



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We Protect Hoosiers and Our Environment.

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Eric J. Holcomb
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March 15, 2017

VIA CERTIFIED MAIL 7002 0510 0002 7964 3075

Ms. Lee Anne Devine
U.S. Army Corps of Engineers
Louisville District
P.O. Box 59
Louisville, KY 40201-0059

Dear Ms. Devine:

Re: Section 401 Water Quality Certification
Project: 2017 Reissuance of Nationwide
Permits

The Office of Water Quality has reviewed the Federal Register Notice dated January 6, 2017, announcing the reissuance of the Nationwide Permits (NWP's). We have also reviewed your correspondence dated January 12, 2017, stating the Federal Register Notice is the U.S. Army Corps of Engineers (Corps) application for water quality certification under Section 401 of the Clean Water Act for those NWP's that will result in a discharge of dredged and/or fill material into waters of the United States within the State of Indiana. The NWP's and general conditions become effective on March 19, 2017. The Corps has reissued certain NWP's, modified several existing NWP's, and introduced two (2) new NWP's.

The Louisville, Detroit, and Chicago Districts of the U.S. Army Corps of Engineers developed the existing Indiana Regional General Permit No. 1 (RGP #1) to replace several NWP's. As a consequence of this action, the following NWP's have been, and will continue to be, suspended for the State of Indiana and do not require Section 401 Water Quality Certification:

NWP 13 Bank Stabilization
NWP 14 Linear Transportation Projects
NWP 18 Minor Discharges
NWP 29 Residential Developments
NWP 36 Boat Ramps
NWP 39 Commercial and Institutional Developments
NWP 40 Agricultural Activities
NWP 41 Reshaping Existing Drainage Ditches



A State that Works

- NWP 42 Recreational Facilities
- NWP 43 Stormwater Management Facilities
- NWP 44 Mining Activities

It is the judgment of this office that NWPs 1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 15, 19, 21, 22, 24, 25, 27, 28, 30, 33, 37, 45, 46, 49, 50, 51, 52 will comply with applicable provisions of state law (including 327 IAC 2) and Sections 301, 302, 303, 306, and 307 of the Clean Water Act subject to the conditions set forth in this Certification. Therefore, subject to the following conditions, the Indiana Department of Environmental Management (IDEM) hereby grants Section 401 Water Quality Certification (WQC) for these NWPs. Any changes in language or scope of any NWP not detailed in the aforementioned Federal Register, or as modified by the conditions below, are not authorized by this certification.

Section 401 Water Quality Certification decisions for NWPs in effect for the State of Indiana-2017

NWP	Activity	Decision	Conditions
1	Aids to Navigation	Approve	General
2	Structures in Artificial Channels	Approve	General
3	Maintenance	Approve	General & Specific
4	Fish and Wildlife Harvesting, Enhancement, and Attraction Devices	Approve	General
5	Scientific Measurement Devices	Approve	General
6	Survey Activities	Approve	General
7	Outfall Structures and Associated Intake Structures	Approve	General & Specific
8	Oil and Gas Structures on Outer Continental Shelf	Deny	N/A
9	Structures in Fleeting and Anchorage Areas	Approve	General
10	Mooring Buoys	Approve	General
11	Temporary Recreational Structures	Approve	General
12	Utility Line Activities	Approve	General & Specific
15	U.S. Coast Guard Approved Bridges	Approve	General & Specific
16	Return Water from Upland Contained Disposal Areas	Deny	N/A
17	Hydropower Projects	Deny	N/A
19	Minor Dredging	Approve	General
20	Response Operations for Oil and Hazardous Substances	Deny	N/A
21	Surface Coal Mining Activities	Approve	General
22	Removal of Vessels	Approve	General
23	Approved Categorical Exclusions	Deny	N/A
24	Indian Tribe or State Administered Section 404 Program	Approve	General
25	Structural Discharges	Approve	General & Specific

26	Reserved	N/A	N/A
27	Aquatic Habitat Restoration, Establishment, and Enhancement Activities	Approve	General & Specific
28	Modifications to Existing Marina	Approve	General
30	Moist Soil Management for Wildlife	Approve	General
31	Maintenance of Existing Flood Control Facilities	Deny	N/A
32	Completed Enforcement Actions	Deny	N/A
33	Temporary Construction, Access, and Dewatering	Approve	General
34	Cranberry Production Activities	Deny	N/A
35	Maintenance Dredging of Existing Basins	Deny	N/A
37	Emergency Watershed Protection and Rehabilitation	Approve	General & Specific
38	Cleanup of Hazardous and Toxic Waste	Deny	N/A
45	Repair of Uplands Damaged by Discrete Events	Approve	General
46	Discharges to Ditches	Approve	General & Specific
47	Reserved	N/A	N/A
48	Existing Commercial Shellfish Aquaculture Activities	Deny	N/A
49	Coal Remining Activities	Approve	General
50	Underground Coal Mining Activities	Approve	General
51	Land-Based Renewable Energy Generation Facilities	Approve	General & Specific
52	Water-Based Renewable Energy Generation Pilot Projects	Approve	General & Specific
53	Removal of Low-Head Dams	Deny	N/A
54	Living Shorelines	Deny	N/A

GENERAL CONDITIONS:

The following conditions shall apply to any permittee whose project qualifies under any NWP approved by this certification. All activities that do not meet these conditions require an individual Water Quality Certification from the IDEM and are not authorized under this WQC.

- (1) The permittee shall deposit any dredged material in a contained upland disposal area to prevent sediment run-off to any waterbody.
- (2) The permittee shall install run-off and sediment control measures prior to any land disturbance to manage storm water and to minimize sediment from leaving the project site or entering a waterbody. All operations must phase project activities to minimize the impact of sediment to the receiving waterbody(ies). Erosion and sediment control measures shall be implemented using an appropriate order of construction (sequencing) relative to the land disturbing activities. Wetlands and/or waterbodies that are adjacent to land-disturbing activities must be protected with appropriate sediment control measures. As work progresses, all areas void of

protective cover shall be re-vegetated or stabilized as described in the plan. Areas that are to be re-vegetated must utilize mulch that is anchored or, under more severe conditions, erosion control blankets. Erosion control blankets or other armament shall be used for all areas associated with concentrated flow. Standards and specifications for storm water management, including erosion and sediment control can be obtained in the Indiana Storm Water Quality Manual or similar guidance documents.

- (3) The permittee shall allow the commissioner or an authorized representative of the commissioner (including an authorized contractor), upon the presentation of credentials to conduct the following activities:
 - (a) enter upon the permittee's property;
 - (b) have access to and copy at reasonable times any records that must be kept under the conditions of these permits or this certification;
 - (c) inspect, at reasonable times, any monitoring or operational equipment or method; collection, treatment, pollution management or discharge facility or device; practices required by this certification; and any mitigation site; and
 - (d) sample or monitor any discharge of pollutants or any mitigation site.
- (4) This granting of WQC does not relieve the recipient of the certification from the responsibility of obtaining any other permits or authorizations that may be required for this project or related activities from IDEM or any other agency or person.
- (5) This WQC does not:
 - (a) authorize impacts or activities outside the scope of this certification;
 - (b) authorize any injury to permittees or private property or invasion of other private rights, or any infringement of federal, state or local laws or regulations;
 - (c) convey any property rights of any sort, or any exclusive privileges;
 - (d) preempt any duty to obtain federal, state or local permits or authorizations required by law for the execution of the project or related activities; or
 - (e) authorize changes in the plan design detailed in the notice or application.
- (6) This WQC does not authorize point source discharges of pollutants other than clean fill¹ and uncontaminated dredged material.
- (7) This WQC does not authorize activities on or in any of the State's waters that have been designated as salmonid waters (cold water streams), tributaries of salmonid waters within a two river mile reach upstream from the confluence with the

¹ Clean fill, for the purpose of this Water Quality Certification, means uncontaminated rocks, bricks, concrete without rebar, road demolition waste materials other than asphalt, or earthen fill.

salmonid water, or Outstanding State and/or National Resource Waters (see *Attachment #1*).

- (8) This WQC does not authorize activities on or in any critical wetland or critical special aquatic sites (see *Attachment #2*).
- (9) The permittee must demonstrate, via letter from the Indiana Department of Natural Resources, Division of Nature Preserves, that no state endangered, threatened, or rare species are documented on a permanent or seasonal basis within a 1/2-mile radius of the proposed project site by the Indiana Natural Heritage Data Center, or must provide documentation from the Indiana Department of Natural Resources that states that the activities proposed will not constitute a violation of state laws protecting these species.
- (10) This WQC does not authorize activities associated with the establishment of a mitigation bank.
- (11) This WQC allows the use of multiple NWP's on the same project as long as the cumulative effect for the entire project is less than the specified impact thresholds identified in the approved NWP or as specified in this WQC. If a project exceeds the specified impact thresholds, the activities are not authorized by this WQC and an individual WQC is required. The IDEM may certify several federal permits or licenses under one individual WQC.
- (12) Upon request, the applicant must submit additional information necessary to IDEM to determine if a project will qualify under the terms and conditions of this certification. If the applicant fails to provide any information requested by IDEM, then the project is not authorized.
- (13) All stream pump-around activities must be discharged in a manner that does not cause erosion at the outlet. Cofferdam dewatering activities must use filter bags, upland sediment basins/traps, or a combination of other appropriate sediment control measures to minimize the discharge of sediment-laden water into waters of the U.S. All sediment control measures must be installed and maintained in good working order. For stream pump-around activities, the in-stream material used to construct the dam must be constructed of non-sediment producing sources. Examples include sand bags and sheet pile walls.
- (14) The permittee must ensure all discharges of riprap into streams are flush with the upstream and downstream bank and stream channel elevations and grades.
- (15) The activity must not result in a permanent secondary effect to waters of the U.S. (e.g., dredging, excavation, damming, creation of in-channel ponds) that when combined with the primary effect exceeds the area and length thresholds specified.

- (16)e Notification to IDEM is required for any project authorized by the NWP's for which the District Engineer has issued a waiver for intermittent and ephemeral stream impacts greater than 300 feet. IDEM will review the notification within 30 days to determine whether or not IDEM will elevate the NWP to an Individual Water Quality Certification or authorize it as submitted.e
- (17)e Notification to IDEM is required for any temporary impacts that exceed 0.10 acre for any proposed NWP. For emergency repair situations notification may take place after the emergency repair has begun.e
- (18)e After construction, temporary fills must be removed in their entirety and the affected areas returned to the pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.e
- (19)e The applicant will submit an application for an individual certification if IDEM determines the project would have more than minimal impacts to water quality, either viewed individually or collectively with other projects that may affect the same waterbody.e

² Stream, for the purpose of this Water Quality Certification, means waters of the U.S. that have a defined bed and bank and convey water ephemerally, intermittently or perennially. This term includes natural streams, relocated streams, channelized streams, artificial channels, encapsulated channels and ditches.

NATIONWIDE PERMIT #3, MAINTENANCE, SPECIFIC CONDITIONS

* New and additional riprap has been removed from the 2017 NWP#3. Any projects proposing new and additional riprap must receive authorization under an Individual Section 401 Water Quality Certification or the Indiana RGP#1.

The following conditions apply to NWP #3. All activities that do not meet these conditions require an individual WQC from the IDEM and are not authorized under this WQC

- (1) For activities involving the replacement of a stream encapsulation:
 - (a) The replacement must not reduce the cross-sectional area under bank full elevation;
 - (b) The replacement must not increase the length of the total encapsulation to over 150 feet;
 - (c) The replacement must have either the same slope as the existing encapsulation, or will more closely match the slope of the stream² immediately upstream and downstream;
 - (d) The type of encapsulation must be the same as the existing type of encapsulation;
 - (e) Bank stabilization and channel bottom stabilization must not exceed either one bank full width upstream and downstream of the replacement encapsulation or ten linear feet whichever is greater;
 - (f) Any channel bottom stabilization must be flush with the existing grade of the stream bottom; and
 - (g) Existing encapsulations over 150 feet may be replaced under this NWP as long as the structure length does not change more than 20 feet upstream and 20 feet downstream.

 - (2) For activities involving the placement of thermal plastic liners or other liner types into existing structures:
 - (a) Liners may not be used to extend the structure length by more than 12-inches on either end of the structure;
 - (b) Liners must be installed so that the invert of the liner is as close to the invert of the host pipe as practical;
 - (c) Riprap scour protection or an energy dissipater must be installed flush with the upstream and downstream bank and stream channel elevations and grades;
 - (d) For projects undertaken by the Indiana Department of Transportation (INDOT) and a Local Public Agency (LPA), the project must be reviewed and approved by the INDOT Office of Hydraulics;
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- (e) The liner size must be the largest size approved by the INDOT Office of Hydraulics;
 - (f) For projects undertaken by permittees or entities other than INDOT or a LPA, a hydraulic modeling report must be submitted following the INDOT Standards and Specifications found at http://www.in.gov/indot/design_manual/design_manual_e_2013.htm;
 - (g) If an existing culvert sump cannot be maintained by the installation of a liner then an individual Section 401 Water Quality Certification is required; and
 - (h) For perennial streams, the structure must not be in an elevated position (hanging culvert) within the stream channel. Hanging culverts in perennial stream channels require an Individual Section 401 Water Quality Certification.
- (2) For all other maintenance activities:
- (a) The activity must not permanently affect more than one-tenth (0.1) of an acre of waters of the United States;
 - (b) The activity must not permanently change the sinuosity, flow path, velocity, cross sectional area under the bank full elevation or the slope of a stream;
 - (c) The activity must not permanently affect more than 300 linear feet of stream channel, streambank, or lake shoreline;
 - (d) In the case of bank stabilization activities, the permittee must demonstrate that the bank or shoreline in question is unstable;
 - (e) The activity must not result in a permanent secondary effect to waters of the United States (e.g., dredging, excavation, damming, creation of in-channel ponds) that, when combined with the primary effect, exceeds the area and length thresholds specified above; and
 - (f) Any channel bottom stabilization must be installed flush with the existing stream grade.

Attachment 1: Indiana Waters Designated for Special Protection

Designated Salmonid Waters:

[327 IAC 2-1.5-5(a)(3)]

- Trail Creek and its tributaries downstream to Lake Michigan, LaPorte County
- East Branch of the Little Calumet River and its tributaries downstream to Lake Michigan via Burns Ditch, Porter and LaPorte Counties
- Salt Creek above (upstream of) its confluence with the Little Calumet River, Porter County
- Kintzele Ditch (Black Ditch) from Beverly Drive downstream to Lake Michigan, Porter County
- The Galena River and its tributaries, LaPorte County
- The St. Joseph River and its tributaries in St. Joseph County from the Twin Branch Dam in Mishawaka downstream to the Indiana/Michigan state line, St. Joseph County
- The Indiana portion of the open waters of Lake Michigan
- Those waters designated by the Indiana Department of Natural Resources (IDNR) for put-and-take trout fishing⁵

Waterbodies which have been designated all or partially as Outstanding State Resource Waters: [327 IAC 2-1-2(3) and 327 IAC 2-1.5-19(b)]

- The Blue River in Washington, Crawford, and Harrison Counties, from river mile 57.0 to river mile 11.5
- The North Fork of Wildcat Creek in Carroll and Tippecanoe Counties, from river mile 43.11 to river mile 4.82
- The South Fork of Wildcat Creek in Tippecanoe County, from river mile 10.21 to river mile 0.00
- Cedar Creek in Allen and DeKalb counties, from river mile 13.7 to its confluence with the St. Joseph River
- The Indiana portion of the open waters of Lake Michigan
- All waters incorporated in the Indiana Dunes National Lakeshore.

Waterbodies which have been designated all or partially as Exceptional Use Streams⁶: [listed in: 327 IAC 2-1-11(b) and IC 13-11-2-72.5 (before its repeal)]

- Big Pine Creek in Warren County downstream of the State Road 55 bridge near the town of Pine Village to its confluence with the Wabash River
- Mud Pine Creek in Warren County from the bridge on the County Road between Brisco and Rainsville to its confluence with Big Pine Creek
- Fall Creek in Warren County from the old C.R. 119 bridge in the NW quarter of Section 21, Township 22N, Range 8W downstream to its confluence with Big Pine Creek
- Indian Creek in Montgomery County from the County Road 650 West bridge downstream to its confluence with Sugar Creek
- Clifty Creek in Montgomery County within the boundaries of Pine Hills Nature Preserve
- Bear Creek in Fountain County from the bridge on County Road 450 North to its confluence with the Wabash River

⁵ Available on the internet at: <http://www.in.gov/dnr/fishwild/5457.htm>

⁶ As per IC 13-18-3-2(u): "Each exceptional use water (as defined in IC 13-11-2-72.5, before its repeal) designated by the board before June 1, 2009, becomes an outstanding state resource water on June 1, 2009, by operation of law."

- Rattlesnake Creek in Fountain County from the bridge on County Road 450 North to its confluence with Bear Creek
- The small tributary to Bear Creek in Fountain County within the Portland Arch Nature Preserve which enters Bear Creek at the sharpest bend and has formed the small natural bridge called Portland Arch
- Blue River from the confluence of the West and Middle Forks of the Blue River in Washington County downstream to its confluence with the Ohio River
- The South Fork of Blue River in Washington County from the Horner's Chapel Road bridge downstream to its confluence with Blue River.
- Lost River and all surface and underground tributaries upstream from the Orangeville Rise (T2N, R1W, Section 6) and the Rise of Lost River (T2N, R1W, Section 7) and the mainstem of the Lost River from the Orangeville Rise downstream to its confluence with the East Fork of White River.

Attachment 2: Critical Wetlands and Critical Special Aquatic Sites

In the interest of maintaining consistency with the State Regulated (Isolated) Wetland program established at 327 IAC 17, IDEM defines Critical Wetlands and Critical Special Aquatic Sites to be synonymous with Rare and Ecologically Important Wetland Types under 327 IAC 17-1-3(3)(B):

- **Acid bog:** Acid bog is an acidic wetland of kettle holes in glacial terrain. Bogs can be graminoid (*Carex* spp. and *Sphagnum* spp.) or low shrub (*Chamaedaphne calyculata* and *Betula pumila*). The graminoid bog can be a floating, quaking mat. The soils in acid bogs are saturated and acidic peat. Bogs have non-flowing or very slow flowing water. The water level fluctuates seasonally. When a sphagnum mat floats, it rises and falls with the water table. Acid bogs can be found in northern Indiana.
- **Acid seep:** Acid seep is a bog-like wetland typically found in unglaciated hill regions. This community is a small groundwater-fed wetland located primarily in upland terrain. A thin layer of muck may lie over a mineral substrate. The soil reaction is acid. This seep community is characterized by flowing water during at least part of the year. Acid seeps are located primarily in southern Indiana.
- **Circumneutral bog:** Circumneutral bog is a bog-like wetland that receives groundwater. Circumneutral bogs can be a mosaic of tall shrub bog, graminoid bog, and other communities. The graminoid bog often occurs on a quaking or floating mat. Although a few bogs occur in unglaciated regions, most are found in glacial ice-block depressions. The soils in circumneutral bogs are usually peat, or other low nutrient organic substrates, which are saturated and circumneutral to slightly acid. Circumneutral bogs have non-flowing or very slow flowing water. The water level fluctuates seasonally. Circumneutral bogs are usually found in northern Indiana.
- **Circumneutral seep:** The circumneutral seep (or seep-spring) is a groundwater-fed wetland on organic soil. It is primarily herbaceous. Species typically include marsh marigold (*Caltha palustris*) and skunk cabbage (*Symplocarpus foetidus*) with a scattered tree canopy. Circumneutral seep is typically situated on or near the base of a slope. The soil is typically circumneutral muck. This seep community is characterized by slowly flowing water during at least part of the year. Circumneutral seeps can be found scattered throughout Indiana.
- **Cypress swamp:** Bald cypress swamps are seasonally to permanently inundated wetlands found in depressions and sloughs of large bottomlands associated with the Wabash/Ohio River system. Poorly to very poorly drained soils characterize this environment. Bald cypress (*Taxodium distichum*) is present, and green ash (*Fraxinus pennsylvanica*), silver maple (*Acer saccharinum*), and overcup oak (*Quercus lyrata*) are also usually present. This community is restricted to extreme southwest Indiana.
- **Dune and swale:** Dune and swale is an ecological system consisting of a mixture of upland (black oak sand savanna, dry to mesic sand prairie) and wetland (pond, panne, sedge meadow, marsh, wet prairie) natural communities. These communities occur in long, narrow, linear complexes, with the dry communities occupying sand ridges, and the wet communities occurring in the intervening swales. Black oak (*Quercus velutina*), paper birch (*Betula papyrifera*), jack pine (*Pinus banksiana*), and prairie vegetation typically occur on the

ridges, and sedges, reeds, and marsh/aquatic vegetation line are found in the swales. Water levels are directly influenced by ground water, with the interdunal swales controlled largely by lateral flow through porous beach ridges. Dune and swale is restricted to extreme northwest Indiana, near Lake Michigan.

- **Fen:** Fen is a calcareous, groundwater-fed wetland. Fens are often a mosaic of grassy areas, sedgy areas, graminoid-shrubby cinquefoil, and tall shrub areas. The extent of the tall shrub component of fens may be determined by fire frequency and/or soil moisture. Drying of the soil increases the growth of shrubs. Fens typically occur in the vicinity of glacial moraines. Fens typically have a muck or peat substrate. The water level fluctuates seasonally and is fed by groundwater. Fens can be found in central and northern Indiana.
- **Forested fen:** Forested fen is a tree-dominated wetland on organic soil which receives groundwater. Forested fens are often a mosaic of treed areas, tall shrub areas, and herbaceous areas. A tall shrub layer is often well developed in forested fens. Indicative species typically include tamarack (*Larix laricina*), black ash (*Fraxinus nigra*), yellow birch (*Betula alleghaniensis*), poison sumac (*Toxicodendron vernix*), and red maple (*Acer rubrum*). Forested fens occur in wet lowlands, where moraines meet outwash features or depressions. Forested fens have saturated, poorly to very poorly drained soils that are often muck, but some seasonal flooding can occur in forested fens that are especially level. This community is a late successional stage of fen or circumneutral bog. Forested fens occur in northern Indiana.
- **Forested swamp:** Forested swamp is a seasonally inundated to intermittently exposed wetland of large river bottoms. Forested swamps do not receive direct flow from river flooding except under exceptional circumstances. Forested swamps occur in depressions, sloughs and large bottomlands, typically dominated by tree species such as swamp cottonwood (*Populus heterophylla*), green ash (*Fraxinus pennsylvanica*), and swamp white oak (*Quercus bicolor*). In northern Indiana important tree species include black ash (*Fraxinus nigra*), yellow birch (*Betula alleghaniensis*), and red maple (*Acer rubrum*). Poorly to very poorly drained and aerated soils characterize the swamp environment. Soils usually are mineral not muck or peat. This community type is found throughout Indiana.
- **Marl beach:** Marl beach is a fen-like community located on the marly muck shorelines of lakes. Marl precipitate is evident. A thin layer of water is present in spring, but dries down in summer. Draw-down of a lake creates additional area for this community to develop on. Marl beaches can be found in extreme northern Indiana, primarily in the northeast.
- **Muck flat:** Muck flat is a shoreline and lake community possessing a unique flora of sedges and annual plants, many of which are also found on the Atlantic and Gulf Coastal Plains. This community is found at the margins of lakes or covering shallow basins. This community has a peat substrate. The muck flats can float on the water surface, but during high water periods are usually inundated. The water level of a basin fluctuates during a season or from year to year in response to the amount of precipitation. This exposes bare substrate needed for germination by species of the community. Muck flats are found in northern Indiana.
- **Panne:** Panne is a groundwater fed herbaceous wetland occupying interdunal swales near Lake Michigan. Pannes are located on the lee side of the first or second line of dunes from the lakeshore. The soil is wet, calcareous sand. Pannes are located in counties bordering Lake Michigan.

- **Sand flat:** Sand flat is a shoreline and lake community possessing a unique flora of sedges and annual plants, many of which are also found on the Atlantic and Gulf Coastal Plains. This community is found at the margins of lakes or covering shallow basins. This community has a sand substrate. During high water periods sand flats at the margins of lakes or ponds are inundated. The water level of a basin fluctuates during a season or from year to year in response to the amount of precipitation. This exposes bare substrate needed for germination by species of the community. Sand flats occur in northern Indiana, and in the Plainville Sand Section of southwest Indiana.
- **Sedge meadow:** Sedge meadow is an herbaceous wetland typically dominated by graminoid species such as flat sedge (*Cyperus* spp.), spike rush (*Eleocharis* spp.), rushes (*Juncus* spp.) and sedges (*Carex* spp.). Sedge meadow is an herbaceous wetland of stream margins and river floodplains, and lake margins or upland depressions. Streamside sedge meadows are frequently flooded in the spring and early summer. Sedge meadows of lake margins and depressions often contain standing water during wet months and after heavy rains; during dry periods, the water level is at or just below the substrate. Sedge meadow usually occupies the ground between a marsh and the uplands, or a shrub swamp or wet forest. Periodic high water can kill trees and shrubs invading sedge meadows. Sedge meadows can be found in the northern half of the state.
- **Shrub swamp:** Shrub swamp is a shrub-dominated wetland that is seasonally inundated to intermittently exposed. This community occurs in depressions and the substrate in either mineral soils or muck, as opposed to peat which is characteristic of bogs. Shrub swamp is characterized by non-flowing or very slowly flowing water with levels that fluctuate seasonally. Shrub swamps are persistent, though considered successional. Two opportunistic native shrubs, sandbar willow (*Salix exigua*) and gray dogwood (*Cornus racemosa*), by themselves, are not indicative of shrub swamps. This community type is found throughout Indiana.
- **Sinkhole pond:** Sinkhole ponds are water-containing depressions in karst topography. Sinkhole ponds are found in the Mitchell Karst Plain in south-central Indiana.
- **Sinkhole swamp:** Sinkhole swamps are depressions in karst topography dominated by tree or shrub species. Sinkhole swamps are found in the Mitchell Karst Plain in south-central Indiana.
- **Wet floodplain forest:** Wet floodplain forest is a broadleaf deciduous forest of river floodplains. Wet floodplain forests occur in depressions and flats on narrow to wide floodplains and also on recently exposed substrates that are frequently flooded. Wet floodplain forests are frequently flooded and may have standing water seasonally to permanently present. Wet floodplain forests occur statewide.
- **Wet prairie:** Wet prairie is an herbaceous wetland typically dominated by graminoid species such as prairie cordgrass (*Spartina pectinata*), bluejoint (*Calamagrostis canadensis*), and sedges (*Carex* spp.). Vegetation height is often 2-3 m. The species diversity of wet prairies is lower than that of mesic prairies. Wet prairies occur in deep swales and the substrate ranges from very deep black mineral soils (which are high in organic matter) to muck. Ponding in spring lasts for several weeks prior to drainage. Wet prairies commonly occur in the Grand Prairie Natural Region, the Tipton Till Plain and the Bluffton Till Plain, with a few examples found in the Northern Lakes Natural Region.
- **Wet sand prairie:** Wet sand prairie is an herbaceous wetland typically dominated by graminoid species such as prairie cordgrass (*Spartina pectinata*), bluejoint (*Calamagrostis*

canadensis), and sedges (*Carex* spp.). Vegetation height is often 2-3 m. The species diversity of wet prairies is lower than that of mesic prairies. Wet lowland prairies occur in deep swales and the substrate is sand, sometimes mixed with muck. Flooding is a regular springtime occurrence in wet sand prairie and may last several weeks. This community occurs in a mosaic with marsh and other wetlands, and with upland prairies and sand savannas. Fire was frequent occurrence, but more common in the fall when waters had receded. This community occurs in northwest Indiana and in the Plainsville Sands area.