USER GUIDE

Texas Water Service Boundary Viewer

Public Version

Table of Contents: The Viewer User Guide

1. Overview of the User Guide:

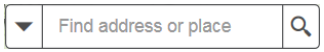
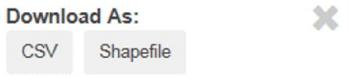
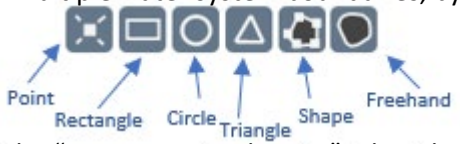
The Texas Water Development Board (TWDB) has developed a statewide public water system service boundary mapping application called the Texas Water Service Boundary Viewer (TWSBV). This application will aid in annual population estimates for water utilities, as well as population projections for the Regional Water Plans and the State Water Plan. While several water system mapping applications exist in the state, they do not necessarily represent the actual retail service area or include all the systems within the state. This application strives to provide the most up-to-date and best data available on the service areas for all community Public Water Systems (PWS) within Texas.

A primary goal is to partner with the annual TWDB Water User Survey (WUS) to encourage water systems to update or verify there have been no changes annually. The application will also be available to the public to view or download data. Information displayed on the map includes the PWS ID, name, and last update date. Version 1.0 of the Viewer also provides links to supplemental information about the PWS, allowing the user to view PWS specific data from the WUS as well as information on the Texas Commission of Environmental Quality (TCEQ)'s Drinking Water Watch(DWW) data. New reports will be added in the future versions to include useful information about water systems in the state.

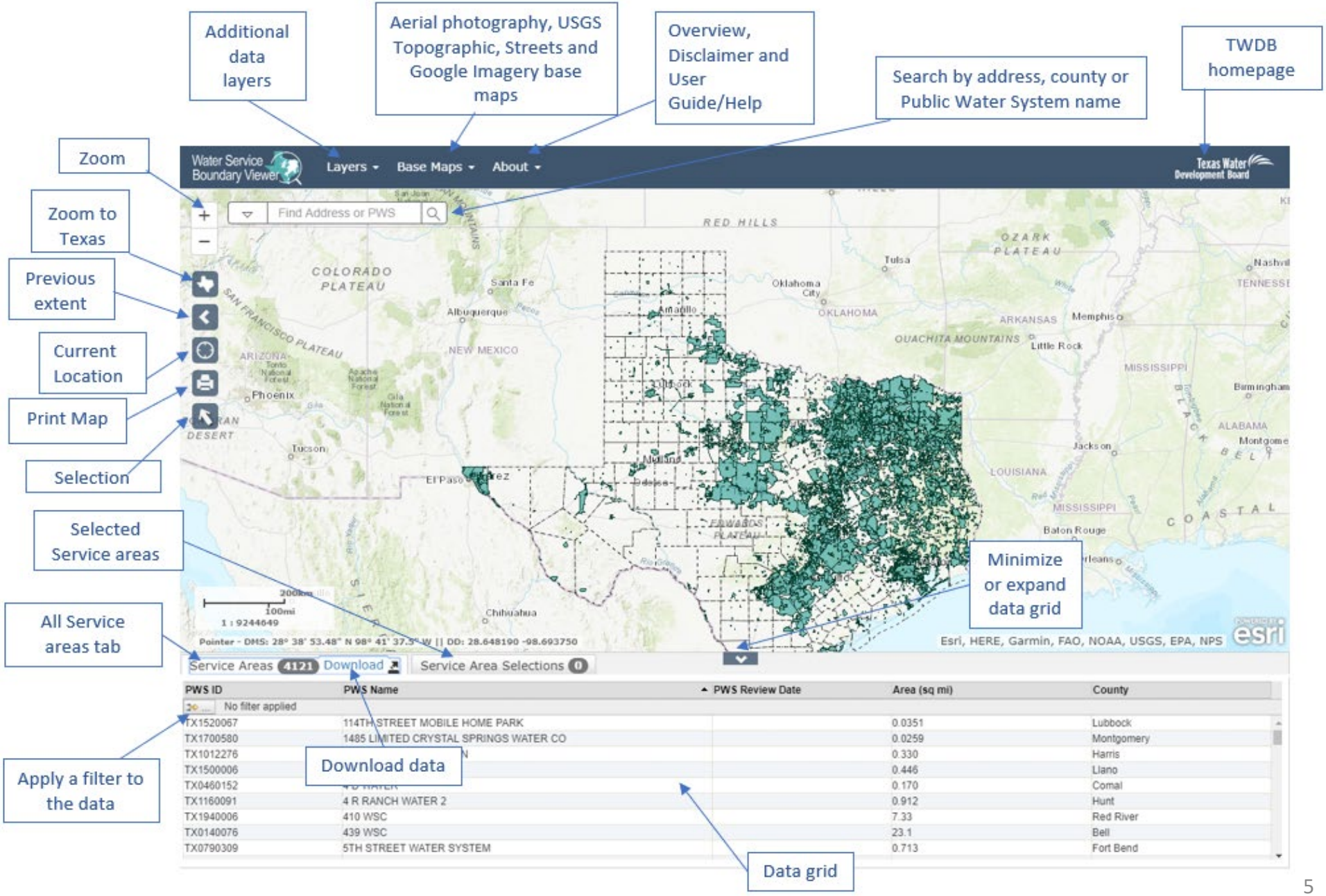
This material is based upon work supported by the U.S. Geological Survey(USGS) under Cooperative Agreement No. G17AC00016. The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the opinions or policies of the USGS. Mention of trade names or commercial products does not constitute their endorsement by the USGS.

The goal of the USER GUIDE is to provide easy to read, step-by-step instructions about how to access and use the tools within the application.

2. Quick Start Guide: a few tips and tricks to help you get started using the TWSBV application

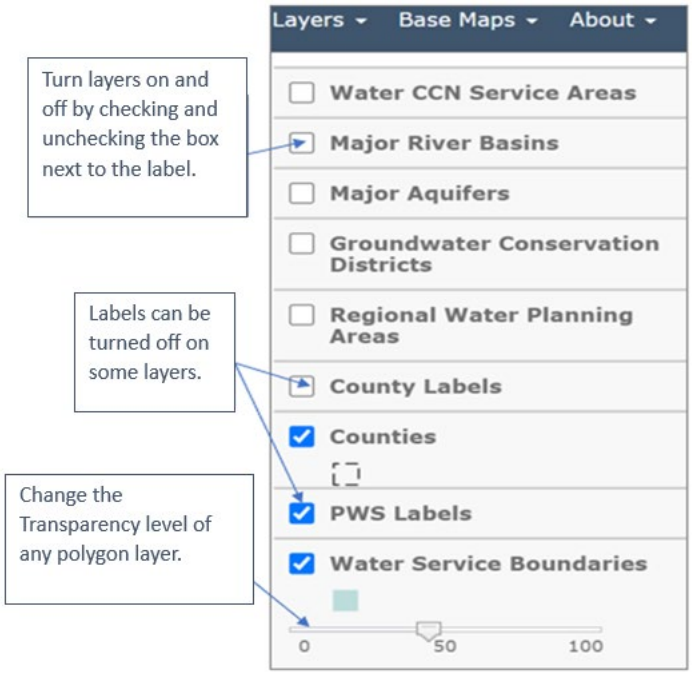
HOW TO…..	TOOL(S)	STEPS
Find a Water System		Using the **FIND TOOL**, start typing an address, county, PWS name or ID. Matching results will begin to appear; you can then select or continue to type the complete search phrase. Once selected, the map will zoom to the area of interest.
Download Data		Use the **DOWNLOAD DATA TOOL**, to download the entire statewide dataset, or a filtered or selected subset. Data can be downloaded as a shapefile (GIS Interchange format) or a CSV (excel compatible). 
Print a PDF Map		Use the **PRINT TOOL**, once you have selected the area or water system of interest. The print tool will make a map of the current view. 1. Enter the Map title 2. Click print preview to select the page size and orientation (ANSI A: 8.5x11, ANSI B: 11x17) 3. Click “Download Map” once the map is complete 
Select Water Systems		Use the **SELECTION TOOL**, to select a single or multiple water system boundaries, by choosing a selection shape. 1. Choose selection method 2. Click (point) or draw over selection area 3. Once an area is selected, it will appear in the “Service Area Selection” tab in the DataGrid  **Note: Do not select large amounts of PWS’s at once. It will crash the application.**
Filter the DataGrid		Use the **DEFINE FILTER TOOL,** to select records within the data grid based on your own criteria. 1. Choose the column you want to filter on (ex. County, Name) 2. Choose the condition (ex. contains, is, is not, etc.) 3. Choose the value you are searching for (ex. Travis, My PWS Name, etc.) 

3. General Information: an overview of the buttons and features of the Viewer



3.1 General Information: Additional Data Layers

Additional data layers are available under the 'Layers' drop down. When you enter the application only PWS Areas, PWS Labels, and Counties are turned on by default. You can turn the layer and labels on and off, as well as adjust the opacity.



Layer Name	*Description*
Water CCN Service Areas	Water Certificate of Convenience and Necessity (CCN) is regulated by the Public Utility Commission. CCN boundaries give the exclusive right to provide retail water to the identified geographic area. This layer is maintained by the PUC and provided for reference[1].
Major River Basins	Map layer of the eight major river basins of Texas: the Neches-Trinity, Trinity-San Jacinto, San Jacinto-Brazos, Brazos-Colorado, Colorado-Lavaca, Lavaca-Guadalupe, San Antonio-Nueces, and Nueces-Rio Grande
Major Aquifers	Map layer of the nine major aquifers of Texas: Pecos Valley, Seymour, Gulf Coast, Carrizo-Wilcox, Hueco-Mesilla Bolsons, Ogallala, Edwards-Trinity (Plateau), Edwards (Balcones Fault Zone) and Trinity.
Groundwater Conservation Districts	Map layer of the 98 groundwater conservation districts (GCD)s of Texas.
Regional Water Planning Areas	Regional Water Planning Areas are the boundaries used for the Regional and State Water Plans maintained by the TWDB.
County Labels	County labels are the names of the counties
Counties	Counties of Texas is provided as a reference when using a base map that does not include county boundaries.
PWS Labels	The Public Water System labels are the PWS' name as regulated by the Texas Commission on Environmental Quality (TCEQ)[2].
Water Service Boundaries	The Public Water System areas represent the retail water service boundaries as provided by the water system representative. The TWDB assumes no legal liability or responsibility or makes any guarantees to the accuracy.

1: For more information on CCN boundaries please visit PUC: https://www.puc.texas.gov/industry/water/utilities/gis.aspx
2: For more information on TCEQ regulated PWS please visit: https://www.tceq.texas.gov/drinkingwater

3.2 General Information: Base Maps

Additional base maps are provided under the 'Base Map' drop down. You can select the map that best meets your needs. Descriptions of maps are provided. When you enter the Viewer, the topographic map is the default view. When you zoom into the limit of the map, the Google Imagery will turn on to allow you to continue to zoom. The table lists all 27 b

Base Map	Description
Enhanced Contrast Map	This web map provides a detailed vector basemap for the world with enhanced contrast that aim to meet the standards for WCAG and US Government Section 508 compliance.
Enhanced Contrast Dark	This web map provides a detailed vector basemap for the world with dark colors and enhanced contrast that aim to meet the standards for WCAG and US Government Section 508 compliance.
Imagery	The World Imagery map is a detailed imagery map layer that is designed to be used as a base map for various maps and applications.
Imagery hyrbid	The Imagery with Labels is a detailed imagery map layer that include labels of roads and major features, that is designed to be used as a base map for various maps and applications.
Streets	The Streets base map presents a multiscale street map of the world.
Topographic	The Topographic map includes boundaries, cities, water features, physiographic features, parks, landmarks, transportation and buildings.
Navigation	This web map provides a detailed vector basemap for the world symbolized with a custom navigation map style that is designed for use during the day in mobile devices
Streets (Night)	This web map provides a detailed vector basemap for the world symbolized with a custom street map style that is designed for use at night or in other low-light environments.
Terrain with Labels	The Terrain with Labels base map is designed to be used to overlay and emphasize other thematic map layers.
Light-Gray Canvas	The Light-Gray Canvas base map is designed to be used as neutral background map for overlaying and emphasizing other map layers.
Dark-Gray Canvas	The Dark-Gray Canvas base map is designed to be used as a soothing background map for overlaying and focusing attention on other map layers.
Oceans	The Oceans base map is designed to be used as a base map by marine GIS professionals and as a reference map by anyone interested in ocean data.
National Geographic	The National Geographic base map is designed to be used as a general reference map for informational and educational purposes.
Open Street Map	The Open Street Map is a community map layer that is designed to be used as base map for various maps and applications.
Charted Territory Map	This web map provides a customized world basemap uniquely symbolized. It takes its inspiration from a printed atlas plate and pull-down scholastic classroom maps.
Community Map	Through Esri's Community Maps Program, members of the ArcGIS user community can contribute their geographic data to become part of a community map that Esri publishes and hosts online
Navigation Dark	This web map provides a detailed vector basemap for the world symbolized with a custom 'dark mode' navigation map style that is designed for use on mobile devices in low-light or night conditions.
Newspaper Map	This web map provides a customized vector basemap for the world symbolized with a unique "newspaper" styled map. It has a black & white appearance with select features highlighted in red.
Human Geography	This web map provides a detailed vector basemap with a monochromatic style and content adjusted to support Human Geography information.
Human Geography Dark	This web map provides a detailed vector basemap with a dark monochromatic style and content adjusted to support Human Geography information.
Modern Antique Map	This web map provides a customized vector layer for the world symbolized with a unique antique styled map, with a modern flair -- including the benefit of multi-scale mapping.
Mid-Century Map	This web map provides a customized vector layer for the world symbolized with a unique "Mid-Century" styled map. It takes its inspiration from the art and advertising of the 1950's with unique fonts.
Nova Map	This web map provides a detailed vector tile basemap for the world featuring a dark background with glowing blue symbology inspired by the ArcGIS.com splash screen.
Colored Pencil Map	This web map provides a detailed vector basemap for the world symbolized with the appearance of being hand-drawn by colored pencils
Outline Map	This vector web map features outline maps of the World. The maps can be used for coloring and other fun activities by budding cartographers.
Firefly Imagery Hybrid	This map features an alternative view of the World Imagery map designed to be used as a neutral imagery basemap, with de-saturated colors, that is useful for overlaying other brightly styled layers.
NAIP Imagery Hybrid	This map features recent high-resolution National Agriculture Imagery Program (NAIP) imagery for the United States and is optimized for display quality and performance.

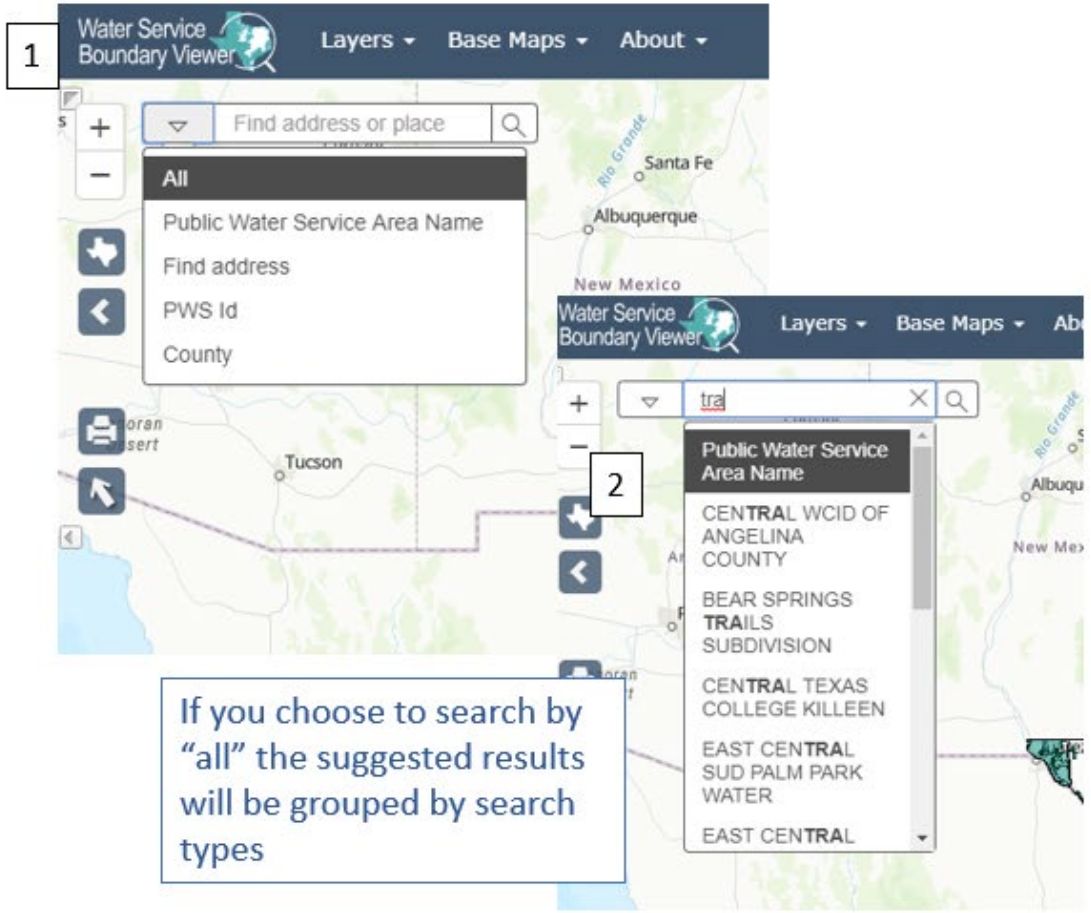
3.3 General Information: Using Search

The SEARCH tool can be used to look for addresses, counties, Public Water System (PWSs) name or PWS IDs.

Users can use the search bar to find locations or retail service boundaries of interest.

1. Use the drop-down button to choose the type of location you want to search by
2. When you begin to type a value the search box will autocomplete the text and allow you to select from the suggestions

Note: you must change the dropdown to “County” to search by county.



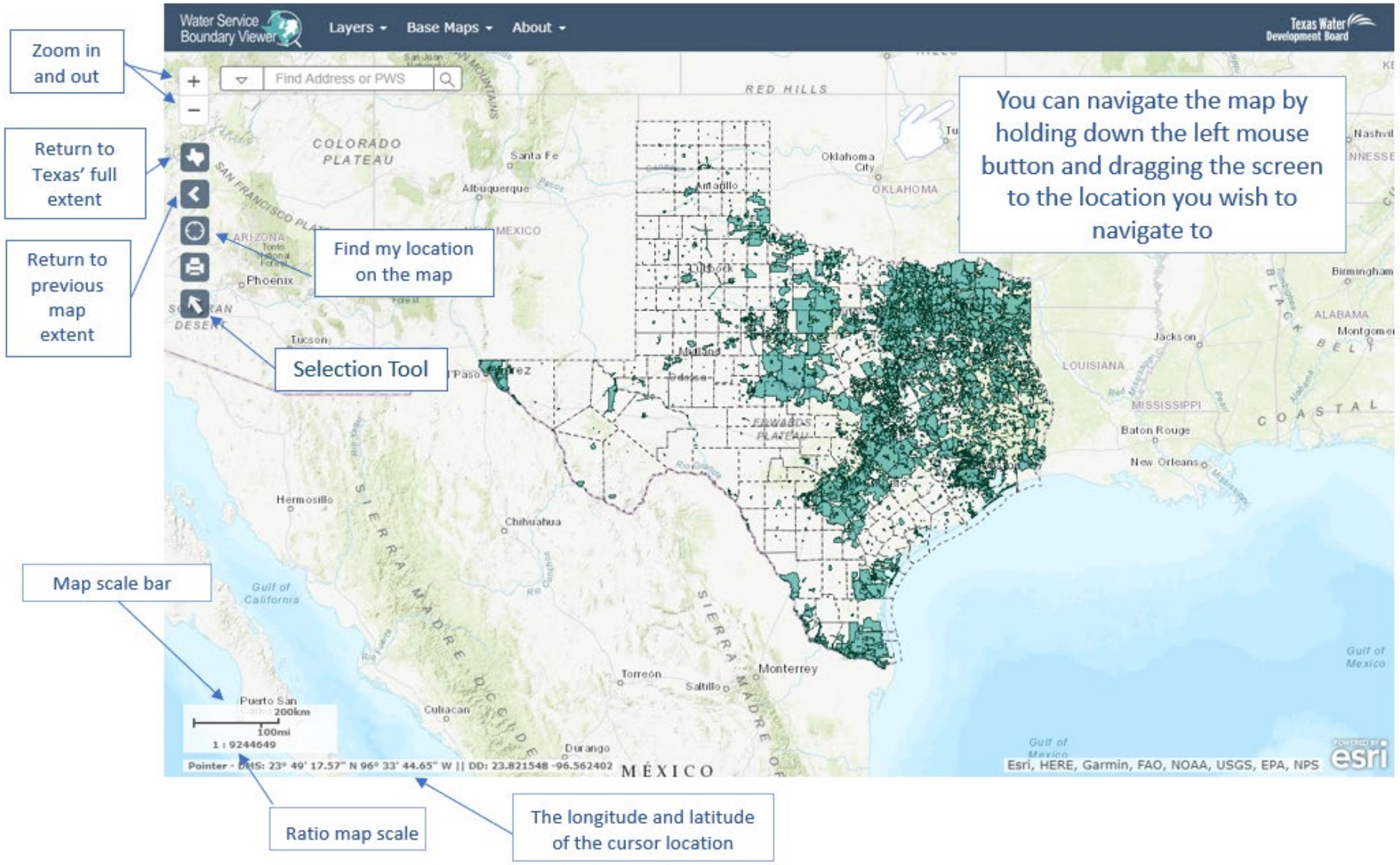
If you choose to search by “all” the suggested results will be grouped by search types

If searching by PWS ID, be sure to include the TX that leads the 7-digit number. This information can be found in the data grid.

PWS ID	PWS Name
No filter applied	
TX1700580	1485 LIMITED CRYSTAL SPRINGS WATER
TX1012276	2920 WEST SUBDIVISION
TX1500006	3 G WSC
TX0460152	4 D WATER COMPANY
TX1160091	4 R RANCH WATER 2
TX1940006	410 WSC
TX0140076	439 WSC
TX0790309	5TH STREET WATER SYSTEM
TX0790425	723 UTILITY

3.4 General Information: Navigation

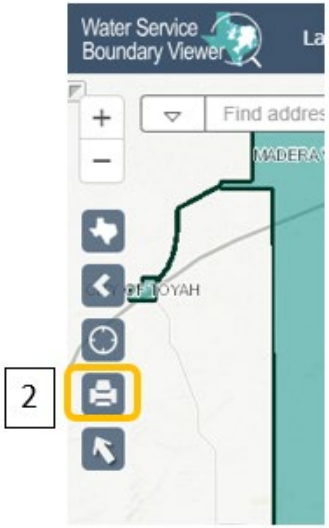
The are several ways to navigate through the Viewer. This page highlights the different tools and how they work. You can also navigate the page with the mouse wheel and click and drag the map.

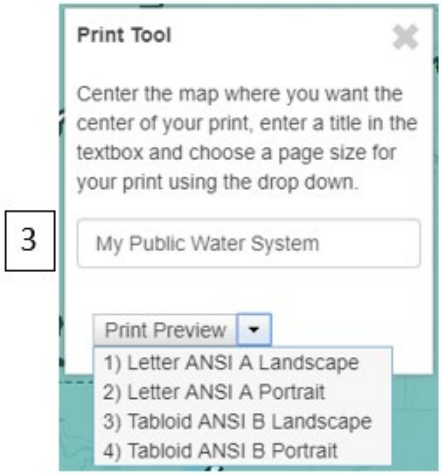


4. Printing and Creating a PDF Map: Create a map of an area of interest designed to be used for multiple purposes.

Users can create a pdf map of an area of interest using the following steps:

1. Select the extent of the area you want to be included in the map (the map will be created from the current view)
2. Click the “Print/Map Tool”
3. Enter a map title
4. Select the size and orientation of map you want to create
5. Wait for the map to generate and click “Download” once it appears





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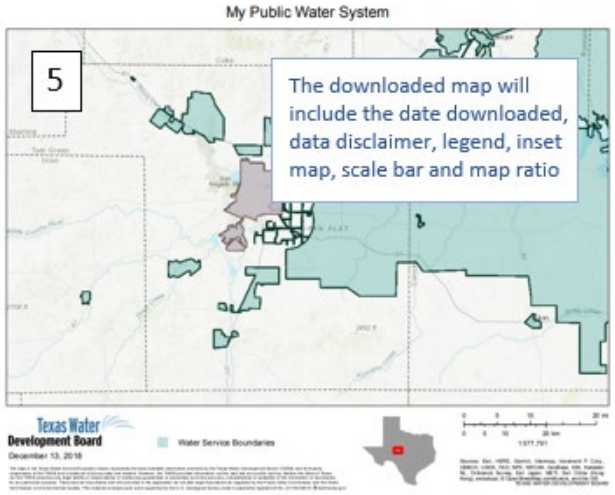
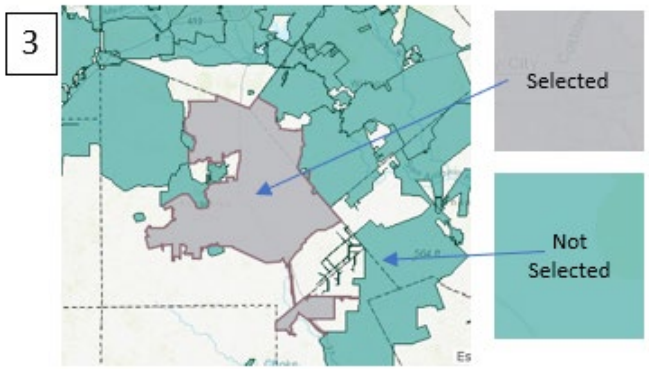
Map Size	*Size in Inches*
Letter ANSI A Landscape	8.5x11
Letter ANSI A Portrait	8.5x11
Tabloid ANSI B Landscape	11x17
Tabloid ANSI B Portrait	11x17



5. Using the Selection Tool: The selection tool can be utilized to select retail service water boundaries by several different methods.

Users can create a subset of boundaries for download or review using the selection tool.

1. Begin by clicking the selection tool.
2. The SELECT TOOLBOX will open with the available selection methods to choose from. A detailed description of how each tool works is located on the following page
3. When a selection is made it will appear gray,
4. If at any point you want to start over or clear the selected boundaries, click the "Clear Selection" button.
5. The retail service areas selected will appear in the "Service Area Selections" tab within the data grid.

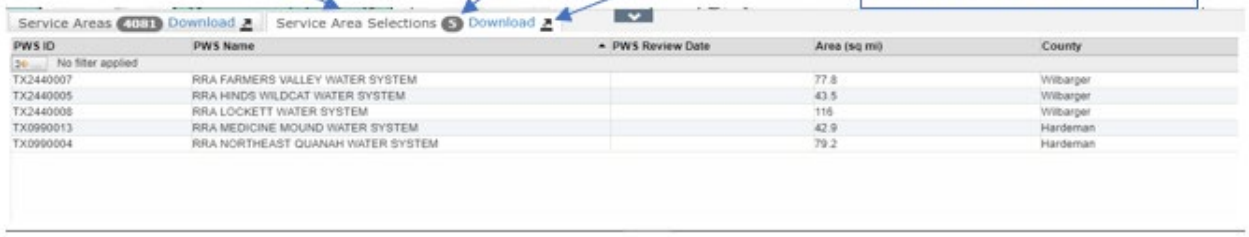


Note: Selecting large amounts of systems at the same time will crash the application.

The selection will also appear in the data grid in the "Service Area Selections" tab

The number of selected records

The selection is available to download as a CSV (Excel compatible) or Shapefile (GIS Format)



5.1 Using the Selection Tool: Different ways to utilize the individual selection tools.

Selection using Point

Using Point Selection allows users to have the most control over the boundaries they are selecting. Pair it with the search bar to find locations that are not close together. Click the Point Selection button before each selection.

Selection using a Rectangle

Using Rectangle Selection allows user to draw a rectangle over the area or boundaries of interest. This selection method is useful for selecting large areas. Once you draw the rectangle, it will disappear from the screen and highlight the selected boundaries that intersected the shape.

Selection using a Circle

Using Circle Selection allows user to draw a circle over the area or boundaries of interest. Where you place the mouse cursor will be the center of the circle. Once you draw the circle, it will disappear from the screen and highlight the selected boundaries that intersected the shape.

Selection using a Triangle

Using Triangle Selection allows user to draw a triangle over the area or boundaries of interest. Where you place the mouse cursor will be the center of the triangle. Once you draw the triangle, it will disappear from the screen and highlight the selected boundaries that intersected the shape.

Selection by drawn Polygon

Using the Polygon Selection method allows you to draw the desired shape. Begin to draw by clicking on the map, and double click to finish once you have a minimum of 3 points drawn. Once complete the polygon will disappear from the screen and highlight the selected boundaries that intersected the shape.

Selection by Freehand Polygon

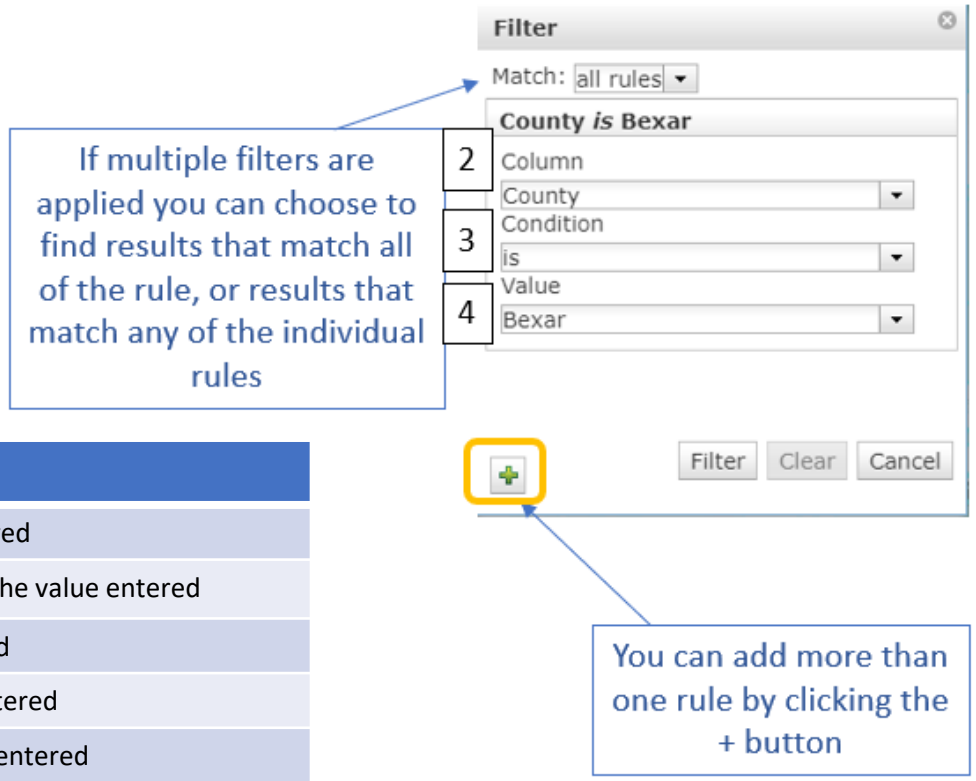
Using the Freehand Selection method allows you to draw the desired shape. Begin to draw by holding down the mouse and draw the shape, release the mouse to finish the drawing. Once complete the polygon will disappear from the screen and highlight the selected boundaries that intersected the shape.

6. Applying a Filter to the Data Gird

Users can apply filter(s) based on different parameters to the data grid for review or for download:

1. Click the DEFINE FILTER tool located in the top left of the data grid 
2. Choose the column from the data grid you want to filter on.
3. Choose a condition (see table of conditions below).
4. Choose a value to search. As you begin to type, the value box will auto populate results.

Example of searching for all records within Bexar County:

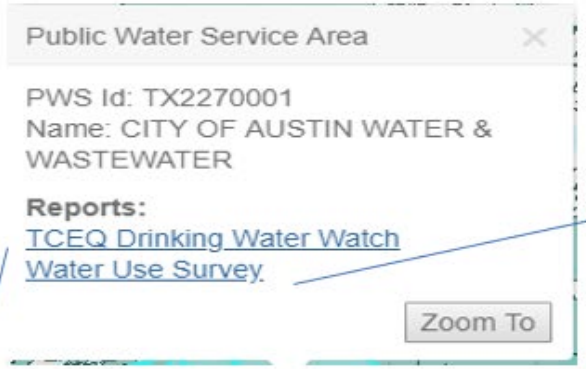


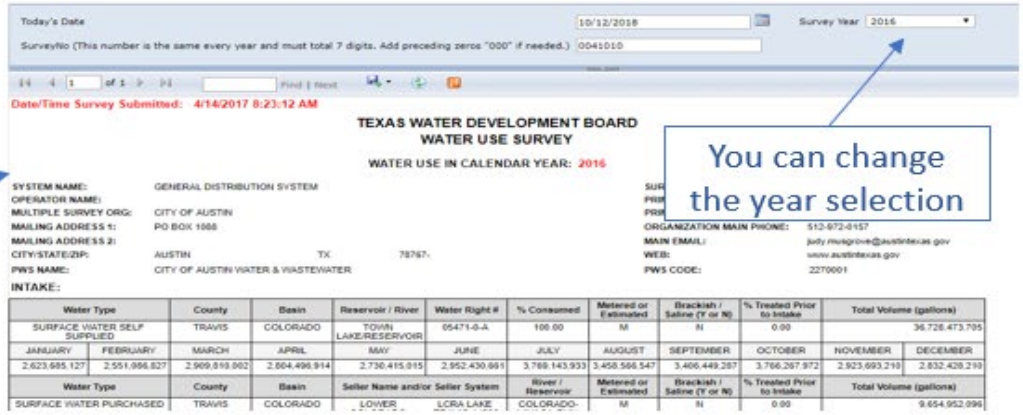
Condition	*Example*
Contains	Result will contain the value entered
Is	Result will be the exact match of the value entered
Starts With	Result will start with value entered
Ends With	Results will end with the value entered
Does not Contain	Results will not contain the value entered
Is Not	Results will return all records that are not the value entered
Does not Start With	Results does not start with value entered
Does not End With	Results does not end with value entered
Is Empty	Results will return empty records based on the column

7. Viewing Reports: Reports on the Public Water Systems are available for viewing.

To view a report, you must first locate the boundary of interest. This can be accomplished by scrolling to the area, using the search bar, or filtering the data grid.

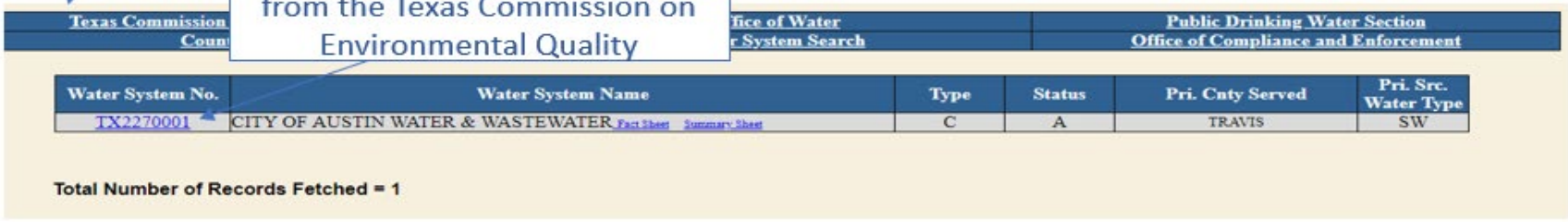
1. Click on the boundary of interest to pop-up the attribute data.
2. Within the pop-up are links to 2 reports, select one and a page will open in a different tab in your browser
   - TCEQ Drinking Water Watch includes information about system violations, sales, and other information TCEQ regulates
   - Water Use Survey data is collected by the TWDB and includes information about categorical water intake and sales





You can change the year selection

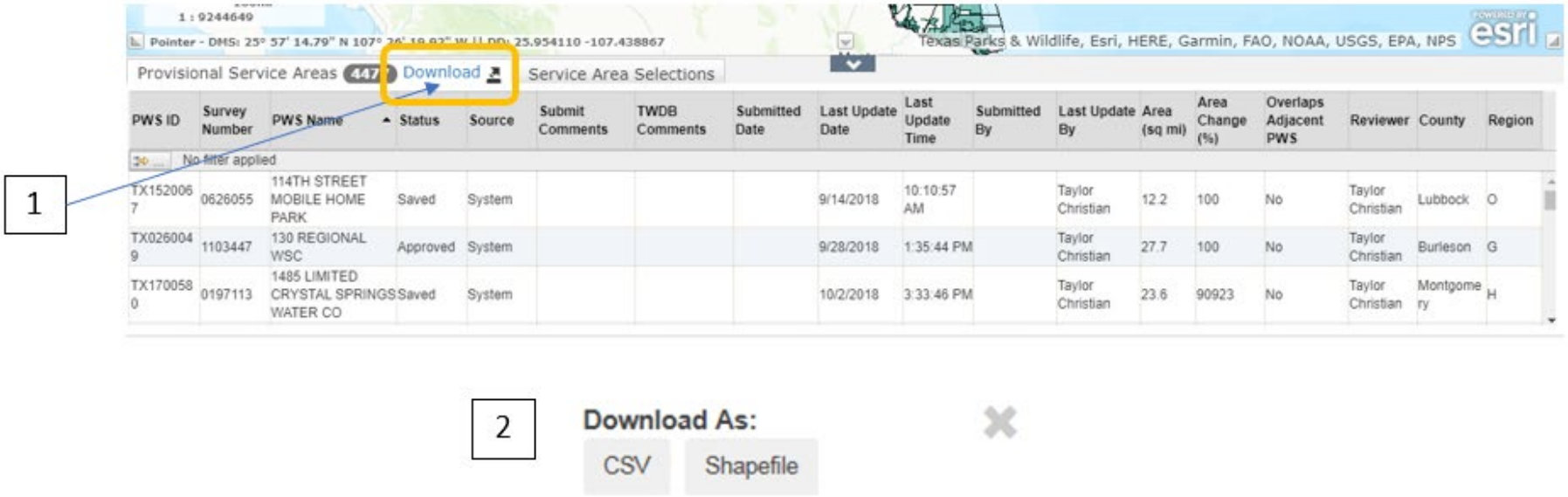
Select the PWS ID to view data from the Texas Commission on Environmental Quality



8. Downloading Data: data available in the Viewer are also available for download in a CSV or Shapefile format.

Users can download entire statewide data, or a subset of the data based on a data filter, or a selection.

1. Choose the data you need (statewide or a subset? If subset use the selection tool, or a data filter to find the desired data)
2. Click the download button located in the data grid
3. Choose CSV (Excel Compatible) or Shapefile (GIS format) from the pop-up window.



PWS ID	Survey Number	PWS Name	Status	Source	Submit Comments	TWDB Comments	Submitted Date	Last Update Date	Last Update Time	Submitted By	Last Update By	Area (sq mi)	Area Change (%)	Overlaps Adjacent PWS	Reviewer	County	Region
TX1520067	0626055	114TH STREET MOBILE HOME PARK	Saved	System				9/14/2018	10:10:57 AM		Taylor Christian	12.2	100	No	Taylor Christian	Lubbock	O
TX0260049	1103447	130 REGIONAL WSC	Approved	System				9/28/2018	1:35:44 PM		Taylor Christian	27.7	100	No	Taylor Christian	Burleson	G
TX1700580	0197113	1485 LIMITED CRYSTAL SPRINGS WATER CO	Saved	System				10/2/2018	3:33:46 PM		Taylor Christian	23.6	90923	No	Taylor Christian	Montgomery	H