# Wondering About Wetlands

Wetlands are just that: “wet land.” The land is covered by shallow water during at least part of the year and is often located between dry land and deeper water like rivers, lakes and oceans. Wetlands can be marshes, swamps, bogs, mudflats, or even shallow pools. Melting ice from receding glaciers during Iowa’s last Ice Age gouged out and then filled in these “prairie potholes.” When pioneers first settled Iowa, there were many wetland areas, but most were drained through tiling to create the fertile farmland Iowa is known for today.

The pioneers probably did not know the many benefits of wetlands, such as:

- Reduce damage done by floodwaters by slowing runoff.
- Absorb water, allowing water to slowly seep into the ground and recharge groundwater supplies.
- Provide breeding ground and habitat for numerous wildlife, as well as resting places for migratory birds.
- Provide areas for recreational activities like fishing, kayaking, birdwatching, and hunting.
- Improve water quality by trapping and filtering out pollutants and dirt so they do not get into our lakes and rivers.

Because we now know the benefits of wetlands, landowners are encouraged to develop wetland areas, particularly as buffers between farmland and rivers and streams to prevent so much dirt and harmful chemicals, like fertilizer and pesticides, from entering bodies of water. The federal government has recently initiated programs, like the Wetlands Reserve Program being administered by the Natural Resources Conservation Service (NRCS), to promote wetland development. Over 75,000 acres have already been restored in Iowa, with hopes for much more in the future. Landowners can receive both financial and technical assistance for creating wetlands from NRCS.

As wetland restoration increases, we can look forward to a future with cleaner, safer water.

## Wetlands in Action

Wetlands are great at removing pollutants from water. For this reason, Metro Waste Authority (MWA) has recently added a Constructed Wetlands Leachate Treatment Facility to its Metro Park East Sanitary Landfill near Mitchellville. Leachate is the highstrength wastewater created when rainwater percolates through the garbage in the landfill (like water filtering through coffee grounds), picking up contaminants like nitrogen, iron, lead, and ammonia.

A piping system running under the landfill collects the leachate and routes it to a series of wetland cells. Each wetland cell contains different vegetation that naturally removes the contaminants found in the wastewater. There are more than 100,000 plants, such as Bearded Sedge, Bebb’s Sedge, and River Bulrush, that are particularly suited for removing leachate

contaminants. After the leachate treatment process is completed, the leachate is called *effluent* and is ready for land application.

The effluent is applied to a specially-built prairie at the site. While the prairie plants remove any remaining contaminants, their main purpose is to release water back into the environment as vapor through *transpiration*, the release of water vapor by plants. Monitoring safeguards are in place to ensure that none of the leachate or treated effluent is discharged into surface or groundwater.

In addition to treating leachate in an environmentally responsible manner, MWA will save over $5 million in leachate treatment costs over the next 30 years through use of its constructed wetlands.

## Wetlands on the Web

Find out more about wetland principles, processes, benefits, and restoration.

- http://library.thinkquest.org/J003192F
  This website, written by kids, is a great introduction to wetlands, complete with photos and a "Lost in the Wetlands" activity.

- www.epa.gov/owow/wetlands/
  Choose from a variety of wetland topics.

## Wetland Activities for the Classroom

**A Wetland is Like a Sponge**

Bring items or pictures of the items listed below and challenge students to brainstorm what wetland function each item represents.

| **Object** | **Wetland Function** |
|---|---|
| Sponge | Absorbs excess water/flood control |
| Cereal box | Provides food for wildlife and people |
| Coffee filter or sieve | Purifies/filters water |
| Monopoly house | Provides wildlife habitat |
| Anchor | Helps land hold onto soil by slowing water and decreasing erosion |
| Motel sign or pillow | Provides resting place for migrating birds |

**Wetland in a Pan**

Materials: baking pan, modeling clay, small piece of indoor/outdoor carpet, soil, grass, cotton swabs, twigs, tree needles, measuring cup

Procedures:

1. Spread a sloping layer of modeling clay into about 1/3 of the pan, with the high end of the slope at the pan's end, making sure the clay is sealed to the pan's sides.
2. Cut a strip of the carpet to completely fill the space across the pan's middle 1/3, and place it along the edge of the clay to represent a wetland. The remaining 1/3 of the pan represents a river or stream.
3. Place the soil, twigs, grass, tree needles, and cotton swabs (to represent cattails) on the land.
4. Slowly pour 200 ml of water on the "land" and have students observe the results. Take the "wetland" out so they can see how it has trapped soil particles and water (filtering and absorbing functions).
5. Pour the water from the "river" into a measuring cup to determine how much water was absorbed by the wetland (providing flood control).