Aquifer Test Index FAQs

Frequently asked questions meant to improve the public users' knowledge and access to the Aquifer Test Index data

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General Aquifer Test Information

What is an aquifer test?

An aquifer test is a controlled field experiment that determines the hydraulic properties (parameters) of water-bearing geologic formations (aquifers) by measuring water level or pressure responses that result from stressing a well in a controlled manner.

The preferred aquifer test, commonly referred to as a multi-well pumping test, is one in which one well is pumped (the control or test well) and at least one other well is used to measure water level or pressure responses (observation well(s)) to obtain accurate estimates of aquifer parameters. Single-well pumping tests and slug tests are also common options and may also serve as practical aquifer tests when estimating aquifer parameters.

Why are aquifer tests important?

Aquifer tests are crucial for understanding groundwater flow, proper water resource management, and groundwater protection.

- They help determine how fast water moves through the aquifer and how it interacts with other geological features.
- They help determine the capacity of an aquifer to produce water and identify potential over-pumping issues.
- They are essential for developing drinking water source protection plans and delineating source protection areas.

What are some key data components acquired from aquifer testing?

Aquifer testing can provide local and regional hydrogeologic information that can be used for groundwater model development and calibration. The data that may be acquired include, but are not limited to:

- hydraulic parameters
    - hydraulic conductivity (K) and transmissivity (T),
    - storativity (S),
    - flow dimension (n),
- transient head responses from observation wells during long-term pumping tests,
- recharge and no-flow boundary conditions,
- aquifer anisotropy and directional changes in T,
- fluid specific gravities (or densities) used in calculation of hydraulic head gradients, and
- water-quality analyses that may be useful in inferring flow directions and fluid sources.

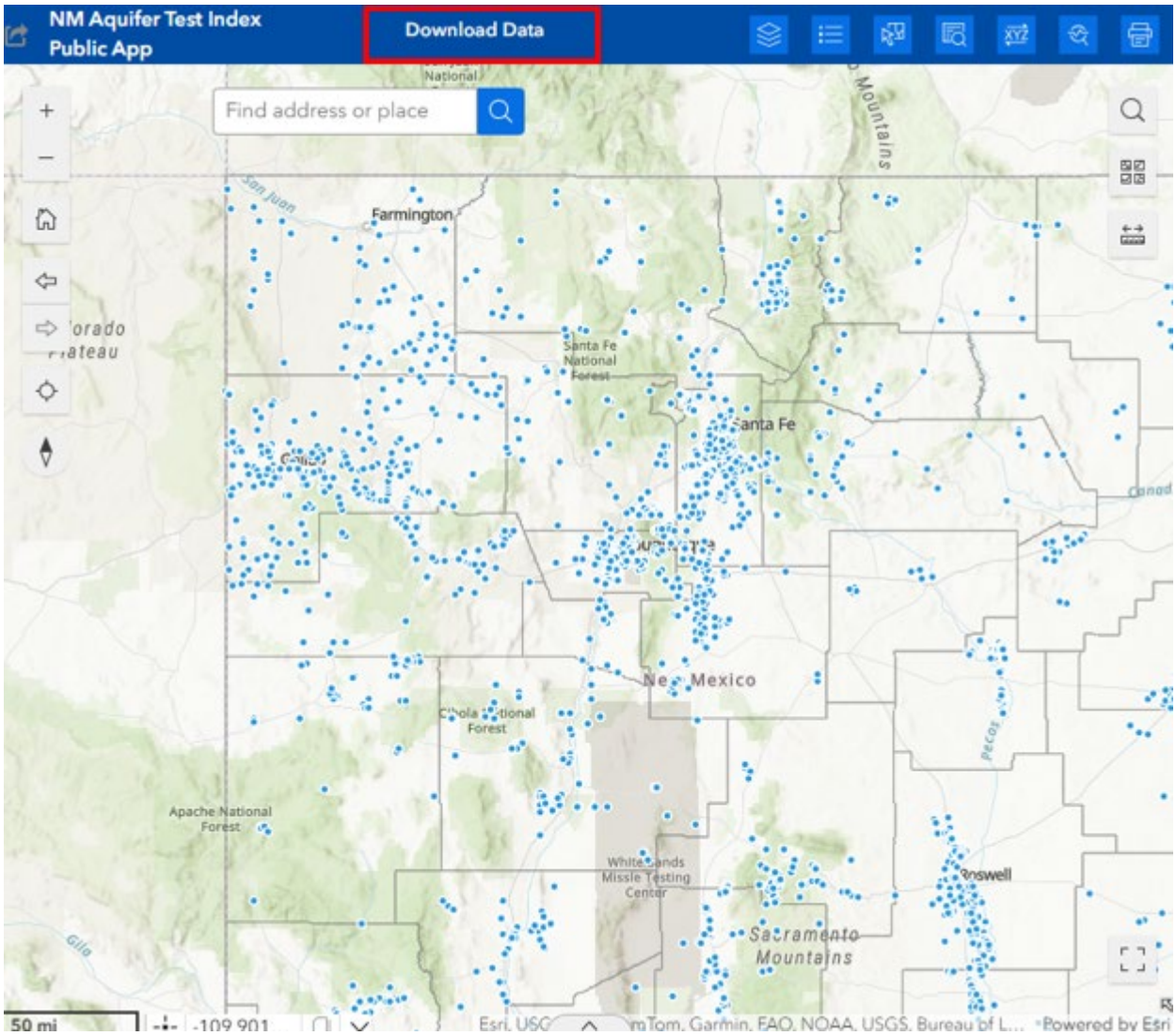
Tips for using the NM Aquifer Test Index Public Application

How do I bulk download the data in the Aquifer Test Index Database?

A copy of the dataset can be downloaded in a variety of ways.

1. You can generate and export a replica Geodatabase, Shapefile, or CSV by using the Aquifer Test Index Export Tool. Access to the tool is provided in multiple locations.
    a. On the OSE Hydrology Bureau's Aquifer Test Index webpage, by clicking the link shown in the screen image below.

    b. On the NM Aquifer Test Index Public App, by clicking the 'Download Data' link, as shown in the screen image below.



Directions on how to use the Export Tool:

i. Navigate to the Export Tool by clicking on one of the links shown above. This will direct you to the following URL: https://www.ose.nm.gov/Hydrology/ose_aquifer_test_exports.html

ii. Follow these steps to extract and download your desired file:

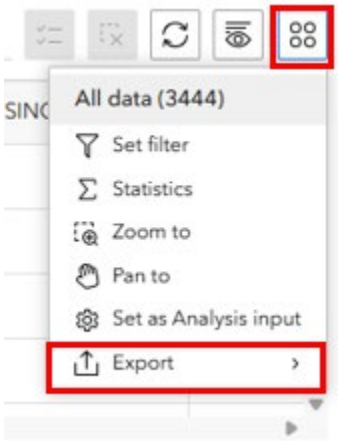
a. **Choose Your Format**: Click on one of the buttons to select the format you wish to export: File Geodatabase, Shapefile, or CSV.

b. **Initiate the Export**: Once you click on the desired format, the system will send a request to generate your replica.

c. **Check the Status**: After the system processes your request, a status URL will be displayed near the bottom of the page. Click this link to check the status of your export.

d. **Download your File**: If your export is successful, you will be given a 'Result URL'. Click on the result URL to download your desired export.

2. From the NM Aquifer Test Index Public App, you can export the data in JSON, CSV, or GeoJSON format directly from the Attribute Table by following these steps:
    a. Expand the Attribute Table by clicking the ^ symbol at the bottom-center of the Web Map.
    b. Once the Attribute Table is open, click the 'Actions' button on the far right of the table and navigate to the 'Export' action, as shown in the screen image below.



    c. Once you click on the 'Export' action, you will see options to choose either to export to JSON, CSV, or GeoJSON.
    d. Click your desired file format to download the file.
        i. **Note**: you may be required to allow pop-ups if you have a pop-up blocker enabled on your computer in order to complete the file download.

What is the 'Select' widget and how do I use it?

The 'Select' widget ( ) allows users to select features from the current dataset. There are two different ways a user can use the 'Select' widget:

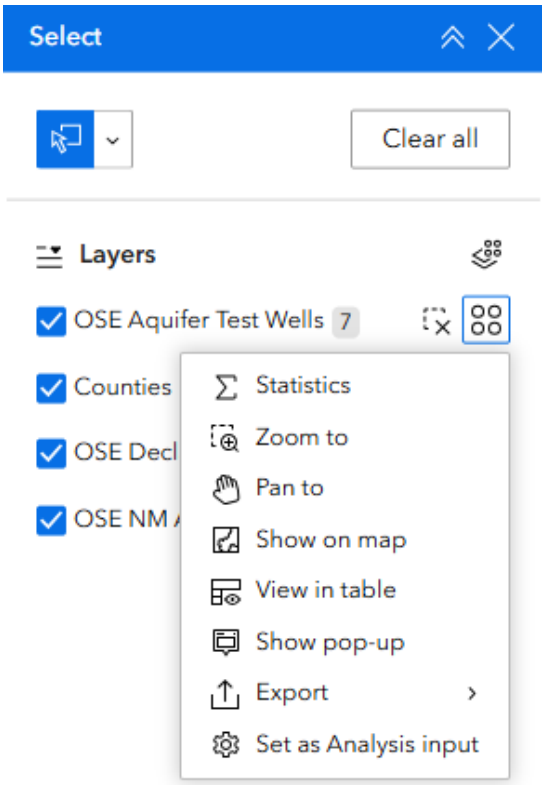
1. **Interactive Selection**: Users have the option to select data by drawing a rectangle, lasso, circle, line, or point. The following are the tools included in the interactive selection option:
    a. **Select by rectangle**: Users can click and drag to draw a rectangle across features.
    b. **Select by lasso**: Users can click the map to create the vertices of a polygon or draw with the pointer to create a freehand shape. Users can double-click to close the polygon and select contained features.
    c. **Select by circle**: Users can click and drag to draw a circle across a feature.
    d. **Select by line**: Users can click the map to create the vertices of a line. Users can double-click to end the line and select intersecting features.
    e. **Select by point**: Users can click the map to place a point and select intersecting features.

2. **Spatial Selection**: Users have the option to select data based on their locations relative to features in another layer. The following are the tools included in the spatial selection option:
    a. **Intersect**: Part of a feature from the selectable layer is contained in a feature from the selecting layer.
    b. **Contain**: The feature from the selectable layer is completely enclosed by the feature from the selecting layer.
    c. **Cross**: The feature from the selectable layer crosses a feature from the selecting layer.
    d. **Envelope Intersect**: The envelope of the selectable layer intersects with the envelope of the selecting layer.
    e. **Index Intersect**: The envelope of the selectable layer intersects the index entry of the selecting layer.
    f. **Overlap**: Features from the selectable layer overlap features from the selecting layer.
    g. **Touch**: The feature from the selectable layer touches the border of a feature from the selecting layer.
    h. **Within**: The feature from the selecting layer is completely enclosed by the feature from the selectable layer.

The user has the option to select data from four available layers:

1. **OSE Aquifer Test Wells** – this data layer contains all available aquifer test index data.
2. **Counties** – this data layer contains all counties within New Mexico.
3. **OSE Declared Groundwater Basins** – this data layer contains the groundwater basin extent and declaration date information.
4. **OSE NM Aquifers Simplified** – this data layer contains very basic information relating to the main aquifer system.

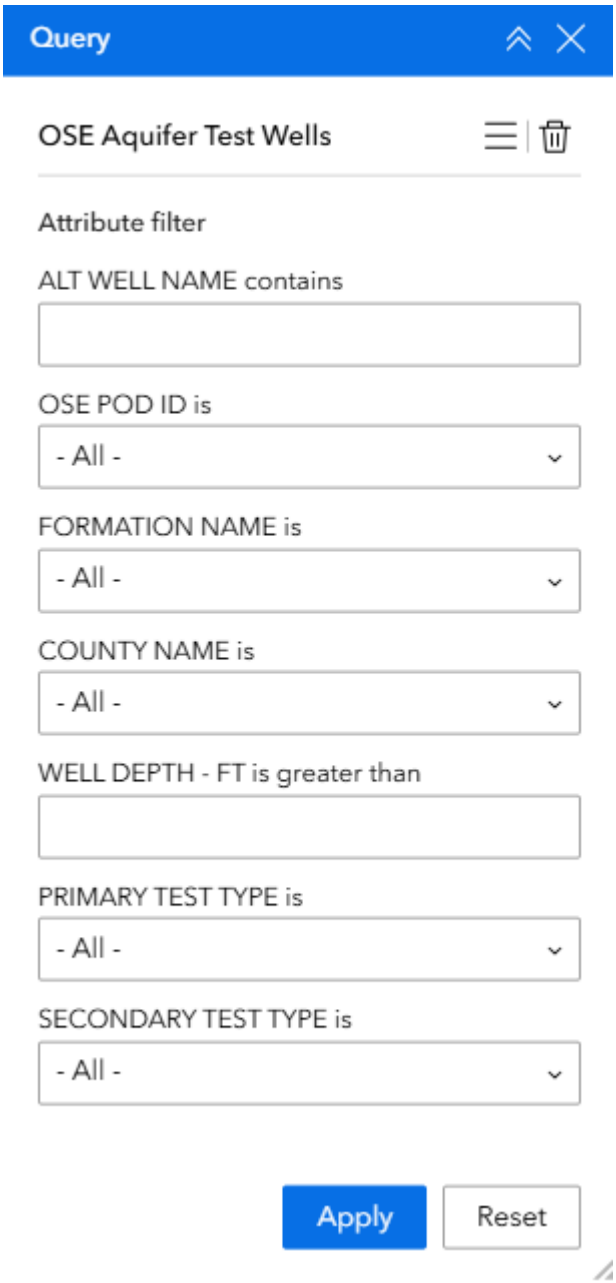
Once a selection has been made, the user can navigate to the icon with 4 circles () and choose from the options of commands.



More information on the 'Select' widget can be found here.

What is the 'Query' widget and how do I use it?

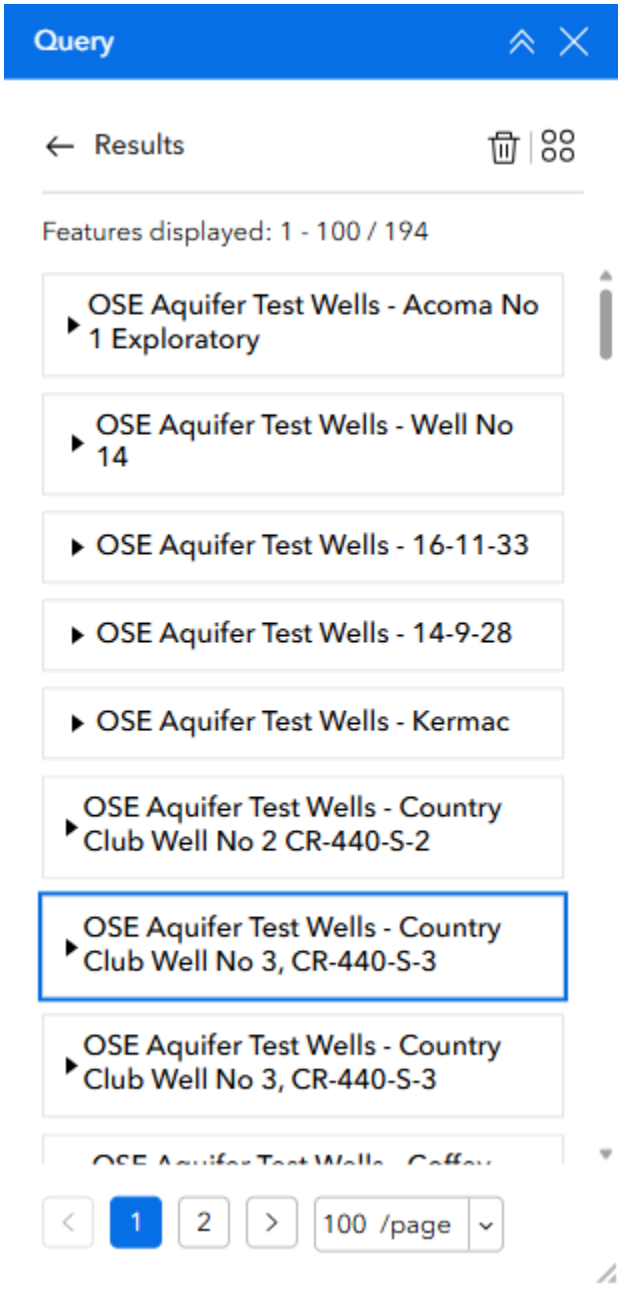
The 'Query' widget ( ) allows users to retrieve data based on the specified attribute filters shown below.



- One or more attribute filters may be used when querying the desired data.

Viewing the results of a query:

1. Once the necessary attribute filters have been applied, the user should click ‘Apply’ to see the results of the query.
2. The user can navigate through the query results and view individual data by clicking the ▸ icon (shown below).



3. For additional action commands, the user can navigate to the icon with 4 circles ( ) and choose from the options of commands.

More information on the 'Query' widget can be found here.

What is the 'Coordinate Conversion' widget and how do I use it?

The 'Coordinate Conversion' widget ( ) allows a user to input coordinates using one coordinate system and output to different coordinate systems using multiple notation formats.

The following tools and options are available for the user:

- **Add Point** – Click a point on the map to capture the corresponding coordinates.
- **Copy All** – Copy all output notation to the operating system's clipboard so it can be pasted into an external application.
- **Zoom** – Zoom to the manually supplied or captured coordinates on the map in the input location.
- **Input Format Settings** – Reconfigure the input notation and apply a custom format for how captured coordinates will be displayed. Decimal degrees (DD) is the default input notation.
- **Add Conversion** – Create a new output notation with a custom format.

The following functions are available in the output notation section:

- **Output Format Settings** – Change the title of the output notation and supply a custom format for how to display coordinates.
- **Copy** – Copy the coordinate to the clipboard so it can be pasted into an external application.
- **Expand Output** – Display coordinates as individual parts to allow copying each separately (such as only the Latitude coordinate for Lat/Lon).
- **Remove Coordinate** – Remove a notation from the list of output notations.

More information on the 'Coordinate Conversion' widget can be found here.

What is the 'Analysis' widget and how do I use it?

The 'Analysis' widget () allows you to add spatial analysis tools, raster functions, and geoprocessing tools to an app. Currently, the 'Analysis' widget is only enabled for data action and interactive options such as extracting data from the dataset.

Data actions provide an 'Actions' button () that users can click while running the 'Analysis' widget and select from a list of actions to perform, such as exporting records to a file or as an ArcGIS item.

The following actions are enabled in the 'Analysis' widget:

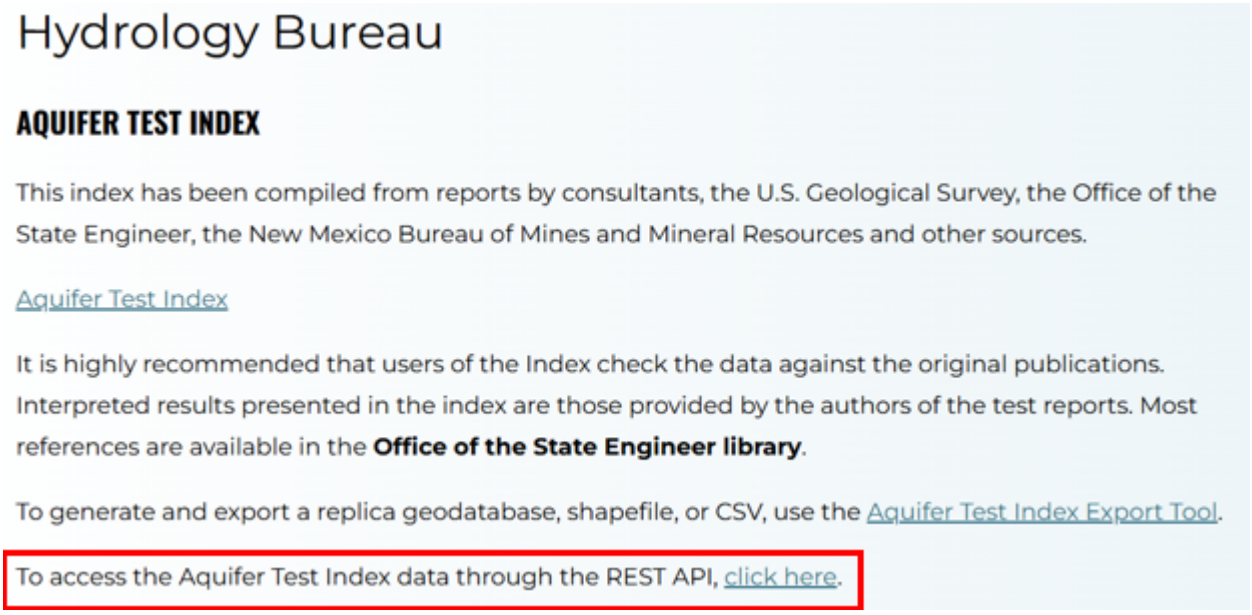
- Statistics
- Related data
- Add to map
- Add to table
- Pan to
- Set as Analysis input
- Show pop-up
- Zoom to

Please note: To use the 'Analysis' widget, the user must be signed in with an ArcGIS account that has privileges to perform analysis. When a user clicks on the 'Analysis' widget, a prompt will pop up and asked them to sign into an ArcGIS account.

More information on the 'Analysis' widget can be found here.

How do I access Aquifer Test Index data through the REST API?

The Aquifer Test Index REST API can be found on the OSE Hydrology Bureau's Aquifer Test Index webpage, by clicking the link shown in the screen image below.

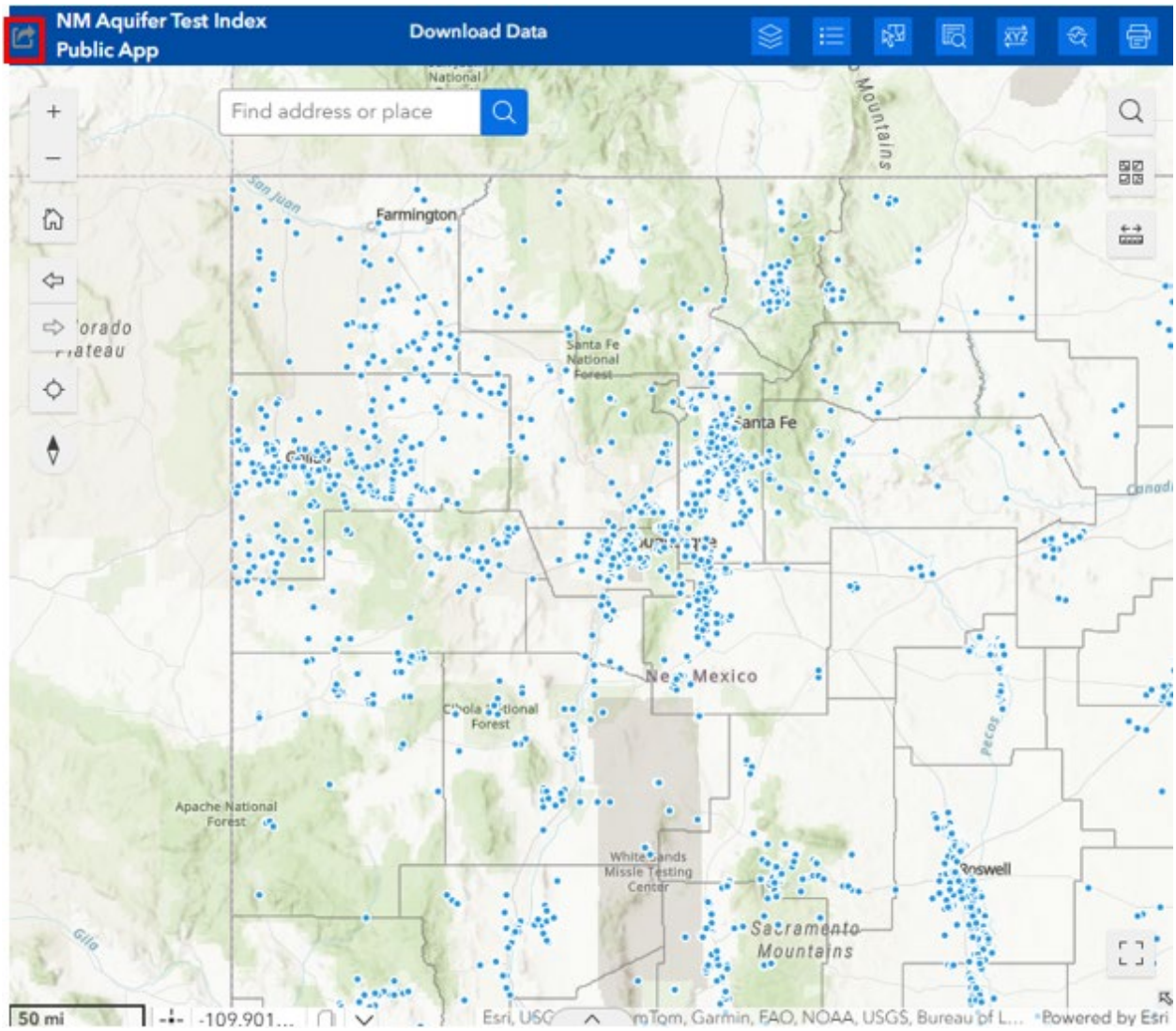


The user will then be directed to the Aquifer Test Index REST API. Users have access to the AquiferTestWells data layer, which contains all information pertaining to the Aquifer Test Index and its data.

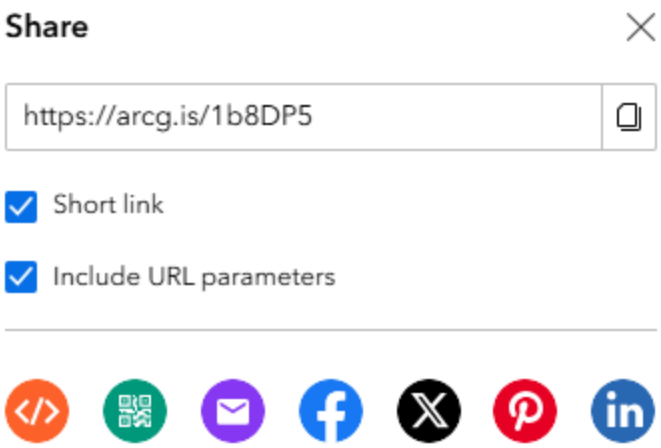
How do I share the Aquifer Test Index data with others?

The Aquifer Test Index can be shared in a variety of ways.

1. The application can be shared by copying the Aquifer Test Index URL – https://experience.arcgis.com/experience/b7b0c54a80ed46adafa422e504a1330e. This URL can be shared with additional users to directly access the application and its data.
2. The application can be shared directly from the public interface on the OSE Hydrology Bureau's Aquifer Test Index webpage or the NM Aquifer Test Index Public App.
    a. Open the Aquifer Test Index application and agree to the terms and conditions.
    b. Click on the 'Share' icon in the top left corner of the application.



c. Once the ‘Share’ icon is selected (shown in the screen image below), the user has multiple options as to how they wish to share the application and its data.



d. Users can copy the short link, which is automatically generated and can be shared and pasted in any internet web browser, for access to the full application.
e. Users have the option to share the application in a more specific manner by clicking on the following icons:
    i. **Embed**: automatically generates an embed code which allows a user to display the Aquifer Test Index application and data directly into another webpage.
    ii. **QR Code**: automatically generates a QR code that allows users the ability to scan the code with a QR code reader (like a smartphone camera app) and access the Aquifer Test Index application and its data.
    iii. **Email**: automatically generates an email that can be sent to additional users. The email contains a short URL link for direct access to the Aquifer Test Index application and its data.
    iv. **Facebook**: automatically generates a Facebook post that can be shared with users on the social media app.
    v. **X/Twitter**: automatically generates a Twitter post that can be shared with users on the social media app.
    vi. **Pinterest**: automatically generates a LinkedIn post that can be shared with users on the social media app.

vii.  **LinkedIn**: automatically generates a Pinterest post that can be shared with users on the social media app.

Who can I contact if I have further questions?

If there are any further questions, please contact Max Gersh, OSE Hydrology Bureau, at Max.Gersh@ose.nm.gov.