCRIPTION**

NHDPlus attribute. Flow direction is "With Digitized" or "Uninitialized" Only flowlines with FlowDir = "With Digitized" are used to define the surface water network for the National Stream Internet. All other flowlines are deleted.

**DESCRIPTION SOURCE**

U.S. Environmental Protection Agency (USEPA) and the U.S. Geological Survey (USGS).

*Hide Field FLOWDIR* ▲

**FIELD FTYPE** ▶

- \* ALIAS FTYPE
- \* DATA TYPE String
- \* WIDTH 24
- \* PRECISION 0
- \* SCALE 0

**FIELD DESCRIPTION**

NHDPlus attribute. NHD Feature Type.

**DESCRIPTION SOURCE**

U.S. Environmental Protection Agency (USEPA) and the U.S. Geological Survey (USGS).

*Hide Field FTYPE* ▲

**FIELD FCODE** ▶

- \* ALIAS FCODE
- \* DATA TYPE Integer
- \* WIDTH 9
- \* PRECISION 9
- \* SCALE 0

**FIELD DESCRIPTION**

NHDPlus attribute. Numeric codes for various feature attributes in the NHDFCode lookup table

**DESCRIPTION SOURCE**

U.S. Environmental Protection Agency (USEPA) and the U.S. Geological Survey (USGS).

*Hide Field FCODE* ▲

**FIELD AreaSqKM** ▶

- \* ALIAS AreaSqKM
- \* DATA TYPE Double
- \* WIDTH 19
- \* PRECISION 0
- \* SCALE 0

**FIELD DESCRIPTION**

NHDPlus attribute. Reach catchment area in square kilometers as computed in the NHDPlus database, Exception: where DUP\_COMID = 1, AreaSqKM was calculated to 0 for the National Stream Internet dataset.

**DESCRIPTION SOURCE**

U.S. Environmental Protection Agency (USEPA) and the U.S. Geological Survey (USGS).

**ACCURACY INFORMATION**

**ACCURACY** A value of 0 (zero) is given to segments that were creating while splitting the original NHD Plus version 2 and creating a new duplicate segment.

*Hide Field AreaSqKM* ▲

**FIELD TotDASqKM** ▶

- \* ALIAS TotDASqKM
- \* DATA TYPE Double
- \* WIDTH 19
- \* PRECISION 0
- \* SCALE 0

**FIELD DESCRIPTION**

NHDPlus attribute. Total Upstream Cumulative Drainage Area, in square kilometers, at the

downstream end of the NHDFlowline feature.

DESCRIPTION SOURCE

U.S. Environmental Protection Agency (USEPA) and the U.S. Geological Survey (USGS).

[Hide Field TotDASqKM ▲](#)

FIELD DUP\_COMID ►

- \* ALIAS DUP\_COMID
- \* DATA TYPE Integer
- \* WIDTH 9
- \* PRECISION 9
- \* SCALE 0

FIELD DESCRIPTION

National Stream Internet attribute. Indicates a duplicate COMID created by splitting the original segment to correct the complex confluence issue. DUP\_COMID = 1 for the short segment that was created by splitting. All other segments have DUP\_COMID = 0.

DESCRIPTION SOURCE

USDA Forest Service RMRS Boise Aquatic Sciences Lab

ACCURACY INFORMATION

ACCURACY A value of "1" indicates that the original NHDPlus version 2 segment was split,

[Hide Field DUP\\_COMID ▲](#)

FIELD DUP\_ArSqKM ►

- \* ALIAS DUP\_ArSqKM
- \* DATA TYPE Double
- \* WIDTH 19
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

National Stream Internet attribute. This value is the ArSqKM value for the original stream segment before it was split to modify complex confluences.

DESCRIPTION SOURCE

USDA Forest Service RMRS Boise Aquatic Sciences Lab

[Hide Field DUP\\_ArSqKM ▲](#)

FIELD DUP\_Length ►

- \* ALIAS DUP\_Length
- \* DATA TYPE Double
- \* WIDTH 19
- \* PRECISION 0
- \* SCALE 0

FIELD DESCRIPTION

National Stream Internet attribute. This value is the calculated length (in kilometers) of the new segment after the segment was split to modify complex confluences.

DESCRIPTION SOURCE

USDA Forest Service RMRS Boise Aquatic Sciences Lab

[Hide Field DUP\\_Length ▲](#)

[Hide Details for object Flowline\\_MS05\\_NSI ▲](#)

[Hide Fields ▲](#)

## Metadata Details ►

\* METADATA LANGUAGE English (UNITED STATES)  
 METADATA CHARACTER SET utf8 - 8 bit UCS Transfer Format

SCOPE OF THE DATA DESCRIBED BY THE METADATA dataset  
 SCOPE NAME \* dataset

\* LAST UPDATE 2015-07-28

### ARCGIS METADATA PROPERTIES

METADATA FORMAT ArcGIS 1.0  
 METADATA STYLE FGDC CSDGM Metadata  
 STANDARD OR PROFILE USED TO EDIT METADATA FGDC

CREATED IN ARCGIS FOR THE ITEM 2015-02-09 14:20:12  
 LAST MODIFIED IN ARCGIS FOR THE ITEM 2015-07-28 15:25:48

### AUTOMATIC UPDATES

HAVE BEEN PERFORMED Yes  
 LAST UPDATE 2015-07-28 15:25:48

### ITEM LOCATION HISTORY

ITEM COPIED OR MOVED 2015-02-09 14:20:12

[Hide Metadata Details ▲](#)

## Metadata Contacts ►

### METADATA CONTACT

INDIVIDUAL'S NAME David Nagel  
 ORGANIZATION'S NAME U.S. Forest Service, Rocky Mountain Research Station, AWAE Program  
 CONTACT'S POSITION GIS Analyst  
 CONTACT'S ROLE publisher

### CONTACT INFORMATION ►

PHONE  
 VOICE 208-373-4391

### ADDRESS

TYPE both  
 DELIVERY POINT 322 East Front St; Suite 401  
 CITY Boise  
 ADMINISTRATIVE AREA ID  
 POSTAL CODE 83702

[Hide Contact information ▲](#)

### METADATA CONTACT

INDIVIDUAL'S NAME Sharon (Parkes) Payne  
 ORGANIZATION'S NAME USDA Forest Service RMRS Boise ASL  
 CONTACT'S POSITION GIS Specialist

CONTACT'S ROLE distributor

CONTACT INFORMATION ►

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CITY Boise

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POSTAL CODE 83702

E-MAIL ADDRESS sparkes@fs.fed.us

*Hide Contact information ▲*

*Hide Metadata Contacts ▲*

**Metadata Maintenance ►**

MAINTENANCE

UPDATE FREQUENCY not planned

*Hide Metadata Maintenance ▲*