

MicroSurvey FieldGenius 8

Volume Calculation Procedure

Contents

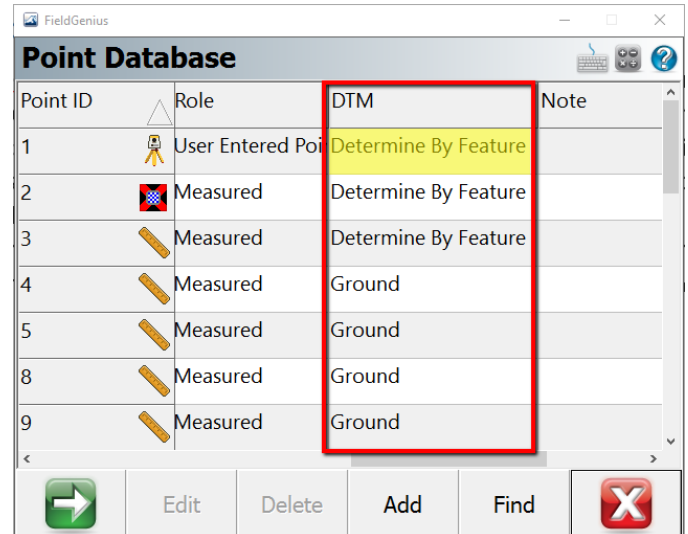
Considerations for Field Survey.....	2
Editing Point DTM State	5
Volume Calculation Procedure.....	7



Considerations for Field Survey

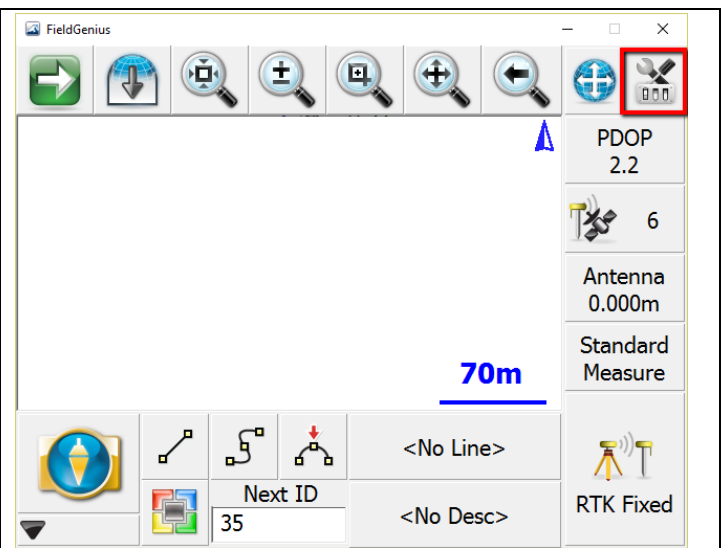
FieldGenius automatically creates a Points Database DTM surface in real-time, adding newly stored points to the surface unless the Automap Library description specifically is set to not include points with that description in the DTM. Due to this behavior it is very important to assign descriptions to your measured points that will allow you to build a DTM surface with only those points that you want to include. Surface definitions can be saved once you have a surface with the filtered points, then the Automap descriptions can be further edited to remove or add other points to create a new surface that can be used for volume calculations.

A setting exists that allows you to automatically store measured points without confirming the Point ID and description. While this is a handy setting to speed up the field survey, it is important that you do not have the option enabled because those points are automatically assigned the **Ground** DTM state, which means the points will always be included in the surface, regardless of Automap settings. You will want all points to be stored with a **Determine by Feature** DTM state. You can edit a point's Advanced properties to change the DTM state, however that is a tedious step that can be avoided by ensuring your GNSS tolerance settings are set to NOT skip over the Store Points screen. The steps below illustrate how to modify the setting, specifically when using GNSS instruments:

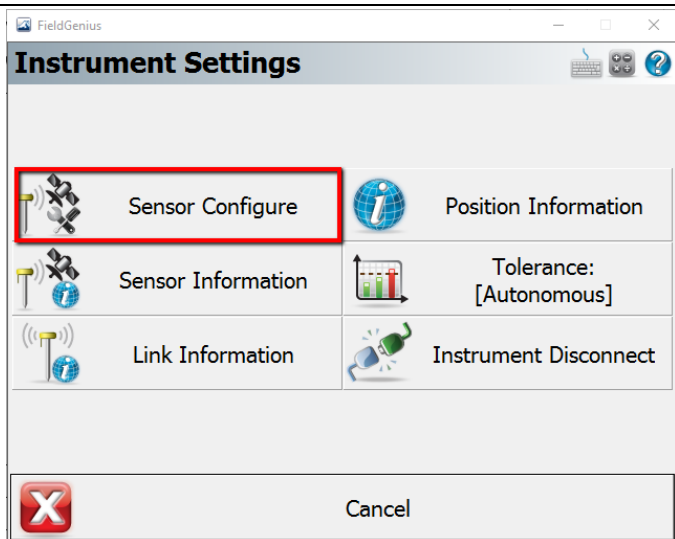


Point ID	Role	DTM	Note
1	User Entered Poi	Determine By Feature	
2	Measured	Determine By Feature	
3	Measured	Determine By Feature	
4	Measured	Ground	
5	Measured	Ground	
8	Measured	Ground	
9	Measured	Ground	

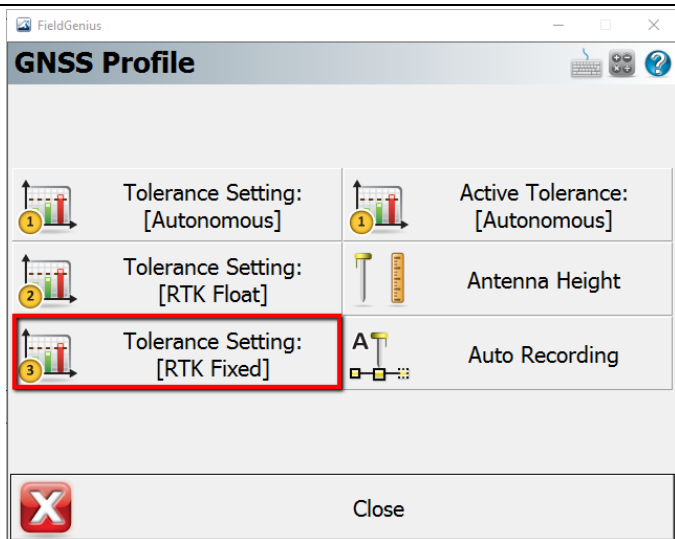
1. Open **Instrument Settings**:



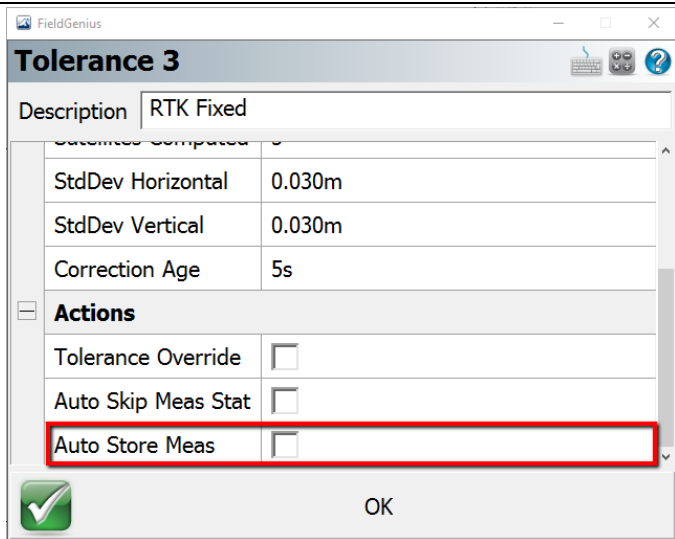
2. Pick **Sensor Configure**:



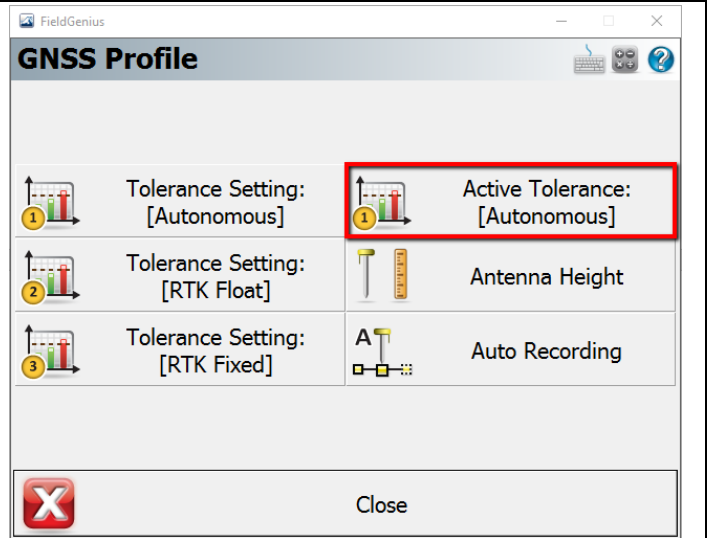
3. Pick the **Tolerance Setting** that is active, should be RTK Fixed:



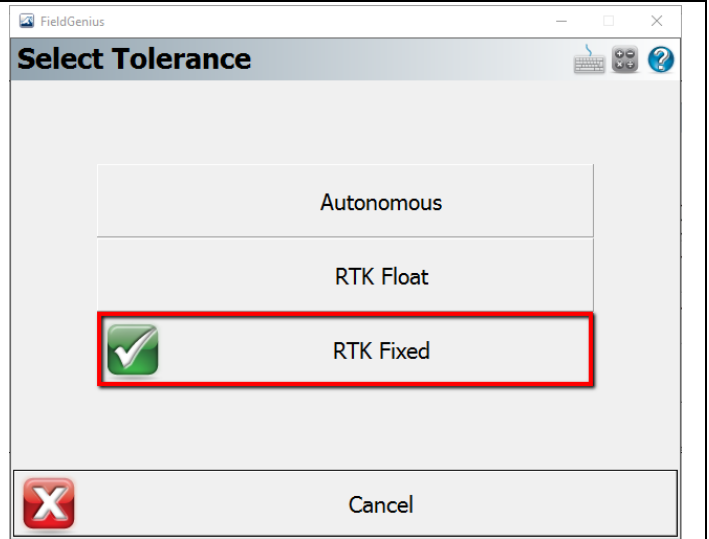
4. Ensure the **Auto Store Meas** checkbox is *NOT CHECKED*, then pick OK:



5. Ensure the **Active Tolerance** is set:

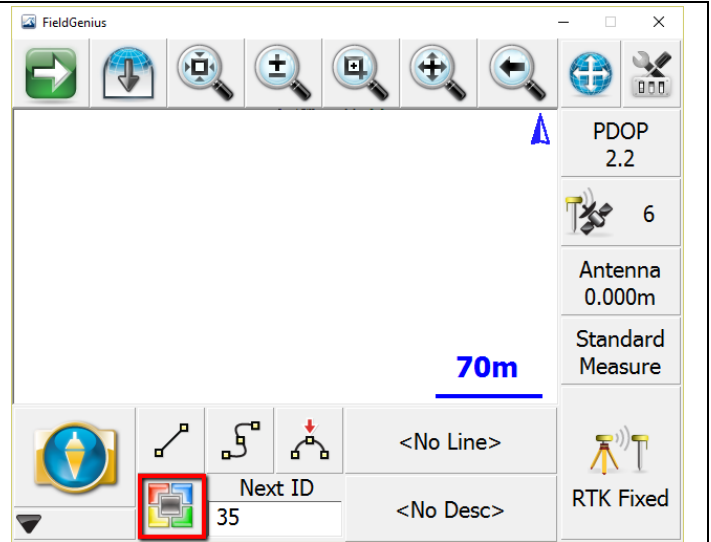


6. Pick **RTK Fixed** if not already set:

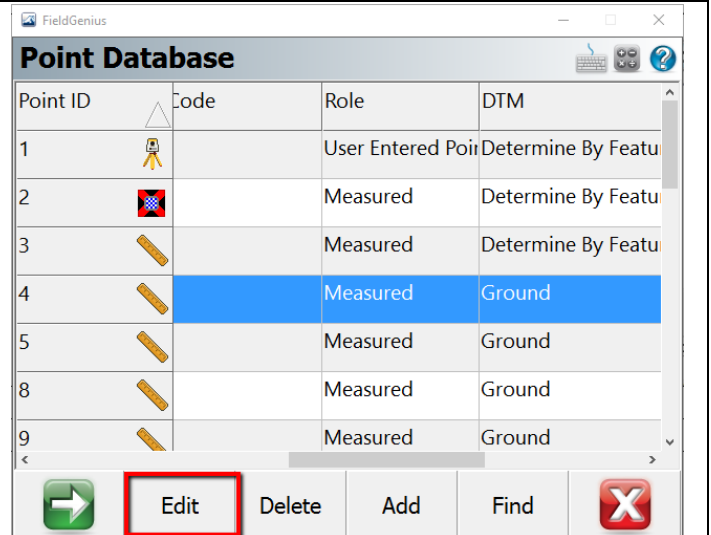


Editing Point DTM State

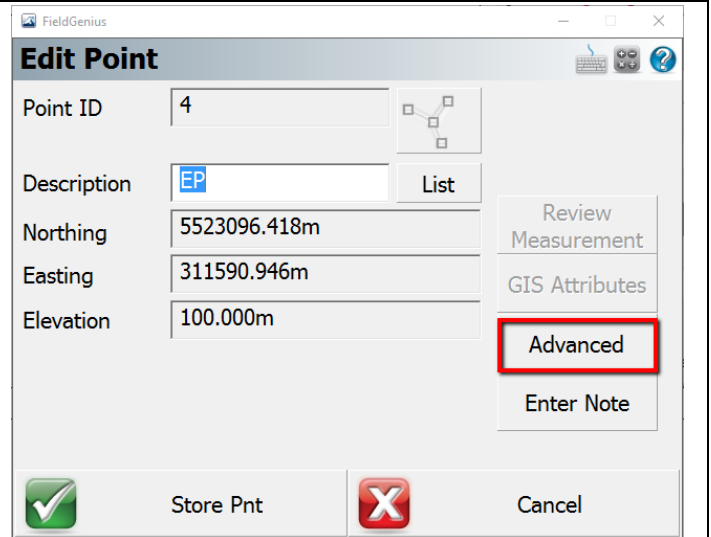
1. Open the Point Database:



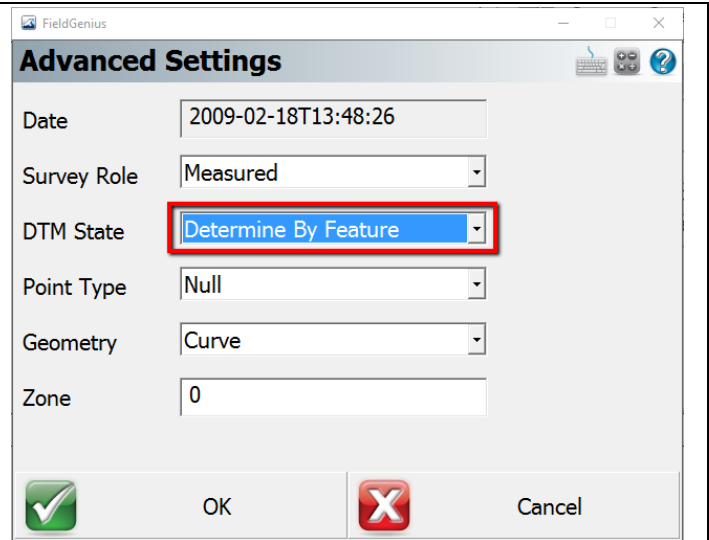
2. Select a Point that you need to edit, then pick **Edit**:



3. Pick **Advanced**:

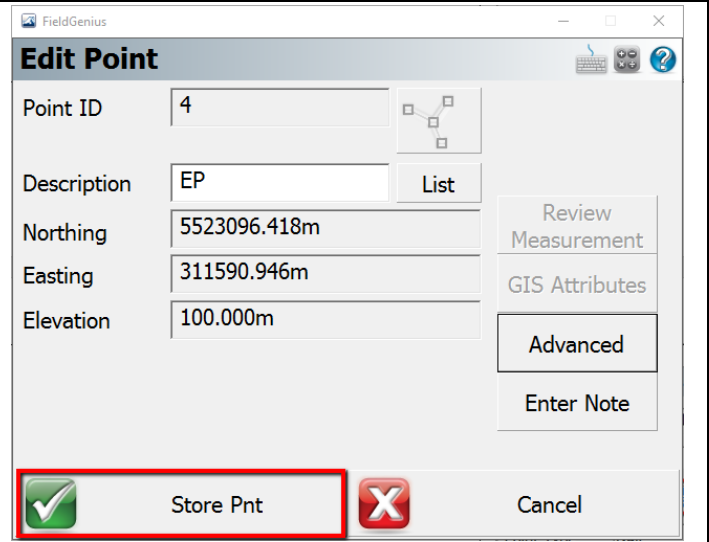


4. Change the DTM State to **Determine by Feature** and then pick OK:



The screenshot shows the 'Advanced Settings' dialog box in FieldGenius. The 'DTM State' dropdown menu is highlighted with a red box and set to 'Determine By Feature'. Other settings include Date (2009-02-18T13:48:26), Survey Role (Measured), Point Type (Null), Geometry (Curve), and Zone (0). The 'OK' button is highlighted with a green checkmark icon.

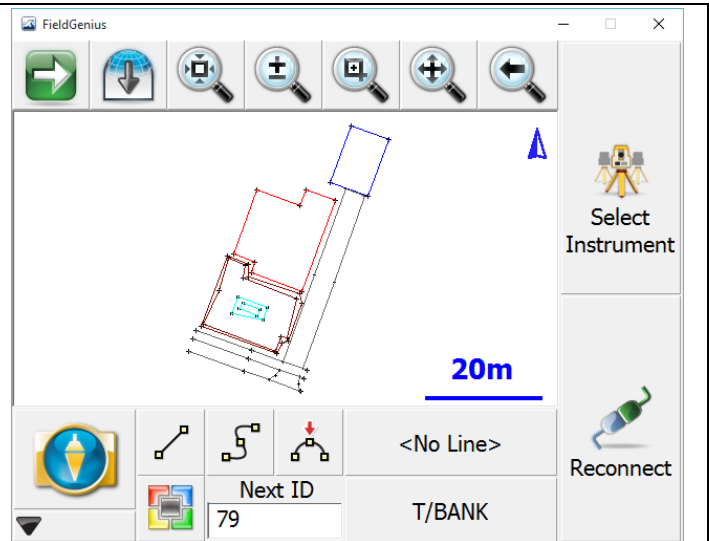
5. Pick **Store Pnt** to finalize the change:



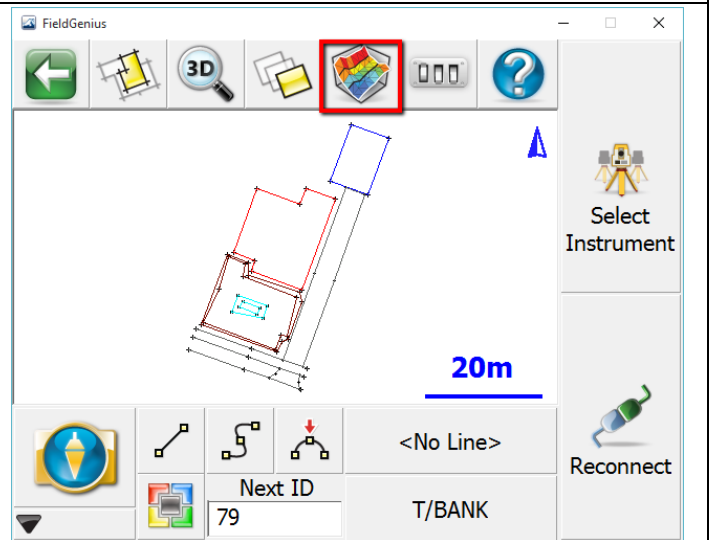
The screenshot shows the 'Edit Point' dialog box in FieldGenius. The 'Store Pnt' button is highlighted with a red box and a green checkmark icon. The dialog displays Point ID (4), Description (EP), Northing (5523096.418m), Easting (311590.946m), and Elevation (100.000m). Other buttons include 'List', 'Review Measurement', 'GIS Attributes', 'Advanced', and 'Enter Note'.

Volume Calculation Procedure

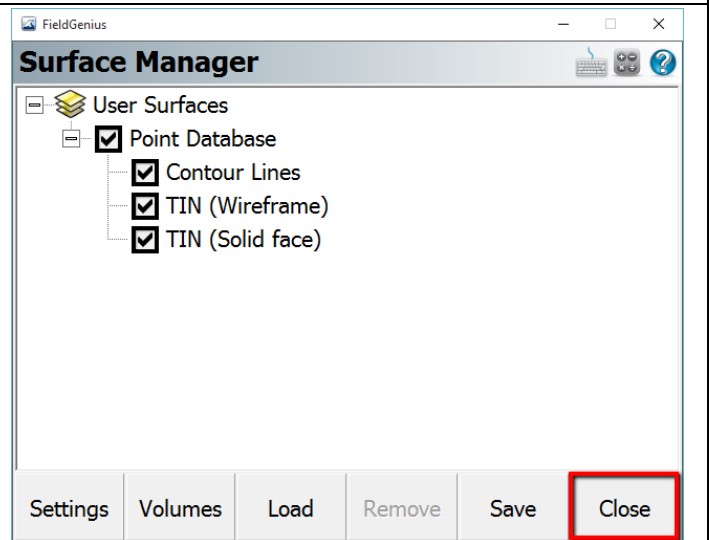
1. This tutorial is based on a sample data set available as a FieldGenius Project folder, loading the project “Volume” in map view looks as shown:



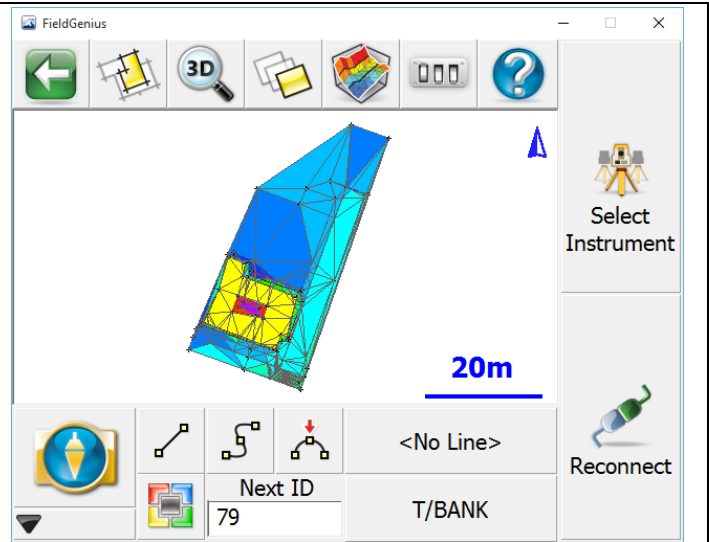
2. By default all points with all descriptions will be included in the Points Database surface. To load the surface, pick the **Surface Manager** icon:



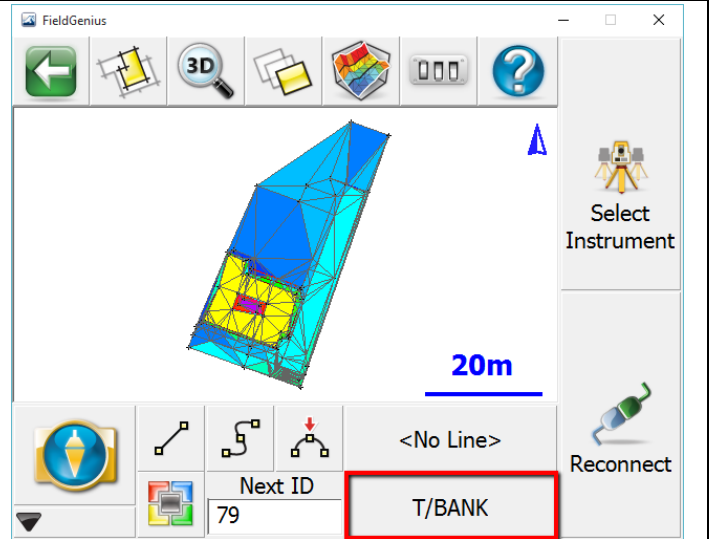
3. Turn on the Point Database surface and then pick **Close**:



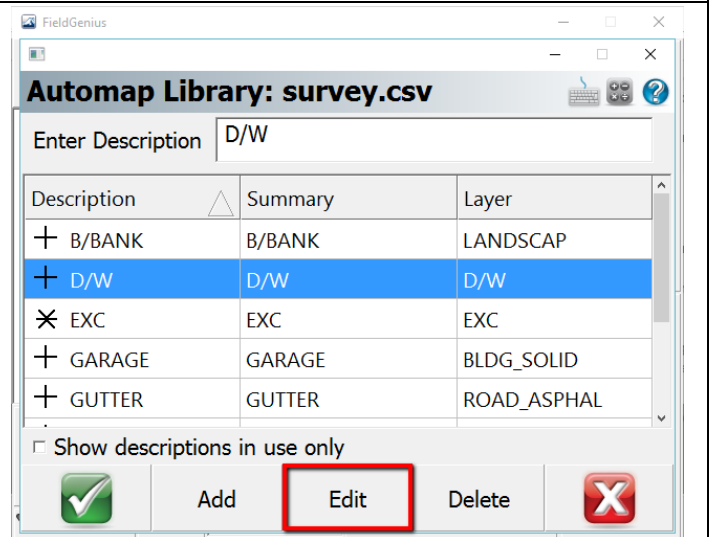
4. The surface including all the points is displayed:



5. The next step is to filter out certain points. In this project we have points with descriptions B/BANK, D/W, EXC, GARAGE, GUTTER, HOUSE and T/BANK. The goal is to calculate the volume within the excavated area in front of the house. All points inside the T/BANK boundary are points that define our excavated area. To remove points from the surface pick the current **Description:**

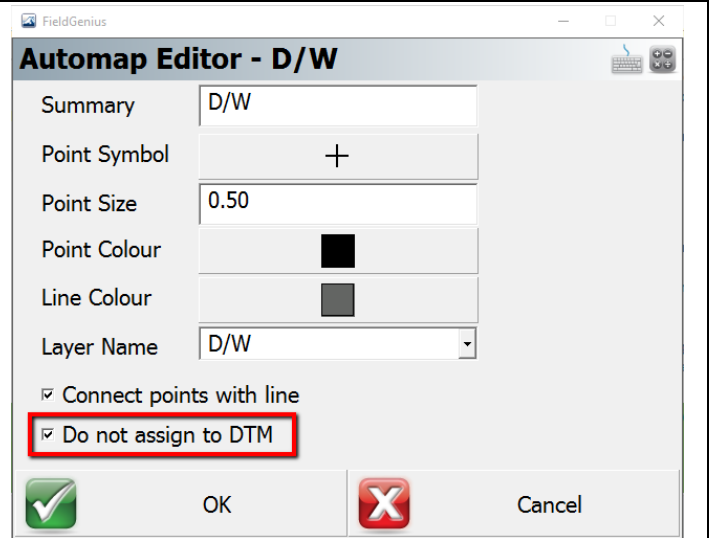


6. The Automap Library opens. Pick any description that we want to include, such as D/W, then pick **EDIT:**

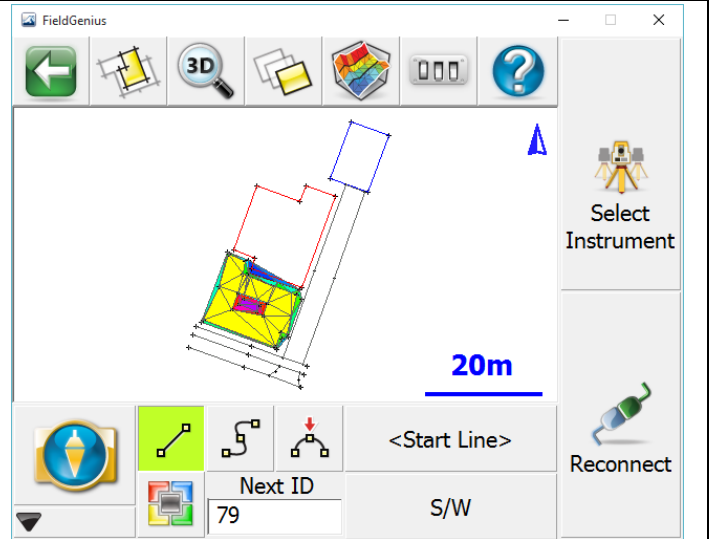


7. Set the toggle to Do not assign to DTM, then pick OK. Do this for the following descriptions:

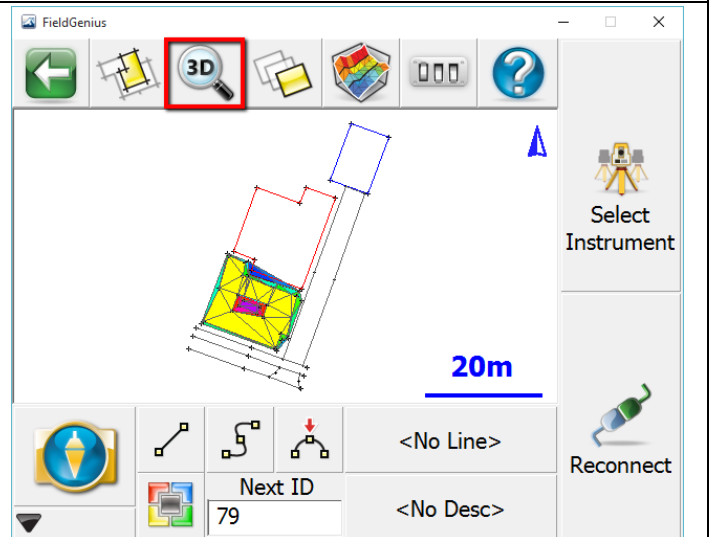
- D/W
- GARAGE
- GUTTER
- HOUSE



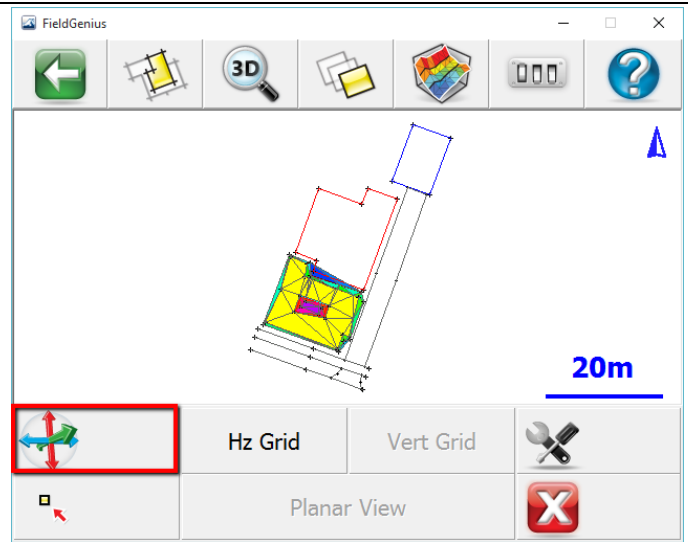
8. The resulting surface with the points removed now looks like this:



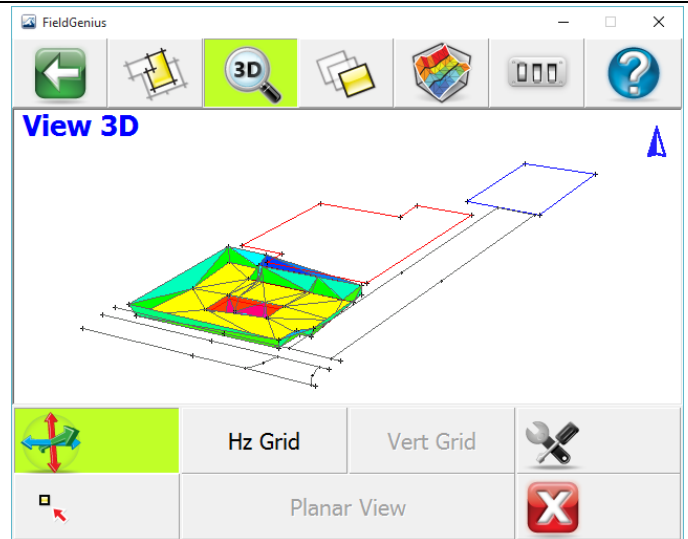
9. We can view the surface in a 3D View by selecting the 3D icon:



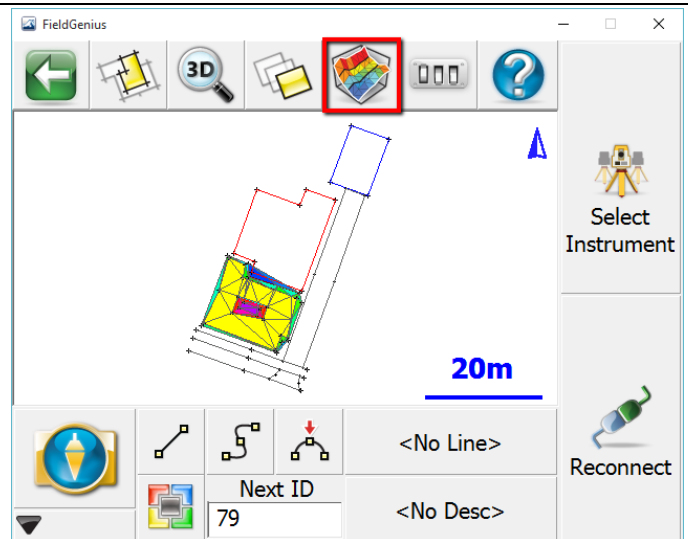
10. Pick the **Orbit** icon to toggle the 3D orbit:



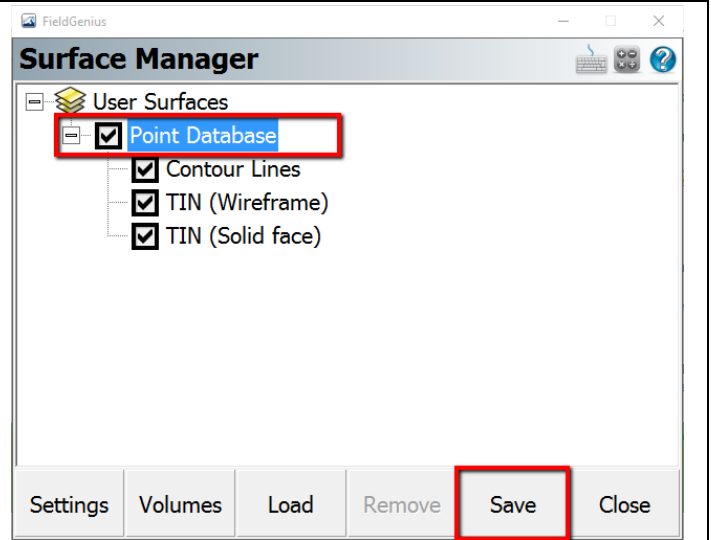
11. Example of 3D View:



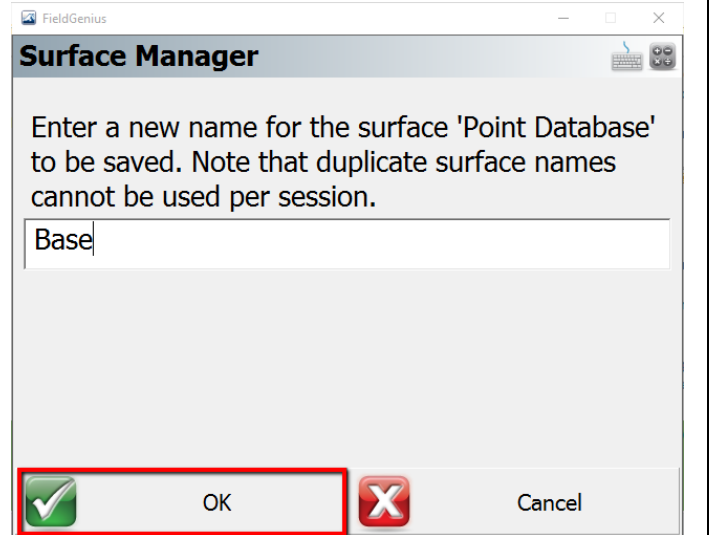
12. Toggle out of 3D View after confirming the surface looks correct, then open the **Surface Manager**:



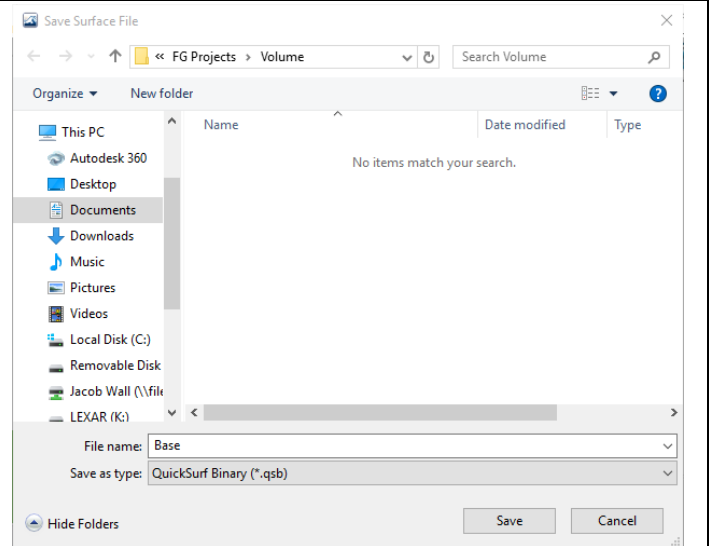
13. Pick the Point Database surface and then pick **Save** to save the current surface as we saw it in 3D view:



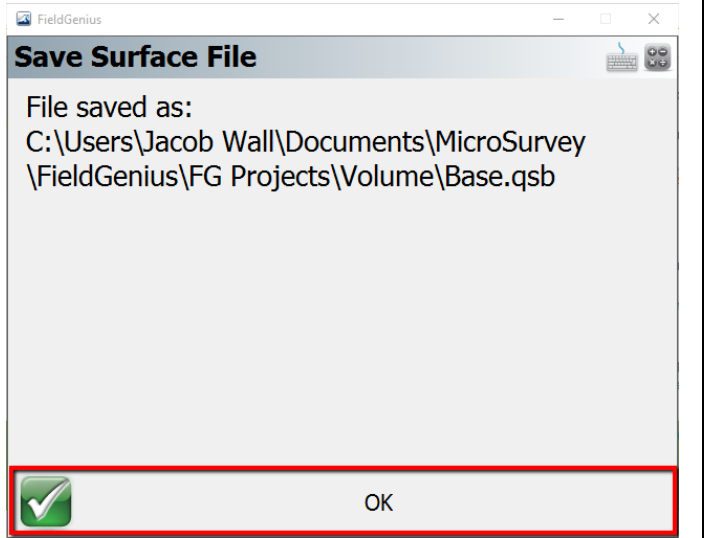
14. Enter a name for the surface, for example **Base**:



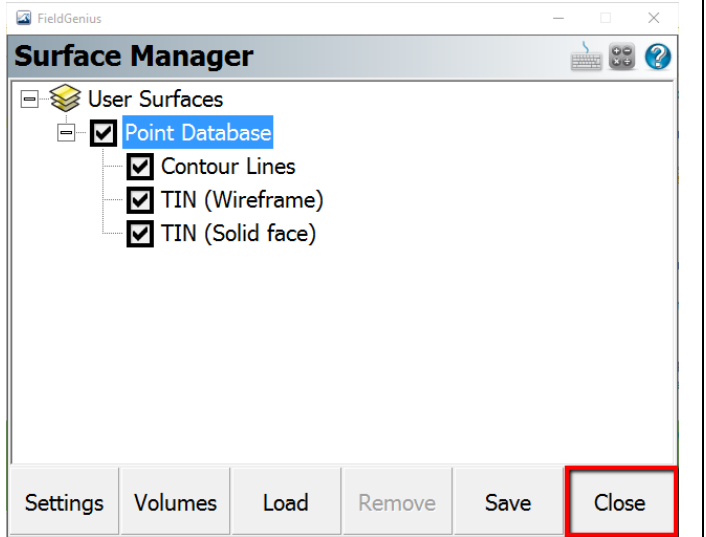
15. Enter the name for the QSB file to be saved, you can give it the same name as the surface:



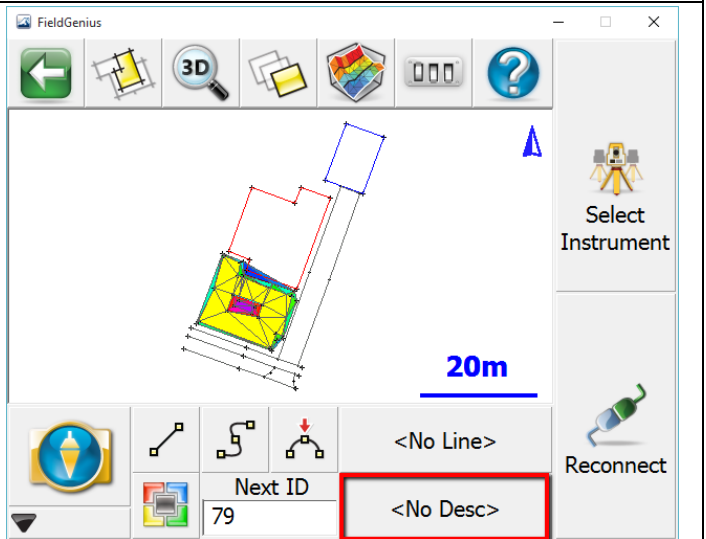
16. The path to the saved file is displayed, pick **OK** to continue:



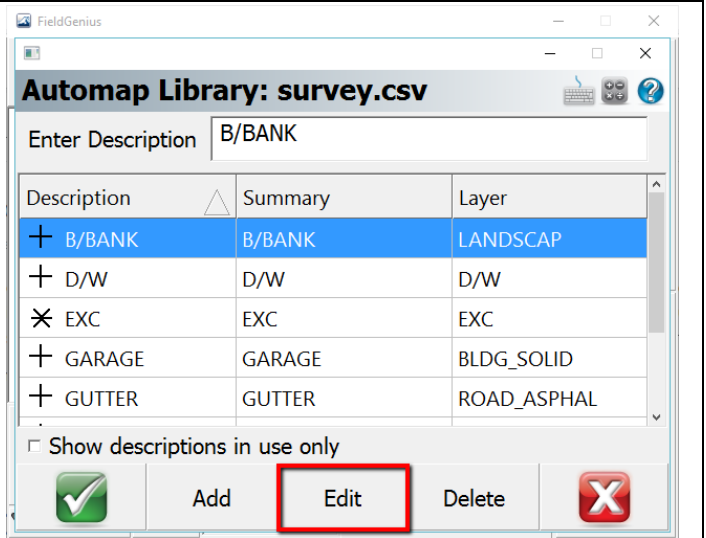
17. Close the Surface Manager:



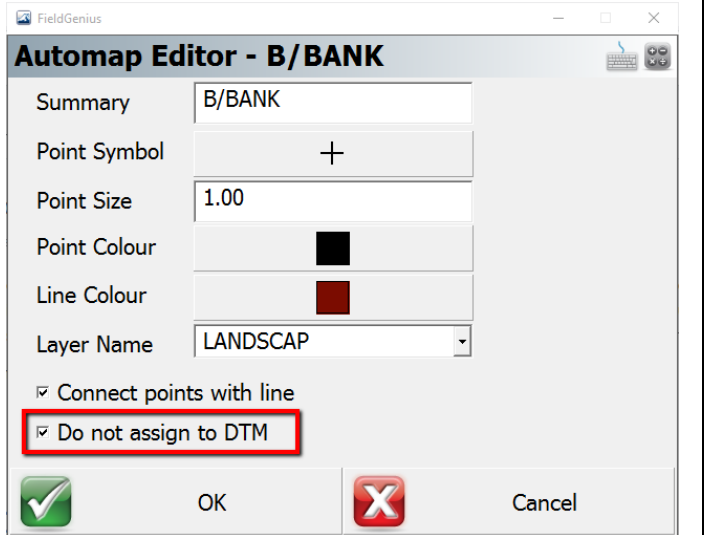
18. The next step is to remove all the points from the surface, except the T/BANK points which will define our "TOP" surface, the previously saved surface will be our "BOTTOM" surface. Pick the current description to open the Automap Library:



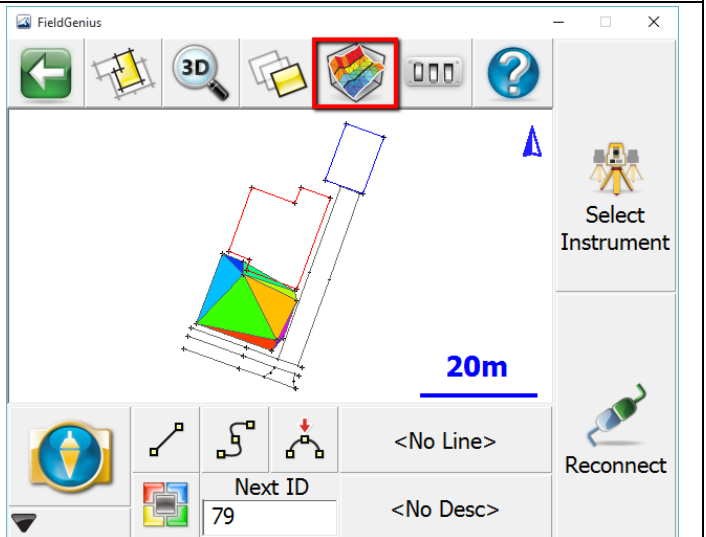
19. Pick a description such as B/BANK and **Edit** it:



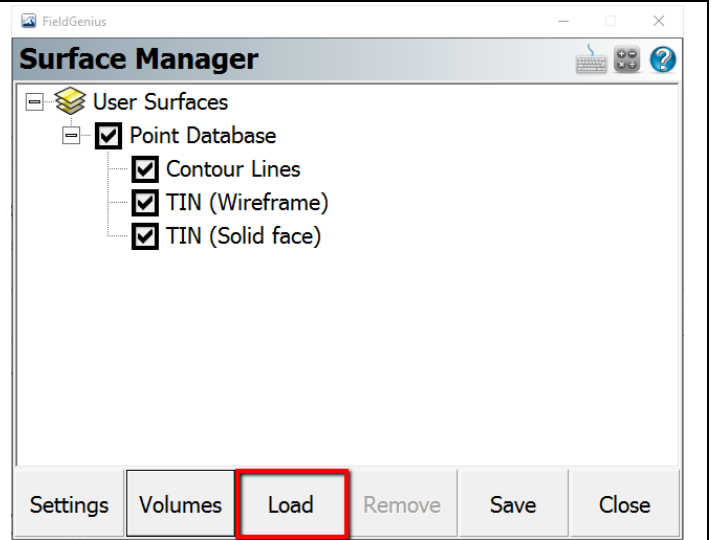
20. Set the description to **Do not assign to DTM** and repeat for description EXC:



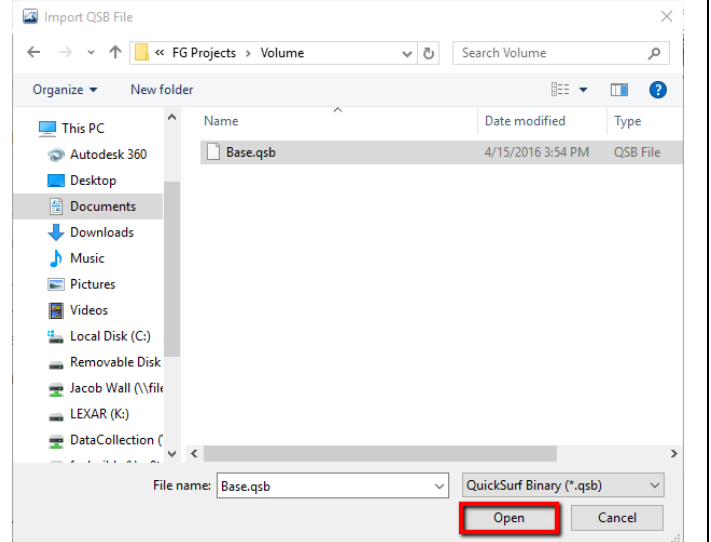
21. The resulting surface is a flat surface connecting all the T/BANK points. Open the **Surface Manager**:



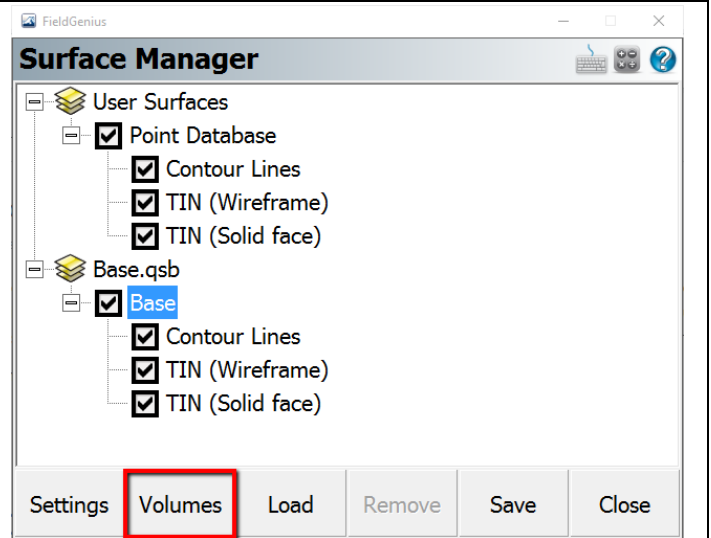
22. First thing to do is load our Base surface we saved earlier, pick **Load**:



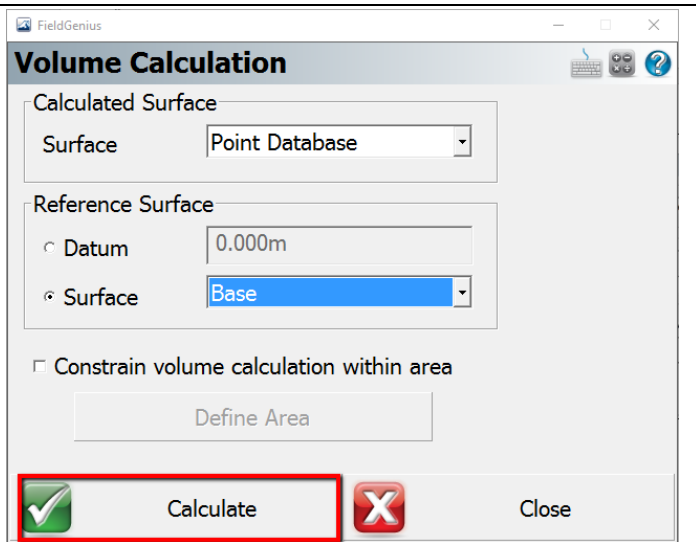
23. Pick the Base.qsb file and then **Open**:



24. Turn on the Base surfaces, then pick the **Volumes** option:



25. Set the Point Database Surface as the Calculated Surface, then set the Base Surface as the Reference Surface. Pick **Calculate** to calculate the volume:



26. The results are displayed:

