Indiana State Nonpoint Source Program Management Plan 2025 – 2029

Vision: "To restore waters impaired by nonpoint source pollution and maintain water quality in healthy watersheds through locally led partnerships."

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Office of Water Quality Watershed Assessment
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Acronyms List

AIMS	Assessment Information Management System
AOC	Area of Concern
AWEP	Agricultural Water Enhancement Program
BMP	Best Management Practice
BONWR	Big Oaks National Wildlife Refuge
CAFO	Concentrated Animal Feeding Operation
CALM	Consolidated Assessment and Listing Methodology
CCPI	Cooperative Conservation Partnership Initiative
CEES	Center for Earth and Environmental Science
CFU	Colony Forming Unit
CIG	Conservation Innovation Grant
CLP	Clean Lakes Program
CNPCP	Coastal Nonpoint Control Program
CREP	Conservation Reserve Enhancement Program
CRP	Conservation Reserve Program
CSO	Combined Sewer Overflow
CSP	Conservation Securities Program
CWA	Clean Water Act
CWI	Clean Water Indiana
CWSRF	Clean Water State Revolving Fund
CZARA	Coastal Zone Act Reauthorization Amendments
CZMA	Coastal Zone Management Act
DO	Dissolved Oxygen
DOR	Division of Reclamation
EDF	External Data Framework
EPA	Environmental Protection Agency (U.S. EPA)
EQIP	Environmental Quality Incentives Program
ERB	Environmental Review Board
EWPP	Emergency Watershed Protection Program
FFY	Federal Fiscal Year
FOTG	Field Office Technical Guide
FRPP	Farmland and Ranchland Protection Program
FSA	Farm Service Agency
FWA	Fish and Wildlife Area
GAO	Government Accountability Office
GIS	Geographical Information System
GLRI	Great Lakes Restoration Initiative
GRTS	Grants Reporting and Tracking System
GW	Groundwater
GWMN	Groundwater Monitoring Network
HAB	Harmful Algal Bloom
HRW	Hoosier Riverwatch

HRI	Healthy Rivers Initiative
HUC	Hydrologic Unit Code
IAC	Indiana Administrative Code
IASWCD	Indiana Association of Soil and Water Conservation Districts
IBC	Impaired Biotic Communities
IBI	Index of Biotic Integrity
IC	Indiana Code
ICP	Indiana Conservation Partnership
IDEM	Indiana Department of Environmental Management
IDNR	Indiana Department of Natural Resources
IFA	Indiana Finance Authority
IGS	Indiana Geological Survey
IR	Integrated Report
ISDA	Indiana State Department of Agriculture
IDOH	Indiana Department of Health
IU	Indiana University – Bloomington
IU-SPEA	Indiana University School of Public and Environmental Affairs
IU	Indiana University – Indianapolis
IWLA	Indiana Watershed Leadership Academy
LaMP	Lakewide Management Plan
LARE	Lake and River Enhancement program
LMCP	Lake Michigan Coastal Program
L-THIA	Long-Term Hydrologic Impact Analysis tool
mIBI	Macroinvertebrate Index of Biotic Integrity
MOU	Memorandum of Understanding
MRBI	Mississippi River Basin Initiative
MS4	Municipal Separate Storm Sewer System
NASS	National Agricultural Statistics Service
NH3	Chemical formula for ammonia
NIPSCO	Northern Indiana Power Service Company
NIRPC	Northwest Indiana Regional Planning Commission
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPS	Nonpoint source pollution
NRCS	Natural Resources Conservation Service
NWI	National Wetland Inventory
NWQI	National Water Quality Initiative
OISC	Office of the Indiana State Chemist and Seed Commissioner
ORSANCO	Ohio River Valley Water Sanitation Commission
OSDS	On-site Disposal System (a.k.a. septic systems)
OSMRE	Office of Surface Mining Reclamation and Enforcement
OSRW	Outstanding State Resource Water
OWQ	Office of Water Quality (IDEM)
P.L.	Public Law
ppb	Parts per billion

ppm	Parts per million
PWQ	Pathway to Water Quality
QAPP	Quality Assurance Project Plan
QHEI	Qualitative Habitat Evaluation Index
QMP	Quality Management Plan
RAP	Remedial Action Plan
RC&D	Resource Conservation and Development District
RCAP	Rural Community Assistance Program
RPT	Recovery Potential Tool
RWWTF	Rural Wastewater Task Force
SIDMA	Social Indicators Data Management and Analysis tool
SMCRA	Surface Mining Control and Reclamation Act
SRF	State Revolving Fund
SSC	Suspended sediment concentration
SSCB	State Soil Conservation Board
SWAP	Source Water Assessment Plan
SWCD	Soil and Water Conservation District
SWOT	Strengths, Weaknesses, Opportunities and Threats analysis
SWQMP	Storm Water Quality Management Plan
TBD	To Be Determined
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TNC	The Nature Conservancy
TSS	Total suspended solids
U.S.C.	United States Code
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WASCoB	Water and Sediment Control Basin
WHIP	Wildlife Habitat Incentive Program
WLEB	Western Lake Erie Basin
WMP	Watershed Management Plan
WQC	Water Quality Certification
WQMS	Water Quality Monitoring Strategy
WQS	Water Quality Standards
WREP	Wetland Reserve Enhancement Program
WRP	Wetland Reserve Program
WSS	Watershed Specialist
WWH	Warm-water habitat

Mission Statements

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

The Indiana Department of Environmental Management's core mission is to implement federal and state regulations to protect human health and the environment, while allowing the environmentally sound operation of industrial, agricultural, commercial, and governmental activities vital to a prosperous economy.

OFFICE OF WATER QUALITY

The Office of Water Quality's mission is to monitor, protect, and improve Indiana's water quality to ensure its continued use as a drinking water source, habitat for wildlife, recreational resource, and economic asset.

The office achieves this by developing rules, guidance, policies, and procedures; assessing surface and groundwater quality; regulating and monitoring drinking water supplies and wastewater treatment facilities; and protecting watersheds and wetlands. The office also provides outreach and assistance to the regulated community and the public, while supporting environmentally responsible economic development.

Executive Summary

The Indiana State Nonpoint Source Program management plan ("Management plan") guides the usage of Clean Water Act (CWA) Section 319 funds received by the Indiana Department of Environmental Management (IDEM) from the United States Environmental Protection Agency (U.S. EPA). The Plan outlines and drives the IDEM's Nonpoint Source Program efforts, while seeking to credit and provide synergy with other state, local, and federal nonpoint source efforts in Indiana.

Current U.S. EPA guidelines require states to update their Plans every five years. This 2025 revision of the Plan is a comprehensive update to all sections of the previous Plan (2019-2023, IDEM 2019). IDEM requested and received a one-year extension of the previous plan to provide additional time needed due to programmatic limitations at the time. Therefore, this plan will cover years from 2025 through 2029 and will continue its five-year revision cycle on this schedule. For this revision to the Indiana State Nonpoint Source Management Plan, IDEM is updating all sections to reflect current data to create a comprehensive standalone plan. This Plan will be reviewed annually by program staff to assess its continued validity. The next full revision of this program plan will be completed in Federal Fiscal Year (FFY) 2029.

Approach

Sections of the Plan are representative of the conditions in Indiana, continue to inform how the Indiana Nonpoint Source Program guides the use of Clean Water Act (CWA) Section 319 funds, and provide explanation of how the Indiana Nonpoint Source Program will operate in 2025-2029.

The goals and actions presented in this document were informed through a survey of stakeholders and a pair of workshops with an advisory team made up of IDEM staff and partner organizations. IDEM has established six goals for 2025-2029 plan:

1. Improve the resources available for nonpoint source pollution management through partnerships.

2. Characterize Indiana waters for nonpoint source pollution impairments and improvements.

3. Cultivate a citizenry that embraces the value of water quality.

4. Improve Indiana's water quality by reducing nonpoint source pollution and restoring aquatic habitats.

5. Prioritize water resources so that they may continue to meet their intended uses.

6. Provide networking, guidance, and support to the people doing the work.

Nonpoint source water pollution reflects land uses. Nonpoint source pollution in Indiana originates from a variety of sources including agriculture, forestry, mining, and urban or residential land uses that impact 13,616 miles of streams, while unknown sources impair 11,649 miles of streams (IDEM 2024 Integrated Report).

Indiana has formulated a multi-layered approach to address nonpoint source pollution that includes monitoring, targeted implementation, and education and outreach. Monitoring forms the basis of the approach. Monitoring identifies which waterbodies are high quality, which meet designated uses, and which are designated as impaired. In recent years, Indiana has solicited grant applications for both restoring impaired waters and protecting higher-quality waters. Indiana has targeted its restoration dollars to watersheds with impaired waters that have demonstrated stakeholder interest in tackling nonpoint source pollution issues and show the most potential for success. Section 319 watershed planning and implementation grant recipients undertake an outreach campaign for the local watershed and encourage the use of best management practices (BMPs) on targeted lands. Cost-share for those BMPs is often provided through a Section 319 grant or through the United States Department of Agriculture's (USDA) Farm Bill programs. As a result of these efforts, Indiana has been able to show successful restoration of several streams and watersheds at www.idem.IN.gov/nps/what-is-nonpoint-source-pollution/make-a-real-difference/.

Over the next five years, Indiana's Section 319 program proposes to continue working with state, federal, and local partners to produce and implement Watershed Management Plans (WMP). To optimize resources and water quality benefits, Indiana proposes to work with partners to prioritize its watersheds for targeted funding. Indiana will work to achieve a balance between restoration and protection activities funded through its programs.

Purpose of the Indiana Nonpoint Source Management Plan

The need to protect America's waterways from man-made pollution has been an issue of national significance for well over a century. In 1899 Congress passed the Rivers and Harbors Act, legislation which prohibited the dumping of refuse into navigable waterways or their tributaries. The Federal Water Pollution Control Act was first enacted in 1948 and addressed public health issues relating to polluted ground and surface water. The Act was amended many times between 1948 and 1987, but perhaps the most significant of these revisions occurred in 1977.

The 1977 Amendments to the Federal Water Pollution Control Act, commonly referred to as the Clean Water Act (CWA), outlined actions to be taken by the nation to mitigate pollutants in, and prevent further pollution to, surface waters in the United States. The goal of the CWA is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters, with an interim goal of "water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983" (P.L. 95-217). Early success in reducing point-source water pollution throughout the nation occurred by regulating industry and municipal waste through the National Pollutant Discharge Elimination System (NPDES program). However, it became clear that additional federal assistance was needed to address nonpoint source (or "run-off") pollution. To address this need, the U.S. Congress amended the CWA in 1987 to establish the Section 319 Nonpoint Source Program (Appendix A).

The Section 319 Nonpoint Source Program exists today primarily as a grant program with funding provided each year by Congressional appropriations under CWA Section 319. These funds are distributed to the U.S. EPA, and then to the states, tribes, and territories of the United States to control nonpoint source pollution.[1] States are required to identify, through CWA Sections 303 and 305, those waterbodies that do not meet water quality standards, including those impaired by nonpoint source pollution. The states then outline a management program plan to mitigate nonpoint source pollution. State management plans are subject to approval by U.S. EPA, upon which they may request federal Section 319(h) funding to implement their program.

The Nonpoint Source Program management plan guides states' efforts to identify strategic priorities, develop goals and milestones, and work effectively to address the ever-changing condition of their waters and engage partners to address statewide nonpoint source priorities. A portion of the financial assistance provided is used for pass-through grants to fund projects statewide and local initiatives to address nonpoint source pollution in which states competitively award funding to and for Nonpoint Source Program administration to manage the funds and establish statewide nonpoint source pollution initiatives.

Section 319 funds can be used for activities such as technical assistance, financial assistance, planning, education, training, technology transfer, demonstration projects, and monitoring to assess the success of nonpoint source pollution implementation projects. Federal funding levels for the 319(h) program have fluctuated over the years since its enactment (Figure 1). Indiana received its maximum funding

[1] Because of the unique relationship between U.S. EPA and First Nations and territories of the United States, only state grants and programs (including territorial programs when territories are "treated as states") will be discussed here and elsewhere in this document.

allocation of $5,220,600 in FFY 2003. In light of this shrinking federal funding for the Section 319 program, as well as major nonpoint source pollution-fueled water quality problems such as hypoxia in the Gulf of Mexico and sedimentation and algal blooms in Lake Erie, the efficient use of nonpoint source pollution funds is now more urgent than ever.

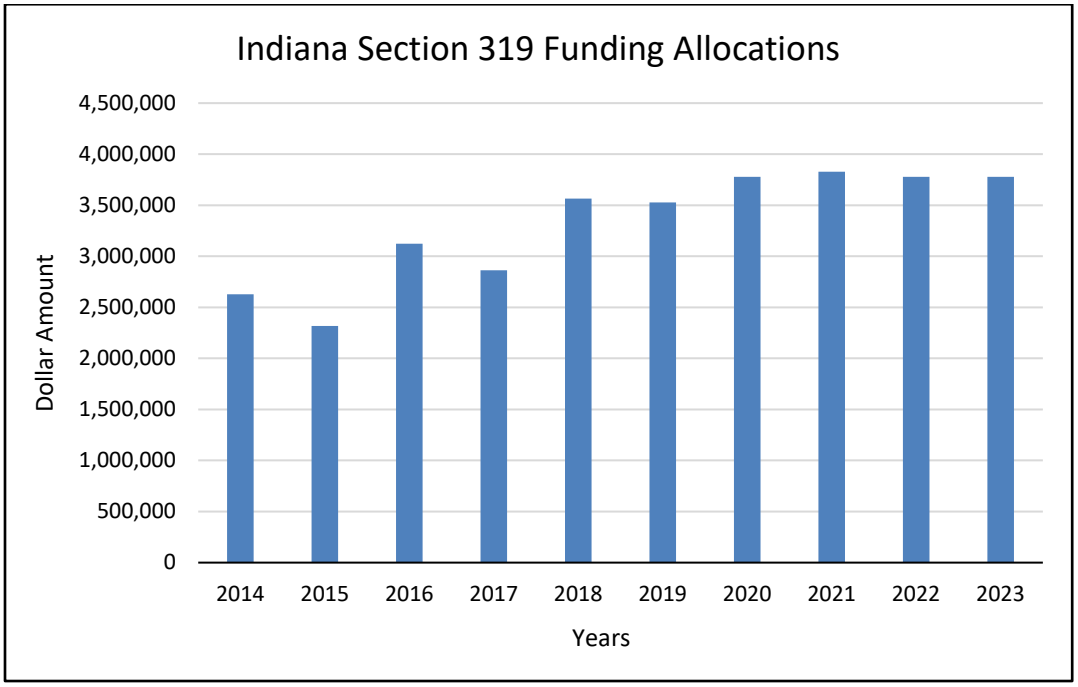

Figure 1. Total Indiana Section 319 funding allocation in FFY 2014 through 2023

A study done by the Government Accountability Office (GAO) in 2012 found that both U.S. EPA and states can do more to ensure that nonpoint source funding is spent according to the most efficient use of funds (GAO 2012). U.S. EPA performed a similar study in 2011 to evaluate the 319 program (EPA 2011). U.S. EPA has formulated new guidelines for the 319 program, including revised guidance to U.S. EPA Regions on how to make consistent satisfactory progress determinations for the states, updated guidance for state Nonpoint Source Program management plans, and updated Nonpoint Source Program and grants guidance. States are required to review and update their plans every five years or risk unsatisfactory performance leading to potential ineligibility to receive Section 319(h) grants. New 319 guidelines were published in 2024.

Indiana's State Nonpoint Source management plan was last updated in 2019. This Plan revision will describe Indiana's strategies for reducing and preventing nonpoint source pollution through program implementation and document the methods Indiana will use to meet the criteria included in the U.S. EPA guidance "Key Components of an Effective State Nonpoint Source Program" (Appendix B).

History of the Nonpoint Source Program in Indiana

The 1987 Clean Water Act (CWA) amendments created a federal source of dedicated nonpoint source funding available to the states, provided that the states assessed the status of their nonpoint source pollution and reported that status to U.S. EPA. Indiana prepared its first assessment of nonpoint source pollution in the state in 1989[2]. At that time, it was estimated that 3,579 total stream/river miles and 20,539 lake acres in Indiana were affected by nonpoint source pollution. Key sources of impairment listed in the report included agriculture (crop production, pasture and range land, as well as feedlots and aquaculture), silviculture, construction and urban run-off, resource extraction/exploration/development, land disposal, hydrologic/habitat modification and "other" (including atmospheric deposition, waste storage/storage tank leaks, spills, and natural sources) (IDEM 1989).

Indiana received its first appropriation of $1,012,520 of Section 319 dollars in FFY 1990. The money was administered by IDEM, Indiana's CWA designee. IDEM created a new Nonpoint Source Program in its Water Quality Surveillance and Standards Branch in the Office of Water Management. With this funding, IDEM set up an internal structure to administer funds, continued its nonpoint source pollution assessment activities, and passed through $355,000 to statewide and local projects. Over the next 22 years, IDEM received nearly $77 million in Section 319 funding to assist with implementation of the State Nonpoint Source management plan.

Since the Nonpoint Source Program was established in Indiana, it has undergone a myriad of internal shifts and evolutions in response to changing priorities and needs at the federal, state, and local levels. Just a few of them are highlighted here.

From the program's inception, the state recognized that nonpoint source pollution management was larger than the program housed at IDEM. To complete the first nonpoint source pollution assessment, leaders of the IDEM and Indiana Department of Natural Resources (IDNR) pulled together an inter-agency task force to analyze the most up-to-date information on potential sources of nonpoint source pollution and devise strategies to ameliorate it. Members of the task force included the Lieutenant Governor's Office; IDNR's Divisions of Water, Reclamation, Forestry, Fish and Wildlife, Soil Conservation, and Oil and Gas; the Office of the State Chemist (OISC); Purdue's Cooperative Extension Service; the Agricultural Stabilization and Conservation Service (now the Farm Service Agency, or FSA); the Soil Conservation Service (now the Natural Resources Conservation Service, or NRCS); State Department of Highways; the State Board of Health; and IDEM's Offices of Water and Solid and Hazardous Waste Management.

Many potential sources of nonpoint source pollution were (and continue to be) present in Indiana. However, due to the large presence of agricultural land use in the state (nearly 62%), and its potential to be a large source of nonpoint source pollution in Indiana, IDEM partnered with NRCS early in its nonpoint source pollution work to coordinate with the local Soil and Water Conservation Districts (SWCDs) and their local field offices to reach out to the agricultural community. In FFY 1992, IDEM

[2] From *Nonpoint Source Assessment Report* (IDEM 1989): "Of the estimated 90,000 miles of water courses in Indiana, only about 20,000 miles of streams and rivers are large enough to support all designated uses throughout most of the year" (p.1)

funded a nonpoint source pollution liaison between NRCS and itself.

This arrangement lasted for eleven years. From FFY 1999 through 2003 IDEM also used Section 319 dollars to fund NRCS personnel to work with local watershed interests and provide technical assistance around the state. This "Watershed Team" was very effective at getting watershed initiatives off the ground at the local level. Due to the success of the Watershed Team, when NRCS could no longer spare personnel for the Nonpoint Source Program (in 2003), IDEM was able to create four in-house Watershed Specialist (WSS) positions (in 2004) that continue to provide local support and technical assistance to the present.

By 2003, the Indiana Nonpoint Source Program was hitting its stride, and several key accomplishments were completed in this year. By this time the Nonpoint Source Program had released a Watershed Management Plan (WMP) checklist (in 2001); which was revised in 2003 to include the nine Key Elements of a Watershed Management Plan (U.S. EPA 2002). Also in 2003, the program published a comprehensive manual for organizing a watershed group and writing a management plan[3]. The State Revolving Fund Loan Program had also developed a Nonpoint Source Program to dovetail with the nonpoint source grants program and completed its first project with the City of Evansville in 2003[4].

Another internal reorganization moved the Nonpoint Source Program into closer integration with the total maximum daily load (TMDL) and 305(b)/303(d) Assessments programs in 2007 when the Watershed Management Section (WMS) combined with those two programs to become the Nonpoint Source/TMDL Section in the Watershed Planning Branch. The staff had grown to 14 in number and included six project managers, a Quality Assurance Project Plan (QAPP) Coordinator, the Section Chief, a Geographic Information Systems (GIS) Coordinator, a clerical assistant, and four WSS. The WSS were equivalent to the Watershed Conservationists: they frequently traveled to local watershed group steering committee meetings, public meetings, one-on-one meetings with watershed coordinators throughout the state, groups that were interested in writing a WMP, and groups looking for funding for their remediation activities.

The Nonpoint Source Program endured another internal shift when it became part of the Watershed Assessment and Planning Branch in 2010. There it remained co-located with the 305(b)/303(d) and TMDL programs and was paired with the Assessment Branch (Biological Studies Section, Surveys Section, and Toxicology and Chemistry Section). This alignment enabled the Nonpoint Source Program to capitalize on the monitoring expertise of the Assessment Branch to begin baseline studies for watershed plans and follow-up monitoring for success. This structure has also allowed better coordination with the TMDL program by incorporating local interest into the priority framework for selection of TMDL projects across the state. The two programs working together have established an effective relationship of producing meaningful TMDLs by leveraging local partnerships early in the process who can implement the TMDLs using funding and support from Nonpoint Source Program. At present, the Nonpoint Source Program remains in the Watershed Assessment and Planning Branch as part of the Watershed Planning and Restoration Section.

[3] *Indiana Watershed Planning Guide*

[4] The project remediated a rail site and contaminated groundwater that flows to Pigeon Creek.

Indicators of Success

From an economics point of view, nonpoint source pollution has been characterized as a "wicked problem" – a problem that is not solved, as much as it is either improved, made worse, or remains constant (Doering 2013). Wicked problems are not easily described, due to differing perspectives of the observers and the complex nature of the problems themselves; and involve a great deal of uncertainty, complexity, and conflict. Under these conditions, wicked problems are not a typical "scientific problem," in which the problem is observed, defined, analyzed, and solved in a series of steps. Rather, the problems are somewhat defined by the solutions. Suggested methods for tackling wicked problems include authoritative strategies where a small number of people are made responsible for the larger problem; competitive strategies where the most opposing viewpoints are made responsible for choosing their most preferred solution, thereby generating many possible "best solutions" from which to choose; and collaborative strategies that include as many perspectives as possible to share knowledge and generate a consensus on an approach to tackle the problem (Roberts 2000).

Indiana's Nonpoint Source Program has chosen to work on the wicked problem of nonpoint source pollution under a collaborative process. The approach includes an iterative process of planning, implementing, evaluating, and adaptive management (Figure 2).

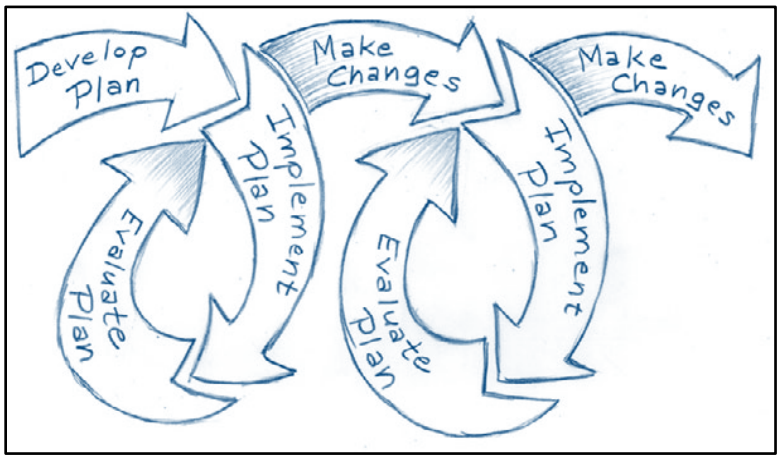

Figure 2. Adaptive management (From EPA 2008)

The indicators the IDEM uses to evaluate its program will have an impact on the definition of "success" and in turn, will influence decisions that are made. Acknowledging this truth, IDEM has identified means of measuring program success based on both environmental and administrative measures.

Environmental Indicators

U.S. EPA's Strategic Measures: Objective 5.2 Protect and Restore Waterbodies and Watersheds, in its Strategic Plan 2022-2026, has set a national goal of attaining an increase in surface water quality standards for all pollutants and impairments that did not previously meet standards by 41,000 square miles by 2026. On a regional scale, Indiana is committing to show improvement in or delisting of five waterbodies that appear on the 2024 or subsequent Indiana 303(d) List of Impaired Waters to satisfy the WQ-10 commitment.

Water quality improvements generally take a long time to manifest. IDEM's approach thus far has been to monitor those waters 1) that are listed on Indiana's 303(d) List of Impaired Waters for *E. coli* and/or IBC; and 2) that have utilized 319 funding or a "watershed approach" to delist or show a trend of improvement. In accordance with the 2022-2026 Water Quality Monitoring Strategy, IDEM will continue to use additional resources (e.g., staff, funds, and technical support) to monitor water quality in select watersheds where nonpoint source pollution restoration activities have occurred. The monitoring data will be compared to baseline information, if available, to gauge the efficacy of the work. IDEM will also, to the extent practicable, continue to participate in the discussion of the appropriate indicators to report to Congress and U.S. taxpayers the improvements being made through the use of Section 319 and related funds.

Estimated Load Reductions

Many of the nonpoint source pollution-related listings on the Indiana 303(d) List of Impaired Waters are due to elevated sediment, nutrients, and bacteria. IDEM will track, in the federal Grant Reporting and Tracking System (GRTS) database, estimated load reductions of these sediment and nutrients that are reported to the Nonpoint Source Program. While the Nonpoint Source Program can only track those reductions that have been reported (most of which are BMP-funded and reported by 319 grantees), IDEM believes that reductions in these parameters indicate future improvements in water quality, as sources/causes of pollution are removed from the system.

Program Progress - Administrative Indicators

Additional indicators of success will be administrative in nature and demonstrate the success of the Nonpoint Source Program in meeting the goals of this plan. Some of these indicators include:

- Percentage of state covered by WMPs
- Money passed through to local entities for planning and implementation
- Number of watershed groups serviced by the program through grants or through contact with watershed specialists
- Number of improved water bodies or water quality improvements due to nonpoint source pollution projects
- Continued implementation of the External Data Framework and the submission of water quality data for potential use in making water quality assessments and determining nonpoint sources of pollution

Physical Inventory

Demographics, Population & Location

The state of Indiana covers more than 36,000 square miles in the Midwestern/Great Lakes Region of the United States and has a population approaching 6.8 million (Census 2020). Prior to European settlement, the state was predominately forested (primarily oak-hickory and beech-maple climax communities) and included large tracts of wetland in the north and small patches of prairies scattered throughout. Major rivers ran clear enough to see the substrate, as attested by the Native American names “Wabashiki” (“water over white stones”) and “Wapahani” (“white sands”) for the Wabash and White Rivers (Figure 3), respectively.

The state can be divided into several ecoregions: the Eastern Corn Belt Plains, Interior Plateau, Interior River Valleys and Hills, Central Corn Belt Plains, and Southern Michigan/Northern Indiana Drift Plains (Figure 4).

Figure 3. White River through Indianapolis.

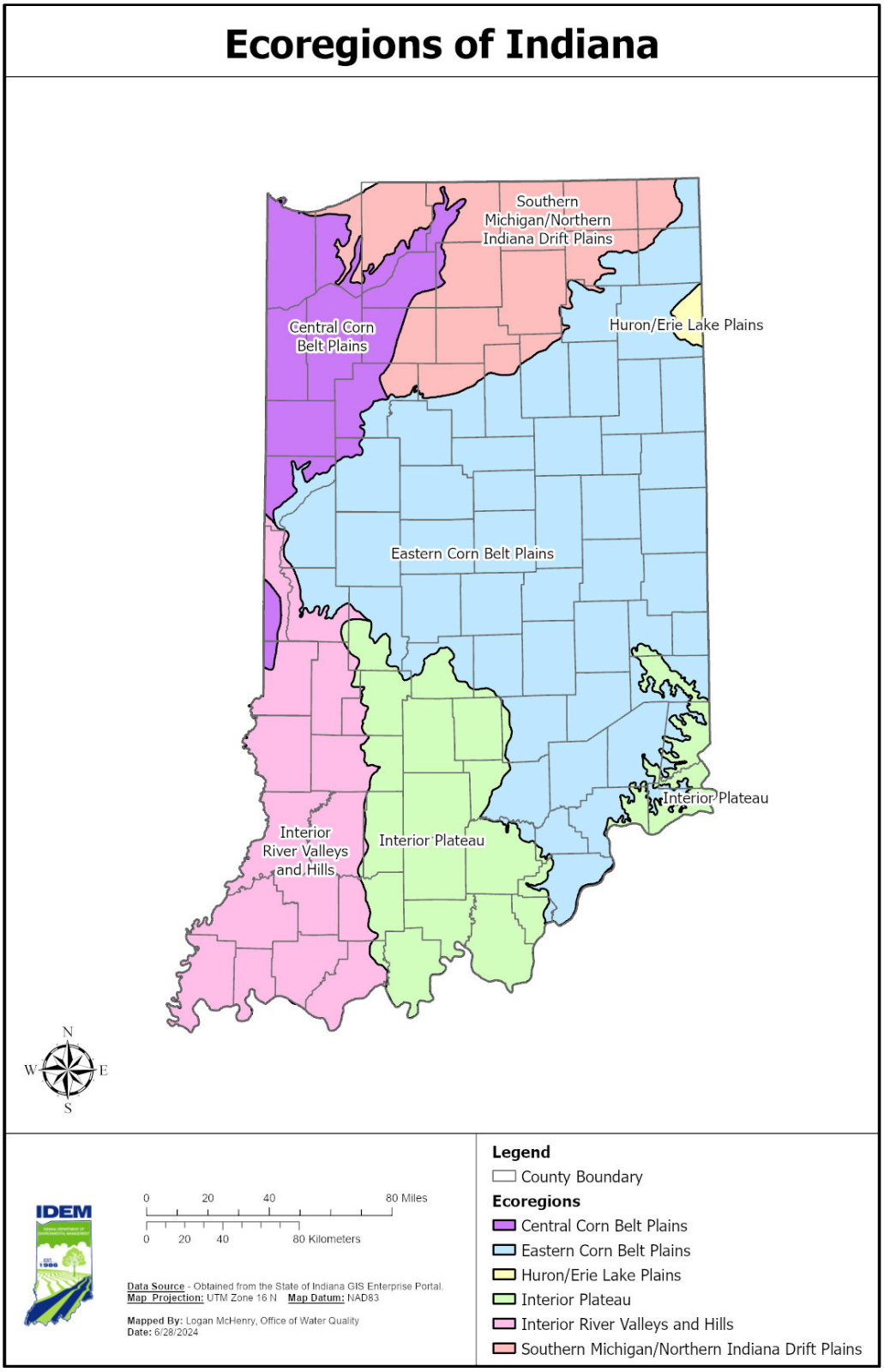

Figure 4. Ecoregions of Indiana (Data from http://www.epa.gov/wed/pages/ecoregions/level_iii_iv.htm)

Geology

Bedrock and Glacial History

Indiana is underlain by six different types of bedrock (limestone, shale, dolomite, sandstone, siltstone, and coal) from five distinct geological periods (Figure 5). The topography of the state's bedrock drives drainage patterns to some extent. The highest points on the bedrock surface are found in Randolph and Wayne Counties, on a plateau from which four major river systems originate (White, Wabash, Whitewater, and Great Miami Rivers). The lowest bedrock elevations are found in Posey and Vanderburgh Counties, near the confluence of the Wabash and Ohio Rivers. The composition of bedrock has important implications for hydrologic networks in the state. In particular, limestone and dolomite are unstable over time, creating challenges for Indiana's construction and agricultural industries and recreational opportunities for Hoosier spelunkers. Limestone and dolomite were formed from the lithified remains of aquatic sea creatures that resided in the shallow sea covering Indiana during the early Paleozoic era (from the Cambrian through the Devonian period - approximately 542-359 million years ago) (Appendix C). These materials are rich in calcium carbonate and subject to dissolution from slightly acidic rain waters.

As a result of this dissolution, cave systems, sinkholes, and sinking streams are formed, to create a landscape known as "karst." Karst geology is present in south-central and south-eastern Indiana. It is generally extremely vulnerable to pollution as surface water can bypass the filtering soil and infiltrate straight into groundwater. The surficial topography of Indiana has been shaped in large part by at least three major glaciations events of the Pleistocene epoch: the pre- Illinoian, Illinoian, and Wisconsin glaciations.

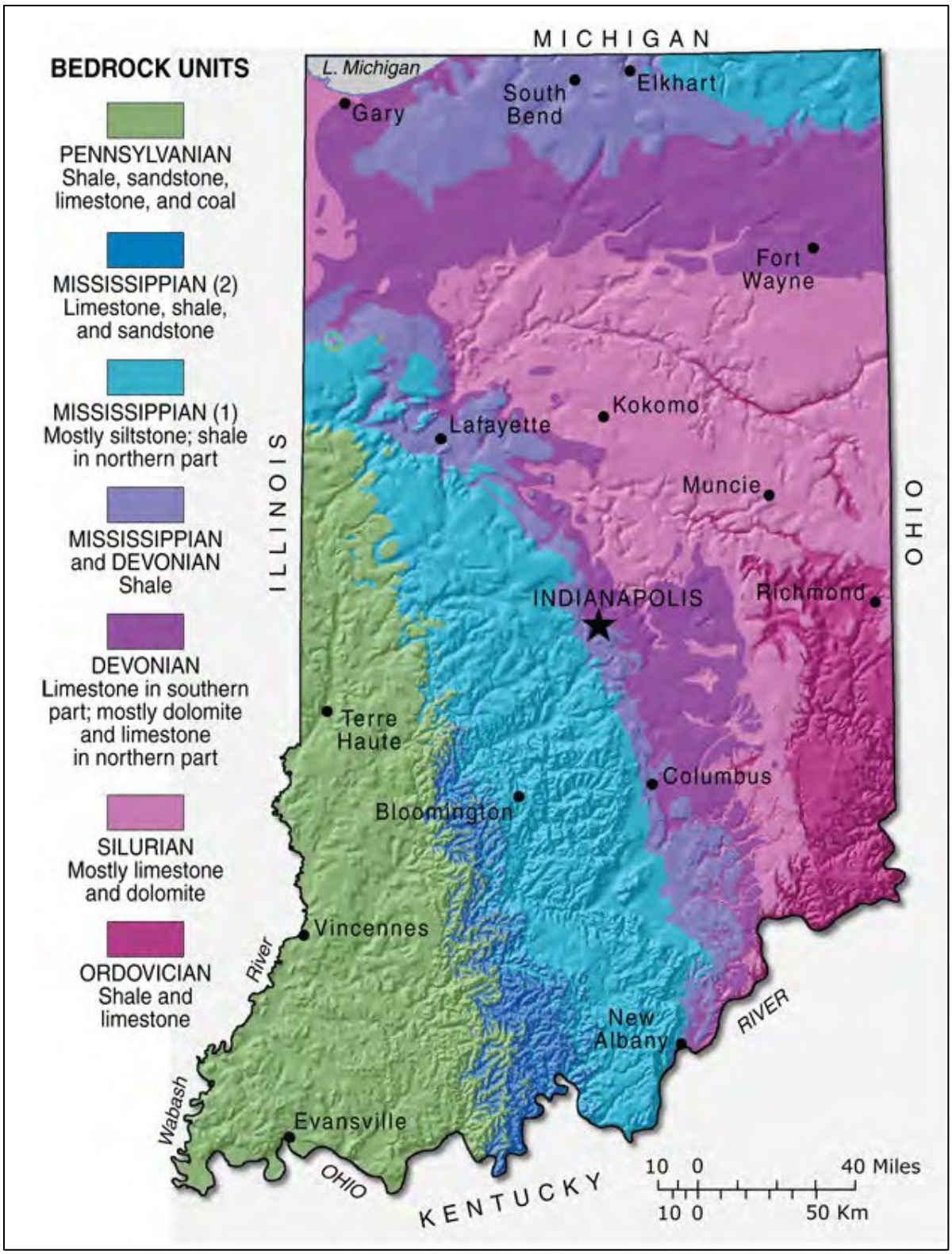

Figure 5. Bedrock Units of Indiana

As the shallow seas that covered Indiana receded, deposits of limestone, shale, siltstone, dolomite, sandstone, and coal were left exposed to the erosive forces of wind and water. Over time, erosion and deposition caused soil to form atop the exposed bedrock. Around 2.5 million years ago, the most recent Ice Age began. Ice sheets from the Arctic reached down into the area that is now the United States, eroding, churning, and depositing the sediments born from bedrock. Several such events likely took place between 700,000 and 300,000 years ago, but since it is very difficult to characterize their chronology and extent, geologists simply refer to them as "pre-Illinoian." During the Illionoian glaciation (300,000-140,000 years ago), the ice sheet penetrated the majority of the state, excepting an upside-down "U"-shape that ranged from the Wabash-Ohio River confluence in the southwest, up to the Morgan-Monroe County line, and back down to present- day Jeffersonville in the southeast. When this ice sheet retreated, it left several tens of feet of sediment throughout its range in Indiana. The last glaciation occurred ca. 50,000 years ago when the Wisconsin glacier advanced into Indiana. It reached as far south as central Indiana, flattening the landscape and creating glacial lakes in northern Indiana, but leaving the rolling hills of southern Indiana virtually untouched.

Soils

Soil types in Indiana vary widely from well-drained prime farmland soils in the central and north- central region to the sandy soils of northwestern Indiana to very-poorly drained, mucky soils in certain parts of the central and east-central regions and southern bottomlands. Soil-related nonpoint source pollution concerns include erosion from highly erodible and potentially highly erodible lands, depth to bedrock or groundwater, potential nutrient runoff, hydric soils, and septic system suitability.

Table 1. Selected Field Indicators of Hydric Soils (NRCS 2018)

Field Indicators of Hydric Soils for All Soils	
A1.	Classified as a Histosol or Histel
A2.	Histic epipedon underlain by mineral soil material with chroma 2 or less.
A3.	Black Histic.
A4.	Hydrogen sulfide odor within 30 cm of soil surface.
A5.	Stratified Layers starting within the upper 15 inches.
A6.	2% or more organic bodies of muck or mucky modified mineral texture starting within 15 cm of soil surface.
A7.	Mucky mineral layer 5 cm or more thick, starting with 15 m of soil surface.
A8.	Layer of muck starting within 15 cm or more of the soil surface.
A9.	1 cm muck or more thick within 15 cm of surface.
A10.	2cm or more muck layer starting in first 15 cm.
A11.	Depleted below dark surface.
A12.	Thick dark surface.
A13.	Alaska gleyed
A14.	Alaska redox.
A15.	Alaska gleyed pores.
A16.	Coast prairie redox
A17.	Mesic spodic

Statewide, nearly 2.4 million acres of cropland have been classified as "at risk" for sheet and rill erosion. Of those at-risk acres, 90% still need treatment. In addition, about 1 million acres of pasture and 2.4 million acres of forestland are also at risk due to sheet and rill erosion, with nearly 98% of pasture and 99.7% forest at-risk acreage still needing protection. While sheet and rill erosion are problematic in most of the state, soil damage via wind erosion is a concern in the northwestern portion of the state (NRCS 2011).

To a degree, soil can act as a filter of suspended and dissolved particles, chemicals, and compounds. As surface water infiltrates, then percolates through soil, a variety of substances can become absorbed, altered, or taken up by roots and microorganisms. The degree to which the soil can clean polluted water is highly variable, depending upon soil type, pollutants involved, and depth to groundwater or impermeable materials. Where these conditions allow shortened contact time between the soil and pollutants, the risk of pollutants reaching the water table or surface water (through surface water recharge via groundwater) is increased. Nutrients, pathogens, pesticides, and household hazardous waste (e.g. paint, oil poured out on the ground) are some of the nonpoint source pollutants of concern in these scenarios.

Depth to bedrock and to groundwater is highly variable throughout the state. In the glaciated northern 2/3 of Indiana, bedrock is covered by a relatively thick layer of unconsolidated materials (i.e. "soil"); while in the southern portion of the state, depth to bedrock is relatively shallow and exposed outcroppings of bedrock sometimes can be found.

Hydric soils are soils that have formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register 1994). Though these soils may be drained through the employment of open ditches or drainage tiles, which effectively lower the water table, indicators of prior wetness remain present (Table 1). Hydric soils are one criteria of a wetland determination and may provide an indication of where historic wetlands may have existed, and could be prioritized, for restoration purposes. Hydric soils are generally very limited to somewhat limited in their suitability for dwellings, out- buildings, roads, shallow excavations, lawns, septic systems, and landfills. Approximately 24% of the major soil components in Indiana are hydric.

Septic System Suitability

Where wastewater treatment plants and sanitary sewer connection lines are not available, residents and commercial establishments treat their wastewater using "septic systems." Though there are many different kinds of septic systems employed to treat wastewater under a variety of soil conditions, these types of treatment systems always consist of a tank to hold solids and a mechanism to filter effluent. The tank is typically made of concrete and is buried near the home or building. A waste line brings effluent into the tank, where solids separate into two layers: scum (soap, grease, toilet paper) that floats to the top and solids (sludge) that settle to the bottom. Settled solids are broken down into organic matter by the anaerobic bacteria that naturally colonize the tank. The liquid effluent is passed through the tank chamber into the drainage field through the tank's outlet line. The effluent infiltrates the soil through the "fingers" of the drainage field, and then moves through the soil's pore spaces where microorganisms found in the pores of the soil break down additional bacteria and viruses that are present in the liquid. Other impurities also decompose in the drainage field. Eventually this purified water is taken up by nearby plants or deposited into groundwater.

Septic systems depend, in large part, on soil porosity to treat wastewater. In order to operate properly, the tank must be pumped on a regular basis so that solids do not reach the level of the effluent line and escape to clog the drainage field. In addition, the effluent must have proper contact time with the soil so that the soil microorganisms can treat pathogens and adsorb or decompose impurities. Soils that are very well-drained (such as sandy soils) or are very wet (e.g. due to flooding), do not provide enough time for treatment before the effluent reaches the groundwater. In addition, soils with a high clay content ("tight" soils), that have been compacted, or contain an impermeable layer, may not allow sufficient infiltration and create ponded conditions on top of a typical drainage field. In these types of soils, mounded or dosed systems may be more appropriate than a conventional drain field.

The NRCS has rated all soils in Indiana for their suitability to be used as a conventional septic system drainage field. This rating system ranges from "very limited" for septic systems to "not limited." In Indiana, approximately 5% of soils are suitable for use as a conventional septic system drainage field. Modifications to septic systems can typically overcome soil limitations. Even so, it is estimated that 20% of the state's residential septic systems are inadequate and have failed or are failing to protect human health and the environment (Steinhardt 2019).

Current Land Use

Table 2. Indiana Land Use

Land Use	Acres	Square Miles	Percentage
Agriculture	11,531,682	18,018	49.8
Developed, High Intensity	190,461	298	0.8
Developed, Medium Intensity	845,037	1,320	3.7
Developed, Low Intensity	501,230	783	2.2
Developed, Open Space	1,168,842	1,826	5.1
Forest	5,523,086	8,630	23.9
Hay/Pasture	2,532,261	3,957	10.9
Open Water	296,473	463	1.3
Shrub/Herbaceous	12,594	20	0.1
Wetlands	543,173	849	2.4

(From 2023 National Agricultural Statistics Service (NASS), https://nassgeodata.gmu.edu/CropScape/) (www.mrlc.gov) *Note: the wetland acres and percents differ between the NLCD and state data. In light of the ground-truthing done to verify acreages, and wetland types, the state numbers will be carried through this plan.

Land use information for Indiana is compiled annually as a part of the National Agricultural Statistics Service (NASS), hosted and made available by George Mason University: Center For Spatial Information Science and Systems (CSISS). As a part of that effort, land cover information available via satellite was converted into (among other things) corresponding land uses (Figure 6). The largest land use in Indiana is agriculture (60.76%, when hay and pasture are included), followed by forested use (23.86%). Various developed land uses account for 11.69% and wetlands and open water make up 3.63% of the state (Table 2). For the purposes of the Nonpoint Source Program, land uses will be characterized as "rural" (for agriculture, forestry, mining, wetlands and open water running through these landscapes) and "urban" (including cities and towns, residential areas in more rural locations, and open water surrounded by such uses).

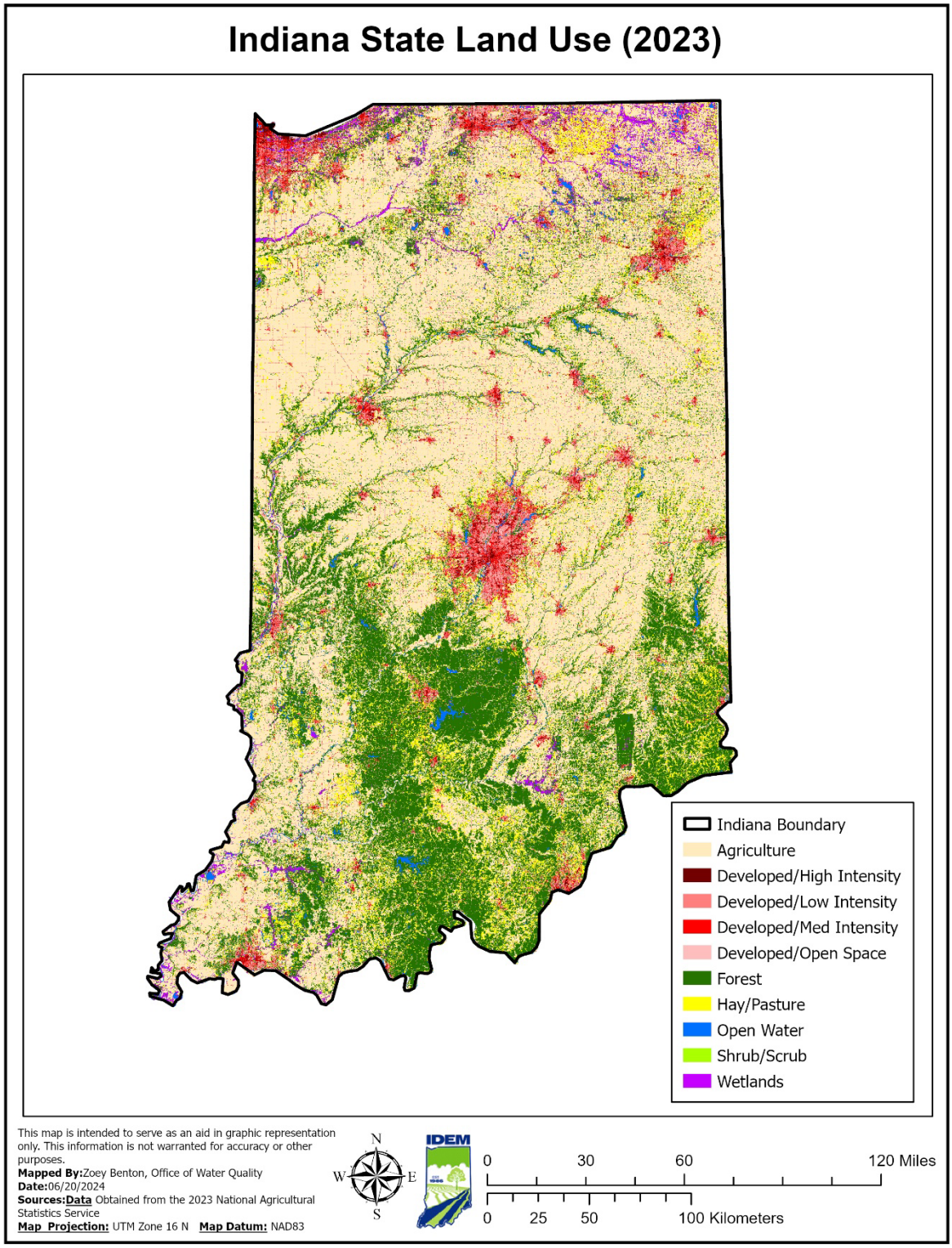

Figure 6. Indiana State Land Use (From 2023 National Agricultural Statistics Service (NASS), https://nassgeodata.gmu.edu/CropScape/)

Rural Land Uses

Since European settlement, Indiana has been predominately an agricultural state, though large tracts of forest cover remain in the southern and central portions of the state (Figure 6). In 2022 (the last year for which statistics are available), the National Agricultural Statistics Service (NASS) indicated that Indiana ranked 6th in the nation for its inventory of hogs and pigs and 5th in the nation for the value of its grains (including corn, wheat, oilseeds, dry soybeans, and dry peas). Indiana ranked 9th in the U.S. for overall market value of agricultural products sold. This same year Hoosier farmers harvested 5.7 million acres of soybeans, 5.4 million acres of corn for grain, and 488,227 acres of hay. The state also maintained an inventory of 8.1 million broilers and other meat-type chickens, 770,048 cattle and calves, 4.4 million hogs, 35.9 million layers, 10.9 million pullets, and 8.5 million turkeys. In 2022, the Indiana agricultural industry netted some $18 billion (NASS 2022).

Figure 7. Corn field in Indiana

An annual survey is conducted by partners from the Indiana Conservation Partnership (ICP), led by the Indiana State Department of Agriculture (ISDA) to estimate the adoption of cover crops and post-harvest tillage. As of 2023, there were 1.6 million acres of living cover crop in all crops, 596 thousand acres of living cover crop in corn (Figure 7), and 931 thousand acres of living cover crop in soybeans. Living green cover implementation has increased from 8.5% (1,230,875 acres) in 2014 to 14% (1,611,147 acres) in 2022. This is an additional 380,272 acres of living cover crop implemented over 10 years. Brown County had the highest percentage of total living cover planted after all crops at 53%, followed by Bartholomew County at 43.2%, and both Knox County and St. Joseph County at 39% (ISDA, 2023). In addition to implementing more cover crop practices, Indiana has also had an increase in the implementation of conservation tillage practices. According to ISDA, conservation tillage implementation on corn and soybean fields increased from 1,412,359 acres (15% of all corn and soybean fields) in 1990 to 6,101,134 acres (53% of all corn and soybean fields) in 2019 (ISDA, 2019).

According to the United States Department of Agriculture (USDA) Economic Research Service, in 2022, Indiana exported $2.7 billion in soybeans, $1.4 billion in corn, and $836 thousand in feed and other feed

grains. Pork exports were the highest among livestock exports at $394 thousand, followed by poultry products at $273 thousand. In 2022, Indiana ranked 7th in the country for the export value of total agricultural exports, 11th for the export value of total animal products, and 6th for the export of total plant production (USDA, 2023). The ISDA reports agriculture in Indiana contributed an estimated $35.1 billion to Indiana's economy, exporting $7.4 billion in 2022 (ISDA, 2024).

Urban Areas

Significant urban areas in the state include Indianapolis and its suburbs in central Indiana, the major urban areas in northwest Indiana, Ft. Wayne in the northeast, Evansville in the southwest, and the South Bend/Elkhart area in the north. Smaller urban areas are spread out throughout the state; locations of note include Anderson, Bloomington, Lafayette, Muncie, and Terre Haute. Despite the fact that developed space is only about 12% of the land cover in the state, the majority (78%) of Indiana's population lives in the urban areas.

Urban areas can be a large source of nonpoint source pollution, especially when best management practices are not used by a large population base. Common urban sources of nonpoint source pollution include construction activities, pet waste, fertilizing grassy areas, run-off from impervious surfaces, nuisance waterfowl waste, residential car washing done on the street or in the driveway, and stream bank erosion. Polluted waters from these activities can run over land or enter storm sewers to discharge directly into streams. To mitigate the pollutants generated by populated areas, the U.S. EPA, together with the state, has designated certain populated areas such as cities, towns, universities, colleges, hospitals, military bases, and certain correctional facilities to be permitted for their discharge of urban storm water run-off. These permittees are known as "municipal separate storm sewer systems" or MS4s. Indiana's MS4s are regulated under 327 IAC 15-13 or "Rule 13" and are issued a National Pollutant Discharge Elimination System (NPDES) permit. In MS4 areas, much of the storm water discharge is generated by overland flow, but since the water is captured via storm sewers and conveyed to the waterbody through pipes, the nonpoint source pollution runoff becomes a "point" source discharge which can be regulated under the NPDES program.

There are over 200 MS4s that have been designated in Indiana (www.idem.in.gov/stormwater/municipal-separate-storm-sewer-systems-ms4/designated-ms4-entities-currently-permitted/), though in many cases, two or more entities were co-permitted. These NPDES permits are reviewed and re-issued (as applicable) on a 5-year cycle. MS4 entities must submit a Storm Water Quality Management Plan (SWQMP) to IDEM that includes a watershed characterization and program implementation elements. Program elements must include the following six minimum control measures:

1. Public Education and Outreach
2. Public Participation and Involvement
3. Illicit Discharge Detection and Elimination
4. Construction Site Storm Water Run-off Control
5. Post-construction Storm Water Run-off Control
6. Municipal Operations, Pollution Prevention, and Good Housekeeping

All MS4 municipalities have local storm water ordinances or other legal means in place, and many fund their SWQMP activities through a storm water utility. Even though the pollution being mitigated through MS4 regulation could be considered nonpoint source pollution, regulated activities specifically outlined in the SWQMP cannot be funded with Section 319 funds. However, any nonpoint source pollution activity that goes "above and beyond" the SWQMP may be funded through Section 319 funds.

Urban areas can serve as significant sources of chlorides when roads are treated with "salt" as de-icer for driving safety considerations. Populated areas that use sand instead of salt have an increase of sediment when sand enters stream system as runoff.

Mineral, oil and gas extraction

Coal and Minerals Southwestern Indiana includes land rich in minerals such as coal, clay, shale, and shale oil (Figure 8). The Indiana Geologic Survey (IGS) estimates that Indiana has approximately 57 billion tons of unmined coal resources, of which 17 billion tons are recoverable using current technologies (IGS 2011). As of the end of 2012, there were 30 active coal operations (DNR 2013a), two gypsum mines, and six shale and/or clay mines covering 590.95 acres in southwestern Indiana (IMCC 2012). Of these activities, the coal industry is the largest and has the potential to greatly impact water quality in the state.

Coal mining in Indiana dates back to the 1800s. Prior to 1941, there was no state or federal requirement that coal mining companies address environmental concerns resulting from the abandonment of spoil piles, coarse-grain refuse and tailings. Though some coal mining companies voluntarily began reclamation activities, not all companies took it upon themselves to do so. Major nonpoint source pollution concerns from barren gob piles and tailings include erosion and acid mine drainage. Acid mine drainage occurs when water flowing through slurry waste piles becomes acidic, due to the reaction of water with sulphur-bearing materials in the waste. The reaction creates sulfuric acid, which then leaches heavy metals out of the rocks it encounters. These waters are dangerous to humans, and aquatic life generally cannot tolerate the low pH present in these environments. There is some evidence of acid mine drainage to waters of the state in southwest Indiana.

In 1941, Indiana passed a law that required coal mining companies to plant trees on spoil banks. By 1967, Indiana's mining regulations had incorporated additional protections for mined land, including provisions to allow farming activities, burial of certain acid-forming rocks, grading specifications, and a requirement for a performance bond so that reclamation activities would be guaranteed. Nationally, the environmental standards of the coal mining industry changed dramatically with the enactment of the federal Surface Mining Control and Reclamation Act (SMCRA) of 1977 (30 U.S.C. 25), which mandated that the coal industry take steps to control the environmental impacts of coal mining. SMCRA provides authority for the federal Office of Surface Mining Reclamation and Enforcement (OSMRE) to support and oversee state mining regulatory programs, as well as providing grants and oversight to state abandoned mine reclamation programs. Today, the state of Indiana, through the DNR Division of Reclamation, oversees the mining and reclamation activities of 30 coal mines and the production of 32-36 million tons of coal per year.

Coal mining sites that are no longer active (whether abandoned or properly closed according to a DNR-approved mine reclamation plan) can be rehabilitated for many land uses, including farmland, forest land, wildlife habitat, wetlands, and recreation areas.

Aside from coal, several other minerals are mined in Indiana. The soft mineral gypsum is mined from two underground mines in Martin County. The deposit is 350-600 feet beneath the surface and can be up to 16 feet thick. Gypsum is used to make drywall, cement, soil amendments, plaster of Paris, and finishing compound.

Southern Indiana also includes a belt of limestone situated between Bloomington and Bedford, where 2.7 million cubic feet of “Indiana limestone” (technically Salem limestone) is excavated from nine quarries annually for its uses in the building industry. In addition, sand and gravel seams, peat, and marl are distributed widely throughout the state. While 150 active sand and gravel mines across the state produce 25 million tons annually, some 2000 sand and gravel quarries have been abandoned, with potential nonpoint source impacts on groundwater. Water quality concerns from these mining activities include pesticide and fertilizer run-off leaching into groundwater through abandoned quarries and erosion concerns.

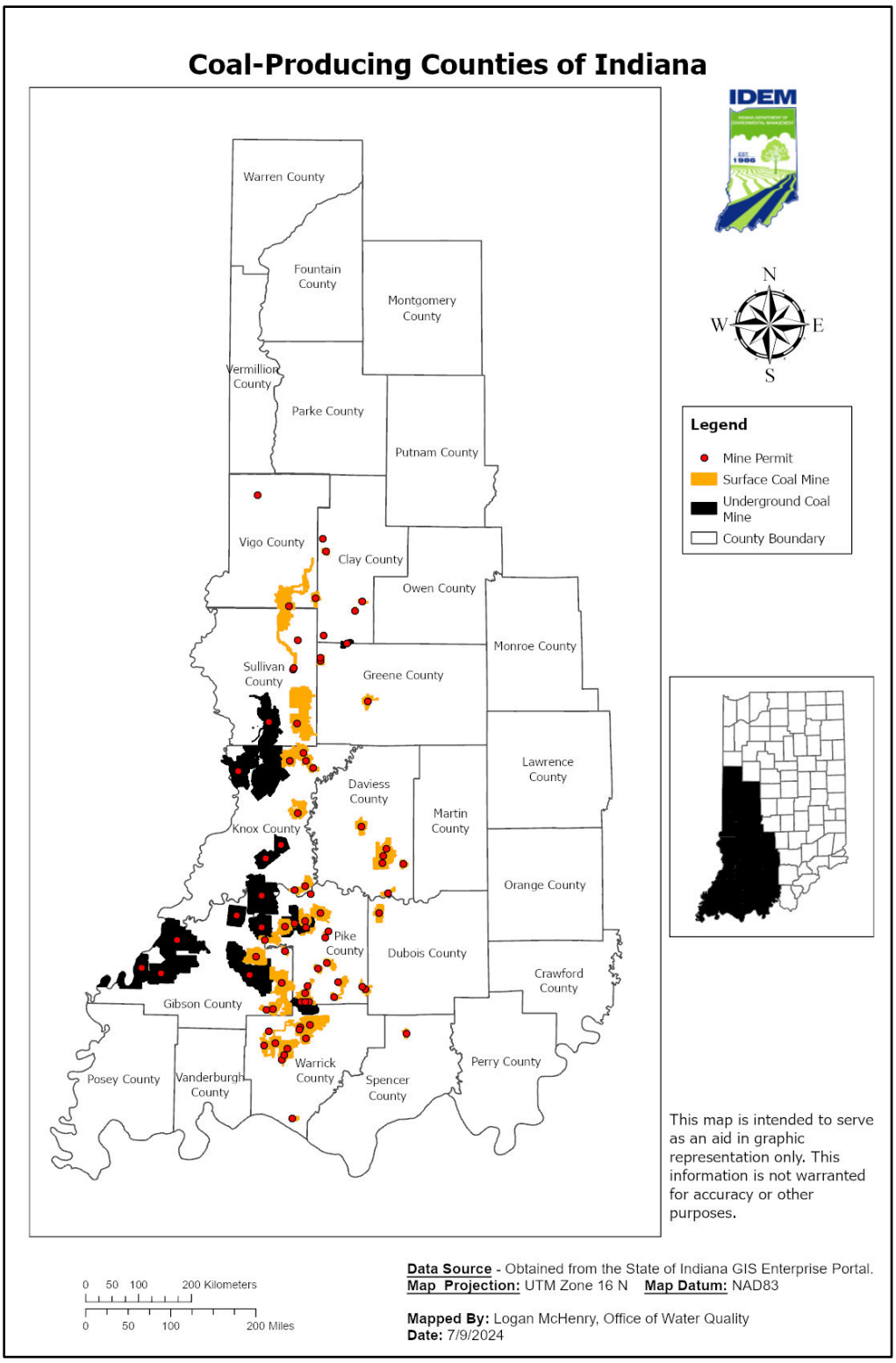

Figure 8. Coal production in Indiana

Oil and Gas

Exploration of subsurface oil and gas probably began in Indiana during the middle of the 1800s stemming from early drilling for salt recovery and precipitation. Although gas springs and oil seeps were discovered in counties in southern Indiana along the Ohio River in the 1860s, the first major exploitation of gas and oil began with the discovery of the Trenton Field in east-central Indiana in 1876. This explosion in oil and gas development precipitously declined in the early 20th century due to wasted resources and poor drilling practices. As the Trenton Field exploration and exploitation declined, reserves in the Illinois Basin in southern Indiana were discovered and developed throughout the mid-1900s. Overall, the amount of oil production in Indiana has declined since the 1960s, but has seen resurgence in the New Albany Shale Play in southeastern Indiana in the last 20 years (Figure 9).

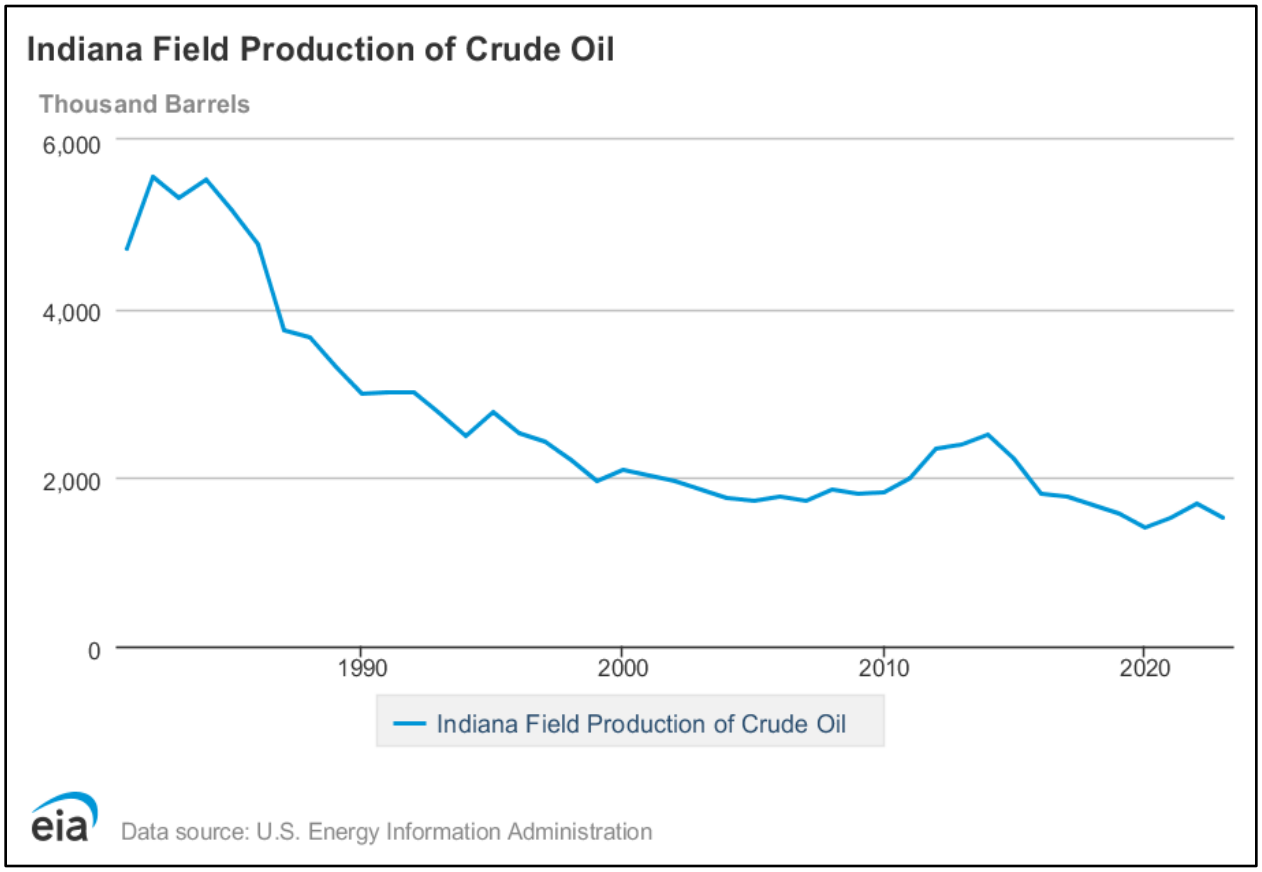

Figure 9. Historical Oil Production in Indiana (www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=pet&s=mcrfpin1&f=a) (legacy.igws.indiana.edu/OilGas/Indiana%20Petroleum%20History)

Unlike the shallower pits and mines created for mineral and coal mining, oil and gas wells in the U.S. average nearly 8,000 feet deep. The majority of Indiana has been drilled and explored for oil and gas, but only in the shallow range of the first few thousand feet. This restricted exploitation of only the shallow surface has potentially left undiscovered reserves of oil and gas available at greater depths. These potential deep, and unexplored, reserves may be more accessible with the advent of new technologies in oil and gas extraction, including but not limited to the application of advanced seismic acquisition and processing techniques, new drilling technologies including horizontal drilling and shale fracturing, and complex completion techniques such as CO_2 stimulation.

While early primitive drilling and oil extraction techniques had the potential to lead to surface "blow outs" and environmental contamination, modern techniques use blow out preventers that keep material within the bore-hole, preventing contamination to the environment. Although modern controls can prevent surface contamination, by-products from oil and gas wells (such as brine or chlorides) can reach shallow groundwater aquifers through poor maintenance and defunct equipment, including corroded well casings and leaking storage tanks and/or pipelines. The proper handling of by-products from finishing can also be of concern to water resources if not disposed of properly. As new techniques are developed, including high-volume hydraulic fracturing, it will be important to keep up on the transparency of chemical use and the elimination of potential groundwater contamination pathways. The IDNR, Division of Oil and Gas is charged with regulating petroleum exploration, production and site abandonment activities, underground injection control, and test hole drilling.

The total oil production in Indiana for 2022, the last year on record as of this writing, was approximately 1.7 million barrels. At an approximate price of $92.56 per barrel, the total production of oil in tax dollars from 2022 was roughly $1.5 million. The total gas production in Indiana for 2022 was approximately 3.8 million Mcf (an Mcf is 1000 cubic feet of gas). At an approximate price of $6.05 per Mcf, the total production of gas in tax dollars in 2022 was over $230,000 at www.dnr.in.gov/oil-and-gas/oil-and-gas-activity/oil-and-gas-statistics/.

Indiana's Hydrology

Watersheds

Nonpoint source pollution is often called "run-off" pollution because pollution "runs off" the watershed and into the body of water. A watershed is an area of land that collects and drains water from high points (hills) to low points (valleys) (Figure 10). When rain falls in a watershed, the water travels over natural and manmade terrain features toward the lowest point. Any area that drains water to one location is a watershed. Watersheds are synonymously called "basins," "catchments," and "drainage areas."

The United States Geological Survey (USGS) has categorized watersheds according to their size, using an address system known as hydrologic unit codes (HUCs). Watersheds are nested, with the drainage of a small creek belonging to the watershed of that creek, as well as the next larger watershed, and the next, continuing all the way to a major river that leads to an ocean. In order to capture this "basin within a basin" characteristic of watersheds, HUCs can describe very specific watersheds, but can be extrapolated to their larger watershed. The fewer the numbers in a HUC, the larger the area it covers.

Regional Watersheds of Indiana

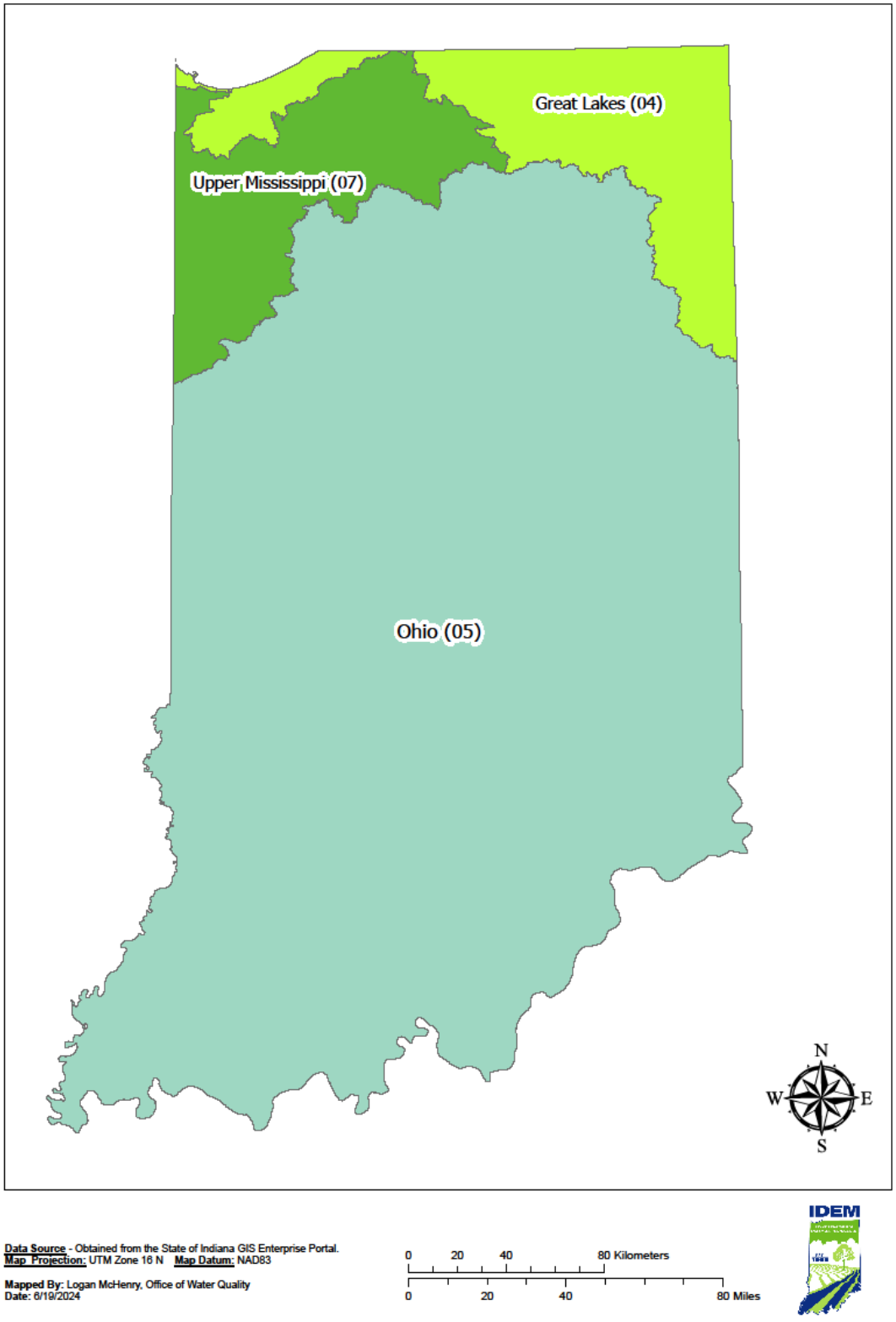

Figure 10. Indiana's 2-digit watersheds

For example, the Upper White River watershed (of which Marion County and Indianapolis are a part) is the HUC-8 watershed (or 8-digit watershed) 05120201. It is part of the Patoka-White River drainage (051202), which is part of the larger Wabash River drainage (0512), which is part of the Ohio River drainage (05). Indiana's HUCs were first described at the HUC-8, HUC-11, and HUC-14 scales by the USGS Indiana-Kentucky Water Science Center. However, in order to maintain consistency across the nation, Indiana's HUCs have been re-indexed to the HUC-8, HUC-10, and HUC-12 scales. Older maps and documents that depict or discuss watersheds will often describe 11- and 14-digit HUCs, while the newer figures and texts refer to the 10- and 12-digit HUCs. The 12-digit level is the smallest level that is described by HUCs (of which, Indiana has 1589), though watersheds smaller than 12-digits can be defined using software tools and land survey equipment. The state of Indiana can be divided into three regional watersheds (HUC-2 scale): the Great Lakes (04), Ohio River (05), and the Mississippi River (07) regional watersheds (Figure 10). Over 81.8% of Indiana drains to the Ohio River, while 9.7% goes to the Great Lakes, and 8.5% goes to the Upper Mississippi River. Indiana wholly or partially contains 38 sub-basins (8-digit HUCs) (Figure 11).

Sub-basins of Indiana

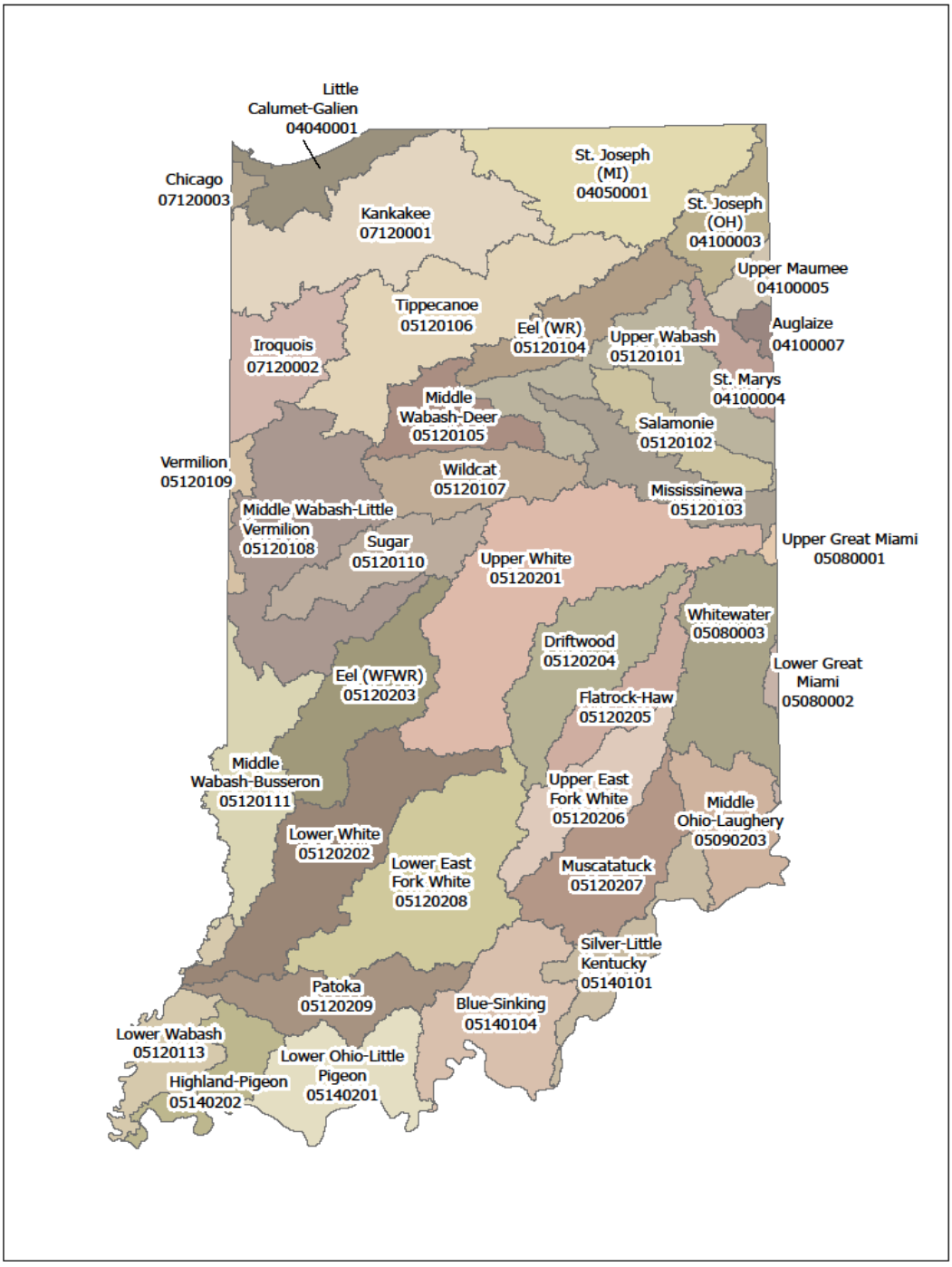

Figure 11. Indiana's 8-digit Watersheds

Streams

Indiana contains 62,746 miles of streams and rivers, from headwater agricultural streams to the mighty Wabash (Figure 12). Warm water stream habitats dominate these stream miles, with cold water streams present in the Lake Michigan drainage only. Of these miles at least 81.42% are first and second order ("headwater") streams[5], with drainage areas of less than 5 mi^2 (Ward 2008).

Hydromodification of streams, and of headwater streams in particular, is a major issue in Indiana. Many portions of the state have wet soils that must be drained through ditches and subsurface drainage tiles in order to be farmed. In many instances, natural headwater streams were straightened and channelized in order to send water away from farm fields as fast as possible. In addition, many miles of forested riparian corridor have been removed to reduce the occurrence of in-stream log jams and root intrusion into the tile drainage system[6]. While such hydromodifications have rendered the majority of the state arable, from an ecosystem standpoint, the result has been reduced canopy cover resulting in higher water temperatures; mucky and embedded substrates unsuitable as habitat for many aquatic macroinvertebrates or fish spawning; loss of riffle-pool-run systems; flashy hydrographs; and disconnection with floodplain, resulting in downstream flooding.

While drainage projects have had a profound effect on Indiana's aquatic systems, they are not the only hydromodifications seen in Indiana. Pumping of groundwater - both for irrigation and as drinking water for single-family dwellings as well as whole communities- has affected changes in spring-fed streams. In addition, low head, hydroelectric and flood-control dams, drinking water impoundments, and road crossing culverts have disconnected stream segments and limit the migration of fish and mussel species.

Large Rivers

In Indiana, the Wabash and White Rivers, portions of the St. Joseph (Lake Michigan), Maumee River, and portions of the Kankakee River are "large rivers" (Indiana Biological Survey 2005).

Characteristics of the Wabash and White Rivers (whose watersheds comprise the majority of Indiana's drainage) are detailed below.

[5] All Orders (Strahler 1957) of Streams were selected based on 1:100,000 scale of U.S EPA's River Reach File 3. US EPA National Health and Environmental Effects Research Laboratory (NHEERL), Western Ecology Division (WED), Corvallis, Oregon. Data sent by Barbara J. Rosenbaum, contractor to the US EPA NHEERL-WED, to 9 Environmental Scientist IDEM, Office of Water Quality, Assessment Branch, Biological Studies Section. Strahler, A.N. 1957. Qualitative Analysis of Watershed Geomorphology. Trans. Am. Geophys. Un. 38, 913-920.

[6] Note that even though a tile drainage system delivers stream discharge through a series of "pipes," any pollutants carried by the discharge would still be considered nonpoint source. This is not to be confused with MS4 discharges, which are point sources, as they are regulated under an NPDES permit.

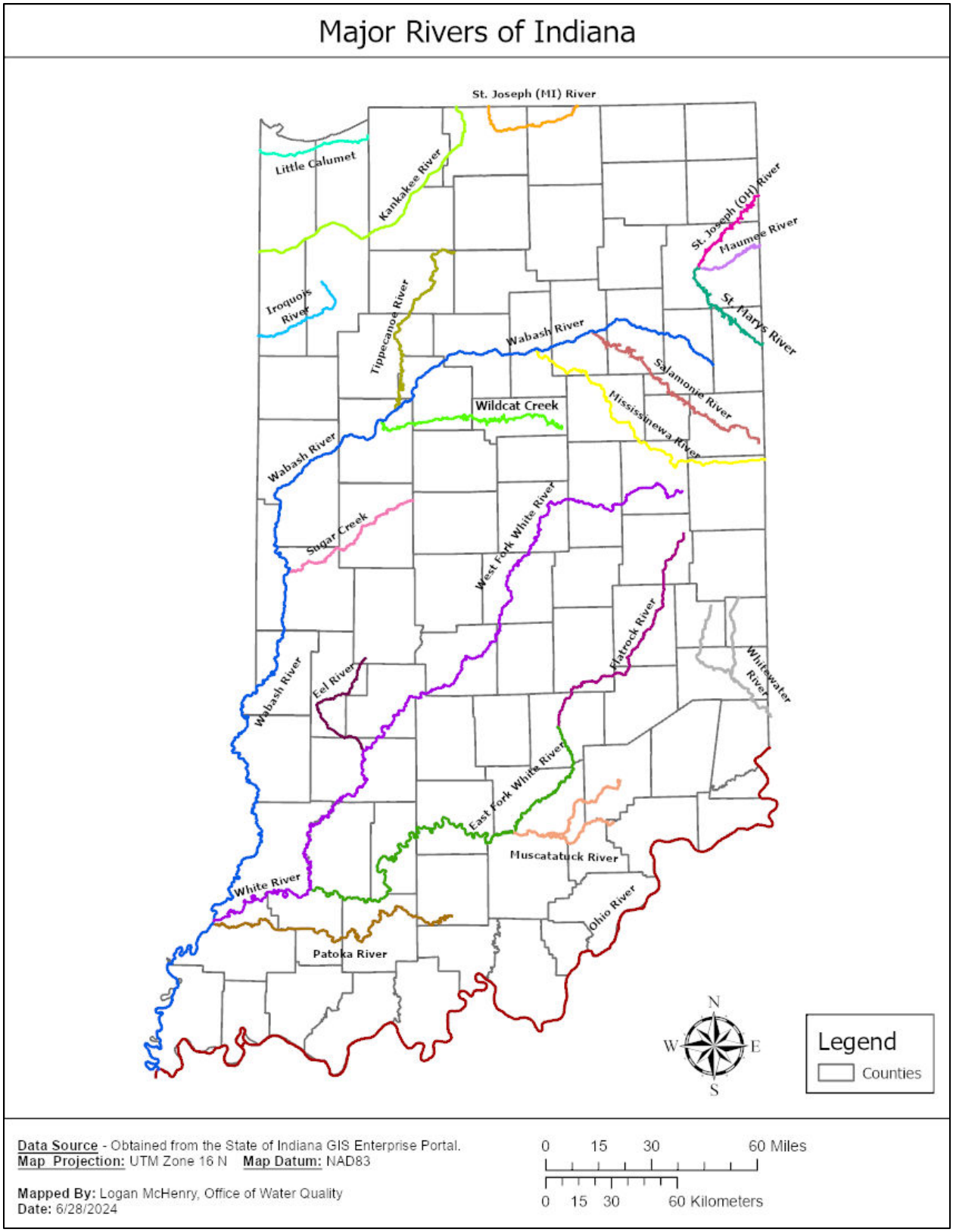

Figure 12. Major Indiana Rivers

Wabash River

The Wabash River is Indiana's state river and has played a major role in the state's history. Beginning near Ft. Recovery, OH, the river drains 32,910 mi^2 of Indiana, Ohio and Illinois. After flowing for approximately 30 miles in Ohio, the river enters Indiana and flows 61 miles before it is dammed for flood control at the J. Edward Roush Lake, upstream of Huntington, IN. From there, the Wabash River flows unimpeded for 411 miles and is the longest free-flowing river east of the Mississippi River (Karns et al. 2006).

The Wabash River watershed is connected to the Great Lakes watershed in Ohio through Beaver Creek, an outlet of Grand Lake Saint Mary's and tributary of the Wabash. However, historically, the main trade route between the Great Lakes and Mississippi River during early European settlement was via the Wabash River through a portage at Ft. Wayne. Though commonly reported as a 7–8-mile portage, the actual passage could vary greatly, according to water levels; during times of intense flooding, travelers could navigate their canoes between the watersheds without portaging. Flood waters still come between the basins via Junk Ditch at the site of Eagle Marsh on the south side of Ft. Wayne. Control of the portage was a key reason that the Miami Indians situated their village "Kekionga" near the Three Rivers and why Fort Wayne was established here.

Once Indiana was granted statehood, its leadership embarked on the building of a canal that would connect the Lake Erie tributaries in Ft. Wayne to the Wabash (and ultimately, the Mississippi) River. The result of the project was the historic Wabash and Erie Canal. Between 1832 and 1853 Indiana constructed over 450 miles of canals with the assistance of federal land grants. At 468 miles, the canal connected the Maumee River at Fort Wayne with the Wabash River, then exited the Wabash at Terre Haute and continued south to Evansville by way of the Eel River. This canal system allowed steamboats and flatboats to navigate the traditional trade route much more efficiently. However, the canal soon fell into disuse when the railroad became the preferred method of transporting goods. In 1876 the Wabash and Erie Canal was auctioned off by its trustees; however, remnants of the system remain today, particularly near the Town of Delphi in Carroll County and City of Logansport.

Towns established along the Wabash River in the late 19th and early 20th centuries have always been subject to flooding. A major flood of Peru, Logansport and Lafayette occurred in March 1913; and the Lower Wabash flood of January 1937 was the worst flood to occur in recorded history.

These flooding events prompted the United States government to develop a plan for flood control to protect these Wabash riverfront towns. Over the course of several decades, the U.S. Army Corps of Engineers (USACE) devised a plan to construct eight flood-control reservoirs including three in the Upper Wabash River basin (Roush, Salamonie, and Mississinewa), one in the Middle Wabash (Cecil M. Harden Lake), two in the White River watershed (Cagles Mill Lake and Lake Monroe), and one in the Patoka watershed (the aptly named Patoka Lake) (USACE 2011).

Despite the anthropogenic alterations to the river, its tributaries, and watershed, the Wabash still has the potential to regain the ecological diversity once present in its waters. The system has the last population of the lake sturgeon in the entire Mississippi River basin. A viable fishery of shovelnose sturgeon is also present in the mainstem. Though unionid mussel diversity has decreased significantly, at least 30 species maintain reproducing populations.

White River

Draining 11,400 mi^2, the White River is the major tributary of the Wabash River. The White River consists of two forks that flow in a generally southwesterly direction: the East Fork White River and the West Fork White River. The two forks converge northeast of Petersburg, IN and flow for an additional 45 miles as the White River. Altogether, the river flows for a combined 554 miles to its confluence with the Wabash near Mt. Carmel, IL.

The West Fork of the White River begins in a farm field in eastern Randolph County. The river quickly grows in size as it crosses the agricultural landscape as a result of numerous small tributaries in Randolph and eastern Delaware Counties. Muncie is the first of several major urban areas that influence the White River. In the City of Muncie, major efforts have been undertaken by the city to clean up the pollution caused by the releases of numerous factories from the early 20th century. The Muncie Sanitary District's Bureau of Water Quality monitors fish and macroinvertebrate populations in the White River and its Delaware County tributaries to ensure that anthropogenic impacts are not causing additional degradation of the river.

Figure 13. White River through Indianapolis

As the West Fork White River progresses on its course through Madison, Hamilton and Marion Counties, it grows larger from the contribution of major tributaries such as Killbuck Creek, Duck Creek, Pipe Creek, Fall Creek, Cicero Creek, Cool Creek, Stony Creek, Eagle Creek, and White Lick Creek, and flows through the Cities of Anderson, Noblesville, Fishers and Carmel into Indianapolis (Figure 13). Though urban issues create various pollution issues, such as phosphorus from lawn fertilization and pathogens from combined sewer overflows (CSOs), recreational use in this section of the river is relatively high, with angling being the most popular form of recreation employed (Hoffman 2005).

The East Fork White River begins at the confluence of the Flatrock and Driftwood Rivers in central Indiana near the City of Columbus. As it flows through primarily rural and wild lands, the East Fork is joined by major tributaries such as the Muscatatuck River, Salt Creek, Sand Creek, and Lost River, before meeting with the West Fork to form the White River (Figure 14). Unlike the West Fork, the East Fork has little in the way of urban influences.

Great Rivers

The Ohio River, forming the southern border of the state, is Indiana's only "great river." The Ohio begins at the confluence of the Allegheny and Monongahela Rivers in Pittsburgh, Pennsylvania and flows 981 miles through six states before emptying into the Mississippi River at Cairo, IL. It is a warm-water, navigable river, with 20 high-lift dams to facilitate commercial shipping.

Despite the fact that it contains over 1,000 CSO outfalls and over 600 NPDES permitted discharges - including from industry, power-generating facilities, and municipalities – the river serves as a water supply for over 5 million people and as habitat for the federally-endangered pink mucket pearly mussel. Drainage from parts of 15 states (IL, IN, OH, PA, NY, MD, WV, KY, TN, VA, NC, GA, AL, MS & SC) and 203,940 mi^2 flows to the Ohio River. Because it shares drainage with so many states, water quality in the Ohio River is governed through the Ohio River Valley Water Sanitation Commission (ORSANCO), of which Indiana is a part (ORSANCO 2023).

Beyond Indiana: Hypoxia in the Gulf of Mexico

As a contributor to the Mississippi River watershed, Indiana (represented by the Indiana State Department of Agriculture, or ISDA) is involved in the Gulf Hypoxia Task Force. This collaborative state/federal partnership oversees work on the Gulf of Mexico Hypoxia Action Plan, the strategy for reducing and eliminating the annual dead zone in the Gulf of Mexico (Mississippi 2008). The dead zone appears to be the result of a massive yearly algal bloom, brought about by the over- enrichment of waters coming into the Gulf from the Mississippi/Atchafalaya River Basin. One prominent nutrient model (the SPAtially Referenced Regressions On Watershed attributes, or SPARROW model) indicates that Indiana is among several states which are responsible for significant exports of nitrogen and phosphorus to the Gulf. As such, ISDA (in collaboration with several other Indiana agencies and organizations) has prepared and submitted Indiana's nutrient reduction strategy to U.S. EPA. This strategy follows guidelines set forth by the Gulf Hypoxia Action Plan which include prioritization of HUC-8 and HUC-12 watersheds; a description of how the state will utilize and coordinate existing resources and programs within those watersheds, seek future funding, and grow and maintain conservation partnerships; a summary of current and future monitoring across the state; and the methods for which accountability will be provided to state and federal agencies, to conservation partners and to the public.

In addition, the Indiana State Nutrient Reduction Strategy (www.isda.in.gov/divisions/soil-conservation/indiana-state-nutrient-reduction-strategy) has been developed through efforts with the ICP, IDEM, and ISDA to outline present and future impactful conservation efforts with an overall commitment towards reducing nutrient runoff into water bodies. The Indiana State Department of Agriculture (ISDA) is Indiana's representative on the Gulf of Mexico Hypoxia Task Force. As the state water quality agency designated by U.S. EPA to administer CWA programs, IDEM has co- authored the SNRS and is participating on the work group to track progress and provide revisions to it every five years.

Lakes

Indiana boasts over 1,000 public lakes covering 106,000 acres. The distribution of those lakes includes 452 natural lakes and 580 impoundments (DNR 2012b). Generally, the lakes in the northeastern and north central regions are natural kettle lakes or chains of lakes left over from the glacial period. Also, in general, lakes in the central and southern portions of the state tend to be impoundments, though the flood control reservoirs can also be found in northeastern Indiana. Additional impoundments have been

established for drinking water storage and recreation.

The majority of Indiana's public lakeshore has been developed. Potential pollutants from developed lakeshores include nutrients from fertilizer, pet waste, and car-washing detergents; sediment from erosion; and *E. coli* from nuisance geese and failing septic systems.

In recent years, many of Indiana's lakes (both natural and man-made) have been experiencing harmful algal blooms (HABs). It is believed that high levels of phosphorus in addition to other factors are contributing to these freshwater algal blooms.

Great Lakes

Lake Michigan

Indiana's portion of the Lake Michigan shoreline is 67 miles located entirely within the Little Calumet-Galien watershed (HUC 04040001). This 8-digit watershed also roughly corresponds[7] to the area managed under the Coastal Zone Management Act (16 U.S.C. §1451 et seq.) through the IDNR Division of Nature Preserves Lake Michigan Coastal Program (LMCP). At present, all 67 miles of the shoreline in Indiana are listed as impaired for recreational and fishable uses. Several watershed management plans for subwatersheds of the Little Calumet-Galien have been approved (Appendix F). Additional water quality-related plans in the area include the Remedial Action Plan (RAP) for the Grand Calumet Area of Concern (AOC) and the Lake Michigan Lakewide Management Plan (LaMP; agreed to in the U.S –Canada Great Lakes Water Quality Agreement of 1987), MS4 entities and associated SWQMPs, and several plans developed for the Indiana Dunes National Lakeshore through the National Park Service.

Indiana's share of Lake Michigan waters includes 154,176 acres of open water. The Indiana waters of Lake Michigan have been assessed for mercury and polychlorinated biphenyls (PCBs) in fish tissue in accordance with IDEM's Consolidated Assessment and Listing Methodology (CALM). 154,176 acres have been impaired for human health and wildlife designated uses for both Mercury and PCBs in fish tissue. Because Lake Michigan is assessed as a single unit, any impairment identified in any part of the lake is applied to all 154,176 acres of Lake Michigan.

In addition to the coastal zone and open waters of Lake Michigan, Indiana shares the St. Joseph River watershed (HUC 04050001), a major tributary to southeastern Lake Michigan, with the state of Michigan. A cooperative watershed management plan was developed for the 8-digit HUC using Michigan 319 funds and is being implemented by partners in both states (www.idem.in.gov/nps/resources/watershed-management-plans/st-joseph-river-lake-michigan-wmp). Several smaller WMPs have been developed in both states, implemented by local groups.

Lake Erie

Though Indiana cannot claim to have Lake Erie lakefront real estate, the state does contribute drainage area to the Maumee River, the largest tributary to the Western Lake Erie Basin. Formed from the confluence of the St. Joseph (Lake Erie) and St. Mary's Rivers, the Maumee flows eastward out of the City of Ft. Wayne, through Ohio, to Lake Erie. The watershed is predominantly agricultural, though the

[7] The Program Boundary is based on the Historic Little Calumet Galien Watershed. This watershed includes the Chicago Diversion. The Program Boundary is squared off using township boundaries and the associated county roads. As such, some portions of the watershed are outside the Program Boundary and some areas outside the watershed are included in the Program Boundary.

river itself runs through several urban areas (Ft. Wayne and New Haven in Indiana, as well as Defiance and Toledo in Ohio). Since 2003, a large plume of sediment and algae coming into the lake through Maumee Bay has been observable via satellite images. Several partnerships, including the Western Lake Erie Basin (WLEB) Partnership, the St. Joseph River Watershed Initiative, the Upper Maumee Watershed Partnership, and the Maumee River Basin Partnership of Local Governments are working to improve water quality in the tributaries that lead to Maumee Bay. At the state level, ISDA actively participates in the WLEB Partnership and offers technical assistance to landowners to reduce nutrient loss in the watershed. IDEM leads a dedicated Advisory Committee comprised of representatives from different stakeholder sectors. Their collaborative effort resulted in publishing Indiana's Great Lakes Water Quality Agreement (GLWQA) Domestic Action Plan (DAP) to reduce phosphorous to the Western Lake Erie Basin. Founded on the principle of adaptive management, the DAP is a dynamic document acknowledging that phosphorous loading in particular, and nutrient pollution in general, is a very complex problem caused by point and nonpoint sources across all sectors, which requires a multi-dimensional solution. IDEM has and continues to provide funding for watershed groups working in this area to reduce nonpoint source pollution to Lake Erie. All watersheds within the Indiana portions of the Western Lake Erie contain approved watershed management plans.

Figure 14. Goose drinking water in the White River

Wetlands

Wetlands are present in every county in Indiana. The best estimate of the wetlands in Indiana prior to European settlement is based on the presence of hydric soils (soils that form under saturated, flooded, or ponded conditions). Mapping of soils is conducted by the USDA Natural Resource Conservation Service, or NRCS (formerly the Soil Conservation Service or SCS). Based on an analysis of this data by the IDNR, it is believed there were approximately 5.6 million acres of wetlands in Indiana 200 years ago.

The value of wetlands, including wetland functions with economic impacts such as flood control, pollutant attenuation, and wildlife habitat, has not always been appreciated in Indiana. One historical bulletin issued from by the Indiana Bureau of Legislative Information in 1914 indicated that 625,000 acres stood to be "reclaimed" (i.e. drained) in Indiana at that time. Significant pre- settlement wetlands that existed as part of the Kankakee Grand Marsh in northwestern Indiana and the Great Black Swamp in northeastern Indiana were drained in order to exploit the prime farmland beneath the waters. Additional wetland acreage has been filled to allow for development and agriculture. Bogs are mined for peat, a horticultural amendment. Today, an estimated 863,000 acres of wetland remain in Indiana.

The nation's wetlands were mapped beginning in the 1970s by the U.S. Fish and Wildlife Service (USFWS) as part of the National Wetlands Inventory (NWI). Advances in remote sensing and Geographic Information System (GIS) technologies have been made since the state's wetlands were originally tallied as part of the NWI in 1985. IDEM contracted with Ducks Unlimited to update the NWI maps for Indiana in 2007. The project was completed in 2009. A total of 174,204 acres of emergent, 658,205 acres of forested/scrub-shrub, and 30,551 acres of lacustrine wetland were identified. Of the identified wetlands, 59% are under an acre in size.

Change in wetland acreage since the last NWI was completed suggests that some wetlands were converted to other uses over the intervening years. The analysis indicated that 45,415.96 acres were converted for other uses between the date of the original NWI (ca. 1980-1988) and the update year (ca. 2005). Approximately 72% were converted for agriculture purposes and nearly 24% for development (the remaining 4% of wetland conversions were categorized as recreational and "other"). Additionally, the report found that emergent wetlands occupied the greatest converted acreage (48%), with forested wetlands a close second (32%). Ditched and/or excavated wetlands accounted for 117,099 acres; while farmed wetlands totaled only 2,215 acres.

Combining the information from the National Wetlands Inventory (NWI) and the IDNR yields the following summary:

- Estimated wetlands circa 1780s: 5,600,000 acres
- Percent of surface area in wetlands circa 1780s: 24.1%
- Existing wetlands: 813,000 acres
- Percent of surface area in wetlands today: 3.5 %
- Percent of wetlands lost: 85%

The country's attitude toward wetlands shifted in the 1970s, evidenced by President Jimmy Carter's Executive Order 11990, which required federal programs to avoid wetland loss when possible. Later, the 1985 Farm Bill would include a "Swampbuster" provision (16 U.S.C. §§3801- 3823) to discourage more wetland loss due to agriculture. President George H. W. Bush set a national policy of "No Net Loss" (of wetlands) in 1989, paving the way for compensatory wetland mitigations for drained or filled wetlands. Today, in Indiana, IDEM and the USACE permit wetland and riparian impacts requiring mitigation. Many groups throughout the state are preserving and restoring wetlands through Farm Bill programs, state monies, and private funding. Wetland restorations with notable state involvement include the Limberlost-Loblolly Swamp in Jay County, Goose Pond Fish and Wildlife Area in Greene County, the

Healthy Rivers Initiative (including wetlands in the floodplains and bottomlands of Sugar Creek, Wabash River, and Muscatatuck River), Grand Kankakee Marsh (500,000 acres in eight northwestern Indiana counties), Jasper-Pulaski Fish and Wildlife Area (in Jasper and Pulaski Counties), Wabashiki Fish and Wildlife Area (Vigo County), and numerous smaller tracts dedicated as state nature preserves. In addition, several land trusts and conservancies are protecting wetland acres across the state.

Groundwater

Groundwater is water that resides in aquifers, underground geologic formations that are capable of producing water through a well. Groundwater doesn't "flow" (like a river or stream) so much as it slowly migrates through sediments and fissures in bedrock until an equilibrium is reached. Groundwater in the northern 2/3 of Indiana is typically found in sand and gravel of glacial deposits and is generally plentiful. More than 300,000 public and private wells provide water for drinking and industrial uses in Indiana.

Given the absence of glaciers, and therefore the unconsolidated materials they generated, in southern Indiana, groundwater is much scarcer. In addition, some portions of southern Indiana have karst landscapes that bypass the natural filtering capacity of soil and send water from the surface to deep underground through caverns and tunnels. Groundwater in karst landscapes is very susceptible to pollution because there is no chance to filter the water through a soil layer before it permeates into bedrock. The solution to this groundwater scarcity has been to build drinking water reservoirs.

Despite the widespread use of groundwater as drinking water in Indiana, this source water receives less attention from the Nonpoint Source Program than surface water. Significant nonpoint source pollution threats to groundwater include:

- Nitrates
- Bacteria and other pathogens
- Arsenic (naturally occurring)
- Pesticides
- Improper abandonment of wells
- Dumping to quarries, mines, and karst features

Considerable opportunities exist to coordinate the Nonpoint Source Program with IDEM's Groundwater (GW) Section to identify communities with source water intakes that do not have a watershed management plan and encourage the creation of a source water implementation plan. In addition, the GW Section has initiated a project to rank wellhead protection areas on the risk of contamination and target those high-ranking communities for additional technical assistance. Long-term, the Section is interested in using a tool that can predict groundwater recharge and discharge areas of the state to better predict the magnitude of the risk of particular aquifers to contamination. Other states have programs that the GW Section is interested in emulating, including the groundwater management zones in Oregon and the groundwater-enhanced super gages in Montana.

Water Quality

Ambient surface water quality standards for the state of Indiana are found in Title 327 of the Indiana Administrative Code. 327 IAC 2-1-1.5 defines the water quality goal of the state: "to restore and maintain the chemical, physical, and biological integrity of the waters of the state." All waters in Indiana are designated for one or more beneficial uses in the state's water quality standards, which also contain numeric and narrative criteria to protect their water quality. These criteria are used to determine whether a waterbody is "fully supporting" the designated use or if the use is impaired. Beneficial uses take into consideration the use and value of the water as a public water supply, as habitat for the protection of aquatic wildlife, and as a source for recreation, industry and agriculture uses (Table 3).

Unless otherwise noted in the IAC, all of Indiana's waters are designated for full-body contact recreation and warm water aquatic life use (327 IAC 2-1-3 and 327 IAC 2-1.5-5). In the Great Lakes, waters that meet the ecological conditions for salmonid reproduction and put-and-take trout fishing should also, by rule, maintain those conditions (327 IAC 2-1.5-5). The state also designates waters for public and industrial water supply, agriculture, and fish and wildlife uses, but generally, if a waterbody meets the water quality criteria for both the full-body contact and aquatic life use designation, it will meet the criteria for the remaining uses.

Every two years (in even-numbered years), Indiana submits to U.S. EPA the Integrated Water Quality Monitoring and Assessment Report (also known as the Integrated Report or IR). The IR describes the state of water quality in Indiana. Each waterbody for which data is available is assessed according to whether or not it meets the minimum water quality criteria for aquatic life use and human health, which includes full-body contact recreation and fish consumption. The 2024 IR included the following summary of surface water quality conditions in Indiana:

Table 3. Assessment of monitored stream and lake miles in Indiana

Designated Beneficial Use	Total Size	Size Assessed	Size Fully Supporting	Size Not Supporting	Size Not Attainable
River (Miles)					
Full Body Contact (Recreational Use)	62,746	33,643	8,956	24,687	0
Human Health and Wildlife (Fishable Use)	62,746	8,916	3,361	5,555	0
Public Water Supply (Drinking Water Use)[8]	96	27	27	0	0
Warm Water Aquatic Life (Aquatic Life Use)	62,746	36,264	24,486	11,778	31
Lake Michigan Shoreline (Miles)					
Full Body Contact (Recreational Use)	67	67	0	67	0

[8] *While all waterbodies in Indiana are designated for aquatic life and recreational uses, not all are designated for use as a public water supply. There are a total of 22,851 lake acres, 96 stream miles, and 41 miles of shoreline designated for use as a public water supply in Indiana.*

Human Health and Wildlife (Fishable Use)	67	67	0	67	0
Public Water Supply (Drinking Water Use)	41	41	41	0	0
Warm Water Aquatic Life (Aquatic Life Use)	67	67	67	0	0
Lake Michigan (Acres)					
Human Health and Wildlife (Fishable Use)	154,176	154,176	0	154,176	0
Lakes and Reservoirs (Acres)					
Full Body Contact (Recreational Use)	129,547	39,790	30.7%	30,503	9,287
Human Health and Wildlife (Fishable Use)	129,662	81,336	62.7%	42,215	39,120
Public Water Supply (Drinking Water Use)	22,851	12,471	54.6%	0	12,471
Warm Water Aquatic Life (Aquatic Life Use)	129,547	16,540	12.8%	5.434	11,106

From Indiana's 2024 Integrated Water Monitoring and Assessment Report https://www.in.gov/idem/nps/watershed-assessment/water-quality-assessments-and-reporting/integrated-water-monitoring-and-assessment-report/).

The Integrated Report also contains a Consolidated List of all the waters of the state. Each waterbody is placed into a category for each of its designated uses depending on the degree to which it supports that use:

- Category 1: The waterbody is fully supporting all of its designated uses and none of its uses are threatened.

- Category 2: The waterbody is fully supporting the designated use assessed and no other use is threatened; insufficient data and information are available to determine if the remaining uses are supported or threatened.

- Category 3: Insufficient data and information are available to determine if the waterbody is supporting its designated use.

- Category 4: The designated use is impaired or threatened but a total maximum daily load (TMDL) is not required because:

    - A TMDL has already been completed for the impairment(s) and approved by U.S. EPA and is expected to result in attainment of all applicable water quality standards; or
    - Other pollution control requirements are reasonably expected to result in the attainment of the water quality standard in a reasonable period of time; or,
    - The impairment is not caused by a pollutant.

- Category 5: The designated use is impaired, and a TMDL is required because:

- The aquatic life use, recreational use, or drinking water use is impaired or threatened by one or more pollutant; or
- The concentration of mercury or PCBs in the edible tissue of fish collected from the waterbody exceeds Indiana's human health criteria for these contaminants.

The 303(d) list is comprised of the Category 5 waters on Indiana's Consolidated List and is included as an appendix to the IR. Category 5 waters may be impaired by point sources or nonpoint sources. If the cause and source of the impairment is determined to be driven by point sources, permits are revisited to remedy the impairment. If the impairment is driven by nonpoint source pollution, the waterbody is eligible for watershed planning and implementation through IDEM's Nonpoint Source Program. In either case, the state may need to prepare a TMDL for the impaired waterbody.

TMDLs

TMDL reports are assessments of water quality in rivers, lakes, and streams where impairments exist. The report is mandated through CWA Section 303(d), and contains an overview of the waterbodies, the sources of pollutants, the methods used to analyze data, reductions in levels of pollutants needed to restore water quality, actions that need to be taken to reduce pollutant levels, and actions that are being taken to improve water quality. Currently, Indiana's TMDLs are written on a watershed basis. In 2011, IDEM completed a project to create a TMDL template that would address several of the U.S. EPA's 9 Elements of a Watershed based Plan. FFY 2013 was the first year in which this template was applied to TMDLs in Indiana. Since then, multiple TMDL projects have been followed with the development and implementation of watershed management plans using 319 funds through local partnerships. IDEM recently updated their TMDL development priority framework through 2032 building on this concept of local partnerships in determining future watersheds for TMDL development.

Prior to FFY 2014, IDEM did not use Section 319 funding to develop TMDLs (including monitoring or staff time). However, with completion of the TMDL/WMP Template, TMDLs are being written to increase TMDL/ Nonpoint Source Program integration and efficiency, and include an implementation focus to align with current program needs. The opportunity exists to utilize 319 funding for TMDL development and implementation, with the acknowledgement that local adaptation may be necessary. IDEM will continue to pursue greater integration of the TMDL and Nonpoint Source Programs. The state has continued to use a model and prioritization strategy leading to strong reasonable assurance in TMDLs through Nonpoint source program coordination. Working with local stakeholders from the beginning, watershed planning and implementation projects have directly followed TMDL development. IDEM will continue using this model and expanding on efficiencies between TMDL and WMP development. Indiana will continue program assessment to determine the best use of leveraging nonpoint source pollution funds when developing TMDLs.

Regulatory Actions to Control Nonpoint Source

NPDES Storm Water Permits

Facilities and industries that discharge effluent to surface water bodies of the state must apply for and receive a permit under the NPDES Permit Compliance Program (CWA 308, 327 IAC 5, et seq.), housed in the IDEM Office of Water Quality (OWQ). This also applies to storm water discharges as defined under 327 IAC 15-6 (Rule 6 – Storm Water Discharges Exposed to Industrial Activity and discharges associated with concentrated animal feeding operations (CAFO) in accordance with 327 IAC 15-16. As of December 18, 2021, Indiana no longer administers the construction stormwater program under Indiana Administrative Code (327 IAC 15-5 or Rule 5). Permitting coverage is now issued under the Construction Stormwater General Permit (CSGP). IDEM also issued a Municipal Separate Storm Sewer General Permit

(MS4GP) in 2021. The MS4 General Permit replaces 327 IAC 15-13 (Rule 13) that had previously been the Administrative Code that established the permitting requirements for all designated MS4s in Indiana. The NPDES permitting area coordinates regulatory compliance activities with the Office of Enforcement and the Office of Voluntary Compliance (Office of Pollution Prevention and Technical Assistance), as well as informs the public, private sector, and regulated community about strategies to achieve regulatory compliance. Section 319 funds cannot be used to meet permit requirements. Permitted sources are only eligible to receive Section 319 funding from the state if the project is "above and beyond" the conditions of the entity's state or federal permit.

Section 401 Water Quality Certifications

IDEM regulates activities in lakes, rivers, streams and wetlands to ensure that those activities maintain the chemical, physical, and biological integrity of these waters. Our nation's wetlands and waterways provide beautiful scenery, drinking water/groundwater recharge, and recreation value, along with many other benefits. They also provide raw materials for industry and medicine, hydroelectric power, a receptacle for wastewater, and a highway for commerce. While these uses provide great benefits to citizens, they can also alter and pollute our nation's waters and waterways. Federal permits or licenses are required to conduct many of these types of operations, including building and operating hydroelectric dams, discharging wastewater, altering flow paths, and placing fill materials into wetlands and waterways.

When a project is planned in Indiana that will impact a wetland, stream, river, lake, or other Water of the U.S., that project must apply for a Section 401 Water Quality Certification (401 WQC) from IDEM before the planned water quality impacts commence. A Section 401 WQC is a required component of a federal permit and must be obtained before a federal permit or license can be granted.

Water Quality and Water Shortage

Indiana experienced the worst drought since the dust bowl era in 2012. During the drought, water use restrictions were put into place in several Indiana localities as streams dried up and lake levels lowered. As a result of the drought, the Indiana legislature reconvened the Water Resources Study Committee in the summer of 2013 to discuss issues of water scarcity and the development of a comprehensive water plan for the state.

Water quality is linked to water quantity. During a drought, pollutants may become concentrated as flow is reduced and lake levels drop. Aquatic communities must seek pools as refugia in flowing systems or, in lake systems, move lower in the water column. As Indiana continues to discuss issues of water scarcity, it must also consider related water quality. No comprehensive water plan would be complete without a discussion of both.

Non-Regulatory Actions to Control Nonpoint Source

Watershed Management Plans

Most actions to reduce and prevent nonpoint source pollution in Indiana are voluntary actions. Local "watershed groups" can be anything from an ad-hoc group of stakeholders meeting together to strategize about their water quality issues to incorporated 501(c)(3) non-profit groups. When watershed groups come together to create a program to address nonpoint source pollution in a local watershed, they often start with writing a watershed management plan (WMP). A WMP is a strategy and a work plan for achieving water resource goals that provides assessment and management information for a geographically defined watershed. It includes the analyses, actions, participants, and resources related to development and implementation of the plan. The watershed planning process uses a series of

cooperative, iterative steps to characterize existing conditions, identify and prioritize problems, define management objectives, and develop and implement protection or remediation strategies as necessary.

The main components (or chapters) in a watershed management plan include:

- Public Concerns
- Watershed Inventory - includes water quality, physical, and social data
- Problem Identification
- Identification of Sources of Problems
- Selection of Critical Areas
- Goals and Objectives
- Methods to Measure Success

These components include U.S. EPA's 9 Elements for Watershed Management Plans (U.S. EPA 2008), incorporated within a larger checklist of items needed within the plan before it is accepted. CWA Section 319 or 205j funds can be used to hire additional staff that may be required to produce a WMP. WMPs in Indiana are approved using the 2024 Indiana Watershed Management Plan Checklist (Appendix E). Approved WMPs are then eligible to receive 319 implementation funding. Indiana currently has 127 approved WMPs (Appendix F).

Section 319 funding may be used to implement best management practices identified in a WMP, but many different sources of funding exist for water quality improvement projects. The "Funding Mechanisms" section (page 129) provides further details on implementation funding available for watershed implementation projects in Indiana.

Monitoring

Monitoring for water quality is a primary responsibility of the IDEM Office of Water Quality. The Office monitors for ambient water quality information (including groundwater and surface water); potential permit violations; watershed characterization; to support the development of public health advisories (such as fish consumption advisories and beach closures); identify trends in water quality improvement/degradation; to develop water quality criteria, to set permit limits and environmental indicators; identify impacts to beneficial uses; and to respond to citizen concerns. The state's full water quality monitoring strategy is described in the *Indiana Water Quality Monitoring Strategy 2022-2026.* However, only those monitoring activities related to nonpoint source pollution programming will be included in this document.

Nonpoint Source Monitoring Strategy

Indiana's nonpoint source pollution monitoring strategy has been evolving since it was first completed and submitted to U.S. EPA in late 2009. At that time, IDEM's monitoring staff and Nonpoint Source Program staff were organizationally and spatially separated into IDEM's Assessment Branch (monitoring staff) and the Watershed Planning Branch (Nonpoint Source Program staff), and resided in different physical locations, making coordination between the programs somewhat difficult. In early 2010, IDEM

combined these branches to more effectively utilize resources. Also in 2010, the newly created "Watershed Assessment and Planning Branch" embarked upon revising the water quality monitoring strategy (WQMS) for the state. Nonpoint source pollution monitoring issues were incorporated into the updated WQMS, and new programs commenced in the 2011 sampling season.

Essential nonpoint source pollution monitoring strategy components retained in the new WQMS can be grouped into four broad topics which are summarized below. Additional information on each of these programs is available in the *Indiana WQMS 2022-2026*, the 2023 *IDEM Quality Management Plan (QMP),* and internal project work plans.

1. **Monitoring for Watershed Characterization Leading to the Formulation of a Watershed Management Plan**

Watershed management plans funded through Section 319 grants to local watershed groups and other organizations must:

- Identify the causes of impairment within their watershed(s), the sources and/or stressors driving them, and the load reductions or other activities needed to control them.

- Identify and prioritize the critical areas in need of implementation measures to reduce nonpoint source pollution.

- Include a monitoring component to evaluate the effectiveness of the implementation efforts over time, measured against a set of defined criteria that can be used to determine whether loading reductions are being achieved and whether progress is being made toward attaining water quality standards.

These monitoring objectives are met with targeted monitoring data. However, for the purposes of identifying impairments within their watersheds, nonpoint source projects may also draw upon other types of data such as those available through OWQ's fixed station and probabilistic monitoring activities.

Watershed groups and other organizations participating in watershed planning and restoration activities may use data from any source, including but not limited to data collected by IDEM.

Watershed groups commonly conduct their own monitoring to characterize water quality for such purposes as creating a watershed management plan (WMP) or detecting an improvement in water quality. Any monitoring activities funded through IDEM's Nonpoint Source Program must be conducted under a Quality Assurance Project Plan (QAPP) approved by OWQ's Nonpoint Source Program prior to initiation of monitoring activities. Watershed groups typically use the most scientifically rigorous sampling and analytical methods their expertise and budget will allow, which can vary significantly from watershed group to watershed group. To identify the reliability and potential use of external data in OWQ programs, IDEM created the External Data Framework (EDF), which allows the state to evaluate data submitted to the state from external parties in terms of quality, methodology, and rigor.

The EDF is a voluntary approach to systematically and transparently categorize external data sets submitted to IDEM for use in OWQ programs. IDEM uses a tiered approach to evaluate data submissions based upon scientific rigor, with Level 1 consisting of data with low rigor (but based on solid science) that is appropriate as supplemental or educational information; Level 2, which includes a medium level of rigor and documented data quality that can be used for activities such as demonstrating the

effectiveness of TMDL implementation efforts; and, Level 3 data which has high scientific rigor and can be used for 303(d) listing and delisting and regulatory decisions.

Because U.S. EPA requires all states to show progress on improving waters impacted by nonpoint source pollution, and because IDEM has chosen delistings as the mechanism by which it will show progress, data quality level plays an important role in the characterization of nonpoint source pollution and measuring the success of best management practices (BMPs) in each watershed. IDEM anticipates that not all watershed groups can meet data quality level 3, which is necessary to make listing and delisting decisions.

IDEM provides additional support to a limited number of watershed groups in characterizing water quality for a WMP in its watershed characterization monitoring program and follow-up monitoring for success (delistings) each year. This monitoring will provide a reliable scientific baseline for later determining if improvements in water quality have been achieved because of any best management practices implemented in the watershed, which may help IDEM to meet some of the performance measures described in the following section.

Watershed characterization for combined TMDL and WMP planning

IDEM's selection criteria for determining where to provide watershed characterization monitoring support is driven by where a TMDL is also planned for development. Because IDEM develops one TMDL per year at the HUC-10 watershed scale, IDEM will also choose one HUC-10 watershed per year on which to perform watershed characterization monitoring.

Watershed characterization monitoring provides valuable data for the dual purpose of TMDL development and CWA § 319 watershed management planning. Additionally, this intensive monitoring design allows for future comparisons to evaluate changes in the water quality within the watershed(s) studied. Selecting a spatial monitoring design with sufficient sampling density to accurately characterize water quality conditions is a critical step in the process of developing an adequate local scale watershed study. For its watershed characterization studies, IDEM uses a modified geometric site selection process in order to get the necessary spatial representation of the entire study area. Sites within a watershed are selected based on a geometric progression of drainage areas starting with the area at the mouth of the mainstem stream and working upstream through the tributaries to the headwaters (sites ≥ 5 square miles). Monitoring sites are then "snapped" to the nearest bridge with additional sites located at pour points and, to the extent possible, sites of concern to the stakeholders. Study areas are selected based upon TMDL development needs and where there is local interest in developing and implementing a watershed management plan. Due to staffing and laboratory constraints, one watershed characterization study will be conducted per year commencing in the fall (usually November). The watershed characterization monitoring project provides Tier 3 physical, chemical, and bacteriological data collected monthly for twelve months at the pour points and for the rest of the sites, April through October, which constitutes the recreational season. Biological data are collected once per year at each of the sites.

The results of the watershed characterization monitoring provide the data needed to identify the sources and extent of impairment for TMDL development and for local watershed groups to designate critical areas and management decisions for their watershed management plans. Additionally, the rigor of this monitoring design supports future performance measures monitoring to determine if improvements in water quality have occurred due to management and BMP implementation.

2. **Identify Water Quality Improvements Accomplished by Watershed Restoration Efforts Funded Through Clean Water Act Programs**

This monitoring objective comes from the National Water Program Guidance issued by U.S. EPA (U.S. EPA 2022), which defines the measures to be used to assess progress in meeting the goals outlined in its Strategic Plan. This guidance contains both administrative and environmental performance measures for many of IDEM's CWA programs. IDEM's WQMS addresses those measures which require water quality monitoring data.

"Number of primarily nonpoint source pollution-impaired waterbodies partially or fully restored by Nonpoint Source Program actions": Measured through WQ-10 (or "Nonpoint Source Success Stories") – This performance measures state developed "nonpoint source success stories" and submits them to U.S. EPA for the purposes of tracking how nonpoint source pollution restoration efforts are improving water quality. To meet this measure, IDEM must identify nonpoint source-impaired waters that have been improved as a result of watershed restoration efforts funded in whole or in part by IDEM's Nonpoint Source Program.

This performance measure involves identifying where water quality improvements are occurring, either as a result of OWQ grant-funded watershed planning and restoration efforts or for other reasons. To meet this monitoring objective, OWQ must conduct targeted monitoring of waters previously identified as impaired on Indiana's 303(d) list, with an emphasis on those watersheds where restoration efforts are known to have occurred. Because of the need to delist streams, Level 3 data quality is necessary. The completion of the EDF now allows IDEM to accept third party data that meets Level 3 criteria and use those data to make delisting decisions when appropriate.

3. **Lakes Monitoring**

The Indiana Clean Lakes Program (CLP) is administered for IDEM by Indiana University O'Neill School of Public and Environmental Affairs (IU/O'Neill) through a Section 319 grant from OWQ's Nonpoint Source Program. The project has two primary monitoring components. One uses trained IU/O'Neill graduate and undergraduate students and staff to sample lakes. The second monitoring component uses a group of volunteer citizen scientists (volunteers) trained by O'Neill School staff.

Lakes monitored by O'Neill School are selected from the approximately 1500 potential lakes and reservoirs in the state by narrowing the list to those deemed "publicly accessible" to create a candidate lake list. Candidate lakes are lakes greater than 5 acres in surface area, 1.5 meters deep, and having a publicly accessible boat launch. The candidate lakes (approximately 500) are narrowed to 80 randomly selected lakes each year for sampling. This random selection of lakes allows for statistical assessment of lake water quality across the state.

Lakes monitored by volunteers are those lakes that volunteers regularly recreate on. Any lake can be monitored by volunteers. This monitoring is conducted throughout the summer to obtain repeated and long-term measurements on lakes. This is beneficial as our other monitoring only allows for snapshot water monitoring.

Additional Monitoring Programs

In addition, several monitoring programs that are currently funded through sources other than 319 may be funded by Section 319 in the future. These include, but are not limited to, the following:

- Monitoring to Support Total Maximum Daily Load Development
- Monitoring to Support Development of Public Health Advisories
- Special Studies
- Groundwater Monitoring
- Monitoring to Support the National Water Quality Initiative
- Monitoring to support the State Nutrient Reduction Strategy and/or GLWQA Annex 4 Initiatives

Generally, OWQ's targeted monitoring approaches are designed to meet specific needs but are leveraged where possible to meet multiple water monitoring objectives. Sites and study areas are specifically selected based on known impairments, historical information, permitted dischargers, land use, watershed group focus areas, and other factors relevant to the monitoring objective for which the monitoring is to be conducted. Sampling projects and sites change annually and may occur anywhere in the state, depending on specific monitoring objectives. The targeted monitoring design allows for gathering a variety of biotic and abiotic information including bacteriological, fish and macroinvertebrate community measures, fish and sediment contaminant levels, in-stream and riparian habitat measures, and physical and chemical water chemistry parameters.

Environmental Indicators Collected by 319 Projects

In addition to data collected by IDEM, some watershed interest groups have the budget and expertise to conduct their own water quality monitoring programs. These groups have requested guidance from the Nonpoint Source Program as to the types of information that is important to collect, as well as the appropriate methods to be used. In response to this need, IDEM partnered with Purdue University on a project to produce a manual for watershed groups collecting water quality data. The result of that project was the Monitoring Water in Indiana: Choices for Nonpoint Source and Other Watershed Projects handbook which lays out basic information on important nonpoint source pollution parameters and biological indices, identifies core and supplemental indicators, suggests targets and protective levels, and provides information on photo monitoring. In addition, it identifies methodologies used by the main water quality agencies in the state, including IDEM, IDNR- Lake and River Enhancement (LARE), USFWS, and USGS so that groups can choose to use methods comparable to larger datasets in the state. The program is exploring the possibility of updating this guidance over the coming years.

Hoosier Riverwatch Program

Hoosier Riverwatch is a program of the IDEM, Watershed Assessment and Planning Branch. The program began in Indiana to increase public awareness of water quality issues and concerns by training volunteers to monitor stream water quality (Figure 15). The mission of Hoosier Riverwatch is to involve the citizens of Indiana in becoming active stewards of Indiana's water resources through watershed education, water monitoring, and clean-up activities. Hoosier Riverwatch accomplishes this mission through the following goals:

- Educate citizens on watersheds and the relationship between land use and water quality.
- Train citizens in the basic principles of water quality monitoring.
- Promote opportunities for involvement in water quality issues.
- Provide water quality information to individuals or groups working to protect water resources.
- Support volunteer efforts through technical assistance, monitoring equipment, networking opportunities, and educational materials.

Figure 15. Hoosier Riverwatch staff member giving a Hoosier Riverwatch Presentation

Prior to November 2012, Hoosier Riverwatch was a program within the IDNR where it was supported by a federal Sport Fish Restoration grant and state funding. The move to IDEM better integrates the volunteer water monitoring program into watershed monitoring and planning activities, and it is now 319-funded. Many watershed groups without large budgets or technical resources utilize Hoosier Riverwatch to monitor their watersheds. Currently, over 30 volunteer instructors help support the program to meet annual workshop goals. These instructors are spread across the state and provide basic training as well as advanced training sessions as requested. Future advanced workshops will include additional training on macroinvertebrates. The program has also been working in recent years to

produce training videos that can be used to help streamline the training workshops as well as be used as reference materials for previously trained volunteers.

QAPPs

Any monitoring data collection (including the collation of data collected by third parties) funded through IDEM's Nonpoint Source Program must be conducted under a QAPP approved by the Nonpoint Source Program prior to initiation of monitoring activities. QAPPs ensure that the data collected are the data needed to meet water quality objectives. QAPPs also lay out the sampling sites, protocols, and QA/QC measures that will be employed throughout the sampling program. More information related to QAPP requirements is available at www.idem.in.gov/nps/resources/indiana-nonpoint-source-management-plan/quality-assurance-project-plan-qapp-guidance/. In recent years, IDEM worked with a contractor to develop a novel tool that can be used to electronically submit and review QAPPs, with the intention of making the process easier for external data submitters in general and through nonpoint source grant funded projects. Currently, the tool has been built and is being beta tested. The tool is planned to be implemented fully in 2025.

4. Management of Nonpoint Source Grant Project Data and Data Submitted through the Office of Water Quality's External Data Framework

The IDEM Assessment Information Management System (AIMS) database includes the ability to integrate nonpoint source monitoring data collected by external organizations for projects funded through IDEM's Nonpoint Source Program and others interested in submitting their data through the External Data Framework (EDF). In recent years, data submission and review guidance has been finalized allowing a defensible process for review of submissions of external data. The EDF, which is, guides IDEM's use of data submitted by external partners for the purposes of 305(b) water quality assessments.

While many of the external sources of information may be from volunteer or other monitoring professionals, the ability to integrate data from multiple sources allows OWQ to better support internal and external data requests by providing a more comprehensive set of data, which is accurately characterized in terms of its data quality and appropriateness for various uses.

In addition to storing water quality data collected by nonpoint source project and other external partners, AIMSII also supports watershed planning and implementation efforts with its ability to store modeled results for load reduction estimates based on specific types of best management practices.

The nonpoint source pollution function of AIMS supports the internal data management needs associated with the EDF and serves as an important component of the guidance that external organizations can receive. The templates developed for the submission of data from grant funded Nonpoint Source Program projects can also be used by external organizations who wish to provide their water quality data to IDEM. The templates will help participating organizations to standardize their project metadata, which describes the data they collect, and their water quality data for submission through the EDF. Providing such documentation will help external organizations ensure that the data they collect is of known quality, enhancing the usability of the data and creating new opportunities for collaboration. Based on feedback from data submitters, the template has been modified over the years to make submissions more streamlined such as defining the protocols for the submitters when they receive a template. IDEM is also hoping to provide instructional videos to make the submission process easier and reduce the staff time needed by providing assistance.

Modeling

While monitoring water quality conditions is an approach taken by IDEM and many local watershed groups to characterize problems, causes, and source of nonpoint source pollution, modeling is another way to approximate conditions in a given watershed. Models require data of some type – be it water quality data or land use data. Many models have been, and continue to be, produced for use by water quality practitioners. Common models utilized by groups in Indiana include the Region V model, the Long-term Hydrologic Impact Analysis tool (L-THIA), the Spreadsheet Tool for the Estimation of Pollutant Load (STEP-L), the Soil and Water Assessment Tool (SWAT), Pollutant Load Estimate Tool (PLET), and the Agriculture Conservation Planning Framework (ACPF). Many additional models are available for cases in which the aforementioned tools are not well-suited.

Inventory of Stakeholders

Legal Framework Renders all Citizens Stakeholders Relative to nonpoint source pollution

The Indiana Code (IC) legally defines water in a natural stream or lake as a public trust resource – property of the citizenry held in trust by the state (IC 14-25-1-2). To further paraphrase, the state is designated as the primary caretaker of water resources, acting on behalf of citizens and making determinations to protect the natural resource for future generations. Although the state protects Indiana's water resources, each Indiana resident is made a stakeholder in the quality of their water resources, whether it is for economic, recreational, or consumptive uses.

IDEM is the agency designated by the state to administer the federal programs stemming from the Clean Water Act (CWA) and the Safe Drinking Water Act (SDWA), which gives it broad authority to act on behalf of citizens to reduce water pollution, including nonpoint source pollution. While the CWA and SDWA provide federal and state authority for protecting water quality, the state of Indiana has also put into place a legal framework whereby state agencies - IDEM as well as other agencies, such as the Office of the Indiana State Chemist (OISC) – can control nonpoint sources and protect water quality. Additional water-related functions fall under the jurisdiction of IDEM's sister and partner agencies, such as Soil and Water Conservation Districts (SWCDs), the Indiana State Department of Health (IDOH), the Indiana Department of Natural Resources (DNR), and Purdue University Extension.

The IC itself empowers IDEM to protect Indiana from sources of pollution through a variety of avenues. More specifically, the Environmental Rules Board (ERB) has been established to adopt rules and promulgate those adopted rules to abate pollution. The state retains the authority to broadly interpret the code in its protection of water resources. For example, IC 13-18-4-5 states that "a person may not throw, run, drain, or otherwise dispose; or cause, permit, or suffer to be thrown, run, drained, allowed to seep, or otherwise disposed; into any of the streams or waters of Indiana any organic or inorganic matter that causes or contributes to a polluted condition of any of the streams or waters of Indiana…" The Indiana Attorney General has suggested that this Act protects state water resources from pollution regardless of the activity from which it was created, including nonpoint source pollution sources (Appendix G).

The ERB is also tasked in the IC to establish the requirements for issuing permits, with IDEM establishing the guidelines for compliance and reporting (IC 13-15-1- 2). While the majority of these permits regulate point source discharges, the Nonpoint Source Program works in partnership with most of these programs in their effort to eliminate nonpoint source pollution, including the programs for storm water, drinking water, wetlands, and confined animal feeding, among others. The individual state programs established by federal and state Acts are integral to protecting Indiana's water resources and perform as important internal partners to the state Nonpoint Source Program.

Indiana contains land as part of a federally recognized tribe, the Pokagon Band of Potawatomi, which covers approximately 165 acres near South Bend, IN. Jurisdiction of activities on this land lies within the tribe itself. However, the Nonpoint Source Program will help collaborate as requested for NPS related activities surrounding monitoring, planning, and/or implementation projects in these areas.

Internal IDEM Program Partners

The Nonpoint Source Program is integral to the mission of improving water quality in Indiana, but it acts only as a part of several integral IDEM programs that work in parallel to enhance the resource. The nonpoint source pollution program staff work to engage these other agency programs when working with external partners and look to create efficiencies in their efforts to reduce nonpoint source pollution sources. Each internal partner brings a different piece to the puzzle that is holistic nonpoint source pollution reduction. In no particular order, the internal IDEM partners that assist the Nonpoint Source Program are:

- Storm Water Program
- Wetlands Program
- Enforcement Program
- TMDL Program
- Monitoring & Assessment Programs
- Hoosier Riverwatch Volunteer Monitoring Program
- Brownfield Program
- Confined Feeding Program
- GW/Drinking Water Program

The Nonpoint Source Program works with these partners through attendance at their annual conferences, information-sharing and coordination meetings, technical assistance, invitations to speak with local watershed groups on a variety of projects, and the resolution of water quality problems at the local level.

External Program Partners

While the IC gives IDEM broad authority to regulate many facets of water pollution, a large majority of nonpoint source pollution planning and implementation requires the voluntary participation of partners external to the agency to improve water quality in Indiana. These stakeholders represent a wide array of interests, including federal, state, and local governments and agencies, as well as universities, other nonprofit organizations, and ad hoc interest groups. External stakeholders are engaged in a variety of ways, including, but not limited to:

(1) Participation on watershed steering committees,

(2) Providing technical assistance in their areas of expertise,

(3) Partnering in nonpoint source pollution and watershed education resource development,

(4) Facilitation of outreach messaging,

(5) Integration of resources to achieve nonpoint source pollution goals and objectives, and

(6) Implementation of BMPs to reduce nonpoint source pollution.

The current list of external partners is varied in its scope but continues to grow as the Nonpoint Source Program investigates new partnerships and unique opportunities. Current external Nonpoint Source Program partners include:

External Agency Partners

- Indiana Department of Natural Resources (DNR) Programs
    - DNR – LMCP
    - DNR – LARE Program
    - DNR – Forestry
    - DNR – Fish and Wildlife – Fisheries Section
    - DNR – Fish and Wildlife – Wildlife Diversity Program, Nongame Section
    - DNR – Parks and Reservoirs
    - DNR – Healthy Rivers Initiative
    - DNR – Heritage Trust
    - DNR – Reclamation
    - DNR – Oil and Gas
    - DNR – Water
- Indiana Department of Health (IDOH)
- Indiana State Department of Agriculture (ISDA)
- Office of the Indiana State Chemist and Seed Commissioner (OISC)
- State Revolving Fund (SRF) Program
- United States Army Corps of Engineers (USACE)
- U.S. Department of Agriculture (USDA) Programs
- Natural Resources Conservation Service (NRCS)

- Farm Service Agency (FSA)
- United States Geological Survey (USGS)
- U.S. Environmental Protection Agency (EPA)
- Adjacent state environmental agencies
- Local governments
- Indiana Conservation Partnership (ICP)
- Tribal Lands

Nonprofit Partners

- Indiana Association of Soil and Water Conservation District (IASWCD)
- Resource Conservation and Development (RC&D) Councils
- The Nature Conservancy (TNC)
    - Wabash River Basin Initiative
    - Western Lake Erie Basin Initiative
- Alliance for Indiana Rural Water
- Local watershed and conservancy groups, lake associations
- Ad hoc interest groups
- Water utilities

Academia

- Purdue University
- Indiana University-O'Neill School of Public and Environmental Affairs
- Indiana University –Center for Earth and Environmental Science (CEES)
- Manchester University
- Grace College – Kosciusko Lakes and Streams program
- Taylor University
- Purdue University – Fort Wayne (PFW)

IDEM also actively looks to recruit new stakeholders in its mission to reduce nonpoint source pollution in Indiana. This is primarily achieved through the duties carried out by the regional watershed specialists and other Nonpoint Source Program staff. The watershed specialists assist local and regional groups with watershed planning, but also actively assist groups in stakeholder recruitment, and actively look to develop new partnerships through their participation in agency, academic, and professional organization meetings and conferences. The watershed specialists and other staff also represent IDEM on external working committees, including the Indiana Conservation Partnership (ICP) and the Indiana Association of Soil and Water Conservation Districts (IASWCD), among others.

The revised 2025-2029 state Nonpoint Source management plan was informed by public and practitioner input through a stakeholder survey and taskforce meetings. Overall, public input in decision-making processes ensures that decisions are made in the public's best interest, promotes accountability, and enriches outcomes with a wider range of perspectives and experiences.

IDEM targeted external partner feedback in this revision of the Management Plan in the form of an online survey. The survey also solicited stakeholder opinion concerning the major state nonpoint source pollution goals and objectives, prioritization of nonpoint source pollution challenges, and the best strategies to reduce nonpoint source pollution for the next five years. The complete external stakeholder survey can be found in Appendix H, while the list of stakeholders originally targeted to receive the survey appears in survey results section below.

In addition to gaining feedback from the online survey, IDEM identified practitioners within the external agency partners to invite as taskforce members to provide insights into the goals and objectives of the Nonpoint Source management plan. Two taskforce meetings were completed in April and June 2024.

Stakeholder Participation

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Methods

An online survey collected data on opinions about the next five years of nonpoint source pollution in Indiana (Appendix H). IDEM developed the 2023 nonpoint source pollution stakeholder survey in collaboration with DJ Case & Associates (DJ Case). This survey allowed practitioners in Indiana to present their organizations' opinions in the planning process. Practitioners were asked via an online survey for

their opinions about the management plan for the next five years, as well as goals, objectives, and challenges to the management plan. Many of the items on the questionnaire were used in previous Nonpoint Source management plans. In addition, the survey included open and closed questions from previous Nonpoint Source management plan surveys. Data collection occurred in March and April 2024. DJ Case conducted the survey with the help of IDEM staff to identify and invite people via email to a closed-access questionnaire programmed in Qualtrics. Over 1,000 email addresses were sent the survey through listservs and organizational contacts by IDEM staff. A total of 98 responses were received.

Results

Relationship to nonpoint source pollution

Respondents represented regions in Indiana with many in the Northwest (26%), Northeast (19%) and a combination of all four regions (20%). The majority (85%) expressed that they were aware of IDEM's Nonpoint Source Program. Experience with nonpoint source work in Indiana ranged from not involved (17%) to involved in a watershed group (24%) to being an active partner with the Nonpoint Source Program (5%). The majority responded in a combination of all five response options (42%). Describing participants' relationship to nonpoint source work in the state ranged from part of a watershed group (51%), conservation professional (58%), interested citizen (44%), and IDEM nonpoint source pollution grantee (21%).

Ways to improve

Survey respondents were asked how Indiana could change the way it administers its grant program to be more effective at abating nonpoint source pollution in the state. The top choices included adding an online grant application process (50%), provide additional information about the eligibility of projects (56%), and less paperwork (35%). Participants who chose other options included themes such as timing when considering grant announcements and application process, clarification on grant criteria, and providing resources to previous efforts. The Nonpoint Source Program will put additional focus on identifying and implementing ways to improve these processes for projects during this cycle as part of Goal 6 of this plan.

Goal effectiveness and improvement

The five goals in the 2019 Nonpoint Source management plan scored moderately to very effective in addressing the needs of nonpoint source pollution efforts in the state.

Themes for goal improvement:

- Continued partnerships and providing guidance for implementation
- Awareness:
    - Frequency and use of monitoring system
    - What services IDEM provides for the state and its residents
- Communication between IDEM, groups, and organizations
- Resources and training opportunities to staff

Nonpoint Challenges- Areas of Concern

- Protecting outstanding state resource waters with endangered, threatened, or rare species (78%)
- Drinking water contamination (78%)
- Bacteria contamination from runoff (70%)
- Nutrient runoff from farms (70%)
- Protecting outstanding state resource waters (70%)
- Bacteria contamination from septic systems (68%)
- Nutrient runoff from urban/ suburban sources (59%)
- Algae blooms (58%)
- Fish kills (55%)
- Sedimentation issues (55%)
- Nonpoint Source impact on marginalized communities (44%)

Largest negative impact on public health and environmental quality in Indiana

- Nutrient runoff from farms (22%)
- Sedimentation issues (21%)
- Nutrient runoff from urban/ suburban sources (12%)

Highest amount of awareness among the public in Indiana

- Algae blooms (28%)
- Drinking water contamination (23%)
- Nutrient runoff from farms (18%)
- Fish kills (17%)

Lowest amount of awareness among the public in Indiana

- Nonpoint Source impact on marginalized communities (26%)
- Nutrient runoff from urban/ suburban sources (14%)
- Sedimentation issues (14%)

Greatest potential for improvement with concerted effort over the next 5 years

- Nutrient runoff from farms (23%)
- Bacteria contamination from septic systems (16%)
- Sedimentation issues (16%)

Attention and dedication of resources

- Bacteria contamination from septic systems (28%)

Respondents had the opportunity to list program areas or stakeholders who they thought IDEM should work with, and the list included Ag retailers, county management districts, elected officials, Indiana Conservation Partnership, Indiana Finance Authority, and Farm Service Agency.

Missing or recognized weaknesses:

- Better ways to connect communities implementing WMPs
- Education/outreach and septic funding
- Increase frequency of testing by IDEM
- Statewide overview and status update on watershed plans and groups
- Updates on program accomplishments

Problems, Causes, Sources

Problem

Many of Indiana's waters are not meeting one or more of their designated uses. All Indiana waters, except where otherwise noted, are designated for recreational use and warm water aquatic life use (327 IAC 2-1-3). Even so, over 20,000 miles of the approximately 63,000 miles of streams in Indiana are impaired for one or more of their designated uses (IDEM 2024), and 144 of the 1,582 lakes in Indiana (not including Lake Michigan) are impaired. Current information on Indiana's 303(d) List of Impaired Waters can be found at www.in.gov/idem/nps/watershed-assessment/water-quality-assessments-and-reporting/section-303d-list-of-impaired-waters.

Causes

Important nonpoint source pollutants and the designated use(s) impacted in Indiana include:

- Sediment – aquatic life use
- Nutrients (phosphorus in lakes and stagnant pools, nitrogen as ammonia and nitrate) – aquatic life, recreational, and drinking water (groundwater) use
- Pathogens, (*E. coli* as indicator) – recreational use
- Heavy metals – aquatic life use
- Pesticides – aquatic life use, drinking water use
- Oil, grease, and toxic chemicals – aquatic life, recreational, and drinking water use
- Pharmaceuticals and personal care products – aquatic life use
- Anions, particularly chloride and sulfates – aquatic life and drinking water use

Any one or more of these pollutants, along with the physical conditions in a waterbody, can have an individual or combined effect on water quality resulting in an impairment of one/more designated uses. Indiana's water quality standards contain numeric water quality criteria that can be used to assess the potential impacts of these pollutants (327 IAC 2-1 et seq.). Numeric targets for various indicators of pollution and degraded water quality have also been developed for this purpose (Table 4).

Table 4. Water quality standards for common nonpoint source pollutants

Parameter	Target	Reference/Other Information
Total Ammonia (NH3)	Range between 0.0 and 0.21 mg/L depending upon temperature and pH	Indiana Administrative Code (327 IAC 2-1-6)
Atrazine	Max: 3.0 ppb	U.S. EPA Drinking Water Standard
Dissolved Oxygen (DO)	Min: 4.0 mg/L	Indiana Administrative Code (327 IAC 2-1-6)
	Min: 6.0 mg/L in cold water fishery streams	Indiana Administrative Code (327 IAC 2-1.5-8)
	Min: 7.0 mg/L in spawning areas of cold water fishery streams	Indiana Administrative Code (327 IAC 2-1.5-8)
E. coli	Max: 235 CFU/ 100mL in a single sample	Indiana Administrative Code (327 IAC 2-1.5-8)
	Max: Geometric Mean of 125 CFU/ 100mL from 5 equally spaced samples over a 30-day period	Indiana Administrative Code (327 IAC 2-1.5-8)
Nitrate	Max: 10 mg/L in drinking water class of water	Indiana Administrative Code (327 IAC 2-11-6)
Nitrite	Max: 1 mg/L in drinking water class of groundwater	Indiana Administrative Code (327 IAC 2-11-6)
Nitrate-N + Nitrite-N	Max: 10 mg/L in surface waters designated as a drinking water source	Indiana Administrative Code (327 IAC 2-1-6)
Temperature	Dependent on time of year and whether stream is designated as a cold water fishery	Indiana Administrative Code (327 IAC 2-1-6)
Heavy Metals	Variable, depending upon hardness	Indiana Administrative Code (327 IAC 2-1-6)
pH	Min: 6.0/Max: 9.0	Indiana Administrative Code (327 IAC 2-1-6)
Chlorides	Dependent upon sulfate and hardness in general; Max: 250 mg/L (public water supply)	Indiana Administrative Code (327 IAC 2-1-6)
Sulfates	Dependent on chlorides and hardness in general; Max: 250 mg/L (public water supply)	Indiana Administrative Code (327 IAC 2-1-6)

(from www.idem.in.gov/nps/watershed-assessment/water-monitoring-and-you/interpreting-data/water-quality-targets/#mean)

Table 4 cont. Water quality targets for common nonpoint source pollutants

Parameter	Target	Reference/Other Information
Nitrate-nitrogen (NO3)	Max: 0.633 mg/L	U.S. EPA recommendation*
	Max: 1.0 mg/L	Ohio EPA recommended criteria for Warm Water Habitat (WWH) headwater streams in Ohio EPA Technical Bulletin MAS//1999-1-1 [PDF]
	1.5 mg/L	Dividing line between mesotrophic and eutrophic streams (Dodds, W.K. et al., 1998, Table 1, pg. 1459, and in EPA-822-B-00-002, p 27.)
	10.0 mg/L	IDEM draft TMDL target based on drinking water targets
Orthophosphate also known as Soluble reactive phosphorus (SRP)	Max: 0.005 mg/L	Wawasee Area Conservancy Foundation recommendation for lake systems, NESWP344
Suspended Sediment Concentration (SSC)	Max: 25.0 mg/L	U.S. EPA recommendation for excellent fisheries
	Range: 25.0-80.0 mg/L	U.S. EPA recommendation for good to moderate fisheries
Total Kjeldahl Nitrogen (TKN)	Max: 0.591 mg/L	U.S. EPA recommendation *
Total Phosphorus	Max: 0.076 mg/L	U.S. EPA recommendation
	0.07 mg/L	Dividing line between mesotrophic and eutrophic streams (Dodds, W.K. et al., 1998, Table 1, pg. 1459, and in EPA-822-B-00-002, p 27.)
	Max: 0.08 mg/L	Ohio EPA recommended criteria for Warm Water Habitat (WWH) headwater streams in Ohio EPA Technical Bulletin MAS//1999-1-1 [PDF]
	Max: 0.3 mg/L	IDEM draft TMDL target
Total Suspended Solids (TSS)	Max: 80.0 mg/L	Wawasee Area Conservancy Foundation recommendation to protect aquatic life in lake systems
	Max: 30.0 mg/L	IDEM draft TMDL target from NPDES rule for lake dischargers in 327 IAC 5-10-4 re: monthly average for winter limits for small sanitary treatment plants
	Range: 25.0-80.0 mg/L	Concentrations within this range reduce fish concentrations (Waters, T.F., 1995). Sediment in streams: sources, biological effects and control. American Fisheries Society, Bethesda, MD. 251 p.
	Max: 40.0 mg/L	New Jersey criteria for warm water streams
	Max: 46.0 mg/L	Minnesota TMDL criteria for protection of fish/macroinvertebrate health
Turbidity	Max: 25.0 NTU	Minnesota TMDL criteria for protection of fish/macroinvertebrate health
	Max: 10.4 NTU	U.S. EPA recommendation

* U.S. EPA recommended criteria are different for parts of southwest Indiana within Ecoregion IX. See Ecoregional Nutrient Criteria for more information.

(from www.idem.in.gov/nps/watershed-assessment/water-monitoring-and-you/interpreting-data/water-quality-targets/)

Pollution Indicators

The parameters shown in Table 4 are considered indicators of pollution if they are found in concentrations that exceed their associated targets. In addition to these parameters, the following parameters and indices (several parameters with results for each combined into a single score), are commonly used to indicate nonpoint source pollution in Indiana:

- Indices of Biotic Integrity (IBI – fish - and macroinvertebrates - mIBI) – indicates the condition of the current biological community against a perceived representative/ideal community. When a community quality is lower than the threshold, the biology indicates that something in the environment (habitat, chemicals, invasive species, etc.) is negatively impacting the aquatic life use in the waterbody. Biological indicators are valuable for water quality monitoring because, unlike chemical parameters, the organisms living in the water can indicate conditions in the water over time. When a waterbody does not meet the threshold for acceptable IBI, the stream reach is listed for "Impaired Biotic Communities" or IBC. IBI and mIBI values greater than or equal to 36 indicate those communities are fully supporting while values less than 36 indicate communities are not supporting (i.e., impaired). Possible scores range from 0-60.

- Qualitative Habitat Evaluation Index (QHEI) – indicates the quality of the aquatic habitat.

- *Escherichia coli* bacteria – indicates fecal contamination from warm-blooded animals.

- Chlorophyll *a* – indicates the presence of algae, which in itself indicates potential nutrient enrichment.

- Indiana Trophic Status Index – a measurement of water quality in Indiana lakes.

- % impervious surfaces – indicates increased potential for stream "flashiness" which leads to scouring, increased sediment and decreased habitat quality for aquatic life. These indicators, together or separately, help water quality professionals to determine if impairment exists and to identify potential sources of the degraded water quality. For example, a low IBI score could be the result of a habitat condition (little/no shade, lack of woody debris), sanitary/illicit discharge of wastewater (ammonia), nutrient enrichment (especially when combined with low DO, little shade and/or abundant algal growth), heavy metals/high pH, or excess siltation. Site conditions can help to tease out particular land uses that may be impacting water quality.

Sources of nonpoint source pollution:

Because nonpoint source pollution is generally transported through overland flow, widespread land use practices have the greatest potential for contributing to nonpoint source pollution. Major sources of nonpoint source pollution in Indiana include:

- Agricultural Management – These activities can cause nutrient, sediment, pesticide, and pathogen loading to waterways through field crop and livestock production, including land application of livestock manure as crop fertilizer.

- Atmospheric Deposition – Pollutants in the atmosphere, such as mercury and lead, can be deposited in waterways through rainfall or through the intermixing of air and water.

- Closed Landfills and Solid Waste Disposal Sites – Rainwater infiltrating improperly closed landfills can cause diffuse pollution to enter the groundwater or surface water.

- Groundwater – Rainwater infiltrating into the ground can carry nutrients, metals, and hydrocarbons that can contaminate groundwater resources. In groundwater-fed streams, these pollutants can enter the surface water through the groundwater interface.

- Hydromodification – Hydromodification, or the alteration of natural waterways through straightening, hard-armoring, and damming. Hydromodification includes channelized streams, denuded streams, low-head and hydropower dams and impoundments, drainage of wetlands/tile drainage, dredged channels. Increased sedimentation and habitat loss are concerns in modified waterbodies.

- Land Application of Non-Agricultural Wastes – Land application of non-agricultural wastes, or biosolids, can pollute ground and surface water through run-off and infiltration of nutrients, pathogens, salts, and heavy metals.

- Urban Issues – Urban run-off and drainage systems provide direct access for sediment, hydrocarbons, pesticides, nutrients, pathogens, salts, heavy metals, and thermal pollution to enter waterways.

- Natural Resource Extraction – Natural resource extraction, i.e. coal extraction, oil and gas production, and non-energy mineral extraction, can be a conduit for sediment, heavy metals, sulfates, hydrocarbon, brine, and acid pollution.

- On-Site Sewage Disposal – On-site sewage disposal, or septic systems, can be a source of nutrients, pathogens, salts, and pharmaceuticals and personal care product pollution in both surface water and groundwater.

- Streambank/Shoreline Erosion – Erosion of stream banks and shorelines mainly supplies sediment, but also some small amounts of nutrients, to surface waters.

- Timber Management – Erosion of land from timber harvesting techniques, access roads, and loss of vegetation cover can cause sediment pollution.

- Transportation – Run-off from transportation facilities and infrastructure can pick up pollutants similar to urban areas, including hydrocarbons, salts, and sediments.

This Nonpoint Source management plan will work to address the above sources as stakeholders express interest. However, during the next five years, the IDEM Nonpoint Source Program will not fund activities to control nonpoint source pollution from atmospheric deposition. Even so, any watershed group that is funded through a Section 319 grant can count the monies expended to address atmospheric deposition (excluding federal funds or other ineligible expenses) as matching funds.

Indiana's Nonpoint Source Program

Current Approach

Indiana continues to use a multi-layered approach to manage nonpoint source pollution. This approach emphasizes careful monitoring, targeted grantmaking, strategic outreach and education, powerful partnerships, and responsible administration. Consequently, as of 2024, Indiana and Minnesota lead the Region V states in its reporting of Nonpoint Source Success Stories, a metric by which the Section 319 program is measured against EPA's strategic plan at https://www.epa.gov/nps/success-stories-about-restoring-water-bodies-impaired-nonpoint-source-pollution.

Monitoring

IDEM continues to utilize probabilistic and targeted monitoring designs to identify impaired waters and report them biannually through the Integrated Report. Since 2014, IDEM has integrated targeted monitoring for at least one TMDL/WMP project per year in a "watershed characterization" design (www.idem.in.gov/cleanwater/surface-water-monitoring/). Through this design, IDEM monitors water quality at sites selected based on a geometric progression of drainage areas starting at the mouth of the mainstem stream and working upstream through the tributaries to the headwaters (sites ≥ 5 square miles). Monitoring sites are then "snapped" to the nearest bridge, with additional sites located at pour points of the 12-digit watersheds and at locations that are of concern to stakeholders. Water quality data collected in this manner allows IDEM to gather data necessary to complete the TMDL while simultaneously compiling the data required for local watershed management groups to designate critical areas and determine management measures to use in their WMPs. This level of sampling rigor also supports future monitoring for investigating the success of the management measures undertaken.

Figure 16. Hoosier Riverwatch supplies

Since the previous Plan was approved, Indiana has also built the infrastructure necessary to support third-party data submission and use by building on to the existing AIMS and Hoosier Riverwatch program databases (Figure 16). Nonpoint source data collected by 205(j) - and 319(h)-funded watershed groups are uploaded into the AIMSII database which regularly exports data to EPA's Water Quality Portal (WQP) database through the Water Quality Exchange node.

Indiana's Nonpoint Source Program encourages grantees to monitor their watersheds for the purpose of characterizing the watershed for watershed management plans and to document trends in water quality during and subsequent to implementation of a WMP. Grantees and other interested parties sometimes use the state volunteer monitoring program Hoosier Riverwatch in combination with other methods to gather water quality data for their particular project. However, until 2014, Hoosier Riverwatch and other grantee-generated data were generally not included in the state's dataset for assessment purposes because they generally did not attain a high enough rigor (or, data quality level, set through quality assurance and quality control practices of the monitoring organization); nor was there generally official follow-up by IDEM to evaluate water quality improvements. The data were reported to IDEM, relayed to U.S. EPA as part of the project's final report, and stored for future use.

Beginning in 2009, IDEM made strides to allocate resources for targeted success monitoring of watersheds that had received 319 funding. Also in 2009, the state adopted the Nonpoint Source Monitoring Strategy into the state Water Quality Monitoring Strategy (WQMS). The state thoroughly revised its WQMS for 2022-2026 that guides the way in which IDEM will deploy staff and other monitoring resources. Among other things, the 2022-2026 WQMS prescribes watershed characterizations for at least one watershed group receiving nonpoint source pollution funding per year and follow-up success monitoring where 319 implementation funding has been spent in order to document improvements in water quality. Best management practices (BMPs) are land management techniques that mitigate pollution of the watershed and are compatible with the productive use of the resource. BMPs are used in both urban and agricultural areas. Locations of BMPs installed through 319-funded projects are digitized by IDEM staff by polygons and maintained as a layer in the state's Enterprise Portal. These data are used extensively to assist with selection of stream sites for follow up monitoring where improvements can be seen through nonpoint source pollution related efforts through the performance monitoring program.

Targeted Grantmaking for Water Quality Improvement

The majority of 319 funding provided to Indiana by U.S. EPA is passed through to state and local organizations to monitor water quality issues, prepare community-based 9 Element watershed management plans, implement those plans (including the installation of on-the-ground practices), and perform outreach and education activities. Each fall, IDEM solicits proposals from nonprofits, agencies, watershed groups, universities, and other eligible entities for water quality projects in furtherance of the applicant's mission and the state Nonpoint Source management plan.

Over the past five years, IDEM has elected to target its pass-through nonpoint source pollution grant dollars to entities interested in nutrient reduction, source water protection, and positive impacts to Indiana's aquatic life designated use. These grantmaking decisions have been informed by Indiana's S source water protection provisions of the Safe Drinking Water Act, and Indiana's Domestic Action Plan for the Western Lake Erie Basin. Load reductions and other results of these actions can be found in Indiana's Nonpoint Source Program.

Strategic Outreach and Education

Goal 3 of Indiana's state Nonpoint Source Management Plan outlines the Nonpoint Source Program's strategy for nonpoint source outreach and education. Indiana has chosen to focus its educational program on challenging nonpoint pollution sources such as failing septic systems, hydromodification, and sediment and nutrients as outlined in the "Program Challenges to Date" section starting on page 93. Education in pass-through grants is generally limited to outreach that will result in a greater appreciation for water resources and the implementation of best management practices, though special projects have been undertaken for particular problems (e.g., septic outreach in the coastal zone).

IDEM nonpoint source pollution grants support statewide and local education efforts to both further public awareness of nonpoint source pollution and to train local watershed leaders to develop and implement watershed management plans at the local level. Local watershed grantees are encouraged to include an outreach aspect to each nonpoint source project funded through IDEM nonpoint source pollution. In addition, IDEM has supported various statewide outreach campaigns.

Local leaders and watershed coordinators have an annual opportunity to receive advanced training in watershed management through the Indiana Watershed Leadership Academy (IWLA) (Figure 17). Since 2006, Purdue University has trained over 532 watershed coordinators, teachers, leaders, volunteers, engineers, district staff, consultants, non-profit organizations, and local government leaders through its IWLA program, funded through IDEM's 319 grant program. Participants learn skills related to watershed planning, working with local government and plan commissions, sharing the work with volunteers, monitoring water quality, and estimating load reductions. IDEM continues to support this program while encouraging the university to find alternative funding sources to sustain the program.

IDEM also employs four regional WSS to work with local watershed efforts to build community buy-in, set appropriate watershed goals, coordinate with similar efforts in the area, find sources of funding, and coordinate statewide messaging. The WSS are housed in Indianapolis and serve stakeholders in assigned basins across the state (Figure 18).

Figure 17. Watershed Leadership Academy

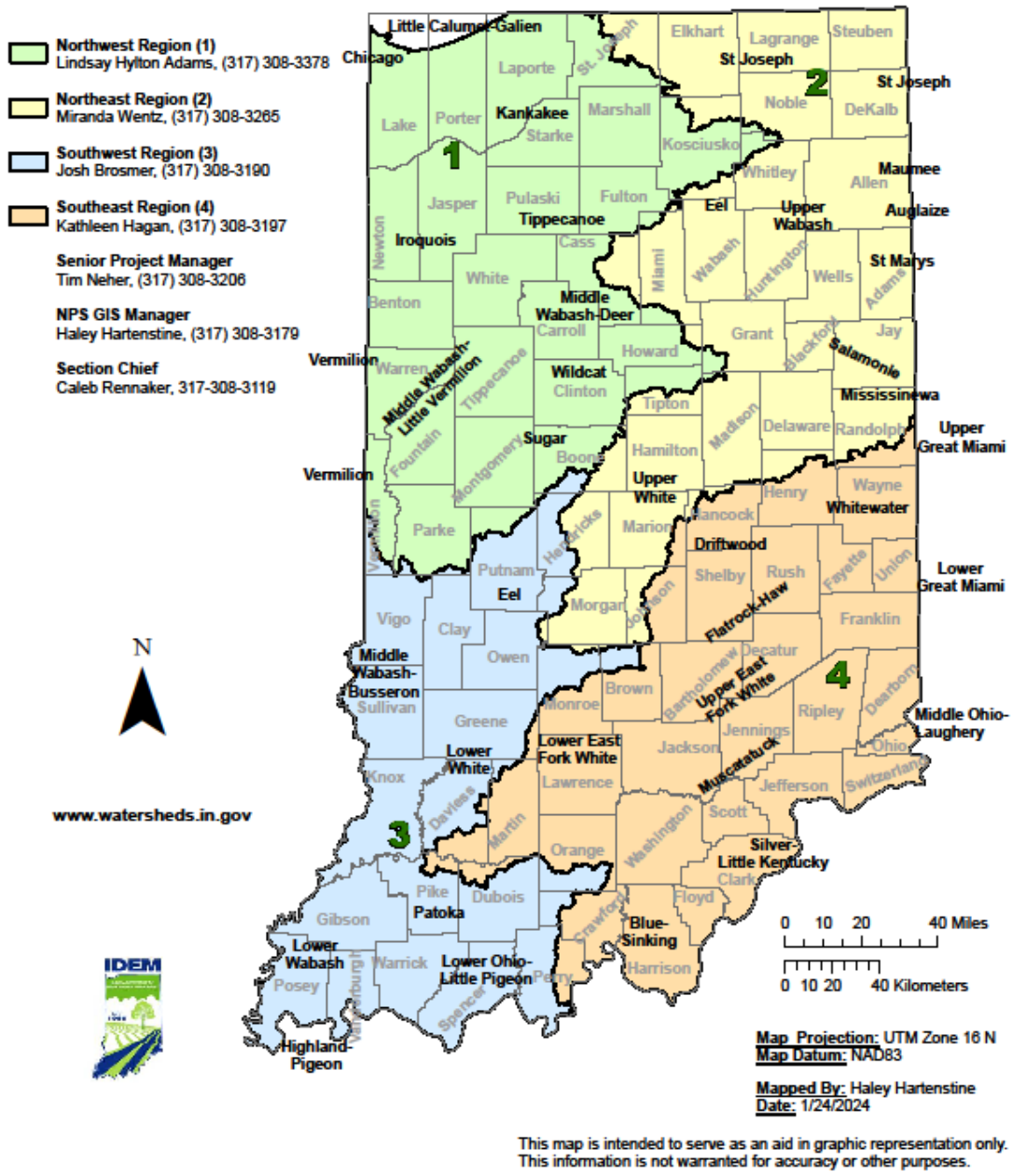

Figure 18. Watershed Specialist coverage areas

Powerful Partnerships

Partnerships remain the backbone of Indiana's Nonpoint Source Program. IDEM continues to be a partner in the Indiana Conservation Partnership which has been particularly useful in developing priority watersheds for funding sources such as the National Water Quality Initiative and the Mississippi River Basin Initiative. The ICP also creates an annual report on load reductions accomplished through funding programs of the ICP partners at https://www.in.gov/isda/divisions/soil-conservation/. In 2019, the ICP agreed to update its watershed prioritization for several programs, including CREP and the *Indiana State Nutrient Reduction Strategy* that will be used to inform IDEM's nonpoint source pollution priorities.

Additional partners outlined in the 2019-2023 SNPSMP such as academia, non-profit groups, and internal IDEM programs remain important partners with the program.

The IDEM Nonpoint Source Program utilizes multiple partnerships to reach diverse stakeholder groups and further its goals in Indiana. Some of those partnerships are highlighted below. IDEM is one of eight agencies and organizations comprising the Indiana Conservation Partnership (ICP). Along with the Indiana State Department of Agriculture (ISDA), NRCS, USDA Farm Service Agency (FSA), Purdue University Extension, the Indiana Association of Soil and Water Conservation Districts (IASWCD), the State Soil Conservation Board, and the Indiana Department of Natural Resources (IDNR), IDEM works toward the conservation and/or protection of Indiana's soil and water resources. Several initiatives, such as the Conservation Cropping Systems Initiative (CCSI; education on the use of a system of practices, such as cover crops, nutrient management, continuous no-till/strip-till, and pest management to promote soil health); the ICP Training and Certification Program; Indiana's Nutrient Reduction Strategy; and a multitude of local watershed efforts have a direct effect on nonpoint source pollution management in Indiana. Pooling our resources as a partnership avoids redundancy and inconsistent messaging to local stakeholders.

Aside from the ICP, the Nonpoint Source Program coordinates with several state and federal agencies at the state and local levels to share data, pool resources, and leverage expertise on key nonpoint source pollution issues and projects. Partners such as the USGS provide monitoring expertise and the Indiana State Department of Health (IDOH), and local health departments are valued partners for laboratory support and outreach on septic system issues. The Lake Michigan Coastal Program (LMCP), administered through the DNR Division of Nature Preserves, provides additional federal funding, local coordination, and technical assistance to accomplish nonpoint source pollution prevention. The DNR's Division of Reclamation is a key partner to revitalizing former mining areas in the southwest part of the state, while their Division of Oil and Gas has coordinated with the Nonpoint Source Program on oil and mine extraction-related nonpoint source pollution issues.

Academia has long been a partner in dealing with Indiana nonpoint source pollution. The Indiana Clean Lakes Program (CLP) is conducted by Indiana University – O'Neill School of Public and Environmental Affairs (SPEA) under a grant agreement with IDEM. It is funded through the 319 program to sample a subset of Indiana's lakes to provide water quality data to make assessments on whether or not those lakes are meeting designated uses. In addition, they run a volunteer lake monitoring program that educates stakeholders and trains them to collect data for trend analysis and encourages them to get involved in lake stewardship. Another partnership with Indiana University-Indianapolis (IU-Indy), formerly Indiana University-Purdue University Indianapolis, assisted with the initiation of Indiana's, blue-green algae monitoring program. The Indiana Geological and Water Survey (IGWS), housed at IU, is a strong ally on groundwater issues research and characterization.

Purdue University is also a major academic partner for the Nonpoint Source Program. Aside from the IWLA referenced above, Purdue has participated in the nonpoint source pollution conversation through research on agricultural tile drainage, septic systems, and the human dimensions of natural resource management. Purdue has developed several online watershed tools to assist state and local watershed managers, including the Long-Term Hydrologic Impact Analysis tool (L-THIA), the Indiana Watershed and Watershed Group Finders, the Social Indicators Data Management and Analysis (SIDMA) tool, the Indiana Water Monitoring Inventory, and the Watershed Risk-Assessment Decision Support Tool (WaterDST).

Partnerships with non-profit groups such as The Nature Conservancy (TNC) and the Indiana Association of Counties have resulted in the placement of best management practices on the ground. Additional nonprofit partners include Indiana's land trusts (particularly those with staff), incorporated watershed organizations, conservation-oriented nonprofits (such as the IASWCD and Resource Conservation and Development Councils), and lake associations, including the Indiana Lake Management Society.

Of course, partnerships between programs internal to IDEM are integral to accomplishing the Nonpoint Source Program's mission. Some examples of these are working with the Clean Water State Revolving Fund (CWSRF) program to provide state match to the federal 319 grant; coordinating with the Total Maximum Daily Load (TMDL) program to provide data and load reductions for watershed management plans; IDEM's monitoring team provides sampling services for baseline and targeted monitoring projects; and the integrated report coordinator assesses the data provided to validate impairments and successes. Groundwater (GW) staff work with Nonpoint Source Program staff to discuss how source water protection plans could be written to meet WMP approval requirements. Work with the Stormwater Program staff, including the MS4 coordinator, has led to the introduction of MS4 operators and watershed groups in a number of communities, with the potential of unified messaging to the public on stormwater issues. The Nonpoint Source Program has also held coordination meetings with IDEM's Office of Land Quality Confined Feeding staff to understand the rules being applied to confined feeding of livestock, and to pass on contacts for local concerned citizens. Finally, the Nonpoint Source Program coordinates internally with compliance and enforcement sections as a mechanism for assisting permittees with options for addressing compliance concerns and providing outreach for identifying local partnerships or active watershed planning projects. IDEM staff have also developed online interactive tools and story maps which are shared directly as a source of identifying local partnerships and continue to put a focus on developing more meaningful tools as identified to promote outreach on related activities to a wide array of partners.

Responsible Administration

IDEM continues to look for efficiencies and improvements to its administration of the State Nonpoint Source Program. Since 2008, IDEM has reviewed and revised its state Nonpoint Source management plan on a 5-year cycle. In 2025-2029, IDEM will continue to pursue greater integration of the TMDL and Nonpoint Source Programs. The state has continued to use a model and prioritization strategy leading to strong reasonable assurance in TMDLs through Nonpoint source program coordination. Working with local stakeholders from the beginning, watershed planning and implementation projects have directly followed TMDL development. IDEM will continue using this model and expanding on efficiencies between TMDL and WMP development. The state has also reviewed and revised its 2009 watershed management plan checklist during the previous cycle and will implement the new 2024 checklist during this next cycle. The new checklist will make the writing and review process more streamlined while still meeting all required key elements.

In general, there have been improvements in the grant application process. In 2022, the form and instructions were updated to align with existing policies. The state also added the capability to accept electronic signatures for contracts and grant agreements, making the process more streamlined. The Nonpoint Source Program also decided to no longer route invoices through the Senior Project Manager for additional approval and began sending them directly for payment through the finance department. The additional review step was not found to be value added as watershed specialists were sufficiently trained to properly process invoices, making reimbursement payments to grantees quicker. Finally, the program added additional consideration in the application review process for groups that could provide a list of shovel-ready projects, which would lead to quicker and more successful implementation projects.

Addressing Nonpoint Source Pollution Impacting Underserved Communities

IDEM is currently taking actions to address equity and climate (Indiana 2023). Broadly, these include the creation of and activities performed by the IDEM Environmental Stakeholder Inclusion (ESI) program (environmental justice assessments, stakeholder outreach, bilingual staff), nonpoint source pollution control grant scoring to promote work in disadvantaged communities, the generation of public resources/documents in multiple languages, infrastructure replacement to address potential toxics exposure in impacted/overburdened areas, employee volunteering under the Community Service Leave Program, education and outreach initiatives, and the agency's recognition, utilization, and involvement of and in external organizations' efforts to combat extreme weather and respond to environmental justice issues.

Specifically, relevant projects are identified and given additional priority in the scoring process when selecting projects to fund under nonpoint source control grants. The methodology entails using GIS technology to create a layer that outlined the watershed locations specified on each application, blended with a layer that identified disadvantaged communities (DAC) as defined by the Climate and Economic Justice Screening Tool (CEJST). After blending those layers and using census data made available, "EJ" scores are developed taking into consideration the percentage of the watershed area that is in a designated disadvantaged community, but more importantly, the percentage of population within that watershed that lives in those disadvantaged communities. The applications are then ranked in order based on highest to lowest score under that methodology. The Nonpoint Source Program will continue to work internally with its ESI program moving forward to identify and score projects with environmental justice relevance.

To assess impacts of agency actions on or identify disadvantaged communities for other programs, IDEM OWQ has used EJ Screen and the Recovery Potential Screening Tool's socioeconomic factors in addition to the Climate and Economic Justice Screening Tool. Indiana organizations focused on environmental justice and extreme weather include Purdue University Climate Change Research Center, Indiana Silver Jackets, Sustainable Rivers Program, Indiana Conservation Cropping Systems Initiative, Indiana Conservation Partnership, Hoosier Environmental Council, Just Transition Northwest Indiana, and Earth Charter Indiana.

Additional work for IDEM relative to the agency's current initiatives could include increased monitoring in areas with disadvantaged communities, focusing citizen science programs such as the Hoosier Riverwatch in disadvantaged communities, improving public access to water resources in disadvantaged

communities, restoring waterbodies in low-income areas, developing greater wetland storage for high-intensity precipitation events, or establishing vegetated buffers along waters likely to suffer from flooding or drought.

Additional IDEM considerations:

IDEM staff identified possible future work to be undertaken by the agency. This included continuing to expand accessibility to activities and information by producing multi-lingual resources and hiring bilingual employees; completing additional infrastructure replacements and repairs to improve the quality of life for disadvantaged communities; promoting work in disadvantaged or climate-challenged communities through nonpoint source pollution grants; targeting outreach, monitoring, education, restoration work, and citizen science programs in disadvantaged communities; partnering with more external organizations or academic institutions; and developing relevant baseline datasets to improve climate resiliency.

Addressing Extreme Weather

Increasingly extreme weather patterns should be considered in any efforts to address nonpoint source pollution, as increased frequency and intensity of rainfall can send more pollutants into waterways in shorter timeframes. Changes in weather patterns, temperatures, and growing seasons have lasting implications for nonpoint source pollution mitigation efforts, and climate resilience should continue to be part of any planning and implementation process (Figure 19).

Extreme weather impacts encountered in Indiana include drought, more intense storms, and flooding. Drought has created issues with monitoring and sampling. Waterbodies have become less representative of their natural state and smaller streams have become unnaturally ephemeral, which has led to accessibility issues when sampling, fewer biota captured during sampling, the inability to collect historically sampled variables, discrepancies between geographic information system (GIS) maps and present-day landscapes, and difficulty maintaining longstanding sampling schedules. Another extreme weather impact, flooding, is expected to potentially cause problems with Indiana's Combined Sewer Overflow (CSO) infrastructure and program. Another consequence of extreme weather is inaccuracy when it comes to forecasting. With new and often unpredictable events caused by extreme weather now affecting the state, forecasted trends, an integral part of TMDL modeling and development, may be less representative of current conditions given the vintage of model inputs.

The ability to address these issues has been limited by a lack of funding, agency workload, the incremental and variable nature of extreme weather impacts, and the lack of a climate impacts directive or mission and dedicated staff. The Stream Regional Monitoring Network, the USGS, and the Hoosier Riverwatch (an IDEM volunteer water quality monitoring program) anticipate capturing extreme weather effects in their monitoring and long-term hydrologic trends reports that will likely include extreme weather impacts. IDEM OWQ has referenced/followed natural hazard mitigation and floodplain management work that considers extreme weather impacts, such as the fluvial erosion hazards program completed by the Indiana Silver Jackets. IDEM OWQ also noted the work of the Indiana Conservation Partnership, which educates Hoosiers about implementing conservation practices that promote climate resiliency. Additionally, the partnership's program—the Conservation Cropping Systems initiative—aims to increase soil health, which would provide resiliency co-benefits. IDEM has reviewed Purdue University's Climate Change Impact Assessment reports and could further their partnership with Indiana University-Purdue University Indianapolis, which has an Environmental Resilience Institute that conducts

climate change research and community outreach and education. IDEM is also continually exploring new strategies to incorporate the information in these reports during the development of TMDLs.

One way that IDEM OWQ is expecting to work on climate resiliency is through education and outreach. The agency plans to discuss water and flood management strategies with farmers (via the CWA section 319 grant), continue the Clean Community Program, which is anticipated to increase resiliency, and potentially coordinate with the Indiana Conservation Partnership to discuss extreme weather with Hoosiers through the Pathway to Water Quality Program. IDEM OWQ also plans to respond to EPA's new extreme weather priority with possible updates to the TMDL program to account for extreme weather impacts. Additionally, IDEM OWQ's permitting branch will consider thermal impacts linked to extreme weather on the aquatic environment, for example CWA section 316(a) variances for power plants may change due to climate. Also, IDEM has been addressing greenhouse gas emissions and fossil fuel consumption via small changes over time—for example, switching from two-stroke boat motors to four- stroke motors, and using battery powered rather than gasoline backpack electrofishing equipment.

The completed Priority Climate Action Plan (https://www.in.gov/idem/airquality/files/cprg_20240301_final_pcap.pdf) was submitted to the U.S. EPA on March 1, 2024 as part of the Climate Pollution Reduction Grant (CPRG) Phase 1 Planning Grant. This is the first deliverable of the CPRG Phase 1 Planning Grant and the prerequisite to the CPRG Phase 2 Implementation Grant. Specifically, the plan addresses the expansion of green spaces and urban tree canopy (Measure 9) and implementation of agricultural best management practices (Measure 10). Multiple goals and targets outlined in this plan align with goals of the Nonpoint Source Program and should be considered along with programmatic efforts.

Figure 19. Frozen Williams Creek

Program Successes to Date

The Nonpoint Source Program has experienced a number of successes to date.

Indiana's Nonpoint Source Management Plan includes a section on successes of the Nonpoint Source Program. Successes reported in 2019 have been maintained. Additional successes since 2019 and through 2024 include:

Since calendar year 2019, IDEM has:

- Allocated in excess of $14,103,950 toward local watershed planning and implementation
    - Over 20% of funded projects contained a priority for drinking water totaling $2,316,991
- Approved 16 watershed management plans
- Allocated more than $12 million for implementation of best management practices
- Recorded over $8.5 million in local match
- Reduced nitrogen by 1,139,358 lbs
- Reduced phosphorus by nearly 598,853 lbs
- Reduced sediment by 372,942 tons

Over the life of the program, IDEM has:

- Reduced nitrogen by nearly 5,940,841 lbs
- Reduced phosphorus by nearly 3,033,659 lbs
- Reduced sediment by 2,216,369 tons

Coastal Nonpoint Source Pollution Control Program

Indiana has an approved Coastal Zone Management Program (authorized through the CZMA of 1972). The Indiana Department of Natural Resources (IDNR) Division of Nature Preserves administers the program on behalf of the state, which covers 604 square miles of land and 241 square miles of Lake Michigan (the Coastal Region). Indiana submitted its Lake Michigan Coastal Program (LMCP) Document/Final Environmental Impact Statement to NOAA for approval in 2002. It was approved the same year. The Coastal Zone Act Reauthorization Amendments (CZARA) of 1990 include a requirement for all states that have approved Coastal Zone Management Programs to develop a Coastal Nonpoint Pollution Control Program (CNPCP) as a part of their CZM program. This program was not intended to supersede the CZMA or Section 319 programs, but to act as a supplement to these programs. The CNPCP is federally administered by both NOAA and U.S. EPA, who provide approval of CNPCPs for CZARA and Section 319 funding, respectively.

Indiana received conditional approval of its 2005 draft CNPCP submission to NOAA and U.S. EPA in 2005. The draft program detailed how Indiana would meet the 55 management measures provided through NOAA/U.S. EPA guidance. Working with local, state, and federal partners, the LMCP submitted revised CNPCP measures based on NOAA and U.S. EPA's feedback in December 2013, September 2014, February 2016, April 2016, and June 2016. During the 2014-2018 reporting period, LMCP received interim approval, indicating management measure conditions were satisfied for all but one of the remaining management measures. Only the Operating Onsite Disposal System: Maintenance and Inspection management measure remained to be completed.

U.S. EPA directed the IDEM Nonpoint Source Program to allocate, on average, at least $100,000 per year of Section 319 funding to the Coastal Zone until the remaining conditions were satisfied. Projects funded for this purpose were jointly developed by LMCP and Section 319 staff. To this end, the LMCP was awarded a Section 319 grant in May 2018 to support efforts to achieve the remaining management measure. This Section 319 grant included three critical tasks to achieve that goal: parcel-level septic system mapping/GIS across the Coastal Region, microbial source tracking (MST) of E. coli contamination at select sampling locations, and a robust neighborhood-based outreach and education program deployed in 20 neighborhoods within the Coastal Region.

The LMCP was awarded another Section 319 grant in June 2022 to further efforts to achieve the remaining management measure. This grant is currently active and is again focused on education and outreach efforts to increase awareness of septic health. The primary objectives for this grant are to: work with the Indiana Department of Health (IDOH) to develop a voluntary protocol for septic system inspections and tracking in the form of an online GIS dashboard, conduct an environmental scan and review of peer communities' septic ordinances, and conduct an education and outreach program designed to bring about behavioral changes and encourage BMP implementation concerning septic systems in Indiana's three coastal counties.

Implementation of the abovementioned Section 319 grant objectives is instrumental in meeting this final management measure. In March 2024, NOAA and EPA found that Indiana had satisfied all required conditions for meeting management measures and the state's Coastal Nonpoint Pollution Control Program received full approval.

IDEM's assistance and efforts during the prior reporting period were also instrumental in satisfying many of the 19 management measures submitted between 2014 and 2016. A letter dated January 9, 2013,from Indiana's Office of the Attorney General regarding enforceable policies for management measures (included in the 2014-18 Nonpoint Source Pollution Management Plan) was important in satisfying many of the management measures completed during the prior reporting period.

Additionally, IDEM's Section 319 Program requires WMPs funded with 319 funds in the Coastal Zone to meet Section 6217 requirements. Section 319 implementation funds awarded to the region must be used to address critical areas identified in the WMP (which are included under the definition of "critical coastal areas" for the purposes of 6217), which may include (but are not limited to) providing cost-share dollars and technical assistance to install BMPs, conducting an outreach and education program to raise awareness of nonpoint source issues in critical coastal areas, and administrative funding to hire staff and administer the grant.

In the last decade, IDEM has provided funding for planning and implementation of several WMPs in this region. IDEM awarded Save the Dunes, a nonprofit organization, a grant to complete a WMP for the East

Branch Little Calumet River, which was released in June 2016.

LaPorte County Soil and Water Conservation District (SWCD) was awarded a grant to implement the Trail Creek WMP through a cost-share program (2013 – 2016). In addition, IDEM awarded FFY 2013 Section 319 funds to the Northwest Indiana Regional Plan Commission's (NIRPC) effort to draft and implement a WMP for the Deep River-Portage Burns Harbor Waterway watershed (four-year project duration; FFY 2013- 2017). The Deep River-Portage Burns Harbor Waterway WMP was released in October 2016, with a cost-share program Implemented in 2017. Additional proposals for planning and implementation in the Coastal Region will be considered as they are received during the 319 grant solicitation period.

IDEM will track all 319 projects, including those in the Coastal Region, in GRTS and will report on load reductions in its nonpoint source annual report. Specific segments listed and delisted will appear on a biennial basis via the Integrated Report, and the 303(d) List. The DNR LMCP will provide additional documentation of progress made to NOAA and U.S. EPA, as required.

Successes in Water Quality Monitoring

Nonpoint source funding has had a profound effect on water quality monitoring in Indiana. The Clean Lakes Program, which began in 1989 and continues to this day, conducts both professional and volunteer monitoring on Indiana's public freshwater lakes. Through a 319 contract with IU, samples are collected from a subset of Indiana lakes each year for the purposes of 305(b) and 314 assessments.

The toxics sampling program (fish and sediment) began as a 319-funded project in 1989. Though sediment sampling is no longer a part of IDEM's water quality monitoring program, the fish tissue sampling, for the purposes of 305(b) assessments and preparation of fish consumption advisories, remains in place. The program is no longer funded through 319 but has transitioned to Section 106 and state funding sources.

Indiana's first nonpoint source pollution monitoring strategy was submitted and conducted in 2010. At present, IDEM performs nonpoint source-related monitoring, including watershed characterization for watershed groups (since 2011), monitoring for success (since 2010) and beach monitoring for cyanobacteria and cytotoxins (since 2010).

Indiana's Hoosier Riverwatch program has been the state's leading volunteer organization for stream monitoring since 1994. Since that time, hundreds of volunteers have been trained to measure water quality parameters in waters of the state. Until late 2012, the program resided at the IDNR. However, given that many watershed groups utilize Riverwatch methods to monitor water quality in their watersheds, and that Riverwatch methods are designed to detect the most common nonpoint source pollutants, it just made sense to more closely connect the program to IDEM's Nonpoint Source Programs. In 2013, the Riverwatch program was moved to IDEM's Watershed Assessment and Planning Branch and is now funded using 319 funds.

Performance Measures

IDEM reported on 37 WQ-10(a) waterbodies and watersheds between 2008 and 2024 (Table 5). Indiana was pleased by EPA's reduction in the number of measures to report for the 319 program and has appreciated the flexibility provided by WQ-10a. IDEM continues to report load reductions in GRTS.

Table 5. Waterbodies Reported to U.S. EPA under its Success Stories (WQ-10) programs. Performance Measures Reported 2008-2024

Year	Water Body	# of Water Bodies	# of Water Quality Improvements
2023	Hogan Creek	4	2
2022	Big Creek	4	4
2021	Little Deer Creek	1	1
2021	Stump Ditch and Kilmore Creek	2	2
2020	Hogan Creek	2	3
2019	Boyles Ditch	1	1
2017	Pendleton Branch of Indian Creek	1	2
2017	Buck Creek-Busseron Creek	3	3
2016	Flowers Creek	2	1
2015	Indian Creek	4	4
2015	Emma Creek	1	1
2013	Metcalf Ditch	1	1
2013	Jenkins Ditch	1	1
2011	Clifty Creek	1	1
2011	Bull Run/West Creek	2	2
2009	Big Walnut Creek	6	6
2008	Pigeon Creek	1	1
	Total	37	36

Successes in Water Quality Improvement

Over the life of the program, over 125 watershed management plans have been written (or revised) and approved by IDEM; more than $58 million dollars have gone toward implementing those plans; and an estimated 2,216,369 tons of sediment, 3,033,659 lbs of phosphorus, and 5,940,851 lbs of nitrogen have been kept out of Indiana and downstream waters as a direct result of this program. IDEM has also shown direct results of success through Success Story reports to U.S. EPA.

Successes in Water Quality Protection

Refuges, Preserves, and Easement Programs

The state has also seen success in water quality protection, in particular through the establishment of several refuges and easement programs to protect water quality and aquatic life use. In the original 1989 nonpoint source pollution assessment, Indiana reported that the USFWS was working to create the Patoka National Wildlife Refuge (to add to the Muscatatuck Refuge, which was established in 1966). The Refuge was established in 1994 along 30 miles of the Patoka River corridor. It includes wetlands,

floodplain forest, and uplands – all beneficial for nonpoint source pollution control. Information from the USFWS indicates that, in addition to fish and wildlife habitat goals, one of the purposes of establishing the refuge was to improve water quality. In addition, Big Oaks NWR (BONWR) was established in 2000, on the closed Jefferson Proving grounds. Big Oaks is located on 50,000 acres in Jefferson, Jennings, and Ripley Counties. While the BONWR is known as a Globally Important Bird Area, it also encompasses several aquatic habitats including Big, Otter, and Graham Creeks; cave systems; fens, seeps and springs; and flatwoods within its boundaries.

In addition to the federal refuges, several significant state projects have been initiated to increase wildlife habitat and improve water quality. The Healthy Rivers INitiative, launched in 2010, aspires to protect some 69,000 acres along the Wabash and Muscatatuck Rivers and Sugar Creek. The project also involves restoration and enhancement of riparian and aquatic habitats and the species that use them. Project partners include Clean Water Indiana, NRCS, TNC, and other non-governmental organizations (NGOs). Similar projects include the Goose Pond Fish and Wildlife Area (FWA) in Greene County, Wabashiki FWA in Vigo County, and the Loblolly Marsh Nature Preserve in Jay County.

Indiana's Conservation Reserve Enhancement Program (CREP) is a federal-state partnership offering water quality practices and land retirement to riparian and wetland landowners at an attractive rate. The goal of the program is the enrollment of 26,250 acres in land retirement. Indiana CREP is currently available in eleven 8-digit watersheds in 65 counties (Figure 11):

- Highland-Pigeon (HUC 05140202) Lower Wabash (HUC 05120113)
- Lower East Fork White (HUC 05120208) Lower White (HUC 05120202))
- Middle Wabash-Busseron (HUC 05120111)
- Middle Wabash-Deer (HUC 05120105)
- Middle Wabash – Little Vermillion (HUC 05120108)
- Tippecanoe (+Tippecanoe Priority Area additional incentive) (HUC 05120106) Upper East Fork White (HUC 05120206)
- Upper Wabash (HUC 05120101)
- Upper White (+Upper White Priority fish kill area additional incentive) (HUC 05120201)

CREP goals are to:

- Enroll 26,250 acres of eligible cropland and marginal pastureland, including frequently flooded lands, into CREP to establish buffer practices and wetlands
- Protect at least of 3,000 linear miles of watercourses by installing buffer practices.
- Reduce the amount of sediment, phosphorus, and nitrogen entering rivers and streams in the designated watersheds by 2,450 tons per year of sediment, 2,400 pounds per year of phosphorus, and 4,700 pounds per year of nitrogen.
- Increase the acres of wetlands in the watersheds for erosion control, sediment reduction, stormwater retention, and nutrient up-take.
- Enroll 15 percent of the eligible watersheds' cropland, subject to normal CRP acreage limits by county.

Figure 20. Cows grazing in pasture in Indiana

As of December 2022, there are 23,516 acres that have been enrolled which is 89% of the enrollment goal. Within the CREP watersheds, 1,047 linear miles of waterbodies have been protected. Since 2005, 5,998 acres of wetland restorations have been restored in Indiana.

As of July 1, 2013, three eligibility restrictions on wetland restorations within CREP have been lifted. Wetland restorations, CREP's largest cost-share BMP, now share the same guidelines as those in the USDA Conservation Reserve Program. These changes will allow a significant number of acres across all eleven watersheds to be eligible for enrollment into the program.

Since 2010, CREP practices have reduced nonpoint source pollutants from entering waterbodies:

- Sediment by 85,907 tons
- Phosphorus by 100,288 lbs
- Nitrogen by 197,091 lbs

In 2024, CREP issued a programmatic environmental assessment to propose expansion of the program to provide coverage in all 92 counties and add an additional practice. The proposal would increase enrollment acreage goals from 26,250 to 100,000 and increase protection goals for linear miles of watercourses from 3,000 to 4,000.

The **President Benjamin Harrison Conservation Trust Fund** (formerly called the Indiana Heritage Trust) was founded in 1992 to protect Indiana's natural heritage for future generations. It provides funding for conservation easements and land acquisitions in sensitive areas of the state (e.g., rare habitats and species). It is funded through appropriations from the General Assembly, sales of the environmental license plate, and private donations. Although funding has been declining from the license plate because of the plethora of competing plates and significant reductions in appropriations, the Fund has protected more than 61,793 acres to date, including wetlands and riparian acres.

State-funded Erosion-Control Programs

In addition, Indiana has had several state-led erosion-control programs for agricultural lands. T by 2000, LARE, CREP, and CWI programs have all served at one time or another to control sedimentation by installing best management practices on vulnerable erosive soils. These programs are described thoroughly as part of the Funding Mechanisms section of this Plan.

Regulatory Protections

Rule 6 is Indiana's industrial stormwater rules. As of December 18, 2021, Indiana no longer administers the construction stormwater program under Indiana Administrative Code (327 IAC 15-5 or Rule 5). Permitting coverage is now issued under the Construction Stormwater General Permit (CSGP). IDEM also issued a Municipal Separate Storm Sewer General Permit (MS4GP) in 2021. The MS4 General Permit replaces 327 IAC 15-13 (Rule 13) that had previously been the Administrative Code that established the permitting requirements for all designated MS4s in Indiana. The Construction Stormwater General Permit regulates sediment releases from construction sites where land disturbance is one acre or more in size. Rule 6 is the industrial stormwater rule, which regulates the discharge of pollutants that are associated with industrial activities for specific industries operating under specific standard industrial classification codes. The Municipal Separate Storm Sewer General Permit is the MS4 rule for populated areas.

In addition, Indiana has promulgated rules to protect water quality from confined feeding operations (both the federally-defined "concentrated animal feeding operations" and the state-defined "confined feeding operations" [327 IAC 19]) spills, inappropriate fertilizer applications (355 IAC 7) and pesticides (e.g., 355 IAC 4 et seq.; 357 IAC 1-12).

Successes in Integrating Programs/Partnerships

Since the last revision of the state Nonpoint Source management plan, the nonpoint source pollution section has been working hard to break down silos and integrate related programs to extend the resources of all Nonpoint Source Programs. Specific initiatives are referenced below.

Monitoring

The IDEM Office of Water Quality (OWQ) reorganized in 2010 to combine the Watershed Planning Branch with the Assessment Branch to create the Watershed Assessment and Planning Branch. This integration has permitted crucial conversations regarding targeted monitoring needs and how watershed groups should be monitored; and has allowed watershed characterizations for watershed groups to be completed by IDEM. These conversations culminated in an updated WQMS for 2011-2019 and carried over in the 2022-2026 WQMS which included efficiencies in staff time and use of limited resources. In addition, IDEM assumed the Hoosier Riverwatch (citizen-monitoring) program in 2012 from the IDNR.

The Groundwater Monitoring Network (GWMN) at IDEM has continued to provide important information on sources and pollutants in groundwater across the state. In the past five years, the GWMN has been conducting monitoring with an increased focus on arsenic concentrations. Arsenic is naturally occurring and found in rocks, soil, water, and plants in many areas of the U.S. Arsenic is released into the water through natural events like infiltration, dissolution of minerals from clay, and erosion of rocks. Arsenic can also be released into the environment through industrial activities like wood preservation, mining, and smelting. Samples collected in 2018 showed that the majority of arsenic present in Indiana groundwater occurs in the form of arsenic V, likely due to the strong reducing conditions in the groundwater. The sampling event confirmed that arsenic concentrations show high spatial variability across the state. As a follow up in 2019, a small residential neighborhood in Nappanee in Elkhart County was intensively sampled to measure the variability of arsenic. Arsenic concentrations ranged from 13 to 140 ug/L over the 23-acre neighborhood, despite a similar geology across the study area. Statistical analysis of the full GWMN dataset showed that well depth and construction could account for small variations in arsenic levels across Indiana, but well depths alone could not explain the full variability of the arsenic levels observed in the Nappanee study area.

To further investigate the issue of spatial variability of arsenic levels, a residential neighborhood in New Palestine in Hancock County was selected for intensive sampling in 2023. The 400-acre neighborhood was selected because of known arsenic levels in groundwater from previous GWMN and the availability of well logs in the Indiana Department of Natural Resources database. Samples were collected from 48 private drinking water wells within the study area. Arsenic was found above the MCL in 12 of the samples with concentrations as high as 77 ug/L. For 2024, the small-scale study was expanded to four additional study areas across Hancock County. Sampling is currently ongoing. When completed, the results from the study areas will be able to be compared to determine the aquifer characteristics responsible for the spatial variability of arsenic. Future geochemical modeling will help evaluate the geochemistry of the aquifers of Indiana and determine the conditions under which arsenic is mobilized.

Integration with other non-profit, local, state, and federal programs

As illustrated throughout this document, the Nonpoint Source Program has a multitude of non-profit, local, state, and federal partners with whom it works. Since the last revision of the Plan, IDEM nonpoint source pollution has:

- Completed work on a TMDL/WMP template that will bring TMDLs into alignment (to the extent practicable) with the WMP needs of the watershed group.
- Commenced watershed characterization monitoring for watershed groups/grantees.
- Coordinated with the IDEM monitoring sections and the 305(b)/303(d) coordinator on success reporting.
- Conferred with the IDNR-LARE program on watershed management plans and diagnostic studies.
- Contributed to the LMCP Coastal Nonpoint Pollution Control Program and received final approval.
- Called program coordination meetings with nonpoint source pollution -related programs, including Confined Feeding, Stormwater, Wetlands, and IDNR Forestry, Groundwater (Source Water and Wellhead Protection), USFWS, OISC, and U.S. Geological Survey.
- Collaborated with IDEM's Environmental Stakeholder Inclusion (ESI) program and Environmental Justice Coordinator on integrating disadvantaged community considerations into program priorities and grant application reviews.
- Collaborated with the Indiana County Surveyors Association, TNC, Purdue and Indiana University Center for Earth and Environmental Sciences, as well as several consultants, on drainage and hydromodification issues.
- Collaborated with other members of the ICP on the ICP's Leadership, Training and Certification Program, and Pathway to Water Quality (PWQ) committees.
- Cooperated with the ISDA on multiple training opportunities.

Successes in Outreach and Education

IDEM has made a large investment in outreach and education over the past five years. In addition to continuing the WSS outreach and program coordination efforts, IDEM also updated its website content and produced web-based tools to reach out to the citizens of Indiana. The online watershed toolkit includes information specific to Indiana watershed efforts trying to organize a group, write a watershed management plan, inventory their watershed, choose BMPs and provide cost-share, educate stakeholders, and procure sustainable funding for their watershed work. The Nonpoint Source Program also revised the Indiana Watershed Planning Guide and made it available online to watershed coordinators and volunteers.

IDEM completed additional outreach and education projects in collaboration with partners. IDEM sends representatives to participate in the PWQ exhibit and steering committee (an ICP outdoor learning center housed at the Indiana state fairgrounds), the IWLA (hosted by Purdue University), the IASWCD's Conference Planning Committee (the IASWCD conference is the largest conservation-oriented conference in the state and where the ICP and other nonpoint source pollution partners annually congregate to share successful endeavors as well as lessons learned), and Networking Roundtables where programs educating on nonpoint source pollution topics can coordinate their training efforts, instead of duplicating them. In addition, IDEM contributed grant support to the Indiana-based Clear Choices Clean Water campaign, which has resulted in an estimated 18,532 lbs phosphorus saved across the country, the majority of which is in Indiana.

Successes in Adaptive Management

Figure 21. Pathway to Water Quality Education at Indiana State Fair

IDEM believes in the philosophy of continuous improvement. As such, it is continually analyzing and adapting programs to better meet the needs of the state and watershed stakeholders (Figure 21). In the past five years, IDEM has adapted its program policies to increase participation in practices that will keep nonpoint source pollution out of streams. One example of this is the decision to change the cover crops maintenance requirement from five years to one year, which increased adoption of the practice. Another example is the decision to publish a list of "Eligible BMPs" that are not subject to pre-approval by IDEM (Appendix J). Having this list available allows grantees to respond more quickly to potential cost-share participants.

Based on years of feedback using IDEM's 2009 version of the nonpoint source pollution Watershed Planning Checklist, a 2024 version of the checklist was developed. Although there were no substantial changes to the overall required content, insightful feedback over the years from partners drafting WMPs as well as IDEM's internal review committee prompted an update. The 2024 version is more streamlined, gives more flexibility to those drafting WMPs, and better allows reviewers to focus on quality of content. A transition plan for the updated version is still being finalized.

Program Challenges to Date

The Indiana Nonpoint Source Program has experienced a number of challenges to date. In some cases, IDEM Nonpoint Source Program has the authority to resolve those challenges. In other cases, outside forces impose challenges on the program, which will need to adapt in order to continue providing satisfactory progress on its commitments to U.S. EPA. In both cases, it is the intention of the Nonpoint Source Program to address the identified challenges through the goals and strategies of this Plan.

Since 2019, Indiana reported the following challenges to its Nonpoint Source Program:

- Decreased funding for projects
- Lack of assessment methodology for some nonpoint source pollutants
- Staff turnover at the federal, state, and local levels
- Challenging sources
- Uncompleted projects
- Measuring success
- Need for policy clarification
- Administrative best practices (e.g., finance and operations)

Progress and adaptive management have addressed some of these challenges, while others remain. Below is an update on each of these challenges as well as an accounting of additional challenges that have arisen in the past 5 years.

Decrease in Funding for Projects

In the past five years, Section 319 funding has remained relatively predictable, around $3.5 million. While IDEM continues to receive nonpoint source funding requests for much more than it can provide, the strategy at the state and local level is to integrate funding from other sources to improve water quality. Additional sources of funding can be found on page 129.

While the demand for nonpoint source funding still far exceeds the supply, as long as a relatively consistent funding amount can be expected, IDEM no longer considers decreased funding for projects to be a challenge.

One of the largest challenges of Indiana's Nonpoint Source Program is a decrease in dedicated funding for planning and mitigating nonpoint source pollution. Non-federally-linked state funding for nonpoint source pollution is almost exclusively available through the CWI and LARE programs, which – when fully funded – have a combined annual appropriation of approximately $4 million. (Note that the state recycled funds of the CWSRF are not included in this total, as those dollars depend upon previous federal appropriations to make loans available.) Therefore, the state relies heavily on the federally

funded 319 program to reduce and prevent nonpoint source pollution in Indiana. However, the U.S. EPA study of 2011 demonstrated a downward trend in federal funding of the 319 Program, from an all-time high of $238.5 million in 2003 to $175.5 million in 2011. Though it could be argued that these reductions are offset by increased targeted federal funding available to Indiana, such as funding for the Great Lakes through the Great Lakes Restoration Initiative (GLRI - through the U.S. EPA Great Lakes National Program Office) or drainage to the Gulf of Mexico through the Mississippi River Basin Initiative (MRBI, available through the NRCS), these types of regionally-competitive funding sources do not ensure that Indiana will receive any portion of those funding sources, nor that the most critically impaired watersheds in Indiana will be prioritized for regional funding.

Watershed management plans (WMPs) that meet U.S. EPA's 9 Elements are the cornerstone of Indiana's nonpoint source pollution reduction efforts. These WMPs identify the extent of pollution problems, identify causes and sources of that pollution, and outline a strategy to reduce nonpoint source pollution in the targeted watershed. Funding for implementation of a plan can be from diverse sources, including local, state, and federal mechanisms. However, funding for planning is still necessary. As of 2024, roughly 54% of 12-digit HUC watersheds have a WMP. This number nearly doubled over a decade of work since the previous management plan reported 32% of 12-digit HUC watersheds had a WMP in 2013. However, with the federal shift to an emphasis on implementation of WMPs and other allowable plans (U.S. EPA 2013), planning for watersheds that still do not have a WMP may be slowed.

In addition, funding for staffing of watershed groups/projects is diminishing. Though several federal programs (including Great Lakes Commission, GLRI, MRBI, and National Water Quality Initiative funding) have provided dollars for on-the-ground practices since the 1990s, the funding generally does not include monies for staff or technical assistance, choosing rather to emphasize implementation of on-the-ground mitigation measures. In Indiana, this presents a difficulty for watershed groups and others working on watershed-related projects (e.g., SWCDs), as state and local funding for such positions is typically very limited.

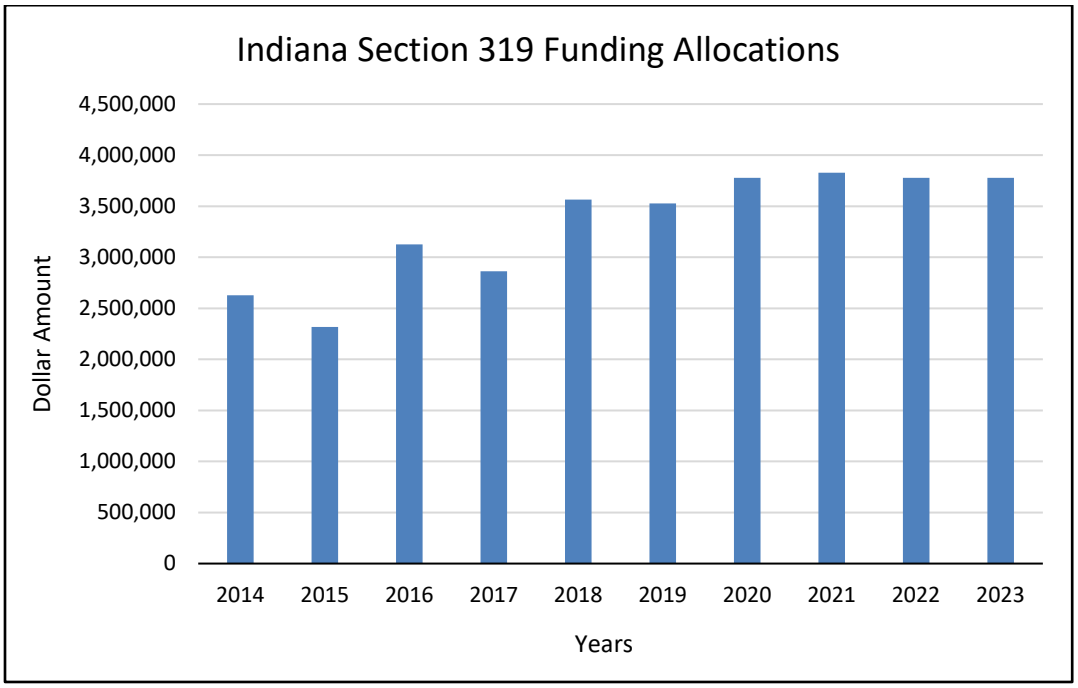

Figure 22. Total Indiana Section 319 funding allocation in FFY 2014 through 2023.

Assessment Criteria for some Nonpoint Source Pollutants

Indiana's method for source identification is part of the 305(b) water quality assessment process and involves an evaluation of several types of information, including land use, field observations by monitoring staff, compliance issues with permitted facilities, etc., to identify the most likely sources driving an identified impairment. Distinguishing between point and nonpoint sources of impairment is part of this process.

Thus far, Indiana has not developed numeric water quality standards for sediment and nutrients, relying on existing narrative criteria. In FFY 2015, IDEM focused on developing an assessment methodology for drinking water, which includes some pesticides, and is currently exploring methodologies to assess sedimentation issues. Indiana already has an assessment methodology for nutrients, which is based on numeric benchmarks for a suite of nutrient-related parameters that is used to translate narrative standards in lieu of numeric water quality criteria.

In 2017, IDEM completed a pilot test (24-hour period) to study dissolved oxygen (DO) and nutrients in rivers and streams to better understand the relationships between nutrient loads, excessive nutrients, and the impact on biological communities. The study added continuous dissolved oxygen sensors as well as orthophosphate measurements. IDEM did not observe a significant correlation of macroinvertebrate index of biological integrity (mIBI) metrics or mIBI scores with any DO measure, but IDEM did observe correlations with increasing chlorophyll-a (chl a). Although no statistically significant relationships that would support numeric nutrient benchmarks for key variables were determined from this small study, the results suggested that the DO regime may play a key role in these complex nutrient relationships. The results suggested that additional data were needed to fully understand the nuances of nutrient utilization in the lotic environment and identify the factors influencing whether a given concentration of nutrient species is beneficial or harmful.

Currently, IDEM is working with a contractor to support developing conceptual models that link nutrients to endpoints of interest and reflect the protection of designated uses. A comprehensive, combined dataset of nutrient data (including total Kjeldahl nitrogen, dissolved inorganic nitrogen, total phosphorus, and orthophosphate), continuous dissolved oxygen (DO), fish, macroinvertebrate, diatom, and habitat measures will be leveraged to detect meaningful relationships between nutrients, related variables, and aquatic life in streams and support the identification of nutrient thresholds.

Water quality standards, and their interpretation in the form of CWA assessments, form the foundation of the state's water quality program. Water quality standards and CWA assessments are determined at the state level, with approval by U.S. EPA, to reflect the conditions of both point and nonpoint source pollutants in the state as appropriate to meet the "fishable, swimmable" goals of the CWA. Utilizing these tools, the state is able to determine which waters are "impaired" or do not meet beneficial use requirements (i.e., the WQS are the basis of the 303(d) list). In Indiana, numeric surface water criteria related to nonpoint source pollution include *E. coli*, metals, salts (e.g. chloride and sulfates), ammonia, pH, temperature, pesticides, and other organic substances (327 IAC 2-1-6 et seq.). While narrative criteria are in place mandating that all surface waters of the state be free from discharges which will, in essence, render them unsafe for fishable and swimmable uses, some nonpoint source pollutants and issues (e.g., sediment, "flashiness" and biological oxygen demand) lack specific numeric surface water quality criteria and a defensible assessment methodology through which they could be assessed as "impaired" or "unimpaired" for particular nonpoint source pollutants. In these cases, these waters are

assessed based on the narrative criteria using a combination of surrogate parameters and conditions present over a prescribed frequency (CALM 2024).

Water quality standards and assessment methodologies allow IDEM to determine whether or not a waterbody is impaired for its designated uses. Impairment places a waterbody on the 303(d) List of Impaired Waters (those waters which require a TMDL). Once a TMDL has been written for a waterbody, permit modification and watershed management planning are the next steps for TMDL implementation. IDEM's Nonpoint Source Program uses 303(d) listings as one factor to determine priority for grant awards.

IDEM has collected data on nutrients, which can be used to develop numeric criteria for nutrients, but available resources limit the pace at which revisions to the water quality standards can be developed and implemented. IDEM will continue to work with U.S. EPA to provide U.S. EPA updated milestone information on the adoption of numeric nutrient criteria in subsequent nonpoint source pollution reports.

Staff Turnover at the Federal, State and Local Levels

Section 319 staff turnover, particularly among state-level primary project managers, has been a challenge since the program's inception. With staff turnover at the state level, local project staff can become frustrated with their working relationship with the state as uncertainty enters into their project. This uncertainty results from a lack of experience in new staff and the lag time it takes to get them up to speed. Newly hired project managers experience a learning curve in regard to program policies, current/standard operating procedures, and expectations of project performance, all of which increase the time needed to respond appropriately to grantees. Turnover at the state level has occurred for a number of reasons, both personal and professional, at all levels of program management. Within the past five years, turnover among primary project managers has mostly been due to the pay grade and status level of the position. The governor's Next Level State Work Initiative took place in 2022, which resulted in a review of the state's job classification and compensation structures. This resulted in significant overall increases in compensation for those staff directly involved in administering Indiana's Nonpoint Source Program at IDEM. A notable difference in staff recruitment and retention has resulted from this initiative. Agencywide specific efforts in recent years have been focusing on training and development for all staff. These efforts are playing key parts in developing and retaining quality staff; however, program areas across the board, including the nonpoint source program, have lost significant knowledge from experienced staff through turnover or retirements over the past five years.

Federal employee turnover can also cause delays in project completion and project success. On the regional level (e.g., U.S. EPA Region V staff), turnover can cause delays in receiving grant awards, approvals of workplans and management plans, and answers to questions relating to eligibility. When federal employees turn over on the local level (e.g., NRCS field employees), delays to conservation plans, practice designs, and contracting can occur – all of which could lead a group to ask for an extension of their grant agreement or risk project incompletion and landowner mistrust.

Local watershed groups also experience high staff turnover. This is often the case when watershed coordinators are funded solely with Section 319 funds. While some watershed coordinators are able to stick with the project until the end of their grant(s) period, others leave for more stable employment before the end of the grant term. At times, there is a lag between project grant awards such that a coordinator faces unemployment for several months before the next grant is awarded. Staff turnover at

the local level is detrimental to projects because, as learned by one of the program's grantees:

"The more partnerships and contacts the projects has the more successful it will be – the more people you know or know you the easier it is to schedule workshops, obtain good speakers, and assist with other projects" (IDEM 2011 Annual Nonpoint Source Program Report).

Local project success is built on rapport with local leaders. When project staff changes, that rapport is not transferred to the new leadership, who will need time to gain trust with stakeholders. This cyclical process delays watershed improvements and has been long recognized as a major obstacle to successful projects. Strategies to manage this challenge at a statewide level have been unsuccessful to date.

Staff turnover at multiple levels continues to be somewhat problematic. At the federal level, IDEM is pleased by the integration at Region V of the TMDL and nonpoint source pollution project management responsibilities and hopes that turnover is reduced. At the state level, turnover continues for a variety of reasons. Past consequences of this turnover have been reduced progress on the education goals of previous plans and challenges with completing ongoing projects on time due to lack of technical support from IDEM staff.

At the local level, grant-funded positions are subject to higher turnover. Some strategies to counter the job insecurity issue related to "soft" money include creating permanently funded watershed coordinator positions, one watershed coordinator working on several projects simultaneously, and utilizing existing staff to work on grant-funded projects, with the grant providing only partial funding for any given staff position.

Challenging Sources

While there are many sources of nonpoint source pollution in Indiana, two in particular have been difficult to address, both at the legislative and programmatic levels.

Challenging sources cited in the 2018 Plan included septic systems and modified hydrology. Little headway has been made on systematically addressing these sources in the past five years. Below are highlights of work completed in the past five years. Other accomplishments are in the program's annual reports at www.idem.in.gov/nps/ or www.idem.in.gov/nps/resources/nonpoint-source-annual-report/.

Septic Systems

Residential septic systems are regulated by the IDOH, which delegates administration of most routine septic installations and inspections to the county health departments. While 410 IAC 6-8.3 regulates the standards of construction of septic systems, there is no uniform statewide control on failed or failing septic systems or legacy straight pipes (i.e., illicit discharges and "dumps to ditch" systems). County health departments typically do not have the staff or political backing to initiate maintenance inspections of septic systems and rely on complaints to investigate potential sanitary pollution. While water quality standards can, and have been, used to stop discharges from straight pipes, enforcement action at this level is relatively rare. Septic systems are expensive (and sometimes impossible, due to lot size limitations) to replace. Legacy straight-pipes are believed to be relatively common, but difficult to detect. Currently, Indiana funds sewer expansion through the CWSRF. Through the Nonpoint Source Program of the CWSRF, communities can request to take septic systems off-line as part of a sewer

expansion project. And, while at least 23,200 homes that were on septic systems are now on sewer[9], the funding is limited to projects sponsored by utilities that also have a traditional infrastructure loan through CWSRF. The rural homeowner who is not in or near a community with a CWSRF infrastructure loan does not have access to those funds to repair or replace a septic system. The CWSRF Loan Program 2024 Annual Report for Indiana reported approximately 1,774 failing septic systems in nine communities were eliminated that were discharging to waters of the state

Many opportunities are available to strategize about the septic problem. Lawmakers discuss the issue in nearly every General Assembly session. One group, the Rural Wastewater Task Force (RWWTF), attempts to inform public policy related to on-site sewage disposal (i.e., "septic") systems. The group meets regularly during the Indiana General Assembly's legislative sessions and also between sessions. The Rural Community Assistance Program (RCAP) provides assistance to rural water and wastewater treatment systems, including regional sewer districts that often result in the removal of septic systems from the landscape. Formal and ad-hoc meetings of representatives from multiple agencies and statewide organizations, such as IDEM and IDOH, RCAP, the Alliance for Indiana Rural Water, Indiana Office of Community and Rural Affairs, USDA's Rural Development, among many others present various opportunities to brainstorm solutions to pollution from failed or failing septic systems.

IDEM believes that the Clean Water State Revolving Loan Fund (SRF) remains the best source of funding to take failed and failing septic systems offline. Between 2014 and 2024, 22,300 homes were taken off of septic systems and connected to centralized sewer service as SRF nonpoint source pollution projects, reducing nutrient and pathogen loads in varying parts of the state. Even as this work continues, IDEM's nonpoint source program still works to increase coordination with SRF on an expanded integration solution to fit Indiana's needs. In several of the past five years, interest rates were already so low that adding a nonpoint source project was not an incentive for borrowing communities, as it has been in the past.

IDEM's position is that proper outreach and education from the Nonpoint Source Program, in connection with federal, state, and local partners; funding and sewer connection through the SRF; and regulation as appropriate will be needed to solve the problem created by failed and failing septic systems in Indiana.

In the Coastal Region, the LMCP was awarded a Section 319 grant in June 2022 to further efforts to achieve the remaining management measure of the state's Coastal Nonpoint Pollution Control Program, which was approved in March 2024 This grant is currently active and is focused on education and outreach efforts to increase awareness of septic health. The primary objectives for this grant are to: work with the Indiana Department of Health (IDOH) to develop a voluntary protocol for septic system inspections and tracking in the form of an online GIS dashboard, conduct an environmental scan and review of peer communities' septic ordinances, and conduct an education and outreach program designed to bring about behavioral changes and encourage BMP implementation concerning septic systems in Indiana's three coastal counties.

Hydromodification

Hydromodification is both a legacy and continuing issue in Indiana with nonpoint source ramifications. Drainage projects often deplete habitat for aquatic life and interrupt the pollution attenuation function historically performed by wetlands. Stream channelization and dredging destroys habitat; increases

[9] Through CWSRF since 2004.

flow, erosion and resuspension of sediment; and increases downstream flooding. Urban development increases impervious surfaces and hinders infiltration of surface water to groundwater. Low-head and hydroelectric dams obstruct some aquatic communities from inhabiting all portions of their potential range.

IDEM Nonpoint Source Program continues to work with partners on the above problems. While drainage practices remain an issue for water quality, Purdue Extension and the Watershed Specialists have promoted water quality practices to surveyors throughout the state. Between 2006 and 2023, 17 county surveyors attended the Indiana Watershed Leadership Academy. In addition, the Indiana Stream and Wetlands Mitigation Program of the Indiana DNR was approved to provide in-lieu fee mitigation alternatives and largely considers watershed management plans in its service areas. IDEM also has a volunteer mitigation matchmaker website that allows landowners with land available for mitigation to add their land to a database of potential mitigation sites.

IDEM has also tackled urban water quality projects in the past five years. Section 319-funded projects must go above and beyond the requirements of any municipal separate storm sewer system (MS4) in the project area. Most watersheds have some population centers in them. Between 2018 and 2024, the Nonpoint Source Program addressed nonpoint source pollution from urban centers through the region of the Great Bend of the Wabash River Implementation Project and the St. Joseph River Watershed Initiative Project.

Modified Hydrology

Agricultural Drainage/Loss of Wetlands

Nonpoint source pollution prevention and drainage are not mutually exclusive goals. Indiana's current drainage code dates back to the federal Swamp Act of 1850 (9 Stat. 519), which provided land to the states by the federal government on the condition that it be drained and plowed. Indiana's first statewide drainage code became effective in 1852 when roughly 25% of the state was wetlands. An Indiana Bureau of Legislative Information bulletin from 1914 estimated that 625,000 acres of "waste" lands could be arable with adequate drainage (Kettleborough 1914). It also notes that 1.5 million acres had been drained by 1914 – mostly in northwestern IN. The benefits of drainage outlined in the document include economic (able to occupy and farm the land) and public health (reduce malaria, change in air quality and humidity, drinking water, mosquito/bug and reptile threats). Drainage of the land through lowering water tables and shunting the excess water to channelized, denuded streams was a common practice in early statehood that persists through today. Through drainage programs/projects, 4,737,000 acres of wetland have been drained. The hydrological significance of this loss is seen in major flood events and the water quality significance is great (erosion, head-cutting, nitrate delivery to streams through field tiles, lost nutrient uptake functions of wetlands). County surveyor participation in water quality projects and outreach events, such as water quality presentations at the annual Purdue Road School training, installation of two-stage ditches, and attendance at the IWLA, has increased the number of drainage projects that consider water quality needs as well as water quantity.

Urban Impacts

Likewise, streams in urban areas have not escaped impacts. As towns and cities grew up around lakes, rivers, and streams, construction often took place in the floodplains, which in turn increased the need to protect buildings and infrastructure from floodwaters. Streams were placed into hard conveyances, such as concrete and pipes, and sometimes buried to protect dwellings and other structures. The sediment transport function of moving waters is a threat to buildings and infrastructure. When erosion impacts upon man-made structures become imminent, rivers and streams are typically straightened and hard-armored to reduce erosion.

Cities and towns are rife with hard surfaces such as roads, parking lots, sidewalks, and roofs. These surfaces are referred to as "impervious surfaces" – rain that falls on these surfaces runs off through overland flow instead of infiltrating through the soil to slowly recharge nearby waterbodies. The result of moving water off the land more quickly than natural is "flashy" streams – those that very quickly receive water (through an infrastructure of drainage pipes or through overland flow) and fill their banks, but transport water so efficiently that low flow conditions are once again achieved in an unnaturally fast recovery. Flashy streams can contribute flooding to their adjacent landscapes, as well as downstream. Aquatic life does not adapt well to flashy streams. Substrate is scoured away relatively quickly, banks are eroded, sediment is deposited on top of remaining substrate, and water levels are highly variable.

Pollution from populated areas varies from lawn and garden debris to pet waste to road salt to oil and other automotive chemicals. In warm weather, the water flowing over impervious surfaces picks up heat from those surfaces and adds thermal pollution to waterbodies that receive it. This effect is exacerbated by a lack of canopy cover from shallow or non-existent riparian buffers that expose water to direct sunlight, further raising the temperature.

Other

Man has been harnessing the power of moving water to perform work for centuries. Today, Indiana still uses the power of rivers to produce energy through the workings of hydroelectric dams (Table 6). Six hydroelectric dams are on-line in Indiana, providing 36 MWh of power to Indiana per year (U.S. EIA 2024).

Table 6. Hydroelectric Dams in Indiana

Hydroelectric Dam	Waterbody	Owner
Norway Dam	Lake Schafer	NIPSCO
Oakdale Dam	Lake Freeman	NIPSCO
Twin Branch Dam	St. Joseph River (Lake MI)	Indiana-Michigan Power
Elkhart Dam	Elkhart River	Indiana-Michigan Power
Markland Locks and Dam	Ohio River	Duke Energy
South Bend	St. Joseph River	City of South Bend

Figure 23. Low-head dam and bridge over the Patoka River in Dubois County

Small low-head dams are also a part of Indiana's hydromodification history (Figure 23). These dams often powered grist and wood mills in the early years of Indiana's statehood. However, once the mills were taken out of service, the low-head dams often were not removed. Low-head dams are a barrier to fish migration, collect sediment and contaminants behind them, and endanger paddlers and other persons recreating on the water. They also crumble and break down, creating swift velocities through notches in the dam, and potentially transporting contaminated sediments downstream. Perhaps the biggest challenge of low-head dams is that they are expensive to remove and often the party that originally installed the dam no longer exists. Through its National Inventory of Dams, the IDNR reports that there are 1,388 jurisdictional dams in Indiana; 278 of those dams are rated "high hazard classification." Through partnerships and mechanisms such watershed planning efforts, multiple efforts have been led towards dam removals. In 2023, there were three dams removed, increasing fish passage and natural function of waterbodies.

Uncompleted projects

Of the planning projects that closed out between January 2019 and June 2024, all WMPs were completed during the grant term or continue to make progress toward completion. As for implementation projects closed during the same time period, nine projects returned a total of $102,978.04 in cost-share dollars, with amounts returned ranging from $0 to $55,418.61. Reasons for returned funds included: receipts totaling less than estimated costs, natural disasters preventing implementation (e.g., tornadoes or drought), the COVID-19 pandemic, a change in controlling interest of public land where BMPs were to be implemented, and time constraints and unfavorable weather conditions preventing BMP installation. While IDEM cannot control the weather or political change, the Nonpoint Source Program encourages projects to have BMPs lined up to begin as soon as funds are available to prevent returned funds.

The 2012 GAO report to Congress on the national Nonpoint Source Program indicates that, nationwide, nearly 30% of projects funded with 319 dollars are not able to accomplish the proposed goals of their project. Indiana's projects are no exception to this. In response to historical unspent project money, extensive efforts are made during the Request for Proposals process to ensure that 319 funds will be awarded only to potentially successful projects. In order to be granted 319 funds, groups must make the case that they have the right partners on board to deal with their particular water quality problems and

sources. Recently, successful implementation proposals have included letters of commitment from landowners who would put practices on the ground to abate nonpoint source pollution. WSS engages with these groups long before proposals are due in order to ensure that the projects proposed are feasible and of water quality benefit. Still, circumstances beyond the control of the grantee (e.g., a wet or drought year; land changing hands; sudden loss of the watershed coordinator) may keep them from expending funds allocated to their project.

Measuring Success

Past cycles have seen an increased emphasis on measuring and reporting success at the state and regional levels. U.S. EPA included strong, numeric, achievable success measures in both its 2006-2011 and 2011-2015 strategic plans, including milestones that were passed on to states. Two of those measures, WQ-10, are particularly relevant to the state Nonpoint Source Program. From FFY07 to FFY12, Indiana was tasked with showing success in at least five 12-digit watersheds. Despite inherent difficulties with using the 2002 303(d) list as the baseline upon which improvements would be measured, Indiana was able to meet its commitment of documenting improved water quality of six watersheds in that time period.

WQ-10 (or "Success Stories") is a reach-related measure indicating miles or acres of fully or partially restored waterbodies that were listed on any state 303(d) list for nonpoint source pollution causes and for which Section 319 money was expended. Again, the target was set for showing improvements in five segments in the five-year period 2019-2023.

While IDEM nonpoint source pollution has been able to work with its partners to report successes to U.S. EPA as requested, there remains some difficult points that continue to hinder the ability of IDEM to show improvement in water quality. From a success reporting perspective, it presents a difficulty that the Food, Conservation, and Energy Act of 2008 (P.L. 110-234, Sec. 1619) specifically prohibits NRCS and FSA from disclosing the geospatial references of land related to program participants, except in limited circumstances or in aggregate. IDEM continues to collaborate with Indiana's USDA office for the release of some georeferenced information in order to collaborate on the National Water Quality Initiative (NWQI), and may also include an agreement to share data for additional purposes; however, due to data privacy issues, it is difficult for IDEM nonpoint source pollution to associate conservation practices installed under USDA programs with stream improvement for WQ-10.

Finally, reporting measures of success is a challenge for IDEM as it requires watershed characterization monitoring against which subsequent equivalent monitoring can be evaluated. IDEM shows successes by using the "delisting option" for showing improvement (U.S. EPA 2008b). However, in order to list and delist stream segments, data must be collected at the Level 3 data quality objective level. The result of this need is that IDEM can only delist a stream segment where IDEM has already assessed using Tier 3 available data. These watersheds will be targeted for follow-up monitoring after a sufficient implementation period has elapsed.

With the simplification of strategic measures at EPA, this challenge has been addressed. Now that the Nonpoint Source Program is primarily reporting successes using Measure WQ-10(a), IDEM has found it easier to report successes. Additional information on success stories can be found online.

Clarification of Policy for Watershed Management Planning Activities

Watershed groups in Indiana continue to struggle with the identification of critical areas for their WMPs. Critical areas are required to be included in the plan before the plan can be approved by IDEM. IDEM developed guidance on Determining Critical and Protection Areas in Watershed Management Plans to provide guidance to groups in determining critical protection areas (Appendix P). Additional guidance was developed for Updating a Watershed Management Plan in order to clarify policy requirements for groups using previously approved plans based on older checklists (Appendix O). IDEM will continue to work with EPA and use relevant stakeholder input to update or revise this guidance as needed.

Critical Areas

Indiana's critical areas guidance (Appendix E) was finalized in FFY 2017, prior to the release of EPA's

"Critical Source Area Identification and BMP Section: Supplement to Watershed Planning Handbook."

Indiana's guidance presents a holistic approach to identifying and cleaning up nonpoint source pollution, recognizing that targeted clean-up will achieve faster results than a shotgun approach. Indiana's approach allows groups to recognize and address "low hanging fruit" to achieve water quality improvements in the most rapid manner possible – something that is not always achievable using a "worst first" approach as described in the EPA supplement. Indiana continues the dialogue with EPA on critical area determinations in search of a replicable, mutually acceptable approach.

Prioritizing Waters

In its 2014 state management plan, IDEM proposed utilizing existing prioritization schemas and working with the Indiana Conservation Partnership to narrow down to specific geographic locations on which to prioritize funding. This created a helpful model in determining priorities in future plan updates. In 2024, the Nonpoint Source Program prioritized the following watersheds for nonpoint source funding:

1. Upper Wabash (05120101)
2. Middle Wabash-Deer (05120105)
3. Middle Wabash-Little Vermillion (05120108)
4. Middle Wabash Busseron (05120111)
5. Lower Wabash (05120113)
6. Upper White (05120201)
7. Lower White (05120202)
8. Maumee River (04100003, 04100005, 04100007, 04100004)

Project areas that include a 10-digit HUC watershed with a surface water drinking water intake and waters identified as impaired in the 2024[10] §303(d) List of Impaired Waterbodies are prioritized.

Project areas that include a 10-digit HUC watershed that impacts outstanding state resource waters, category 1 waters, and/or waters with endangered, threatened, or rare species are prioritized with specific focus on fish, mussels, salmonids, cisco, and hellbenders.

These priorities will be used to target funding for projects and will be updated as needed based on current or new information. While the lists of watersheds that fall under the above priorities could change with each integrated reporting cycle, the rationale behind the priorities remains solid. In the above priorities, IDEM has included specific priorities related to various partner efforts and priorities, such as the *State Nutrient Reduction Strategy*, the *Domestic Action Plan for the Western Lake Erie Basin*, and endangered and threatened aquatic species. Even so, the number of watersheds where nonpoint source funds could be awarded could be more focused.

The Indiana Conservation Partnership is continually reviewing its prioritization of waters in the *State Nutrient Reduction Strategy* which informs several other programs such as MRBI, NWQI, and Section 319/205(j) funding. IDEM anticipates that drinking water will remain a focus, as well as reductions in sediment and nutrients, but the strategy for impacting these parameters particularly geographic locations may change. As the SNRS is updated, it will be evaluated against the Section 319/205(j) funding criteria to ensure cohesion between the programs.

The IDEM Nonpoint Source Program began a prioritization process to target its Section 319 funding in 1997. At that time, a committee consisting of IDEM's nonpoint source partners analyzed available data to formulate twelve priority sources of nonpoint source pollution for funding. These priorities were included in the 1999 state Nonpoint Source Program management plan:

1. Agricultural production;
2. Streambank/shoreline erosion and aquatic habitat degradation;
3. Land application of non-agricultural wastes;
4. Timber harvesting and loss of forest lands;
5. Land development;
6. On-site sewage disposal;
7. Landfills;
8. Transportation;
9. Coal mining;
10. Oil and gas production;

[10] Note that the 303(d) list year is updated in subsequent solicitations as appropriate.

11. Non-energy mineral extraction; and

12. Atmospheric deposition.

In the FFY 2006 grant cycle, the Indiana Nonpoint Source Program prioritized waters impaired by nonpoint source pollution for Section 205j and 319(h) funding. Since that time, the following three priorities have guided the expenditure of nonpoint source pollution funds:

1. Watershed management planning in watersheds with waterbodies on the current 303(d) list.

2. Watershed management planning/implementation in watersheds with completed Total Maximum Daily Load reports (TMDLs).

3. Watershed implementation in watersheds with plans that meet U.S. EPA 9 Elements and IDEM's current checklist.

IDEM nonpoint source pollution further targeted the expenditure of its grant funds to priority geographical areas: the Lake Michigan Coastal Zone (hydrologic unit code (HUC) 04040001), waters of the Wabash River watershed (HUCs 05120101-05120113), and waters of the East Fork White River watershed (HUCs 05120204-08). The purpose of this geographical targeting was to align the state's limited nonpoint source pollution funding with the conditionally approved Coastal Nonpoint Pollution Control Program (CNPCP) and the goals of the Indiana Conservation Partnership (ICP). Moving forward, IDEM and DNR will continue to work to implement the approved LCMP and may prioritize funding for projects that align with the goals and needs of the program. IDEM will also continue to target funding with ongoing goals of the ICP where program priorities align.

With shrinking federal funding and an emphasis on showing success, IDEM has determined that it needs to take an adaptive management approach to prioritization. Therefore, IDEM identified several approaches by which it could prioritize its funding, as well as the advantages and disadvantages of each.

Approach #1. Use the 303(d)/consolidated list (e.g., "stay the course")

Pros:	Cons:
Nonpoint Source Program does not have to develop anything new.	Moving target (new waters are added and waters removed each list cycle).
Takes into consideration scientifically defensible water quality monitoring.	Only reports on parameters that Indiana has a standard or CALM methodology for (others represented by surrogate, such as IBC).
Is an objective tool that either identifies waters as impaired or not (or not enough info).	Specifies stream segments, not watersheds– if a particular monitoring site is located on a large waterbody, the results cannot be extrapolated back to any particular feeding stream. Vice versa with headwater and receiving streams. To diagnose nonpoint source pollution sources in a watershed, need characterization monitoring, not scatter-shot sampling sites.

Table 7. Prioritization Approach #1 Decision Table

Approach #2. Prioritize by source (e.g., conventionally tilled fields, livestock with stream access, denuded stream banks, eroding stream banks, drinking water resources)

Pros:	Cons:
More waterbodies of the state than using the 303(d)/consolidated list alone	Sources are very widespread. Likely that further prioritization within these sources would be necessary.
Address more sources than through using the 303(d)/consolidated list alone	Not targeted to provide demonstrable success through easy monitoring procedures
Likely that some place in every part of the state will be eligible (i.e. more real estate would be eligible than using HUCs or stream reach IDs to prioritize)– more politically tenable	Might perpetuate condition in which implementation of BMPs is so spread out, improvements in water quality cannot be observed for many years
More in-line with other funding sources/mechanisms (EQIP, WRP, USFWS funds, etc.)	Many sources in a given watershed – would each source be given equal weight? Would all sources be addressable at any given time?
Could build statewide outreach on particular sources	

Table 8. Prioritization Approach #2 Decision Table

Approach #3. Prioritize implementation of current plans only

Pros:	Cons:
Provide focus on implementation, as is emphasized in the 2013 U.S EPA guidelines.	Might still be too spread out to show success; may still have to prioritize certain geographical locations
Might provide a catalyst for groups to find a way to fund planning using dollars other than 319.	Watersheds building momentum for planning may be stifled.
	Political backlash.

Table 9. Prioritization Approach #3 Decision Table

Approach #4. Only provide funding for local project staff, not cost share (i.e., fund outreach, monitoring, planning, and coordination-related tasks)

Pros:	Cons:
More projects funded, even with limited dollars.	Everybody is going to want to fund staff – lots of applications for a little bit of money.
Leverages funding with other, more robust cost- share programs (319 funds staff – Farm Bill and USFWS programs typically do not fund staff).	Inter-watershed wars – each county (or SWCD) in a watershed might want their own "coordinator".
	It is possible that less BMPs will be funded.
	There is no guarantee that there will be funding available for cost-share – could be funding staff with no/limited funds available for implementation.

Table 10. Prioritization Approach #4 Decision Table

Approach #5. Prioritize areas with no planning for planning

This approach is not as feasible since 50% of the annual 319 allocation is to go to implementation activities

Approach #6. Use state/federal prioritizations already in place for MRBI, GLRI, endangered species, OSRWs, and others.

Pros:	Cons:
Work of prioritization has already been done, for programs similar in scope and need.	Does not take into consideration 319-specific needs such as working in critical areas or developing a plan before providing cost-share funds.
Leverages the funds that are being provided by special initiatives with 319 funding.	It is possible that over-saturation of funding will occur where more money is dedicated to a geographic area than that area can obligate within the allotted timeframe.
	It is possible that no stakeholders from these areas will apply for 319 funds.
	There are watersheds (e.g., OH River) not covered by these initiatives that have water quality issues as well.

Table 11. Prioritization Approach #6 Decision Table

Approach #7. Prioritize using the U.S. EPA's Recovery Potential Tool and Environmental Justice Screening Tool.

Pros:	Cons:
Science-based analysis of areas in need of restoration – prioritizes those areas most likely to recover.	Data is not equally available for all parts of the analysis.
Flexibility of scale - the analysis can be large (8- digit) or small (12-digit).	Priority data may differ across the state (i.e. slope may be more of a factor in southern and western IN than eastern and central IN).
Consideration of Environmental Stakeholder Inclusion (ESI) and Environmental Justice (EJ) concerns.	Data is still evolving, and areas can be difficult to identify. Areas may need additional considerations for support for successful projects.

Table 12. Prioritization Approach #7 Decision Table

Approach #8. Prioritize based on Total Maximum Daily Load (TMDL) development

Pros:	Cons:
Quicker and more cost-effective planning process for local groups due to leveraging information provided in TMDL.	Limited TMDLs being developed each year across the state.
Reduces duplication of efforts and drastically increases reasonable assurance that TMDLs will be implemented.	Inquiry of interest from local groups may happen many years prior to them receiving funding.

Table 13. Prioritization Approach #8 Decision Table

IDEM has chosen to use a combination of Approaches #1, 2, 6, 7, and 8 to develop a hierarchy of priority areas across the state. Although these approaches will be the intended approaches, IDEM will continue to use an adaptive management approach as necessary to ensure the most effective and efficient use of funding and resources to solving nonpoint source issues in the state.

Goals and Management Measures

The IDEM Nonpoint Source Management Plan is a vision and mission-driven strategy. All goals, objectives, milestones, and measures of success are based upon these two statements.

Program Vision:

The vision of Indiana's Nonpoint Source Program is to restore waters impaired by nonpoint source pollution and maintain water quality in healthy watersheds through locally led partnerships.

Mission: "To work with our partners to make measurable improvements in, and prevent degradation of, water quality by addressing nonpoint source pollution through education, planning, and implementation."

Because nonpoint source pollution primarily results from run-off across the landscape, it is best dealt with using a *watershed approach*. The "watershed approach" is a method of strategically addressing water pollution which takes into account all sources of point source and nonpoint source pollution in a watershed and engages the diverse stakeholders of the geographic region through the watershed planning process. It provides a framework for coordinating and integrating the myriad of programs and resources available to stakeholders in the watershed. The watershed approach is based on four basic principles:

1. Geographic focus, based on hydrological rather than political boundaries.

2. Water quality objectives are based on scientific data.

3. Coordinated priorities and integrated solutions.

4. Diverse, well-integrated partnerships.

In federal fiscal years (FFY) 2025 through 2029, IDEM plans to work with watershed partners to build consensus on data-driven statewide priority watersheds where nonpoint source pollution resources can be focused. One of IDEM's contributions to this partnership will be providing water quality data and an analysis of recovery potential for particular watersheds. The IDEM Watershed Planning and Restoration Section will utilize a combination of local understanding, targeted priorities, and available tools, such as the U. S. EPA Recovery Potential Screening (RPS) Tool to aid in the selection of watersheds to target for development of Total Maximum Daily Loads (TMDLs) reports. The RPS identifies watersheds with the greatest potential to recover and to restore water quality. The IDEM Watershed Planning and Restoration Section will also work to integrate TMDLs and watershed planning activities, both through watershed characterization and the use of the TMDL- Watershed Management Plan (WMP) template. Local stakeholder support to sponsor implementation efforts of TMDLs through watershed-based management efforts will continue to be an important factor in determining final selection and timelines for individual TMDL projects.

This Plan proposes to form and utilize partnerships to define and address nonpoint source pollution issues; monitor the status of those issues; provide outreach and education to citizens of the state to raise awareness of nonpoint source pollution issues; remediate the causes and sources of nonpoint

source pollution; and protect areas already meeting water quality standards and those areas threatened by nonpoint source pollution. Proposed short and long-term objectives outlined under each of these broad goals are categorized as “programmatic,” “financial,” and “technical.”

Goal 1: Improve the resources available for nonpoint source pollution management through partnerships.

Cooperation with state, federal, local, and private partners is critical to Indiana’s nonpoint source pollution program. IDEM knows that coordinating with these partners optimizes the funds, staff, physical resources (buildings, landholdings, etc.), and political capital available to Indiana’s work on nonpoint source pollution issues. IDEM has allied itself and will continue to collaborate with numerous agencies and organizations in the pursuit of cleaner water.

Coordinating with Clean Water State Revolving Fund to address nonpoint source pollution

The Clean Water State Revolving Fund (CWSRF) nonpoint source pollution program has been providing state match for the Section 319 grant through recycled state funds since 2005. The Indiana Finance Authority (IFA) is the agency that oversees the CWSRF for the state. IDEM coordinates with IFA on CWSRF projects that address nonpoint source pollution. Eligible projects for CWSRF funding and 319 match include:

- Restored hydrology including, but not limited to:
    - Wetland, floodplain, and stream restoration/protection
    - Streambank stabilization
    - Riparian buffers/corridors
    - Dam removal
- Erosion control measures – vegetative and structural or non-structural
- Groundwater remediation for nonpoint source pollution impairments
- Failing septic system – repair, replacement or connection to sewer
- Stormwater best management practices (BMPs)
- Source water and wellhead protection measures
- Brownfield Remediation with water quality benefits
- Conservation easements
- Agricultural and waste management BMPs

Indiana's CWSRF-nonpoint source pollution program works in conjunction with its loan program and all nonpoint source pollution projects must be tied to a CWSRF loan. Loan project applicants are encouraged to include a nonpoint source pollution component through an interest rate reduction of up to 0.5%, which generally covers the cost of the nonpoint source pollution project. Additionally, those projects that include nonpoint source pollution components in their loan applications increase their project priority score, which moves the project higher on the list for funding.

The IDEM nonpoint source pollution program is seeking increased coordination with the CWSRF-nonpoint source pollution program in order to address the challenge of decreasing funds for nonpoint source projects. While WMPs have been used by CWSRF-nonpoint source pollution to document need for a particular project, a strong link between the two programs has not been established. Increased coordination of the CWSRF and IDEM-nonpoint source pollution programs has taken place over the years. The CWSRF program has included the following long-term goal in its Clean Water State Revolving Fund Intended Use Plan: "(LT11) Provide interest rate breaks to communities which adopt Nonpoint Source Projects Green components, and Climate Resiliency projects. The CWSRF Loan Program will meet quarterly with the Indiana Department of Environmental Management (IDEM) Watershed Assessment and Planning Branch to identify Projects on the CWSRF Loan Program PPL which may benefit from SRF funding." In order to achieve this goal, the programs have agreed to more frequent communication, including quarterly coordination meetings, project status reports, nonpoint source pollution staff participation in community orientation/planning meetings, and completed projects to be reported in EPAs Grants Reporting and Tracking System (GRTS).

Working with the Lake Michigan Coastal Program

Indiana has an approved Coastal Zone Management Program (authorized through the CZMA of 1972). The Indiana Department of Natural Resources (IDNR) Division of Nature Preserves administers the program on behalf of the state, which covers 604 square miles of land and 241 square miles of Lake Michigan (the Coastal Region). Indiana submitted its Lake Michigan Coastal Program (LMCP) Document/Final Environmental Impact Statement to NOAA for approval in 2002. It was approved the same year. The Coastal Zone Act Reauthorization Amendments (CZARA) of 1990 include a requirement for all states that have approved Coastal Zone Management Programs to develop a Coastal Nonpoint Pollution Control Program (CNPCP) as a part of their CZM program. This program was not intended to supersede the CZMA or Section 319 programs, but to act as a supplement to these programs. The CNPCP is federally administered by both NOAA and U.S. EPA, who provide approval of CNPCPs for CZARA and Section 319 funding, respectively.

Indiana received conditional approval of its 2005 draft CNPCP submission to NOAA and U.S. EPA in 2005. The draft program detailed how Indiana would meet the 55 management measures provided through NOAA/U.S. EPA guidance. Working with local, state, and federal partners, the LMCP submitted revised CNPCP measures based on NOAA and U.S. EPA's feedback in December 2013, September 2014, February 2016, April 2016, and June 2016. During the 2014 – 2018 reporting period, LMCP received interim approval, indicating management measure conditions were satisfied for all but one of the remaining management measures. Only the Operating Onsite Disposal System: Maintenance and Inspection management measure remained to be completed.

U.S. EPA directed the IDEM Nonpoint Source Pollution Program to allocate, on average, at least $100,000 per year of Section 319 funding to the Coastal Zone until the remaining conditions were satisfied. Projects funded for this purpose were jointly developed by LMCP and Section 319 staff. To this

end, the LMCP was awarded a Section 319 grant in May 2018 to support efforts to achieve the remaining management measure. This Section 319 grant included three critical tasks to achieve that goal: parcel-level septic system mapping/GIS across the Coastal Region, microbial source tracking (MST) of E. coli contamination at select sampling locations, and a robust neighborhood-based outreach and education program deployed in 20 neighborhoods within the Coastal Region.

The LMCP was awarded another Section 319 grant in June 2022 to further efforts to achieve the remaining management measure. This grant is currently active and is again focused on education and outreach efforts to increase awareness of septic health. The primary objectives for this grant are to: work with the Indiana Department of Health (IDOH) to develop a voluntary protocol for septic system inspections and tracking in the form of an online GIS dashboard, conduct an environmental scan and review of peer communities' septic ordinances, and conduct an education and outreach program designed to bring about behavioral changes and encourage BMP implementation concerning septic systems in Indiana's three coastal counties.

Implementation of the abovementioned Section 319 grant objectives is instrumental in meeting this final management measure. In March 2024, NOAA and EPA found that Indiana had satisfied all required conditions for meeting management measures and the state's Coastal Nonpoint Pollution Control Program received full approval.

IDEM's assistance and efforts during the prior reporting period were also instrumental in satisfying many of the 19 management measures submitted between 2014 and 2016. A January 9, 2013, letter from Indiana's Office of the Attorney General regarding Enforceable Policies for management measures (included in the 2014-18 Nonpoint Source Pollution Management Plan) was important in satisfying many of the management measures completed during the prior reporting period.

Additionally, IDEM's Section 319 Program requires WMPs funded with 319 funds in the Coastal Zone to meet Section 6217 requirements. Section 319 implementation funds awarded to the region must be used to address critical areas identified in the WMP (which are included under the definition of "critical coastal areas" for the purposes of 6217), which may include (but are not limited to) providing cost-share dollars and technical assistance to install BMPs, conducting an outreach and education program to raise awareness of nonpoint source issues in critical coastal areas, and administrative funding to hire staff and administer the grant. In the last decade, IDEM has provided funding for planning and implementation of several WMPs in this region. IDEM awarded Save the Dunes, a nonprofit organization, a grant to complete a WMP for the East Branch Little Calumet River, which was released in June 2016.

LaPorte County Soil and Water Conservation District (SWCD) was awarded a grant to implement the Trail Creek WMP through a cost-share program (2013 – 2016). In addition, IDEM awarded FFY 2013 Section 319 funds to the Northwest Indiana Regional Plan Commission's (NIRPC) to draft and implement a WMP for the Deep River-Portage Burns Harbor Waterway watershed (four-year project duration; FFY 2013- 2017). The Deep River-Portage Burns Harbor Waterway WMP was released in October 2016, with a cost-share program Implemented in 2017. Additional proposals for planning and implementation in the Coastal Region will be considered as they are received during the 319 grant solicitation period.

IDEM will track all 319 projects, including those in the Coastal Region, in GRTS and will report on load reductions in its nonpoint source annual report. Specific segments listed and delisted will appear on a biennial basis via the Integrated Report, and the 303(d) List. The DNR LMCP will provide additional documentation of progress made to NOAA and U.S. EPA, as is required.

Indiana's State Nutrient Reduction Strategy

The Indiana State Department of Agriculture (ISDA) is Indiana's representative on the Gulf of Mexico Hypoxia Task Force. This agency has been charged with preparing Indiana's State Nutrient Reduction Strategy (SNRS), www.isda.in.gov/divisions/soil-conservation/indiana-state-nutrient-reduction-strategy/ which includes drainage not only to the Mississippi River but also to Lake Erie and Lake Michigan. As the state water quality agency designated by U.S. EPA to administer CWA programs, IDEM has co- authored the SNRS and is participating on the work group to track progress and provide revisions to it every five years.

Indiana's Great Lakes Water Quality Agreement Annex 4 Domestic Action Plan

The *Indiana Great Lakes Water Quality Agreement Domestic Action Plan (DAP) for the Western Lake Erie Basin (WLEB)*, was updated in December 2023. It is the product of a dedicated Advisory Committee comprised of representatives from different stakeholder sectors and led by IDEM. Founded on the principle of adaptive management, the DAP is a dynamic document acknowledging that phosphorous loading in particular, and nutrient pollution in general, is a very complex problem caused by point and nonpoint sources across all sectors, which requires a multi-dimensional solution.

The DAP emphasizes using existing programs and optimizing partnerships, effecting the most change with the least cost, prioritizing resources to areas with the most phosphorus export and/or reduction potential, seeking to engage citizens who are not participating in conservation efforts, making use of social indicators to guide actions, and employing adaptive management.

Indiana's goal is to meet the spring-time phosphorus targets for the Maumee River as it flows across the border into Ohio. The DAP includes an Action/Milestone table that highlights the current and planned activities to address the issues outlined in it.

Goal 1 Objectives

Programmatic Objectives

1.1 Provide support for implementing the Indiana Coastal Nonpoint Pollution Control Program (CNPCP) (FFY 2029).

a. Continue to support implementation of the Coastal Nonpoint Pollution Control Plan. (FFY 2025-2029).

1.2 Continue to provide implementation support for IDEM-approved TMDLs and 9-Element WMPs in the Coastal Zone.

a. Provide implementation support for the Coastal Zone TMDLs (FFY 2025-2029, ongoing).

b. Provide implementation support for the Coastal Zone WMPs (FFY 2025-2029, ongoing).

1.3 Continue to support implementation of the LMCP CNPCP.

a. The nonpoint source pollution Northwest Region watershed specialist will continue to participate in relevant meetings regarding the CNPCP (FFY 2025-2029, ongoing).

b. Integration of CNPCP goals and objectives in new WMP efforts in the Coastal Zone (FFY 2025-2029, ongoing).

1.4 Support the Conservation Reserve Enhancement Program (CREP), Resource Conservation Partnership Program (RCPP), Great Lakes Restoration Initiative (GLRI), Lake and River Enhancement (LARE), Clean Water Indiana (CWI), and other Indiana Conservation Partnership (ICP) and statewide initiatives as they become available.

a. Forward solicitation or information as it becomes available (FFY 2025-2029, ongoing).

b. Participate in ICP planning meetings to determine priorities for funding/initiatives that align with WMP critical areas, water quality, and/or TMDL priority areas (FFY 2025-2029, every other month).

c. Promote the programs through the watershed specialist, and work with watershed groups to identify/recommend projects that would fit well under the priorities for each funding source (FFY 2025-2029, ongoing).

d. Include program information in relevant TMDLs as methods for implementation (FFY 2025-2029, ongoing).

e. Coordinate with ICP partners on meetings and workshops (FFY 2025-2029, ongoing).

1.5 Utilize the ICP as an advisory group for priority state nonpoint source pollution policies and updates by participating in bimonthly leadership meetings (FFY 2025-2029, ongoing).

1.6 Continue to provide technical assistance to local watershed groups through the watershed specialist or project manager as documented through quarterly site visit reports and the Section 319 Annual Report (FFY 2025-2029, ongoing).

1.7 Continue to participate on technical committees related to statewide nonpoint source related issues such as the IN State Technical Committee, Science Assessment Team, and the Indiana Water Resources Research Center Advisory Group (FFY 2025-2029, ongoing).

1.8 Continue to align the TMDL and WMP planning process with the TMDL vision

a. Lake Manitou TMDL (FFY 2025)

b. Indian Creek White River TMDL (FFY 2026-2027)

c. Indian Creek – Monroe TMDL (FFY 2027-2028)

d. Honey Creek TMDL (FFY 2028-2029)

e. Continue using prioritization process to determine TMDL project watersheds (FFY 2029-2029, ongoing).

f. Review and revise TMDL priority framework as needed (FFY 2025-2029).

1.9 Continue to partner with the Indiana-United States Department of Agriculture (USDA)- Natural Resources Conservation Service (NRCS) on the National Water Quality Initiative (NWQI) for as long as the Initiative remains a national and state priority.

a. Continue support of the School Branch Project (FFY 2025-2029, ongoing).

b. Coordinate with NRCS as needed to share in the decision-making on next steps for the Initiative (FFY 2025-2029, annually).

1.10 Support implementation of the State Nutrient Reduction Strategy and the Indiana Great Lakes Water Quality Agreement Annex 4 Domestic Action Plan for the Western Lake Erie Basin (FFY 2025-2029, ongoing).

a. Review priorities of both documents and import objectives of nonpoint source pollution-related importance into the *state nonpoint source pollution program* (FFY 2025-2029, ongoing).

Financial Objectives

1.11 Continue to support projects which implement management measures in the CNPCP.

1.12 Meet with EPA (at least quarterly) and IDEM finance and operations groups to discuss ongoing grant status.

1.13 Coordinate with CWSRF to link loan applicants and local watershed groups.

a. IDEM nonpoint source pollution will cross-reference the monthly SRF project status report with active 319 projects and/or other known watershed efforts to identify watershed opportunities and meet quarterly with CWSRF Loan Program to communicate those that may benefit from SRF funding (FFY 2025-2029, ongoing).

b. Annually, the nonpoint source pollution program will notify the CWSRF and Drinking Water State Revolving Fund (DWSRF) program of the 319 projects that are approved for funding, upon notice from U.S. EPA (FFY 2025-2029, annually).

c. Where there are potential projects, a fact sheet describing the potential nonpoint source pollution project(s) opportunity is included in the SRF packet to the community, and the nonpoint source pollution staff promotes the potential project(s), provides contacts for technical assistance, and provides information on other funding sources active in the watershed, such as NRCS, Clean Water Indiana, 319, 205(j) etc. (FFY 2025-2029, ongoing).

d. The CWSRF program communicates to the nonpoint source pollution program the projects with nonpoint source pollution BMPs funded through CWSRF that were identified in the approved WMPs. Nonpoint source pollution staff ensure that this information is input to GRTS. This information is included in the Annual 319 Report to U.S. EPA (FFY 2025-2029, ongoing).

Technical Objectives

1.14 Work with partners to model, assess, and prioritize critical watersheds in the state (FFY 2025-2029, ongoing).

1.15 Utilize the IDEM watershed specialist or technical staff to assist partners with nonpoint source pollution planning and implementation activities (FFY 2025-2029, ongoing).

Goal 2: Characterize Indiana waters for nonpoint source pollution impairments and improvements.

IDEM's strategy for monitoring water quality in the state, including the status of nonpoint source pollution, is described in the *Indiana Water Quality Monitoring Strategy 2022-2026* (WQMS) (https://www.idem.in.gov/cleanwater/surface-water-monitoring/). Broadly, IDEM will use the following types of monitoring to evaluate and characterize nonpoint source pollution in the state:

- Probabilistic monitoring – characterization of water quality throughout the entire state using a stratified random sampling design on a rotating basin schedule, which enables statistically-valid, unbiased, and comprehensive assessments of the degree to which each basin is supporting its designated uses.

- Watershed characterization – (formerly called "baseline watershed" and "TMDL" projects) uses a modified geometric design to assess subwatersheds and to better determine the sources and extent of impairment.

- Performance monitoring – follow-up monitoring after restoration activities have taken place to evaluate the water quality (e.g., Measures WQ-10) as compared to baseline water quality that was determined by IDEM through probabilistic, watershed characterization, or other IDEM-conducted monitoring.

- Special projects – projects necessary to develop water quality criteria to include in Indiana's water quality standards; to characterize nutrient loads of Indiana waters that contribute to nonpoint source pollution to the Gulf of Mexico and the Great Lakes; to develop TMDLs; to participate in national initiatives, such as the U.S. EPA's National Aquatic Resource Surveys (NARS) and the National Water Quality Initiative (NWQI); and other priority projects as opportunities become available.

In addition, nonpoint source pollution program grantees often monitor water quality in their watersheds of interest, utilizing a variety of methods. In 2012, IDEM issued *Monitoring Water in Indiana: Choices for Nonpoint Source and Other Watershed Projects* (a.k.a., "the Monitoring Handbook"; Frankenberger and Esman 2012) outlining the core indicators that all nonpoint source pollution grant projects are required to include if they are going to conduct water quality monitoring utilizing Section 319 or 205j monies as well as a number of supplemental indicators that they may monitor, depending upon their project needs. Different methods for monitoring these indicators are suggested in the handbook, but specific methods are not required. Providing this monitoring guidance has helped IDEM to communicate to its grantees the types of nonpoint source pollution water quality issues most watershed groups are likely to encounter and should characterize in their watershed management plans. Watershed groups wishing to monitor for less common nonpoint source pollution parameters that are not contained within the Monitoring Handbook (e.g., chlorides, sulfides and pesticides) may coordinate with IDEM nonpoint source pollution staff to do so.

Many groups use Hoosier Riverwatch (Indiana's citizen monitoring program) methods to conduct their water quality monitoring and to raise stakeholder awareness of water quality in their watersheds. IDEM's nonpoint source pollution program has taken responsibility for continuing to host and train groups in the web-based Hoosier Riverwatch database, which serves as a repository for water quality

monitoring data collected by volunteers trained through the program. IDEM's nonpoint source pollution program also funds a similar program for volunteer monitoring of Indiana lakes. Indiana's Clean Lakes Program is administered through Indiana University-Bloomington (IU) and funded through a CWA Section 319 grant.

Water quality monitoring alone will not improve water quality conditions in Indiana. The information generated through monitoring efforts must help inform effective decision-making. Sometimes that requires modeling to interpolate and extrapolate for conditions that are not reflected in the monitoring effort or to integrate collected data into a decision-making framework. Specific modeling efforts that will be undertaken by IDEM in the next five years include use of the U.S. EPA's Recovery Potential Screening Tool to gage which waters should receive limited resources available and the load/flow duration curves for TMDL development. IDEM has also been increasing its capacity to assess nonpoint source pollution in the state through work on the External Data Framework, a program that allows IDEM to use data collected by partners to its fullest potential.

IDEM's various surface water monitoring programs adhere to strict quality assurance and quality control processes to ensure that the data collected to meet water quality management needs are scientifically sound and valid. In turn, the data are evaluated using different analytical tools and models designed to derive the water conditions. Over the next five years, IDEM will continue to employ load duration curves for TMDL development, LOADEST for estimating constituent loads in streams and rivers, using the Recovery Potential Screening Tool to compare watersheds in order to help set priorities for restoration efforts, as well as for additional or enhanced monitoring. To optimize monitoring resources statewide, IDEM will continue to advance the External Data Framework, a program that defines acceptance criteria (quality assurance documentation) for surface water data collected by entities other than IDEM for use by IDEM and/or other entities.

IDEM evaluates and makes adjustments in its monitoring program annually.

Goal 2 Objectives

Programmatic Objectives

2.1 Require the use of the *Environmental Monitoring for Watershed Groups* handbook for 319 grantees (FFY 2025-2029, ongoing).

2.2 Import 319 grantee data meeting appropriate data quality criteria into water quality database or the Hoosier Riverwatch Database to be uploaded into WQX on a routine basis (FFY 2025-2029, ongoing).

2.3 Invite the participation of local project leaders when conducting 305(b) CWA assessments on watershed characterization monitoring data completed for TMDL and WMP development (FFY 2025-2029, ongoing).

2.4 Evaluate the logistics and results of the monitoring programs and make adaptive management decisions on an annual basis (FFY 2025-2029, annually).

2.5 Collaborate with partners to identify feasible projects for characterizing extent of septic related issues across the state.

Financial Objectives

2.6 Continue to fund the Clean Lakes Program (volunteer and professional) data collection for use in CWA 305(b) and 314 assessments and 303(d) listings (FFY 2025-2029, ongoing).

2.7 Direct IDEM resources to perform watershed characterization monitoring of at least one watershed annually to support TMDL and watershed planning efforts.

a. Indian Creek – White River TMDL (FFY 2025).

b. Indian Creek Monroe TMDL (FFY 2025-2026).

c. Honey Creek TMDL (FFY 2026-2027).

d. Project TBD from priority framework (FFY 2027-2028).

e. Project TBD from priority framework (FFY 2028-2029).

2.8 Utilize IDEM resources to monitor the School Branch Watershed for the National Water Quality Initiative (NWQI) as described in the sampling design developed by IDEM and NRCS (FFY 2025-2029, ongoing).

2.9 Support funding for projects which help characterize the extent of septic related sources across the state (FFY 2025-2029, ongoing)

Technical Objectives

2.10 Continue support of the Hoosier Riverwatch voluntary monitoring program as part of IDEM's monitoring and assessment schemas.

a. Provide support for 20 Hoosier Riverwatch workshops (volunteer instructor, advanced training) and maintain current loaner/teaching trunks (FFY 2025-2029, annually).

b. Provide support for maintenance and upgrades of the Hoosier Riverwatch water quality monitoring database and associated websites (FFY 2025-2029, ongoing).

2.11 Accept external data through the External Data Framework.

a. Use the External Data Framework to accept data for various uses including nonpoint source pollution assessment, planning and de-listing (FFY 2025-2029, ongoing).

2.12 Utilize IDEM resources to delist waters, or to otherwise demonstrate water quality improvements, where nonpoint source pollution has been abated.

a. Evaluate water quality data submitted through the External Data Framework process, as well as grantee monitoring, to identify watersheds that should be surveyed for possible nonpoint source pollution water quality improvements (FFY 2025-2029, annually).

b. Use additional resources (e.g., staff, funds, and technical support) to monitor water quality in watersheds where nonpoint source pollution restoration activities have occurred. The monitoring data will be compared to baseline information, if available, to gauge the efficacy of the work (FFY 2025-2029, annually).

2.13 Continue Groundwater Monitoring Network (GWMN) (FFY 2025-2029).

a. Analyze the findings of groundwater data taken by the state to characterize the causes, sources, and magnitude of nonpoint source pollution in groundwater as new data is available. (FFY 2025-2029).

b. Support ongoing studies and geochemical modeling to determine variability in arsenic concentrations in groundwater (FFY 2025-2029).

c. Collaborate with groundwater program staff through internal cross collaboration meetings on a quarterly basis (FFY 2025-2029).

Goal 3: Cultivate a citizenry that embraces the value of water quality.

In the next five years, IDEM plans to focus its outreach and education on issues by working with its partners to create sound messaging to bring attention to these challenging sources.

In the interim, IDEM will continue to utilize strong components of its current program. IDEM's nonpoint source pollution website, in particular, will continue to be updated and promoted to target audiences such as nonpoint source pollution grantees and partners. IDEM will also continue to work with partners on training initiatives, such as the Indiana Watershed Leadership Academy (IWLA) sponsored by Purdue University and the ICP's Training and Certification Program for ICP staff. In addition, IDEM will continue to utilize the nonpoint source pollution staff to engage interested groups and communities, through direct contacts, conference attendance, involvement in statewide and regional committees, and webinar and other training opportunities, as well as updating current educational pieces.

Goal 3 Objectives

Programmatic Objectives

3.1 Update and revise nonpoint source pollution education and outreach messaging and materials; determine distribution and use.

a. Determine existing educational and outreach materials produced internally and through watershed planning partnerships and develop strategy for collaborative sharing (FFY 2025-2027).

b. Meet with IDEM Media and Communication Services (MACS) to develop outreach material designs and techniques (FFY 2025-2029).

c. Implement identified strategies as determined in 3.1a (FFY 2027-2029).

d. Develop and maintain interactive tools such as story maps to provide online communication on programs and partnerships (FFY 2027-2029, ongoing).

3.2 Continue meetings with partners to discuss strategic messaging for the state on septic system care.

a. Conduct analysis on existing programs and partnerships in other states and determine where similar strategies can be implemented in Indiana (FFY 2025-2026).

b. Implement identified strategies as determined in 3.2a (FFY 2026-2029).

c. Continue work with partners to identify the target audience and deploy education methods (FFY 2025-2029, ongoing).

d. Provide support in promoting successes on septic related projects (FFY 2025-2029, ongoing).

e. Support technical events (such as Indiana Environmental Health Association (IEHA) annual conference) to exchange information between government partners, watershed groups, and citizens (FFY 2025-2029, ongoing).

f. Assist in providing outreach on septic systems in the Lake Michigan Coastal Zone (FFY 2025-2029, ongoing).

g. Translate lessons learned from Northwest Indiana, statewide (FFY 2020-2029, ongoing).

h. Continue to support Pathway to Water Quality's work, financially and otherwise with the Indiana Department of Health (FFY 2025-2029, ongoing).

i. Promote the use of the Revolving Loan Fund for Septic upgrades and repairs for communities (FFY 2025-2029, ongoing).

3.3 Continue collaboration with partners to discuss strategic messaging for the state on hydromodification.

a. Meet with partners to discuss issues regarding hydromodification (IDEM Wetlands, DNR, US Army Corps, Silver Jackets, Indiana Association for Floodplain and Stormwater Management(AFSM), (FFY 2025-2029).

b. Assist IDEM Wetlands Program with meeting goals and objectives of the State Wetland Plan (FFY 2025-2029, ongoing).

c. Assist Indiana Department of Natural Resources meet Goals and Objectives with their Stream Mitigation Program (FFY 2025-2029, ongoing).

d. Support low head dam removal to improve nonpoint source pollution impacts on water resources (FFY 2025-2029, ongoing).

3.4 Continue collaboration with partners to discuss IDEM's goal of strategic messaging for the state on sediment and nutrient pollution.

a. Meet with partners to discuss issues regarding sediment and nutrient pollution (ICP partners, USGS), (FFY 2025-2029, ongoing).

b. Provide support in promoting successes on sediment and nutrient related projects (FFY 2025-2029, ongoing).

c. Support implementation of the *State Nutrient Reduction Strategy* education/outreach goals (FFY 2025-2029, ongoing).

d. Support implementation of the *Indiana Annex 4 DAP* education/outreach goals (FFY 2025-2029, ongoing).

3.5 Continue to provide citizen monitoring training through Hoosier Riverwatch and the Clean Lakes Program (FFY 2025-2029, ongoing).

a. Leverage partnerships and program materials to conduct educational and outreach events with a goal of leading or assisting with at least 3 outreach events per year (FFY 2025-2029, ongoing).

b. Conduct advanced training workshops on relevant water quality topics and leverage for outreach and education on sources for nonpoint pollution (i.e., E. coli and septic issues) (FFY 2025-2029, ongoing).

3.6 Highlight successes of the nonpoint source pollution program, including successful grantees and other partners.

a. Produce five "Success Stories" (EPA WQ-10(a) Strategic Measure) by 2029 and publicize widely within Indiana (FFY 2025-2029).

b. Publicize any awards given to watershed groups related to their water quality efforts in Indiana (FFY 2025-2029, ongoing).

3.7 Provide cost-effective outreach to audiences in Indiana.

a. Continue to participate in the Pathway to Water Quality at the Indiana State Fairgrounds (FFY 2025-2029, ongoing).

b. Continue to support the Indiana Watershed Leadership Academy with technical support (FFY 2025-2029, ongoing).

c. Participate in regional meetings as needed to inform watershed interest groups of nonpoint source pollution program information (FFY 2025-2029, ongoing).

d. Provide regular communication to regional groups of nonpoint source pollution watershed efforts (FFY 2025-2029, ongoing).

Financial Objectives

3.8 Long-term goal: use 319 funds to leverage for partner-based statewide initiatives including widely disseminated materials such as statewide television/radio commercials/billboards or actionable projects based on above identified workgroups.

a. Support partners for the state initiatives on septic system care (FFY 2025-2029, ongoing).

b. Support partners for the state initiatives on hydromodification (FFY 2025-2029, ongoing).

c. Support partners for the state initiatives on sediment and nutrient pollution (FFY 2025-2029, ongoing).

Technical Objectives

3.9 Continue to build capacity for water quality improvement in the state.

a. Continue to educate leaders through Purdue University's Indiana Watershed Leadership Academy (FFY 2025-2029, ongoing).

b. Continue to support the ICP's Training and Certification Program on watershed related issues by sitting on the Technical Research Board and the advisory team (FFY 2025-2029, ongoing).

Goal 4: Improve Indiana's water quality by reducing nonpoint source pollution and restoring aquatic habitats.

The heart of Indiana's nonpoint source pollution program is its effort to restore waterbodies polluted by nonpoint source pollution. The state's land use and hydrology have been highly modified by human activity. It is not the intention of the nonpoint source pollution program to attempt to revert to pre-colonial land use and hydrological regime, but rather to obtain a balance of uses so that water quality conditions can meet the state's water quality goals of "swimmable" and "fishable."

Many of IDEM's restoration activities take place through grant agreements with state and local partners. Indeed, without these partnerships, IDEM would be hard-pressed to meet its swimmable/fishable goals. Partners leverage Section 205j and Section 319 grant funding with other federal, state, local, and private funding to write and implement watershed management plans that will ultimately improve water quality in Indiana's watersheds.

When applicable and appropriate, IDEM encourages grantees to consider best management practices that will provide positive impacts to meet multiple objectives. For example, in the waters of the Coastal Zone, restoration activities undertaken with Section 319 funds will also be in accordance with the CZARA Section 6217 (g) measures. IDEM is currently modeling this "bigger bang for the buck concept" through its TMDL/nonpoint source pollution program. TMDLs are being written on the TMDL-WMP template that allow watershed groups to easily incorporate TMDL data and streamline the watershed planning process.

Goal 4 Objectives

Programmatic Objectives

4.1 Capitalize on the monitoring and load-calculations done during TMDL development to inform forthcoming watershed planning projects.

a. Utilize the TMDL-WMP template for TMDLs sampled for and written so that they provide the best detail for the development of 9-Element WMPs that are implementable using 319 funds (FFY 2025-2029, ongoing).

b. Link TMDLs with watershed characterization monitoring projects for Section 319 watershed management planning applications (FFY 2025-2029, ongoing).

c. Develop Lake Manitou TMDL (FFY 2025)

d. Develop Indian Creek – White River TMDL (FFY 2025-2026)

e. Develop Indian Creek Monroe TMDL (FFY 2025-2027)

f. Develop Honey Creek TMDL (FFY 2026-2028)

g. Project TBD from priority framework (FFY 2027-2029)

Financial Objectives

4.2 Use Section 319 funding to support implementation of WMPs that meet the U.S. EPA'S 9 Key Elements of a Watershed Plan (including staff support and outreach as well as the placement of BMPs in critical areas as identified in the WMPs), (FFY 2025-2029).

4.3 Repair previously installed BMPs with the caveats outlined in the program policy (FFY 2025-2029).

4.4 Continue to leverage LARE and CWI funds to address erosion, sedimentation and nutrient input concerns as long as the General Assembly continues to approve appropriations (FFY 2025-2029).

4.5 Coordinate with IDNR's Stream Mitigation Program (FFY 2025-2029, ongoing).

Technical Objectives

4.6 Show restoration in at least 5 assessment units (at least 5 WQ-10(a)) in the five-year cycle 2025-2029, annually.

4.7 Continue to geolocate all BMPs installed through the Section 319 grant program in order to enhance the BMP GIS layer located in the nonpoint source pollution program (FFY 2025-2029, ongoing).

4.8 Solicit for proposals to use Section 319 funding to support implementation of WMPs that meet the U.S. EPA'S 9 Key Elements of a Watershed Plan (includes staff support as well as BMPs). (FFY 2025-2029, annually):

a. Provide financial and technical support to install agricultural BMPs in critical areas identified in the WMP plans (FFY 2025-2029, annually).

b. Provide financial and technical support to install urban and/or residential BMPs in critical areas identified in the plan (FFY 2025-2029, annually).

c. Provide financial and technical support to install forestry BMPs in critical areas identified in the plan (FFY 2025-2029 annually).

d. Provide financial and technical support to install abandoned mine BMPs in critical areas identified in the plan (FFY 2025-2029 annually).

e. Provide financial and technical support to install hydrological and aquatic habitat BMPs in critical areas identified in the plan, including dam removal (FFY 2025-2029, annually).

Goal 5. Protect priority water resources so that they may continue to meet their intended uses.

Restoration of impaired waters continues to be the foremost priority of Indiana's nonpoint source program; yet there is room to consider projects for which protection is an objective. For the purposes of this goal, the nonpoint source pollution program considers "priority water resources" to include water quality assessment Category 1 waters, outstanding state resource waters (OSRWs – which include national resource waters), drinking water and vulnerable groundwater source waters, cold/cool water/salmonid waters, lakes containing cisco, and waterbodies harboring endangered, threatened, and/or rare species.

Category 1 waters are defined by the Integrated Report as those waters that fully support all designated uses and none of its uses are threatened. The definitions of outstanding state resource waters, outstanding national resource waters, and high-quality waters of the state are codified at 327 IAC 2-1-11, IC 13-11-2-149.5, IC 13-11-2-149.6, and 327 IAC 2-1.3-2, respectively. Priority areas are determined based on the presence of priority waters within watersheds at the HUC-10 scale which is commonly used in watershed planning projects. Currently, there are 160 watersheds containing Category 1 waters for protection and 18 watersheds containing OSRWs for protection. (Appendix R). Location information on source water and vulnerable groundwater protection areas is not provided. However, these areas will be incorporated internally.

Cisco areas came from the 2019-2024 Strategic Plan as referenced Indiana Cisco Strategic Plan 2019-2024. Efforts to sustain Cisco populations in Indiana will require an emphasis on watershed and in-lake best management practices (BMPs) that reduce nutrient loading (Table 14). Based on Table 3 in the strategic plan, we determined the HUC10 watersheds which contained lakes where cisco were reported as "common" or "rare" in 2016 which would be considered priority areas for our purposes. There are five watersheds containing cisco for priority protection.

Figure 24. Waterfalls in Mill Creek

Table 14. Cisco Lakes Priorities

HUC 10	HUC 10 Name	County	Lake	Acres	2016 Status
0405000108	Fawn River	Steuben	Failing	23	Common
0405000108	Fawn River	Steuben	Gage	327	Common
0405000108	Fawn River	Steuben	Green	24	Rare
0405000111	Pigeon River	LaGrange	North Twin	135	Common
0405000111	Pigeon River	LaGrange	South Twin	116	Common
0405000113	Mill Creek-St Joseph River	Elkhart	Indiana	122	Common
0405000115	North Branch Elkhart River	LaGrange	Eve	31	Common
0512010601	Grassy Creek-Tippecanoe River	Noble	Crooked	206	Common

Additional watersheds prioritized for protection include salmonid waters and waters containing rare, threatened, and endangered species. Currently, there are seven watersheds identified for the protection of salmonids. Priority protection for endangered, threatened, or rare species are limited to fish, mussels, and hellbender presence over the previous 30 years according to the Indiana Natural Heritage Data Center. Priority watersheds will be updated and provided annually during project solicitations.

Indiana contains many more impaired waters than high-quality waters. Appendix R includes the lists of watersheds targeted for protection over the next five years. Priority watersheds may be further limited or updated by the priorities for any particular nonpoint source pollution funding cycle. Additional considerations for priorities not listed or described here may be considered on a case-by-case basis during review of project applications.

IDEM will also continue to use appropriate information and tools to ensure consideration of priorities towards environmental justice (EJ) concerns and disadvantaged communities. Tools such as U.S. EPA's EJ Screen will be used along with continued coordination with the agency's EJ Coordinator and Environmental Stakeholder Inclusion (ESI) program to ensure these considerations are properly aligned with overall program priorities.

Goal 5 Objectives

Programmatic Objectives

5.1 Continue to encourage watershed planning activities in watersheds with Category 1 waters, (FFY 2025-2029, ongoing).

5.2 Prioritize planning watersheds with source water intakes (FFY 2025-2029, annually).

5.3 Participate as requested in Phase II wellhead protection planning (FFY 2025-2029, ongoing).

5.4 Prioritize planning for watersheds with Environmental Justice and/or disadvantaged community concerns (FFY 2025-2029, ongoing).

Financial Objectives

5.5 Fund 319-eligible protection strategies identified in critical areas of IDEM-approved 9- Elements watershed management plans proposed by Section 319 grant applicants whose implementation applications rank high enough for funding (FFY 2025-2029, annually).

5.6 Support implementation of Statewide Wildlife Action Plan's Goals and Objectives that align with nonpoint source pollution protection (FFY 2025-2029).

5.7 Support implementation of the State Wetland Plan's Goals and Objectives that align with nonpoint source pollution protection (FFY 2025-2029).

Technical Objectives

5.8 Work with IDEM's Groundwater section and watershed groups, as well as CWSRF and DWSRF, to identify wells in need of proper decommission (FFY 2025-2029, ongoing)

Goal 6. Provide networking, guidance, and support to the people doing the work.

Progress in achieving the goals of Indiana's Nonpoint Source Program is deeply rooted in the dedication, collaboration, and hard work of stakeholders and watershed professionals across the state. To maximize the impact of each project, it is essential that our partners receive the appropriate tools, support, and networking opportunities. The results of a recent stakeholder survey highlight the need for better information sharing regarding successful projects or components, ensuring that efforts are not duplicated unnecessarily. Additionally, the survey revealed that managing local projects can often feel isolating and overwhelming, partly due to a lack of mentorship and collaboration with others engaged in similar work.

Over the next five years, IDEM will focus on identifying the strengths, weaknesses, and opportunities of those directly overseeing 319 program-funded projects. This information will guide the enhancement or development of critical resources, including guidance materials, networking opportunities, and tools designed to support these professionals in their roles. By improving these resources, IDEM aims to increase project success rates, reduce local turnover by fostering a supportive network, and decrease reliance on IDEM's technical staff, empowering local leaders to take on more responsibilities independently.

Goal 6 Objectives

Programmatic Objectives

6.1 Implement the 2024 WMP Checklist (FFY 2025-2026)

6.2 Develop program specific guidance on farm equipment modification (FFY 2025-2029).

6.3 Collaborate with grantees and program partners to identify guidance support, needs, and/or shortfalls for developing and administering nonpoint source projects. (FFY 2025-2029).

a. Identify needs, support needed, and/or shortfalls in existing program (FFY 2025-2027).

b. Update and/or develop new program guidance identified (FFY 2026-2029).

6.4 Investigate and develop mechanisms for improved communication and sharing of information and materials for watershed planning and implementation projects (i.e., list servs, forum, etc.) (FFY 2025-2027).

6.5 Support Hoosier Riverwatch instructors and volunteers by providing mechanisms in networking (i.e., annual instructor retreat), producing guidance materials (i.e., manuals, educational materials), and giving training support (i.e., training videos) (FFY 2025-2029, ongoing)

Financial Objectives

6.6 Support tools or events focused on cross collaboration, support, and information sharing for program partners and grantees (FFY 2025-2029, ongoing).

Technical Objectives

6.7 Provide updated guidance on pollutant load calculations for use with watershed planning efforts (FFY 2025-2026).

6.8 Complete testing and implement the QAPP Tool to support nonpoint source monitoring projects (FFY 2025-2026).

Funding Mechanisms

Funding mechanisms identified in previous plans remain relevant with a few exceptions. Clean Water Act 106, 205(j), 212, and 319(h) remain viable sources of funding for nonpoint source-related water quality activities. Additional federal funding through NOAA Coastal Zone grants and the Great Lakes Restoration Initiative and state funding through the Lake and River Enhancement (LARE) Program and Clean Water Indiana (CWI) continues to be appropriated.

A new Farm Bill was passed in 2018 and extended through September 2024. Updates to the Farm Bill beyond this timeframe may have impacts on funding for conservation programs relevant to goals in the Nonpoint Source Program and may require adaptive management. Funding programs authorized by the Farm Bill generally provide technical assistance and/or on-the- ground practice installation. The programs currently retained include the following.

1. Swampbuster protections for wetland conservation – Swampbuster prohibits producers receiving subsidies for crop production, crop insurance, conservation assistance, or farm loans from draining wetlands. Wetlands have important nonpoint source attenuation functions. A wetland saved is a wetland that doesn't need to be restored.

2. Conservation Reserve (and Enhancement) Program – The Conservation Reserve Program and Conservation Reserve Enhancement Program (CREP) are land retirement programs that pay landowners not to farm environmentally-sensitive lands. In Indiana, CREP is currently limited to the following HUCs:

    a. Upper Wabash (05120101)

    b. Middle Wabash-Deer (05120105)

    c. Tippecanoe (05120106)

    d. Middle Wabash-Little Vermillion (05120108)

    e. Middle Wabash-Busseron (05120111)

    f. Lower Wabash (05120113)

    g. Upper White (05120201)

    h. Lower White (05120202)

    i. Upper East Fork White (05120206)

    j. Lower East Fork White (05120208)

    k. Highland-Pigeon (05140202)

3. Farmable Wetlands Program – this program pays landowners to restore previously farmed wetlands and their vegetative buffers.

4. Environmental Quality Incentives Program (EQIP) – EQIP is a conservation cost-share program of the Farm Bill that works directly with landowners and operators. It provides financial and technical assistance to create plans and install practices that address resource concerns on agricultural land. There are several sub-programs that utilize EQIP authority:

5. Conservation Innovation Grants (CIG) – CIG is a competitive grant program designed to develop innovation in agriculture.

6. National Water Quality Initiative (NWQI) – NWQI is a partnership between state water quality agencies and the USDA Natural Resources Conservation Service. The goal of the initiative is to make measurable water quality improvements through the implementation of conservation practices in targeted 12-digit watersheds. Indiana has had various NWQI watersheds through the years. IDEM has continued to support the School Branch NWQI monitoring project (HUC 051202011108).

7. Conservation Stewardship Program (CSP) – CSP rewards farmers for undertaking conservation practices and committing to doing more.

8. Regional Conservation Partnership Program (RCPP) – This program allows partner funds and in- kind support to be used alongside dedicated USDA funds to implement conservation projects.

9. Agricultural Conservation Easement Program (ACEP) – ACEP combines the former Wetland Reserve (Enhancement) Program with the Grassland Reserve Program and the Farm and Ranch Lands Protection program.

10. Emergency Watershed Protection Program (EWP) – this program can be used after a natural disaster that threatens water quality.

11. Emergency Conservation Program – a program through the Farm Service Agency to alleviate damage from natural disasters.

12. Mississippi River Basin Healthy Watersheds Initiative (MRBI) – this initiative uses EQIP and ACEP dollars to target nutrient pollution exported from targeted watersheds that drain to the Mississippi River and contribute to hypoxia in the Gulf of Mexico.

13. Grassroots Source Water Protection Program – sometimes referred to as the Source Water Protection Program, this initiative is a joint project between USDA and the National Rural Water Association. Its goal is to prevent the pollution of surface and groundwater that is used as a drinking source.

One new program, the Grassland Conservation Initiative, a “subprogram” of CSP, provides payments for producers whose land has been in grass, instead of commodity crops, for the past 10 years.

Funding sources included in the previous Indiana management plan that have been dropped from the Farm Bill include the following.

1. Agricultural Water Enhancement Program (AWEP) – AWEP provided financial and technical assistance for producers to implement agricultural water conservation activities on agricultural land to conserve groundwater and improve water quality. Two projects, in Indiana's St. Joseph River (Lake Michigan) watershed (HUC 04050001) and LaPorte County, Indiana, were approved under AWEP.

2. Wildlife Habitat Incentives Program (WHIP) – WHIP was dropped from the 2014 Farm Bill that was passed after Indiana's 2014 state Nonpoint Source management plan was approved by U.S. EPA. Historically, some WHIP-funded practices have contributed to Nonpoint Source Success Stories (e.g. Pendleton Branch (9%), Buck Creek-Busseron (1.1%), Flowers Creek (2%), Jenkins Ditch (percentage could not be calculated); however, these were a small proportion of the total funding for these projects.

Private grants are increasingly being utilized by Indiana's watershed efforts, including funding from Iowa Soybean Association, Environmental Defense Fund, Indiana Corn Marketing Council, Farm Bureau Inc, Ball Brothers Foundation, The Nature Conservancy, Green Leaf, Indiana Dairy Producers, lake associations, Hoosier Energy, and Baxter Pharmaceutical Solutions.

Currently, Indiana uses a wide range of funding mechanisms to prevent and reduce nonpoint source pollutants as discussed in the previous section. To the extent that these resources remain available for nonpoint source pollution work, Indiana will continue to utilize them. The program will continue to monitor updates to the next Farm Bill and adjust accordingly where necessary.

Clean Water Act grants

Indiana utilizes 319, 205(j), 212 (State Revolving Funds), and 106 (regular and supplemental) to perform nonpoint source pollution activities. The majority of 319(h) funds are passed through to fund local projects, while the remainder funds program staff at the state level. In the recent past, IDEM has utilized 205(j) funds received to conduct monitoring on the Iroquois River, the Ohio River, and the Wabash River to characterize sediment and nutrient pollution and incorporate cyanotoxin analysis for informing Harmful Algal Blooms (HABs) through partnerships with USGS and ORSANCO. They have also been used to fund monitoring with special equipment and techniques for School Branch which is an NWQI watershed and write watershed management plans (WMPs) at the local level. The 106 funds granted to IDEM largely underwrite the monitoring programs described elsewhere in this document, as well as Assessment and TMDL program staff.

Section 319 requires states to match the federal 319 funding provided at a federal to state ratio of 60:40. Indiana currently uses repaid loan dollars through the Clean Water State Revolving Fund (CWSRF) program (which are considered state funds), or local funds used for these projects, to match its administrative and technical support (programmatic) funding. It is anticipated that this arrangement will continue. Local project match (40% of the total project cost) is provided by project sponsors. At no time is federal money used to match federal grants.

State-led Programs: T by 2000, Lake and River Enhancement, Clean Water Indiana, and the Healthy Rivers Initiative

Historically, Indiana has used appropriations generated from the state cigarette tax as dedicated funding to support local Soil and Water Conservation Districts (SWCDs) and water quality improvement projects. State dedicated funding was recommended by the Governor's Soil Resources Study Commission in 1985. The Commission was charged with assessing the state of soil erosion in Indiana and developing recommendations to address concerns that arose from the study. The state legislature established "T by 2000" funds to create the Division of Soil Conservation in the Indiana Department of Natural Resources (IDNR).

The Lake and River Enhancement (LARE) program began in 1987 when the funding for T by 2000 was first appropriated, with the goal to protect lakes from excessive sedimentation from upstream sources. Rivers were added to the eligible waters to receive funding in 1991. Initially, LARE funds constituted 10% of the T by 2000 program, about $300,000 at that time. The source of funding was changed to a lake and river enhancement fee paid through boat owners' annual registration through the Bureau of Motor Vehicles.

Erosion and sedimentation problems have persisted beyond the year 2000. The T by 2000 program was renamed Clean Water Indiana (CWI) and continues today. In 2005, the IDNR Division of Soil Conservation, and related CWI funding, was transitioned to the newly created State Department of Agriculture (ISDA). During this transition, the LARE program remained in the IDNR, under the Division of Fish and Wildlife and became 100% funded through the lake and river enhancement fee annually paid by boat owners. Though funding amounts fluctuate, approximately $1.8 million is annually available for LARE projects. In 2011, the General Assembly added logjam removal to the list of available projects to be funded through LARE.

The CWI program is codified at IC 14-32-8 and is administered by the ISDA as directed by the State Soil Conservation Board. The purpose of the fund is to "provide financial assistance to soil and water conservation districts, land occupiers, and conservation groups to implement conservation practices to reduce nonpoint sources of water pollution through education, technical assistance, training, and cost sharing programs" (P.L. 160-1999, amended by P.L.175- 2006, SEC.18). CWI is currently funded through 1/6th of the cigarette tax fund, which is dwindling due to state and federal no-smoking educational campaigns. In the 118th First Session of General Assembly of the state of Indiana, conservation organizations such as the Indiana Association of Soil and Water Conservation Districts (IASWCD) encouraged lawmakers to appropriate more money to and to consider a different dedicated funding source for the CWI fund.

The Healthy Rivers INitiative is a relatively young state program. Begun in 2010, it is a land conservation program to protect floodplains in the Wabash River, Sugar Creek, and the Muscatatuck River. Though not a "traditional" funding source, this initiative is working with willing landowners to protect over 43,000 acres of vulnerable floodplain while creating floodwater storage and increasing public awareness of recreational and water quality issues.

Coastal Zone Management Act

Indiana utilizes funding received through the National Oceanic and Atmospheric Administration (NOAA) Office of Ocean and Coastal Resource Management program to fund:

- Protection and restoration of significant natural and cultural resources.
- Programs to prevent the loss of life and property in coastal hazard areas.
- Improved public access for recreational purposes.
- Revitalized urban waterfronts and ports.
- Improved coordination among government agencies in policy and decision-making processes.
- Pollution prevention initiatives, including nonpoint source pollution into coastal waters.

IDEM will track all 319 projects, including those in the Coastal Region, in GRTS and will report on load reductions in its nonpoint source annual report. Specific segments listed and delisted will appear on a biennial basis via the Integrated Report. The DNR LMCP will provide additional documentation of progress made to NOAA and U.S. EPA, as is required.

USDA Programs

The United States Department of Agriculture (USDA) provides grant and cost-share funding for conservation measures through the Natural Resources Conservation Service (NRCS) and the Farm Service Agency (FSA). These programs are subject to change with subsequent Farm Bills, but as of the writing of this document, the following USDA programs are in place:

Conservation Reserve (Enhancement) Program

FSA administers the Conservation Reserve Program (CRP) and the Conservation Reserve Enhancement Program (CREP). These are voluntary land retirement programs that allow producers to take environmentally sensitive lands (e.g. highly erodible lands, riparian lands) out of production and plant them into some type of conservation cover for an environmental benefit. CRP practices help to maintain a higher percent native cover (as compared to cropland), which is an important contributor to watershed integrity. The FSA pays the producer an annual rental payment to off-set the cost of maintaining the land. CRP contracts are available for 10–15-year terms. Popular CRP practices in Indiana include filter strips (CP21), grassed waterways (CP8A), and native grass plantings (CP2).

The Conservation Reserve Enhancement Program (CREP) was described in the Program Successes section. CREP is a federal-state partnership that adds an additional appropriation to the state for certain CRP conservation practices (Table 15) and provides a one-time incentive payment from the state. In Indiana, CREP is available to 65 counties across eleven HUC-8 watersheds. The ISDA has technical assistance available to producers in the CREP watersheds to supplement federal agency support for the program. CREP is currently undergoing an effort to expand availability of the program statewide and include CP9 (Shallow Water Areas for Wildlife) as an eligible practice.

Table 15. Indiana Eligible CREP Practices

Practice Code	Name	Environmental Benefit
CP2	Native Grasses	Remove sediment and nutrients, wildlife
CP3A	Hardwood Tree Planting	Wildlife, erosion control, reduced pollution from water, air and land, buffers waterways
CP4D	Wildlife Habitat	Wildlife, nutrient and sediment removal, recreation
CP21	Filter Strip	Wildlife, pollutant removal
CP22	Riparian Buffers	Stream shading, wildlife, pollution removal
CP23, CP23A	Wetland Restoration	Wildlife, nutrient and sediment removal
CP31	Bottomland Timber	Erosion control, wildlife, carbon sequester, pollution removal

National Water Quality Initiative

The NWQI is a joint initiative between the NRCS and the U.S. EPA, whereby 5% of state EQIP funds are set aside to address high-priority water quality concerns in watersheds with a nutrient or sediment impairment. The funding is to be allocated through landowner contracts for land in one to three 12-digit watersheds that have been chosen by NRCS and the water quality agency (IDEM) to be a part of the initiative. In Indiana, current NWQI watersheds include Black River, Eagle Creek, Muncie Creek, Upper Blue Sinking, and Lake Wawasee. IDEM will coordinate with NRCS as long as this Initiative is implemented.

Figure 25. Bird at Eagle Creek Reservoir in Indiana

Wetland Reserve (Enhancement) Program

The Wetland Reserve Program (WRP) is the NRCS's wetland easement program. Under this program,

historically farmed wetlands can be returned to native wetland vegetation and hydrology. The program is voluntary and can provide restoration funds with or without an easement. Easements can be for 30 years or permanent. In addition, wetlands that were previously restored under a local, state or federal program can be placed into long-term protection.

The Wetland Reserve Enhancement Partnership (WREP) is one component of the Wetland Reserve Program. Leveraging resources from partners, NRCS enrolls lands into the easement program for protection and restoration. Indiana NRCS has partnered with The Nature Conservancy on two WREP projects – one in southwest Indiana and one in the Upper Wabash watershed.

Mississippi River Basin Initiative

MRBI is a regional competitive program administered under NRCS, funded through the Cooperative Conservation Partnership Initiative (CCPI), EQIP, CIG, CSP, and WREP programs. NRCS currently has identified priority watersheds in Indiana for both planning and implementation. Additionally, it identifies focus area watersheds which are HUC-8 watersheds where modeling has shown significant nutrient contributions to the Mississippi River Basin (https://www.nrcs.usda.gov/programs-initiatives/mississippi-river-basin-healthy-watersheds-initiative).

Great Lakes Restoration Initiative (EQIP, EWPP –Floodplain Easements)

NRCS programs are one source of GLRI funding available to watersheds that drain to the Great Lakes. 60,000 acres of privately-owned lands have been put into conservation through NRCS GLRI funding.

Western Lake Erie Basin Initiative (EQIP)

The Western Lake Erie Basin (WLEB) Initiative was put in place to address agricultural nutrient and sediment inputs into Lake Erie. The project area includes 820,770 acres in the St. Joseph River (OH), St. Mary's River, Upper Maumee River, and Auglaize River watersheds in Indiana. Nineteen best management practices are eligible under this program.

Cooperative Conservation Partnership Initiative (EQIP, CSP)

The Cooperative Conservation Partnership Initiative (CCPI) is a joint project initiative between NRCS and approved program partners. Under the CCPI, the NRCS has authority to make EQIP, and/or Conservation Stewardship Program (CSP) resources available within an approved CCPI project area. Indiana currently has 4 CCPI projects, including Hoosier National Forest and statewide forestry projects; southwest Indiana irrigation project; and Wildcat Creek Invasives project.

Private and other Grants

While the majority of funding for nonpoint source pollution projects is provided through the programs described above, partners will occasionally use private funders and other state and federal grants to accomplish their nonpoint source pollution goals.

2025 – 2029 Action Register

The U.S. EPA guidance Key Components of an Effective State Nonpoint Source Management Program requires states to identify annual milestones against which the Nonpoint Source program will be evaluated. The previous goals and indicators section provided a narrative accounting of the strategies Indiana will use to control and mitigate nonpoint source pollution. The following action register provides a consolidated listing of the goals, objectives, and management measures described above, as well as identifying annual milestones as required by U.S. EPA.

Note: Products listed alongside an ending FFY will be submitted to U.S. EPA by the completion of that FFY. All starting and ending dates are projected and contingent upon normal processing times and administrative procedures. Should state or federal bureaucratic obstacles be encountered, these dates will be amended as appropriate.

Goal 1	Improve the resources available for nonpoint source pollution management through partnerships.	Responsible Party	Funding Source	Subcontractor/ Sponsor	FFY Starting	FFY Ending (Projected)	Product	Measures
	A. Programmatic Objectives							
	1.1. Provide support for implementing the Indiana Coastal Nonpoint Pollution Control Program (CNPCP).	IDEM/DNR	319/Farm Bill/LARE/CWI/CZM	In-house	2025	2029	Successful implementation of CNPCP	Progress towards management measures in the Coastal NPS Management Plan
	a. Continue to support implementation of the Coastal NPS Management Plan.	IDEM/DNR	319/Farm Bill/LARE/CWI/CZM	In-house	2025	2029	Successful implementation of CNPCP	Progress towards management measures in the Coastal NPS Management Plan
	1.2. Continue to provide implementation support for IDEM-approved TMDLs and 9-Element WMPs in the Coastal Zone.							
	a. Provide implementation support for the Coastal Zone TMDLs.	IDEM/DNR	319/Farm Bill/LARE/CWI/CZM	NIRPC, Save the Dunes	2025	2029 (ongoing)	BMPs; Load reductions	Continued watershed specialist support for funding and planning support; No. of BMPs installed/ load reductions recorded
	b. Provide implementation support for the Coastal Zone WMPs.	IDEM, local groups	319/Farm Bill/LARE/CWI/CZM	NIRPC, Save the Dunes	2025	2029 (ongoing)	BMPs; Load reductions	Continued watershed specialist support for funding and technical support; No. of BMPs installed/ load reductions recorded
	1.3. Continue to support implementation of the LMCP.							
	a. Nonpoint source pollution technical staff will continue to participate in relevant meetings regarding the CNPCP.	IDEM/DNR	319	In-house	2025	2029 (ongoing)	Successful implementation of CNPCP	No. of meetings attended; new projects initiated
	b. Integration of CNPCP goals and objectives in new WMP efforts in the Coastal Zone.	IDEM/DNR	319	In-house	2025	2029 (ongoing)	Approved 9-Element Plans with CNPCP elements incorporated	No. of new Coastal Zone planning efforts; annual summary of progress in plan revision
	1.4. Support the Conservation Reserve Enhancement Program (CREP), Resource Conservation Partnership Program (RCPP), Great Lakes Restoration Initiative (GLRI), Lake and River Enhancement (LARE), Clean Water Indiana (CWI), and other Indiana Conservation Partnership (ICP) and statewide initiatives as they become available.							
	a. Forward solicitation or information as it becomes available.	IDEM	319	In-house	2025	2029 (ongoing)	Solicitations/information forwarded	No. of solicitations/information forwarded
	b. Participate in ICP planning meetings to determine priorities for funding/initiatives that align with WMP critical areas, water quality, and/or TMDL priority areas (every other month).	IDEM	319	In-house	2025	2029 (ongoing)	Priorities determined	BMPs and load reductions reported

Goal 1	Improve the resources available for nonpoint source pollution management through partnerships.		Responsible Party	Funding Source	Subcontractor/ Sponsor	FFY Starting	FFY Ending (Projected)	Product	Measures
	c.	Promote the programs through the watershed specialists and work with watershed groups to identify/recommend projects that would fit well under the priorities for each funding source.	IDEM	319	In-house	2025	2029 (ongoing)	Projects identified	No. of customers served by the watershed specialist; No. of projects identified.
	d.	Include program information in relevant TMDLs as methods for implementation.	IDEM	106	In-house	2025	2029 (ongoing)	TMDLs include ICP programs as methods for implementation; Coordinate with ICP partners on Reasonable Assurance	No. of TMDL reports in which programs included
	e.	Coordinate with ICP partners on meetings and workshops.	IDEM	319	In-house	2025	2029 (ongoing)	Watershed specialist and TMDL staff participate, and present/plan programs as needed	No. of ICP programs that nonpoint source pollution/TMDL staff participate in (as requested)
	1.5. Utilize the ICP as an advisory group for priority state nonpoint source pollution policies and updates by participating in bimonthly leadership meetings.		IDEM	319	In-house	2025	2029 (ongoing)	N/A	IDEM participates in leadership meetings to provide updates and receive input on nonpoint source pollution policies and priorities
	1.6. Continue to provide technical assistance to local watershed groups through the watershed specialist or project manager as documented through quarterly site visit reports and the Section 319 Annual Report.		IDEM	319	In-house	2025	2029 (ongoing)	Site visit reports	No. of groups served by the watershed specialist
	1.7. Continue to participate on technical committees related to statewide nonpoint source related issues such as the IN State Technical Committee, Science Assessment Team, and the Indiana Water Resources Research Center Advisory Group.		IDEM	319	In-house	2025	2029 (ongoing)	Reports, analyses, publications on statewide nonpoint source pollution issues	No of meetings attended, No. of publications or reports developed
	1.8. Continue to align the TMDL and WMP planning process with the TMDL vision.								
	a.	Lake Manitou TMDL	IDEM	106/319	In-house	2025	2025	Completed approved TMDL and WMP project in process	No. of public meetings; Technical assistance to local sponsor
	b.	Indian Creek White River TMDL	IDEM	106/319	In-house	2026	2027	Completed approved TMDL and WMP project in process	No. of public meetings; Technical assistance to local sponsor
	c.	Indian Creek Monroe TMDL	IDEM	106/319	In-house	2027	2028	Completed approved TMDL and WMP project in process	No. of public meetings; Technical assistance to local sponsor
	d.	Honey Creek TMDL	IDEM	106/319	In-house	2028	2029	Completed approved TMDL and WMP project in process	No. of public meetings; Technical assistance to local sponsor
	e.	Continue using prioritization process to determine TMDL project watersheds.	IDEM	106/319	In-house	2029	2029 (ongoing)	New TMDL projects chosen and completed	No. of TMDL watersheds identified and written up according to the established prioritization process
	f.	Review and revise TMDL priority framework as needed.	IDEM	106/319	In-house	2025	2029	Up to date Vision document.	Adaptively managed vision based on program priorities.
	1.9. Continue to partner with the IN-USDA-NRCS on the National Water Quality Initiative (NWQI) for as long as the Initiative remains a national and state priority.								
	a.	Continue support of the School Branch Project.	IDEM	319/106	In-house, USGS	2025	2029 (ongoing)	Successful completion of grant project; complete dataset	No. of partner meetings, site visit reports, water quality data analysis
	b.	Coordinate with NRCS as needed to share in the decision-making on next steps for the Initiative.	IDEM	319	In-house	2025	2029 (annually)	Next steps defined	Coordination has occurred

Goal 1	Improve the resources available for nonpoint source pollution management through partnerships.	Responsible Party	Funding Source	Subcontractor/ Sponsor	FFY Starting	FFY Ending (Projected)	Product	Measures
	1.10. Support implementation of the *State Nutrient Reduction Strategy* and the *Indiana GLWQA Annex 4 Domestic Action Plan*.	IDEM/ISDA	319/Farm Bill/LARE/CWI	ICP	2025	2029 (ongoing)	BMPs; estimated load reductions	# of Priorities adopted by IDEM-nonpoint source pollution
	a. Review priorities of both documents and import objectives of nonpoint source pollution-related importance to the state nonpoint source pollution program.	IDEM	319	In-house	2025	2029 (ongoing)	Updated state nonpoint source pollution plan reconciled with *State Nutrient Reduction Strategy* and *Domestic Action Plan* (one time)	*Consider State Nutrient Reduction Strategy* and *Domestic Action Plan* objectives when considering annual nonpoint source pollution Grant Solicitation priorities
	B. Financial Objectives							
	1.11. Continue to support projects which implement management measures in the CNPCP.	IDEM	319	DNR	2025	2029 (ongoing)	List of projects awarded 319 funding	Progress towards management measures in the Coastal NPS Management Plan
	1.12. Meet with EPA (at least quarterly) and IDEM finance and operations groups to discuss ongoing grant status.	IDEM/EPA	319	In-house	2025	2029 (ongoing)	N/A	Annual grant allocation money fully expended by IDEM.
	1.13. Coordinate with CWSRF to link loan applicants and local watershed groups.							
	a. IDEM nonpoint source pollution will cross-reference the monthly SRF project status report with active 319 projects and/or other known watershed efforts to identify watershed opportunities and meet quarterly with CWSRF Loan Program to communicate those that may benefit from SRF funding.	IDEM	319	In-house	2025	2029 (ongoing)	List of potential nonpoint source pollution projects available to SRF loan communities; WMP(s) with projects available to communities	Projects identified for communities
	b. Annually, the nonpoint source pollution program will notify the CWSRF and DWSRF program of the 319 projects that are approved for funding, upon notice from U.S. EPA.	IDEM	319	In-house	2025	2029 (annually)	List of projects awarded 319 funding	U.S. EPA-funded projects communicated to SRF programs
	c. Where there are potential projects, a fact sheet describing the potential nonpoint source pollution project opportunity is included in the State Revolving Fund packet (when shared) to the community, and the nonpoint source pollution staff promotes the potential project, provides contacts for technical assistance, and provides information on other funding sources active in the watershed, such as NRCS, Clean Water Indiana, 319, 205(j), etc.	IDEM	319	In-house	2025	2029 (ongoing)	Fact sheets included; contacts and funding sources provided	Percentage of community orientation or planning meetings where nonpoint source pollution projects with an active group working with the IDEM-nonpoint source pollution program have been identified
	d. The CWSRF program communicates to the nonpoint source pollution program the projects with nonpoint source pollution BMPs funded through CWSRF that were identified in the approved WMPs. Nonpoint source pollution staff ensure that this information is input to GRTS. This information is included in the Annual 319 Report to U.S. EPA.	State Revolving Fund	N/A	IFA	2025	2029 (ongoing)	BMPs funded; estimated load reductions	BMPs; estimated load reductions input into GRTS and included in Annual Report
	C. Technical Objectives							
	1.14. Work with partners to model, assess, and prioritize critical watersheds in the state.	IDEM/ICP	319/ partner funds	ICP	2025	2029 (ongoing)	List of priority watersheds	Progress on prioritizing watersheds

Goal 1	Improve the resources available for nonpoint source pollution management through partnerships.	Responsible Party	Funding Source	Subcontractor/ Sponsor	FFY Starting	FFY Ending (Projected)	Product	Measures
	1.15. Utilize the IDEM watershed specialists or technical staff to assist partners with nonpoint source pollution planning and implementation activities.	IDEM	319	In-house	2025	2029 (ongoing)	WMP; load reductions	No. of watershed groups assisted by the watershed specialist or project manager

Goal 2	Characterize Indiana waters for nonpoint source pollution impairments and improvements		Responsible Party	Funding Source	Subcontractor/ Sponsor	FFY Starting	FFY Ending	Product	Measures
	A. Programmatic Objectives								
	2.1. Require the use of the *Environmental Monitoring for Watershed Groups* handbook for 319 grantees.		IDEM	319	Grantees	2025	2029 (ongoing)	Data	% of grantees who monitor core indicators as prescribed in the Handbook
	2.2. Import 319 grantee data meeting appropriate data quality criteria into water quality database or the Hoosier Riverwatch Database to be uploaded into WQX on a routine basis.		IDEM	319	In-house /database contractor/HRW DB contractor	2025	2029 (ongoing)	Data; DB updates/maintenance	Sample sets uploaded into water quality database or HRW DB
	2.3. Invite the participation of local project leaders when conducting 305(b) CWA assessments on watershed characterization monitoring data completed for TMDL and WMP development.		IDEM	106, 319	In-house	2025	2029 (ongoing)	Watershed characterization assessments with local insight on sources	Local watershed leaders invited to assessment meetings on watershed characterization
	2.4. Evaluate the logistics and results of the monitoring programs and make adaptive management decisions on an annual basis.		IDEM	319	In-house	2025	2029 (annually)	Revised monitoring strategy, when appropriate	Monitoring strategy is reviewed and adaptively managed
	2.5. Collaborate with partners to identify feasible projects for characterizing extent of septic related issues across the state.		IDEM	319	IDEM/ICP/Conservation Law Center	2025	2027	List of feasible projects	No of projects initiative/completed or progress made towards statewide efforts
	B. Financial Objectives								
	2.6. Continue to fund the Clean Lakes Program (volunteer and professional) data collection for use in CWA 305(b) and 314 assessments and 303(d) listings.		IDEM	319	IU O'Neill	2025	2029 (ongoing)	Data; 305(b) and 314 assessments; 303(d) listings	Monitoring has occurred
	2.7. Direct IDEM resources to perform watershed characterization monitoring of at least one watershed annually to support TMDL and watershed planning efforts.								
	a.	Indian Creek - White River TMDL	IDEM	106/319	IDEM/ Local sponsor	2025	2025	Data; assessments; TMDL submitted to US EPA; IDEM/EPA-approved WMP	Progress on data collection, assessments, TMDL, WMP
	b.	Indian Creek Monroe TMDL	IDEM	106/319	IDEM/ Local sponsor	2025	2026	Data; assessments; TMDL submitted to US EPA; IDEM/EPA-approved WMP	Progress on data collection, assessments, TMDL, WMP
	c.	Honey Creek TMDL	IDEM	106/319	IDEM/Local sponsor	2026	2027	Data; assessments; TMDL submitted to US EPA; IDEM/EPA-approved WMP	Progress on data collection, assessments, TMDL, WMP
	d.	Project TBD from priority framework	IDEM	106/319	IDEM/Local sponsor	2027	2028	Data; assessments; TMDL submitted to US EPA; IDEM/EPA-approved WMP	Progress on data collection, assessments, TMDL, WMP
	e.	Project TBD from priority framework	IDEM	106/319	IDEM/Local sponsor	2028	2029	Data; assessments; TMDL submitted to US EPA; IDEM/EPA-approved WMP	Progress on data collection, assessments, TMDL, WMP

Goal 2	Characterize Indiana waters for nonpoint source pollution impairments and improvements	Responsible Party	Funding Source	Subcontractor/ Sponsor	FFY Starting	FFY Ending	Product	Measures
	2.8. Utilize IDEM resources to monitor the School Branch Watershed as a target of the National Water Quality Monitoring Initiative (NWQI) as described in the sampling design developed by IDEM and NRCS.	IDEM/NRCS	319, 106	USGS, IU-Indy	2025	2029 (ongoing)	Data	Data collection has occurred
	2.9. Support funding for projects which help characterize the extent of septic related sources across the state.	IDEM	319/CWSRF	IDEM, Conservation Law Center, DNR, Local sponsor	2025	2029 (ongoing)	Data or publications supporting better understanding of septic related sources	Completion of projects, metrics on status of systems or number of systems
	C. Technical Objectives							
	2.10. Continue support of the Hoosier Riverwatch voluntary monitoring program as part of IDEM's monitoring and assessment schemas.							
	a. Provide support for 20 Hoosier Riverwatch workshops (volunteer, instructor, advanced trainings) annually and maintain current loaner/teaching trunks.	IDEM	319	HRW Coordinator & Volunteer Trainers	2025	2029 (annually)	Trained volunteers; HR manuals; 20 fully stocked loaner trunks	No. of trainings; no. of trained volunteers; no. of fully stocked loaner trunks
	b. Provide support for maintenance and upgrades of the Hoosier Riverwatch water quality monitoring database and associated websites.	IDEM	319	Contractor (TBD)	2025	2029 (ongoing)	HR website and database maintained	No. of hits on HR website; no. of upgrades to HRW DB; new entries/datasets entered
	2.11. Accept external data through the External Data Framework.							
	a. Use the External Data Framework to accept external data for various uses including nonpoint source pollution assessment, planning and de-listing.	IDEM	106	In-house	2025	2029 (ongoing)	Nonpoint source pollution decisions based on external data	No. of external sources
	2.12. Utilize IDEM resources to delist waters, or otherwise demonstrate water quality improvements, where nonpoint source pollution has been abated.							
	a. Evaluate water quality data submitted through the External Data Framework process, as well as grantee monitoring, to identify watersheds that should be surveyed for possible nonpoint source pollution water quality improvements.	IDEM	319, 106	In-house	2025	2029 (annually)	List of waters to be surveyed	Data is evaluated
	b. Use additional resources (e.g., staff, funds, and technical support) to monitor water quality in watersheds where nonpoint source pollution restoration activities have occurred. The monitoring data will be compared to baseline information, if available, to gauge the efficacy of the work.	IDEM	319, 106	In-house	2025	2029 (annually)	Raw data; possible Success Story submitted to U.S. EPA	Data is collected and reviewed; Success Story is submitted to U.S. EPA if appropriate
	2.13. Continue the Groundwater Monitoring Network (GWMN).	IDEM	106	IDEM-GW	2025	2029 (ongoing)	Raw data/reports	Ground monitoring network continued
	a. Analyze the findings of groundwater data taken by the state to characterize the causes, sources, and magnitude of nonpoint source pollution in groundwater as new data is available.	IDEM	106	IDEM-GW	2025	2029	Reports	Reports of analyzed data
	b. Support ongoing studies and geochemical modeling to determine variability in arsenic concentrations in groundwater.	IDEM	106	IDEM-GW	2025	2029	Reports	Reports of analyzed data
	c. llaborate with groundwater program staff through internal cross collaboration meetings on a quarterly basis.	IDEM	319, 106	IDEM	2025	2029	Data information sharing, project development	No. of cross coordination meetings attended.

Goal 3	Cultivate a citizenry that embraces the value of water quality.		Responsible Party	Funding Source	Subcontractor/ Sponsor	FFY Starting	FFY Ending	Product	Measures
	A. Programmatic Objectives								
	3.1. Update and revise nonpoint source pollution education and outreach messaging and materials; determine distribution and use.								
	a.	Determine existing educational and outreach materials produced internally and through watershed planning partnerships and develop strategy for collaborative sharing.	IDEM	319	N/A	2025	2027	List of existing materials to keep, new materials to generate	List of materials to develop; number of audiences to be reached and types of materials
	b.	Meet with IDEM Media and Communication Services (MACS) to develop outreach material designs and techniques.	IDEM	319	IDEM Media and Communications Services (MACS)	2025	2029	Order of new outreach supplies and displays	No. of displays; number of brochures/booklets
	c.	Implement identified strategies as determined in 3.1a.	IDEM	319	In-house	2027	2029	Updated and/or new educational materials	No. of new or updated materials, No. of partners or grantees making use of developed materials
	d.	Develop and maintain interactive tools such as story maps to provide online communication on programs and partnerships.	IDEM	319	In-house	2027	2029 (ongoing)	Interactive tools, story maps, web content	No. of tools developed, No. of views or interactions with tools
	3.2. Continue collaborations with partners to discuss strategic messaging for the state on septic system care.								
	a.	Conduct analysis on existing programs and partnerships in other states and determine where similar strategies can be implemented in Indiana.	IDEM	319	In-house	2025	2026	Summary report of information on other programs	Completion of summary report
	b.	Implement identified strategies as determined in 3.2a.	IDEM	319	In-house	2026	2029 (ongoing)	New strategies developed into program	No. of projects or deliverables implemented into watershed or statewide projects
	c.	Continue to work with partners to identify the target audience and deploy education methods.	IDEM	319	In-house	2020	2029 (ongoing)	Target audience(s) identified; deployment plan	Audience identified; methods deployed
	d.	Provide support in promoting successes on septic related projects.	IDEM	319	TBD	2025	2029 (ongoing)	Press releases to partner outlets, social media, newspaper, television, radio, list servs, websites	No. of releases
	e.	Support technical events or projects (such as IEHA annual conference) to exchange information between government partners, watershed groups, and citizens.	IDEM	319	In-house	2025	2029 (ongoing)	Nonpoint source pollution attendance at partner events	No. of events attended; new partnerships developed
	f.	Assist in providing outreach on septic systems in the Lake Michigan Coastal Zone.	IDEM	319	IDNR Lake Michigan Coastal Program	2025	2029 (ongoing)	Fully approved IDNR CNPCP Septic Measure	No. of times that staff provide assistance (as requested)
	g.	Translate lessons learned from Northwest Indiana, statewide.	IDEM	319	IDNR Lake Michigan Coastal Program	2020	2029 (ongoing)	Final IDNR CNPCP Septic Measure; connections between IDNR Coastal Program and other regional septic partners	No. of meetings
	h.	Continue to support Pathway to Water Quality's work, financially and otherwise with the Indiana State Department of Health.	IDEM	319	ICP, IDOH	2025	2029 (ongoing)	Septic Display at PWQ	No. of visitors; staff assistance at PWQ
	i.	Promote the use of the Revolving Loan Fund for Septic upgrades and repairs for communities	DNR-LMCP/IDEM	319, CWSRF	In-house	2025	2029 (ongoing)	Septic upgrades and repairs through SRF	No. of septic-related loans
	3.3. Continue collaboration with partners to discuss strategic messaging for the state on hydromodification.								
	a.	Meet with partners to discuss issues regarding hydromodification (IDEM Wetlands, DNR, US Army Corps, Silver Jackets, and AFSM).	IDEM	319	In-house	2025	2029 (ongoing)	Coordinated communication on hydromodification issues	No. of meetings; No. of workshops

Goal 3	Cultivate a citizenry that embraces the value of water quality.		Responsible Party	Funding Source	Subcontractor/ Sponsor	FFY Starting	FFY Ending	Product	Measures
	b.	Assist IDEM Wetlands Program with meeting goals and objectives of the State Wetland Plan.	IDEM	319	In-house	2025	2029 (ongoing)	State Wetland Plan Goals and/or Objective met	No. of meetings, No. of products, Progress on goals/objectives
	c.	Assist Indiana Department of Natural Resources meet Goals and Objectives with their Stream Mitigation Program.	IDEM/IDNR	319	IDNR	2025	2029 (ongoing)		No. of meetings
	d.	Support low head dam removal to improve nonpoint source pollution impacts on water resources.	IDEM	319	In-house/IN Silver Jackets	2025	2029 (ongoing)	Low head dams removed; Improved water quality	No. of meetings; WMPs with dams as sources
	3.4. Continue collaborations with partners to discuss IDEM's goal of strategic messaging for the state on sediment and nutrient pollution.								
	a.	Meet with partners to discuss issues regarding sediment and nutrient pollution (ICP partners, USGS).	IDEM	319	In-house	2025	2029 (ongoing)	Coordinated communication on sediment and nutrient pollution issues	No. of meetings; No. of workshops
	b.	Provide support in promoting successes on sediment and nutrient related projects.	IDEM	319	TBD	2025	2029 (ongoing)	Press releases to partner outlets, social media, newspaper, television, radio, list servs, websites	No. of releases
	c.	Support implementation of the State Nutrient Reduction Strategy education/outreach goals.	ISDA/IDEM	319	ISDA; in-house	2025	2029 (ongoing)	Inclusion of *State Nutrient Reduction Strategy* educational goals in nonpoint source pollution annual priorities	Progress on meeting *State Nutrient Reduction Strategy* education goals
	d.	Support implementation of the Indiana Annex 4 DAP education/outreach goals.	IDEM	319	In-house	2025	2029 (ongoing)	Inclusion of *Indiana Annex 4 DAP* educational goals in nonpoint source pollution annual priorities	Progress on *Indiana Annex 4 DAP* education goals
	3.5. Continue to provide citizen monitoring training through Hoosier Riverwatch and the Clean Lakes Program.		IDEM	319	In-house/IU O'Neill	2025	2029 (ongoing)	Websites, manuals, workshops	No. of workshops for HRW; manuals printed; sampling events logged/submitted
	a.	Leverage partnerships and program materials to conduct educational and outreach events with a goal of leading or assisting with at least 3 outreach events per year	IDEM	319	HRW Coordinator & Volunteer Trainers, IU O'Neill	2025	2029 (ongoing)	Improved understanding and awareness of water quality and nonpoint source pollution	No. of educational and outreach events held, No. of participants
	b.	Conduct advanced training workshops on relevant water quality topics and leverage for outreach and education on sources for nonpoint pollution (i.e., E. coli and septic issues).	IDEM	319	HRW Coordinator & Volunteer Trainers	2025	2029 (ongoing)	Improved skills for trained volunteers and increased awareness for priority nonpoint source issues	No. of training workshops organized, No. of participants
	3.6. Highlight successes of the nonpoint source pollution program, including successful grantees and other partners.								
	a.	Produce 5 "Success Stories" (U.S. EPA WQ-10(a) Strategic Measure) by 2029 and publicize within Indiana.	IDEM/ICP	319/ Partner funds	In-house	2025	2029	Success Stories produced and submitted to U.S. EPA	Success Stories are submitted to U.S. EPA and are publicized in Indiana
	b.	Publicize any awards given to watershed groups related to their water quality efforts in Indiana.	IDEM	319	In-house	2025	2029 (ongoing)	Publications of successes	No. of releases for awards
	3.7. Provide cost-effective outreach to audiences in Indiana.								
	a.	Continue to participate in the Pathway to Water Quality at the Indiana State Fairgrounds.	IDEM/ICP	319/ Partner funds	IASWCD	2025	2029 (ongoing)	Facetime with fairgoers/contacts made	Hours of participation to prep exhibit and work Fair
	b.	Continue to support the Indiana Watershed Leadership Academy with technical support.	IDEM	319	In-house/Purdue	2025	2029 (ongoing)	New graduates annually	No. of students; background of students; No. of workshops and trainings

Goal 3	Cultivate a citizenry that embraces the value of water quality.	Responsible Party	Funding Source	Subcontractor/ Sponsor	FFY Starting	FFY Ending	Product	Measures
	c. Participate in regional meetings as needed to inform watershed interest groups of nonpoint source pollution program information.	IDEM	319	In-house/ICP partners	2025	2029 (ongoing)	Meetings/trainings	No. of workshops; No. of materials
	d. Provide regular communication to regional groups of nonpoint source pollution watershed efforts.	IDEM	319	In-house	2025	2029 (ongoing)	Connectivity between watershed groups	No. of communications such as face to face, email or other communication
	B. Financial Objectives							
	3.8. Long-term goal: use 319 funds to leverage for partner-based statewide initiatives including widely disseminated materials such as statewide television/radio commercials/billboards or actionable projects based on above identified workgroups.							
	a. Support partners for the state initiatives on septic system care.	IDEM	319	In-house	2025	2029 (ongoing)	Projects supported	Progress on initiative development
	b. Support partners for the state initiatives on hydromodification.	IDEM	319	In-house	2025	2029 (ongoing)	Projects supported	Progress on initiative development
	c. Support partners for the state initiatives on sediment and nutrient pollution.	IDEM	319	In-house	2025	2029 (ongoing)	Projects supported	Progress on initiative development
	C. Technical Objectives							
	3.9. Continue to build capacity for water quality improvement in the state.							
	a. Continue to educate leaders through Purdue University's Indiana Watershed Leadership Academy.	IDEM	319	In-house	2025	2029 (ongoing)	Watershed leaders trained	Technical assistance provided
	b. Continue to support the ICP's Training and Certification Program on watershed related issues by sitting on the Technical Research Board and the advisory team.	IDEM	Partner funds	In-house	2025	2029 (ongoing)	Development of training and certification programs	Technical assistance provided

Goal 4	Improve Indiana's water quality by reducing nonpoint source pollution and restoring aquatic habitats.	Responsible Party	Funding Source	Subcontractor/ Sponsor	FFY Starting	FFY Ending	Product	Measures
	A. Programmatic Objectives							
	4.1. Capitalize on the monitoring and load-calculations done during TMDL development to inform forthcoming watershed planning projects.							
	a. Utilize the TMDL-WMP template for TMDLs sampled for and written so that they provide the best detail for the development of 9-Element WMPs that are implementable using 319 funds.	IDEM	106	In-house	2025	2029 (ongoing)	TMDLs on template as described in Goal 1.7	Progress on TMDLs
	b. Link TMDLs with watershed characterization monitoring projects for Section 319 watershed management planning applications.	IDEM	106, 319	In-house/grantees	2025	2029 (ongoing)	TMDL data collected; TMDL submitted to U.S. EPA	Progress on WMP projects
	c. Develop Lake Manitou TMDL	IDEM	319, 106	In-house/grantees	2025	2025	Final TMDL report	EPA approved report
	d. Develop Indian Creek – White River TMDL	IDEM	319, 106	In-house/grantees	2025	2026	Final TMDL report	EPA approved report
	e. Develop Indian Creek Monroe TMDL	IDEM	319, 106	In-house/grantees	2025	2027	Final TMDL report	EPA approved report
	f. Develop Honey Creek TMDL	IDEM	319, 106	In-house/grantees	2026	2028	Final TMDL report	EPA approved report
	g. Project TBD from priority framework	IDEM	319, 106	In-house/grantees	2027	2029	Final TMDL report	Progress or on track for EPA approval.
	B. Financial Objectives							
	4.2. Use Section 319 funding to support implementation of WMPs that meet the U.S. EPA'S 9 Key Elements of a Watershed Plan (including staff support and outreach as well as the placement of BMPs in critical areas as identified in the WMPs).	IDEM	319	TBD	2025	2029	BMPs; estimated load reductions	At least 50% of State 319 funds allocated to implementation of WMP's; BMPs and estimated load reductions reported in GRTS
	4.3. Repair previously installed BMPs with the caveats outlined in the program policy.	IDEM	319	Grantees	2025	2029	BMPs	Repaired BMPs will be tracked and reported

Goal 4	Improve Indiana's water quality by reducing nonpoint source pollution and restoring aquatic habitats.	Responsible Party	Funding Source	Subcontractor/ Sponsor	FFY Starting	FFY Ending	Product	Measures
	4.4. Continue to leverage LARE and CWI funds to address erosion, sedimentation and nutrient input concerns as long as the General Assembly continues to approve appropriations.	IDEM/ICP	319/LARE/CWI	SWCDs, Lake associations	2025	2029	BMPs, education/outreach	LARE/CWI funds/BMPs and estimated load reductions will be tracked/reported to US EPA when possible
	4.5. Coordinate with IDNR's Stream Mitigation Program.	IDEM/IDNR	319	In-house	2025	2029 (ongoing)		No. of meetings, No. of products, Progress on goals/objectives
	C. Technical Objectives							
	4.6. Show restoration in at least 5 assessment units (at least 5 WQ-10) in the five-year cycle 2025-2029.	IDEM	319	In-house	2025	2029 (annually)	5 Success Stories reported to U.S. EPA	No. of watersheds reported for success measures
	4.7. Continue to geolocate all BMPs installed through the Section 319 grant program in order to enhance the BMP GIS layer located in the nonpoint source pollution program.	IDEM	319	In-house	2025	2029 (ongoing)	GIS shapefile/ geodatabase	Progress on BMP tracking geodatabase
	4.8. Solicit for proposals to use Section 319 funding to support implementation of WMPs that meet the U.S. EPA'S 9 Key Elements of a Watershed Plan (includes staff support as well as BMPs).	IDEM	319	In-house	2025	2029 (annually)	Solicitation	Proposals are solicited at least annually
	a. Provide financial and technical support to install agricultural BMPs in critical areas identified in the plan.	IDEM/ICP	319	TBD	2025	2029 (annually)	BMPs/estimated load reductions in critical areas	BMPs; estimated load reductions input into GRTS
	b. Provide financial and technical support to install urban and/or residential BMPs in critical areas identified in the plan.	IDEM	319	TBD	2025	2029 (annually)	BMPs/estimated load reductions in critical areas	BMPs; estimated load reductions input into GRTS
	c. Provide financial and technical support to install forestry BMPs in critical areas identified in the plan.	IDEM/IDNR – Forestry	319	TBD	2025	2029 (annually)	BMPs/ estimated load reductions in critical areas	BMPs; estimated load reductions input into GRTS
	d. Provide financial and technical support to install abandoned mine BMPs in critical areas identified in the plan.	IDEM/IDNR-DOR	319	TBD	2025	2029 (annually)	BMPs/ estimated load reductions in critical areas	BMPs; estimated load reductions input into GRTS
	e. Provide financial and technical support to install hydrological and aquatic habitat BMPs in critical areas identified in the plan, including dam removal.	IDEM/IDNR-LARE	319	TBD	2025	2029 (annually)	BMPs/ estimated load reductions in critical areas	BMPs; estimated load reductions input into GRTS

Goal 5	Prioritize protected water resources so that they may continue to meet their intended uses.	Responsible Party	Funding Source	Subcontractor/ Sponsor	FFY Starting	FFY Ending	Product	Measures
	A. Programmatic Objectives							
	5.1. Continue to encourage watershed planning activities in watersheds with Category 1 waters.	IDEM	319	In-house	2025	2029 (ongoing)	WMPs	Watershed specialist communications with and technical assistance to interested groups in watersheds identified; independent planning and assessment by these groups
	5.2. Prioritize for planning watersheds with source water intakes.	IDEM	319, 106	In-house	2025	2029 (annually)	Priorities used in nonpoint source pollution decision making	Prioritized list of watersheds
	5.3. Participate as requested in Phase II wellhead protection planning.	IDEM	319	In-house	2025	2029 (ongoing)	Updated WHPPs	% of nonpoint source pollution participation in WHPP activities invited to
	5.4 Prioritize planning for watersheds with Environmental Justice and/or disadvantaged community concerns.	IDEM	319	In-house	2025	2029 (ongoing)	Priority EJ areas identified for decision making	Number of watershed projects funded in EJ identified areas
	B. Financial Objectives							
	5.5. Fund 319-eligible protection strategies identified in critical areas of IDEM-approved 9-Elements watershed management plans proposed by Section 319 grant applicants whose implementation applications rank high enough for funding.	IDEM	319	In-house/grantees	2025	2029 (annually)	BMPs	Strategies funded reported to US EPA
	5.6. Support implementation of Statewide Wildlife Action Plan's Goals and Objectives that align with nonpoint source pollution protection.	IDEM/IDNR	TBD	IDNR	2025	2029	BMPs	Strategies funded reported to US EPA
	5.7. Support implementation of the State Wetland Plan's Goals and Objectives that align with nonpoint source pollution protection.	IDEM	TBD	In-house	2025	2029	BMPs	Strategies funded reported to US EPA
	C. Technical Objectives							
	5.8. Work with IDEM's Groundwater section and watershed groups, as well as CWSRF and Drinking Water SRF, to identify wells in need of proper decommission.	IDEM	319, 106	GW/SRF	2025	2029 (ongoing)	Wells properly decommissioned	No. of wells identified for decommission/no. of wells decommissioned

Goal 6	Provide networking, guidance, and support to the people doing the work.	Responsible Party	Funding Source	Subcontractor/ Sponsor	FFY Starting	FFY Ending	Product	Measures
	A. Programmatic Objectives							
	6.1. Implement the 2024 WMP Checklist	IDEM	319	In-house	2025	2026	Updated WMP checklist published for grantees and used for WMP review process	Checklist used in review process
	6.2. Develop program specific guidance on farm equipment modification	IDEM/ISDA	319	In-house	2025	2029	Guidance on farm equipment modifications	Guidance document developed and published for grantees
	6.3. Collaborate with grantees and program partners to identify guidance support, needs, and/or shortfalls for developing and administering nonpoint source projects.	IDEM/ICP/Local partners	319	In-house	2025	2029	Summary of missing, outdated, or requested guidance from grantees and partners	No. of guidance documents identified for development or updating
	a. Identify needs, support needed, and/or shortfalls in existing program.	IDEM/ICP/Local partners	319	In-house	2025	2027	Summary of missing, outdated, or requested guidance from grantees and partners	No. of guidance documents identified for development or updating
	b. Update and/or develop new program guidance identified.	IDEM/ICP/Local partners	319	In-house	2026	2029	New or updated guidance materials	No. of guidance documents developed or updated
	6.4. Investigate and develop mechanisms for improved communication and sharing of information and materials for watershed planning and implementation projects (i.e., list servs, forum, etc.).	IDEM/Local partners	319	In-house	2025	2027	Review or summary of mechanism(s) for improving information sharing	Identified path forward for creating a better mechanism for information sharing
	6.5. Support Hoosier Riverwatch instructors and volunteers by providing mechanisms in networking (i.e., annual instructor retreat), producing guidance materials (i.e., manuals, educational materials), and giving training support (i.e., training videos).	IDEM	319	HRW Coordinator & Volunteer Coordinator	2025	2029 (ongoing)	Trained instructors and volunteers with effective tools to administer the HRW program	No. of new or updated guidance materials, No. of networking events held, No. of instructors and volunteers supported, No. of participants
	B. Financial Objectives							
	6.6. Support tools or events focused on cross collaboration, support, and information sharing for program partners and grantees.	IDEM	319	In-house	2025	2029 (ongoing)	Tools developed or events held	No. of tools developed, No. of events held and no. of attendees
	C. Technical Objectives							
	6.7. Provide updated guidance on pollutant load calculations for use with watershed planning efforts.	IDEM	319	In-house	2025	2026	Updated guidance and tools for calculating pollutant loads for watershed projects	Updated guidance and tool(s) published on IDEM website
	6.8. Complete testing and implement the QAPP Tool to support nonpoint source monitoring projects.	IDEM	319	In-house	2025	2026	Online QAPP Tool	No of grantees to who submit QAPPs through the tool.

Adaptive Management

Adaptive management is a cornerstone of the Indiana Nonpoint Source program. It drives change through the practical application of an open and honest program evaluation. As new tools are developed and inefficiencies are discovered, IDEM adapts its administrative process accordingly.

IDEM nonpoint source pollution program will evaluate its program annually and report on the status of the goals outlined in this plan. The Nonpoint Source Pollution Annual Report will be made available to the public via the IDEM nonpoint source pollution website, www.idem.in.gov/nps.

IDEM will work with the U.S. EPA to correct any deficiencies that might become apparent in the program through the Nonpoint Source Pollution Annual Report. Where annual milestones prove unachievable, IDEM will seek technical assistance from U.S. EPA to revise those milestones. As goals are completed, they can be moved from the Goals section to the Program Successes section. Though minor programmatic adjustments may be made on an ad hoc basis, IDEM nonpoint source pollution program will prepare a thorough update of this plan in 2029.

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Appendix A

SEC. 319 [33 U.S.C. 1329] Nonpoint Source Management Programs

(a) State Assessment Reports.--

(1) Contents

The Governor of each State shall, after notice and opportunity for public comment, prepare and submit to the Administrator for approval, a report which--

(A) identifies those navigable waters within the State which, without additional action to control nonpoint sources of pollution, cannot reasonably be expected to attain or maintain applicable water quality standards or the goals and requirements of this Act;

(B) identifies those categories and subcategories of nonpoint sources or, where appropriate, particular nonpoint sources which add significant pollution to each portion of the navigable waters identified under subparagraph (A) in amounts which contribute to such portion not meeting such water quality standards or such goals and requirements;

(C) describes the process, including intergovernmental coordination and public participation, for identifying best management practices and measures to control each category and subcategory of nonpoint sources and, where appropriate, particular non-point sources identified under subparagraph (B) and to reduce, to the maximum extent practicable, the level of pollution resulting from such category, subcategory, or source; and

(D) identifies and describes State and local programs for controlling pollution added from nonpoint sources to, and improving the quality of, each such portion of the navigable waters, including but not limited to those programs which are receiving Federal assistance under subsections (h) and (i).

(2) Information Used in Preparation.--In developing the report required by this section, the State

In developing the report required by this section, the State (A) may rely upon information developed pursuant to sections 1288, 1313(e), 1314(f), 1315(b), and 1324 of this title, and other information as appropriate, and (B) may utilize appropriate elements of the waste treatment management plans developed pursuant to sections 1288(b) and 1313 of this title, to the extent such elements are consistent with and fulfill the requirements of this section.

(b) State Management Programs.--

(1) In General.--The Governor of each State, for that State or in combination with adjacent States, shall, after notice and opportunity for public comment, prepare and submit to the Administrator for approval a management program which such State proposes to implement in the first four fiscal years beginning after the date of submission of such management program for controlling pollution added from nonpoint sources to the navigable waters within the State and improving the quality of such waters.

(2) Specific Contents.--Each management program proposed for implementation under this subsection shall include each of the following:

(A) An identification of the best management practices and measures which will be undertaken to reduce pollutant loadings resulting from each category, subcategory, or particular nonpoint source designated under paragraph (1)(B), taking into account the impact of the practice on groundwater quality.

(B) An identification of programs (including, as appropriate, nonregulatory or regulatory programs for enforcement, technical assistance, financial assistance, education, training, technology transfer, and demonstration projects) to achieve implementation of the best management practices by the categories, subcategories, and particular nonpoint sources designated under subparagraph (A).

(C) A schedule containing annual milestones for (i) utilization of the program implementation methods identified in subparagraph (B), and (ii) implementation of the best management practices identified in subparagraph (A) by the categories, subcategories, or particular nonpoint sources designated under paragraph (1)(B). Such a schedule shall provide for utilization of the best management practices at the earliest practicable date.

(D) A certification of the attorney general of the State or States (or the chief attorney of any State water pollution control agency which has independent legal counsel) that the laws of the State or States, as the case may be, provide adequate authority to implement such management program or, if there is not such adequate authority, a list of such additional authorities as will be necessary to implement such management program. A schedule and commitment by the State or States to seek such additional authorities as expeditiously as practicable.

(E) Sources of Federal and other assistance and funding (other than assistance provided under subsections (h) and (i) which will be available in each of such fiscal years for supporting implementation of such practices and measures and the purposes for which such assistance will be used in each of such fiscal years.

(F) An identification of Federal financial assistance programs and Federal development projects for which the State will review individual assistance applications or development projects for their effect on water quality pursuant to the procedures set forth in Executive Order 12372 as in effect on September 17, 1983, to determine whether such assistance applications or development projects would be consistent with the program prepared under this subsection; for the purposes of this subparagraph, identification shall not be limited to the assistance programs or development projects subject to Executive Order 12372 but may include any programs listed in the most recent Catalog of Federal Domestic Assistance which may have an effect on the purposes and objectives of the State's nonpoint source pollution management program.

(3) Utilization of Local and Private Experts.--In development and implementing a management program under this subsection, a State shall, to the maximum extent practicable, involve local public and private agencies and organizations which have expertise in control of nonpoint sources of pollution.

(4) Development on Watershed Basis.--A State shall, to the maximum extent practicable, develop and implement a management program under this subsection on a watershed-by- watershed basis within such State.

(c) Administrative Provisions.--

(1) Cooperation Requirement.--Any report required by subsection (a) and any management program and report required by subsection (b) shall be developed in cooperation with local, substate regional, and interstate entities which are actively planning for the implementation of nonpoint source pollution controls and have either been certified by the Administrator in accordance with section 208, have worked jointly with the State on water quality management planning under section 205(j), or have been designated by the State legislative body or Governor as water quality management planning agencies for their geographic areas.

(2) Time Period for Submission of Reports and Management Programs.-- Each report and management program shall be submitted to the Administrator during the 18-month period beginning on the date of the enactment of this section.

(d) Approval or Disapproval of Reports and Management Programs.--

(1) Deadline.—

Subject to paragraph (2), not later than 180 days after the date of submission to the Administrator of any report or management program under this section (other than subsections (h), (i), and (k)), the Administrator shall either approve or disapprove such report or management program, as the case may be. The Administrator may approve a portion of a management program under this subsection. If the Administrator does not disapprove a report, management program, or portion of a management program in such 180-day period, such report, management program, or portion shall be deemed approved for purposes of this section.

(2) Procedure for Disapproval.--If, after notice and opportunity for public comment and consultation with appropriate Federal and State agencies and other interested persons, the Administrator determines that--

(A) the proposed management program or any portion thereof does not meet the requirements of subsection (b)(2) of this section or is not likely to satisfy, in whole or in part, the goals and requirements of this Act;

(B) adequate authority does not exist, or adequate resources are not available, to implement such program or portion;

(C) the schedule for implementing such program or portion is not sufficiently expeditious; or

(D) the practices and measures proposed in such program or portion are not adequate to reduce the level of pollution in navigable waters in the State resulting from nonpoint sources and to improve the quality of navigable waters in the State; the Administrator shall within 6 months of the receipt of the proposed program notify the State of any revisions or modifications necessary to obtain approval. The State shall thereupon have

an additional 3 months to submit its revised management program, and the Administrator shall approve or disapprove such revised program within three months of receipt.

(3) Failure of State to Submit Report.--If a Governor of State does not submit the report required by subsection (a) within the period specified by subsection (c)(2), the Administrator shall, within 30 months after the date of the enactment of this section, prepare a report for such State which makes the identifications required by paragraphs (1)(A) and (1)(B) of subsection (a). Upon completion of the requirement of the preceding sentence and after notice and opportunity for comment, the Administrator shall report to Congress on his actions pursuant to this section.

(e) Local Management Programs; Technical Assistance.--If a State fails to submit a management program under subsection (b) or the Administrator does not approve such a management program, a local public agency or organization which has expertise in, and authority to, control water pollution, resulting from nonpoint sources in any area of such State which the Administrator determines is of sufficient geographic size may, with approval of such State, request the Administrator to provide, and the Administrator shall provide, technical assistance to such agency or organization in developing for such area a management program which is described in subsection (b) and can be approved pursuant to subsection (d). After development of such management program, such agency or organization shall submit such management program to the Administrator for approval. If the Administrator approves such management program, such agency or organization shall be eligible to receive financial assistance under subsection (h) for implementation of such management program as if such agency or organization were a State for which a report submitted under subsection (a) and a management program submitted under subsection (b) were approved under this section. Such financial assistance shall be subject to the same terms and conditions as assistance provided to a State under subsection (h).

(f) Technical Assistance for States.-- Upon request of a State, the Administrator may provide technical assistance to such State in developing a management program approved under subsection (b) for those portions of the navigable waters requested by such State.

(g) Interstate Management Conference.--

(1) Convening of Conference; Notification; Purpose.--If any portion of the navigable waters in any State which is implementing a management program approved under this section is not meeting applicable water quality standards or the goals and requirements of this Act as a result, in whole or in part, of pollution from nonpoint sources in another State, such State may petition the Administrator to convene, and the Administrator shall convene, a management conference of all States which contribute significant pollution resulting from nonpoint sources to such portion. If, on the basis of information available, the Administrator determines that a State is not meeting applicable water quality standards or the goals and requirements of this Act as a result, in whole or in part, of significant pollution from nonpoint sources in another State, the Administrator shall notify such States. The Administrator may convene a management conference under this paragraph not later than 180 days

after giving such notification, whether or not the State which is not meeting such standards requests such conference. The purpose of such conference shall be to develop an agreement among such States to reduce the level of pollution in such portion resulting from nonpoint sources and to improve the water quality of such portion. Nothing in such agreement shall supersede or abrogate rights to quantities of water which have been established by interstate water compacts, Supreme Court decrees, or State water laws. This subsection shall not apply to any pollution which is subject to the Colorado River Basin Salinity Control Act. The requirement that the Administrator convene a management conference shall not be subject to the provisions of section 505 of this Act.

(2) State Management Program Requirement.--To the extent that the States reach agreement through such conference, the management programs of the States which are parties to such agreements and which contribute significant pollution to the navigable waters or portions thereof not meeting applicable water quality standards or goals and requirements of this Act will be revised to reflect such agreement. Such a management programs shall be consistent with Federal and State law.

(h) Grant Program.--

(1) Grants for Implementation of Management Programs.--Upon application of a State for which a report submitted under subsection (a) and a management program submitted under subsection (b) is approved under this section, the Administrator shall make grants, subject to such terms and conditions as the Administrator considers appropriate, under this subsection to such State for the purpose of assisting the State in implementing such management program. Funds reserved pursuant to section 205(j)(5) of this Act may be used to develop and implement such a management program.

(2) Applications.--An application for a grant under this subsection in any fiscal year shall be in such form and shall contain such other information as the Administrator may require, including an identification and description of the best management practices and measures which the State proposes to assist, encourage, or require in such year with the Federal assistance to be provided under the grant.

(3) Federal Share.--The Federal share of the cost of each management program implemented with Federal assistance under this subsection in any fiscal year shall not exceed 60 percent of the cost incurred by the State in implementing such management program and shall be made on condition that the non-Federal share is provided from non-Federal sources.

(4) Limitation on Grant Amounts.-- Notwithstanding any other provision of this subsection, not more than 15 percent of the amount appropriated to carry out this subsection may be used to make grants to any one State, including any grants to any local public agency or organization with authority to control pollution from nonpoint sources in any area of such State.

(5) Priority for Effective Mechanisms.--For each fiscal year beginning after September

30, 1987, the Administrator may give priority in making grants under this subsection, and shall give consideration in determining the Federal share of any such grant, to States which have implemented or are proposing to implement management programs which will--

(A) control particularly difficult or serious nonpoint source pollution problems, including, but not limited to, problems resulting from mining activities.

(B) implement innovative methods or practices for controlling nonpoint sources of pollution, including regulatory programs where the Administrator deems appropriate;

(C) control interstate nonpoint source pollution problems; or

(D) carry out groundwater quality protection activities which the Administrator determines are part of a comprehensive nonpoint source pollution control program, including research, planning, groundwater assessments, demonstration programs, enforcement, technical assistance, education, and training to protect groundwater quality from nonpoint sources of pollution.

(6) Availability for Obligation.--The funds granted to each State pursuant to this subsection in a fiscal year shall remain available for obligation by such State for the fiscal year for which appropriated. The amount of any such funds not obligated by the end of such fiscal year shall be available to the Administrator for granting to other States under this subsection in the next fiscal year.

(7) Limitation on Use of Funds.-- States may use funds from grants made pursuant to this section for financial assistance to persons only to the extent that such assistance is related to the costs of demonstration projects.

(8) Satisfactory Progress.--No grant may be made under this subsection in any fiscal year to a State which in the preceding fiscal year received a grant under this subsection unless the Administrator determines that such State made satisfactory progress in such preceding fiscal year in meeting the schedule specified by such State under subsection (b)(2).

(9) Maintenance of Effort.--No grant may be made to a State under this subsection in any fiscal year unless such State enters into such agreements with the Administrator as the Administrator may require to ensure that such State will maintain its aggregate expenditures from all other sources for programs for controlling pollution added to the navigable waters in such State from non- point sources and improving the quality of such waters at or above the average level of such expenditures in its two fiscal years preceding the date of enactment of this subsection.

(10)Request for Information.--The Administrator may request such information, data, and reports as he considers necessary to make the determination of continuing eligibility for grants under this section.

(11)Reporting and Other Requirements.--Each State shall report to the Administrator on an annual basis concerning (A) its progress in meeting the schedule of milestones submitted pursuant to subsection (b)(2)(C) of this section, and (B) to the extent that appropriate information is available, reductions in nonpoint source pollutant loading and improvements in water quality for those navigable waters or watersheds within the State which were identified pursuant to subsection (a)(1)(A) of this section resulting from implementation of the management program.

(12)Limitation on Administrative Costs.--For purposes of this subsection, administrative costs in the form of salaries, overhead, or indirect costs for services provided and charged against activities and programs carried out with a grant under this subsection shall not exceed in any fiscal year 10 percent of the amount of the grant in such year, except that costs of implementing enforcement and regulatory activities, education, training, technical assistance, demonstration projects, and technology transfer programs shall not be subject to this limitation.

(i) Grants for Protecting Groundwater Quality.--

(1) Eligible Applicants and Activities.--Upon application of a State for which a report submitted under subsection (a) and a plan submitted under subsection (b) is approved under this section, the Administrator shall make grants under this subsection to such State for the purpose of assisting such State in carrying out groundwater quality protection activities which the Administrator determines will advance the State toward implementation of a comprehensive nonpoint source pollution control program. Such activities shall include, but not be limited to, research planning, groundwater assessments, demonstration programs, enforcement, technical assistance, education and training to protect the quality of groundwater and to prevent contamination of groundwater from nonpoint sources of pollution.

(2) Applications.--An application for a grant under this subsection shall be in such form and shall contain such information as the Administrator may require.

(3) Federal Share; Maximum Amount.--The Federal share of the cost of assisting a State in carrying out groundwater protection, activities in any fiscal year under this subsection shall be 50 percent of the costs incurred by the State in carrying out such activities, except that the maximum amount of Federal assistance which any State may receive under this subsection in any fiscal year shall not exceed $150,000.

(4) Report.--The Administrator shall include in each report transmitted under subsection (m) a report on the activities and programs implemented under this subsection during the preceding fiscal year.

(j) Authorization of Appropriations.-- There is authorized to be appropriated to carry out subsections (h) and (i) not to exceed $70,000,000 for fiscal year 1988, $100,000,000 per fiscal year for each of fiscal years 1989 and 1990, and $130,000,000 for fiscal year 1991; except that for each of such fiscal years not to exceed $7,500,000 may be made available to carry out subsection (i). Sums appropriated pursuant to this subsection shall remain

available until expended.

(k) Consistency of Other Programs and Projects With Management Programs.-- The Administrator shall transmit to the Office of Management and Budget and the appropriate Federal departments and agencies a list of those assistance programs and development projects identified by each State under subsection (b)(2)(F) for which individual assistance applications and projects will be reviewed pursuant to the procedures set forth in Executive Order 12372 as in effect on September 17, 1983. Beginning not later than sixty days after receiving notification by the Administrator, each Federal department and agency shall modify existing regulations to allow States to review individual development projects and assistance applications under the identified Federal assistance programs and shall accommodate, according to the requirements and definitions of Executive Order 12372, as in effect on September 17, 1983, the concerns of the State regarding the consistency of such applications or projects with the State nonpoint source pollution management program.

(l) Collection of Information.--The Administrator shall collect and make available, through publications and other appropriate means, information pertaining to management practices and implementation methods, including, but not limited to, (1) information concerning the costs and relative efficiencies of best management practices for reducing nonpoint source pollution; and (2) available data concerning the relationship between water quality and implementation of various management practices to control nonpoint sources of pollution.

(m) Reports of Administrator.--

(1) Annual Reports.--Not later than January 1, 1988, and each January 1 thereafter, the Administrator shall transmit to the Committee on Public Works and Transportation of the House of Representatives and the Committee on Environment and Public Works of the Senate, a report for the preceding fiscal year on the activities and programs implemented under this section and the progress made in reducing pollution in the navigable waters resulting from nonpoint sources and improving the quality of such waters.

(2) Final Report.--Not later than January 1, 1990, the Administrator shall transmit to Congress a final report on the activities carried out under this section. Such report, at a minimum, shall--

(A) describe the management programs being implemented by the States by types and amount of affected navigable waters, categories and subcategories of nonpoint sources, and types of best management practices being implemented;

(B) describe the experiences of the States in adhering to schedules and implementing best management practices;

(C) describe the amount and purpose of grants awarded pursuant to subsections (h) and (i) of this section;

(D) identify, to the extent that information is available, the progress made in reducing pollutant loads and improving water quality in the navigable waters;

(E) indicate what further actions need to be taken to attain and maintain in those navigable waters (i) applicable water quality standards, and (ii) the goals and requirements of this Act;

(F) include recommendations of the Administrator concerning future programs (including enforcement programs) for controlling pollution from nonpoint sources; and

(G) identify the activities and programs of departments, agencies, and instrumentalities of the United States which are inconsistent with the management programs submitted by the States and recommend modifications so that such activities and programs are consistent with and assist the States in implementation of such management programs.

(n) Set Aside for Administrative Personnel.--Not less than 5 percent of the funds appropriated pursuant to subsection (j) for any fiscal year shall be available to the Administrator to maintain personnel levels at the Environmental Protection Agency at levels which are adequate to carry out this section in such year.

[319 added by PL 100-4]

Appendix B

Nonpoint Source Program and Grants Guidelines for States and Territories (EPA 841-R-24-009).

Issued May 4, 2024

Key Components of an Effective State Nonpoint Source Management Program

The EPA expects all states[41] to review and, as appropriate, revise and update their NPS management programs every five years or sooner if less extensive amendments are believed to be necessary. An up-to-date, comprehensive program ensures that CWA Section 319 funding, technical support, and other resources are directed effectively and efficiently and are used to address water quality issues at both the state and watershed levels.

The EPA updated the following components from the 2013 Guidelines.[42] Consistent with Section 319, an effective and approvable state NPSMP plan includes the following seven components. States should refer to these components when developing updated programs for EPA approval.

1. The state program identifies water restoration and protection goals and program strategies (regulatory, nonregulatory, financial and technical assistance, as needed) to achieve and maintain water quality standards. It includes relevant, current, and trackable annual milestones that best support program implementation.

The state's long-term goals reflect a strategically focused state NPSMP designed to achieve and maintain water quality standards and maximize water quality benefits. Goals are focused on restoring and protecting waters by reducing and/or preventing NPS pollution statewide and on a watershed scale. Updating the milestones every five years provides an opportunity to gauge the effectiveness of programs, make needed mid-course corrections through an adaptive management process, and describe outcomes and key actions expected each year. Because the NPSMP is a longer-term planning document, the annual milestones could be more general than are expected in an annual Section 319 grant work plan. However, the annual milestones in the NPSMP should align with annual work plan actions and be specific enough to track progress and for the EPA to determine satisfactory progress in accordance with Section 319(h)(8).

Examples of annual milestones include anticipated improvements in water quality, reductions in water use, achievement of water quality standards, the delivering of a certain number of NPS success stories about restored waterbodies, implementing an expected number and type of watershed projects and BMPs in a certain number of high-priority impaired watersheds, completion of reports, the passing of NPS-related laws, and the establishment of NPS subprograms.

The state identifies key programs needed to achieve implementation of the measures, including, as appropriate, nonregulatory or regulatory programs for enforcement, technical assistance, financial assistance, education, training, technology transfer, and demonstration projects.

[41] Consistent with the scope of the guidelines, this appendix applies to states, the District of Columbia,

and the U.S. territories of American Samoa, the Commonwealth of the Northern Mariana Islands, Guam, the Commonwealth of Puerto Rico, and the U.S. Virgin Islands. (Hereinafter, "state" refers to states, the District of Columbia, and territories.)

[42] This is an update of Appendix A (Key Components of an Effective State Nonpoint Source Management Program) from the EPA's 2013 *Nonpoint Source Program and Grants Guidelines for States and Territories.*

The state NPSMP describes its approach to addressing the twin demands of restoring waters that the state has identified as impaired by NPS pollution and preventing new water quality problems from current and reasonably foreseeable future NPS impacts, especially for waters that currently meet water quality standards. The state's program describes how it will set priorities and align resources between the restoration and protection of healthy waters based on their water quality challenges and circumstances. In addition, the state incorporates existing baseline requirements established by other applicable federal or state laws to the extent they are relevant.

For states and territories with approved CNPCPs under CZARA, key commitments to implementation timelines within these CNPCPs should be included in the schedule of annual milestones articulated in state/territory NPSMPs. Incorporating program elements required by CZARA into state/territory NPSMPs ensures that CNPCPs are integrated into the overall approaches to reduce NPS pollution and that the CNPCPs are being meaningfully implemented; see Chapter 7.3 for example milestones. States should continue incorporating relevant milestones to address ongoing NPS challenges in their coastal nonpoint management areas.

2. The state program identifies the primary categories and subcategories of NPS pollution and a process for prioritizing impaired and unimpaired waters and identify how national and state priorities may align.

The state identifies the primary categories and subcategories causing water quality impairments, threats, and risks across the state. The state may include emerging issues, such as pollutants and/or categories of NPS pollution, which require additional data to be collected to fully understand the scope and magnitude of the concern.

The state identifies waters impaired by NPS pollution based on currently available information (e.g., in reports under CWA sections 305(b), 319(a), 303(d), and 320, and in assessments and analyses of changing land uses within the state). The state may also identify important unimpaired waters that are threatened or otherwise at risk from NPS pollution. The state NPSMP plan includes a process to assign priority and progressively address identified waters and watersheds by conducting more detailed watershed assessments and developing and implementing WBPs.

Factors used by the state to assign priority to waters and watersheds may include a variety of considerations, for example:

- Human health considerations, including contact recreation and/or source water protection for drinking water.

- Ecosystem integrity, including ecological risk and stressors.

- Beneficial uses of the water.
- The value of the watershed or groundwater area to the public.
- The vulnerability of surface water or groundwater to additional environmental degradation and climate change impacts.
- The likelihood of achieving demonstrable environmental results.
- The degree of understanding of the causes of impairment and the solutions capable of restoring the water.
- The adequacy of existing water quality monitoring data or future monitoring commitments.
- The degree to which TMDL allocations assigned to point sources depends on achieving NPS reductions.
- The extent of coordination with other federal agencies; states; local, public, and private agencies/organizations; and other stakeholders to coordinate resources and actions.
- The degree to which pollution can be reduced in overburdened communities and/or the degree to which projects will address water quality problems in disadvantaged communities.
- The readiness and capacity to proceed among stakeholders, including other federal, state, and local agencies or organizations.

When prioritizing protection efforts, states may wish to consider the following scenarios for prioritizing the protection of healthy waters:

- Outstanding National Resource Waters or other state-defined categories of high-quality waters.
- Watersheds currently supporting healthy aquatic ecosystems, as identified in assessments of watershed function and structure (e.g., the EPA's Healthy Watersheds Integrated Assessments).
- Waters and watersheds identified as protection priorities in the CWA Section 305(b)/303(d) integrated report.
- Watersheds or portions of watersheds with unique, valuable, or threatened species or the critical aquatic habitats of these species.
- Waters and watershed areas (including groundwater where appropriate) that serve as source water for a public drinking water supply.
- Healthy waters in watersheds where it complements efforts to restore NPS-impaired waters.
- Waters near geographic areas where rapid land use development is occurring.
- Waters where data trends indicate water quality degradation is occurring.

- Restored waters that require continued water quality assessment and maintenance of BMPs to ensure unimpaired status.

- Watersheds that contribute high nutrient loads to downstream waters.

The state links its prioritization and implementation strategy to other programs and efforts, such as those listed in components 1 and 4. In establishing priorities for groundwater activities, the state considers wellhead protection areas, groundwater recharge areas, and zones of significant groundwater/surface water interaction, including drinking water sources.

Different approaches for prioritizing waters for restoration and protection are available, including several tools offered by the EPA. For example, the EPA's Recovery Potential Screening Tool is useful for comparing the restorability of impaired waters across various watersheds. It can also be used to determine protection priorities for unimpaired waters and now also includes social demographics. The EPA has developed and continues to maintain the CyanoHAB story map as a user-friendly, interactive resource. The story map compiles monthly updates on state-issued recreational waterbody and drinking water health advisories due to cyanobacterial harmful algal blooms (cyanoHABs) from across the country. Another tool is the EPA's Cyanobacteria Assessment Network (CyAN) mobile application, a customizable app that currently provides access to cyanobacterial bloom satellite data for over 2,000 of the largest lakes and reservoirs nationwide. Bloom Watch is another resource that uses crowd-sourced data to find and report potential cyanobacteria blooms. The EPA's Nutrient web page also offers several resources.

Climate Change: The NPSMP should identify the primary categories and subcategories of NPS pollution that will be exacerbated by changing climate conditions, such as the increased likelihood of natural disasters (drought, wildfires, excessive heat, and storm frequency and intensity), depending on a state's climactic zones. The program can also prioritize areas or approaches for their potential co-benefits, such as improving water quality while also mitigating natural hazard impacts, increasing soil health, and improving filtration approaches.

Equity: Incorporate a strategy to ensure equitable access to the benefits of NPSMP efforts for all communities. Depending on prior work in a state NPS program, this might range from simply conducting a preliminary assessment and identifying barriers to actively implementing engagement efforts to evaluating progress to address barriers.

Several screening tools are available to assist when considering factors related to climate change and advancing equity for disadvantaged communities. Tools include the Climate and Economic Screening Tool (CEJST)—with a preference for the screening factors for water/wastewater, climate, and legacy pollutant-burdened communities; the EJSCREEN Supplementary Index; and the Recovery Potential Screening Tool. The national NPS Program has worked with some states to develop a best practices approach for using the Recovery Potential Screening Tool in analyzing Section 319 work and demographic indicators. Some states also have their own prioritization approach to consider stressors related to climate change and advancing equity. To qualify for use of Section 319 funds, those prioritizations should be consistent with civil rights laws. The national NPS Program will continue to update analysis, barrier, and action approaches on its NPS equity resources page.

3. The state program identifies management measures (i.e., systems of practices) that will be undertaken to reduce pollutant loadings resulting from each category, subcategory, or particular

nonpoint source identified in component 2 above. The measures should also consider the impact of the BMPs on groundwater quality.

Understanding the BMPs that are best suited for the state's pollutants, climate and evolving environmental conditions is essential for developing a strategy to address NPS pollution in varied landscapes. Awareness of historical effectiveness and landowners' willingness to implement BMPs is also important when selecting a suite of potential BMPs as part of a broader statewide or watershed strategy. Establishing preliminary suites of BMPs supports the development of a more-focused local nine-element watershed plan. Several resources are available to support establishing suites of BMPs, such as the EPA's *Critical Source Area Identification And BMP Selection: Supplement To Watershed Planning Handbook*, the EPA's 2001–2007 NPS pollution National Management Measures guidance documents; and the NRCS's Conservation Practice Standards (standards applicable to water quality).

Strategies to address NPS pollutants should consider any BMP design changes that might be needed in response to increased climate variability (e.g., increased storm intensity, drought, wildfires, rising temperature). For example, rising water temperatures can contribute to increased algal growth and potential cyanobacteria blooms. In these cases, a state may consider implementing BMPs that specifically target nutrient or temperature reduction in affected areas.

In addition, states are encouraged to implement nature-based solutions that reduce NPS pollutants and help mitigate the impact of natural hazards. For example, restoring or protecting floodplains can reduce NPS pollutant delivery to waterbodies, improve overall aquatic habitat conditions, and trap and control

runoff from storms to mitigate high-flow events and reduce flood risk downstream. States may also wish to include the targeted ability to respond to natural disaster emergencies that threaten water quality.

4. The state uses both watershed projects and well-integrated regional or statewide programs to restore and protect waters, achieve water quality benefits, and advance any relevant climate resiliency goals.

The state has the flexibility to design its NPSMP in a manner best suited to achieve and maintain water quality standards. The state may achieve water quality results through a combination of watershed approaches and statewide programs, including regulatory authorities. The state NPSMP emphasizes a watershed management approach that advances equitable access to water quality benefits for underserved communities. The watershed approach provides a science- and policy-based framework to address water quality problems in a holistic manner. It balances local, state, and federal objectives and allows for cost-sharing and distribution of effort among diverse stakeholder groups.

While the NPSMP plan is expected to identify and address NPS pollution in impaired waters, the NPS pollutant loadings will likely be influenced by changing climate conditions—making restoration or protection under future climate scenarios more difficult. Accounting for climate change co-benefits expected from common NPS restoration measures (e.g., riparian restoration activities yield co-benefits such as carbon sequestration, flood resilience, and groundwater recharge) in the NPSMP plan, the state could measure positive progress during restoration activities even if the long-term impacts of a changing climate extend beyond the timeline for initial restoration goals.

The state NPSMP is well integrated with other relevant programs to restore and protect water quality, aligning the priority-setting processes and resources to increase efficiency and environmental results.

These include, but are not limited to, the following programs, as applicable:

- CWA Section 303(d) assessments and TMDLs
- CWSRF and DWSRF
- USDA Farm Bill conservation programs (e.g., NWQI, EQIP, RCPP, Conservation Stewardship Program, Agricultural Conservation Easement Program)
- State agricultural conservation
- State nutrient framework or strategy source water protection
- Climate change planning and resiliency
- FEMA – Hazard Mitigation and Climate Resilience
- Point sources (including stormwater, confined animal feeding operations, and enforcement of federally permitted facilities)
- Groundwater
- U.S. Geological Survey
- State and Tribal wetlands protection program
- NEP
- Geographic programs
- Coastal Nonpoint Pollution Control Program under CZARA
- Pesticide management
- Forestry, both federal (U.S. Forest Service) and state
- USACE programs
- BLM
- Other state, Tribal and federal natural resource and environmental management programs, as needed

The state makes a strong effort to coordinate and leverage programs that have significant potentially available resources to support NPS activities, such as USDA NRCS conservation programs, FEMA natural hazard mitigation and recovery programs, and EPA CWSRF. For example, a state NPSMP clearly identifies processes to incorporate some of the significant resources of the CWSRF program for eligible NPS activities. The state NPSMP plan explains how NPS projects fit into the state's prioritization scheme for CWSRF funding and describes state efforts to increase the use of the state CWSRF for the NPSMP. If

there are barriers to the prioritization of NPS projects, the state NPSMP describes efforts to coordinate with the CWSRF program and potential future steps to encourage NPS projects.

If, in reviewing federal programs, the state identifies federal lands and activities that are not managed consistently with state NPS program objectives, the state may seek EPA assistance to help resolve issues at the federal agency level. Such federal programs include the land management programs of the BLM and the U.S. Forest Service, USDA's conservation programs, and the USACE's waterway programs, as well as development projects and financial assistance programs that are, or may be, inconsistent with the state's NPSMP. Where appropriate, the EPA will work with other federal agencies to enhance their understanding of the significance of NPS pollution and assist in resolving issues that arise between the state and federal agencies with respect to federal consistency. As the EPA region becomes aware of these issues, it will work with the national NPS Program to improve consistency among federal programs.

5. The state identifies and enhances its collaboration with appropriate federal, state, interstate, Tribal, and regional agencies as well as local entities (including conservation districts, private sector groups, utilities, and citizen groups) that will be utilized to implement the state program. Furthermore, the state supports capacity-building in disadvantaged, underserved, or overburdened communities.

The state NPSMP works collaboratively with partners and other key NPS entities to implement NPS control measures in priority watersheds. To form and sustain partnerships, the state may use a variety of formal and informal mechanisms, such as memoranda of agreement, letters of support, cooperative projects, the sharing and combining of funds, and meetings to share information and ideas. Creating and maintaining this cooperative approach is supported through formal engagement with interagency collaborative teams, NPS task forces, and representative advisory groups, as well as through more informal but ongoing NPS program coordination and outreach efforts.

The state works to ensure its local partners and grantees have the capacity to effectively carry out watershed implementation projects funded to support its NPSMP. To address barriers to increased equity, state programs can incorporate the additional flexibility provided in these guidelines to use project funds to support watershed plan development and capacity building in disadvantaged communities. States can also incorporate capacity development by supporting local watershed

coordinators and leveraging community resources, such as local minority-serving institutions, community organizations, and local businesses.

The state seeks public involvement and comments on significant program changes from diverse sources such as:

- Local, regional, state, interstate, and federal agencies
- Tribal NPS programs and Tribal government representatives, as well as other Indigenous Peoples, including, for example, Indigenous and Tribal community-based organizations and individual Native Americans.
- Public interest groups

- Industry representatives
- Municipalities and public water systems
- Academic institutions
- Private landowners and producers
- Concerned citizens and others, as appropriate

Engaging with a wide range of stakeholders ensures that environmental objectives are well-integrated with economic stability and other social and cultural objectives.

6. The state manages and implements its NPSMP efficiently and effectively, including necessary financial management.

The state implements its NPSMP to solve water quality problems as effectively and expeditiously as possible, report progress in meeting milestones and improving water quality (Section 319(h)11), and make satisfactory progress each year by meeting its schedule of annual milestones (per Section 319(b)(2)(C) and Section 319(h)(8); see also Appendix D of this document). To ensure that priority water quality problems are addressed in a cost-effective and efficient way, the state program includes a process for identifying water restoration and protection priorities and deploys resources strategically to address those priorities. The state's work plans for watershed projects and statewide activities are well-designed, with sufficient detail to ensure effective implementation. The state implements its activities and projects, including all tasks and outputs, in a timely manner. The state has established systems to ensure it meets its reporting obligations and uses the EPA's GRTS effectively. The state employs sufficient staff and appropriate programmatic and financial systems to manage Section 319 funds for maximum water quality benefits while ensuring that Section 319 dollars and nonfederal match are used efficiently and consistently with legal obligations. The state ensures that Section 319 funds complement and leverage funds available for technical and financial assistance from other federal sources and agencies, including funding through CWSRF, DWSRF, CWA Section 604(b), USDA NRCS, and others.

7. The state evaluates its NPSMP using environmental and functional measures of success and revises its NPSMP plan at least every five years.

The state establishes appropriate measures of progress in meeting programmatic and water quality goals and objectives identified in key component 1 above. The state assesses the program's effectiveness in meeting its goals and objectives, revises its activities, and appropriately tailors its annual work plans based on a review of the monitoring/evaluation strategies. State program goals and

objectives are revised as necessary to reflect progress or problems encountered, strategies towards achieving the goals, and indicators to measure progress. The state should use the five-year update to address evolving issues such as changing priorities, updated science, or natural hazard impacts on state NPS programs. Updating the milestones every five years provides an opportunity to gauge the effectiveness of programs, make needed mid-course corrections and describe outcomes and key actions expected each year. For example, if an emerging contaminant is identified as a potential threat, the state can update its NPSMP plan to include strategies to address the contaminant. The state should include and be prepared to deploy all potential strategies and management approaches in its

management program to ensure issues can be readily addressed as they arise (e.g., natural hazard response, presence of emerging contaminants, changes in state priorities).

The state evaluates its NPSMP using environmental and functional measures of success. Staff from the state's NPSMP, TMDL program, and other water quality-related programs collaborate on evaluation strategies to ascertain the following:

- Restored waters/NPS impairments eliminated (i.e., water quality impairments removed) and other documentable water quality improvements and successes.
- Section 319-funded watershed projects with significant NPS pollutant load reduction.
- The number of remaining NPS-impaired waters.
- The number of remaining NPS-threatened, healthy waters.
- Any emerging NPS issues (e.g., emerging NPS pollutants or categories of concern).
- Additional data needs.

The state integrates monitoring and evaluation strategies with ongoing federal natural resource inventories and monitoring programs.

The state's annual report, as required under Section 319(h)(11), characterizes the state's progress in meeting annual milestones, implementing BMPs and watershed projects, and, to the extent information is available, achieving reductions in NPS pollutant loadings and improvements in water quality resulting from program implementation (i.e., achieving water quality goals).

Water quality improvements are a functional measure of program success and are also a national NPS Program reporting measure, as reported through the NPS Success Stories. NPS Success Stories and other significant milestones captured in annual reports and interim metrics are described in Chapter 8.7.

States can use feedback and findings from their EPA region's satisfactory progress determinations to support critical evaluation and strategize program improvements.

The state NPSMP is reviewed and revised at a minimum every five years. The revision is not necessarily a comprehensive update unless significant program changes warrant a complete revision; instead, an update targets the outdated parts of the program. At a minimum, this includes updating annual milestones and the schedule for program implementation to ensure they remain current and oriented toward achieving water quality goals.

Appendix C

Geologic Timeline

ERA	PERIOD/ SYSTEM	MILLIONS YEARS AGO	PREDOMINANT ROCK TYPES IN INDIANA	PRINCIPAL FOSSIL TYPES IN INDIANA
CENOZOIC	QUATERNARY	2.6	Unconsolidated deposits - glacial till, sand, gravel, silt, marl, clay, and peat deposited during and after continental glaciation	Mastodon, mammoth, peccary, dire wolf, saber-toothed cat, gastropods, pelecypods, plants, and pollen
	TERTIARY	65.5	Unconsolidated sediment consisting of clay, mud, gravel, sand, and silt	Short-faced bear, peccary, camels, snakes, rodents, fishes, birds, and turtles
MESOZOIC	CRETACEOUS	145.5	None present	None present
	JURASSIC	199.6	None present	None present
	TRIASSIC	251	None present	None present
PALEOZOIC	PERMIAN	299	None present	None present
	CARBONIFEROUS: PENNSYLVANIAN	318.1	Shale, sandstone, mudstone, clay, coal, limestone, and conglomerate	Lycopods, *Calamites*, seed ferns, true ferns, *Cordaites*, and amphibians
	CARBONIFEROUS: MISSISSIPPIAN	359.2	Shale, sandstone, siltstone, limestone, and gypsum	Crinoids, brachiopods, cephalopods, corals, molluscs, trilobites, bryozoans, fishes, arthropods, and foraminifera
	DEVONIAN	416	Upper part: carbonaceous shale Lower part: limestone, dolostone, and shale	Corals, brachiopods, cephalopods, trilobites, pelecypods, and bryozoans
	SILURIAN	443.7	Dolostone, limestone, siltstone, and shale	Corals, stromatoporoids, bryozoans, brachiopods, trilobites, gastropods, pelecypods, crinoids, and eurypterids
	ORDOVICIAN	488.3	Upper part: shale and limestone Lower part: limestone, dolostone, and sandstone*	Cephalopods, trilobites, brachiopods, bryozoans, crinoids, pelecypods, and gastropods
	CAMBRIAN	542	Sandstone and dolostone*	Trilobites, brachiopods, and sponges
PRECAMBRIAN		4,600	Granite, marble, gneiss, and other igneous and metamorphic rock types*	Microbes

* Present only in the subsurface

Geologic time dates from U.S. Geological Survey, 2010, Divisions of geologic time—major chronostratigraphic and geochronologic units: U.S. Geological Survey Fact Sheet 2010-3059.

Indiana Geological Survey
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Bloomington, IN 47405-2208
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Appendix D

Indiana Designated MS4s

For updated information on Indiana designated MS4 entities currently permitted, please reference www.idem.in.gov/stormwater/municipal-separate-storm-sewer-systems-ms4/designated-ms4-entities-currently-permitted/.

Appendix E

IDEM Watershed Management Plan (WMP) Checklist 2024

Name of Project:		
WMP Draft Date:		
IDEM Reviewers:		**WMP Review Date:**
1.	**2.**	**3.**

Instructions: Elements 1-27 must be met for the WMP to be able to be approved by IDEM.

The most current IDEM WMP Instructions document should be used to complete the WMP.

Section 1: Watershed Community Initiative

Pages	✓	Element 1: Community Initiative
		Describes the concerns that led the community to initiate this watershed project and discusses the local leaders

Comments:

Pages	✓	Element 2: Steering Committee
		Has a description and table of the steering committee and who they represent

Comments:

Pages	✓	Element 3: Public Outreach and Stakeholder Concerns
		Describes any outreach efforts used to generate stakeholder involvement
		Explains how stakeholder concerns were gathered
		Includes a list of stakeholder concerns

Comments:

Section 2: Overall Watershed Inventory

Pages	✓	Element 4: Geology/Topography Characteristics
		Explains the geologic/topographic features that define the watershed's drainage pattern
		If applicable, describes karst topography or any other unique features

Comments:

Pages	✓	Element 5: Hydrology Characteristics
		Includes a brief overview of the hydrology as it pertains to the watershed
		Has map(s) of ☐streams, ☐lakes, ☐wetlands, ☐watershed boundaries
		Quantifies ☐streams (miles), ☐lakes (# & acreage), ☐wetlands (acreage)
		Explains how ☐streams, ☐lakes, and ☐wetlands are used by the public
		Describes any hydrological modifications within the watershed (such as legal drains, dams, channelization, tile drains, dredging)

		Includes list of subwatersheds with names, HUC #, and acreage of each subwatershed

Comments:

Pages	✓	Element 6: Soil Characteristics
		Includes narrative of soil characteristics that can affect water quality
		Has map(s) of ☐highly erodible soils, ☐hydric soils, and ☐septic system suitability
		Quantifies ☐highly erodible soils, ☐hydric soils, and ☐septic system suitability (ac, % of watershed)

Comments:

Pages	✓	Element 7: Land Use Characteristics
		Includes a description of general land use in the watershed
		a. Has map(s) of land use layers pertinent to the watershed
		b. Quantifies land use types (acreage and percent of watershed)
		Includes narrative of major nonpoint source pollutants potentially impacting watershed. Consider sources from agricultural, forested, and urban areas. (such as tillage transect information, fertilizer/manure, livestock operations, pet and wildlife waste, large unsewered communities, etc.)
		Includes narrative and map(s) of major point source pollutants potentially impacting the watershed (such as NPDES facilities, CAFOs, CSOs, SSOs, brownfields, superfunds, LUSTs, manure application or storage, etc.)

Comments:

Pages	✓	Element 8: Other Planning Efforts
		Explains how other planning efforts impact water quality in the watershed (such as MS4 plans, city/county master plans, TMDL reports, other WMPs)

Comments:

Pages	✓	Element 9: Threatened & Endangered Species
		Describes threatened & endangered aquatic species that would most likely be found in the watershed. Habitats, impacts, and ongoing conservation efforts should be noted.

Comments:

Pages	✓	Element 10: Connections & Relationships
		Describes interconnection between the characteristics discussed in elements 4-9 and how they relate to the stakeholder concerns and nonpoint source pollution

Comments:

Section 3: Subwatershed Inventories

Pages	✓	Element 11: Data Targets
		Includes a table with applicable targets for ☐water quality parameters (physical & chemical), ☐biological data, ☐habitat data, & ☐references for each target

		a. If an Indiana State Standard exists for a parameter of concern, target must be at least as stringent as that standard
		b. If an NPS TMDL exists for the watershed, target must be at least as stringent as the NPS TMDL target

Comments:

Pages	✓	Element 12: Data Sources & Methodology
		For each data set used, there is narrative of ☐data background, ☐data's age, and ☐how often data was collected (potential sources include project data, windshield or desktop surveys, TMDL reports, 305b and 303d lists, other IDEM data, other WMPs, LARE studies, USGS)
		Includes methodology for each data set collected as part of the grant
		Has map of watershed boundaries with sampling locations

Comments:

Elements 13-14 should be discussed for each 12-digit HUC. If the project is at the 10-digit scale, 12-digit HUCs may be combined into sections.

Pages	✓	Element 13: Water Quality Data Analysis
		Summarizes important findings and trends from water quality data sets in Element 12 for each subwatershed
		Has map of ☐impaired waterbodies & ☐water quality sampling locations for each subwatershed

Comments:

Pages	✓	Element 14: Land Use Information
		Discusses major land use types for each subwatershed and also includes:
		a. Includes relevant information from Element 7 on a subwatershed scale
		b. Includes summary and map(s) of relevant desktop and windshield survey results (if relevant): ☐Streams lacking buffers (mi or # of locations), ☐bank erosion (mi or # of locations), ☐livestock access areas, ☐illegal dump sites, ☐large unsewered communities, ☐CSOs, ☐CAFOs, & ☐CFOs.
		c. A discussion and quantity, if relevant, of ☐fertilizer use, ☐other farm types, ☐pet and wildlife waste, ☐NPDES facilities, ☐other contaminated areas

Comments:

Section 4: Watershed Inventory Summary

Pages	✓	Element 15: Watershed Inventory Summary
		Summarizes important findings, relationships, or trends
		Has map(s) of important water quality and habitat/biology results with watershed boundaries shown

Comments:

Pages	✓	Element 16: Analysis of Stakeholder Concerns

		Includes a table that ☐lists each stakeholder concern, ☐whether the concern is supported by data, ☐evidence for each concern, ☐if concern is outside the project's scope, and ☐which concerns will be focused on
		Has narrative explanation for each concern that is supported by data but will not be focused on

Comments:

Pages	✓	Element 17: Causes
		Includes a table that pairs each concern from Element 16 with the potential causes for that problem. Potential causes must be a specific pollutant parameter, but secondary causes may also be identified. (Examples of causes include high TSS, high turbidity, high nutrient levels, high E. coli levels).

Comments:

Pages	✓	Element 18: Sources
		Includes a table that links together ☐potential causes from Element 17 with potential source(s), ☐causes, ☐magnitude, and ☐appropriate subwatershed(s) where sources are present

Comments:

Section 5: Pollutant Loads, Critical Areas, & Goals

Pages	✓	Element 19: Current Pollutant Loads & Needed Reductions
		Describes how pollutant loads and reduction needs were calculated
		Includes a table that ☐lists current loads for each pollutant identified as a potential cause, ☐the target loads, and ☐the reductions needed to meet the target loads

Comments:

Pages	✓	Element 20: Critical Areas
		Identifies critical areas that conform to the definition in the Checklist Instructions and describes how those critical areas were determined
		Describes specific ☐water quality pollutant(s) and ☐source(s) in each critical area
		Map(s) showing all critical areas

Comments:

Pages	✓	Element 21: Goal Statements
		Goal statements include ☐concern or pollutant, ☐current load or concentration for water quality goal statements, or current condition of the problem for outreach, social, or administrative goal statements, ☐target pollutant load, concentration, or condition of the problem, and ☐timeframe for goal completeness
		If water quality standards exist for a pollutant, the goal, at a minimum, must be to meet that standard
		If a NPS TMDL has been developed for the watershed, the goal, at a minimum, must be designed to achieve the reduction in pollutant load called for in the NPS TMDL

Comments:

Pages	✓	Element 22: Goal Indicators
		Includes indicators that can be measured for each goal to determine whether progress is being made toward achieving that goal
		Water quality restoration goal indicators show environmental changes in the aquatic ecosystem or water quality parameters
		Non-water quality restoration goal indicators show administrative success or social change

Comments:

Section 6: Action Register and Future Activities

Pages	✓	Element 23: Best Management Practices (BMPs) and Measures
		Lists relevant BMPs and other management measures that will achieve load reductions from Element 19 and goal statements from Element 21
		Each listed BMP is paired with the ☐pollutant(s) it will address & ☐critical area(s) it should be implemented in.
		Brief descriptions of the main BMPs are included

Comments:

Pages	✓	Element 24: Expected Load Reductions
		Includes a table that ☐lists relevant BMPs, ☐expected load reduction for each BMP, and ☐target amount to install for each BMP

Comments:

Pages	✓	Element 25: Action Register Table
		Includes a description of considerations of federal, state, local, or private funds or resources to assist with implementing the plan
		Includes an Action Register Table that contains the following:
		a. A list of objectives designed to achieve the goals from Element 22
		b. What BMPs or education and outreach activities will be used to achieve each objective
		c. Identifies target audience for each objective
		d. Includes a timeline of measurable milestones (ex: short/mid/long term) for determining whether each objective is being implemented according to the schedule
		e. An estimate of financial cost (in dollar amount) needed to achieve each objective. May include financial estimates for BMPs, outreach activities, salary, promotional costs, technical costs, travel, training, etc.
		f. Identifies potential partners, technical assistance needed, and who will provide technical assistance to implement each objective

Comments:

Section 7: Tracking Effectiveness

Pages	✓	Element 26: Monitoring and Tracking Strategy

		Includes a monitoring and tracking strategy that has the following components in a table:
		a. Lists and explains each method that will be used to track indicators
		b. The tracking schedule
		c. Estimated cost for tracking indicators
		d. Lists potential partners responsible for implementing
		e. Explain technical assistance needed and who will provide it
		Includes an adaptive management strategy

Comments:

Pages	✓	Element 27: Future Activities
		Includes a description of future WMP activity
		Has project sponsor contact information
		Has criteria and timeframe for when WMP will be re-evaluated and revised
		Describes who will be responsible for the re-evaluating and revisions

Comments:

Appendix F

IDEM-Approved 9-Element Watershed Management Plans

No.	Name	HUC(s)
1	Anderson River (Upper) WMP	051402010404, 051402010402
2	Bacon Prairie Ditch WMP	05120201080060
3	Baugo Creek WMP	04050001230010, -040
4	Bean Blossom Creek WMP	05120202010
5	Big Creek WMP	05120113110
6	Big Pine Creek WMP	0512010804
7	Big Walnut Creek/Deer Creek WMP Rewrite	05120203010, -050
8	Brandywine Creek WMP (LARE)	0512020403
9	Browns Wonder Creek-Sugar Creek WMP	0512011001
10	Buck Creek WMP	051202010604
11	Busseron Creek WMP	0512011115
12	Cedar Creek WMP	04100003080, -090
13	Central Muscatatuck WMP	0512020701, 0512020706
14	Clifty Creek WMP Update	0512020601
15	Coffee Creek WMP*	040400010403
16	Conns Creek WMP	05120205040
17	Cool Creek WMP	05120201090030
18	Deep River-Portage Burns Waterway WMP*	04040001030
19	Deer Creek-Sugar Creek WMP	0512010504, 0512010505, 0512010506
20	Duck Creek WMP	05120201060
21	Dunes Creek WMP*	04040001080020
22	Eagle Creek WMP	05120201120
23	Eel River (Middle) WMP	0512010405, 0512010406
24	Eel River-Tick Creek WMP	05120104070060
25	Elkhart River WMP	04050001170, -210
26	Fawn River WMP	0405000108
27	Flat Lake WMP	07120001060070
28	Flatrock Creek/Auglaize River WMP	0410000712
29	Flatrock-Haw Creek WMP	0512020506
30	Fourteen Mile Creek/Goose Creek-OH River WMP	0514010106, 0514010104
31	Galena River WMP (LARE)*	0404000110
32	Garrison Creek WMP	05080003040100
33	Geist Reservoir-Upper Fall Creek WMP (LARE)	0512020108

34	Headwaters Yellow River WMP	0712000103
No.	**Name**	**HUC(s)**
35	Highland - Pigeon WMP	05140202010020, -030; 05140202020, -030, -040, -070; 05140202050010; 05140202100040
36	Hogan Creek WMP	05090203040
37	Indian Creek (Harrison County) WMP	05140104080, -100
38	Indian Creek (Johnson County) WMP	05120201170
39	Indian Creek (Switzerland County) WMP	0509020309
40	Indian-Kentucky Creek WMP	0514010102
41	Kessinger Ditch WMP	05120202090040-060
42	Lake Manitou WMP	051201060501, 051201060502
43	Lake Maxinkuckee WMP	05120106060010
44	Lake Monroe WMP	0512020804, -05, -06, -07
45	Lambs Creek WMP	051202011501, -02, -03
46	Lauramie Creek WMP	051201070309
47	Lick Creek WMP	05080003040020
48	Limberlost-Loblolly WMP	05120101050010, -060
49	Little Blue River WMP	05120204030
50	Little Calumet River (East Branch) WMP*	040400010401, 040400010402
51	Little Calumet WMP*	04040001040020, -030; 07120003030050
52	Little Cicero Creek WMP	05120201080080, -090
53	Little Duck Lilly WMP	051202010405
54	Little Elkhart River WMP	04050001140010-030
55	Little Sugar Creek WMP	05120110040020-030
56	Little Vermillion River WMP	05120108140040-060
57	Little Wildcat Creek WMP	051201070401, 051201070402
58	Lost River WMP	0512020812, 0512020813
59	Lower Big Blue River WMP	0512020408
60	Lower East Fork White River WMP	0512020815
61	Lower Eel River WMP	05120203080, -090
62	Lower Fall Creek WMP (Update)	05120201110
63	Lower Kankakee River WMP	0712000109, 0712000111, 0712000112
64	Lower Patoka WMP Rewrite	05120209070, -080
65	Lower Pigeon Creek WMP	0514020203
66	Lower Salamonie River WMP	0512010203, 0512010204
67	Lower Salt Creek WMP	0512020808
68	Lower St. Joseph River - Bear Creek WMP	04100003070; 04100003100
69	Lower White Lick Creek WMP	05120201150130, -060, -070, -080
70	Middle Fork East Fork Whitewater WMP	05080003070030, -040

71	Middle Patoka WMP	0512020902, -06
No.	**Name**	**HUC(s)**
72	Mill Creek - Blue River WMP	0514010407
73	Morse Reservoir-Cicero Creek WMP (LARE)	0512020106
74	Mud Creek Headwaters WMP	05120107010030
75	Mud Creek WMP	05120204100020
76	Muncie Creek WMP	051202010110, 051202010111
77	Otter Creek WMP	0512011104
78	Owen County Watershed Initiative WMP	05120202020010-030
79	Patoka Lake WMP	05120209010
80	Pete's Run WMP	051201070406
81	Pigeon Creek WMP 2014 Update	04050001110020-080
82	Pigeon River WMP	0405000111
83	Pitcher Lake WMP	05120113120010
84	Pleasant Run WMP	051202011205
85	Plummer Creek WMP	0512020203
86	Prairie Creek (Daviess County) WMP	0512020207
87	Puterbaugh Creek-Heaton Lake WMP	040500012003
88	Salt Creek WMP*	04040001050
89	Salt-Pipe Creek WMP	0508000305, -06
90	Sand Creek WMP	05120206030
91	Silver Creek WMP	0514010108
92	South Fork Blue River WMP	0514010406
93	South Fork Wildcat WMP	051201070301-11
94	South Laughery Creek WMP	05090203070-080
95	Spring Creek - Lick Run WMP	051201070307
96	St. Joseph (Middle) WMP	041000030502, 041000030504, 041000030505, 041000030506
97	St. Joseph River (Lake Michigan) WMP	04050001
98	St. Joseph River (Upper) WMP	0410000304, 041000030301, 041000030305, 041000030203
99	St. Mary’s River WMP	04100004 (IN only)
100	Stahl Ditch - Kitty Run WMP	051201070403, 051201070109
101	Stony Creek WMP	05120201070040-070
102	Sugar Creek WMP	05120204060
103	Swanfeld Ditch WMP	05120201050080
104	Tanners Creek WMP	05090203030
105	Trail Creek WMP*	040400010103, -05
106	Treaty Creek - Wabash River WMP	0512010114

No.	Name	HUC(s)
107	Turkey Creek/Askren/Round Prairie Creek WMP	051201070103
108	Turman Creek-Kelley Bayou WMP	051201111201, 051201111202, 051201111303, 051201111203
109	Turtle Creek WMP	05120111150020, -030
110	Upper Elkhart River WMP	0405000115, 0405000116, 0405000118
111	Upper Iroquois River WMP	0712000201, -02, -03, -04, -05
112	Upper Maumee WMP	0410000501, 0410000502
113	Upper Middle Eel River WMP	0512010403, 0512010404
114	Upper Mississinewa River WMP	0512010301, -02, -03, -04, -05
115	Upper Patoka WMP	05120209020
116	Upper Salamonie River WMP	0512010201, -02
117	Upper Tippecanoe River WMP	05120106010
118	Upper Wabash River WMP	Indiana portions of 05120101010, 05120101040, 05120101050, 0512011060
119	Upper Wabash River WMP Phase III	0512010110, 0512010112, 0512010113
120	Wabash River (Region of the Great Bend) WMP	0512010801, 0512010802, 0512010805
121	Wabash River WMP	0512010115, 0512010116
122	Walnut Creek-Tippecanoe River WMP	0512010602
123	White River (Delaware County) WMP	051202010301, 051202010305, 051202010204, 51202010108
124	Whitewater (West Fork) WMP	0508000301, -02, -03
125	Whitewater River WMP	0508000308
126	Wildcat (South Fork) Blinn & Kilmore WMP	051201070306
127	Youngs Creek WMP	0512020406

*Coastal Zone WMPs

Note that only WMPs that meet U.S. EPA' 9 Elements and are eligible to receive Section 319 implementation funding are included in the list above.

Appendix G

Indiana Attorney General Opinion of IDEM's Authority to Control and Prevent NPS

STATE OF INDIANA
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INDIANA ATTORNEY GENERAL

TELEPHONE: 317.232.6201
FAX: 317.232.7979

January 9, 2013

Mike Molnar
Program Manager
Lake Michigan Coastal Program
Indiana Department of Natural Resources
402 West Washington Street, Room W267
Indianapolis, IN 46204

RE: Authority to prevent and control non-point source pollution;*Advisory Letter #12-35*

Dear Mr. Molnar:

The Department of Natural Resources (DNR) requested an opinion from our office regarding whether the Indiana Department of Environmental Management (IDEM) has authority under applicable statutes and rules to prevent and control non-point source pollution within Indiana. We understand that such an opinion is necessary for joint approval of the state's non-point pollution control program by the National Oceanic and Atmospheric Administration and the U.S. Environmental Protection Agency pursuant to Section 6217 of the Federal Coastal Zone Act Reauthorization Amendments of 1990, 16 U.S.C. 1455, P.L. 101-508.

BRIEF ANSWER

In response to DNR's request we can provide the following opinion confirming that IDEM has the relevant authority in this regard based on permitting laws and related authority to require adequate control of resource management measures.

ANALYSIS

IDEM is the agency within the State of Indiana designated to implement both the Clean Water Act and the Safe Drinking Water Act. As such, IDEM has been granted broad general authority to secure the benefits of these federal Acts and secure compliance therewith. Additionally, a number of state statutes provide IDEM with broad regulatory authority over pollution control and abatement.

IC 13-18-3-1 requires the Water Pollution Control Board (WPCB) [1] to adopt rules for the control and prevention of pollution to Indiana's waters. Additionally, IC 13-18-3-11 provides that all water pollution control laws shall be liberally construed to effectuate the purposes of those laws. For instance, IC 13-18-4-5 states that "a person may not throw, run, drain, or otherwise dispose; or cause, permit, or suffer to be thrown, run, drained, allowed to seep, or otherwise disposed; into any of the streams or waters of Indiana any organic or inorganic matter that causes or contributes to a polluted condition of any of the streams or waters of Indiana..." Therefore, this Act protects waters of the state from pollution irrespective of the specific activity from which the pollution is generated.

IC 13-15-1-2 Provides that the WPCB shall establish requirements for the issuance of permits to control water pollution. The rules may include appropriate management measures to prevent or abate water pollution as necessary. Furthermore, IDEM may issue administrative orders to cease a violation and to abate the condition of pollution. IC 13-18-4-6. Such orders would, among other things, require that the "alleged violator take specific action to correct the violation." IC 13-30-3-4(2) (B)(i). Additionally, IDEM may obtain court orders for injunctive relief pursuant to IC 13-30-4-1(b)(2) and/or IC 4-21.5-6-6(1). The remedy request for action could include management measures such as those suggested in Section 6217(g) guidance. Furthermore, while the majority of the water programs in Indiana are permit-related, IDEM has the authority to control and prevent non-point source pollution in the absence of a permit as well and require implementation of the Section 6217(g) measures, as necessary, including those for agriculture, urban development, roads, highways and bridges, hydromodification, and wetlands and riparian areas.

IDEM is not required to wait for a nonpoint source violation to occur before taking action. Pursuant to IC 13-18-4-6, IDEM may issue administrative orders against a person who "is violating or is about to violate" the rules provided under the WPCA. Additionally, IDEM may take "appropriate steps to prevent any pollution that is determined to be unreasonable and against public interests in view of the condition in any stream or other waters of Indiana." IC 13-18-4-4. Therefore, IDEM has specific statutory authority to proactively prevent non-point source pollution from occurring. Any person violating the above provisions is subject to civil penalties. IC 13-30-4-1.

IDEM has promulgated water quality standards that also apply to non-point sources of pollution. The WPCB has specific authority to establish rules to determine what qualities and properties of water indicate a polluted condition of the water in any of the streams or waters of Indiana. IC 13-18-4-1. The minimum surface water quality standards (MSWQS) specify minimum conditions for waters within the Great Lakes system. Pursuant to 327 lAC 2-1.5-8 "All surface waters at all times and all places...shall meet the minimum conditions of being free from substances, materials, floating debris, oil, or scum attributable to municipal, industrial, agricultural, and other land use practices..." A person violating these standards is subject to an administrative order requiring the person to cease the violation and abate the condition of pollution, as well court orders for injunctive relief. IC 13-18-4-6, 13-40-4-1(b)(2), 4-21.5-6-6(1). The remedy request for action could include the implementation of management measures such as those suggested in the Section 6217(g) guidance.

---

[1]Pursuant to House Enrolled Act 1002-2012 (Public Law 133-2012), the WPCB was abolished effective January 1, 2013 and replaced by the Environmental Rules Board. The new board will have essentially the same powers and duties as those outlined in this opinion, and the legislative change will not affect IDEM's ability to prevent and control nonpoint source pollution.

Finally, if the controls available to IDEM at present are not sufficient to address non- point source pollution, the WPCB has ample authority to craft additional regulations as necessary. The Board is given broad authority to "adopt rules for the control and prevention of pollution in waters of Indiana with any substance that is deleterious to the public health ...or by which any fish life or any beneficial animal or vegetable life may be destroyed; or the growth or propagation of fish life or beneficial animal or vegetable life is prevented for injuriously affected." IC 13-18-3-1. Additionally, the Board may adopt rules restricting the polluting context of any waste material and polluting substances discharged or sought to be discharged into any of the streams or waters of Indiana. IC 13-18-4-3.

CONCLUSION

All of these general authorities, which taken together with the regulations promulgated by the Water Pollution Control Board provide IDEM with the authority to prevent and control non- point source pollution within Indiana and require implementation of the 6217(g) management measures, as necessary, including those for agriculture, urban development, roads, highways and bridges, hydromodification, and wetlands and riparian areas.

Please let me know if you need anything further in this regard.

Sincerely,

Matt Light
Chief Counsel
Advisory & ADR Services

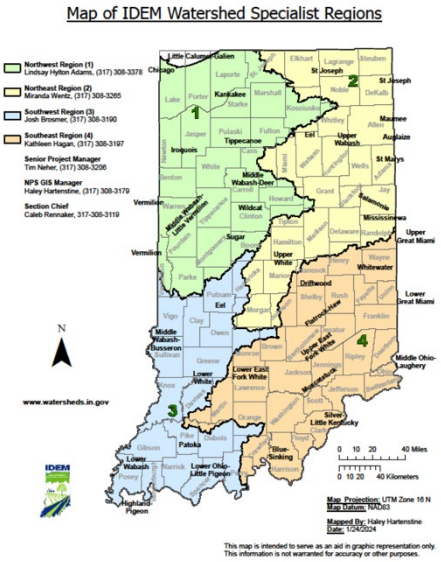
Division cc: Nancy King, IDEM Office of Legal Counsel

Appendix H

Stakeholder Survey

The Indiana State Nonpoint Source (NPS) Management Plan guides the usage of Clean Water Act (CWA) Section 319 funds received by the Indiana Department of Environmental Management (IDEM) from the United States Environmental Protection Agency (U.S. EPA). Current U.S. EPA policy requires states to update their plans every five years. As IDEM begins to revise the plan, we are very interested to get your input, so our program best reflects your interests. Please complete the following survey to assist with the 2024 revision of the Indiana State NPS Management Plan.

1. In which of the following region(s) do you represent water quality interest? (Select all that apply)



   - ◯ Northwest
   - ◯ Northeast
   - ◯ Southwest
   - ◯ Southeast

2. Are you aware of IDEM's Nonpoint Source Program? (Select one)

   - ◯ No
   - ◯ Yes

3. What is your experience with the nonpoint source work in Indiana? (Select all that apply)

   - ☐ Not involved in nonpoint source work
   - ☐ Previously involved in a watershed group
   - ☐ Currently involved in a watershed group
   - ☐ I have implemented Best Management Practices on my property
   - ☐ I am an active partner with IDEM's Nonpoint Source Program

4. How would you describe your relationship to nonpoint source work in the state? (Select all that apply)

   - ☐ Part of a watershed group
   - ☐ Conservation professional (including federal, state, and local employees)
   - ☐ Business stakeholder
   - ☐ Interested citizen

☐ Academic

☐ IDEM Nonpoint Source Grantee (current or former)

☐ Farmer

☐ Industry

☐ Other, please specify _____

5. In what ways could Indiana change the way that it administers its grant program to be more effective at abating nonpoint source pollution in the State?

   ☐ Less paperwork

   ☐ Less turn-around time for invoices

   ☐ Allow more time for the 319 grant application process

   ☐ Add an online grant application process

   ☐ Provide additional information about the eligibility of projects

   ☐ Other, please specify _____

6. Please rate the effectiveness of each goal in the current Nonpoint Source Management Plan at addressing the needs of nonpoint source pollution efforts in the state. The current goals of the State Nonpoint Source Management Plan are:

   Goal 1: Utilize partnerships to leverage resources available for nonpoint source pollution management.

   ◯ Not at all effective
   ◯ Somewhat effective
   ◯ Moderately effective
   ◯ Very effective
   ◯ Not sure

   Additional comments: [Text Box]

   Goal 2: Monitor and assess Indiana waters for nonpoint source impairments and improvements.

   ◯ Not at all effective
   ◯ Somewhat effective
   ◯ Moderately effective
   ◯ Very effective
   ◯ Not sure

   Additional comments: [Text Box]

Goal 3: Develop and conduct a strategic outreach and education program.

◯ Not at all effective
◯ Somewhat effective
◯ Moderately effective
◯ Very effective
◯ Not sure

Additional comments: [Text Box]

Goal 4: Improve Indiana's water quality, including surface and groundwater, by reducing NPS pollutants such as nutrients, sediment, and bacteria; restoring aquatic habitats; and establishing flow regimes that mimic natural conditions.

◯ Not at all effective
◯ Somewhat effective
◯ Moderately effective
◯ Very effective
◯ Not sure

Additional comments: [Text Box]

Goal 5. Protect sensitive, vulnerable, and high quality waters of the state so that they may continue to meet their designated uses.

◯ Not at all effective
◯ Somewhat effective
◯ Moderately effective
◯ Very effective
◯ Not sure

Additional comments: [Text Box]

7. The Indiana Nonpoint Source Program has a variety of partners it works with to reduce nonpoint source pollution in the State. Do you know of any program areas or stakeholders that the NPS Program should be sure to engage? [Text Box]

8. Are there any aspects missing or recognized weaknesses from the 2019 - 2023 Indiana Nonpoint Source Management Plan?

9. What level of prioritization do you feel IDEM should address the nonpoint source pollution challenges listed below. (Check one for each row.)

Nonpoint challenges	No priority	Low priority	Medium priority	High priority	Not sure
Algae blooms					
Bacteria contamination from runoff					
Bacteria contamination from septic systems					
Fish kills					
Nonpoint Source impact on marginalized communities					
Nutrient runoff from farms					
Nutrient runoff from urban/ suburban sources					
Drinking water contamination					
Sedimentation issues					
Protecting outstanding state resource waters					
Protecting outstanding state resource waters with endangered, threatened, or rare species					

10. From the same list of challenges (drop down menu), which one is having the largest negative impact on public health and environmental quality in Indiana?
11. From the same list of challenges (drop down menu), which one has the highest amount of awareness among the public in Indiana?
12. From the same list of challenges (drop down menu), which one has lowest amount of awareness among the public in Indiana?
13. From the same list of challenges (drop down menu), which one has the greatest potential for improvement with concerted effort over the next 5 years?
14. Think about the efforts that have been directed to these issues over the past 5 years. Which one deserves more attention and dedication of resources than it has been getting?
15. Do you have any general comments about the Indiana Nonpoint Source Program? [Text Box]

Appendix I

List of Survey Stakeholders

Organizations
Academics
DNR Lake Michigan Coastal Program
Domestic Action Plan (DAP) Advisory Committee
Environmental groups (MCM)
Farm Bureau
Hoosier Riverwatch
IDEM's Media and Communication Services (MACS) distribution lists.
Indiana Association of Soil and Water Conservation Districts (IASWCD)
Indiana Conservation Partnership
Indiana Lakes Management Society (ILMS)
Indiana Water Resources Association (IWRA)
Indiana Watershed Leadership Academy (IWLA)
MS4 distribution list
Northwest Indiana Regional Planning Commission (NIRPC)
Rural Wastewater Task Force
The Nature Conservancy (TNC)
University contacts distribution list
Water Monitoring Council newsletters

Appendix J

319 FOTG BMPs List

Section 319 Grant Program Eligible NRCS Field Office Technical Guide Practices

Practice Name	Key Requirements
Access Control	1. Livestock exclusion only from stream, wetland or woodland. 2. Area protected must have a minimum of 30 ft distance to water in the case of streams, measured from barrier to water's edge.
Access Road	1. Must be used as approach to stream crossing (578). Distance is determined on a case-by-case basis. 2. One way traffic only.
Agrichemical Handling Facility	
Animal Mortality Facility	
Animal Trails and Walkways	
Composting Facility	
Comprehensive Nutrient Management Plan	1. Must follow EQIP Conservation Activity Plan (Practice Code 102). 2. For CNMP development, the NRCS CNMP Review Checklist must be completed and signed by the landowner, a Certified CNMP Developer, and an Approved NRCS CNMP Reviewer, if appropriate.
Conservation Cover	
Constructed Wetland	
Contour Buffer Strip	
Contour Farming	
Cover Crop	1. The cover crop cannot be mechanically harvested for grain, seed or forage. This includes dry hay, straw, bale age, silage, haylage, green chop, etc. 2. Grazing of cover crops is allowed if used to address an existing resource concern caused by existing livestock, and the cover crops will be grazed according to a grazing plan. 3. Funds may be used to establish the cover crop only (does not include removal). 4. This practice is required to be maintained for one season. A farmer is eligible to receive cost-share on a field a maximum of 3 times.
Critical Area Planting	

Practice Name	Key Requirements
Denitrifying Bioreactor	
Diversion	
Drainage Water Management	
Fence	1. Only eligible if used to exclude livestock under (472) Access Control or for pasture management that meets (528) Prescribed Grazing standard. 2. Temporary fence is not eligible under this practice.
Field Border	
Filter Strip	
Forage and Biomass Planting	
Grade Stabilization Structure	This practice may not be used in a water of the State unless appropriate permits have been obtained.
Grassed Waterway	
Heavy Use Area Protection	
Integrated Pest Management	1. For pest management plan development, the NRCS Pest Management Plan Checklist must be completed and signed by the producer/operator and a Certified Pest Management Specialist. 2. For PMP implementation, the item that was completed in the PMP that produced an outcome must be listed on the cost-share form.
Irrigation Water Management	1. Eligible only for existing irrigation systems. Participant must have irrigated 2 of the past 5 years. 2. A Uniformity Test and flow monitoring is required. 3. Cost-share is for detailed record keeping and data collection and irrigating according to an approved irrigation scheduling program (such as Purdue's Michiana Irrigation Scheduler or equivalent). 4. Management must decrease nonpoint source pollution of surface or groundwater resources.
Land Reconstruction, Abandoned Mine Land	
Lined Waterway or Outlet	1. Must be applied as part of a resource management system. 2. This practice may not be used in a water of the State unless appropriate permits have been obtained.
Mulching	Only eligible to support another practice for the purpose of establishment of permanent vegetative cover.

Practice Name	Key Requirements
Nutrient Management	1. For nutrient management plan development, the Nutrient Management Plan Checklist must be completed and signed by the producer/operator and a Certified Nutrient Management Specialist. 2. For NMP implementation, the item that was completed in the NMP that produced an outcome must be listed on the cost-share form.
Open Channel	1. 2-stage ditch only. 2. Eligible for existing constructed channels with > 1 square mile drainage area. 3. Site evaluation by person with adequate engineering approval is required prior to implementation.
Pipeline	Must be in conjunction with exclusion fencing (382), watering facility (614), or prescribed grazing (528).
Pond	1. Eligible only for livestock watering. Livestock must be excluded from accessing the pond. 2. Must be sized for the grazing need or the minimum to meet standards.
Prescribed Burning	1. The Prescribed Burn Plan must be reviewed and signed by the Burn Boss and a Fire Manager who are familiar with the fuel type being used. 2. Must obtain a Variance from the IDEM Office of Air Quality. 3. Must be implemented to prepare site for an additional approved vegetative BMP.
Prescribed Grazing	Must follow the "Additional Criteria to Improve or Maintain Surface and/or Subsurface Water Quality and Quantity" in the standard.
Pumping Plant for Water Control	Eligible only for livestock watering.
Residue and Tillage Management, Mulch Till	1. This practice must either be used as a transition from conventional tillage to the Residue and Tillage Management, No Till/Strip Till (329); or Mulch-Till must meet the "modified No-Till" criteria; or applicant must prove that the current system's soil loss is above "T" and this practice will take it below "T". 2. Applicant must have mulch-tilled/modified no-tilled and/or no-tilled for no more than 5 consecutive years in order to be eligible. 3. Must develop nutrient management (590) and pest management (595) plans that are specific for a mulch-till system and have any component critical to the success of the system implemented the fall prior to the implementation of mulch-till.
Residue and Tillage Management, No Till/Strip Till	1. Applicant must have no-tilled for no more than 5 consecutive years in order to be eligible. 2. Must develop nutrient management (590) and pest management (595) plans that are specific for a no-till system and have any component critical to the success of the system implemented the fall prior to the implementation of no-till.

Riparian Forest Buffer	
Practice Name	**Key Requirements**
Riparian Herbaceous Cover	

Roof Run-off Structure	1. Must limit stormwater run-off, thus reducing soil erosion and increasing the infiltration rate. 2.This practice includes cisterns and rain barrels.
Spring Development	Must be in conjunction with exclusion fencing (382) or prescribed grazing (528).
Stormwater Run-off Control	May not be used to implement practices for the purpose of meeting any State Rule or National Pollutant Discharge Elimination System (NPDES) Storm Water Program requirements. These requirements most often apply to Rule 5 (327 IAC 15-5) and Rule 13 (327 IAC 15-13), which is also known as the Municipal Separate Storm Sewer System (MS4) rule.
Streambank and Shoreline Protection	Bioengineering and/or vegetative establishment only.
Stream Crossing	1. May only be used in conjunction with exclusion fencing (382) to limit livestock access to water of the State, or for equipment crossing in conjunction with Access Road (560). 2. For livestock access, the practice must be sited and constructed in a manner to deter loafing time in the stream.
Stream Habitat Improvement and Management	This BMP is considered a secondary practice.*
Strip Cropping	Crop strips will be no wider than 360 feet.
Structure for Water Control	Only as needed for a drainage water management system (554).
Subsurface Drain	Must be used in conjunction with a Grassed Waterway (412), Diversion (362), Drainage Water Management System (554), WASCOB (638), or other approved BMP in which subsurface drainage is necessary.
Terrace	
Tree and Shrub Establishment	Must be used for long-term erosion control and improvement of water quality.

Underground Outlet	Must be used in conjunction with a Terrace (600), Grassed Waterway (412), Diversion (362), Drainage Water Management System (554), WASCOB (638), or other approved BMP in which subsurface drainage is necessary.
Vegetated Treatment Area	This BMP is considered a secondary practice.*
Practice Name	**Key Requirements**
Waste Facility Cover (Roofs and Covers)	

Waste Storage Facility	1. Must be above and beyond permit requirements. 2. If a waste facility is on a property that does not contain animals there must be a contract in place to receive manure for at least 10 years. 3. A CNMP must be written, delivered and certified prior to the start of the waste storage facility.
Waste Utilization	1. 319 funds may only be used for technology (including equipment modifications) that reduces or eliminates surface application of manure or that increases application efficiency such as no-till manure injection, variable rate controllers, and Geographic Positioning Systems. 2. Must be above and beyond permit requirements. 3. Soil test must have been completed within the last 4 years to be valid. The minimum number of acres necessary for manure application shall be based on the IDEM "Manure Application Land Requirements." 4. Only fields with a soil test phosphorus level of <50 ppm (100 lbs) per acre will be eligible. 5. Manure must be applied in accordance with a Waste Utilization Plan, Nutrient Management Plan, or CNMP for the field. 6. Does not include any aspect of transport or hauling of waste.
Water and Sediment Control Basin	1.Nutrient Management (590) and Integrated Pest Management (595) must already be implemented or implementation started within the year the structure is being built. 2. Fields within the watershed of the structure must be managed to "T", or practices must be installed in the year the structure is built that brings the soil loss to "T". 3. All of these requirements apply within the entire drainage area of the WASCOBs, whether on the applicant's land or adjacent land.
Water Well	Only for livestock watering.
Watering Facility	1. Must be used in conjunction with exclusion fencing (382) and/or prescribed grazing (528). 2. Reimbursed only for livestock watering.
Wetland Creation	

Wetland Enhancement	
Wetland Restoration	

Appendix K

Core and Supplemental Environmental Indicators Lists

Table K1. Core and Supplemental Parameters for the IDEM Nonpoint Source Program

Core parameters for monitoring in the IDEM Nonpoint Source Program	**Supplemental parameters, also included in the manual**
1. Nitrate	1. Total Nitrogen
2. Total phosphorus	2. Ammonia
	3. Total Kjeldahl Nitrogen
A sediment measure:	4. Orthophosphate
3. Total Suspended Solids, or	5. Biochemical Oxygen Demand
4. Turbidity/Transparency	6. Conductivity
	7. Suspended Sediment Concentration
A habitat measure:	8. Bank Erosion Hazard Index
5. Qualitative Habitat Evaluation Index	9. Buffer Zone Width
6. Citizens Qualitative Habitat Evaluation Index	10. Richards-Baker Flashiness Index
	11. Indiana Index of Biotic Integrity for Fish Communities
7. Dissolved oxygen	12. Macroinvertebrate Indices of Biotic Integrity
8. pH	13. Chlorophyll A
9. Stream flow	14. Carlson's Trophic State Index
10. Water Temperature	15. Indiana Trophic State Index
11. E. coli	16. Hoosier Riverwatch Water Quality Index

from the Water in Indiana: Choices for Nonpoint Source and Other Watershed Projects. (Water Monitoring Handbook; Frankenberger and Esman 2012).

Appendix L

Status of CZARA Section 6217 Conditions

INDIANA COASTAL NONPOINT PROGRAM NOAA/EPA DECISIONS ON CONDITIONS OF APPROVAL

FOREWORD

The Coastal Nonpoint Pollution Control Program, set forth in Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990 (CZARA), 16 U.S.C. § 1455b, addresses nonpoint source pollution problems in coastal waters. Section 6217 directs states and territories with approved coastal zone management programs to develop and implement management measures for nonpoint pollution control to restore and protect coastal waters (coastal nonpoint programs). This document provides the bases for the determination by the National Oceanic and Atmospheric Administration (NOAA) and the United States Environmental Protection Agency (EPA) (collectively, federal agencies) that Indiana has met the conditions that the federal agencies had identified in their earlier approval of Indiana's coastal nonpoint program on January 15, 2008, pursuant to CZARA (2008 findings). In this document, the federal agencies describe how the State program modifications since that time satisfy each of the conditions identified in the 2008 findings.

DECISION

The federal agencies issued findings on January 15, 2008, approving Indiana's coastal nonpoint program submission subject to conditions. Those findings are available at https://coast.noaa.gov/data/czm/pollutioncontrol/media/6217in_fnl.pdf. Since that time, Indiana has undertaken a number of actions to address each of the conditions identified in the 2008 findings. Based on those actions and the materials provided by the State that document how its program meets each condition, NOAA and EPA find that Indiana has satisfied all conditions on its coastal nonpoint program.

INTRODUCTION

CZARA directed EPA to develop technical guidance to assist states and tribes in designing coastal nonpoint programs. On January 19, 1993, EPA issued that guidance in the document titled *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters*, 840-B92-002 (January 1993), which addresses five major source categories of nonpoint pollution: (1) urban runoff; (2) agriculture runoff; (3) forestry runoff; (4) marinas and recreational boating; and (5) hydromodification. The guidance also addresses nonpoint source pollution issues associated with the loss of or damage to wetlands and riparian areas. The guidance is commonly referred to as the 6217(g) guidance because the statutory direction to EPA appears in CZARA Section 6217(g).

This document is organized following the same structure that was used in the federal agencies' 2008 findings to support approval of Indiana's program, with conditions, grouping together the conditions related to each major nonpoint source category or subcategory. In the 2008 findings, the federal agencies determined that Indiana met the requirements of the 6217(g) guidance for the following management measures: coastal nonpoint boundary; public participation; program coordination; the pollution prevention management measure under the urban category; all of the management measures for marina siting and design except for shoreline stabilization, storm water runoff, and fueling station design; and all of the management measures for marina and boat operation and maintenance except for petroleum control and boat cleaning. In addition to

the marina management measures noted above, the agencies approved Indiana's program subject to conditions related to the agriculture management measures (except where exempted as noted below), the urban management measures (except pollution prevention, as noted above, and where exempted, as noted below), hydromodification management measures (except where exempted as noted below), and wetland and riparian areas management measures, as well as programmatic elements related to critical coastal areas, additional management measures, and technical assistance and monitoring.

In the 2008 findings, the federal agencies determined that Indiana had provided sufficient justification to support its request to categorically exclude the forestry management measures and the irrigation water management measure for irrigated agricultural lands from its coastal nonpoint program. The State is also exempt from meeting the construction site erosion and sediment control and the construction site chemical control management measures under the urban and hydromodification (dams) categories because these activities are covered under the National Pollution Discharge Elimination System (NPDES) Phase II Storm Water Permit Program.

For each outstanding condition, this approval decision repeats the original finding and condition identified in 2008 and provides a rationale detailing how the State has met the condition. For reference purposes, a list of acronyms is included at the end of this document.

For further understanding of terms in this document, please refer to the following:[1]

- *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters* (EPA, January 1993)
- *Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance* (NOAA/EPA, January 1993)
- *Flexibility for State Coastal Nonpoint Programs* (NOAA/EPA, March 1995)
- *Final Administrative Changes to the Coastal Nonpoint Pollution Control Program Guidance for Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990 (CZARA)* (NOAA/EPA, October 1998) ("Final Administrative Changes")
- *Policy Clarification on Overlap of 6217 Coastal Nonpoint Programs with Phase I and II Storm Water Regulations* (NOAA/EPA, December 2002).

The federal agencies rely on, but do not repeat here, except as relevant to the decision, the extensive information that the State included in various submittals to support its coastal nonpoint program. Further information and analysis are contained in the administrative record for this approval decision and are available upon request at the following locations:

[1] All guidance documents for the Coastal Nonpoint Pollution Control Program are available online at: https://coast.noaa.gov/czm/pollutioncontrol/.

U.S. EPA Headquarters, Office of Water
Nonpoint Source Management Branch 1200
Pennsylvania Ave., NW (4503-T)
Washington, DC 20460
Contact: Don Waye (202/566-1170)
NOAA, Office for Coastal Management
SSMC-4, N/OCM6
1305 East-West Highway Silver
Spring, MD 20910
Contact: Allison Castellan (202/596-5039)
U.S. EPA Region 5, Water Division 77
W. Jackson Blvd.
Chicago, IL 60604-3608
Contact: Stephen Feely (312/886-6744)

II. AGRICULTURE[2]

2008 FINDING: Indiana's program may include management measures in conformity with the 6217(g) guidance, however additional clarification is needed. The State has identified a back-up enforceable authority but has not yet demonstrated the ability or the authority to ensure implementation throughout the coastal nonpoint program management area by submitting a legal opinion, demonstrating the authority and commitment to use the enforcement mechanisms where necessary, describing the laws and processes linking the implementing agencies with the enforcement agency, and describing the monitoring and tracking mechanisms the State will employ to ensure that the voluntary programs are being implemented sufficiently. Indiana has presented sufficient justification to grant an exclusion of the irrigation water management measure for irrigated agricultural lands.

2008 CONDITION: Within five years, Indiana will demonstrate that it has programs in place to conform with the 6217(g) guidance. Within five years, Indiana will submit a legal opinion and other supporting documents as described in the *Final Administrative Changes to the Coastal Nonpoint Pollution Control Program Guidance*[3] (October 1998) to demonstrate that it has adequate back-up authority to implement the agricultural management measures throughout the coastal nonpoint program management area.

2024 DECISION: Indiana has satisfied this condition.

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[2] This section begins with Roman numeral two because it follows the organization of the federal agencies' 2008 findings to support the approval of Indiana's program with conditions available at https://coast.noaa.gov/data/czm/pollutioncontrol/media/6217in_fnl.pdf. Gaps in numbering and/or lettering of subsequent sections and subsections exist for this similar reason.

[3] NOAA and EPA. 1998. Final Administrative Changes to the Coastal Nonpoint Pollution Control Program Guidance. Accessed 09/01/2022. https://coast.noaa.gov/data/czm/pollutioncontrol/media/6217adminchanges.pdf

RATIONALE: Indiana has satisfied this condition through a variety of regulatory and voluntary approaches, including its combined feeding operation rule, fertilizer and pesticide rules, and extensive outreach and technical assistance efforts through partnerships with the United States Department of Agriculture (USDA) National Resource Conservation Service (NRCS), local soil and water conservation districts, and Purdue University Extension Service (Purdue Extension). The State has also provided a legal opinion and supporting documentation that demonstrates it has adequate back-up authority to implement the agriculture management measures throughout the coastal nonpoint program management area.

Erosion and Sediment Control

The 6217(g) agriculture management measure for erosion and sediment control calls for states to:

1. Apply the erosion component of the Conservation Management System (CMS) as defined in the Field Office Technical Guide of the USDA – Soil Conservation Services (SCS) to minimize the delivery of sediment from agricultural lands to surface waters, *or*
2. Design and install a combination of management and physical practices to settle the settable solids and associated pollutants in runoff delivered from the contributing area for storms of up to and including a 10-year, 24-hour frequency.

Indiana implements the erosion and sediment control management measure through an active voluntary technical and financial assistance effort led by local Soil and Water Conservation Districts (SWCDs) that encourage the use of USDA NRCS Field Office Technical Guide (FOTG) best management practices (BMPs) such as conservation tillage/no till (FOTG Code 329),[4] conservation cover (FOTG Code 327),[5] contour farming (FOTG Code 330),[6] buffer strips (FOTG Code 332),[7] filter strips (FOTG Code 393),[8] and others, to reduce erosion and sediment runoff from agricultural practices consistent with the 6217(g) guidance. SWCDs in the three Lake Michigan counties within the coastal nonpoint program management area consistently identify soil erosion as a top agriculture resource concern and develop annual work plans to address these priority concerns within their counties. SWCDs partner with NRCS to educate farmers about BMPs to reduce erosion and control sediment from farm fields through presentations, field days, monthly board meetings, and annual meetings and newsletters. They also make site visits to interested farmers to provide one-on-one technical assistance.[9] During the site visits, SWCD and NRCS staff conduct site surveys and create property maps that are used to develop a comprehensive conservation plan for each property. SWCD and NRCS staff then work with the farmer to identify problem areas and suitable BMPs to install, as well as

[4] NRCS. 2016. Conservation Practice Standard: Residue and Tillage Management, No Till. Code 329. September 2016. Accessed 02/28/2023. https://www.nrcs.usda.gov/sites/default/files/2022-09/Residue_And_Tillage_Management_No_Till_329_PO_Sep_2016_0.pdf

[5] NRCS. 2016. Conservation Practice Standard: Conservation Cover (Code 327). Accessed 01/30/2023. https://efotg.sc.egov.usda.gov/api/CPSFile/5177/327_IN_CPS_(Con)servation_Cover_2016

[6] NRCS. 2018. Conservation Practice Standard: Contour Farming (Code 330). November 2018. Accessed 01/30/2023. https://efotg.sc.egov.usda.gov/api/CPSFile/5189/330_IN_CPS_(Con)tour_Farming_2018

[7] NRCS. 2015. Conservation Practice Standard: Contour Buffer Strips (Code 332). October 2015. Accessed 01/30/2023. https://efotg.sc.egov.usda.gov/api/CPSFile/5193/332_IN_CPS_(Con)tour_Buffer_Strips_2015

[8] NRCS. 2018. Conservation Practice Standard: Filter Strip (Code 393). January 2018. Accessed 01/30/2023. https://efotg.sc.egov.usda.gov/api/CPSFile/9413/393_IN_CPS_Filter_Strip_2018

[9] NRCS. Undated. Conservation Technical Assistance (website). Accessed 09/01/2022. https://www.nrcs.usda.gov/conservation-basics/conservation-by-state/indiana

cost-share funding opportunities from the State that can help offset the cost of implementing the BMPs. Projects that help address priority concerns, such as erosion and sediment control, receive priority consideration when applying for funding.[10] State and federal farm programs also give priority funding to projects within the Lake Michigan watershed, further encouraging the implementation of erosion and sediment control BMPs within the coastal nonpoint program management area.

Additionally, Indiana promotes implementation of erosion and sediment control practices through its watershed management planning process (discussed further under the watershed protection section below). For example, the Little Calumet-Galien watershed predominately consists of forested area and land zoned for agriculture. The Little Calumet River East Branch watershed management plan (WMP) identifies multiple stretches of streambank erosion and miles of insufficient or limited buffers within all three subwatersheds (Coffee Creek, Reynolds Creek, and Kemper Ditch). Several projects being implemented by the Porter County SWCD in the Kemper Ditch subwatershed have supported the use of cover crops and have planted native plants and trees on agriculture land to reduce erosion and improve water quality and the health of the subwatershed.[11]

SWCDs and NRCS also develop partnerships with other state and federal agencies, as well as nonprofit and private organizations, to fund and implement agricultural BMPs to improve water quality. Between 2017 and 2021, the Indiana Conservation Partnership (ICP), which consists of eight Indiana agencies and organizations, installed over 1300 conservation and farm BMPs in Indiana's three counties within the coastal nonpoint program management area. These practices were modeled to reduce sediment loads to Indiana waterways by 39.8 million pounds.[12,13,14]

Facility Wastewater and Runoff from Confined Animal Facility Management (Large and Small)

The goal of this management measure is to limit the discharge from confined animal facilities to surface waters by:

For large units:

1. Storing both the facility wastewater and the runoff from confined animal facilities that is caused by storms up to and including a 25-year, 24-hour frequency storm. Storage structures should:
    a. Have an earthen lining or plastic, membrane lining or
    b. Be constructed with concrete or
    c. Be a storage tank; and

[10] NRCS. Undated. Environmental Quality Incentives Program (website). Accessed 09/01/2022. https://www.nrcs.usda.gov/programs-initiatives/eqip-environmental-quality-incentives/indiana/environmental-quality-incentives

[11] Porter County SWCD. Kemper Ditch East Branch Little Calumet River Project. 2020. Accessed 09/01/2022. https://storymaps.arcgis.com/stories/9823c472ca8b4af6aacb64548e7ef55b

[12] ICP. 2021. LaPorte County Nutrient and Sediment Load Reductions: 2021. Accessed 09/01/2022. https://www.in.gov/isda/files/Laporte2021.jpg

[13] ICP. 2021. Porter County Sediment and Nutrient Load Reductions: 2021. Accessed 09/01/2022. https://www.in.gov/isda/files/Porter2021.png.jpg

[14] ICP. 2021. Lake County Nutrient and Sediment Load Reductions Report: 2021. Accessed 09/01/2022. https://www.in.gov/isda/files/Lake2021.png.jpg

2. Managing stored runoff and accumulated solids from the facility through an appropriate waste utilization system.

For small units:

1. Designing and implementing systems that collect solids, reduce contaminant concentrations, and reduce runoff to minimize the discharge of contaminants in both facility wastewater and in runoff that is caused by storms up to and including a 25-year, 24-hour frequency storm. Implementing these systems to substantially reduce significant increases in pollutant loadings to ground water; and
2. Managing stored runoff and accumulated solids from the facility through an appropriate waste utilization system.

The Indiana Department of Environmental Management (IDEM) updated its combined feeding operation rule (327 IAC 19-12-4) in 2012, which brought it into conformity with the 6217(g) guidance for both the large and small confined animal facility management measures. Under the rule, all new manure storage structures for confined feeding operations must be designed, constructed, and maintained with a combined storage capacity of at least 180 days storage for all materials entering the storage structure (327 IAC 19-12-4(c)). Structures must also be constructed and lined up appropriately to protect human health and environmental safety in accordance with Section 5 of Rule 327 IAC 19-12 (327 IAC 19-12-4(g)). For example, 327 IAC 19-12-4(d) requires all liquid manure storage facilities to be constructed in accordance with the Indiana NRCS Conservation Practice Standard Code 313: Waste Storage Facility (FOTG Code 313).[15] Practices required by IDEM's updated combined feeding operation rule include designing structures with reinforced concrete, steel or masonry materials, protecting waste storage facilities from a 25-year, 24-hour precipitation event, and, at a minimum, including freeboard heights of six inches for vertical walled tanks and 12 inches for all other facilities.

Where storage tanks are in environmentally sensitive areas, a flexible membrane liner should be installed to provide secondary liquid containment. In addition, manure storage facilities that contain solid manure may not be constructed in sand or gravel soils, unless they are specially designed with an approved liner, in accordance with 327 IAC 19-12-4(g).

Indiana implements the waste utilization condition through the same active voluntary technical and financial assistance effort discussed in the erosion and sediment control section above which encourages the use of the NRCS FOTG for waste utilization (FOTG Code 633).[16] This practice applies where agricultural wastes (including animal manure and contaminated water from livestock and poultry operations), solids and wastewater from municipal treatment plants, and agricultural processing byproducts are generated and/or utilized. The practice includes a variety of BMPs to reduce polluted runoff when applying agricultural wastes to land and calls for developing waste utilization plans that incorporate these best practices. For example, the timing, application, and handling of wastes will be performed in a manner that maximizes the utilization of nutrients by crops and is consistent with the facility's waste treatment plan,

[15] NRCS. 2017. Conservation Practice Standard: Waste Storage Facility (Code 313). November 2017. Accessed 01/30/2023. https://efotg.sc.egov.usda.gov/api/CPSFile/20940/313_OH_CPS_Waste_Storage_Facility_2017

[16] NRCS. 2017. Conservation Practice Standard: Waste Recycling (Code 633). October 2017. Accessed 01/30/2023. https://www.nrcs.usda.gov/sites/default/files/2022-10/Waste_Recycling_633_CPS_Oct_2017b.pdf

including a nutrient management plan for proper land application of byproducts, if applicable.[17] Waste utilization plans also need to include operational requirements for emptying the storage facility, including the locations, times, rates, and volumes at which waste is to be removed and utilized.

Nutrient Management

The goal of the agriculture management measure for nutrient management is to develop, implement, and periodically update a nutrient management plan to: (1) apply nutrients at rates necessary to achieve realistic crop yields, (2) improve the timing of nutrient application, and (3) use agronomic crop production technology to increase nutrient use efficiency. When the source of the nutrients is not commercial fertilizer, the plan must include provisions to determine the nutrient value and the rate of availability of the nutrients. The plan must determine and credit the nitrogen contribution of any legume crop. Soil and plant tissue testing should be used routinely. Nutrient management plans must contain the following core components:

1. Farm and field maps showing acreage, crops, soils, and waterbodies;
2. Realistic yield expectations for the crop(s) to be grown, based primarily on the producer's actual yield history, State Land Grant University yield expectations for the soil series, or SCS Soils-5 information for the soil series;
3. A summary of the nutrient resources available to the producer, which at a minimum include:
    a. Soil test results for pH, phosphorus, nitrogen, and potassium;
    b. Nutrient analysis of manure, sludge, mortality compost (birds, pigs, etc.), or effluent (if applicable);
    c. Nitrogen contribution to the soil from legumes grown in the rotation (if applicable); and
    d. Other significant nutrient sources (e.g., irrigation water);
4. An evaluation of field limitations based on environmental hazards or concerns, such as:
    a. Sinkholes, shallow soils over fractured bedrock, and soils with high leaching potential;
    b. Lands near surface water;
    c. Highly erodible soils; and
    d. Shallow aquifers;
5. Use of the limiting nutrient concept to establish the mix of nutrient sources and requirements for the crop based on a realistic yield expectation;
6. Identification of timing and application methods for nutrients to provide nutrients at rates necessary to achieve realistic crop yields; reduce losses to the environment; and avoid applications as much as possible to frozen soil and during periods of leaching or runoff; and
7. Provisions for the proper calibration and operation of nutrient application equipment.

Indiana has met the first six of the seven parts of the nutrient management measure through passage and implementation of the statewide fertilizer rule (355 IAC 8). The rule requires any

[17] NRCS. 2020. Conservation Practice Standard: Waste Treatment (Code 629). September 2020. Accessed 03/07/2023. https://www.nrcs.usda.gov/sites/default/files/2022-10/Waste_Treatment_629_CPS_9_2020.pdf

person applying fertilizer material for the purposes of producing agriculture crops[18] to develop a fertilizer application plan and to apply fertilizer in accordance with the application plan for the targeted application site to achieve realistic crop yields (355 IAC 8-3-1). This rule also limits the application of fertilizer on highly erodible land (355 IAC 8-3-3) and prohibits the application of fertilizer directly to surface water, saturated or snow-covered ground, or from public roads (355 IAC 8-3-4). The rule provides setbacks for application of unmanipulated organic fertilizer (such as manure). Unless there is a gradient barrier and a minimum setback of 10 feet or a filter strip with a minimum width of 50 feet located between the application site and any known feature identified in the rule, a person shall apply unmanipulated organic fertilizer according to setback distances described in 355 IAC 8-3-2. A setback distance of 500 feet is required for public water supplies, wells, and surface intakes, a setback distance of 25 to 200 feet is required for surface waters and sink holes, and a setback distance of 50 to 200 feet is required for private water wells. The setback distance depends on the type of application used and the steepness of the slope (e.g., farther setback distances are required for slopes that have greater than a six percent slope) (355 IAC 8-3-2). The rule also requires any person who applies unmanipulated organic fertilizer to monitor the application site soil conditions and weather forecast 24-hours prior to, during, and immediately following application (355 IAC 8-3-5).
Violators of the statewide fertilizer rules may be subject to civil fines (IC 15-16-2-49.5; 355 IAC 9) and injunctive relief (IC 15-16-49).

Indiana has met the seventh element of the nutrient management measure, proper calibration and operation of nutrient application equipment, through the State's licensing of agricultural fertilizer applicators, and by promoting the FOTG standard for nutrient management (FOTG Code 590) through its technical assistance outreach programs.[19] In order to legally use (apply, handle, transport) for hire or use organic fertilizer (including manure) from a combined feeding operation for purposes of producing an agricultural crop, a person must obtain a commercial applicator license or private applicator certification by passing the Category 14 Agriculture Fertilizer Application exam (355 IAC 7-3 and 355 IAC 7-4-1). The exam includes questions to test the applicators' knowledge about equipment calibration and other aspects of fertilizer application.[20,21] To maintain their license, applicators must accumulate at least three service-learning credits before the expiration of their license, which occurs at the end of the fourth calendar year following passage of the applicator's exam (355 IAC 7-4-2).[22] FOTG 590 requires calibrating application equipment to ensure accurate distribution of material at planned rates.

Pesticide Management

[18] The rule exempts persons applying or distributing less than 10 cubic yards per year or four thousand (4,000) gallons of fertilizer material in a calendar year. 355 IAC 8-1-2.
[19] NRCS. 2018. Conservation Practice Standard: Nutrient Management (Code 590). November 2018. Accessed 09/01/2022. https://efotg.sc.egov.usda.gov/api/CPSFile/9511/590_IN_CPS_Nutrient_Management_2018
[20] Office of Indiana State Chemist. Purdue University. Pesticide. Category 14: Agricultural Fertilizer Management. Undated. Indiana Pesticide Applicator Requirements (website). Accessed 01/20/2023 https://oisc.purdue.edu/pesticide/14.html
[21] Purdue University Extension. PPP-14. 2022. Indiana Fertilizer Applicator Training Manual. Category 14: Agricultural Fertilizer Applicator. February 2022. Accessed 01/30/2023.
[22] Office of Indiana State Chemist. Indiana Commercial Pesticide and Fertilizer Applicator Continuing Certification Program. Category 14, Agricultural Fertilizer Program. Accessed 09/01/2022. https://oisc.purdue.edu/pesticide/continuing_certification_program.html

The goal of the agriculture management measure for pesticide management is to reduce contamination of surface water and ground water from pesticides through the:

1. Evaluation of pest problems, previous pest measures, and cropping history;
2. Evaluation of soil and physical characteristics of the site including mixing, loading, and storage areas for potential leaching or runoff of pesticides. If leaching or runoff is found to occur, steps should be taken to prevent further contamination;
3. Use of integrated pest management strategies that apply pesticides only when economic beneficial to the producer or when runoff losses are unlikely;
4. Consideration of the persistence, toxicity, runoff potential, and leaching potential of products in making a selection of registered materials;
5. Periodical calibration of pesticide spray equipment; and
6. Use of anti-backflow devices on hoses used for filling mixture tanks.

Indiana addresses the pesticide management measure largely through its pesticide laws and regulations (IC 15-16-4 and IC 15-16-5), which require anyone who applies pesticides to follow pesticide label requirements. In addition, those who apply pesticides for hire must pass a pesticide licensing exam to become a licensed applicator (IC 15-16-5-48 and IC 15-16-5-54). The license is good for five years and requires continuing education hours (IC-15-16-5-43). A license exam is also required for private pesticide applicators who buy and apply restricted-use pesticides to property they own, rent or otherwise control, for the purpose of producing an agricultural commodity.[23] Commercial agricultural pesticide applicators must pass additional exams specific to agricultural pest management.[24] Due to liability concerns associated with using pesticides on agriculture land near residential areas, most large pesticide applications in the coastal nonpoint program management area are provided by commercial applicators.[25]

The State partners with Purdue Extension to provide pest management training, licensing exams, and continuing education training for pesticide applicators. Consistent with the 6217(g) guidance, the applicators license training and exam cover the need to evaluate: 1) soil and physical characteristics of the site and take steps to prevent leaching and runoff of pesticides if the potential exists; 2) cropping history; and 3) previous pest control measures when applying pesticides. The training and exam materials also address pesticide mixing, loading, and storage procedures consistent with the 6217(g) guidance (355 IAC 5; 357 IAC 1).[26]
Violators of the statewide pesticide rules may be subject to civil fines (IC 15-16-2-49.5; 57 IAC 1-6-2) and injunctive relief (IC 15-16-49). In particular, the State may impose civil penalties for applying restricted use pesticides without the required license, applying pesticides inconsistent

[23] Office of Indiana State Chemist. Undated. Pesticide. Farmers: Private Applicators (website). Accessed 01/30/2023. https://oisc.purdue.edu/pesticide/private_applicators.html
[24] Purdue University Extension. 2009. Pesticide Applicatory Certification. PPP-25. July 2009. Accessed 09/01/2022. https://www.extension.purdue.edu/extmedia/ppp/ppp-25.pdf
[25] Indiana Lake Michigan Coastal Program. 2016. 6217 Nonpoint Source Pollution Control Program Submission for Programmatic Approval. April 2016. Copy available upon request.
[26] Perdue Extension. Undated. Pesticide Training Manuals (website). Accessed 03/07/2023. https://mdc.itap.purdue.edu/wk_group.asp?tgroup=PPPManuals

with the label, improperly storing pesticides, or operating in a careless or negligent manner (357 IAC 1-6-2).[27]

Purdue Extension also holds local and regional workshops, field days, and publishes a variety of newsletters, technical memoranda, and guidance documents to educate farmers about the latest in pesticide management and to promote best practices consistent with the 6217(g) guidance.

For example, the FOTG for Integrated Pest Management (IPM) and the associated IPM checklist and Agronomy Technical Note 4 discuss the need to regularly calibrate pesticide spray equipment and to apply pesticides only when an economic benefit to the producer will be achieved (i.e., applications based on economic thresholds).[28,29,30,31] Perdue Extension's "Managing Farm Chemicals" brochure, referenced in the FOTG for IPM, also notes that anti-back flow devices should be placed on all wells and other water sources.[32] Purdue Extension also provides technical guidance through their *Field Assessment for Water Resource Protection Guide*, which recommends installation of anti-backflow devices on hoses and wells to prevent backwash of pesticides.[33] In addition, the guide directs readers to the Purdue Pesticide Program's *Pesticide Safety Tips for the Workplace and Farm* which recommends installation of anti-backflow devices on water tanks, faucets, water lines, and/or hoses to prevent pesticide mixtures from being siphoned into a water supply.[34]

Grazing Management

The goal of the agriculture management measure for grazing management is to protect range, pasture, and other grazing lands by:

1. Implementing one or more grazing BMPs to protect sensitive areas such as streambanks, wetlands, estuaries, ponds, lake shores, and riparian zones from physical disturbance and to reduce direct loading of animal waste and sediments; and
2. Implementing the range and pasture components of a CMS as defined in the Field Office Technical Guide of the USDA-SCS by applying the progressive planning approach of the USDA-SCS to reduce erosion, or maintain range, pasture, and other grazing lands in

[27] Perdue Extension. Pesticide Training Manuals (website). Accessed 2/6/2023. https://mdc.itap.purdue.edu/wk_group.asp?tgroup=PPPManuals

[28] NRCS, Pest Management Conversation System. Undated. Pest Management Checklist. Accessed 03/07/2023. https://www.nrcs.usda.gov/wps/portal/nrcs/in/technical/ecoscience/pest/

[29] NRCS. 2012. Conservation Practice Standard Code 595: Integrated Pest Management. November 2012. Accessed 03/07/2023. https://efotg.sc.egov.usda.gov/api/CPSFile/19549/595_NE_CPS_Integrated_Pest_Management_2011

[30] NRCS. 2010. Agronomy Technical Note 4: Pest Management in the Conservation Planning Process. September 2010. Accessed 03/07/2023. https://efotg.sc.egov.usda.gov/api/CPSFile/12831/595_IN_OTH_Integrated_Pest_Management-Agronomy_Technical_Note_4_2010

[31] Purdue Pesticide Programs. 2007. Managing Farm Chemicals Brochure. March 2007. Accessed 03/07/2023. https://www.extension.purdue.edu/extmedia/PPP/PPP-50.pdf

[32] Purdue Extension. 2007. Managing Farm Chemicals Brochure. March 2007. Accessed 03/07/2023. https://www.extension.purdue.edu/extmedia/PPP/PPP-50.pdf

[33] Purdue Extension. 2003. Field Assessment for Water Resource Protection. December 2003. Accessed 03/07/2023. https://www.extension.purdue.edu/extmedia/WQ/WQ-42.pdf

[34] Purdue Extension. 2003. Pesticide Safety Tips for the Workplace and Farm: A Pictorial Guide to Best Pesticide Management Practices. PPP-61. September 2003. Accessed 03/07/2023 https://www.extension.purdue.edu/extmedia/ppp/ppp-61.pdf

accordance with activity plans established by either the Bureau of Land Management of the U.S. Department of the Interior or the Forest Service of USDA.
Indiana estimates the three coastal counties (Lake, Porter, and LaPorte) within the coastal nonpoint program management area accounted for less than 2.5 percent of grazing livestock state-wide in 2021.[35] Indiana implements a voluntary outreach and technical assistance program to address nonpoint source pollution problems that may arise in this area. Through the ICP, the State works closely with SWCDs, NRCS, Purdue Extension, and others to provide training and technical assistance to the agricultural community related to grazing management. The trainings and technical assistance these groups provide promote NRCS FOTGs and other Purdue Extension materials that include BMPs consistent with the 6217(g) grazing management measure, such as the installation of watering facilities to limit livestock access to ponds and water bodies, the installation of fencing to exclude animals from waterways, the installation of stream crossings for livestock, and the use of prescribed grazing systems.[36,37]

Enforceable Policies and Mechanisms for the Agriculture Management Measures
Indiana provided a legal opinion from its Attorney General stating that the State has the authority through IC-15, IC 13-18, IC-13-30, and their implementing regulations, to require implementation of the 6217(g) measures, including the agriculture measures, as necessary. IDEM also sent a letter further describing the mechanism and process that links the implementing agencies with the enforcement agency (IDEM) and provided an example of an enforcement action that was taken demonstrating the State's commitment to use its back-up authority, when needed, to ensure implementation of the 6217(g) management measures.[38] The Lake Michigan Coastal Program (LMCP) works closely with the Indiana Department of Agriculture, SWCDs, NRCS, and IDEM to coordinate the implementation of the 6217(g) agriculture management measures. To help track implementation, the Indiana Department of Agriculture, through the ICP, has developed maps indicating where agriculture BMPs have been implemented within the coastal nonpoint management area and is using these maps to model nutrient and sediment load reductions to identify when and where additional nonpoint source pollution reduction efforts may be needed.[39,40]

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[35] United States Department of Agriculture, National Agricultural Statistics Service Indiana Field Office. County Data; All Cattle, Beef Cows, and Milk Cows 2020-2021. October 2021. Accessed 03/07/2023. https://www.nass.usda.gov/Statistics_by_State/Indiana/Publications/Annual_Statistical_Bulletin/2021/pg82-83.pdf [36] Purdue Extension. 2004. Field Assessment for Water Quality. WQ-42. January 2004. Accessed 03/07/2023. https://www.extension.purdue.edu/extmedia/WQ/WQ-42.pdf
[37] NRCS. 2018. Conservation Practice Standard: Prescribed Grazing. (Code 528). January 2018. Accessed 01/30/2023. https://efotg.sc.egov.usda.gov/api/CPSFile/9474/528_IN_CPS_Prescribed_Grazing_2018
[38] IDEM. 2016. Letter from Elizabeth Admire, State Natural Resource Co-Trustee Office of Legal Counsel to Mike Molnar, Program Manager Lake Michigan Coastal Program, RE: Enforceable policies and mechanisms for nonpoint source pollution, June 2, 2016. (Available upon request))
[39] Indiana Department of Agriculture. 2021. Indiana's Sediment and Nutrient Load Reductions Tool and ArcGIS StoryMaps. Accessed 09/01/2022.
https://www.arcgis.com/apps/webappviewer/index.html?id=19252aff567c43aea086e28127c9094c
[40] Indiana Department of Agriculture. 2014. Indiana Conservation Partnership Data Consolidation, Quality Control and Mapping Utilizing the EPA Region 5 Load Reduction Model. Accessed 09/01/2022. http://icp.iaswcd.org/wp-content/uploads/2014/03/2013-ICP-Region-5-Model-Load-Reductions-Poster.pdf

D. URBAN

A. NEW DEVELOPMENT AND SITE DEVELOPMENT

2008 FINDING: Indiana may have programs in place to implement the site development management measure, but additional clarification, with a few examples, is needed. The State does not have programs in place to ensure implementation of the new development management measure outside of urbanized areas subject to NPDES Phase II municipal separate stormwater system (MS4) permits. The State has identified a back-up enforceable authority, but has not yet demonstrated the ability of the authority to ensure implementation of the new and site development measures throughout the coastal nonpoint program management area by submitting a legal opinion, demonstrating the authority and commitment to use the enforcement mechanisms where necessary, describing the laws and processes linking the implementing agencies with the enforcement agency, and describing the monitoring and tracking mechanisms the State will employ to ensure that the voluntary programs are being implemented sufficiently.

2008 CONDITION: Within five years, Indiana will demonstrate it has programs in place to implement the site development measure throughout the coastal nonpoint program management area and demonstrate that areas within the coastal nonpoint program management area not subject to NPDES Phase II MS4 permits will implement the new development management measure. Also, within five years, Indiana will submit a legal opinion and other supporting documents as described in the *Final Administrative Changes to the Coastal Nonpoint Pollution Control Program Guidance*[41] to demonstrate that it has adequate back-up authority to implement the new and site development management measures throughout the coastal nonpoint program management area.

2024 DECISION: Indiana has satisfied this condition.

RATIONALE: The 6217(g) new development management measure calls for states to ensure they have programs and authorities in place that meet the following criteria:

1. By design or performance:
    a. After construction has been completed and the site is permanently stabilized, reduce the average annual total suspended solid (TSS) loadings by 80 percent, or
    b. Reduce the post-development loadings of TSS so that the average annual TSS loadings are no greater than pre-development loadings; and
2. To the extent practicable, maintain post-development peak runoff rate and average volume at levels that are similar to pre-development levels.

All three counties and independent cities within the coastal nonpoint program management area are subject to NPDES Phase II MS4 permits and must undertake specific actions to control stormwater, according to 327 IAC 15-13. In 2002, NOAA and EPA determined that state coastal nonpoint programs are no longer required to include the new development management

[41] NOAA and EPA. 1998. Final Administrative Changes to the Coastal Nonpoint Pollution Control Program Guidance. Accessed 09/01/2022. https://coast.noaa.gov/data/czm/pollutioncontrol/media/6217adminchanges.pdf

measure in urbanized areas subject to Phase I or Phase II NPDES MS4 permits because these regulations are redundant with this management measure for those permitted areas.[42] Thus, Indiana is exempt from the new development management measure because the entire coastal nonpoint management area is subject to NPDES MS4 permit stormwater requirements.

The site development management measure calls for states to plan, design, and develop sites to:

1. Protect areas that provide important water quality benefits and/or are particularly susceptible to erosion and sediment loss;
2. Limit increases of impervious areas, except where necessary;
3. Limit land disturbance activities such as clearing and grading, and cut and fill to reduce erosion and sediment loss; and
4. Limit disturbance of natural drainage features and vegetation.

Indiana implements the site development management measure through direct regulatory authorities (local ordinances) and IDEM's voluntary *Indiana Storm Water Quality Manual.*[43] The State has also provided a legal opinion and supporting documentation that demonstrates it has adequate back-up authority to implement the site development management measure throughout the coastal nonpoint program management area.

The *Indiana Storm Water Quality Manual* provides guidelines and specific BMPs for site clearing that are consistent with the site development management measure. For example, the manual calls for preserving natural vegetation, riparian buffers, and natural drainage patterns, limiting land disturbance activities, and includes practices to limit the creation of impervious surfaces. The manual is promoted through IDEM's website and electronic copies of the manual have been distributed during storm water workshops sponsored by the Northwest Indiana Regional Planning Commission and IDEM.[44]

Specific county ordinances that address the site development management measure include the Municipal Code of the City of La Porte, the Porter County Unified Development Ordinance, and the Lake County Stormwater Management and Clean Water Regulations Ordinance.

Chapter 30, Article 4 of the LaPorte County Municipal Code contains site plan review and development plan requirements that control the amount of open space and impervious surfaces within a development and limit the intensity of development in areas of sensitive natural resources or natural features to reduce or eliminate adverse environmental impacts (Sec. 30-76(5)). The Porter County Unified Development Ordinance Chapter 7, Section 15, prohibits clearing and grading of natural resources such as woodlands, stream corridors, and wetlands, and restricts cut and fill on slopes no greater than a 3:1 ratio, except as approved. It also requires that development be sited and constructed to retain natural vegetation and preserve natural drainage patterns and requires that, where possible, cut and fill construction should fit the

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[42] NOAA and EPA. 2002. Policy Clarification on Overlay of 6217 Coastal Nonpoint Programs with Phase I and II Storm Water Regulations. Accessed 09/01/2022.
https://coast.noaa.gov/data/czm/pollutioncontrol/media/NPDES_CZARA_Policy_Memo.pdf

[43] IDEM. 2007. Indiana Storm Water Quality Manual. Accessed 09/01/2022.
https://www.in.gov/idem/stormwater/2363.htm

[44] IDEM. Undated. Indiana Storm Water Quality Manual (website). Accessed 03/07/2023.
https://www.in.gov/idem/stormwater/resources/indiana-storm-water-quality-manual/

topography and soils of the site to minimize the potential for erosion. Chapter 3, Section 2-B of the Lake County Stormwater Management and Clean Water Regulations Ordinance establishes that property owners are responsible for maintaining the natural features and drainage patterns on their lots and taking preventive measures against any and all erosion and/or deterioration of natural or constructed drainage features on their lots including overland flow patterns. Chapter 4, Section 2 of the Lake County ordinance requires a Stormwater Pollution Plan for construction plans and land disturbing activity greater than one acre that considers these principles:

1. Development design should fit the natural topography and soils of the site to minimize the potential for soil erosion;
2. Existing natural vegetation should be retained and protected where possible;
3. Areas immediately adjacent (within 25 feet of top of bank) to watercourses and lakes also should be left undisturbed wherever possible; and
4. Collected runoff leaving a project site must be either discharged directly into a well-defined, stable receiving channel, or diffused and released to adjacent property without causing an erosion or pollutant problem to the adjacent property owner.

Indiana provided a legal opinion from its Attorney General stating that the State has the authority through IC-15, IC 13-18, IC-13-30, and their implementing regulations, to require implementation of the 6217(g) measures, including the site development management measure, as necessary. IDEM also sent a letter further describing the mechanism and process that links the implementing agencies with the enforcement agency (IDEM) and provided an example of an enforcement action that was taken demonstrating the State's commitment to use its back-up authority, when needed, to ensure implementation of the 6217(g) management measures.[45] Indiana tracks implementation of the site development management measure through annual reporting of its Clean Water Act (CWA) Section 319 Nonpoint Source (NPS) Management Program.[46]

E. WATERSHED PROTECTION AND EXISTING DEVELOPMENT

2008 FINDING: Indiana's program has measures in place to address the watershed protection measure and the second two elements of the existing development measure. The State does not have programs to identify priority local and/or regional watershed pollutant reduction opportunities, nor does it have a schedule for implementing appropriate controls. Indiana has identified back-up enforceable authorities, but has not yet demonstrated the ability of the authority to ensure implementation of the watershed protection and existing development measures throughout the coastal nonpoint program management area by submitting a legal opinion, demonstrating the authority and commitment to use the enforcement mechanisms where necessary, describing the laws and processes linking the implementing agencies with the enforcement agency, and describing the monitoring and tracking mechanisms the State will employ to ensure that the voluntary programs are being implemented sufficiently.

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[45] IDEM. 2016. Letter from Elizabeth Admire, State Natural Resource Co-Trustee Office of Legal Counsel to Mike Molnar, Program Manager Lake Michigan Coastal Program, RE: Enforceable policies and mechanisms for nonpoint source pollution, June 2, 2016. (Available upon request)

[46] IDEM. Undated. Nonpoint Source Program Annual Reports (website). Accessed 02/24/2023. https://www.in.gov/idem/nps/resources/nonpoint-source-annual-report/

2008 CONDITION: Within five years, Indiana will demonstrate that it has programs in place to identify priorities for local and/or regional watershed pollutant reduction opportunities and develop a schedule for implementing appropriate controls. Within five years, Indiana will submit a legal opinion and other supporting documents as described in *Final Administrative Changes to the Coastal Nonpoint Pollution Control Program Guidance*[47] to demonstrate that it has adequate back-up authority to implement the watershed protection and existing development management measures throughout the coastal nonpoint program management area.
2024 DECISION: Indiana has satisfied this condition.
RATIONALE: The 6217(g) watershed protection management measure calls for states to ensure they have programs and authorities in place that:

3. Avoid conversion, to the extent practicable, of areas that are particularly susceptible to erosion and sediment loss;
4. Preserve areas that provide important water quality benefits and/or are necessary to maintain riparian and aquatic biota; and
5. Site development, including roads, highways, and bridges, to protect to the extent practicable the natural integrity of waterbodies and natural drainage systems.

The existing development management measure calls for states to develop and implement watershed management programs to reduce runoff pollutant concentrations and volumes from existing development by:

1. Identifying priority local and/or regional watershed pollutant reduction opportunities, e.g., improvements to existing urban runoff control structures;
2. Developing a schedule for implementing appropriate controls;
3. Limiting destruction of natural conveyance systems; and
4. Where appropriate, preserving, enhancing, or establishing buffers along surface waterbodies and their tributaries.

As noted in the 2008 findings, IDEM had already developed a watershed planning program that addressed the programmatic elements of the watershed protection management measure as well as elements 3 and 4 of the existing development management measure. Since receiving approval, with conditions, Indiana has continued to develop and promote watershed planning to address the watershed protection and existing development measures (as well as other management measures) throughout the coastal nonpoint program management area. The State has also provided a legal opinion and supporting documents to demonstrate it has adequate back-up authority to implement the voluntary-based watershed planning approach.
In 2009, IDEM updated its watershed management plan checklist to further emphasize that watershed management plans (WMP) developed within the coastal nonpoint program management area should be consistent not only with EPA's nine element plans for watershed planning but also the 6217(g) guidance, including by identifying priority pollutant reduction

[47] NOAA and EPA. 1998. Final Administrative Changes to the Coastal Nonpoint Pollution Control Program Guidance. Accessed 09/01/2022. https://coast.noaa.gov/data/czm/pollutioncontrol/media/6217adminchanges.pdf

opportunities and developing a schedule for implementing appropriate controls.[48] The watershed management plan checklist specifically requires that individuals implementing projects within the coastal nonpoint management area "work with the Indiana Department of Natural Resources (IDNR) Coastal Programs to ensure their '6217'requirements are incorporated into the WMP. 6217 requires that the WMP addresses agriculture, silviculture, urban and rural areas, marinas, and recreational boating, and hydromodifications." The checklist is intended to assure that each plan includes interim measurable milestones for carrying out identified pollution reduction opportunities. To be eligible for EPA's CWA Section 319 funding, watershed projects must meet the checklist requirements.

The coastal nonpoint program management area is entirely within the Little Calumet-Galien watershed. Within the Little Calumet-Galien watershed there are eight subwatersheds with WMPs that encompass approximately 91 percent of the watershed.[49] The Little Calumet River East Branch WMP is an example of how the 6217(g) management measures have been incorporated into WMPs. Stormwater management is identified as a top priority within the watershed.[50] The WMP specifically identifies Reynolds Creek, Kemper Ditch and Coffee Creek as areas of opportunity to reduce stormwater runoff flow and volume from existing development, and it identifies specific BMPs such as increasing pervious surfaces, installing infiltration swales and extended detention acreage, improving existing urban runoff control structures, limiting the destruction of natural conveyance systems, and establishing buffers along waterbodies to achieve this goal. For each recommended project, the WMP also identifies milestones, costs, and partners.

The Deep River-Portage Burns Waterway WMP also identifies opportunities to reduce nonpoint source pollution from developed areas.[51] The WMP recommends stormwater drainage enhancement, stormwater storage creation, subdivision stormwater controls, retrofits to existing stormwater ponds and other existing urban runoff structures, and the use of low-impact development practices and improvements to existing urban runoff structures. One specific project implemented under the WMP involved green infrastructure improvements in the Headwaters Turkey Creek watershed to maintain and improve floodplain capabilities to decrease peak flows and maximize available storage volume in the upper watershed.

Enforceable Policies and Mechanisms for the Watershed Protection and Existing Development Management Measures

Indiana provided a legal opinion from its Attorney General stating that the State has the authority through IC-15, IC 13-18, IC-13-30, and their implementing regulations, to require

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[48] IDEM. 2009. Watershed Management Plan Checklist and Instructions (2009). Accessed 09/01/2022. https://www.in.gov/idem/nps/watershed-planning/watershed-management-planning/watershed-management-plan-checklist-and-instructions-2009/

[49] IDEM. Watershed Management Plans. Region 1, Northwest, Little Calumet (04040001). Accessed 09/01/2022. https://www.in.gov/idem/nps/resources/watershed-management-plans/

[50] Little Calumet East Branch River Watershed Management Plan. 2015. Accessed 09/01/2022. https://ecm.idem.in.gov/cs/idcplg?IdcService=GET_FILE&dID=83086341&dDocName=83086346&Rendition=web&allowInterrupt=1&noSaveAs=1

[51] Deep River Portage Burns Waterway Watershed Management Plan. 2016. Accessed 09/01/2022. https://ecm.idem.in.gov/cs/idcplg?IdcService=GET_FILE&dID=83085309&dDocName=83085242&Rendition=web&allowInterrupt=1&noSaveAs=1

implementation of the 6217(g) measures, including the watershed protection and existing development management measures, as necessary. IDEM sent a letter describing the mechanism and process that links the implementing agencies with the enforcement agency (IDEM) and an example of an enforcement action that was taken demonstrating the State's commitment to use its back-up authority, when needed, to ensure implementation of the 6217(g) management measures.[52] Indiana tracks implementation of its watershed planning program and actions to address polluted runoff for existing development through the annual reporting of its Section 319 NPS Management Program.[53]

D. NEW AND OPERATING ONSITE DISPOSAL SYSTEMS (OSDS)

2008 FINDING: Indiana's program includes management measures and enforceable policies and mechanisms in conformity with the 6217(g) guidance, except that it does not include measures or enforceable polices and mechanisms for: 1) inspection and maintenance of existing OSDS; 2) establish protective vertical separation distances to groundwater; and 3) use of denitrifying systems in nitrogen sensitive areas for new and existing OSDS.
2008 CONDITION: Within five years, Indiana will include in its program management measures and enforceable mechanisms and policies for inspection of existing OSDS. Within five years, Indiana will include in its program management measures and enforceable mechanisms and policies for protective separation distances to groundwater in conformity with the 6217(g) guidance for new OSDS. Finally, within five years, Indiana will include in its program management measures and enforceable mechanisms and policies for denitrifying systems where nitrogen-limited surface waters may be adversely affected by nitrogen loading from OSDS, in conformity with the 6217(g) guidance for new and operating OSDS.
2024 DECISION: Indiana has satisfied this condition.

RATIONALE: The purpose of the new OSDS management measure is to protect the coastal nonpoint management area from pollutants discharged from OSDS. To achieve this goal, the 6217(g) guidance calls for states to:

- **D.** Ensure that new OSDS are located, designed, installed, operated, inspected, and maintained to prevent the discharge of pollutants to the surface of the ground and to the extent practicable reduce the discharge of pollutants into groundwaters that are closely hydrologically connected to surface waters;
- **E.** Direct placement of OSDS away from unsuitable areas;
- **F.** Establish protective setbacks from surface waters, wetlands, and floodplains for conventional as well as alternative OSDS;
- **G.** Establish protective separation distances between OSDS system components and groundwater which is closely hydrologically connected to surface waters; and

[52] IDEM. 2016. Letter from Elizabeth Admire, State Natural Resource Co-Trustee Office of Legal Counsel to Mike Molnar, Program Manager Lake Michigan Coastal Program, RE: Enforceable policies and mechanisms for nonpoint source pollution, June 2, 2016. (Available upon request)
[53] IDEM. Undated. Nonpoint Source Program Annual Reports (website). Accessed 02/24/2023. https://www.in.gov/idem/nps/resources/nonpoint-source-annual-report/

H. Where conditions indicate that nitrogen-limited surface waters may be adversely affected by excess nitrogen loadings from groundwater, require the installation of OSDS that reduce total nitrogen loadings by 50 percent.

For operating OSDS, the 6217(g) guidance directs states to:

1. Establish and implement policies and systems to ensure that existing OSDS are operated and maintained to prevent the discharge of pollutants;
2. Inspect OSDS at a frequency to ascertain whether OSDS are failing; and
3. Where conditions indicate that nitrogen-limited surface waters may be adversely affected by groundwater nitrogen loadings from OSDS and where nitrogen loadings from OSDS are delivered to groundwater that is closely hydrologically connected to surface water, consider replacing or upgrading OSDS to treat influent so that total nitrogen loadings are reduced by 50 percent.

In the 2008 findings, NOAA and EPA found that Indiana had satisfied elements 1, 2 and 3 of the new OSDS management measure and element 1 of the operation OSDS management measure. Since then, Indiana has strengthened its efforts to manage nonpoint source pollution from OSDS. The State relies on a mix of regulatory and voluntary approaches to address the conditions related to OSDS. Specifically, the State achieves protective separation distances to groundwater through state regulations and achieves routine inspections of operating OSDS through local ordinances and proactive outreach efforts. In addition, Indiana provided information that nitrogen-limited waters adversely affected by nitrogen loading from OSDS are not an issue for the freshwaters that comprise Indiana's coastal nonpoint program management area.

Indiana's regulations for Residential Sewage Disposal (410 IAC 6-8.1) establish a permitting program for the construction and installation of new OSDS. Specific requirements for vertical separation distances for groundwater vary based on the type of system but range from 20-30 inches above either the seasonal high-water table or any soil horizon with a soil loading rate less than 0.25 gallons per day per square foot (410 IAC 6-8.1-50 and 410 IAC 6-8.1-51). These separation distances were developed and approved based on EPA's 1980 *Design Manual for Onsite Wastewater Treatment and Disposal Systems* and other research from the region.[54] EPA's 6217(g) guidance recommends following the 1980 design manual for guidance on vertical separation distances, making Indiana's regulations consistent with the 6217(g) guidance.[55]

Regarding the condition related to denitrifying systems, the 6217(g) guidance requirements for denitrification systems apply only to nitrogen-limited waters. Phosphorus, not nitrogen, is the primary limiting nutrient in many freshwater systems. The Indiana State Department of Health and IDEM's 2008 report, "*Nitrates, Groundwater, and Onsite Sewage Systems in Indiana*"

[54] EPA. 1980. Design Manual for Onsite Wastewater Treatment and Disposal Systems. October 1980. EPA 625/1- 80-012. Accessed 09/01/2021. https://www.epa.gov/sites/production/files/2015- 06/documents/septic_1980_osdm_all.pdf

[55] EPA. 1993. Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters. January 1993. Accessed 02/23/2023. https://water.epa.gov/polwaste/nps/czara/index.cfm.

supports this conclusion for Indiana's coastal waters.[56] Therefore, NOAA and EPA grant the State an exemption from the denitrifying systems requirement of the new and operating OSDS measures.

Indiana addresses the inspection requirement for operating systems through a mix of direct regulatory requirements and voluntary-based programs. La Porte County, which has roughly 7,000 of the estimated 33,000 OSDS within the Indiana coastal nonpoint program management area, has two ordinances that require routine inspections of operating OSDS consistent with the 6217(g) guidance. In 2012, the county adopted an ordinance that requires operating permits for any new OSDS installed after the ordinance was adopted. The operating permits require inspections every three to five years depending on the type of system.[57] To reach older OSDS that pre-date the 2012 ordinance, in 2016, La Porte County also adopted an ordinance requiring certified inspections of all OSDS before the property is sold or otherwise transferred.[58]

Although the two remaining counties within Indiana's coastal nonpoint program management area, Lake and Porter, do not have ordinances in place that require routine inspections of operating OSDS, Indiana has developed a strategy for achieving voluntary-based inspections through proactive outreach programs to homeowners, realtors, and OSDS professionals. The State has committed to the goal of inspecting 67 percent of the OSDS within these two counties through this voluntary approach over the next 15 years.[59]

Indiana's LMCP formed the Northwest Indiana Septic System Work Group in 2013 to support voluntary inspections of OSDS. The work group, made up of federal, state, and local OSDS stakeholders, works to identify and address potentially failing OSDS within the coastal watersheds and conducts outreach and education programs for OSDS including proper system maintenance. The work group launched a Good Neighbor Program to encourage homeowners within identified hot spot areas of potentially failing OSDS to properly maintain and inspect their systems.[60,61,62] The Good Neighbor Program recruited local neighborhood ambassadors to distribute outreach materials to homeowners. The work group also partners with the Greater Northern Indiana Association of Realtors (GNIAR) and the Indiana Onsite Wastewater Professionals Association (IOWPA) to develop and distribute New Neighbor Welcome Packets

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[56] Indiana State Department of Health and IDEM. 2008. "Nitrates, Groundwater, and Onsite Sewage Systems in Indiana. Report to the Legislature. December 2008.

[57] La Porte County. 2012. Ordinance Establishing On-site Sewage System Regulations. Ordinance No. 2012-01. Accessed 09/01/2022. https://laporteco.in.gov/Resources/Commissions/2012/Ordinances/Ordinance2012-01.pdf [58] LaPorte County. 2016. La Porte County Property Transfer Ordinance. Ordinance No. 2016-02. Accessed 09/01/2022. https://www.laportecounty.org/Resources/HealthDept/PropertyTransferOrdinance.pdf

[59] Indiana LMCP. 2021. 6217 OSDS Measure Submission for Inspection and Maintenance of Existing Septic Systems (OSDS) Management Measure in the Indiana Coastal Watershed. 2021. Copy available upon request.

[60] IDNR. Undated. Clean Water Ambassador Program (website). Accessed 03/01/2023. https://www.in.gov/dnr/lake-michigan-coastal-program/septic-smarts-clean-water-ambassadors/

[61] IDNR. 2019. Good Neighbor Program Brochure. Accessed 03/01/2023. (outside) https://www.in.gov/dnr/lake-michigan-coastal-program/files/lm-HSS_Good_Neighbor_Brochure_2_Outside.pdf and

[62] IDNR. Undated. Be a Good Neighbor: Homeowner Maintenance Record Keeping Folder. Accessed 03/01/2023. (front) https://www.in.gov/dnr/lake-michigan-coastal-program/files/lm-HSS_Good_Neighbor_Septic_Folder_1_Front.pdf. https://www.in.gov/dnr/lake-michigan-coastal- program/files/lm-HSS_Good_Neighbor_Septic_Folder_1_Front.pdf; (back) https://www.in.gov/dnr/lake-michigan- coastal-program/files/lm-HSS_Good_Neighbor_Septic_Folder_2_Back.pdf

to all new homeowners with septic systems. The work group also organizes an outreach and social media campaign in conjunction with Septic Smart Week, an EPA-driven initiative that raises awareness about the impacts of septic systems on water quality and encourages proper system maintenance, including regular inspections and tank pumping.

Indiana also has developed several training programs that promote the importance of and need for routine inspections of existing OSDS. The LMCP, IDEM, GNIAR and IOWPA work together to provide annual training for realtors and certified IOWPA inspectors in Northwest Indiana on the importance of OSDS inspections, especially during property transfers for the realtor audience. The realtor training is part of GNIAR's continuing education requirements that realtors must take to maintain their real estate licenses. Similarly, decentralized wastewater professionals are required to attend the training to receive and maintain their IOWPA certifications.

In addition to the in-person trainings geared toward professional audiences, the LMCP and IDEM are partnering with Purdue Extension, Illinois-Indiana Sea Grant, the Indiana Department of Health, GNIAR and IOWPA to develop online septic system education modules to facilitate virtual learning. The online modules will be adaptable to target several different audiences including homeowners, realtors, IOWPA members, and local communities. The State plans to hold virtual training events several times a year for these target audiences located within the coastal nonpoint program management area and post the education material online so that interested individuals will be able to access it at any time.

In addition to these voluntary programs to encourage inspections, some communities also have implemented free OSDS pump-out and inspection programs. As of 2019, the Town of New Chicago in Lake County, with a population of approximately 2,000, pumps about 450-475 systems every five years and conducts operational inspections when the systems are pumped. In February 2021, Lake County approved a $79 million plan to extend sewer lines to portions of the county with high septic failure rates southwest of Gary, Indiana.[63] With federal funding from the American Rescue Plan, the county has committed to extending central sewer lines to more than 1,000 existing homes by 2026. If additional financing becomes available, the county will extend sewer service to more communities outside Gary.

Indiana will track voluntary inspections through partnerships with Porter and Lake Counties and IOWPA. With support from the LMCP, Porter County recently moved to a cloud-based system for tracking OSDS inspections that will be queried annually to determine the number of inspections of existing OSDS. Although Lake County currently lacks an electronic inspection database, the LMCP has committed to meeting with Lake County Health Department staff annually to review their paper files on OSDS inspections. In addition, the LMCP will continue to partner with Lake County to encourage and support the county to move to an electronic tracking system. The LMCP is partnering with IOWPA to acquire software that can be used to track inspections performed by IOWPA-certified inspectors within Lake and Porter Counties.

The use of this software will assist the counties in tracking voluntary inspections.

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[63] The NWI Times, Munster, IN." Federal Funds to Help Lake County Replace Septic Systems with Sanitary Sewers". Accessed 09/01/2022. https://www.nwitimes.com/news/local/lake/federal-funds-to-help-lake-county-replace-septic-systems-with-sanitary-sewers/article_45016349-e0e2-5117-8a10-e11c24fe38b4.html

The State is committed to an adaptive approach to ensure it will achieve its voluntary inspection targets. Every five years, Indiana will assess the number of inspections that have occurred within Lake and Porter Counties to determine if they are on target for reaching the State's goal of inspecting 67 percent of the operating OSDS within these counties over the next 15 years. The State has committed to adjusting its strategy, as needed, and to considering additional approaches that may be needed to achieve its goal. In addition, the LMCP is committed to continuing to provide technical assistance to Porter and Lake Counties to encourage them to adopt ordinances that will result in routine inspections of operating OSDS and that mirror the ordinance that LaPorte County has enacted. The LMCP and IDEM also will continue to support efforts to adopt state-wide inspection requirements.

Enforceable Policies and Mechanisms for the OSDS Management Measures

Indiana provided a legal opinion from its Attorney General stating that the State has the authority through IC-15, IC 13-18, IC-13-30, and their implementing regulations, to require implementation of the 6217(g) measures, including the OSDS management measures, as necessary. IDEM also sent a letter further describing the mechanism and process that links the implementing agencies with the enforcement agency (IDEM) and an example of an enforcement action that was taken demonstrating the State's commitment to use its back-up authority, when needed, to ensure implementation of the 6217(g) management measures.[64]

F. PLANNING, SITING, AND DEVELOPING ROADS AND HIGHWAYS; SITING, DESIGNING AND MAINTAINING BRIDGES; ROAD, HIGHWAY AND BRIDGE OPERATION AND MAINTENANCE; ROAD, HIGHWAY AND BRIDGE RUNOFF SYSTEMS

2008 FINDING: Indiana's program may have programs in place to implement the planning, siting and developing measure for roads and highways and the management measure for bridges for state and local roads, but additional clarification is needed. Additionally, the State has not identified enforceable mechanisms and policies for these measures. Although state roads are exempt from the operation and maintenance and runoff management measures because they are subject to NPDES Phase II MS4 permits, Indiana has not demonstrated it has programs or enforceable policies in place to address the operation and maintenance and runoff control measures for local roads throughout the coastal nonpoint program management area.

2008 CONDITION: Within five years, Indiana will demonstrate it has programs in place to implement the planning, siting and developing measures for roads, highways and bridges for state and local roads. Also, within five years, Indiana will develop programs to address the operation and maintenance and runoff control measures for local roads. Finally, within five years, Indiana will submit a legal opinion and other supporting documents as described in the *Final Administrative Changes to the Coastal Nonpoint Pollution Control Program Guidance*[65]

[64] IDEM. 2016. Letter from Elizabeth Admire, State Natural Resource Co-Trustee Office of Legal Counsel to Mike Molnar, Program Manager Lake Michigan Coastal Program, RE: Enforceable policies and mechanisms for nonpoint source pollution, June 2, 2016. (Available upon request)

[65] NOAA and EPA. 1998. Final Administrative Changes to the Coastal Nonpoint Pollution Control Program Guidance. Accessed 09/01/2022. https://coast.noaa.gov/data/czm/pollutioncontrol/media/6217adminchanges.pdf

to demonstrate that it has adequate back-up authority to implement all roads, highways and bridge management measures throughout the coastal nonpoint program management area.
2024 DECISION: Indiana has satisfied this condition.
RATIONALE: Indiana relies on local ordinances, its stormwater quality manual, and watershed planning to address the management measures for planning, siting, and developing state and local roads and bridges and is exempt from the operation and maintenance and runoff control management measures for local roads due to NPDES permit coverage. Because the State is either exempt from the management measures or meets them through direct local authorities, a legal opinion to demonstrate it has adequate back-up authority to ensure implementation of the roads, highways and bridges management measures is no longer needed.
Planning, Siting and Developing Roads, Highways and Bridges
The goal of this management measure is to plan, site, and develop roads and highways to:

1. Protect areas that provide important water quality benefits or are particularly susceptible to erosion or sediment loss;
2. Limit land disturbances such as clearing and grading and cut and fill to reduce erosion and sediment loss; and
3. Limit disturbance of natural drainage features and vegetation.

As described under the new and existing site development management measures section, all three coastal counties that comprise the coastal nonpoint program management area (Lake, Porter, and LaPorte) have adopted ordinances to manage stormwater runoff during site development, including the development of roadways and bridges, which is consistent with the 6217(g) guidance. The ordinances (Lake,[66] Porter,[67] and LaPorte[68]) call for stormwater pollution prevention plans that require the design of developments and roads be conducted in a manner that retains natural vegetation, drainage patterns and hydrological features and that these landscape alterations be sited and designed to fit the natural topography of the site and soils of the site to minimize soil erosion and nonpoint source pollution. In other words, the stormwater management practices and facilities for a site shall be chosen based on the physical conditions of the site, including topography, water table, soil type, and location in relation to environmentally sensitive areas or other special features that provide important water quality benefits. Additionally, inspection during construction by a State-certified professional engineer or land surveyor is required to ensure compliance with the provisions of the ordinance and the stormwater pollution prevention plan.
Operation and Maintenance and Runoff Systems

[66] Lake County, Indiana Code of Ordinances Volume II. Accessed 01/30/2023. https://lakecounty.in.gov/departments/ms4-stormwater-quality/ordinances-manuals-and-forms/?f=/departments/ms4-stormwater-quality/ordinances-manuals-and-forms/Lake_Co_Stormwater_Ordinance.pdf.pdf#view=Fit
[67] Porter County Unified Development Ordinance. Zoning District Development Standards. Accessed 01/30/2023. https://www.porterco.org/DocumentCenter/View/337/Chapter-05- Zoning_District_Development_Standards?bidId=
[68] LaPorte County Zoning Ordinance. Article 20 Stormwater Management. Accessed 01/31/2023. https://laporteco.in.gov/Resources/Planner/Articles/20StormwaterManagement.pdf

The operation and maintenance management measure calls on states to incorporate pollution prevention procedures into the operation and maintenance of roads, highways, and bridges to reduce pollutant loadings to surface waters.

To address the management measure for road, highway, and bridge runoff systems, states must have in place runoff management systems for existing roads, highways, and bridges to reduce runoff pollutant concentrations and volumes entering surface waters that:

1. Identify priority and watershed pollutant reducing opportunities; and
2. Establish schedules for implementing appropriate controls.

The three coastal counties that comprise Indiana's coastal nonpoint program management area are designated MS4s under the NPDES Phase II stormwater management program. State roads are also designated MS4s. In December 2002, NOAA and EPA issued a policy clarification that stated that in designated MS4 areas, road, highway and bridge operation and maintenance and runoff systems were no longer subject to the requirements of the CZARA Section 6217 Coastal Nonpoint Pollution Control Program due to their coverage by the NPDES stormwater permit program (Phase I and II).[69] Therefore, Indiana is exempt from the roads, highways and bridges operation and maintenance management measure due to the coastal nonpoint program management area's coverage under NPDES permits.

V. MARINAS AND RECREATIONAL BOATING

A. MARINA SITING AND DESIGN

2008 FINDING: Indiana's program is in conformity with the 6217(g) guidance for water quality, habitat assessment, marina flushing, and sewage facility management. Based on the information provided, Indiana's program is not in full conformity with the 6217(g) guidance for shoreline stabilization, storm water runoff, and fueling station design.

2008 CONDITION: Within five years, Indiana will demonstrate that it has programs in place to implement the shoreline stabilization, storm water runoff, and fueling station design management measures.

2024 DECISION: Indiana has satisfied this condition.

RATIONALE: Indiana has satisfied the marina siting and design management measures through a mix of direct regulatory requirements (327 IAC 15-6 (Rule 6) and 40 C.F.R. Parts 280 and 281) and the voluntary Clean Marina Program and guidebook. The State has also provided a legal opinion and supporting materials demonstrating it has adequate back-up authority to ensure implementation the management measures and is committed to using that authority, when needed.

[69] NOAA and EPA. *Policy Clarification on Overlap of 6217 Coastal Nonpoint Programs with Phase I and II Storm Water Regulations*. 2002. Accessed 02/28/2023. https://coast.noaa.gov/data/czm/pollutioncontrol/media/NPDES_CZARA_Policy_Memo.pdf

Shoreline Stabilization

According to the 6217(g) marina siting and design management measure for shoreline stabilization, shorelines should be stabilized where shoreline erosion is a nonpoint source pollution problem; vegetative methods are strongly preferred. Structural methods are acceptable only if they are more cost effective or appropriate given the severity of the wave and wind erosion, offshore bathymetry, and the potential adverse impact on other shorelines and offshore areas.

Indiana frequently addresses shoreline stabilization through the permitting process for newly proposed or expanding marinas, and existing marinas as they address erosion occurring within the marina basin. Installation of erosion control measures typically requires a permit from the U.S. Army Corps of Engineers pursuant to the Rivers and Harbors Act of 1899 and Section 404 of the CWA, a Section 401 Water Quality Certification from IDEM, and a permit under the Navigable Waterways Act from IDNR. To qualify for the Regional General Permit for the Section 401 Water Quality Certification, natural shoreline stabilization methods that benefit the aquatic environment by incorporating organic materials to produce functional structures, provide wildlife habitat, and provide areas for revegetation are required where there is no pre- existing seawall or other shoreline hard armament.[70]

In addition to direct regulatory requirements, Indiana also addresses this management measure through its Clean Marina Program and the *Clean Marina Guidebook* (guidebook).[71,72] Through the Clean Marina Program, state staff (IDEM and IDNR) provide technical assistance through workshops and one-on-one assistance to help marinas adopt the BMPs identified in the guidebook in order to reduce nonpoint source pollution from marina activities.[73,74] The Clean Marina Program website has recorded presentations and digital materials that include information on the process and benefits of becoming a "clean marina."[75,76] IDEM designates marinas "clean marinas" if they meet all federal and state laws pertaining to marinas and implement at least 80 percent of the clean marina BMPs listed in the guidebook and complete the Indiana Clean Marina Program Designation Checklist.[77] The largest marina along Indiana's Lake Michigan coast that has 918 slips, constituting nearly a third of the slips within the coastal nonpoint program management area, is a certified clean marina.[78]

[70] IDEM. Undated. Terms and Conditions for the IDEM Regional General Permit Notification Form (website). Accessed 01/31/2023. https://www.in.gov/idem/wetlands/information-about/section-401-water-quality-certification/terms-and-conditions-of-the-idem-regional-general-permit-notification-form/

[71] IDEM. Indiana Clean Marinas (website). Accessed 01/31/2023. https://www.in.gov/idem/lakemichigan/indiana-clean-marinas/.

[72] IDEM. 2012. *Indiana Clean Marina Program Guidebo*ok. Accessed 01/31/2023. https://www.in.gov/idem/lakemichigan/resources/indiana-clean-marina-guidebook/

[73] IDEM. Compliance and Technical Assistance Program. Accessed 01/31/2023. https://www.in.gov/idem/ctap/

[74] IDEM. Clean Marina Program. Accessed 01/31/2023. https://www.in.gov/idem/lakemichigan/indiana-clean-marinas/certified-indiana-clean-marinas/

[75] IDEM. Clean Marina Program. Accessed 01/31/2023. https://www.in.gov/idem/lakemichigan/indiana-clean-marinas/

[76] IDEM. Clean Marina Program. How Marinas Can Participate. Accessed 01/31/2023. https://www.in.gov/idem/lakemichigan/indiana-clean-marinas/how-marinas-can-participate/

[77] IDEM. 2012. Indiana Clean Marina Program Designation Checklist. See Appendix C in Section 4: Appendices of the Indianan Clean Marina Guidebook. Accessed 01/31/2023. https://www.in.gov/idem/lakemichigan/resources/indiana-clean-marina-guidebook/

[78] IDEM. Clean Marina Program Interactive Map of Certified Marinas in Indiana. Accessed 01/31/2023. https://indianadem.maps.arcgis.com/apps/Shortlist/index.html?appid=dea97b86c805434b965da37d5b42b9bf

The Clean Marina Guidebook contains a variety of BMPs for stabilizing eroding shorelines at marinas. The guidebook encourages the use of vegetative shoreline stabilization methods except in cases where structural shoreline stabilization may be the only alternative given the space and uses present. In these instances, the guidebook contains recommendations for the use of riprap revetments over vertical bulkheads to help decrease wave energy and erosion and the use of vertical bulkheads only where shoreline space is limited and reflected waves will not endanger shorelines or habitat. Retention of natural shoreline features at boat ramps, to the extent feasible, to reduce erosion from water running off the ramp also is encouraged.

Stormwater Runoff

The management measure for stormwater runoff calls for states to implement effective runoff control strategies including the use of pollution prevention activities and the proper design of hull maintenance areas to reduce the average annual loadings of TSS in runoff from hull maintenance areas by 80 percent.

In 2003, IDEM revised its general NPDES rules to require a general NPDES permit for the point source discharge of stormwater exposed to industrial activity (327 IAC 15-6). Marina facilities in Standard Industrial Classification (SIC Code 4493 and boatyards and boat builders that repair, clean, and/or fuel boats (SIC Code 3732) are among the industrial activities that must abide by this requirement.[79] Marina facilities included in SIC Code 4493 rent boat slips, store boats, and generally perform a range of other marine services including boat cleaning and incidental boat repair. Boat maintenance activities conducted at SIC Code 4493 facilities including rehabilitations, mechanical repairs, painting, fueling, and lubrication or equipment cleaning operation, are considered industrial activities and are covered under the NPDES stormwater regulations (327 IAC 15-6-2(a)(5)). SIC Code 4493 facilities that are not involved in equipment cleaning or boat maintenance activities but allow patrons to work on their boat either in-water or out of the water are also covered under the NPDES requirements.[80] Therefore, Indiana is exempt from the marina siting and design stormwater management measure where marinas are covered by NPDES permits.[81]

In addition to the NPDES general permit requirements, Indiana also promotes the stormwater runoff management measure through the Clean Marina Program and guidebook, discussed in more detail in the shoreline stabilization section above. The guidebook contains recommendations for the implementation of effective runoff control strategies which include the use of pollution prevention activities and the proper design of hull maintenance areas to reduce nonpoint source pollutants from entering adjacent waterbodies. The guidebook contains recommendations that boat repair and maintenance should be performed inside enclosed work

[79] The Standard Industrial Classification (SIC) system was replaced by the North American industry Classification System (NAICS) in 1997. SIC Code 4493 (marinas) is now NAICS 713930. SIC Code 3732 (boat yards and boat builders) is now identified by NAICS as 336612 (boat building) and 811490 (other personal and household goods repair and maintenance).

[80] NOAA and EPA. 1993. *Coastal Nonpoint Pollution Control Program Development and Approval Guidance.* January 1993. Accessed 09/6/2022. https://coast.noaa.gov/data/czm/pollutioncontrol/media/6217progguidance.pdf [81] NOAA and EPA. 1993. *Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance.* January 1993. Accessed 02/23/2023. https://coast.noaa.gov/data/czm/pollutioncontrol/media/6217progguidance.pdf

buildings and protected from wind, as much as possible. Where hull maintenance activities cannot be conducted inside, the guidebook recommends that blasting and sanding be performed within enclosed spray booths or tarp enclosures to help reduce the spread of residue and particulates from these activities. Performing hull maintenance activities over an impervious surface, such as a designated concrete pad, is also encouraged in the guidebook. The guidebook recommends that, where possible, sanders be equipped with vacuums and work only be allowed on clear, non-windy days. The guidebook recommends against blowing of dust and debris. In addition, the guidebook recommends that dust and residue be cleaned up and removed immediately after work is performed or at a minimum of once per day. Any collected waste from hull maintenance activities should be stored under cover and in a secure container to reduce the possibility of it entering stormwater. The guidebook also recommends that permeable tarps, screens, or filter cloths be readily available under cradles or stands before a boat is dry docked to capture and filter pollutants from runoff. Finally, the guidebook recommends that hull and boat maintenance areas should be clearly designated, well-marked with a list of posted rules, and located away from the water's edge.

In addition to the specific hull maintenance BMPs listed above, the guidebook contains recommendations for several general stormwater BMPs to reduce the average annual loadings of TSS in runoff from hull maintenance areas by 80 percent consistent with the 6217(g) stormwater runoff management measure. For example, the guidebook contains recommendations for: 1) the siting of vegetated areas between impervious surface areas; 2) the placement of permeable concrete on top of a filter layer consisting of a stone reservoir and a filter fabric; 3) the installation of oil/grit separators and/or vertical media filters to capture pollutants in runoff; 4) the use of catch basins where stormwater enters the marina in large pulses to allow sediment to settle and be disposed of; and 5) the addition of inlet filters to storm drains that are located near designated work areas. All of these practices can be employed to remove pollutants and sediment from stormwater runoff before it enters nearby waterways.

Fueling Station Design

The fueling station design management measure calls on states to design fueling stations to allow for ease in cleanup of spills. Indiana meets this management measure through a mix of regulatory and voluntary mechanisms.

Indiana utilizes federal and state regulations to meet the fueling station design management measure. Federal regulations require that any marina have a spill prevention, control and countermeasure plan if it has the capacity to store greater than an aggregate of 1,320 gallons of petroleum above ground, including any container of 55 gallons or more, or more than 42,000 gallons underground that is not subject to the underground storage tank standards found in 40 C.F.R. Parts 280 and 281, and has a reasonable expectation of an oil discharge into or upon navigable waters of the United States (40 C.F.R. Part 112).

Under 329 IAC 9-2-2, Indiana requires owners and operators of new or replaced underground storage tanks to certify that the following requirements are met: (1) tank and piping installation requirements under 40 C.F.R. § 280.20; (2) cathodic protection of steel tanks and piping standards under 40 C.F.R. § 280.20; (3) release detection under 40 C.F.R. Part 280 Subpart D; and (4) financial responsibility under 329 IAC 9-8. In reviewing this information, the State may

require the owner and operator to develop a corrective action plan for responding to contaminated soils and ground water. The corrective action plan also needs to consider the proximity, quality, and current and future uses of nearby surface water and ground water, as well as the potential effects of residual contamination on nearby surface water and ground water (329 IAC 9-5-7). In the event of an oil spill or release from an underground system, the owner or operator has 24 hours to report the release to the State, take immediate action to prevent any further release into the environment, identify and mitigate fire, explosion, and vapor hazards, and mitigate, to the extent practicable, adverse effects on human health and the environment (329 IAC 9-5-2).

In addition, the *Clean Marina Guidebook* recommends fueling stations be designed to include automatic shutoffs on fuel lines and at the hose nozzles to reduce fuel loss and spills. Personal watercraft floating docks should also be included at fuel docks to help drivers refuel without spilling. The guidebook also contains recommendations that marinas provide a clearly marked area containing spill equipment such as absorbent pads, booms, empty sandbags, sewer pipe plugs, dry absorbent and drain covers at the pumps to help contain spills if they occur.

Enforceable Policies and Mechanisms for the Marina Siting and Design Management Measures

In cases where the voluntary-based Clean Marina Program is used to help meet the marina siting and design management measures, Indiana has provided a legal opinion from its Attorney General asserting that the State has adequate back-up authority through the Indiana Clean Water Act (IC 13-18-3) to require implementation of the 6217(g) management measures, including the marina management measures for shoreline stabilization, stormwater runoff, and fueling station design, as necessary. The State also has described how the implementing agencies (IDNR, IDEM) will work with the enforcing agency (IDEM) to ensure enforcement action is taken when needed. Indiana also provided an example of an enforcement action that demonstrates the State's commitment to using this back-up authority when necessary.[82] Indiana tracks the number of certified clean marinas to evaluate overall implementation of the marina siting and design management measures where it relies on voluntary-based approaches for shoreline stabilization, stormwater runoff and fueling station design.

B. MARINA AND BOAT OPERATION AND MAINTENANCE

2008 FINDING: Indiana's program includes programs and enforceable policies and mechanisms in conformity with the above management measures except for petroleum control and boat cleaning.

2008 CONDITION: Within five years, Indiana will demonstrate that it has programs in place to implement the petroleum control and boat cleaning management measures.

2024 DECISION: Indiana has satisfied this condition.

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[82] IDEM. 2016. Letter from Elizabeth Admire, State Natural Resource Co-Trustee Office of Legal Counsel to Mike Molnar, Program Manager Lake Michigan Coastal Program, RE: Enforceable policies and mechanisms for nonpoint source pollution, June 2, 2016.

RATIONALE: Indiana addresses the petroleum control and boat cleaning management measures through its Clean Marina Program and guidebook which are discussed in more detail under the marina siting and design section. The State has provided a legal opinion and other supporting documents asserting that it has adequate back-up authorities to ensure implementation of these management measures and is committed to using its authorities, when needed.

Boat Cleaning

The goal of the boat cleaning management measure is to ensure that cleaning operations minimize, to the extent practicable, the release of harmful cleaners, solvents, and paint from in-water hull cleaning to surface waters. Consistent with this management measure, the *Clean Marina Guidebook* recommends washing boat hulls above the waterline by hand using a soft sponge, using cleaning products sparingly, and using environmentally friendly cleaning products.[83] The guidebook recommends that using caustic cleaners such as bleach, ammonia, or lye and washing the boat below the waterline should be avoided. In addition, the guidebook recommends that boat hulls be cleaned frequently enough to reduce the use of harmful cleaners in the first place and using long-lasting or low-toxicity antifouling paint to minimize the need for hull cleaning. To accompany the guidebook, the Clean Marina Program developed a Clean Boater Tip Sheet on boat cleaning to help educate boaters about the harmful effects of cleaning products on the surrounding environment.

Petroleum Control

The goal of the petroleum control management measure is to reduce the amount of fuel and oil from boat bilges and fuel tank air vents entering marina and surface waters. To achieve this goal, the *Clean Marina Guidebook* recommends the use of absorbent bilge pads and socks to soak up oil and fuel to prevent collected liquids in the bottom of the bilge from being discharged to surrounding waters and notes that used bilge pads and socks should be properly recycled or disposed of after use. The guidebook also recommends that boaters avoid pumping bilge water that has an oily sheen and that boaters drain all water from the bilge, livewell and motor on land. The installation of fuel/air separators on inboard fuel tank air vents to help reduce the amount of fuel spilled into surface waters while fueling also is recommended. The Clean Marina Program also developed and promotes a Clean Boater Tip Sheet on bilge maintenance that includes BMPs to control spills and drips that are consistent with the 6217(g) management measures for petroleum control.[84] In addition, the bilge tip sheet recommends that boaters maintain boat engines to prevent leaks, repair leaking hoses, gaskets and seals, and use non-spill vacuum-type systems when changing engine oil. The bilge tip sheet recommends that there should be an inch or two of water in the bilge when installing bilge pump and bilge water filters. The tip sheet also recommends that installed bilge water filters be covered with plastic bags before removal to catch drips.

[83] Indiana Department of Environmental Management. 2012. *Indiana Clean Marina Guidebook*. Accessed 01/31/2023. https://www.in.gov/idem/lakemichigan/resources/indiana-clean-marina-guidebook/

[84] IDEM. Indiana Clean Marina Program Clean Boater Tip Sheet: Bilges. Accessed 01/31/2023. https://www.in.gov/idem/lakemichigan/files/marinas_boaters_sheet_bilges.pdf

Enforceable Policies and Mechanisms for the Marina Operation and Maintenance Management Measures

Indiana has provided a legal opinion from its Attorney General asserting that the State has adequate back-up authority through the Indiana Clean Water Act (IC 13-18-3) to require implementation of the 6217(g) measures, including the marina management measures for boat cleaning and petroleum control, as necessary. The State also described how the implementing agencies (IDNR, IDEM) will work with the enforcing agency (IDEM) to ensure enforcement action is taken when needed.[85] Indiana also provided an example of an enforcement action that demonstrates the State's commitment to using this back-up authority when necessary. Indiana tracks the number of certified clean marinas to evaluate overall implementation of the marina operation and maintenance management measures.

VI. HYDROMODIFICATION

2008 FINDING: Indiana's program includes management measures and enforceable policies and mechanisms in conformity with the 6217(g) guidance except for: 1) a process to improve surface water quality and instream and riparian habitat restoration through the operation and maintenance of existing modified channels; 2) the protection of surface water quality and instream and riparian habitat during the operation of dams; and 3) the management measures for eroding streambanks and shorelines. Indiana's program is exempt from the erosion and sediment control and chemical and pollutant control management measures because these areas are being addressed through the NPDES Phase II Storm Water Program. The State has identified a back-up enforceable policy, but has not yet demonstrated the ability of the authority to ensure widespread implementation throughout the coastal nonpoint program management area by submitting a legal opinion, demonstrating the authority and commitment to use the enforcement mechanisms where necessary, describing the laws and processes linking the implementing agencies with the enforcement agency, and describing the monitoring and tracking mechanisms the State will employ to ensure that the voluntary programs are being implemented sufficiently.
2008 CONDITION: Within five years, Indiana will develop a process to improve surface water quality and instream and riparian habitat through the operation and maintenance of existing modified channels. Also, within five years, the State will develop programs for the protection of surface water quality and instream and riparian habitat during the operation of dams and implement the management measure for eroding streambanks and shorelines. Finally, within five years, Indiana will submit a legal opinion and other supporting documents as described in the *Final Administrative Changes to the Coastal Nonpoint Pollution Control Program Guidance*[86] to demonstrate that it has adequate back-up authority to implement the hydromodification management measures throughout the coastal nonpoint program management area.

2024 DECISION: Indiana has satisfied this condition.

[85] IDEM. 2016. Letter from Elizabeth Admire, State Natural Resource Co-Trustee Office of Legal Counsel to Mike Molnar, Program Manager Lake Michigan Coastal Program, RE: Enforceable policies and mechanisms for nonpoint source pollution, June 2, 2016. (Available upon request)
[86] NOAA and EPA. 1998. Final Administrative Changes to the Coastal Nonpoint Pollution Control Program Guidance. Accessed 01/31/2023. https://coast.noaa.gov/data/czm/pollutioncontrol/media/6217adminchanges.pdf

RATIONALE: Indiana employs its voluntary watershed planning efforts to protect and improve surface water quality and instream and riparian habitat through the operation and maintenance of existing modified channels and dams, as well as to implement the management measure for eroding streambanks and shorelines. In addition, the State has provided a legal opinion and other supporting documents to demonstrate that it has adequate back-up authority to implement the hydromodification management measures throughout the coastal nonpoint program management area.

Channelization and Channel Modification

The channelization and channel modification management measures call on states to:

1. Evaluate the potential effects of proposed channelization and channel modification on the physical and chemical characteristics of surface waters and instream and riparian habitat in coastal areas;
2. Plan and design channelization and channel modification to reduce undesirable impacts; and
3. Develop an operation and maintenance program for existing modified channels that includes identification and implementation of opportunities to improve physical and chemical characteristics of surface waters and instream and riparian habitat in those channels.

In their 2008 findings, NOAA and EPA concluded that Indiana had already satisfied the first two elements of these management measures. To satisfy the third element of the management measure that addresses the operation and maintenance of existing modified channels, Indiana relies on its watershed planning process to implement appropriate BMPs. As described in more detail in the watershed protection section, IDEM developed a watershed management plan checklist to ensure that watershed management plans within the coastal nonpoint program management area are consistent with the 6217(g) management measures, including the identification of opportunities to improve the physical and chemical characteristics of surface waters and instream and riparian habitat in modified channels, when needed.[87]

For example, the Salt Creek WMP identifies channelization, ditches and drains as potential sources of pollution within the watershed and includes actions to promote and install practices that restore natural hydrology of these modified channels and ditches.[88] Projects have included a study to determine the feasibility of daylighting the headwaters of Robbin's Ditch and enhancing Thorgren Basin, a roughly two-acre concrete detention basin for collecting stormwater.[89,90] As a result of the feasibility study, the concrete-lined channels in Thorgren Basin were replaced with bio-swales and native vegetation to enhance water quality and instream and riparian habitat. Channels entering the basin were also lined with sediment traps and re-constructed to meander to slow stormwater flow.[91]

[87] IDEM. 2009. Watershed Management Plan Checklist and Instructions (2009). Accessed 01/31/2023. https://www.in.gov/idem/nps/watershed-planning/watershed-management-planning/watershed-management-plan-checklist-and-instructions-2009/

[88] Save the Dunes Conservation Fund. 2008. *Salt Creek Watershed Management Plan.* Accessed 02/02/2023. https://ecm.idem.in.gov/cs/idcplg?IdcService=GET_FILE&dID=83088881&dDocName=83088886&Rendition=web&allowInterrupt=1&noSaveAs=1

See the *Enforceable Mechanisms and Policies for Hydromodification* subsection below for a discussion of Indiana's back-up authority that supports voluntary implementation of the channelization and channel modification management measures.

Dams—Protection of Surface Water Quality and Instream and Riparian Habitat

The goal of this management measure is to develop and implement a program to manage the operation of dams in coastal areas that includes an assessment of:

1. Surface water quality and instream and riparian habitat and potential for improvement; and
2. Significant nonpoint source pollution problems that result from excessive surface water withdrawals.

IDEM's watershed management planning program, discussed in the watershed protection and channelization sections above, also helps the State implement the dam management measure. All watershed management plans need to meet the requirements of IDEM's watershed plan checklist and EPA's nine element plans, including consistency with the 6217(g) management measures, to be eligible for Section 319 NPS Management Program funding[92] This means that where a dam operation negatively impacts surface water quality or instream and riparian habitat, watershed plans need to identify priority actions to address these issues.

For example, the Trail Creek WMP included an action to locate and evaluate dams within the Trail Creek watershed, assess the impact they have on water quality and instream habitat, and identify potential areas for improvement.[93] The assessment identified nine dams for improvement. The Deep River-Portage Burns Waterway WMP identifies the Deep River Dam as a source of nonpoint source pollution and an area of interest for restoration, modification, or removal.[94] A feasibility study determined that installing a rock riffle on the downstream side of the dam was the best course of action to improve water quality and habitat.[95] Construction was completed in 2021. By leaving the dam in place, the wetlands along the backwater pool were not affected, streambank erosion downstream of the dam is expected to decrease, and, as the dam deteriorates, the riffle construction will provide necessary structural support to prevent failure.

[89] Save the Dunes Conservation Fund. 2008. *Salt Creek Watershed Management Plan.* pg. 150. Accessed 02/02/2023. https://ecm.idem.in.gov/cs/idcplg?IdcService=GET_FILE&dID=83088881&dDocName=83088886&Rendition=web&allowInterrupt=1&noSaveAs=1

[90] Save the Dunes. 2010 Salt Creek Engineering Feasibility Study. Accessed 02/02/2023. https://larereports.dnr.in.gov/
*Search Salt Creek Watershed

[91] IDNR. 2016. Thorgren Basin: Changes is Good—Both for Flood Control and the Environment, *Waterlines.* Winter 2016. Accessed 02/24/2023. https://content.govdelivery.com/accounts/INDNR/bulletins/12c7006

[92] IDEM. Watershed Management Plan Checklist. 2009. Accessed 01/31/2023. https://www.in.gov/idem/nps/watershed-planning/watershed-management-planning/watershed-management-plan-checklist-and-instructions-2009/

[93] Trail Creek Watershed Management Plan. 2007. Accessed 01/31/2023. https://ecm.idem.in.gov/cs/idcplg?IdcService=GET_FILE&dID=83088935&dDocName=83088940&Rendition=web&allowInterrupt=1&noSaveAs=1

See the *Enforceable Mechanisms and Policies for Hydromodification* subsection below for a discussion of Indiana's back-up authority to ensure implementation of the dam management measure.

Eroding Streambanks and Shorelines

The eroding streambanks and shorelines management measure calls on states to:

1. Stabilize streambanks and shorelines where streambank or shoreline erosion is a nonpoint source pollution problem. Vegetative methods are strongly preferred unless structural methods are more cost-effective, considering the severity of wave and wind erosion, offshore bathymetry, and the potential adverse impact on other streambanks, shorelines, and offshore areas;
2. Protect streambank and shoreline features with the potential to reduce nonpoint source pollution; and
3. Protect streambanks and shorelines from erosion due to uses of either the shorelands or adjacent surface waters.

IDEM's watershed management planning program, discussed in the previous section, also includes actions to stabilize and protect eroding streambanks and shorelines. All watershed management plans need to meet the requirements of IDEM's watershed plan checklist and EPA's nine element plans, including consistency with the 6217(g) management measures, to be eligible for Section 319 NPS Management Program funding.[96]

The Trail Creek WMP contains actions to identify significant areas of streambank erosion and instability and to implement streambank stabilization projects at these priority locations.[97] Implementation actions include coordination with LaPorte County and appropriate agencies to implement policies and procedures to encourage riparian buffer restoration and mandatory setbacks from the creek. The Little Calumet East Branch WMP also identifies specific priority areas for shoreline stabilization and riparian buffers to reduce nonpoint source pollution.[98]

[94] Deep River-Portage Burns Waterway Watershed Plan. September 2016. Accessed 03/01/2023. https://ecm.idem.in.gov/cs/idcplg?IdcService=GET_FILE&dID=83085309&dDocName=83085242&Rendition=web&allowInterrupt=1&noSaveAs=1

[95] Northwest Indiana Regional Planning Commission. 2018. Deep River Dam Engineering Feasibility Study. Accessed 01/31/2023. https://nirpc.org/wp- content/uploads/2018/06/FeasibilityReport_DeepRiverDam_NIRPC_62118.pdf

[96] IDEM. Watershed Management Plan Checklist. 2009. Accessed 01/31/2023. https://www.in.gov/idem/nps/watershed-planning/watershed-management-planning/watershed-management-plan-checklist-and-instructions-2009/

[97] Trail Creek Watershed Management Plan. 2007. Accessed 01/31/2023. https://ecm.idem.in.gov/cs/idcplg?IdcService=GET_FILE&dID=83088935&dDocName=83088940&Rendition=web&allowInterrupt=1&noSaveAs=1

Enforceable Policies and Mechanisms for Hydromodification

To support the voluntary watershed planning efforts, Indiana has provided a legal opinion from its Attorney General asserting that the State has adequate back-up authority through its CWA (IC 13-18-3) to require implementation of the 6217(g) management measures, including the hydromodification management measures, as necessary. IDEM sent a letter describing the mechanism and process that links the implementing agencies with the enforcement agency (IDEM) and included an example of an enforcement action that was taken demonstrating the State's commitment to use its back-up authority, when needed, to ensure implementation of the 6217(g) management measures.[99] Indiana tracks voluntary implementation of the hydromodification management measures through annual reporting of its Section 319 NPS Management Program and through the interactive online Watershed Management Plan and Total Maximum Daily Load Reports Search (WATRS) map.[100,101]

VI. WETLANDS, RIPARIAN AREAS, AND VEGETATED TREATMENT SYSTEMS

2008 FINDING: Indiana has identified several federal and state programs that have the potential to adequately implement the management measures for protection and restoration of wetland and riparian areas but has not yet demonstrated the ability of these programs to ensure implementation of the measures within the coastal nonpoint program management area. The State's program includes management measures for vegetated treatment systems. The State has identified a back-up enforceable policy and mechanism, but has not yet demonstrated the ability of the authority to ensure widespread implementation throughout the coastal nonpoint program management area by submitting a legal opinion, demonstrating the authority and commitment to use the enforcement mechanisms where necessary, describing the laws and processes linking the implementing agencies with the enforcement agency, and describing the monitoring and tracking mechanisms the State will employ to ensure that the voluntary programs are being implemented sufficiently.

[98] Little Calumet River East Branch Watershed Management Plan. 2015. Accessed 01/31/2023. https://ecm.idem.in.gov/cs/idcplg?IdcService=GET_FILE&dID=83086341&dDocName=83086346&Rendition=web&allowInterrupt=1&noSaveAs=1

[99] IDEM. 2016. Letter from Elizabeth Admire, State Natural Resource Co-Trustee Office of Legal Counsel to Mike Molnar, Program Manager Lake Michigan Coastal Program, RE: Enforceable policies and mechanisms for nonpoint source pollution, June 2, 2016. (Available upon request)

[100] IDEM. Undated. Nonpoint Source Program Annual Reports (website). Accessed 02/24/2023. https://www.in.gov/idem/nps/resources/nonpoint-source-annual-report/

[101] IDEM. Undated. Watershed Management Plan and Total Maximum Daily Load Reports Search. Accessed 01/31/2023. https://indianadem.maps.arcgis.com/apps/webappviewer/index.html?id=bc47efd179324774adb7136ca95b3352&marker=-87.43733714408911%2C39.293585819372474%2C%2C%2C%2C&markertemplate=%7B%22title%22%3A%22Middle%20Wabash-Busseron%22%2C%22longitude%22%3A-87.43733714408911%2C%22latitude%22%3A39.293585819372474%2C%22isIncludeShareUrl%22%3Atrue%7D&level=7

2008 CONDITION: Within five years, Indiana will demonstrate that it has programs in place for the protection and restoration of wetland and riparian areas. Also, within five years, Indiana will submit a legal opinion and other supporting documents as described in *Final Administrative Changes to the Coastal Nonpoint Pollution Control Program Guidance*[102] to demonstrate that it has adequate back-up authority to implement the wetland, riparian and vegetated treatment system management measures throughout the coastal nonpoint management area.
2024 DECISION: Indiana has satisfied this condition.
RATIONALE: Indiana relies on a regulatory approach for the protection of wetlands and riparian areas and their existing functions through the Section 401 Water Quality Certification process, and several programs that promote the restoration of the preexisting functions in damaged and destroyed wetlands including the *2015 Indiana Wetlands Program Plan*, the *2019 Indiana State Nonpoint Source Management Plan*, the NRCS Wetland Reserve Enhancement Program, the Volunteer Compensatory Mitigation tool, the IDNR Lake and River Enhancement (LARE) Program, and the LMCP. Indiana now satisfies the wetlands and riparian protection management measure through direct regulatory programs, therefore, the State no longer needs to provide a legal opinion and supporting documents to demonstrate it has adequate back-up authorities. In addition, the 1993 *Coastal Nonpoint Pollution Control Program Development and Approval Guidance* does not require states to include enforceable policies and mechanisms for the promotion of wetlands and riparian areas and vegetated treatment systems management measures.[103]
The management measure for wetlands and riparian areas calls for states to:

1. Protect wetlands and riparian areas that are serving a significant nonpoint source pollution abatement function from adverse effects and maintain these functions while protecting the other existing functions of these wetlands and riparian areas as measured by characteristics such as vegetative composition and cover, hydrology of surface water and ground water, geochemistry of the substrate, and species composition; and
2. Promote the restoration of the preexisting functions in damaged and destroyed wetlands and riparian systems in areas where the systems will serve a significant nonpoint source pollution abatement function.

Indiana protects wetlands and riparian areas through its Section 401 Water Quality Certification Program and Isolated Wetlands Program. Any person who places fill materials, excavates, dredges, or mechanically clears within waters covered by the CWA must obtain a water quality certificate from IDEM under Section 401 of the CWA.[104] In addition, IDEM reviews projects in isolated wetlands under its Isolated Wetlands Law (IC 13-18-22). The *Waterways Permitting Handbook* describes how IDEM assesses, avoids, and minimizes adverse impacts to wetlands and riparian areas through its water quality certification and isolated wetlands review processes, which is consistent with the 6217(g) guidance for protection of wetlands and riparian areas.[105]

[102] NOAA and EPA. 1998. Final Administrative Changes to the Coastal Nonpoint Pollution Control Program Guidance. Accessed 01/31/2023. https://coast.noaa.gov/data/czm/pollutioncontrol/media/6217adminchanges.pdf [103] NOAA and EPA. 1993. *Coastal Nonpoint Pollution Control Program Development and Approval Guidance.* January 1993. Accessed 01/31/2023. https://coast.noaa.gov/data/czm/pollutioncontrol/media/6217progguidance.pdf
[104] IDEM. Undated. Section 401 Water Quality Certification (website). Accessed 02/24/2023. https://www.in.gov/idem/wetlands/information-about/section-401-water-quality-certification/

While wetland preservation, rather than mitigation, is IDNR's first priority in the coastal region, IDNR's statewide In-Lieu Fee Mitigation Program for wetland and stream mitigation allows permit applicants (developers) to pay a fee to support the restoration or conservation of wetland areas in a different location where permitted damage or destruction of wetlands occurs at a project site.[106] The In-Lieu Fee Mitigation Program fulfills the compensatory mitigation requirements for permitted impacts under Sections 404 and 401 of the CWA, Section 10 of the Rivers and Harbors Act, and Indiana's State Isolated Wetlands Law (IC 13-18-22). The program is designed to protect and preserve wetland and stream function by targeting larger ecologically valuable parcels for restoration and conservation on a landscape or watershed scale. The program involves scientific analysis and planning to ensure management measures are implemented to preserve and restore wetland functions, including the abatement of nonpoint source pollution where such pollution is negatively affecting wetland functions. The IDNR has identified stream and wetland restoration and conservation areas in the three coastal counties (Porter, Lake and LaPorte) as potential sites where future mitigation projects are to be prioritized.[107]

Indiana also protects wetlands and riparian areas through its Indiana Flood Control Act (IC 14-28-1). The act regulates various development activities (e.g., structures, obstructions, deposits, and/or excavations) within the floodway of any State waterway. Specifically, activity in the floodway cannot result in unreasonably detrimental effects upon fish, wildlife, or botanical resources, such as wetlands and riparian areas (IC 14-28-1-20(2)(B)(ii)). As part of the IDNR Flood Control Act permit review process, the Division of Water conducts an environmental review that considers the physical and hydraulic impacts of the project.[108] Other divisions, such as the Division of Fish and Wildlife, have an opportunity to comment on projects to ensure impacts to habitat and aquatic life are minimized. Each division can include special requirements within the permit to ensure protection of water quality, wetlands, and riparian areas. Indiana has provided several examples of how this review process leads to the protection of wetland and riparian areas. For example, during the review of a planned bridge replacement, an IDNR biologist noted that nearby wetlands may be impacted during construction. As a result, the staging area and bridge construction was designed to minimize impacts such that less than 0.1 acre of wetlands was ultimately impacted. In another project involving the installation of a pipeline, IDNR staff worked with the applicant to identify wetlands impacted by the proposed route and worked with the applicant to apply directional boring under the wetlands to avoid impacts.[109]

[105] Indiana Department of Environmental Management. 2008. 401 Water Quality Certification and Isolated Wetland Program. Waterways Permitting Handbook. September 2008. Accessed 01/31/2023. https://www.lrc.usace.army.mil/Portals/36/docs/regulatory/pdf/INWWB.pdf

[106] IDNR. Stream and Wetland Mitigation Program. In-Lieu Fee Mitigation Program. Accessed 01/31/2023. https://www.in.gov/dnr/land-acquisition/stream-and-wetland-mitigation-program/

[107] IDNR. Indiana Stream and Wetland Mitigation Program Annual Report. 2021. Accessed 01/31/2023. https://www.in.gov/dnr/land-acquisition/files/la-2021-INSWMP-AnnualReport.pdf

[108] Indiana LMCP. 2016. 6217 Nonpoint Source Pollution Control Program for Programmatic Approval. February 2016. Copy available upon request.

There are several other programs in the State that also help to protect wetlands and riparian areas. For example, the *2015 Indiana Wetlands Program Plan* serves as a guide to wetland conservation and restoration efforts in the State.[110] The plan includes goals and action items to protect and restore wetlands, such as undertaking wetland mapping and promoting wetland conservation. As part of this planning effort, the State has developed a tool to identify and map high-priority wetland conservation sites. The tool improves tracking of existing high-quality wetland areas and helps to target these valuable areas for protection.

The *2019 Indiana State Nonpoint Source Management Plan* provides information on a number of programs the State uses to promote the restoration of damaged and destroyed wetlands and riparian systems. Programs and initiatives include targeted CWA Section 319 funds, the United States Fish and Wildlife Service Partners for Fish and Wildlife Program, the NRCS Wetland Reserve Enhancement Program, Great Lakes Restoration Initiative (GLRI), the Volunteer Compensatory Mitigation tool, and IDNR's LARE program.[111] All of these programs play important roles in promoting restoration of wetlands and riparian areas. For example, two recent GLRI-supported projects have restored approximately 80 acres of wetland and riverine habitat within the Grand Calumet River area of concern to improve water quality and aquatic habitat and an additional 2,000 acres of critical coastal wetlands in the Calumet Region of Lake County.[112,113] The Clean Water State Revolving Fund has also been used to protect and restore wetlands and riparian conservation easements to address nonpoint source problems.[114]

VI. CRITICAL COASTAL AREAS, ADDITIONAL MANAGEMENT MEASURES, AND TECHNICAL ASSISTANCE

2008 FINDING: Indiana's program does not include processes for the identification of critical coastal areas or for the development and continuing revision of management measures applicable to critical coastal areas and cases where the 6217(g) measures are fully implemented but water quality threats or impairments persist. The program does not describe efforts to provide technical assistance to agencies and the public for implementing additional management measures.

[109] Indiana LMCP. 2016. 6217 Nonpoint Source Pollution Control Program for Programmatic Approval. February 2016. Copy available upon request.

[110] IDEM. Wetland Program Plan 2015. Accessed 02/09/2023. https://www.in.gov/idem/wetlands/files/program_plan.pdf

[111] IDEM, Office of Water Quality. Indiana State Nonpoint Management Plan 2019 Update. Accessed 01/31/2023. https://ecm.idem.in.gov/cs/idcplg?IdcService=GET_FILE&dID=83145821&dDocName=83146426&Rendition=web&allowInterrupt=1&noSaveAs=1

[112] GLRI. 2019. Lake George Branch Wetlands Restoration Project Phase 2. Accessed 01/31/2023. https://www.glri.us/projects
*Search in Project Table for project name: Lake George Branch Wetlands Restoration Project Phase 2

[113] GLRI. Restoring Calumet Coastal Wetlands Through Collaborative Restoration and Management (IL, IN). 2018-2021. Accessed 09/01/2022. https://www.glri.us/projects
*Search in Project Table for project name: Restoring Calumet Coastal Wetlands Through Collaborative Restoration and Management (IL, IN)

[114] Indiana Finance Authority. State Revolving Fund Loan Program. Accessed 01/31/2023. https://www.in.gov/ifa/srf/about-srf/

2008 CONDITION: Within five years, Indiana will develop a process for the identification of critical coastal areas and a process for developing and revising management measures to be applied in critical coastal areas and in areas where necessary to attain and maintain water quality standards. Within five years, Indiana will also develop a program to provide technical assistance in the implementation of additional management measures.

2024 DECISION: Indiana has satisfied this condition.

RATIONALE: Indiana uses its watershed management planning process, discussed in more detail in the watershed protection section above, as the basis for identifying critical areas for the implementation of additional management measures and for the development and revision of management measures within these critical coastal areas. The State's Watershed Planning Guide instructs watershed planners how to identify critical areas within the watershed where BMPs will be needed to address nonpoint source pollution and achieve the goals of the WMP by using information collected during the watershed inventory, including identified sources of pollutants and pollutant loads.[115] Watershed planners then identify the BMPs that would be appropriate for each critical area and explain why that area was designated as critical. The identified critical areas may be updated as nonpoint source issues are resolved, new issues are identified, and lower priority areas move up in terms of priority rank.

Indiana promotes watershed planning as the standard practice in watershed management. Many funding sources that support nonpoint source management projects, such as Section 319 NPS Management Program implementation funds and the LARE Watershed Land Treatment Program, among others, require that an approved watershed management plan is in place to be eligible for funding.[116,117] Other private, competitive funding sources have also shown a preference for projects that follow a larger strategy or that can be shown to be working toward some kind of measurable result against a baseline. Creating a watershed plan is a natural fit for both conditions. Additionally, the State employs regional Watershed Specialists who share information on creating watershed plans and providing the technical assistance to complete the planning process. Finally, the Indiana Watershed Leadership Academy, an extension program that is focused on the watershed restoration process, emphasizes planning as the basis for future restoration activities.[118]

[115] IDEM. 2010. Indiana Watershed Planning Guide. Accessed 01/31/2023. https://www.in.gov/idem/nps/resources/indiana-watershed-planning-guide/

[116] IDEM. Undated. Clean Water Act Section 319(h) Grants. (website). Accessed 02/24/2023. https://www.in.gov/idem/nps/funding/clean-water-act-section-319h-grants/

[117] IDNR. 2021. Watershed Land Treatment Program (WLTP) Cost-Share and Incentive-Payment Projects and Policies. July 2021. Accessed 02/24/2023. https://www.in.gov/dnr/fish-and-wildlife/files/fw-LARE_Policies_Watershed_Land_Treatment_Program.pdf

[118] Purdue Extension Indiana Watershed Leadership Academy. (website). Indiana Watershed Leadership Program. (website). Accessed 02/09/2023. https://engineering.purdue.edu/watersheds/index.html

IDEM requires that watershed plans within in the Little Calumet-Galien watershed, which includes Indiana's coastal nonpoint program management area, be developed in coordination with IDNR to ensure that the 6217(g) guidance requirements, including the need to identify critical coastal areas and the implementation of additional management measures when needed, are incorporated into the WMP.[119] Once a coastal WMP is approved, IDEM conveys the approval information to IDNR's LMCP. To easily track all critical areas within the coastal nonpoint program management area, the LMCP maps the critical areas identified in the coastal area watershed plans.

The listing process for identifying CWA Section 303(d) impaired waters provides Indiana with another mechanism for identifying critical coastal areas where the identification and implementation of additional management measures are needed to address nonpoint source pollution problems. IDEM issues an Integrated Water Monitoring and Assessment Report every two years to meet the requirements of Sections 303(d) and 305(b) of the CWA. In accordance with Section 305(b), the report assesses whether state waters support beneficial uses designated under Indiana's water quality standards.[120] IDEM then uses this information to update the State's list of 303(d) impaired waters (i.e., those waters not meeting water quality standards) which is also included in the report. The integrated report helps Indiana to identify critical coastal areas where impairments are occurring and to determine if and what additional management measures are needed to correct the impairment. After IDEM releases the report, the LMCP identifies and revises the master list of critical coastal areas based on the report findings. The State then provides technical assistance to help the target audience implement the identified additional management measures.

Indiana has several technical assistance programs in place to help local governments and the public implement additional management measures, when needed. Through the ICP, eight Indiana agencies, including IDEM, IDNR, Indiana State Department of Agriculture Division of Soil Conservation, SWCDs, and NRCS, work together to provide technical, financial, and educational assistance to promote a common conservation goal and sound land and water stewardship decisions. ICP partners, principally the SWCDs, NRCS, and Purdue Extension, operate a robust technical assistance program to help agricultural producers reduce polluted runoff and improve water quality.

IX. MONITORING

2008 FINDING: Indiana's program does not yet include a plan to assess over time the success of the management measures in reducing pollution loads and improving water quality.

2008 CONDITION: Within five years, Indiana will develop a plan that enables the State to assess over time the extent to which implementation of management measures is reducing pollution loads and improving water quality.

[119] IDEM. 2009. Watershed Management Plan Checklist. Accessed 01/31/2023. https://www.in.gov/idem/nps/watershed-planning/watershed-management-planning/watershed-management-plan-checklist-and-instructions-2009/

[120] IDEM. Undated. Integrated Water Monitoring and Assessment Report (website). Accessed 02/09/2023. https://www.in.gov/idem/nps/watershed-assessment/water-quality-assessments-and-reporting/integrated-water-monitoring-and-assessment-report/

2024 DECISION: Indiana has satisfied this condition.

RATIONALE: The 6217(g) guidance calls for a description of any necessary monitoring techniques to accompany the management measure to assess over time the success of the measures in reducing pollution loads and improving water quality. The monitoring program should be designed to measure change in pollution loads and water quality that may result from

the implementation of management measures, as well as ensure management measures are properly implemented, inspected, and maintained.

Indiana has demonstrated its ability to meet the monitoring requirements by integrating IDEM's monitoring initiatives, which include probabilistic, fixed station, blue-green algae, baseline, and follow-up (success) monitoring, with other efforts in the State such as the Hoosier River Watch (citizen monitoring). IDEM monitoring activities and programs are coordinated with other state and federal agencies through the State's monitoring strategy, which has been designed to meet EPA's recommendations for a State Comprehensive Monitoring and Assessment Program.[121] Indiana's probabilistic monitoring effort is a nine-year rotating basin (one basin per year) monitoring approach that allows the State to assess the condition of its waters for CWA Section 305(b) reporting and Section 303(d) listing purposes. Other efforts, such as fixed station monitoring, baseline characterization for WMPs, follow-up success monitoring, water quality sampling for total maximum daily loads, and special projects, provide site-specific program support. Water quality data collected as a requirement for State-approved WMPs and through other grant-funded actions is also integrated within IDEM's overall efforts to report on environmental conditions.

Recipients of funding from IDEM's Section 319 NPS Management Program use the *EPA Region 5 Model for Estimating Pollutant Load Reductions* and the *Pollutant Load Estimation Tool* to estimate the pollutant load reductions for each BMP they implement, pursuant to WMPs, and provide their results to IDEM as part of their grant agreement. EPA Region 5's load reduction model is a tool that provides a gross estimate of sediment and nutrient load reductions from the implementation of agricultural and urban BMPs and estimates water quality improvements.[122] In order to be eligible for CWA Section 319 funding, all WMPs also need to include a monitoring component.[123] The WPM's monitoring strategy evaluates the effectiveness of implementation efforts over time, measured against a set of defined criteria that can be used to determine whether loading reductions are being achieved and whether progress is being made toward attaining water quality standards.

[121] IDEM. 2017. Water Quality Monitoring Strategy. Accessed 01/31/2023. https://ecm.idem.in.gov/cs/idcplg?IdcService=GET_FILE&dID=83258315&dDocName=83260120&Rendition=web&allowInterrupt=1&noSaveAs=1&fileName=83260120.pdf

[122] EPA. 2018. Spreadsheet Tool for Estimating Pollutant Loads (STEPL) and Region 5 Model. Accessed 01/31/2023. https://19january2021snapshot.epa.gov/nps/region-5-model-estimating-pollutant-load- reductions_.html

[123] IDEM. 2009. Watershed Management Plan Checklist and Instructions. Accessed 01/31/2023. https://www.in.gov/idem/nps/watershed-planning/watershed-management-planning/watershed-management-plan-checklist-and-instructions-2009/

The Indiana State Department of Agriculture and the ICP track agricultural BMP implementation using EPA Region 5's load reduction model to generate a comprehensive picture of the impact of voluntary conservation practices across the State, including within the coastal nonpoint program management area. The ICP uses the model results to establish baselines and measure load reduction trends by watershed each calendar year and to prioritize workload, staffing, and financial needs.[124]

Additional efforts to track implementation of specific 6217(g) management measures are discussed further in each management measure section and include the WATRS interactive map for watershed planning and the system for tracking the number of annual OSDS inspections.

The LMCP utilizes data collected from all these efforts to assess over time the extent to which implementation of the 6217(g) management measures is reducing pollutant loads and improving water quality. The LMCP analyzes the data specifically for the objectives of the coastal nonpoint program and suggests additional management measures and practices, as needed. This information is shared with watershed groups and local governments in a report to encourage the implementation of practices that will most effectively improve water quality in Indiana's coastal nonpoint program management area. The LMCP coordinates with IDEM on the development of sampling plans, the selection of water quality parameters, and the analysis of water quality data to ensure that monitoring under various programs is in accordance with coastal nonpoint program objectives.

[124] Indiana LMCP. 2014. 6217 Nonpoint Source Pollution Control Program Submission for Programmatic Approval. Indiana Conservation Partnership Data Consolidation, Quality Control and Mapping Utilizing the EPA Region 5 Load Reduction Model. December 2014. Copy available upon request.

List of Acronyms

6217(g)	Section 6217(g) of the Coastal Zone Act Reauthorization Amendment
BMP	best management practice
C.F.R.	Code of Federal Regulations
CMS	Conservation Management System
CWA	Clean Water Act
CZARA	Coastal Zone Act Reauthorization Amendments
EPA	U.S. Environmental Protection Agency
FOTG	Field Operating Technical Guides
GLRI	Great Lakes Restoration Initiative
GNIAR	Greater Northern Indiana Association of Realtors
IAC	Indiana Administrative Code
IC	Indiana Code
ICP	Indiana Conservation Partnership
IDEM	Indiana Department of Environmental Management
IDNR	Indiana Department of Natural Resources
IPM	integrated pest management
IOWPA	Indiana Onsite Wastewater Professional Association
LARE	Lake and River Enhancement Program
LMCP	Lake Michigan Coastal Program
MS4	municipal separate stormwater system
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPS	nonpoint source pollution
NRCS	National Resource Conservation Service
OSDS	onsite disposal system
SCS	Soil Conservation Service
SIC	standard industrial classification
SWCD	soil and water conservation district
TSS	total suspended solid
USDA	United States Department of Agriculture
WATRS	Watershed Management Plan and Total Maximum Daily Load Reports Search
WMP	watershed management plan

Appendix M

Pollutants and Sources Addressed by Indiana Section 319 Eligible Practices

Implementation Activities	*Pollutant Treated*				*Source of NPS Pollution Addressed*									
	Bacteria	*Nutrients*	*Sediment*	*Metals*	*Cropland*	*Pastures and Livestock Operations*	*CFOs*	*Streambank Erosion*	*Onsite Wastewater Treatment Systems*	*Wildlife/Domestic Pets*	*Urban NPS Runoff*	*Forestry*	*Abandoned Mine*	*Hydromodification*
Access Control†	X	X	X			X		X						X
Access Road	O	O	X					X				X		
Active Acid-Mine Drainage Treatment Facilities*				X									X	
Aeration and Settling Ponds for Acid Mine Drainage*				X									X	
Agrichemical Handling facility		X			X									
Alternative Watering Systems†	X	X	X			X	X	X		X				
Animal Mortality Facility	X	X	O			X	X			X				
Animal Trails and Walkways	X	O	X			X	O	X		X				
Composting Facility	X	X	O			X	X				X			
Comprehensive Nutrient Management Plan†	X	X	O		X		X							
Conservation Cover	X	X	X		X									
Conservation Crop Rotation	X	X	X		X								X	
Conservation Easements‡	X	X	X		X			X				X	X	
Conservation Tillage/Residue Management†	X	X	X		X									
Constructed Wetland	X	X	X		X					X	X			
Contour Buffer Strip	X	X	X		X									
Contour Farming	X	X	X		X									
Cover Crops	X	X	X		X									
Critical Area Planting	X	X	X			X		X			X	X	X	
Dam Modification or Removal‡			X					X			X			X
Daylighting‡											X			X
Diversion	X	X	X		X							X		
Drainage Bioreactor‡		X			X									
Drainage Water Management	X	X	O		X	X								

Field Border	X	X	X		X	X							X	

Implementation Activities	*Pollutant Treated*				*Source of NPS Pollution Addressed*									
	Bacteria	*Nutrients*	*Sediment*	*Metals*	*Cropland*	*Pastures and Livestock Operations*	*CFOs*	*Streambank Erosion*	*Onsite Wastewater Treatment Systems*	*Wildlife/Domestic Pets*	*Urban NPS Runoff*	*Forestry*	*Abandoned Mine Lands*	*Hydromodification*
Filter Strips	X	X	X		X	X	X	X		O	O		X	
Forage and Biomass Planting‡			X			X								
Fords‡			X									X		
Forest Stand Improvement	X	X	X									X		
Grade Stabilization Structure		X	X					X						
Grading		O	X										X	
Grassed Waterways	X	X	X		X									
Green Alley‡		X	X								X			
Green Roof‡		X	X								X			
Groundwater Remediation‡				X									X	
Heavy Use Area Protection	X	X	X			X	X					X		
Integrated Pest Management†	X	X	X		X									
Irrigation Water Management‡		X	X		X									
Land Reconstruction of Mined Land	X	X	X										X	
Land Use Ordinances‡	X	X	X					X	X	X	X			
Levee or Dike Modification or Removal‡											X			O
Liming*													X	
Lined Waterway or Outlet		X	X		X	O		O						
Log Landings‡												X		
Manure Handling, Storage, Treatment, and Disposal†	X	X	O				X							
Mineshaft and Adit Closings*													X	
Mulching	X	X	X			X		X	X	X	X		X	
Nutrient Management Plan	X	X	O		X	O	X				X			
Outreach, Education and Training‡	X	X	X		X	X	X	X	X	X	X	X	X	X
Oxidation Wetlands*				X									X	
Passive Acid Mine Drainage Treatment Facilities*				X									X	
Pasture and Hay Planting	X	X	X			X	X							

Phytoremediation*				X									X	
Porous Pavement‡		X	X								X			

Implementation Activities	*Pollutant Treated*				*Source of NPS Pollution Addressed*									
	Bacteria	*Nutrients*	*Sediment*	*Metals*	*Cropland*	*Pastures and Livestock Operations*	*CFOs*	*Streambank Erosion*	*Onsite Wastewater Treatment Systems*	*Wildlife/Domestic Pets*	*Urban NPS Runoff*	*Forestry*	*Abandoned Mine Lands*	*Hydromodification*
Prescribed Grazing	X	X	X			X								
Rain Barrel‡		X	X								X			
Rain Garden‡		X	X								X			
Removal and Consolidation of Small (Mining) Waste Piles*				X									X	
Riparian Forested Buffers	X	X	X		X	X	X	X		X	X			X
Roof Runoff Structure	X	X	X			X	X				X			
Sediment Basin		X	X		X						X			X
Septic Inspection and Maintenance‡	X	X	X						X					
Septic System Replacement‡	X	X							X					
Silt Fence‡			X								X			
Soil Amendment*				X									X	
Soil Removal and Disposal*				X									X	
Spring Development	X	X	X			X								
Stormwater Runoff Control‡	X	X	X				X				X			
Stream Crossing	O	O	X			X		X		X		X		
Stream Fencing (Animal Exclusion)†	X	X	X			X		X						
Stream Habitat Improvement and Management‡			X											X
Streambank and Shoreline Protection	X	X	X		X	X		X		X	X	X		X
Streambank Stabilization‡			X					X			X	X	X	X
Street Rain Garden‡		X	X								X			
Strip Cropping	X	X	X		X									
Sulfate-reducing Wetlands*				X									X	
Temporary Bridge/Culvert‡			X									X		
Terrace‡			X		X									
Two-stage Ditches		X	X		X			X						O
Vegetated Swale‡			X								X			

WASCOBs	X	X	X		X									
Waste Storage Facility	X	X	X				X							
Waste Treatment Lagoon	X	X	O				X							

Implementation Activities	*Pollutant Treated*				*Source of NPS Pollution Addressed*									
	Bacteria	*Nutrients*	*Sediment*	*Metals*	*Cropland*	*Pastures and Livestock Operations*	*CFOs*	*Streambank Erosion*	*Onsite Wastewater Treatment Systems*	*Wildlife/Domestic Pets*	*Urban NPS Runoff*	*Forestry*	*Abandoned Mine Lands*	*Hydromodification*
Waste Utilization	X	X			X		X							
Water Bars‡			X									X		
Well Decommissioning	X	X												
Wetland Creation/Enhancement/Restoration	X	X	X		X			X		X	X		X	X

*These mining practices were not addressed by the Ohio document.

† These practice categories represent a combination or generalization of several practices in the Ohio document.

‡Practices are not in the Ohio document and BPJ has been used by IDEM-NPS program staff to assign pollutants treated and under which conditions.

Table M1. Best management practices – pollutants and sources controlled. Adapted from Wilson, R. Analysis of Effectiveness of Ohio NRCS Practice Standards in Addressing Five Leading Causes of Water Quality Impairment, Ohio EPA. X indicates a relatively high pollutant control effectiveness (ratio ≥1.0), O indicates minimal pollutant control effectiveness (ratio 0.9-0.1), blank space indicates that this pollutant or source is not targeted by, or loadings are increased by, use of this practice.

Appendix N

Outstanding State/National Resource Waters, High Quality Waters

Indiana Outstanding State Resource Waters as of 5/8/24.

The following listing is based upon 327 IAC 2-1-11(b), 327 IAC 2-1.3-3(d), 327 IAC 2-1.5-19(b) and are classified as outstanding state resource waters:

(1) The Blue River in Washington, Crawford, and Harrison Counties, from river mile 57.0 to river mile 11.5. (HUC 0514010407, 0514010408, 0514010409)

(2) The North Fork of Wildcat Creek in Carroll and Tippecanoe Counties, from river mile 43.11 to river mile 4.82. (HUC 0512010704)

(3) The South Fork of Wildcat Creek in Tippecanoe County, from river mile 10.21 to river mile 0.00. (HUC 0512010703)

(4) Cedar Creek in Allen and DeKalb counties, from river mile 13.7 to its confluence with the St. Joseph River. (HUC 0410000308)

(5) The Indiana portion of the open waters of Lake Michigan.

(6) All waters incorporated in the Indiana Dunes National Lakeshore.

(7) 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. (HUC 0521010804)

(8) Mud Pine Creek in Warren County from the bridge on the County Road between Brisco and Rainsville to its confluence with Big Pine Creek. (HUC 5012010803)

(9) 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. (HUC 0512010804)

(10) Indian Creek in Montgomery County from the County Road 650 West bridge downstream to its confluence with Sugar Creek. (HUC 0512011006)

(11) Clifty Creek in Montgomery County within the boundaries of Pine Hills Nature Preserve. (HUC 0512011006)

(12) Bear Creek in Fountain County from the bridge on County Road 450 North to its confluence with the Wabash River. (HUC 0512010806)

(13) Rattlesnake Creek in Fountain County from the bridge on County Road 450 North to its confluence with Bear Creek. (HUC 0512010806)

(14) 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. (HUC 0512010806)

(15) 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. (HUC 0514010407, 0514010408, 0514010409)

(16) The South Fork of Blue River in Washington County from the Horner's Chapel Road bridge downstream to its confluence with Blue River. (0514010406)

(17) 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. (HUC 0512020812, 0512020813)

Appendix O

Updating a Watershed Management Plan

GUIDANCE DOCUMENT [MARCH 2015]

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Updating a Watershed Management Plan

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When to Update a Watershed Management Plan

A watershed management plan (WMP) is a living document that will require periodic updates as landuse and water quality change over time and best management practices (BMPs) are implemented. During the WMP development process the watershed group determined how often the WMP will be reevaluated; typically every 5 years (or annually to more closely track progress). As part of the evaluation process, the group should review the implementation activities in the work plan or action register, the monitoring results, and any other chosen indicators to determine the effectiveness of the implementation efforts and whether progress is being made toward achieving the WMP goals. If implementation efforts are on track and interim milestones are being met, celebrate success and carry on! If it is determined that interim milestones or pollutant reduction goals are not being met, consider the following questions and make any necessary adjustments before modifying the WMP:

- Did weather-related causes postpone or affect implementation?
- Was there a shortage of technical assistance?
- Did you misjudge the amount of time needed to install some of the practices?
- Did you fail to account for socio-economic or other barriers to adoption?
- Are you choosing, implementing and using the management measures correctly (i.e., are they being installed, operated, and maintained correctly)?
- Do you need to wait longer before you can reasonably expect to see results?

A WMP may or will need to be updated for various reasons including:

- Documented significant landuse or water quality changes in the watershed.
- Water quality impairments still persist after the WMP has been implemented to a level that the problems originating in the critical areas have been remediated and new critical areas need to be selected.
- The WMP evaluation showed pollutant reduction goals are not being met, and the questions above and other relevant questions or issues the group may identify have been considered.

When it is determined that a WMP needs to be updated, the group will need to establish whether this entails "**rewriting**" the WMP or simply "**revising**" the WMP. The term (and ultimately the process) chosen depends on what needs to be done. Before updating a WMP, the watershed group should discuss the revision with their IDEM Watershed Specialist. IDEM and the watershed group will decide which checklist elements need to be revised and make a

determination on whether the WMP needs to be rewritten or just requires a few revisions. An updated WMP must be approved by IDEM before Section 319 funds can be awarded for implementation. Section 319 or 205j grant funds may be available to help groups update their plan (see the *Section 319 and 205j Grant Funding* section below for more information).

Rewriting a Watershed Management Plan

Rewriting a watershed plan implies that most of the WMP needs to be updated, incorporating the entire planning process. The WMP will be required to meet IDEM's 2009 WMP Checklist.

A rewrite is required if all of the following WMP checklist requirements are determined to be outdated enough to impede successful implementation of the WMP:

1. Baseline information on land use and land characteristics;
2. Baseline information on current water quality;
3. Nonpoint source pollution sources;
4. Critical and/or priority areas;
5. Goals; and,
6. BMPs or measures needed to achieve goals.

Projects rewriting a watershed management plan must devote a sufficient amount of time to the process to gather essential data, make decisions, and educate and engage watershed stakeholders. IDEM encourages projects rewriting a WMP to have at least 6 steering committee meetings during the rewriting process. Implementation may not occur in the watershed until the rewritten plan is approved.

Revising a Watershed Management Plan

Revising a watershed plan implies that only select WMP checklist requirements need to be updated. The WMP updates must meet the checklist requirements for the particular (2003 or 2009) checklist the WMP was originally approved under. WMPs approved under the 2001 checklist must be rewritten to meet the 2009 WMP Checklist to be eligible for implementation funding. Since there needs to be a clearly understandable and logical train of thought throughout the WMP, when one section of the WMP needs to be revised, other sections may also need some revision. Below are the elements of a WMP that commonly need to be revised, along with related elements that will need to be considered. The relevant 2003 WMP Checklist and 2009 WMP Checklist element numbers are shown in parentheses respectively.

If you want to revise:

- Stakeholder Concerns - check every subsequent checklist requirement through Measurable Milestones (Elements 4-19 or Elements 3-28)
- Baseline Conditions - check every subsequent checklist requirement through Measurable Milestones (Elements 5-19 or Elements 7, 11-28)
- Causes - check every subsequent checklist requirement through Measurable Milestones (Elements 7-19 or Elements 18-28)
- Specific Sources - check every subsequent checklist requirement through Measurable Milestones (Elements 8-19 or Elements 19-28)
- Problems in the Watershed - check the baseline conditions and every subsequent checklist requirement through Measureable Milestones (Bullet 5-19 or Elements 7, 11- 28)
- Estimated Existing Loads - check Baseline Conditions through Monitoring Plan (Elements 5-20 or Elements 7, 11-32)
- Critical Areas - check Baseline Conditions through Measureable Milestones (Elements 5-19 or Elements 7, 11-28)
- Water Quality Improvement or Protection Goals - check Baseline Conditions through

Monitoring Plan (Elements 5-20 or Elements 7, 11-32)

- Indicators - check the Indicators and Monitoring Plan (Elements 12, 13, 20 or Elements 23, 32)
- BMPs or Measures needed to achieve the Goals - check Goals & Indicators and through Measurable Milestones (Elements 11-19 or Elements 22-28)

Other considerations when revising a watershed management plan:

- Additional areas may be added to an existing WMP if the delineation of the HUC(s) was changed by USGS when they converted from an 11 or 14-digit HUC to a 10 or 12- digit HUC and the WMP no longer matches the newly defined watershed boundaries. Additional areas may also be added if the applicant wants to expand the coverage of the WMP by adding an adjacent watershed. Implementation may occur with Section 319 funds only in the current approved WMP critical areas until the revised WMP is approved.
- If a NPS TMDL is developed after the WMP is finished, the plan will need to be revised to be consistent with the load allocations in the NPS TMDL.

Section 319 and 205j Grant Funding

In order for a group to receive Section 319 or 205j funding for WMP updates, at least two of the WMP sections below must be outdated:

- Information on land use and land characteristics
- Current water quality
- Pollution sources
- Critical areas
- Goals
- Objectives designed to achieve the goals

Judging what is "outdated" is subjective, and groups should make this determination using their best professional judgment and discussing with IDEM. The result will determine whether the process for "rewriting" or "revising" the WMP is applicable. WMPs approved by IDEM within the last five years are not eligible to receive funding for revision, unless extraordinary circumstances necessitate it and it is pre-approved by IDEM. For more information on whether your WMP revision qualifies for funding, read the specific requirements in the IDEM: 319/205(j) Grant Application Instructions.

Additional Guidance

- Watershed toolkit/Evaluate: http://www.idem.in.gov/nps/2689.htm
- Progress Evaluation: http://www.idem.in.gov/nps/3452.htm

Appendix P

Determining Critical and Protection Areas in WMPs

GUIDANCE DOCUMENT **[September 2016]**

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Determining Critical and Protection Areas in Watershed Management Plans

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PURPOSE

The purpose of this document is to provide guidance on selecting critical and protection areas for groups developing a watershed management plan (WMP) using Section 319(h) grant funds through the Indiana Department of Environmental Management's (IDEM's) Nonpoint Source (NPS) Program. Watershed management plans, also known as watershed-based plans, are required by U.S. EPA (EPA) in the Nonpoint Source Program and Grants Guidelines for States and Territories to address nine minimum elements. These elements must be addressed before the WMP may be implemented using Section 319 grant funds. Element c of the Nine Elements shown below (from pg. 2-16 in Handbook for Developing Watershed Plans to Restore and Protect Our Waters) relates to critical areas:

> *c. A description of the nonpoint source management measures that will need to be implemented to achieve load reductions in paragraph 2* [element b[11]]*, and a description of the critical areas in which those measures will be needed to implement this plan.*

Critical areas are defined by EPA as "areas experiencing the most or worst problems and impairments" (U.S. EPA 2008) and "where management practices are needed" (U.S. EPA 2013b), and "those [areas] producing disproportionately high pollutant loads" (U.S. EPA 2013a). Additionally, the Handbook for Developing Watershed Plans to Restore and Protect Our Waters

indicates that critical areas may be identified "by pollutant or sector" (p B-17). In addition, the EPA Watershed Academy Web "Introduction to the Watershed Planning Process" module defines

[11] Element b of the 9 Elements (or "Components of a Watershed-Based Plan") is "an estimate of the load reductions expected for the management measures described under paragraph (c) below (recognizing the natural variability and the difficulty in precisely predicting the performance of management measures over time). Estimates should be provided at the same level as in item (a) above (e.g., the total load reduction expected for dairy cattle feedlots; row crops; or eroded streambanks)."

critical areas as “those areas that play a role in the watershed that is especially important to its ecosystems, to its people, or to both.” However, as new tools and guidance continue to be developed by EPA (such as the Recovery Potential Tool and Healthy Watersheds guidance), confusion has arisen as to whether critical areas might encompass more opportunities than simply “the most and worst” pollution problems. Absent comprehensive national EPA guidance regarding critical areas, IDEM developed this guidance to assist groups who are developing WMPs in defining critical areas that meet EPA’s definition and are reflective of local conditions.

Critical areas are important for defining priority actions for watershed management activities. Therefore, it is inappropriate for the entire area covered by the WMP to be considered critical. If everything is a priority, then nothing is a priority. Even where land use is homogeneous, all subwatersheds or areas covered by the WMP cannot be considered critical. Further prioritization will be needed to target areas for implementation.

CONSIDERATIONS FOR DETERMINING CRITICAL AREAS

Several considerations should be taken into account when determining critical areas. Following is a list of factors that might influence how critical areas are determined.

1. The goal of designating critical areas within the watershed is to better manage resources, such as money and staff, so that restoration takes place as quickly and effectively as possible.
2. In advance of the planning process, consider what methods or information are available to determine critical areas. Work with the IDEM Watershed Specialist assigned to the watershed to develop a sampling plan that will help pinpoint critical areas. If, after consultation with IDEM, it is determined that there are not enough resources for sampling at a resolution to define critical areas, modeling and desktop/windshield surveys are perfectly acceptable ways to gather information.
3. If planning or restoration activities have taken place in the watershed prior to or outside of the current project, that information should be taken into consideration when determining critical areas and referenced in the watershed plan.
4. Determine whether a specific land use (whether it is the majority land use or not) is contributing the most pollution and should be designated as a critical area. For example, in Plummer Creek (Grossman et al. 2016), forested land use comprises 72.6% of the watershed but does not appear to deliver the bulk of NPS pollutants to the receiving waters. Alternatively, 15.8% of the land is in agricultural use, and data analysis determined it to be the main contributor of NPS pollution in the watershed. Therefore, any agricultural land use that is significantly contributing nonpoint source pollutants (nutrient, sediment, and/or *E. coli*) was determined to be critical for this watershed (pg. 137).
5. Watershed plans are meant to be holistic plans for addressing pollution problems in the watershed. Funding sources other than 319 can be used to implement the WMP. Don’t let potential sources of funding drive critical area decision-making.
6. Watershed planning is a cooperative, community effort that takes into account all stakeholder issues. Set critical area size to ensure the issue can be addressed comprehensively. Help folks who are not in a critical area to understand why they may not be eligible for 319 implementation funding.

7. Size/scope of project area: Critical areas should be based on areas no larger than a 12digit Hydrologic Unit Code (HUC) watershed, consistent with IDEM's 2009 WMP Checklist. Where appropriate, multiple 12-digit HUC watersheds may be critical for the same issue(s). See discussion in the section below on how to further target priority areas within HUC 12 watersheds.
8. To fully meet Element c of the 9 Elements, the WMP needs to say how implementation in critical areas will meet the load reductions needed.

TYPES OF CRITICAL AREAS

There are different ways to go about choosing critical areas. Below are three types of critical areas, with examples of how they were determined in different watersheds. Any combination of these types of critical areas may be present in any given WMP, as long as the combination of all critical areas does not make up the entire watershed.

Project-Area Based, Tiered Watersheds (By Pollutant or Source)

When load reductions are based on the entire watershed (project area), subwatersheds or smaller drainage areas designated as critical areas should be prioritized (e.g. using tiers or implementation priorities such as "high", "medium", "low") corresponding to their level of need. Watershed implementation would then be focused on the subwatersheds with the highest need for improvement (often referred to as "Tier 1" watersheds) and funds should not be spent (and 319 funds are not eligible to be spent) on BMP implementation in other tiers until opportunities for water quality improvement in Tier 1 subwatersheds have been exhausted. All watersheds, regardless of their priority, may receive targeted outreach and education.

Watershed plans developed at the HUC 10 or multi 10-digit level may have 12-digit watersheds or smaller drainage areas as critical areas. Factors that might make one subwatershed higher in priority than another could be based on pollutant parameter exceedances of targets, proportion of pollutant loadings, magnitude of sources, or a combination of the above.

If 12-digit HUC watersheds are designated as critical areas, the WMP must further describe how smaller areas/individual sites within the watershed will be prioritized for implementation. Individual sites need not be identified in the WMP, however, the process that will be used for prioritizing the sites containing the critical source or pollutant must be explained. Note: A description of the decision-making process for determining where BMPs will be targeted within the critical areas is also a requirement of the cost-share program for Section 319 grant projects implementing a WMP (see Section 319(h) Cost-Share Program Development Guidelines).

Example: Deer Creek-Sugar Creek WMP (WREC 2015).

Land use in the Deer Creek-Sugar Creek watershed is fairly homogeneous, and many inventoried issues appear throughout the watershed, such as: agricultural land use, tile drained soils, soils

used for septic treatment, hydric soils, and wetland loss. Though these issues contribute to pollution and degraded water quality, due to their widespread nature they cannot be used to narrow down critical areas which contribute the most loading and pollution.

The steering committee was able to identify inventoried issues of high concern however, including high density of regulated and unregulated farm animals, high percentage of unstable streambanks, high density of manure application, water quality monitoring data exceeding targets during high flow events, and impaired waterbody locations. Modeled load reductions needed to meet targets and were also taken into consideration. When comparing the ten HUC 12 subwatersheds in a table format, the extent and type of inventoried issues per watershed illuminated the subwatersheds generating the most of each pollutant (Tables 41-43 in the WMP).

The steering committee prioritized issues of water quality before addressing those areas critical for impaired natural aquatic habitat. The combined extent of all areas critical for nutrients, *E. coli*, or sediment covers 8 of the 10 HUC 12 subwatersheds. In an effort to further prioritize and target an implementation plan, the pollutant critical areas were stacked to create a tiered hierarchy of priority areas. Areas that are critical for all three parameters are considered "high priority" and will be the first to receive targeted actions. Implementation will then be targeted in areas critical for 2 parameters ("medium priority"), and then areas critical for 1 parameter ("low priority"). Areas that are not critical for any of the parameters are considered "no priority". Figure 1 below (Figure 102 in the WMP) shows the priority critical areas in the watershed.

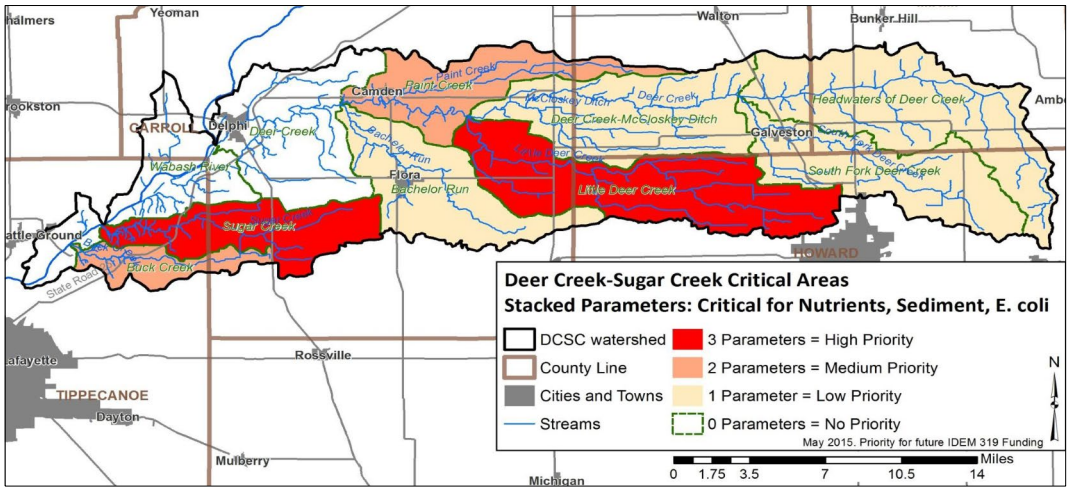

Figure 1. High, Medium, and Low Priority Critical Areas in the Deer Creek-Sugar Creek Watershed.

Prioritized by Sources

Nonpoint source pollution sources (*e.g.* livestock with stream access, conventionally-tilled fields, and pet waste) may be considered critical across the watershed if the source is contributing a significant amount of a documented problem, and if the WMP includes the process or procedures (criteria) by which sources will be targeted for financial and technical assistance. For example, livestock access areas may be considered critical, but the WMP must describe what process will be

used to determine if a particular site is critical – such as looking at herd size, severity of bank erosion, etc. Critical areas may or may not be part of the predominant land use(s), depending upon the causes and sources of pollution.

Before addressing a particular pollutant source, it is important to consider any upland or upstream issues that may influence the effectiveness of the BMP. For example, before addressing a streambank erosion problem, make sure all cattle are excluded from the stream, necessary buffer strips are in place, and upstream hydrology issues have been addressed so the BMP is not damaged or destroyed.

Example: Upper Maumee WMP (Quandt 2014)

The Upper Maumee WMP identified lack of stream buffers and streambank erosion in the headwaters as significant sources of sediment in waterbodies throughout the watershed. They designated headwater streams that lacked adequate stream buffers or exhibited stream bank erosion as critical areas. They then prioritized locations for treatment by 12digit watershed based on the magnitude of missing buffers and streambank erosion in the watershed. This method was used to identify Priority 1 (high), 2 (medium) and 3 (low) subwatersheds. Further, within the Priority 1 watersheds, the steering committee decided to make all stream buffers less than 60 feet in width at headwater streams critical for the installation of riparian buffer strips. The steering committee followed the NRCS recommended widths for an adequate riparian buffer: land with a 0 – 2% slope should have a minimum of a 20 foot buffer; land with a 2 – 4% slope, a minimum of a 40 foot buffer; and land with a slope greater than 4%, a minimum buffer of 60 feet. While slope in relation to stream buffers was not inventoried at the time the WMP was written, it will be assessed on a case by case basis at the time of implementation; at which time priority will be given to those areas where the most significant runoff and erosion potential exists.

Figure 2 (Figure 5.1 in the WMP) depicts the buffer inventory and Priority 1, Priority 2, and Priority 3 critical areas for buffer replacement. A close-up of Trier Ditch reveals the high amount of 0-10 ft. buffer in the watershed that was uncovered as part of the inventory, and Trier Ditch ends up being designated as a Priority 1 critical area. In contrast, Bullerman Ditch has less headwater streams overall, but the streams there generally have larger buffers than those seen in Trier Ditch. While some are 0-10 ft. buffers in the Bullerman Ditch watershed, there are not as many as in Trier Ditch. Bullerman Ditch is still a critical area for riparian buffer, but a low priority area.

In the Upper Maumee River Watershed, implementation will be focused on Priority 1 watersheds until all opportunity to implement the plan has been exhausted. The group will then focus on Priority 2 areas and so on.

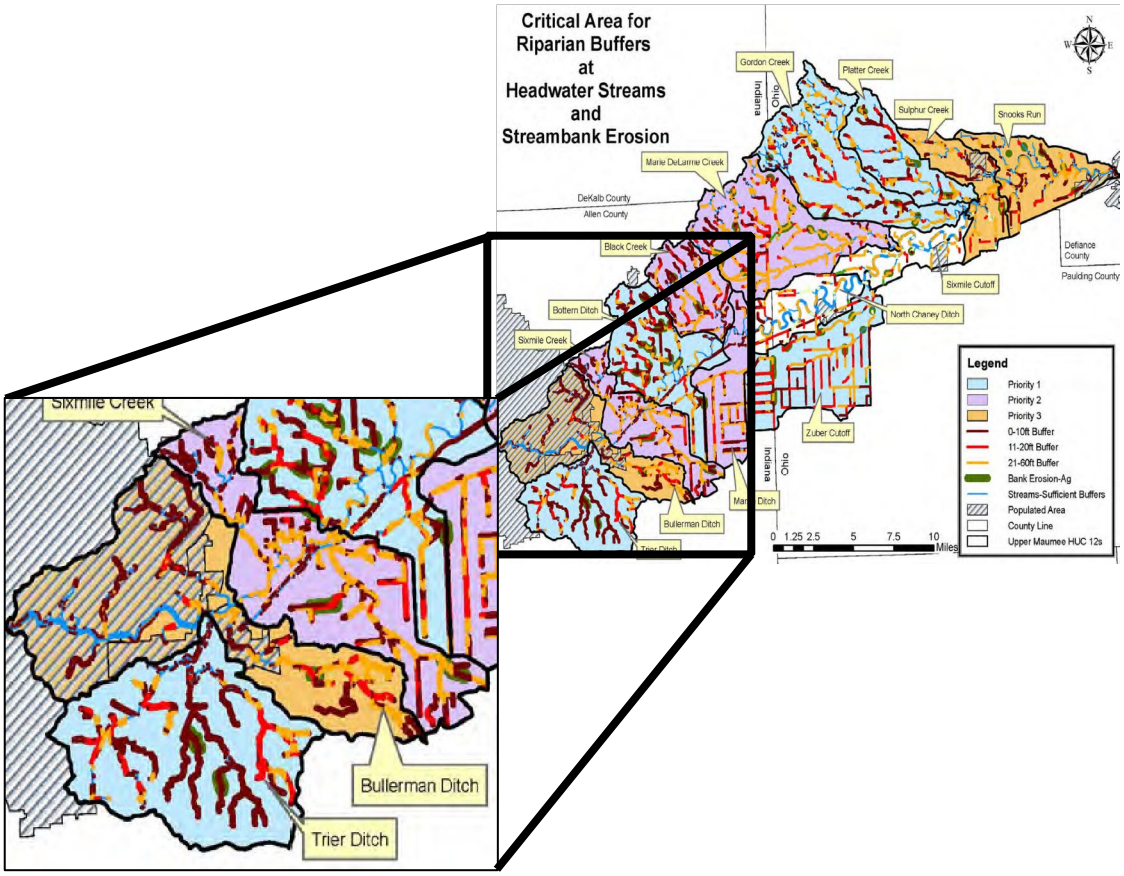

Figure 2. Critical Buffer Areas in the Maumee River Watershed.

Regional Critical Areas (Subwatershed and Catchment Goals – No Prioritizing Needed)

Where there are areas of localized pollution sources, water quality improvements may be realized more quickly when implementation is concentrated in these "hotspots." This method of identifying critical areas works well when pollution is being generated by several sources in a relatively concentrated area. It also provides some of the most accurate load reductions because calculating the treatments needed to correct the problem can be done with more precision in a smaller area.

Example: Upper St. Joseph WMP (Quandt 2015)

The Upper St. Joseph WMP defines critical areas in several ways – pollutant-based at the 12-digit HUC, source-based, and specific points where a pollutant is known to be a problem. When the group was considering critical areas for dissolved reactive phosphorus, one potential source they focused on was turf-based fertilizer use, especially in urban areas and residential lakes. They designated all urban areas (including Reading, Camden, and Montgomery Michigan; Pioneer, Holiday City, Montpelier, Edon, and Blakeslee Ohio; and Clear Lake and Hamilton, Indiana) critical for the use of lawn fertilizer. In addition, they designated the large built-up lakes of Clear Lake (807.74 acres), Long Lake (148.64 acres),

Hamilton Lake (802 acres), Ball Lake (84.40 acres), Nettle Lake (100.70 acres), Bird Lake (115.07 acres), and Lake Seneca (240.83 acres) as critical for dissolved reactive phosphorus that enters the lake through lawn fertilizer.

A note on landowner willingness: IDEM has been advised by EPA that landowner willingness to implement practices should not be a consideration for critical area determinations. Instead, this information should be used in developing an education / outreach strategy to persuade landowners to include water quality considerations in their land management planning. Landowner willingness may, however, play a role in determining priorities for implementation.

PROCESS FOR DETERMINING CRITICAL AREAS

1. Gather data. Consider all available data, including data from the windshield/desktop survey, water quality data from the project, water quality data from sources outside the project, historical data, pollutant loads, potential sources, stakeholder concerns, anecdotal evidence, etc. If for some reason a data source is not used, justify its exclusion from the plan.
2. Analyze data. Come up with a system to compare the different types of data that are available. For example, the group may decide to rank possible sources, compare loadings, or sum rankings/scores for multiple categories for an overall ranking/score.
3. Show work. Clearly articulate the methods used to analyze and prioritize within the watershed(s). If IDEM cannot clearly determine that all data were considered and how they were used, the plan will not be approved.
4. Map it. IDEM's 2009 WMP Checklist (Element 24) requires mapping of critical areas. It is much, much easier to know if a project is in a critical area of the plan if there is a map.

PROTECTION AREAS

EPA's Nonpoint Source Program and Grants Guidelines (U.S. EPA 2013) allows for the inclusion of protection areas in WMPs to protect unimpaired/high quality waters from degradation. Defining protection areas is the reciprocal of defining critical areas – finding the best areas instead of the worst.

Indiana's landscape has been highly modified by human activity, so not all watersheds may have protection areas. Nonetheless, IDEM strongly suggests selecting protection areas where:

1. Category 1 waters have been identified by IDEM's 303(d) process[12]
2. Endangered, threatened, or rare (ETR) aquatic species have been identified
3. Outstanding state resource waters (OSRWs)[13] exist
4. Other uses, such as source water for drinking water, need protecting
5. Vulnerable habitat or geology has been identified (e.g. pristine area, wetlands, karst areas in an urbanizing landscape)

WMPs covering watersheds without these features may still identify protection areas where there is good water quality or habitat relative to the watershed. However, be aware that EPA continues to

[12] Category 1 waters are defined as those waters for which the available data indicate that all designated uses are supported and no use is threatened. Category 1 waters are identified on IDEM's Consolidated List, which is an appendix of the Integrated Water Monitoring and Assessment Report.

[13] OSRWs are listed in Indiana Administrative Code at 327 IAC 2-1-11(b), 327 IAC 2-1.3-3(d), and 327 IAC 2-1.5-19(b)

focus Section 319 funds on restoration activities to delist impaired waterbodies. While protection areas are allowable and appropriate in WMPs, consider whether the watershed is in greater need of restoration or protection. Not every watershed has protection areas.

Implementation in protection areas will likely differ from implementation in restoration areas. To protect sensitive areas, a group may seek to implement ordinance changes, land acquisitions, easements, and integration of these areas into local or regional comprehensive plans. Additionally, areas of high quality aquatic habitat can be enhanced by additional conservation actions in the floodplain and adjacent to the stream. Restoration efforts may branch off of areas with high quality habitat in order to expand the length of contiguous habitat and corridors. Best management practices may also be used to prevent degradation from encroaching development.

Example: Deep River Watershed Restoration Plan

Stakeholders in the Deep River watershed of northwestern Indiana gathered data on nine 12-digit subwatersheds in their watershed of interest (NIRPC 2016). They analyzed all potential sources of pollution in order to identify critical restoration areas and protection areas. The Deep River Watershed Restoration Plan (WRP) includes two priority preservation areas, based on:

- higher water quality compared to other locations
- healthier fish and macroinvertebrate assemblages
- higher quality stream and riparian habitat
- land area included in the Green Infrastructure Vision ecological network
- concentrations of natural habitat features that provide important ecosystem functions (ex. water purification, groundwater recharge, and stream flow regulation)
- concentrations of high quality natural areas and Heritage Database species
- habitats most at risk to invasive species

Priority preservation areas described in the Deep River WRP include the Deep River Outstanding River reach and Hobart Marsh. The Plan describes the rationale for naming the Outstanding River reach as a priority preservation area:

> "Monitoring sites located on this reach had significantly (statistically) higher IBI scores; greater number of fish species; lower number of tolerant species; better QHEI channel morphology sub-metric scores; higher dissolved oxygen concentrations and lower *E. coli* and ammonia concentrations. The higher quality of this reach can likely be attributed to its natural, meandering river channel upstream of Lake George and the contiguous tracts of forest, wetland and floodplain buffering it from adjacent human land uses."

The Hobart Marsh Area includes 750 acres of permanently protected land with high quality upland and aquatic habitats. The site includes critical habitat for nine state threatened or rare plant species; one state endangered reptile species; over 40 state ETR insect species; and four state endangered bird species. Implementation strategies may include increasing vegetative cover, low impact designs, and habitat restoration to prevent degradation in these areas. Figure

3 (Figure 204 in the Jan 2016 draft WMP) depicts the priority protection areas in the Deep River watershed.

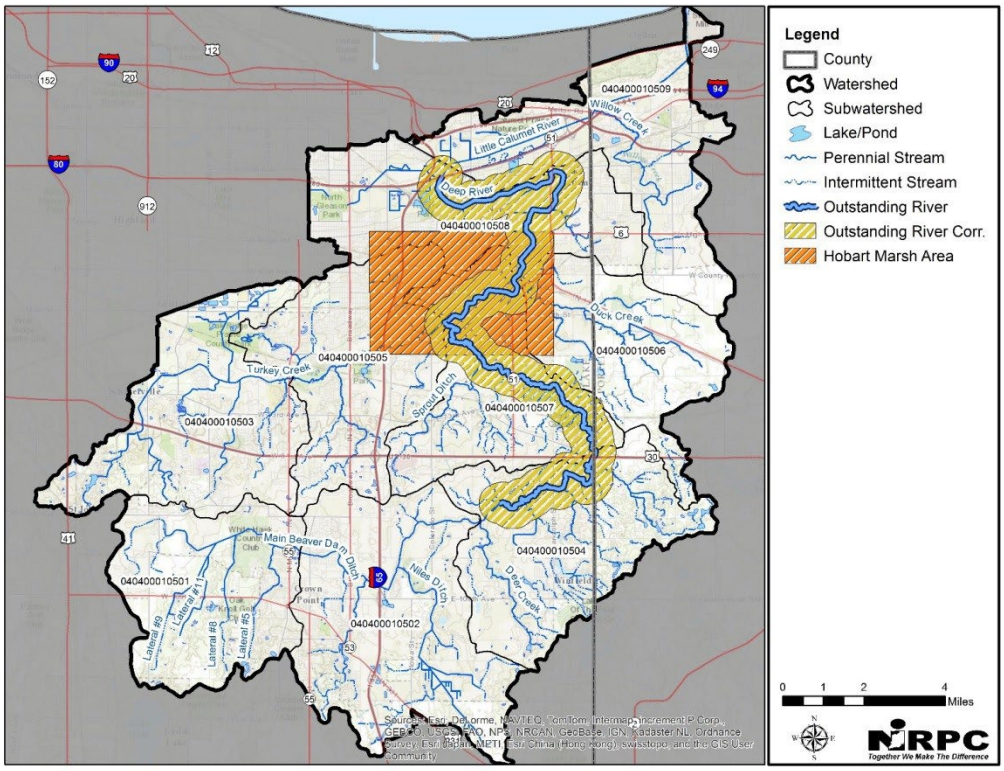

Figure 3. Priority Protection Areas in the Deep River Watershed.

SUMMARY

An important part of watershed planning is identifying the critical areas in the watershed so that implementation money and efforts can be focused on areas that will achieve the greatest water quality benefits. Watershed groups will need to look at and discuss inventoried watershed data, current pollutant loads, and potential pollutant sources in order to identify critical areas where BMPs are needed to meet the goals in the WMP. This process is not easy, and some tough choices will have to be made. However, if the group works together to determine the best solutions for the problems in the watershed, the WMP will be a great roadmap for effective implementation.

Resources are available to help groups develop watershed management plans and identify critical areas, including the IDEM Watershed Specialists. These staff members are responsible for coordinating, advising, and assisting locally led watershed management activities within assigned watersheds. Watershed Specialists work closely with watershed groups throughout the planning and implementation process and serve all groups in the state, regardless of how the group is funded.

A WMP is a living document which requires periodic evaluation and assessment. As land-use and water quality changes in the watershed, and BMPs and measures are implemented, critical areas may change as well.

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Appendix Q

Nutrient Criteria Development Milestones for FY25

Nutrient Criteria Development Milestones for FY25: *INDIANA*			Date: 06/25/2024	
Total Phosphorus				
Milestone		Target date	Completion date	Comments
Lakes & Reservoirs	Planning for criteria development	*completed*	*completed*	
	Collection of information & data	*completed*	*completed*	
	Analysis of information & data	*completed*	*July 2010*	
	Proposal of criteria			**IDEM has evaluated EPA HQ's statistical models included in the 2021 Ambient Water Quality Criteria to Address Nutrient Pollution in Lakes and Reservoirs (NRWQC) as well as the Technical Support Document for the 2021 nutrient lake criteria. The models can be used to derive Indiana-specific chlorophyll a, TN and/or TP values that will protect a specific designated use (aquatic life, recreation, drinking water). EPA developed, as part of a pilot project for the 2021 NRWQC, an Indiana-specific chlorophyll a-microcystin model for the recreation designated use at certain lakes and reservoirs. IDEM found that the model is not a good fit given Indiana's current lake datasets. IDEM is evaluating whether additional lake data*

				from the Corps of Engineers may be used to derive a nutrient model and resulting criteria for a sub-set of Indiana lakes, such as our reservoirs, to protect the recreation and/or drinking water designated use. IDEM may evaluate the feasibility of implementing other models that may be more appropriate for protecting designated uses at other lakes and reservoirs, and whether additional data collection is needed to verify and implement the selected models. IDEM participated in an EPA Region 5 RTAG NSTEPS grant that will develop a set of regional variables, such as dissolved organic carbon and threshold slope, needed for certain models. IDEM is waiting for the final report on this Region 5 analysis to be released in order to review the findings.
	Adoption of criteria into the state's WQS			*IDEM is reviewing whether to apply for N-STEPS assistance with further evaluating of the NRWQC models with additional Corps of Engineers reservoir data.*
Rivers & Streams	Planning for criteria development	*completed*	*completed*	
		2017 Nutrient Pilot study completed		
	Collection of information & data	Summer 2024 for 2024 N-STEPS project	Ongoing	See notes below.
	Analysis of information & data	*TBD*	*TBD*	IDEM is currently working with EPA through an N-STEPS project to analyze

			additional data collected during 2018-2021 that includes dissolved reactive phosphorus (DRP), continuous dissolved oxygen, fish, macroinvertebrate, diatom, and habitat data. This analysis will supplement the original 2017 pilot study in order to detect meaningful relationships between nutrients, related variables, and aquatic life in streams. Breakpoint analysis could help determine if there are DRP concentrations that noticeably impact the biology. IDEM would also like to determine if the DO flux regime has significant impacts on the biology. This project will help inform IDEM's assessment methodology for nutrients in Indiana's streams and rivers.
Collection of data for pilot technical study	*May-September 2017* *2024 Nutrient Data Project*	*Completed* 2024 Nutrient Data Project Completion Date TBD	*The data collection, completed September 2017, included continuous DO and other parameters. IDEM evaluated the data to determine if DO is a critical parameter for a multi-variable criterion.* 2024 Collection of water chemistry and biology data ongoing (diatoms are included along with fish and macro data).
QA/QC of data, biological community IDs	*2018*	*completed*	
Analysis of data	*2019*	*2019 study completed;*	*IDEM published the draft report on September 30, 2019, and the final report on January 17, 2020.*

	2023-2024 (N-STEPS project in progress)	*Nutrient Data Study TBD*	IDEM is hoping to see results of a 2023-2024 nutrient data analysis project by the end of 2024.
Proposal of criteria	**	**	*** Additional data is needed to fully understand the nuances of nutrient utilization in the lotic aquatic system and all the factors influencing whether a given concentration of nutrient is beneficial or harmful. IDEM will evaluate analysis and recommendations from the 2024 nutrient N-STEPS data study to see if there are any necessary updates needed to IDEM's nutrient 303(d) assessment methods. In addition, IDEM will consider whether the final report identifies any future nutrient criteria avenues of research.*
Adoption of criteria into the state's WQS	***		****In addition to requiring additional data and information about the complex relationship between nutrients and other variables in lotic systems, IDEM is continuing to evaluate whether Indiana's Diatom Index can be further analyzed in order to facilitate the development of a total phosphorus criterion for rivers and streams. IDEM is currently participating in Region 5 discussions on whether a regional diatom index could be created.*

Total Nitrogen

Milestone	Target date	Completion date	Comments

Lakes & Reservoirs	Planning for criteria development	*completed*	*completed*	
	Collection of information & data	*completed*	*completed*	
	Analysis of information & data	*		**IDEM has evaluated EPA HQ's statistical models included in the 2021 Ambient Water Quality Criteria to Address Nutrient Pollution in Lakes and Reservoirs (NRWQC). The models can be used to derive Indiana-specific chlorophyll a, TN and/or TP values that will protect a specific designated use (aquatic life, recreation, drinking water). EPA developed, as part of a pilot project for the 2021 NRWQC, an Indiana-specific chlorophyll a-microcystin model for the recreation designated use at certain lakes and reservoirs. IDEM will evaluate the feasibility of implementing other models that may be more appropriate for protecting designated uses at other lakes and reservoirs, and whether additional data collection is needed to verify and implement the selected models. IDEM is participating in an EPA Region 5 RTAG NSTEPS grant that will develop a set of regional variables, such as dissolved organic carbon and threshold slope, needed for certain models. IDEM is still waiting for the publication of the final report associated with this project.*
	Proposal of criteria	**		***To be evaluated following review and analysis of the NRWQC models and EPA's Indiana state-specific chlorophyll a-microcystin model. IDEM is reviewing whether to apply for N-STEPS assistance*

				with further evaluating of the NRWQC models with additional Corps of Engineers reservoir data.
	Adoption of criteria into the state's WQS	-	-	
Rivers & Streams	Planning for criteria development	*completed*	*completed*	
	Collection of information & data	*completed*	*completed*	
	Analysis of information & data	*Oct. 2012*	*completed*	
	Collection of data for pilot technical study	*May-September 2017*	*completed*	*The study, completed September 2017, included continuous DO and other parameters to fill data gaps in existing data set.*
	QA/QC of data, biological community IDs	*2018*	*completed*	
	Analysis of data	*2019*	*completed*	*IDEM published the draft report on September 30, 2019, and the final report on January 17, 2020.*
	Proposal of criteria	**		*** Additional data is needed to fully understand the nuances of nutrient utilization in these aquatic systems and all the factors influencing whether a given concentration of nutrient is beneficial or harmful.*
	Adoption of criteria into the state's WQS	***		*****In addition to the need for additional data, IDEM will evaluate in 2025 the monthly TN data collected from all major POTW's over the past 5-year permit cycle well as TN data available for rivers/streams in Indiana, to characterize TN ambient levels in Indiana rivers/streams as well as TN levels being discharged from major municipal dischargers.*

Appendix R

Nonpoint Source Priority Waters

Hydrologic Unit Code (10-digit)	Watershed Name	Protected for (1)	Protected for (2)
0404000101	Trail Creek-Frontal Lake Michigan	Salmonid	OSRW
0404000102	Galien River	Salmonid	
0404000103	Salt Creek	Salmonid	OSRW
0404000104	East Arm Little Calumet River	Salmonid	OSRW
0404000105	Deep River-Portage Burns Waterway	Salmonid	OSRW
0404000106	Calumet River-Frontal Lake Michigan	Salmonid	OSRW
0405000101	Coldwater River		Category 1
0405000107	Prairie River		Category 1
0405000108	Fawn River	Cisco	Category 1
0405000110	Pigeon Creek		Category 1
0405000111	Pigeon River	Cisco	Category 1
0405000112	Little Elkhart River		Category 1
0405000113	Mill Creek-St Joseph River	Cisco	Category 1
0405000114	Christiana Creek		Category 1
0405000115	North Branch Elkhart River	Cisco	Category 1
0405000116	South Branch Elkhart River		Category 1
0405000117	Turkey Creek		Category 1
0405000118	Solomon Creek-Elkhart River		Category 1
0405000119	Elkhart River		Category 1
0405000120	Puterbaugh Creek-St Joseph River		Category 1
0405000121	Baugo Creek		Category 1
0405000122	Brandywine Creek-St Joseph River	Salmonid	Category 1
0405000126	St Joseph River		Category 1
0410000307	Cedar Creek		OSRW
0508000206	Four Mile Creek		Category 1
0508000208	Indian Creek		Category 1
0508000209	Taylor Creek-Great Miami River		Category 1
0508000301	Martindale Creek-Whitewater River		Category 1
0508000302	Greens Fork Creek		Category 1
0508000303	Nolands Fork		Category 1
0508000304	Williams Creek-Whitewater River		Category 1
0508000305	Salt Creek		Category 1
0508000306	Pipe Creek-Whitewater River		Category 1
0508000307	East Fork Whitewater River		Category 1
0508000308	Whitewater River		Category 1
0509020302	Muddy Creek-Ohio River		Category 1

0509020303	Tanners Creek		Category 1
0509020304	South Hogan Creek-North Hogan Creek		Category 1
0509020305	Versailles Dam-Laughery Creek		Category 1
0509020306	Hayes Branch-Laughery Creek		Category 1
0509020307	South Fork Laughery Creek-Laughery Creek		Category 1
0509020308	Gunpowder Creek-Ohio River		Category 1
0509020309	Indian Creek		Category 1
0509020310	Big Bone Creek-Ohio River		Category 1
0512010101	Headwaters Wabash River		Category 1
0512010104	Loblolly Creek		Category 1
0512010105	Brewster Ditch-Wabash River		Category 1
0512010106	Sixmile Creek-Wabash River		Category 1
0512010107	Rock Creek		Category 1
0512010108	Griffin Ditch-Wabash River		Category 1
0512010109	Eightmile Creek		Category 1
0512010110	Aboite Creek-Little River		Category 1
0512010111	Little River		Category 1
0512010112	Clear Creek		Category 1
0512010113	Loon Creek-Wabash River		Category 1
0512010114	Treaty Creek-Wabash River		Category 1
0512010115	Pipe Creek		Category 1
0512010116	Little Pipe Creek-Wabash River		Category 1
0512010401	Blue River		Category 1
0512010402	Gangwer Ditch-Eel River		Category 1
0512010403	Sugar Creek-Eel River		Category 1
0512010404	Clear Creek-Eel River		Category 1
0512010405	Paw Paw Creek-Eel River		Category 1
0512010406	Weesau Creek-Eel River		Category 1
0512010407	Eel River		Category 1
0512010601	Grassy Creek-Tippecanoe River	Cisco	
0512010701	Kokomo Creek-Wildcat Creek		Category 1
0512010702	Middle Fork Wildcat Creek		Category 1
0512010703	South Fork Wildcat Creek		Category 1, OSRW
0512010704	Wildcat Creek		Category 1, OSRW
0512010801	Wea Creek		Category 1
0512010802	Burnett Creek-Wabash River		Category 1
0512010803	Mud Pine Creek		Category 1, OSRW
0512010804	Big Pine Creek		Category 1, OSRW
0512010805	Kickapoo Creek-Wabash River		Category 1

0512010806	Big Shawnee Creek-Wabash River		Category 1, OSRW
0512010807	East Fork Coal Creek		Category 1
0512010808	Jordan Creek-Wabash River		Category 1
0512010809	Coal Creek		Category 1
0512010811	Little Vermilion River		Category 1
0512010812	Cecil M. Harden Lake-Big Racoon Creek		Category 1
0512010813	Little Raccoon Creek		Category 1
0512010814	Flo Run-Big Racoon Creek		Category 1
0512010815	Big Raccoon Creek		Category 1
0512010816	Mill Creek-Wabash River		Category 1
0512011006	Sugar Creek		OSRW
0512020101	Muncie Creek-White River		Category 1
0512020102	Buck Creek-White River		Category 1
0512020103	Killbuck Creek-White River		Category 1
0512020104	Pipe Creek		Category 1
0512020105	Duck Creek		Category 1
0512020106	Cicero Creek		Category 1
0512020107	Stony Creek-White River		Category 1
0512020108	Geist Reservoir-Fall Creek		Category 1
0512020109	Fall Creek		Category 1
0512020110	Crooked Creek-White River		Category 1
0512020111	Eagle Creek		Category 1
0512020112	Pleasant Run-White River		Category 1
0512020113	White Lick Creek		Category 1
0512020114	Clear Creek-White River		Category 1
0512020115	Lambs Creek-White River		Category 1
0512020116	Indian Creek		Category 1
0512020117	Butler Creek-White River		Category 1
0512020201	Beanblossom Creek		Category 1
0512020202	Fish Creek-White River		Category 1
0512020203	Plummer Creek		Category 1
0512020204	Lattas Creek-White River		Category 1
0512020205	First Creek-White River		Category 1
0512020206	Black Creek		Category 1
0512020207	Prairie Creek		Category 1
0512020208	Indian Creek-White River		Category 1
0512020209	Kessinger Ditch-White River		Category 1
0512020210	White River		Category 1
0512020301	East Fork Big Walnut Creek		Category 1
0512020302	Little Walnut Creek		Category 1
0512020303	Deer Creek		Category 1
0512020304	Big Walnut Creek		Category 1

0512020305	Mill Creek		Category 1
0512020306	Birch Creek		Category 1
0512020307	Jordan Creek-Eel River		Category 1
0512020308	Eel River		Category 1
0512020501	Shankatank Creek-Flatrock River		Category 1
0512020502	Little Flatrock River		Category 1
0512020503	Conns Creek		Category 1
0512020504	Mill Creek-Flatrock River		Category 1
0512020505	Lewis Creek		Category 1
0512020506	Flatrock River		Category 1
0512020601	Clifty Creek		Category 1
0512020602	Little Sand Creek-East Fork White River		Category 1
0512020603	Sand Creek		Category 1
0512020604	White Creek		Category 1
0512020605	Thompson Slough-East Fork White River		Category 1
0512020606	Hough Creek-East Fork White River		Category 1
0512020701	Big Creek		Category 1
0512020702	Graham Creek		Category 1
0512020703	Otter Creek		Category 1
0512020704	Brush Creek-Vernon Fork Muscatatuck River		Category 1
0512020705	Stucker Ditch		Category 1
0512020706	White Oak Branch-Muscatatuck River		Category 1
0512020707	Vernon Fork-Muscatatuck River		Category 1
0512020708	Cammie Thomas Ditch		Category 1
0512020709	Muscatatuck River		Category 1
0512020812	Dry Branch-Lost River		OSRW
0512020813	Lost River		OSRW
0514010401	Otter Creek-Ohio River		Category 1
0514010402	Buck Creek		Category 1
0514010403	Upper Indian Creek		Category 1
0514010404	Middle Indian Creek		Category 1
0514010405	Lower Indian Creek		Category 1
0514010406	South Fork Blue River		Category 1, OSRW
0514010407	Mill Creek-Blue River		Category 1, OSRW
0514010408	Whiskey Run-Blue River		Category 1, OSRW
0514010409	Blue RIver		Category 1, OSRW
0514010410	Wolf Creek-Ohio River		Category 1
0514010411	Little Blue River		Category 1
0514010412	Oil Creek		Category 1
0514010414	Yellowbank Creek-Ohio River		Category 1

0712000101	Pine Creek		Category 1
0712000102	Little Kankakee River-Kankakee River		Category 1
0712000103	Headwaters Yellow River		Category 1
0712000104	Mill Creek-Kankakee River		Category 1
0712000105	Yellow River		Category 1
0712000106	Kline Arm		Category 1
0712000107	Robbins Ditch-Kankakee River		Category 1
0712000108	Pitner Ditch-Kankakee River		Category 1
0712000109	Hodge Ditch		Category 1
0712000110	Crooked Creek-Kankakee River		Category 1
0712000111	Knight Ditch-Kankakee River		Category 1
0712000112	Beaver Lake Ditch-Kankakee River		Category 1
0712000113	Singleton Ditch		Category 1
0712000114	Spring Creek-Kankakee River		Category 1