Targeted Watershed Site Selection Tool (TWSST)

How to navigate TWSST output in the Water Condition Viewer

The following tutorial provides a brief introduction to locating and using the Targeted Watershed Site Selection Tool in the Water Condition Viewer. While this tutorial will be updated periodically, information in this document may not reflect recent additions or modifications to the Water Condition Viewer.

The Targeted Watershed Site Selection Tool (TWSST) has been integrated with WDNR's 1:24k hydrography layers and can be accessed via WDNR's Water Condition Viewer (WC Viewer), a web-based mapping application. All TWSST products contained in the summary reports are also available in the WC Viewer. Advantages of using TWSST in the WC Viewer include access to base maps, aerial photography, and numerous ancillary map layers.

The WC Viewer looks and functions essentially the same as the Surface Water Data Viewer. The large and increasing number of map layers in the Surface Water Data Viewer and related performance issues motivated the addition of a second Viewer to house spatial data for WDNR's Water Resources program. The main difference between the two Viewers is the list of available map layers. While some critical map layers are common between the Viewers (e.g. monitoring stations and Natural Communities), many others are unique to the WC Viewer, such as calculated results and related ratings from streams and lakes assessments, as well as output from the TWSST model.

The following brief tutorial describes how to access TWSST map layers and products in the Water Condition Viewer. It also provides a variety of examples of how to incorporate additional map layers with the TWSST stream classification to assist in the monitoring site selection process. The tutorial assumes some familiarity with the Surface Water Data Viewer. More information on WDNR's numerous interactive web-based mapping applications can be found at http://dnr.wi.gov/maps/gis/applist.html.

Open the Water Condition Viewer

The Water Condition Viewer can be accessed via the Internet with the following URL:

http://dnrmaps.wi.gov/sl/?Viewer=water condition viewer

## Turn On TWSST Map Layers

1. Click the Show Layers button.

Like the Surface Water Data Viewer, map layers in the WC Viewer are organized into groups of similar layers. Both layer groups and individual layers can be turned on and off. Several layers are automatically turned on when opening the WC Viewer; this can be adjusted for your personal preferences.

2. Locate and expand the "Monitoring Study Tools" group and then the "Targeted Watershed Site Selection Tool" group. To view the two TWSST map layers, turn on all groups and layers circled in the screen shot below.

The "TWSST Watershed Areas" map layer contains the 52 TWSST watersheds and most of the information in the summary report—summary statistics, narrative descriptions of stream groups, and boxplots of physical characteristics and monitoring parameters. The "TWSST Modeled Stream Groups" map layer contains stream reaches color-coded by group and is the primary visual component for interpreting the stream classification.

3. Optional – If your TWA watersheds are already in the WC Viewer you can locate and expand the "TWA Projects & Watershed Plans" group. Turn on the map layers in this group to view locations and information on past and current Targeted Watershed Assessments.

4. Adjust a group's transparency to allow more or less visibility of your watershed area.

Map layer groups can be made partially or entirely transparent, enabling visualization of any layers behind it. However, the transparency of individual map layers cannot be adjusted independently of the group.
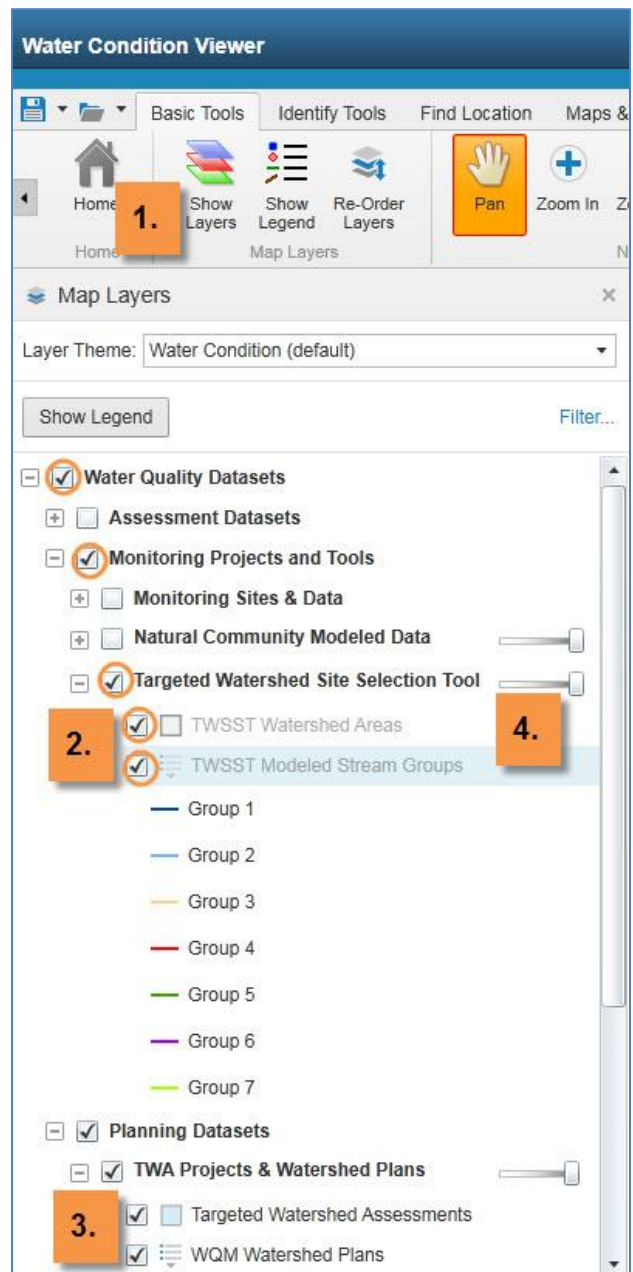
Locate TWA and TWSST Watersheds

1. Zoom in to the TWSST watershed that contains the TWA of interest.

The TWSST watersheds (typically HUC 8s) are the spatial unit for the stream classification, while TWAs are typically conducted at the HUC 12 scale. In the screen shot below, TWSST watersheds are shaded light grey and have thick grey borders. TWA catchments are shaded blue and have thin grey borders. To aid identification of TWA and TWSST boundaries, the "TWSST Modeled Stream Groups" map layer has been turned off and partial transparency has been applied to both of the active (turned on) map layer groups. Recall that the TWSST stream classifications only apply within a TWSST watershed (typically a HUC 8) and comparisons cannot be made across TWWST watersheds.
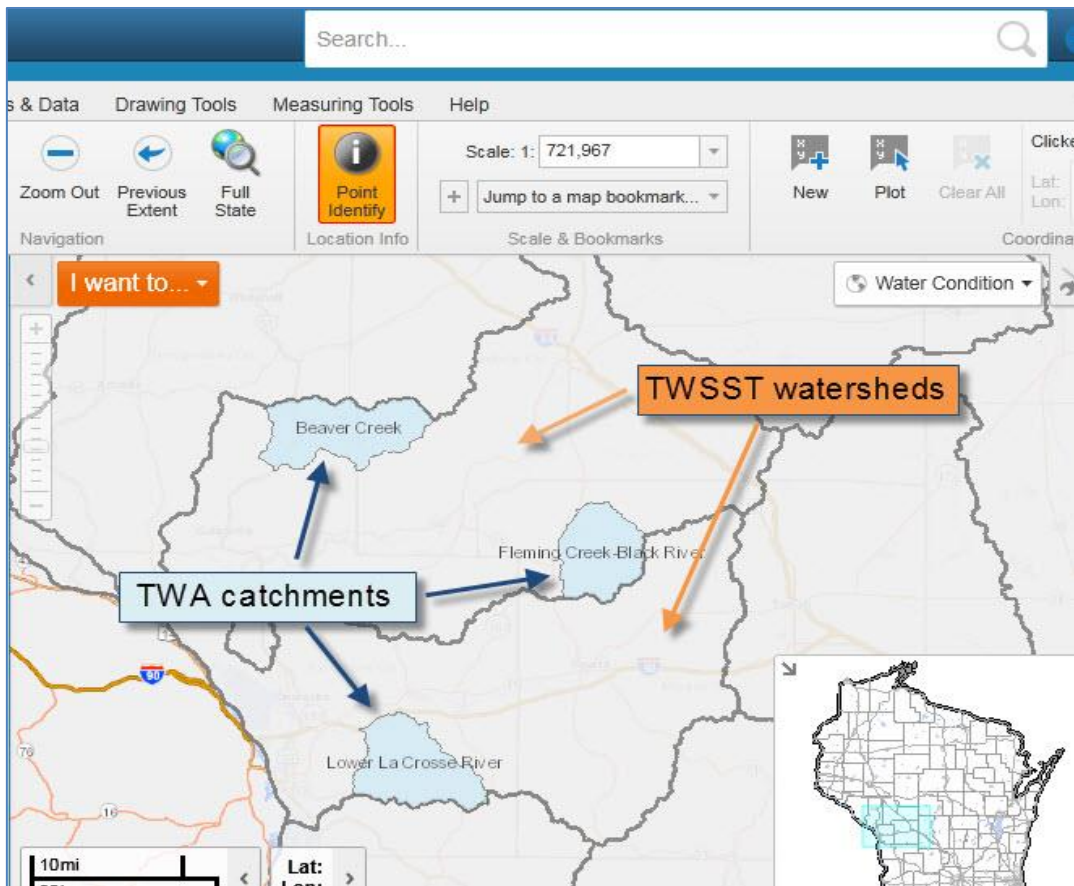
Access TWSST Products

1. Zoom in to a TWA or watershed of interest.

2. Click the Point Identify button.

3. Click anywhere within the TWA.

The Point Identify function returns a list of features located at the point clicked. Results are limited to features from map layers that are active (turned on). In the example below, results include the TWA feature, a stream feature, and the TWSST watershed.
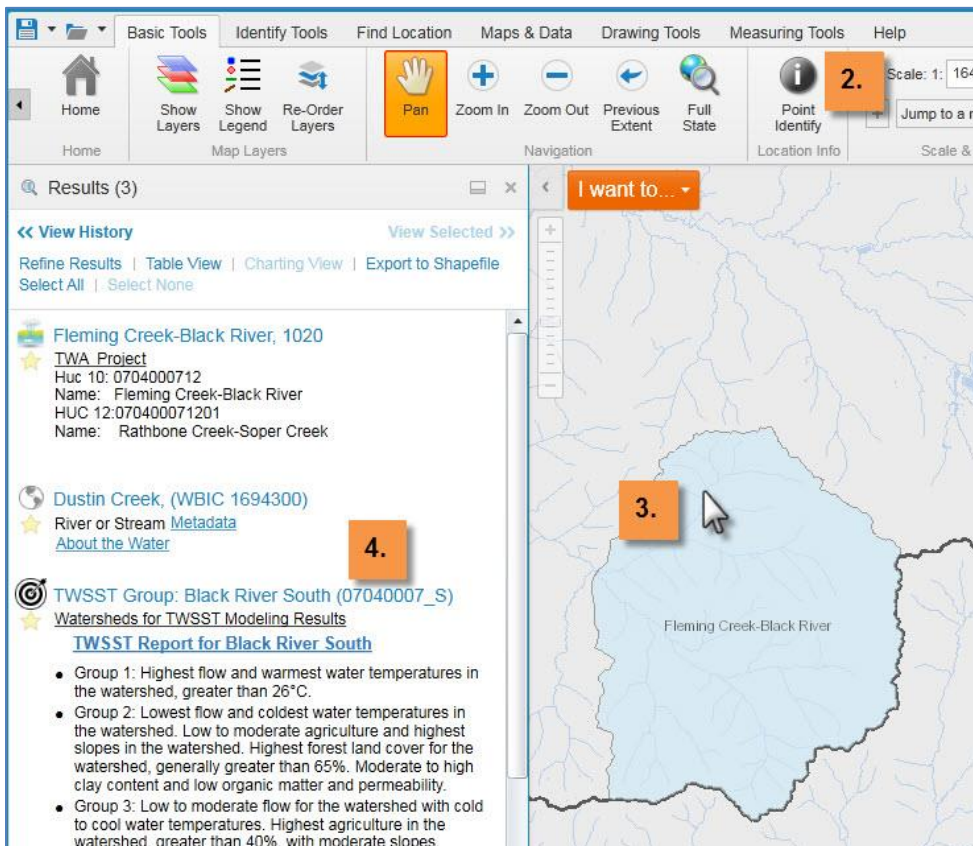
4. Hover over the name of any feature in the Results list and that feature is highlighted on the map.

5. Click the name of the TWSST watershed in the Results list.

A pop up window appears containing two tabs, Details and Attributes. Click on the Attributes tab to display a table of all attributes associated with the TWSST watershed. Most of these will be familiar from the summary reports. Click on the Details to access narratives of stream groups and links to the TWSST watershed summary report and boxplots of physical characteristics and monitoring parameters.
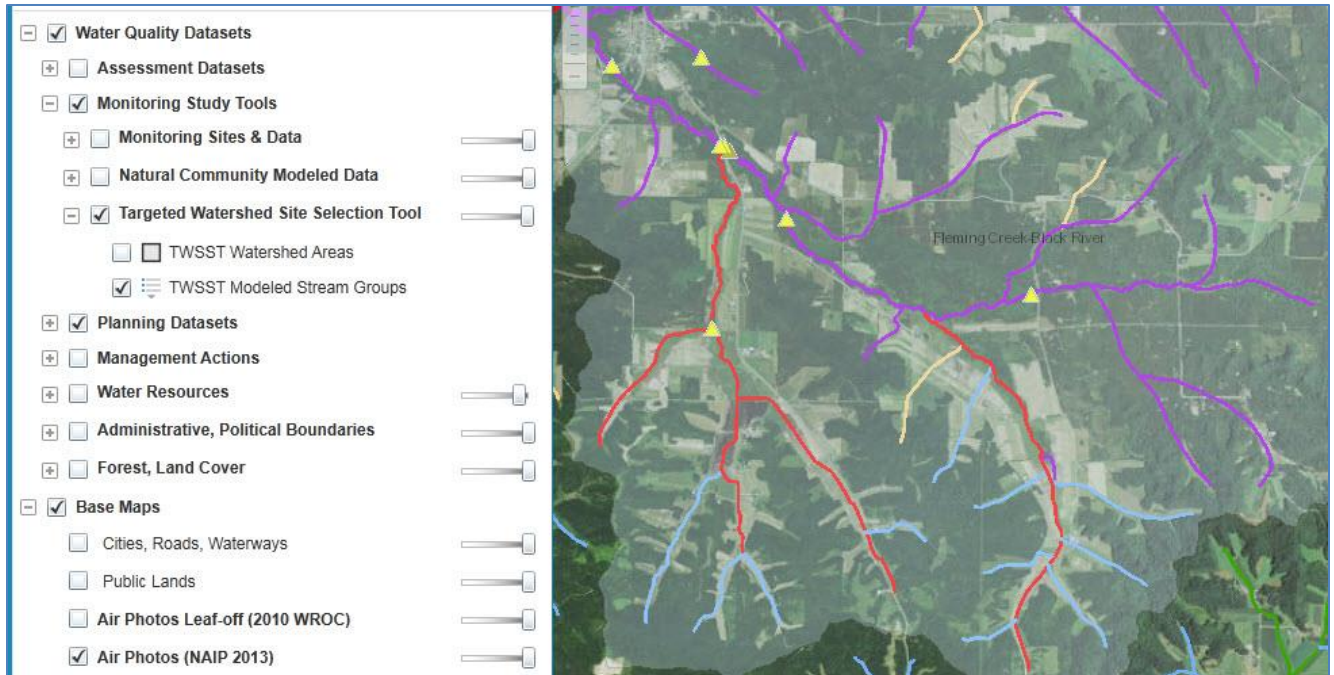
View The Stream Classification

1. Switch from the Results tab back to the Map Layers tab.

2. Turn the "TWSST Modeled Stream Groups" map layer on if needed.

There are six groups in this TWSST watershed, four of which are found in this TWA. At this point, it is useful to review the group narratives and boxplots with the objective of relating the spatial patterns on the map to both differences and variability in physical characteristics and monitoring parameters. If you are unable to open the maps, group descriptions and boxplots at once on your monitor it can be useful to print out the relevant summary report to help interpret differences in stream groups.

Incorporate Base Maps

Multiple base maps are currently available in the WC Viewer. In the screen shot below, leaf-on air photos provide context for the stream groups. The darker air photo base maps may also provide contrast to the color-coded streams making them easier to visualize.

Incorporate Additional Map Layers

The WC Viewer contains numerous map layers than can be turned on for viewing alongside the TWSST stream classification. Some of these map layers are also contained in the Surface Water Data Viewer (e.g. SWIMS monitoring stations locations) and you may be familiar with them. Other layers are only contained in the WC Viewer (e.g. mIBI ratings for stations and assessment units).

In the screen shot below, the following map layers have been turned on: SWIMS point stations, mIBI assessments, and grant and permit locations.

1. Click the Show Legend button to view the symbology for features in all map layers that are turned on.
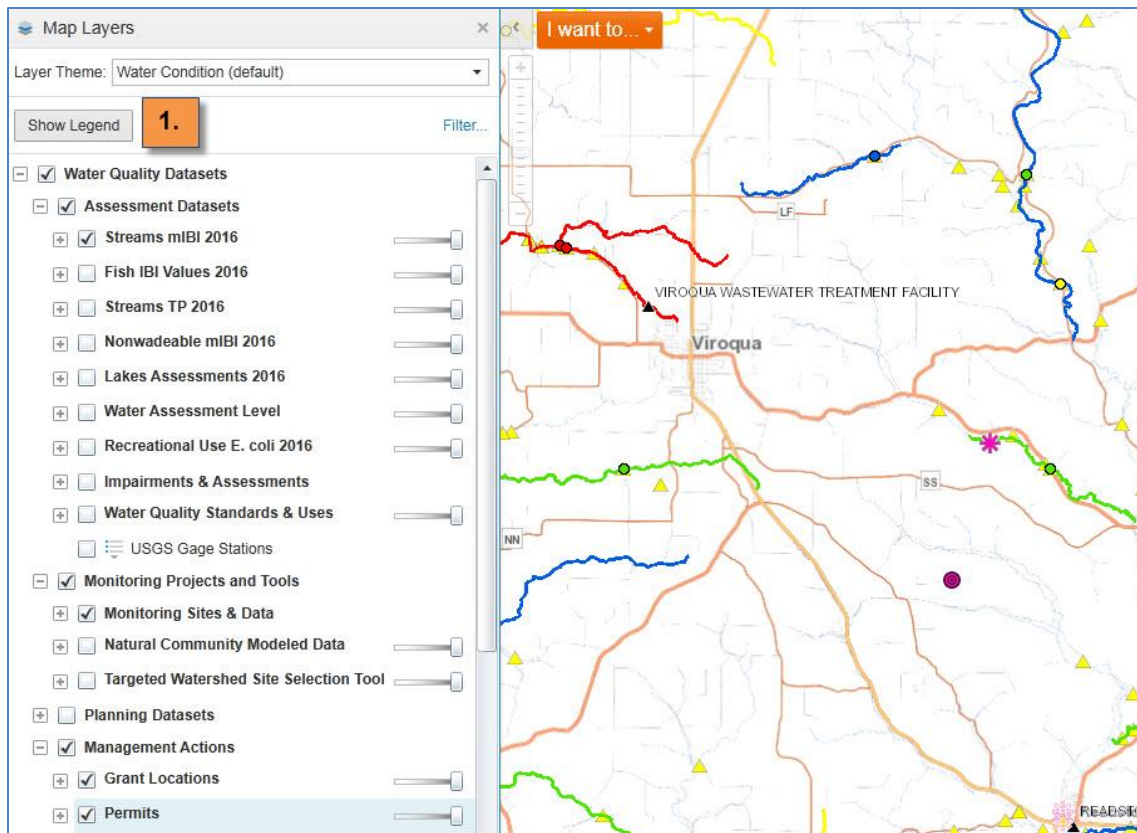

Any map layer that has been published as a map service can be added to the WC Viewer. For example, the Dams & Floodplains map layers found in the Surface Water Data Viewer are not automatically loaded in the Water Condition Viewer but can be added.

1. Click the Maps & Data tab, and then click the Add Map Layer button.
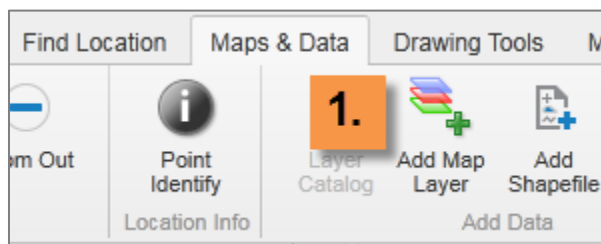
2. Scroll through the list of available map services or search for one by keyword. A search by the keyword "dam" results in one map service. Click on the thumbnail (not the URL hyperlink) for the map service to select it, and then click Next.
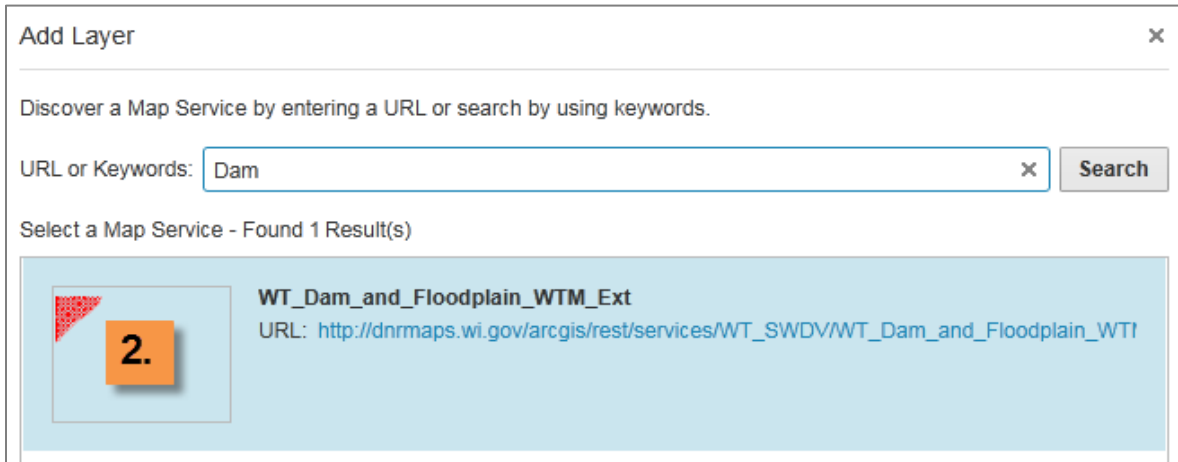
Select the parent project (top result) to add all layers contained in the Dams and Floodplains group. You can also select an individual map layer from the group, for example only the dams layer, and exclude the other layers that are grouped under that parent project. Click Next, and then Finish and the map layer will be added to the table of contents in the WC Viewer (the Map Layers pane).
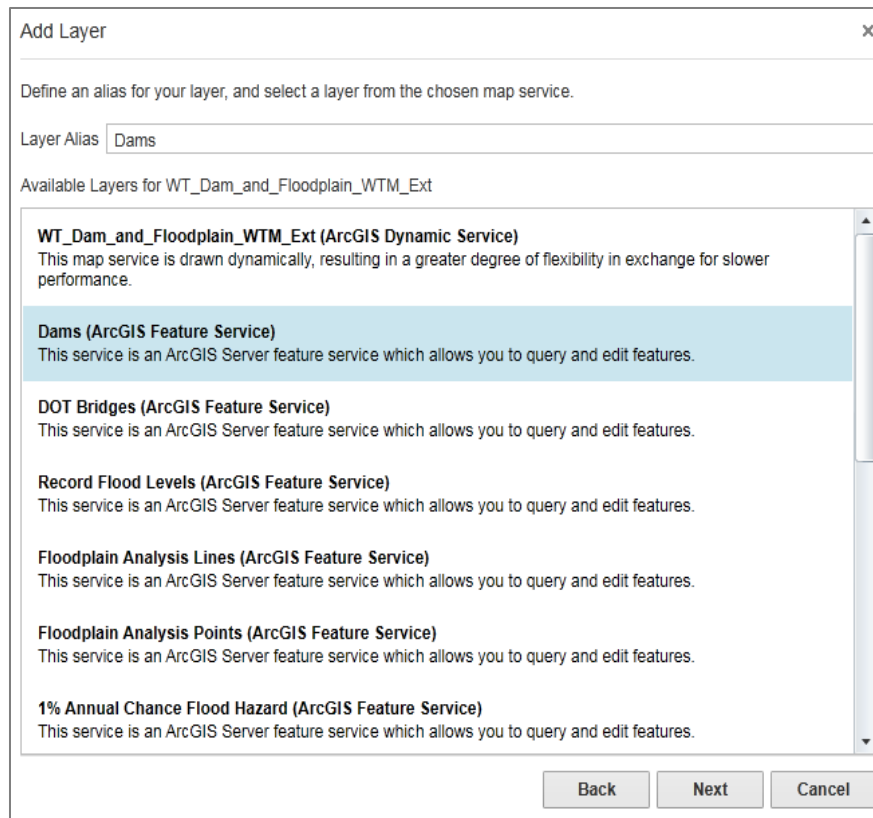
After adding additional layers such as point sources, base maps, and road layers, begin site selection by locating SWIMS stations as needed for the specific design and intent of the TWA.