

Lab: Modeling Land Use

Purpose:

A new community must be planned before it is developed. Many different people are involved in the process of planning a community. In this lab you will work in groups to plan a new community development for a growing city. Your group's objective is to plan the community while preserving as much of the natural environment as possible. You particularly need to pay attention to your water resources.

Background information:

Land use is an important issue for us today. We are losing farmland for growing food to new buildings of many kinds. So we now have more homes and shopping malls, but not as much land to grow our food. And, once we have put blacktop on the land, we no longer are able to have the water infiltrate the ground and percolate through the layers of rock into the groundwater. Every township has zoning rules that tell us where we can build and develop the land. These rules are established by the township board members. Many people will have input into your plan.

Have each group member select a role:

Developer: Interested in building houses, schools, and shopping centers

Conservationist: Interested in preserving open space and natural areas

Planner: Interested in attracting people and businesses to the community

Engineer: Interested in developing appropriate locations for the community infrastructure such as WWTF, DWTP, and power plants.

Materials:

Colored Pencils

Graph paper

Pencil

Ruler

Procedure:

1. Use all or part of a piece of graph paper as your map. Each square of the graph paper equals 1 acre.
2. Using a blue pencil color in a 250 acre lake.
3. Using a yellow pencil color in 100 acres of wetlands adjacent to the lake.
4. Using a green pencil color 100 acres of forest area.
5. Using a red pencil color 200 acres of farmland.
6. Once the areas are colored in, they cannot be moved.
7. Using the remaining acres, plan a community that has minimal impact on the environment.

Observations:

8. In your roles as the developer, planner, engineer, and conservationist, discuss how and where to put the mandatory following areas:
 - a. 40 acres for a landfill

- b. 20 acres for utilities such as a power plant for electricity, a drinking water treatment plant, and a waste water treatment facility. These must be located on a river.
 - c. 40 acres for parks
 - d. 200 acres for housing
 - e. 80 acres for shopping, hospitals, and schools
9. The areas for each item in question 8 are negotiable if everyone agrees to the change, however, the landfill must be at least 30 acres.
 10. You must plan for and include on your map sources for food, water, and electricity for the community.
 11. Draw each of the items on your map based on the area you negotiated for each one.
 12. Be sure to plan for and include roads, trails, or bridges as needed on your map. Yep, roads must be included and shown going to and connecting all areas.
 13. Include a map key at the bottom of the map to identify items such as roads, buildings, housing, and utilities.

Analyze the Results:

14. Did everyone in your group agree on the community development plan, or were there conflicts of interest? Explain how you solved the conflict.
15. Were you able to include everything in the plan that each group member wanted?
16. What issue caused the most discussion in the group? Why?
17. What challenges did you face in working around the land features? Were you able to conserve most or all of the lake, wetlands, and forest?
18. Where does your group foresee future growth and development to take place?

Conclusions:

19. How do you think this land use planning model compares to the real-life process of land use planning?
20. How does this model of land use planning illustrate human impact on the environment?

RAFT project:

RAFT is an acronym for **Role: Audience (Intended Recipient): Format: Topic**

Role	Audience	Format	Topic
Stream	Residents of an Elderly community	Travel guide	Journey downstream
Stream	City Planner	Complaint letter	Turbidity
Stream	Construction Company	Advice column	Building on a floodplain
Stream	U.S. Senator	Letter	Pollution
Stream	4 th grade student	Postcard	Dam

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