

Discovery Area Post-Protocol



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Purpose

To use a land cover type map to make environmentally sound decisions

Overview

Students analyze their land cover type maps to determine where to place a hospital while considering potential environmental impacts. Students present their work in a mock town meeting. At the conclusion of the meeting, students should reach a final decision.

Student Outcomes

Science Concepts

Life Science

Earth has many different environments that support different combinations of organisms.

Humans can change natural environments.

Geography

How humans modify the environment

Scientific Inquiry Abilities

Use the land cover type map to discuss how a structure will affect organisms using a particular land cover type.

Analyze different scenarios that change the land cover types of an area.

Evaluate different solutions to various scenarios.

Identify answerable questions.

Design and conduct scientific investigations.

Use appropriate mathematics to analyze data.

Develop descriptions and predictions using evidence.

Recognize and analyze alternative explanations.

Communicate procedures, descriptions, and predictions.

Level

All

Time

Two to four class periods

Materials and Tools

Classified land cover type map from *Manual Interpretation* or *Unsupervised Clustering Mapping Protocols*.

Prerequisites

Manual Interpretation or *Unsupervised Clustering Mapping Protocol*.

Familiarity with the terms: dominant, subdominant, rare, and isolated

Group presentation skills



What To Do and How To Do It

1. Divide the class into groups of three or four.
2. Discuss what land cover types are classified on their land cover type map. Have them list them in the table on the *Hospital Planning Sheet*.
3. As a class, thoroughly discuss each of the land cover types. You may want to use the ideas and questions below to guide the discussion. Pay close attention to living as well as non-living constituents.
 - Is there vegetation in this land cover type? What kinds?
 - What animals depend on the vegetation in the land cover type?
 - What is the amount of suitable land cover needed for those plants and animals?
 - What part does the land cover type play in watershed issues?
 - Where are different land cover types located in relation to each other?
 - Are there any parks, protected or threatened areas?
4. Each group must decide the three most desirable locations for a hospital, including the parking lots and roads.
 - Using the chart, students compare the land cover areas. How will the proposed development affect the plants and animals in those areas? How do people presently use those areas?
 - The students discuss the options with their group and narrow their decision to one.
5. Once they have narrowed their choices down, students construct a presentation board with their proposal and prepare a presentation for the class explaining their choice of site.

- Enlarge the original classified image so that the land cover areas are easily recognizable.
 - Place the hospital, road, and parking lots that will be part of the development on the classified image, basing the size on other buildings in the image.
6. **Town meeting:** Each group explains their location choice for the hospital. Each presentation is intended to persuade classmates that the team has picked the best location. Students role-play local citizens. Asking questions related to environmental issues should be encouraged.

Note: To add more reality to the exercise, assign roles to students: Nurse, Forest Ranger, Unemployed Person, Watershed Ecologist, Student, Hospital Board of Directors, Sick Person, Hotel Owner, New Doctor, etc. Have each student role-play during the site selection and/or mock town meeting.
 7. After viewing all the presentations, ask each student or group to indicate which location they liked best and why. Vote on the best place for the hospital.

Discussion

1. Is there agreement with the class decision? Why or why not?
2. Could there be more than one answer?
3. How did the class/students decide on their final location? What considerations played the most important roles? Land cover type? Animal life? Plant life? Water source? Wetland? Loss of buildings? Trying to limit new roads? Existing uses of the land? Need for the hospital within the boundaries of their GLOBE Study Site? Etc.

Assessment

1. A rubric can be created for the presentation. It might include: all members participate in the presentation, group's ability to work together to make decisions, all ideas accepted for discussion, skills such as clear speaking voice, speed of speech, ability to answer questions from the audience, and level of preparation. You can also include the presentation board in the assessment. The rubric for this might include neatness, location choice clearly marked and visual presentation.
2. For individual assessment, ask the students to write out their choice of location and why they picked this area. They should attempt to take environmental factors into consideration and consider the map information as a whole.

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Hospital Planning Sheet

Name: _____ Date: _____

Land Cover Types in your satellite image:

Most Common Land Cover Types	Less Common Land Cover Types	Least Common Land Cover Types
1.	1.	1.
2.	2.	2.
3.	3.	3.
4.	4.	4.

Using the information above and your class discussion, decide as a group where to place a hospital that is 9000 m² in size so that it has the least impact on the environment. This size is approximately 10 pixels that can be arranged however your group decides. It should be easily accessible to roadways and to the majority of the population in your area. You should include at least two pixels for a parking lot and other grounds (garden, courtyards, etc.). Use your satellite image to determine your group's three choices. Be sure to justify each choice.

Choice	Reasons

Narrow down your three choices to one. In the space below, explain why you chose this site and what benefits it has over the other choices.
