

**NPDES PHASE II MS4 GENERAL PERMIT  
WATER QUALITY CHARACTERIZATION REPORT  
STORMWATER QUALITY MANAGEMENT PLAN**

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**WQCR and SWQMP Certification in accordance with 327 IAC 15-4-3(i) and MS4GP 3.3 and 4.9**

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## CHAPTER 1: INTRODUCTION

As part of the 1987 amendments to the federal Clean Water Act (CWA), the United States Congress added Chapter 402(p) to the CWA to address the water quality impacts of stormwater discharges from industrial facilities and large to medium municipal separate storm sewers systems (MS4s). Large to medium MS4s were defined as communities serving populations of 100,000 or more and are regulated by the Environmental Protection Agency (EPA) under the National Pollutant Discharge Elimination System's (NPDES) Storm Water Phase I Program.

In addition to these amendments, Congress directed the EPA to issue further regulations to identify and regulate additional stormwater discharges that were considered to be contributing to national water quality impairments. In 1999, the EPA issued regulations that expanded the existing NPDES Storm Water Program to include discharges from small MS4s in “urbanized areas” serving populations of less than 100,000 and stormwater discharges from construction activities that disturb more than one acre of land. These regulations are referred to as the NPDES Phase II Storm Water Program.



Figure 1: Location of Hendricks County Indiana

Hendricks County (**Figure 1**) has met these criteria and consequently has been designated as an MS4 entity.

In the State of Indiana, the Indiana Department of Environmental Management (IDEM) is responsible for the development and oversight of the NPDES Phase II Program. IDEM initiated adoption of the Phase II Rules that were ultimately codified as 327 IAC 15-13 (Rule 13) and became effective on August 6, 2003.

In December 2021, IDEM formally replaced Rule 13 with a new MS4 General Permit (MS4GP). Since the permits have not been updated since 2003, several new or revised provisions have been incorporated that would impact how regulated Indiana MS4 entities such as counties, cities, and towns incorporate these new changes into their existing programs. The MS4GP provides permit coverage for Phase II entities, and the requirements and conditions of the MS4GP apply to all Phase II MS4s upon submittal of a Notice of Intent (NOI).

Under Rule 13, IDEM issued approximately 185 Phase II MS4 permits in Indiana. On April 13, 2022, IDEM notified another 45 entities that they would be subject to the MS4GP regulations starting on April 13, 2023.

This report has been prepared to meet the requirements of the MS4GP for the development of a Water Quality Characterization Report (WQCR) and a Stormwater Quality Management Plan (SWQMP) for previously regulated and newly designated MS4s. It is also intended to replace older versions of the obsolete Rule 13 required WQCR and SWQMP; also known as Parts A, B, and C.

## 1.1 HENDRICKS COUNTY MS4 EXISTING CONDITIONS

Hendricks County covers approximately 83,460 acres and the MS4 jurisdictional boundary mirrors the county boundaries (as of 2022) as identified in **Figure 2**. Hendricks County contains incorporated areas in the following townships: Eel River, Union, Middle, Brown, Lincoln, Washington, Center, Marion, Clay, Franklin, Liberty, Guilford.

The primary responsibilities for implementing requirements included in the MS4GP are held by the Hendricks County Clean Water Department. Compliance, project permitting, and inspections are performed through oversight from this department. Maintenance of the county's infrastructure is handled through the Hendricks County Surveyor's Office and Highway Department.

Hendricks County is the tenth largest county within Indiana and accounts for approximately 2.6% of the state's population. The population of Hendricks County in 2020 was estimated to be about 174,788, an increase of 20.2% since 2010.

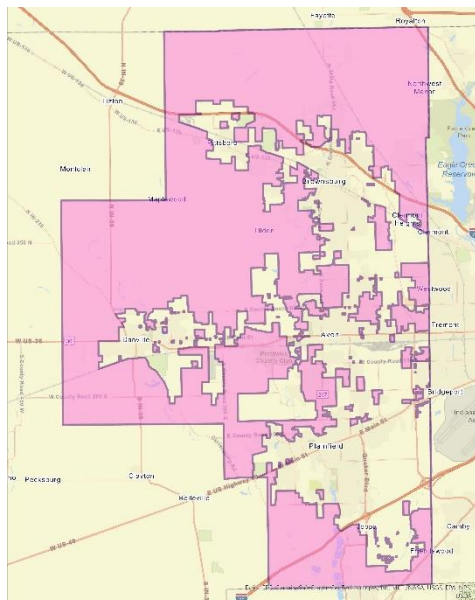


Figure 2: MS4 Boundary, Hendricks County

## 1.2 MS4 CONVEYANCE SYSTEM

The MS4GP authorizes stormwater discharges from designated MS4 entities throughout the State of Indiana. The permit applies to all areas under the ownership, control, or jurisdiction of a designated MS4 entity. “MS4” refers to the permit holder such as the county as well as the separate storm sewer system that the county owns and operates or maintains.

The State of Indiana defines MS4s as a conveyance or system of conveyances owned by a state, city, county, town, district, or other public entity having jurisdiction over stormwater, including special districts under state law such as a sewer district, that discharges to waters of the United States and is designed or used for collecting or conveying stormwater. Regulated conveyance systems include roads with public drains, municipal streets, catch basins, curbs, gutters, storm drains, piping, channels, ditches, tunnels, and conduits. It does not include combined sewer overflows and publicly owned treatment works.

The authorized MS4 entity or county is responsible for the MS4 conveyances that it owns, operates, or maintains within its boundaries.



## CHAPTER 2: WATER QUALITY CHARACTERIZATION REPORT

### REQUIREMENT MS4GP 3.1(a):

The water quality characterization report (WCQR) shall use the most current data available but may also consider additional data that describes the chemical, biological, and/or physical condition of the receiving waters of the MS4 jurisdictional area.

## 2.1 LAND USE/LAND COVER

### REQUIREMENT MS4GP 3.1(c):

The WCQR must include: (1) An assessment of land use.

Land use and land cover can be an important tool in developing a basic overall assessment of the watershed, MS4 area, and the anticipated water quality within the receiving waters. Derived from the 2019 National Land Cover Dataset (NLCD), **Table 1** indicates the land cover (in acreage) within the jurisdictional area. Additionally, the land cover is graphically represented in **Exhibit 3**.

**Table 1: Hendricks County Land Cover**

Land Cover	Acres
Cultivated Crops	47,726.8
Developed, Low Intensity	7,061.4
Developed, Open Space	6,563
Developed, Medium Intensity	3,014.9
Developed, High Intensity	343.6
Barren Land (Rock/Sand/Clay)	21.7
Deciduous Forest	8,821.3
Evergreen Forest	46.4
Mixed Forest	966.0
Grassland/Herbaceous	457.2
Open Water	521.4
Emergent Herbaceous Wetlands	143.7
Woody Wetlands	135.5
Shrub/Scrub	94.9
Pasture/Hay	7,538.9
<b>TOTAL</b>	<b>83,456.7</b>

The effects of land use/land cover changes on surface runoff, stream flow, and groundwater recharge are fundamental considerations in stormwater management. Planned expansion of urban areas provides the opportunity to implement policies and Best Management Practices (BMPs) that may significantly reduce or prevent impacts to the environment in terms of groundwater recharge, water pollution and stormwater drainage. Urbanization typically includes additional impervious surfaces and increased runoff which can result in downstream flooding, and detrimental impacts to local waterways. Since each land use/land cover may have a different impact on stormwater runoff, strategic land use planning can help minimize these impacts.

The county's long-term plan shows several large areas that will change the land use and land cover of the current MS4 area. Long term development zones include those on the eastern corridor of the county and along interstates I-70 and I-74.

## 2.2 MS4 OWNED AND OPERATED STRUCTURAL STORMWATER MANAGEMENT MEASURES

### REQUIREMENT MS4GP 3.1(c):

The WCQR must include: (2) An inventory of MS4 owned/operated structural stormwater management measures...including an identification number, geographic coordinate, and structure condition.

According to MS4 staff, there are no publicly owned and/or operated structural BMPs within the jurisdictional area.

## 2.3 RECEIVING WATERS

### REQUIREMENT MS4GP 3.1(c):

The WCQR must include: (3) Identification of all receiving waters that receive discharges from outfalls within the MS4, including wetlands and lakes. (4) Any 303d listed impaired waters or TMDLs for receiving waters need to be identified.

The county discharges stormwater into the receiving waters listed in **Appendix 1**. These waterbodies are also identified on **Exhibit 2**.

### 2.3.1 Watersheds

According to the U.S. Geological Survey (USGS), watersheds are delineated using a nationwide system based on surface hydrologic features. This system divides the country into 21 regions (two-digit), 222 subregions (four-digit), 370 basins (six-digit), 2,270 subbasins (eight-digit), approximately 20,000 watersheds (ten-digit), and 100,000 sub-watersheds (12-digit). A hierarchical hydrologic unit code (HUC) consisting of two additional digits for each level in the hydrologic unit system is used to identify any hydrologic area.

The MS4 area overlays portions of one eight-digit HUC watershed; the Eel River Basin (HUC 05120203) and the Upper White River Basin (HUC 05120201). The 12-digit HUCs (based on April 2019 MS4 boundaries) along with the acreages in the MS4 are listed in **Table 2**.

**Table 2: Hendricks County Watersheds**

HUC 12	Name	Acres in MS4
051202011303	Abner Creek-White Lick Creek	14599.6
051202011306	Clarks Creek-White Lick Creek	5075.0
051202011108	Eagle Creek Reservoir-Eagle Creek	6225.0
051202030501	East Fork Mill Creek	4298.3
051202011309	East Fork White Lick Creek	1990.9
051202011106	Fishback Creek	1517.7
051202011308	Headwaters East Fork White Lick Creek	2883.4
051202030502	Headwaters Mill Creek	421.0
051202011304	Headwaters West Fork White Lick Creek	12655.8
051202011301	Hughes Branch-West Fork White Lick Creek	11685.2
051202011307	McCracken Creek	1001.0
051202011310	Monical Branch-White Lick Creek	209.2
051202030103	Ramp Run-East Fork Big Walnut Creek	431.4
051202011110	Ristow Branch-Eagle Creek	501.8
051202030102	Ross Ditch-East Fork Big Walnut Creek	1273.1
051202011305	West Fork White Lick Creek	10137.9
051202011302	Wiley Thompson Ditch-White Lick Creek	8550.2

### 2.3.2 Integrated Waters Report

The CWA Section 303(d) requires states to identify waters that do not currently or are not expected to meet the state's water quality standards through implementation of technology-based standards. Within this section of the CWA, states must also prioritize these waters based on the designated uses of the water and the severity of the pollution. **Appendix 2** identifies the segments within the jurisdictional area for Hendricks County that are listed on the Indiana 303(d) list of impaired waters.

Section 305(b) of the CWA requires the state to assess and report on how well the waters of Indiana support the beneficial uses designated in the Water Quality Standards (WQS). Indiana's Integrated Water and Monitoring Assessment Report (IR) is developed every two years to fulfill this requirement and describes the condition of Indiana's lakes and streams, the Lake Michigan shoreline, and ground water. All IDEM water quality data is evaluated and interpreted for each hydrologic unit area (HUA); typically, a 12-digit HUC. Each HUA is given a water quality rating relative to its stream's status in meeting WQS. WQS are set at levels necessary for protecting a waterway's designated use(s), such as swimmable, fishable, or drinkable.

### 2.3.3 Total Maximum Daily Loads

The prioritized 303(d) list of impaired waters is then used to develop a list of waters for which a Total Maximum Daily Load, or TMDL, must be developed. These TMDL reports identify the causes of the impairments, the amount of pollutant reduction needed, and potential actions to be taken to improve water quality within the watershed. **Table 3** identifies TMDLs relevant to the Hendricks County MS4 jurisdictional boundaries and the pollutant for which it was developed.

**Table 3: Hendricks County TMDLs**

Waterbody Name	TMDL Pollutant	Link to Report
Upper Mill Creek	<i>E. coli</i> TMDL	<a href="https://www.in.gov/idem/nps/resources/total-maximum-daily-load-reports/upper-mill-creek/">https://www.in.gov/idem/nps/resources/total-maximum-daily-load-reports/upper-mill-creek/</a>

### 2.3.4 Wetlands

The 2022 National Wetlands Inventory (NWI) identifies potential wetland areas by utilizing infrared photography which has not been field verified. Information provided through the NWI should be utilized only as a reference, not as a definitive answer of whether wetlands are present on a particular site. According to the 2022 NWI, there are approximately 2,180 acres of potential wetlands within the MS4 area.

The MS4GP requires MS4s to establish a construction program that contains, at a minimum, the requirements of the Indiana Construction Stormwater General Permit (CSGP). The CSGP requires all project site owners to develop construction plans that include an existing project site layout describing the location and name of all wetlands, lakes, and water courses on or adjacent to the project site (CSGP 4.1(a)(3)(j)).

## 2.4 SENSITIVE AREAS

### REQUIREMENT MS4GP 3.1(c):

The WQCR must include: (5) Identification of known sensitive areas including, but not limited to public swimming areas, drinking water intakes, habitats associated with threatened or endangered species, and outstanding state and national resource waters.

These areas are designated as sensitive due to their importance to the surrounding environment or economic conditions. Special considerations or restrictions may be imposed to provide an added layer of protection for those areas or land uses designated as sensitive by the MS4 or IDEM.

### 2.4.1 Public Swimming Areas

There are no known recreational or public swimming areas within the jurisdiction of the MS4.

### 2.4.2 Drinking Water Intakes

According to the Indiana Administrative Code, a public water supply system is a public water supply for the provision to the public of piped water for human consumption, if such a system has at least fifteen (15) service connections, or regularly serves an average of at least twenty-five (25) individuals daily at least sixty (60) days of the year.

IDEM's Drinking Water Branch carries out the requirements of the federal Safe Drinking Water Act (SDWA), which is designed to ensure that Public Water Supplies (PWS) deliver water to Hoosier homes and businesses that is adequate in quantity and is safe to drink. According to the Branch, there are 207 drinking water wells in Hendricks County, 56 of which are active.

The Indiana Department of Natural Resources' (IDNR) Division of Water conducts resources assessments of ground water aquifers and maintains the records of over 400,000 water wells drilled in Indiana. A 2019 GIS layer provided by the IDNR showed 6,751 wells within the Hendricks County MS4 area.

### 2.4.3 Habitat Associated with Threatened or Endangered Species

The IDNR's Division of Nature Preserves maintains the Natural Heritage Data for the State of Indiana. Natural Heritage Data includes general information on endangered, threatened, and rare species for each Indiana County. As of February 2022, there are three insects, one reptile, three birds, five mammals and two vascular plants listed as endangered, threatened, or rare within Hendricks County. Additionally, the IDNR identifies Circumneutral Seep and Flatwoods Central Till Plain Forest as High Quality Natural Communities within Hendricks County. However, Natural Heritage Data is only county specific, and therefore, these habitat types may not exist within the MS4 area.

County officials are unaware of any waters within the MS4 area that currently contain threatened, endangered, or rare species or their habitats. If any species listed are identified in the future, the partners will consider those locations to be sensitive areas and will update their stormwater program accordingly.

### 2.4.4 Limited Use and Outstanding State Resource Waters

The federal CWA requires all states to develop, review, revise, and adopt Water Quality Standards (WQS). Water Quality Standards consist of:

- **Designated Uses:** identification of how people, aquatic communities, and wildlife use our waters (e.g., public water supply, protection and propagation of fish, shellfish, and wildlife, and recreation)
- **Water Quality Criteria:** numeric or narrative in form and protect the designated uses. Numeric criteria are allowable concentrations of specific pollutants in a water body while narrative criteria are statements of unacceptable conditions in and on the water.
- **Antidegradation Policies:** protection of existing uses and extra protection for high-quality or unique waters.

General antidegradation policies will allow the County to protect existing uses of waterbodies and aid in ensuring these waterbodies will continue to meet WQS. Waters that may be considered for designation as outstanding state resource waters (OSRQ) include waterbodies that have unique or special ecological, recreational, or aesthetic significance.

### 2.4.5 Other Sensitive Areas

**Erodible Soils:** The Natural Resource Conservation Service (NRCS) uses the soil erodibility index (EI) to provide a numerical expression of the potential for a soil to erode considering the physical and chemical properties of the soil and the climatic conditions where it is located. As a result, the basis for identifying highly erodible land (HEL) is the EI of the soil map unit.

The EI of a soil is determined by dividing the potential erodibility for each soil by the soil loss tolerance (T) value established for the soil. The T value represents the maximum “tolerable” annual rate of soil erosion that could take place without causing a decline in long-term productivity. **Table 4** documents the HEL and Potentially HEL (PHEL) soils within Hendricks County and therefore potentially throughout the MS4 area. A HEL display for Hendricks County is also available in **Exhibit 4**.

**Table 4: Hendricks County Erodible Soils**

Map Unit Symbol	Soil Name	HEL Classification
CsB2	Crosby	PHEL
FoB2	Fox	PHEL
FoC2	Fox	HEL
FxC3	Fox	HEL
HeF	Hennepin	HEL
MmB2	Miami	HEL
MmC2	Miami	HEL
MmD2	Miami	HEL
MmE2	Miami	HEL
MsB3	Miami	HEL
MsC3	Miami	HEL
MsD3	Miami	HEL
OcB2	Ockley	PHEL
OsB2	Ockley	PHEL
RuB2	Russell	PHEL
RuC2	Russell	HEL
XeB2	Xenia	PHEL

Recognizing the potential water quality impacts associated with soil erosion, the partners will consider these soils to be sensitive areas and will prioritize new or redevelopment occurring on these sites during the plan review, inspection, and enforcement process. Chapter 152 of the currently adopted Hendricks County Code of Ordinances defines the purpose of preventing soil erosion relating to construction and post-construction. Determination of sensitive areas is also outlined in this chapter.

## 2.5 REVIEW OF EXISTING WATER QUALITY DATA

### **REQUIREMENT MS4GP 3.1(c):**

The WQCR must include: (6) A review and summary of existing and available monitoring data of the MS4 receiving waters, including, as applicable, data that can be correlated from stream reach characterization and evaluation reports (SRCER).

### **2.5.1 Stream Reach Characterization Report (SRCER)**

The stream reach characterization and evaluation report (SRCER) characterizes and evaluates the pollutant sources on receiving waters from a combined sewer system discharge. The SRCER can be utilized to identify ways to beneficially change the storm sewer system within the MS4 and to improve water quality around combined sewer system outfalls. There are no combined sewers within the Hendricks County MS4 boundaries.

According to Indiana's Combined Sewer Overflow (CSO) Strategy, all CSO communities within the state were required to address the ninth minimum control measure (monitoring to effectively characterize CSO impacts) by conducting a Stream Reach Characterization and Evaluation study. IDEM's "Combined Sewer Overflow Tracking Sheet" (IDEM, 2003), identifies two communities within the Hendricks County MS4 area that utilize a combined sewer system (CSS), including the Towns of Brownsburg and Plainfield.

### 2.5.2 Established TMDLS

States are required to develop a priority ranking for waters that do not or are not expected to meet applicable water quality standards taking into account the severity of pollution and the designated uses of the waters. Once this listing and ranking of waters is completed, the states are required to develop TMDLs for these waters in order to achieve compliance with water quality standards. The relevant TMDLs developed to date are described in the following sections. Many of the TMDLs propose similar BMPs to reduce pollutants, especially *E. coli*. These BMPs may include:

- Septic system outreach program and funding to help fix/replace failing systems.
- Identification of failing septic systems by local health departments. Requirements for periodic pumping and inspection of septic systems.
- Livestock exclusion from riparian areas.
- Installation of structural urban BMPs.
- Education campaigns designed to address relevant nonpoint source pollutants from the actions of watershed residents.

Regarding the inputs of *E. coli* from MS4 communities and MS4GP requirements, the TMDLs anticipate that once MS4 permits have been issued and implemented, they will improve water quality and address storm water impacts in these watersheds.

#### Upper Mill Creek TMDL (2005)

Finalized in 2005, the TMDL report for the Upper Mill Creek Watershed identifies *E. coli* as the primary source of impairment and indicates that potential sources include “nonpoint sources from agriculture and pastures, land application of manure and urban and rural run-off, as well as point sources from straight pipe discharges, home sewage treatment system disposal and combined sewer overflow outlets.” The Upper Mill Creek Watershed is located in Southwestern Indiana and drains approximately 142 square miles in Putnam, Morgan, and Owen Counties. TMDLs in the watershed are established for *E. coli* and will address 11 impairments through storm water controls, point source controls, manure management and habitat improvements.

### 2.5.3 Watershed Group or Health Department Monitoring Data

In 1991, the U.S. Geological Survey (USGS) began the implementation of the National Water Quality Assessment (NAWQA) Program. The NAWQA program integrates the monitoring of surface and ground water quality with the study of aquatic ecosystems. The goals of the NAWQA program are to (1) describe current water quality conditions for a large part of the Nations’ freshwater streams and aquifers, (2) describe how water quality is changing over time, and (3) improve our understanding of the primary natural and human factors affecting water quality. NAWQA program studies are conducted within areas called study units.

The White River Basin is a NAWQA study area. A NAWQA water quality assessment was completed for this basin between 1992 and 1996, which included water quality monitoring from ten sites in the White River Basin. The study found that water quality issues in the White River basin are related primarily to agriculture, the dominant land use, and, on a more localized scale, to urbanization. Key water quality issues for the basin were considered to be related to the effects of:

- Nutrients transported by agricultural runoff and groundwater recharge.



- Pesticides transported by agricultural runoff and groundwater recharge.
- Soil erosion from agricultural areas. Transport of pesticides and nutrients that adhere to sediments also can affect water quality in streams.
- Urban storm runoff and combined-sewer overflows.
- Diverse sources of chemical compounds on regional ground-water quality (sources include landfills, hazardous-material spills, leaking underground storage tanks, and septic systems).

The White River NAWQA study reported that most of the nitrogen (nitrate) input into the White River Basin comes from nonpoint sources, primarily from application of commercial fertilizers. Other sources of nitrate include farm animal manure and effluent from sewage treatment plants. Tile drains have a major influence on nitrate concentrations in many streams in the basin.

In addition, the report noted that herbicides applied to corn and soybeans dominate pesticide use in the White River Basin. Triazine (primarily atrazine and cyanazine) and acetanilide (acetochlor, alachlor, and metolachlor) compounds are the most commonly used herbicides. Herbicide use on corn accounts for about 70 percent of the total agricultural use of pesticides in the basin. About 96 percent of the total agricultural pesticide use is herbicide and insecticide use on corn and soybeans.

Urban areas in the White River Basin were identified as sources of organic compounds, trace elements (including heavy metals), and nutrients. High concentrations of phosphorus and ammonia are caused by the discharge of treated sewage, urban runoff, and other discharges. High concentrations of phosphorus can cause undesirable aquatic plant growth, whereas high concentrations of ammonia can kill fish.

Since the USGS NAWQA study concluded that water quality issues in the White River basin are related primarily to agriculture, and agricultural land uses account for approximately 89% of land uses within Hendricks County's MS4 Area, the County will consider agricultural areas within the MS4 area a priority. This can be accomplished by partnering with the Hendricks County Soil and Water Conservation District (SWCD) to encourage local agricultural producers to implement agricultural BMPs within the MS4 area.

### **Eagle Creek Watershed Study (1999 Incremental Funds)**

The Indiana Farm Bureau has been a long-term sponsor of the Eagle Creek Watershed Task Force (ECWTF), a local watershed group dedicated to improving water quality within the Eagle Creek watershed. Farm Bureau has sponsored grant applications to assist the ECWTF in hiring a Watershed Coordinator, conducting fisheries studies, monitoring water quality, implementing a cost-share program for implementing agricultural BMPs within the Eagle Creek watershed, and completing a Watershed Management Plan for the Eagle Creek watershed.

As part of a 1999 319 grant funded project, the ECWTF conducted a bioassessment study of the Eagle Creek Watershed. Benthic macroinvertebrates and fish community samples were collected in the fall of 2000. The results from the 2000 study were compared to similar bioassessment studies conducted in 1979 and 1981. One of the goals of the study was to determine if the ecological health of Eagle Creek had changed significantly in past 20 years. The final report determined that several subwatersheds suffer from excessive sedimentation, excessive nutrient inputs, toxic substances, and diminished dissolved oxygen (DO) levels. In addition, the Qualitative Habitat Evaluation Index (QHEI) was completed for each monitoring site. QHEI results indicated that some sites exhibited considerably lower scores than the associated terrestrial habitats, suggesting that some sites had experience long-term impacts by upstream pollutants.



In addition, during 2001 through 2002, the ECWTF conducted a trend-based water quality monitoring project designed to characterize seasonal activities within the watershed. Through its partnership with Indianapolis Water Company (IWC), the ECWTF tested ten sites for ten different water quality parameters, including Atrazine (trazines), ammonia, nitrite, nitrate, turbidity, total coliforms, *E. coli*, chloride, and sulfates. During the study period, several areas of concern were identified. During 2000 through 2002, monitoring results indicated that at least 50% of the samples collected contained *E. coli* concentrations about single sample water quality standards (235/100ml). In fact, during 2001, *E. coli* concentrations were observed to be nearly 66% above State water quality standards.

The study determined that elevated concentrations of atrazine continued to be an issue of concern during significant rainfall events. In addition, this study also confirmed the findings of previous bioassessment projects that identified excessive sediment and nutrient loadings to be negatively impacting the watershed.

Based upon the findings of the ECWTF study, the following sub-watersheds should be considered as priorities for Hendricks County's Stormwater Program:

- Fishback Creek (Eagle Creek Reservoir) (05120201120090)
- Eagle Creek Reservoir – School Branch (05120201120100)

#### **2.5.4 Watershed Management Plans**

A watershed management plan (WMP) is a strategy for achieving water quality goals by characterizing the watershed, setting goals and actions steps, and developing an implementation plan to address documented problems. Ultimately, the purpose of the WMP is to guide resource managers, watershed coordinators, policy makers, community organizations, and other relevant stakeholders in restoring and protecting the waterbodies within a given watershed.

##### **Big Walnut WMP Rewrite (2020)**

The 2020 Big Walnut Creek WMP outlines several goal statements that were developed based on concerns and pollutant sources identified during the development of the WMP. It is anticipated that the implementation of policies and programs to meet these goal statements will improve watershed management in the Big Walnut Creek Watershed. The goals in the WMP focus on reducing nutrient loading, sediment loading, *E. coli* loading, and increasing public awareness and education.

##### **Eagle Creek WMP: An Integrated Approach to Improved Water Quality**

The 2005 Eagle Creek WMP outlines several goal statements that were developed based on concerns and pollutant sources identified during the development of the WMP. It is anticipated that the implementation of policies and programs to meet these goal statements will improve watershed management in the Eagle Creek Watershed.

##### **Lower White Lick Creek**

The 2005 Lower White Lick Creek WMP outlines several goal statements that were developed based on concerns and pollutant sources identified during the development of the WMP. It is anticipated that the implementation of policies and programs to meet these goal statements will improve watershed management in the Lower White Lick Creek Watershed. The goal statements included in the WMP are improving water quality in the watershed through the promotion of protection and maintenance of

streams and drainage ditches, continued support of educational programs, incentive programs, and support for innovative agricultural practices, efforts to properly dispose of household and yard wastes, proper planning, long-term maintenance, proper installation, and support for effective septic system function, progressive land use planning and land development practices and identification, acquisition, and clean-up of legacy toxic waste sources.

### **2.5.5 IDNR Fisheries Survey of White Lick Creek**

In 1997, the Fisheries Section of the IDNR conducted a bioassessment of four sites on the West Fork of White Lick Creek. The sites are identified by river mile (RM), which is defined as the number of miles the sampling station is from White Lick Creek's confluence with the West Fork of White River. Sampling locations include:

- RM 4.5 - downstream of the Town of Brooklyn at Bottom Road and Rinker Road,
- RM 6.1 - upstream of the Town of Brooklyn at Henderson Ford Road,
- RM 11.4 - SR 42 Bridge in Mooresville,
- RM 17.0 - CR 600S Bridge in Hendricks County

All monitoring sites were sampled via barge-mounted electrofishing equipment, and each site was electrofished in an upstream direction for thirty minutes. In addition to fish community analyses, habitat evaluations were conducted at each site utilizing the Qualitative Habitat Evaluation Index (QHEI) developed by the Ohio EPA. Utilizing field equipment, the dissolved oxygen concentrations, water temperature and air temperature were recorded at each site.

The study determined that White Lick Creek has “average” species diversity compared to other major streams in Indiana. Although the overall species diversity was considered average, the average number of species collected per site (27.3) was considered better than the per site average of other major streams in Indiana (20.4).

Habitat scores at the surveyed stations ranged from “poor” to “very good.” The QHEI scores were 47.5 (poor) at RM 6.1, 71.5 (very good) at RM 4.5, 63.5 (fairly good) at RM 11.4 and 60.5 (fairly good) at RM 17.0. Though the habitat at RM 6.1 was considered “poor,” there were 27 species collected at the site, which is considered “good.” Also, several species considered intolerant of pollution were present. The study states that habitat improvements can be made at all stations with the expansion of riparian zones.

The study determined that the status of water quality in White Lick Creek is “pretty good” based on the abundance of species intolerant of poor water quality such as the longear sunfish, northern hog sucker, and various species of redhorse. The study does suggest, however, that the water quality of White Lick Creek is in jeopardy by the rapid development occurring in the area. The study expresses concern with the sedimentation that occurs with the construction of residential and commercial developments.

Based upon the findings of the IDNR's 1997 study, the following subwatersheds should be considered as priorities for Hendricks County's Stormwater Program:

- Fishback Creek (Eagle Creek Reservoir) (05120201120090)
- Eagle Creek Reservoir – School Branch (05120201120100)

## 2.6 POTENTIAL AREAS OF POLLUTION

### **REQUIREMENT MS4GP 3.1(c):**

The WQCR must include: (7) Identification of areas that have a reasonable potential for or are actually contributing to stormwater quality problems based on available land use and complaint information and relevant chemical, biological, and physical data.

#### **2.6.1 Complaint Data**

When concerns are observed by the county staff, they are equipped to mitigate the issues quickly. Observations of a potential illicit discharge or other stormwater concerns, either received by county staff or through Report-A-Polluter, are investigated and tracked through photographs and reports. Determined by the nature and severity of the issue, violation notices or fines may be issued. These complaints and observations are not currently tracked by location to develop trend data.

#### **2.6.2 Industrial Facilities**

Hendricks County is aware of 31 facilities within the MS4 boundary which, according to their Standard Identification Classification (SIC) code, should be assessed for their potential to discharge to an MS4 conveyance. While they also may have IDEM Rule 6 permits, it is important for the County to understand the potential impacts to the conveyances and receiving waters. It is also important to note that IDEM will be working on a replacement, master general permit for Rule 6. This is anticipated to occur sometime during 2023.

#### **2.6.3 Residential Septic Systems**

Areas within Hendricks County remain on residential septic systems and concentrations of older systems pose a concern for water quality in those receiving waters. The Hendricks County Health Department is proactively working with areas to mitigate the problems associated with septic system failures.

Hendricks County requires residents within 300' of a sanitary sewer line to connect to it when the line becomes available. These hook up requirements are rigidly implemented throughout the county. The County Regional Sewer District reaches out to residents of subdivisions that are 50 – 60 years old to see if they are interested in sanitary sewers. If 50% or more are interested, then sanitary sewers are provided.

#### **2.6.4 Surface Visual Conveyance Inspection Findings**

In compliance with the MS4GP Municipal Operation Pollution Prevention and Good Housekeeping Minimum Control Measure, MS4 entities are tasked with completing a visual inspection of catch basins, outfalls, and conveyance systems over the five-year permit term with a minimum of 15% must be completed each year. Areas anticipated to contribute to pollution or decrease system function must be noted and corrected. This inspection program is part of the County Surveyor's office and Highway Department.

## 2.6.5 IDDE Findings

As complaints are received and/or IDDE screening brings impacts to light, the county will follow through on investigations and mitigation of any problems. No routine type of complaints have been received by the county's Clean Water Program to date.

A community should understand the extent of water quality problems caused by illicit discharges. The desktop assessment should draw on existing background and anecdotal information to initially characterize illicit discharge potential at the sub-watershed level. Sub-watersheds are then screened based on their composite score, and are designated as having a low, medium, or high risk. **Table 5** describes discharge factors to screen sub-watersheds based on their illicit discharge potential (IDP).

**Table 5: Discharge Screening Factors for IDDE Desktop Assessment**

Discharge Screening Factors	Defining and Deriving the Factor
Past Discharge Complaints and Reports	Frequency of past discharge complaints, hotline reports, and spill responses per subwatershed. Any subwatershed with a history of discharge complaints should automatically be designated as having high Illicit Discharge Potential (IDP).
Poor Dry Weather Water Quality	Frequency that individual samples of dry weather water quality exceed benchmark values for bacteria, nutrients, conductivity or other predetermined indicators. High risk if two or more exceedances are found in any given year.
Density of Generating Sites or Industrial NPDES Storm Water Permits	Density of more than 10 generating sites of five industrial NPDES stormwater sites per square mile indicates high IDP. Density determined by screening business or permit databases.
Stormwater Outfall Density	Density of mapped stormwater outfalls in the subwatershed, expressed as the average number per stream or channel mile. A density of more than 20 outfalls per stream mile indicates high IDP.
Age of Subwatershed Development	Defined as the average age of the majority of development in a subwatershed. High IDP is often indicated for developments older than 50 years. Determined from tax maps and parcel data, or from other known information about neighborhoods.
Sewer Conversion	Subwatersheds that had septic systems but have been connected to the sanitary sewer system in the last 30 years have high IDP.
Historic Combined Sewer Systems	Subwatersheds that were once served by combined sewer system but were subsequently separated have a high IDP/
Presence of Older Industrial Operations	Subwatersheds with more than 5% of its area in industrial sites that are more than 40 years old are considered to have high IDP. Determined from historic zoning, tax maps, and "old-timers."
Aging of Failing Sewer Infrastructure	Defined as the age and condition of the subwatershed sewer network. High IDP is indicated when the sewer age exceeds design life of its construction materials (e.g., 50 years) or when clusters of pipe breaks, spills, overflows or are reported by sewer authorities
Density of Aging Septic Systems	Subwatersheds with a density of more than 100 older drain fields per square mile are considered to have high IDP. Determined from analysis of lot size outside sewer service boundaries.

## 2.7 DATA SUMMARY

### REQUIREMENT MS4GP 3.1(c):

The WQCR must include: (8) An evaluation of data collected to determine which areas or specific discharge points that may need to be considered for future planning and implementation of new stormwater measures or modification of existing measures. The highest priority should be given to sensitive areas and the prohibition of new or significantly increased MS4 discharges.

Several sensitive areas have been identified for special considerations related to stormwater quality runoff and land cover/land use changes. These areas include drinking water sources, wetlands (once field-verified), habitats of endangered, threatened, or rare species, and recreational waters. These areas, and any identified discharge points near these areas, should be considered for additional structural or non-structural BMPs to maximize the possible protection for the area as well as the receiving waters. Types of BMPs for consideration may include targeted education and awareness programs highlighting the importance of sensitive areas, additional requirements for structural controls on new construction, and/or enhanced post-construction structural BMPs. The structural condition of MS4 owned and operated BMPs will guide prioritization of BMP maintenance and repairs over the current MS4GP permit cycle.

As the County plans for future growth and development, land use changes are anticipated within areas of the MS4. Long term development zones include those on the eastern corridor of the county and along interstates I-70 and I-74.

This growth can certainly have impacts on the MS4 program as well as the water quality of receiving waters. 23 waterbodies within Hendricks County are known to have impairments and are 303(d) listed and can be found in **APPENDIX 2:**. Through the implementation of the MS4GP within the city, goals to improve the water quality of impaired waterbodies will be tracked and revised during annual reviews of the program. Outfall mapping and field investigations during dry weather screening will yield any priority areas to be addressed during additional public education and outreach, as well as identify existing BMPs that require repair and/or maintenance. Active construction sites that are greater than five acres and that are a near water resource will have an elevated inspection priority, and post-construction inspections will identify areas needing maintenance or repair which will have a direct positive impact on water quality. The county will continue working to improve water quality in these waterbodies through public education and outreach, as well as expanding the IDDE program to meet the requirements of the MS4GP.



## CHAPTER 3: STORMWATER QUALITY MANAGEMENT PLAN

### REQUIREMENT MS4GP 4.2:

The SWQMP must be developed, implemented, and maintained to include provisions that will reduce the discharge of pollutants from the MS4 to protect water quality, human health, and the biotic community.

### 3.1 MS4 BOUNDARIES

The MS4 boundaries are identified on Exhibit 1 and the specific Township, Range, and Section coverage is listed within **Table 6**. Boundaries will be updated as necessary following any future land purchases or acquisitions.

Table 6: MS4 Boundaries

Township	Range	Section
17 N	2 E	17, 18, 19, 20, 29, 30, 31, 32
17 N	1 E	13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36
17 N	1 W	1, 2, 11, 12, 13, 14, 23, 24, 25, 26, 35, 36
16 N	2 E	5, 6, 7, 8, 17, 18, 19, 20, 29, 30, 31, 32
16 N	1 E	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36
16 N	1 W	13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36
15 N	1 E	1, 2, 3, 4, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33
15 N	1 W	5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24
15 N	2 E	5, 6, 7, 8, 17, 19, 20
14 N	1 E	3, 4, 12, 11, 10, 9, 13, 14, 15, 16, 21, 22, 23, 24
14 N	2 E	8, 17, 18, 19, 20

### 3.2 MS4 ADMINISTRATION

While the MS4 program oversight will be provided by the Clean Water Department as noted in Section 1.1, other departments, staff members, and partners will be responsible for the implementation of individual minimum control measures (MCMs) and tasks. Responsible parties are included in the MCM tables in the following sections.

### 3.3 MCM PROGRAM DESCRIPTIONS

#### **REQUIREMENT MS4GP 4.2(a):**

The SWQMP must at a minimum include:

- (3) Program goals that are established and required by this permit and others identified by the MS4 entity to address local stormwater resource issues within their jurisdiction.
- (4) A detailed program description for each minimum control measure (MCM)...
  - (A) A timetable for SWQMP implementation for each MCM and the WQCR
  - (B) A summary of measurable goals for each MCM and a discussion of environmental impact
  - (C) Individuals that are responsible for implementing each MCM including their contact information

#### **3.3.1 Programmatic Indicators**

Programmatic indicators are categories of data collected throughout the annual period by the MS4 entity which are used to measure implementation of each of the MCMs. These indicators pertain to specific environmental gauges that focus on the impacts of stormwater runoff. IDEM utilizes the indicators to determine the degree of success achieved by the stormwater management programs. IDEM requires an annual update for each indicator and if an indicator is not applicable to the MS4 operator, then the operator shall provide rationale for the non-applicability.

Each of the programmatic indicators have been addressed by BMPs within the MS4 entity. For reference, programmatic indicators are listed in **Appendix 3**.

#### **3.3.2 Public Education, Outreach, Participation and Involvement**

An MS4 must develop strategies to inform constituents and target groups of the impacts that polluted stormwater runoff can have on water quality and ways they can minimize their impact on stormwater quality.

Hendricks County Soil and Water Conservation District (SWCD) and the Hendricks County Recycling District continues to provide public information and outreach services while also playing a major role in the public involvement and participation activities related to the household hazardous waste and recycling efforts.

**Table 7** provides a summary of the Public Education, Outreach, Participation and Involvement BMPs to be implemented and identifies the associated measurable goals, timeline, priority areas, and responsible parties.



**Table 7: Public Education, Outreach, Participation and Involvement BMPs**

Best Management Practice (BMP)	BMP Description	Measurable Goals, Tracking and Programmatic Indicators	Timeline	Responsible Party
<b>Public Education and Involvement Plan</b>  (4.3(a)(1))	<ul style="list-style-type: none"> <li>Identify target constituents</li> <li>Develop a stormwater public education and involvement plan</li> <li>Develop list of three community wide stormwater issues to assist with education and involvement efforts for construction, residential and commercial/industrial groups</li> <li>Develop or collaborate with existing efforts to conduct two public events annually</li> <li>Develop educational materials</li> <li>Develop or collaborate with existing efforts to conduct annual training for builders, developers, contractors, and engineers</li> </ul>	<ul style="list-style-type: none"> <li>Plan developed with partner agency and department input by January 2023</li> <li>Reviewed annually and revised as needed</li> <li>Events and activities will be decided in conjunction with development and annual review of the education and involvement plan</li> <li>Maintain a list of topics covered and constituents reached for each event</li> </ul>	<ul style="list-style-type: none"> <li>2023</li> <li>2024</li> <li>2025</li> <li>2026</li> </ul>	<ul style="list-style-type: none"> <li>Hendricks County Clean Water staff</li> </ul>
<b>Stormwater Educational Materials</b>  (4.3(a)(4)) (4.3(b))	<ul style="list-style-type: none"> <li>Collaborate to develop, produce, or distribute printed materials related to stormwater issues</li> <li>Include information related to proper disposal of wastes</li> <li>Assist with larger efforts such as those similar to MS4 video production, workshops, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Materials and opportunities will be discussed during the development and annual review of the education and involvement plan</li> <li>Work in cooperation with partners to broaden exposure and present a unified message</li> <li>Maintain a list of materials developed, distributed, and utilized</li> </ul>	<ul style="list-style-type: none"> <li>2023</li> <li>2024</li> <li>2025</li> <li>2026</li> </ul>	<ul style="list-style-type: none"> <li>Hendricks County Clean Water staff</li> </ul>
<b>Web Page</b>  (4.3(c))	<ul style="list-style-type: none"> <li>Maintain the Hendricks County Stormwater web page regarding stormwater issues, and links to other sites</li> <li>Include articles developed, brochures, and calendar updates</li> <li>Include ordinances, applicable fees, and MS4 program information</li> <li>Provide relevant stormwater updates and postings on Hendricks County social media</li> </ul>	<ul style="list-style-type: none"> <li>Review web page and update with new information annually</li> <li>Document all questions and comments received via the web page as well as the responses to them</li> <li>Utilize education and involvement plan to identify messages, issues, and partners</li> <li>Develop and share social media posts and document posts relevant to stormwater issues</li> </ul>	<ul style="list-style-type: none"> <li>2023</li> <li>2024</li> <li>2025</li> <li>2026</li> </ul>	<ul style="list-style-type: none"> <li>Hendricks County Clean Water staff</li> </ul>

Best Management Practice (BMP)	BMP Description	Measurable Goals, Tracking and Programmatic Indicators	Timeline	Responsible Party
<b>Elected Official Update</b> (4.3(e))	<ul style="list-style-type: none"> <li>Report stormwater program updates to elected officials or an advisory board</li> </ul>	<ul style="list-style-type: none"> <li>Updates will be provided to elected officials or an advisory board</li> <li>Maintain a list of attendees and materials distributed</li> </ul>	<ul style="list-style-type: none"> <li>2023</li> <li>2024</li> <li>2025</li> <li>2026</li> </ul>	<ul style="list-style-type: none"> <li>Hendricks County Clean Water staff</li> </ul>
<b>Household Hazardous Waste (HHW) and Recycling Activities</b> (4.4(b)(4))	<ul style="list-style-type: none"> <li>Encourage residents and staff to use existing HHW drop off for proper disposal</li> <li>Educate Hendricks County residents about illicit discharges and proper disposal of waste</li> <li>Encourage Hendricks County residents to participate in contractor curb-side recycling program</li> <li>Utilize existing SWMD activities to educate community members on the importance of pollution prevention and recycling programs</li> </ul>	<ul style="list-style-type: none"> <li>Promote the HHW facilities operated by the SWMD</li> <li>Promote contractor recycling program</li> <li>Document the amount of material collected at the HHW Facility</li> <li>Document dates, times, and attendance at all presentations to citizen and school groups that incorporate stormwater quality discussions</li> <li>Document the number of stormwater materials distributed on an annual basis</li> </ul>	<ul style="list-style-type: none"> <li>On-going</li> </ul>	<ul style="list-style-type: none"> <li>Hendricks County Clean Water staff</li> </ul>
<b>Public Reporting Program</b> (4.4(b)(6))	<ul style="list-style-type: none"> <li>Utilize program to field complaints from the public on illegal dumping, illicit discharges, poor erosion control practices, and other activities that negatively impact stormwater quality</li> </ul>	<ul style="list-style-type: none"> <li>Implement the pollution hotline program</li> <li>Include educational material developed</li> <li>Respond to complaints</li> <li>Document the number of complaints received and all follow up actions taken on reports</li> </ul>	<ul style="list-style-type: none"> <li>On-going</li> </ul>	<ul style="list-style-type: none"> <li>Hendricks County Clean Water staff</li> </ul>

Best Management Practice (BMP)	BMP Description	Measurable Goals, Tracking and Programmatic Indicators	Timeline	Responsible Party
<b>Annual Report</b>  (4.3(g)) (4.3(h))	<ul style="list-style-type: none"> <li>Assess the program annually</li> <li>Report progress in an annual report to IDEM</li> </ul>	<ul style="list-style-type: none"> <li>Assess program in conjunction with gathering data and compilation of the annual report</li> <li>Include:               <ul style="list-style-type: none"> <li>List of each public participation and outreach event and activity conduction, a description of the activity, an estimate of the number of attendees, and an assessment if the goals and objectives were met</li> <li>The number and types of construction and/or post-construction stormwater training opportunities what were provided to contractors, developers and builders, property owners (commercial, industrial, residential, homeowner associations, and other targeted entities during the reporting period</li> <li>Documentation that presentations were made to elected officials or boards</li> <li>Describe each targeted audience selected and how they were reached during the reporting period and describe behavioral changes observed</li> <li>A list of all public education materials used during the reporting period</li> </ul> </li> <li>Submit annual report</li> </ul>	<ul style="list-style-type: none"> <li>2023</li> <li>2024</li> <li>2025</li> <li>2026</li> </ul>	<ul style="list-style-type: none"> <li>Hendricks County Clean Water staff</li> </ul>



### 3.3.3 Illicit Discharge Detection and Elimination

An MS4 must develop a program which uses education and both structural and non-structural BMPs to detect, address, and eliminate illicit discharges into the MS4 conveyance system. Problem areas must be located via dry weather screening or other means, the source must be determined, illicit connections must be removed or otherwise corrected, and the actions taken must be documented. Through an ordinance or other regulatory mechanism, illicit discharges must be prohibited from entering the MS4 conveyances and appropriate enforcement procedures and actions are required.

The Illicit Discharge Detection and Elimination (IDDE) BMPs outlined in **Table 8** will be implemented by the MS4 staff in order to comply with the minimum requirements of the MCM. The programs are designed to gain a thorough awareness of their separate storm conveyance system and thereby allowing the identification and elimination of illicit discharges entering the system. The program also establishes the legal, technical, and educational means needed to eliminate illicit discharges.



**Table 8: IDDE BMPs**

Best Management Practice (BMP)	BMP Description	Measurable Goals, Tracking and Programmatic Indicators	Timeline	Responsible Party
<b>IDDE Ordinance</b> (4.4(a))	<ul style="list-style-type: none"> <li>Review IDDE language contained in the Ordinance documents for needed updates and to ensure compliance with the MS4GP</li> </ul>	<ul style="list-style-type: none"> <li>Enforce Ordinance</li> <li>Review policies at least once per permit term</li> </ul>	<ul style="list-style-type: none"> <li>2023 (review/update)</li> <li>Implementation throughout permit term</li> </ul>	<ul style="list-style-type: none"> <li>Hendricks County Clean Water staff</li> </ul>
<b>IDDE Plan</b> (4.4(b)) (4.4(h))	<ul style="list-style-type: none"> <li>Review the IDDE Plan and update as necessary to reflect the proposed actions for illicit discharge detection and elimination in the current permit term</li> <li>Implement the IDDE plan to detect, address, and eliminate illicit discharges into the MS4 conveyance system</li> <li>Include SOPs to locate problem areas and to ensure consistent investigations for all illicit discharges</li> <li>Investigate transient illicit discharges that have been reported to the MS4 Coordinator for additional follow-up</li> <li>Utilize the Desktop Assessment of Illicit Discharge Potential (Table 9 in WQCR) to better prioritize areas for IDDE screening activities</li> </ul>	<ul style="list-style-type: none"> <li>Review and revise IDDE Plan in first year of permit term</li> <li>Conduct dry weather screening until 100% screened by end of permit term</li> <li>Conduct screening of all non-stormwater discharges until discharge is eliminated or determined to be uncontaminated</li> </ul>	<ul style="list-style-type: none"> <li>2023 (review/update)</li> <li>Implementation throughout permit term</li> </ul>	<ul style="list-style-type: none"> <li>Hendricks County Clean Water staff</li> </ul>
<b>Stormwater System Mapping</b> (4.4(d)) (4.4(e)) (4.4(f))	<ul style="list-style-type: none"> <li>Identify priority areas based on land use, prior history, and frequency of discharges</li> <li>Enhance existing maps with information collected during dry-weather screening events, maintenance activities, etc.</li> <li>Add new outfalls and conveyance systems to the map for the appropriate jurisdiction per ordinance as-built requirements or new developments</li> </ul>	<ul style="list-style-type: none"> <li>Review and update map annually</li> <li>Identify priority areas within first year of permit term</li> </ul>	<ul style="list-style-type: none"> <li>2023 (identify priority areas)</li> <li>Review/update annually</li> </ul>	<ul style="list-style-type: none"> <li>Hendricks County Clean Water staff</li> </ul>
<b>IDDE Staff Training</b> (4.4(g))	<ul style="list-style-type: none"> <li>Train appropriate staff members on investigation of illicit discharges or illicit connections to the stormwater conveyance system</li> </ul>	<ul style="list-style-type: none"> <li>Conduct annual refresher training to appropriate departments and staff</li> <li>Document number of staff, number of events held, and the topics covered in each session</li> </ul>	<ul style="list-style-type: none"> <li>2023</li> <li>Annually</li> </ul>	<ul style="list-style-type: none"> <li>Hendricks County Clean Water staff</li> </ul>

Best Management Practice (BMP)	BMP Description	Measurable Goals, Tracking and Programmatic Indicators	Timeline	Responsible Party
<b>Annual Report</b>  (4.4(i)) (4.4(k))	<ul style="list-style-type: none"> <li>Assess the program annually</li> <li>Report progress in an annual report to IDEM</li> </ul>	<ul style="list-style-type: none"> <li>Assess program in conjunction with gathering data and compilation of the annual report</li> <li>Include:               <ul style="list-style-type: none"> <li>IDDE program updates</li> <li>A summary of any storm sewer system mapping changes to the stormwater outfall and conveyance maps</li> <li>Number of new MS4 outfalls mapped</li> <li>Number and location of dry weather outfalls screened for illicit discharges</li> <li>Number and location of illicit discharges detected</li> <li>Number and location of illicit discharges eliminated</li> <li>Number of illicit discharges and/or spills reported to the MS4 entity</li> <li>Number of enforcement actions taken by the MS4 entity</li> </ul> </li> <li>Submit annual report</li> </ul>	<ul style="list-style-type: none"> <li>2023</li> <li>2024</li> <li>2025</li> <li>2026</li> </ul>	<ul style="list-style-type: none"> <li>Hendricks County Clean Water staff</li> </ul>



### 3.3.4 Construction Site Stormwater Run-Off

The MS4GP requires the MS4 operator to develop and administer an erosion and sediment control program which includes strategies to manage the overall program components, monitor compliance of program requirements, and if necessary, enforce any violations. Requirements also include the development of an ordinance or other regulatory mechanism and establishment of a construction program that controls polluted runoff from construction activities that disturb one or more acres of land in the MS4 area. This construction program must include a permitting process, erosion control plan review process, site inspections, and enforcement. The permitting process must include a requirement for the construction project site owner to submit a copy of the permit application directly to IDEM. MS4 entities must provide an opportunity for local SWCD to provide comments and recommendations to the MS4 operator on individual projects.

The construction program must include requirements for the implementation of appropriate BMPs on construction sites to control sediment, erosion, and other waste. MS4 entities must review and approve construction plans submitted by the construction site operator before construction activity commences. Procedures must be developed for site inspection and enforcement to ensure BMPs are properly installed. The procedures must include a means to identify priority sites for inspection and enforcement, as well as a means to receive and consider public inquiries, concerns, and information submitted regarding local construction activities. A tracking process must be implemented in which submitted public information is documented and then given to the appropriate staff for follow-up. Further MS4 personnel responsible for plan review, inspection, and enforcement of construction activities shall receive annual training.

**Table 9** in the next section provides a detailed description of the Construction and Post-Construction Site Stormwater Runoff Control BMPs to be implemented and identifies the measurable goals, progress indicators, timelines, priority areas, and responsible parties. Information such as which structural BMPs are allowed within new or redevelopment, BMP selection criteria, and the associated performance standards may be found in the Stormwater Ordinance and Technical Standards for Hendricks County. These BMPs have been combined with the Post-Construction Site Stormwater Runoff Control BMPs (MCM #5) for ease of presentation and discussion.

### 3.3.5 Post-Construction Site Stormwater Run-Off

The MS4GP requires the development of an ordinance or other regulatory mechanism and establishment of a post-construction program that addresses runoff from new development and redevelopment areas that disturb one or more acres of land in the MS4 area. This program must include a permitting process, plan review process, site inspections, and enforcement. MS4 area personnel responsible for plan review, inspection, and enforcement of post-construction BMPs shall receive annual training.

Where appropriate, MS4 entities must use a combination of storage, infiltration, filtering, or vegetative practices to reduce the impact of pollutants in stormwater runoff on receiving waters in areas that are the responsibility of the MS4 entity. A written Operational and Maintenance (O&M) Plan must be developed and implemented for all existing stormwater structural BMPs, which are under the control of the MS4 entity. As new post-construction BMPs are added to areas under the control of the MS4 entity, the O&M Plan must be updated accordingly.

Compliance with this MCM requires MS4s to develop a program for managing Post-Construction Stormwater Runoff Control BMPs that will ensure adequate, long-term stormwater quality benefits in new development and redevelopment activities. Once construction is complete, post-construction

practices specified by the MS4 must be implemented to ensure adequate stormwater quality is maintained from the developed site. Table 9 provides a summary of the Construction and Post-Construction Site Stormwater Runoff Control BMPs to be implemented and identifies the associated measurable goals, programmatic indicators, timeline, priority areas and responsible parties. These BMPs have been combined with the Construction Site Stormwater Runoff Control BMPs (MCM #4) for ease of presentation and discussion.

**Table 9: Construction and Post-Construction BMPs**

Best Management Practice (BMP)	BMP Description	Measurable Goals, Tracking and Programmatic Indicators	Timeline	Responsible Party
<b>Stormwater Management Ordinance</b>  (4.5(b)) (4.5(f)) (4.6(b)) (4.6(c))	<ul style="list-style-type: none"> <li>Review and revise the active construction and post-construction site ordinance language and stormwater technical standards to ensure compliance with the MS4GP and the CSGP</li> </ul>	<ul style="list-style-type: none"> <li>Continue to update and enforce the Stormwater Management Ordinance</li> <li>Review and approve proposed new and redevelopment projects for compliance with the Stormwater Technical Standards</li> <li>Incorporate post-construction performance standards into the ordinance and/or technical standards</li> <li>Review at least once per permit term</li> </ul>	<ul style="list-style-type: none"> <li>2023 (review/update)</li> <li>Implementation throughout permit term</li> </ul>	<ul style="list-style-type: none"> <li>Hendricks County Clean Water staff</li> </ul>
<b>Plan Review and Permitting Procedures</b>  (4.5(c))	<ul style="list-style-type: none"> <li>Establish or review plan review and permitting procedures, internal processes, and timetables</li> <li>Require pre-construction meetings on all new and re-development projects</li> </ul>	<ul style="list-style-type: none"> <li>Establish or review written procedures for plan review</li> <li>Develop or review forms, checklists</li> <li>Review and approve proposed new and redevelopment projects</li> <li>Review 100% of construction plans and inspect prioritized sites for compliance</li> </ul>	<ul style="list-style-type: none"> <li>2023 (review/update)</li> <li>Implementation throughout permit term</li> </ul>	<ul style="list-style-type: none"> <li>Hendricks County Clean Water staff</li> </ul>
<b>Inspection Procedures</b>  (4.5(d)) (4.6(e)) (4.6(f))	<ul style="list-style-type: none"> <li>Establish or review procedures and processes to inspect sites to ensure measures are installed and maintained</li> <li>Inspect 100% of all permitted construction sites with greater than one acre of disturbance</li> <li>Re-inspect and follow-up on prioritized sites having identified problem areas and/or concerns</li> <li>Complete active construction site and post-construction BMP inspection forms</li> </ul>	<ul style="list-style-type: none"> <li>Establish or review written procedures for inspections</li> <li>Develop or review forms, checklists</li> <li>Identify priority sites for inspections</li> <li>Conduct inspections in accordance with procedures</li> <li>Complete forms for active construction sites and post-construction BMPs inspected</li> </ul>	<ul style="list-style-type: none"> <li>2023 (review/update)</li> <li>Implementation throughout permit term</li> </ul>	<ul style="list-style-type: none"> <li>Hendricks County Clean Water staff</li> </ul>
<b>Enforcement Procedures</b>  (4.5(e))	<ul style="list-style-type: none"> <li>Establish or review procedures and policies to enforce local ordinance or regulatory mechanism</li> </ul>	<ul style="list-style-type: none"> <li>Establish or review written procedures to address violations, including compliance and escalating enforcement</li> </ul>	<ul style="list-style-type: none"> <li>2023 (review/update)</li> <li>Implementation throughout permit term</li> </ul>	<ul style="list-style-type: none"> <li>Hendricks County Clean Water staff</li> </ul>
<b>Public Reporting Program</b>  (4.5(g))	<ul style="list-style-type: none"> <li>Utilize program to field complaints from the public on illegal dumping, illicit discharges, poor erosion control practices, and other activities that negatively impact stormwater quality</li> </ul>	<ul style="list-style-type: none"> <li>Implement the pollution hotline program</li> <li>Respond to complaints and inquiries</li> <li>Document the number of complaints received and all follow up actions taken on reports</li> </ul>	<ul style="list-style-type: none"> <li>On-going</li> </ul>	<ul style="list-style-type: none"> <li>Hendricks County Clean Water staff</li> </ul>

Best Management Practice (BMP)	BMP Description	Measurable Goals, Tracking and Programmatic Indicators	Timeline	Responsible Party
<b>Staff Training</b>  (4.5(j)) (4.6(i))	<ul style="list-style-type: none"> <li>• Train appropriate staff members on plan review, inspection, compliance, and enforcement</li> </ul>	<ul style="list-style-type: none"> <li>• Conduct annual refresher training to appropriate departments and staff</li> <li>• Provide relevant training to all staff involved in plan review, site inspection, and enforcement requirements for construction and post-construction MCMs</li> <li>• Document number of staff, number of events held, and the topics covered in each session</li> </ul>	<ul style="list-style-type: none"> <li>• Annually</li> </ul>	<ul style="list-style-type: none"> <li>• Hendricks County Clean Water staff</li> </ul>
<b>Active Site Inventory</b>  (4.5(l))	<ul style="list-style-type: none"> <li>• Maintain an inventory of all projects subject to the CSGP, the MS4GP, and owned or operated by the MS4</li> <li>• Track the status of construction projects, erosion and sediment control activities, and post-construction BMPs</li> <li>• Track violations, complaints, and public information requests</li> <li>• Digitize publicly owned structural BMPs</li> <li>• Require BMP owners to submit annual report of BMP maintenance</li> </ul>	<ul style="list-style-type: none"> <li>• Establish or revise tracking procedures</li> <li>• Track active construction and post-construction project sites</li> <li>• Develop and distribute mailer requesting annual maintenance report</li> </ul>	<ul style="list-style-type: none"> <li>• 2023 (review/update)</li> <li>• On-going</li> </ul>	<ul style="list-style-type: none"> <li>• Hendricks County Clean Water staff</li> </ul>
<b>Operation &amp; Maintenance (O&amp;M) Manuals</b>  (4.6(d))	<ul style="list-style-type: none"> <li>• Require O&amp;M manuals to be submitted for all post-construction BMPs identified as part of a project submittal package</li> </ul>	<ul style="list-style-type: none"> <li>• Enforce ordinance requirements for O&amp;M plan submittal and plan contents for new BMPs</li> </ul>	<ul style="list-style-type: none"> <li>• As plans are submitted</li> </ul>	<ul style="list-style-type: none"> <li>• Hendricks County Clean Water staff</li> </ul>
<b>CSGP Compliance</b>  (4.5(k))	<ul style="list-style-type: none"> <li>• Ensure MS4 owned/operated projects are compliant with the CSGP</li> </ul>	<ul style="list-style-type: none"> <li>• Submit plans to SWCD</li> <li>• Comply with MS4 Stormwater Ordinance</li> <li>• Develop SOP which includes self-monitoring of projects</li> </ul>	<ul style="list-style-type: none"> <li>• On-going</li> </ul>	<ul style="list-style-type: none"> <li>• Hendricks County Clean Water staff</li> </ul>

Best Management Practice (BMP)	BMP Description	Measurable Goals, Tracking and Programmatic Indicators	Timeline	Responsible Party
<b>Annual Report</b>  (4.5(i)) (4.5(m)) (4.6(h)) (4.6(j))	<ul style="list-style-type: none"> <li>Assess the program annually</li> <li>Report progress in an annual report to IDEM</li> </ul>	<ul style="list-style-type: none"> <li>Assess program in conjunction with gathering data and compilation of the annual report</li> <li>Include:               <ul style="list-style-type: none"> <li>The number of construction projects owned and/or operated by the MS4 entity that are active at the time of submittal</li> <li>The number of construction sites obtaining a MS4 entity-issued stormwater run-off permit or authorization to discharge</li> <li>The number of construction sites inspection</li> <li>The number and type of enforcement actions taken</li> <li>The number of public information requests and/or complaints received</li> <li>Updates to the post-construction ordinance or regulatory mechanism</li> <li>Number of sites requiring post-construction controls</li> <li>Number, type, and location of structural measures installed</li> <li>Number, type, and location of structural measures modified to function properly to improve water quality benefits</li> <li>Number, type, and location of structural measures inspection to ensure each meets design requirements and/or are being maintained</li> </ul> </li> <li>Submit annual report</li> </ul>	<ul style="list-style-type: none"> <li>2023</li> <li>2024</li> <li>2025</li> <li>2026</li> </ul>	<ul style="list-style-type: none"> <li>Hendricks County Clean Water staff</li> </ul>



### 3.3.6 Municipal Operations Pollution Prevention and Good Housekeeping

The MS4GP requires the development and implementation of a program to prevent or reduce polluted runoff from municipal operations within the MS4 area. The program must include written documentation of maintenance activities, maintenance schedules, and long-term inspection procedures for BMPs to reduce floatables and other pollutants discharged from the separate storm sewers.

Controls must be implemented for reducing or eliminating the discharge of pollutants from operational areas, including roads, parking lots, maintenance and storage yards, and waste transfer stations. Written procedures must be developed and implemented for the proper disposal of waste or materials removed from separate storm sewer systems and operational areas. New flood management projects must be assessed via written documentation for their impacts on water quality and existing flood management projects must be examined for incorporation of additional water quality protection devices or practices. MS4 entity employees must be properly trained on various topics such as herbicide and insecticide application and the function of BMPs. Such training must be documented in writing.

**Table 10** provides a summary of the Pollution Prevention and Good Housekeeping BMPs to be implemented and identifies the associated measurable goals, programmatic indicators, environmental benefits, timeline, priority areas and responsible parties associated with each BMP. A detailed description of each BMP is provided below.





**Table 10: Pollution Prevention and Good Housekeeping BMPs**

Best Management Practice (BMP)	BMP Description	Measurable Goals, Tracking and Programmatic Indicators	Timeline	Responsible Party
<b>Stormwater Pollution Prevention Plans (SWPPPs)</b>  (4.7(b-f))	<ul style="list-style-type: none"> <li>Evaluate listing of properties, lots, storage facilities, etc. owned or operated by the MS4</li> <li>Develop additional SWPPPs or SOPs if necessary</li> <li>Include facility inspection sheets, employee training form, spill documentation</li> <li>This general BMP covers specific BMPs such as:               <ul style="list-style-type: none"> <li>Secondary containment</li> <li>Salt/sand management</li> <li>Snow disposal areas</li> <li>Spill prevention and clean up</li> <li>Fertilizer and pesticide management</li> <li>Waste disposal</li> <li>Wash water management</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Utilize SWPPP and sheets to track inspections, training, etc. for each facility</li> <li>Conduct and document quarterly facility inspections and assessments</li> </ul>	<ul style="list-style-type: none"> <li>Annually (review and revise)</li> <li>Quarterly (inspections)</li> </ul>	<ul style="list-style-type: none"> <li>Hendricks County Clean Water staff</li> </ul>
<b>Facility Inspections</b>  4.7(c) 4.7(f)	<ul style="list-style-type: none"> <li>Assess existing operations at each MS4 owned and/or operated facility</li> <li>Conduct quarterly inspections at each facility and update records in SWPPP</li> </ul>	<ul style="list-style-type: none"> <li>Conduct and document quarterly facility inspections and assessments, at least one of which is conducted by the MS4 coordinator or a designated individual</li> </ul>	<ul style="list-style-type: none"> <li>Quarterly</li> </ul>	<ul style="list-style-type: none"> <li>Hendricks County Clean Water staff</li> </ul>
<b>Stormwater Infrastructure Maintenance</b>  (4.7(g))	<ul style="list-style-type: none"> <li>Develop a written O&amp;M plan for MS4 owned and/or operated stormwater infrastructure</li> <li>Perform a surface visual inspection of all catch basins, outfalls, and conveyance systems</li> <li>Maintain the MS4 conveyance and associated structures included outfalls, open channels, and ditches</li> </ul>	<ul style="list-style-type: none"> <li>Implement a storm sewer system maintenance schedule and track activities to document the amount of pollution that has been kept out of local receiving waters as a result of the stormwater program</li> <li>Complete surface visual inspections of the entire system within the permit cycle with a minimum of 15% completed annually</li> <li>Document the amount of litter picked up as a result of periodic litter pickup events</li> <li>Document the amount of materials removed from the storm sewer system and disposal methods</li> <li>Document all improvements made to roadside shoulders and ditches</li> <li>Document all improvements made to stormwater outfalls</li> <li>Document all issues noted during visual inspection</li> </ul>	<ul style="list-style-type: none"> <li>2023 (review/update)</li> <li>Implementation throughout permit term</li> </ul>	<ul style="list-style-type: none"> <li>Hendricks County Clean Water staff</li> </ul>

Best Management Practice (BMP)	BMP Description	Measurable Goals, Tracking and Programmatic Indicators	Timeline	Responsible Party
<b>Third Party Compliance</b> (4.7(j))	<ul style="list-style-type: none"> <li>Establish or review procedures to ensure contractors or third-party entities hired by the MS4 entity are required to comply with stormwater good housekeeping</li> </ul>	<ul style="list-style-type: none"> <li>Establish or review written procedures for compliance and enforcement</li> <li>Document actions taken</li> </ul>	<ul style="list-style-type: none"> <li>As needed</li> </ul>	<ul style="list-style-type: none"> <li>Hendricks County Clean Water staff</li> </ul>
<b>Flood Management Projects</b> (4.7(k)) (4.7(l))	<ul style="list-style-type: none"> <li>Assess flood management projects for incorporation of water quality devices or practices</li> </ul>	<ul style="list-style-type: none"> <li>Document that flood control projects are assessed for incorporation of additional water quality devices or practices</li> </ul>	<ul style="list-style-type: none"> <li>As projects proposed</li> </ul>	<ul style="list-style-type: none"> <li>Hendricks County Clean Water staff</li> </ul>
<b>Staff Training</b> (4.7(m))	<ul style="list-style-type: none"> <li>Train appropriate staff members on new technology, operations, fueling spill prevention and clean-up, other responsibilities that arise during the year, site specific stormwater run-off issues, and permit requirements</li> </ul>	<ul style="list-style-type: none"> <li>Conduct annual refresher training to appropriate departments and staff</li> <li>Train all new full-time employees within 60 days of date of employment</li> <li>Train all new seasonal employees within 30 days of date of employment</li> <li>Document number of staff, number of events held, and the topics covered in each session</li> </ul>	<ul style="list-style-type: none"> <li>Annually</li> </ul>	<ul style="list-style-type: none"> <li>Hendricks County Clean Water staff</li> </ul>
<b>Annual Report</b> (4.7(i)) (4.7(n))	<ul style="list-style-type: none"> <li>Assess the program annually</li> <li>Report progress in an annual report to IDEM</li> </ul>	<ul style="list-style-type: none"> <li>Assess program in conjunction with gathering data and compilation of the annual report</li> <li>Include: <ul style="list-style-type: none"> <li>Number and location of stormwater outfalls and conveyance systems that have been repaired</li> <li>Estimated amount of material collected from stormwater drainage system cleaning including the disposal methods utilized</li> <li>Estimated amount of materials collected from street sweeping, if applicable, including the disposal method utilized</li> <li>Number and location of de-icing salt and sand storage areas and methods used to minimize stormwater exposure</li> </ul> </li> <li>Submit annual report</li> </ul>	<ul style="list-style-type: none"> <li>2023</li> <li>2024</li> <li>2025</li> <li>2026</li> </ul>	<ul style="list-style-type: none"> <li>Hendricks County Clean Water staff</li> </ul>

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## **APPENDIX 1: Receiving Waters**





Abner Creek	March Creek
Army Branch	Marihen Creek
Avon Creek	Mario Creek
Beaman Ditch	Martin Dugan Ditch
Black Creek	McCracken Creek
Bluff Creek	Moore Creek
Bridge Creek	National Creek
Camby Creek	North Creek
Center Creek	Penns Run
Clarks Creek	Pump Run
Clermont Creek	Quinn Ditch
Comb Run Ditch	Rail Run
Cosner Branch	Ramp Run
Cox Ditch	Reel Creek
Crest Branch	Ross Ditch
Dead Run	Salem Creek
DeLong Creek	Sawmill Run
Eads Ditch	School Branch
Eagle Crest Creek	Shiloh Creek
East Fork Mill Creek	Sinker Creek
East Fork White Lick Creek	Tansel Branch
Etter Ditch	Thompson Creek
Fair Creek	West Fork White Lick Creek
Fishback Creek	Westwood Branch
Flynn Creek	White Lick Creek
Friends Creek	Wiley Thompson Ditch
Guilford Branch	Wood Branch
Hendricks Creek	Beck Lake
Hogan Ditch	Danville Conservation Club Lake
Hook Creek	Donahue Lake
Hughes Branch	Forest Lake
Keeney Ditch	Indianhead Lake
Klondike Creek	Jeto Lake
Lake Forest Creek	Ledgewood Lake
Leg Creek	Manor Lake
Lilly Creek	Penn Lake
Lincoln Creek	Pins Way Lake
Log Run	Pins Way Lake
Luck Creek	Stout Lake





## **APPENDIX 2: 303(d) Impaired Waters**



Segment ID	Waterbody Name	Impairment
INW01D8_T1006, INW01D8_T1007	Avon Creek	<i>E. coli</i> , Recreational Use
INW01D4_T1002	Barnette Ditch	<i>E. coli</i> , Recreational Use
INW01D2_T1003	Beaman Ditch	<i>E. coli</i> , Recreational Use
INW01D8_T1004	Bullard Creek	<i>E. coli</i> , Impaired Biotic Communities, Recreational Use, Aquatic Life
INW01D6_T1004, INW01D6_T1005 INW01D6_T1003	Clarks Creek	<i>E. coli</i> , Recreational Use
INW01D5_T1001	Cosner Branch	<i>E. coli</i> , Recreational Use
INW01D8_T1001	Cox Ditch	<i>E. coli</i> , Recreational Use
INW01D4_T1003	Eads Ditch	<i>E. coli</i> , Recreational Use
INW01D2_T1001	Etter Ditch	<i>E. coli</i> , Recreational Use
INW01B6_03	Fishback Creek	<i>E. coli</i> , Recreational Use
INW01D9_T1005	Flynn Creek	<i>E. coli</i> , Recreational Use
INW01D9_T1006	Friends Creek	<i>E. coli</i> , Recreational Use
INW01D9_T1007	Hendricks Creek	<i>E. coli</i> , Recreational Use
INW01D3_T1009A, INW01D3_T1009	Jeto Lake Inlet	<i>E. coli</i> , Recreational Use
INW01BA_T1009	Lincoln Creek	<i>E. coli</i> , PCBs in Fish Tissue, Recreational Use, Fish Consumption
INW01D7_05, INW01D7_T1008	McCracken Creek	<i>E. coli</i> , Recreational Use
INW0351_03, INW0351_T1002	Mill Creek, East Fork	<i>E. coli</i> , Recreational Use
INW01D5_T1006A, INW01D5_T1006B INW01D5_T1006	Prock Lake Inlet	Nutrient, Dissolved Oxygen, Aquatic Life
INW0312_02, INW0312_03	Ross Ditch	<i>E. coli</i> , Recreational Use
INW01D8_T1003	Salem Creek	<i>E. coli</i> , Recreational Use
INW01B8_T1018	School Branch	<i>E. coli</i> , Recreational Use
INW01D4_T1007A, INW01D4_T1007B INW01D4_T1007	Stout Lake Inlet	<i>E. coli</i> , Recreational Use
INW01D4_T1008	West Fork Lick Creek - Unnamed Tributary	<i>E. coli</i> , Recreational Use
INW01D5_08, INW01D4_T1008 INW01D5_04, INW01D5_05 INW01D5_03, INW01D5_07 INW01D5_T1003A, INW01D5_T1005 INW01D5_T1007, INW01D5_T1008 INW01D5_T1009, INW01D5_T1011 INW01D5_T1012	West Fork White Lick Creek	<i>E. coli</i> , Nutrients, Dissolved Oxygen, Aquatic Life, Recreational Use
INW01D2_04, INW01D2_03 INW01D2_02, INW01D2_05 INW01D2_06, INW01D3_02 INW01D3_03, INW01D3_04 INW01D6_02, INW01D6_03 INW01DA_01, INW01D3_T1007 INW01D3_T1008	White Lick Creek	<i>E. coli</i> , Impaired Biotic Communities, Dissolved Oxygen, Recreational Use, Aquatic Life
INW01D8_03, INW01D9_04 INW01D9_05, INW01D9_03 INW01D9_04, INW01D1_02 INW01D1_03, INW01D1_04 INW01D1_05, INW01D4_03 INW01D4_04, INW01D4_05 INW01D4_T1004, INW01D4_T1005 INW01D4_T1006, INW01D2_T1002	White Lick Creek, East Fork	<i>E. coli</i> , Impaired Biotic Communities, Recreational Use, Aquatic Life



## **APPENDIX 3: Programmatic Indicators**



MCM	Programmatic Indicator Permit Citation	Description
Public Education, Outreach, Participation & Involvement MCM	4.3(h)(2)	A list of each public participation and outreach events and activities conducted, a description of the activity, an estimate of the number of attendees, and an assessment if the goals and objectives were met.
	4.3(h)(3)	The number and types of construction and/or post-construction stormwater training opportunities that were provided to contractors, developers and builders, property owners (commercial, industrial, residential, homeowner associations, and other targeted entities during the reporting period.
	4.3(h)(4)	Documentation that presentations were made to elected officials or boards.
	4.3(h)(5)	Describe each targeted audience selected and how they were reached during the reporting period and describe behavioral changes observed.
	4.3(h)(6)	A list of all public education materials used during the reporting period.
Illicit Discharge Detection & Elimination MCM	4.4(k)(2)	IDDE program updates.
	4.4(k)(3)	A summary of any storm sewer system mapping changes to the stormwater outfall and conveyance maps.
	4.4(k)(4)	Number of new MS4 outfalls mapped.
	4.4(k)(5)	Number and location of dry weather outfalls screened for illicit discharges.
	4.4(k)(6)	Number and location of illicit discharges detected.
	4.4(k)(7)	Number and location of illicit discharges eliminated.
	4.4(k)(8)	Number of illicit discharges and/or spills reported to the MS4 entity.
	4.4(k)(9)	Number of enforcement actions taken by the MS4 entity.
Construction Site Stormwater Run-off MCM	4.5(m)(2)	The number of construction projects owned and/or operated by the MS4 entity that are active at the time of submittal.
	4.5(m)(3)	The number of construction sites obtaining a MS4 entity-issued stormwater run-off permit or authorization to discharge.
	4.5(m)(4)	The number of construction sites inspected.
	4.5(m)(5)	The number and type of enforcement actions taken.
	4.5(m)(6)	The number of public information requests and/or complaints received.
Post-Construction Stormwater Run-off MCM	4.6(j)(2)	Updates to the post-construction ordinance or regulatory mechanism.
	4.6(j)(3)	Number of sites requiring post-construction controls.
	4.6(j)(4)	Number, type, and location of structural measures installed.
	4.6(j)(5)	Number, type, and location of structural measures modified to function properly or improve water quality benefits.
	4.6(j)(6)	Number, type, and location of structural measures inspected to ensure each meets design requirements and/or are being maintained.



Municipal Operations Pollution Prevention & Good Housekeeping MCM	4.7(n)(2)	Number and location of stormwater outfalls and conveyance systems that have been repaired.
	4.7(n)(3)	Estimated amount of material collected from stormwater drainage system cleaning including the disposal methods utilized.
	4.7(n)(4)	Estimated amount of material collected from street sweeping, if applicable, including the disposal methods utilized.
	4.7(n)(5)	Number and location of de-icing salt and sand storage areas and methods used to minimize stormwater exposure.

## **APPENDIX 4: Acronyms**



BMP	Best Management Practice
CBBEL	Christopher B. Burke Engineering, LLC
CSGP	Construction Stormwater General Permit
CSO	Combined Sewer Overflow
CWA	Clean Water Act
EI	Erodibility Index
EPA	Environmental Protection Agency
GIS	Geographical Information System
HEL	Highly Erodible Land
HHW	Household Hazardous Waste
HUA	Hydrologic Unit Area
HUC	Hydrologic Unit Code
IAC	Indiana Administrative Code
IBC	Impaired Biotic Communities
IDDE	Illicit Discharge Detection and Elimination
IDEM	Indiana Department of Environmental Management
IDNR	Indiana Department of Natural Resources
IDP	Illicit Discharge Potential
IR	Integrated Water Monitoring and Assessment Report
LARE	Lake and River Enhancement Program
LTCP	Long Term Control Plan
MCM	Minimum Control Measure
MS4	Municipal Separate Storm Sewer System
MS4GP	Municipal Separate Storm Sewer System General Permit
NLCD	National Land Cover Dataset
NOI	Notice of Intent
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resource Conservation Service
NWI	National Wetlands Inventory
O&M	Operation & Maintenance Manual/Plan
OSRW	Outstanding State Resource Waters
PCB	Polychlorinated biphenyls
PHEL	Potentially Highly Erodible Land
PI	Programmatic Indicators
PWS	Public Water Supplies
SDWA	Safe Drinking Water Act
SIC	Standard Identification Classification
SOP	Standard Operating Procedure
SR CER	Stream Reach Characterization and Evaluation Report
SWCD	Soil and Water Conservation District
SWMD	Solid Waste Management District
SWPPP	Stormwater Pollution Prevention Plan
SWQMP	Stormwater Quality Management Plan
TMDL	Total Maximum Daily Load
USGS	United States Geological Survey
WHPA	Wellhead Protection Area
WMP	Watershed Management Plan
WQCR	Water Quality Characterization Report
WQS	Water Quality Standards
WWTP	Wastewater Treatment Plant



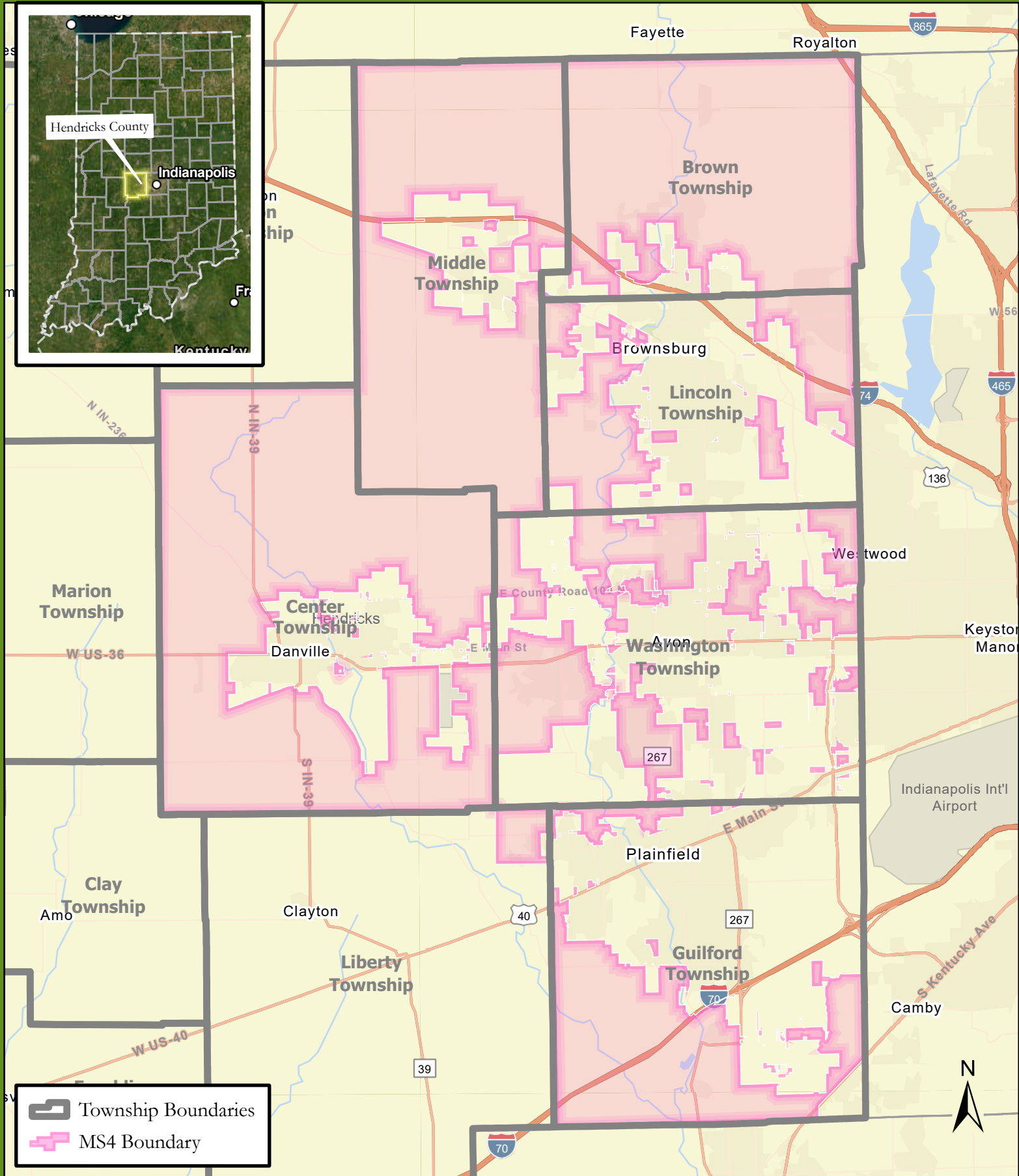


## **APPENDIX 5: Exhibits**









**Christopher B. Burke Engineering LLC**  
PNC Center, Suite 1368 South  
115 West Washington Street  
Indianapolis, Indiana 46204  
(t) 317.266.8000 [www.cbbel-in.com](http://www.cbbel-in.com)

**PROJECT:** MS4 Stormwater Quality Management Plan  
Hendricks County, Indiana

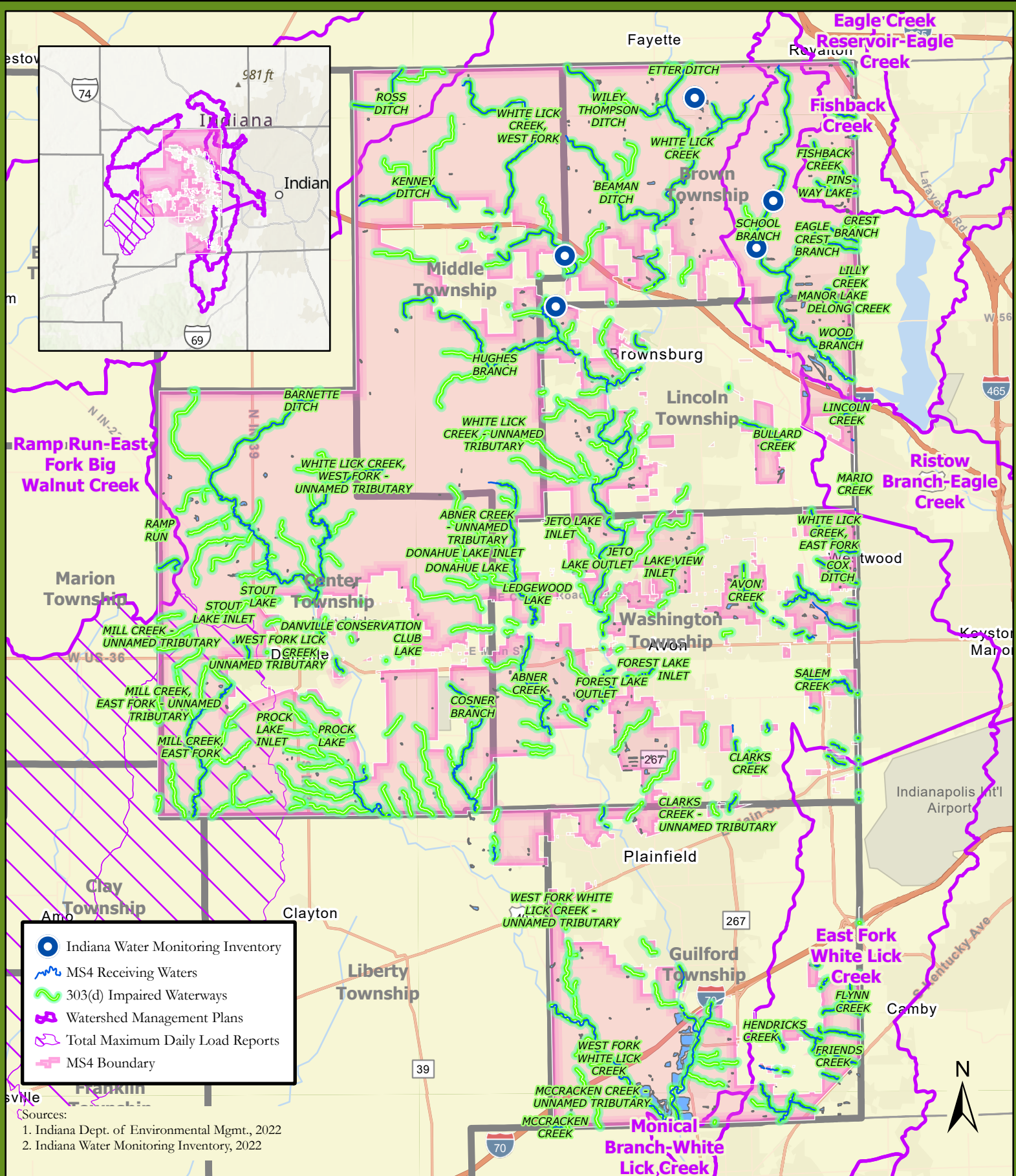
**PROJECT NO.**  
00-0346

**APPROX SCALE:**  
1" = 12,500'

**TITLE:** MS4 Boundary

**DATE:**  
08/2022

**EXHIBIT:**  
1



**Christopher B. Burke Engineering LLC**  
PNC Center, Suite 1368 South  
115 West Washington Street  
Indianapolis, Indiana 46204  
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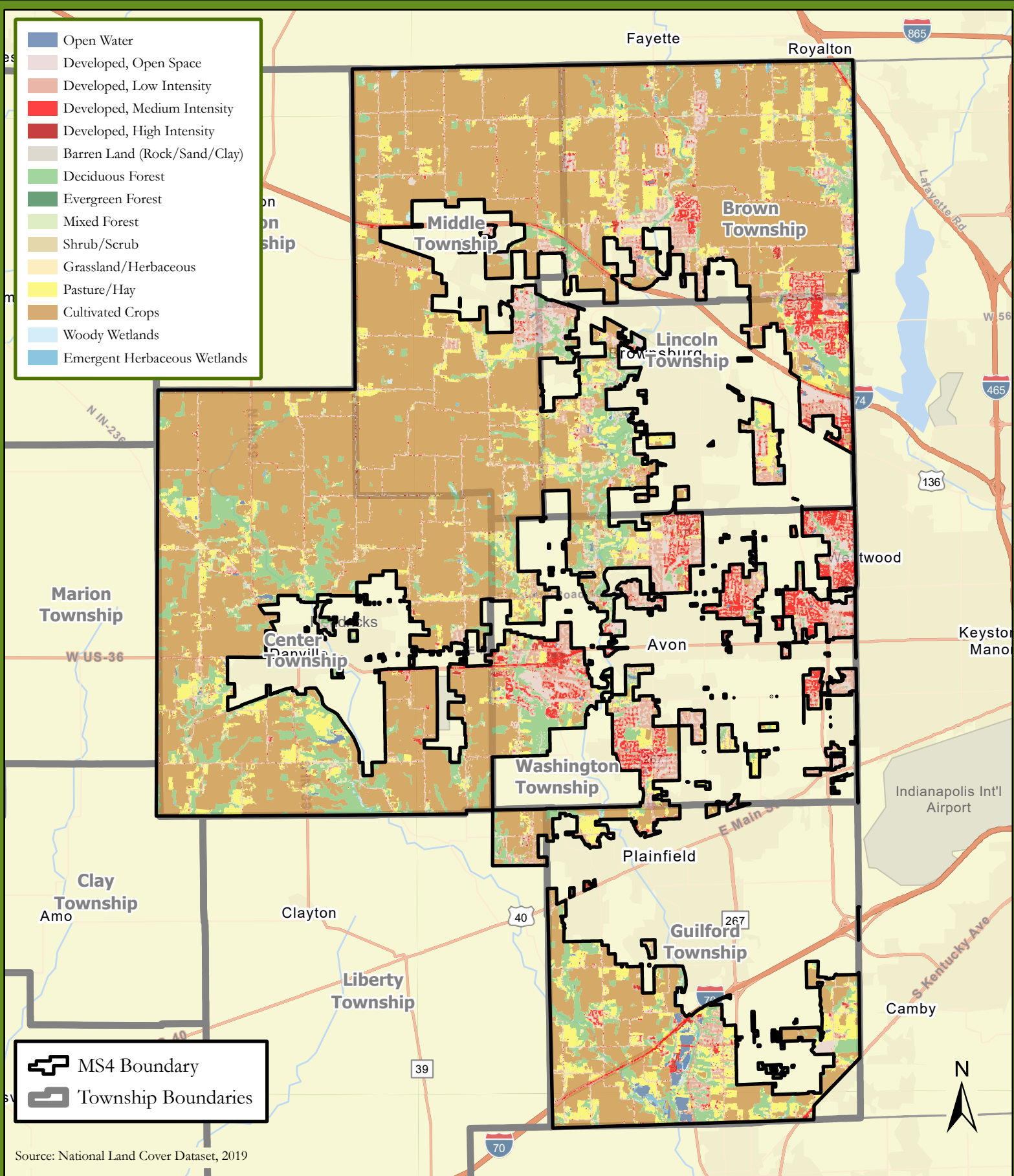
**PROJECT:** MS4 Stormwater Quality Management Plan  
Hendricks County, Indiana


**TITLE:** Water Quality

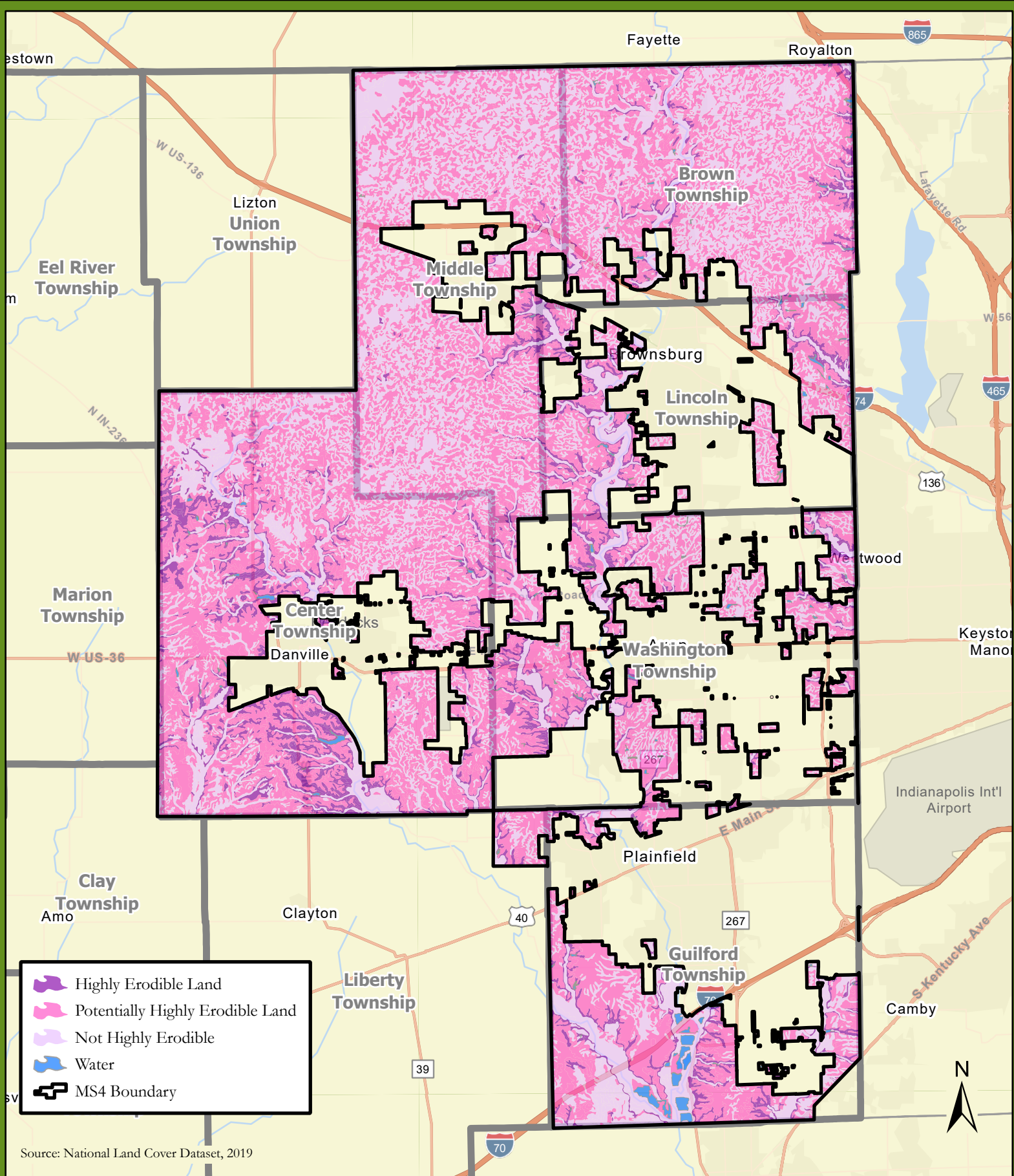
**PROJECT NO.**  
00-0346


**APPROX SCALE:**  
1" = 12,500'  
**DATE:**  
08/2022  
**EXHIBIT:**  
2





 <b>Christopher B. Burke Engineering LLC</b> PNC Center, Suite 1368 South 115 West Washington Street Indianapolis, Indiana 46204 (t) 317.266.8000 <a href="http://www.cbbel-in.com">www.cbbel-in.com</a>	PROJECT:	MS4 Stormwater Quality Management Plan Hendricks County, Indiana		PROJECT NO.	00-0346	APPROX SCALE: 1" = 12,500'
	TITLE:	Land Cover				DATE: 08/2022
						EXHIBIT: 3



 <b>Christopher B. Burke Engineering LLC</b> PNC Center, Suite 1368 South 115 West Washington Street Indianapolis, Indiana 46204 (t) 317.266.8000 <a href="http://www.cbbel-in.com">www.cbbel-in.com</a>	PROJECT: MS4 Stormwater Quality Management Plan Hendricks County, Indiana		PROJECT NO. 00-0346	APPROX SCALE: 1" = 12,500'
	TITLE: Highly Erodible Land			DATE: 08/2022
				EXHIBIT: 4

WQCR and SWQMP Certification in accordance with 327 IAC 15-4-3(i) and MS4GP 3.3 and 4.9

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Lori Gates, CPESC, CPSWQ, CPMSM 12/19/2022  
Qualified Professional Signature Date

Lori Gates 12/19/2022  
Qualified Professional Printed Name Date

Phyllis A. Palmer 12-27-22  
MS4 Operator or Designee Signature (in accordance with 327 IAC 15-4-3(g)) Date

PHYLLIS A. PALMER 12-27-22  
MS4 Operator or Designee Printed Name Date