

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

**NPDES PHASE II
GENERAL PERMIT APPLICATION
STORM WATER QUALITY MANAGEMENT PLAN
PART C: PROGRAM IMPLEMENTATION**



TOWN OF MERRILLVILLE, INDIANA

PERMIT # INR040049

UPDATED: OCTOBER 31, 2013

**Merrillville, Indiana
NPDES Phase II Part C Implementation Plan**



**NPDES PHASE II
STORM WATER QUALITY MANAGEMENT PLAN (SWQMP)
PART C: PROGRAM IMPLEMENTATION**

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Town of Merrillville, Indiana

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Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

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**Merrillville, Indiana
NPDES Phase II Part C Implementation Plan**

TABLE OF CONTENTS

	<u>Page #</u>
LIST OF TABLES	iii
LIST OF EXHIBITS	iii
LIST OF APPENDICES	iii
SUPPLEMENTAL MATERIAL	iv
1.0 INTRODUCTION	1
2.0 DETAILED DESCRIPTION OF MS4 AREA	3
2.1 NARRATIVE DESCRIPTION OF MS4 AREA	3
2.2 DESCRIPTION OF MS4 CONVEYANCE SYSTEMS	3
2.3 PRIORITY WATERSHED RANKING AND CONCERNS	4
2.4 UTILIZATION OF PRIORITY WATERSHED INFORMATION	5
3.0 PUBLIC EDUCATION AND OUTREACH	6
3.1 PROPOSED PUBLIC EDUCATION AND OUTREACH BMPs	6
4.0 PUBLIC PARTICIPATION AND INVOLVEMENT	11
4.1 PROPOSED PUBLIC PARTICIPATION AND INVOLVEMENT BMPs	11
5.0 ILLICIT DISCHARGE DETECTION AND ELIMINATION	16
5.1 PROPOSED ILLICIT DISCHARGE DETECTION AND ELIMINATION BMPs	 17

**Merrillville, Indiana
NPDES Phase II Part C Implementation Plan**

6.0 CONSTRUCTION SITE RUNOFF CONTROL	21
6.1 PROPOSED CONSTRUCTION SITE RUNOFF CONTROL BMPs	21
7.0 POST-CONSTRUCTION RUNOFF CONTROL	26
7.1 PROPOSED POST-CONSTRUCTION RUNOFF CONTROL BMPs	26
8.0 POLLUTION PREVENTION AND GOOD HOUSEKEEPING	31
8.1 PROPOSED POLLUTION PREVENTION AND GOOD HOUSEKEEPING BMPs	31
9.0 MS4 PROGRAM COSTS	39
9.1 SWQMP DEVELOPMENT COSTS	39
9.2 DETAILED PART C IMPLEMENTATION COSTS BY MCM	40
9.3 OTHER COMPLIANCE COSTS	41
9.4 TOTAL SWQMP PROGRAM COSTS	42
9.5 BUGETARY NEEDS	43
10.0 SUMMARY	44
10.1 PROGRAMMATIC INDICATORS	45
10.2 MASTER TIMELINE	49
10.3 NEXT STEPS	54

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

LIST OF TABLES

2-1	Conveyance Systems for Merrillville's MS4 Area	4
2-2	Priority Watershed Ranking and Concerns	5
2-3	Use of Priority Watershed Information	5
3-1	Public Education and Outreach BMPs	9
4-1	Public Participation and Involvement BMPs	14
5-1	Illicit Discharge Detection and Elimination BMPs	19
6-1	Construction Site Storm Water Runoff Control BMPs	24
7-1	Pre-approved Post-construction BMPs	28
7-2	Post-construction Storm Water Runoff Control BMPs	30
8-1	Storm Sewer System Maintenance Schedule Activities	32
8-2	Good Housekeeping and Pollution Prevention BMPs	36
9-1	Total Program Costs	43
10-1	Programmatic Indicators	45
10-2	Master Timeline	49

LIST OF EXHIBITS

1. MS4 Area Map

LIST OF APPENDICES

- A. References
- B. Glossary of Terms

**Merrillville, Indiana
NPDES Phase II Part C Implementation Plan**

SUPPLEMENTAL MATERIALS
(Bound Separately but Available to Agency Upon Request)

- A. Stormwater Management Ordinance
- B. Illicit Discharge Detection and Elimination (IDDE) Plan

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

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. The urbanized area portion of Town of Merrillville met these criteria and was consequently 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. 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 Storm Water 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

All MS4s were required to submit NOI and SWQMP Part A documents to the IDEM by November 5, 2003. Merrillville's initial NOI and SWQMP Part A documents were submitted to IDEM on November 3, 2003, and the initial SWQMP Part B document was submitted to IDEM on May 3, 2004. The original Part C submittal date was September 21, 2005. This document is an updated Part C and will be submitted by October 1st 2014.

This report has been prepared to address Rule 13 requirements for completing the SWQMP Part C: Program Implementation Report, its corresponding Training form, and Training forms for each of the six Minimum Control Measures (MCMs) for Town of Merrillville, Indiana. This report includes the following information:

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

- An initial evaluation of the storm water program for the Town of Merrillville MS4 area, including information on all known structural and nonstructural storm water BMPs utilized,
- A detailed program description for each of the six MCMs, including Measurable goals with results that are related to an environmental benefit and programmatic indicators,
- A timetable for program implementation milestone, which includes milestones for each of the six MCMs,
- SWQMP-Part B: Baseline Characterization Report conclusions (BMP recommendations, additional protective measures for sensitive areas, and correcting identified water quality problems),
- A narrative and mapped description of the MS4 area boundaries that indicate responsible MS4 entity areas for each MCM, including specific jurisdictional boundaries of the MS4 area,
- An estimate of the linear feet of MS4 conveyances within the MS4 area, segregated by MS4 type, including open ditch and pipe,
- A summary of which structural BMP types will be allowed in new development and redevelopment for the MS4 area,
- A summary of the storm water structural BMP selection criteria and, where appropriate, associated performance standards that must be met after installation to indicate BMP effectiveness, and
- A summary of the current storm water budget, (expected or actual) funding source, and a projection of the budget for each year within the five-year permit term.

In addition, the IDEM's SWQMP Part C: Program Implementation Report Training Checklist and Training forms for each of the six MCMs are included in **Appendices C through I** of this report

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

2.0

MS4 AREA DESCRIPTION

Rule 13 requires a narrative and mapped description of the MS4 area boundaries and an estimate of the linear feet of MS4 conveyances within the MS4 area. The Town MS4 boundary is approximately. The following discussion provides an evaluation the municipal stormwater conveyance system within Town of Merrillville's MS4 area. The map of the MS4 area boundaries is **Exhibit 1** of this report.

2.1 NARRATIVE DESCRIPTION OF MS4 AREA

The Town of Merrillville is located in Lake County, Indiana. The Town is comprised of approximately **22,217** acres. The Town's MS4 boundary mirrors its jurisdictional boundary. **Exhibit 1** identifies Merrillville's MS4 boundary.

2.2 DESCRIPTION OF MS4 CONVEYANCE SYSTEMS

Conveyance is defined by IDEM as any structural process for transferring stormwater between at least two (2) points. The term includes piping, ditches, swales, curbs, gutters, catch basins, channels, storm drains, and roadway. IDEM further defines MS4 conveyance systems as outfall conveyance systems with a pipe diameter of twelve (12) inches or larger and open ditches with a two (2) foot or larger bottom width. Although this definition includes only the main trunks of pipes or open ditches that lead to each regulated outfall, mapping of the total conveyance system (that would also include the tributaries to the main trunks) as budgets allow will aid in illicit discharge detection and elimination efforts. **Table 2-1** lists the estimated linear feet of total conveyance systems within Merrillville's MS4 area broken down by type. This estimate will be used to determine the amount of MS4 conveyances to be mapped each year for compliance. The Town has completed 100% of the MS4 conveyance system mapping and will continue updating as needed.

Table 2-1
Conveyance Systems for Merrillville's MS4 Area

Conveyance Type	Estimated Feet of Conveyance	% of Total Conveyance System
Open Storm Drain	157,664	32
Enclosed Pipe	333,570	68
Total	491,234	100

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

2.3 PRIORITY WATERSHED RANKING AND CONCERNS

The Rule 13 SWQMP-Part B required 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 Town of Merrillville's Part B Report concluded that certain 14-digit subwatersheds in their MS4 area are to be given the highest priority for implementation of their stormwater program. Since the submittal of Part B, updated IDEM data has become available and is incorporated into these report findings.

The Town of Merrillville has ranked the following priority watersheds identified in Part B in an effort to further investigate water quality issues associated with stormwater runoff over the next five-year permit term and as a means to further direct and target Rule 13 program activities. Watersheds were ranked based on water quality concerns, such as, waterbody impairments, sensitive areas, and percentage of the subwatershed's land area that is located within the Town's MS4 area.

The priority subwatershed ranking protocol is as follows:

- if a subwatershed contains an IDEM 303(d) listed waterbody, then it is given a higher priority based on its listed number;
- percentage of the MS4 area located within the subwatershed is a consideration because the Town will implement the majority of its Rule 13 program in their delineated MS4 area; and
- proximity of the identified subwatersheds to one another, their drainage patterns, and land uses were considered.

Table 2-2 ranks the previously identified watersheds based on concerns related to the quality of stormwater runoff for the priority watersheds.

Table 2-2
Priority Watershed Ranking and Concerns

Priority Ranking	Watershed Name (14-digit HUC)	Watershed Concerns
1	Turkey Creek-Merrillville (04040001030020)	• 303(d) for E. coli
2	Turkey Creek Headwaters (04040001030010)	• 303(d) for E. coli
3	Main Beaver Dam Ditch-Niles Ditch (04040001030040)	• 303(d) for Impaired Biotic Communities

**Merrillville, Indiana
NPDES Phase II Part C Implementation Plan**

Priority Ranking	Watershed Name (14-digit HUC)	Watershed Concerns
4	Deep River – Deer Creek (04040001030050)	• 303(d) for Impaired Biotic Communities, E. coli and Siltation
5	Deep River – Lake George Dam (04040001030060)	• 303(d) for Impaired Biotic Communities

2.4 UTILIZATION OF PRIORITY WATERSHED INFORMATION

The Town of Merrillville will use the information it obtains during further investigation of water quality issues associated with stormwater runoff in the priority watersheds over the five-year permit term to direct and further target Rule 13 program activities. Program elements will be prioritized to coincide with priority watershed rankings. When practical, implementation activities will start with priority watershed #1 and will continue sequentially through ranked priority watersheds. Program priorities will be updated annually as additional water quality information becomes available. **Table 2-3** summarizes how water quality information related to the priority watersheds can be correlated to each of the Rule 13 MCMs.

**Table 2-3
Use of Priority Watershed Information**

MCM	Use of Priority Watershed Information
1	<ul style="list-style-type: none"> • Distribution of stormwater educational brochures related to human effects on stormwater quality. • MSU will use information to target their efforts. • Add priority watershed information to MS4 Web site.
2	<ul style="list-style-type: none"> • Seek volunteers in Priority Watershed areas. • Identify and work with established Watershed groups in 14-digit subwatersheds.
3	<ul style="list-style-type: none"> • Prioritize Screening/Testing activities. • Prioritize Storm Drain marking areas.
4	<ul style="list-style-type: none"> • Prioritize Construction plan review and inspection activities.
5	<ul style="list-style-type: none"> • Prioritize Plan review and inspection.
6	<ul style="list-style-type: none"> • Prioritize areas for street sweeping program. • Locate sensitive water bodies to minimize salt and sand application.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

3.0

MINIMUM CONTROL MEASURE #1
PUBLIC EDUCATION AND OUTREACH

Rule 13 requires that residents, visitors, public service employees, commercial and industrial facilities, and construction site personnel within the MS4 area be informed about the impacts that polluted storm water runoff can have on water quality and ways they can minimize their impact on storm water quality. A reasonable attempt must be made to reach all constituents with the MS4 area. An initial assessment of the MS4 area constituents must be conducted to determine initial constituent knowledge and practices as they relate to storm water quality. The following discussion provides information on Town of Merrillville's MS4 area Public Education and Outreach Program.

3.1 PROPOSED PUBLIC EDUCATION AND OUTREACH BMPs

The following Education and Outreach BMPs will be developed and implemented by the the Town of Merrillville in order to comply with the minimum requirements of this MCM. The Town's MS4 area, as discussed in Part B, is comprised of both urban and agricultural lands. The Town's Education and Outreach Program is therefore designed to minimize stormwater impacts originating from both land uses by informing citizens about the impacts of stormwater discharges on water bodies and the steps that they can take to reduce pollutants in stormwater runoff.

The town of Merrillville with continue implementation of a Storm Water Public Education and Outreach Program as part of this Part C Plan, which outlines the overall strategy for gradually implementing the program and its corresponding BMPs over the next permit term.

Table 3-1 provides a summary of the Education and Outreach BMPs to be implemented and identifies the associated measurable goals, programmatic indicator number, timeline, priority areas, and responsible parties associated with each BMP. A detailed description of each BMP is provided below.

Worshops for the General Public

The Town will conduct at lease two (2) presentations annually to increase awareness on stormwater quality issues and pollution prevention strategies to the general public (e.g., schools, environmental, and/or civic groups).

Newsletter Articles

The will continue include at least two(2) articles each reporting period within the local quarterly newsletter that discuss topics related to stormwater quality, and other relevant stormwater information designed to enhance the community's understanding of the Town's stormwater issues. Municipal staff will be responsible for drafting the articles.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

The Town will be responsible for disseminating the information. The Town will document the total number of articles published, the topics of each article, and the total number of newsletters disseminated. This information will be included in the Town's Rule 13 Annual Reports.

Stormwater MS4 Web Site

The Town will continue to update and improve the MS4 Web site (1) which will be linked to the NISWAG Web site and includes information pertaining to the Town's Stormwater Program. The MS4 Web site was designed to educate residents, visitors, public service employees, commercial and industrial facilities, and construction site personnel about the impacts polluted storm water runoff can have on water quality and the ways they can minimize their impacts on storm water quality. The MS4 Web site includes copies of the Town's SWQMP, stormwater related ordinances, and other relevant information. The MS4 Web site will include a counter to identify the number of "hits" the site receives. Information will be added to make the public aware of the priority watershed ranking and concerns identified in subsection 2.3. The total number of hits the site receives along with any questions and answers provided will be submitted with the Town's Rule 13 Annual Reports submitted to IDEM.

Stormwater Brochures

The Town will continue to develop different stormwater brochures designed to educate residents, visitors, public service employees, commercial and industrial facilities, and construction site personnel about the impacts polluted storm water runoff can have on water quality and the ways they can minimize their impacts on stormwater quality. The brochures will include targeted outreach information on stormwater quality impacts within MCMs 3,4,5,& 6. The Town will create a no less than four (4) brochures within the next permit term. The Town will distribute no less than one-hundred (100) brochures annually. Additional brochures will be developed as topics and targeted activities necessitate them. Brochures will be disseminated via mass mailings within MS4 areas, at local places of business, at Town offices, and at Town events. The Town will also distribute materials provided by to local residents. A description of the brochures along with the total number of brochures distributed will be documented and included in the Town's Rule 13 Annual Reports submitted to IDEM.

Solid Waste Management District (SWMD) Promotions

In order to educate community members on the importance of pollution prevention and recycling programs, the Town will advertise and promote the activities of the Lake County Solid Waste Management District (SWMD). The Town will offer no less than one hundred (100) promotional handouts at their municipal facilities. This will also help with eliminating illegal dumping activities and help to satisfy requirements of MCM #3. The SWMD develops a newsletter and sponsors hazardous waste disposal events, recycling sites, composting sites, and educational programs for local schools and civic groups. Advertisements and promotions will occur on the Town MS4 Web-site and through the various stormwater brochures to be developed as part of the Town's Stormwater Program. The Town will coordinate with the SWMD to estimate the total waste collected at their different facilities annually (1) and in order to target activities in

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

priority watersheds. In addition, all SWMD stormwater related educational activities that occur within the Town's MS4 area will be documented. All of this information will be included in the Town's Rule 13 Annual Reports submitted to IDEM.

Mass Media Opportunities

Mass media has been shown to be a means to gain a higher level of exposure of stormwater education information and to create a higher level of impressions, which will educate a greater number of individuals. Local radio, TV stations, and newspapers will be contacted about stormwater quality Public Service Announcements (PSAs). As this activity progresses, information will be included with the Town's Rule 13 Annual Reports submitted to IDEM.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Table 3-1
Public Education and Outreach BMPs

Best Management Practice (BMP)	Measurable Goals, Tracking, and Programmatic Indicators	Timeline	Priority Areas	Responsible Party
Workshops for the General Public	<ul style="list-style-type: none"> • Advertise and conduct two (2) events each reporting period • Track using Programmatic Indicator #1 	Initiate in 2014, then held bi-annually	All areas within the MS4 boundary.	SWMB, outsourced, & Parks.
Newsletter Articles	<ul style="list-style-type: none"> • Publish two (2) articles for each reporting period. • Track number of articles published and subject matter. • Track using Programmatic Indicator #1 	Within reporting period.	All areas within the MS4 boundary.	SWMB
MS4 Web Site	<ul style="list-style-type: none"> • Continue updating and improving MS4 Website (1) with detailed stormwater information.. • Answer questions generated by MS4 Web site on an on-going basis. • Track total number of hits site receives and public questions asked and answers to them. • Track using Programmatic Indicator #1 	On-going, update information and respond to public questions.	All areas within the MS4 boundary	SWMB & IT
Stormwater Educational Brochures	<ul style="list-style-type: none"> • Create four (4) different stormwater quality brochures • Distribute no less than one 	Initiate in 2014 and continue throughout permit term.	All areas within the MS4 boundary	SWMB & outsourced

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Best Management Practice (BMP)	Measurable Goals, Tracking, and Programmatic Indicators	Timeline	Priority Areas	Responsible Party
	<ul style="list-style-type: none"> hundred (100) annually Create additional brochures as needed. Track using Programmatic Indicator #1.			
Solid Waste Management District Promotions	<ul style="list-style-type: none"> Continue promotions of HHW collections and distribute no less than one hundred (100) promotional brochures. Coordinate with SWMD to get collection data from HHW events annually (1) Track using Programmatic Indicators #10, #11, and #12. Track using Programmatic Indicator #3. 	On-going.	All areas within the MS4 boundary and various collection sites as determined by SWMD.	SWMB & SWMD.
Mass Media Opportunities	<ul style="list-style-type: none"> Coordinate with local radio, TV stations, and newspapers about Public Service Announcements (PSAs). Document progress in Rule 13 Annual Reports. Track using Programmatic Indicator #1. 	Initiate 2014 then bi-annually.	All areas within the MS4 boundary and various collection sites as determined by SWMD	SWBM

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

4.0	MINIMUM CONTROL MEASURE #2 PUBLIC PARTICIPATION & INVOLVEMENT
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Rule 13 requires that documented opportunities are given to constituents within the MS4 area to participate in the storm water management program development and implementation. The MS4 entity must comply with public notice requirements to allow public comment. An initial assessment of MS4 area constituents must be conducted to identify interested individuals for participation in the MS4 area stormwater program.

4.1 PROPOSED PUBLIC PARTICIPATION AND INVOLVEMENT BMPs

The following Public Participation and Involvement BMPs will be developed and implemented by the Town of Merrillville in order to comply with the minimum requirements of this MCM. Existing BMPs identified in subsection 4.1 with any needed enhancements, as well as, any new BMPs are included in this section.

The Town of Merrillville has continued the implementation of a Storm Water Public Participation and Involvement Program as part of this Part C Plan, which outlines the overall strategy for implementing the program and its corresponding BMPs. The program is designed to engage citizens, form partnerships, and gain greater support and compliance for the program. The presumptive approach of implementing this program assumes that overall stormwater quality will improve each year by better educating the public to reduce the amount of pollutants entering the conveyance system.

Table 4-1 provides a summary of the Public Participation and Involvement BMPs to be implemented and identifies the associated measurable goals, programmatic indicators, tracking, timeline, priority areas, and responsible parties associated with each BMP. A detailed description of each BMP is provided below.

Clean-Up Events

The Town will conduct a local clean-up event (1) annually, which will increase citizen awareness of the Town's stormwater program through public education and outreach. Town departments (including Parks and Public Works Departments) will participate in annual clean-up events as needed. The Town will document the number of volunteers that participate, as well as, the number of events held. This information will be included in the Town's Rule 13 Annual Reports submitted to IDEM.

Stormwater Survey

The Town will develop and conduct an updated Stormwater Public Awareness Survey (1) in 2014 to assess the public's knowledge and understanding of stormwater issues and to establish additional information for MCM #1. The Town will also compile the Survey results and provide a final report. The Town will evaluate the survey results in order to better target their education and outreach activities. The results of the survey as well as the conclusions drawn by the survey will be included with the Town's Rule 13

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Annual Report to be submitted to IDEM.

NISWAG MS4 Partnership Meetings

The Town will have a representative attend at least (8) Northwest Indiana Regional Advisory Group (NISWAG) MS4 Partnerships meetings annually to provide input and give direction for the local MS4 program. The Town or designated representative will attend these meetings to provide input on the program as well as suggestions on the types of BMPs utilized and how to implement them.

Community Involvement/Storm Board Meetings

To ensure adequate citizen involvement in the development and implementation of Town of Merrillville's SWQMP and stormwater program, the Town will continue to conduct monthly (12 annually) Storm Board Meetings open to the public in order to solicit public input on the Town's stormwater management. This information will be included in the Town's Rule 13 Annual Reports submitted to IDEM.

Annual MS4 Update to Town Council

Designated Town staff will present an updated report on the MS4 program to the Town Council during one (1) of their regularly scheduled meetings which are open to the public. This will be done once a year and the Town will track the number of attendees, as well as, document public comments and report this in their Rule 13 Annual Reports submitted to IDEM.

Storm Drain Marking

To increase citizen awareness of the Town's stormwater program through public participation, the Town will organize and conduct one (1) storm drain marking event annually throughout the Town's MS4 area. The Town will identify locations such as subdivisions, commercial parks, and other areas that warrant storm drain marking. The Town will coordinate and advertising these events and seek local volunteers for participation. The Town will document the number of volunteers that participate as well as number of storm drains marked or cast. This information will be included in the Town's Rule 13 Annual Reports submitted to IDEM.

"Report-A-Polluter" Program

The Town will continue to implement their "Report-A-Polluter" program (1) to field complaints from the public on illegal dumping, illicit discharges, poor erosion control, and other activities that negatively impact stormwater quality. Citizens will have the opportunity to submit such complaints. This will be promoted on the MS4 web site under the section for public involvement and will also serve as an education tool to inform the public about hazards of illicit discharges and illegal dumping. The Town will document their follow up on citizen reports and corrections taken. Information will be compiled and included in Town's Rule 13 Annual Reports submitted to IDEM.

Household Hazardous Waste (HHW) Collection Event Promotions and Documentation

In order encourage local residents to participate in the proper disposal of hazardous

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

materials, the Town will frequently advertise and promote the activities of the Lake County Solid Waste Management District's (SWMD) Household Hazardous Waste (HHW) Collection Program and Schedule. This will also help with eliminating illegal dumping activities and satisfy requirements of MCM #3. The SWMD hosts HHW Collection events in several locations throughout Lake County. Advertisements and promotions will occur on Town's MS4 Web-site and through the various brochures developed by SWMD. The Town will coordinate with the SWMD to estimate the total waste collected at their different facilities. The quantities and types of material collected will be included in the Town's Rule 13 Annual Reports submitted to IDEM.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Table 4-1
Public Participation and Involvement BMPs

Best Management Practice (BMP)	Measurable Goals, Tracking, and Programmatic Indicators	Timeline	Priority Areas	Responsible Party
Clean-up Events	<ul style="list-style-type: none"> • Advertise and conduct events (1) annually. • Track using Programmatic Indicators #2 and #3. 	Continue in 2014, then held annually.	All areas within the MS4 boundary	Parks & SWMB
Stormwater Survey	<ul style="list-style-type: none"> • Conduct updated survey (1) • Evaluate results to assess the public's initial knowledge and understanding of stormwater issues. • Use survey results to target outreach efforts. • Track using Programmatic Indicator #3. 	Survey conducted and compiled by December 2015.	All areas within the MS4 boundary	SWMB
NISWAG MS4 Partnership Meetings	<ul style="list-style-type: none"> • Conduct meetings quarterly. • Town will attend meetings (8) and give input into program implementation issues. • Identify ways to target and prioritize program activities. • Track using Programmatic Indicators #2. 	Monthly meetings.	All areas within the MS4 boundary	Select Town Staff/Consultants
Community Involvement/ Storm Board Meetings	<ul style="list-style-type: none"> • Conduct SWMB meetings monthly (12) • Track using Programmatic Indicator #2 and #3. 	Monthly meetings	All areas within the MS4 boundary	SWMB

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Best Management Practice (BMP)	Measurable Goals, Tracking, and Programmatic Indicators	Timeline	Priority Areas	Responsible Party
Annual MS4 Update to Town Council	<ul style="list-style-type: none"> • Provide annual update (1) of local MS4 program and answer questions from the public. • Track using Programmatic Indicators #2 and #3. 	Continue in 2014, then held annually	All areas within the MS4 boundary.	MS4 Operator
Storm Drain Marking	<ul style="list-style-type: none"> • Develop and implement an event (1) annually. • Track using Programmatic Indicators #2, #3, and #4. 	Continue in 2014, then held annually	Targeted areas within the MS4 boundary.	SWMB & DPW
"Report-A-Polluter" Program	<ul style="list-style-type: none"> • Continue "Report-a-Polluter" program (1). • Add information on the stormwater quality MS4 Web page as needed. • Document complaints utilizing tracking form. • Track using Programmatic Indicators #2 and #3. 	Continue in 2014 and on-going.	All areas within the MS4 boundary.	SWMB
HHW Collection Event Promotions and Documentations	<ul style="list-style-type: none"> • Conduct promotions as SWMD performs activities. • Track using Programmatic Indicators #10, #11, and #12. 	Continue in 2014 and on-going.	All MS4 area.	Parks and SWMB

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

5.0	MINIMUM CONTROL MEASURE #3 ILLCIT DISCHARGE DETECTION AND ELIMINATION
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Rule 13 requires the development and implementation of a strategy to detect and eliminate illicit discharges to the MS4 conveyance. A storm sewer system map showing the location of all outfalls and MS4 conveyances under the MS4 operator's control and the names and locations of all waters that receive discharges from those outfalls must be developed. 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.

A plan must be developed to detect, address, and eliminate illicit discharges, including illegal dumping into the MS4 conveyance. This plan must locate problem areas via dry weather screening or other means, determine the source, remove or otherwise correct illicit connections, and document actions taken. The plan must also identify all active industrial facilities within the MS4 area that discharge into the MS4 conveyance.

All public employees, businesses, and the general public must be educated about the hazards associated with illicit discharges and the improper disposal of waste. The educational effort must include informational brochures and guidance for specific audiences and school curricula and the public reporting of illicit discharges and spills. In order to give the public alternatives to improper disposal of wastes, the MS4 entities must initiate or help coordinate existing recycling programs in the MS4 area for commonly dumped wastes, such as motor oil, antifreeze, and pesticides.

5.1 PROPOSED ILLICIT DISCHARGE DETECTION AND ELIMINATION BMPs

The following Storm Water Illicit Discharge Detection and Elimination (IDDE) BMPs will be developed and implemented by Town of Merrillville in order to comply with the minimum requirements of this MCM.

The Town of Merrillville has initiated the implementation of a Storm Water Illicit Discharge Detection and Elimination Program as part of this Part C Plan, which outlines the overall strategy for gradually implementing the program and its corresponding BMPs over the next permit term. The Town's program is designed to gain a thorough awareness of the Town's 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 5-1 provides a summary of the IDDE BMPs listed below and identifies the associated measurable goals, programmatic indicators, tracking, timeline, priority areas, and responsible parties associated with each BMP. Detailed description of each BMP is provided below.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Stormwater System Map

The Town will continue to update as needed, their storm sewer system map (1) that identifies the locations of all outfalls and conveyances under the MS4 operator's control. Having this map has improved the Town's capabilities to respond to illicit discharges entering the storm sewer system. Conveyance is defined by IDEM as any structural process for transferring stormwater between at least two (2) points. The term includes piping, ditches, swales, curbs, gutters, catch basins, channels, storm drains, and roadway. IDEM further defines MS4 conveyance systems as outfall conveyance systems with a pipe diameter of twelve (12) inches or larger and open ditches with a two (2) foot or larger bottom width. Although this definition includes only the main trunks of pipes or open ditches that lead to each regulated outfall, mapping of the total conveyance system (that would also include the tributaries to the main trunks) as budgets allow will aid in illicit discharge detection and elimination efforts.

Existing as-builts identifying storm sewer systems in newly developed areas will continue to be utilized. Only conveyance systems with a pipe diameter of twelve inches or larger and open ditches with a two foot or larger bottom width are mapped. The map identifies all waters that receive discharges from those outfalls. Mapping activities will be documented and included in the Town's Rule 13 Annual Reports submitted to IDEM.

Illicit Discharge Detection and Elimination (IDDE) Ordinance Update

The Town will continue developing, updating and enforcing an Illicit Discharge Detection and Elimination (IDDE) ordinance, which provides legal authority to keep illicit discharges out of the stormwater conveyance. The IDDE regulations will continue to be a part of the comprehensive, Stormwater Management Ordinance (1) that addresses illicit discharges, construction runoff, and Post-construction runoff. The Town will review the Stormwater Management Ordinance annually (1). The Town will be responsible for enforcing the requirements of the IDDE regulations. The Town's Comprehensive Stormwater Management Ordinance, which includes the Rule 13 IDDE requirements, is a supplemental document that is bound separately from this report. Any activities towards revising the ordinance will be documented in the Town's Rule 13 Annual Reports submitted to IDEM.

Illicit Discharge Detection and Elimination (IDDE) Plan

The Town has developed an IDDE Plan, which is a supplemental document that is bound separately from this report, to ensure effective detection and elimination of illicit discharges to and in Merrillville's separate storm sewer system. The Town's IDDE Plan identifies the methods for detecting, addressing and eliminating illicit discharges, including illegal dumping, into the Town's MS4 conveyance system. The plan includes specifics on dry weather screening, methods for determining the source of illicit discharges, removing or correcting illicit connections and documenting actions taken. E. coli monitoring, dye testing, and filming portions of the system will be incorporated into the IDDE plan. The Town will initiate implementation of the plan (1) and update as needed. Program adjustments will be documented in the Town's Rule 13 Annual Reports submitted to IDEM.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Storm Drain Castings

The Town's Subdivision Control Ordinance (1) requires that all new installations or replacements of cast iron catch basins, grates, and inlet covers for new and redevelopment projects be permanently cast with a customized message, such as "DUMP NO WASTE, DRAINS TO WATERWAYS" message. The Town will track number of units installed. Cast designs serve as an enduring directive against dumping and build public awareness of the dangers of water pollution and its impact on local waterways.

MCM 3 Staff Training

The Town will conduct training for staff on the hazards associated with illicit discharges and improper disposal of waste and pollution prevention, including ways to manage activities to prevent substantial quantities of chemicals and water from entering the conveyance system. Appropriate MS4 entity staff will be trained beginning in 2014 and periodic refresher sessions will be conducted at least once (1) annually. The Town will document training opportunities provided and attendees. Additional topics may include proper storage and disposal of hazardous wastes, material handling, identifying illicit discharges, fertilizer and pesticide application, and BMP/SWP3 implementation. The number of trainings, number of staff attending trainings will be tracked and reported in the Town's Rule 13 Annual Reports submitted to IDEM.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Table 5-1
Illicit Discharge Detection and Elimination BMPs

Best Management Practice (BMP)	Measurable Goals, Tracking, and Programmatic Indicators	Timeline	Priority Areas	Responsible Party
Stormwater System Map	<ul style="list-style-type: none"> • Continue updating stormwater system map (1) as needed. • Track using Programmatic Indicators #5 and #6. 	On-going.	All areas within the MS4 boundary.	SWMB and outsourced
Illicit Discharge Detection and Elimination (IDDE) Ordinance Update.	<ul style="list-style-type: none"> • Enforce Stormwater Management Ordinance (1) that includes IDDE regulations. • Review Stormwater Management Ordinance Annually (1) 	On-going.	All areas within the MS4 boundary.	SWMB, Code Enforcement and outsourced
IDDE Plan	<ul style="list-style-type: none"> • Update IDDE Plan (1) and program priorities annually. • Track using Programmatic Indicators #7, #8, and #9. 	Implementation beginning 2014, then updated annually.	Prioritize outfalls checked for further, detailed follow up investigations.	SWMB and outsourced
Storm Drain Castings	<ul style="list-style-type: none"> • Continue requirement that all new installations or replacements of cast iron catch basins, grates, and inlet covers have permanently cast message as part of ordinance (1). • Track using Programmatic Indicator #4. 	On-going	New installations of MS4 conveyance components.	SWMB & DPW

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Best Management Practice (BMP)	Measurable Goals, Tracking, and Programmatic Indicators	Timeline	Priority Areas	Responsible Party
MCM 3 Staff Training	<ul style="list-style-type: none"> • Conduct annual (1) IDDE training. • Track using Programmatic Indicators #2 and #3. 	Continue in 2014 and on-going.	Target MS4 conveyance system, MS4 operational areas, and Department Facilities.	SWMB & DPW

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

6.0

MINIMUM CONTROL MEASURE #4
CONSTRUCTION SITE STORM WATER RUNOFF CONTROL

Rule 13 requires 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 to the 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 that BMPs are properly installed. These 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 appropriate staff for follow up.

MS4 area personnel responsible for plan review, inspection, and enforcement of construction activities shall receive annual training.

6.1 PROPOSED CONSTRUCTION SITE STORMWATER RUNOFF CONTROL BMPs

The following Construction Site Stormwater Runoff Control BMPs will continue to be developed and implemented by Town of Merrillville in order to comply with the minimum requirements of this MCM. Existing BMPs identified in subsection 6.1 with any needed enhancements, as well as, any new BMPs are included in this section.

The Town of Merrillville has initiated the implementation of a Construction Site Stormwater Runoff Control Program as part of this Part C Plan, which outlines the overall strategy for implementing the program and its corresponding BMPs. The Town's program is designed to minimize the amount of sediment and other pollutants from being discharged from construction sites. The presumptive approach of implementing this program assumes that these pollutants will be reduced each year.

Table 6-1 provides a summary of the Construction Site BMPs to be implemented and identifies the associated measurable goals, programmatic indicators, tracking, timeline, priority areas, and responsible parties associated with each BMP. Detailed description of each BMP is provided below.

Erosion and Sediment Control Ordinance

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

To minimize water quality impacts of development occurring within Town of Merrillville and ensure that new and redevelopment within the Town's MS4 area is managed as efficiently as possible, the Town will continue utilizing their Stormwater Management Ordinance (1) to exceed the minimum requirements of 327 IAC 15-5 (Rule 5). This ordinance will continue to be administered and enforced by the Town. This ordinance addresses illicit discharges, construction runoff, and post-construction runoff. The Town will review the Stormwater Management Ordinance annually (1). The Town's draft comprehensive Stormwater Management Ordinance is a supplemental document that is bound separately from this report. Any activities towards revising the ordinance will be documented in the Town's Rule 13 Annual Reports submitted to IDEM.

Plan Review, Site Inspection, and Enforcement

The Town will continue utilizing professional consultants as needed and existing staff to conduct Stormwater Pollution Prevention Plan (SWP3) reviews and issue local stormwater permits. The Town will continue to utilize the Lake County SWCD as an outside review authority for Town-owned projects that will require a Rule 5 permit to comply with 327IAC15-5. Additionally, the Town will continue conducting on-site inspections, on permitted projects and implement enforcement actions as needed. Each permitted project will be inspected no less than four (4) times annually until a Notice of Termination is submitted to IDEM. Inspections will continue to be documented utilizing a local inspection form. Enforcement actions include requiring corrective actions, fines, and/or stop work orders. Activities will be prioritized and first occur within priority watersheds listed in Section 2.3 and proximity to receiving waters.

MCM 4 Staff Training

The Town will continue to ensure that staff that are responsible for SWP3 review and/or construction site inspection attend an MCM 4 training at least once (1) annually. The Town will continue to ensure that an adequate amount and skill level of staffing is in place or services will be outsourced to account for increased workloads or technical assistance needs for SWP3 reviews and inspections. Training program content will include various topics pertaining to MCM 4. All training activities as well as the number of staff trained will be included in the Town's Rule 13 Annual Reports submitted to IDEM.

Training for Construction Professionals

The Town will administer a regional construction and development community education program, which will increase the construction and development community's awareness of changing erosion and sediment control/stormwater pollution prevention standards. This training will be held at least once (1) every two years. This program will be offered to local construction professionals, plan preparers, inspectors and MS4 staff. IDEM will be consulted on program content.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Procedure for Prioritizing Construction Activities

The Town will prioritize construction activities for the inspection and enforcement process to ensure that construction and development site inspections are as effective as possible. For each project site, Town staff will evaluate the nature and extent of the construction activity, topography, highly erodible soils, soil suitability for septic systems, and priority watersheds (as well as their receiving waters) as described in Part B to determine how frequently these sites need to be inspected. Sites great than or equal to 5 acres in size, located near a receiving water, as well as sites containing slopes greater than or equal to 4%, wetlands, and/or endangered, threatened, or rare species will likely be prioritized for more frequent inspections. The Town will periodically evaluate their priorities for construction activities. Updates to Town procedures will be submitted in the Town's Rule 13 Annual Reports.

Inspection and Enforcement Documentation

The Town will continue to utilize and refine their MS4 construction site inspection forms. Inspectors will continue to document any inadequacies identified during each visit. If follow-up inspections prove that the identified BMP inadequacies were not addressed, the inspector will document all enforcement measures to be taken by the Town. The Town will periodically review forms with IDEM Stormwater Specialists for feedback.

Quality Assurance/Quality Control (QA/QC) of Overall Program

In order to ensure consistency with the State's Rule 5 program and maintain overall program quality, the Town will comply with Rule 5 on Town owned and operated projects, work with the SWCD to review Town owned and operated projects, and review the Town's program with IDEM at least once (1) every permit term. This action will correct program deficiencies or make updates based on new information or technology.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Table 6-1
Construction Site Stormwater Runoff Control BMPs

Best Management Practice (BMP)	Measurable Goals, Tracking, and Programmatic Indicators	Timeline	Priority Areas	Responsible Party
Erosion and Sediment Control Ordinance Update	<ul style="list-style-type: none"> • Adopt a new Stormwater Management Ordinance (1) that includes IDDE regulations. • Review Stormwater Management Ordinance Annually (1) 	Completed and update as needed.	All areas within the MS4 boundary meeting the land disturbance threshold.	SWMB, Planning and outsourced.
Plan Review, Site Inspection, and Enforcement	<ul style="list-style-type: none"> • Review 100% of SWP3s associated with construction projects • Inspect each permitted construction site at least (4) times annually • Track using Programmatic Indicators #13, #14, #15 	Continue in 2014, then on-going.	All active development/redevelopment projects permitted within the MS4 boundary.	SWMB, Consultants and SWCD for MS4-owned Projects
Training for Construction Professionals	<ul style="list-style-type: none"> • Conduct a workshop (1) every two years. 	Continue in 2014, then on-going bi-annually.	MS4 entity areas.	SWBM and outsourced
MCM 4 Staff Training	<ul style="list-style-type: none"> • Conduct staff trainings once (1) annually. 	Continue in 2014, then on-going.	All active development/redevelopment projects permitted within the MS4 boundary.	SWMB and outsourced.
Procedure for Prioritizing Construction Program Activities	<ul style="list-style-type: none"> • Completed. • Track using Programmatic Indicator #15. 	Completed.	Use written Procedure for Prioritizing Construction Program Activities.	Planning

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Best Management Practice (BMP)	Measurable Goals, Tracking, and Programmatic Indicators	Timeline	Priority Areas	Responsible Party
Inspection and Enforcement Documentation	<ul style="list-style-type: none"> • Refine forms as part of on-going program. • Review of form by IDEM. • Track using Programmatic Indicators #13, #14, #15 	On-going.	Use written Procedure for Prioritizing Construction Program Activities.	Planning and outsourced.
QA/QC of Overall Program	<ul style="list-style-type: none"> • Comply with Rule 5 on MS4-owned and operated projects. • Seek approval for program and review of County owned and operated projects by IDEM or SWCD. • Review with agencies at least once (1) bi-annually. 	Continue in 2014, then each permit term.	All active development/redevelopment projects permitted within the MS4 boundary.	SWMB and outsourced.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

7.0	MINIMUM CONTROL MEASURE #5 POST-CONSTRUCTION STORM WATER RUNOFF CONTROL
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Rule 13 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 storm water 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 storm water 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.

7.1 PROPOSED POST-CONSTRUCTION SITE STORMWATER RUNOFF CONTROL BMPs

The following Post-construction Site Stormwater Runoff Control BMPs will be developed and implemented by Town of Merrillville in order to comply with the minimum requirements of this MCM. Existing BMPs identified in subsection 7.1 with any needed enhancements, as well as, any new BMPs are included in this section. The Town's ordinance will be implemented on a Town-wide basis.

The Town of Merrillville has initiated the implementation of a Post-construction Site Stormwater Runoff Control Program as part of this Part C Plan, which outlines the overall strategy for gradually implementing the program and its corresponding BMPs over the next permit term. The Town's program is designed to ensure adequate stormwater quality is maintained from developed sites. The presumptive approach of implementing this program assumes that overall stormwater quality will improve each year. The technological standards required as part of the Town's ordinance contains specific reduction goal percentages for each BMP.

Table 7-2 provides a summary of the Post-construction Site Runoff BMPs to be implemented and identifies the associated measurable goals, programmatic indicators, tracking, timeline, priority areas, and responsible parties associated with each BMP. Detailed description of each BMP is provided below.

Post-construction Control Ordinance

The Town adopted a comprehensive, Stormwater Management Ordinance (1) that meets the minimum requirements of 327 IAC 15-13 (Rule 13) including Post-construction site runoff control measures. The Post-construction provisions are part of

Merrillville, Indiana NPDES Phase II Part C Implementation Plan

a comprehensive ordinance that addresses illicit discharges, construction runoff, and Post-construction runoff. The Post-construction provisions ensure long-term storm water quality treatment by requiring BMPs for new and re-development within Town of Merrillville and ensure that new/redevelopment within the Town's MS4 area is managed as efficiently as possible. The ordinance will continue to be administered and enforced by the Town. The Town will review the ordinance annually (1) to ensure it meets the minimum requirements of Rule 5. The Town's comprehensive Stormwater Management Ordinance is a supplemental document that is bound separately from this report.

Post-construction BMPs continue to treat stormwater after construction has been completed and the site has been stabilized. Installing certain BMPs, such as bioretention areas and sand filters, prior to stabilization can cause failure of the measure due to clogging from sediment. If such BMPs are installed prior to site stabilization, Merrillville requires that they will be protected utilizing erosion control measures.

Conversely, detention ponds and other BMPs can be installed during construction and used as sediment control measures. In those instances, Merrillville requires that the construction sequence ensures the pond is cleaned out with pertinent elevations and storage and treatment capacities reestablished as noted in the accepted stormwater management plan.

Merrillville has adopted a policy that the control of stormwater runoff quality will be based on the management of Total Suspended Solids (TSS). This requirement was adopted as the basis of Merrillville's stormwater quality management program for all areas of jurisdiction.

Merrillville has designated 12 pre-approved BMP methods to be used alone or in combination to achieve the 80% TSS removal stormwater quality goals for a given project. These BMP measures are listed along with their anticipated average TSS removal rates in **Table 7-1**. Pre-approved BMPs have been proven/are assumed to achieve the average TSS removal rates indicated in Table 7-1. Anyone applying for a Town permit desiring to use a different TSS removal rate for these BMPs must follow the requirements discussed in the Town's Technical Standards Document for Innovative BMPs. Details regarding the applicability and design of these pre-approved BMPs are contained within fact sheets presented in the Town's Technical Standards Manual.

Note that a single BMP measure may not be adequate to achieve the water quality goals for a project. It is for this reason that a "treatment train", a number of BMPs in series, is often required for a project.

TABLE 7-1
Pre-approved Post-construction BMPs

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

BMP Description	Anticipated Average % TSS Removal Rate^E
Bioretention ^A	75
Constructed Wetland	65
Underground detention	70
Extended Dry Detention ^B	72
Infiltration Basin ^A	87
Infiltration Trench ^A	87
Media Filtration – Underground Sand	80
Media Filtration – Surface Sand	83
Storm Drain Insert ^D	NA ^C
Filter Strip	48
Vegetated Swale	60
Wet Detention	80

Notes:

- A. Based on capture of 0.5-inch of runoff volume as best available data. Effectiveness directly related to captured runoff volume, increasing with larger capture volumes.
- B. Test results are for three types of ponds: extended wet detention, wet pond and extended dry detention
- C. NA may indicate that the BMP is not applicable for the pollutant, but may also indicate that the information is simply Not Available. Independent testing should be provided, rather than the manufacturer's testing data.
- D. Must provide vendor data for removal rates.
- E. Removal rates shown are based on typical results. These rates are also dependent on proper installation and maintenance. The ultimate responsibility for determining whether additional measures must be taken to meet the Ordinance requirements for site-specific conditions rests with the applicant.

Merrillville has established minimum standards for the selection and design of construction water quality BMPs in their Technical Standards document. The information provided establishes performance criteria for stormwater quality management and procedures to be followed when preparing a BMP plan for compliance. Post-construction BMPs must be sized to treat the water quality volume, WQv, for detention-based BMPs or the water quality discharge, Qwq, for flow-through BMPs. The Technical Standards Document provides the methodology for calculating the WQv and Qwq values.

BMPs not previously accepted by Merrillville must be certified by a professional engineer licensed in State of Indiana and accepted through Merrillville. American Society for Testing and Materials (ASTM) standard methods must be followed when

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

verifying performance of new measures. New BMPs, individually or in combination, must meet the 80% TSS removal rate at 50-125 micron range (silt/fine sand) without reentrainment and must have a low to medium maintenance requirement to be considered by Merrillville. Testing to establish the TSS removal rate must be conducted by an independent testing facility, not the BMP manufacturer.

Plan Review, Site Inspection, and Enforcement

The Town will continue to conduct post-construction runoff control plan reviews in conjunction with the SWP3 reviews. The Town will also conduct AS-Built inspections for post-construction BMPs to ensure they are installed properly and in compliance with the Town's ordinance.

The Town will inspect all existing post-construction bio-retention/detention BMPs at least one (1) time within each permit term. The Town will document maintenance needs at each detention facility. Enforcement actions may include requiring corrective actions, fines, and/or stop work orders.

MCM 5 Staff Training

The Town will conduct post-construction staff trainings for select staff members at least one (1) time within each reporting period (bi-annually). The Town will ensure that an adequate amount and skill level of staffing is in place or services can be outsourced to account for increased workloads associated with performing post-construction plan reviews, inspections, and enforcement as mandated by Rule 13. All Town staff or hired consultants involved in SWP3 review and site inspection activities will be trained. Training program content will include information on Post-construction BMPs. All training activities including the number of staff trained will be included in the Town's Rule 13 Annual Reports submitted to IDEM.

Inspection and Enforcement Documentation

The Town developed an inspection and enforcement form (1) for Post-construction BMP Assessments. The form allows inspectors to document Post-construction BMP adequacies and inadequacies identified during each visit. The form will be refined as needed.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Table 7-2
Post-construction Site Stormwater Runoff Control BMPs

Best Management Practice (BMP)	Measurable Goals, Tracking, and Programmatic Indicators	Timeline	Priority Areas	Responsible Party
Post-construction Control Ordinance	<ul style="list-style-type: none"> • Continue implementing Post-construction ordinance (1) 	Completed and update as needed.	Select locations in MS4 area.	Planning and outsourced.
Plan Review, Site Inspection, and Enforcement	<ul style="list-style-type: none"> • Review construction and Post-construction plans as part of SWP3 reviews. • Check AS-built for all newly installed Post-construction BMPs • Conduct Post-construction Assessments for all detention/retention facilities once (1) within each permit term. 	Continue in 2014, then on-going.	<p>All active development/redevelopment projects permitted within the MS4 boundary.</p> <p>All areas with existing detention/retention facilities</p>	Planning and outsourced.
MCM 5 Staff Training	<ul style="list-style-type: none"> • Conduct staff trainings once (1) within each reporting period (bi-annually)..< • Track using Programmatic Indicators #2 and #3. 	Bi-annually.	Train on priority watershed and sensitive areas.	Planning and outsourced.
Inspection and Enforcement Documentation	<ul style="list-style-type: none"> • Develop and refine form (1) as part of on-going program. • Track using Programmatic Indicators #13, #14, #15, #16, #17, #18, #20, and #21. 	Continue in 2014, then on-going.	Use written Procedure for Prioritizing Post-Construction Program Activities.	Planning and outsourced.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

8.0

MINIMUM CONTROL MEASURE #6
POLLUTION PREVENTION AND GOOD HOUSEKEEPING

Rule 13 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, fertilizer and pesticide application, and the function of BMPs. Such training must be documented in writing.

8.1 PROPOSED POLLUTION PREVENTION AND GOOD HOUSEKEEPING BMPs

The following Pollution Prevention and Good Housekeeping BMPs will be developed and implemented by the Town of Merrillville in order to comply with the minimum requirements of this MCM. Existing BMPs identified in subsection 8.1 with any needed enhancements, as well as, any new BMPs are included in this section.

Town of Merrillville has initiated the implementation of a Pollution Prevention and Good Housekeeping Program as part of this Part C Plan, which outlines the overall strategy for implementing the program and its corresponding BMPs. The Town's program is designed to address the quality of stormwater discharges from Town activities to their MS4 conveyance system. The presumptive approach of implementing this program assumes that overall stormwater quality will improve each year by reducing the amounts of pollutants entering the conveyance system. Reduction goal percentages will be correlated to amounts of BMPs installed, amounts of material collected from BMPs, and plans implemented.

Table 8-2 provides a summary of the Pollution Prevention and Good Housekeeping BMPs to be implemented and identifies the associated measurable goals, programmatic indicators, tracking, timeline, priority areas, and responsible parties associated with each BMP. Detailed description of each BMP is provided below.

MS4 Conveyance System Maintenance

The Town will begin a program designed to inspect and maintain the Town's MS4 conveyance system. Regular maintenance allows the conveyance system to work

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

efficiently and remove pollutants. The Town will focus on those portions of the conveyance system which were required to be mapped. MS4 conveyance system maintenance activities and schedules will be documented.

The DPW will continue to conduct periodic BMP structure cleaning, stabilizing unvegetated portions of the conveyance system (ditches, swales and road side shoulders) and remediation of outfall scouring conditions. The Town will continue to repair and clean catch basins, trash racks and other structural components of the Town's conveyance system that it owns and operates. Inspection and maintenance activities will be performed by staff from DPW. Maintenance needs will be prioritized and improvement needs will be conducted as funding allows.

The Town will document the estimated or actual linear feet of the Town's conveyance system that is cleaned and or repaired. In addition, the Town will estimate the amount of material collected from catch basins and trash racks. This information will be included in the Town's Rule 13 Annual Reports submitted to IDEM. **Table 8-1** outlines the Town's MS4 conveyance system maintenance activities.

Table 8-1
Storm Sewer System Maintenance Scheduled Activities

Activity	Schedule for Performing Activity
A. Periodic Litter Pickup	Town staff will annually (1) conduct litter pickup events along major thoroughfares, at stormwater outfalls, or other areas to be prioritized during the second permit term.
B. Periodic BMP Structure Cleaning	DPW performs this activity as needed.
C. Periodic Pavement Sweeping	All streets and MS4 owned parking lots will be swept at least two (2) times per year.
D. Roadside Shoulder and Ditch Stabilization	DPW performs this activity as needed.
E. Planting and Proper Care of Roadside Vegetation	DPW performs this activity as needed.
F. Remediation of Outfall Scouring	DPW performs this activity as needed.

Street Sweeping Program

Street sweeping is performed by DPW at least twice (2) a year to remove debris accumulated over the winter and to keep potential pollutants from entering the storm drains. The Town will track all street sweeping activities. In addition, the Town has

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

contracted with a waste disposal company to collect and dispose of all materials collected. To ensure accurate reporting and documentation of the Town's pollution prevention programs, the Town will track the estimated or actual amount of material by weight collected from street sweeping. This information will be consolidated and included in the Town's Rule 13 Annual Reports submitted to IDEM.

Salt and Sand Management

The DPW will manage their salt and sand storage and application in an effort to maintain public safety while minimizing the potential for salt and sand runoff. The DPW will annually document the total weight/cubic yards of salt and sand applied. Also, DPW personnel will be instructed to contain salt and sand spilled during loading by utilizing machinery and hand tools to maintain cleanliness and minimize the risks of stormwater runoff. Also, once the snow and/or ice has melted, DPW personnel will sweep, as necessary, those areas of the facility that have accumulated sand and other debris as a result of day-to-day operations. DPW will continue to utilize eco-friendly deicing agents such as beet juice to reduce salt application.

Activities associated with salt and sand management will be included in the Town's Rule 13 Annual Reports submitted to IDEM, including documenting the number and location of storage areas covered or otherwise improved to minimize stormwater exposure and the estimated or actual amount, in tons, of salt and sand used for snow and ice control.

Snow Disposal Areas

Snow that is cleared and pushed into large piles from Town operational areas, such as, the DPW Facility and the Town Hall will be located away from stormwater inlets and conveyances to ensure that there is minimal potential for pollutant runoff impact on MS4 area receiving waters.

Spill Prevention and Clean Up

The Town will continue implementing spill prevention and clean up procedures at Town owned and operated facilities. The DPW will be the primary facility for which these measures will be implemented in order to reduce the impact of accidental spills of concentrated solutions, acids, fuels, salts, oils, or other polluting materials that could contaminate stormwater runoff from municipal facilities. Measures will continue to be utilized and maintained such as facility SWP3s, secondary containment, drip pans, updated MSDS binder, spill kits, hydrocarbon drop inlet protection, absorbents, and drain covers.

The Town will document all activities associated with chemical spill response. This information will be included in the Town's Rule 13 Annual Reports submitted to IDEM.

Vehicle Maintenance Areas

Vehicle maintenance areas can be significant sources of stormwater pollutants. To minimize the impacts vehicle maintenance areas have on stormwater runoff, the Town has sealed off all drains and liquids drain to a basin that is suctioned out and the material is disposed of properly. The Town will document, maintenance activities, and

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

estimate the amount of waste collected via the vac truck. The Town will also document the methods by which all materials collected were disposed of. This information will be included in the Town's Rule 13 Annual Reports submitted to IDEM.

Wash Water Management

All wash waters and wastewaters are currently prohibited from entering waters of the state without a valid NPDES Wastewater Permit. All municipal vehicles and equipment will continue to be washed indoors where rinse water drains to the sanitary system. Phosphate-free detergents will be utilized to the extent practical.

Fertilizer and Pesticide Management

The Town has staff members that apply fertilizers or pesticides and are certified by the Office of the Indiana State Chemist (OISC). Town will ensure that all activities associated with fertilizers and pesticides are documented. All information specific to fertilizer and pesticide management will be included in the Town's Rule 13 Annual Reports submitted to IDEM.

Waste Disposal

The Town will ensure that wastes collected are disposed of in a manner that prevents them from contaminating stormwater runoff. The Town will document the disposal of all waste generated from operational areas and from maintaining the Town's stormwater conveyance system. Such wastes include, but are not limited to, dredge spoil, accumulated sediments, floatables and debris. Town staff will determine if the waste generated can be reused, recycled or requires disposal in a sanitary landfill. The Town will document all activities associated with waste disposal including the types of waste generated, the amount of waste generated and the method by which the waste was disposed. Required information will be included in the Town's Rule 13 Annual Reports submitted to IDEM.

Flood Management Projects

The Town will document that new Town-owned flood management projects are assessed for their impacts on water quality on an on-going basis. During the pre-construction phase for new projects, a determination will be made to see if a practice can be modified to address the reduction of pollutants associated with stormwater runoff or if additional BMPs can be designed into the watershed of the project to improve the water quality. This preliminary review will better use limited resources to plan for water quality BMPs before a project is constructed since water quality and water quantity issues are interrelated.

MCM 6 Staff Training

The Town will conduct Good Housekeeping training at least once (1) annually. The Town will document training provided and attendees. The number of trainings, number of staff attending trainings, and information presented will be tracked and reported in the Town's Rule 13 Annual Reports submitted to IDEM.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Table 8-2
Pollution Prevention and Good Housekeeping BMPs

Best Management Practice (BMP)	Measurable Goals, Tracking, and Programmatic Indicators	Timeline	Priority Areas	Responsible Party
MS4 Conveyance System Maintenance	<ul style="list-style-type: none"> • Begin inspection and maintenance program, in 2014. • Prioritize maintenance needs based on inspections and make conveyance systems improvements as funding allows. • Track using Programmatic Indicators #26, #27, #28, #29, and #32. 	Begin in 2014, then on-going.	Unstable, unvegetated, scoured, or eroded roadside shoulders and/or ditches.	Outsourced and DPW.
Street Sweeping Program	<ul style="list-style-type: none"> • Sweep all streets at least twice (2) annually. • Track using Programmatic Indicator #33. 	On-going	Remove salt, sand, and debris from winter activities.	DPW.
Salt and Sand Management	<ul style="list-style-type: none"> • Implement salt and sand management BMPs as part of on-going permit activities and as budgets allow. • Track using Programmatic Indicators #30 & #31. 	<ul style="list-style-type: none"> • Continue in 2014, then on-going. 	Application on Town streets and DPW Facilities.	DPW.
Snow Disposal Areas	Identify and use designated snow disposal areas beginning in Winter 2014, then on-going each winter.	Begin in 2014, then on-going each winter.	DPW Facilities and Town Hall.	DPW.
Spill Prevention and Clean Up	<ul style="list-style-type: none"> • This will be part of on-going permit activities. • Track using Programmatic 	Continue in 2014, then on-going.	DPW Facilities.	DPW.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Best Management Practice (BMP)	Measurable Goals, Tracking, and Programmatic Indicators	Timeline	Priority Areas	Responsible Party
	Indicator #24.			
Vehicle Maintenance Areas	<ul style="list-style-type: none"> • Implement vehicle maintenance area BMPs. • Continue activities as part of regular good housekeeping practices. 	Continue in 2014, then on-going.	DPW Facilities, especially around storm inlets and/or conveyances.	DPW.
Wash Water Management	Eliminate wash waters from entering separate storm system with a wash water management program.	Continue in 2014, then on-going	DPW Facilities.	DPW.
Fertilizer and Pesticide Management	<ul style="list-style-type: none"> • Contractors and/or staff are certified by OISC. • Track using Programmatic Indicator #25. 	Continue in 2014, then on-going	Sensitive areas.	DPW and Parks.
Waste Disposal	<ul style="list-style-type: none"> • Document disposal of all wastes • Determine if waste can be recycled, reused, or disposed of in a landfill. • Contract with private firm to perform waste disposal as needed. 	Begin in 2014, then on-going.	Waste generated from MS4 Conveyance System, MS4 Operational Areas, and DPW Facilities.	Outsourced and DPW.
Flood Management Projects	<ul style="list-style-type: none"> • Document that all new and existing flood management projects are assessed for incorporation of additional water quality devices or 	On-going.	Proposed locations for new flood control projects.	SWMB.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Best Management Practice (BMP)	Measurable Goals, Tracking, and Programmatic Indicators	Timeline	Priority Areas	Responsible Party
MCM 6 Staff Training	<ul style="list-style-type: none"> practices. Review of existing projects Conduct training at least once (1) annually. Train on various good housekeeping topics Track using Programmatic Indicators #2 and #3. 	Continue in 2014, then annually.	Focus on municipal facility and other Town-owned properties and stormwater infrastructure.	SWMB and outsourced.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

9.0

MS4 PROGRAM COSTS

Rule 13 requires a summary of the current storm water budget, expected or actual funding sources, and a projection of the budget for each year within the five-year permit term. Resources used for developing and implementing the storm water program should be documents in order to demonstrate that monies, equipment, and staff are being and will be utilized for the program.

The overall fiscal impact of the requirement of Rule 13 may be grouped under three categories: SWQMP Development costs, Part C Implementation costs, and “other” compliance costs. This chapter details the cost of plan implementation (Part C) and it includes the additional expense for developing the SWQMP, continuous characterization, and data reporting. In the numbers detailed below, no monetary value is placed on volunteer hours.

9.1 SWQMP DEVELOPMENT COSTS

The development of the SWQMP must be completed by the end of the second year of the permit term. Tasks include completion of a Notice of Intent (NOI), and completion of Part A, Part B, and Part C (this document) of the SWQMP.

NOI and Part A: The costs associated with completion of the NOI and Part A are mainly organizational and administrative. A list of known receiving waters was compiled. Public Notice was published in the local newspaper. Preliminary estimates of existing and expected budgets had to be included, and an Operator was identified. The estimated cost to compile the information needed for the NOI and Part A submittal was \$4,000. The cost of the Public Notice and public meetings is not included in this cost as it is absorbed by Minimum Control Measure 2.

Part B Baseline Characterization: Part B involved collection and assessment of existing data for the receiving waters identified in Part A. This data was then used to characterize the baseline water quality conditions in the MS4 area, identify sensitive areas, and guide the development of Part C. Existing BMPs had to be identified and their effectiveness evaluated. The tasks associated with Part B were research, analysis, and report writing. The estimated cost to complete Part B was \$14,000.

Development of the Part C Implementation Plan: The development of a written plan of action for achieving compliance with Rule 13 was completed by the Town of Merrillville. Legally binding agreements were developed between the any cooperating groups or Beyond that, the estimated cost for developing an Implementation Plan is \$27,000 and includes fees for engineering and time and materials contributed by Town of Merrillville.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

9.2 DETAILED PART C IMPLEMENTATION COSTS BY MCM OVER 2014-2015

This section details the cost of implementing the program described in this document. There are 6 MCMs within the implementation plan. Costs for each individual MCM are summarized below. Since different plan elements have different start-up timelines, costs are also broken down by permit year. All estimated costs represent the combined cost to Town of Merrillville.

MCM #1 Public Education and Outreach: The cost to implement this MCM throughout this permit term is estimated to be \$45,000. Estimated annual costs for this MCM are \$9,000/year. The costs include educational materials, contractual services, and man-hours.

MCM #2 Public Participation and Involvement: The cost to implement this MCM throughout this permit term is estimated to be \$50,000. These costs will cover tasks such as public involvement in plan development, promotion of Clean-Up Events, the "Report-A-Polluter" Program, and Storm Drain Marking. The costs include presentation materials for public meetings and hearings, mailings to volunteer groups and homeowner associations, and computer hardware and software upgrades for public complaints, storm drain signage materials and equipment, and man-hours. Additional costs to the Town for MCM #2 are for Town staff to respond to and follow up on public complaints related to stormwater quality issues. These costs are estimated to be \$10,000/year.

MCM #3 Illicit Discharge Detection and Elimination: The cost to implement this MCM throughout this permit term is estimated to be \$200,000. Estimated annual costs for this MCM are \$40,000/year. These costs will cover such tasks as mapping the storm sewer system and screening for pollutants, updating of an illicit discharge ordinance and IDDE Plan, and collection of household hazardous wastes. The costs include training for system inspectors, field equipment for system inspectors, testing equipment, computer hardware and software upgrades for GIS mapping, and staff hours.

MCM #4 Construction Site Runoff Control: The cost to implement this MCM throughout this permit term is estimated to be \$250,000. Estimated annual costs for this MCM are \$50,000/year. These costs will cover such tasks as ordinance updates and review for controlling construction site runoff and an accompanying technical manual, local stormwater permit procedure and SWP3 reviews, and an inspection and enforcement program. The costs include training for developers, builders, contractors, plan reviewers, and site inspectors; and staff hours.

MCM #5 Post-construction Stormwater Management: The cost to implement this MCM throughout this permit term is estimated to be \$200,000. The implementation deadlines for this MCM are mainly in the second permit year, with some preparation work beginning in the second permit year. Estimated annual costs for this MCM are

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

\$40,000/year. These costs will cover such tasks as development of an ordinance for Post-construction stormwater quality management and an accompanying technical manual, establishment of a local stormwater permit procedure, and an inspection and enforcement program. The costs include training for developers, builders, contractors, plan reviewers, and site inspectors; and staff hours.

MCM #6 Pollution Prevention and Good Housekeeping: The cost to implement this MCM throughout the second 5-year permit term is estimated to be \$500,000. Estimated annual costs for this MCM are \$100,000/year. These costs will cover such tasks as the implementation of additional MS4 Conveyance System Maintenance, Salt and Sand Management BMPs, operational BMPs, and staff training. The costs include training materials, and staff hours.

9.3 OTHER COMPLIANCE COSTS 2014 – 2015

Beyond development and implementation of the SWQMP, Rule 13 requires on-going MS4 area characterization, monthly and annual status reports, and renewal of permit application at the end of each 5-year permit term.

On-going Characterization: Rule 13 requires regulated communities to continue collecting and evaluating data on water quality throughout the permit life. The cost for this on-going characterization assumes that the Town will review any additional water quality data that becomes available from another entity. Based on the review of this data, the Town will make any appropriate adjustments to their stormwater program as necessary. The cost for this is estimated at \$5,000 for each year. On-going mapping and screening are included in the cost for MCM 3 implementation.

Status Reporting: Much of the data collection and data management cost of this task is absorbed by the implementation of the MCMs. The estimated cost to compile and organize the volume of data that will be generated is \$5,000 for each year. For each annual report, some additional time and effort will be needed to evaluate the effectiveness of the plan and to determine if adjustments are needed to the BMPs and/or measurable goals. This cost is included in the estimates above.

Permit Application Renewal: At the end of each five-year permit term, the Town will need to take a close look at what is and is not working with their plan. Additional BMPs can be added and ineffective BMPs can be dropped. It is expected that the level of effort needed to complete the evaluation of the existing program, make changes, and submit a permit renewal application to IDEM will be similar to the effort required for the original. Therefore, the estimated cost to prepare the permit renewal application is \$10,000.

On-going As Needed Technical Assistance: Throughout the term of the permit, the Town may require assistance in the form of professional engineering/consulting services in order to address tasks associated with NPDES Phase II compliance issues. These tasks may include, but are not limited to, BMP evaluation, MS4 conveyance mapping, plan reviews, inspections, training modules, ordinances, and coordination with

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

IDEM. The cost for on-going technical assistance is estimated to be \$55,000 for each year.

9.4 TOTAL SWQMP PROGRAM COSTS 2014 – 2015

Table 9-1 summarizes total program costs, which includes the costs for all tasks described above in Sections 9.1, 9.2, and 9.3. The total estimated cost of compliance with Rule 13 is \$1,600,000 for the second 5-year permit term.

**Merrillville, Indiana
NPDES Phase II Part C Implementation Plan**

**Table 9-1
Total Program Costs**

	Jan. 2014- Jan. 2014	Jan. 2014- Jan. 2012	Jan. 2012- Jan. 2013	Jan. 2013- Jan. 2014	Jan. 2014- Jan. 2015	Total
NOI and SWQMP Part A	N/A	N/A	N/A	N/A	N/A	N/A
SWQMP Part B	N/A	N/A	N/A	N/A	N/A	N/A
SWQMP Part C (dev./update)	\$10,000	N/A	N/A	N/A	\$10,000	\$20,000
Implement MCM1	\$9,000	\$9,000	\$9,000	\$9,000	\$9,000	\$45,000
Implement MCM2	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$50,000
Implement MCM3	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$200,000
Implement MCM4	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$250,000
Implement MCM5	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$200,000
Implement MCM6	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$500,000
On-going Characterization	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$25,000
Annual Report	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$25,000
Permit Renewal	N/A	N/A	N/A	10,000	N/A	\$10,000
On-going Assistance	\$55,000	\$55,000	\$55,000	\$55,000	\$55,000	\$275,000
Total	\$324,000	\$314,000	\$314,000	\$324,000	\$324,000	\$1,600,000

9.5 BUDGETARY NEEDS

The total estimated costs provided above are gross costs. The costs are primarily supported by funding generated by an existing stormwater utility fee. Additional funds are utilized within an existing budget that includes additional stormwater management tasks for flood control projects and additional stormwater quality projects.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

10.0

SUMMARY

Implementation of Town of Merrillville's Rule 13 required stormwater quality program will improve the overall quality of stormwater discharges entering into the Town's separate storm sewer system. In order to continue successfully implementing the Rule 13 program, the Town must pay attention to reporting requirements contained in the programmatic indicators, adhere to mandated time lines, and be aware of next steps beyond the Part C document.

10.1 PROGRAMMATIC INDICATORS

As a visual aid to Town of Merrillville and to help evaluate Rule 13 permit compliance, **Table 10-1** lists the programmatic indicators that are required in Rule 13. The table further identifies those required and chosen BMPs that will fulfill these required programmatic indicators.

**Merrillville, Indiana
NPDES Phase II Part C Implementation Plan**

**Table 10-1
Programmatic Indicators**

Programmatic Indicator	Description	BMP addressing Programmatic Indicator
1	Number or percentage of citizens, segregated by type of constituent that have an awareness of storm water quality issues.	Stormwater Survey
2	Number and description of meetings, training sessions, and events conducted to involve citizen constituents in the storm water program.	<ul style="list-style-type: none"> • NISWAG Meetings • Community Involvement Meetings • Clean Up Events • Rule 13 Public Participation Lists • Public Meetings • Training for Construction Professionals • Staff Training (for construction and post-construction) • Storm Drain Marking • Annual IDDE, Good Housekeeping, & Pollution Prevention Staff Training • "Report-A-Polluter" Program
3	Number or percentage of citizen constituents that participate in storm water quality improvement programs.	<ul style="list-style-type: none"> • NISWAG Meetings • Clean Up Events • Rule 13 Public Participation Lists • Public Meetings • Training for Construction Professionals • Staff Training (for construction and post-construction) • Storm Drain Marking • Annual IDDE, Good Housekeeping, & Pollution Prevention Staff Training • "Report-A-Polluter" Program
4	Number and location of storm drains marked or cast, segregated by marking method.	<ul style="list-style-type: none"> • Storm Drain Marking • Storm Drain Castings
5	Estimated or actual linear feet or percentage of MS4 mapped and indicated on an MS4 area map.	Stormwater System Map
6	Number and location of MS4 area outfalls mapped.	Stormwater System Map
7	Number and location of MS4 area outfalls screened for illicit discharges.	Illicit Discharge Detection and Elimination Plan
8	Number and location of illicit discharges detected.	Illicit Discharge Detection and Elimination Plan

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Programmatic Indicator	Description	BMP addressing Programmatic Indicator
9	Number and location of illicit discharges eliminated.	Illicit Discharge Detection and Elimination Plan
10	Number of and estimated or actual amount of material, segregated by type, collected from HHW collections in the MS4 area.	Solid Waste Management District Promotions
11	Number and location of constituent drop-off centers for automotive fluid recycling.	Solid Waste Management District Promotions
12	Number or percentage of constituents that participate in the HHW collections.	Solid Waste Management District Promotions
13	Number of construction sites obtaining an MS4 entity-issued storm water run-off permit in the MS4 area.	<ul style="list-style-type: none"> • Erosion and Sediment Control and Post-construction BMP Tracking • Erosion and Sediment Control Ordinance • Post-construction Control Ordinance
14	Number of construction sites inspected.	Erosion and Sediment Control and Post-construction BMP Tracking
15	Number and type of enforcement actions taken against construction site operators.	<ul style="list-style-type: none"> • Erosion and Sediment Control and Post-construction BMP Tracking • Procedures for Prioritizing Construction Program Activities
16	Number of, and associated construction site name and location for, public informational requests received.	Erosion and Sediment Control and Post-construction BMP Tracking
17	Number, type, and location of structural BMPs installed.	Erosion and Sediment Control and Post-construction BMP Tracking
18	Number, type, and location of structural BMPs inspected.	Erosion and Sediment Control and Post-construction BMP Tracking
19	Number, type, and location of structural BMPs maintained or improved to function properly.	Post-construction BMP Operation and Maintenance Plan
20	Type and location of nonstructural BMPs utilized.	Erosion and Sediment Control and Post-construction BMP Tracking
21	Estimated or actual acreage or square footage of open space preserved and mapped in the MS4 area, if applicable.	Erosion and Sediment Control and Post-construction BMP Tracking
22	Estimated or actual acreage or square footage of pervious and impervious surfaces mapped in the MS4 area, if applicable.	Not Applicable; Town not set up to track
23	Number and location of new retail gasoline outlets or municipal, state, federal, or institutional refueling areas, or outlets or	Not Applicable; Town not set up to track

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Programmatic Indicator	Description	BMP addressing Programmatic Indicator
	refueling areas that replaced existing tank systems that have installed storm water BMPs.	
24	Number and location of MS4 entity facilities that have containment for accidental releases of stored polluting materials.	Spill Prevention and Clean Up
25	Estimated or actual acreage or square footage, amount, and location where pesticides and fertilizers are applied by a regulated MS4 entity to places where storm water can be exposed within the MS4 area.	Fertilizer and Pesticide Management
26	Estimated or actual linear feet or percentage and location of unvegetated swales and ditches that have an appropriately-sized vegetated filter strip.	MS4 Conveyance System Maintenance
27	Estimated or actual linear feet or percentage and location of MS4 conveyances cleaned or repaired.	MS4 Conveyance System Maintenance
28	Estimated or actual linear feet or percentage and location of roadside shoulders and ditches stabilized, if applicable.	MS4 Conveyance System Maintenance
29	Number and location of storm water outfall areas remediated from scouring conditions, if applicable.	MS4 Conveyance System Maintenance
30	Number and location of deicing salt and sand storage areas covered or otherwise improved to minimize storm water exposure.	Sand and Sand Management
31	Estimated or actual amount, in tons, of salt and sand used for snow and ice control.	Salt and Sand Management
32	Estimated or actual amount of material by weight collected from catch basin, trash rack, or other structural BMP cleaning.	<ul style="list-style-type: none"> • MS4 Conveyance System Maintenance • Waste Disposal
33	Estimated or actual amount of material by weight collected from street sweeping, if utilized.	Street Sweeping Program
34	If applicable, number or percentage and location of canine parks sited at least one hundred fifty (150) feet away from a surface waterbody.	Canine Park Location (N/A)

**Merrillville, Indiana
NPDES Phase II Part C Implementation Plan**

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

10.2 Master Timeline

The following Master Time outlines all BMPs that have been and will be completed by Town of Merrillville during their second five-year permit term.

Permit Year	MCM	BMP
2014	1	<ul style="list-style-type: none"> • Workshops for the General Public • Newsletter Articles • Stormwater MS4 Website • Stormwater Brochures • Solid Waste Management District Promotions • Mass Media Opportunities
	2	<ul style="list-style-type: none"> • Clean-up Events • Stormwater Survey • NISWAG Meetings • Community Involvement/Storm Board Meetings • Annual MS4 Update to Town Council • Storm Drain Marking • "Report-A-Polluter" Program • HHW Collection Event Promotions/Documentation
	3	<ul style="list-style-type: none"> • Stormwater System Map • IDDE Ordinance Update • IDDE Plan Implementation • Storm Drain Castings • MCM 3 Staff Training
	4	<ul style="list-style-type: none"> • Erosion and Sediment Control Ordinance Update • Plan Review, Site Inspection, and Enforcement • MCM 4 Staff Training • Training for Construction Professionals • Procedures for Prioritizing Construction Sites • Inspection and Enforcement Documentation • QA/QC of Overall Program
	5	<ul style="list-style-type: none"> • Post-construction Control Ordinance • Plan Review, Site Inspection, and Enforcement • MCM 5 Staff Training • Inspections and Enforcement Documentation

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Permit Year	MCM	BMP
	6	<ul style="list-style-type: none"> • MS4 Conveyance System Maintenance • Street Sweeping Program • Salt and Sand Management • Snow Disposal Areas • Spill Prevention and Clean Up • Vehicle Maintenance Areas • Wash Water Management • Fertilizer and Pesticide Management • Waste Disposal • Flood Management Projects • MCM 6 Staff Training
2015	1	<ul style="list-style-type: none"> • Workshops for the General Public • Newsletter Articles • Stormwater MS4 Website • Stormwater Brochures • Solid Waste Management District Promotions • Mass Media Opportunities
	2	<ul style="list-style-type: none"> • Clean-up Events • NISWAG Meetings • Community Involvement/Storm Board Meetings • Annual MS4 Update to Town Council • Storm Drain Marking • "Report-A-Polluter" Program • HHW Collection Event Promotions/Documentation
	3	<ul style="list-style-type: none"> • Stormwater System Map • IDDE Ordinance Update • IDDE Plan Implementation • Storm Drain Castings • MCM 3 Staff Training
	4	<ul style="list-style-type: none"> • Erosion and Sediment Control Ordinance Update • Plan Review, Site Inspection, and Enforcement • MCM 4 Staff Training • Training for Construction Professionals • Procedures for Prioritizing Construction Sites • Inspection and Enforcement Documentation • QA/QC of Overall Program
	5	<ul style="list-style-type: none"> • Post-construction Control Ordinance • Plan Review, Site Inspection, and Enforcement • MCM 5 Staff Training • Inspections and Enforcement Documentation

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Permit Year	MCM	BMP
	6	<ul style="list-style-type: none"> • MS4 Conveyance System Maintenance • Street Sweeping Program • Salt and Sand Management • Snow Disposal Areas • Spill Prevention and Clean Up • Vehicle Maintenance Areas • Wash Water Management • Fertilizer and Pesticide Management • Waste Disposal • Flood Management Projects • MCM 6 Staff Training
2016	1	<ul style="list-style-type: none"> • Workshops for the General Public • Newsletter Articles • Stormwater MS4 Website • Stormwater Brochures • Solid Waste Management District Promotions • Mass Media Opportunities
	2	<ul style="list-style-type: none"> • Clean-up Events • NISWAG Meetings • Community Involvement/Storm Board Meetings • Annual MS4 Update to Town Council • Storm Drain Marking • "Report-A-Polluter" Program • HHW Collection Event Promotions/Documentation
	3	<ul style="list-style-type: none"> • Stormwater System Map • IDDE Ordinance Update • IDDE Plan Implementation • Storm Drain Castings • MCM 3 Staff Training
	4	<ul style="list-style-type: none"> • Erosion and Sediment Control Ordinance Update • Plan Review, Site Inspection, and Enforcement • MCM 4 Staff Training • Training for Construction Professionals • Procedures for Prioritizing Construction Sites • Inspection and Enforcement Documentation • QA/QC of Overall Program
	5	<ul style="list-style-type: none"> • Post-construction Control Ordinance • Plan Review, Site Inspection, and Enforcement • MCM 5 Staff Training • Inspections and Enforcement Documentation

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Permit Year	MCM	BMP
	6	<ul style="list-style-type: none"> • MS4 Conveyance System Maintenance • Street Sweeping Program • Salt and Sand Management • Snow Disposal Areas • Spill Prevention and Clean Up • Vehicle Maintenance Areas • Wash Water Management • Fertilizer and Pesticide Management • Waste Disposal • Flood Management Projects • MCM 6 Staff Training
2017	1	<ul style="list-style-type: none"> • Workshops for the General Public • Newsletter Articles • Stormwater MS4 Website • Stormwater Brochures • Solid Waste Management District Promotions • Mass Media Opportunities
	2	<ul style="list-style-type: none"> • Clean-up Events • NISWAG MS4 Partnership Meetings • Community Involvement/Storm Board Meetings • Annual MS4 Update to Town Council • Storm Drain Marking • "Report-A-Polluter" Program • HHW Collection Event Promotions/Documentation
	3	<ul style="list-style-type: none"> • Stormwater System Map • IDDE Ordinance Update • IDDE Plan Implementation • Storm Drain Castings • MCM 3 Staff Training
	4	<ul style="list-style-type: none"> • Erosion and Sediment Control Ordinance Update • Plan Review, Site Inspection, and Enforcement • MCM 4 Staff Training • Training for Construction Professionals • Procedures for Prioritizing Construction Sites • Inspection and Enforcement Documentation • QA/QC of Overall Program
	5	<ul style="list-style-type: none"> • Post-construction Control Ordinance • Plan Review, Site Inspection, and Enforcement • MCM 5 Staff Training • Inspections and Enforcement Documentation

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Permit Year	MCM	BMP
	6	<ul style="list-style-type: none"> • MS4 Conveyance System Maintenance • Street Sweeping Program • Salt and Sand Management • Snow Disposal Areas • Spill Prevention and Clean Up • Vehicle Maintenance Areas • Wash Water Management • Fertilizer and Pesticide Management • Waste Disposal • Flood Management Projects • MCM 6 Staff Training
2018	1	<ul style="list-style-type: none"> • Workshops for the General Public • Newsletter Articles • Stormwater MS4 Website • Stormwater Brochures • Solid Waste Management District Promotions • Mass Media Opportunities
	2	<ul style="list-style-type: none"> • Clean-up Events • NISWAG Meetings • Community Involvement/Storm Board Meetings • Annual MS4 Update to Town Council • Storm Drain Marking • "Report-A-Polluter" Program • HHW Collection Event Promotions/Documentation
	3	<ul style="list-style-type: none"> • Stormwater System Map • IDDE Ordinance Update • IDDE Plan Implementation • Storm Drain Castings • MCM 3 Staff Training
	4	<ul style="list-style-type: none"> • Erosion and Sediment Control Ordinance Update • Plan Review, Site Inspection, and Enforcement • MCM 4 Staff Training • Training for Construction Professionals • Procedures for Prioritizing Construction Sites • Inspection and Enforcement Documentation • QA/QC of Overall Program
	5	<ul style="list-style-type: none"> • Post-construction Control Ordinance • Plan Review, Site Inspection, and Enforcement • MCM 5 Staff Training • Inspections and Enforcement Documentation

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Permit Year	MCM	BMP
	6	<ul style="list-style-type: none"> • MS4 Conveyance System Maintenance • Street Sweeping Program • Salt and Sand Management • Snow Disposal Areas • Spill Prevention and Clean Up • Vehicle Maintenance Areas • Wash Water Management • Fertilizer and Pesticide Management • Waste Disposal • Flood Management Projects • MCM 6 Staff Training

10.3 Next Steps

As progress is made in implementing Town of Merrillville's Storm Water Quality Management Plan, elements contained in required annual program reports, and on-going water quality characterizations will need to be tracked. Rule 13 does provide program flexibility in that if a BMP proves to be ineffective or infeasible, then Town of Merrillville may change their program and incorporate a different BMP.

Annual Reports

The Town of Merrillville must submit annual reports to IDEM on their Rule 13 permit program. During this permit term, reports must be submitted only in years two and four.

Annual Reports must include:

- Progress towards development, implementation, and enforcement of all MCMs, including updated programmatic indicator data;
- A summary of complaints received and follow-up investigation results related to storm water quality issues;
- Updated measurable goals;
- Storm water BMPs installed or initiated;
- Follow-up or additional water quality characterization information;
- An updated active industrial facilities list;
- Implementation problems encountered, including BMP changes due to ineffectiveness or infeasibility;
- Funding sources and expenditures;
- Changes to MS4 area boundaries, including land areas added to the MS4 area via annexation or other similar means;
- Identified storm water quality improvement projects; and
- Updated receiving water information.

Agency Inspections

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

To evaluate Rule 13 permit compliance, IDEM staff may periodically inspect Town of Merrillville and review its stormwater program. The MS4 Operator for Town of Merrillville should be prepared to answer questions and provide documentation of program elements. The point of contact for such inspections will be the Town MS4 Operator. The MS4 Operator may call upon responsible entities identified in the BMP tables for assistance in such inspections. IDEM may request data to facilitate the identification or qualification of pollutants that may be released to the environment from an MS4 conveyance or to determine effectiveness of the MCMs.

On-going Water Quality Characterization

As new water quality information becomes available and updates are made to data sources that were reviewed as part of the Town's SWQMP – Part B: Baseline Water Quality Report, Town of Merrillville will review that information and adjust their Rule 13 program accordingly. As reports such as this become available, the Town can review this information and compare it to their list of ranked priority watersheds. If different areas are identified as needing additional measures, then the Town will adjust its priorities for program implementation or adjust or add program elements to address newly identified concerns.

Priority Watershed Activities

In an effort to further investigate ranked priority watersheds identified in subsection 2.3, Town of Merrillville should explore implementing Watershed Management Plans for these watersheds. Town of Merrillville should investigate whether any organized Watersheds groups exist in the priority watersheds and whether they have developed and/or have begun implementing a Watershed Management Plan. If a group does exist and has a plan developed, then Town of Merrillville should be an active participant in watershed activities that overlap with the Rule 13 program goals.

If no group exists, then Town of Merrillville should try to develop their own Watershed Management Plan for each of the priority watersheds. IDEM 319 and 205(j) grant programs could provide funds to develop and implement Watershed Management Plans. As specific goals and pollutants of concern are specifically identified within priority watersheds related to stormwater runoff, the Town should incorporate measures into their Rule 13 program to address these issues.

Rule 13 Permit Renewal

Permit renewal applications are due at least sixty days prior to the expiration date for the Rule 13 permit. Permit coverage under the renewal NOI will begin on the date of expiration from the previous five-year permit term. IDEM may reissue permits on a watershed basis, which may change these dates. Subsequent permits will require Town of Merrillville to maintain and, where possible, improve their performance in implementing the six MCMs.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Appendix A

REFERENCES

Indiana Department of Environmental Management. 327 IAC 15-13 Final Rule. August 2003.

Indiana Department of Environmental Management. Rule 13 Guidance Document. May 2003.

U.S. EPA – Office of Water. Storm Water Phase II Compliance Assistance Guide. March 2000.

U.S. EPA – Office of Water, Storm Water Phase II Final Rule. February 2000.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Appendix B	GLOSSARY OF TERMS
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Although all of the acronyms and definitions listed below may have not been used in this document, the additional terminology is provided to assist the user of the document in understanding technical terminology associated with IDEM Rule 13 and NPDES Phase II regulations.

ACRONYMS

Ag	Agriculture
ASTM	American Society for Testing and Materials
BMPs	Best Management Practices
CBBEL	Christopher B. Burke Engineering, Ltd.
CSO	Combined Sewer Overflow
CWA	Clean Water Act
DPW	Department of Public Works
EPA	Environmental Protection Agency
FCA	Fish Consumption Advisory
GIS	Geographical Information System
GPS	Global Positioning System
HHW	Household Hazardous Waste
HUC	Hydrologic Unit Code
IDDE	Illicit Discharge Detection and Elimination
IDEM	Indiana Department of Environmental Management
IDNR	Indiana Department of Natural Resources
LTCP	Long Term Control Plan
MCMs	Minimum Control Measures
MOU	Memorandum of Understanding

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

MS4	Municipal Separate Storm Sewers
NISWAG	Northwestern Indiana Stormwater Advisory Group
NOD	Notice of Deficiency
NOI	Notice of Intent
NPDES	National Pollution Discharge Elimination System
NPS	Non-point source
NRCS	USDA-Natural Resources Conservation Service
OISC	Office of the Indiana State Chemist
O&M	Operational and Maintenance
PCB(s)	Polychlorinated Biphenyls
POTW	Publicly Owned Treatment Works
PSAs	Public Service Announcements
QA/QC	Quality Assurance/Quality Control
Qwq	Water Quality Discharge
SR CER	Stream Reach Characterization Evaluation Report
SWCD	Soil and Water Conservation District
SWMD	Solid Waste Management District
SWQ	Stormwater Quality
SWQMP	Storm Water Quality Management Plan
TSS	Total Suspended Solids
WQv	Water Quality Volume

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

DEFINITIONS

Backwater. The rise in water surface elevation caused by some obstruction such as a narrow bridge opening, buildings or fill material that limits the area through which the water shall flow.

Base Flood. See "Regulatory Flood".

Base Flood Elevation (BFE). The water surface elevation corresponding to a flood having a one percent probability of being equaled or exceeded in a given year.

Base Flow. Stream discharge derived from groundwater sources as differentiated from surface runoff. Sometimes considered to include flows from regulated lakes or reservoirs.

Benchmark. A marked point of known elevation from which other elevations may be established.

Best Management Practices. Design, construction, and maintenance practices and criteria for stormwater facilities that minimize the impact of stormwater runoff rates and volumes, prevent erosion, and capture pollutants.

Buffer Strip. An existing, variable width strip of vegetated land intended to protect water quality and habitat.

CapaTown of a Storm Drainage Facility. The maximum flow that can be conveyed or stored by a storm drainage facility without causing damage to public or private property.

Catch Basin. A chamber usually built at the curb line of a street for the admission of surface water to a storm sewer or subdrain, having at its base a sediment sump designed to retain grit and detritus below the point of overflow.

Channel. A portion of a natural or artificial watercourse which periodically or continuously contains moving water, or which forms a connecting link between two bodies of water. It has a defined bed and banks which serve to confine the water.

Channel Improvement. Alteration, maintenance, or reconstruction of the channel area for the purpose of improving the channel capaTown or overall drainage efficiency. The noted "improvement" does not necessarily imply water quality or habitat improvement within the channel or its adjacent area.

Channel Stabilization. Protecting the sides and bed of a channel from erosion by controlling flow velocities and flow directions using jetties, drops, or other structures and/or by fining the channel with vegetation, riprap, concrete, or other suitable lining material.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Combined Sewer Overflow. A system designed so that during dry periods the wastewater is carried to a treatment facility. During storm events, the excess water is discharged directly into a river, stream, or lake without treatment.

Compost. Organic residue (or a mixture of organic residue and soil) that has undergone biological decomposition until it has become relatively stable humus.

Comprehensive Stormwater Management Program. A comprehensive stormwater program for effective management of stormwater quantity and quality throughout the community.

Constructed Wetland. A manmade shallow pool that creates growing conditions suitable for wetland vegetation and is designed to maximize pollutant removal.

Contour. An imaginary line on the surface of the earth connecting points of the same elevation.

Contour Line. Line on a map which represents a contour or points of equal elevation.

Control Structure. A structure designed to control the rate of flow that passes through the structure, given a specific upstream and downstream water surface elevation.

Conveyance. Any structural method for transferring stormwater between at least two points.

Cross-Section. A graph or plot of ground elevation across a stream valley or a portion of it, usually along a line perpendicular to the stream or direction of flow.

Culvert. A closed conduit used for the conveyance of surface drainage water under a roadway, railroad, canal or other impediment.

Dam. A barrier to confine or impound water for storage or diversion, to prevent gully erosion, or to retain soil, sediment, or other debris.

Design Storm. A selected storm event, described in terms of the probability of occurring once within a given number of years, for which drainage or flood control improvements are designed and built.

Detention. Managing stormwater runoff by temporary holding and controlled release.

Detention Storage. The temporary detaining of storage of stormwater in storage facilities, on rooftops, in streets, parking lots, school yards, parks, open spaces or other areas under predetermined and controlled conditions, with the rate of release regulated by appropriately installed devices.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Detention Time. The theoretical time required to displace the contents of a tank or unit at a given rate of discharge (volume divided by rate of discharge).

Discharge. Usually the rate of water flow. A volume of fluid passing a point per unit time commonly expressed as cubic feet per second, cubic meters per second, gallons per minute, or millions of gallons per day.

Ditch. A man-made, open drainageway in or into which excess surface water or groundwater drained from land, stormwater runoff, or floodwaters flow either continuously or intermittently.

Drain. A buried slotted or perforated pipe or other conduit (subsurface drain) or a ditch (open drain) for carrying off surplus groundwater or surface water.

Drainage. The removal of excess surface water or groundwater from land by means of ditches or subsurface drains. Also see Natural drainage.

Drainage (soil). As a natural condition of the soil, drainage refers to both the frequency and duration of periods when the soil is free of saturation. Soil drainage conditions are defined as:

- *Well-drained*--Excess water drains away rapidly, and no mottling occurs within 36 in. of the surface.
- *Moderately well drained*--Water is removed from the soil somewhat slowly resulting in small but significant periods of wetness, and mottling occurs between 18 and 36 in.
- *Somewhat poorly drained*--Water is removed from the soil slowly enough to keep it wet for significant periods but not all of the time, and mottling occurs between 8 to 18 in.
- *Poorly drained*--Water is removed so slowly that it is wet for a large part of the time, and mottling occurs between 0 and 8 in.
- *Very poorly drained*--Water is removed so slowly that the water table remains at or near the surface for the greater part of the time; there may also be periods of surface ponding; the soil has a black to gray surface layer with mottles up to the surface.

Drainage Area. The area draining into a stream at a given point. It may be of different sizes for surface runoff, subsurface flow and base flow, but generally the surface runoff area is considered as the drainage area.

Dry Well. A type of infiltration practice that allows stormwater runoff to flow directly into the ground via a bored or other excavated opening in the ground surface.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Duration. The time period of a rainfall event.

Earth Embankment. A man-made deposit of soil, rock, or other material often used to form an impoundment.

Economic Development Income Tax. A tax implemented to generate revenue for cities, Towns, and the Town to be utilized for economic development projects, capital projects, and economic development organizations.

Emergency Spillway. Usually a vegetated earth channel used to safely convey flood discharges around an impoundment structure.

Environment. The sum total of all the external conditions that may act upon a living organism or community to influence its development or existence.

Erosion. The wearing away of the land surface by water, wind, ice, gravity, or other geological agents. The following terms are used to describe different types of water erosion:

- *Accelerated erosion*--Erosion much more rapid than normal or geologic erosion, primarily as a result of the activities of man.
- *Channel erosion* --An erosion process whereby the volume and velocity of flow wears away the bed and/or banks of a well-defined channel.
- *Gully erosion* --An erosion process whereby runoff water accumulates in narrow channels and, over relatively short periods, removes the soil to considerable depths, ranging from 1-2 ft. to as much as 75-100 ft.
- *Rill erosion*--An erosion process in which numerous small channels only several inches deep are formed; occurs mainly on recently disturbed and exposed soils (see Rill).
- *Splash erosion*--The spattering of small soil particles caused by the impact of raindrops on wet soils; the loosened and spattered particles may or may not be subsequently removed by surface runoff.
- *Sheet erosion*--The gradual removal of a fairly uniform layer of soil from the land surface by runoff water.

Filter Strip. Usually a long, relatively narrow area (usually, 20-75 feet wide) of undisturbed or planted vegetation used to retard or collect sediment for the protection of watercourses, reservoirs, or adjacent properties. See also Classified Filter Strip.

Floatable. Any solid waste that will float on the surface of the water.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Flood or Flood Waters. A general and temporary condition of partial or complete inundation of normally dry land areas from the overflow, the unusual and rapid accumulation, or the runoff of surface waters from any source.

Flood Frequency. A statistical expression of the average time period between floods equaling or exceeding a given magnitude. For example, a 100-year flood has a magnitude expected to be equaled or exceeded on the average of once every hundred years; such a flood has a one-percent chance of being equaled or exceeded in any given year. Often used interchangeably with "recurrence interval".

Floodplain. The channel proper and the areas adjoining the channel which have been or hereafter may be covered by the regulatory or 100-year flood. Any normally dry land area that is susceptible to being inundated by water from any natural source. The floodplain includes both the floodway and the floodway fringe districts.

Floodway. The channel of a river or stream and those portions of the flood plains adjoining the channel which are reasonably required to efficiently carry and discharge the peak flow of the regulatory flood of any river or stream.

French Drain. A drainage trench backfilled with a coarse, water-transmitting material; may contain a perforated pipe.

Geographical Information System. A computer system capable of assembling, storing, manipulation, and displaying geographically referenced information. This technology can be used for resource management and development planning.

Geotextile Fabric. A woven or non-woven, water-permeable synthetic material used to trap sediment particles, prevent the clogging of aggregates with fine grained soil particles, or as a separator under road aggregate..

Geotextile Liner. A synthetic, impermeable fabric used to seal impoundments against leaks.

Global Positioning System. A system that provides specially coded satellite signals that is processed by a receiver, which determines position, velocity, and time. The system is funded and controlled by the U.S. Department of Defense.

Grade. (1) The slope of a road, a channel, or natural ground. (2) The finished surface of a canal bed, roadbed, top of embankment, or bottom of excavation; any surface prepared to a design elevation for the support of construction, such as paving or the laying of a conduit. (3) To finish the surface of a canal bed, roadbed, top of embankment, or bottom of excavation, or other land area to a smooth, even condition.

Grass. A member of the botanical family Graminae, characterized by blade-like leaves that originate as a sheath wrapped around the stem.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Grassed Waterway. A natural or constructed waterway, usually broad and shallow, covered with erosion-resistant grasses and used to safely conduct surface water from an area.

Ground Cover (horticulture). Low-growing, spreading plants useful for low-maintenance landscape areas.

Ground Water. Accumulation of underground water, natural or artificial.

Habitat. The environment in which the life needs of a plant or animal are supplied.

Household Hazardous Waste. Solid waste generated by households that is ignitable, toxic, reactive, corrosive, or otherwise poses a threat to human health or the environment.

Hydrologic Unit Code. A numeric United States Geologic Survey code that corresponds to a watershed area.

Hydrology. The science of the behavior of water in the atmosphere, on the surface of the earth, and underground. A typical hydrologic study is undertaken to compute flowrates associated with specified flood events.

Illicit Discharge. Any discharge to an MS4 conveyance that is not composed entirely of stormwater.

Impervious. Not allowing infiltration.

INDOT. Indiana Department of Transportation. Generally used here to refer to specifications contained in the publication "INDOT Standard Specifications."

Infiltration. Passage or movement of water into the soil.

Invert. The inside bottom of a culvert or other conduit.

Land Surveyor. A person licensed under the laws of the State of Indiana to practice land surveying.

Minimum Control Measure (MCM). Minimum measures required by the NPDES Phase II program. The six (6) MCMs are: Public education and outreach, Public participation and involvement, Illicit discharge detection and elimination, Construction site runoff control, Post-construction runoff control, and Pollution prevention and good housekeeping.

Mulch. A natural or artificial layer of plant residue or other materials covering the land surface which conserves moisture, holds soil in place, aids in establishing plant cover, and minimizes temperature fluctuations.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

MS4 Operator. The person responsible for development, implementation, or enforcement of the MCMs for a designated MS4 area.

Municipal Separate Storm Sewers. An MS4: (1) is a conveyance or system of conveyances owned by the state, Town, Town, Town, or other public entity; (2) discharges to waters of the U.S.; (3) is designed or used for collecting or conveying stormwater; (4) is not a combined sewer; and, (5) is not part of a Publicly Owned Treatment Works (POTW's).

Mutual Drain. A drain that: (1) Is located on two or more tracts of land that are under different ownership; (2) Was established by the mutual consent of all the owners; and (3) Was not established under or made subject to any drainage statute.

National Geodetic Vertical Datum of 1929 (NGVD 1929). The nationwide, Federal Elevation datum used to reference topographic elevations to a known value.

National Pollution Discharge Elimination System. A permit developed by the U.S. EPA through the Clean Water Act. In Indiana, the permitting process has been delegated to IDEM. This permit covers aspects of municipal stormwater quality.

Natural Drainage. The flow patterns of stormwater run-off over the land in its pre-development state.

Nonpoint Source Pollution. Pollution that enters a water body from diffuse origins on the watershed and does not result from discernable, confined, or discrete conveyances.

Normal Depth. Depth of flow in an open conduit during uniform flow for the given conditions.

Nutrient(s). (1) A substance necessary for the growth and reproduction of organisms. (2) In water, those substances (chiefly nitrates and phosphates) that promote growth of algae and bacteria.

Open Drain. A natural watercourse or constructed open channel that conveys drainage water.

Open Space. Any land area devoid of any disturbed or impervious surfaces created by industrial, commercial, residential, agricultural, or other manmade activities.

Outfall. The point, location, or structure where wastewater or drainage discharges from a pipe or open drain to a receiving body of water.

Outlet. The point of water disposal from a stream, river, lake, tidewater, or artificial drain.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Peak Discharge. The maximum instantaneous flow from a given storm condition at a specific location.

Percolation. The movement of water through soil.

Perennial Stream. A stream that maintains water in its channel throughout the year.

Permeability (soil). The quality of a soil that enables water or air to move through it. Usually expressed in 'inches per hour or inches per day.

Pervious. Allowing movement of water.

Pesticides. Chemical compounds used for the control of undesirable plants, animals, or insects. The term includes insecticides, herbicides, algicides, rodenticides, nematocides, fungicides, and growth regulators.

pH. A numerical measure of hydrogen ion activity, the neutral point being 7.0. All pH values below 7.0 are acid, and all above 7.0 are alkaline.

Phosphorus (available). Inorganic phosphorus that is readily available for plant growth.

Piping. The formation of "pipes" by underground erosion. Water in the soil carries the fine soil particles away, and a series of eroded tubes or tunnels develop. These openings will grow progressively larger and can cause a dam failure.

Point Source. Any discernible, confined, and discrete conveyance including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or maybe discharged (P.L. 92-500, Section 502[14]).

Porosity. The volume of pore space in soil or rock.

Private Drain. A drain that: (1) Is located on land owned by one person or by two or more persons jointly; and (2) was not established under or made subject to any drainage statute.

Professional Engineer. A person licensed under the laws of the State of Indiana to practice professional engineering.

Programmatic Indicator. Any data collected by an MS4 entity that is used to indicate implementation of one (1) or more minimum control measures.

Publically Owned Treatment Works. A municipal operation that breaks down and removes contaminants in the wastewater prior to discharging to a stream through primary and/or secondary treatment systems.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Rainfall Intensity. The rate at which rain is falling at any given instant, usually expressed in inches per hour.

Receiving Stream. The body of water into which runoff or effluent is discharged.

Recharge. Replenishment of groundwater reservoirs by infiltration and transmission from the outcrop of an aquifer or from permeable soils.

Recurrence Interval. A statistical expression of the average time between floods equaling or exceeding a given magnitude.

Redevelopment. Alterations of a property that change a site or building in such a way that there is disturbances of one (1) acre or more of land.

Regulated Drain. A drain, either open channel or closed tile/sewer, subject to the provisions of the Indiana Drainage Code, I.C.-36-9-27.

Regulatory Flood. The discharge or elevation associated with the 100-year flood as calculated by a method and procedure which is acceptable to and approved by the Indiana Department of Natural Resources and the Federal Emergency Management Agency. The "regulatory flood" is also known as the "base flood".

Reservoir. A natural or artificially created pond, lake or other space used for storage, regulation or control of water. May be either permanent or temporary. The term is also used in the hydrologic modeling of storage facilities.

Retention. The storage of stormwater to prevent it from leaving the development site. May be temporary or permanent.

Revetment. Facing of stone or other material, either permanent or temporary, placed along the edge of a stream to stabilize the bank and protect it from the erosive action of the stream. Also see Revetment riprap.

Riparian. Of, on, or pertaining to the banks of a stream, river, or pond.

Riprap. Broken rock, cobble, or boulders placed on earth surfaces, such as the face of a dam or the bank of a stream, for protection against the action of water (waves). Revetment riprap is material graded such that: (1) no individual piece weighs more than 120 lbs. and (2) 90-100% will pass through a 12-inch sieve, 20-60% through a 6-inch sieve, and not more than 10% through a 12-inch sieve.

Riverine. Relating to, formed by, or resembling a stream (including creeks and rivers).

River Restoration. Restoring the channel of a stream or ditch to its perceived original, non-obstructed capacity by means of clearing & snagging, obstruction removal, and

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

inexpensive streambank protection measures. The term "restoration", as noted, does not necessarily imply restoration or improvement of water quality or habitat within the channel or its adjacent area.

Runoff. That portion of precipitation that flows from a drainage area on the land surface, in open channels, or in stormwater conveyance systems.

Sand. (1) Soil particles between 0.05 and 2.0 mm in diameter. (2) A soil textural class inclusive of all soils that are at least 70% sand and 15% or less clay.

Sediment. Solid material (both mineral and organic) that is in suspension, is being transported, or has been moved from its site of origin by air, water, gravity, or ice and has come to rest on the earth's surface.

Sedimentation. The process that deposits soils, debris and other materials either on the ground surfaces or in bodies of water or watercourses.

Sensitive Water. A water body in need of protection or remediation base on its: providing habitat for threatened or endangered species, usage as a public water supply intake, relevant community value, or exception use classification

Settling Basin. An enlargement in the channel of a stream to permit the settling of debris carried in suspension.

Silt. (1) Soil fraction consisting of particles between 0.002 and 0.05 mm in diameter. (2) A soil textural class indicating more than 80% silt.

Silt Fence. A fence constructed of wood or steel supports and either natural (e.g. burlap) or synthetic fabric stretched across area of non-concentrated flow during site development to trap and retain on-site sediment due to rainfall runoff.

Single Family Rate. A user fee that is a revenue source generated from people who use or benefit from stormwater management services.

Slope. Degree of deviation of a surface from the horizontal, measured as a numerical ratio or percent. Expressed as a ratio, the second number is commonly the horizontal distance (run) and the second is the vertical distance (rise)--e.g., 2:1. However, the preferred method for designation of slopes is to clearly identify the horizontal (H) and vertical (V) components (length (L) and Width (W) components for horizontal angles). Also note that according to international standards (Metric), the slopes are presented as the vertical or width component shown on the numerator--e.g., 1V:2H. Slope expressions in this handbook follow the common presentation of slopes--e.g., 2:1 with the metric presentation shown in parenthesis--e.g., (1V:2H). Slopes can also be expressed in "percents". Slopes given in percents are always expressed as (100*V/H) - e.g., a 2:1 (1V:2H) slope is a 50% slope.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Soil. The unconsolidated mineral and organic material on the immediate surface of the earth that serves as a natural medium for the growth of land plants. Also see alluvial soil, Clay, Cohesive soil, Loam, Permeability (soil), Sand, Silt, Soil horizon, Soil profile, Subsoil, Surface soil, Topsoil.

Soil and Water Conservation District (SWCD). A public organization created under state law as a special-purpose district to develop and carry out a program of soil, water, and related resource conservation, use, and development within its boundaries. A subdivision of state government with a local governing body.

Solid Waste. Any garbage, refuse, debris, or other discarded material.

Special Flood Hazard Area. An area that is inundated during the 100-Year flood.

Storm Duration. The length of time that water may be stored in any stormwater control facility, computed from the time water second begins to be stored.

Storm Event. An estimate of the expected amount of precipitation within a given period of time. For example, a 10-yr. frequency, 24-hr. duration storm event is a storm that has a 10% probability of occurring in any one year. Precipitation is measured over a 24-hr. period.

Storm Frequency. The time interval between major storms of predetermined intensity and volumes of runoff--e.g., a 5-yr., 10-yr. or 20-yr. storm.

Stormwater. Water resulting from rain, melting or melted snow, hail, or sleet.

Stormwater Runoff. The water derived from rains falling within a tributary basin, flowing over the surface of the ground or collected in channels or conduits.

Stormwater Quality Management Plan (SWQMP). A comprehensive written document that addresses stormwater runoff quality within an MS4 area. The SWQMP is divided into three (3) submittal parts: Part A – Initial Application, Part B – Baseline Characterization and On-going Monitoring Plan, and Part C – Program Implementation.

Storm Sewer. A sewer that carries stormwater, surface drainage, street wash, and other wash waters but excludes sewage and industrial wastes. Also called a storm drain.

Stream. See Intermittent stream, Perennial stream, Receiving stream.

Streambanks. The usual boundaries (not the flood boundaries) of a stream channel. Right and left banks are named facing downstream.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Stream Gauging. The quantitative determination of stream flow using gauges, current meters, weirs, or other measuring instruments at selected locations (see Gauging station').

Stream Length. The length of a stream or ditch, expressed in miles, from the confluence of the stream or ditch with the receiving stream to the upstream extremity of the stream or ditch, as indicated by the solid or dashed, blue or purple line depicting the stream or ditch on the most current edition of the seven and one-half (72) minute topographic quadrangle map published by the United States Geological Survey, measured along the meanders of the stream or ditch as depicted on the map.

Subarea/Subbasin. Portion of a watershed divided into homogenous drainage units which can be modeled for purposes of determining runoff rates. The subareas/subbasins have distinct boundaries, as defined by the topography of the area.

Subsoil. The B horizons of soils with distinct profiles. In soils with weak profile development, the subsoil can be defined as the soil below which roots do not normally grow.

Subsurface Drain. A pervious backfield trench, usually containing stone and perforated pipe, for intercepting groundwater or seepage.

Subwatershed. A watershed subdivision of unspecified size that forms a convenient natural unit. See also Subarea.

Surface Runoff. Precipitation that flows onto the surfaces of roofs, streets, the ground, etc., and is not absorbed or retained by that surface but collects and runs off.

Suspended Solids. Solids either floating or suspended in water.

Swale. An elongated depression in the land surface that is at least seasonally wet, is usually heavily vegetated, and is normally without flowing water. Swales conduct stormwater into primary drainage channels and may provide some groundwater recharge.

Tile Drain. Pipe made of perforated plastic, burned clay, concrete, or similar material, laid to a designed grade and depth, to collect and carry excess water from the soil.

Tile Drainage. Land drainage by means of a series of tile lines laid at a specified depth, grade, and spacing.

Topographic Map. Graphical portrayal of the topographic features of a land area, showing both the horizontal distances between the features and their elevations above a given datum.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Topography. The representation of a portion of the earth's surface showing natural and man-made features of a give locality such as rivers, streams, ditches, lakes, roads, buildings and most importantly, variations in ground elevations for the terrain of the area.

Topsoil. (1) The dark-colored surface layer, or a horizon, of a soil; when present it ranges in depth from a fraction of an inch to 2-3 ft. (2) Equivalent to the plow layer of cultivated soils. (3) Commonly used to refer to the surface layer(s), enriched in organic matter and having textural and structural characteristics favorable for plant growth.

Total Maximum Daily Load. Method used to establish allowable loadings for specified pollutants in a surface water resource to meet established water quality standards.

ToxiTown. The characteristic of being poisonous or harmful to plant or animal life. The relative degree or severity of this characteristic.

Tributary. Based on the size of the contributing drainage area, a smaller watercourse which flows into a larger watercourse.

Turbidity. (1) Cloudiness of a liquid, caused by suspended solids. (2) A measure of the suspended solids in a liquid.

Underdrain. A small diameter perforated pipe that allows the bottom of a detention basin, channel or swale to drain.

Unified Soil Classification System (USCS). A system of classifying soils that is based on their identification according to particle size, gradation, plastiTown index, and liquid limit.

Uniform Flow. A state of steady flow when the mean veloTown and cross-sectional area remain constant in all sections of a reach.

Urbanized Area. A land area comprising one (1) or more places that together have a residential population of at least fifty thousand (50,000) and an overall population density of at least five hundred (500) people per square mile.

Vegetative Stabilization. Protection of erodible or sediment producing areas with: permanent seeding (producing long-term vegetative cover), short-term seeding (producing temporary vegetative cover), or sodding (producing areas covered with a turf of perennial sod-forming grass) .

Water Body. Any accumulation of water, surface, or underground, natural or artificial.

Water Quality. A term used to describe the chemical, physical, and biological characteristics of water, usually in respect to its suitability for a particular purpose.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Water Resources. The supply of groundwater and surface water in a given area.

Water Table. (1) The free surface of the groundwater. (2) That surface subject to atmospheric pressure under the ground, generally rising and falling with the season or from other conditions such as water withdrawal.

Watercourse. Any river, stream, creek, brook, branch, natural or man-made drainageway in or into which stormwater runoff or floodwaters flow either continuously or intermittently.

Watershed. The region drained by or contributing water to a specific point that could be along a stream, lake or other stormwater facilities. Watersheds are often broken down into subareas for the purpose of hydrologic modeling.

Watershed Area. All land and water within the confines of a drainage divide. See also Watershed.

Weir. A channel-spanning structure for measuring or regulating the flow of water.

Wetlands. Areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions and/or those wetland areas that are under the COE jurisdiction.

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Appendix C	SWQMP PART C: PROGRAM IMPLEMENTATION CERTIFICATION CHECKLIST
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Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

Appendix D	CERTIFICATION OF THE INFORMATIONAL PROGRAM FOR THE PUBLIC EDUCATION AND OUTREACH MCM
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**Merrillville, Indiana
NPDES Phase II Part C Implementation Plan**

**Appendix E CERTIFICATION OF THE PUBLIC PARTICIPATION AND
INVOLVEMENT PROGRAM FOR THE PUBLIC PARTICIPATION
AND INVOLVEMENT MCM**

**Merrillville, Indiana
NPDES Phase II Part C Implementation Plan**

**Appendix F CERTIFICATION OF THE PLAN TO DETECT, ADDRESS
AND ELIMINATE ILLICIT DISCHARGES FOR THE ILLICIT
DETECTION AND ELIMINATION MCM**

Merrillville, Indiana
NPDES Phase II Part C Implementation Plan

**Appendix G CERTIFICATION OF THE DEVELOPMENT,
IMPLEMENTATION, MANAGEMENT AND ENFORCEMENT
OF AN EROSION AND SEDIMENT CONTROL PROGRAM FOR THE
CONSTRUCTION SITE STORMWATER RUNOFF CONTROL MCM**

**Merrillville, Indiana
NPDES Phase II Part C Implementation Plan**

**Appendix H CERTIFICATION OF THE DEVELOPMENT,
IMPLEMENTATION, MANAGEMENT AND ENFORCEMENT
OF A POST-CONSTRUCTION STORMWATER RUNOFF CONTROL
PROGRAM FOR THE POST-CONSTRUCTION SITE STORMWATER
RUNOFF CONTROL MCM**

**Merrillville, Indiana
NPDES Phase II Part C Implementation Plan**

**Appendix I CERTIFICATION OF THE DEVELOPMENT AND
IMPLEMENTATION OF A PROGRAM TO REDUCE POLLUTANT
RUNOFF FROM MUNICIPAL OPERATIONS FOR THE MUNICIPAL
OPERATIONS POLLUTION PREVENTION AND GOOD HOUSEKEEPING MCM**

**Merrillville, Indiana
NPDES Phase II Part C Implementation Plan**

Appendix J

LISTING OF ACTIVE INDUSTRIAL FACILITIES

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