

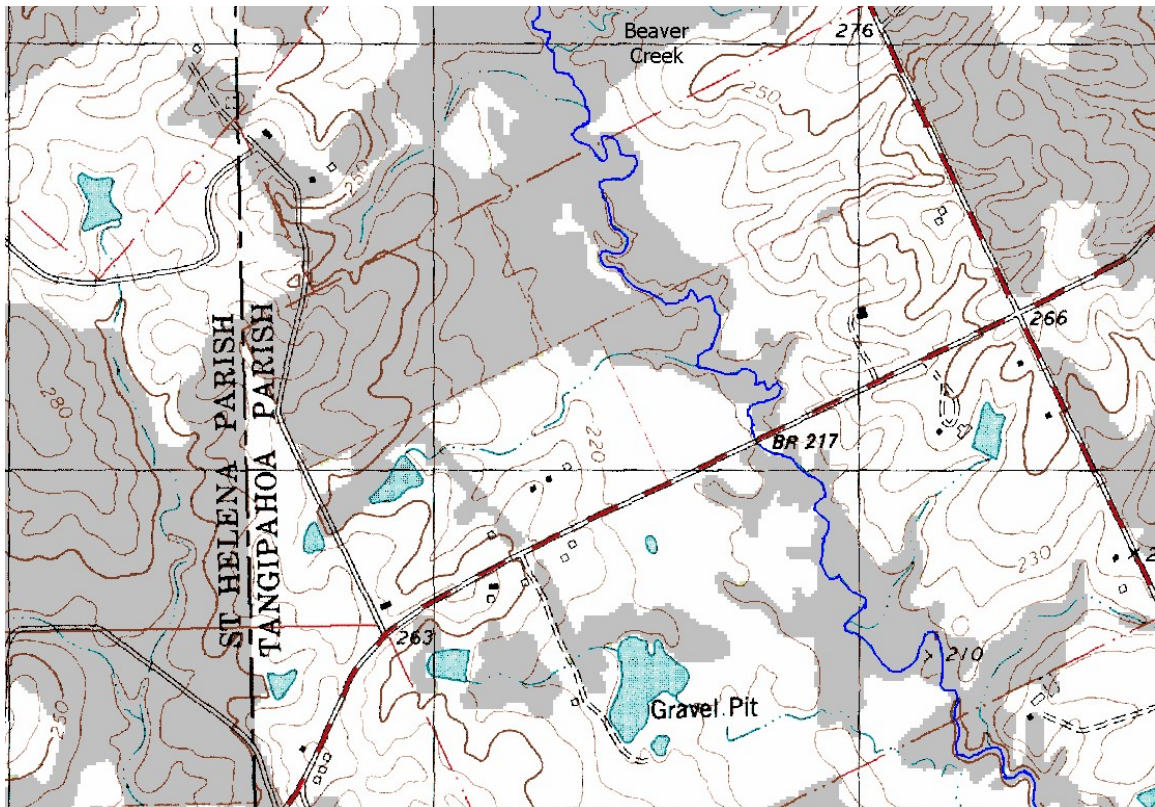
Pre-Processing Geometric Data Workshop

1 Objective

This workshop will help students learn how to use HEC-RAS to pre-process geometric data. Students will learn how to set cross-sectional table properties; pre-process the cross sections into tables of elevation versus conveyance, area, and storage; and review the output from the pre-processor. While this data is from an actual study, the model and results of this workshop do not represent current or future conditions of the river.

2 Background

The stream for this example is a section of Beaver Creek located near Kentwood, Louisiana. The bridge crossing is located along State Highway 1049, near the middle of the river reach. However, the bridge will not be used for this workshop. The field data for this example was obtained from the United States Geological Survey (USGS) Hydrologic Atlas No. HA-601.



3 View HTAB Parameters and Analyze the Hydraulic Property Tables

1. **Start HEC-RAS.**
2. **Open** the "**BeaverCreek**" dataset in the "Geometric PreProcessing" folder.
3. View the default Cross Section Table Parameters in the Geometric Data Editor by selecting the **HTAB** button.

Are the default parameters appropriate for this geometry? If not, change the parameters to appropriate values.

4. **Run** the **Geometry Preprocessor** from the Unsteady Flow Analysis window
5. **View** the **Hydraulic Property Tables** and Plots for each cross section. Note the general relation between conveyance and elevation.

4 Place Levees

6. **Save** the geometry **as** a new file.
7. **Place levees** are the following locations using either the Graphical Cross Section Editor or the Cross Section Editor.

River Station	Station	Elevation
5.99	866	214.8
5.76	906	214.3
5.3	223	209.6
5.13	358	209
5.00	518	209

8. **Save** the **Geometry**
9. **Run** the **Geometry Preprocessor**
10. **View** the **Hydraulic Tables** for each cross section

How did the conveyance vs. elevation relationship change due to the addition of the levee? Compare with the previous geometry file by toggling the selected geometry at the top of the dialog.

5 Ineffective Flow Areas

11. **Save** the geometry **as** a new file.
12. **Add ineffective flow areas** at the levee locations (don't delete the levees).
13. Make them **Permanent**
14. **Run** the **Geometry Preprocessor**
15. **View** the **Hydraulic Tables** for each cross section

How did the conveyance vs. elevation relationship change compared with the previous task?

What provides a better relation between conveyance and elevation between the leveed geometry and the levees with ineffective areas? Why?

6 Questions

- 1. Considering that HEC-RAS is a one-dimensional model, what problems will occur if a levee is overtopped during a simulation? What options in RAS can be used to model a levee being overtopped?*
- 2. Are there any anomalies with the conveyance in the overbanks at River Station 5.3? If so, what is it caused by, and how can it be fixed?*
- 3. How does a permanent ineffective area affect storage within the cross section? When should a cross section be modeled with non-permanent ineffective areas and when should it be modeled with permanent ineffective areas?*