

PROCEDURE FOR POST CONSTRUCTION STORM WATER RUNOFF CONTROL PROGRAM



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OVERVIEW

This procedure summarizes the Wayne County Post-Construction Storm Water Runoff Program, required under the current Michigan Department of Environmental Quality (MDEQ) application for a National Pollutant Discharge Elimination System (NPDES) Permit for Discharge of Storm Water to Surface Waters of the State from a Municipal Separate Storm Sewer System (MS4) (“MDEQ NPDES MS4 Permit Application”).

The Wayne County Post-Construction Storm Water Runoff Program, first published in October 2000, is defined by the Wayne County Storm Water Ordinance, Administrative Rules, and Standards Manual. The current versions of these documents, along with other related guidance, are available online at the Wayne County website. Wayne County’s Post-Construction Storm Water Runoff Program requires that permanent storm water management systems be constructed for those development projects that are subject to the program.

Wayne County, a home rule charter county under Public Act 293 of 1966, as amended, which provides for the establishment of charter counties, derives its storm water management authority from various sources, including:

- The Subdivision Control Act, Act 288 of the Public Acts of Michigan of 1967, as amended
- The Michigan Drain Code, Public Act 40 of 1956, as amended
- The Mobile Home Commission Act, Act 96 of the Public Acts of Michigan of 1987, as amended
- Part 31, MS4 General Permit, Water Resources Protection, Natural Resources and Environmental Protection Act, 1994 PA 451, as amended
- EGLE Wastewater Discharge Permit, Rule 323.2161a, Post-Construction Requirements
- Parks and Airports, Act 90 of 1913, as amended
- County Road Law, Act 283 of 1909, as amended

The purposes of the Wayne County Post-Construction Storm Water Runoff Program therefore include:

- Water Resource Protection,
- Infrastructure Protection,
- Channel Protection, and
- Flood control.

Table 1 summarizes the relationship between the existing and proposed Wayne County Storm Water Ordinance, Administrative Rules, and Standards Manual and the Post-Construction Storm Water Runoff Program requirements identified as items 32 – 59 in the MDEQ NPDES MS4 Permit Application.

The County has developed these revisions to the Wayne County Storm Water Ordinance, Administrative Rules, and Standards Manual with regional partners, and plans to review the revisions with local communities, businesses and other interested parties through the summer and into the fall of 2019. It must be noted that any revision to the Wayne County Storm Water Ordinance or Administrative Rules requires approval of the Wayne County Commission and the Wayne County Executive.

PROCEDURE

The requirements for design, construction, and maintenance of storm water systems installed pursuant to Wayne County's Post-Construction Storm Water Runoff Program are defined in the Storm Water Ordinance, Administrative Rules, and Standards Manual. Chapter 4 of the Storm Water Standards Manual describes Wayne County's procedure for review, approval, and acceptance of the design, construction, and maintenance of storm water systems installed pursuant to Wayne County's Post-Construction Storm Water Runoff Program; this procedure is summarized generally as:

- Review of project design and construction plans and specifications submitted as part of an application for a Permit to Construct for the development project,
- Issuance of Permits to Construct for satisfactory permit applications,
- Submission by the applicant of adequate financial assurances to be held by the County during construction of the project,
- Inspection of the storm water management system during construction, and
- Issuance of long term Maintenance Permits for the project and release of financial assurances, upon satisfactory construction of the project in compliance with the approved Permit.

Additional information about requirements for applications for a Wayne County Permit to Construct are/will be described in documents available online at <https://www.waynecounty.com/departments/environmental/waterquality/ordinance-administrative.aspx>.

REPORTING

Wayne County will continue to provide information about implementation of the Wayne County Post-Construction Storm Water Runoff Program as part of the NPDES MS4 permit compliance report submitted to MDEQ, at the reporting frequency that is specified in the County's Certificate of Coverage, as follows:

- Number of development projects reviewed for compliance,
- Number of construction approvals issued,
- Number of approved projects completed during reporting period,
- Number of approved projects currently under construction, and
- Number of enforcement actions taken during reporting period.

PROCESS FOR UPDATING/REVISING THIS PROCEDURE

Wayne County anticipates adopting these revisions to the Wayne County Storm Water Ordinance, Administrative Rules, and Standards Manual by April, 2020. Thereafter, the Wayne County Post-Construction Storm Water Runoff Program will be reviewed periodically, and at least once during the permit cycle. Necessary revisions to documents related to the Wayne County Post-Construction Storm Water Runoff Program will be made and published as needed. Program revisions, subject to the MS4 permit requirements, will receive Michigan Department of Environment, Great Lakes and Energy (EGLE) approval prior to implementation.

**TABLE 1: COMPARISON OF WAYNE COUNTY STORM WATER MANAGEMENT PROGRAM
AND MDEQ NPDES MS4 PERMIT APPLICATION REQUIREMENTS**

Post Construction Application Requirement	Application Item	Does Wayne County Program Comply with New Requirement?
Is a storm water ordinance in place for new and redevelopment?	32	Yes, Wayne County Program complies with this requirement.
Does the ordinance: i. Address preventing or minimizing water quality impacts	32	Yes, Wayne County Program complies with this requirement. See <i>Part C</i> in attached <i>Summary of Proposed Stormwater Rules</i> .
ii. • Apply to projects that disturb 1 or more acres. • Projects that disturb less than one acre are subject to the requirement if they are part of a larger common plan of development or sale that would disturb one acre or more.	33	Yes, Wayne County Program complies with this requirement. See Page 1 in attached <i>Summary of Proposed Stormwater Rules</i> .
Water Quality Standards		
i. Cover treatment of runoff from: • First 1 inch OR • 90% of storms (list source of rainfall data) OR • Some alternate?	36, 37	Yes, Wayne County Program complies with this requirement. See <i>Part C</i> in attached <i>Summary of Proposed Stormwater Rules</i> . Rainfall data based on NOAA Atlas 14.
ii. Require BMPs be designed on a site-specific basis to reduce TSS by 80% or to under 80 mg/L or alternate?	38	Yes, Wayne County Program complies with this requirement. See <i>Part C</i> in attached <i>Summary of Proposed Stormwater Rules</i> .
Channel Protection Standards		

**TABLE 1. COMPARISON OF WAYNE COUNTY STORM WATER MANAGEMENT PROGRAM
AND MDEQ NPDES MS4 PERMIT APPLICATION REQUIREMENTS (Continued)**

Post Construction Application Requirement	Application Item	Does Wayne County Program Comply with New Requirement?
i. Require that runoff rate and volume do not exceed pre-development rate and volume for all storms up to the 2-yr 24-hr storm or alternate?	39	Yes, Wayne County program complies with this requirement. See <i>Part A & B</i> in attached <i>Summary of Proposed Stormwater Rules</i> for Wayne County's alternative approach. See also technical memoranda submitted to EGLE dated January 30, 2019; April 18, 2019 and July 12, 2019 that provide clear technical support to this alternative approach as a valid alternative to the language in the MS4 permit guidance.
ii. Exclude certain large water bodies. Channel protection criteria shall not be required for the following water bodies: • The Great Lakes or connecting channels of the Great Lakes • The Rouge River downstream of the Turning Basin	40	Water quality controls are required but channel protection may not be required for projects that directly discharge storm water into the following large water bodies within Wayne County excluded by EGLE from program jurisdiction: • Lake St Clair & the Detroit River, which are connecting channels of the Great Lakes, and • The Rouge River downstream of the Turning Basin
Site Specific Requirements	41	
i. Provide a procedure for reviewing infiltration BMPs in areas with soil or groundwater contamination?	42	Yes, Wayne County program will comply with this requirement. See <i>Part A</i> in attached <i>Summary of Proposed Stormwater Rules</i> .
ii. Require BMPs to address pollutants in potential hot spots (ex: gas stations, commercial vehicle maintenance/repair shops, auto recyclers, recycling centers and scrap yards)?	42	Yes, Wayne County Program applies to development including hot spots
Site Plan Review	53	
i. Require the submittal of a site plan for review and approval of post-construction storm water BMPs?	54, 55	Yes. Wayne County Program complies with this requirement. See <i>Part E</i> in attached <i>Summary of Proposed Stormwater Rules</i> .
ii. Provide the procedure for site plan review and approval. Include the process for determining how meets the performance standards and ensures long-term O&M of the BMPs.	54, 55	Yes. Wayne County Program complies with this requirement. See <i>Part E</i> in attached <i>Summary of Proposed Stormwater Rules</i> .

**TABLE 1. COMPARISON OF WAYNE COUNTY STORM WATER MANAGEMENT PROGRAM
AND MDEQ NPDES MS4 PERMIT APPLICATION REQUIREMENTS (Continued)**

Post Construction Application Requirement	Application Item	Does Wayne County Program Comply with New Requirement?
Long-Term O&M	56	
i. Require long-term maintenance of the BMPs?	56	Yes, Wayne County Program complies with this requirement. See <i>Part E</i> in attached <i>Summary of Proposed Stormwater Rules</i> .
ii. Require a maintenance agreement between the Applicant and the owner/operators of the BMPs?	57	Yes, Wayne County Program complies with this requirement. See <i>Part E</i> in attached <i>Summary of Proposed Stormwater Rules</i> .
iii. Does agreement allow the Applicant to inspect structural or vegetative BMPs?	58	Yes, Wayne County Program complies with this requirement. See <i>Part E</i> in attached <i>Summary of Proposed Stormwater Rules</i> .
iv. Does agreement allow the Applicant to perform the necessary maintenance/corrective actions on neglected BMPs?	58	Yes, Wayne County Program complies with this requirement. See <i>Part E</i> in attached <i>Summary of Proposed Stormwater Rules</i> .
v. Track the transfer of O&M responsibility for BMPs?	58	Yes, Wayne County Program complies with this requirement. See <i>Part E</i> in attached <i>Summary of Proposed Stormwater Rules</i> .
Requirements for Federal Facilities	34, 35	Wayne County Program applies to all development including federal facilities. Depending on final revisions to Channel Protection Standards noted under application item 39, special requirements for federal facilities may be necessary for compliance with predevelopment hydrology requirements from Energy Independence and Security Act of 2007
OPTIONAL PROGRAMS		
Allow for offsite mitigation for redevelopment projects that can't meet the performance standards after maximizing detention	43	Wayne County will not pursue this option at this time except if a regional storm water management system is proposed and institutionalized

**TABLE 1. COMPARISON OF WAYNE COUNTY STORM WATER MANAGEMENT PROGRAM
AND MDEQ NPDES MS4 PERMIT APPLICATION REQUIREMENTS (Continued)**

Post Construction Application Requirement	Application Item	Does Wayne County Program Comply with New Requirement?
ii. Allow for payment in lieu for projects that can't meet the performance standards after maximizing detention	44	Wayne County will not pursue this option at this time



Summary of Proposed Stormwater Rules

The Environmental Protection Agency (EPA) through the Michigan Department of Environment, Great Lakes, and Energy (EGLE) requires the Charter County of Wayne and other regulated entities to comply with the National Pollutant Discharge Elimination System (NPDES) Phase II Municipal Separate Storm Sewer System (MS4) permit requirements. The purpose of these standards is to address Post-Construction Stormwater Runoff Control Measures required under this permit, as well as to address Stormwater Detention and Flood Control standards.

The Charter County of Wayne's Department of Public Services will apply these standards within its legal authority and jurisdiction as outlined in the following:

- The Subdivision Control Act, Act 288 of the Public Acts of Michigan of 1967, as amended
- The Michigan Drain Code, Public Act 40 of 1956, as amended
- The Mobile Home Commission Act, Act 96 of the Public Acts of Michigan of 1987, as amended
- Part 31, Water Resources Protection, Natural Resources and Environmental Protection Act, 1994 PA 451, as amended
- EGLE Wastewater Discharge Permit, Rule 323.2161a, Post-Construction Requirements
- Parks and Airports, Act 90 of 1913, as amended
- County Road Law, Act 283 of 1909, as amended

Although not required, communities and other entities responsible for the management of stormwater systems and compliance with MS4 Post-Construction requirements within their respective jurisdictions are encouraged to adopt these standards.

These standards establish minimum stormwater requirements for the design and construction of subdivisions, site condominiums, commercial/industrial sites, and other site improvements under the jurisdiction of the Charter County of Wayne that are 0.5 acre or greater in size. Local standards may be more restrictive than these standards and when conflicting standards arise; the more stringent requirements will govern.

Exceptions, or waivers to these standards will be considered on a case-by-case basis by the Wayne County Department of Public Services (see waiver requirements). These standards supersede all previous versions and revisions and updates will be available on Wayne County's website.

These standards regulate the design and implementation of stormwater management practices with the following overall objectives:

1. Provide a comprehensive framework for managing stormwater that achieves water quality, channel protection, flood control, and long-term operations and maintenance.
2. Promote economic development through the use of straightforward and uniform drainage standards for development throughout Wayne County, as well as across Southeast Michigan.
3. Incorporate design standards that control both the quantity and quality of stormwater runoff.



4. Where practicable, require volume-reducing Low Impact Development (LID) design measures or Best Management Practices (BMPs), such as infiltration, preservation of natural areas, enhanced vegetation and reduced imperviousness, to control runoff volume.
5. Promote the protection/preservation of natural features.
6. Protect public health, safety, and welfare.
7. Provide guidelines and additional resources for the selection of effective structural and vegetative stormwater BMPs for development sites.
8. Enhance the sustainability of stormwater management practices in Wayne County including performance, longevity, safety, maintenance, environmental benefits, and acceptance among Wayne County municipalities.
9. Emphasize long-term operation and maintenance of the stormwater management practices through formal agreements and inspection/enforcement mechanisms.
10. Use current rainfall data based on NOAA Atlas 14.
11. Promote consistent and straightforward design practices by using a set of simple equations to determine runoff rates, detention volumes, and water quality treatment and infiltration requirements.

Construction activity within the jurisdiction of the Charter County of Wayne, including discharges to County Drains or County roadways, will be reviewed and permitted as necessary, for compliance with the following applicable standards.

Part A: Channel Protection Volume Control

Channel Protection Volume Control (CPVC) is necessary to protect natural watercourses from increased erosion and sedimentation as a result of increased imperviousness and runoff rates as development occurs. CPVC also promotes groundwater recharge and stabilizes flow rates and baseflow in our natural watercourses.

CPVC shall be implemented on all developments within Wayne County's review jurisdiction to the Maximum Extent Practicable (MEP). CPVC is required for the Channel Protection Volume (V_{CP}). The V_{CP} is the post-development runoff volume from a 1.0-inch rainfall event (approximately the 90th percentile storm).

The following CPVC implementation process is summarized in the Channel Protection Flowchart included in Appendix A.

1. Implement land use practices that limit the increase in runoff volume, such as LID practices including (but not limited to) promotion of naturalized areas (i.e. meadow or wooded areas vs. turf grass), reduced imperviousness practices, etc.
2. Calculate the required V_{CP} , which is the post-development site runoff volume from a 1.0-inch rainfall event ($V_{CP} = 3630 \times C \times A$), where C is the post-development runoff coefficient, A is the disturbed area in acres, and V_{CP} is the required volume in cubic feet.
3. Provide adequate infiltration and/or storage/reuse BMPs, to the MEP, to provide the CPVC. This may include but is not limited to bio-retention, pervious pavement, rain gardens, bio-swales, cisterns, green roofs, and infiltration trenches.



- a. When the in-situ infiltration rate is above 0.5 inches/hour, supplemental measures are not required.
 - b. When in-situ infiltration rates are between 0.24 inches/hour and 0.5 inches/hour, soils are marginally suitable for infiltration BMPs, and supplemental measures are required. Supplemental measures may include subsoil amendment, or an underdrain placed at the top of the storage bed layer to promote infiltration.
 - c. When in-situ infiltration rates are less than 0.24 inches/hour, the CPVC requirement is waived. When infiltration is waived, other volume reducing LID practices must be implemented to the MEP.
 - d. Infiltration BMPs shall completely dewater in no more than 72-hours, consisting of 24-hour dewatering for the surface volume, and 48-hour dewatering of the void space (soil storage) volume. Water storage/reuse BMPs shall also be designed to fully dewater within 72-hours.
4. Pretreatment is required for all BMPs to remove fine sediment, trash, and debris to preserve the longevity and function of the BMPs.
 - a. Common methods of BMP pretreatment include mechanical separators, vegetated filter strips, vegetated swales, constructed filters, and curb cuts with sediment traps. Refer to the Michigan LID Manual for additional methods of pretreatment.
 5. To incentivize and encourage infiltration on all sites, up to 100% of the provided infiltration volume, up to a maximum of the V_{CP} , is credited towards the required detention and flood control volume. For underground infiltration BMPs that are not easily accessible for inspection and maintenance, infiltration volume credits may be reduced on a case-by-case basis as determined by the site plan reviewer.
 6. The CPVC requirement will be waived under the following circumstances:
 - a. Areas containing contaminated soils/groundwater
 - b. Wellhead protection areas
 - c. Areas with hotspot activities (e.g., gas stations)
 - d. Seasonal high groundwater elevation is within 2 vertical feet of the bottom of the proposed infiltration BMP
 7. In all cases where the CPVC requirement is waived, site design shall include the use of other runoff volume reducing BMPs to the MEP.



Part B: Channel Protection Rate Control

Channel Protection Rate Control (CPRC) is necessary to protect natural watercourses from increased erosion and sedimentation as a result of increased imperviousness and runoff rates as development occurs.

The CPRC shall be implemented on all developments within Wayne County's review jurisdiction to the MEP as outlined below.

1. Extended Detention is required for the site's post-development runoff volume from a 1.9-inch rainfall event. This Extended Detention Volume (V_{ED}) shall be dewatered in 48 hours.
2. To calculate the required V_{ED} , which is the post-development runoff volume from a 1.9-inch rainfall event ($V_{ED} = 6897 \times C \times A$), where C is the post-development runoff coefficient, A is disturbed area in acres, and V_{ED} is the required volume in cubic feet.
3. The extended detention requirement effectively maintains the 2-year pre-development peak flow rates, to the MEP, for new developments and reduces the existing 2-year peak flow rates for redevelopments.

Part C: Water Quality Control

Water Quality Control (WQC) is required for most development sites to limit post-development runoff Total Suspended Solids concentrations to either of the following water quality standards: 80 mg/l or 80% TSS reduction.

When required, WQC shall be implemented to the MEP as outlined below.

The Water Quality Volume (V_{WQ}) is the runoff volume from a site, based on post-development site conditions and a 1.0-inch rainfall event. The V_{WQ} is calculated as ($V_{WQ} = 3630 \times C \times A$), where C is the runoff coefficient, A is the disturbed area in acres, and V_{WQ} is the required volume in cubic feet. The V_{WQ} shall be managed to meet the water quality standards stated above with one, or any combination of the following BMPs:

1. Extended Detention: See above (Part B - Channel Protection Rate Control) Extended Detention requirement.
2. If the CPVC requirement (Part A) is met, then the WQC requirement is presumed to be achieved and no other WQC BMPs will be required.
3. Mechanical Separators shall be sized to provide treatment of the 1-year peak flow rate as determined using the Rational Method.
4. Volume Reducing BMPs: Treatment of the post-development site runoff volume from a 1.0-inch rainfall event using other approved volume reducing BMPs.



Part-D: Detention & Flood Control

Detention and flood control for larger (i.e. 10-year / 100-year) events are not addressed in the MS4 permit requirements for the Post-Construction Runoff Control Minimum Control Measure. Wayne County rules for flood control are still in development and will be released as part of the final rule update.

Part E: Operation and Maintenance

When required, an Operations and Maintenance (O&M) Agreement, and/or Plan, shall be implemented.

The following requirements apply to all stormwater systems owned, operated and maintained by others, which directly connect to a stormwater system within Wayne County's permitting authority:

1. An Operations and Maintenance (O&M) Agreement is required between the municipality and property owner to ensure perpetual O&M of the site's stormwater system. Wayne County must be named as a third-party beneficiary to this Agreement with the power to enforce and inspect. An executed copy of the Agreement must be recorded with the Wayne County Register of Deeds in order to run with the land. A copy of the recorded document shall be submitted to Wayne County prior to approval of the plans.
2. A comprehensive site-specific O&M plan, drawings, details and routine inspection schedule is required for individual stormwater system components.
3. The property owner is required to submit, on an annual basis, the O&M records to the appropriate jurisdiction (municipality or County) for tracking/enforcement.

A resolution will be required for each municipality which authorizes its representative(s) to enter into O&M Agreements that allow for the municipality and County to inspect and enforce the recorded O&M Agreement provisions and, if necessary, to access private property to repair failing systems and charge the property owners for said improvements. This can be a blanket authorization resolution or a specific authorizing resolution for each project at the option of the municipality.

Although Wayne County will provide an O&M Agreement example template, the County recognizes that municipal-specific O&M agreements, ordinances and programs will be proposed. The municipality should reference the Post-Construction Stormwater Runoff Controls Program-Compliance Assistance Document (available on EGLE's website) when developing an alternative for consideration.



Appendix A- Channel Protection Flowchart

