What’s In a Watershed?

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Teacher Orientation Activity Guides

Expedition 3: What's In a Watershed?

Students research the watersheds of Tokyo Bay and San Francisco Bay and make maps that illustrate the geography of the watershed.

Rationale

We all live in a watershed. Part of the hydrological cycle, a watershed represents the portion of a landscape that drains to a particular stream, river or other body of water. When we understand a watershed, we understand the intimate way humans are connected to the environment. In this activity, students research and map the watersheds that drain into Tokyo Bay and San Francisco Bay. As an extension activity, students map their local watershed.

Materials

• "What's In a Watershed?" worksheet

• Atlases and/or maps that show the watershed area for Tokyo Bay and San Francisco Bay

• Maps of your local region (US Geological Survey and AAA maps provide detailed information)

Procedure

1. Introduce the activity and facilitate a class inquiry.

- What is a watershed? What boundaries do you think define our watershed?
- What is a watershed seed point?

• What natural forces shape a watershed?

• What human activities shape a watershed?

After eliciting several responses, share the following definitions:

• *Watershed:* the entire area above a given point (called the *watershed seed*) that drains water into that point.

• *Watershed seed point:* the point at the base of a watershed into which all points in the watershed drain; often the mouth of a stream or river.

2. Divide the class into small groups of 3 to 4 students each. Assign Tokyo Bay to half the groups and San Francisco Bay to the remainder of groups.

3. Provide adequate time for the groups to access Virtual Expeditions and construct watershed maps. If possible, provide students with regional maps and/or print atlases to help them identify geographic features.

4. After the groups have completed their maps, post them in the classroom for a group walkaround. Then, facilitate a class debriefing on the activity.

• How do watersheds connect the terrestrial (land) environment with the marine (ocean) environment?

• What is the relationship between watersheds and human communities?

• In what ways do humans alter the natural flow of watersheds (dams, reservoirs, irrigation canals, etc.)? What is the nearest dam or reservoir to our school? What effect has it had on the watershed?

• More than three-quarters of ocean pollution comes from land. What are some of the sources of pollutants that end up in the oceans (lawn and garden fertilizer and pesticides, agricultural chemicals, mine tailings, sewage, trash disposal, and air pollution)?

5. As an extension, have students map their local watershed.

Extensions

• *Watershed Model*. Build a three-dimensional watershed model. Using a topographic map of your watershed as a guide, construct a model from a layered material like corrugated cardboard or plywood. Plaster of Paris or papier-mâché can be used to smooth the edges. Coat with a waterproofing material. Place an eyedropper or spoonful of water on the model and watch where it flows!

• *Oral History.* Interview elders and other long-time residents of the community about the history of the local watershed and changes they have witnessed in their lifetime. How do they feel about the changes they have experienced?

• *Watershed Story.* Imagine our watershed 50 years ago. Now imagine it 50 years in the future. Write a story that weaves the two perspectives together. What insights do you have about the human species?

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Nautilus Institute
608 San Miguel Ave., Berkeley, CA 94707-1535 | Phone: (510) 423-0372 | Email: nautilus@nautilus.org