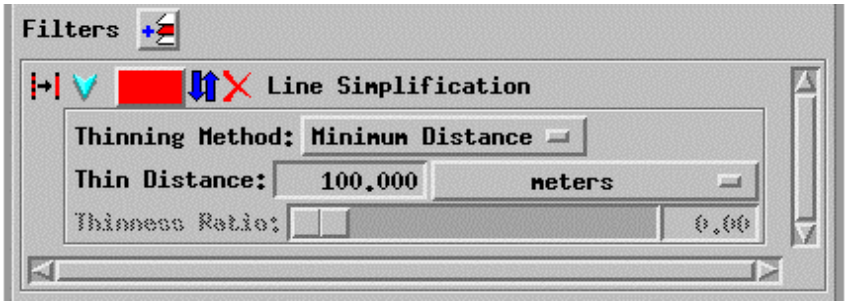
355.3.1

Line Simplification

The Line Simplification filter lets you simplify, or thin, the lines in a vector object by decreasing the number of vertices. The fewer vertices a line has, the straighter and less complex it is. Thinned vector line elements, therefore require less storage space and vector objects with thinned lines can be more quickly manipulated in other processes. The Line Simplification filter lets you specify and view the effect of varying degrees of line simplification. For example, if you are using a detailed vector object containing road information that is to be presented over low resolution imagery, the general direction that the road traverses may be sufficient and the detail of every deflection in the road may overcomplicate the display; you can thin the vector lines representing the roads to the level of detail that appears appropriate for the presentation.

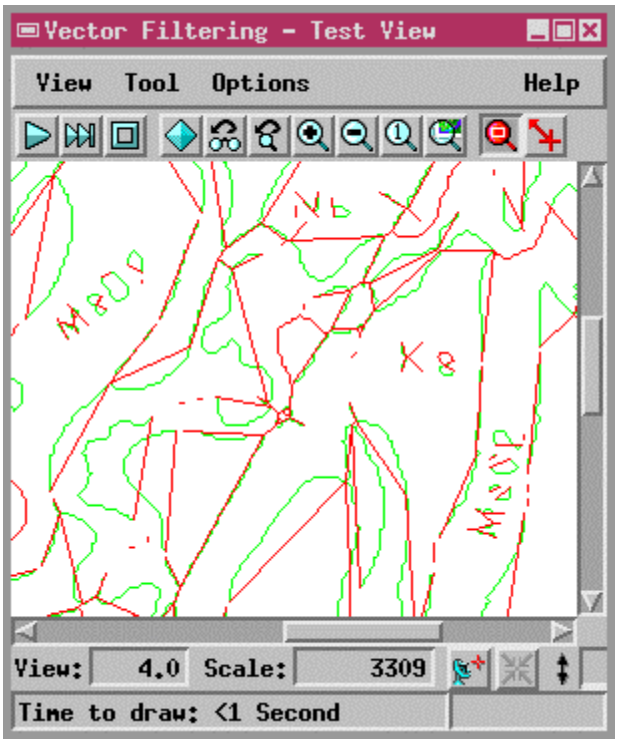


Line Simplification options

Click the Thinning Method button to display the menu and select a thinning method. The three methods available are Douglas-Peuker, Minimum Distance, and Minimum Ratio.

Douglas-Peucker The Douglas-Peucker method looks at how far the middle vertex of the three consecutive vertices on a line deviates from a straight line drawn between the two outer-most points. The filter removes vertices from lines using a minimum distance criterion. Select a unit of measure and enter the Thin Distance in the text field. The Thin Distance is used to determine if the middle vertex deviates too far from the straight line between the two outer vertices. If the distance between the middle vertex and the straight line drawn between the outer two vertices is less than the specified Thin Distance, then that middle vertex is removed and the line is straightened.

Minimum Distance The Minimum Distance method removes vertices from vector lines based on a specified length between vertices. You define the length in the Thin Distance text field. The Minimum Distance filter calculates the length from one vertex on a vector line to the next. If the length between two vertices is less than the specified minimum distance, the vertex nearer the start of the line is removed. The illustration entitled *Line Simplification filter* shows a number of line segments, representing a scanned soil map, thinned by the filtering process using the Minimum Distance method set at 25 meters. The red (darker) lines show the effect that applying the filter has on the nearby green (lighter) lines; several vertices are removed and the lines straightened.



Line Simplification filter

Minimum Ratio The Minimum Ratio method is a data dependent line thinning method. The method looks at each line segment in a vector line and determines the shortest line segment, as well as the total length of the line. The values are used in conjunction with the thinness ratio (from zero to 100) you specify to calculate the minimum distance used to filter that line. Define a Thinness Ratio by using the slider to determine which vertices are removed. The minimum distance, in this case, is not a unique value. The value is determined and applied for each line in the vector object. To calculate the minimum distance that is applied to a vector line, the method multiplies the total line length by the defined thinness ratio and divides the result by 100 and adds the length of the shortest line segment. The shortest line segment in a line generally differs for each line. If the length between two vertices is less than that defined by the minimum distance ratio, the vertex nearer the starting vertex of the line is removed.

355.3.2

Sliver Polygons

The Sliver Polygons filter removes polygons that are often not visible without zooming in on the vector object. When vector objects are merged or combined, borders may not always match up correctly. Borders may not meet or they may overlap slightly, creating trapped space inside small polygons, called sliver polygons. Sliver polygons can also be created when a line is unintentionally digitized twice. You can also use the Sliver Polygons filter to remove legitimate polygons of insignificant size. The Sliver Polygons filter removes undesired polygons from two dimensional vector objects. The Z values that exist in three dimensional vector

