NPDES PHASE II GENERAL PERMIT

STORMWATER QUALITY MANAGEMENT PLAN

PART B: BASELINE CHARACTERIZATION REPORT UPDATE

Prepared for:

City of Terre Haute
Vigo County
Town of West Terre Haute
Town of Seelyville
Ivy Tech Community College – Terre Haute
Indiana State University
Rose – Hulman Institute of Technology
Honey Creek – Vigo County Conservancy District

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Prepared by

Christopher B. Burke Engineering, LLC
115 West Washington Street, Suite 1368 South
Indianapolis, Indiana 46204

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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 Sewer 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**) Stormwater 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. On December 8, 1999, the EPA issued regulations that expanded the existing NPDES Stormwater 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 Stormwater Program.

Figure 1: Location of Vigo County, Indiana

Within Vigo County MS4 area (**Figure 1**), there are eight entities designated as regulated MS4s due to their total population, population density, and total full time enrollment numbers. These MS4 entities have combined their efforts as Co-permittees to better utilize existing programs and to provide unified and consistent regulations throughout the county. They are the City of Terre Haute, Vigo County, the Towns of West Terre Haute and Seelyville, Ivy Tech Community College's Terre Haute campus, Indiana State University, Rose-Hulman Institute of Technology, and the Honey Creek – Vigo County Conservancy District (herein referred to as the **Co-permittees**).

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. The IDEM initiated adoption of the Phase II Rules that were ultimately codified as 327 IAC 15-13 (**Rule 13**). Rule 13 became effective on August 6, 2003 and requires designated MS4 entities to apply for permit coverage by submitting a Notice of Intent (**NOI)** and developing Stormwater Quality Management Plans (**SWQMPs**) through a phased submittal process. The IDEM's phased submittal requirements for the SWQMP include the following three components:

- Part A: Initial Application
- Part B: Baseline Characterization Report
- Part C: Program Implementation Plan

This report has been prepared to update (where appropriate) the SWQMP Part B: Baseline Characterization Report for the Co-permittees and includes the following information:

- An investigation of existing conditions, including land usage and assessment of structural and nonstructural storm water Best Management Practices (**BMP** or **BMPs**) locations and conclusions, such as key observations or monitoring locations in the MS4 conveyances, derived from the land usage investigation.
- The identification of known sensitive areas, such as public swimming areas, surface drinking water intakes, waters containing threatened or endangered species and their habitat, or state outstanding resource or exceptional use waters.
- A review of known existing and available monitoring data of the MS4 area receiving waters, including, as applicable, data that can be correlated from Stream Reach Characterization and Evaluation Reports (**SRCERs**).
- The identification of areas having a reasonable potential for or actually causing stormwater quality problems.
- Assessment results of BMP locations and, as appropriate, the structural condition of the BMP related to the BMPs effectiveness in improving stormwater quality. As appropriate, this assessment should include recommendations for placement and implementation of additional BMPs within the MS4 area.

CHAPTER 2

EXISTING CONDITIONS

327 IAC 15-13-7(a)(1): *An investigation of land usage and assessment of structural and nonstructural storm water BMP locations and conclusions, such as key observation or monitoring locations in the MS4 conveyances, derived from the land usage investigation.*

The following sections provide an evaluation of the MS4 boundary, the receiving waters, demographics, and the current and proposed future land uses within the MS4 boundaries. Information related to BMPs, proposed and existing can be found in Error! Reference source not found. of this document.

2.1 MS4 AREA

The Co-permittees are working under a permit to fulfill requirements of Rule 13. The MS4 area covered by this permit includes the corporate boundaries of all of the Co-permittees.

These areas are identified on **Exhibit 1** and all MS4 boundaries will be updated as necessary following future land purchases or acquisitions.

2.2 RECEIVING WATERS

The Co-permittees discharge stormwater or may discharge stormwater in the future through new development, construction or infrastructure acquisition, into several receiving waters throughout the MS4 area. These waters are listed in **Table 2-1** and identified on **Exhibit 2**.

Table 2-1: Receiving Waters& Potential Receiving Waters

Jurisdiction(s)	Receiving Water(s)
Vigo County	Wabash and Erie Canal
Vigo County	Otter Creek
Vigo County	Gundy Ditch
Vigo County	Swope Ditch
Vigo County	East Little Sugar Creek
Vigo County, Town of West Terre Haute	Sugar Creek
City of Terre Haute	Little Lost Creek
Vigo County, Rose-Hulman Institute of Technology, City of Terre Haute	Lost Creek
Vigo County, Town of Seelyville	Snake Creek
Vigo County	Clear Creek
Vigo County, City of Terre Haute	Wabash River
Vigo County, City of Terre Haute, Honey Creek CD	Thompson Ditch
Vigo County, Honey Creek CD	Honey Creek
Vigo County	Little Honey Creek
Vigo County	Hayworth Slough

(Source: USGS NHD, 2018)

2.2.1 **Watersheds**

The 12-digit Hydrologic Units Codes (**HUC** or **HUCs**) and the acreage within the MS4 boundaries are listed in **Table 2-2.** By using 12-digit HUCs (instead of the 14-digit HUCs requested within other sections of Rule 13) data is more easily correlated between sources of water quality data such as the 303(d), watershed management plans, and other IDEM data sources.

Table 2-2: 12-Digit HUCs

Map ID	HUC NAME	HUC	Acres*
1	South Salt Creek-Wabash River	51201110604	2,042
2	Waterworks Creek-Otter Creek	51201110406	6,183.6
3	Gundy Ditch	51201110405	2,218.6
4	East Little Sugar Creek-Sugar Creek	51201110504	4,117.6
5	Izaak Walton Lake-Wabash River	51201110605	12,476.2
6	Lost Creek	51201110603	13,663.9
7	Sulphur Creek	51201110404	1,622.6
8	South Lake-Clear Creek	51201110902	1,565.7
9	Thompson Ditch-Honey Creek	51201110704	16,620.7
10	Stone Quarry Branch-Honey Creek	51201110702	6,684.2
11	Headwaters Honey Creek	51201110701	165.3
12	Hawks Creek-Wabash River	51201110904	567.9
13	Headwaters Prairie Creek	51201111104	35.7
14	Paint Mill Lake	51201110703	2,095.7
		TOTAL	70,059.7

**Acreage reflects watershed area located within MS4 Boundary*
(Source: USGS Water, 2019)

2.3 DEMOGRAPHICS

The Co-permittees have experienced growth since the onset of the NPDES Phase II Program. It is important to understand the changing dynamics of populations in order to provide the most effective methods of delivering outreach and education materials, as well as, engaging the population through active participation and involvement in the stormwater program.

According to Stats Indiana, the entire Vigo County population in 2010 was 107,852 and the population in 2019 is 107,038 which is a 0.8% decline. In addition to Vigo County residents, there are two universities, Indiana State University and Rose-Hulman Institute of Technology, as well as, one college, Ivy Community College – Terre Haute. The combined, 2019 full-time student enrollment for these three institutions is 16,740.

2.4 LAND COVER

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. Obtained from the 2011 National Land Cover Dataset, **Table 2-3** indicates the land cover in acreage. Additionally, the land cover is graphically presented in **Exhibit 3**.

Table 2-3: Land Cover in the MS4 Area

Land Cover	Acres
Cultivated Crops	17,851
Deciduous Forest	10,935
Developed, Open Space	10,596
Developed, Low Intensity	8,110
Mixed Forest	6,638
Pasture/Hay	4,941
Developed, Medium Intensity	3,605
Woody Wetlands	2,081
Open Water	2,032
Developed, High Intensity	1,429
Shrub/Scrub	577
Barren Land (Rock/Sand/Clay)	542
Grassland/Herbaceous	467
Emergent Herbaceous Wetlands	160
Evergreen Forest	93
TOTAL	**70,057**

(Source: NLCD, 2016)

2.5 FUTURE HYDROLOGICAL CONSIDERATIONS

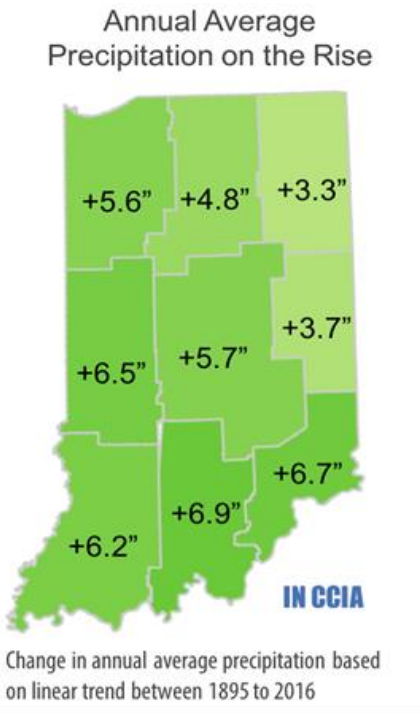

Figure 2: Change in Annual Precipitation

According to the Indiana Climate Change Impact Assessment Report, from 1895 to 1959, the state has gained 0.32 inches of precipitation per decade. Since then, the rate of precipitation change has increased to 1.33 additional inches per decade, a fourfold increase. This increase is happening in every season, though spring and summer have increased at a more rapid pace than fall and winter over the period 1895 to 2016.

Within Vigo County, precipitation is projected to increase. By 2050, Indiana will see approximately 6.0% to 8.0% more rainfall than averaged in the recent past. Vigo County has thus far experienced a 6.5-inch rise in average annual precipitation between 1895 and 2016, as shown in **Figure 2.**

2.6 CONCLUSIONS

The effects of land use/land cover changes on surface runoff, stream flow, and groundwater recharge are fundamental considerations in the practice of stormwater management. Expansion of urban areas significantly impacts the environment in terms of groundwater recharge, water pollution and stormwater drainage. Urbanization can lead to an expansion of impervious surfaces, which can in turn lead to increases in surface runoff volumes, 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.

As the Co-permittees plan for future growth and development, land use changes are anticipated within areas of the MS4. With the 641 by-pass completed, the City of Terre Haute and its Redevelopment Department plan to direct growth to the east side in addition to promoting the south side industrial park for manufacturing development and expansion. These alterations can certainly have impacts on the MS4 program as well as the water quality of the receiving waters.

CHAPTER 3

SENSITIVE AREAS

***327 IAC 15-13-7(a)(2)**: The identification of known sensitive areas, such as public swimming areas, surface drinking water intakes, waters containing threatened or endangered species and their habitat, or state outstanding resource and exceptional use waters. The identified sensitive areas should be given the highest priority for the selection of BMPs and the prohibition of new or significantly increased MS4 discharges.*

3.1 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 climactic 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 3-1** documents the HEL and Potentially HEL (**PHEL**) soils within Vigo County and therefore potentially throughout the MS4 area.

Table 3-1: Highly Erodible Soils

Map Unit Symbol	Soil Name	HEL Classification
AdB, AdC	Ade	HEL
AlB2, AlC2, AlC3, AlD2, AlD3, AlE2, AlF	Alford	HEL/PHEL
AvB2	Ava	PHEL
BlB, BlC, BlD	Bloomfield	HEL
Bp	Borrow Pits	PHEL
CaB	Camden	HEL
CnC2, CnC3, CnD3	Cincinnati	PHEL
ElB	Elston	PHEL
FoB2, FxC3	Fox	PHEL
Gp	Gravel Pits	PHEL
HeG	Hemmepin	HEL
HkE, HkF	Hickory	PHEL
IvB	Iva	HEL
Ma	Made Land	PHEL
MuB2	Muren	PHEL
MeE, MeF	Megley	HEL
PaB2, PaD2	Parke	PHEL
PrD2, PrE2	Princeton	PHEL
RdA	Randolph	PHEL
RdG	Rodman	HEL
RuB2, RuC2, RuC3, RrD2	Russell	HEL/PHEL
St	Strip Mines	HEL
WrB2	Warsaw	PHEL
XeB2	Xenia	PHEL

(NRCS Soil Survey, 1987)

Recognizing the potential water quality impacts associated with disturbing the soils, the Co-permittees 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.

3.2 NATURAL HERITAGE DATA

The Indiana Department of Natural Resource (**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 May 2019, there are 7 mollusks; 1 insect; 2 fish; 2 amphibians; 1 reptile; 9 birds; 5 mammals; and 15 vascular plants listed as endangered, threatened, or rare within Vigo County. Specific data regarding location will not be provided by IDNR.

In addition, Sand Barrens, Wet Floodplain Forest, Southwestern Lowlands, Dry-Mesic Upland Forest, Marsh, Mesic Upland Forest, and Forested Swamp are listed as a High-Quality Natural Communities on the listing noted above. However, Natural Heritage Data is only County specific, and

therefore, these habitat types may not exist within each of the eight, separate MS4 areas.

The MS4 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 Co-permittees will consider those locations to be sensitive areas and will update their stormwater program accordingly.

3.3 WETLANDS

The 2018 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 2018 NWI, there are approximately 7,539 acres of *potential* wetlands within the MS4 area.

Rule 13 requires MS4s to establish a construction program that contains, at a minimum, the requirements of 327 IAC 15-5 (Rule 5). Rule 5 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 (327 IAC 15-5-6.5(a)(3)).

Since Rules 5 and 13 require the identification of wetlands in conjunction with planning for construction site stormwater runoff controls, wetlands will be considered sensitive areas in the MS4 program.

3.4 OUTSTANDING AND EXCEPTIONAL USE WATERS

The MS4 area is not known to contain any waters known for their scenic beauty and recreational opportunities.

3.5 RECREATIONAL WATERS

The MS4 area includes a riverfront park along the Wabash River. Fairbanks Park in Terre Haute provides easy public access for fishing, wading, swimming, canoeing or boating. In addition, Markle Mill Park on Otter Creek provides easy public access for fishing. These recreational waters will be considered sensitive areas within the MS4 boundary.

3.6 PUBLIC DRINKING WATER SOURCES

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.

Within Vigo County, according to IDEM's Drinking Water Branch, there are no active Public Water Supply Systems utilizing surface water as their source of drinking water.

3.7 CONCLUSIONS

As noted within the previous sections, several sensitive areas have been identified for special considerations related to stormwater quality runoff and land cover/land use changes. These areas include:

- Erodible Soils
- Habitats of Endangered, Threatened, or Rare species
- Wetlands (Field-verified)
- Outstanding or Exceptional Use waters
- 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.

CHAPTER 4

REVIEW OF EXISTING MONITORING DATA

327 IAC 15-13-7(a)(3): *A review of known existing and available monitoring data of the MS4 area receiving waters, including, as applicable, data that can be correlated from SRCERs.*

4.1 INDIANA INTEGRATED WATER MONITORING AND ASSESSMENT REPORT

Section 303(d) of the Clean Water Act requires states to identify waters that do not or are not expected to meet applicable water quality standards with technology-based standards alone. States are also required to develop a priority ranking for these waters, taking into account the severity of the pollution and the designated uses of the waters. Once this listing and ranking of waters is completed, States are required to develop Total Maximum Daily Loads (**TMDLs**) for these waters in order to achieve compliance with water quality standards.

Section 305(b) of the Clean Water Act 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 Monitoring and 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. **Table 4-1** identifies known impairments (*E. coli*, Impaired Biotic Communities (**IBC**), polychlorinated biphenyls (**PCBs**) and total mercury) for HUAs within the MS4 areas. The noted table below uses the abbreviation **UNT** for unnamed tributary. **Exhibit 2** illustrates the listed segments.

Table 4-1: IDEM 303(d) Impaired Streams

Stream Name	Impairment(s)
Honey Creek & UNT	*E. coli*, PCBs in Fish Tissue
Otter Creek	pH
Sugar Creek & UNT	Impaired Biotic Communities
Wabash & Erie Canal	pH
Wabash River & UNT	Nutrients, PCBs in Fish Tissue

Source: IDEM, 2016

4.2 STREAM REACH CHARACTERIZATION AND EVALUATION REPORT

No updates that been completed that would revise anything from the previous Part B submission.

4.3 ESTABLISHED TOTAL MAXIMUM DAILY LOADING

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 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 Rule 13, 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.

4.3.1 **Otter Creek**

The Otter Creek Watershed is located near the Indiana-Illinois State Line just northeast of Terre Haute, Indiana, and drains approximately 124 square miles. The Otter Creek watershed originates near northern Clay County, and then flows southwest where it ultimately empties into the Wabash River west of North Terre Haute, totaling approximately 220 stream miles. Land use throughout the watershed is predominantly agricultural. The primary cause of impairment is Escherichia coli bacteria (*E. coli*). Pollution sources in the watershed include non-point sources e.g. row crop agriculture and pastures, urban and rural runoff, land application of manure, and point sources e.g. straight pipe dischargers, home sewage treatment system disposal, and CSO outlets. Note that no CSO outlets in Otter Creek are under the jurisdictional control of the Co-permittees.

https://www.in.gov/idem/nps/3894.htm

In addition, the Otter Creek Watershed Management Plan can be found here:

https://ouabachelandconservancy.org/plan-documents

4.3.2 Wabash River Watershed

The headwaters of the Wabash River are located in west-central Ohio and the river flows for approximately 30 miles before crossing into Indiana. The Wabash River watershed drains two-thirds of Indiana's 92 counties and consists of primarily agricultural land with many small towns and some cities located along the river, notably Terre Haute and Lafayette. The primary cause of impairment is *E. coli* and nutrients. Pollution sources in the watershed include non-point 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.

https://www.in.gov/idem/nps/2841.htm

4.4 OTHER WATER QUALITY DATA

The data below was obtained from various sources compiled by the Indiana Water Monitoring Council. **Table 4-2** identifies the data obtained for the Co-permittees.

Table 4-2: Indiana Water Monitoring Inventory Data

Agency	Name	Date of Record	Location	Parameters Sampled
Indiana American Water (5284012)	Water Quality Data	? – present	IAW-Terre Haute	Bacteriology/Microbiology, Flow/Stage, General Chemistry, Groundwater Level, Groundwater Quality, Metals, Nutrients, Organics/Pesticides
USGS	Real -Time Water Data	1927-present	Wabash River	Flow/Stage
Ind Dept of Env Management (84640RS)	Ground Water Monitoring Network	2011-present	Residential	General Chemistry, Groundwater Quality, Metals, Nutrients, Organics/Pesticides
Ind Dept of Env Management (84141NC)	Ground Water Monitoring Network	2008-present	Public	General Chemistry, Groundwater Quality, Metals, Nutrients, Organics/Pesticides

Agency	Name	Date of Record	Location	Parameters Sampled
Ind Dept of Env Management (84630RS)	Ground Water Monitoring Network	2010-present	Residential	General Chemistry, Groundwater Quality, Metals, Nutrients, Organics/Pesticides
Ind Dept of Env Management (84628RS)	Ground Water Monitoring Network	2010-present	Residential	General Chemistry, Groundwater Quality, Metals, Nutrients, Organics/Pesticides
IU-SPEA	Indiana Clean Lakes Program	1990-present	Izaak Walton Lake (Lazy L)	Aquatic Plants, General Chemistry, Lake Clarity, Nutrients
IU-SPEA	Indiana Clean Lakes Program	1990-present	South – Vigo County	Aquatic Plants, General Chemistry, Lake Clarity, Nutrients
IU-SPEA	Indiana Clean Lakes Program	1997-present	North Lake – Vigo County	Aquatic Plants, General Chemistry, Lake Clarity, Nutrients
IDNR (VI-7)	IDNR/USGS Monitoring Well Data	1970-present	Vigo County	Groundwater level

CHAPTER 5

POTENTIAL AREAS OF POLLUTION

327 IAC 15-13-7(a)(4): *The identification of areas having a reasonable potential for or actually causing storm water quality problems based on the available and relevant chemical, biological, physical, land use, and complaint data.*

5.1 COMPLAINT DATA

When concerns are observed or received by city staff, they are equipped to mitigate the issues quickly. Public Complaints are received through a phone contact center in the city hall. The City of Terre Haute has created the 311 Citizen Contact Center to assist in reporting any non-emergency service requests to city government or to request general local government information. Terre Haute has operators available to take citizen calls in the Citizen Contact Center weekdays from 8:00am to 4:00pm.

In addition, QR code markers are installed at storm drains. The QR code takes users directly to the Stormwater Community Watch Website that allows citizens to report stormwater pollution issues as well as provides them with educational information.

5.2 INDUSTRIAL FACILITIES

The Co-permittees are aware of 325 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 may also have IDEM Rule 6 permits, it is important for the Co-permittees to understand the potential impacts to the conveyances and receiving waters.

5.3 SEPTIC SYSTEMS

Sufficient controls are in place in the MS4 area to address on-site wastewater treatment in developing and redeveloping areas; however, priority will be given to those areas within the MS4 area with known septic system failures or inadequacies.

5.4 COMBINED SEWER OVERFLOW LONG-TERM CONTROL PLAN (CSO LTCP)

The City of Terre Haute has developed a Combined Sewer Overflow Long-Term Control Plan (**CSO LTCP**), which describes the measures they will take to reduce the combined sewer overflows and improve water quality in the Wabash River.

CHAPTER 6

ASSESSMENT OF BMPS

327 IAC 15-13-7(a)(5): *Assessment results of BMP locations and, as appropriate, the structural condition of the BMP related to the BMP's effectiveness in improving storm water quality. As appropriate, this assessment should include recommendations for placement and implementation of additional BMPs within the MS4 area.*

6.1 EXISTING STRUCTURAL BMPS

The Co-permittees has structural BMPs already in place. They range from BMPs specifically installed for water quality to BMPs whose water quality benefits are somewhat incidental, such as detention ponds.

Specifically, existing BMPs include:

- A Green roof at Indiana State University Rankin Plaza
- Permeable pavement in Terre Haute
- Trees at the Brown Boulevard Linear Arboretum
- Bioretention ponds, detention ponds, rain gardens, rain barrels, infiltration, dry wells, filtration, grass swales, vegetated filter strips, & inlet forebays at various locations throughout the County
- High rate clarification chemical treatment for Terre Haute CSO abatement
- Storage for salt, sand, and aggregates
- Indoor storage of automotive and equipment maintenance supplies and chemicals
- Spill kits
- Secondary containment
- Hazardous waste storage
- Street sweeper washout done at the wastewater treatment plant

6.2 EXISTING NON-STRUCTURAL BMPS

Rule 13 requires MS4s to identify areas having reasonable potential for causing stormwater quality problems. A list of BMPs being considered for implementation throughout the MS4 area can be found in the SWQMP Part C update.

6.3 PROPOSED STRUCTURAL BMPS

While no specific structural BMPs are planned at this time, development projects are typically designed in accordance with the Stormwater Ordinance

and Technical Standards Manual which contains provisions for post-construction stormwater quality and quantity management.

The City of Terre Haute City Hall has a planning project for their parking lot. This will be a Green Infrastructure project with different BMPs including pervious pavement, rain gardens, etc.

CHAPTER 7 REFERENCES

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