



Teacher Guide to the Potomac River Watershed 3-D Model

This activity will guide students in building a three-dimensional model of the Potomac River watershed that represents the varying elevations of its topography. Students should refer to the accompanying “Potomac River Watershed 3-D Model Instructions” Student Page. You may need to walk them through the steps until they are comfortable with the assignment. While it does take time to construct the watershed model, it is a rewarding project that enables students to conceptualize what a watershed is, and the model may be used to enhance many Lessons in the Education Guide.

Upper Potomac: 02070003 and 02070004
Middle Potomac: 02070008 and 02070010
Shenandoah River: 02070005 and 02070006 and 02070007
Monocacy River: 02070009
Lower Potomac: 02070011

Figure 1. Six sub-watershed modeling units used in this exercise

To simplify this modeling exercise, the 11 major sub-watersheds of the Potomac River watershed have been grouped into six modeling units, following divisions used by the Chesapeake Bay Program’s Watershed Profiles (see Figure 1).

The sub-watershed maps are colored in up to four different shades of gray, with numbers atop the shades of gray. As indicated in the map legends (refer to figure 2), each shade of gray represents a different elevation range, with darker colors (and associated higher numbers) representing higher elevations. Students will gradually build their map in layers to create a three-dimensional depiction of a contour map (see figure 3).

Legend	
	Base Level- 0-327m
	Level 1- 328-655m
	Level 2- 656-983m
	Level 3- 984-1,311m
	Level 4- 1,312-1,484m

Figure 2. Watershed elevation legend

The students may use a variety of materials—such as foam board, felt, clay, or cardboard—to make their models. Whatever they choose, make sure that all of the groups use the same material. You may also assign the students to use a different color to represent each elevation level, but again, be sure that the groups consistently use the same colors. This consistency is critical because ultimately, the students will join their sub-watershed models to create a comprehensive map of the Potomac River watershed.



Figure 3. Example of a contour map. The lines identify areas of varying elevation.

To make their models, the students will need the following materials:

- Scissors and/or X-Acto knives
- Cardboard, felt, clay or some other thick material that is easy to cut
- Glue
- Pencils or felt-tipped pens
- Sub-watershed contour maps (refer to Student Pages)
- “Potomac River Watershed 3-D Model Instructions” (refer to Student Pages)

So that all students in a group can participate in assembling the model simultaneously, you may choose to make as many copies as there are elevation levels for each sub-watershed map.

Each sub-watershed map Student Page contains three maps. The first is a large map of the sub-watershed for students to use as a template for cutting their material. Because this larger map will gradually be cut down to create each layer, a smaller map of the same sub-watershed provides reference for assembling the layers. Finally, a small map of the entire Potomac River watershed identifies where the sub-watershed fits into the larger watershed. Students should refer to this map when fitting together all of their sub-watersheds to assemble the Potomac River watershed.