EarthSoft

# EQuIS for ArcGIS Training Exercises

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# EQuIS for ArcGIS

## *Adding a Facility*

EarthSoft's **EQuIS for ArcGIS** is an interface for ESRI's ArcGIS desktop applications that allows users to query, and map the information found in an EQuIS databases. The EQuIS for ArcGIS interface is ideal for displaying and effectively communicating project information.

**IMPORTANT:** The following fields must be populated in EQuIS Professional with corresponding values (e.g., the IDENTIFIER and COORD_TYPE_CODE fields in DT_FACILITY and DT_COORDINATE have to match and be populated) in order to use EQuIS for ArcGIS:

- DT_FACILITY.COORD_TYPE_CODE
- DT_FACILITY.IDENTIFIER
- DT_COORDINATE.COORD_TYPE_CODE
- DT_COORDINATE.IDENTIFIER

To determine if these fields have been populated properly, launch EQuIS Professional and view the ArcGIS toolbar at the bottom of the screen. If this toolbar is not populated, the fields listed above have not been populated properly.

### *Launching the EQuIS for ArcGIS Interface:*

Launch the **EQuIS for ArcGIS Interface** in one of two different ways:

Directly within ArcGIS *(Recommended)* – Launch **ArcMap/ArcScene** from Windows Explorer. If the **EQuIS for ArcGIS** toolbar is not already available, select **View > Toolbars > EQuIS for ArcGIS**.

Note if the interface is launched from within EQuIS Professional, the facility you originally logged into will be displayed by default. Ignore (or turn off) the layer and continue with the steps below.

**-OR-**

From within **EQuIS Professional** – Select the **GIS** ribbon and then select the **ArcMap** icon from the **ArcGIS** group.


Figure 1 – GIS group of the Interfaces ribbon in EQuIS Professional

Select **EQuIS > Add Facility** from the **EQuIS for ArcGIS** toolbar. The EQuIS Professional login screen will open.

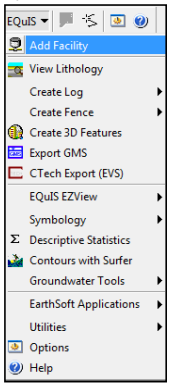



Figure 2 – Selecting Add Facility on the EQuIS for ArcGIS toolbar

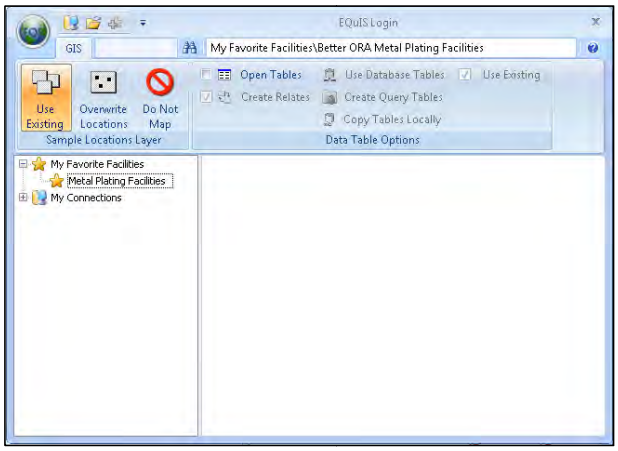



*Figure 3 – EQuIS Professional login screen*

There are several options for adding a facility, which appear along the **EQuIS Login** toolbar. Hover your mouse pointer over each option to display the tooltip, which describes the option in detail:

| Toolbar Group | Option | Purpose |
|---|---|---|
| Sample Locations Layer | Use Existing | Use this option if you already have the sample location layer created on your local drive. This option also checks the EQuIS database to ensure no changes have been made since the sample location layer was last created. If changes are detected then the sample location layer is automatically updated |
| | Overwrite Locations | Overwrites and creates a new sample location layer |
| | Do Not Map | Connects to the EQuIS facility without creating a sample locations layer. This is useful when running modules that do not interact with the sample locations layer. |
| Data Table Options | Open Tables | Opens the corresponding EQuIS database tables as part of the source in ArcGIS. |
| | Create Relates | Creates in-memory relates between the EQuIS database tables and the Sample Locations Layer. Relates can only be created when the 'Open Tables' option is selected. |
| | Use Database Tables | Opens the EQuIS Sample Locations Layer with a live connection to the SQL or Oracle database. This is the fastest option to open EQuIS 5 database tables. |
| | Create Query Tables | Opens each EQuIS database table using the **Make Query Table** ArcGIS geoprocessing tool. |
| | Copy Tables Locally | Copies each populated EQuIS database to user geodatabase. This option is very helpful to view/analyze EQuIS data without an active connection to the EQuIS database. |
| | Use Existing | Uses any existing tables copied to your local file/personal geodatabase when using the **Copy Tables Locally** option. If the table does not already exist, it will be copied locally. This option is checked by default. |

Select the **Use Existing** option and uncheck **Open Tables**.

Double-click on the **Springfield** training facility to log-in. The Springfield **Spatial Reference** screen opens.

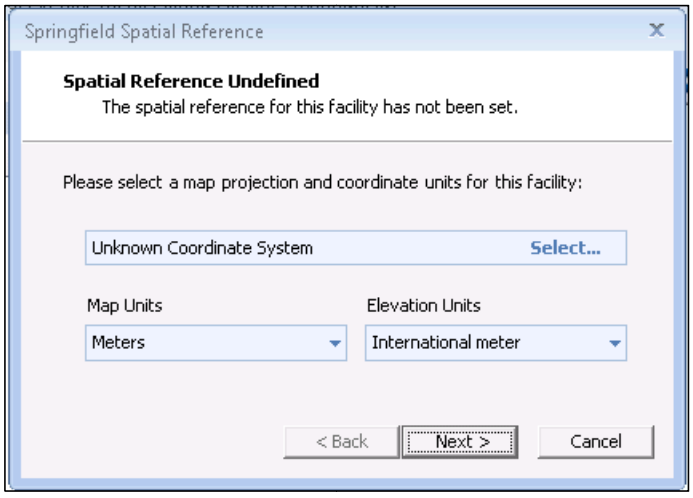



Figure 4 – Springfield Spatial Reference screen

## *Determining Spatial Reference:*

The first time a facility is opened in ArcGIS, or when a facility is opened without having a spatial reference defined (coordinate system/projection, coordinate bounds (domain), and xy (z) units), a custom dialog is displayed which displays the domain of the facility. The domain is based on the values in the facility's X_COORD, Y_COORD, and SURF_ELEV fields from the DT_LOCATION table.

Choose **Select** to edit the spatial reference properties.

On the **XY Coordinate System** tab of the **Spatial Reference Properties** screen, choose **Select** to define a predetermined coordinate system.

Browse to C:\Coordinate Systems\Projected Coordinate Systems\UTM\NAD 1927 and select NAD_1927_UTM_Zone 17N.prj.

Click **Add**.

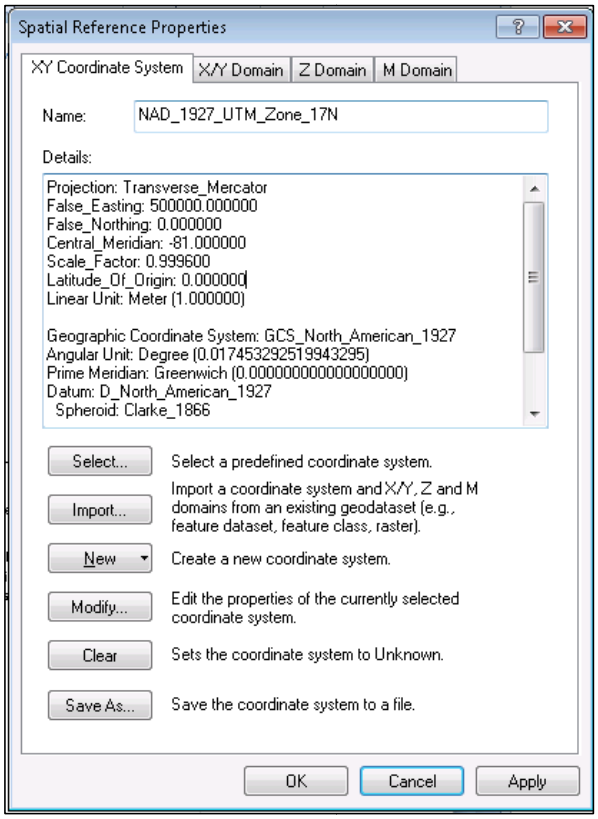
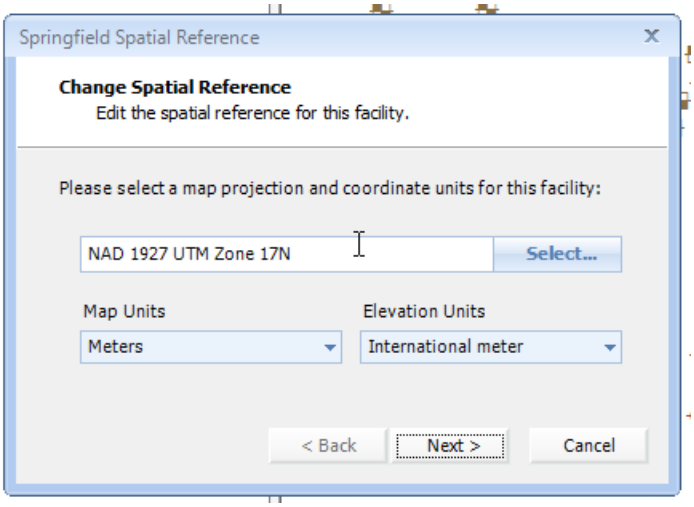



*Figure 5 – XY Coordinate System tab*

The **XY Coordinate System** tab now displays the details of the predefined coordinate system you have chosen.

Click **Apply** and then **OK**.




Click **Next** on the **Springfield Spatial Reference screen**. A layer is created in ArcGIS and displays the different types of sampling locations in the Springfield facility. (This may take a few moments depending on the processor's speed.)

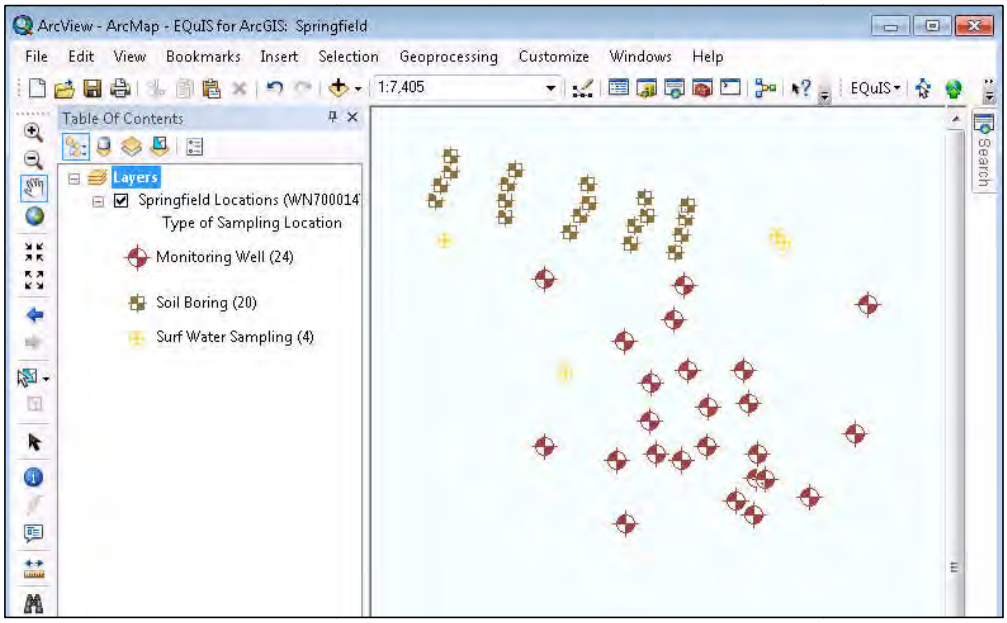



*Figure 6 – Types of sampling locations layer for the Springfield facility*

Note: The coordinate system selection (**NAD_1927_UTM Zone 17N.prj**) is stored in RT_COORD_TYPE so that you will not need to make this selection again for this database.

## Options Menu

The EQuIS for ArcGIS **Options** menu allows the user to change various settings within the EQuIS for ArcGIS interface. The **Options** menu includes setting options for the interface itself, for database connection options to EQuIS Professional, and for other interfaces, such as RockWorks and Surfer. In this exercise, we will explore the features within the EQuIS for ArcGIS **Options** Menu.

Users may want to review the Options Menu and customize their Options Settings in the EQuIS for ArcGIS interface prior to adding a facility.

### Application Options:

From the EQuIS for ArcGIS toolbar, select **EQuIS > Options**. The **EQuIS for ArcGIS Options** screen will open.

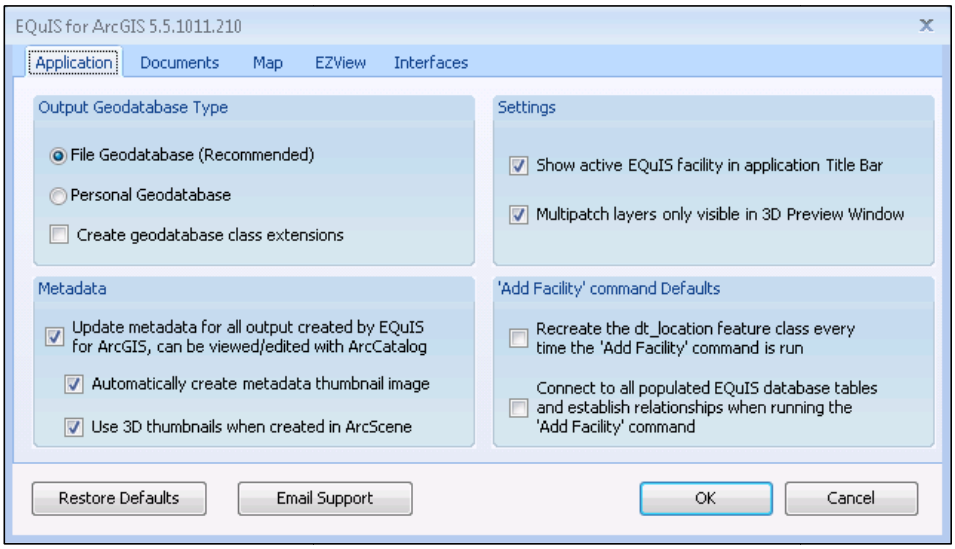



*Figure 7 – Application Node from EQuIS for ArcGIS Options*

- The *Output Geodatabase Type* options in the top-left pane allows for the selection of the format of the output feature class file, as a **File Geodatabase** or a **Personal Geodatabase**, and also select to create geodatabase class extensions.

- The *Metadata* options in the lower-left pane enable automatically updating the metadata associated with your EQuIS for ArcGIS project as follows:

| | |
|---|---|
| Update metadata for all output created by EQuIS for ArcGIS, can be viewed/edited with ArcCatalog | If checked, this updates the metadata for all output created by the interface, and the metadata can be viewed and edited in **ArcCatalog**. |
| Automatically create metadata thumbnail image | If checked, this will create a thumbnail image with any metadata created. |
| Use 3D thumbnails when created in ArcScene | If checked, 3D thumbnails will be used when metadata is created in **ArcScene**. |

- The *Settings* in the top-right pane are selected by default:
    - Show active EQuIS facility in application Title Bar
    - Multipatch layers only visible in 3D Preview Window

In the lower-right pane, there are two options for the ***'Add Facility'*** *command Defaults:*

Recreate the dt_location feature class every time the 'Add Facility' command is run" is the option that can be set to use the "**Overwrite Existing**" Sample Locations Feature on the EQuIS Login screen by default.

Connect to all populated EQuIS database tables and establish relationships when running the 'Add Facility' wizard is the 'Add Facility' Command.

Holding the mouse over the various selections in the **Options** window will display helpful tooltips.

The **Restore Default** button is available should you need to reset any of the selections on the **Options** window to the EQuIS defaults.

1. Select **Email Support** at bottom left to copy version information about the system and the EQuIS for ArcGIS interface to the clipboard.
2. Open an email client and paste the copied information into the email message.
3. Send the message to help@earthsoft.com.

If an issue is encountered with the interface, this is a simple way to inquire to EarthSoft Support with pertinent details to facilitate resolution of the issue.

4. Close the dialog/email to return to the **EQuIS for ArcGIS Options** window.

## *Documents Options:*

5. From the **EQuIS for ArcGIS Options** window, select the **Documents** tab.

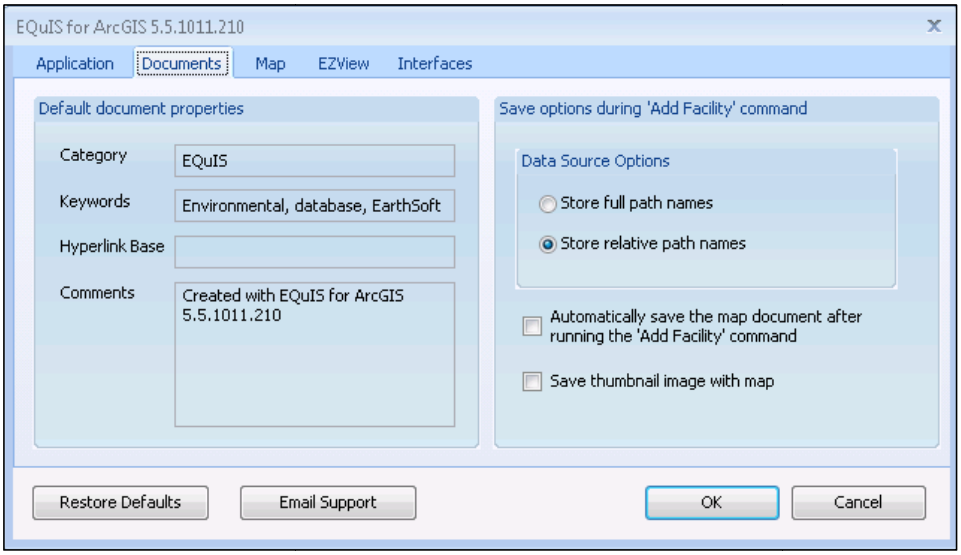



*Figure 8 – Documents Options*

6. In the left-hand pane, the **Default document properties** can be adjusted to include a **Category**, **Keywords**, a **Hyperlink Base**, and any **Comments** pertaining to the created document.

7. In the right-hand pane, the **Save options during 'Add Facility' command** include:

| | |
|---|---|
| **Data Source Options** | Stores the file system path names to data sources as full path names |
| | Stores the file system path names to data sources as relative path names |
| **Automatically save the map document after running the 'Add Facility' command** | If selected, the map is automatically saved after a Facility is added. |
| **Save thumbnail image with map** | If selected, a thumbnail image of the map is saved with the map. |

## *Map Settings Options:*

1. From the **EQuIS for ArcGIS Options** window, select the **Map** tab.

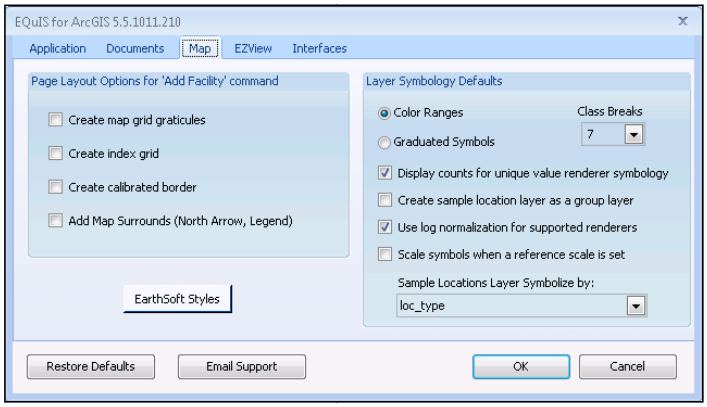


Figure 9 – Map Settings

The **Page Layout Options for 'Add Facility' command** pane offers the following options:

| | |
|---|---|
| Create map grid graticules | If selected, map grid graticules are automatically created when a facility is added. |
| Create index grid | If selected, an index grid is automatically created when a facility is added. |
| Create calibrated border | If selected, a calibrated border is automatically created when a facility is added. |
| Add Map Surrounds | If selected, map surrounds, such as a north arrow or legend are automatically added to the map. |

2. Select the **EarthSoft Styles** button.

3. Expand the **EarthSoft.style** node from the tree on the left.
4. Select **Marker Symbols** to see the types of symbols that are available for point features.

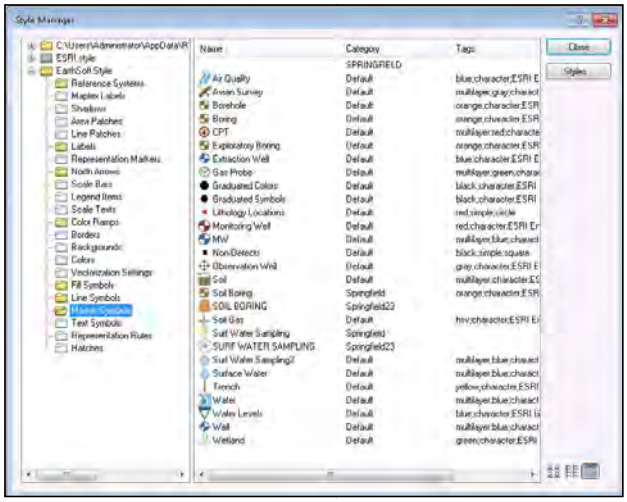


Figure 10 – Marker Symbols for point features in the Style Manager

The **Category** corresponds to the EQuIS facility code (DT_FACILITY.FACILITY_CODE, e.g., **Springfield)**. The interface will first look for facility-specific symbols, and then look for any of the other categories that match the value being rendered. For sample location mapping, the value being rendered is DT_LOCATION.LOC_TYPE by default and this corresponds to the entries in the **Name** column in the style gallery.

5. Select **Close** to exit the **Style Manager**.

The **Layer Symbology Defaults** in the right-hand pane offer several options:

| | |
|---|---|
| Color Ranges | Sets color ranges as the layer default, instead of graduated symbols. |
| Graduated Symbols | Sets graduated symbols as the layer default, instead of color ranges. |
| Class Breaks | Allows the number of class breaks used in symbology to be set. |
| Display counts for unique value renderer symbology | Counts for the unique value renderer symbology are displayed. |
| Create sample location layer as a group layer | Creates the sample location layer as a group layer. |
| Use log normalization for supported renderers | Log normalization is used when rendering specific layers. |
| Scale symbols when a reference scale is set | Sets symbols to the reference scale. |
| Create sample location layer as a group layer | Will break unique values of the sample locations layer into their own separate sub-layer. |
| Sample Locations Layer Symbolize by | Identifies the EQuIS field from the DT_LOCATION table which is used for symbolizing the Sample Locations Layer (DT_LOCATION.LOC_TYPE by default). |

## *EZView Options:*

6. From the **EQuIS for ArcGIS Options** window, select the **EZView** node.

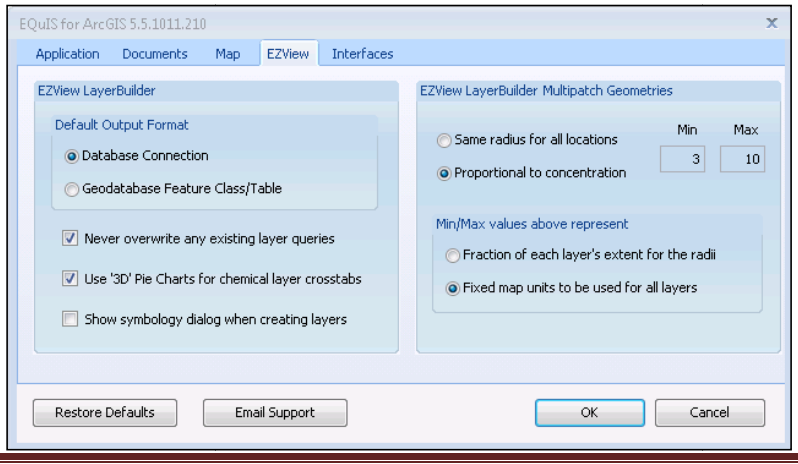


*Figure 7 – EZView LayerBuilder window*

There are several different options when creating layers with the **EZView LayerBuilder**, including:

| | |
|---|---|
| **Database connection** | Allows the data to update as changes are made to the query. |
| **Geodatabase Feature Class/Table** | Creates a new geodatabase feature class/table each time the query is changed. |
| **Never overwrite any existing layer queries** | Preserves all existing layer queries when creating a new layer. |
| **Use '3D' Pie Charts for chemical layer crosstabs** | Uses Pie Chart symbology for all chemical layer crosstabs created. |
| **Show symbology dialog when creating layers** | Displays the symbology dialog when a layer is created. |

In the **EZView Layer Builder Multipatch Geometries** pane are several options for Multipatch Geometries:

| | |
|---|---|
| **Same radius for all locations** | All spheres will have the same radius. |
| **Proportional to concentration** | Spheres will have radii proportional to their concentrations. |
| **Min/Max boxes** | Enter the numeric min/max values, defined further below. |
| **Min/Max values as Fraction of each layer's extent for the radii** | Min/max values of the spheres will represent the fraction of each layer's extent for the radii. |
| **Min/Max values as Fixed map units to be used for all layers** | Min/max values of the spheres will represent fixed map units to be used for all created layers. |

## *Interfaces Options:*

From the EQuIS for ArcGIS Options window, select the **Interfaces** tab.

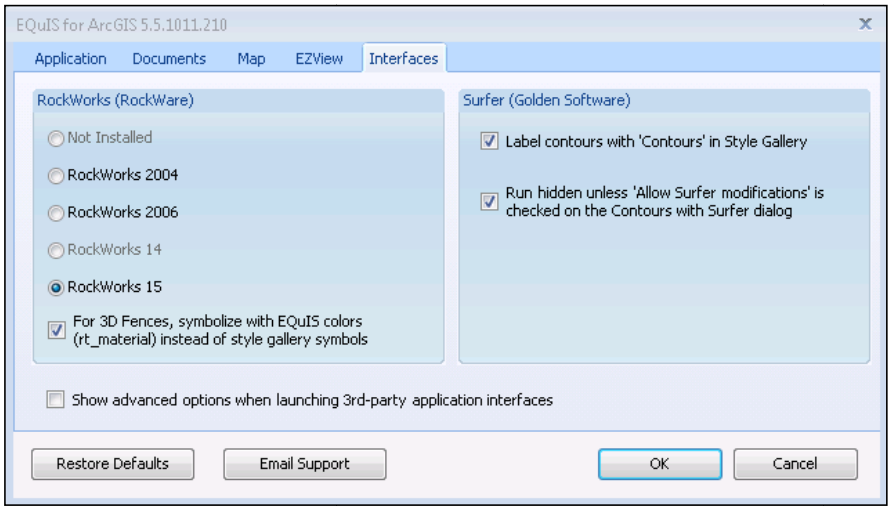



Figure 12 – Interfaces Options

When interfacing with RockWorks, several different options are available in the left-hand pane:

| | |
|---|---|
| Not Installed, RockWorks 2004, RockWorks 2006, RockWorks 14 or RockWorks 15 | Detects the version of RockWorks installed on the local machine. |
| For 3D Fences, symbolize with EQuIS colors (rt_material) instead of style gallery symbols | Uses EQuIS colors from the RT_MATERIAL table for 3D Fences, instead of the symbols in the ESRI style gallery. |

Additionally, when interfacing with Surfer to create contours, two other options are available in the right-hand pane:

| | |
|---|---|
| Label contours with 'Contours' in Style gallery | If selected, uses labels for contours that are set in the ESRI Style Gallery |
| Run hidden unless 'Allow Surfer modifications' is checked on the Contours with Surfer dialog | If selected, Surfer will run in the background when creating contours, and will not open, unless the "Allow Surfer modifications" option is selected in the contours dialog. |

At the bottom of the Interfaces tab, there is also a checkbox that will open advanced options dialogs whenever a 3rd-party application or interface is launched (such as RockWorks or Surfer). This option displays the same dialog for gINT, LogPlot, GMS that EQuIS Professional uses when exporting files to these applications. When this mode is used with RockWorks 3D Fences, the gridding method and other parameters can be modified.

Select **OK** to close the **EQuIS for ArcGIS Options** menu.

## *Labeling Features:*

The **ArcGIS Style Manager** provides categories of styles (style galleries) to enable standardization of all aspects of map symbology for consistent map documents. The EQuIS for ArcGIS Interface takes advantage of this feature by creating layers based on the EarthSoft style gallery (setup in the EQuIS for **ArcGIS> Options** menu). In this exercise, we will learn how to label selected location features in the ArcGIS Desktop Interface.

With the Springfield Training facility already added, click on **Select Features**  from the main ArcMap toolbar.

Click on one of the locations to highlight it.

**Comment [ELM1]:** With v5.5.1, this right-click feature is not working.

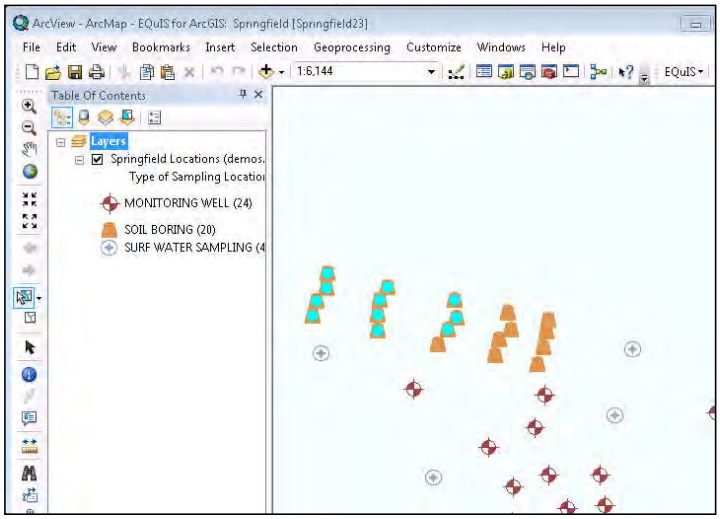



Figure 13- Selecting A Location in ArcGIS

Right-click over the selected locations and select **Label** from the dropdown menu. The DT_LOCATION.SYS_LOC_CODE labels appear for the selected locations.

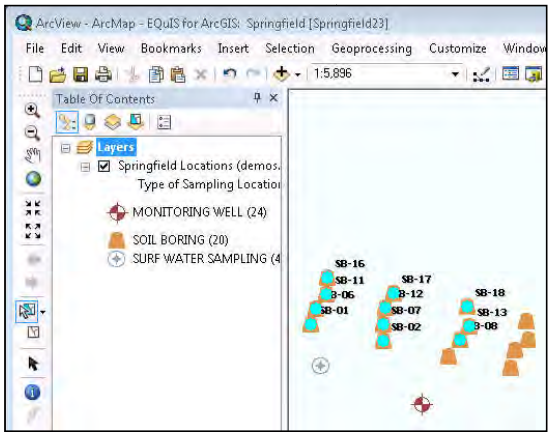



*Figure 148 – Labeled locations*

The EarthSoft style gallery is available for customizing the text style of the labels on a per-facility basis. Choose **Customize** > **Style Manager** > **EarthSoft.Style** > **Labels** > **Label from the ArcGIS**.

## *Un-Labeling Features:*

To turn off the labels, right-click on the Locations layer and deselect **Label Features**. All of the labels from the selected locations are removed.

You can label all layer locations from the same menu without making any feature selection.

## Related Tables

In the EQuIS for ArcGIS Interface, users can access the contents of EQuIS tables to create custom layers in ArcGIS to use with other ArcGIS features. Users may also create joins and relates between EQuIS tables if both the **Open Tables** and **Create Relates** options are chosen when adding a facility into ArcGIS.

In this exercise, the user will view tables and relate tables using the EQuIS for ArcGIS Interface's tools.

### Viewing Tables:

From ArcGIS, select **EQuIS > Add Facility** and select the **Open Tables** and **Create Relates**, and **Create Query Tables** options. Note that selecting these options results in longer loading time.

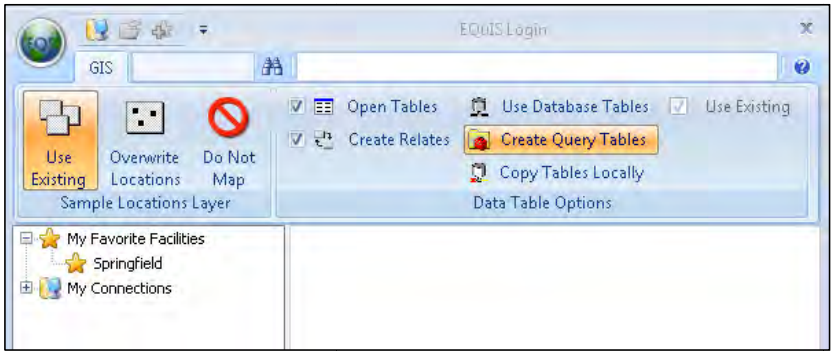



Figure 15- Selecting Locations in ArcGIS

Select the Springfield Training facility.

The EQuIS tables are listed in the **Table of Contents**. If no tables are listed, select the **List By Source** option for your Table of Contents window.

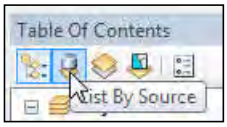



*Figure 16 – Table of Contents List By Source table display*

After reviewing the tables, right-click on the Monitoring Well sub-layer of the Springfield *Metal Plating Facilities Locations* layer and select **Open Attribute Table**.

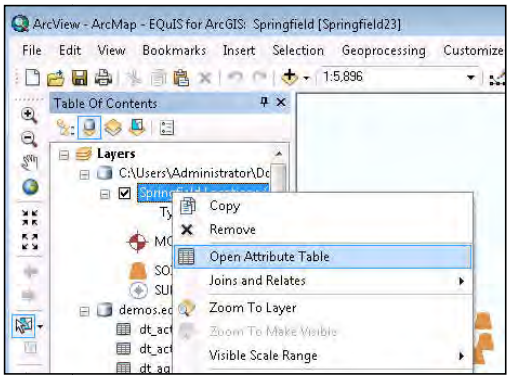
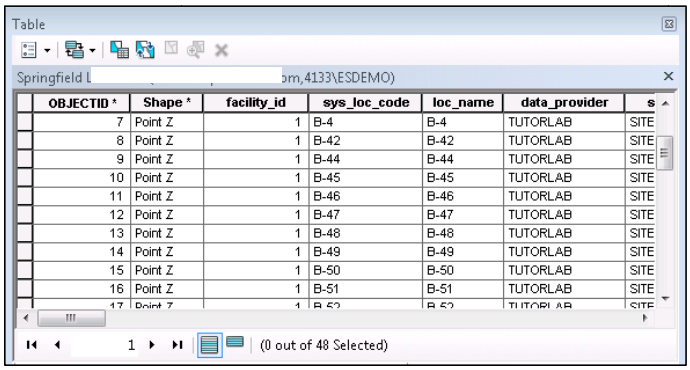



*Figure 17 – Opening the Attributes Table*



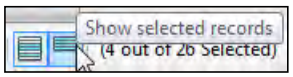

| OBJECTID * | Shape * | facility_id | sys_loc_code | loc_name | data_provider | s |
|---|---|---|---|---|---|---|
| 7 | Point Z | 1 | B-4 | B-4 | TUTORLAB | SITE |
| 8 | Point Z | 1 | B-42 | B-42 | TUTORLAB | SITE |
| 9 | Point Z | 1 | B-44 | B-44 | TUTORLAB | SITE |
| 10 | Point Z | 1 | B-45 | B-45 | TUTORLAB | SITE |
| 11 | Point Z | 1 | B-46 | B-46 | TUTORLAB | SITE |
| 12 | Point Z | 1 | B-47 | B-47 | TUTORLAB | SITE |
| 13 | Point Z | 1 | B-48 | B-48 | TUTORLAB | SITE |
| 14 | Point Z | 1 | B-49 | B-49 | TUTORLAB | SITE |
| 15 | Point Z | 1 | B-50 | B-50 | TUTORLAB | SITE |
| 16 | Point Z | 1 | B-51 | B-51 | TUTORLAB | SITE |

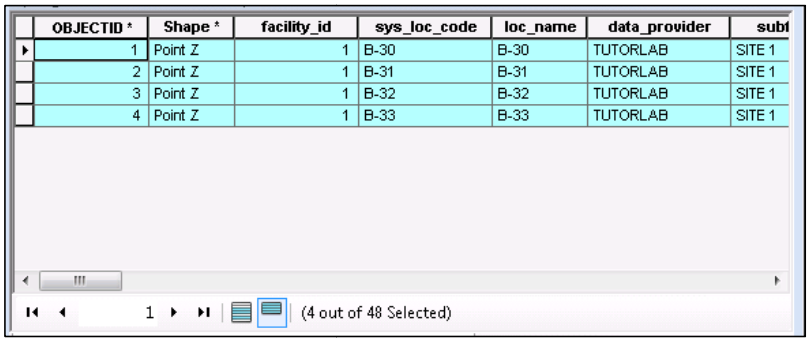
*Figure 18 – Attributes table*

## *Joins and Relates:*

Select the first record (**B-30**) and then press and hold **Shift** to select through the fourth records (**B-31, B-32 and B-33**). These should be the only four records highlighted.

Select **show selected records** from the bottom toolbar in the Table window.





| OBJECTID * | Shape * | facility_id | sys_loc_code | loc_name | data_provider | subl |
|---|---|---|---|---|---|---|
| 1 | Point Z | 1 | B-30 | B-30 | TUTORLAB | SITE 1 |
| 2 | Point Z | 1 | B-31 | B-31 | TUTORLAB | SITE 1 |
| 3 | Point Z | 1 | B-32 | B-32 | TUTORLAB | SITE 1 |
| 4 | Point Z | 1 | B-33 | B-33 | TUTORLAB | SITE 1 |



Figure 19 – Showing only the selected records

Select the **Related Tables** pull-down menu from the top toolbar and choose select **dt_sample:dt_sample.**

Comment [ELM2]: Did not work with v5.5.1 and Arc 10.

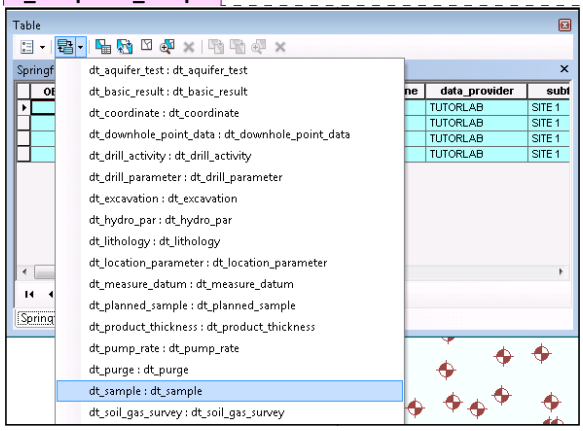




*Figure 209 – Opening related tables*

A second tab displays all of the DT_SAMPLE records related to locations B-30, B-31, B-32 and B-33 as selected from the first table.

Select the **Show All Records** button from the bottom toolbar to view all records in DT_SAMPLE.

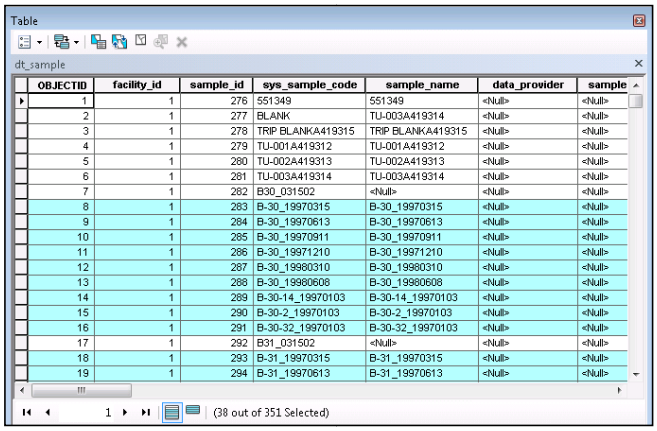



Figure 21 – DT_SAMPLE attributes table

## Adding New Locations and Modifying Location Groups

New locations and location groups are added to database from within the map by using the EQuIS for ArcGIS interface. This exercise outlines the process for creating new locations and digitizing coordinates from within the EQuIS for ArcGIS Interface as well as editing and creating new Location Groups.

### Adding and Editing New Locations

1. Select the **Feature Selection** tool.
2. Select several locations symbolized as Monitoring Wells by drawing a box around them with the **Feature Selection** tool.
3. Select **EQuIS > Utilities > Add/Edit Locations**.

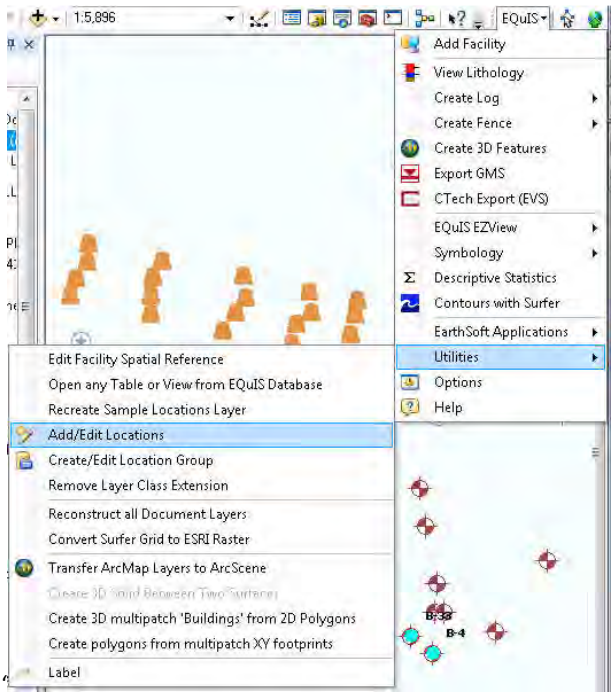
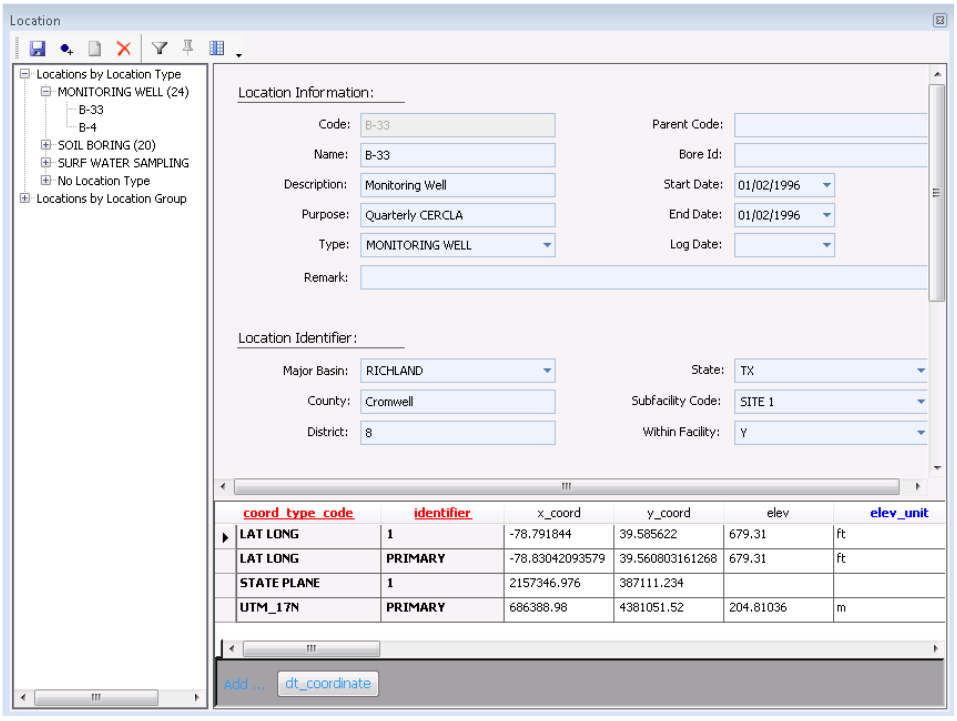



Figure 22 – Add/Edit Locations Menu

4. Expand **Locations by Location Type**, and expand the **MONITORING WELL** location type node. Review the data for the selected locations. Add and/or edit data as desired.




5. Single-click on MONITORING WELL to highlight the location type and then select **Add Location** at top left in the Location Window.

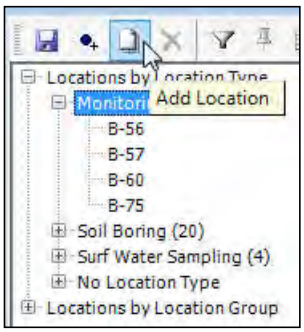



Figure 10 – Add New Location

6. Enter the MW-100 as the sys_loc_code and any additional information for the location.
7. Select the **Digitize Tool**.
8. Click the point on the map where the location should be added.

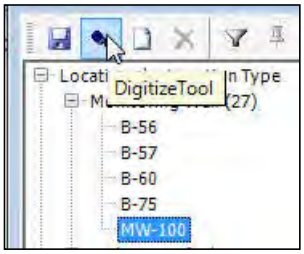



Figure 11 – The Digitize Coordinates Button

9. **Save** your work.

10. Close the *Add/Edit Location* window.
11. Close ArcMap.
12. Re-open ArcMap.
13. **Add** the Springfield facility.
14. Select the **Overwrite Locations** option located in the upper-left of the *Add Facility* window's toolbar (and leave **Open Tables** unchecked) to ensure your new location will be added.

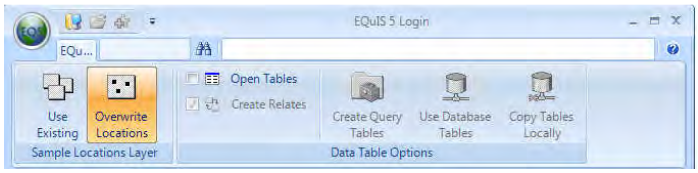
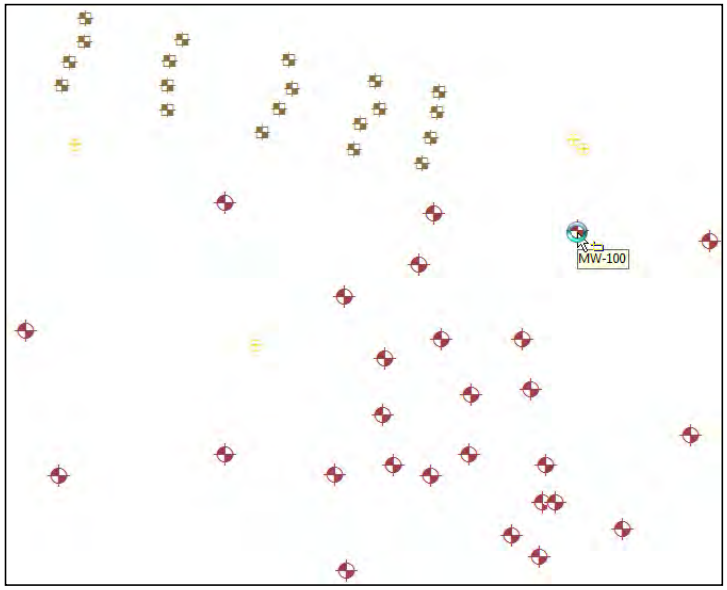



Figure 12 – Selecting the Overwrite Locations option




## Creating and Modifying Location Groups

1. Click the **Feature Selection Tool**.
2. Select one or more locations.
3. Select the EQuIS **Menu > Utilities > Create/Edit Location Groups**. A new group is populated with the selected locations and a default group_code.
4. Name the group 'Hot Locations <your initials>'.
5. From the available parameters list, select; **B-38**, **B-42**, and **B-48.**
6. Right Click and select **Add to Group**.

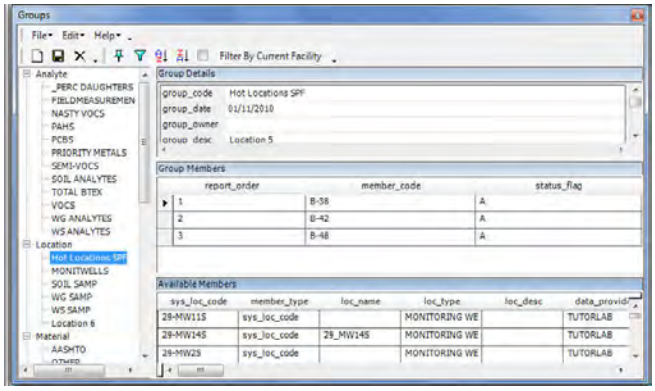


Figure 13 – New Group Added

7. **Save** the new location group and close the Groups window.

Existing locations and location groups may be edited with these tools. Existing locations may be edited by going directly to the Utilities > Add/Edit Locations screen and paging through the locations or selecting the specific location and going to the Utilities > Add/Edit Locations screen. Location groups may be created and edited by going directly to the Create/Edit location groups

## EQuIS View Lithology Tool

Within the EQuIS for ArcGIS interface, the **View Lithology** tool is available, which displays the lithologic profile of a location based upon data in DT_LITHOLOGY in the EQuIS database. This exercise will discuss using the View Lithology tool within the EQuIS for ArcGIS interface.

### View Lithology

1. Add the **Springfield Metal Plating** facility.
2. From the ESRI Tools toolbar, choose the **Select Features** button. 
3. Next, select one of the soil borings from the map by drawing a box around the boring (e.g. SB-4 in the upper middle quadrant).

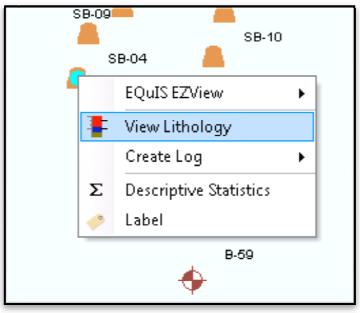



Figure 14 – Selecting a Soil Boring Location

4. Once the location has been selected, right-click the blue dot to view the **Single Point Functions** menu and select **View Lithology**.
5. A new window opens, displaying the Lithology for this location.

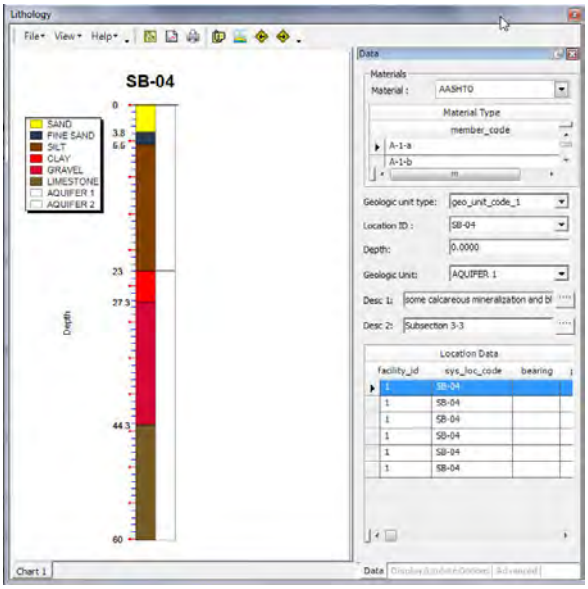



Figure 15 – View Lithology Window

The **Lithology** window shows the lithology data for the selected location. If multiple locations are selected, they are all placed in the dropdown list on the form. If no locations are selected, all locations will be added to the Location ID dropdown list.

6. Close the Lithology window.

## EZView LayerBuilder

EQuIS EZView allows users to run the reports that are available in Professional and/or Enterprise and build layers using their output. In this exercise, you will learn how to create different types of layers in ArcMap using the EQuIS EZView tool.

### Create a Layer for a Single Location

The EQuIS EZView reporting utilities is accessible from the single point function menu, giving the user the ability to run a report on any selected location.

1. Select the B-48 Monitoring Well location using the **Feature Select Tool** .
2. Right-click, and hover over **the EQuIS EZView** utility.

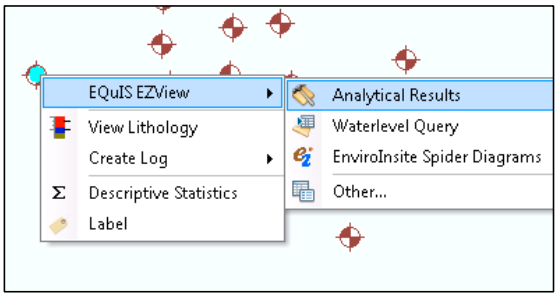



Figure 16 – Selecting the Analytical Results report option

3. Select to run the **Analytical Results** report.
4. Select the following parameters:

| | |
|---|---|
| **Location** | B-48 (should already be selected) |
| **Matrix** | WG |
| **Analyte** | Individual – Cis-1,2-Dichloroethene |

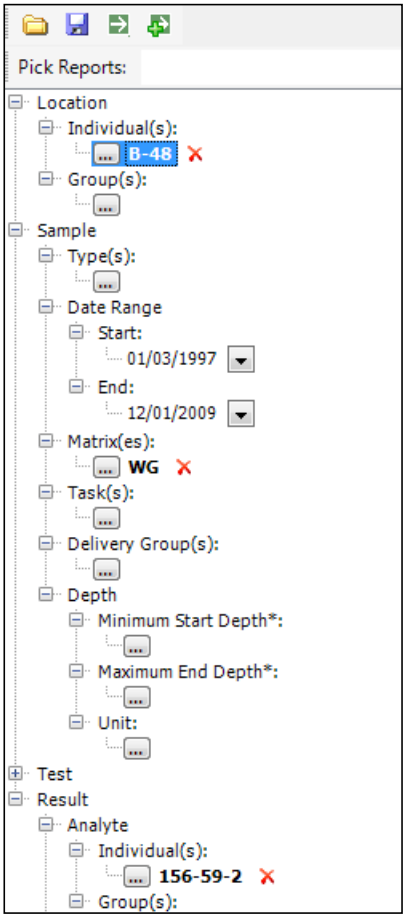


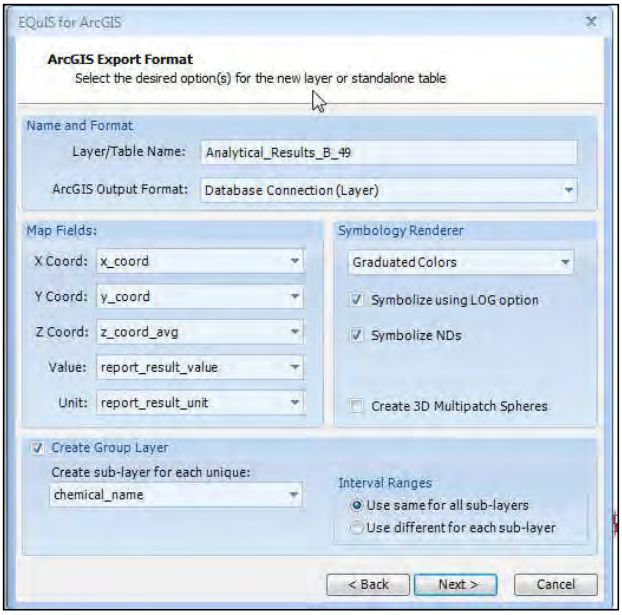

Figure 17 – Analytical Results Report for single location

5. Select **Go** to run the report. Approximately 6 records are returned in a tabular format.
6. Select **Open in ArcGIS** from the report toolbar.

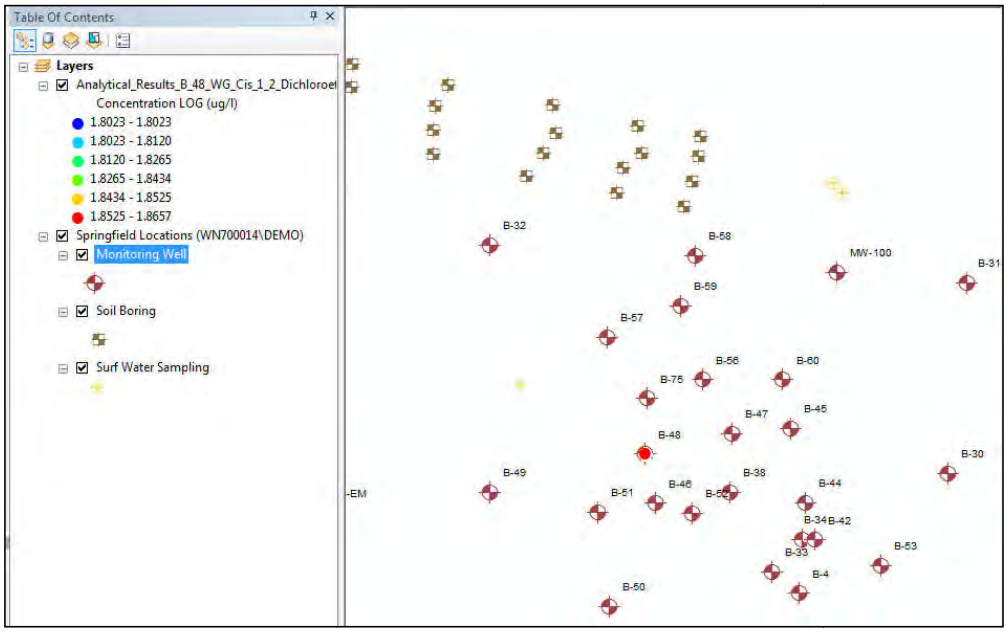

7. From the **EQuIS for ArcGIS** wizard that opens, review the options that are available:

| | | |
|---|---|---|
| **Name and Format** | **Layer/Table Name** | The name that will be displayed in the Table of Contents for the built layer. |
| | **ArcGIS Output Format** | The *Layer* can be a *Database Connection*, meaning it will update as the data is updated in the database, or can be saved to the *Geodatabase*, meaning it will be a static layer. The report can also be exported as a *Table* instead of a visual layer and has the same connection options. |
| **Map Fields** | **X Coord, Y Coord, Z Coor, Value, and Unit** | The fields used from the selected EZView report that will be mapped in the layer or table. |
| **Symbology Renderer** | **Symbol Dropdown** | The layer can be symbolized as <None>, Single Symbol, Graduated Colors, Graduated Symbols, Water Levels or as Pie Charts. |
| | **Symbolize using LOG option** | The mapped symbols can be sized using a LOG of the *Value* instead of the actual value. |
| | **Symbolize NDs** | The Non-Detects (if included in the report) can be symbolized, and will be displayed as a separate sub-layer. |
| | **Create 3D Multipatch Spheres** | Pie Charts can be symbolized as 3D "beach balls" or multipatch spheres, if ArcScene is also installed and licensed. |
| **Create Group Layer** | **Create sub-layer for each unique:** | Choose a field from the report for which to create unique sub-layers. |
| | **Interval Ranges** | For each layer, use the same interval range for all sub-layers, or use a different interval range for each sub-layer. |

8. Confirm the default options as seen in the figure below, and then select **Next**.




A layer (or table) is created, symbolizing the data as determined in the previous screen. This may take a few moments, depending on the speed of the processor.




If there are multiple results for one location over the reported date range, the most recent date is displayed on the top, meaning the most recent result is the visible result of the layer.

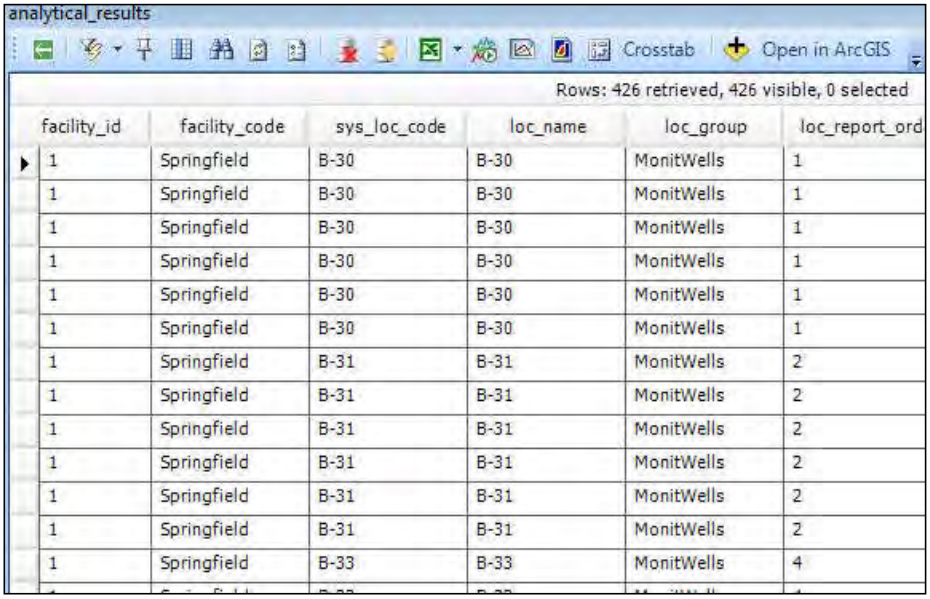
## *Create an Animated Time-Based Layer:*

1. From the EarthSoft toolbar, select **EQuIS EZView> Analytical Results**.

2. Make the following selections in the *analytical_results* window:

| | |
|---|---|
| **Location** | MONITWELLS |
| **Matrix** | WG |
| **Analyte** | Individual – Trichloroethylene (TCE) |

3. Select **Go**. Greater than 100 records will be returned.


analytical_results

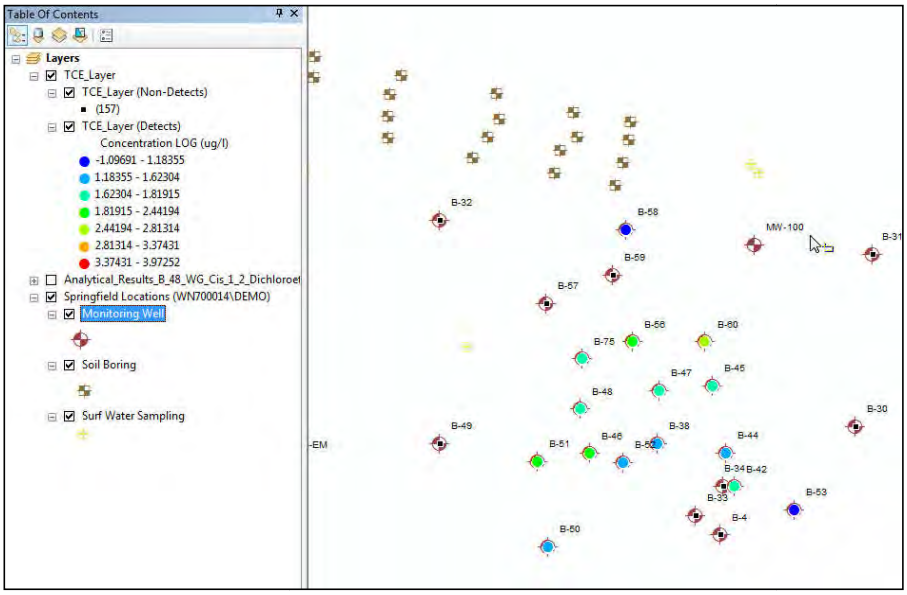
Crosstab | Open in ArcGIS

Rows: 426 retrieved, 426 visible, 0 selected

| facility_id | facility_code | sys_loc_code | loc_name | loc_group | loc_report_ord |
|---|---|---|---|---|---|
| 1 | Springfield | B-30 | B-30 | MonitWells | 1 |
| 1 | Springfield | B-30 | B-30 | MonitWells | 1 |
| 1 | Springfield | B-30 | B-30 | MonitWells | 1 |
| 1 | Springfield | B-30 | B-30 | MonitWells | 1 |
| 1 | Springfield | B-30 | B-30 | MonitWells | 1 |
| 1 | Springfield | B-30 | B-30 | MonitWells | 1 |
| 1 | Springfield | B-31 | B-31 | MonitWells | 2 |
| 1 | Springfield | B-31 | B-31 | MonitWells | 2 |
| 1 | Springfield | B-31 | B-31 | MonitWells | 2 |
| 1 | Springfield | B-31 | B-31 | MonitWells | 2 |
| 1 | Springfield | B-31 | B-31 | MonitWells | 2 |
| 1 | Springfield | B-31 | B-31 | MonitWells | 2 |
| 1 | Springfield | B-33 | B-33 | MonitWells | 4 |

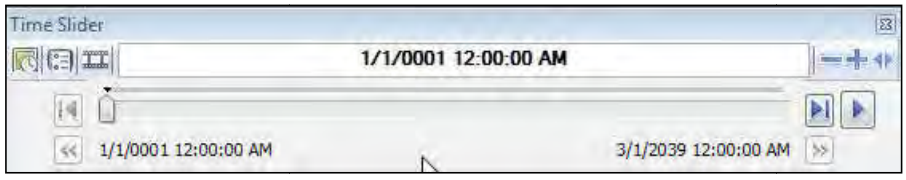
4. Select **Open in ArcGIS**.

5. Give your query the Layer/Table Name of **TCE Layer** in the EQuIS for ArcGIS Wizard and change your ArcGIS Output Format to Geodatabase (Layer)
6. Select **Next** to view the map.

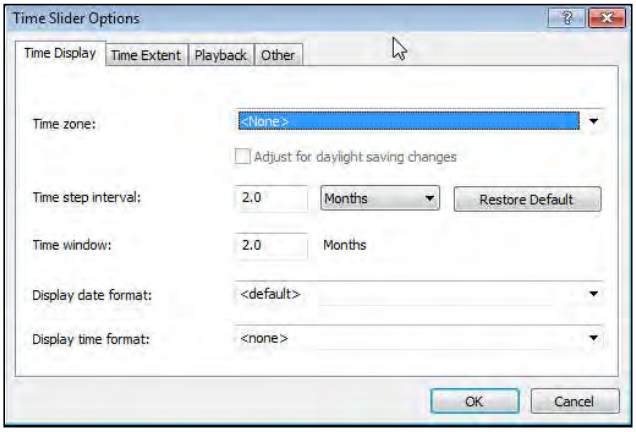



The following steps are for ArcMap 10 or later.

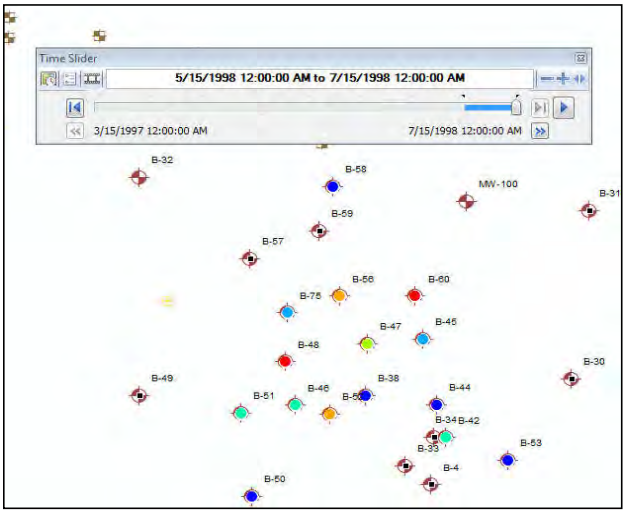
7. For each sub-layer (i.e.: Monitwells, Soil Boring, Surf Water Sampling) double-click on each and select the **Time** tab in the **Layer Properties Window**.
8. For each sub-layer, uncheck **Enable Time on this Layer** and select OK.
9. Select to **Open the Time Slider Window** from the toolbar.




10. Select **Time Slider Options**.
11. On the **Time Display** tab, change the Time step interval to 2.0 months.
12. Change the **Time Window** to 2.0 months.




13. On the **Time Extent** tab, restrict the full time extent to the TCE_Layer (Detects). Note that the start and end times automatically update.
14. Change the End Time date to 06/15/1998.
15. On the **Playback** tab, change the duration to be all the way to *slower*.
16. Select OK to close the **Time Slider Options**.
17. Select **Play** to animate the results and view how the results change over time.




18. To save the animation as an .avi movie file, select the filmstrip from the **Time Slider** window, give the file a name, and select **Export**.
19. Close the Time Slider window.

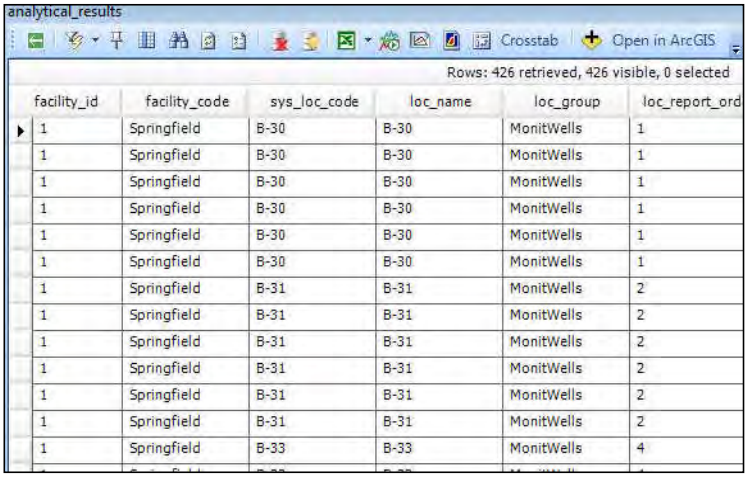
## *Create Chemical Sub-Layers for Multiple Analytes:*

1. From the EarthSoft toolbar, select **EQuIS EZView> Analytical Results**.

2. Make the following selections in the *analytical_results* window:

| | |
|---|---|
| **Location** | MONITWELLS |
| **Matrix** | WG |
| **Analyte** | Group:_PERC_Daughters |
| **Start Date** | 01/01/1997 |
| **End Date** | 12/31/1997 |

3. Select **Go**. More than 100 records will be returned.




| facility_id | facility_code | sys_loc_code | loc_name | loc_group | loc_report_ord |
|---|---|---|---|---|---|
| 1 | Springfield | B-30 | B-30 | MonitWells | 1 |
| 1 | Springfield | B-30 | B-30 | MonitWells | 1 |
| 1 | Springfield | B-30 | B-30 | MonitWells | 1 |
| 1 | Springfield | B-30 | B-30 | MonitWells | 1 |
| 1 | Springfield | B-30 | B-30 | MonitWells | 1 |
| 1 | Springfield | B-30 | B-30 | MonitWells | 1 |
| 1 | Springfield | B-31 | B-31 | MonitWells | 2 |
| 1 | Springfield | B-31 | B-31 | MonitWells | 2 |
| 1 | Springfield | B-31 | B-31 | MonitWells | 2 |
| 1 | Springfield | B-31 | B-31 | MonitWells | 2 |
| 1 | Springfield | B-31 | B-31 | MonitWells | 2 |
| 1 | Springfield | B-31 | B-31 | MonitWells | 2 |
| 1 | Springfield | B-31 | B-31 | MonitWells | 2 |
| 1 | Springfield | B-33 | B-33 | MonitWells | 4 |

4. Select **Open in ArcGIS**.
5. Uncheck Symbolize NDs and Symbolize using LOG option in the ArcGIS Export Format wizard.
6. Check Create Group Layer and leave other settings as defaults.
7. Select **Next**.
8. Sub-layers for all three chemicals will be created. If necessary, double-click on each and select the **Time** tab in the **Layer Properties Window**.
9. For each sub-layer, uncheck **Enable Time on this Layer** and select OK.

## *Create Pie Charts with Multiple Analytes:*

1. From the EQuIS Toolbar, select **EQuIS EZView> Analytical Concentration Query**.
2. Make the following selections in the *analytical_results* window:

| | |
|---|---|
| **Location** | MONITWELLS |
| **Matrix** | WG |
| **Task** | WG97Q2 |
| **Analyte Group** | VOC |

3. Enter **VOCs WG97Q2** in the **Pick Reports** field and click the adjacent **Save** icon .

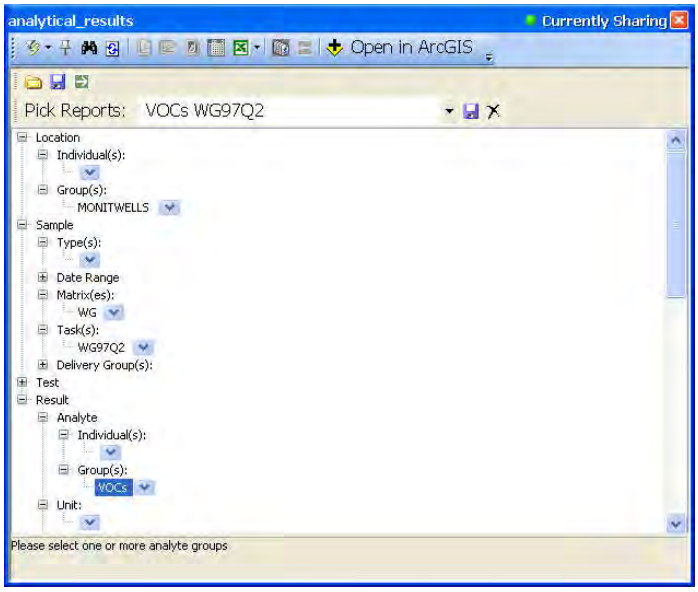
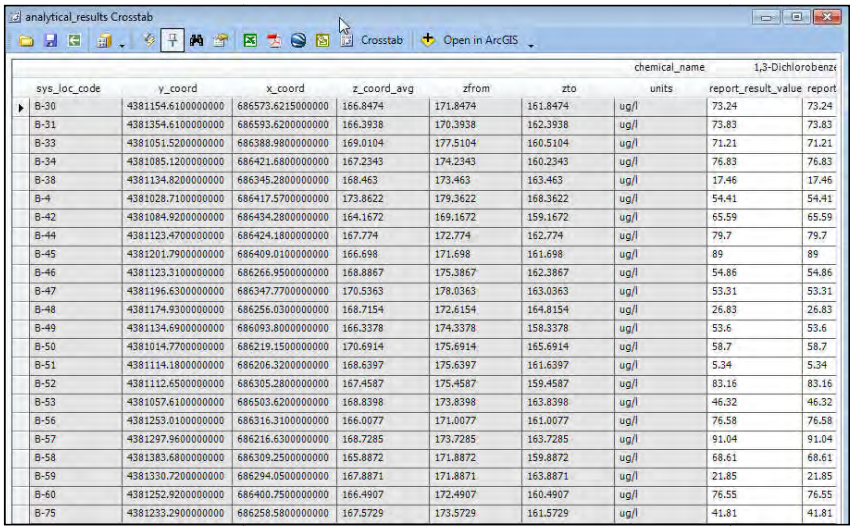



Figure 18 – analytical_results Window with Pick Report Selected

4. Select **Go.**
5. Click the **Crosstab** button from the tool bar.




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | chemical_name | 1,3-Dichlorobenze |
| | sys_loc_code | y_coord | x_coord | z_coord_avg | zfrom | zto | units | report_result_value | report |
| ▶ | B-30 | 4381154.6100000000 | 686573.6215000000 | 166.8474 | 171.8474 | 161.8474 | ug/l | 73.24 | 73.24 |
| | B-31 | 4381354.6100000000 | 686593.6200000000 | 166.3938 | 170.3938 | 162.3938 | ug/l | 73.83 | 73.83 |
| | B-33 | 4381051.5200000000 | 686388.9800000000 | 169.0104 | 177.5104 | 160.5104 | ug/l | 71.21 | 71.21 |
| | B-34 | 4381085.1200000000 | 686421.6800000000 | 167.2343 | 174.2343 | 160.2343 | ug/l | 76.83 | 76.83 |
| | B-38 | 4381134.8200000000 | 686345.2800000000 | 168.463 | 173.463 | 163.463 | ug/l | 17.46 | 17.46 |
| | B-4 | 4381028.7100000000 | 686417.5700000000 | 173.8622 | 179.3622 | 168.3622 | ug/l | 54.41 | 54.41 |
| | B-42 | 4381084.9200000000 | 686434.2800000000 | 164.1672 | 169.1672 | 159.1672 | ug/l | 65.59 | 65.59 |
| | B-44 | 4381123.4700000000 | 686424.1800000000 | 167.774 | 172.774 | 162.774 | ug/l | 79.7 | 79.7 |
| | B-45 | 4381201.7900000000 | 686409.0100000000 | 166.698 | 171.698 | 161.698 | ug/l | 89 | 89 |
| | B-46 | 4381123.3100000000 | 686266.9500000000 | 168.8867 | 175.3867 | 162.3867 | ug/l | 54.86 | 54.86 |
| | B-47 | 4381196.6300000000 | 686347.7700000000 | 170.5363 | 178.0363 | 163.0363 | ug/l | 53.31 | 53.31 |
| | B-48 | 4381174.9300000000 | 686256.0300000000 | 168.7154 | 172.6154 | 164.8154 | ug/l | 26.83 | 26.83 |
| | B-49 | 4381134.6900000000 | 686093.8000000000 | 166.3378 | 174.3378 | 158.3378 | ug/l | 53.6 | 53.6 |
| | B-50 | 4381014.7700000000 | 686219.1500000000 | 170.6914 | 175.6914 | 165.6914 | ug/l | 58.7 | 58.7 |
| | B-51 | 4381114.1800000000 | 686206.3200000000 | 168.6397 | 175.6397 | 161.6397 | ug/l | 5.34 | 5.34 |
| | B-52 | 4381112.6500000000 | 686305.2800000000 | 167.4587 | 175.4587 | 159.4587 | ug/l | 83.16 | 83.16 |
| | B-53 | 4381057.6100000000 | 686503.6200000000 | 168.8398 | 173.8398 | 163.8398 | ug/l | 46.32 | 46.32 |
| | B-56 | 4381253.0100000000 | 686316.3100000000 | 166.0077 | 171.0077 | 161.0077 | ug/l | 76.58 | 76.58 |
| | B-57 | 4381297.9600000000 | 686216.6300000000 | 168.7285 | 173.7285 | 163.7285 | ug/l | 91.04 | 91.04 |
| | B-58 | 4381383.6800000000 | 686309.2500000000 | 165.8872 | 171.8872 | 159.8872 | ug/l | 68.61 | 68.61 |
| | B-59 | 4381330.7200000000 | 686294.0500000000 | 167.8871 | 171.8871 | 163.8871 | ug/l | 21.85 | 21.85 |
| | B-60 | 4381252.9200000000 | 686400.7500000000 | 166.4907 | 172.4907 | 160.4907 | ug/l | 76.55 | 76.55 |
| | B-75 | 4381233.2900000000 | 686258.5800000000 | 167.5729 | 173.5729 | 161.5729 | ug/l | 41.81 | 41.81 |

**NOTE:** The Y_COORD and X_COORD values must be included as Row Headers for your data to be mapped properly. The Column Headers, additional Row Headers and Tabbed Data may be any fields you would like to display in your labels. Select the back button to view and edit the crosstab configuration and select Go to re-run the crosstab after any changes have been made.

6. Review your cross-tabbed data and then select the **Open in ArcGIS** button.

7. In the ArcGIS Export Format Wizard, give your query a Layer/Table Name of **VOC Layer.**
8. Ensure that the X Coord and Y_Coord values are populated with X_COORD and Y_COORD respectively. The other defaults may be used. Note that **Pie Charts** are the default symbology option.

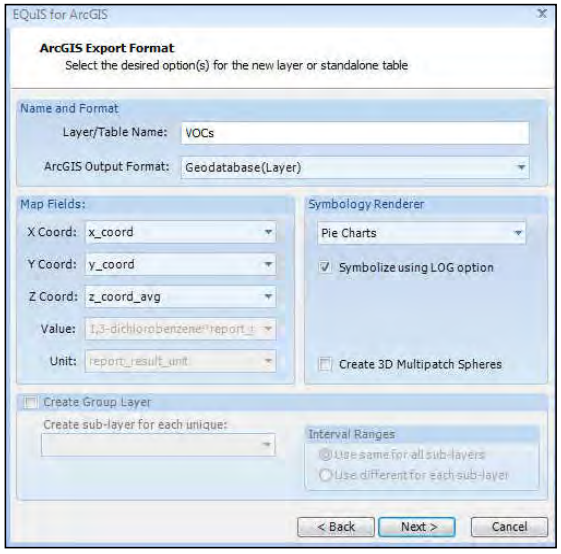



Figure 19 – ArcGIS Export Format Window

9. Select **Next**.

   Pie charts are plotted on each location with a key identifying what each color in the pie charts represents in your list of layers.

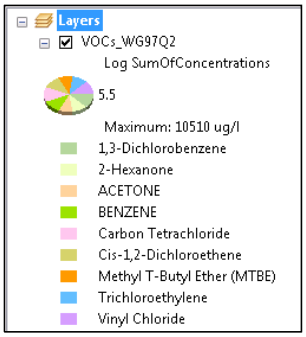



Figure 20 – Key Identifying Pie Chart Layer Colors

10. Click **Select Features** from the main ArcMap toolbar and select one pie charts.

11. Right-click in the selected area and click **Label** to label these features on the map.

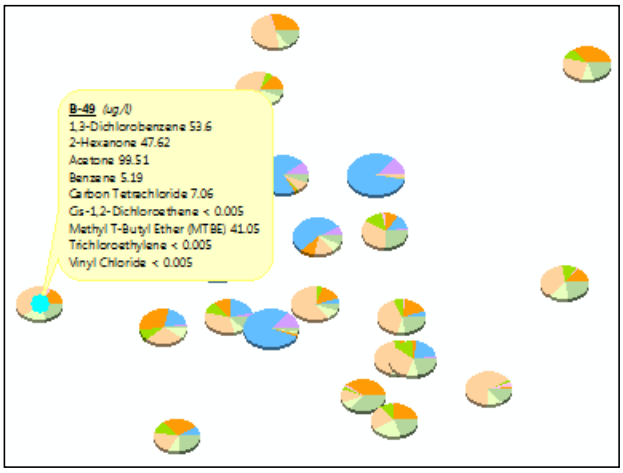



Figure 21 – Layers and Pie Charts

12. Right-click on the layer name in the **Table of Contents** and select **Convert Labels To Annotation**.

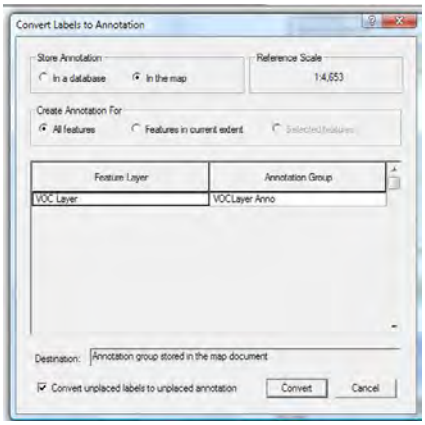



Figure 22 – Convert Labels to Annotations Window

13. Select the **In the map** radio button under Store Annotation and click **Convert**.
14. Select the **Element Selector**  .
15. Click on the labels on the map and drag them to a new location to better view the pie charts.

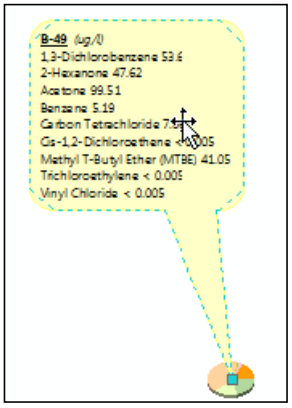



Figure 23 – Labels and Pie Charts Spread Out to Read More Easily

## *Create an Action Level Exceedance Layer:*

1. From the EQuIS Toolbar, select **EQuIS EZView> Other**.
2. The *Open* window appears, allowing you to use any report available in your EQuIS database.

The reports listed in the EQuIS for ArcGIS EZView *Open* window may vary for users depending upon what reports have been published to the database.

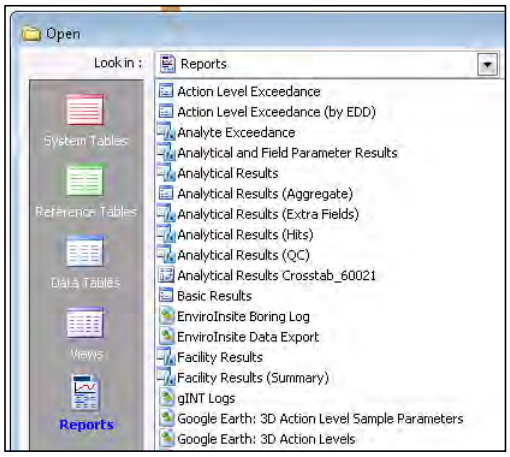
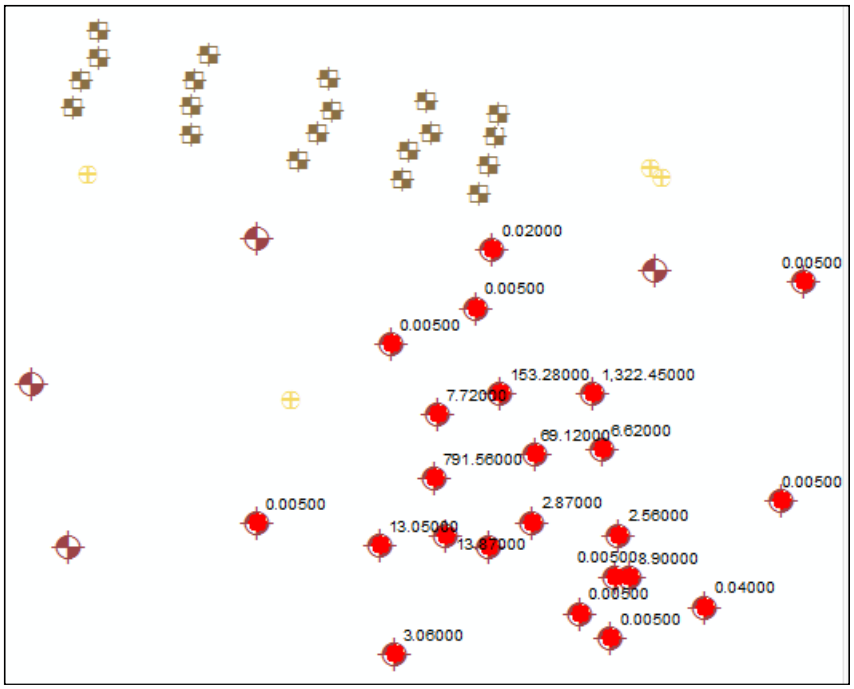



Figure 24 – List of Available Reports in EQuIS Database

3. Select the **Action Level Exceedances** report. Click **Open**.

4. From the *Pick Report* drop-down, select **VOCs WG97Q2** from the previous section.
5. Select the **B-30 VINYL CHLORIDE** *Action Level*.
6. Click **Go.**
7. Review your data and select **Open in ArcGIS**.
8. Give your layer a descriptive name and select **Next**.
9. Right-click on your plotted layer and select "Label Features". The results will be labeled for all plotted exceedances.



## *Creating a Groundwater Elevation Query Layer:*

1. From the EQuIS Toolbar, select **EQuIS EZView> Water Level Query**.
2. Make the following selection in the Water_Level criteria window and leave the other selections as default:

| | |
|---|---|
| **Location** | MONITWELLS |
| **Date Range Start** | 02/17/1996 |
| **Data Range End** | 02/18/1996 |

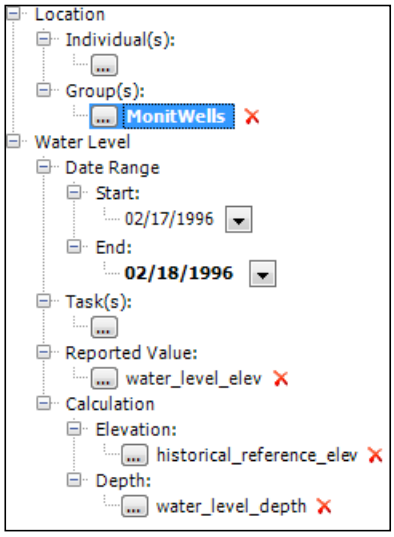



Figure 25 – Water Level Query Window

3. Click **Go**.
4. Review your data and select **Open in ArcGIS.**

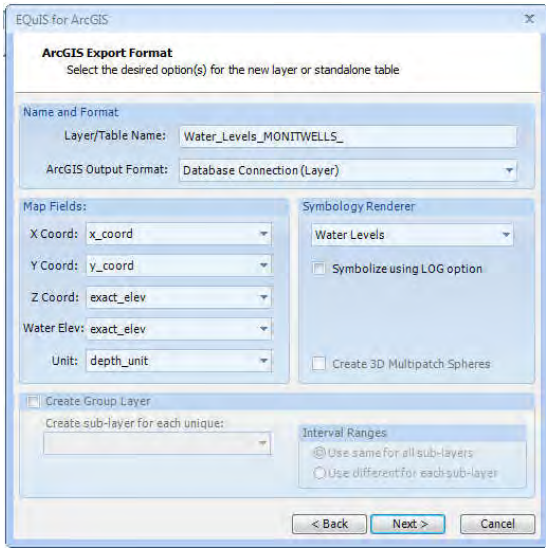
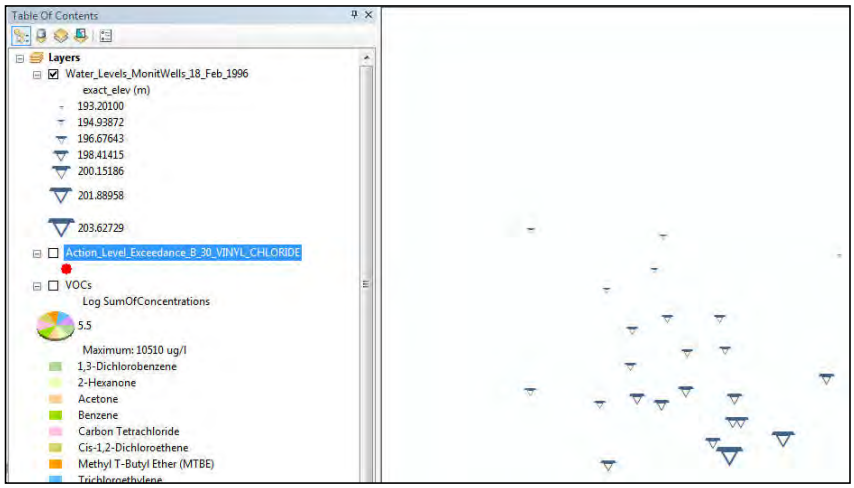



Figure 26 – Naming Your Layer/Table Name for Exporting

5. Name your Layer/Table **Water Level_MONITWELLS**.
6. Note the default symbology is **Water Levels.**
7. Click **Next.**
8. Turn off your Sample Locations Layer to display only the water levels.



## 3rd Party Interfaces: Surfer, EnviroInsite, LogPlot, gINT, RockWorks and GMS

The EQuIS for ArcGIS Interface allows users to visualize data for single or multiple locations using third party applications such as Surfer, gINT, and GMS. In these exercises, learn to send contours to Surfer, create Spider Diagrams with EnviroInsite, create logs using LogPlot and gINT, use the Digitize Line Tool to create fence diagrams with Rockworks, as well as export data to GMS and EVS.

### Golden Software's Surfer and ArcGIS:

If Golden Software's Surfer is installed on the same machine where EQuIS Professional and ArcMap are installed, contours can be sent out to Surfer and then automatically added as an ArcGIS layer using the Contour with Surfer interface in the EQuIS dropdown.

1. From the EQuIS Toolbar, select **Contour with Surfer**.
2. Set the *Layer* and *Field* to contour in the **Contours with Surfer** Wizard.

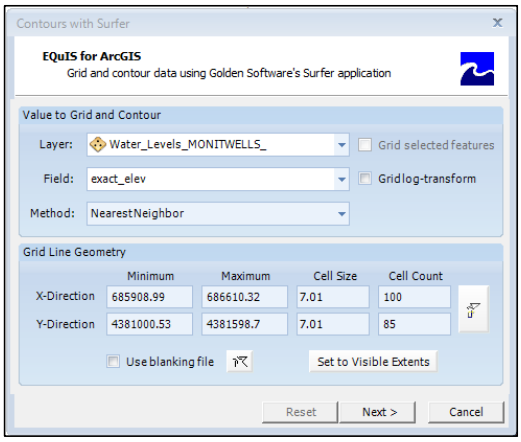



Figure 27 – Setting the Layer, Field and Method for Contours with Surfer

3. Select the Water_Levels_Monitwells layer created in the previous section and set the *Field* to **exact_elev**.
4. Set *Method* to **Nearest Neighbor**.
5. Click **Next**.
6. Right-click in the *Color Ramp* column.

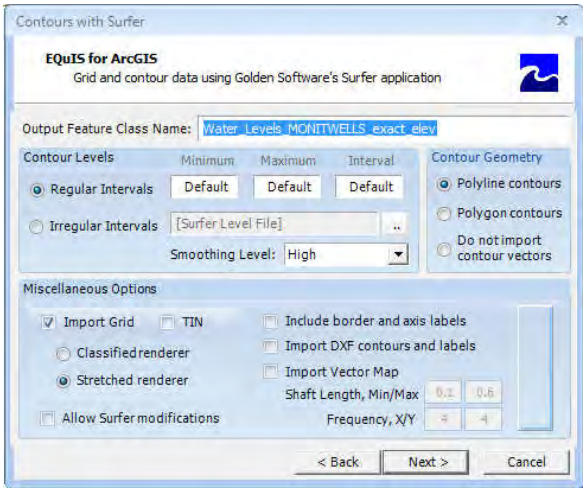



Figure 28 – Contours with Surfer Color Ramp Column

7. Select **Edit Symbols**.
8. From the *Type* drop-down, select **Gradient Fill Symbols**.

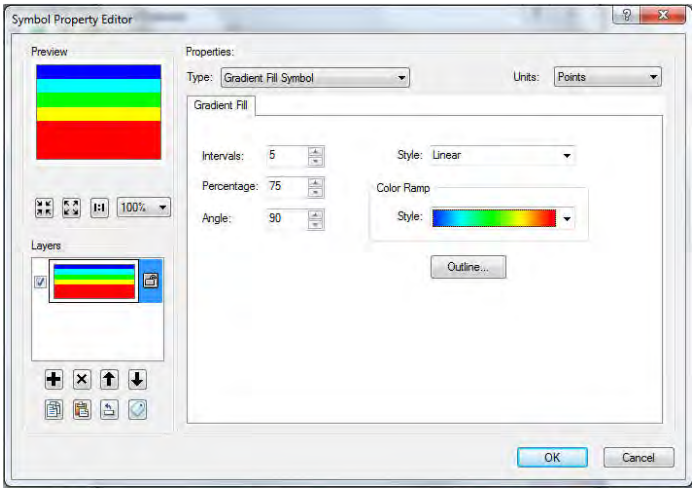
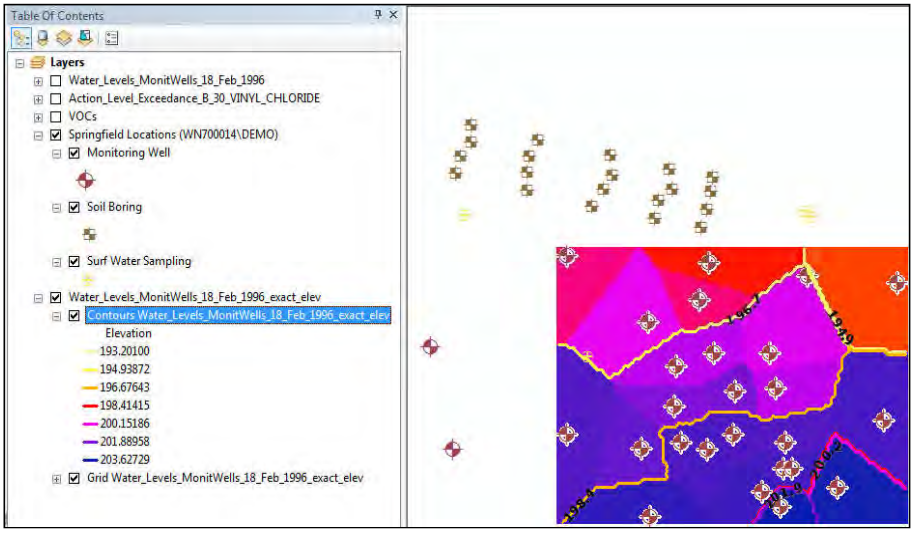



Figure 29 – Color Ramp Properties Window

9. From the *Color Ramp Style* drop-down, select a **color gradient** of your choice.
10. Click **OK** through the Symbol screens.
11. Review the grid spacing and smoothing level and then click **Next** to create a Surfer plot.




Depending on the choices made in the selection process, a wide variety of output is available.

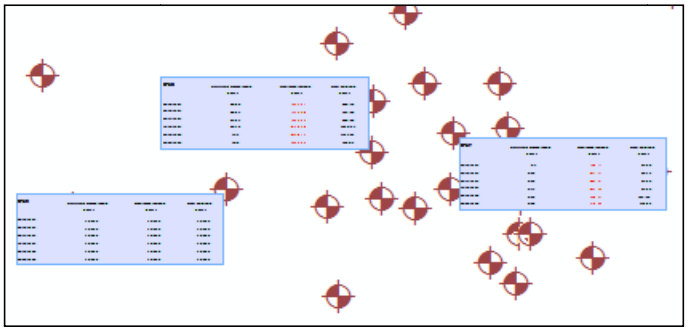
## *Spider Diagrams with EnviroInsite*

If EnviroInsite is installed, location-specific crosstabs can be mapped by making a few parameter selections and sending the data out to EnviroInsite and automatically bringing the data back into ArcGIS. These location-specific crosstabs are also known as "**Spider Diagrams**" or "Chem Data Boxes".

1. From the EQuIS Toolbar, select **EQuIS EZView> EnviroInsite Spider Diagrams**.
2. Make the following selections:

| | | |
|---|---|---|
| **Spider Diagrams** | **Types** | Analyte Groups |
| | **Crosstab Results** | (Check) |
| **Cartography** | **Create map/geodatabase annotation** | (Check) |
| **Location** | **Individual** | B-47, B-48, B-49 |
| **Fields** | **Screen Field- Use dt_well_segment to define screen interval** | (Check) |
| **Sample** | **End** | 12/31/1998 |
| **Analyte** | **Group** | _PERC Daughters |
| **Action Level(s)** | | CLEANWATER INDUST |

3. Click **Go**  . EnviroInsite will automatically open and create the Spider Diagrams, and then close and export the Spider Diagrams to ArcGIS, where they will be displayed on the map.



4. If the diagrams are small, zoom in to view the actual results. Also, use the Element selector tool to select the diagrams and place them in different locations on the map (this only works if the Create map/geodatabase annotation was checked).

| B-47 | Cis-1,2-Dichloroethene (ug/L) | Trichloroethylene (ug/L) | Vinyl Chloride (ug/L) |
|---|---|---|---|
| 03/15/1997 | 5.7 | 504.55 | 61.34 |
| 06/13/1997 | 5.83 | 475.65 | 69.12 |
| 09/11/1997 | 5.95 | 447.05 | 81.35 |
| 12/10/1997 | 6.17 | 406.27 | 91.95 |
| 03/10/1998 | 6.39 | 384.25 | 102.55 |
| 06/08/1998 | 6.54 | 359.08 | 113.92 |

**NOTE:** The format of the Spider Diagrams (background, font, color, etc.) can be changed by going to EQuIS> Options> Map> EarthSoft Styles.

## *LogPlot Boring Logs*

If RockWare's LogPlot is installed, create boring logs on the fly from ArcGIS.

Select **EQuIS > Options** and the **Show advanced options when launching 3rd-party application interfaces** on the **Interfaces** tab to access the export options available from EQuIS Professional. Please turn this feature on for this exercise.

1. Select a borehole using the **Feature Select Tool**.
2. Right-click on the borehole and select **Create Log** > **LogPlot.**

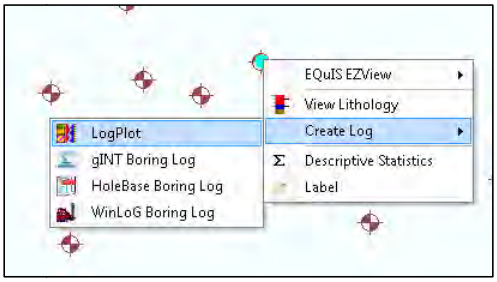
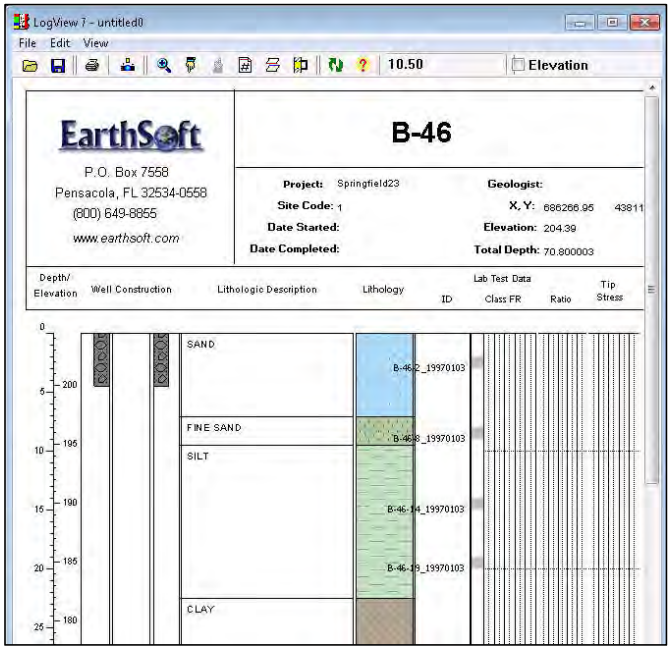



Figure 30 – Selecting LogPlot Menu Option

The output that is generated is determined by the data present in the database and the design file currently selected in LogPlot. Multiple templates may be created, but LogPlot requires that one remain as the default template.




## *gINT Boring Log*

You will need a gINT a library (*.glb) and a gINT template (*.gdt), examples of which can be found in the **...\EarthSoft\EQuIS\Tutor\gINT\ directory**.

1. In ArcMap, select a borehole using the **Feature Select Tool** .
2. Right-click the borehole and select **Create Log** > **gINT Boring Log**.
3. From gINT, select File>System Properties browse to the path …**\EarthSoft\EQuIS\Tutor\gINT** and select to open the *gint us.gdt* as the template.
4. The **EQuIS for gINT** window opens. Select **Browse** undert the **gINT Library (.glb)** tab and then select to load the *gint us.glb* files (stored by default at C:\Program Files\EarthSoft\EQuIS\Tutor\gINT\).

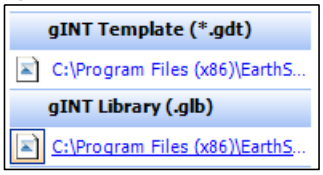
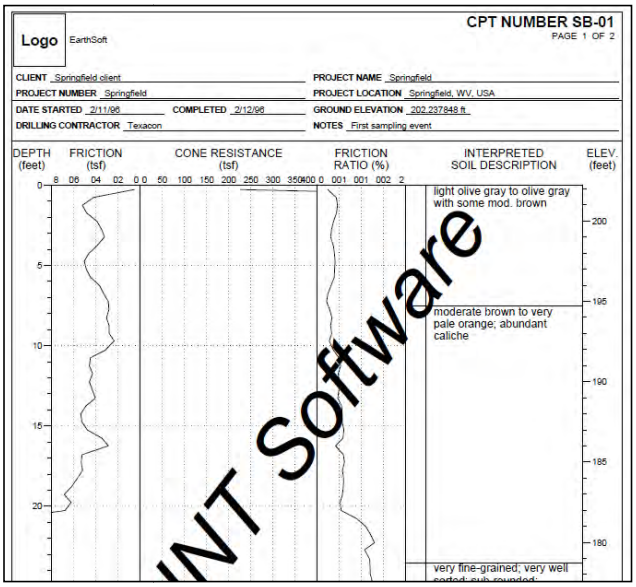



Figure 31 – gINT Template and Library Links

5. Select the desired log output such as **CPT** from the Generate Output list.




Please note, Elevation and Depth data must be stored in the database in order to complete the following 3rd party exercises.

## *Selecting multiple locations with the Digitize Line Tool*

The **Digitize Line Tool** allows users to digitize a sectional line and use it to interpolate data when creating geological profiles, cross-sections and 3D fence diagrams.

1. Click **Digitize section line**  from the EQuIS toolbar.
   The cursor becomes a crosshair on the map for drawing the line of your cross-section or profile.
2. Click at the point on the map where you want the line to begin.
3. Click to map where you want any 'turns' in the line to occur.
4. When all segments are complete, double-click to end your section line.
   The **EQuIS Geological Profiles** toolbar opens.

The **Add** additional line segments option is available in the EQuIS Geologic Profiles toolbar after you have finished your initial line.

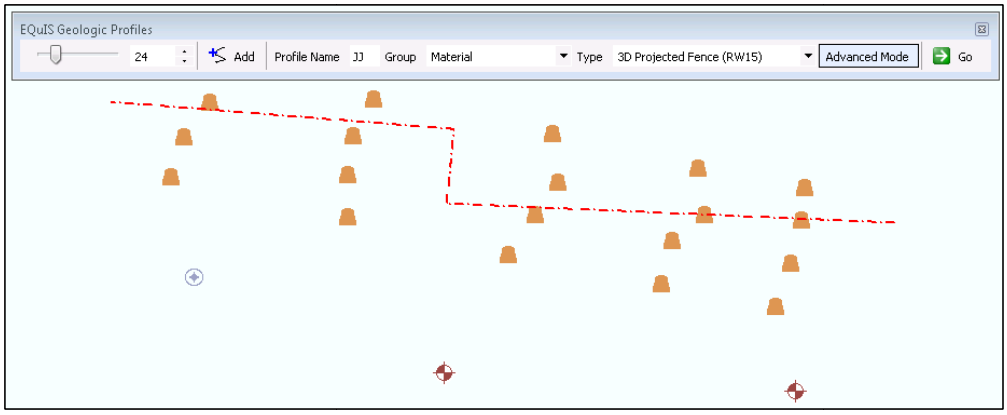



Figure 32 – Suggested Digitized Line

## Rockworks - 3D Fence Diagrams

If RockWorks is installed, create a 3D fence or 3D geologic projected fence.

Multiple versions of RockWorks are supported with the EQuIS for ArcGIS Interface. Please check with EarthSoft Support if the version of RockWorks installed on the machine is not working with the interface.

Notice the slider bar on the left end of the EQuIS Geologic Profiles toolbar. This bar allows you to modify the number of locations that will be included in RockWorks interpolation. Change the slider value and note that the locations to be included in the *Fence Diagram* are outlined on the map.

1. From the **Type** pull-down menu on this toolbar, select the **3D Projected Fence (RW 15)** or **3D Fence** option.
2. Click **Go**. Rockworks opens and automatically processes the request.

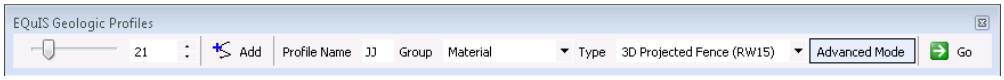
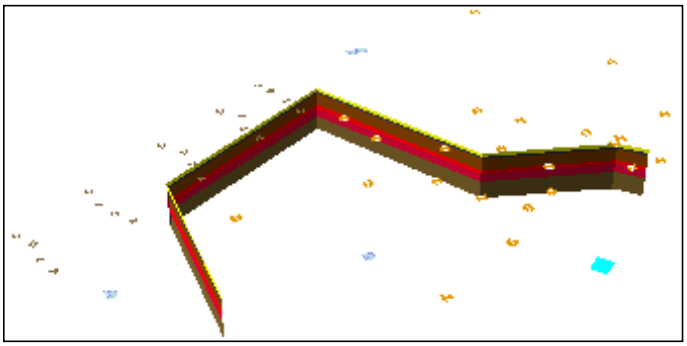



Figure 33 – 3D Fence Type Option

The Rockworks application is launched.

3. A new 3D Fence Layer is added to ArcMap and is displayed in the EQuIS 3D Preview Window.



## *GMS Lithology Export*

1. If the 3D Preview window is still open, close the window.
2. In ArcGIS Desktop, select a group of locations with by using **Select Feature**  .

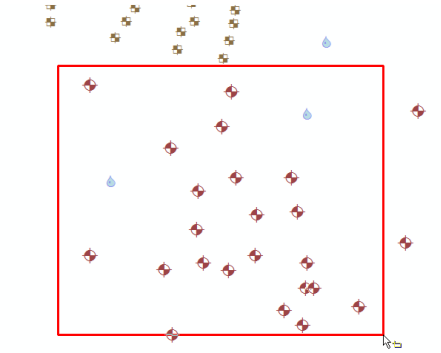


Figure 34 – Selected group of locations

3. From the EQuIS toolbar menu, select **Export GMS.**

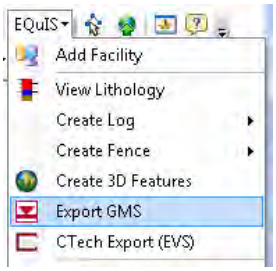
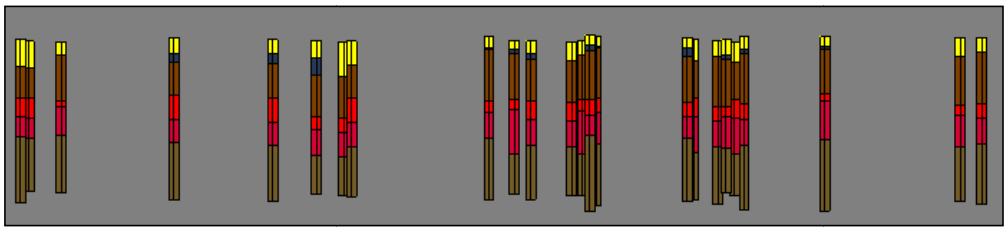


Figure 35 – Export GMS menu option

4. Select **Export Borehole Data** to export the borehole data.
5. Select **Plan View** from the **GMS** toolbar to display the 3D lithology for each location.



## *CTech's EVS Export*

Both geology and chemistry data can be exported for use in CTech's high-end 3D visualization applications (e.g., EVS, EVS-Pro, MVS, and MAS).

Geology data can be exported in the uninterrupted, pre-geology format (*.PGF). The *.PGF format is compatible with the Geologic Indicator Kriging (GIK) found in the Krige3D module in EVS Pro/MVS. The recommended approach is to export as PGF format, and use the interactive tools or GIK to define the geologic layers.

1. In ArcGIS Desktop, select a group of locations with by using the **Select Feature** button .
2. From the EQuIS toolbar menu, select **CTECH Export (EVS).**
3. The EQuIS for EVS interface opens, with the locations from Step 1 selected:

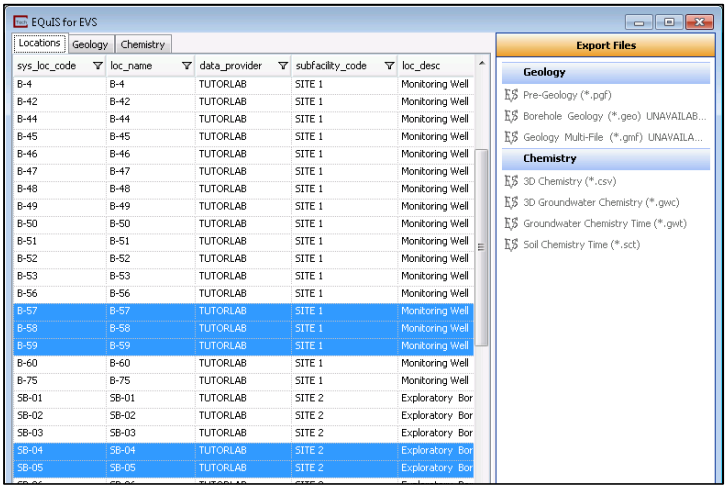



Figure 36 – EQuIS 5 for EVS Interface with Selected Locations

4. Navigate to the **Chemistry** tab, and select the *Analyte Group* **PERC_DAUGHTERS** and then click **Go** on the report.

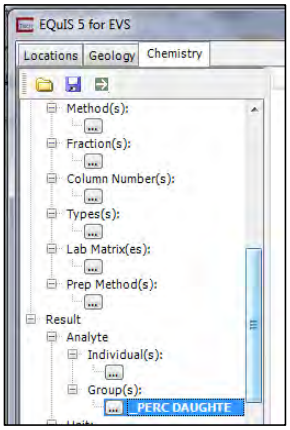



Figure 37 – Chemistry Tab with PERC_DAUGHTERS Analyte Group Selected

5. Next, from the Export Files pane on the left, select **3D Chemistry (.csv)** and save your file to an appropriate location.
6. When you are prompted on whether or not you would like to preview this file, select **Yes**.
7. When EVS opens, select Version to run: **EVS for ArcView** and select **Launch EVS for ArcView**.
8. Next close the **SLICE_EASTING** and **SLICE_NORTHING** windows, and the model will be drawn.

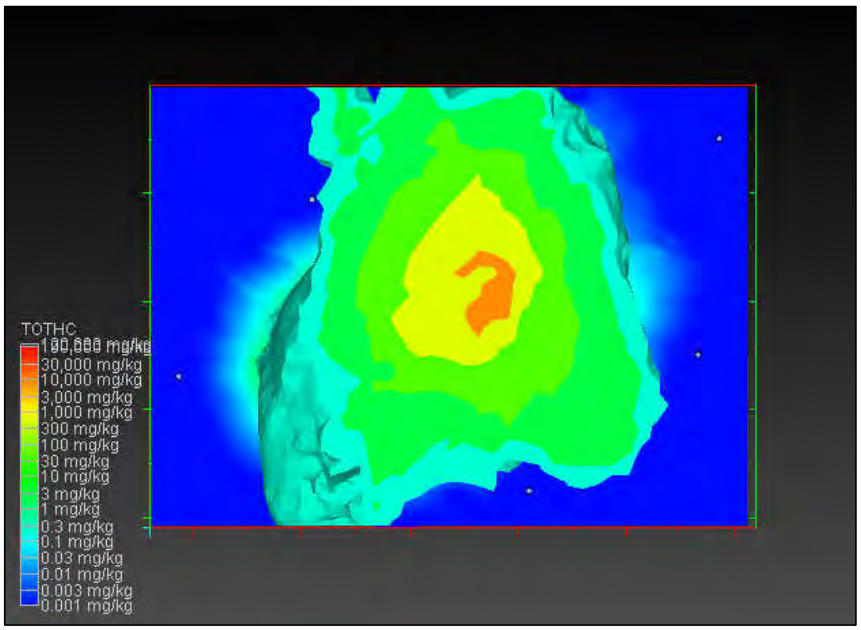



Figure 38 – 3D EVS for ArcView Model

## ArcGIS 3D Analyst Integration

If 3D Analyst is installed and licensed on your system, click on the **ArcScene (3D Analyst)** toolbar item from the EQuIS for ArcGIS menu.

1. From the EQuIS for ArcGIS Menu select **Create 3D Features**

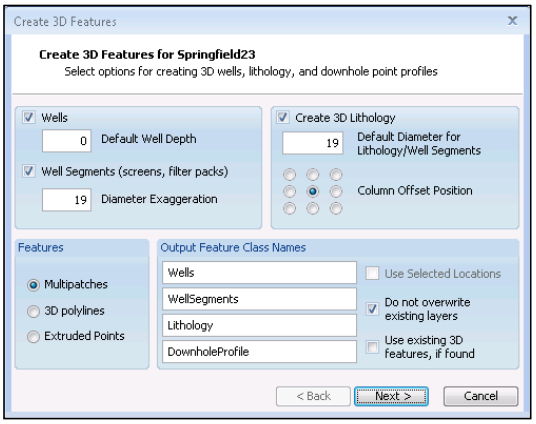



Figure 39 – Create 3D Features Window

2. In the new window, select **Use existing 3D features, if found** and click **Next**.

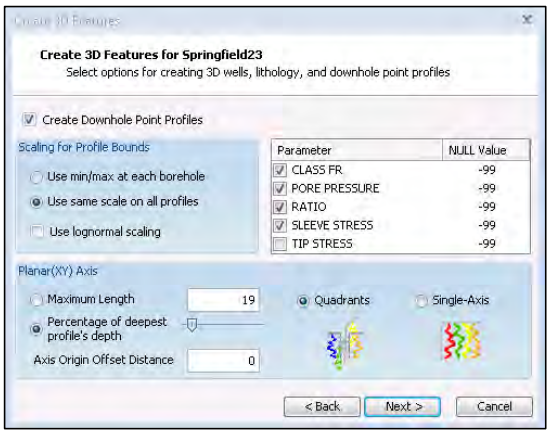



Figure 40 – "Use existing 3D features, if found" option selected

3. Select **Next** on the next screen as well. The 3D Preview window opens and displays the 3D lithology data as well as the locations.