



## The Function and Value of Wetlands

Office of Water Quality

(317) 232-8603 • (800) 451-6027

[www.idem.IN.gov](http://www.idem.IN.gov)

100 N. Senate Ave., Indianapolis, IN 46204

### Introduction

Wetlands are often misunderstood features in the landscape. Some consider them as waste land, only valuable when drained or developed. Yet, wetlands are one of the most productive, high-functioning ecosystems in the world and provide a wealth of important benefits. Wetlands are located all over Indiana, many are very small in size, but all provide most of the functions noted below. These functions are realized at the local level in your community, statewide, nationally, and worldwide. Wetlands look very different depending on where they are located, the plants that occupy them, and the varied amount of water or hydrology they receive during the year. Wetlands are not just for ducks and mosquitoes; they are so much more!

### Wetland Functions



#### Critical Flood Storage

- One acre of wetland can store up to one million gallons of water.
- Wetlands store and slowly release surface water, rain, snowmelt, groundwater, and floodwaters.
- Wetland vegetation slows the movement of flood waters and distributes them more gradually over floodplains.
- Wetland flood storage lowers flood heights which results in reduced erosion downstream and on adjacent lands, protects homes and businesses, and prevents waterlogging of agricultural lands.
- Wetlands provide a level of flood protection that is otherwise provided by expensive dredging operations, water storage infrastructure, and levees.
- Wetlands help control the rate and volume of runoff in urban areas, resulting in less pressure on stormwater infrastructure and lower risks to human health and safety.



#### Water Quality Protection

- Wetlands serve as a sediment trap. Their plant roots have been known to assimilate up to 90% of sediment observed in streamflow or runoff.
- Wetlands filter harmful nutrients from water. Their plants absorb excess nutrients, convert them into less harmful forms, and recycle them into new food supplies within the wetland.
- Wetlands detoxify chemicals that flow into our waterways from roads, agricultural lands, developed areas, and industrial sites. This occurs within unique plant and soil processes.
- Wetlands are very successful at removing bacteria and other harmful pathogens that run off the land surface. This helps to keep our waterways safer for recreation and other uses.



#### Diverse and Unique Habitat

- Wetlands are considered “biological supermarkets”. They are comparable to rain forests and coral reefs in their diversity of food supply and wildlife species.
- Some species live their entire lives in wetlands, while others use them only seasonally or for specific purposes like feeding, pollinating, or breeding.
- 43% of threatened or endangered animals in the U.S. rely on wetlands.
- Up to 50% of North American bird species nest or feed in wetlands.

### ***Did you know?***

As many as 10,000 to 30,000 sandhill cranes migrate each year through Indiana to the Jasper-Pulaski Fish and Wildlife Area in the fall. Eagle Creek Park in Indianapolis, with its diversity of wetland and upland habitats, is known to be home to more than 270 bird species!



## Groundwater Recharge

- Groundwater recharge (soil infiltration) is an important part of the water cycle, which also includes transpiration, evaporation, precipitation, runoff, and collection. Infiltration is impeded by hard surfaces, such as parking lots, roads, buildings, and other development.
- The deep roots of wetland plants and high organic matter within the wetland soil help direct rainwater into the ground. This helps refill/recharge underground water supplies or aquifers. Aquifers provide many functions including acting as a source of irrigation and drinking water through wells, feeding streams during dry weather, and moderating drought conditions for plants and animals.
- Wetlands collect surface water that sheet-flows across the land (runoff) which allows more water to infiltrate the soil instead of filling up the streams (see critical flood storage).

### ***Did you know?***

The USGS estimates the population of self-supplied water supply users in Indiana to be 1,680,000, all of which are groundwater supplied (2018). According to the U.S. EPA, 679 community water systems use groundwater to supply 2,406,000 people (2019).



## Wetland Value

It is impossible to tally up the trillions of dollars in value that wetlands provide through their various functions and services. Intact wetlands play an important role in the water cycle and ecosystem and are crucial to the ability of the earth to sustain life and provide building blocks for the infrastructure we have come to depend on. Removing wetlands directly increases the costs to build and maintain our infrastructure, especially through events such as extreme drought, flooding, and pollution. Some of our infrastructure that rely on wetlands to provide and sustain the previously mentioned functions include, but are not limited to:

- Hydropower
- Industry cooling and operation
- Agriculture
- Drinking water
- Wastewater treatment
- Food production
- Recreation
- Urban and rural stormwater management and flood control

### ***Think about it...***

Compare the cost of preserving stream buffers, floodplains, and wetlands for stormwater treatment to construction of grey infrastructure (a series of inlets, pipes, and conveyances to a treatment plant that must be operated, maintained, replaced, and expanded every 20 to 30 years). What else is also gained?

It is important to note that wetlands are protected resources. Impacts to wetlands, such as draining and dredging, dumping of pollutants or other fill, building structures, or mechanical clearing of vegetation require a permit from the Indiana Department of Environmental Management and the U.S. Army Corps of Engineers.

### **Additional References**

<https://www.in.gov/idem/wetlands/>

<https://www.epa.gov/wetlands/how-do-wetlands-function-and-why-are-they-valuable>

<https://www.epa.gov/wetlands/may-american-wetlands-month>

<https://www.epa.gov/sites/production/files/2016-02/documents/wetlandfunctionsvalues.pdf>

<https://www.extension.purdue.edu/extmedia/WQ/WQ-10.html>

<https://water.usgs.gov/nwsun/WSP2425/functions.html>

<https://dec.vermont.gov/watershed/wetlands/functions/water-quality>

<https://ecology.wa.gov/Water-Shorelines/Wetlands/Education-training/Functions-values-of-wetlands>