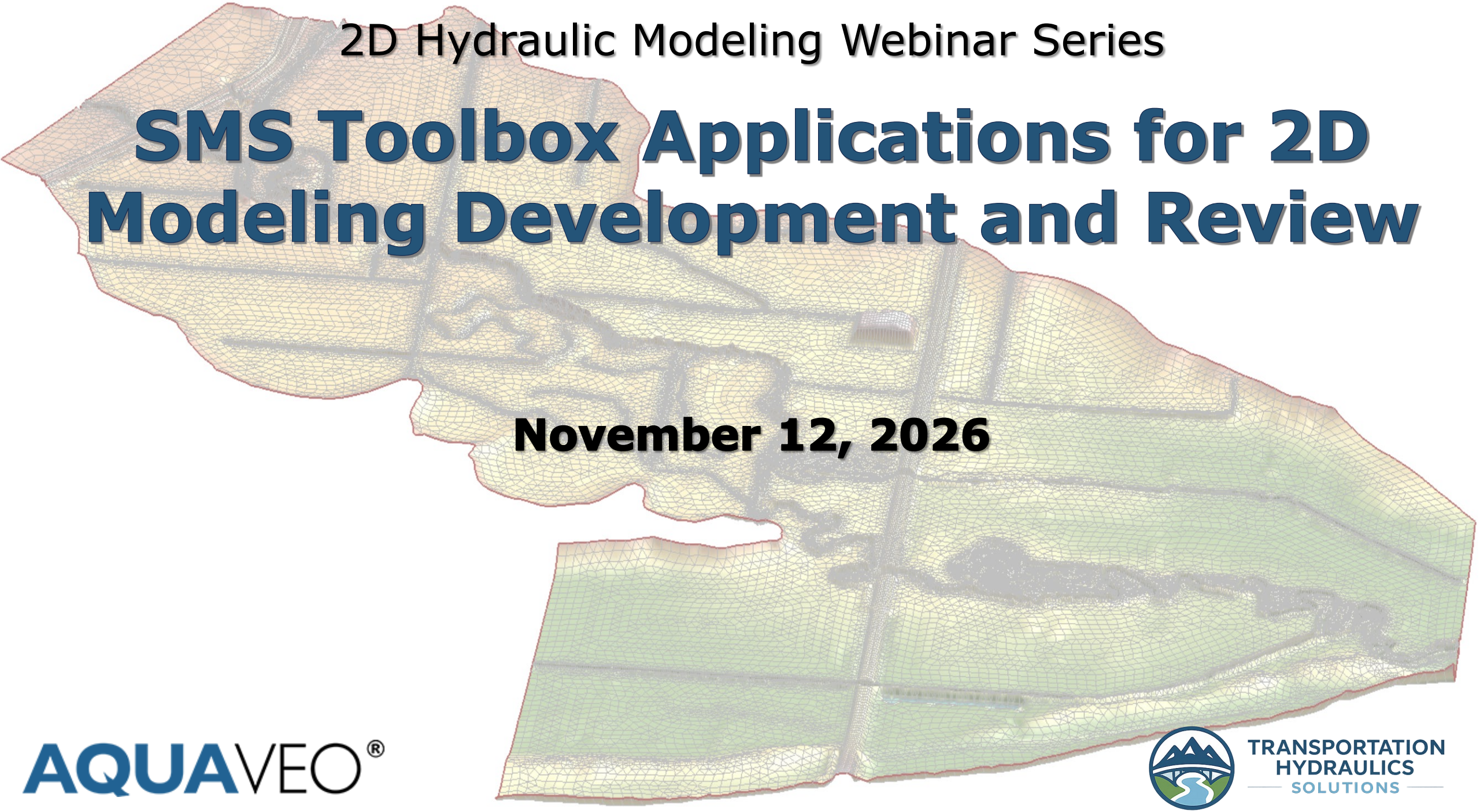
2D Hydraulic Modeling Webinar Series

SMS Toolbox Applications for 2D Modeling Development and Review



November 12, 2026

AQUAVEO®

TRANSPORTATION HYDRAULICS SOLUTIONS

2D Hydraulic Modeling Webinar Series Objectives

- Highlight best practices in 2D modeling for transportation hydraulics
- Showcase new features and capabilities in SMS/SRH-2D
- Share examples of 2D modeling applications
- Compare SRH-2D and HEC-RAS 2D modeling approaches
- Provide an open forum for questions and other insights

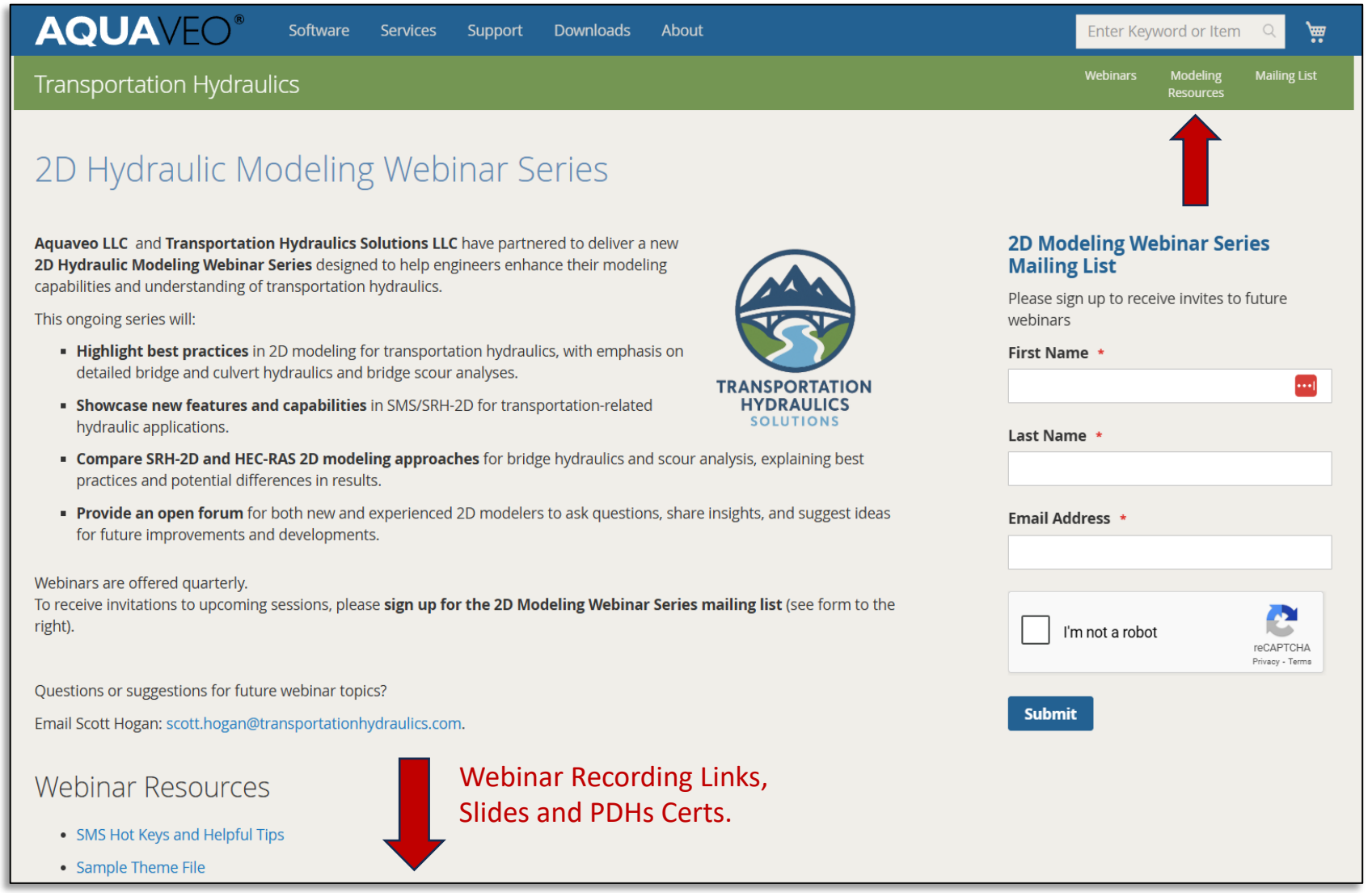
Agenda

- 2D Hydraulic Modeling Webinar Series Page and Resources
- Current version of SMS/SRH-2D
- Training opportunities
- Tips and Tricks
- **SMS Toolbox Applications for 2D Modeling Development and Review**

2D Hydraulic Modeling Webinar Series Page

https://aquaveo.com/software/sms/srh2d-hydraulic-modeling-webinar-series

- Sign up to receive future webinar invites
- SMS Hot Keys and Tips
- Sample Theme file
- Presentation slides and recording links
- PDH certificate
- Modeling resources



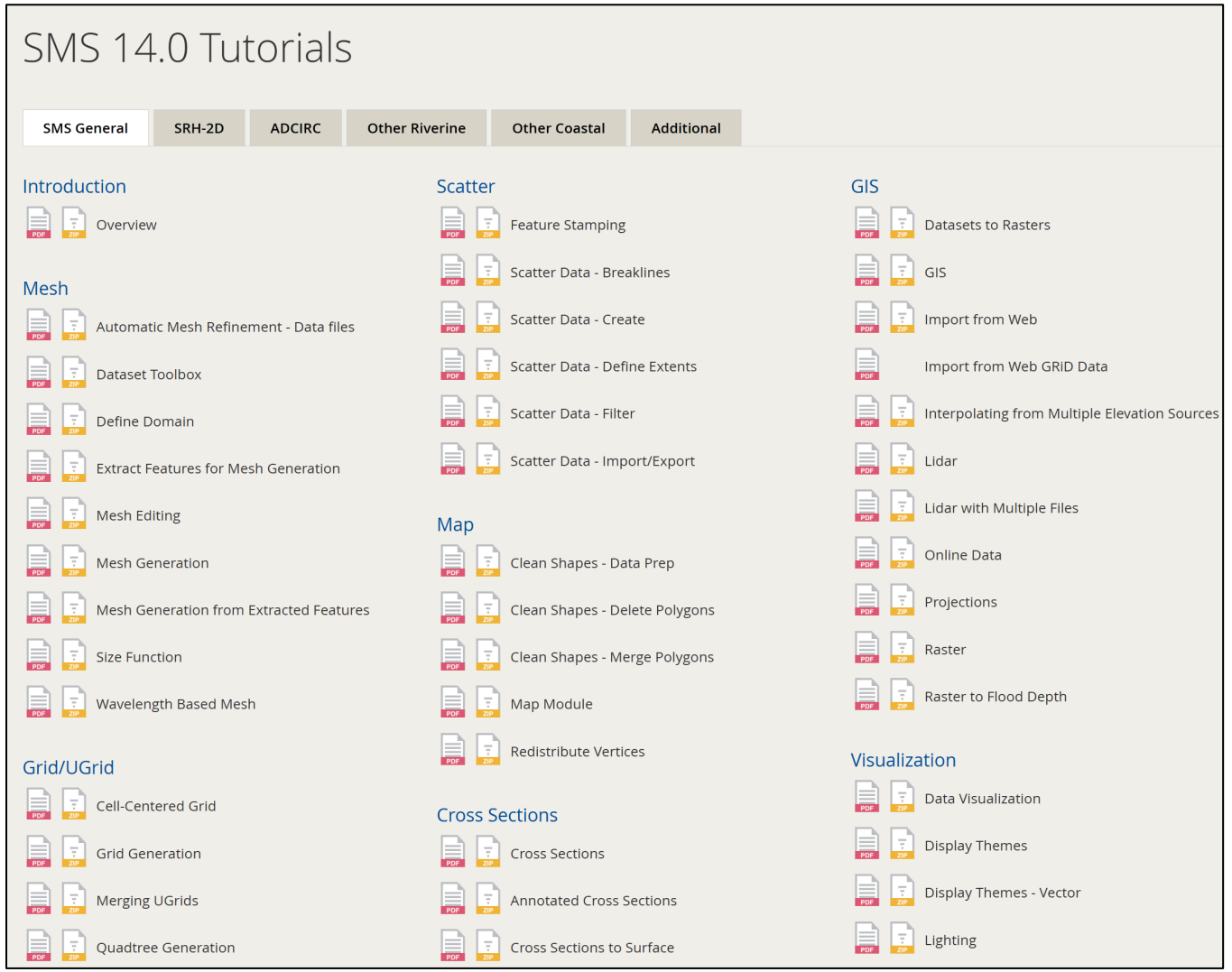
SMS Current Release

- SMS 14.0.5 / SRH-2D v4.0 Build date: October 13, 2026
  - Minor bug fixes and feature adjustments (Release notes)
  - No changes in SRH-2D

SMS / SRH-2D Tutorials

SMS Learning - Tutorials

- SMS General – GIS
  - Datasets to Rasters
  - Raster to Flood Depth
  - Rasters
- SMS General – Mesh
  - Extract Features for Mesh Generation
  - Mesh Generation from Extracted Features



Training Opportunities

2D Hydraulic Modeling For Transportation Hydraulics (2DHM):

AQUAVEO®

- February 2-5, 2027, Virtual Course Ohio DOT (open) REGISTER NOW
- February 23-26, 2027, Virtual Course (open) REGISTER NOW
- March 16-18, 2027, Harrisburg PA (closed)
- Additional virtual and in-person courses available on request

Applied Bridge Scour Training:

TRANSPORTATION HYDRAULICS SOLUTIONS

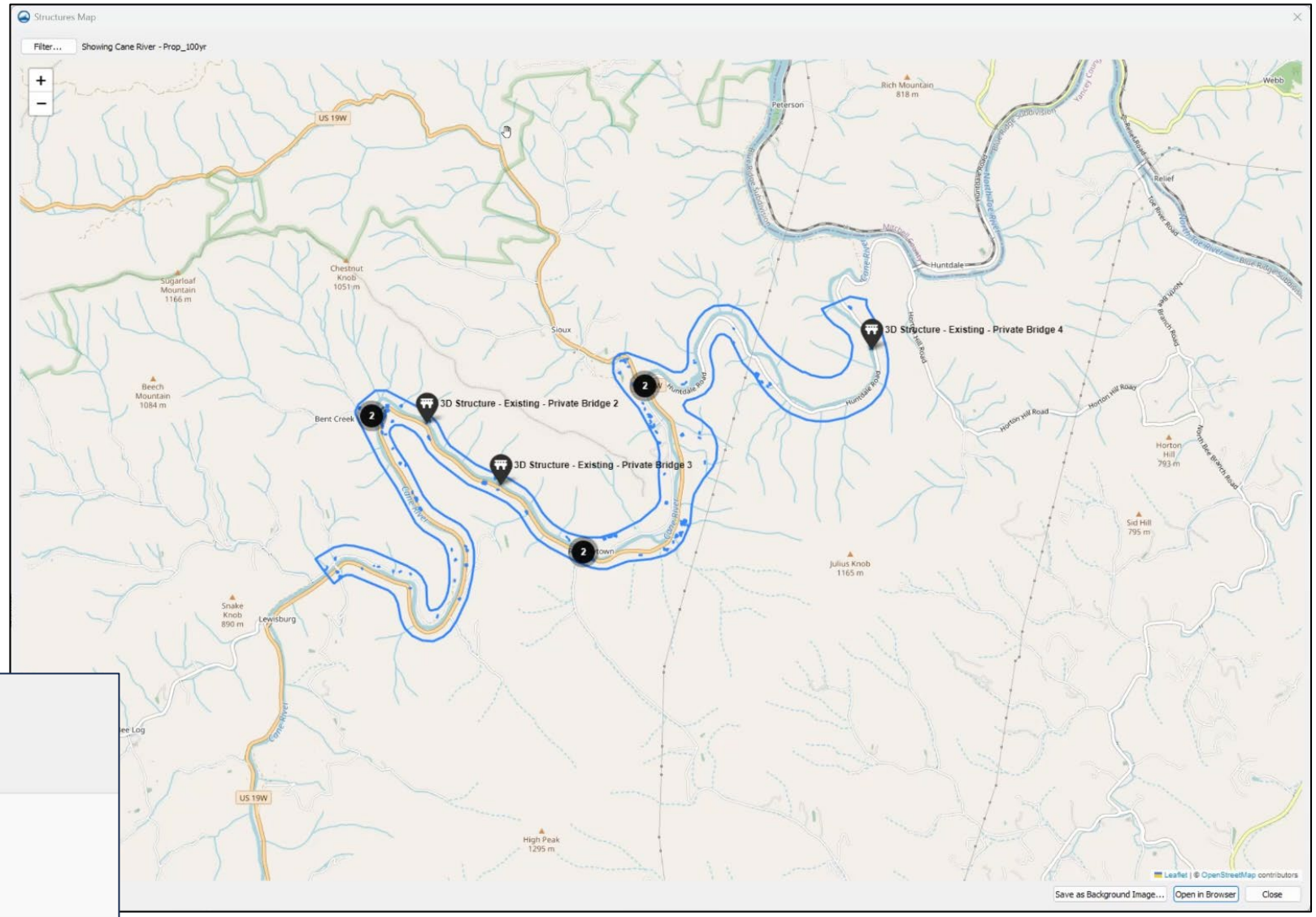
LWZ LLC

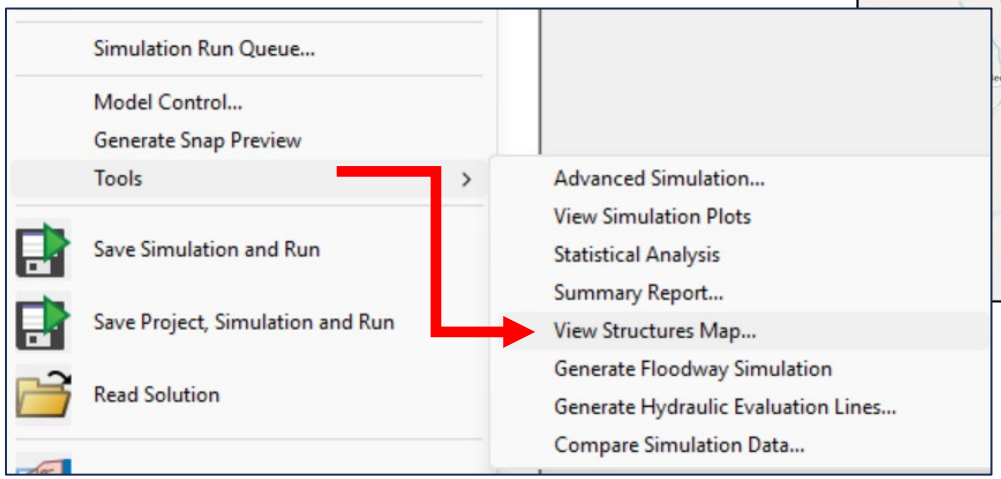
- December 1-3, 8-10, 2026 Virtual course (full)
- February 8-12, 2027, Virtual course (private)
- March 29-April 2, 2027, Virtual course (open) REGISTER NOW
- April 27-29, 2027, Helena MT (public registration opens mid-January)
- May 18-20, 2027, Raleigh NC (public spots may be available later)

Tips and Tricks

View Structures Map

- Right click any Simulation
- Displays all or selected 3D Structures
  - Select using Filter button
- Save as background
- Open in browser



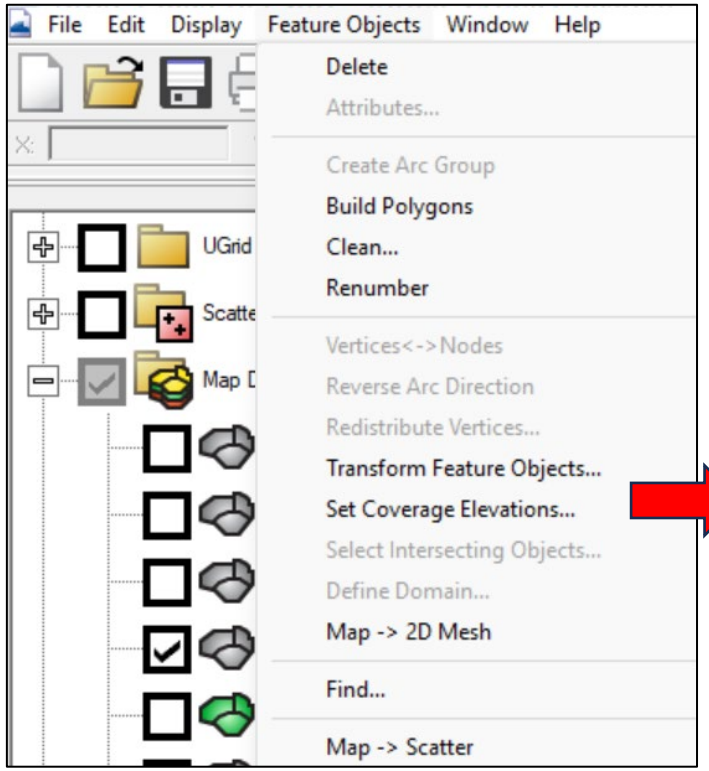


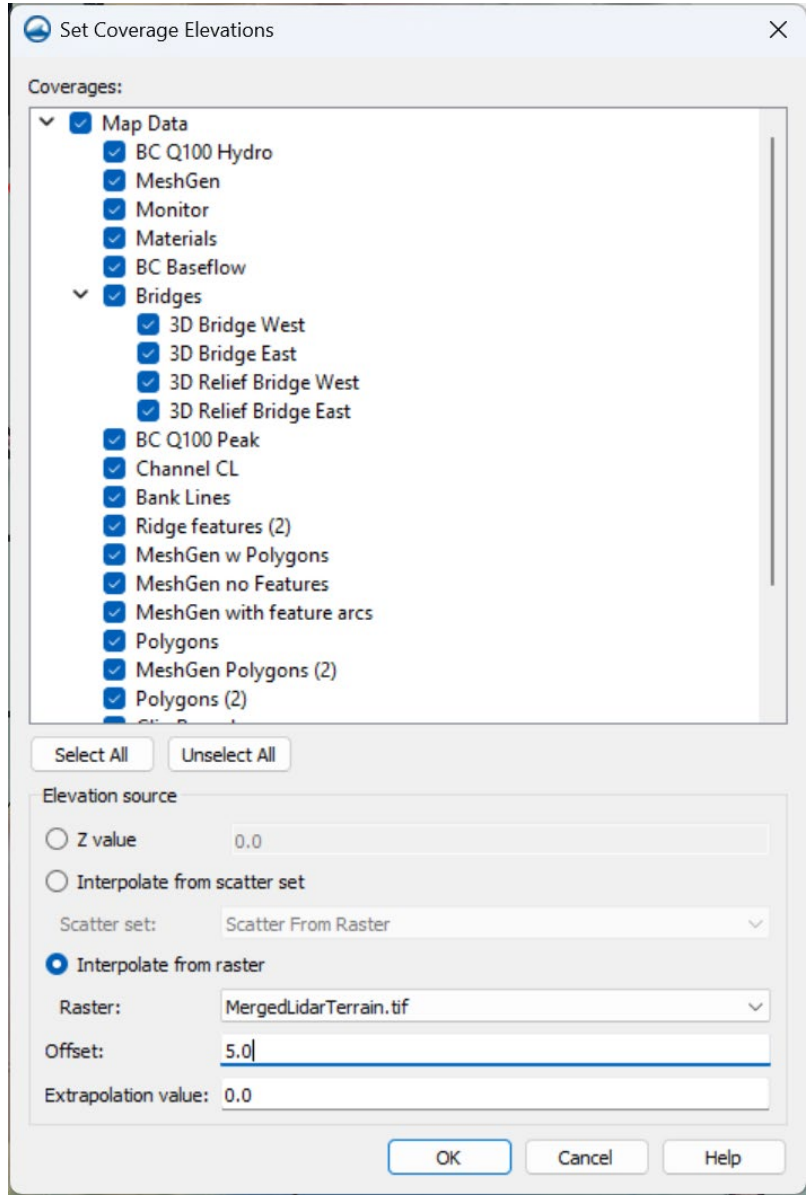
Tips and Tricks

Assigning elevations to map coverage

If arcs are hidden below the terrain:

- Use Set Coverage Elevations option
  - Feature objects menu
  - Rt click on a coverage
- Set for one or multiple coverages

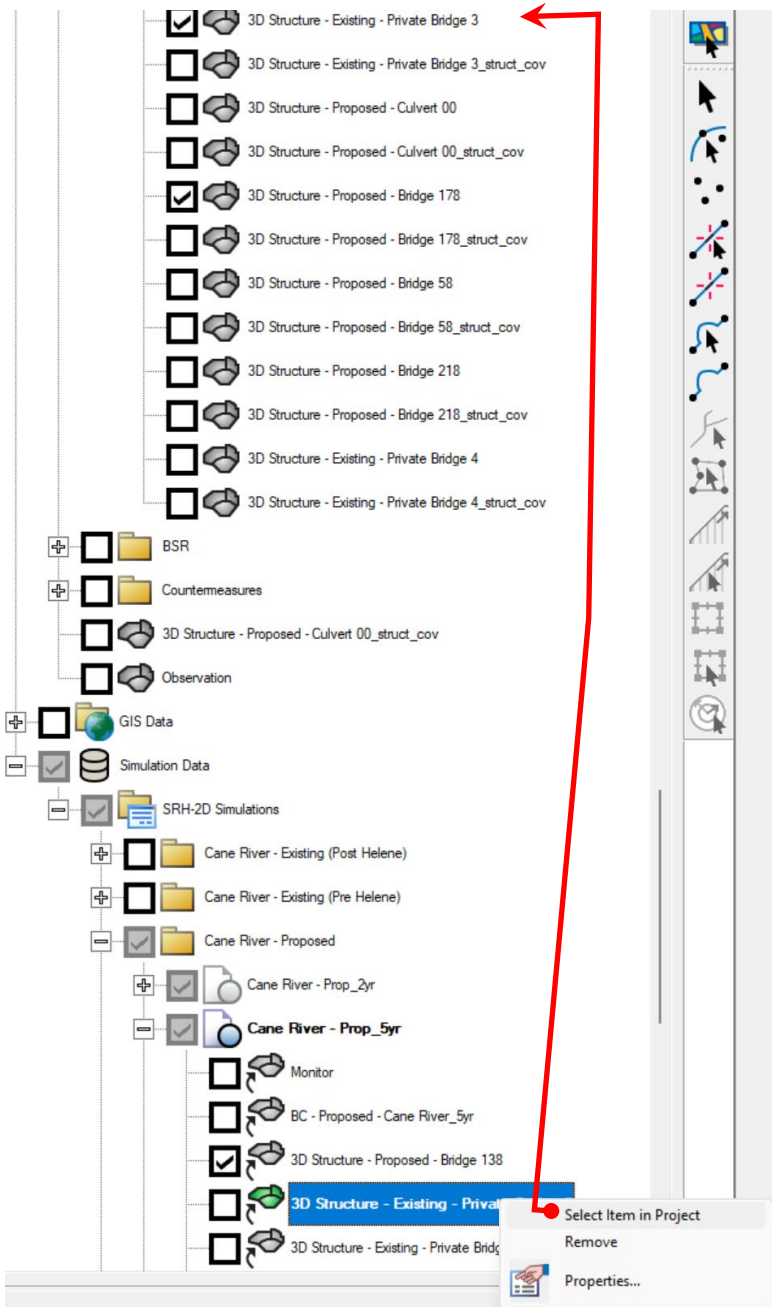




Tips and Tricks

Select Item in project

- Quick access from Simulation links to original coverage



SMS 14 Toolbox

Feature Highlights Overview

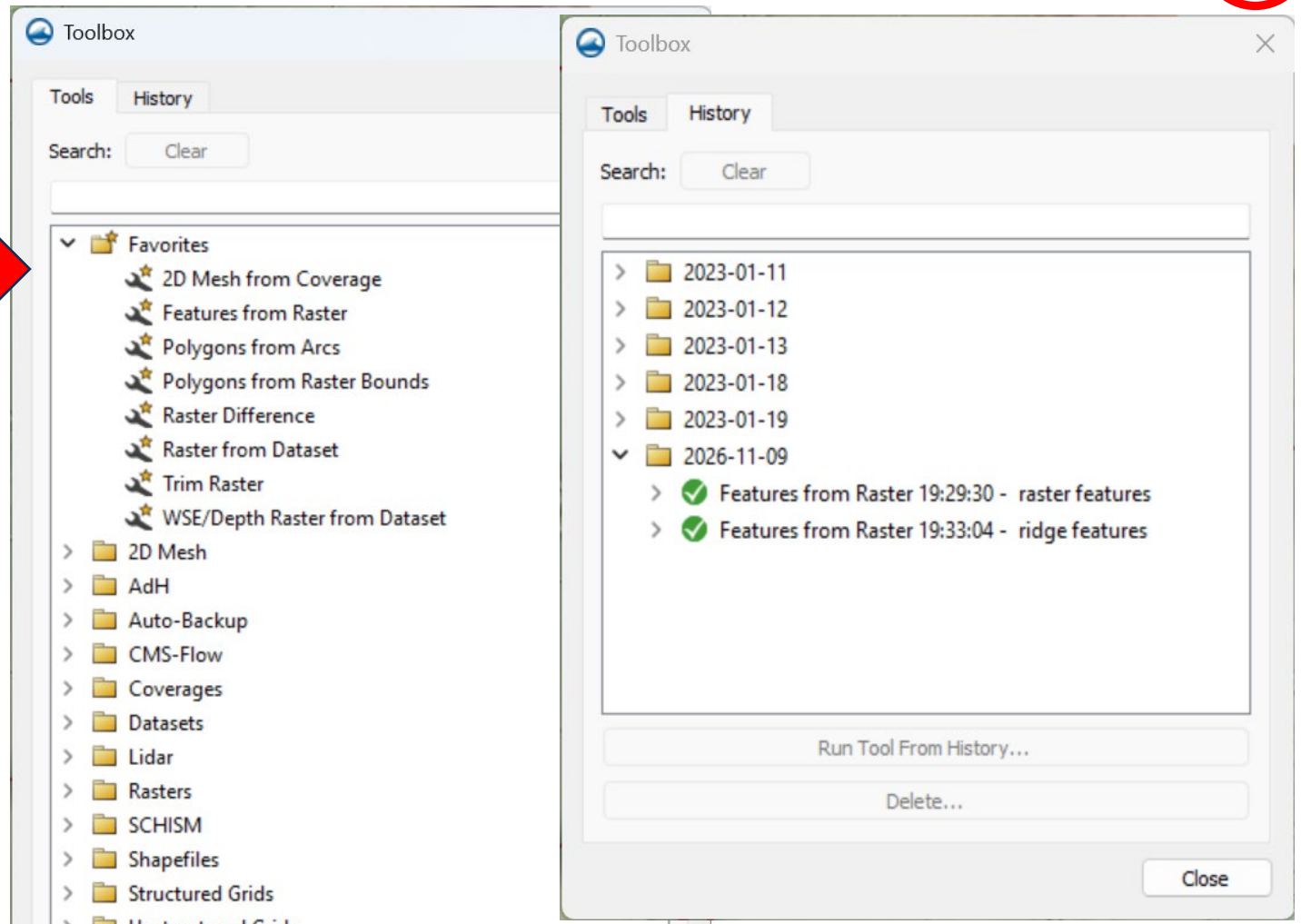
- Favorites List & History
- Comparing mesh terrain with original terrain
- Feature extraction from terrain rasters
- Converting results to rasters
- Creating detailed floodplain maps and delineation arcs
- Editing and merging terrain rasters
- Options to generate a quad mesh along linear features

SMS 14 Toolbox

Favorites / History



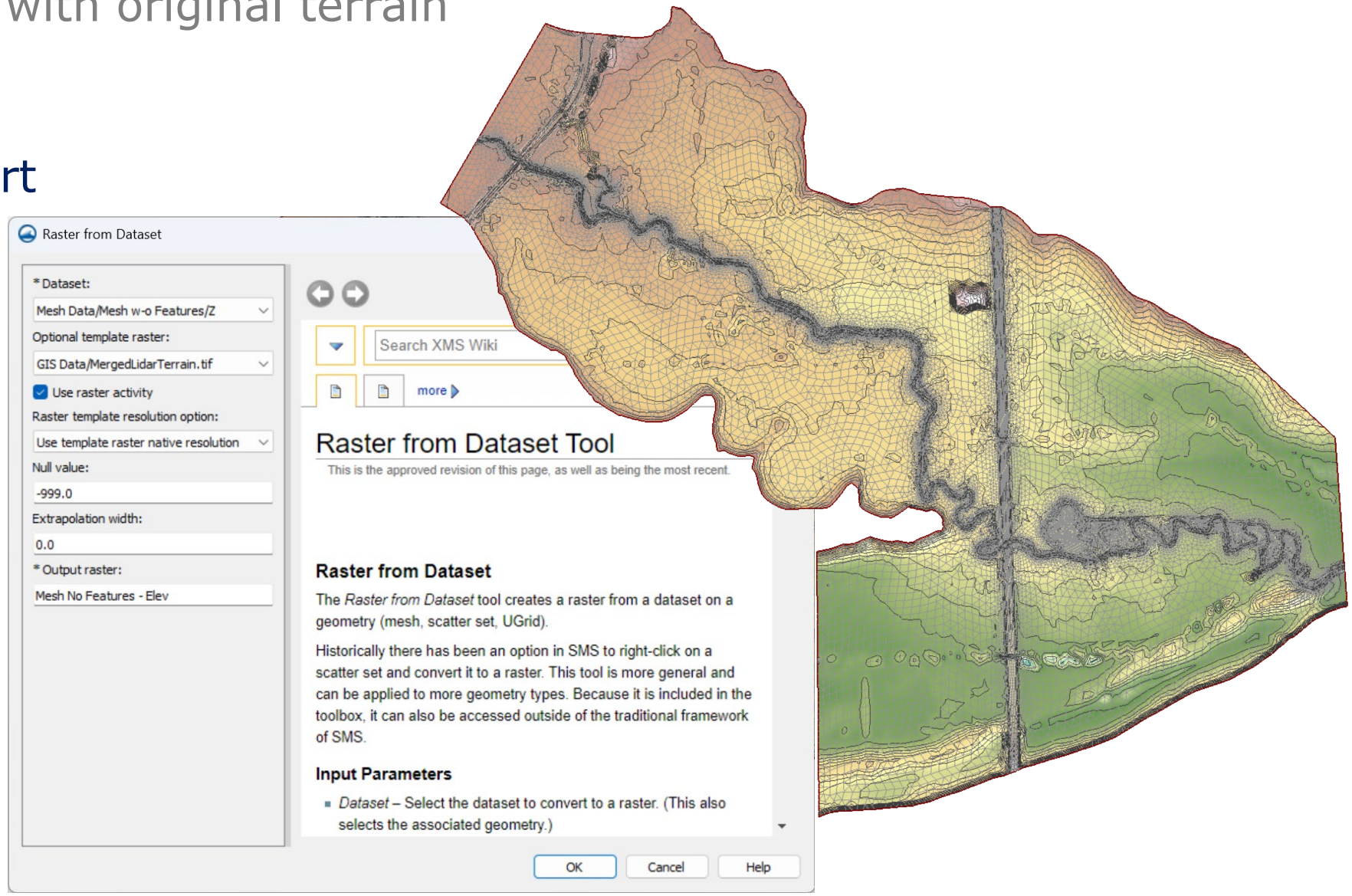
- The Tools are generally categorized by what they produce.
- Right click on a tool to add it to your favorites.
- All tool actions are recorded under the History tab and may be rerun
- The search bar can be used to find tools



SMS 14 Toolbox

Comparing mesh terrain with original terrain

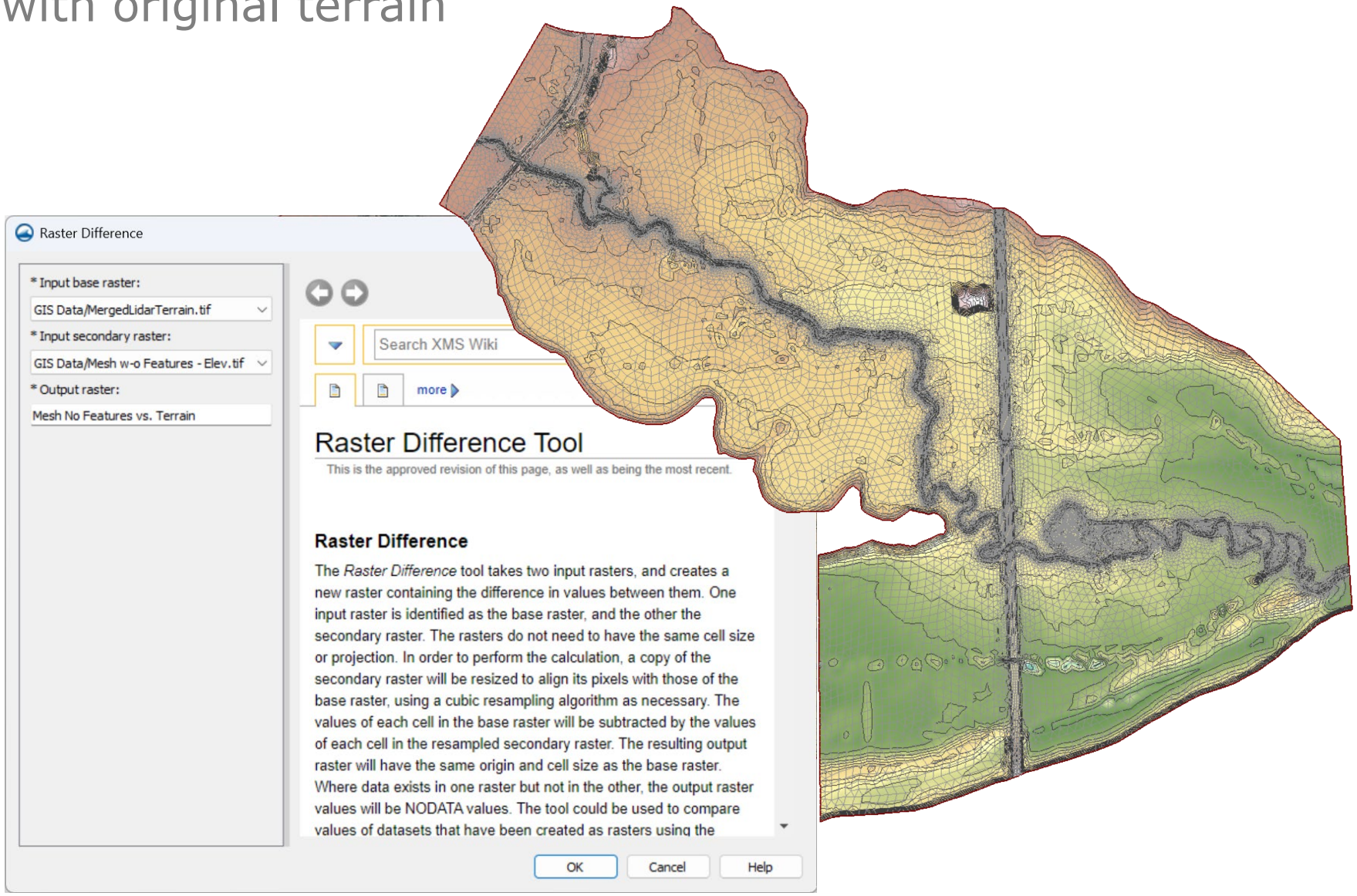
- Use ***Raster from Dataset*** tool to convert Mesh elevations to a raster dataset



SMS 14 Toolbox

Comparing mesh terrain with original terrain

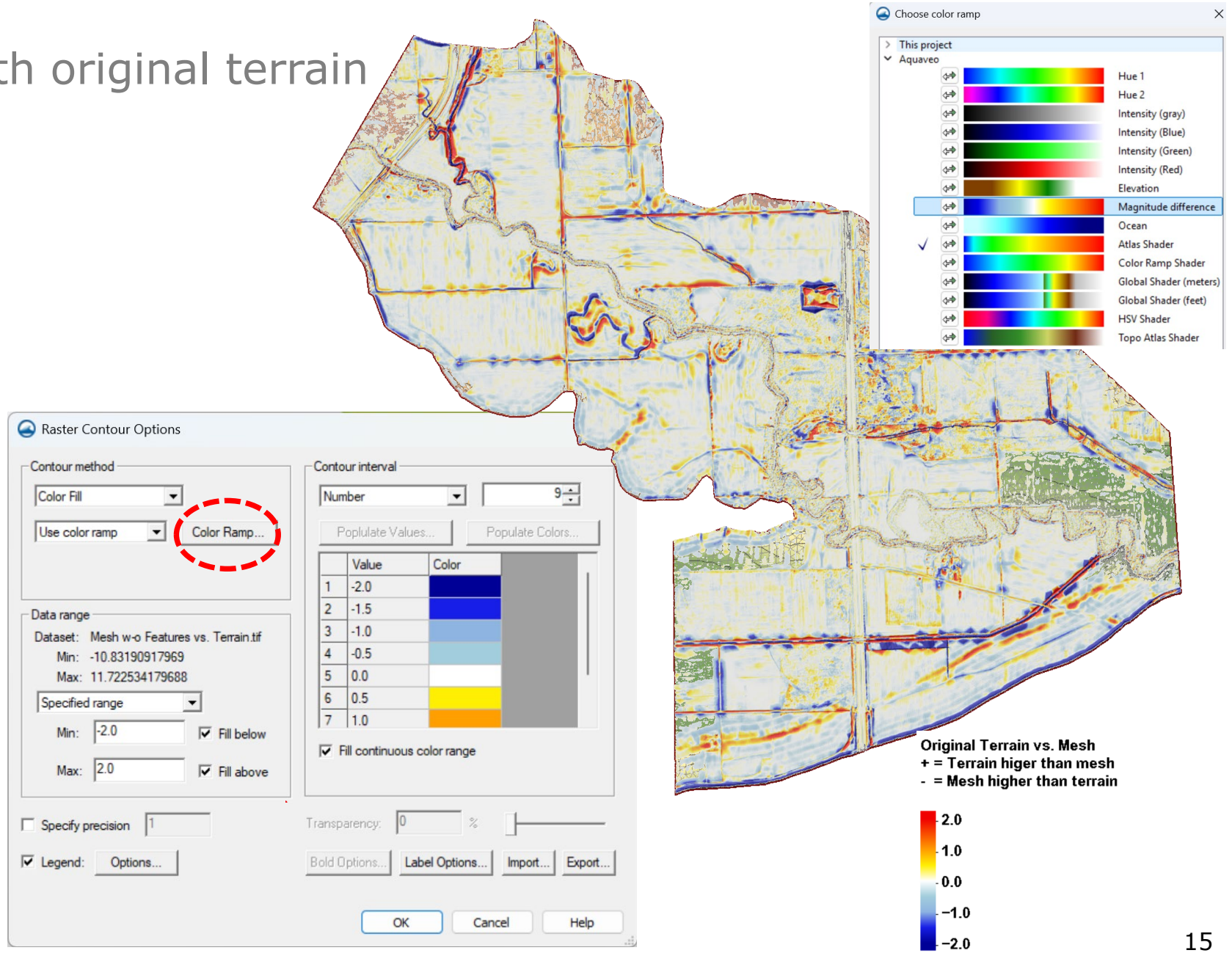
- Use ***Raster from Dataset*** tool to convert Mesh elevations to a raster dataset
- Then use the ***Raster Difference Tool*** to compare mesh vs. terrain



SMS 14 Toolbox

Comparing mesh terrain with original terrain

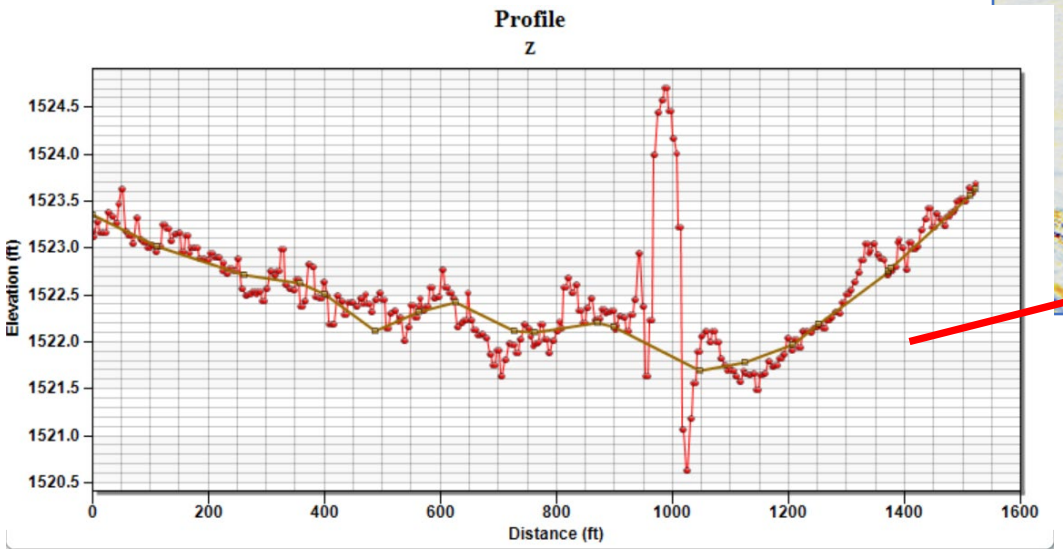
- Use ***Raster from Dataset*** tool to convert Mesh elevations to a raster dataset
- Then use the ***Raster Difference Tool*** to compare mesh vs. terrain
- Set ***Raster Contour Options***
  - Set a Specified range
  - Use a Difference color ramp
  - Review differences

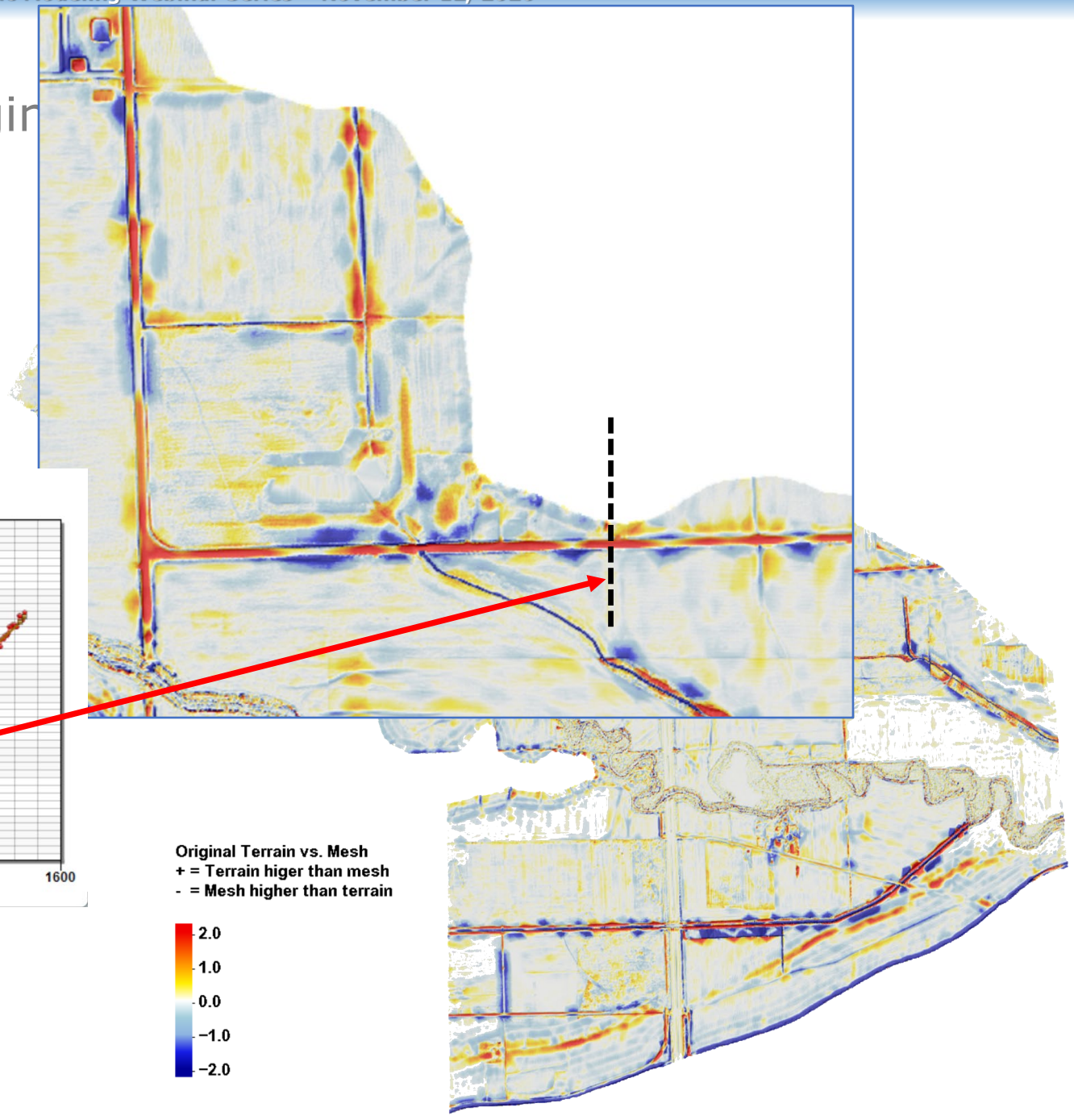


SMS 14 Toolbox

Comparing mesh terrain with origin

- Use Observation arcs to compare profiles





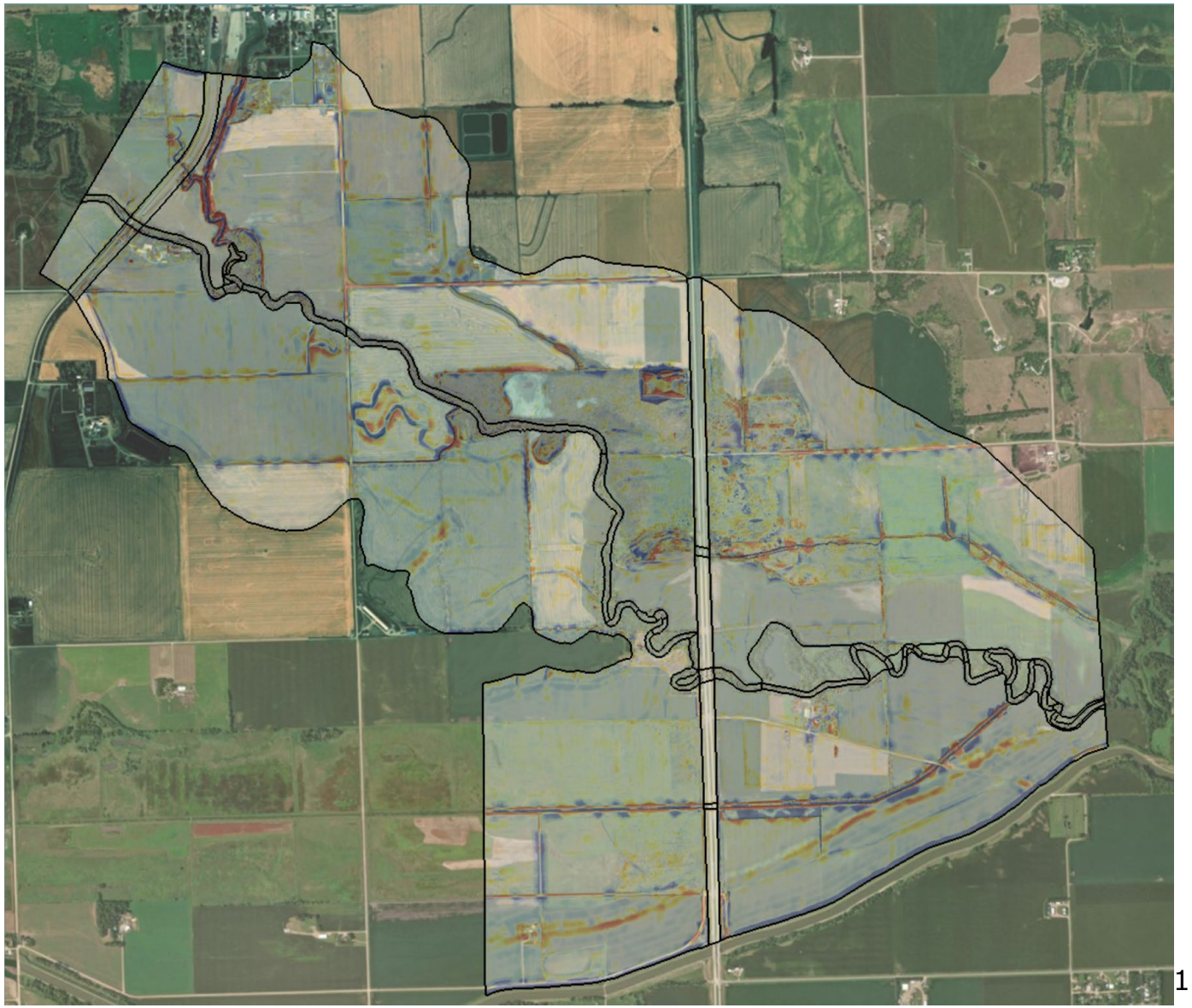
SMS 14 Toolbox

Adding details to the mesh generator coverage

- Note hydraulic controls and other features where more detail is needed
- Add breaklines to mesh generator coverage to align elements and change mesh resolution

  Options:

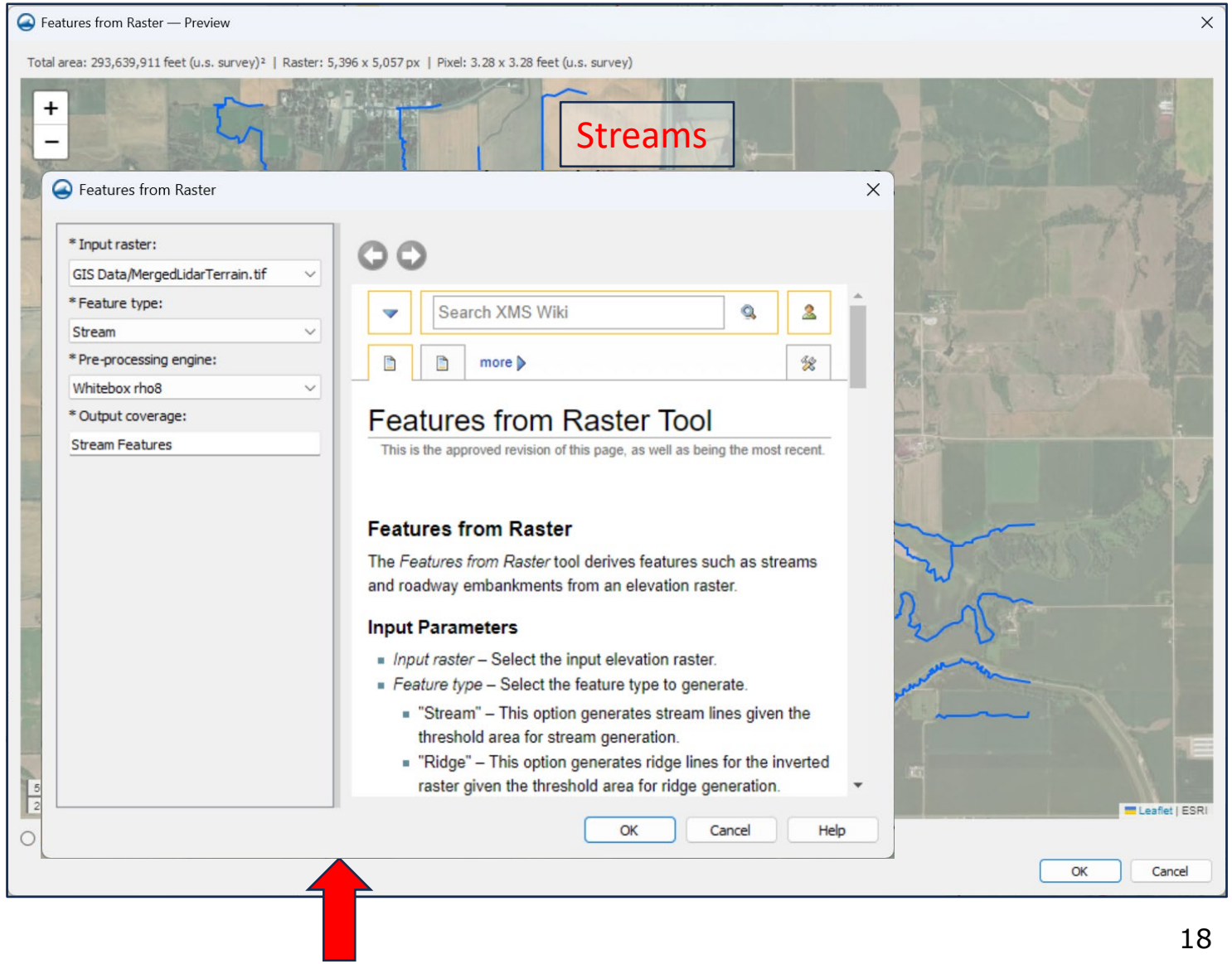
  - Manually digitize features
  - Use Features from Raster
  - Use Polygon from arc Tool



SMS 14 Toolbox

Feature extraction from terrain rasters

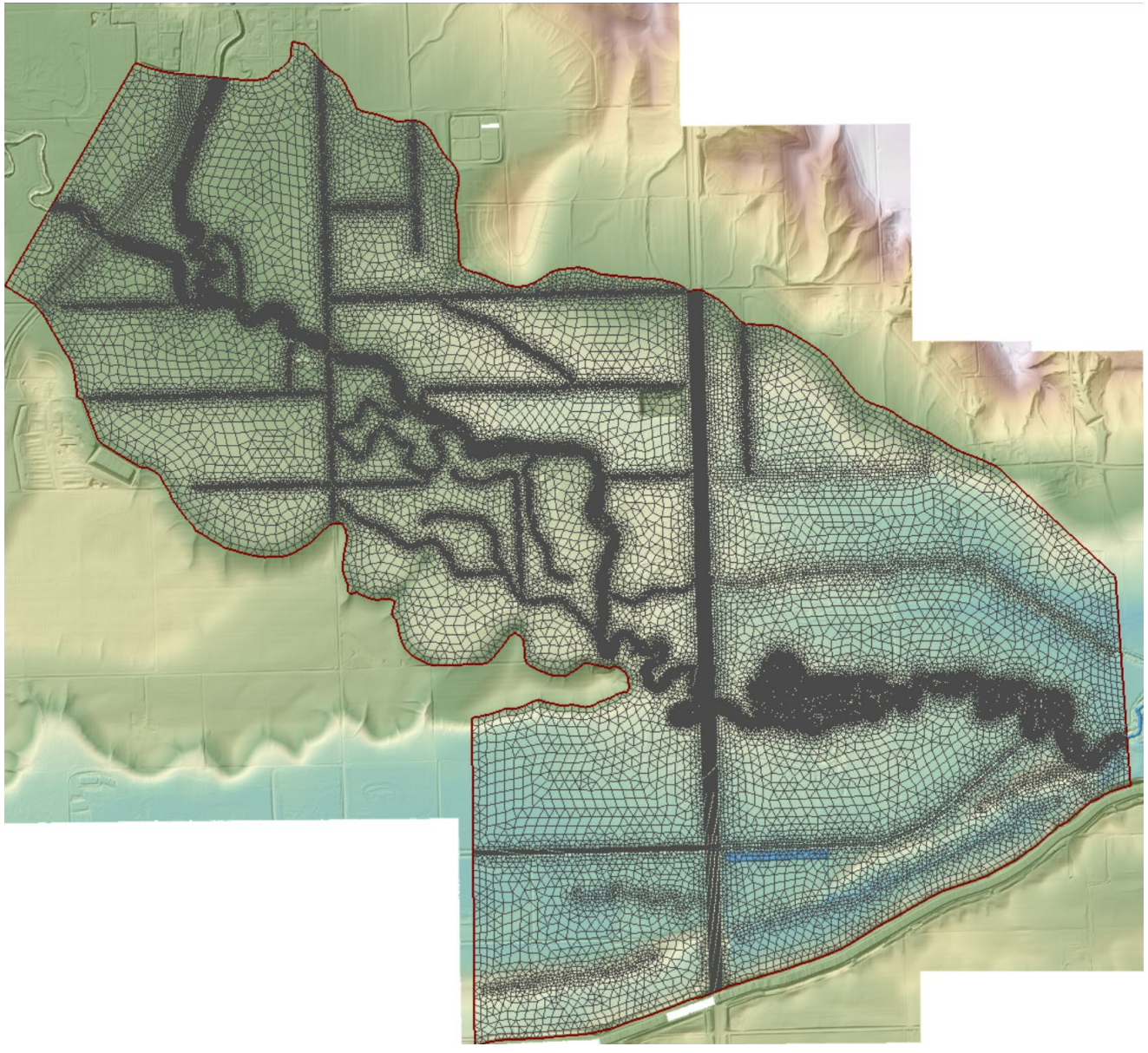
- Select ***Features from Raster*** Tool
- Select Feature Type (Streams or Ridges).
- In the Preview window change the % or area or area and Preview
- Select OK when the desired density of breaklines is shown
- A coverage with the arcs is generated
- Repeat for Ridges (Use run tool from History option)



SMS 14 Toolbox

Feature extraction from terrain rasters

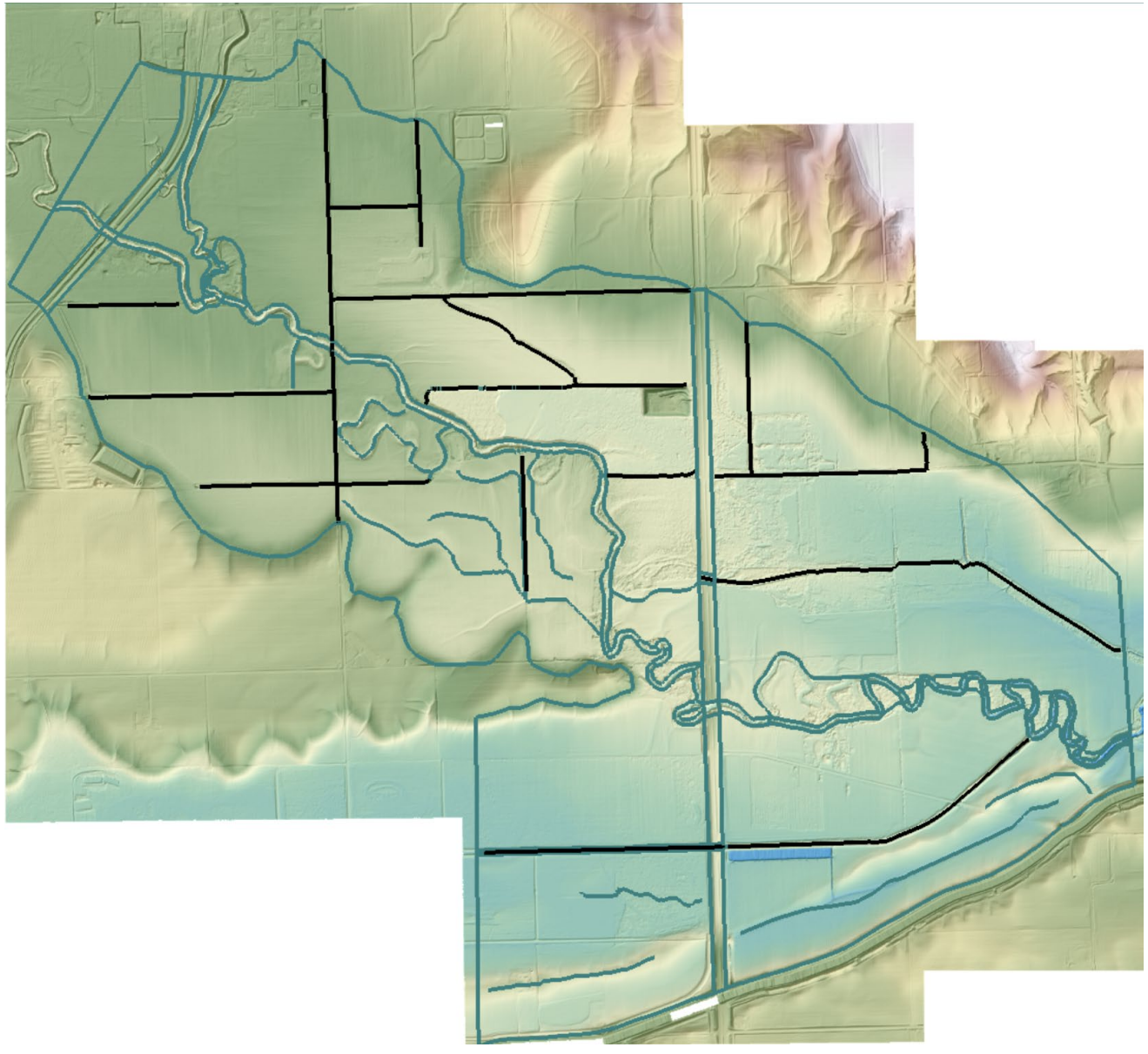
- Copy desired features to the Mesh Generator coverage
- Manually add/edit breaklines as needed
- Set vertex spacing for target element sizes
- Assign terrain source to all polygons
- Generate mesh



SMS 14 Toolbox

Polygons from Arcs Tool

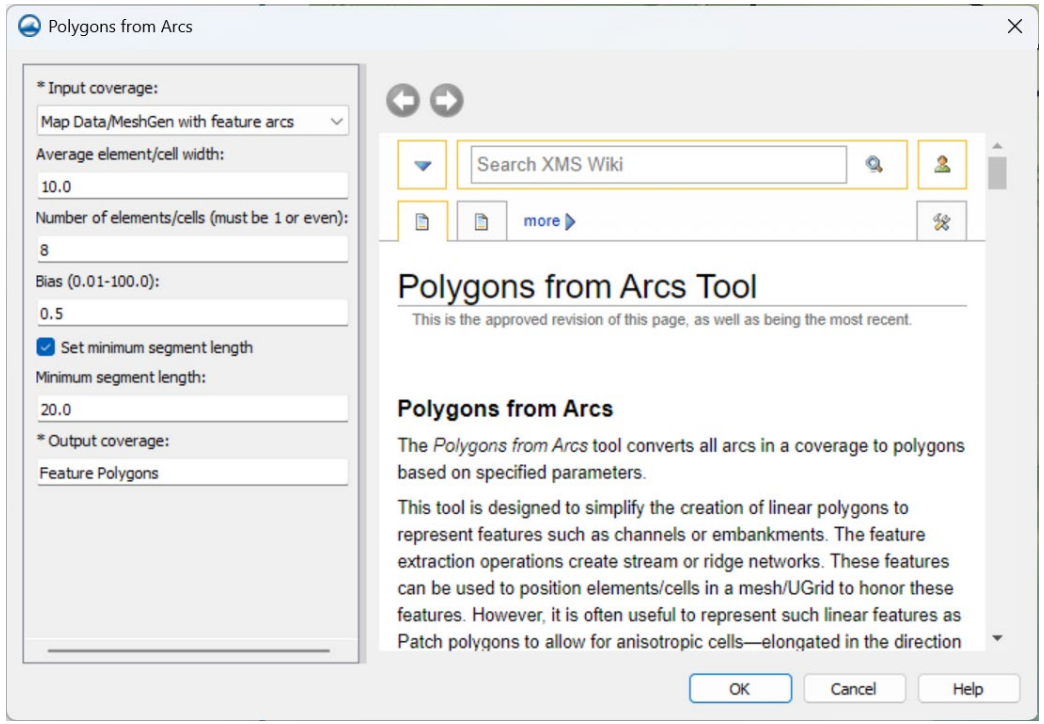
- The ***Polygon from Arcs Tool*** is useful for adding quad meshing along linear features
- Create a new generic coverage and copy the arcs to this coverage (Area Property)
- Set the desired vertex spacing (element size)
- Run the Polygon from Arcs Tool



SMS 14 Toolbox

Polygons from Arcs Tool

- Enter desired parameters
- Select ok and review results
- Copy polygons to mesh generator coverage





SMS 14 Toolbox

Polygons from Arcs Tool

- Make final edits to mesh generator coverage
- Assign terrain source to all polygons
- Generate the mesh
- Review the results



SMS 14 Toolbox

Polygons from Arcs Tool

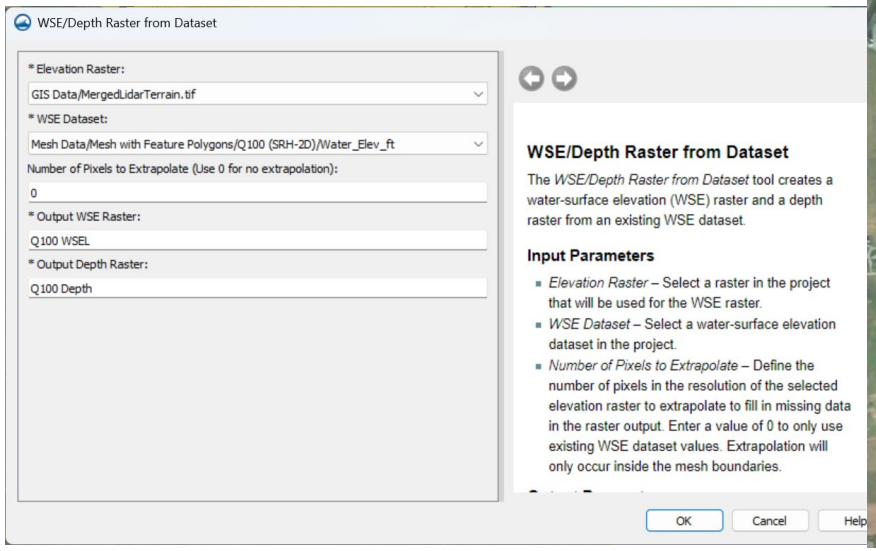
- Make final edits to mesh generator coverage
- Assign terrain source to all polygons
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- Review the results

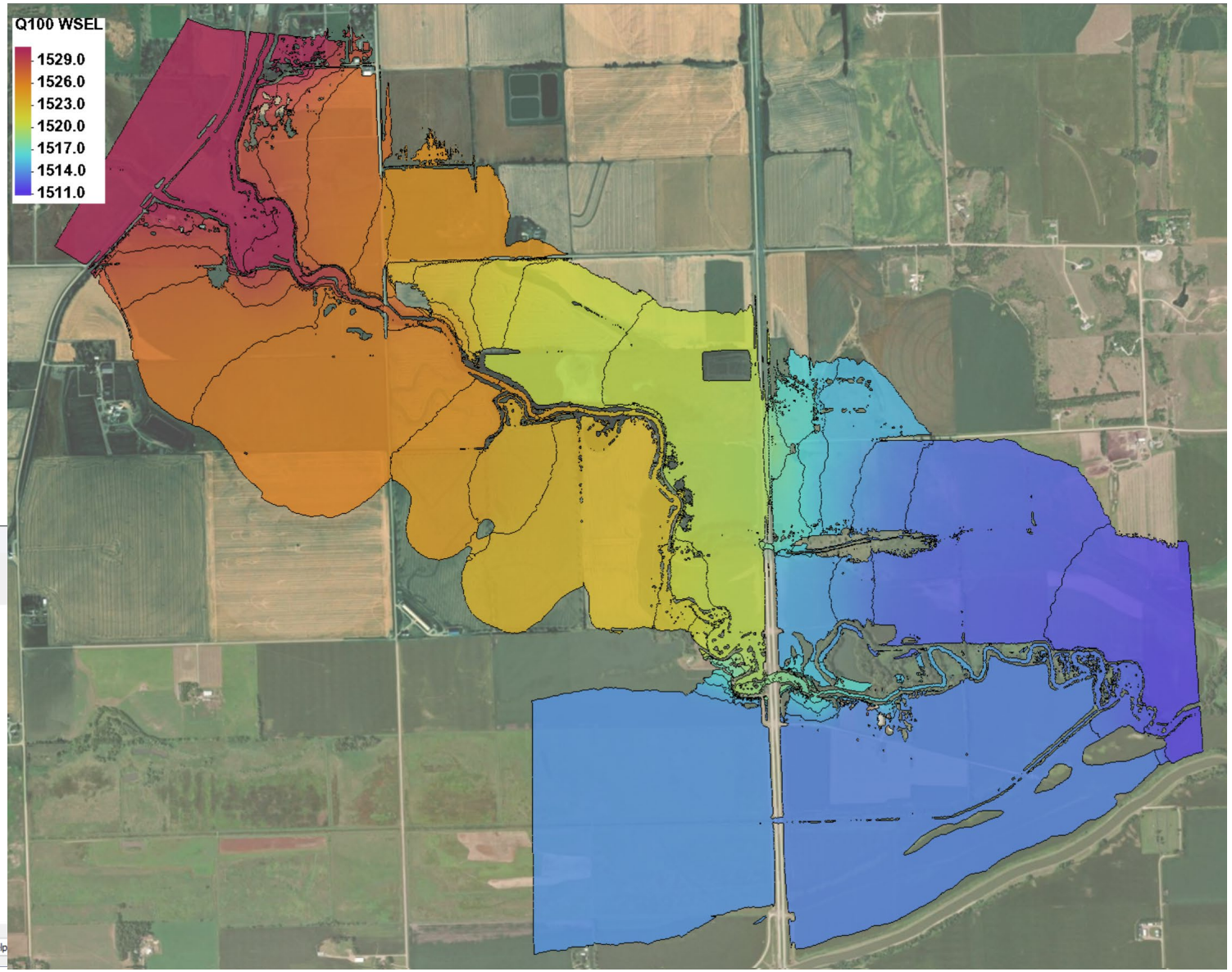


SMS 14 Toolbox

Creating detailed floodplain maps and delineation arcs

- Use the ***WSE/Depth from Dataset*** tool
  - SMS Maps the WSEL results to the original terrain for a detailed flood map
  - WSEL & Depth TIF images are generated

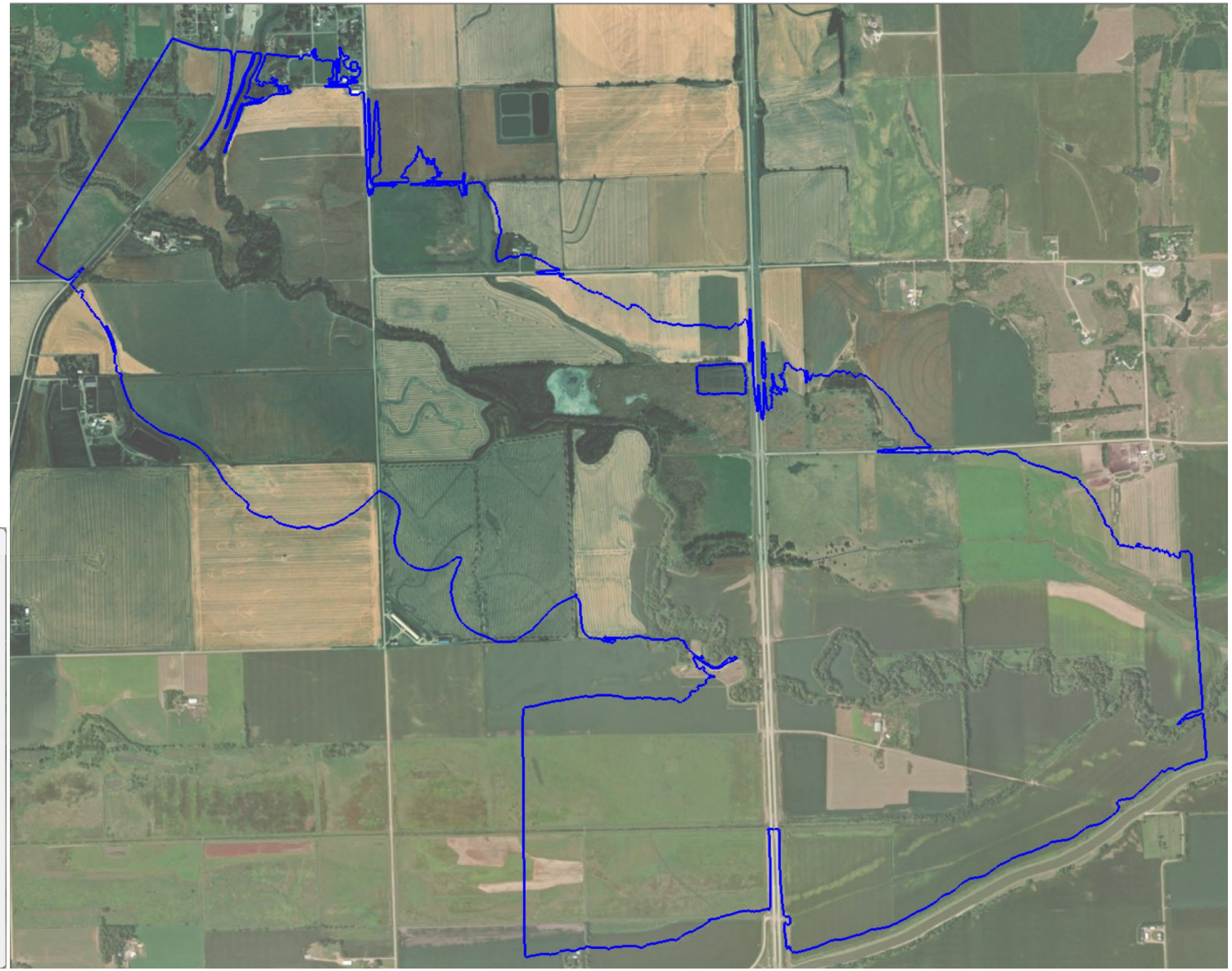


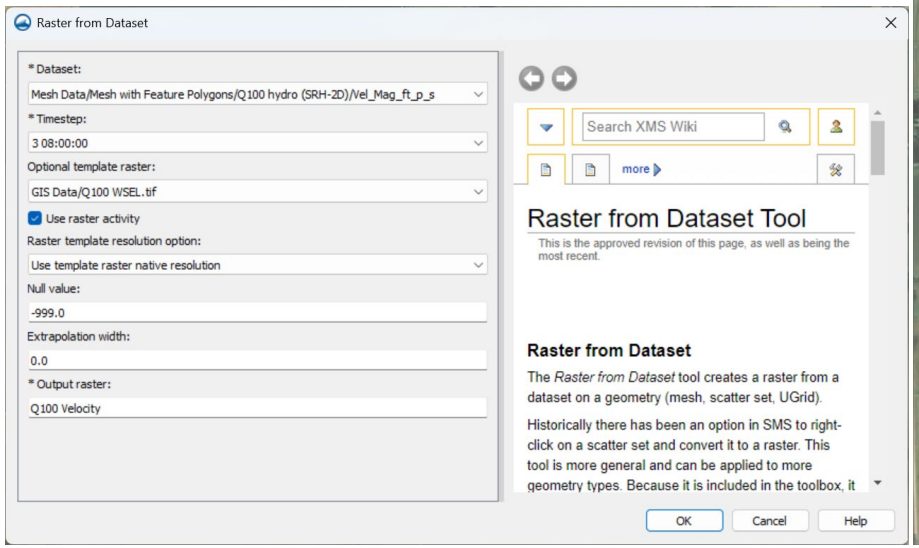


SMS 14 Toolbox

Creating detailed floodplain maps and delineation arcs

- Use the ***Polygons from Raster Bounds*** tool
- SMS generates a new boundary coverage
- Use ***File SaveAs*** and select **.shp** type to export

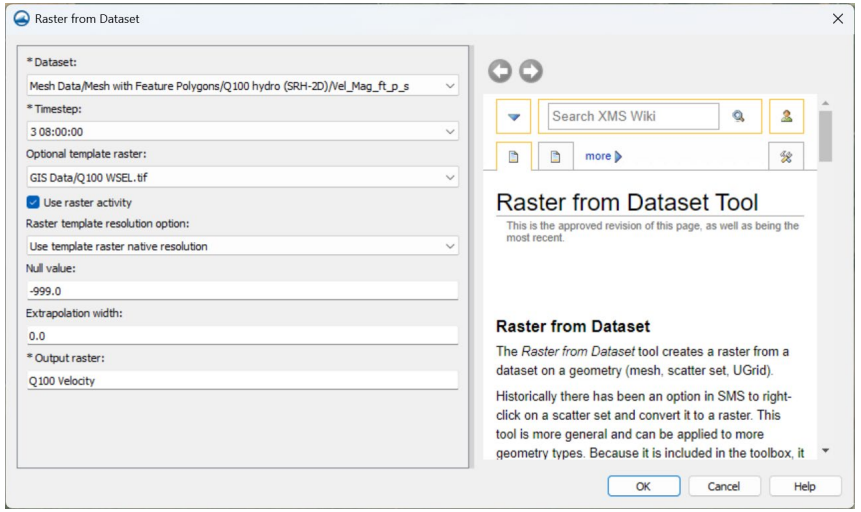


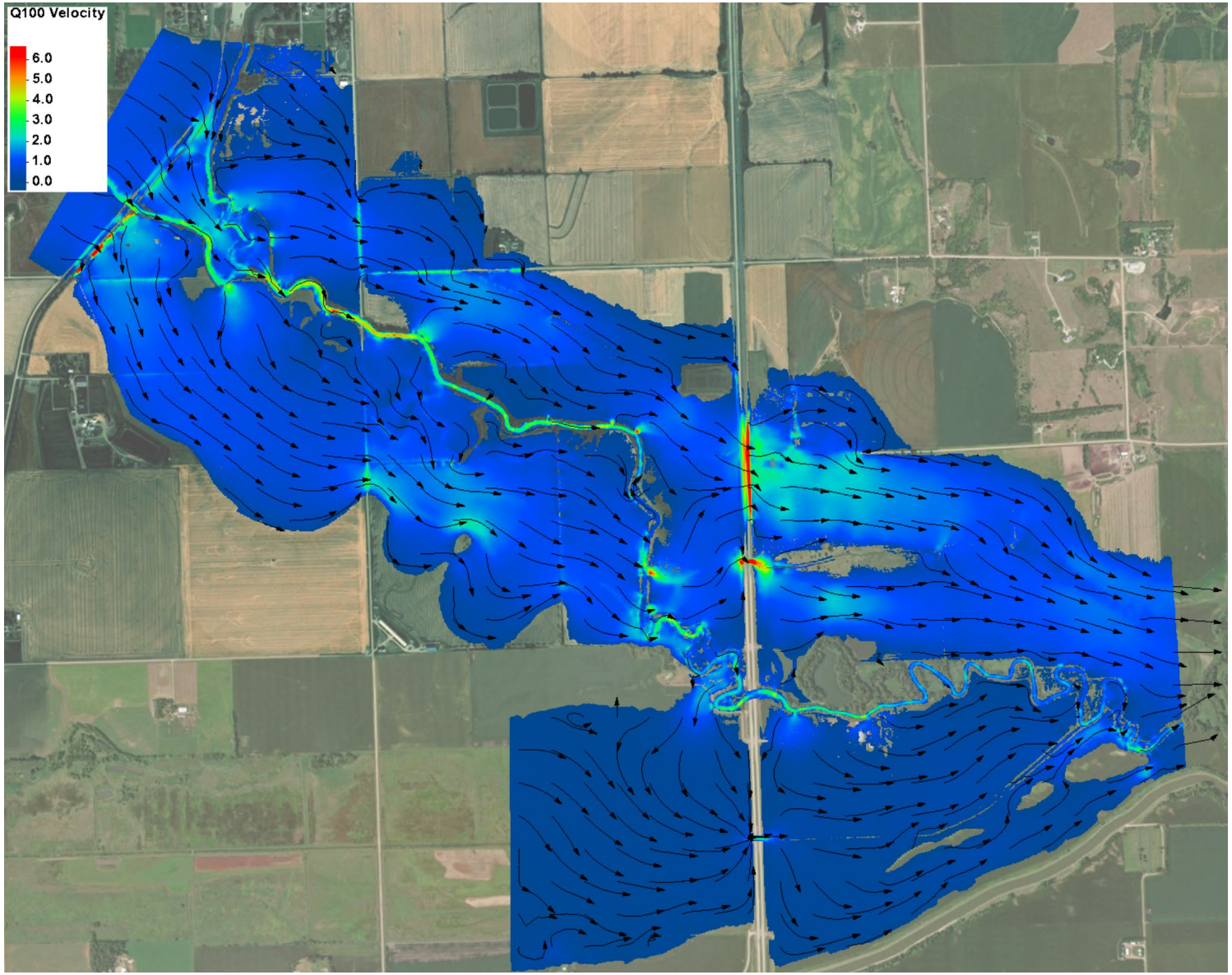


SMS 14 Toolbox

Converting results to rasters

- Use the Raster from Dataset Tool
- Select a dataset (Velocity, Depth, etc.)
- Select the Q100 WSEL TIF as the template raster to map to the same floodplain limits





Questions





THANK YOU for participating!
Please contact us with any questions

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