Water Stories Lesson Three:
"Where does the water go?"

Academic Question: How much water do you and your family use each day?

Objective(s):

- To describe the local human history and development that impacts and is impacted by these waterways
- To understand that fresh water is a limited resource
- To understand how much water we use each day
- To understand that groundwater is a fraction of the water found on Earth but an important source of fresh drinking water

Process (Activities):

1. Begin the activity by asking where water is found on the Earth. Allow students to brainstorm where water is found. This list should include: oceans, seas, glaciers, ice caps, snowy mountain ranges, aquifers, ground water, lakes, rivers, and streams.
2. Using an apple to represent the earth, ask the following questions and carve out the specified amount:
    a. Begin explaining that the apple represent the earth. Ask students: What percent of the earth is water? (75%). Carve the apple into four quarters. Discard 1 quarter of the apple. The remaining three-quarters represent the water.
    b. Ask students: What percent of the earth's water is in the ocean? (97% of the remaining three-quarters of apple) Carve the peeling off one quarter of the apple. Discard all but peeling. The peeling represents the fresh water on the earth.
    c. Ask students: What percent of the earth's water is tied up in glaciers and ice caps? (2% of the original three-quarters) Cut off the tip of the peeling. Discard all but the tip. This tip represents all the water the remains for all plants, animals, and humans.
    d. Ask students: What percent of the earth's water is held in lakes, rivers and underground sources? (.62%) The last small piece of peeling (0.62%) is all that remains to represent possible water sources available for all living things: .6% represents ground water and .02% represents surface.
    e. Ask the question: What happens if we don't protect this resource?
    f. Eat this last piece of apple.
3. Discuss with students how much of the fresh water is usable (some water is trapped in unyielding soils or is too polluted). Ask students how much water they think they use each day.
4. Have students take the water use survey home and measure their water use for one day.

HOME WATER USE SURVEY

Showering (Showers use approximately 14 gallons per shower.)
_____ gallons per day

Bathing (Bath uses 20 gallons.)
_____ gallons per day

Flushing Toilet (Low flush toilet uses 1.6 gallons per flush. Standard toilet uses 4.5 gallons.)
_____ gallons per day

Running the Washing Machine (Washing Machines short cycle uses 7 gallons per load. A full cycle uses 16 gallons per load.)

Short Cycle: _____ gallons per day
Long Cycle: _____ gallons per day

Using the Automatic Dishwasher (A dishwasher uses 15 gallons per load.)

_____ gallons per day

Dishing Washing by Hand (Washing the dishes under running water uses 30 gallons. Washing dishes by filling the sink uses 5 gallons.)

_____ gallons per day

Drinking, Cooking (Drinking and cooking uses 0.5 to 1 gallon per person per day.)

_____ gallons per day

Washing Hands (Washing your hands with the water running uses 10 gallons. Washing your hands without the water running uses 0.5 gallons.)

_____ gallons per day

Brushing Teeth (Brushing teeth your teeth with the water running uses 10 gallons. Brushing your teeth without the water running uses 0.5 gallons.)

_____ gallons per day

Using Outdoor Water (An average household hose uses 10 gallons per minute.)

__ # of minutes X 8 gallons per minute = _____ gallons per day

TOTAL WATER USE: My family uses ___ gallons per day.

Product/Application: Discuss with students how much water they use and what activity used the most water. Discuss ways water can be conserved. Have the class create a bar chart of their water use and calculate the class average. Discuss the differences in water use. Finally, discuss what water source your community relies on for fresh drinking water and the threats to the long-term availability of this water supply.

Assessment/Evaluation: Ask students to identify 5 ways they can conserve water. Ask students to identify their source of drinking water.

Conclusion: Have students label the community's source of drinking water and create water conservation information to post on the waterways wall map display.

Resources: The following web sites contain helpful water usage and conservation information:

- Environmental Protection Agency's Office of Water (www.epa.gov/watrhome/)
- Water Wiser: The Water Efficiency Clearinghouse (www.waterwiser.org/)
- The USGS: Water Use in the United States (water.usgs.gov/watuse/)
- The USGS: Water Science for Schools (wwwga.usgs.gov/edu/index.html)
- EPA's Office of Ground Water and Drinking Water "How Much Drinking Water Do We Use In Our Homes?" (www.epa.gov/OGWDW/wot/howmuch.html)
- EPA's Water Conservation web site (www.epa.gov/OW/you/intro.html)

Time Frame: Three 45 minutes class periods.
Grade Level: 6th - 12th