

Reading the River 2002
Boone County Water Quality
Grades 11-12
Earth Science

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Context of Curriculum Product

This unit will be taught as part of a one semester Earth Science Class. The lesson will be taught after a unit on running water and ground water.

Boone County Water Quality

_ Objectives Upon completion of this lesson, the students will be able to:

1. Describe the water cycle.
2. Determine the factors influencing water quality.
3. Identify the local watersheds and their significance in managing water quality.
3. Apply these concepts to the problem of locating a sewage plant in Boone County.

_ Program of Studies Scientific Inquiry

Identify and refine questions and identify scientific concepts to guide the design of scientific investigations.

Use equipment (e.g. LaMotte water test kit) and data collecting techniques.

Communicate results of scientific investigation.

_ Core Content for Science Assessment

- SC-H-2.3.3 Interactions among the solid Earth, oceans, the atmosphere, and living things have resulted in the ongoing development of a changing earth system.

_ Materials

LaMotte Kit

Topographic Maps of Boone County

_ Activity Procedure

Water Quality Test

- 1) Instruct the class in use of the LaMotte Kit
- 2) Instruct the class in how to measure the health of a stream
 - a. Water Quality
 - pH
 - Dissolved Oxygen
 - Temperature
 - Conductivity
 - Coliform tests (depending on the cost)
 - b. Aquatic insect population
 - c. Fish Population
 - d. Habitat Characteristics
 - Weather
 - Current
 - Overhead Canopy
 - River Bottom Composition
 - Land Use
 - Water Appearance
 - Water Odor

- 3) From this the student will develop a checklist. The students will then apply the checklist to a stream near their home.
- 4) The results will be displayed on a map.

Watershed Activity

- 1) A topographic map will be given to each student.
- 2) The student will locate their house on the map
- 3) The student will then trace the route that the water drains.
- 4) The student will identify the local watershed between their house and the Ohio River.

Sewage Problems in Boone County Activity

- 1) Have teams of students review the following web sites to produce a newspaper editorial on the location of the Boone County Sewage Site
- 2) Invite a representative from Sanitation District #1 to discuss their proposal for Boone County.
- 3) After listing to the representative from Sanitation District #1 have each student write his or her own editorial on the location of the sewage plant.

_ Definition/Explanation of concept/skill

- 1) Use of the LaMotte kit to measure water quality.
- 2) Use of topographic maps to locate house and collection sites.
- 3) Identify local watershed.
- 4) Analysis of argument about sewage plant location.
- 5) Write results his or her own editorial on the location of the sewage plant.

_ Method to assess stated objectives

The assessments will be based upon the work done in the activities.

References

Lick River Water Shed

<http://kywatersheds.org/Licking/LRbasin.htm>
<http://12.220.89.221/lickingriver/>
<http://www.crh.noaa.gov/cgi-bin/ahps.cgi?lmk&blsk2>
<http://www.jpfr.org/LRV/River.htm>
<http://water.nr.state.ky.us/watch/lifec.htm>
<http://www.lickingriver.org/>

Sewage

http://www.bccn.boone.in.us/health/septic_systems.html
http://enquirer.com/editions/2002/04/17/loc_sewage-treatment.html
http://enquirer.com/editions/1999/07/28/loc_boone_weighs_in_on.html
<http://www.kentucky.com/mld/kentucky/3908494.htm>
<http://water.wku.edu/wastewater/septic.html>
<http://water.nr.state.ky.us/dow/fac/sec113.htm>
http://enquirer.com/columns/crowley/1999/08/15/pcr_like_it_or_not_boone.html
<http://www.sd1.org/info/CSOs.html>

Education

<http://www.sciencecourseware.com/>