



An Overview of Wetlands and Streams

Office of Water Quality

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Introduction

Wetlands and streams are necessary components of a healthy ecosystem. They come in many shapes and sizes and provide many critical functions.

Wetlands are areas in the landscape that contain standing water or have water at or near the soil surface for part or all of the year, including the growing season. Categorically different from both dry land (upland) and deep water of lakes and streams, wetlands often occur in the transitional zones between these features. Wetlands support an array of plants and animals which are uniquely adapted to life in saturated or flooded conditions.

A stream is a body of free-flowing water conveyed through a narrow, defined channel. A stream can take on many different shapes depending on the landscape through which it flows. Some streams are large and are used for transportation of goods and people, while some streams may not flow year-round. In the United States, there are over 3.5 million miles of rivers and streams, all carrying water and other materials from one place to another. Every stream is part of a larger system of connected waterbodies. The land that drains to the system of waterbodies is known as a watershed.

Wetland Basics

There are three criteria used to identify a wetland: vegetation, hydrology and soil. All three criteria must be met for the area to be classified as a wetland.



Vegetation: Nearly 5,000 different hydrophytic (water loving) plants occur in wetlands. Plant species vary in their tolerance of wetland conditions. Each plant is assigned an indicator status. The indicator status is used to describe the likelihood a plant will occur within a wetland. The hydrophytic vegetation criteria is considered met if more than 50 percent of the dominant species have a facultative or wetter indicator.

- **Obligate Wetland (OBL).** Occur almost always in wetlands
- **Facultative Wetland (FACW).** Usually occur in wetlands, could occur in non-wetlands
- **Facultative (FAC).** Equally likely to occur in wetlands or non-wetlands
- **Facultative Upland (FACU).** Usually occur in non-wetlands, but could occur in wetlands
- **Obligate Upland (UPL).** Almost never occur in wetlands

Wetter



Drier



Hydrology: Refers to the presence of water at or above the soil surface long enough to significantly influence the plant types and soils that occur in the area. Hydrology indicators can be observed as part of a field inspection during the growing season. Water does not actually need to be present at the time of inspection since many of the hydrology indicators can suggest that water was present at one time.

- Examples of hydrology indicators include standing or flowing water, saturated soil within 12 inches of the ground surface (as observed in a hole), water marks on trees or other erect objects, drift lines (piles of debris from flooding), algal mats and/or thin layers of sediment on leaves, tree trunks, or other objects. This is not an all-inclusive list, there are many more indicators.



Soils: Approximately 2,000 different types of hydric soils occur in United States wetlands. Hydric soils exhibit characteristics that indicate that they developed in conditions where the presence of water has limited soil oxygen (anaerobic) for long periods during the growing season. The Natural Resources Conservation Services (NRCS) develops soil maps identifying the locations of hydric soils, which may indicate the presence of a wetland.

- Examples of common hydric soil indicators found in Indiana: soil consists predominantly of decomposed plant material (peat or muck); mineral soil has a light gray color below the surface with orange-colored mottles (depleted); mineral soil has a dark brown or nearly black color below the surface with orange-colored mottles. Wetlands can be classified by vegetation type. Common types are Forested Wetlands, Scrub Shrub Wetlands and Emergent Wetlands. Wetlands can also be classified by unique hydrology characteristics such as Fens, Bogs, Floodplain Wetlands, or Seasonally Flooded Basins.

Functions and Values of Wetlands

- Wetlands provide important, unique and irreplaceable habitat for wildlife.
- Wetland plants and soils improve water quality by naturally filtering and trapping nutrients, sediment and harmful bacteria.
- Wetlands can store carbon within their plant biomass and soils, keeping carbon dioxide (a greenhouse gas) out of the atmosphere and enriching the soil.
- Wetlands recharge underground aquifers by directing water back into the ground through infiltration.
- Wetlands act as sponges, absorbing rainfall and floodwater and slowly releasing it back into streams. Wetlands reduce potential flood damage to homes and businesses and protect the health and safety of communities.
- Wetland vegetation holds soil in place, dissipates the energy of waves, and buffers strong currents which protects shorelines from erosion.
- Wetlands provide areas for recreation, education and aesthetics.

Stream Basics

Streams are classified by both their place within a watershed's stream network and their flow regime. The largest streams are called rivers, eventually connecting to the ocean. The streams that drain to a river or other streams are called tributaries.

Perennial: Water flows throughout the year and collects water from other streams (locations 3 and 4 on stream network graphic).

Intermittent: Water flows for much of the year in a typical year; may carry no water during the dry season or drought (location 2 on stream network graphic)

Ephemeral: Water flows only for a short time, usually after a big rain event or snowmelt. Ephemeral streams are very small and normally have a dry channel throughout most of the year. These are also called headwater streams (location 1 on stream network graphic).

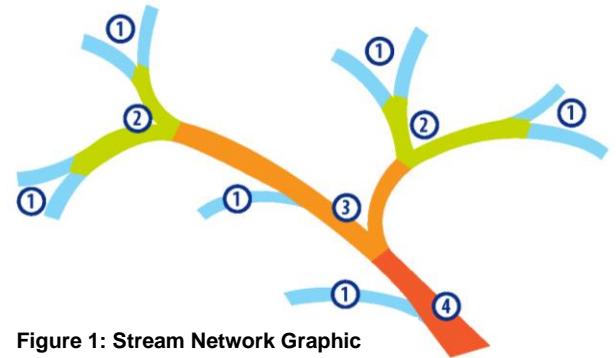


Figure 1: Stream Network Graphic

Functions and Values of Streams

- Streams transport water and sediment throughout a watershed.
- Streams and their floodplains provide a place to hold flood waters during large rain events, dissipate flow energy, and moderate peak flows.
- Streams provide food and habitat for many types of insects, mussels, amphibians, birds, reptiles, fish and mammals, including humans.
- Streams provide groundwater recharge.
- Streams support diverse vegetation communities and necessary wildlife migration corridors.
- Streams provide a source of drinking water, irrigation water, and water for industry.
- Streams offer recreation, education and aesthetics benefits.
- Streams increase the economic value of property.

More Information:

Contact IDEM for more information or to determine if an area may be stream or wetland:

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

The United States Army Corps of Engineers (USACE) Regulatory Division can also assist with stream and wetland identification and questions:

https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/reg_supp/

Plant indicators: <https://plants.usda.gov/core/wetlandSearch> and http://wetland-plants.usace.army.mil/nwpl_static/v34/home/home.html

National Wetland Inventory maps: <https://www.fws.gov/wetlands/data/mapper.html>

Hydric Soil maps: <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>

United States Environmental Protection Agency (US EPA): <https://www.epa.gov/wetlands>

United States Geological Survey (USGS): https://www.usgs.gov/special-topic/water-science-school/science/rivers-streams-and-creeks?qt-science_center_objects=0#qt-science_center_objects