# NPDES PHASE II
# MS4 GENERAL PERMIT
# STORM WATER QUALITY MANAGEMENT PLAN
# PART B: BASELINE CHARACTERIZATION REPORT
# UPDATE

**HANCOCK COUNTY, INDIANA**

**PERMIT #INR040128**

**OCTOBER 30, 2010**

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# STORM WATER QUALITY MANAGEMENT PLAN (SWQMP)
# PART B: BASELINE CHARACTERIZATION REPORT
# UPDATE

Prepared for:

**Hancock County, Indiana**

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## LIST OF EXHIBITS

1. Hancock County MS4 Area
2. Hancock County Receiving Waters, 14-Digit HUCs, Wetlands
3. Hancock County Land Use

## 1.0 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) Storm Water Phase I Program.

In addition to these amendments, Congress directed the Environmental Protection Agency (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 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. Hancock County met this criterion and was consequently designated as a 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. 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 required designated MS4 entities to apply for permit coverage and develop Storm Water Quality Management Plans (SWQMPs) through a phased submittal process.

This report has been prepared to update (where necessary) the SWQMP Part B: Baseline Characterization Report for Hancock County, Indiana and includes the following information:

- An investigation and assessment of the impacts of existing land uses on stormwater runoff within the MS4 area,
- An identification of sensitive areas within the MS4 area,
- A review of known existing and available water quality monitoring data for the MS4 area,
- *An identification and assessment of structural and non-structural Best Management Practices (BMPs) within the MS4 area,*
- *An identification of priority areas for the implementation of BMPs, and*
- *Recommendations for implementation of both structural and non-structural BMPs for each of the six minimum control measures required by Rule 13.*

The italicized bulleted items above are briefly mentioned within this report. However, full details regarding these items can be found in the Hancock County SWQMP Part C: Program Implementation. Portions of this document are highlighted to indicate what information has been updated from the development of the 2004 Part B during the first permit term. The source information has been highlighted where information contained in the table has not changed but sources were consulted during the development of this update.

## 2.0 LAND USE WITHIN MS4 AREA

Rule 13 requires the investigation of land usage and the assessment of structural and non-structural stormwater Best Management Practice (BMP) locations. The following discussion provides an evaluation of land uses within Hancock County's MS4 area. Structural and non-structural BMPs are identified and assessed in Chapter 5.0 of this report.

### 2.1 DESCRIPTION OF MS4 AREA

Hancock County is located in central Indiana, approximately 30 miles east of Indianapolis, Indiana. The MS4 area covered by this permit includes unincorporated areas surrounding Cumberland, Fortville, Greenfield, McCordsville, New Palestine, and Spring Lake. Spring Lake is an urbanized area community that is conditionally exempt from having to comply with Rule 13 based on low population or no MS4. **Exhibit 1** identifies the County's MS4 boundary.

As provided by the Hancock County Surveyor's Office, the Hancock County MS4 area receiving streams are listed in **Table 2-1** and illustrated in **Exhibit 2**.

**Table 2-1: Receiving Waters**

| | | |
|---|---|---|
| Walter Alford Drain | Cal Jackson Drain | Smith and Johnson Drain |
| Amity Branch | Dan Jackson Drain | Snider and King Drain |
| Charles Brier Drain | Christian Kirkhoff Drain | Stansbury and Schultz Drain (Dry Branch) |
| Buck Creek | Kraft Drain | Hiram Stottlemeyer Drain |
| Doe Creek | Marsh Montgomery Drain | Sugar Creek |
| O.M. Estes Drain | Merlau-Hack Drain (West Little Sugar Creek) | Sweet Creek |
| John Hall Drain | Rash Arm-Cal Jackson Drain | Margaret Wallace Drain |
| Heinrich Drain | Schultz and Schultz Drain (North Fork) | |

(Hancock County Surveyor's Office, 2010)

### 2.2 POPULATION DATA

According to STATS Indiana, in 2009, Hancock County was ranked as the 24th largest County in Indiana with a population of 68,334. The County experienced a 23.4% population increase from 2000 to 2009. The City of Greenfield is the largest community in Hancock County with 28% of the total population or 18,787 people. The following chart illustrates the past, present, and projected population for Hancock County and the State of Indiana.

**Table 2-2: Population Statistics**

| | Hancock County | Rank in State | % of State | Indiana |
|---|---|---|---|---|
| 2000 | 55,391 | 25th | 0.9% | 6,080,485 |
| 2009 | 68,334 | 24th | 1.1% | 6,423,113 |
| 2015 (projected) | 76,508 | 20th | 1.2% | 6,581,1875 |
| % Change 2000 to 2009 | 23.4% | | | 5.6% |

(STATS Indiana, 2010)

## 2.3 LAND USE DATA

As illustrated in **Exhibit 3**, approximately 87% of Hancock County's MS4 area is in agricultural production and 8% is considered to be urbanized. This data was provided by the Hancock County GIS Department. **Table 2-3** summarizes land use data within Hancock County as determined by the 2010 data.

**Table 2-3: 2010 Land Use Data for Hancock County's MS4 Area**

| Land Use | Land Area (acres) | MS4 Area (%) |
|---|---|---|
| Agriculture | 16,307.49 | 71.70 |
| Residential | 4,875.52 | 21.44 |
| Institutional/Tax Exempt | 772.27 | 3.40 |
| Commercial | 626.96 | 2.76 |
| Utility | 100.42 | 0.44 |
| Industrial | 49.30 | 0.22 |
| Water | 11.76 | 0.05 |
| **Total** | **22,743.72** | **100** |

(Hancock County GIS Department, 2010)

Townships along the western border of Hancock County, including Vernon, Buck Creek, and Sugar Creek Townships, have been the fastest growing and are quickly becoming part of the Indianapolis Metropolitan Region. The City of Greenfield is located in Center Township where growth is primarily occurring in the unincorporated area around the city. Growth is anticipated in Vernon, Sugar Creek, and Buck Creek Townships. Sugar Creek and Buck Creek Townships are provided water and sewer services by Gem Utilities and Western Hancock Utilities, private companies that plan on expanding their service area to keep up with anticipated growth.

## 2.4 WATERSHEDS WITHIN MS4 AREA

Hancock County is located within two different 8-digit Hydrologic Unit Code (HUC) watersheds, the Upper White and the Driftwood River Basins. As illustrated in **Exhibit 2** and listed in **Table 2-4**, there are 14, 14-digit Hydrologic Unit Code (HUC) subwatersheds that drain Hancock County's MS4 area. The acreage shown in the table is the total acreage of the subwatershed, not just the portion within the MS4 area.

**Table 2-4: 14-Digit Watersheds within Hancock County**

| Watershed Name | 14-digit HUC | Size (ac)* |
|---|---|---|
| Lick Creek-Manifold/McFadden Ditches | 05120201100110 | 10,678.4 |
| Fall Creek-Flatfork Creek | 05120201100120 | 7,645.0 |
| Dry Branch (Geist Reservoir) | 05120201100140 | 4,905.9 |
| Geist Reservoir-Bee Camp | 05120201100150 | 11,121.9 |
| Indian Creek-Steele Ditch | 05120201110010 | 11,727.5 |
| Fall Creek-Indian Lake/Lawrence Creek | 05120201110020 | 9,408.2 |
| Sugar Creek-Boyd Ditch | 05120204060040 | 11,705.0 |
| Sugar Creek-Smith Johnson Ditch | 05120204060050 | 6,627.8 |
| Little Sugar Creek-Thompson Ditch | 05120204060070 | 7,811.7 |
| Buck Creek-Headwaters (Hancock) | 05120204070010 | 9,225.6 |
| Buck Creek-Parker Estes Ditch | 05120204070020 | 7,696.6 |
| Grassy Creek (Marion) | 05120204070030 | 12,033.0 |
| Buck Creek-Breier/Doe Creeks | 05120204070040 | 9,735.2 |
| West Little Sugar Creek-Buck Creek | 05120204070060 | 11,642.8 |

(IDEM, 2010)

*: This acreage represents the acreage of the entire subwatershed and not just the portion of the watershed within the MS4 area.

## 2.5 SUMMARY OF LAND USE EVALUATIONS

The effects of land use and land use change on surface runoff, streamflow, 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 volume, downstream flooding, and detrimental impacts to local waterways. Since each land use has a different impact on stormwater runoff, strategic land use planning can help minimize these impacts.

As agricultural land uses account for approximately 72% of land uses within the Hancock County MS4 Area, Hancock County encourages local agricultural producers to implement agricultural BMPs, including, but not limited to, conservation tillage, nutrient and pesticide management, buffer strips, and wetland restoration. This is accomplished by working with the Hancock County Soil and Water Conservation District (SWCD) to target local agricultural producers in the MS4 area.

Further, residential land uses account for approximately 21.5% of land use within the Hancock County MS4 Area, and the County attempts to manage growth and development in a way that minimizes potential impacts on water quality. As required by Rule 13, Hancock County adopted a comprehensive stormwater ordinance designed to minimize the impacts that urbanized areas have on water quality.

# 3.0 SENSITIVE AREAS

Rule 13 requires the identification of "Sensitive Areas" as locations that should be given the highest priority for the selection of BMPs and the prohibition of new or significantly increased MS4 discharges. The following discussion provides an evaluation of potentially sensitive areas within Hancock County's MS4 area.

## 3.1 ERODIBLE SOIL

The Natural Resources 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 erodibility index of a soil map unit.

The erodibility index 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 highly erodible and potentially highly erodible soils within Hancock County's MS4 area.

**Table 3-1: Highly Erodible Soils**

| Map Unit Symbol | Soil Name | HEL Classification |
|---|---|---|
| MMB2, MMC2, MMD2, MpC3, MpD3 | Miami | Highly Erodible |
| OcB2 | Ockley | Potentially Highly Erodible |
| OkC2 | Ockley | Highly Erodible |

Recognizing the potential water quality impacts associated with disturbing highly erodible soils, the County will consider these soils to be "sensitive areas". The County will prioritize new/redevelopment sites, which contain the identified highly erodible or potentially highly erodible soils during the plan review, inspection, and enforcement process.

## 3.2 SOIL SUITABILITY FOR SEPTIC SYSTEMS

**Table 3-2** identifies soils within Hancock County that have severe and moderate limitations for septic systems. Based upon a thorough review of the Hancock County Soil Survey, these soils have been determined to be common throughout the County's MS4 area. Purdue University has determined that approximately 97% of the soils within Hancock County have severe limitations for septic systems.

Existing County policy dictates that all new developments occurring within Hancock County are required to connect to the sanitary sewer system, if service is readily available. However, when sanitary sewer service is not available, on-site wastewater treatment permits are issued by the Hancock County Health Department, if site conditions meet all applicable Indiana State Department of Health standards.

**Table 3-2: Soil Suitability for Septic Systems**

| Soil Series | Map Symbols | Moderate or Severe | Slope Dependent |
|---|---|---|---|
| Brookston | Br | severe | |
| Crosby | CrA | severe | |
| Eel | Ee | severe | |
| Genesee | Ge | severe | |
| Kokomo | Ko | severe | |
| Miami | MmA, MmB2, MmC2, MmD2, MpC3, MpD3 | moderate | |
| Miami | MmA, MmB2, MmC2, MmD2, MpC3, MpD3 | severe | ✓ |
| Milford | Mr | severe | |
| Ockley | OcA, OcB2, OkC2 | moderate | ✓ |
| Palms | Ps | severe | |
| Rensselaer | Re | severe | |
| Shoals | Sh | severe | |
| Sloan | So | severe | |
| Westland | We | severe | |
| Whitaker | Wh | severe | |

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

## 3.3 NATURAL HERITAGE DATA

The IDNR's Division of Nature Preserves maintains the Natural Heritage Data for the State of Indiana. National Heritage Data includes general information on endangered, threatened, and rare species for each Indiana County. As of June 2010, there is 1 plant, 3 birds, and 3 species of mammals listed as endangered, threatened or rare within Hancock County. Further, there are 6 species of bivalves or mussels that have been identified within Hancock County.

Hancock County officials are unaware of specific stretches of streams or rivers within the County's MS4 area that currently contain threatened or endangered species and their habitats. If endangered or threatened species and their habitats are identified in the future, Hancock County will consider those locations to be sensitive areas and will update their stormwater program accordingly. Endangered, threatened, and rare species and habitats are not considered to be sensitive areas as part of Hancock County's stormwater program.

## 3.4 WETLANDS

The 2009 National Wetland Inventory (NWI) Map, as illustrated in Exhibit 2, identifies potential wetlands within Hancock County's MS4 area. It should be noted that the NWI data was generated from infrared photography and has not been field verified. The NWI map should be used only as a reference, not as a definitive answer of whether wetlands are present on a particular site.

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 are considered sensitive areas in Hancock County's Stormwater Program. The County's required stormwater ordinance requires developers to meet, at a minimum, the requirements for identifying and protecting wetlands as outlined in 327 IAC 15-5-6.5(a)(3).

## 3.5 OUTSTANDING AND EXCEPTIONAL USE WATERS

According to IDEM's listing of Indiana Waters Designated for Special Protection, there are no waters in Hancock County that have been designated as "outstanding state resource waters" or as "exceptional use waters".

## 3.6 ESTABLISHED TMDL WATERS

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 the pollution and the designated uses of the waters. Once this listing and ranking of waters is completed, the states are required to develop Total Maximum Daily Loads (TMDLs) for these waters in order to achieve compliance with water quality standards. These streams are discussed further in Section 4.2.

Since the 2004 Part B, there has been one completed TMDL in the Hancock County MS4 area; the Sugar Creek TMDL finalized in May 2007. According to the Sugar Creek TMDL the sources of *E. coli* to the Sugar Creek Watershed include both point and nonpoint sources and achieving the wasteload and load allocations for the Sugar Creek Watershed depends on:

1. *E. coli* limits being added to dischargers who monitor for total residual chlorine,
2. CFOs not violating their permits,
3. Nonpoint sources of *E. coli* being controlled by implementing best management practices in the watershed,
4. The issuance of the MS4 permits for Hancock County, Johnson County, Madison County, New Palestine, and Edinburgh, and
5. Education and outreach for septic system care.

According to the Sugar Creek TMDL, the NPDES permitted dischargers "with sanitary components do not have a history of significant non-compliance, these dischargers are not considered to be major contributor of *E. coli* to Sugar Creek". Further, "There are zero (0) CSO communities in the Sugar Creek Watershed". Finally, it is anticipated that based on the activities required by IDEM's Rule 13 program, "will improve the water quality in Sugar Creek".

## 3.7 RECREATIONAL WATERS

No State listed Recreational Waters are located within the Hancock County's MS4 area. In addition, according to County Officials, there are no known uses of MS4 area receiving streams for recreational purposes.

## 3.8 PUBLIC DRINKING WATER SOURCES

According to Indiana 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 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.

According to a 2010 search of IDEM's Drinking Water Branch, there are 201 active public drinking water suppliers within Hancock County; however, none of these suppliers utilize surface water as their drinking water source. Public Drinking Water Sources will not be considered a priority for the County's Stormwater Program.

## 3.9 SUMMARY OF SENSITIVE AREA CONCLUSIONS

As discussed in the sections above, several sensitive areas have been identified as having the potential to impact or be impacted by stormwater runoff from Hancock County's MS4 area. These areas include highly erodible soils, soils unsuitable for septic systems, and wetlands.

# 4.0 SUMMARY OF EXISTING MONITORING DATA

Rule 13 requires a review of known existing and available monitoring data for the MS4 area receiving waters, including, as applicable, data that can be correlated from chemical, biological, physical, land use, and complaint data. The following discussion provides an evaluation of known and available data for Hancock County's MS4 area receiving waters.

## 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 2 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 14-digit HUC subwatershed. Each subwatershed is given a water quality rating relative to its streams status in meeting WQS. WQS are set at levels necessary for protecting a waterway's designated use(s), such as swimmable, fishable, or drinkable. Each subwatershed is given a rating of fully, partially, or not supportive of its designated uses. **Table 4-1** identifies known impairments and TMDL development schedule for waterbodies within Hancock County according to the IDEM's 2008 Indiana IR. None of these segments are located within the Hancock County MS4 area, they are located along the eastern border of Hancock County.

**Table 4-1: 2008 IDEM Integrated Report (IR)**

| Watershed Name | Impairment | TMDL Schedule |
|---|---|---|
| Sixmile Creek (05120204020030) | *E. coli* | 2012 |
| Big Blue River (05120204020030) | *E. coli* | 2013 |
| Nameless Creek (05120204020040) | *E. coli* | 2012 |

(IDEM, 2008)

## 4.2 UNITED STATES GEOLOGIC SURVEY (USGS) STUDIES

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. Although monitoring site in the basin was in southern Marion County, Indiana, the White River NAWQA "Summary of Findings" generalizes about water quality impairments identified within the 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 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 87% of land uses within Hancock County's MS4 Area, the County will consider agricultural areas within the MS4 area a priority. This can be accomplished by partnering with the Hancock County Soil and Water Conservation District (SWCD) to encourage local agricultural producers to implement agricultural BMPs within the MS4 area.

## 4.3 STREAM REACH CHARACTERIZATION EVALUATION REPORT

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", identifies two communities within the Hancock County MS4 area that utilize a combined sewer system (CSS), the Town of Fortville and the City of Greenfield. Both of these communities have had their requirement to prepare and submit a Stream Reach Characterization Evaluation Report (SRCER) waived by IDEM. Both communities have plans to replace their CSS with separate sanitary and storm sewer systems.

## 4.4 CLEAN WATER ACT CHAPTER 319 GRANT STUDIES

The Hancock County SWCD was awarded IDEM 319 funds in 2007 to complete a Watershed Management Plan (WMP) for the Sugar Creek watershed, covering portions of Hancock, Henry, Madison, and Shelby counties. The Sugar Creek WMP can be viewed and downloaded at www.in.gov/idem/nps/3196.htm. This WMP found that:

- *E. coli* / pathogen levels regularly exceeded the Indiana WQS,
- Nitrates, Nitrites, and Phosphorus are present in excessive levels,
- Excessive soil erosion and sedimentation is degrading the Sugar Creek Watershed, and
- Excessive flow rates and volumes of water during rain events cause damage.

As described with the TMDL, the implementation of the activities and programs required by IDEM's Rule 13 program will further protect and/or improve the water quality within Sugar Creek. It will be important for Hancock County, and the other MS4 entities within Hancock County, to partner with local watershed groups to ensure the success of each program.

Within the Sugar Creek WMP, agricultural and urban BMPs selected as the most cost effective methods to reduce pollutant loading, are also BMPs highlighted by the Hancock County Surveyor's Office, or other stormwater partners, in numerous education and outreach pieces. For example, several BMPs with an agricultural emphasis have been discussed by the Hancock SWCD through new items, brochures, and demonstration events. Urban BMPs such as rain barrels and rain gardens have been discussed by the Stormwater Committee as methods to reduce the quantity of stormwater as well as the quantity of pollutants that reach the MS4 conveyance systems within Hancock County.

## 4.5 HEALTH DEPARTMENT STUDIES

After consultation with the Hancock County Health Department, no Health Department studies or complaint data were identified that were relevant to the Hancock County MS4 area.

# 5.0 IDENTIFICATION AND ASSESSMENT OF BMPs

Rule 13 requires the assessment of structural and nonstructural stormwater Best Management Practices (BMPs) and locations. The following discussion provides an inventory of BMPs identified for Hancock County. Structural and non-structural BMPs are identified according to each of the six required Minimum Control Measures (MCMs). Further details regarding the BMP, measurable goals, timelines, and responsible parties may be found in the Hancock County SWQMP Part C update.

## 5.1 PUBLIC EDUCATION AND OUTREACH

Compliance with this MCM requires MS4s to demonstrate that residents, visitors, public service employees, commercial and industrial facilities, and construction site personnel within the MS4 are educated about the impacts of polluted stormwater runoff on MS4 area receiving streams.

Public Education and Outreach activities in Hancock County include:

- Clean up Events
- Training for Construction Professionals
- Web Site
- Stormwater Survey
- Stormwater Educational Brochures
- Solid Waste Management District Activities
- Soil & Water Conservation District Activities
- Local Media Opportunities
- Stormwater Management Committee
- Rule 13 Public Participation List
- Public Meetings
- Storm Drain Marking
- Problems of Concern Form

## 5.2 PUBLIC PARTICIPATION AND INVOLVEMENT

Compliance with this MCM requires MS4s to demonstrate that citizens and community members were provided with ample opportunities to participate in the development and implementation of the SWQMP.

Many of the BMPs listed in Section 5.1 include a component for Public Participation and Involvement.

## 5.3 ILLICIT DISCHARGE DETECTION AND ELIMINATION

Compliance with this MCM requires MS4s to develop and implement a strategy to detect and eliminate illicit discharges to the MS4 conveyance system.

Illicit Discharge Detection and Elimination activities in Hancock County include:

- Stormwater System Map
- IDDE Ordinance
- IDDE Plan

- Pollution Prevention Program
- Storm Drain Marking
- SWMD Activities
- Annual IDDE, Good Housekeeping, and Pollution Prevention Staff Training

## 5.4 CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

Compliance with this MCM requires MS4s to develop, implement, manage, and enforce an erosion and sediment control program for construction activities that disturb one or more acres of land within the MS4 area.

Construction Site Stormwater Runoff Control programs in Hancock County include:

- Erosion and Sediment Control Ordinance
- Hancock County Stormwater Technical Standards
- Operation and Maintenance Manuals
- Plan Review, Site Inspection, and Enforcement
- Staff Training
- Erosion Control and Post-Construction BMP Tracking Database
- Training for Construction Professionals
- Procedure for Prioritizing Program Activities
- Inspection and Enforcement Documentation
- Hancock County Rule 5 Compliance

## 5.5 POST-CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

Compliance with this MCM requires MS4s to develop a program for managing post-construction Best Management Practices (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 via an enforceable ordinance or other regulatory mechanism.

Many of the BMPs listed in Section 5.4 contain a component for Post-Construction Site Stormwater Runoff Control.

## 5.6 POLLUTION PREVENTION AND GOOD HOUSEKEEPING

Hancock County has taken several steps to ensure that various departments are implementing pollution prevention efforts. Consequently, the County has implemented several pollution prevention measures designed to benefit stormwater quality.

Pollution Prevention and Good Housekeeping activities in Hancock County include:

- Maintenance Schedules and Database
- Secondary Containment
- MS4 Conveyance System Maintenance
- Street Sweeping Program
- Salt and Sand Management

- Snow Dispersal Areas
- Spill Prevention and Clean Up
- Vehicle Maintenance Areas
- Wash Water Management
- Fertilizer and Pesticide Management
- Canine Park Location
- Waste Disposal
- Flood Management Projects
- Annual Good Housekeeping & Pollution Prevention Staff Training
- Facility Specific Stormwater Pollution Prevention Plans

# 6.0 POTENTIAL PROBLEM AREAS

Rule 13 requires the identification of areas having reasonable potential for or actually causing stormwater quality problems based upon relevant land use data and identified sensitive areas, as well as, existing and available water quality data. These areas are required to be given the highest priority for the selection of BMPs and the prohibition of new or significantly increased MS4 discharges. The following discussion summarizes potential problem areas identified within Hancock County. BMPs being considered are discussed in Chapter 5 of this report.

## 6.1 LAND USES

Agricultural land uses account for approximately 86.8% of land uses within Hancock County. In order to minimize potential impacts associated with agricultural land uses, the County will encourage local agricultural producers to implement agricultural BMPs, including, but not limited to, conservation tillage, nutrient and pesticide management, buffer strips, and wetland restoration. This can be accomplished through the Hancock County SWCD.

Urban land uses account for 8.4% of land uses within Hancock County. However, growth in the County's MS4 area is occurring at a rapid pace. This trend towards urbanization, particularly in the western portion of the County, will likely continue in the near future. It will be important for the County to manage growth and development in a way that minimizes the potential impacts on water quality. As required by Rule 13, the County will need to adopt a comprehensive stormwater ordinance designed to minimize the impacts of the County's urbanized areas on water quality. BMPs discussed in Chapter 7 should also minimize the water quality impacts of the County's urban land uses on receiving waters.

## 6.2 SENSITIVE AREAS

### Highly Erodible Soils

As discussed in Section 3.1, several soils in the County's MS4 area have been classified as highly erodible or potentially highly erodible. Recognizing the potential water quality impacts associated with disturbing these soils, the County will consider these soils to be "sensitive areas". The County will prioritize new/redevelopment occurring on sites that contain these soils during the plan review, inspection, and enforcement process.

### Soil Suitability for Septic Systems

The soil suitability data discussed in Section 3.2 suggests a high probability for septic system failures within the County's MS4 area. While some existing controls are in place to address wastewater treatment in new/redeveloping areas, priority will be given to those areas within the County's MS4 area with known septic system failures or inadequacies.

## 6.3 WATER QUALITY

Existing water quality data and studies related to the County's MS4 area receiving streams has identified multiple instances of stormwater related pollutants. The County's intent in the previous permit term was to focus initial stormwater program implementation within prioritized watersheds. However, after further evaluation, the County has determined that all watersheds within the MS4 area will be considered priorities. This approach will simplify program implementation and should maximize the overall benefit that the stormwater program has on all local receiving waters.

## 6.4 SPECIFIC LOCATIONS REQUIRING STRUCTURUAL 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.

## 7.0 REFERENCES

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