Watershed Puzzle

Objectives: This can be used as a stand-alone manipulative that doesn't require a presenter or as a 'building block' by a presenter who will expand upon the concepts introduced by this activity. Participants will learn what a watershed is. Participants will observe and manipulate pieces of a 'watershed map puzzle' with political boundaries superimposed upon it. Participants will think about how the 'pieces' – the counties, states, rivers, the ocean – included in the watershed are connected.

Time needed: 5 minutes

Target age: 5-10

Materials needed: - map of watershed, including political boundaries (cut along boundaries, pieces laminated with magnets or velcro on backs)
- board that pieces can stick to with definition of watershed and questions about the watershed

Description: Participants will read the definition of watershed, then put together the pieces of the watershed puzzle. The visual provided by the map is an essential tool in understanding the watershed concept. Once the puzzle is put together, participants will answer questions about the watershed pictured. Questions can be specific to the particular watershed. For example: Can you find Mobile Bay (the water body that defines the watershed used)? From which states does water come? What do you think happens to water that is just outside this watershed? Why doesn't it go into this watershed? The description of the highlighted watershed might also include information related to familiar places, i.e. Water in Mobile Bay might have come from Birmingham, Alabama.

Extensions:
- Other questions might ask participants to consider what this flowing water might be carrying.
- When this is used by a presenter,
  o Discussion might include the importance of water as a shared resource.
  o Discussion might include non-point source pollution, including different types of pollution (sediment, fertilizer and other sources of nutrients, pesticides, oil, etc.), sources of those pollutants, and the effects those pollutants might have on wildlife and humans.
  o Discussion might include the difficulties of managing resources that travel across political boundaries.

National Science Education Standards:

K-4

Earth and Space Science – Properties of earth materials

Science and Technology – Understandings about science and technology

Science in Personal and Social Perspectives – Types of resources

Ocean Literacy: Essential Principles and Fundamental Concepts:

1. *The Earth has one big ocean with many features.* – g. The ocean is connected to major lakes, watersheds and waterways because all major watersheds on Earth drain to the ocean. Rivers and streams transport nutrients, salts, sediments and pollutants from watersheds to estuaries and to the ocean.

Extensions:
NSES:
<u>K-4</u>
Science and Technology – Abilities to distinguish between natural objects and objects made by man
Science in Personal and Social Perspectives - Personal health; Changes in environments; Science and technology in local challenges
History and Nature of Science – Science as a human endeavor
Ocean Literacy:
2. *The ocean and life in the ocean shape the features of the Earth.* – c. Erosion – the wearing away of rock, soil and other biotic and abiotic earth materials – occurs in coastal areas as wind, waves, and currents in rivers and the ocean move sediments.; d. Sand consists of tiny bits of animals, plants, rocks and minerals. Most beach sand is eroded from land sources and carried to the coast by rivers . . .
6. *The ocean and humans are inextricably interconnected.* – e. Humans affect the ocean in a variety of ways. Laws, regulations and resource management affect what is taken out and put into the ocean. Human development and activity leads to pollutions (point source, non-point source . . .) and physical modifications (changes to beaches, shores and rivers) . . . ; g. Everyone is responsible for caring for the ocean. The ocean sustains life on Earth and humans must live in ways that sustain the ocean. Individual and collective actions are needed to effectively manage ocean resources for all.