

# Stormwater Management Ordinance and Technical Standards for Monroe County

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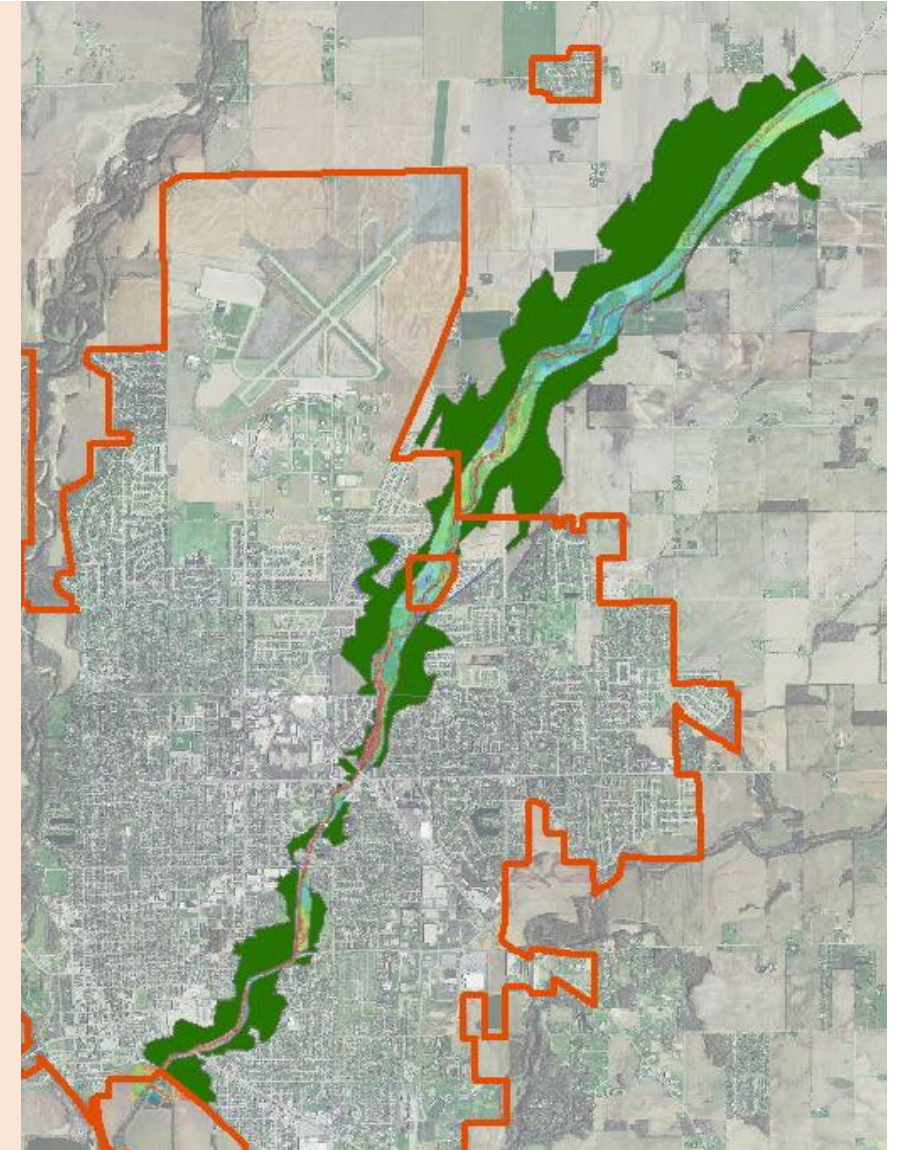
## The Need for Uniformity

- Demand by the development community and legislators for a uniform pollution prevention requirements and enforcement
- Will help the development community and their engineers' familiarity with the requirements
- Will make it possible for reviewers to compare notes and readily utilize one another experience dealing with issues



# The Need for Comprehensiveness

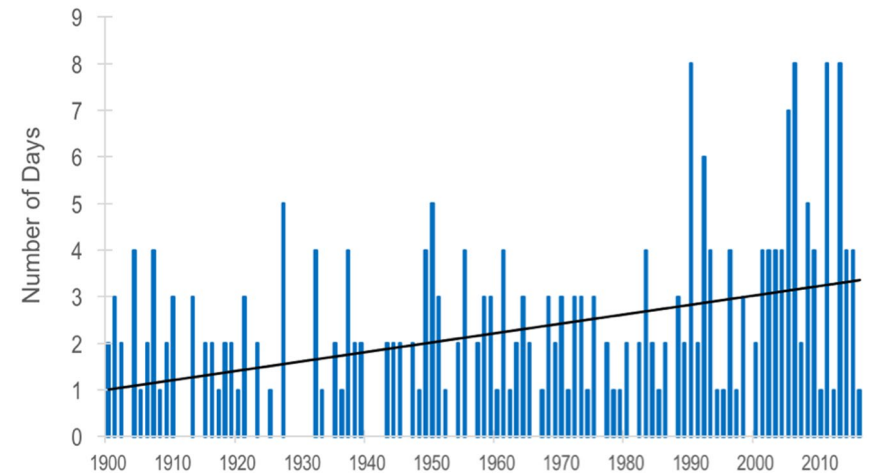
- A myriad of separate ordinances, written policies, and technical standards documents in effect to regulate various aspects of stormwater quality and quantity
- Typically administered by separate local departments/offices and lack cohesiveness and even sometimes in conflict with one another
- Multiple documents are difficult to navigate by the development community
- A single comprehensive ordinance will make it much easier to navigate by both the development community and the development plan reviewers.



# The Need for Updated Provision

- New IDEM Construction Stormwater General Permit (CSGP)
- Existing ordinances and policies have not been fully effective in preventing an increase in vulnerability
- A need for adopting and implementing additional strategies and safeguards due to the ongoing upward trend in occurrence of extreme precipitation events

More Frequent Extreme Precipitation Events in Indiana





“Do unto those downstream  
as you would have those upstream  
do unto you.” —Wendell Berry



## The Need for No-Adverse-Impact Policies

- Despite best of intentions, we are observing adverse impacts to others or to the community itself as new development occurs within the community
- These unintended adverse impacts will likely intensify and become more widespread as the current trends in climate change continues
- Need a set of provisions that is designed to identify potential adverse impacts, close the gaps, and reduce the chances for inadvertent negative impacts

# Streamlined Format

The Stormwater Ordinance and Standards are formatted as two documents:

- The **Model Stormwater Management Ordinance**
  - Contains big picture legal requirements
  - Enumerate “what” is required
  - A shorter document with very limited details
  - Less prone to need for frequent changes
  - References the Technical Standards Manual for details
- The **Model Stormwater Technical Standards Manual**
  - Contains detailed technical requirements
  - Works hand in hand with the Ordinance
  - Describes “how” the requirements need to be met
  - May be updated more frequently and easily
  - References additional published documents/ reference materials



# Monroe County Stormwater Management Ordinance

- 1. General Information
- 2. Prohibited Discharges and Connections
- 3. Stormwater Quantity Management
- 4. Stormwater Pollution Prevention for Construction Sites
- 5. Stormwater Quality Management for Post-Construction
- 6. Karst and Sinkhole Development
- 7. Permitting Requirements and Procedures
- 8. Compliance and Enforcement

**STORMWATER TECHNICAL  
STANDARDS MANUAL  
MONROE COUNTY, INDIANA**

**August 2022 Draft**



# TABLE OF CONTENTS

- 1. Introduction
- 2. Methodology for Determination of Runoff Rates
- 3. Methodology for Determination of Retention/Detention Storage Volumes
- 4. Storm Sewer Design Standards and Specifications
- 5. Open channel Design Standards and Specifications
- 6. Stormwater Detention Design Standards for Peak Flow Control
- 7. Construction Site Stormwater Pollution Prevention Standards
- 8. Post-Construction Stormwater Management Standards

# TABLE OF CONTENTS

- 9. Methodology for Determination of Required Sizing of BMP's
  - 10. Lot Development Standards
  - 11. River Corridor, Bluffs and Floodplain Protection Standards
  - 12. Standards Associated with Dams and Levees
  - 13. Stormwater Standards for Proposed Solar Farms
- 
- Appendix A: Abbreviations and Definitions
  - Appendix B: Standard Forms
  - Appendix C: Construction BMP Fact Sheets
  - Appendix D: Post-Construction BMP Appendices

# Chapter 2 – Determination of Runoff Rates

- NRCS TR-55 Methodology should be used ( $T_c$ 's, CN's)
  - CN's modified for post-development
- Type 2 Rainfall Distribution should be used
- **Exceptions:**
  - Rational Method can be used if development site  $\leq 5$  acres
  - Atlas 14 Rainfall Distribution can be used for watershed analyses

# Chapter 3 – Determination of Retention/Detention Volumes

- NRCS TR-55 Methodology should be used ( $T_c$ 's, CN's)
  - CN's modified for post-development
- Type 2 Rainfall Distribution should be used
- **Exception:**
- Rational Method can be used if development site  $\leq 5$  acres
  - Calculate required storage
  - Confirm required storage is provided in facility (stage/storage)
  - Check discharge based on stage



# Chapter 4 – Storm Sewer Design Standards

- Storm sewers designed to convey 10-year discharge
- 12-inch diameter minimum for storm sewers, driveway culverts
- 15-inch diameter minimum for roadway culverts
- Minimum cover of 2 feet, 2.5 feet under pavement
- At least one 10-foot wide clear lane provided for local roads
- Maximum depth in street sag is 7 inches
- Section M: Drainage System Overflow Design (Emergency Flood Routing)

# Chapter 6 – Detention Designs Standards

- General Release Rates of 0.5/0.9 cfs per acre for 10-year and 100-year storm events
- Sinkhole, Critical Watersheds, Downstream Restrictions may have more restrictive rates
- Minimum orifice size is 4 inches
  
- General Detention Design Requirements for Wet and Dry Basins
- No detention facilities are allowed within a floodplain

# Chapter 8 – Post-Construction Standards

Total Property/Development Area	Post-Construction BMP Requirement*
0 to less than ½ acre	No Water Quality BMP
At least ½ acre to less than 3 acres	At least 1 Water Quality BMP
At least 3 acres	2 Water Quality BMPs in series
At least 10 acres	CPv plus at least 1 Water Quality BMP**

# Chapter 8 – Post-Construction Standards

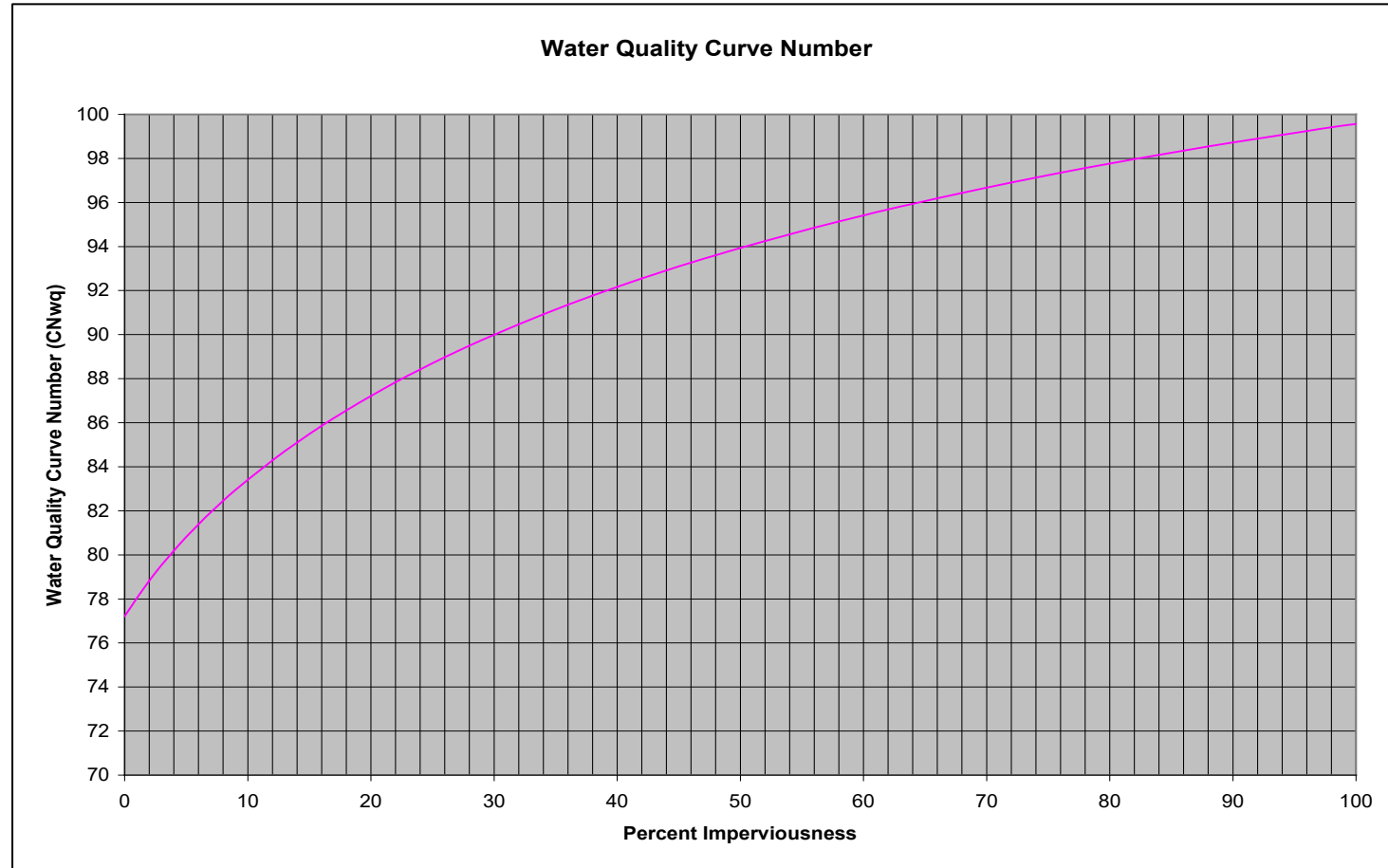
- Conventional Approach Procedures
- Low Impact Development (LID) Approach Procedures
- Provisions for **Hot Spot** Land Uses
- Inspection and Maintenance Requirements
  - Operations and Maintenance Manual



# Chapter 9 – Methodology for Sizing BMP's

- Channel Protection Volume ( $CP_v$ )
  - 1-Year 24-hour Rainfall Depth
- Water Quality Volume ( $WQ_v$ )
  - 1-inch Rainfall Depth
- Flow Through BMP Sizing
  - Calculating Treatment Flow Rate and Figure 9-1
  - Manufactured Treatment Device Certifications (NJDEP)

# Chapter 9 – Methodology for Sizing BMP's



# Chapter 10 – Lot Development Standards

- Grading and Building Pad Elevations
  - Minimum Federal and State Requirements
  - Local Requirements
- Lot Drainage
- Acceptable Outlet and Adjoining Property Impact Policies

# Chapter 11 – River Corridor, Bluffs and Floodplain Protection Standards

- Floodway and Fluvial Erosion Hazard (FEH) Corridors
- Bluff Zones
- Floodplain Protection and No Net Loss Floodplain Storage Standards



# Chapter 12 – Dam and Levee Standards

- New Dams and Improvements to Existing Dams and Levees
- Developments Downstream of Existing Dams

# Chapter 13 – Stormwater Standards for Solar Farms

# APPENDICES

- A. ABBREVIATIONS AND DEFINITIONS
- B. APPLICATIONS, FORMS, AND MISCELLANEOUS SHEETS
  - Stormwater Permit Forms
  - Forms for Active Construction Sites
  - Individual Lot/Parcel Permit Forms
  - Critical Watersheds List
- C. CONSTRUCTION BMP FACT SHEETS
- D. POST-CONSTRUCTION BMP APPENDICES

# Permit Application/Checklist

<b>Jurisdiction Entity</b>		
Application/Checklist for Stormwater Permit (To Be Completed by Applicant)		
Project Name:		
General Location:		
Form Completed By (Name):	Date Completed:	
Total Site Acreage:	Proposed Land Disturbance Acreage:	
<b>1. Application Fee</b>		
Check Attached	Amt. \$	
<b>2. Owner/Applicant Information</b>		
Owner Name:	Phone #:	E-Mail:
Engineer Company Name:		
Engineer Name:	Phone #:	E-Mail:
Brief Project Purpose and Description:		
<b>3. Construction Plans</b>		<b>Page/Sheet #</b>
3.1	Title sheet which includes location map, vicinity map, operating authority, design company name, developer name, and index of plan sheets.	
3.2	A copy of a legal boundary survey for the site, performed in accordance with Rule 12 of Title 865 of the Indiana Administrative Code or any applicable and subsequently adopted rule or regulation for the subdivision limits, including all drainage easements and wetlands.	
3.3	A reduced plat or project site map showing the parcel identification numbers, the lot numbers, lot boundaries, easements, and road layout and names. The reduced map must be legible and submitted on a sheet or sheets no larger than eleven (11) inches by seventeen (17) inches for all phases or sections of the project site.	
3.4	An existing project site layout that must include the following information:	
3.4a	A topographic map of the land to be developed and such adjoining land whose topography may affect the layout or drainage of the development. The contour intervals shall be one (1) foot when slopes are less than or equal to two percent (<2%) and shall be two (2) feet when slopes exceed two percent (>2%). All elevations shall be given in either National Geodetic Vertical Datum of 1929 (NGVD) or North American Vertical Datum of 1988 (NAVD). The horizontal datum of topographic map shall be based on Indiana State Plane Coordinates, NAD83. The map will contain a notation indicating <u>these datum information</u> .  i. If the project site is less than or equal to two (2) acres in total land area, the topographic map shall include all topography of land surrounding the site to a distance of at least one hundred (100) feet.  ii. If the project site is greater than two (2) acres in total land area, the topographic map shall include all topography of land surrounding the site to a distance of at least two hundred (200) feet.	
3.4b	Location, name, and normal water level of all wetlands, lakes, ponds, and water courses on or adjacent to the project site.	
3.4c	Location of all existing structures on the project site.	
3.4d	Location(s) where runoff enters the project site and location(s) where runoff	

# Maintenance Agreement

## Stormwater Management BMPs Maintenance Agreement

THIS AGREEMENT is made this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, by \_\_\_\_\_ [Owner Name] of \_\_\_\_\_ [Company Name] with principal offices located \_\_\_\_\_ [Owner/Company Address], hereinafter "Owner".

*Non-MS4 communities who do not wish to proactively regulate the stormwater quality or channel erosion in their communities can delete this form.*

In accordance with **Jurisdiction Entity** Stormwater Ordinance and Technical Standards, the Owner agrees to install and maintain stormwater management practice(s) (also known as BMPs) on the subject property, known as \_\_\_\_\_ [Property's Common Name] located at \_\_\_\_\_ [Property's Address], hereinafter "Property" in accordance with Exhibit A. The Owner further agrees to the terms stated in this document to ensure that the stormwater management practice(s) continues serving the intended function in perpetuity. This Agreement includes the following exhibit:

**Exhibit A:** BMP Operation and Maintenance Manual ("Manual").

Note: This agreement and all Exhibits shall be recorded with the deed of property by the Owner at the **Jurisdiction Entity** Recorder's Office and two (2) copies of the recorded document provided to **Jurisdiction Entity**'s Office, hereinafter "Community".

Through this Agreement, the Owner hereby subjects the Property to the following covenants, conditions, and restrictions:

- The Owner shall be solely responsible for the installation, maintenance, and repair of the stormwater management practices, drainage easements, and associated landscaping identified in the Manual.
- No alterations or changes to the stormwater management practice(s) identified in the Manual shall be permitted unless they are deemed to comply with this Agreement and are approved in writing by the Community.
- The Owner shall retain the services of a qualified individual or company to operate and ensure the maintenance of the stormwater management practice(s) identified in the Manual.
- The Owner shall annually, by December 30th, provide to the Community records of inspections, maintenance, and repair of the stormwater management practices in accordance with the Manual.
- The Community or its designee is authorized to access the property as necessary to conduct inspections of the stormwater management practices or drainage easements to ascertain compliance with the intent of this Agreement and the activities prescribed in the Manual. Upon written notification by the Community or its designee of required maintenance or repairs, the Owner shall complete the specified maintenance or repairs within a reasonable time frame determined by the Community. The Owner(s) shall be liable for the failure to undertake any maintenance or repairs so that the public health, safety and welfare shall not be endangered nor the road improvement damaged.
- If the Owner fails to properly maintain the stormwater management practice(s) in accordance with the Manual and this Agreement, the Community is authorized,

# QUESTIONS ?

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