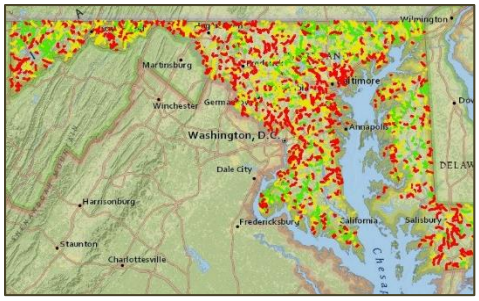
FieldScope Map Inquiry: Streams and Land Use Near Your Campus



Goals

Students will develop on-line mapping skills to explore the school's watershed, using Maryland Fieldscope (http://maryland.fieldscope.org/v3) and Maryland Stream Health mapping programs. They will learn how maps can support environmental research. They will observe relationships of land use and water quality in their watershed.

Grades: 6-12

Time: 60-90 minutes

Skills Exercised: Computer mapping programs, critical thinking – making inferences from data.
Math: percentages

Background

FieldScope is an online mapping program that enables students to analyze, interpret, and share environmental data about their schools' watershed or an adopted stream. They will use the Maryland FieldScope to investigate the following features:

- Watershed outline and location
- Rivers and streams
- Land cover
- The amount of impervious surface in their watershed
- Land-use relationships to local stream health.

Prerequisite Knowledge

It is helpful for students to understand what comprises a healthy stream system and the concepts of impermeable surfaces and stormwater runoff. Suggested viewing: Score Four PowerPoint Presentation.

Materials Needed

- Computers
- Student Lesson Sheets
- *Note internet connection delays can occur when an entire class students are using computers; therefore, it can be beneficial for students to work in pairs or teams of 3.*

Teacher Instructions

This lesson has six sections. The student handout has directions for each section, and it is advisable to practice these steps beforehand. (If teachers desire a more thorough understanding of FieldScope, tutorials are available on its website; this lesson can, however, be completed without a tutorial.)

1) Introductory Directions.
   - In this section, students learn to select a base map and map layers, how to view map layers, and use the legend and zoom features.

- It is helpful to display the Fieldscope website and walk the students through this section so that they can understand the features.

2) Watersheds and Rivers and Streams
   - In this section, students locate their school, create a marker for the school, determine what watershed it is in, and find the nearest stream.
   - Students can proceed independently, but time should be given to answer any questions about the program, as well as the discussion questions at the end of the section.

3) Land Cover
   - Students set new map layers and identify different land covers in their watershed.
   - Again, discussion questions are included.

4) Impervious Surfaces Layer
   - Students identify areas and land uses with impervious surfaces.
   - Students hypothesize about the relationship of stream water quality and land-use and the proporation of impervious surfaces in their watershed. Students share their hypotheses.

5) Stream Health Layer
   - Students learn the results of MD Department of Natural Resources stream monitoring in nearby streams.

6) Conclusions
   - The class should summarize what has been learned and relate it to information presented in the Score Four initial PowerPoint presentation.