RISK3T

RISK ASSESSMENT CALCULATOR

USER'S MANUAL

&

Small Print Software, Inc.

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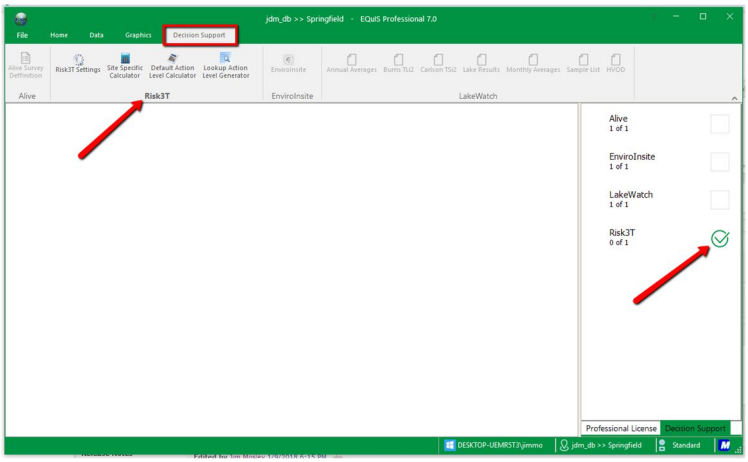
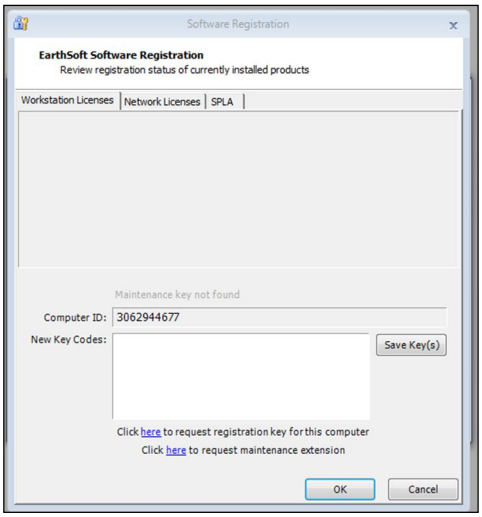
1.0 Getting Started – Opening the Risk3T Program

To get started, open EQuIS Professional. From the Ribbon at the top of the page,

- select >*Decision Support*<,
- click >*Risk3T*<,
- select the Risk3T license (on the right-hand side of the form).



The first time Risk3T is opened following installation, a screen showing how to register the program is displayed. Prior to registration, all buttons will be inactive. Once the program has been registered, the screen will no longer be displayed upon starting the program.



1.1 Registration Instructions

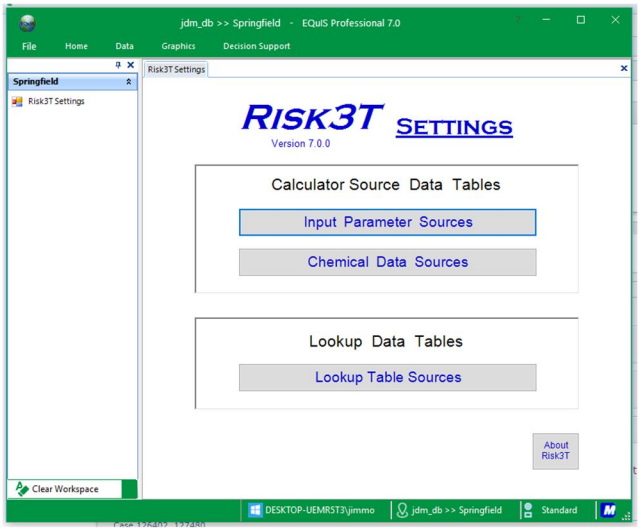
Risk3T must be registered before it can be run on the workstation. The Registration process is the same as for any other EarthSoft module.

2.0 Risk3T Settings

2.1 Navigating the Risk3T Settings Form

From the Settings Form you can access the

- Input Parameter Sources
- Chemical Data Sources
- Lookup Table Sources

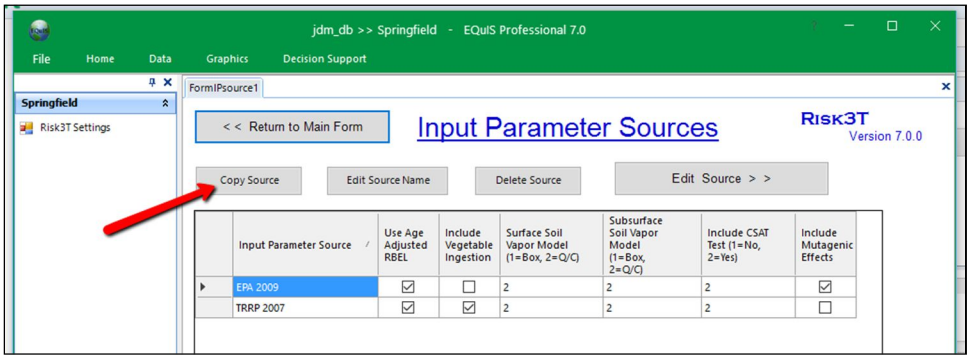


2.2 Input Parameter Sources

From the Risk3T Settings screen, select *>Input Parameter Sources<*. Once you open the Input Parameter Sources Form, you can view, create, edit, and delete input sources. (Risk3T comes with EDDs for two parameter sources -- EPA 2009 and Texas Risk Reduction Program (TRRP) 2007 -- in the EQuIS\Formats\Risk3T folder).

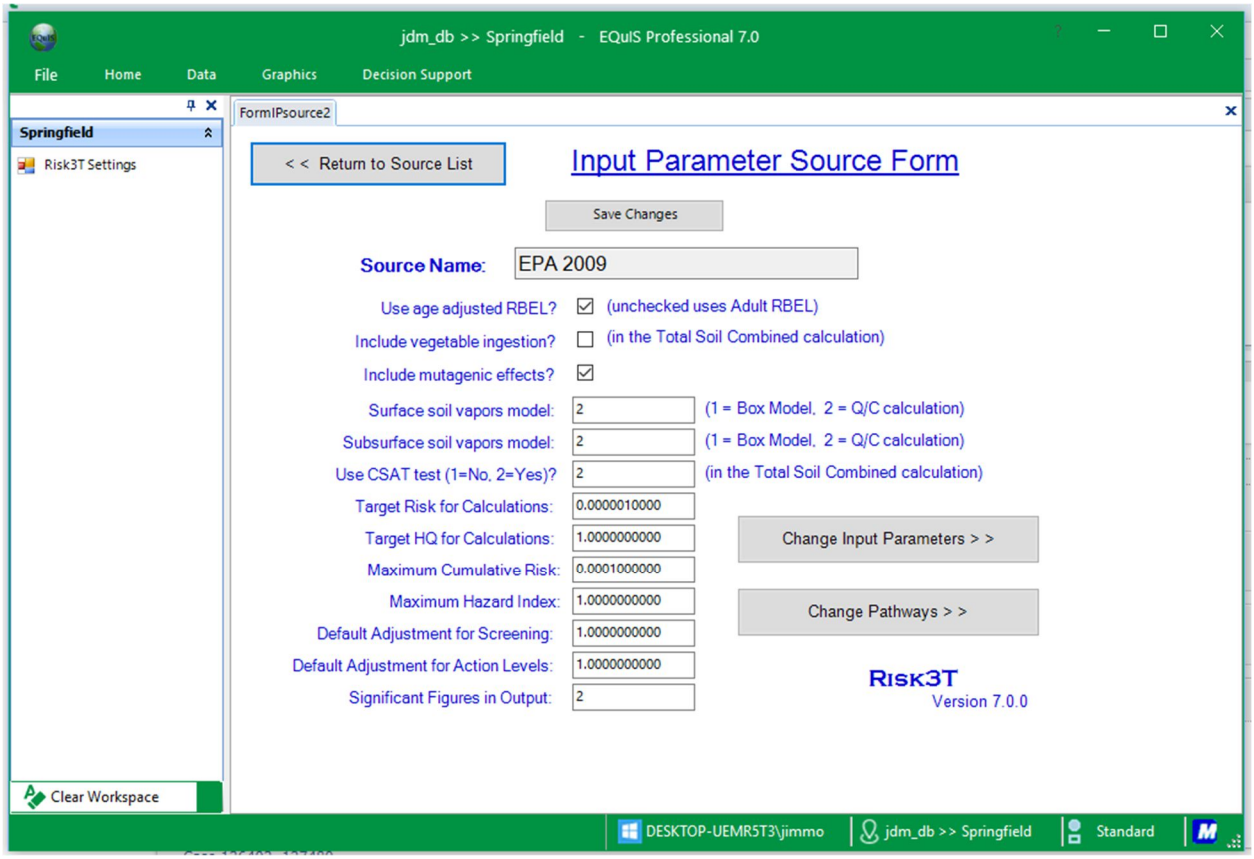
2.2.1 Add Input Parameter Source

To add a new Input Parameter Source, highlight the existing source that is most like the one you want to add and select the *>Copy Source<* button. Then change the Source Name and any Input Parameters you want to modify.



2.2.2 Edit Input Parameter Source

Click >*Edit Source*< to modify the source parameters for the agency risk assessment rules. A new form will open, allowing you to modify the overall settings (e.g., Target Risk) for the source.

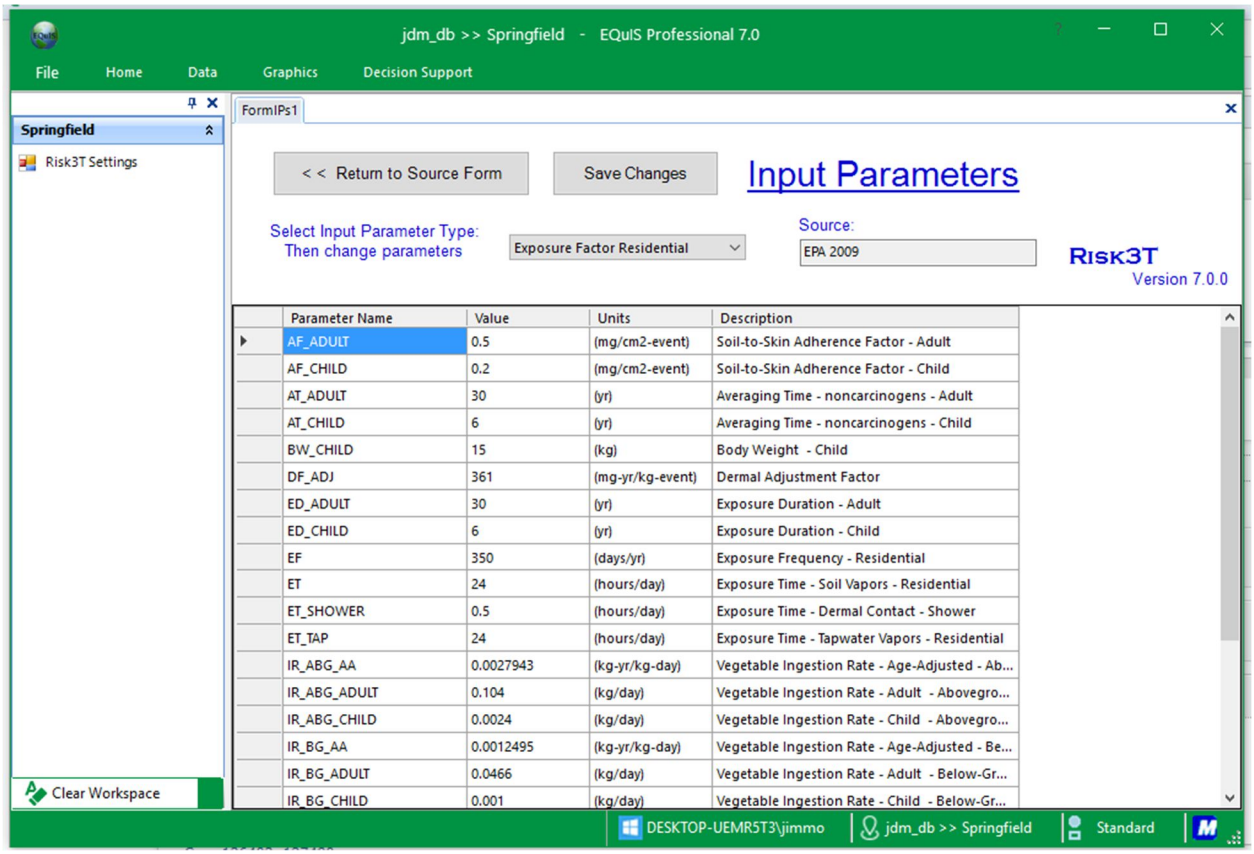


2.2.3 Edit Input Parameters

Click >*Change Input Parameters*< to modify the input parameters for each risk exposure pathway's equation. Use the drop-down menu on the Input Parameters Form to select the "Input Parameter Type." Each type of parameter has a specific set of variables which can be modified. Once changes have been made, select >*Save Changes*<. The following is a list of parameter types that can be modified:

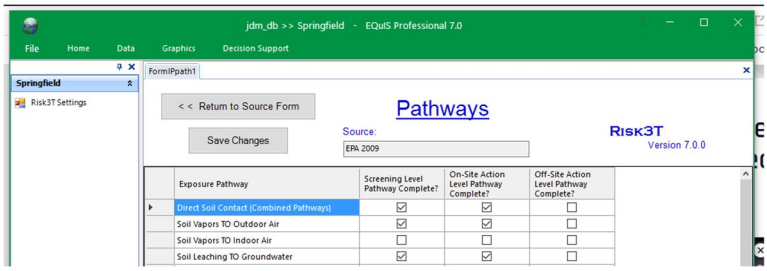
- Distance to POE;
- Exposure Factor;
- Exposure Factor – Commercial/Industrial;
- Exposure Factor – Mutagenic;
- Exposure Factor – Recreation Water;
- Exposure Factor – Residential;
- Input Parameter – Building;

- Input Parameter – Groundwater;
- Input Parameter – Particulate Emission Rate (PEF);
- Input Parameter – Soil;
- Input Parameter – Soil – to – Groundwater;
- Source Area Size – Groundwater; and
- Source Area Size – Soil.



2.2.4 Edit Pathways

Click >*Change Pathways*< to edit the pathways that are included by default in the calculations for the Input Parameter Source. (Pathways can be added or removed from any site-specific calculation.)



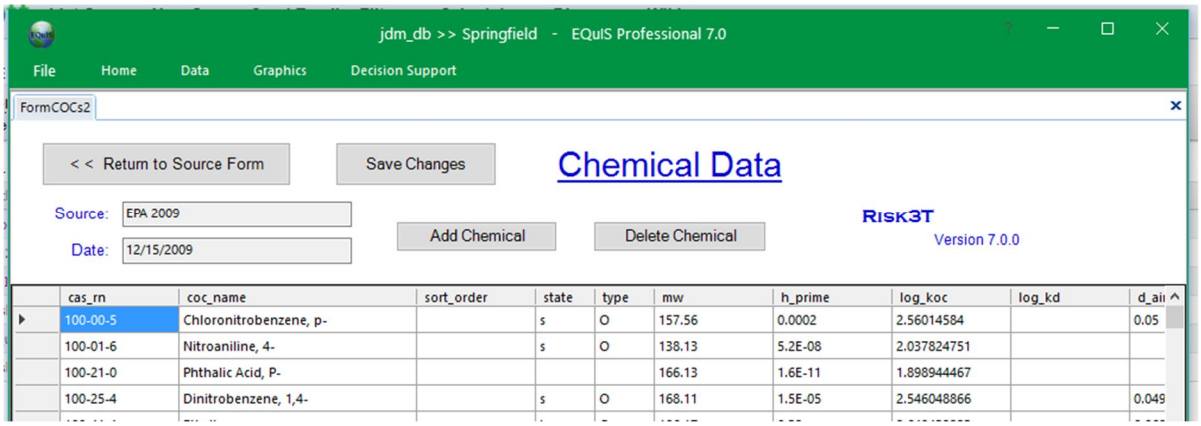
2.3 Chemical Data Sources

Selecting a chemical data source is similar to selecting the Input Parameter Source. From the Risk3T Settings screen, click the *> Chemical Data Sources<* button.

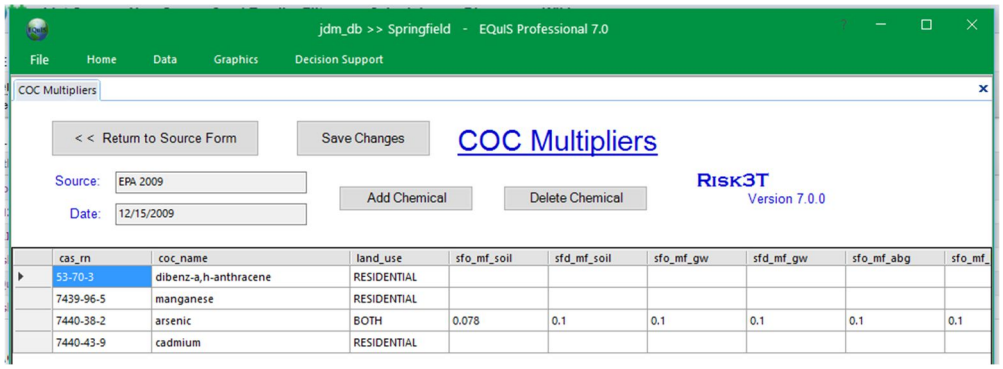
2.3.1 Copy and Edit Chemical Data Source

Once in the Chemical Data Sources Form, the chemical sources can be copied, modified, and/or deleted. To create a new chemical source, highlight the existing source most similar to the source you wish add, and select *>Copy Source<*. Once the copy of the existing source appears in the table, change the name and date of the source by selecting *>Edit Source Name/Date<*. Once the new chemical data source has been created, select *>Edit Chem Data<* to add, modify, and/or delete chemicals from the new source.

In the Chemical Data Form, a chemical's data can be modified by typing the new information into the table cells. A chemical can be added to the source by selecting *>Add Chemical<*. A blank row will appear at the bottom of the table, allowing you to enter the new chemical information. To save the new chemical(s) to your list, select *>Save Changes<*. To delete a chemical from the data source, select the chemical and click *>Delete Chemical<*. Risk3T automatically saves changes following chemical deletion.



Select *>Edit Multipliers<* to add, modify, and/or delete chemical-specific adjustments to the toxicity exposure equations.



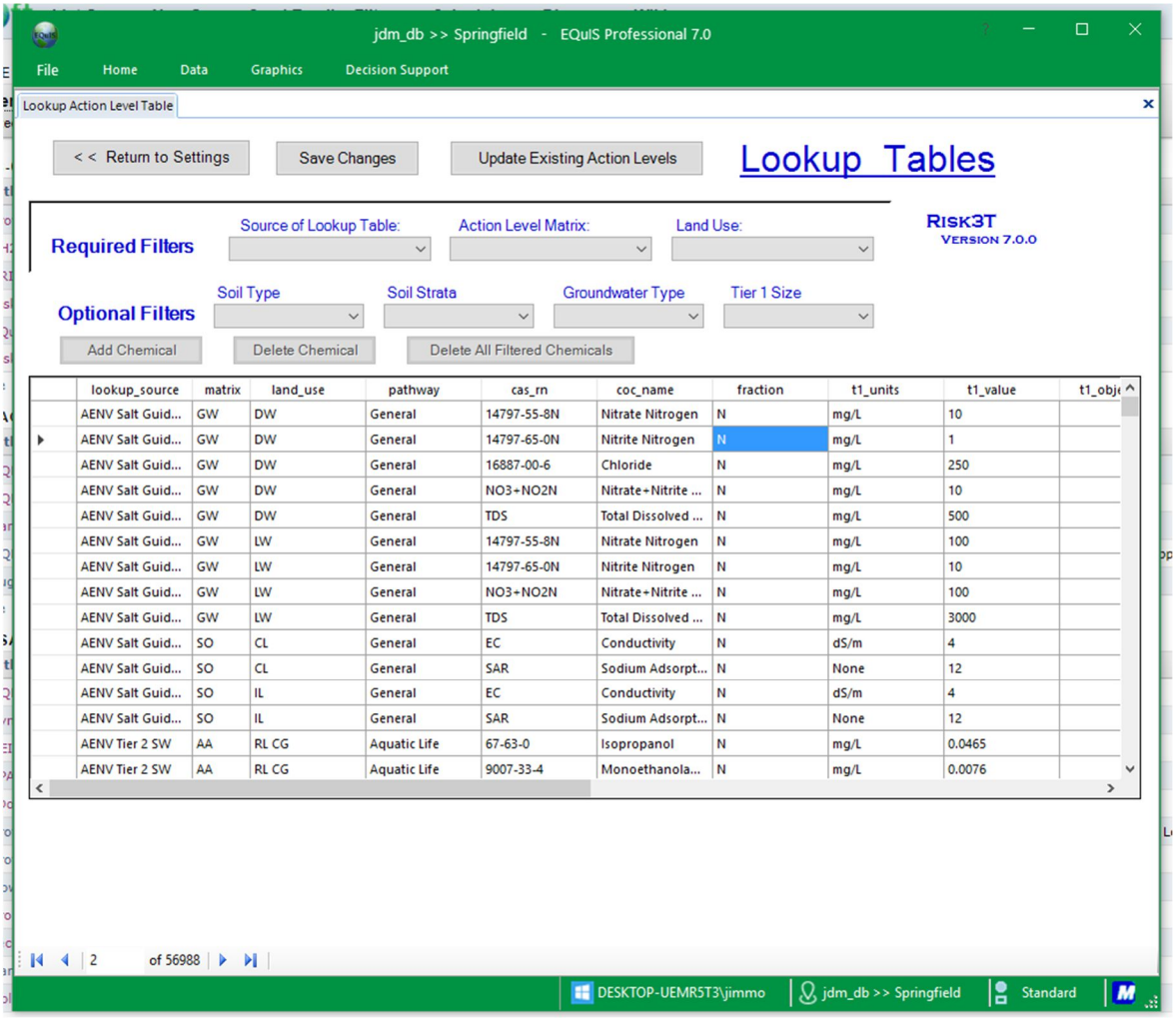
2.4 Lookup Table Sources

To edit Lookup Table Sources, from the Risk3T Settings Form, select *>Lookup Table Sources<*.

In the Lookup Table Form, the Action Level Lookup Table can be modified by typing the new information into the table cells. To save changes, select *>Save Changes<*.

A chemical can be added to the source by selecting *>Add Chemical<*. A blank row will appear at the bottom of the table, allowing you to enter the new chemical information. To save the new chemical(s) to your list, select *>Save Changes<*.

To delete a chemical from the data source, select the chemical and click *>Delete Chemical<*. Risk3T automatically saves changes following chemical deletion.



3.0 Site-Specific Action Levels

Begin working on Site-Specific Action Levels by clicking the >*Site-Specific Calculator*< button on the Risk3T Ribbon. This will open the Site-Specific Calculator -- Area of Concern (AOC) List. Here, AOCs can be added, edited, organized, and/or deleted. At least one AOC must be created and available to organize laboratory analytical data in Risk3T.

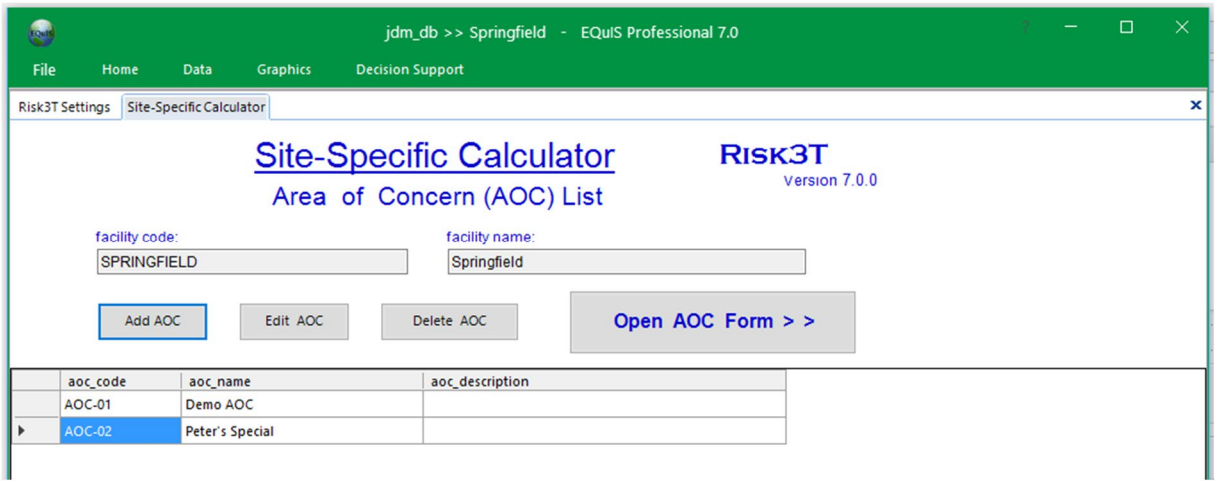
3.1 Area of Concern (AOC)

An AOC is a site, or a portion of a site, that is being investigated. It is possible for one site to have several AOCs or all of the site may be in one AOC. To create a new AOC:

- Select >*Add AOC*< from the AOC List Form.
- A suggested AOC Code, used to organize your AOCs within Risk3T, will be automatically provided. You can accept the suggested code or create a user-specified code consistent with your own unique numbering system.
- The AOC Name, a short descriptor used to identify the site, is required. Please note, the AOC Name will be displayed on all printed reports.
- The AOC Description, a more detailed description of your AOC, may also be provided. However, the description is not required for the program to function.

To edit a previously created AOC, select >*Edit AOC*<. The AOC code, name, and description of the selected AOC will be displayed and can then be edited. To delete a previously created AOC, select >*Delete AOC*<. Deleting an AOC does not delete any laboratory analytical data stored in EQuIS. Deleting an AOC does, however, delete all of the assignments, risk scenarios, and calculations completed for that AOC.

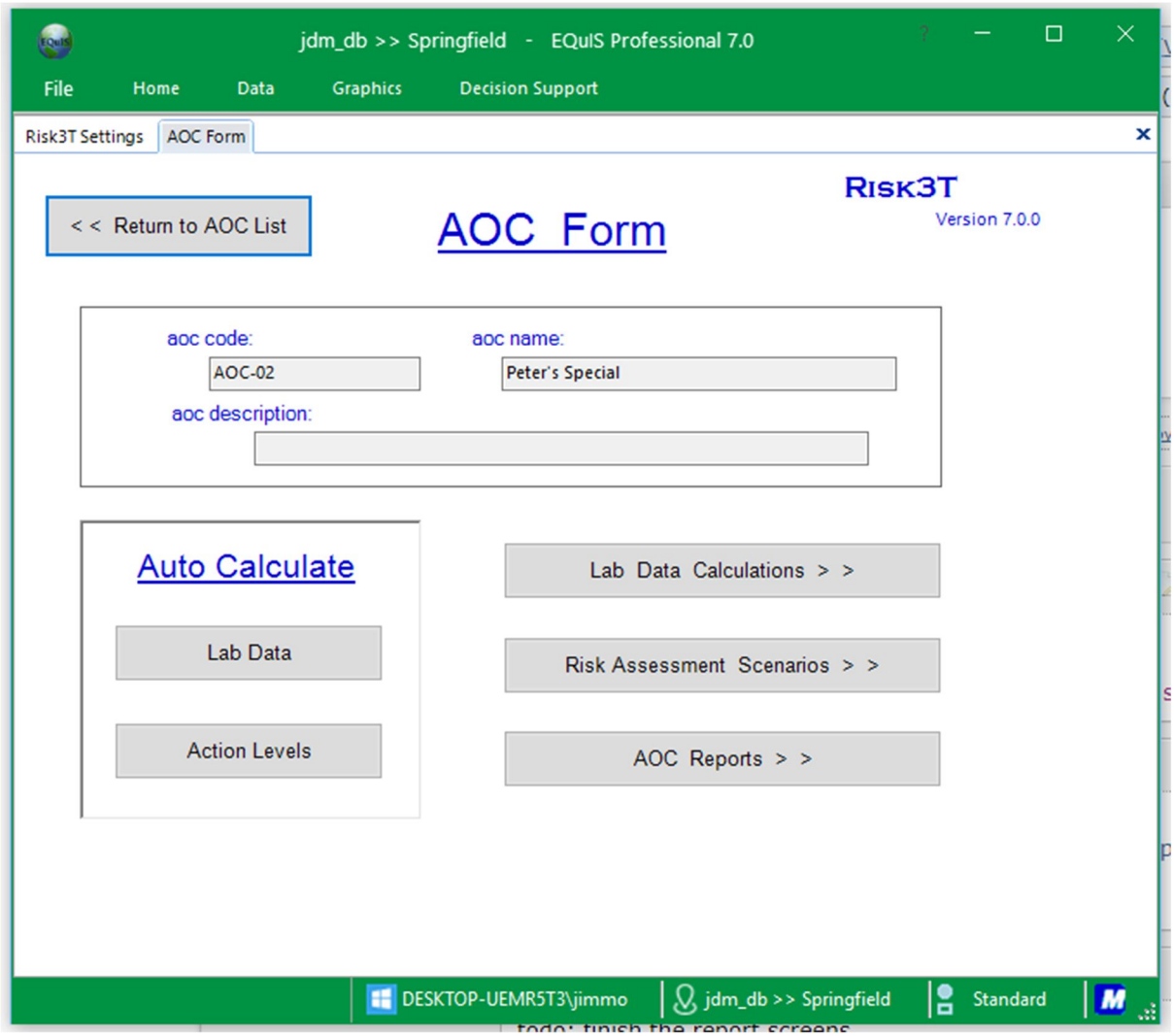
To access the AOC Form, select >*Open AOC Form*<. By doing so, you will be directed to additional sections and features of the Risk3T program. These additional features are outlined in Sections 3.0, 4.0, and 5.0.



3.2 Managing Data within the Area of Concern Form

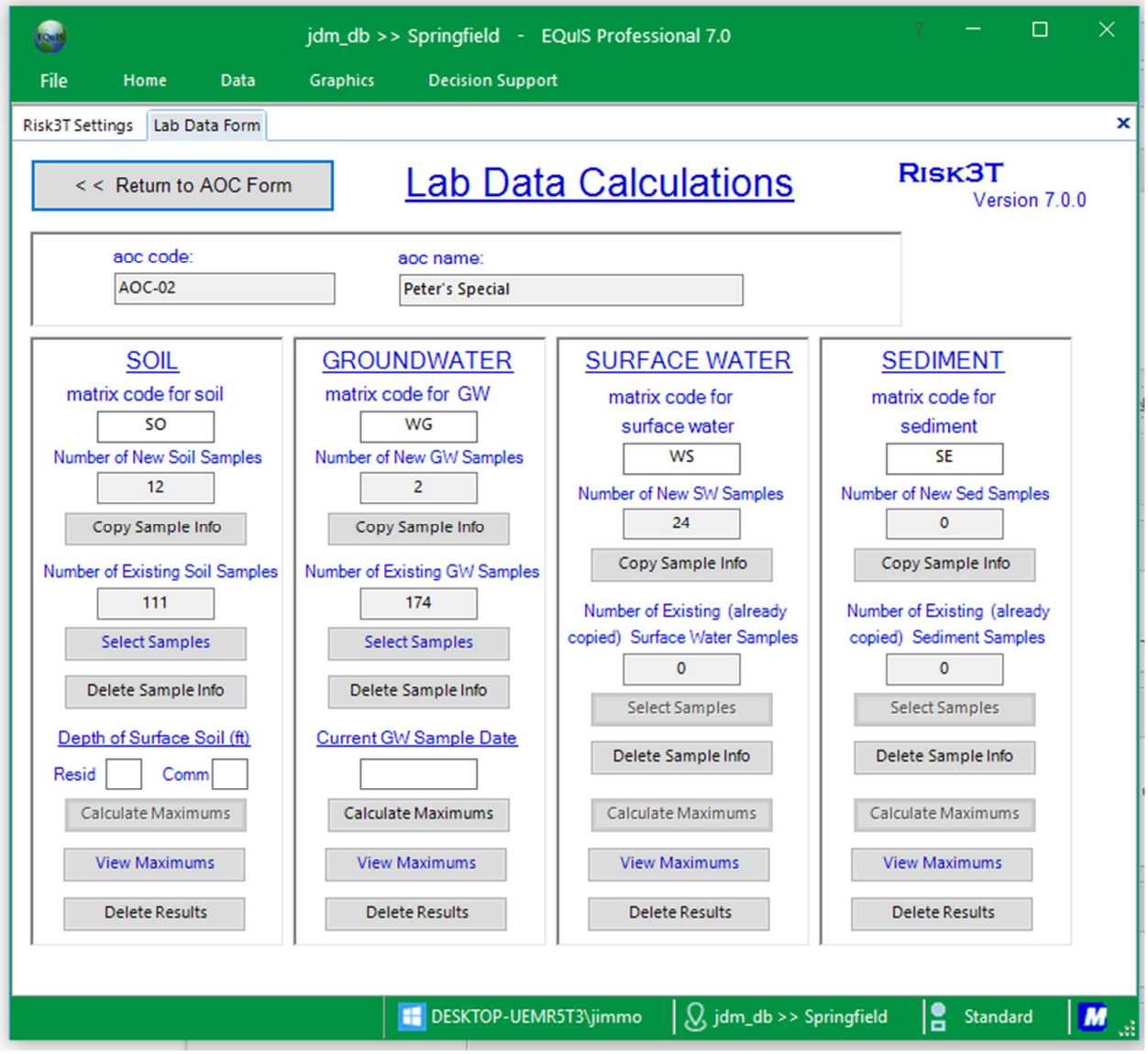
The AOC Form is an interface that acts as a switchboard, linking you to other facets of the Risk3T program. Once an AOC has been created, you can access the AOC Form by selecting *>Open AOC Form*. The AOC Form consists of the following buttons:

- *>Lab Data<*, used to auto Calculate Maximum Concentrations;
- *>Action Levels<*, used to auto calculate screening levels, perform auto screening function, and to auto calculate Protective Concentration Levels (PCLs);
- *>Lab Data Calculations<*, used to assign laboratory analytical data from EQuIS to this AOC. The assigned data will be used in comparisons with the screening levels and action levels calculated in the risk assessment scenario(s);
- *>Risk Assessment Scenarios<*, used to create and/or modify risk assessment scenarios; and
- *>AOC Reports<*, used to select reports of interest for risk assessment and to compare calculated risk values to laboratory analytical data.



3.2.1 Laboratory Analytical Data Calculations

Select >*Lab Data Calculations*< to assign laboratory analytical data from EQuIS tables to this AOC. This feature will import the laboratory analytical data from EQuIS Professional into the currently selected AOC. You can choose to assign all, or portions, of a data set to the AOC. This feature also allows the exclusion of samples that are typically not used in risk assessment calculations (i.e., quality assurance/quality control samples) and identifies maximum concentrations for chemicals to be used in risk assessment comparisons.



3.2.2 Assigning Data from EQuIS Tables

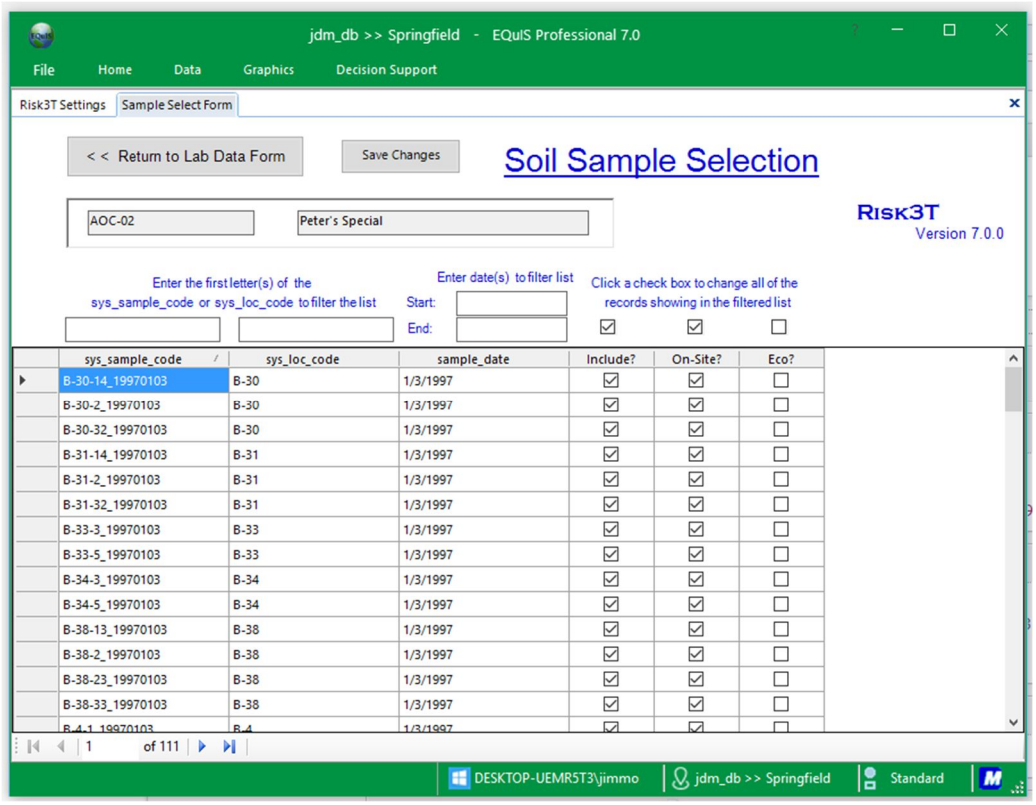
The Lab Data Calculations Form is divided into four sections representing different environmental media. These include soil, groundwater, surface water, and sediment. The steps required to assign laboratory analytical data from EQuIS tables are outlined below:

- For each data set you choose to assign, enter the Matrix Code for the type of media sampled. The Risk3T default Matrix Codes include SO (soil), WG (groundwater), WS (surface water), and SE (sediment). If different matrix codes are being used for a dataset, type those codes over the defaults.
- The total number of samples in the EQuIS tables for each matrix code will be listed under the heading "Number of New Soil/GW/SW/Sed Samples."
- Click *>Copy Sample Info<* to copy the sample information for these samples into the Risk3T tables.
- If more than one code is being used for a given matrix, copy the sample info for the first code, then enter the second code and click the *>Copy Sample Info<* button again. The "Number of Existing Samples" will be the total of the number of samples copied.

Note: The Matrix Codes used in EQuIS Professional should be reviewed to ensure all available data have been imported into the Risk3T program prior to initiating risk assessment calculations.

3.2.3 Selecting Samples

From the Lab Data Calculations Form, click *>Select Samples<* once for each type of media for which you intend to assign sample results. The sample identification and date are provided, followed by two or three columns of check boxes. The first two columns are titled "Include" and "On-Site". The third column, if present, will be titled "Eco" or "SWPOE," depending on the media selected. By checking these boxes, you can indicate which samples should be included in the risk assessment comparisons.



The following provides a description of each column heading.

- ***Include.*** When a check is placed in a box in the "Include" column, Risk3T adds that sample to the population of data used to calculate the maximum concentration of each chemical of concern (COC). Risk3T also determines the maximum detection limit for all non-detect samples for each COC. Check the box above the "Include" column to include all samples, or uncheck the upper box to unselect all samples and then check individual boxes to include only certain samples.
- ***On-Site.*** A check placed in a box in the "On-Site" column indicates that sample was collected on-site, while no check indicates that sample was collected off-site. Risk3T calculates separate maximum concentrations for the on-site sample population and the off-site sample population.
- ***Eco.*** Only available for soil samples, a check placed in a box in the "Eco" column indicates that sample was collected from an ecologically sensitive area. Risk3T calculates separate maximum concentrations for ecologically sensitive areas.
- ***SWPOE (Surface Water Point of Exposure).*** Only available for groundwater samples, a check placed in a box in the "SWPOE" column indicates that sample was collected from a SWPOE monitoring well. Risk3T calculates separate maximum concentrations for these wells.

The sample list can be filtered using the two boxes located above the sample name and sample date.

- ***Sample name filter***. To filter samples according to their name, enter the first few letters or numbers of the name of the sample/s you wish to select. As you enter the information, the filter will automatically start displaying only those sample names beginning with those letters and numbers. To display all the matrix samples after performing a filter, simply delete any text from the box.
- ***Sample date filter***. To select samples collected on a certain date/s, enter the starting date into the "Start" box and the ending date into the "End" box. Again, to display all the matrix samples after performing a filter, simply delete the dates from both boxes.

When the sample list is filtered, clicking a check box above a column will only change the data in the filtered display.

Once all samples required for inclusion in the maximum concentration calculations have been selected, click on >*Save Changes*<. If you feel you have selected inappropriate samples or inadvertently made changes to your sample selection, select >*Return to Lab Data Form*< to discard selections and return to the Lab Data Calculations Form.

3.2.4 Deleting Sample Information

From the Lab Data Calculations Form, select >*Delete Sample Info*< to delete all sample selections. This, in turn, will also delete any maximum concentration calculations performed on the previously selected samples. You can then begin anew with the sample selection process (see Section 3.1.1).

3.2.5 Calculating Maximum Concentrations

Once the appropriate samples have been selected, the maximum concentrations can be calculated.

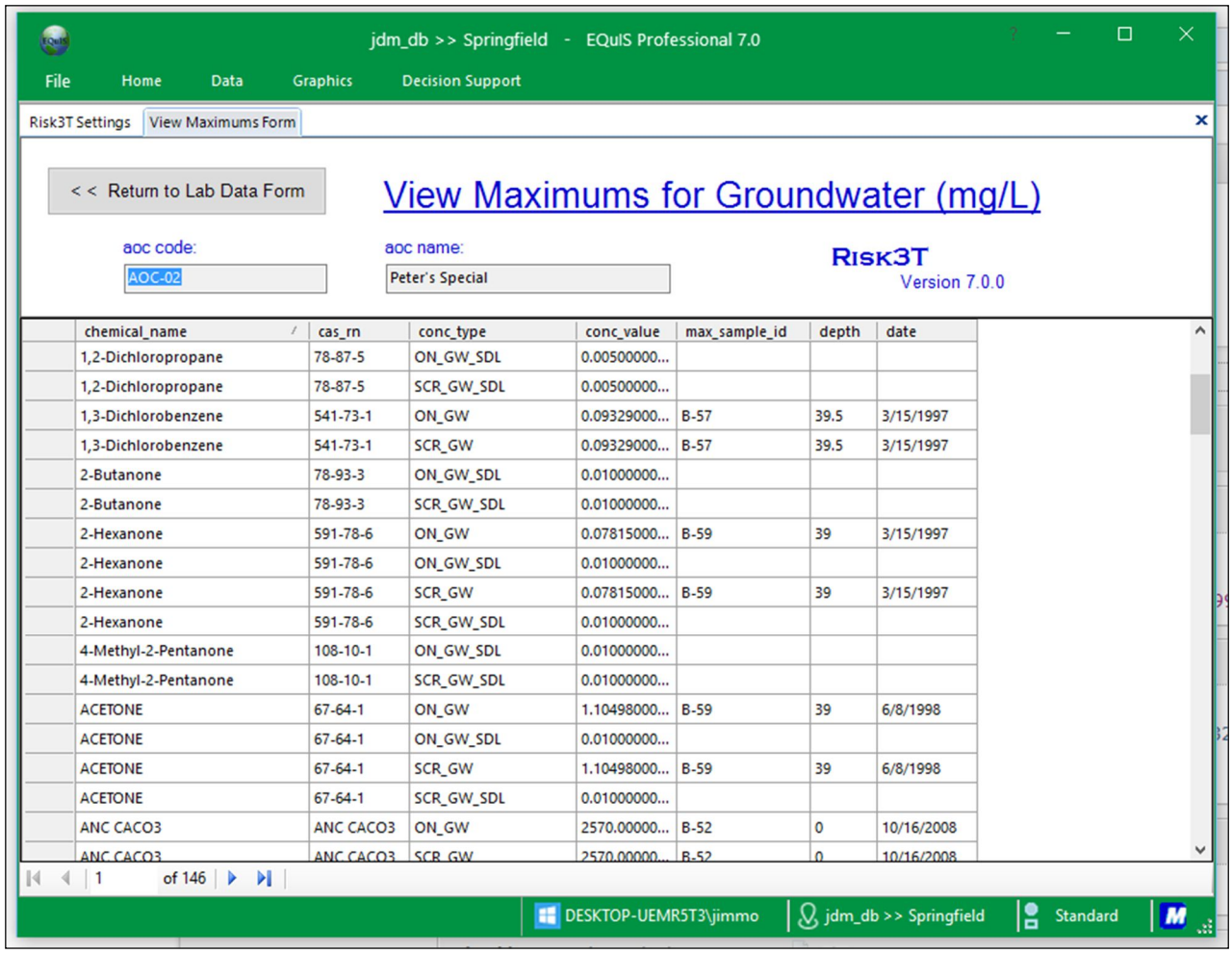
- ***Soil.*** Prior to calculating the maximum soil concentrations detected, the depth of surface soil at the site must be entered. Under the heading "Depth of Surface Soil," two entry boxes are available, one for residential ("Resid") and one for commercial ("Comm"). Enter the depth of surface soil in each box. Upon doing so, the >*Calculate Maximums*< button will be enabled. Click >*Calculate Maximums*<, the program will display a progress bar and provide the number of samples included for each type of calculation.
- ***Groundwater.*** To calculate the maximum groundwater concentrations detected, no additional information is required. Click >*Calculate Maximums*<, the program will display a progress bar and provide the number of samples included for each type of calculation. You can choose to enter a date into the "Current GW Sample Date" box. By doing so, Risk3T will only calculate maximums using the results of samples collected on or after the date entered.
- ***Surface Water and Sediment.*** To calculate the maximum surface water and sediment concentrations detected, no additional information is required. Click >*Calculate Maximums*<, the program will display a progress bar and provide the number of samples included for each type of calculation.

Note: Sample information must have been previously copied into Risk3T for the >*Calculate Maximums*< buttons to be active.

3.2.6 Viewing Calculated Maximum Concentrations

By selecting >*View Maximums*<, the resulting maximum concentrations can be reviewed. When selected, the following information is displayed:

- ***Chemical Name.*** Each chemical in your data set will have multiple calculated maximum concentrations. A maximum concentration is calculated for each sampled media, land use, and screening level.
- ***CAS Number.*** The CAS number for each chemical is displayed for reference.
- ***Concentration Type.*** There are multiple concentration types calculated in Risk3T. The concentration type name represents whether the sample is on-site/off-site, commercial/industrial or residential, screening level, and if it is a detected concentration or non-detected sample detection limit. For example, the concentration type "ON_SUB_SDL_C" indicates this maximum is for on-site subsurface soil sample detection limit for commercial/industrial land use. For a detected concentration, the concentration type name is "ON_SUB_C" for maximum detected on-site subsurface soil concentration for commercial/industrial land use. An example of a screening concentration type is "SCR_SUB_SDL_C" for non-detected sample detection limits and "SCR_SUB_C" for detected concentrations.
- ***Concentration Value.*** This is the maximum calculated for each concentration type for each individual chemical. This value will be either an on-site or off-site maximum for commercial/industrial or residential or the screening level maximum.



3.2.7 Deleting Calculated Maximum Concentrations

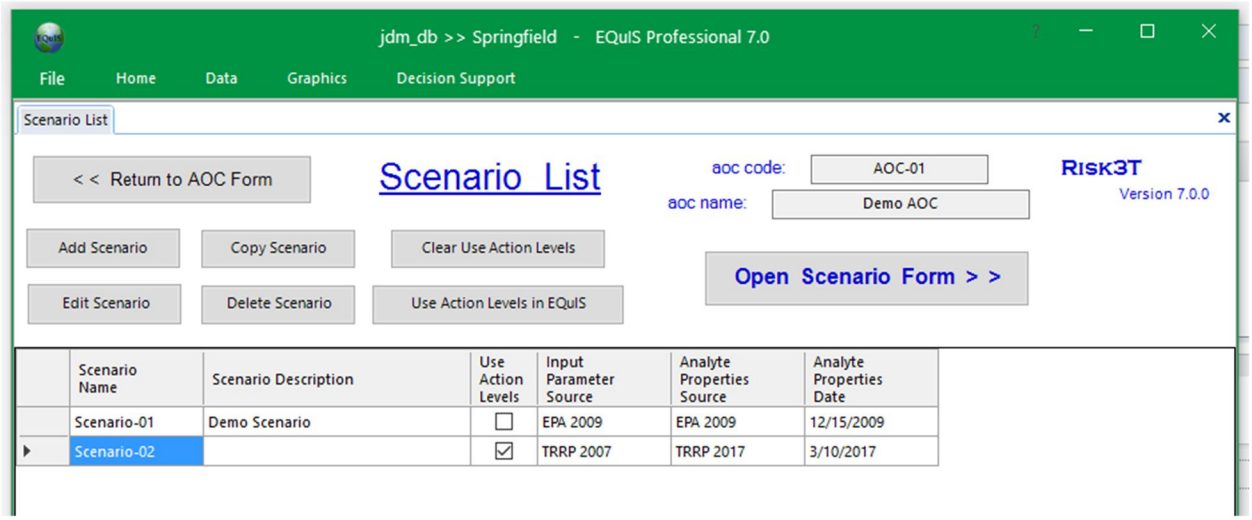
Select >*Delete Results*< to delete the calculated maximum concentrations for each sample media.

3.3 Managing Risk Assessment Scenarios within the Area of Concern

Selecting *>Risk Assessment Scenarios<* from the AOC Form allows the user to create various scenarios for risk assessment calculations. Different scenarios can be created by altering variables such as land use, and by entering site-specific input parameters. Risk3T calculates screening and action levels based on these input parameters.

3.3.1 Scenario List

The Scenario List Form allows you to create, edit, and delete risk assessment scenarios.



- ***>Add Scenario<.*** A separate window opens where you can create the name of your scenario and provide a brief description. You can also choose the source of your input parameter and chemical property tables. Risk3T comes with three default input parameter programs which include ASTM RBCA, ASTM RBCA with vegetable ingestion, and Texas Risk Reduction Program (TRRP). The software also includes ASTM RBCA and TRRP chemical properties.

- ***>Edit Scenario<.*** After you create a scenario, you have the option to change the name, description, and the input parameter and chemical property sources.

- ***>Copy Scenario<.*** Use this button to copy risk assessment scenarios.

- ***>Delete Scenario<.*** Use this button to delete unwanted risk assessment scenarios.

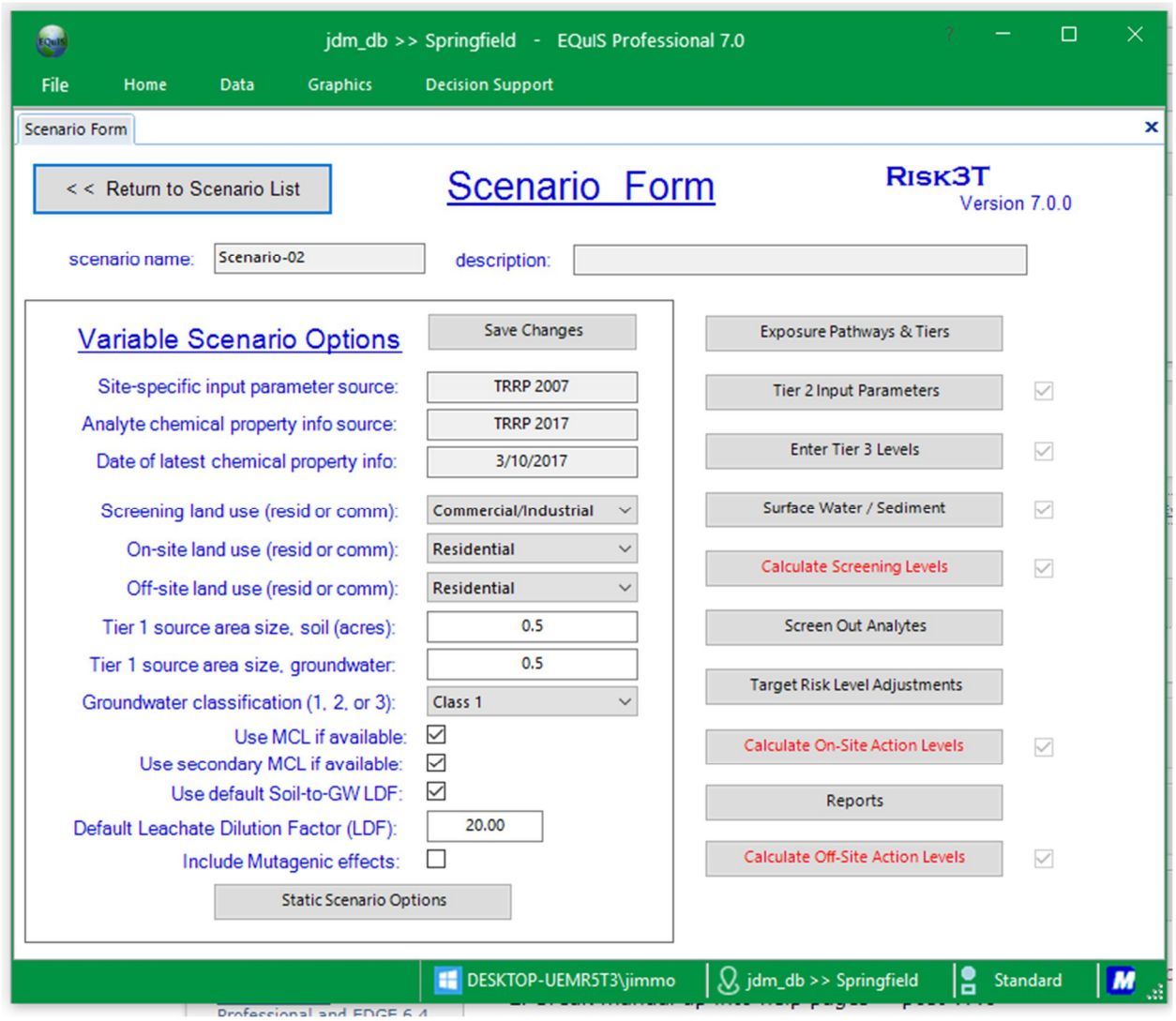
- ***>Use Scenario's Action Levels< and >Clear Use Action Levels<.*** Before using the AOC Reports form, highlight the scenario from the scenario list on the Scenario List Form that you wish to utilize in your risk assessment reports and click *>Use Scenario's Action Levels<*. Select *>Clear Use Action Levels<* to clear the scenario specific action levels and make another selection. (See Section 5.0, AOC Reports, for more information about reviewing risk assessment summary reports.)

3.3.2 Scenario Form

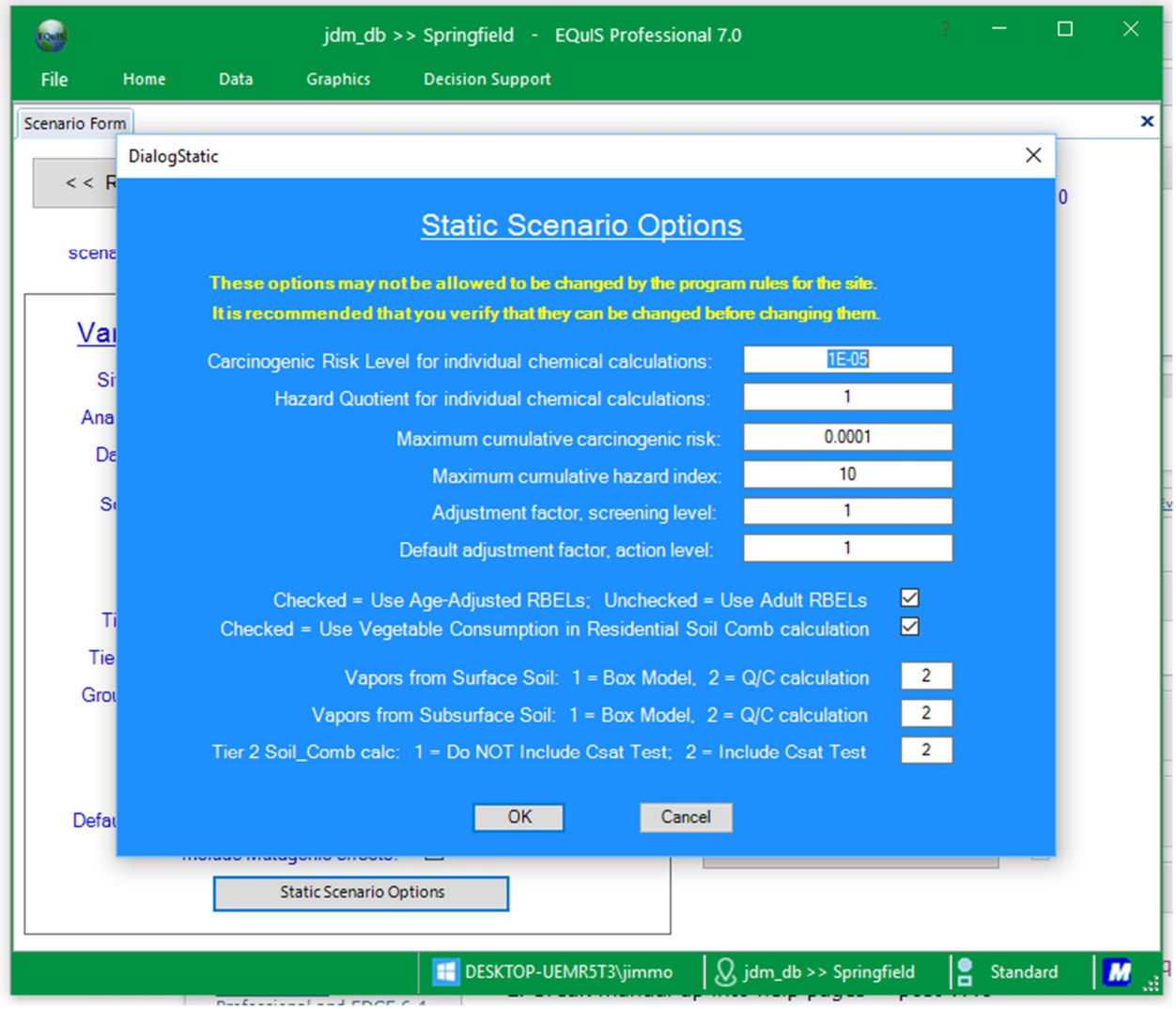
Scenario Options

Once you have created your scenario, select the >*Open Scenario Form*< to access the two scenario options; variable and static.

- ***Variable Scenario Options.*** You can change the variable scenario options for your site, including screening land use, on-site/off-site land use, Tier 1 source area size for soil and groundwater, and groundwater classification. You also have the option to use the maximum contaminant level (MCL) or secondary MCL for chemicals, and modify the leachate dilution factor. To change input parameters and chemical properties, you must return to the Scenario List and edit these options from the Edit Scenario form. Once all changes have been made, the >*Save Changes*< button will turn red; select >*Save Changes*< to save any modifications to your scenario.



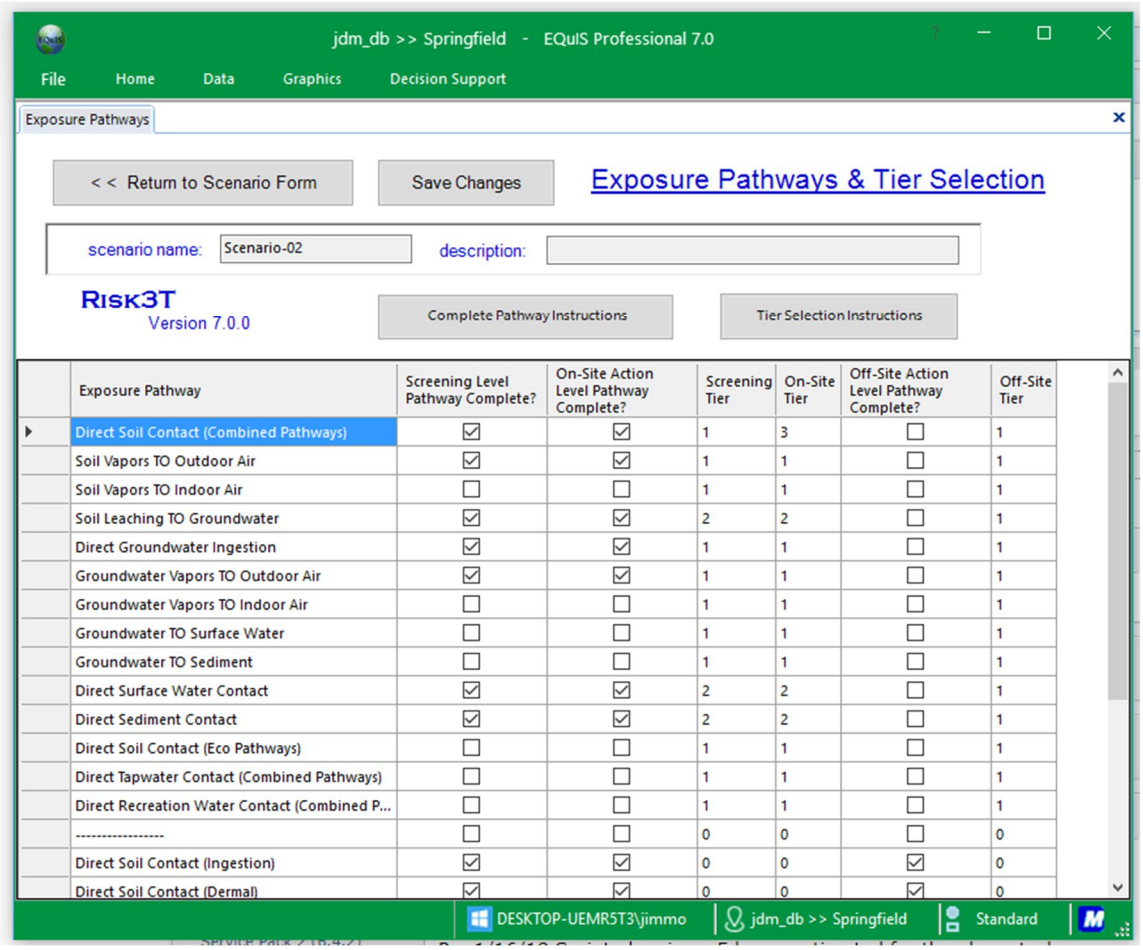
- ***Static Scenario Options.*** These options are associated with default, site specific input parameters that are typically not modified due to the state or federal program by which they are regulated. However, you can use input parameters from one state program in a different state. For instance, you can use TRRP input parameters in another state or in risk calculations which do not fall under TRRP, and can modify the static scenario options. If you make a change to these options that are not allowed, an error message (!) will flash next to that option. You can save your changes by selecting *>OK<*. To cancel your changes select >Cancel<.



Exposure Pathways and Tier Selections

Once you have selected scenario options, you can immediately calculate screening levels and on-site action levels using the default exposure pathways and Tier selections. However, you can still change the default pathway and tier by selecting *>Exposure Pathway and Tiers<*.

- ***Exposure Pathways.*** This column lists the possible exposure pathways you can select for your scenario. There are five default pathways already selected, these include: Direct Soil Contact (Combined Pathways), Soil Vapors to Outdoor Air, Soil Leaching to Groundwater, Direct Groundwater Ingestion, and Groundwater Vapors to Outdoor Air. Select additional, or deselect default, completed pathways by using the check boxes in the following columns: Screening Level Pathway Complete, On-Site Action Level Pathway Complete, and Off-Site Action Level Pathway Complete.



Exposure Pathway	Screening Level Pathway Complete?	On-Site Action Level Pathway Complete?	Screening Tier	On-Site Tier	Off-Site Action Level Pathway Complete?	Off-Site Tier
Direct Soil Contact (Combined Pathways)	☑	☑	1	3	☐	1
Soil Vapors TO Outdoor Air	☑	☑	1	1	☐	1
Soil Vapors TO Indoor Air	☐	☐	1	1	☐	1
Soil Leaching TO Groundwater	☑	☑	2	2	☐	1
Direct Groundwater Ingestion	☑	☑	1	1	☐	1
Groundwater Vapors TO Outdoor Air	☑	☑	1	1	☐	1
Groundwater Vapors TO Indoor Air	☐	☐	1	1	☐	1
Groundwater TO Surface Water	☐	☐	1	1	☐	1
Groundwater TO Sediment	☐	☐	1	1	☐	1
Direct Surface Water Contact	☑	☑	2	2	☐	1
Direct Sediment Contact	☑	☑	2	2	☐	1
Direct Soil Contact (Eco Pathways)	☐	☐	1	1	☐	1
Direct Tapwater Contact (Combined Pathways)	☐	☐	1	1	☐	1
Direct Recreation Water Contact (Combined P...	☐	☐	1	1	☐	1
----------	☐	☐	0	0	☐	0
Direct Soil Contact (Ingestion)	☑	☑	0	0	☑	0
Direct Soil Contact (Dermal)	☑	☑	0	0	☑	0

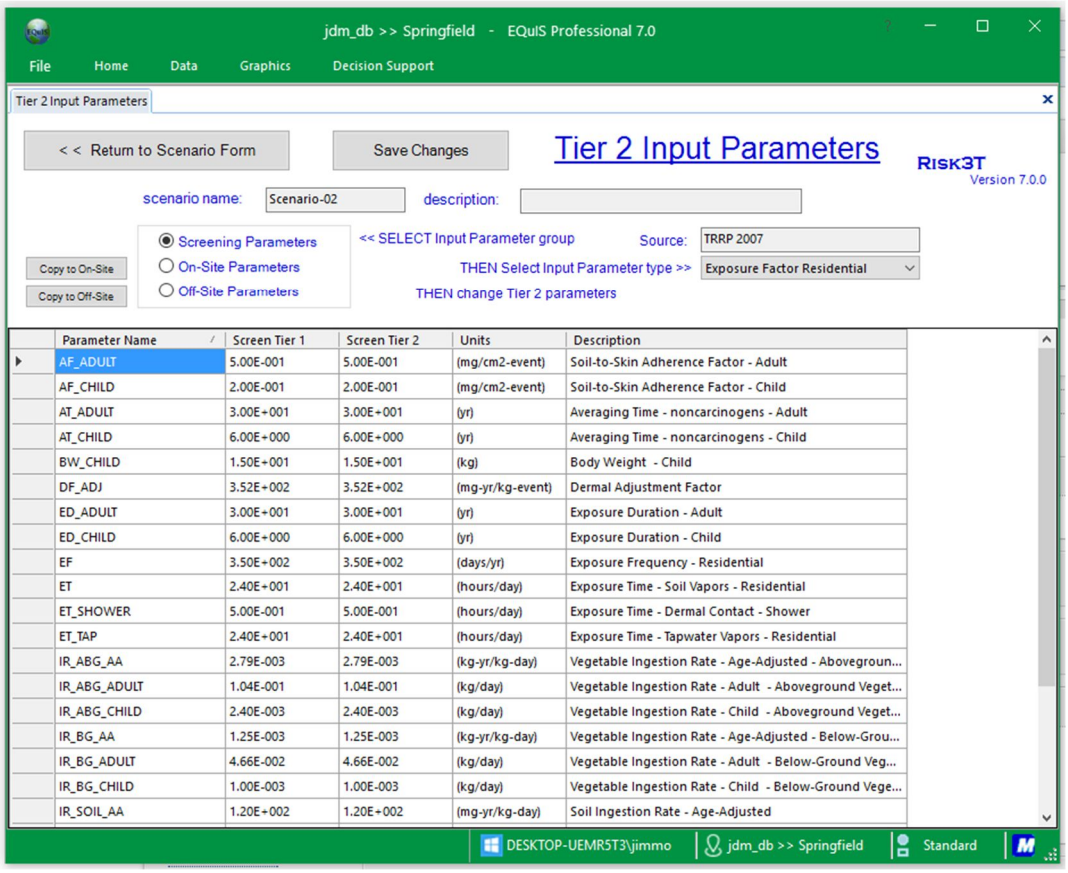
- ***Tier Selection.*** You can select the tier (Tier 1, Tier 2, or Tier 3) you wish to use in your risk assessment scenario by typing in 1, 2, or 3 in the Screening Tier, On-Site Tier, and Off-Site Tier columns.

- ***Complete Pathway and Tier Selection Instructions.*** These two buttons give guidance on how to choose completed pathways and give instruction on how to select the Risk Assessment Tier for your site.

After selecting the exposure pathways and risk assessment tiers for your scenario, save your changes using the >*Save Changes*< button at the top of the form. To return to the Scenario Form, select >*Return to Scenario Form*<.

Tier 2 Input Parameters

If you selected off-site exposure pathways, surface water and sediment pathways, and/or Tier 2 or 3 for your risk assessment calculations, the Tier 2, Tier 3, and surface water/sediment input buttons, and the off-site action level calculation buttons, will be active. After selecting Tier 2 to calculate your action levels, use the >*Tier 2 Input Parameters*< button to modify these parameters.



- ***Select Input Parameter Group***. There are three groups from which to choose, Screening Level Parameters, On-Site Parameters, and Off-Site Parameters. Modifying these parameters will change your action level calculations for screening, on-site, and off-site. The table displays the parameter, the default Tier 1 value, Tier 2 value, and a description of that particular parameter.
- ***Select Parameter Type.*** There are 11 parameter types, which remain the same for each parameter group. The 11 parameter types are listed below. Each parameter type has a specific set of variables which can be modified. The Tier 1 column cannot be modified and is provided for reference when entering Tier 2 values. The parameter types are as follows:
  - Distance to POE;
  - Exposure Factors;
  - Exposure Factors – Commercial/Industrial;
  - Exposure Factors – Residential;

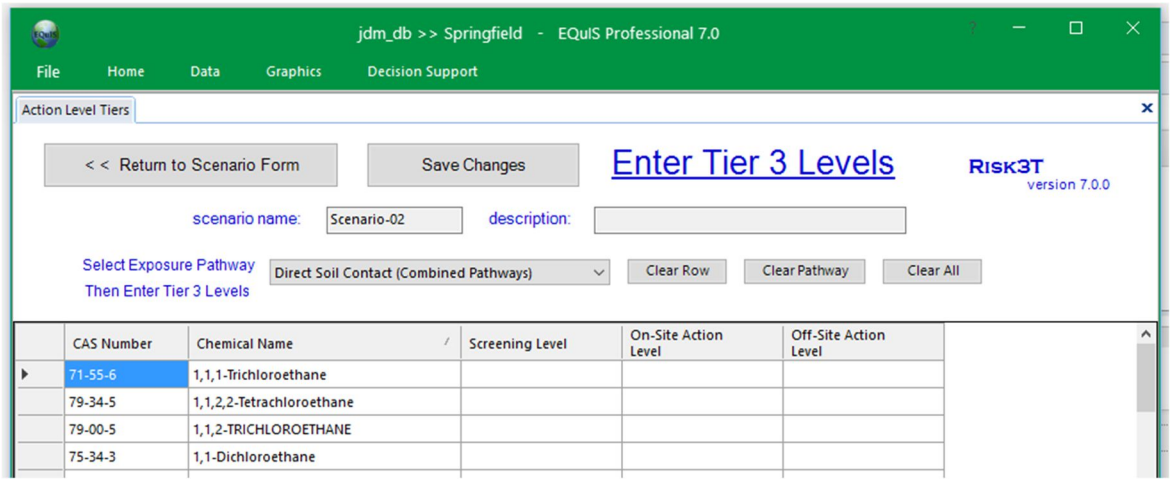
- Input Parameter – Building;
- Input Parameter – Groundwater;
- Input Parameter – Particulate Emission Rate (PEF);
- Input Parameter – Soil;
- Input Parameter – Soil – to – Groundwater;
- Source Area Size – Groundwater; and
- Source Area Size – Soil.

- ***Copy to On-Site and Copy to Off-Site.*** Once you make changes to any of the three input parameter groups (screening, on-site and off-site) you can use the >*Copy to On-Site*< and >*Copy to Off-Site*< buttons to copy the same changes to on-site and off-site Tier 2 parameters. For instance, if you make changes to the Screening Parameter group, and want to make the same changes to your on-site parameters, simply select >*Copy to On-Site*< and those changes will be made to those on-site parameter types. Once you select either the >*Copy to On-Site*< and >*Copy to Off-Site*<, your changes are automatically saved.

You can save changes as you modify each parameter type, or you can make all your changes at once and save when you are finished.

Tier 3 Levels

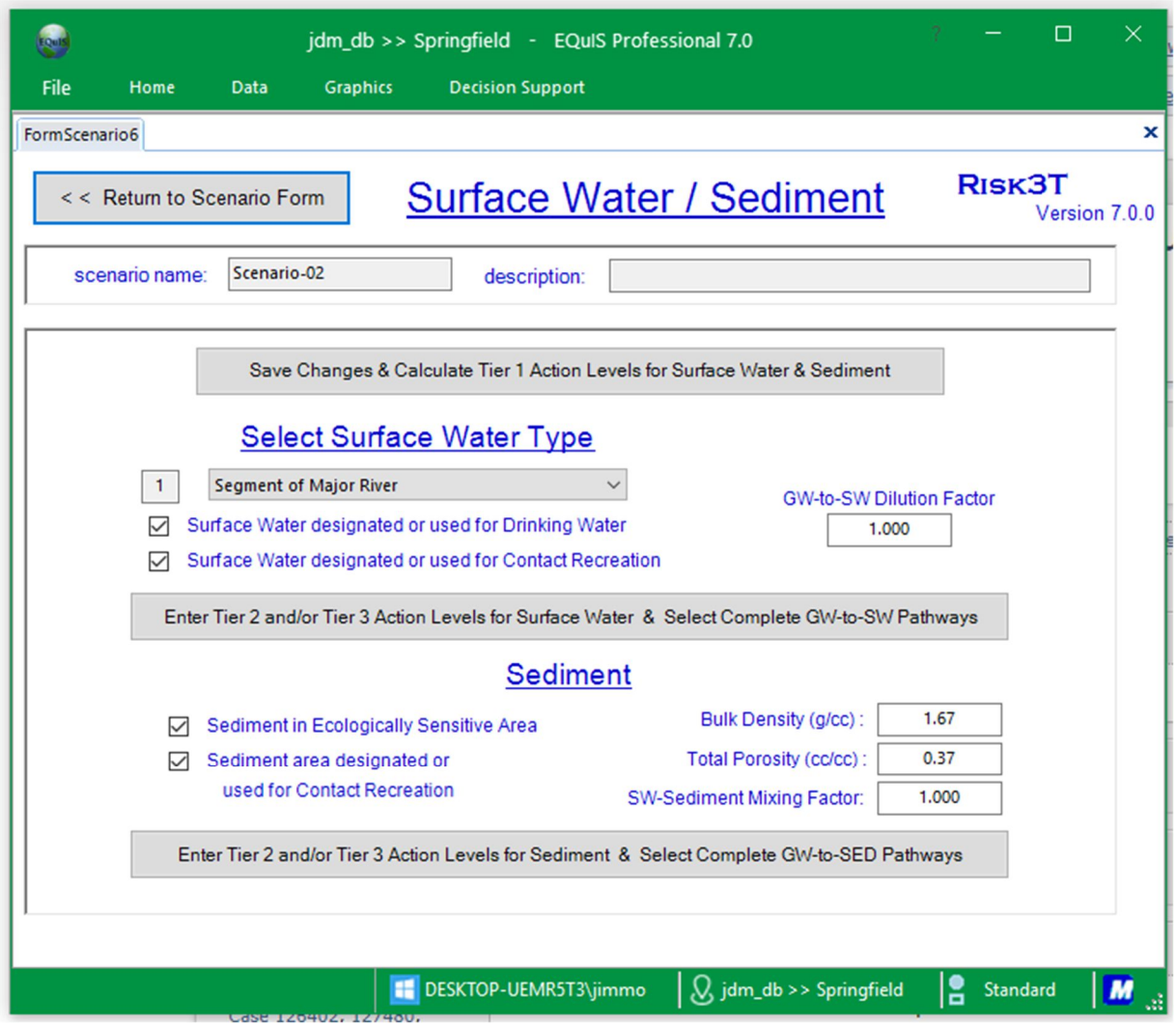
If you selected Tier 3 from the Exposure Pathways and Tier Selection form, click >*Enter Tier 3 Levels*<. On this screen you will enter the Tier 3 results calculated from programs outside of Risk3T.



- ***Select Exposure Pathway.*** The drop-down menu for exposure pathways is restricted to the pathways you selected on the Exposure Pathway and Tier Selection Form. Select a pathway to start entering your Tier 3 results. The table presents the chemical name and its CAS number, and three columns to enter in Tier 3 values for screening level and on-site and off-site action levels. To save your changes, select >Save Changes< from the top of the form.

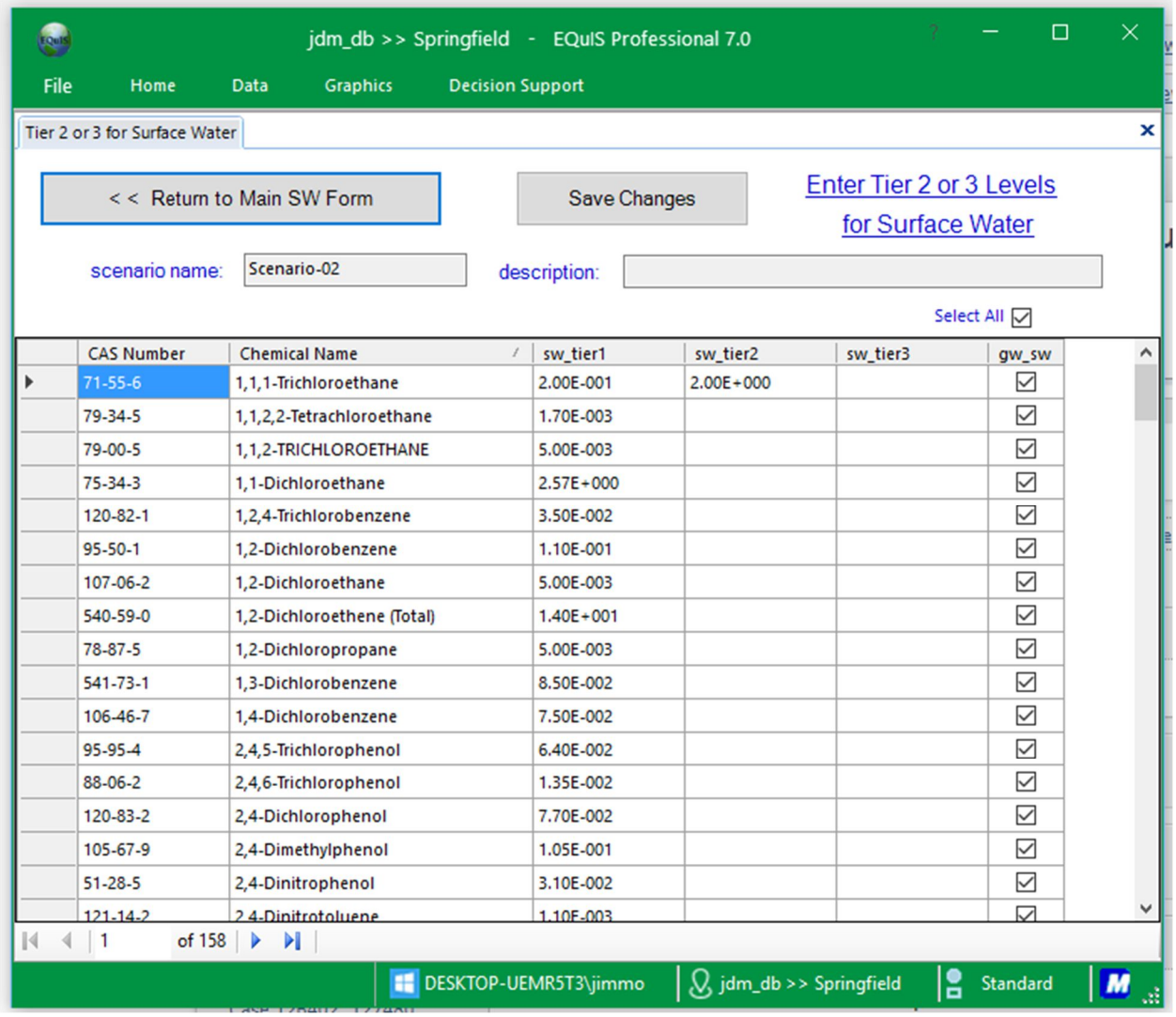
Surface Water and Sediment

If you selected a surface water or sediment pathway from the Exposure Pathway form, select >*Surface Water/Sediment*< to enter the form.



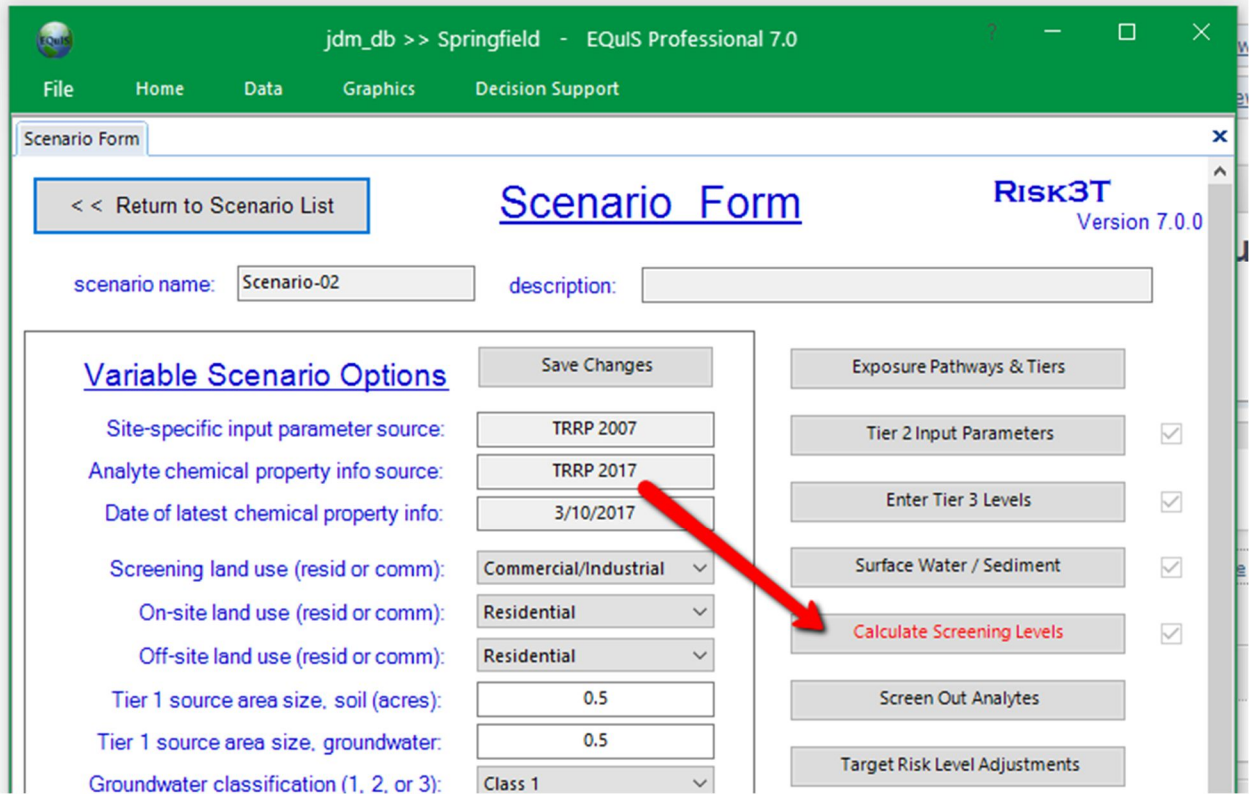
When you first open the Surface Water and Sediment Form, there are no action levels calculated, so the action level table will be empty when you select >*Enter Tier 2 and/or Tier 3 Action Levels for Surface Water [Sediment] & Select Complete GW-to-SW [SED] Pathways*<. For surface water, you must first select the type of surface water and its use; for sediment, select its use and properties. Once you select inputs for surface water and sediment, the Tier 1 action levels are calculated and will populate the action level table.

The Surface Water and Sediment action level tables have Tier 2 and Tier 3 columns which can be used to input Tier 2 and Tier 3 values calculated using an external program. Entered Tier 2 or Tier 3 values override Tier 1 values. You can also select which chemicals have completed Groundwater to Surface Water and Groundwater to Sediment pathways. Use the toggle check box above the pathway column to select all chemicals or deselect all and individually check chemicals to include.



Calculate Screening Levels

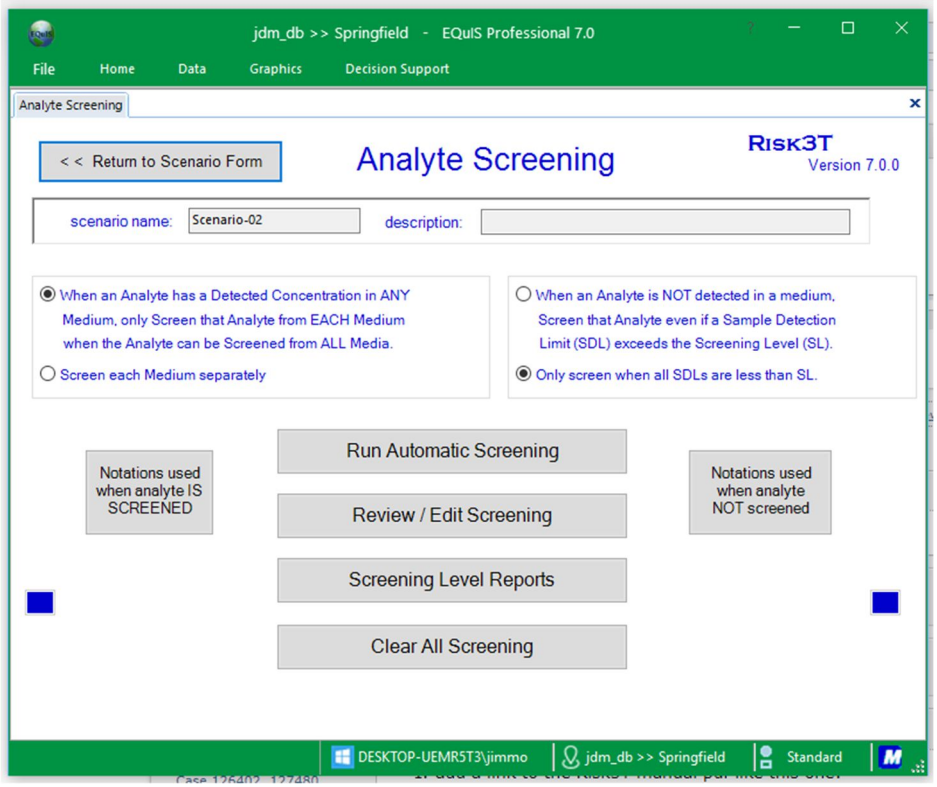
After choosing exposure pathways, tiers, and making tier adjustments, the >*Calculate Screening Levels*< button's font will be red, indicating changes have been made and screening levels must be calculated (or recalculated). When clicked, a separate window will open and display the chemicals for which Tier 1, 2 and 3 levels are being calculated. [Note: If you select the Tier 2 or Tier 3 for Soil Leaching to Groundwater pathway, the calculation will be displayed with the Soil to Groundwater pathway calculation, not the Tier 2 Screening Levels listing.] When calculations are complete, this button returns to a black font.



Screening Analytes

Once screening levels have been calculated, you are ready to screen out analytes from your environmental media. To begin, select >*Screen Out Analytes*< to open the Analyte Screening Form. On the Analyte Screening Form, you will need to choose how to screen your detected samples by sample media and how to treat non-detect samples and their sample detection limits.

There are two information buttons on the Analyte Screening Form that describe the notations for screened and unscreened analytes. These will be useful when reviewing your analyte screening results.



Screening Options

- ***Detected Results.*** The preselected default option for screening detected results is when an analyte has a detected concentration in any environmental medium, only screen that analyte from each medium when that analyte can be screened from all media. The other option is to screen out analytes from each medium separately. To change options, simply select the radio button next to the desired option.

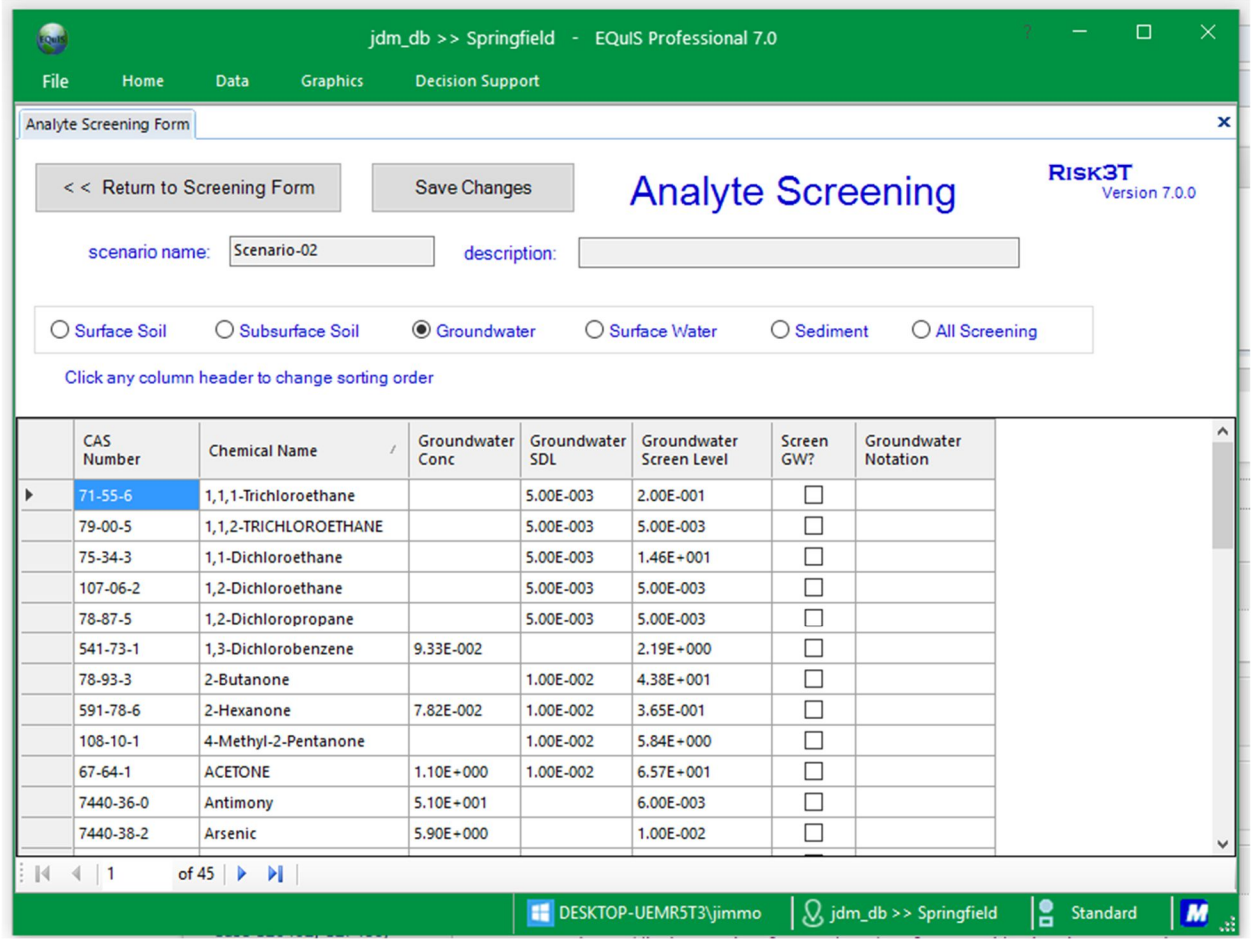
- ***Non – Detected Results.*** The preselected default option for non-detected results is to only screen out the analyte if the sample detection limit (SDL) is less than the screening level (SL). Another option is to screen out the analyte from the medium even if the SDL exceeds the SL. To switch from one option to the other, select the radio button next to the desired option.

Automatic Screening

The >*Run Automatic Screening*< button screens your sample analytes based on the screening levels you calculated and the screening options you selected. Once you select >*Run Automatic Screening*<, a separate window appears, displaying all the chemicals that are screened.

Review and Edit Screening

Once you have run automatic screening, you can choose to review and/or edit these results by selecting the >*Review/Edit Screening*< button. Please note screening notation definitions for screened and unscreened results are located on the main Analyte Screening Form on the left and right sides.



On the review/edit screen, screening results are filtered by environmental media. You can toggle through the results using the radio buttons next to each medium (Surface Soil, Subsurface Soil, Groundwater, Surface Water, and Sediment) or you can choose to show all results from all media (All Screening). The table shown below will change each time you select a different medium.

The screening table will display the chemical, its CAS number, the detected concentration, the SDL, and the screening notation (see notation instruction screen for definitions). There is also a column you can check or uncheck to screen or un-screen chemicals. If you selected All Screening, the table will show you the chemical name and CAS number and will also list which media is or is not screened out for each chemical. You can also use the check boxes in each column to screen or un-screen each chemical.

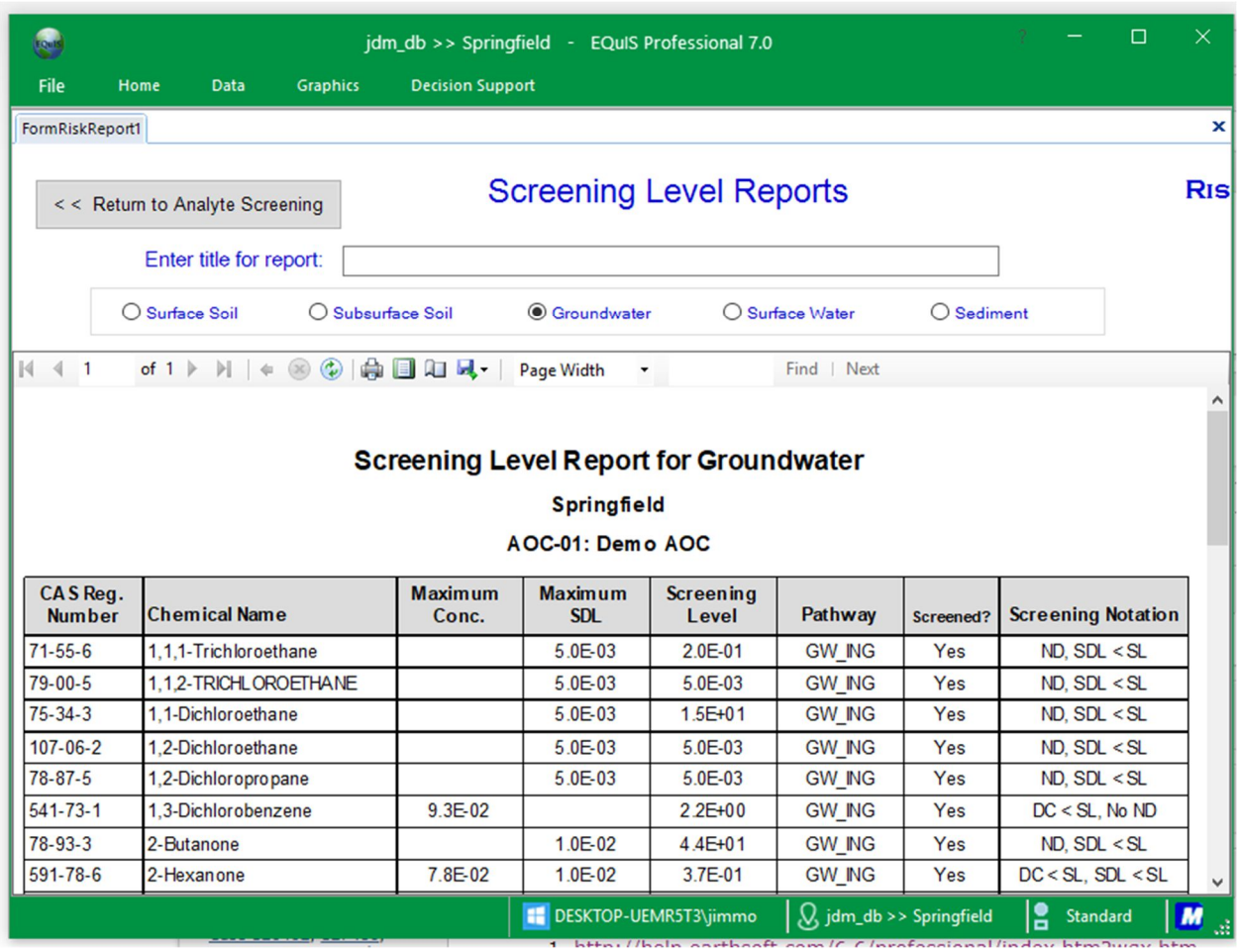
Once you make your changes, select the >*Save Changes*< button located at the top of the form. To return to the main Analyte Screening form, select >*Return to Screening Form*<.

Screening Level Reports

Risk3T allows you to view, print, and/or export to Excel, the screening level report. Select the >*Screening Level Reports*< button on the Analyte Screening Form to open the Screening Level Reports Form.

Screening level reports are created for each environmental media and are displayed one at a time in the report viewer. To switch between each environmental medium report, use the radio buttons just above the report viewer.

Each report includes a preformatted title section indicating the environmental media, facility name, and AOC name and number. The preformatted footer at the bottom of the report includes the scenario number, scenario name, and date the report was generated. You can also type in your own report title using the text box located above the report viewer. Once you type your title, select enter or tab from the keyboard and your title will be added to the report. This title will be included on each report as you toggle through the media options.



CAS Reg. Number	Chemical Name	Maximum Conc.	Maximum SDL	Screening Level	Pathway	Screened?	Screening Notation
71-55-6	1,1,1-Trichloroethane		5.0E-03	2.0E-01	GW_ING	Yes	ND, SDL < SL
79-00-5	1,1,2-TRICHLOROETHANE		5.0E-03	5.0E-03	GW_ING	Yes	ND, SDL < SL
75-34-3	1,1-Dichloroethane		5.0E-03	1.5E+01	GW_ING	Yes	ND, SDL < SL
107-06-2	1,2-Dichloroethane		5.0E-03	5.0E-03	GW_ING	Yes	ND, SDL < SL
78-87-5	1,2-Dichloropropane		5.0E-03	5.0E-03	GW_ING	Yes	ND, SDL < SL
541-73-1	1,3-Dichlorobenzene	9.3E-02		2.2E+00	GW_ING	Yes	DC < SL, No ND
78-93-3	2-Butanone		1.0E-02	4.4E+01	GW_ING	Yes	ND, SDL < SL
591-78-6	2-Hexanone	7.8E-02	1.0E-02	3.7E-01	GW_ING	Yes	DC < SL, SDL < SL

The report format includes the chemical name and CAS number, maximum detected concentration for each chemical, maximum SDL, screening level, location and depth (soil/sediment) of sample with maximum concentration, and date sample was collected.

Shading in the table represents chemicals not screened out based on the screening options chosen on the Analyte Screening Form. If a chemical is not shaded, it was successfully screened out based on the criteria selected.

The report viewer allows you to change page numbers, print, modify the print layout and page setup, and export the table to Excel.

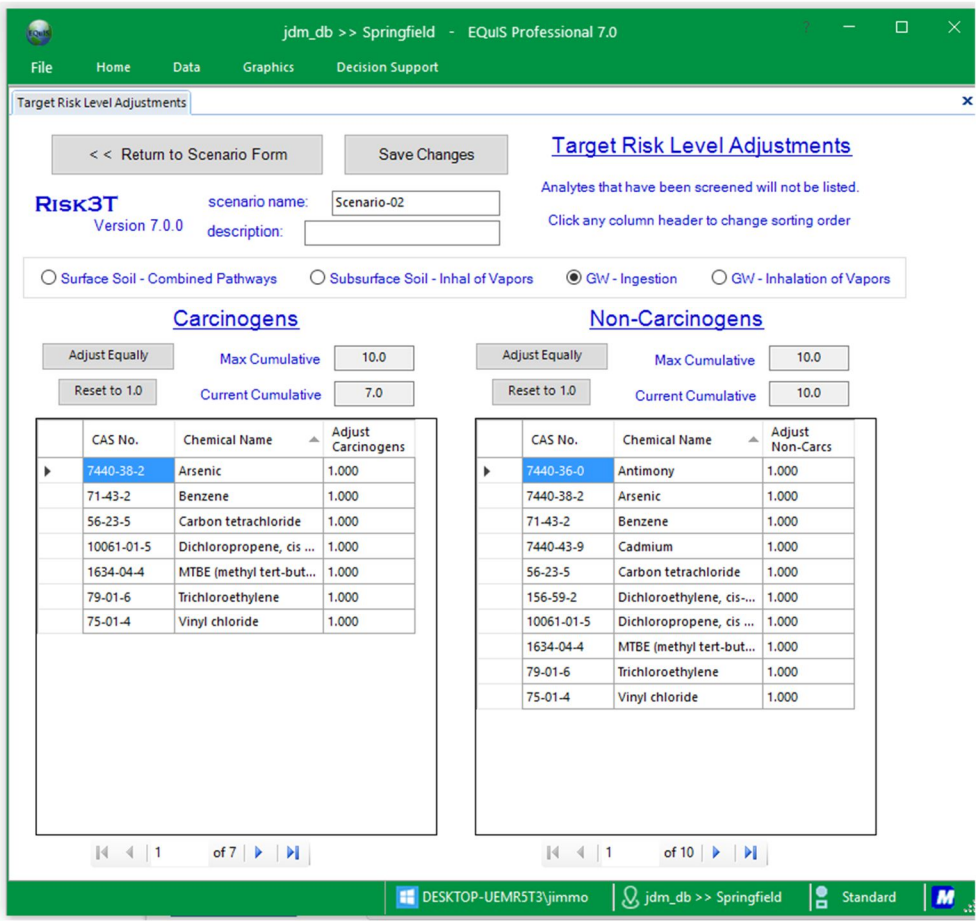
REMOVE SCREENING

Once you have reviewed the screening for each chemical and each media, you can choose to keep it or clear it. To remove or clear your screening results, select >*Clear All Screening*< on the Analyte Screening Form. Return to the Scenario Form by selecting >*Return to Scenario Form*<.

TARGET RISK LEVEL ADJUSTMENTS

Once you have calculated your screening levels and screened your chemicals and environmental media, you can adjust the target risk levels as necessary. To do this, select the >*Target Risk Level Adjustments*< button on the Scenario Form.

The Target Risk Level Adjustment Form only lists those chemicals which did not screen out during the screening process. There are four pathways that can be adjusted including Surface Soil Combined, Subsurface Soil – Inhalation of Vapors, Groundwater – Ingestion, and Groundwater – Inhalation of Vapors. Use the radio button next to each pathway to toggle between them.



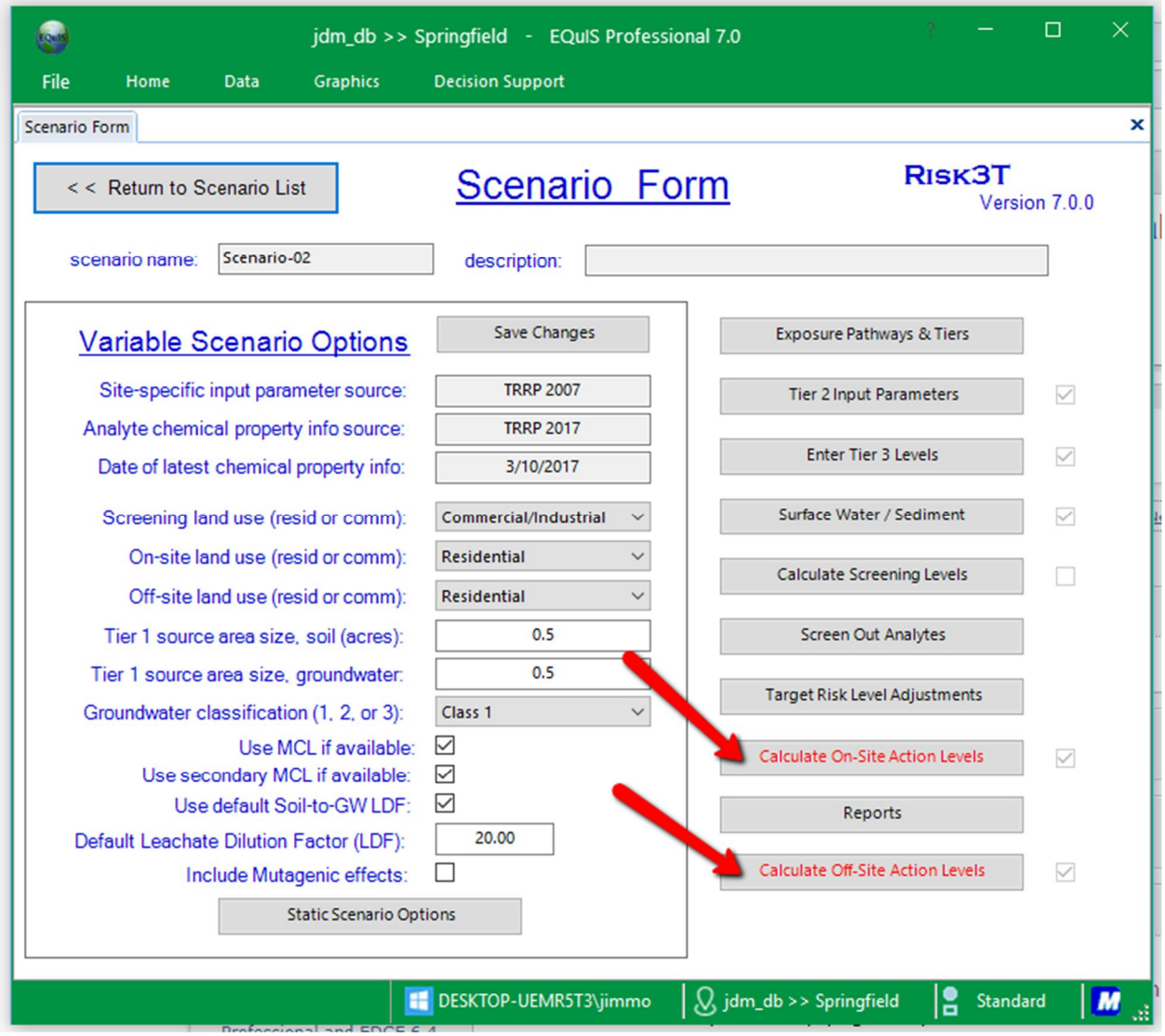
On this form, chemicals are separated into two categories; carcinogenic and non-carcinogenic. In some cases, a chemical will have both carcinogenic and non-carcinogenic properties and therefore will be listed in both tables.

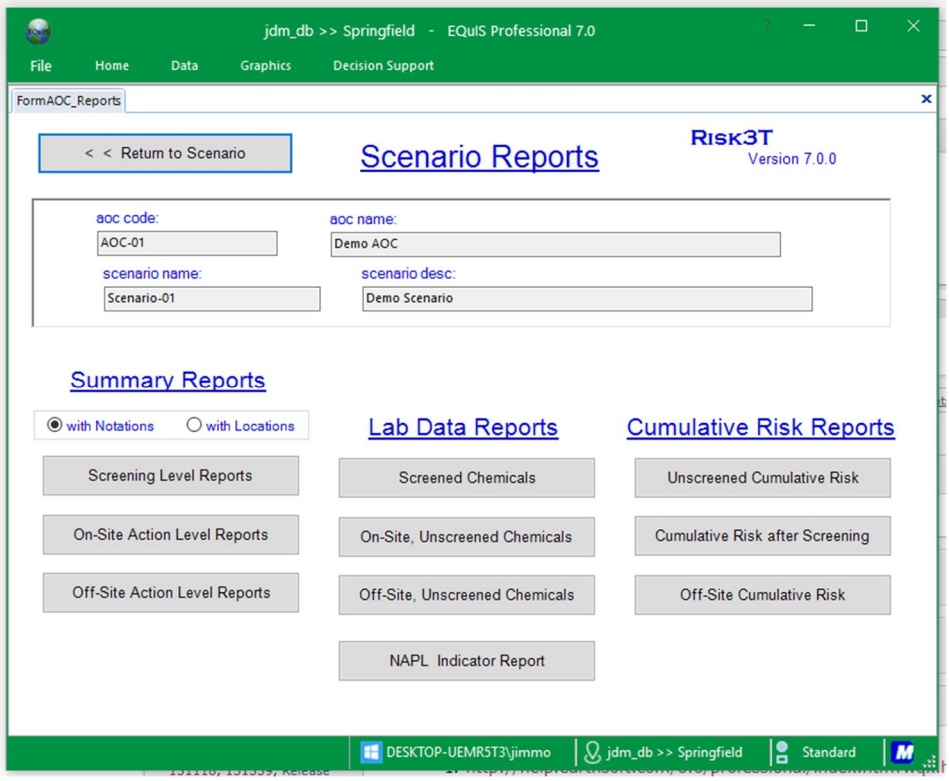
The decision to adjust target risk levels is based on the comparison between the allowable maximum cumulative risk and the current cumulative risk. The state or federal rule you are applying to your site will determine the allowable maximum cumulative risk. On the target risk form you will

see the maximum cumulative and current cumulative values above each table. To adjust the risk values, you can manually change them or use the >*Adjust Equally*< button above each table. If you make manual changes in the Adjust Carcinogens/Non-Carcinogens column on the table, you need to select the >*Save Changes*< button at the top of the form to save any changes. Your changes are automatically saved when you use the >*Adjust Equally*< button. To return to the Scenario Form, select >*Return to Scenario Form*<.

ON-SITE AND OFF-SITE ACTION LEVEL CALCULATIONS AND REPORTS

Action Level Calculations. Action levels are calculated separately using the >*Calculate On-Site Action Levels*< and >*Calculate Off-Site Action Levels*< buttons. Once either of these buttons is selected, a separate window opens and shows the chemicals for which action levels are being calculated.





Action Level Reports. The Action Level Reports Form for both on-site and off-site calculations is similar to the Screening Level Report Form. Action level reports are created for each environmental media and are displayed one at a time in the report viewer. To switch between each environmental medium report, use the radio buttons next to each media located just above the report viewer. Each report includes a preformatted title section, indicating on-site/off-site action levels, facility name, and AOC name and number. You can also type in your own report title using the text box located above the report viewer. Once you type your title, select enter or tab from the keyboard and your title will be added to the report. This title will be included on each report as you toggle through the media options.

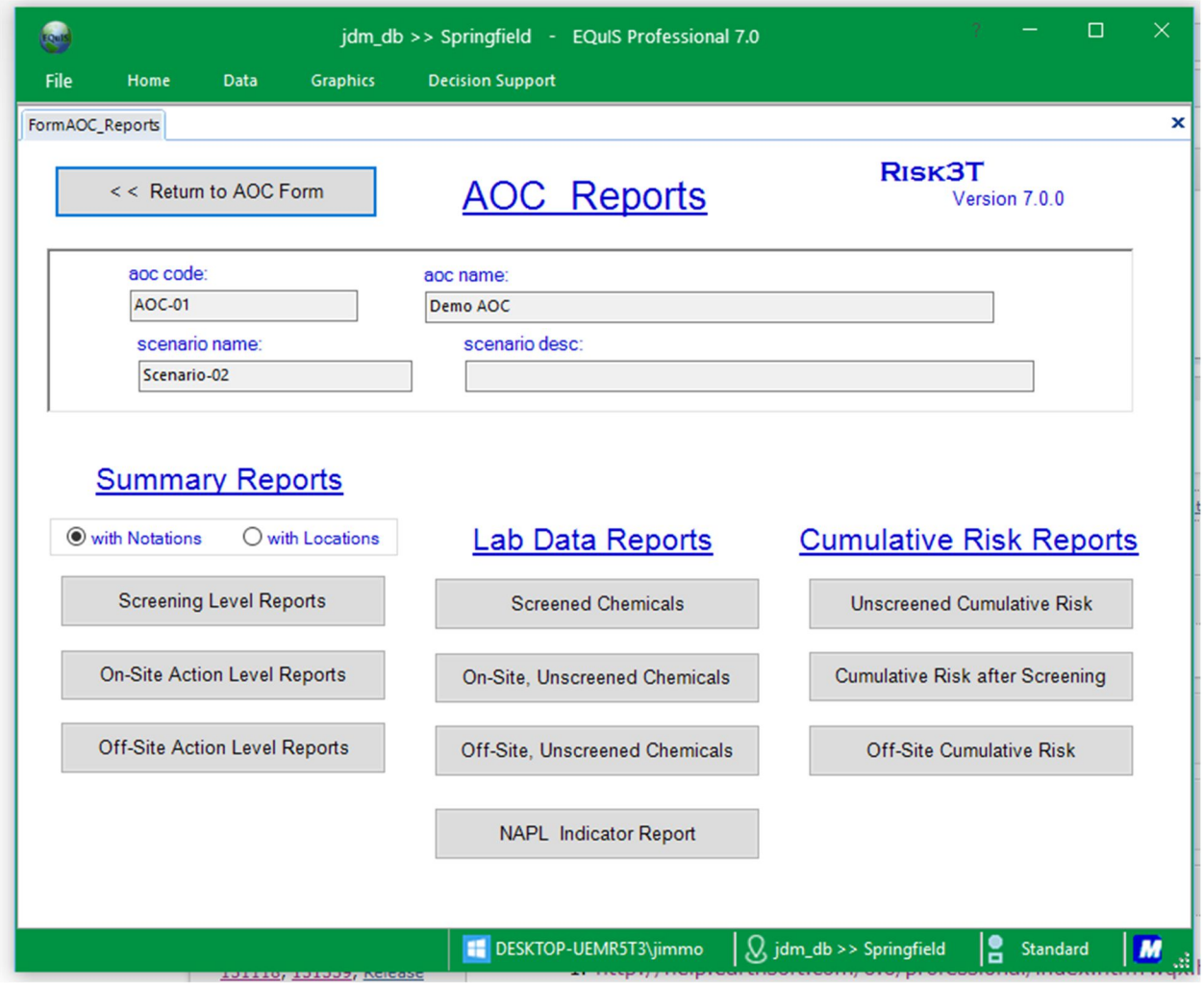
The on-site and off-site action level reports include the chemical name and CAS number, maximum concentration, maximum SDL, action level, whether or not you need to remedy the chemical, and the screening notation. If the maximum concentration of the chemical exceeds the action level either on-site or off-site, the chemical name is shaded in the table and the word 'remedy' appears in the "Remedy?" column. If the maximum concentration or SDL does not exceed the action level, the chemical name is not shaded and NFA appears in the "Remedy?" column.

The report viewer allows you to change pages, print, modify the print layout and page setup, and export the table to Excel.

4.0 AOC Reports

Prior to generating AOC Reports, you must first select the scenario you wish to view. Click on >*Risk Assessment Scenarios*< from the AOC Form. From the Scenario List, select the scenario you wish to use by clicking on it and then selecting >*Use Scenario's Action Levels*<. This will place a checkmark in the column "Use Action Levels." Return to the AOC Form by clicking >*Return to AOC Form*<. (See Section 3.2.1, Scenario List, for additional details.)

Clicking >*AOC Reports*< allows the user to select the various types of reports to include in a risk assessment report. These reports include screening level reports, on-site and off-site action level reports, and laboratory data reports.



4.1 Summary Reports

The summary reports include screening level reports and on- and off-site action level reports. They display similarly to the screening level report form and on- and off-site action level report forms.

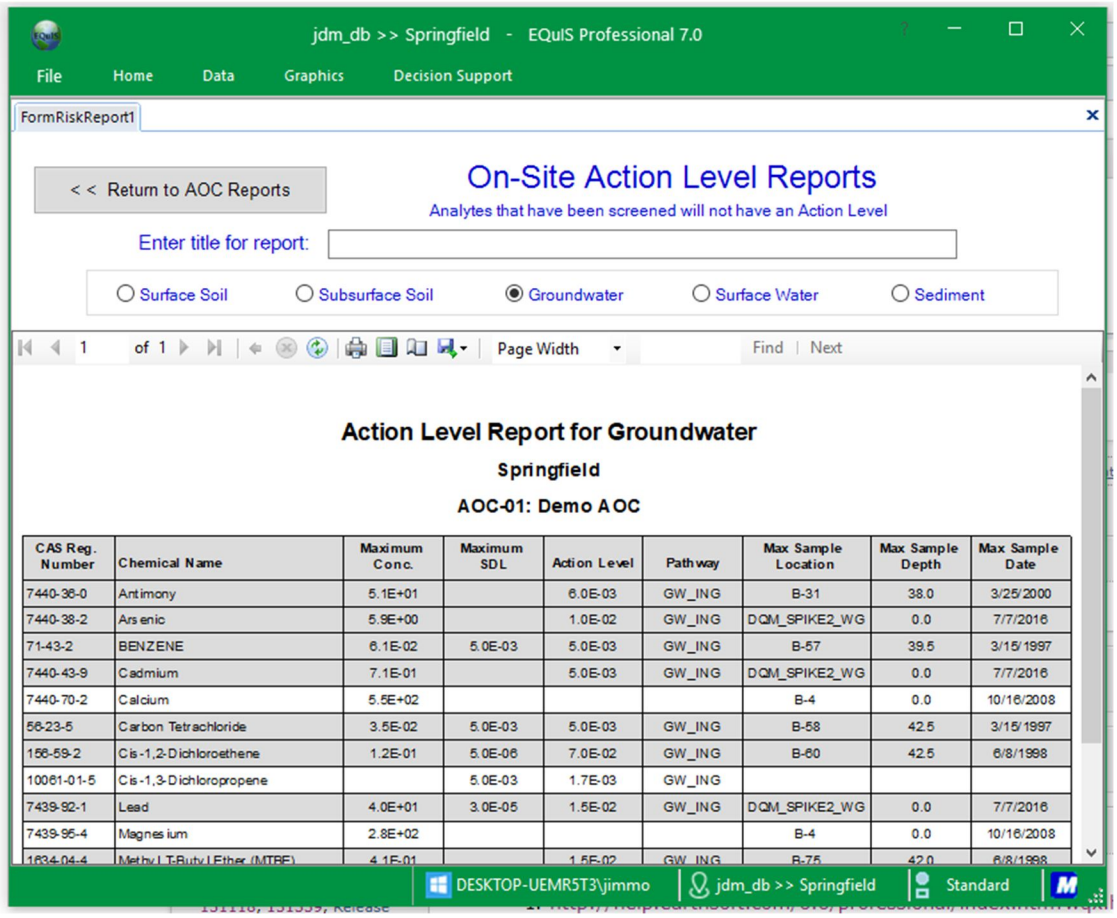
>*Screening Level Reports*<. When displaying screening level reports, there are two choices based on the radio buttons above the Screening Level Reports button:

- "with Notations": The notations explaining the rationale behind each screening is displayed.
- "with Locations": The location of the sample with the maximum detected concentration is displayed.

Any chemical not screened will be shaded. The report is preformatted with a title block displaying the name of the table, the environmental media, the facility name and the AOC name and number. You can also type in your own title using the title text box near the top of the form. The footer displays the selected scenario number and the date report was generated.

>*On-Site Action Level Reports*<. These reports display the same as they do on the On-Site Action Level Reports Form from the Scenario Form. (Refer to Section 4.2.9, On-Site and Off-Site Action Level Calculations and Reports, for additional information.)

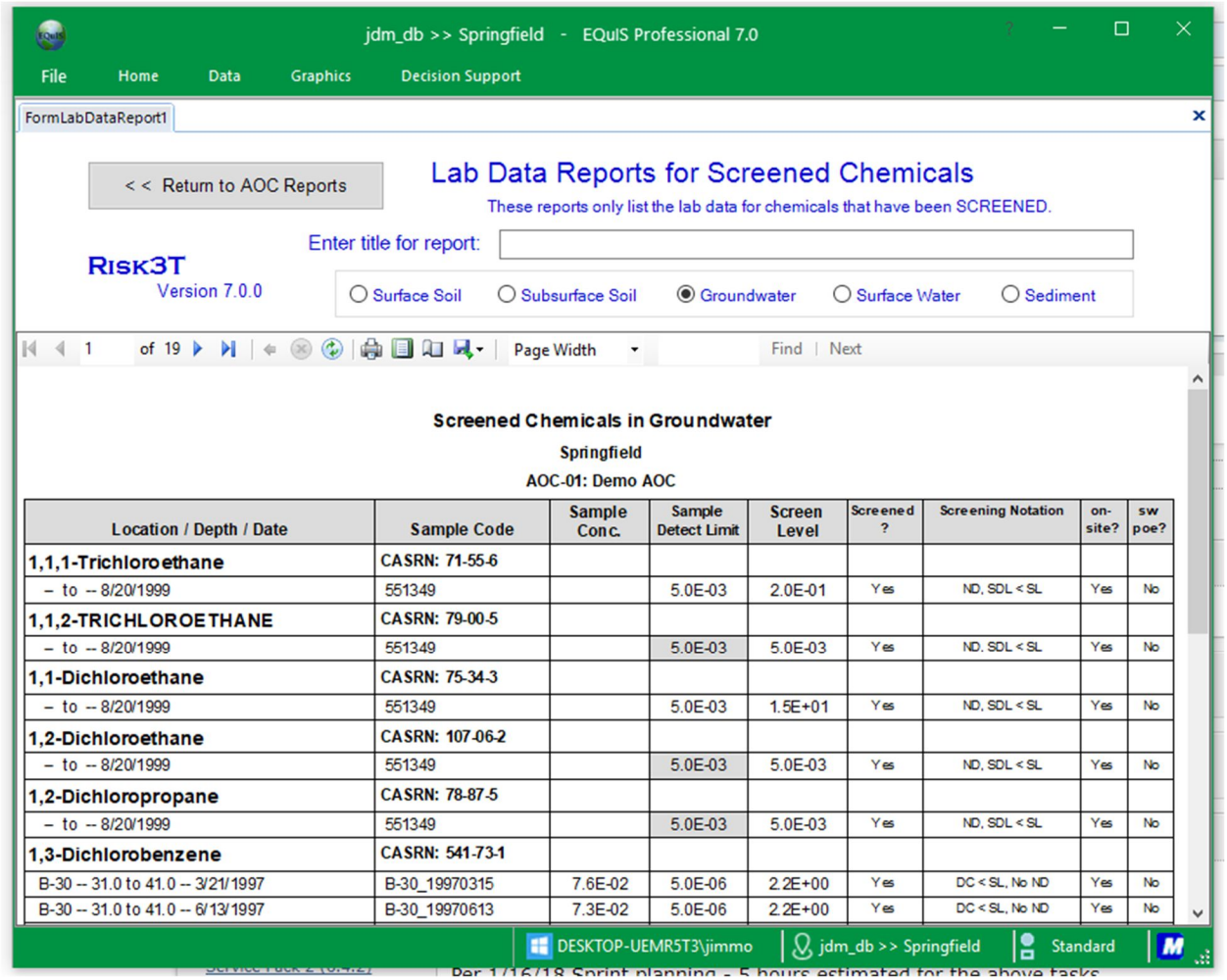
>*Off-Site Action Level Reports*<. These reports display the same as they do on the Off-Site Action Level Reports Form from the Scenario Form. (Refer to Section 4.2.9, On-Site and Off-Site Action Level Calculations and Reports, for additional information.)



CAS Reg. Number	Chemical Name	Maximum Conc.	Maximum SDL	Action Level	Pathway	Max Sample Location	Max Sample Depth	Max Sample Date
7440-36-0	Antimony	5.1E+01		6.0E-03	GW_ING	B-31	38.0	3/25/2000
7440-38-2	Arsenic	5.9E+00		1.0E-02	GW_ING	DQM_SPIKE2_WG	0.0	7/7/2016
71-43-2	BENZENE	6.1E-02	5.0E-03	5.0E-03	GW_ING	B-57	39.5	3/15/1997
7440-43-9	Cadmium	7.1E-01		5.0E-03	GW_ING	DQM_SPIKE2_WG	0.0	7/7/2016
7440-70-2	Calcium	5.5E+02				B-4	0.0	10/16/2008
56-23-5	Carbon Tetrachloride	3.5E-02	5.0E-03	5.0E-03	GW_ING	B-58	42.5	3/15/1997
156-59-2	Cis-1,2-Dichloroethene	1.2E-01	5.0E-06	7.0E-02	GW_ING	B-60	42.5	6/8/1998
10061-01-5	Cis-1,3-Dichloropropene		5.0E-03	1.7E-03	GW_ING			
7439-92-1	Lead	4.0E+01	3.0E-05	1.5E-02	GW_ING	DQM_SPIKE2_WG	0.0	7/7/2016
7439-95-4	Magnesium	2.8E+02				B-4	0.0	10/16/2008
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.1E-01		1.5E-02	GW_ING	B-75	42.0	6/8/1998

4.2 Laboratory Data Summary Reports

You have the option of printing laboratory data summary reports from Risk3T. You can print all screened chemicals, and on-site or off-site unscreened chemicals.



Location / Depth / Date	Sample Code	Sample Conc.	Sample Detect Limit	Screen Level	Screened ?	Screening Notation	on-site?	sw poe?
1,1,1-Trichloroethane	**CASRN: 71-55-6**							
– to -- 8/20/1999	551349		5.0E-03	2.0E-01	Yes	ND, SDL < SL	Yes	No
1,1,2-TRICHLOROETHANE	**CASRN: 79-00-5**							
– to -- 8/20/1999	551349		5.0E-03	5.0E-03	Yes	ND, SDL < SL	Yes	No
1,1-Dichloroethane	**CASRN: 75-34-3**							
– to -- 8/20/1999	551349		5.0E-03	1.5E+01	Yes	ND, SDL < SL	Yes	No
1,2-Dichloroethane	**CASRN: 107-06-2**							
– to -- 8/20/1999	551349		5.0E-03	5.0E-03	Yes	ND, SDL < SL	Yes	No
1,2-Dichloropropane	**CASRN: 78-87-5**							
– to -- 8/20/1999	551349		5.0E-03	5.0E-03	Yes	ND, SDL < SL	Yes	No
1,3-Dichlorobenzene	**CASRN: 541-73-1**							
B-30 -- 31.0 to 41.0 -- 3/21/1997	B-30_19970315	7.6E-02	5.0E-06	2.2E+00	Yes	DC < SL, No ND	Yes	No
B-30 -- 31.0 to 41.0 -- 6/13/1997	B-30_19970613	7.3E-02	5.0E-06	2.2E+00	Yes	DC < SL, No ND	Yes	No

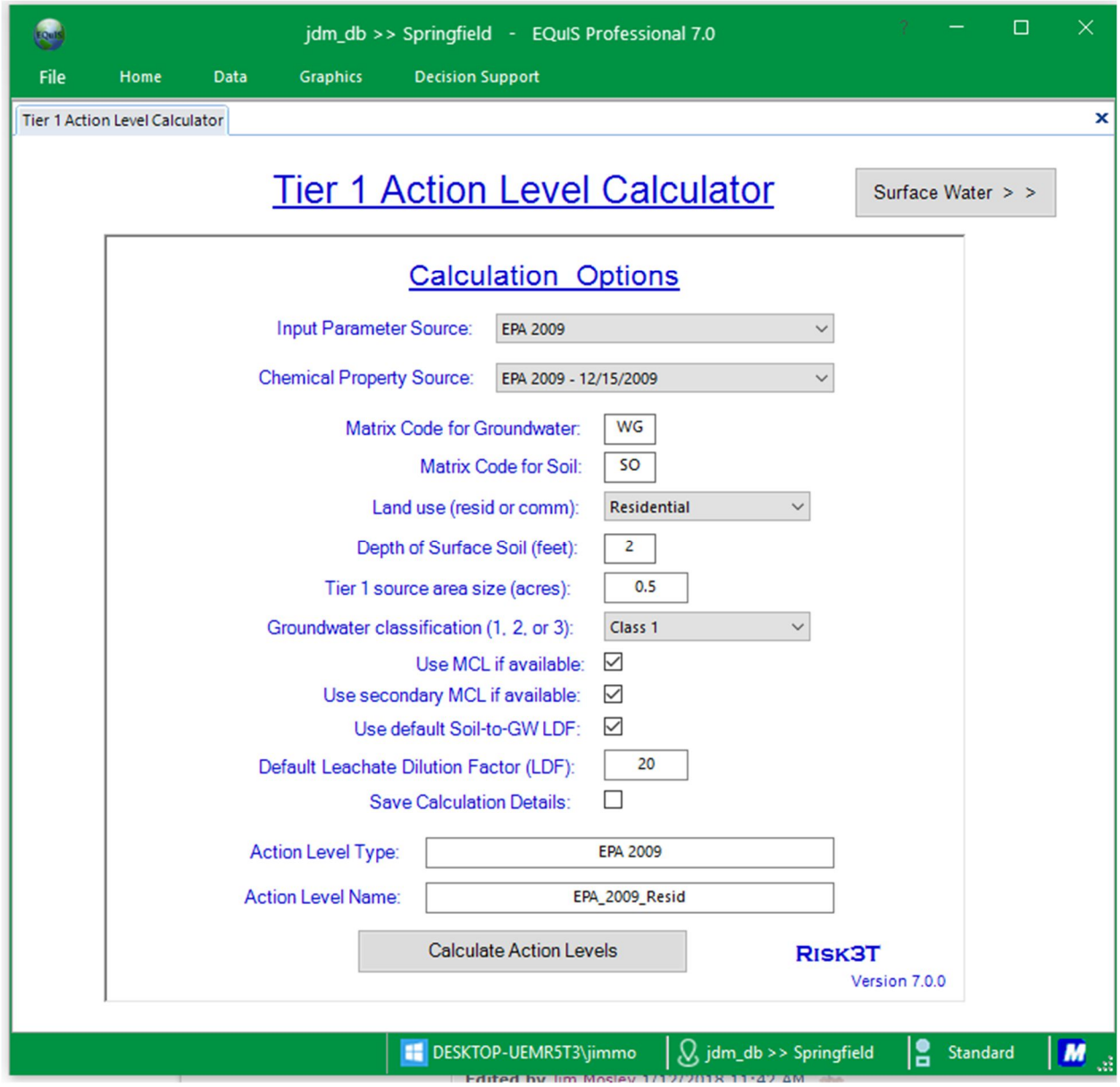
>Screened Chemicals<. The report generated here only presents screened out chemicals from the environmental media. You can toggle between the different media using the radio buttons next to each media. Each report displays a default title; however, a custom title can be added using the title text box near the top of the form. The footer displays the selected scenario number and the date report was generated.

>On-Site, Unscreened Chemicals<. This report displays all on-site screened chemicals for your project. Samples which exceeded the screening level are shaded. You can toggle between the different media using the radio buttons next to each media. Each report displays a default title; however, a custom title can be added using the title text box near the top of the form. The footer displays the selected scenario number and the date report was generated.

>Off-Site, Unscreened Chemicals<. This report displays all off-site screened chemicals for your project. Samples which exceeded the screening level are shaded. You can toggle between the different media using the radio buttons next to each media. Each report displays a default title; however, a custom title can be added using the title text box near the top of the form. The footer displays the selected scenario number and the date report was generated.

5.0 Tier 1 Action Level Calculator

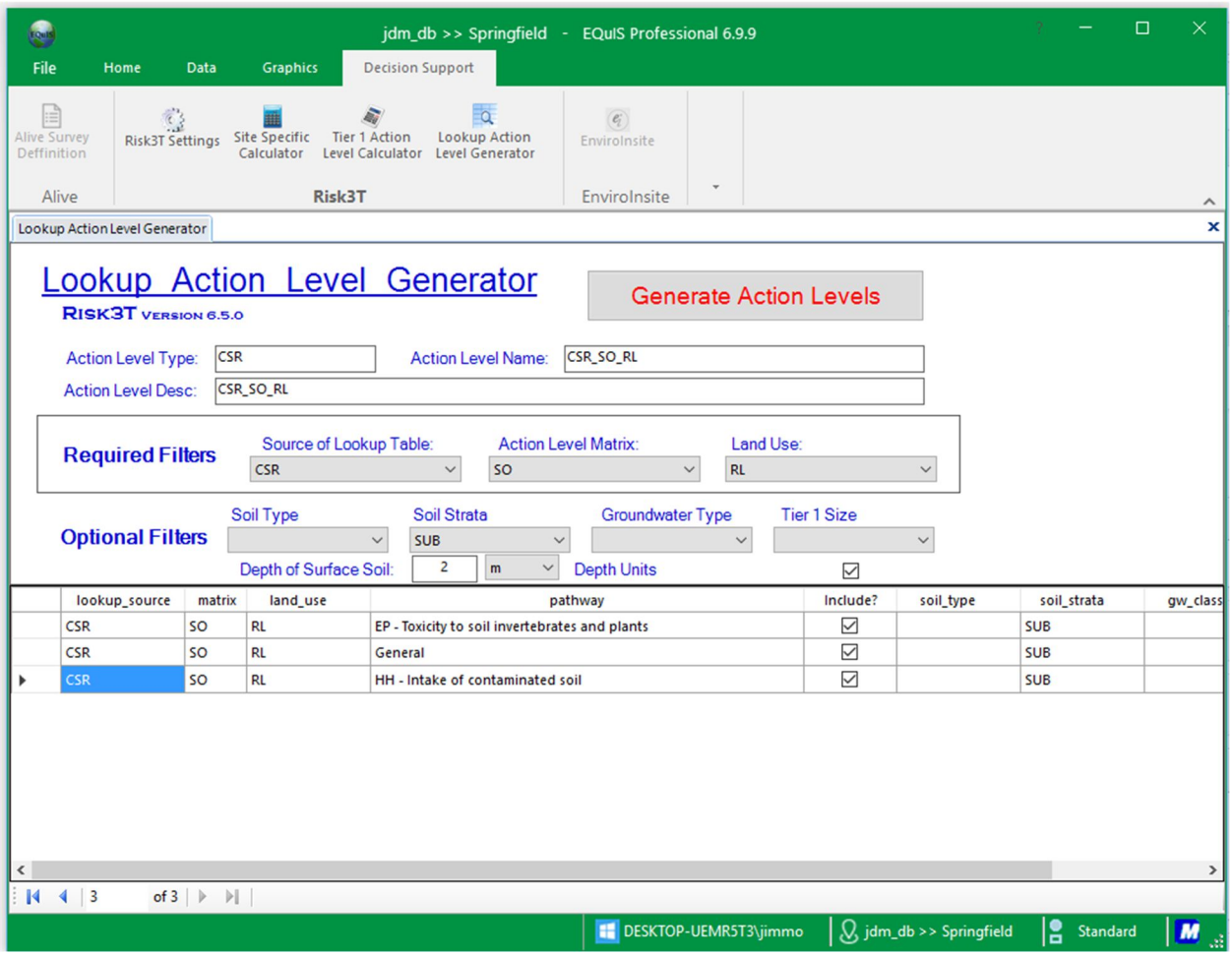
Click the >*Tier 1 Action Level Calculator*< button in the Risk3T Ribbon to open the > *Tier 1 Action Level Calculator* < screen. Select a value in each of the two drop-down lists to select the desired Input Parameter and Chemical Property Sources. Change other selections as necessary. Review and, if desired, modify the Action Level Type and Action Level Name fields.



Click the >*Calculate Action Levels*< button to create a new Action Level in EQuIS.

6.0 Lookup Action Level Generator

Click the >*Lookup Action Level Generator*< button in the Risk3T Ribbon to open the >*Lookup Action Level Generator*< screen. Select a value in each of the Required Filters drop-down lists to reduce the list of available pathways. Select a value from the Optional Filters drop-down lists, to further reduce the list of pathways, if desired.



Click the >*Include?*< checkboxes of the pathways to include in the Action Level. After filtering, clicking the checkbox above the grid will include all of the filtered pathways.

Click the >*Generate Action Levels*< button to create a new Action Level in EQuIS.