

# BUILD A RIVER

**Grade Level:** Elementary and Middle School

**Summary:** Students demonstrate how everyone has an impact on the health of a river as it flows through a watershed and discuss ways in which they can improve their impact.

**Time Frame:** Approximately 50 minutes

**Materials:** Large pieces of posterboard or newsprint, markers or colored pencils, paperclips (or other small items from students' desks)

**Background:** Land use can dramatically affect the quality of the water in a river or lake. Vegetation, human settlement, farming, and a variety of other factors can influence the amount of pollution entering a body of water. Individual actions, both positive and negative, can add up to alter the water quality of an area.

Water is affected both by point and non-point-source pollutants. Point source pollution involves pollutants that can be traced back to an identifiable point or source (i.e. a sewage ditch or factory discharge). Non-point source pollution cannot be directly pointed to – the pollutant can come from many places. Examples include fertilizer runoff from farms and gardens, motor oil filtering from paved streets, and sediments from eroding stream banks.

**Preparation:** Using your posterboard or newsprint, draw a river down the middle – color it in blue. Divide the river in half down the middle and into crosswise sections so each group of students will have one 'plot of land' adjacent to the river. Number each section in sequential order so that all land plots on one side of the river are odd numbers and all land plots on the other are even on the top left corner of each section. Cut out the sections of the stream.

## **Procedure:**

1. Inform students they have just inherited a plot of riverfront property and one million dollars in which they can use however they would like.
2. In small groups of 2-4, have students brainstorm the ways in which they would like to use their land and money.
3. Pass out 'plots of land' and markers or colored pencils. Explain that the blue space is the river and the blank space is their land. They have one million dollars to develop their land however they'd like – e.g. build a farm, resort, factory, park, etc. Have students draw what they would do with this land. They should

include how they will get their water, where electricity will come from, and all other resources they will need for this property.

4. When their drawings are completed, ask students to find the number at the top left corner and explain their plot of land is a part of a puzzle. Have students assemble the pieces with all the odd numbers on one side and even numbers opposite.

5. Have students share with the class how they developed their land. They should share how they used water and what actions or land development activities polluted or changed the river in any way. They can represent each pollutant with a paperclip or other item from their desk (the facilitator of this activity may want to select items for each pollutant to keep them consistent for each plot of land).

6. Have students share what each item represents, then pass these items downstream (i.e. plot 10 will pass their 'pollutants' down to plot 8 and so on) until all pollutants have made it to plots 1 and 2.

**Discussion and Follow-Up:** Once all the 'pollutants' reach the final students, discuss the activity. How do the students downstream feel about the pollutants that came into their property? How did the students further upstream feel? Did the pollutants affect property use plans?

Have students reclaim their items. Some more identifiable items could be considered point source pollutants as the students know exactly where they came from. Others, such as paperclips or pen caps are harder to identify as they can originate from multiple sources – these would represent non-point source pollutants.

As a follow-up, have each student write a paragraph detailing the ways in which he or she can reduce the amount of pollution he or she contributed to the river.

*A Step Further:* Students can research the regulations governing waterfront property in their neighborhoods. If they believe their waterways are not managed well they can write letters to local government officials supporting environmentally sound legislation.

This activity was adapted from: *Project WET Curriculum and Activity Guide*.