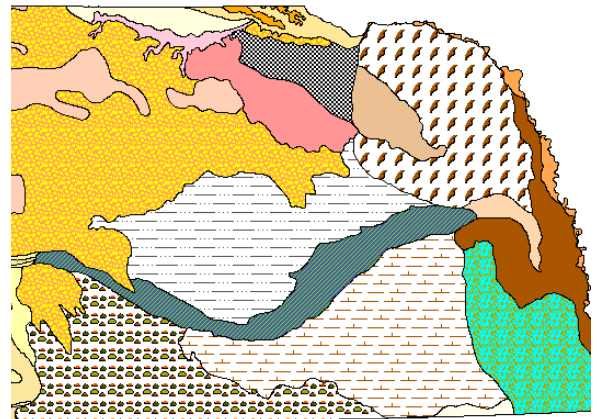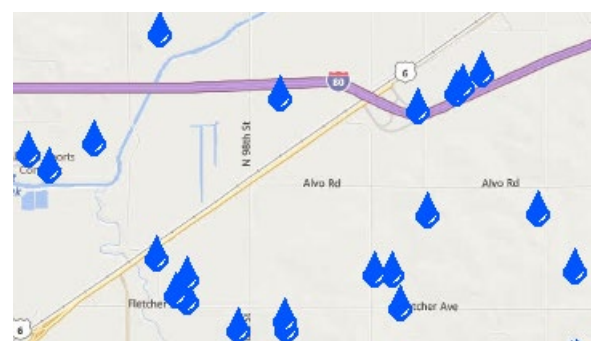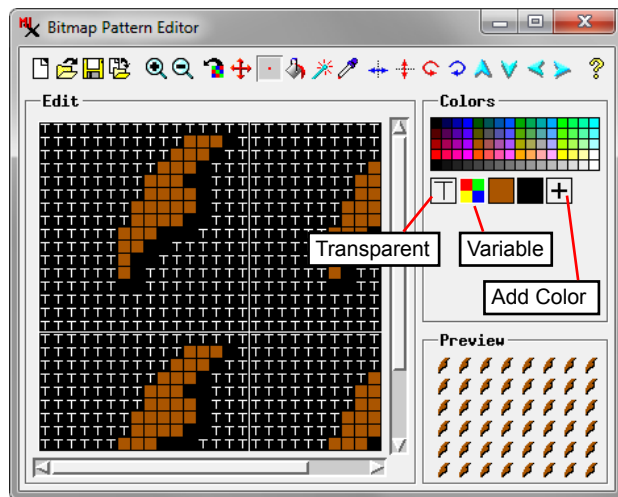# Bitmap Pattern Editor

The Bitmap Pattern Editor is used to create small raster (bitmap) images for use in displaying elements in geometric objects (vector, CAD, and shape). They can be used as point symbols or in repeating patterns as fills for polygons; examples are illustrated to the right. Individual cells in the bitmap pattern can be transparent, assigned a fixed color, or a *variable* color that can be set to a different color in each style that uses the pattern. Bitmap point symbols can be set to different sizes using the point symbol style controls. In contrast, bitmap polygon fills are drawn on screen with one pattern cell for each screen pixel, so the size of the pattern elements on screen is fixed regardless of the map scale of the display. Bitmap polygon fills work better for on-screen viewing than in prints because the small size of print elements in high-resolution printers reduces the scale of the patterns and the dithering applied during printing blurs the distinctions between different colors in the patterns.

The Bitmap Pattern Editor is opened by choosing the Bitmap option in the Fill Style or Point Style controls and then pressing the *Create or Edit Pattern* icon button. The Bitmap Pattern Editor window is divided into several sections (see illustration below). Icon buttons at the top of the window allow you to choose a tool for editing the pattern and also provide options to open and save patterns and to change the view, position, and orientation of the pattern. The left side of the window is an Edit panel in which you can directly edit the cells in the unit pattern. The right side of the window provides a panel for setting the color for one or more cells in the pattern and a pattern sample area that shows the repeated fill pattern at the same size as it will be rendered in a polygon fill on screen.

Above, polygons with bitmap fill patterns. Below, points with bitmap symbols.

Edit Panel

The Bitmap Pattern Editor opens with a new blank pattern. The Edit panel is a square grid with black background in which each square represents a cell in the bitmap pattern. Initially each cell is transparent, as indicated by a T symbol. Cells with a fixed color assigned are shown as squares in that color, and cells with the variable color assigned are shown in the current style color with a superimposed V symbol (see illustration below).
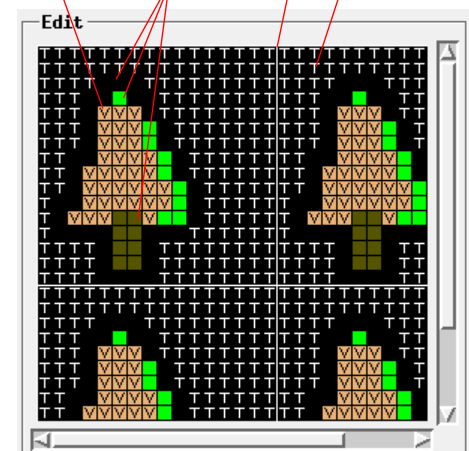
The default size of a new bitmap pattern is 32 x 32 cells, but you can specify a different size when you manually create a new pattern. The illustrations on this page show patterns that are 16 x 16 cells in size. The Edit panel for point symbols shows a single pattern unit, whereas for polygon fill patterns it shows a 2 x 2 repeat of the pattern so that you can see how the pattern units fit together horizontally and vertically. Thin solid white lines indicate the pattern unit boundaries in the panel, which has horizontal and vertical scroll bars so you can scroll to see portions of the repeat that don't fit in the panel.

variable color cell   cells with fixed colors   pattern unit boundary   transparent cell

Colors Panel

Use the Colors controls in the top right portion of the Bitmap Pattern Editor to choose a color to assign to cells in the pattern. Left-click on a color tile in the palette to pick a fixed color. A sample of the selected color is added to the sample set below the palette for easy reselection. (When you open an existing pattern, all of its fixed colors are automatically added to the sample set.) Left-click on the "T" icon button below the palette (see illustration above) to set one or more pattern cells transparent. Right-clicking on the palette opens a Select Palette window, allowing you to choose a different color palette to show in the Colors panel. Press the Add Color icon button below the palette to open the Add Color window,
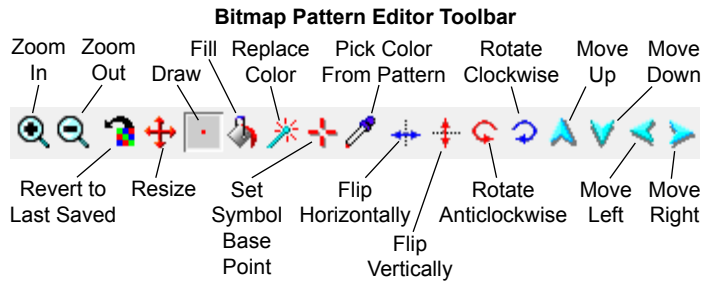
(continued)

Edit panel for a 16 x 16 fill pattern

in which you can use one of a number of available color models to define a custom color to add to the sample color set. Instead of assigning a fixed color to a pattern cell, you can press the Variable icon button below the palette to designate the cell color as variable. When the bitmap pattern is used for display, a "variable" cell is assigned the color currently set in the style object for the point symbol or polygon fill. The same bitmap pattern can then be used for a number of different styles simply by changing the style color.

Bitmap Pattern Editor Toolbar

Zoom In   Zoom Out   Draw   Fill   Replace Color   Pick Color From Pattern   Rotate Clockwise   Move Up   Move Down

Revert to Last Saved   Resize   Set Symbol Base Point   Flip Horizontally   Flip Vertically   Rotate Anticlockwise   Move Left   Move Right

Editing Pattern Cell Colors

Once you have chosen a color, choose one of the tools below from the toolbar to change the color of a cell or cells in the pattern.

Draw: left-click on a cell to change it to the current color setting, or left click and drag to change each cell you drag through.

Fill: left-click on a cell and all contiguous cells with the same color are changed to the current color. Contiguous cells are in contact side-to-side or top-to-bottom; cells in contact only at a corner are not considered to be contiguous (see illustration below).

Replace: left click on a cell and all cells with the same color setting as the one you click on are changed to the current color.
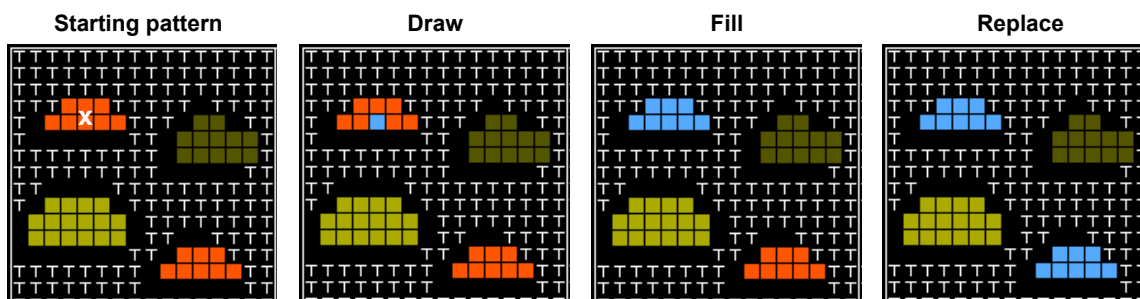
Zoom In/Out

You can view the pattern design area at different scales using the Zoom In and Zoom Out icon buttons on the toolbar.

Preview Panel

The Preview panel shows the pattern as it will be displayed on screen. For polygon fills the pattern is repeated to fill the Preview area, whereas for point symbols only the single pattern unit is shown. Left-click on the Preview panel to open a Select Colors window to choose a different background color for the panel.

Other Editing Operations

You can perform other editing operations on the current pattern using icon buttons on the Bitmap Pattern Editor window's toolbar (see illustration above).

Revert to Last Saved: pressing this icon button reverts the pattern to the last saved version, removing all of the cumulative changes you have made since the last save.

Resize: opens the Resize Pattern window, which lets you change the width and height of the pattern (in number of pattern cells). After setting the Bitmap Width and Bitmap Height, use the radio control in the lower part of the window to set how the previous pattern cells are treated. The *Zoom to new size* option magnifies the previous pattern unit if you set a larger pattern size or shrinks it to fit a smaller pattern size. The *Extend or clip to new size* option merely changes the dimensions of the pattern unit without modifying the previous assignments of pattern cells.

Set Symbol Base Point (point symbols only): use this tool to left-click at the pattern location that should align with the point location in the displayed geometric object.

Pick Color from Pattern: sets the active color from the cell you click on in the pattern.

Flip: The Flip Horizontally and Flip Vertically icon buttons produce mirror images of the pattern horizontally and vertically, respectively.

Rotate: The Rotate Anticlockwise and Rotate Clockwise icon buttons rotate the pattern by 90 degrees in the specified direction.

Move: The Move Up, Move Down, Move Left, and Move Right icon buttons shift the pattern by one cell in the specified direction.

New, Open, Save, Save As

When you have finished creating a new bitmap pattern, press the Save As icon button to name the pattern and save it to the current style object. If you make incremental changes to a named pattern, press the Save icon button to overwrite the previously-saved pattern. To create a new pattern, press the New icon button. The New Bitmap Pattern window opens (see illustration below). Enter values (in cells) in the Pattern Width and Pattern Height fields to set the size of the pattern.

To open an existing pattern, press the Open icon button; the Select Pattern window then opens. Use the Pattern Set menu to choose the current style object or a standard pattern library as the source set, or press the browse icon button to choose a style object from another Project File. Highlight the desired pattern in the list and press OK to complete the selection.

Starting pattern   **Draw**   **Fill**   **Replace**
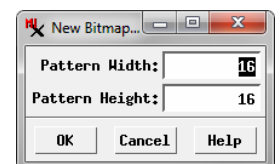
When you choose New from the Pattern menu, the New Bitmap Pattern window opens to allow you to set the width and height of the pattern (in cells).

Effects of the Draw, Fill, and Replace tools when clicking on the cell marked with the white "x" in the starting pattern graphic. The current selected color is blue. The Draw mode changes only the cell that is clicked on. The Fill mode changes all contiguous cells with the same color setting as the cell at the click location. The Replace mode changes all cells (anywhere in the pattern) that have the same color setting as the click location.