

Volumes By Triangulation

Step 1 - Triangulate & Contour for Base:

Before running Volumes By Triangulation, we need two triangulation surface files to compare. From the Surface menu, choose Triangulate & Contour which brings up the Triangulate & Contour dialog.

Under the Contour tab, turn off Draw Contours. Actually, drawing the contours at this step can be a good visual check that the surface is right but we're going to skip it this time. Under the Triangulate tab, turn on Write Triangulation File, Use Inclusion Perimeter and Ignore Zero Elevations. Then pick the Browse button and set the file name as base.tin. When the dialog is set as shown, pick OK.

Triangulate and Contour

Triangulate | Contour | Labels | Selection

☐ Draw Triangulation Lines Layer: TRI_LINES Select

☐ Draw Triangulation Faces Layer: TRI_FACE Select

☐ Draw Slope Arrows Setup

☒ Write Triangulation File Browse...

TIN File: C:\Carlson projects\Base.tin

☒ Use Inclusion/Exclusion Areas ☐ Pick Reference Plane

☒ Ignore Zero Elevations ☐ Highlight Breaklines

☐ Specify Input Elevation Range ☐ Interpolate Ridges and Valleys

☐ Specify Output Elevation Range ☐ Interpolate Summits and Pits

☐ Erase Previous Contour Entities

☐ Simplify Surface Tolerance: 1.0

☐ Preserve Breaklines Breakline Angle: 35.0 Weight: 10.0

Maximum triangle mesh line length

Interior: 300 Exterior: 300

Current Settings: Custom Load Save

OK Cancel Help

Next, the program prompts for the inclusion and exclusion perimeters. Choose the perimeter polyline for inclusion and nothing for exclusion. Then you select the entities to triangulate. For the base surface, pick only the perimeter polyline and then press Enter.

Select the Inclusion perimeter polylines or ENTER for none.

Select objects: pick the perimeter polyline

Select objects: press Enter

Select the Exclusion perimeter polylines or ENTER for none.

Select objects: press Enter

Select the points and breaklines to Triangulate.

Select objects: pick the perimeter polyline

Select objects: press Enter

Step 2 - Triangulate & Contour for Stockpile:

To create the second surface, repeat step 1 with a few simple changes. In the Triangulate, choose Browse, and set the file name to *FINAL.tin* and then pick OK.

For the inclusion and exclusion perimeters, again choose the perimeter polyline for inclusion and nothing for exclusion. At the select objects prompt, enter All and press Enter to use all the points and the perimeter to make the stockpile surface.

Select the Inclusion perimeter polylines or ENTER for none.

Select objects: pick the perimeter polyline

Select objects: press Enter

Select the Exclusion perimeter polylines or ENTER for none.

Select objects: press Enter

Select the points and breaklines to Triangulate.

Select objects: All

Select objects: press Enter

Step 3 - Volumes By Triangulation:

Now that we have our two triangulation files, we can use *Volumes By Triangulation* which performs a TIN to TIN prismatic volume calculation. Of all the volume methods, this one is the most accurate since all the source data points are used in the volume model. *Volumes By Triangulation* is well suited for this example.

Run *Two Triangulation Surface Volumes* from the Surface → Volumes By Triangulation menu. For the Select Existing Surface File dialog, choose BASE.tin. Next, for the Select

Final Surface File dialogue, choose FINAL.tin. Click OK. At the prompts for the inclusion and exclusion perimeters, pick the perimeter polyline and press Enter for None for the exclusion. In the Volume Report Options, go with the defaults and pick OK. Then the volumes are calculated and the report is displayed.

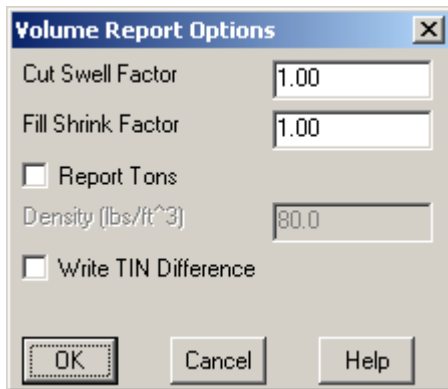
Select Inclusion polylines.

Select objects: pick the perimeter polyline

Select objects: press Enter

Select Exclusion polylines.

Select objects: press Enter



The image shows a 'Volume Report Options' dialog box with a blue title bar and a close button (X) in the top right corner. The dialog contains several input fields and checkboxes. The 'Cut Swell Factor' and 'Fill Shrink Factor' are both set to '1.00'. The 'Report Tons' checkbox is unchecked. The 'Density (lbs/ft^3)' is set to '80.0'. The 'Write TIN Difference' checkbox is also unchecked. At the bottom, there are three buttons: 'OK', 'Cancel', and 'Help'. The 'OK' button is highlighted with a dashed border.

Cut Swell Factor	1.00
Fill Shrink Factor	1.00
☐ Report Tons	
Density (lbs/ft ³)	80.0
☐ Write TIN Difference	

OK Cancel Help