

**NHDPlusV2 VAA Navigator  
User Documentation  
Horizon Systems Corporation  
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## **Description**

The NHDPlusV2 VAA Navigator performs navigation on the NHDPlusV2 surface water network using NHDPlusV2 Value Added Attributes (PlusFlowlineVAA.dbf). The Navigator may be used through ArcMap via a special ArcMap toolbar or it may be called from user-written program code. The Navigator will work on any NHDPlusV2 workspace and requires the NHDSnapshot and NHDPlusAttributes components to be installed for each VPU on which the Navigator will be used.

The Navigator performs four types of navigation: upstream mainstem, upstream with tributaries, downstream mainstem, and downstream with divergences. Navigations can begin and end on full NHDFlowline features or may begin and end as points along features.

Any of the four types of navigation may be stopped based on a user-supplied distance from the starting point. Navigation results may also be filtered based on certain user specified criteria.

## **NHDPlusV2 Navigator Toolbar**

From the ArcMap toolbar, the first time the VAA Navigator is executed for a given NHDPlusV2 VPU, it builds a Microsoft SQL database for that VPU which speeds up future navigations. The database is called V02NavDB\_<vvvvvvvv>.mdf, where <vvvvvvvv> is the VPUid for the NHDFlowline feature class being navigated. The database is created in a local folder specified by the user. The second and subsequent times that the Navigator is executed, it looks for the database and, if found, uses it.

Recommendation: In the navigation options dialog displayed when the VAA Navigator Toolbar is used, specify that the Navigator databases are to be stored with the installed NHDPlusV2 data in a sub-folder that is create for that purpose. The user must have read/write privileges to the folder.

Note: When called from a user-written program, the NHDPlusV2 VAA Navigator is capable of navigating drainage areas that contain multiple VPUs. When used through the ArcMap toolbar, only a single VPU will be navigated during each use of the tool.

## Microsoft SQL Server 2012 LocalDB and the NHDPlusV2 VAA Navigator

The Navigator uses Microsoft SQL Server 2012 Express LocalDB to build the navigation databases described above and to perform each navigation. SQL Server 2012 Express LocalDB must be installed on the computer that is going to run the Navigator. The SQL Server instance must be accessible to the login of the user who will be executing the Navigator. If SQL Server is installed with default parameters, then the default server instance name is *(localdb)\V11.0*.

Once a navigation database is created by the VAA Navigator, it MUST only be deleted or moved through the SQL Server functions found in SQL Server 2012 Management Studio. The databases should never be renamed.

## Installation

Install or upgrade Microsoft .NET (see NHDPlusV2 VAA Navigator Toolbar “System Requirements” on the NHDPlusV2 Tools webpage). Links to the Microsoft web page for .NET are also on the tools webpage.

Install SQL Server 2012 Management Studio. The Install package is available on the NHDPlusV2 Tools webpage.

The NHDPlusV2 VAA Navigator is installed as part of the installation of the NHDPlusV2 VAA Navigator Toolbar. If you have a previous version of the NHDPlusV2 VAA Navigator Toolbar installed, remove the toolbar from the ArcMap toolbar ribbons and uninstall the NHDPlusV2 VAA Navigator using Windows Control Panel.

Create a directory on your hard drive to use for the installation. Place a copy of NHDPlusV2VAANavigatorToolbar\_<version number>.7z file into that directory. Use 7-Zip to unzip NHDPlusV2VAANavigatorToolbar\_<version number>.7z using the “Extract Here” option. Once the installation is complete, this directory and its contents may be deleted.

Double-click on NHDPlusV2VAANavigatorToolbarSetup.exe to start the installation program. The installation program will place all the necessary files on your local hard

drive and add the necessary entries to your computer's registry. During the installation, you will need to select a location on your hard drive to be used for NHDPlus Tools. This will default to C:\NHDPlusTools in the install process. You may change the default to a <drive>:\<foldername> of your choice. The folder may already exist, but that is not required. It is recommended that all NHDPlusV2 tools be installed in the same folder. The NHDPlusV2 VAA Navigator Toolbar (and the NHDPlusV2 VAA Navigator) will be placed in a sub-folder called NHDPlusV2VAANavToolbar under the folder specified during the install.

In the installation folder there is a file called NavigatorCaller.ini. It has two parameters that contain the paths to the folders the NHDPlusV2VAANavToolbar uses for processing. The two parameters are **TempWorkAreaPath** and **NavDBPath**. These default to:

TempWorkAreaPath=C:\Working

NavDBPath= C:\NHDPlusV21\NavigatorDBs

Anyone using the NHDPlusV2VAANavToolbar needs to have read/write permissions for the folders specified in these two parameters. These paths should exist and can be changed in the NavigatorCaller.ini to any folders where the user has read/write permissions.

The other two parameters: **DataSource** and **SessionID** in NavigatorCaller.ini should not be modified.

To register the NHDPlusV2 VAA Navigator Toolbar with ArcMap:

1. Start ArcMap. If using Windows 7 or a later version of Windows, you may need to right click on ArcMap and choose "Run as Administrator".
2. Right click on an empty area of the ArcMap toolbar ribbons. Select "Customize" (at the bottom of the list). Choose the "Commands" tab in the Customize dialog.
3. Click "Add from File". Navigate to the folder where you installed the VAA Navigator. Select \NHDPlusV2VAANavToolbar\NHDPlusV2VAANavToolbar.tlb. Click OK. If you receive a "No Objects Added" message, then you must return to step 1 and use the "Run as Administrator" option.
4. Click "Close"
5. Right click on an empty area on the ArcMap toolbar ribbons. Select the NHDPlusV2 VAA Nav Toolbar from the list.

## Known Problems & Issues

None.

Please contact [nhdplus@hscnet.com](mailto:nhdplus@hscnet.com) if you experience problems with the VAA Navigator.