

# Terrain Modification

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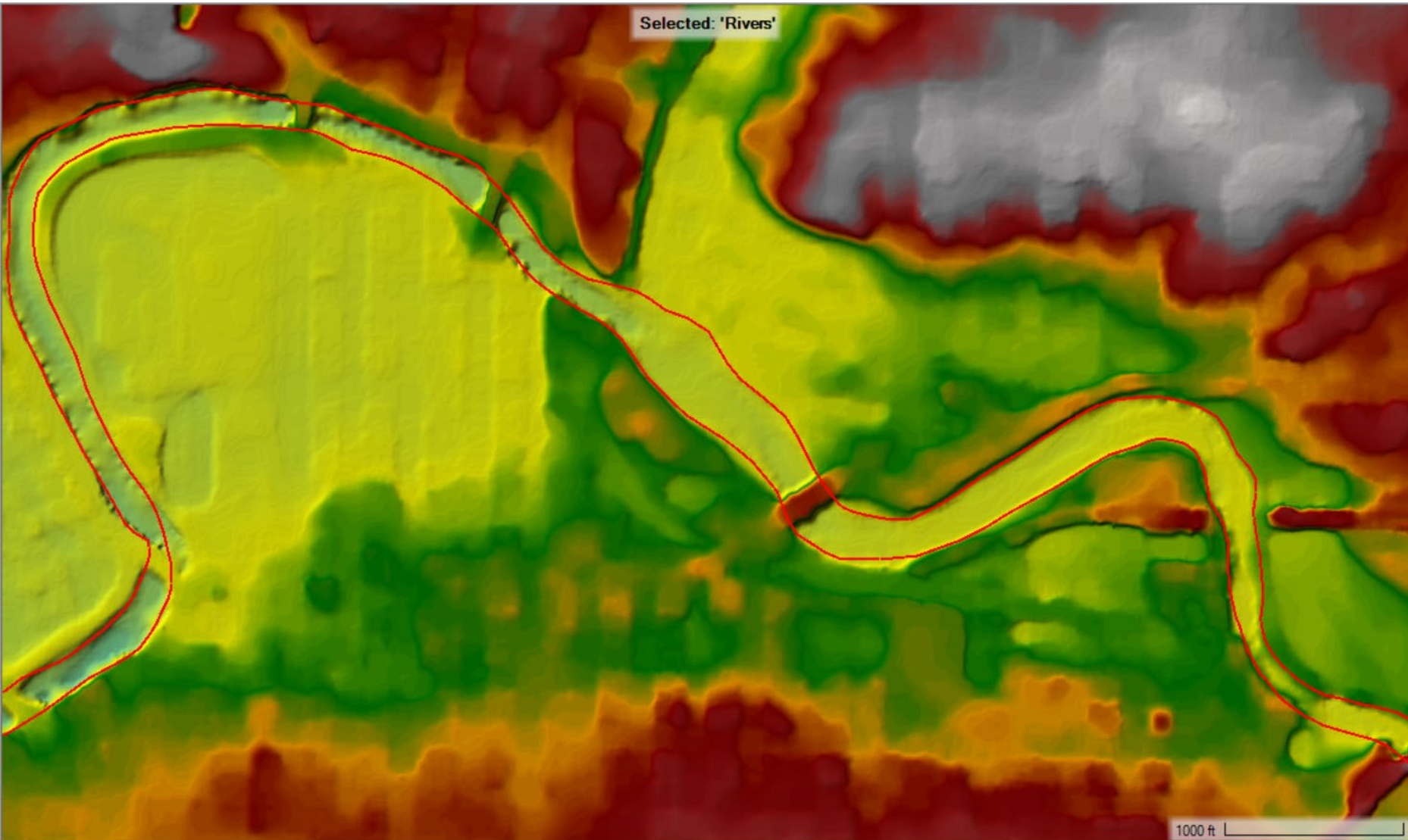


# Overview

- Terrain Replacement using Existing Cross Sections
- Terrain Modification Tools



# Channel Data





# Export of Channel Data

The screenshot displays the HEC-RAS interface. On the left, the 'Geometries' tree is expanded to 'Base', and the 'Export Layer' menu is open. The menu options are:

- Export Layer
  - Create Terrain GeoTiff from XS's (Overbanks and Channel)
  - Create Terrain GeoTiff from XS's (Channel Only)**
  - Reduce Terrain to Minimally Cover Geometry...
  - SHP Create Point Shapefile of XS-River Intersections
  - SHP Create Polygon Shapefile of Geometry Region
  - SHP Create Polygon Shapefile for XS Vegetation Regions

The main window shows a 3D terrain model with a channel network. A text box at the top center reads 'Selected: 'Cross Sections''. In the bottom right, a dialog box titled 'Export Terrain' is open, with the text 'Enter raster cell size' and a text input field containing the number '5'. The dialog has 'OK' and 'Cancel' buttons. A scale bar at the bottom right indicates '1000 ft'.





# Create New RAS Terrain with Channel

- Create New RAS Terrain
- Set Priority – Channel data is highest

New Terrain Layer

Set SRS ...

Input Terrain Files (2 files)

	Filename	Projection	Cell Size	Rounding	Info
	Channel.tif	PROJCS["NAD_1983_StatePlane_Indiana_East...]	5	(na)	
	Base.tif	PROJCS["NAD83 / Indiana East (ftUS)",GEOGC...]	5	1/32	

Output Terrain File

Rounding (Precision): 1/32  Create Stitches  Merge Inputs to Single Raster

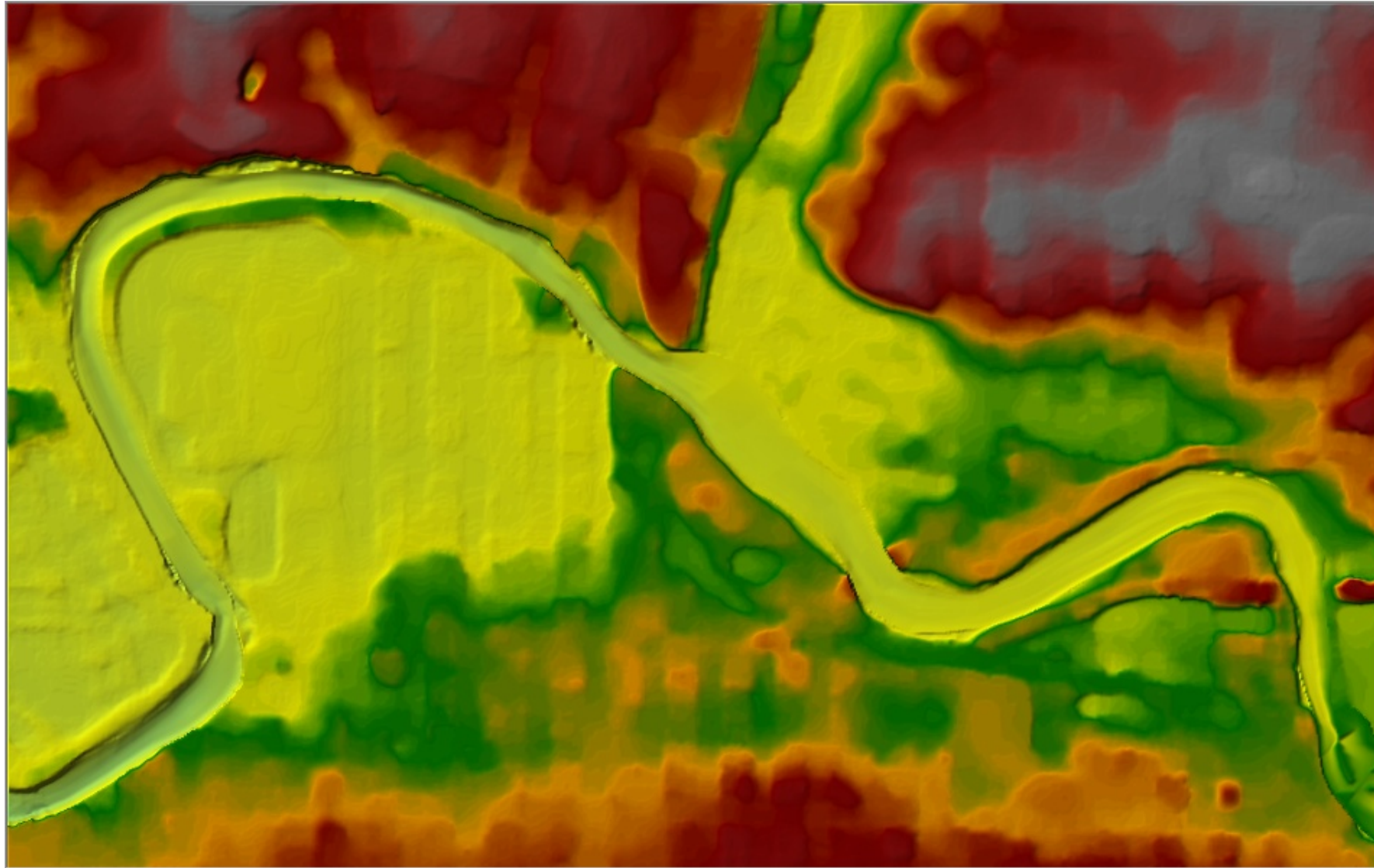
Vertical Conversion: Use Input File (Default)

Filename: C:\Temp\\_RAS 2D Class\WS - Terrain Modification\Terrain\WithChannel.hdf

Create Cancel

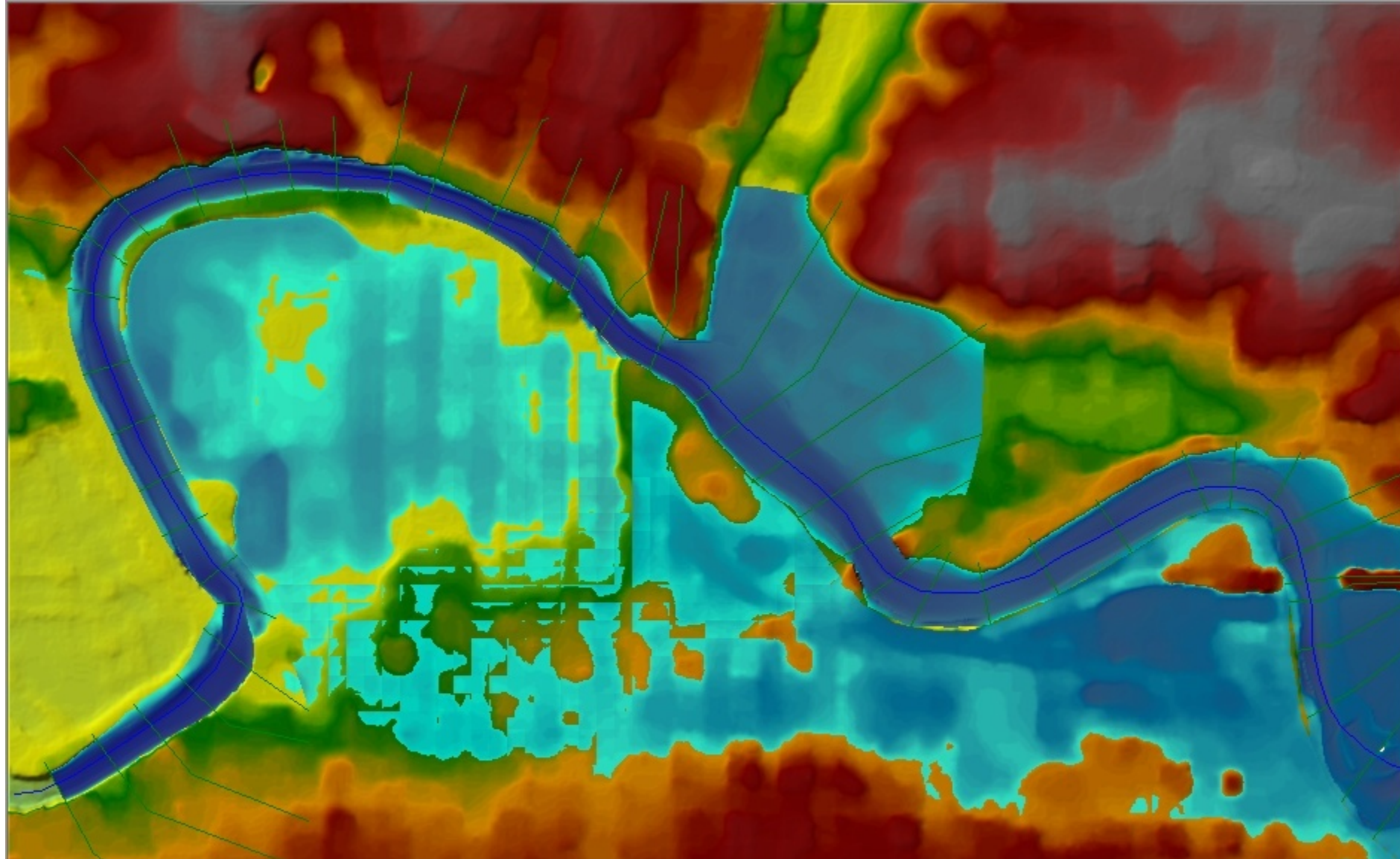


# Terrain with Channel





# Inundation Mapping

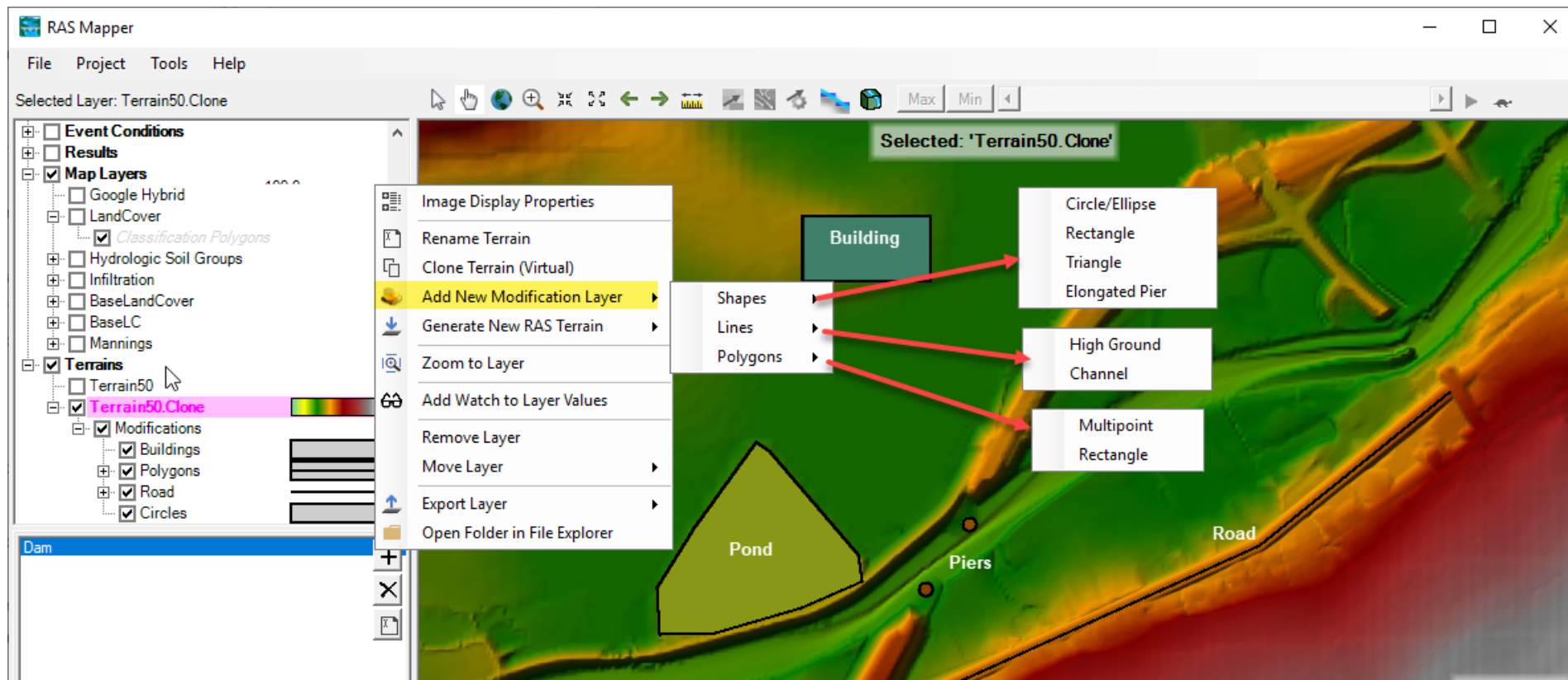






# Terrain Modifications

- Vector Overrides to Terrain Layer
  - Simple Shapes (Piers), Lines (Channel, Roads, Levees), Polygons (Areas, Buildings)

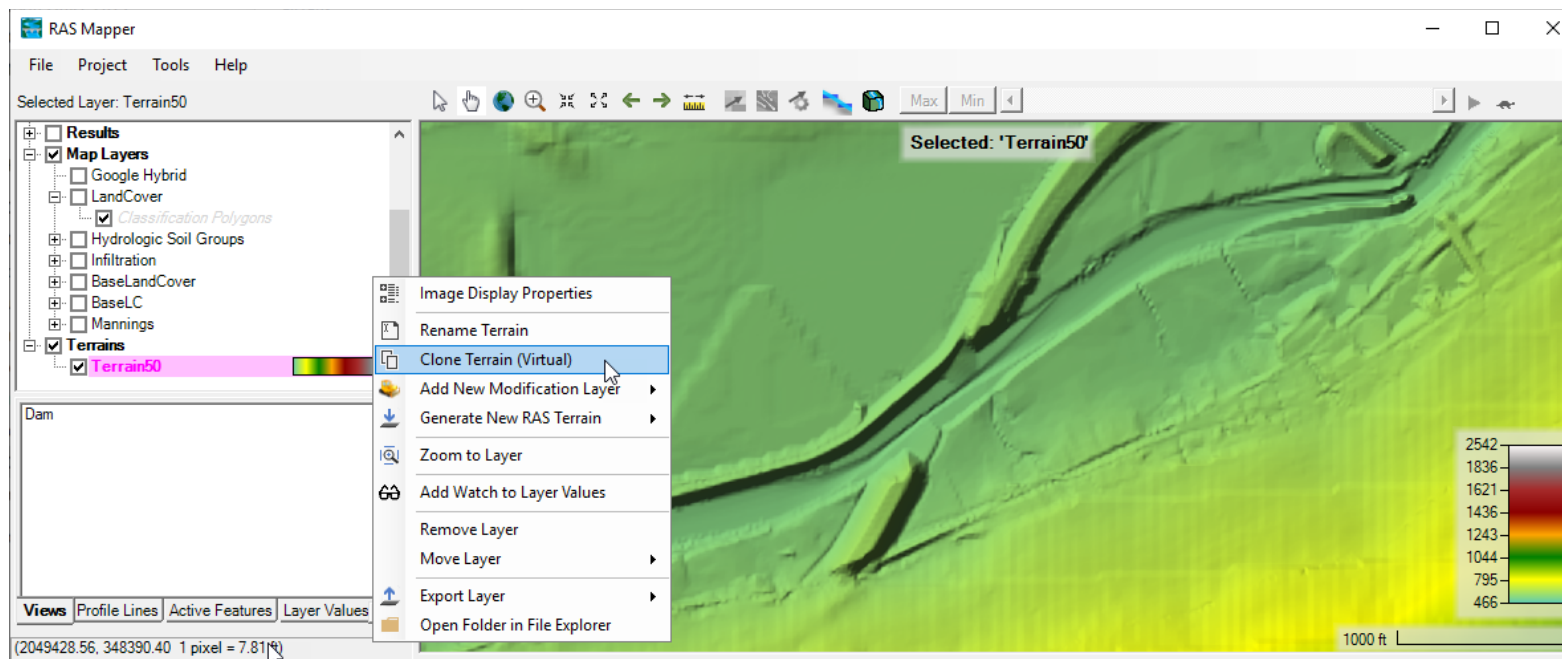






# Terrain Clone

- *Virtual* copy of the Terrain
- No duplication of elevation dataset (large)
- Vector additions stored in a separate file (the terrain clone)





# Shapes - Piers

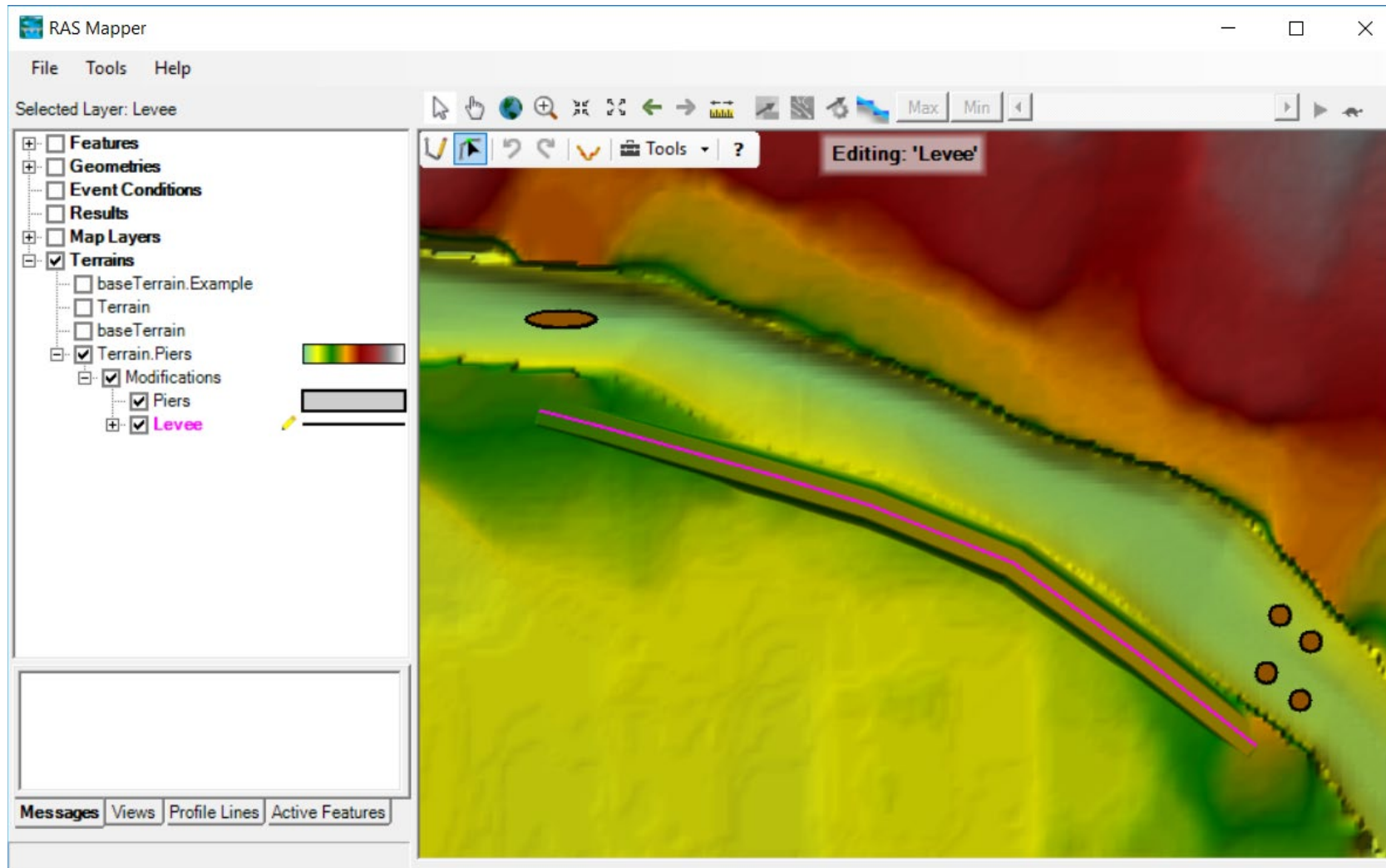
The screenshot displays the RAS Mapper interface with the 'Pier Editor' dialog box open. The dialog box is titled 'Pier Editor' and contains the following settings:

- Name: Pier 1
- Modification Method: Replace Terrain Value
- Elevation (ft): 575
- Rotation Angle (Degrees): 44.7337
- Width (ft): 20
- Pier Shape:
  - Use Rectangular Body
  - Use Pier Nose (Shape: Round)
  - Use Pier Nose (Shape: Sharp)
  - Length (ft): 100
  - Radius (ft): 10
  - Length (ft): 10

The background shows a terrain map with a red pencil icon indicating the location of the pier. The map is color-coded by elevation, with green representing lower elevations and red representing higher elevations. A scale bar at the bottom right indicates 500 ft. The status bar at the bottom left shows coordinates (2062826.51, 351720.64) and a scale of 1 pixel = 2.45 ft.



# Lines - High Ground







# Lines – High Ground

**Ground Line Editor**

Name (Optional):

Modification Type:

Top Width:

Left Side Slope (H:V):

Right Side Slope (H:V):

Lateral Extent Limits:

Snapping Tolerance:

Polyline Length: 1161.64 (ft)

Station-Elevation

	X	Y
▶ 1	407417.38768188...	1804497.9113489...
2	407251.73357862...	1804628.6909041...
3	407065.73598900...	1804762.3766717...
4	406859.39491302...	1804846.65682952
5	406722.80293314...	1804887.3438022...
6	406469.962459758	1804959.9991106...
7	406379.86987728...	1804983.2488093...

**Plot**

**XS View**

**Plot** **Table**

**Profile Plot**



# Lines – Elevation Control Points

The screenshot shows the RAS Mapper application window. The title bar reads "RAS Mapper". The menu bar includes "File", "Tools", and "Help". The status bar at the top indicates "Selected Layer: Control Points". The left-hand side contains a tree view of layers:

- Features
- Geometries
- Event Conditions
- Results
- Map Layers
- Terrains
  - baseTerrain.Example
  - Terrain
  - baseTerrain
  - Terrain.Piers
    - Modifications
      - Piers
      - Levee
      - Control Points

Below the tree view is a color scale legend. The main map area shows a topographic map with a river channel. A line representing a levee or pier is drawn across the river. Several purple dots, representing elevation control points, are placed along this line. A mouse cursor is hovering over one of these dots. A dialog box titled "Elevation Needed" is open in the foreground, containing the text "Enter the elevation for this elevation point" and a text input field with the value "941". The dialog box has "OK" and "Cancel" buttons. At the bottom of the RAS Mapper window, there are tabs for "Messages", "Views", "Profile Lines", and "Active Features". The status bar at the very bottom displays the coordinates "(406823.17, 1804841.66 1 pixel = 2.12 feet)".



# Lines – Elevation Control Point

- Elevation control points shown in grey

Ground Line Editor

Name (Optional):

Modification Type:

Top Width:

Left Side Slope (H:V):

Right Side Slope (H:V):

Lateral Extent Limits:

Snapping Tolerance:

Polyline Length: 1161.64 (ft)

Station-Elevation | X,Y Data

	Station	Elevation
	1 0	943
	2 143.51341941785...	944
	3 269.12608846422...	944
▶	4 400	942.5
	5 800	942.5
	6 823.32691655262...	941
	7 970.59058152351...	941
	8 1161.6400146484...	941
*		

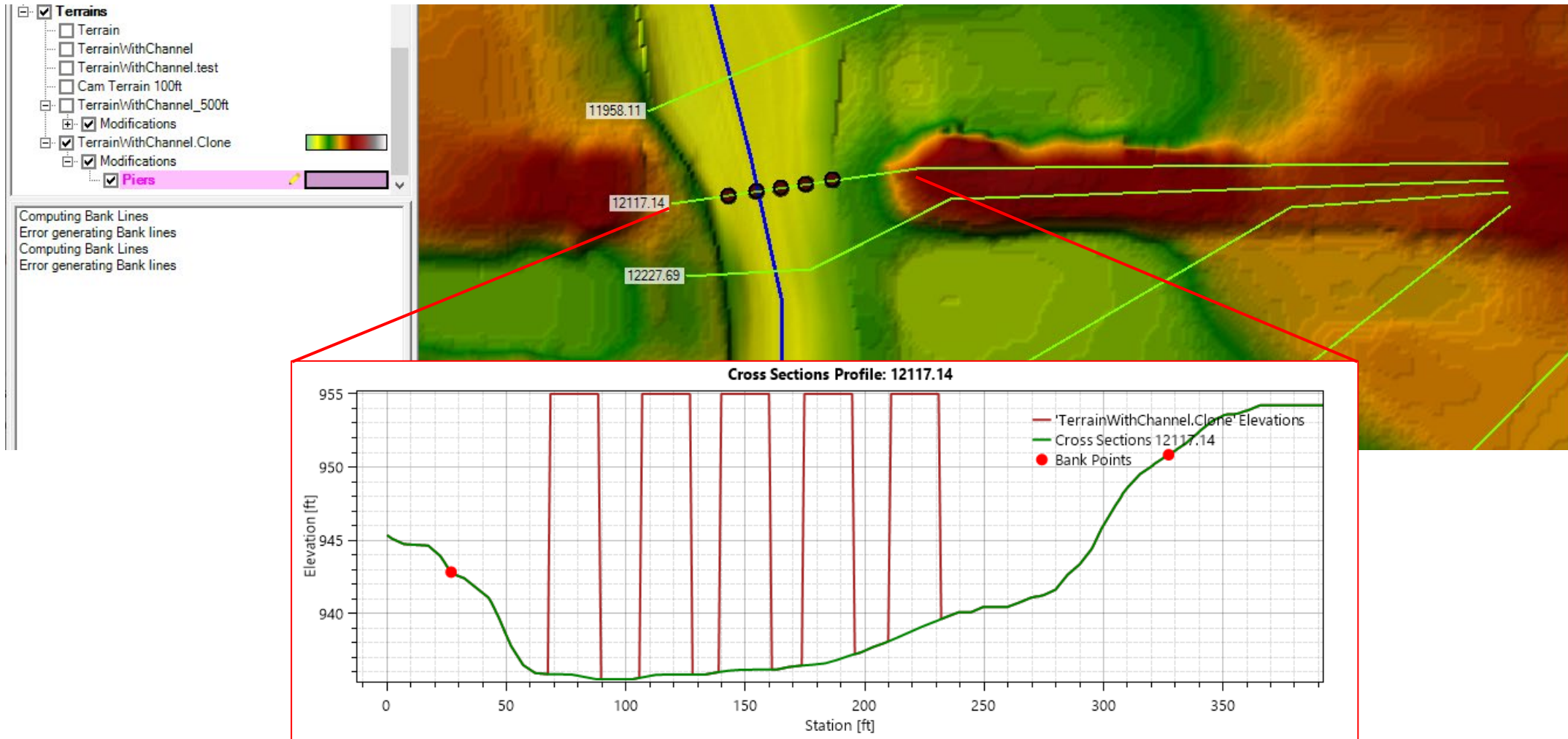
Plot | XS View

Plot | Table | Profile Plot





# Terrain Modifications



# Questions?