

UNL MESOWHEELS Program: *What is a Wetland?*¹

BACKGROUND:

Nebraska is home to four diverse and important wetland systems: saline, riverine, playa, and sandhill. Wetlands provide several benefits to our environment including²: improving water quality, providing habitat for wildlife, reducing flooding and soil erosion, supplying water storage, and providing recreational and education opportunities. The state of Nebraska contained around 2,910,500 acres of wetlands in 1867, but now only has around 1,905,500 areas (35% loss)². Therefore, efforts to preserve and restore this important ecosystem is critical for improving water quality and providing habitat for sensitive wildlife and plants.

OBJECTIVE:

The objective of this exercise is to

1. Understand how wetlands can reduce sediment and contaminants (i.e., pesticides and phosphorus) attached to sediment from entering rivers
2. Observe how water is slowed down and stored in wetlands

MATERIALS NEEDED PER STUDENT:

Part 1

- 12-ounce cup with 4 small holes cut into the bottom of the cup to allow drainage of water
- 8-ounce cup or beaker
- Sponge cut in a circle to fit cup
- Coffee Filter
- Pet Store Sand
- Gravel or Pet Store rock
- Soil with mulch
- Pitcher

Part 2

- 6"X6" tin pans
- Modeling Clay or PlayDough
- Sponges (uncut)
- Soil with mulch
- Pitcher

PROCEDURE:

Part 1: Water Quality Improvement

1. First start by discussing why water quality is important. Search for recent examples of water quality issues in the United States and world.
2. Pass out the following materials to each participate or group order: 12-ounce cup, coffee filter, sand, gravel, 8-ounce cup/beaker

1. Adapted from The Watercourse and Environmental Concern Inc. (1995) (https://www.fws.gov/uploadedFiles/Region_1/NWRS/Zone_2/Inland_Northwest_Complex/Turnbull/Documents/EE/Field_Trip/Wetland%20in%20a%20Pan.pdf)
2. http://outdoornebraska.gov/wp-content/uploads/2015/10/NebraskaWetlandsGuide_03182016.pdf

3. Request they install their wetland in the following order (See Figure 1):
 - a. Coffee Filter
 - b. Sand (2 inch depth)
 - c. Gravel (2 inch depth)
4. Holding the wetland cups over the smaller cup or beaker pour water mixed with mulch/dirt into the wetland
5. Discuss what happens to the water. Compare in different beakers the water before and after. Some wetlands may allow dirt to escape if the filters are folded not allowing water to be held in as long. In this case, a design failure could be discussed and suggest solutions to fix the problem such as redoing the liner (coffee filter).

Part 2: Water Storage

1. Pass out following materials: Foil Pan, Clay/Play Dough, Sponge
2. Instruct students construct a hill that will be moving towards a river using only clay (See Figure 2)
3. Pour dirty water over hill. Observe water and empty water from tin pan.
4. Place sponges at the bottom of the hill, which will represent a wetland and pour water over the hill again.
5. Discuss differences in water after the wetlands were installed. How, does the wetland help the water quality? (Slows down water, holds in contaminants)

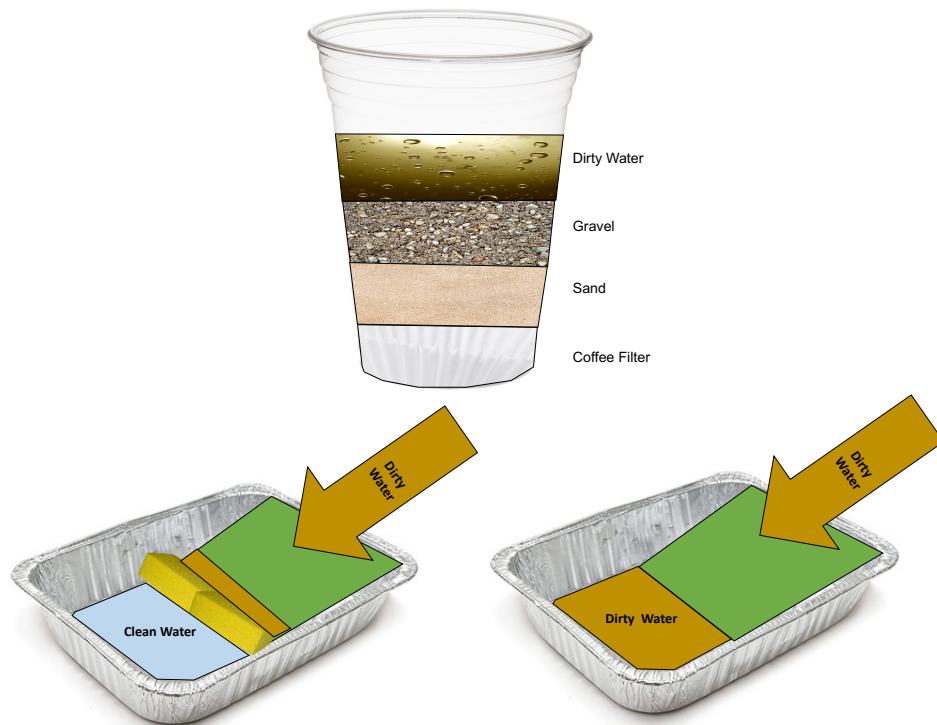


Figure 1: Wetland in a cup (top) and wetland water storage (bottom) schematics.