Name _____ Date _____

Nitrogen in Ecosystems

During this lab, you will design and carry out an experiment that investigates the effects of increased nitrogen on an aquatic or a terrestrial ecosystem. This will be done in 'microcosms', that is, models of a real ecosystem. With your group members, create an experimental design and submit it to your teachers for approval.

Part 1: Design

1. First, decide whether you will experiment on an aquatic or terrestrial ecosystem.
2. Next, decide what you think will happen if you increase the concentration of nitrogen in your ecosystem. **Hypothesis:** _____
   _____
   _____
3. Things to think about:
   -Will you measure on a daily or a weekly basis?
   -How much fertilizer will you add? How often?
   -In an aquatic ecosystem, what will you measure: DO, NO3, pH, temperature
   -In an aquatic ecosystem, will you measure phytoplankton growth? Will you add an aquatic plant?
   -In a terrestrial ecosystem, what will you measure: plant height, soil pH, soil temperature, NO3
   -How long will you run your experiment? How many replicates will you complete?
   -How will you determine the impact of your fertilizer additions?
4. What materials will you need?
   _____ _____ _____
   _____ _____ _____
   _____ _____ _____
5. Explain your experimental design:
   _____
   _____
   _____
   _____
   _____
   _____
   _____
6. Check your procedure with your teacher.

Part 2: Data collection

Based on the type of ecosystem you are studying, create a data table to collect your results.

Part 3: Analyze results

Share your data with your classmates. In your final lab report, include answers to the following questions:

1. What happened to your ecosystem with the addition of excess nitrogen fertilizer?
2. Which treatment had the greatest impact on your ecosystem?
3. Explain the impact of excess nitrogen on aquatic and terrestrial ecosystems.
4. Imagine you are managing a local watershed. You need to insure that the reservoir within your watershed remains viable as a drinking water source. What measures would you take throughout the watershed to maintain this level of water quality?