

WI Water Quantity Data Viewer User Guide

Department of Natural Resources
Drinking Water & Groundwater Program

June 17, 2024

1 Table of Contents

- 1 Table of Contents2
- 2 Introduction3
 - 2.1 Contact Info3
- 3 Navigating the Interface.....4
 - 3.1 Application Interface4
- 4 Panel Tabs5
 - 4.1 Home5
 - 4.2 Layers5
 - 4.3 Legend5
 - 4.4 Results5
 - 4.5 Filter5
 - 4.6 Query5
 - 4.7 Find Township, Range, Section5
- 5 Layers.....5
 - 5.1 Layer Options6
- 6 Results6
 - 6.1 Results by using the cursor click.....6
 - 6.2 Results by Using Identify Tool(s)7
 - 6.3 Result View(s)7
- 7 Search For.....8
 - 7.1 Search for features in the Data Layers8
 - 7.2 Search for an address (Geocode).....9
 - 7.3 Displayed Results9
- 8 Toolbar (Tools)9
 - 8.1 Extents.....9
 - 8.2 Identify9
 - 8.3 Buffer10
 - 8.4 Draw.....10
 - 8.5 Measure11
 - 8.6 Find PLSS.....13
 - 8.7 Go to XY.....13
 - 8.8 Filter14
 - 8.9 Query15

9 **Toolbar (Data)**16
10 **Toolbar (Reset)**.....17
11 **Toolbar (Share)**.....17
12 **Toolbar (Links)**.....18

2 Introduction

The Wisconsin Water Quantity Data Viewer application is a public-facing GIS viewer that provides data related to proposed high capacity wells, existing surface and groundwater withdrawals, and water quantity data collect by the Wisconsin Department of Natural Resources (DNR) and our partners including the United States Geological Survey (USGS), the Wisconsin Geological and Natural History Survey (WGNHS), and the Universities of Wisconsin.

2.1 Contact Info

High Capacity Well Questions: Email DNRWATERUSERREGISTRATION@wisconsin.gov

GIS Viewer Technical Issues: Email DNRDGGISAPPS@wisconsin.gov with the subject heading “WI Water Quantity Data Viewer”.

Include the following in the email:

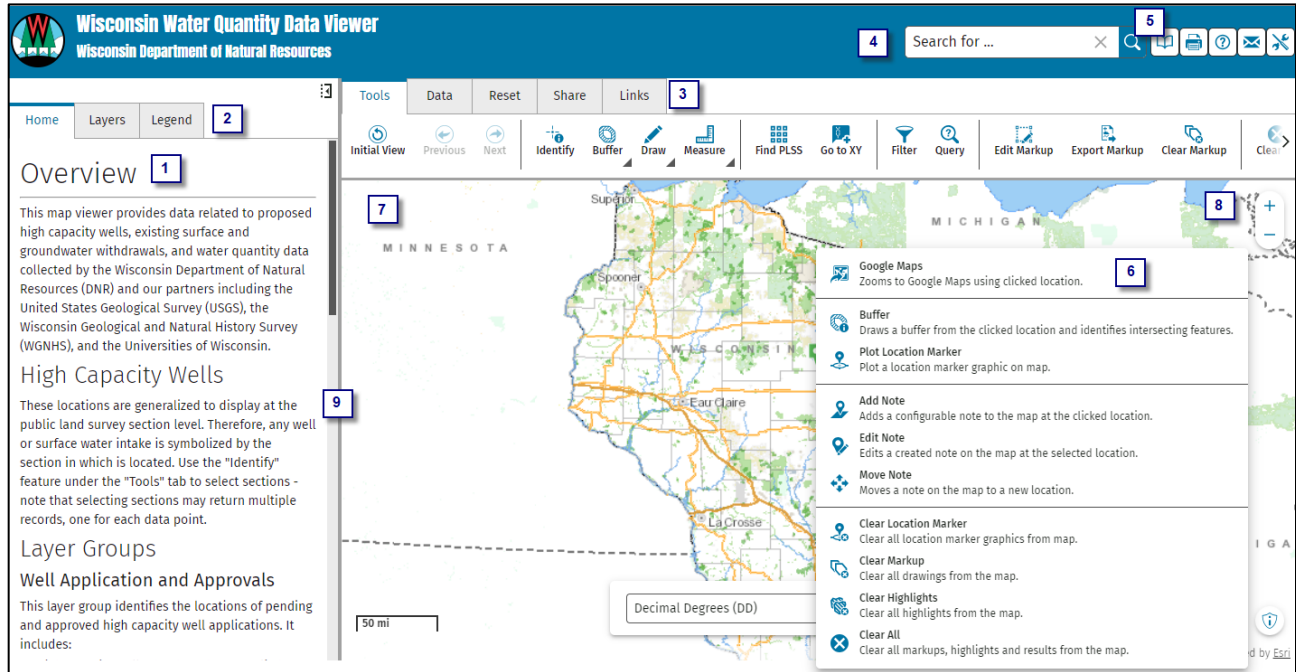
- Contact information
- A description of the issue you are experiencing
- Screenshots, if possible

3 Navigating the Interface

An overview of the application interface.

3.1 Application Interface

When you open the application, there are several elements to take note of:



| ID | Name | Description |
|----|--------------------|---|
| 1 | Home Panel | Displays a brief introduction about the application and contact information. |
| 2 | Panel Tabs | These tabs can be clicked on to open. The panels in this application: Home, Layer, Legend, Results, Filter, Query and Find Township, Range and Section. |
| 3 | Toolbar | The toolbar contains different tools to use in the application. |
| 4 | Search For.. | The search bar is where you will type in the values you need to search against the different layers in the map as well as an address search. |
| 5 | Tools in Header | These tools in header are available when the end user has collapsed the toolbar. |
| 6 | Right-Click on Map | Displays a list of actions to do various tasks with the map/data. |
| 7 | Map Area | Displays data from the layer list. |
| 8 | Zoom In/Out | Click on the + to zoom in and the – to zoom out. |
| 9 | Adjust Panel | Allows you to resize the width of the panel. |

4 Panel Tabs

There are three main Panel Tabs: Home, Layers, and Legend. More tabs will appear as you open workflows, utilize tools or select data.

4.1 Home

Displays the overview of the use of the application and the data layers utilized in the application.

4.2 Layers

Displays the layers available in the GIS viewer. Some layers are scale dependent and are only viewable when zoomed in on the map.

4.3 Legend

Displays symbology for visible layers in the map area and their drawing order. The legend will not show a layer in the legend if it is not turned on or if it is not visible on the map.

4.4 Results

Displays the results from search bar, identify or buffers.

4.5 Filter

Displays a dialog for the end user to filter data in the layer list.

4.6 Query

Displays a dialog for the end user to query data from certain layers in the layer list. View the [INSERT] for layers where this is enabled.

4.7 Find Township, Range, Section

When **FIND PLSS** is invoked the form is displayed in a panel tab.

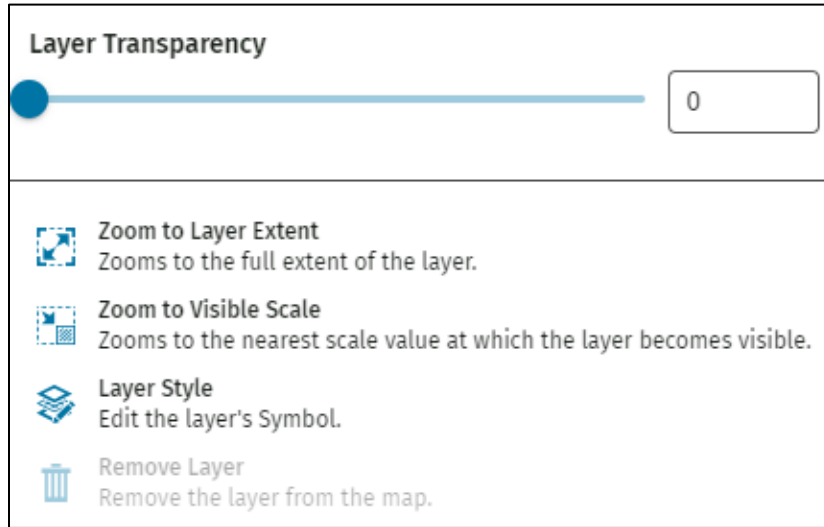
5 Layers

Below is a list of the data layers that are available in the GIS Viewer. View the description of available data layers by clicking on the Layer Information button on the Home tab in the application.

| Layer Name | Layer Name |
|---------------------------------|------------------------------------|
| USGS Groundwater Quality | Well Applications and Approvals |
| USGS Surface Water Quality | High Capacity Withdrawal Locations |
| DNR Water Quantity Monitoring | Basemaps |
| WGNHS Spring Monitoring | Topography |
| Groundwater Protection Features | LiDAR |
| Great Lakes Basin Boundary | Air Photos |
| Public Land Survey System | |

5.1 Layer Options

Each layer has the following options:



Remove Layer – Is activated once the user upload other spatial data into the application, which is under the Data tab.

6 Results

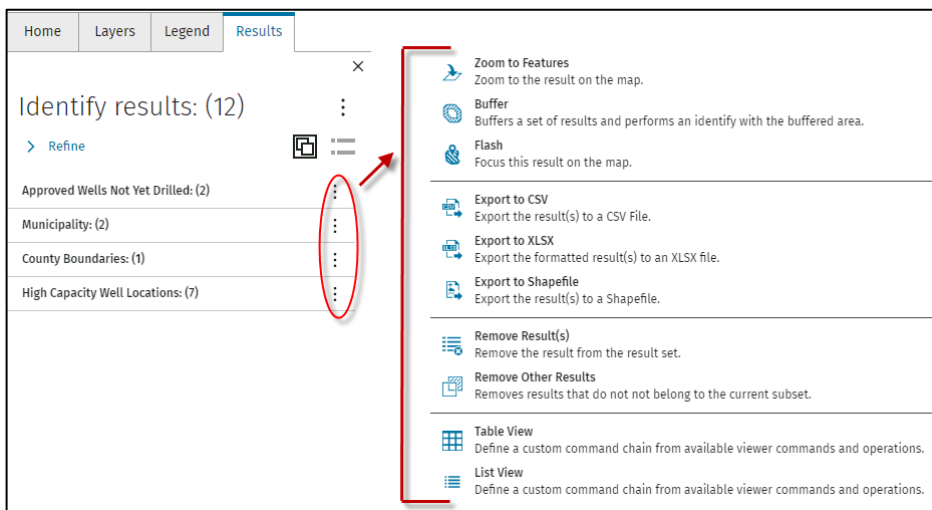
The results panel appears after a search or analysis has been completed.

6.1 Results by using the cursor click

Action: Click on a single feature using the cursor (arrow) in the map without activating the identifying tools.

Result: The Results panel is displayed showing the features selected, grouped by layer type.

The listed results have the following options, when the three ellipses are clicked.



Zoom to Features: Zooms to the features in the grouping.

Buffer: Creates a buffer from feature(s) in the grouping. No selection of intersecting features.

Flash: Focuses the results in the grouping on the map by selecting the feature(s).

Export to CSV: Exports results to a CSV file.

Export to XLSX: Exports results to an Excel file.

Export to Shapefile: Exports the result(s) to a Shapefile.

Remove Result(s): Removes the results from the Results panel.

Remove Other Result(s): Removes other results from the Results list.

Table View: Toggles the results details to a table view at the bottom of the map.

List View: Toggles the results details to a list view.

6.2 Results by Using Identify Tool(s)

Action: Using the Identify tool(s) single click or draw a shape around the features.

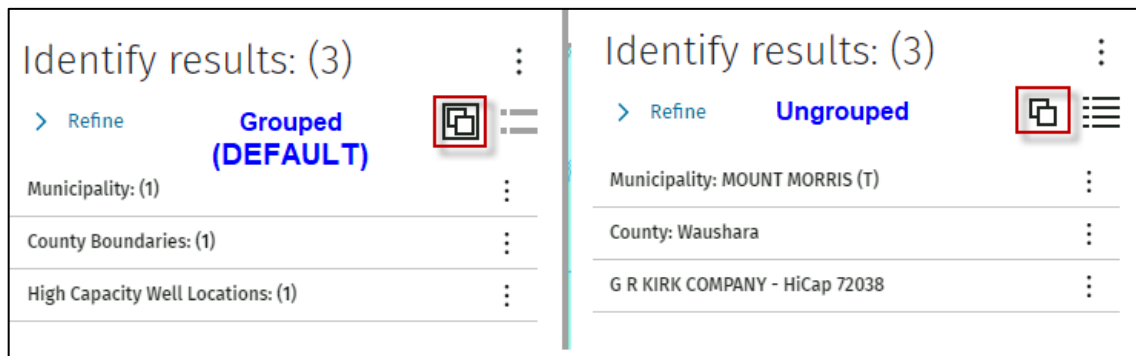
Result: The Results panel is displayed showing the features selected, grouped by layer type.

6.3 Result View(s)

There are two different types of groups for results shown:

Grouped - Groups the results by layer name (DEFAULT).

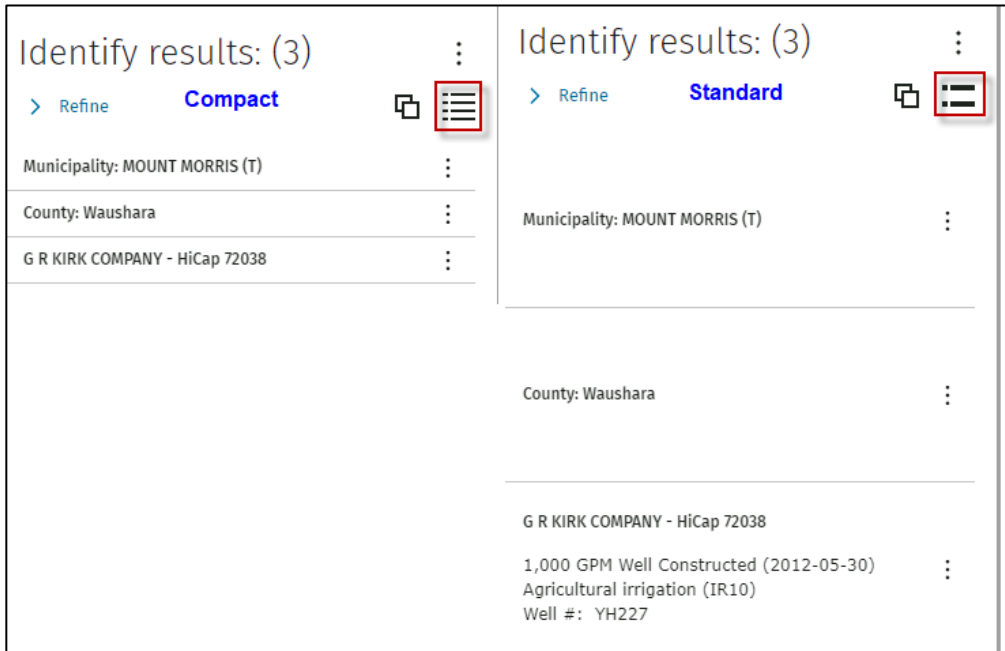
Ungrouped – Ungroups the results by layer and displays individual records in compact view.



The ungrouped view has two sizes:

Compact – Shows the single record using the title for the pop-up.

Standard – Shows the expanded view which is what is configured as the pop-up.



7 Search For...

The search bar is used to search for:

- Data in certain layers; and
- For an address search for any address that is within the United States (ie A Google search).

7.1 Search for features in the Data Layers

The layer you are searching against must be turned on in the Layers tab. If the layer is turned off, it will not find the record.

Below are the values you can type into the search bar and find features for:

| Layer Name | Search on Data Type |
|------------------------------|--|
| High Capacity Well Locations | <ul style="list-style-type: none"> • WUWN # • High Cap Well # • High Cap Property # • Company Owner • Owner Name • Company Operator • Operator Name |
| Surface Water Withdrawals | <ul style="list-style-type: none"> • Owner Name • Operator Name |

Tips For Searching:

If you want to find the exact phrase you will need to type the phrase with quotes around the text. If you want to do a fuzzy search don't include the quotes around the phrase.

(**Example:** Typing in "GC066" will only return results that match exactly GC066)



Due to how the applications searches it is best to zoom into the area of interest and then type in your search parameters. For example, search on address of interest and zoom to that location then type in your search for data of interest.

7.2 Search for an address (Geocode)

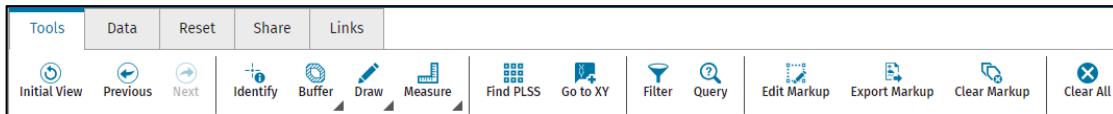
When searching for an address it uses a World Geocoder. Will only return an address in the United States.

7.3 Displayed Results

Once you select or search for data in the map, the results display in the Results panel.

8 Toolbar (Tools)

The Toolbar contains tools that allow users to do further analysis with the data in the application. A tool can be activated by clicking on its icon. Tools that have a small black triangle in the bottom right corner have a submenu that will become available when the tool is activated.



8.1 Extents

A quick way to return your map view to different views.

Initial View – Zooms the map to the original extent, which is the state of WI.

Previous – Zooms the map to the previous extent.

Next – Zooms the map to the next extent.

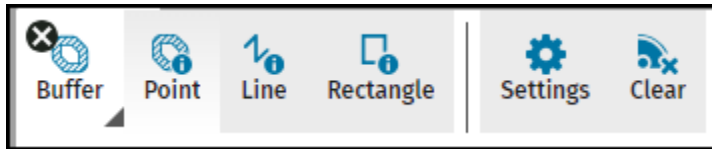
8.2 Identify

Allows the user to click on the map and receive information about any layer that is visible and the identify option is configured in the application.

- To select one feature, single click on a feature
- To select multiple features, click and hold the left mouse button and drag the mouse around features of interest

8.3 Buffer

Used to create a buffer anywhere drawn on the map and selects features that intersect the buffer area.



Point - When activated, will generate a buffer from point clicked on the map and select intersecting features.

Line – When activated, will generate a buffer from the line drawn on the map and select intersecting features.

Rectangle – When activated, will generate a buffer from the rectangle drawn on the map and select intersecting features.

Settings – Adjust settings of buffer units/distance. Default buffer is 1,200 ft

Note: If user changes these values, the next time they use the buffer tool it will default to the last units/distance used.

Clear – Clears **ALL** buffers drawn on the map.

8.4 Draw

Is used to create markups (Point, Line, Polygon and Circle) on the map. When activated a cross hair is visible on the map.



Point – Click on the map to draw a point.

Line – Click the map to add the first point, move your mouse to the next segment of the line and left click. When done drawing the line double click to end the drawing.

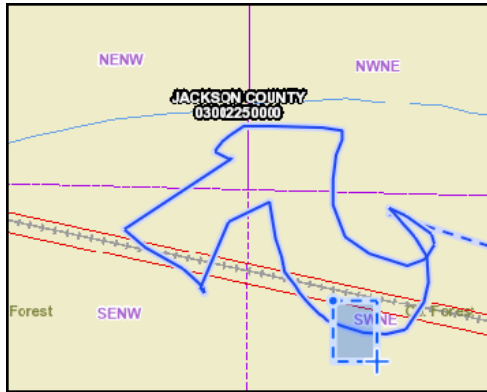
To draw a line without point and click, after adding the first point on the map, hold down the left mouse button and drag to create the line. When done double click to end the drawing of the line.

Polygon – Click on the map and start drawing polygon, double click when completed.

Circle – Click on the map and start drawing a circle, double click when completed.

Edit – Allows the user to edit the drawing.

To select drawing to edit, click and drag an edge of the drawing. Once selected the actual drawing can be modified by dragging the vertices.



Export – Allows the user to export the drawing(s) to a shapefile to load into a GIS application (ArcGIS Pro or any GIS Viewer that supports this functionality).

Note: Creates a shapefile of the drawing(s) and zips up the shapefile. Refer to the Data tab on how to add this into the Well Driller Viewer.

Clear – Used to clear **ALL** drawings from the map.

8.5 Measure

Is used to measure (Length, Area and Circle) in the map. When activated a cross hair is visible on the map.



Units – Allows user to change the units of measurement. The Default measurements are:

- **Length** – Feet
- **Area** – Acres

Select Measurement System and Units
✕

Measurement System

US Customary
▼

Length Units

Feet
▼

Area Units

Acres
▼

Edit – Allows the user to edit the measurement drawing in the map. To select it, draw a box around any segment of the measurement. Then take any of the vertices and drag to continue the measurement.



Clear – Used to clear all measurements drawn on the map.

8.6 Find PLSS

Displays a form in a tab panel that allows the user to search for a defined PLSS (town, range, section, etc.), zoom the map in, then either select the feature or draw a red graphic border around it.

The dialog box has a title bar with a back arrow, 'layers', 'Legend', and 'Find Township, Range, Section'. Below the title bar, there are three main sections:

- Township ***: A dropdown menu with the text 'In Wisconsin, all values are north of the baseline' below it.
- Range ***: A dropdown menu.
- Direction**: Two radio buttons, 'East' (selected) and 'West'.
- Section**: A dropdown menu.
- Quarter** and **Quarter-Quarter**: Two dropdown menus.

 At the bottom, there are 'Find' and 'Close' buttons.

8.7 Go to XY

Displays a dialog box that allows the user to enter coordinates, zooms to a scale of 15,840 in the map and places a red marker on the map.

The dialog box has a title bar 'Enter coordinates' with a close button. It contains:

- A dropdown menu for 'Decimal Degrees (DD)'.
- Latitude ***: An input field containing '44.685033' and a degree symbol.
- Longitude ***: An input field containing '-89.72862' and a degree symbol.
- A 'Scale:' dropdown menu set to '15840'.
- At the bottom, 'OK' and 'Cancel' buttons.

 To the right of the dialog box is a map preview showing a red dot marker on a grid. A blue arrow points from the dialog box towards the map. A scale indicator on the map shows 'Scale: 15840'.

8.8 Filter

The Filter Builder tool provides a form in a panel that allows the user to adjust what is visible on the map by using logical conditions to filter data.

Note: For fields that have text data, the value typed in is case sensitive. In the example below, typing this as *Bula* would not find any data.

The screenshot shows the Filter Builder interface with the following elements:

- Navigation tabs: Home, Layers, Legend, Filter (selected).
- Data Source: High Capacity Well Locations.
- Advanced Mode: Unchecked.
- Logic: Only include features in the map and results where:
 - All of the following are true
 - Any of the following are true
- Filter Rule: OWNER_COMPANY Equal To BULA
- Dropdown List (highlighted by a blue arrow):
 - BULA POTATO FARMS
 - BULA FARMS INC
 - BULA LAND CO
 - GARY BULA FARMS INC
 - BULA-GIERINGER FARMS II LLC
 - BULA ACRES LLC

8.9 Query

The Query Builder tool provided a form in a panel that allows the user to search map layers by entering logical conditions.

Note: For fields that have text data, the value typed in is case sensitive. In the example below, typing this as *Bula* would not find any data.

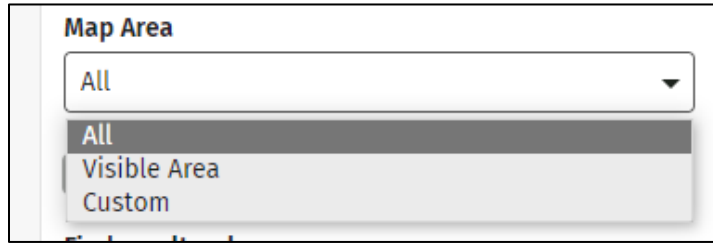
The screenshot shows the Query Builder interface with the following details:

- Navigation:** Home, Layers, Legend, Query (selected)
- Data Source:** High Capacity Well Locations
- Map Area:** All
- Advanced Mode:**
- Find results where:**
 - All of the following are true
 - Any of the following are true
- Condition:** OWNER_NAME Equal To BULA
- Buttons:** + Add Condition, X Clear, Query, Cancel
- Results List:**
 - BULA POTATO FARMS
 - BULA FARMS INC
 - BULA LAND CO
 - GARY BULA FARMS INC
 - BULA, DAVID
 - BULA-GIERINGER FARMS II LLC
 - BULA, GENE
 - BULA, NATHAN
 - BULA, MARK
 - BULA ACRES LLC
 - BULA, SHAWN

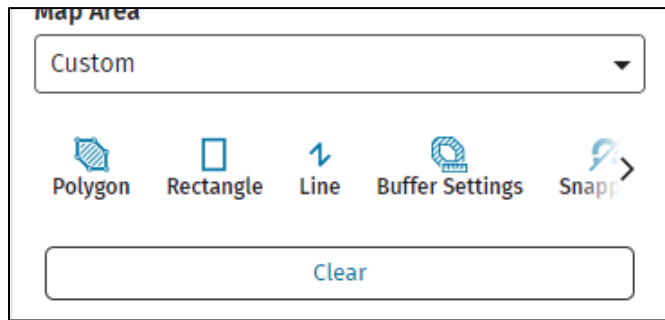
The following are the only layers in which this is enabled for:

- Baseflow Data – In SWIMS or Fisheries
- Lake Level Data – In SWIMS
- Groundwater Level Data – In SWIMS
- Trout Streams
- Surveyed Springs 1 CFS or more
- Outstanding/Exceptional Resource Waters
- Well Applications Pending Review
- Approved Wells No Yet Drilled
- Wells Approved Within 30 Days of Current Date
- High Capacity Well Locations
- Surface Water Withdrawals

The query can be applied to the following areas within the map:

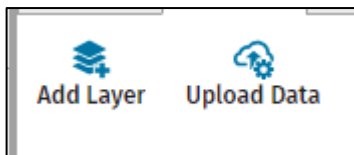


Custom – Gives the user the option to draw (Polygon, Rectangle and Line) for an area of interest in which to apply the query.



9 Toolbar (Data)

Provides an interface to upload layer data from an external file or ArcGIS Online (AGOL).



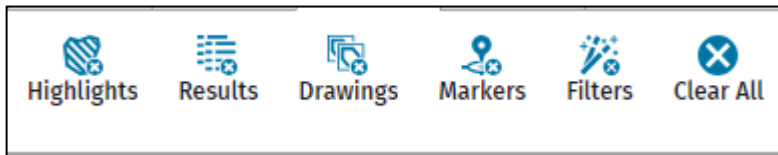
Add Layer – Provides an interface to add data from AGOL to the map.

Upload Data - Provides an interface to upload layer data from an external file. Supported file types are CSV, Excel, and shapefiles.

Note: Shapefile must be zipped up. The zip file that contains the shapefile would be the file that needs to be uploaded.

10 Toolbar (Reset)

Reset tools to clear the map of highlights, results, drawings/measurements, markers, filters and clear all.



Highlights – Clears all highlighted features in the map.

Results – Clears all Results from the Results tab.

Drawings – Clears all drawings from the map.

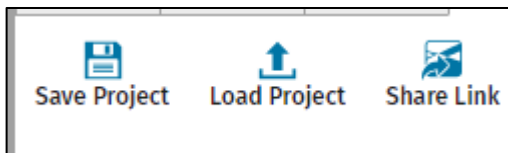
Markers – Clears all Location Markers.

Filters – Clears all Filters set using the Filter Builder.

Clear All – Clears everything (highlights, results, drawings/measurements, markers and filters) from the map.

11 Toolbar (Share)

Allows users to save, load a saved project and share the GIS viewer.



Save Project – Preserves the current state of your view as a .json downloaded file.

It preserves the following:

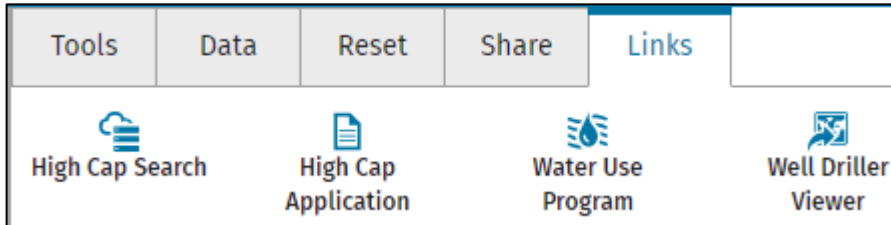
- Map extent, layer state (on/off, transparency)
- All markups
- Location notes
- Measurements
- User-added data from an ESRI portal
- User-Uploaded data from a file

Load Project – Presents a dialog box that allows users to load the Saved project.

Share Link – Allows the user to share the extent of the map along with the layer state (on/off) only.

12 Toolbar (Links)

Links to other resources both database and map viewers that gives users a quick way to get to other resources needed when constructing a new well.



High Cap Search – Search for a High Capacity Well(s) and Surface Water Sources.

High Cap Application – Search for High Capacity applications.

Water Use Program – Link to the Water Use website.

Well Driller Viewer – Link to the Well Driller Viewer.