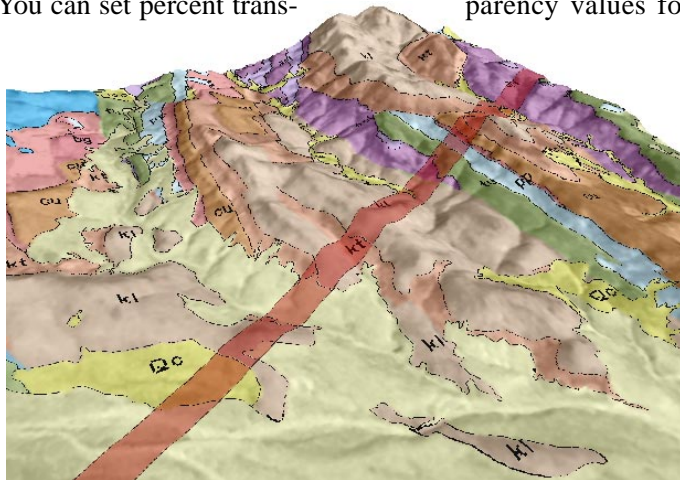# Transparency and Relief Shading in 3D Views

3D perspective views provide an effective means of visualizing sets of complex geodata layers. They not only provide a perspective view that allows 3D visualization of the terrain, they also provide all of the visual effects you already use to enhance your 2D views, including layer transparency and relief shading. These effects work in 3D views with all of the available surface rendering modes.

Layer transparency allows you to visually combine data from multiple display layers that are draped over the terrain surface. You can set percent trans-   parency values for

entire raster layers, for particular colors in a raster layer with a color palette, or for polygon fill styles in a vector layer. Any number of layers in the view can have transparency; the cumulative transparency effect is determined pixel-by-pixel at the time of rendering.

You can select Relief Shading as a display option for any raster layer in the view and freely vary the sun elevation and azimuth as well as the vertical scale for shading. You can also combine transparency with shading by making the shaded layer partially transparent or by overlay-   ing it with other partially transparent   layers.


3D perspective views illustrating layer transparency. In the left view, two vector layers with partially transparent polygon fills overlie a panchromatic SPOT image. The lower vector layer shows geologic map polygons, and the upper layer has
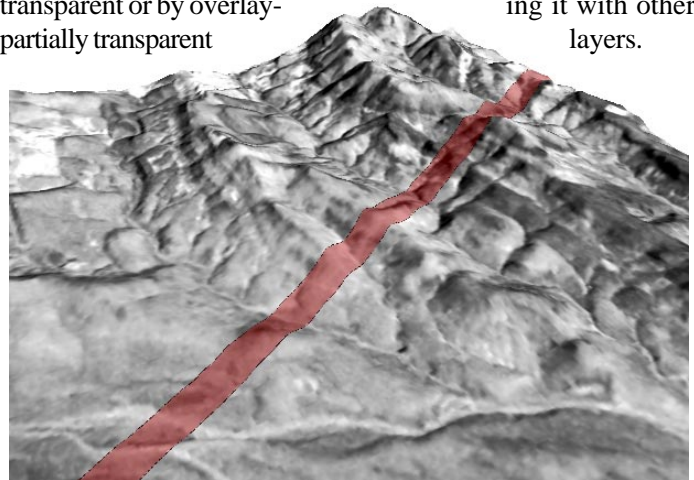
a single, narrow, red-filled polygon that might represent a pipeline right-of-way. Note that both geologic map and background image features are visible through the pipeline polygon. The geologic map layer has been removed in the right view to show only the pipeline over the image background.
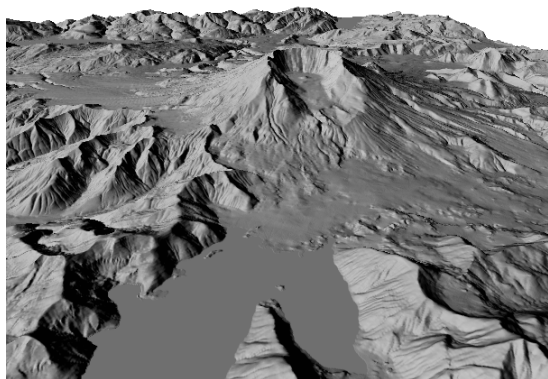
At left are two perspective views of an elevation raster with on-the-fly relief shading. The views use the same viewer position, but in the lower view the illumination direction has been changed and the shaded layer has been overlaid with a vector layer with transparent polygon fills.
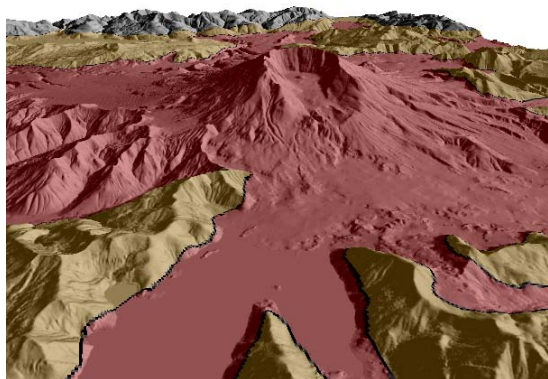
You can add a pedestal for any drape raster in a 3D view to enhance the perspective effect. Controls for the illumination direction of the pedestal are on the 3D View's Viewpoint Controls window.
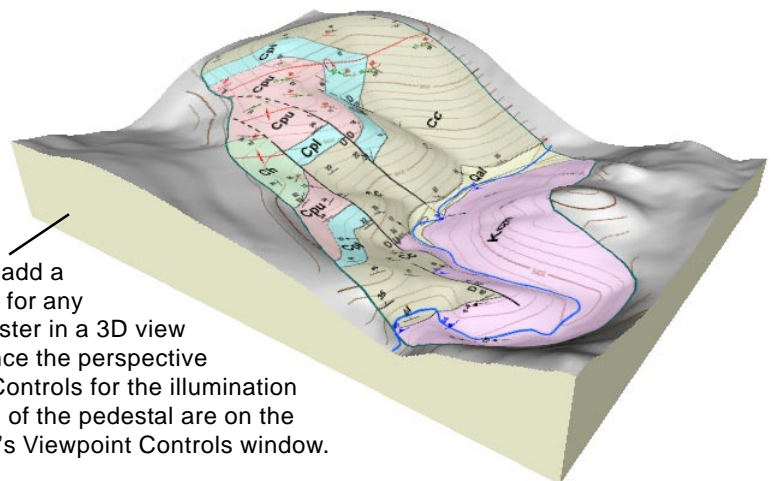
The perspective view above shows a shaded-relief geologic map that is a single raster drape layer. This layer was created by overlaying a precomputed Shading raster (created from the surface elevation raster in the Topographic Properties process) with the various vector map layers in a 2D Group and rendering the group to a raster.