

TDEC's Water Well Data Web-Application

Web Application Designed for Sharing of Water Well Data

User Manual



Division of Water Resources

Drinking Water Unit

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TDEC's Water Well Data Web Application

Web-Application Objective

The TDEC Water Well Data Web Application is designed to facilitate the distribution of water well data to the public. The application was created with the intentions of continuing the practice of providing water well data by 7.5 Minute Quadrangle Reports in addition to providing tools for on-screen display of the data. Well data download options are available in addition to the ability to print maps showing an area of interest ([AOI](#)).

Well Data Disclaimer

Water Well Locational Data

The water well data should not be used as an endpoint for decision making purposes in instances such as spill response or for measuring the proximity of a well to other features (e.g., property lines, septic systems, buildings, etc.). All well locations should be confirmed by the user of the data before decisions are made.

There may be records in the State's water well database that do not contain reliable locational information, specifically with respect to the reported latitude and longitude. The database includes entries reported as far back as the 1920s and the accuracy of locational information depends on the type of instruments (e.g., topographic map, address, GPS, etc.) used to record/report the location as well as the diligence of the reporting entity. It is suggested that you review all available information (e.g., coordinates, quadrangle ID, address, owner name) for an area of interest to resolve inaccurate locations within the search area and attributed quadrangle(s).

For reasons stated above, it is important to review **all** relevant data when performing a due-diligence study (e.g. Water Use Survey, spill response, property transactions). We have created tools specifically to assist the user in acquiring data for a due diligence study so that they may download all relevant data a perform the review deemed necessary to achieve individual project goals. It is recommended that the due-diligence study user perform an [AOI Well Search](#) and a [WLTS Data Attribute search](#). Ultimately, it is the responsibility of the user to ensure that they have reviewed all available data relevant to their project.

Public Water Supply Data

Municipal well locations are considered confidential under Tenn. Code Ann. § 10-7-504 (a)(21)(A) and Tenn. Comp. R. & Regs. 0400-01-01-.01(4)(c), so the location of those data have been redacted from the records provided. In cases where the requestor needs information regarding these features in the area of interest, the requester will need to contact the Division. We will perform the query and provide information pertaining to the presence or absence of these features in the area of interest. If these features are present, the name of the Public Water Supply (PWS) will be provided so that the user can contact the public water supply for additional information. In order to request information regarding the

presence or absence within an area of interest, please contact the TDEC Division of Water Resources, Drinking Water Unit.

Phone: Richard W. Rogers V., PG – 615-532-0180

E-mail: Richard.Rogers@TN.gov or Brian.Ham@TN.gov. Please include “Public Water Supply Inquiry” in the Subject line.

Application Functionality Summary

There are several ways a user can query the water well database using this application. In developing the application, we have attempted to duplicate the types of queries and reports that users who have made requests from the Division might expect to see. Below is a list of query options. In the following sections, detailed instructions of how to use each of these options is provided.

- Review Data for Wells Near Me
- Area of Interest (AOI) Well Report
- Select and Export
- Query Water Well Data by Attribute

The above options are found under the Search Bar in the upper left corner of the screen. Additional tools are made available in the upper right of the screen on the banner. These tools include:

- Legend
- Layer Control
- Basemap Options
- Printing Tools
- Measurement Tools
- Summary Statistics
- Filter Options

The following sections provide detailed descriptions and instructions regarding the use of the above tools.

Detailed Tool Instructions

If you need additional information regarding the function of a specific tool, click on the picture of the tool icon in this manual, and it will take you to the description and use instructions for the tool.

General Map Tools



Zoom Tools: Press the “plus” and the map will zoom in. Press the “minus” and the map will zoom out.



Default Extent: Returns the user to the “home” extents (i.e., State of Tennessee)



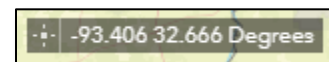
My Location: Zooms the map to the user’s location using the device’s location services. This tool only works if the device is able to communicate a user location to the application.



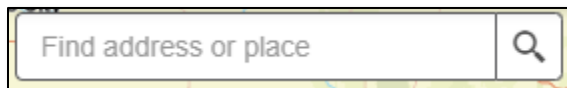
Full Screen: Takes the application into full-screen mode. Press the escape key to exit full-screen mode.



Scale bar: (lower left of screen)



Geographic position of the pointer in Decimal Degrees. Pressing the compass rose on the left of this display will allow the user to click a specific place on the map and view the coordinates for that location.



Allows the user to use the **Tennessee Geocoder**. The user should begin typing an address and watch for suggested matches to pop up. Once the correct address is found, hover over and click the correct suggestion and the map will zoom to that location. The Tennessee Geocoder is not set up to accept coordinates (Latitude & Longitude). See Coordinate Conversion tool and AOI Well Report tools below if you wish to search using coordinates.



Attribute Table: for the layers available in the map. (bottom center).



Map legend: Only layers that are turned on and are within the view frame will show up in this legend.



Layer list: From this list, the user can perform the following functions:

- Zoom to the layer
- Set the transparency of the layer
- Set the visibility range of the layer
- Enable/disable the pop-up for the layer
- Hide/show labels for a layer
- Move a layer up or down in the list, thus changing the draw-order.
- View the attribute table for a layer,
- Review the detailed information for a layer.



Basemap Options: The following list of basemaps are available via ESRI basemaps:

- Imagery
- Topographic
- USA Topo Maps
- Open Street Map
- Streets
- Light Gray Canvas (best option for printing)



Printing Tools: Once the printing tools are open, the user can change the page size and the file formatting for the print. Under the advanced tab, the user can access a more robust list of settings that can be adjusted.



Measurement Tool: Allows the user to measure the area of a polygon or length of a line or find the coordinates of a point.



Summary Statistics: Allows the user to view water well statistics in the current map that fall within the visible map extent. Available statistics include:

- Count
- Average Total Depth
- Average Estimated Yield
- Average Static Water Level
- Average Casing Depth



CAUTION: When using the summary statistics tool, it is important to understand that an erroneous value reported to the Division will bias the result of the statistic.

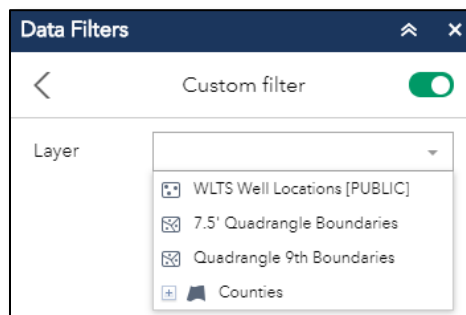
Example: If a well is reported to have an estimated yield of 9,999 gallons per minute, the average estimated yield reported by the summary statistics tool for any area that includes this value will be biased high.



Filter Options: Allows the user to choose from pre-set filters or create a data filter of their own.

- Show Only Orphan Wells: by activating this filter, the map and query tools will only return wells that have been classified as Quad 9th Orphans.
- Remove Quad 9th Orphan Wells: by activating this filter, the map and query tools will only return wells that are not classified as Quad 9th Orphans.
- Custom Filters: This allows the user to create data filters of their own. Below are some instructions on how to create a simple filter.

- 1) Click on the “ellipse”  symbol in the bottom right corner of the Filter window.
- 2) Click on the “create custom filter” icon .
- 3) In the “Layer” dropdown box, choose the layer that you wish to apply the filter.



- 4) Add query expressions by choosing the attribute that you wish to filter upon, then enter the query necessary to return the desired result.

Note: for more information regarding the creation of expressions for custom filters, please visit the [Filter Widget Help](#) on the ESRI website.

Water Well Data Query Tools



Wells Near Me:

This tool allows the user to create a simple buffer around a point on the map, then review the selected wells within that buffer. The user may choose the point by clicking on the map, by searching for an address using the Tennessee Geocoder, or by using the location services of the device if available. The buffer size can be changed by keying in a value or using the slider. A list of wells will be returned in order of nearest to farthest. Step by step instructions to using this tool are as follows:

The screenshot shows the 'Review Data For Wells Near Me' interface. It includes a search bar with the text '42978 NATCHEZ TRACE PKW', a search icon, and a location pin icon. Below the search bar is a text input for 'Show results within (Miles)' with the value '1' and a slider control ranging from 0 to 5. The bottom section displays a list of well locations with their distances in miles.

WELL LOCATIONS	(17)
WELL LOCATIONS: 20003462	0.45 mi
WELL LOCATIONS: 20003463	0.47 mi
WELL LOCATIONS: 20092840	0.49 mi

Annotations in the image point to the following elements:

- Address Search Bar (Tennessee Geocoder)
- Pick Location on the map
- Use My Location
- Buffer Value
- Buffer Value Slider
- List of Wells Within Buffer

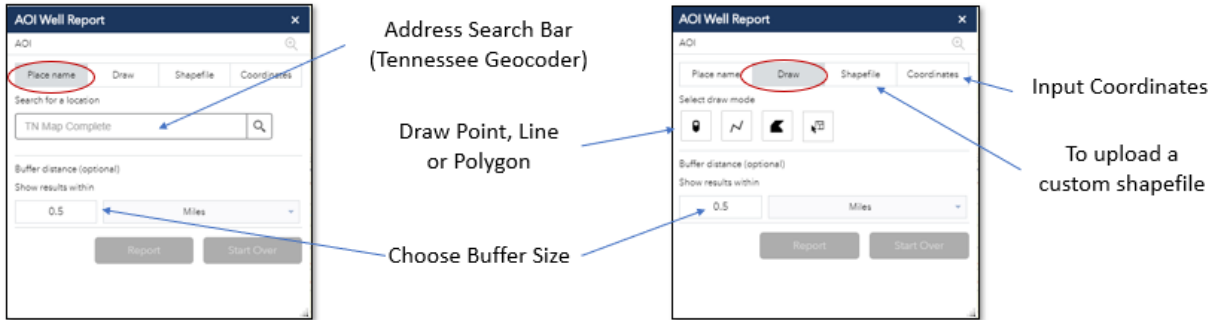
- 1) Select a location by using the geocoder, or use device location services, or pick a location on the map.
- 2) Set the buffer size (miles) by entering a value or by using the slider. The maximum buffer allowed is 5 miles.
- 3) Review the data in the returned list. If more information is needed for a particular well, the user can click on the entry in the list to view its attributes. Alternatively, a user can click on the well symbol on the map and review the attributes in the pop-up.

NOTE: The Wells Near Me tool does not allow for download of any data, it is strictly for reviewing data on-screen.




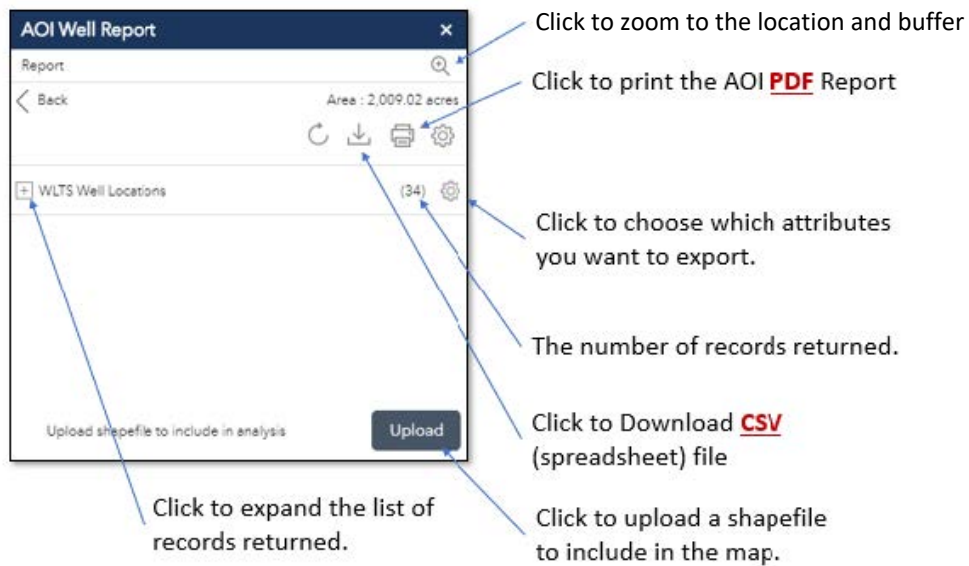
AOI Well Report:

The Area of Interest (AOI) Well Report allows the user to create a simple map and report in pdf format that lists the wells within a chosen buffer. The user can create the buffer around a point, line (e.g. road), or polygon (e.g. sketched property boundary). A point may be entered by searching for an address using the Tennessee Geocoder, entering coordinates, or by clicking on the map. A line or polygon must be entered by drawing the line or polygon on the map.



To begin using the tool:

- 1) Click on the AOI Well Report Icon (upper left) of the application. 
- 2) Choose input method tab (Place name, Draw, Shapefile, or Coordinates)
- 3) Enter the necessary information or use the interactive tools to locate the area of interest on the map (i.e., draw a point, line or polygon).
- 4) Enter the desired buffer size (zero, if no buffer is desired).
- 5) Click on the Report button to see the following results window.



- 6) From this window, choose the **CSV** download option or the **PDF** report option to download the private well data from the server.

NOTES:

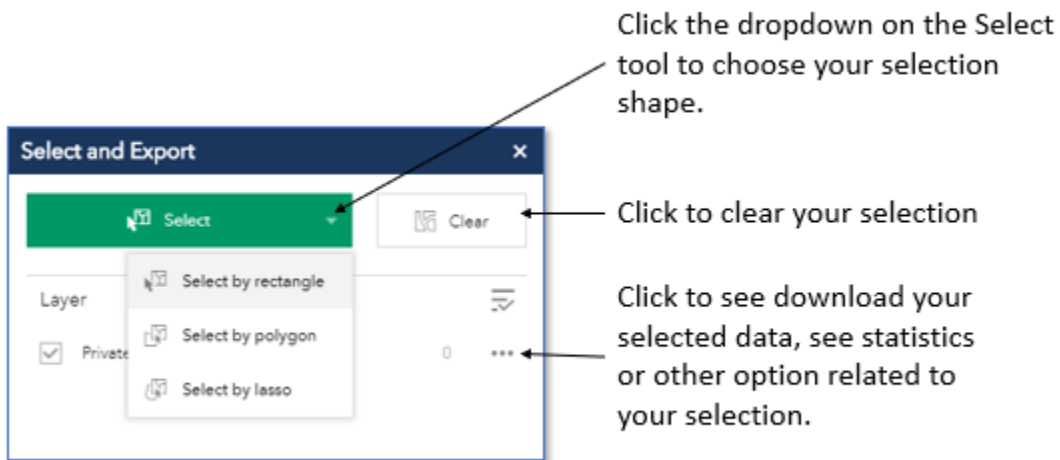
- If you would like to project the water wells in your own GIS, choose the CSV option. If you would like a printed PDF report with a listing of the wells within the buffer, please choose the PDF Report option.
- If the database query is being performed as part of a due-diligence well survey (e.g., water-use survey, chemical spill, etc.), please perform a Quadrangle Query using the [Query WLTS Data Attributes](#) tool. Be sure to review the “orphan” wells (those without coordinates) in addition to those that project within your Site buffer.



Select & Export:

This simple tool allows the user to simply select a well or group of wells on the map, then export a CSV file that can be opened and manipulated in a spreadsheet software or imported and projected in the user’s GIS.

- 1) Click the Select and Export icon  in the upper left of the data frame.

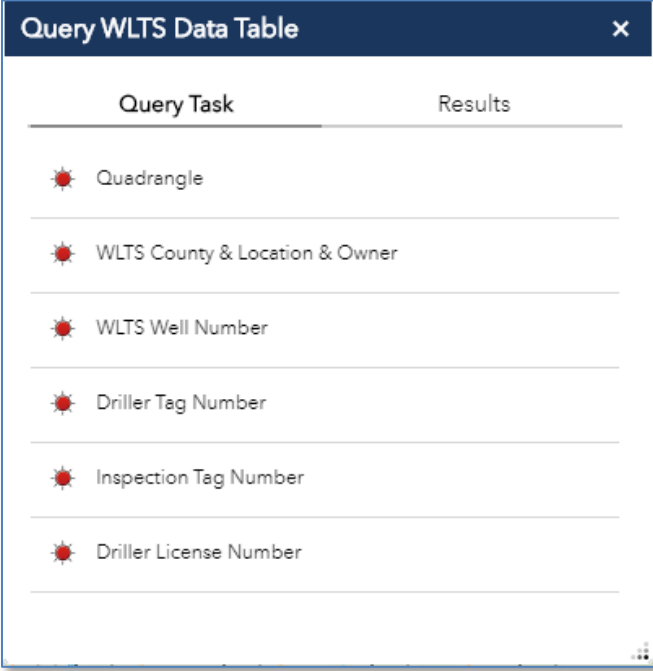








- 2) Choose the type of selection shape that you wish to use (rectangle, polygon or lasso).
- 3) Select the well locations for which you desire additional information.
- 4) Click on the three dots next to the results and choose which option you would like from the dropdown menu.



Query WLTS Data Attributes

The Query WLTS Data Attributes tool contains several preset, fill-in-the-blank, queries that will search the WLTS database entries for those that match your search. The preset queries are listed below:



Query Task	Results
 Quadrangle	
 WLTS County & Location & Owner	
 WLTS Well Number	
 Driller Tag Number	
 Inspection Tag Number	
 Driller License Number	

- 1) Click on the Query WLTS Data Table tool.
- 2) Choose the type of query that you would like to perform. (The example below is the Quadrangle Query)
- 3) Complete the chosen query form as necessary to limit the returned data to only those that you wish to review and click APPLY.

(continued on next page)

The screenshot shows a web application window titled "Query WLTS Data Table". It has two tabs: "Query Task" (selected) and "Results". Under "Query Task", there is a "Quadrangle Query" section with a back arrow. Below this, the "Query criteria" section includes three input fields: "Enter Quadrangle Name:" (with "Knoxville" entered and an example "Lillamay"), "Enter Quadrangle Number:" (with an example "0305NE"), and "Enter Quadrangle 9th:". A green "Apply" button is at the bottom. To the right, a 3x3 grid contains numbers 1 through 9. Arrows point from the grid to the "Apply" button and from the "Enter Quadrangle 9th:" field to the grid.

Enter Quadrangle name or number. (see map)

If you wish to limit the Quadrangle Ninth, enter 1 – 9 here corresponding to the ninth of interest.

Click Apply.

1	2	3
4	5	6
7	8	9

4) The map will then highlight all wells within the database that are attributed with the input data.

NOTES:

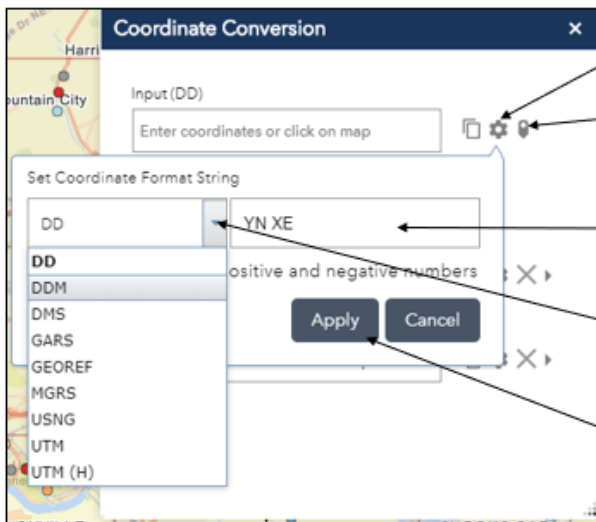
- The user might notice that not all wells within the chosen area are highlighted or that some entries returned from the query are located outside of the desired area of interest. This is because some database entries have inaccurate information attributed within the database. See [Well Data Disclaimer](#) for additional information.
- Quadrangle 9th Orphan wells will be evident in the lower right (southeast) corner of the corresponding quadrangle 9th. When performing a water well data review for due-diligence purposes, please ensure that the Orphan Wells are not filtered out of the list as these are wells that could be located in your area of interest.



Coordinate Conversion Tool:

The Coordinate Conversion Tool has been added to simplify the conversion of coordinate pairs from one format to another.

- 1) Click the Coordinate Conversion tool icon to open the tool.
- 2) Click on the settings button to select your input coordinate format (Decimal Degree, Degrees-Minutes-Seconds, etc.)
- 3) Click the dropdown menu and choose your desired coordinate input format.
- 4) Enter the coordinate pair in this format.
- 5) View the converted coordinates or zoom to the location on the map to verify the quadrangle name, number, and ninth.



Click to choose the format of your input coordinates.

Click to add a point at the chosen location.

Enter your input coordinates here.

Choose the coordinate format of the input coordinates here.

Click Apply and view the converted coordinates.

Contact Information:

General Water Well Data Requests:

The TDEC Division of Water Resources will continue to respond to data requests by way of e-mail and direct phone requests if that method is preferred by the user. Please contact Richard Rogers at Richar.Rogers@TN.gov for private water well data requests.

Web Application Problems, Comments & Questions:

If you have any questions about the web application or suggestions for improvements, please reach out to Richard W. Rogers at Richard.Rogers@TN.gov. We will likely be making improvements to the application when deemed necessary. We appreciate any and all feedback.

Well Head / Source Water Protection Area Requests:

Please direct requests for well head protection areas and source water protection areas to Brian Ham at Brian.Ham@TN.gov.