

**Learning Outcomes:**

Nature of Science	Students should be able to review and reflect on the skills and thinking used in carrying out investigations, and apply their learning and skills to solving problems in unfamiliar contexts
Biological World	Students should be able to evaluate how humans can successfully conserve ecological biodiversity and contribute to global food production; appreciate the benefits that people obtain from ecosystems
Earth and Space	Students should be able to illustrate how earth processes and human factors influence the Earth's climate, evaluate effects of climate change and initiatives that attempt to address those effects

A developer would like to purchase a large area of farmland near Portumna. Community members are worried about the environmental impacts that the development may have on the land. A committee has been formed to research these impacts before any decisions are made. You work for an environmental consulting firm. Your team's task is to design plans for monitoring and minimizing environmental impacts and submit those plans to the town committee.

**Task 1: Research**

Begin by identifying the possible impacts associated with new development that can affect the environment.

• Choose one environmental issue you identified to research further. Think about the following questions as you research.

1. How does your issue affect the environment?
2. How does your issue affect living and non-living things?
3. What role does your issue play in the economic and cultural aspects of the community?
4. Do programs currently exist to address this problem?
5. If so, how successful are these programs?
6. What methods have been developed to reduce the environmental impact?
7. What methods are being used in other rural areas with similar concerns?

## **Task 2: Planning a design**

Use your research results to begin planning a design to monitor and minimize the environmental impact of the issue you chose. Consider the following questions as you plan your design.

- What is the best way to continuously monitor the impact of the problem you researched?
- Will that method still work even after your design is implemented?
- How will your design be implemented?
- Who must be involved?
- What resources are needed?
- What are the possible advantages and disadvantages of your design?
- What technologies must be in place for your plan to work effectively?

## **Task 3: Evaluate your design**

Sketch out a preliminary draft of your design and plans. Evaluate your design.

- How will you be able to tell if your design is working?
- Did you include a way to monitor the impact of the problem after your design is in place? Explain your answer.
- Will your design cause hardship to any part of Portumna?
- Did you include suggestions for lessening that hardship? Explain your answer.
- What sort of results do you expect? Are these results realistic? Why or why not?

## **Task 4: Present your findings**

Make any necessary revisions and finalize your design.

- Compile background information and information about your design into a recommendation to share with the town committee. Your plan should include visuals, such as graphs, maps, or tables.
- Your team will present the plans to your class.

**Student evaluation and reflection on learning:**

What did I learn?	What did my team mates learn?	What did my teacher learn?

Teacher Feedback
What have I learned?