

A Watershed View of the Bay

Grade Level: 7-12

Subject Areas: Physical Science, Life and Space Science

Duration: 1 to 2 class periods

Setting: classroom

Skills: map reading, analyzing and interpreting information

Vocabulary: topographic, confluence, delineate

Related State Content Benchmark Objectives

- Describe how rainwater in Michigan reaches the oceans
- Describe and identify surface features using maps

Objectives

Students will:

- delineate the boundary of the Grand Traverse Bay Watershed;
- locate all of the streams and rivers that flow into the Bay;
- determine the stream order of each stream and river at its confluence with the Bay; and
- given another set of topo maps, construct or piece together another watershed

Materials

- topographic maps that contain the watershed (Traverse City, Traverse City SW, Traverse City SE, Elk Rapids, Sutton's Bay, Grawn, Mayfield, Jack's Landing, and South Boardman)*
- removable tape (photographic tape)

Background

Students should--at the middle school and high school level--understand how water flows through the Great Lakes Basin (watershed). They should also be able to roughly delineate the boundary of the watershed in which they live. Topographic maps are a great tool for helping to "get a picture" of the total area and configuration of the watershed. It may be helpful to introduce students to topographic maps by asking them to find their school and other points of interest. It is particularly important that students make the connection between high points (elevation) on a contour with a place they have visited. For students in the Traverse City area, such a high point could be Wayne Hill, or the top of a local ski area. This activity suggests topographic maps for the Grand Traverse Bay Watershed (where the Schoolship program sails); by working from the *Michigan Atlas* one can determine the topo maps suitable for other watersheds.

The Activity

1. Distribute one topographic map for every 3-4 students.
 2. Ask the student groups to work together to identify features of their particular topo map: rivers, streams, roads, Lake Michigan, cities, etc.
 3. Ask students to identify and link with removable tape each of the highest elevations in their topo map taking care to move around headwater tributaries of streams.
 4. Ask students to generate a list of questions they need answers to in order to find the adjacent topographic map (students may use features such as rivers to help form questions).
 5. Allow one student from each group to visit other groups and "find" the topo map that connects or continues their map. The idea is to "piece together" all of the topo maps in such a way that collectively they form the watershed of Grand Traverse Bay.
- *Topographic maps can be found at outdoor/camping stores, bookstores, and planning departments.*

Additional Resources

A great resource for working with topographic maps is “How to Teach with Topographic Maps” by Dana Van Burgh, Elizabeth N. Lyons, and Marcy Boyington. Order from the National Science Teachers Association (NSTA) 1840 Wilson Boulevard, Arlington, Va 22201-3000, or visit their Web site @ <http://www.nsta.org>