



**OCCUPATIONAL SAFETY AND  
ENVIRONMENTAL HEALTH GUIDELINE**

**Subject:** Storm Water Management – Post-Construction Requirements (EP3-001)

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<b>TABLE OF CONTENTS:</b>	<b><u>Section</u></b>	<b><u>Page</u></b>
	<b>Summary</b>	<b>1</b>
	<b>Reference Regulations</b>	<b>1</b>
	<b>Scope</b>	<b>2</b>
	<b>Acronyms</b>	<b>2</b>
	<b>Responsibility</b>	<b>2</b>
	<b>Procedures</b>	<b>4</b>
	<b>Technical Support</b>	<b>6</b>
	<b>Attachments</b>	<b>6</b>
	Appendix A UM Storm Water Permit – NPDES #MIS040090	
	Appendix B 90 Percent Annual Non-Exceedance Storms, March 2006 - MDEQ	
	Appendix C Rainfall Atlas of the Midwest, 1992 – NOAA	
	Appendix D Computing Flood Discharges for Small Ungaged Watersheds, June 2008 – MDEQ	
	Appendix E Post-Construction Storm Water Worksheet	

**SUMMARY:** Construction and redevelopment projects on UM property are regulated under a National Pollutant Discharge Elimination System (NPDES) permit #MIS040090 for storm water discharges, as issued by the Michigan Department of Environmental Quality (MDEQ). The Storm Water Management Post-Construction Requirements Guideline has been developed to provide guidance regarding responsibilities and actions to meet the Permit conditions for construction and renovation projects on UM properties, which include but are not limited to, the Ann Arbor, Dearborn and Flint campuses.

The post-construction storm water plan for regulated projects is required to include:

1. A minimum treatment volume standard to address water quality impacts;
2. Channel protection criteria to address resource impairment resulting from flow volumes and rates; and an
3. Operation & Maintenance Plan

**REFERENCE REGULATIONS:** Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq.)  
Michigan Act 451, Public Acts 1994, as amended, Part 31.  
Michigan Executive Orders 1991-31, 1995-4, and 1995-18.

**SCOPE:** As required by the NPDES permit for UM, the scope of this Guideline includes all construction and renovation projects on UM properties that involve either:

- a. earth disturbance of one (1) acre or greater,

**OR**

- b. earth disturbance of less than one (1) acre, but which are part of a larger common plan of development or sale that would disturb one (1) acre or more.

*Note: “Regulated site” in this guideline refers to projects meeting a. or b. above.*

**ACRONYMS:**

- BMPs – Best Management Practices
- EHS – Environment, Health & Safety at UMF and Environmental Health & Safety at UMD
- MDEQ – Michigan Department of Environmental Quality
- NOAA – National Oceanic & Atmospheric Administration
- NPDES – National Pollutant Discharge Elimination System
- O&M – Operation & Maintenance
- OSEH – Department of Occupational Safety & Environmental Health
- SOP – Standard Operating Procedure
- TSS – Total Suspended Solids
- UAO – University Architect’s Office
- UAs – Urbanized Areas
- UM – The University of Michigan
- UMD – The University of Michigan, Dearborn campus
- UMF – The University of Michigan, Flint campus

**RESPONSIBILITY:** **This Guideline applies only to units involved in construction or renovation activities meeting one of the scope criteria. These responsibilities do not apply to units not involved in construction or renovation activities.**

OSEH Executive Director

- Promote an environment where UM staff and other personnel are directed and encouraged to follow this guideline.

Directors & Facility Managers

- Provide support to units/staff with responsibilities for storm water management, including ensuring appropriate notifications, information, data, etc. are provided to OSEH or EHS (UMD & UMF).
- Assure that staff and contractors are aware of the requirements outlined in this guideline and instructed on the details of implementation in accordance with the NPDES permit. This includes providing information developed by OSEH/EHS to personnel

regarding the importance of storm water management planning and controls.

#### Program Managers & Supervisors

- Assure that staff and contractors are aware of the requirements outlined in this guideline and instructed on the details of implementation in accordance with the NPDES permit. This includes providing information developed by OSEH/EHS to personnel regarding the importance of storm water management planning and controls.
- Maintain documentation on all of the above and/or provide OSEH with data for tracking these activities.

#### AEC & Other Project Managers (Plant, Grounds, Athletics, UAO, etc.)

- Provide OSEH/EHS with advance notification of regulated projects.
- Work with the Project Developers & Contractors to ensure that the project prepares and implements site plans which incorporate the post-construction storm water requirements of the NPDES permit for UM (#MIS040090, April 2009), including the minimum treatment volume standard, channel protection criteria and operation & maintenance plan requirements.
- Work with the Project Developers & Contractors to provide the documentation, certifications and plans to UM-OSEH/EHS for the post-construction storm water controls.
- Initiate enforcement of the post-construction storm water control requirements, with OSEH/EHS support.

#### Project Developers & Contractors

- Submit the post-construction storm water plan with supporting documentation to UM-OSEH/EHS for review, comment and recordkeeping.
- Provide UM-OSEH/EHS with certification that the design complies with the post-construction storm water control requirements.
- Prepare and implement site plans which incorporate the post-construction storm water requirements of the NPDES permit for UM (#MIS040090, April 2009), including the minimum treatment volume standard, channel protection criteria and operation & maintenance plan requirements.
- Provide UM-OSEH/EHS with certification that the construction of the post-construction storm water controls meets the required volume and treatment standards identified in the permit.

#### OSEH / EHS

- Review and revise the Guideline.
- Coordinate the storm water management program for UM and act as primary contact with MDEQ. Administer and enforce (with the

support and participation of AEC and Other Project Managers) the storm water management program for UM, including developing and maintaining procedures, guidance, information, etc. to aid UM staff and contractors in complying with the post-construction requirements for storm water management on regulated sites.

- Develop, track and enforce (with the support and participation of Plant, Grounds, AEC and Other Project Managers) a program to ensure long-term O&M plans for the water quality treatment and channel protection controls installed as a requirement under this guideline.
- Maintain and retain records on post-construction storm water management for all regulated sites, in accordance with NPDES permit #MIS040090.

**PROCEDURES:**

**1. The post-construction plan for storm water management on regulated sites shall include:**

- A minimum treatment volume standard to address water quality impacts;
- Channel protection criteria to address resource impairment resulting from flow volumes and rates;
- Operation & Maintenance requirements.

Refer to UM NPDES permit #MIS040090 and the [Post-Construction Storm Water Worksheet](#) for additional details on these requirements.

The project team (AEC, Other Project Manager, Project Developer and/or Contractors) shall develop the post-construction storm water management plan in accordance with this guideline and the NPDES permit #MIS040090. Preferred design elements are identified in the Post-Construction Storm Water Worksheet.

**1.1 Minimum Treatment Volume Standard**

The minimum treatment volume standard shall be either:

- a. One (1) inch of runoff from the entire site,  
**OR**
- b. The calculated site runoff from the [90 Percent Annual Non-Exceedance Storms](#), as summarized in MDEQ’s memo dated March 24, 2006.

**1.2 Minimum Treatment Volume Standard – TSS Removal**

The treatment methods shall be designed on a site-specific basis to achieve the following:

- a. A minimum of 80 percent removal of total suspended solids (TSS), as compared with uncontrolled runoff,  
**OR**
- b. Discharge concentrations of TSS not to exceed 80 milligrams per liter (mg/l).

Note: A minimum treatment volume standard is not required where site conditions are such that TSS concentrations in storm water discharges will not exceed 80 mg/l.

## **2.0 Channel Protection Criteria**

The channel protection criteria must maintain post-development site runoff volume and peak flow rate at or below existing levels for all storms up to the 2-year, 24-hour event. “Existing levels” means the runoff volume and peak flow rate for the last land use prior to the planned new development or redevelopment. More restrictive channel protection criteria may be utilized by UM on a case-by-case basis, as appropriate.

### **2.1 Rainfall data**

The rainfall data for calculating runoff volume and peak flow rate shall be the [Rainfall Frequency Atlas of the Midwest](#), 1992 (NOAA - Huff & Angel).

### **2.2 Methods for estimating pre- and post-development runoff**

The methods used for estimating pre- and post development runoff shall follow curve number evaluations as described in MDEQ’s [Computing Flood Discharges from Small Ungaged Watersheds](#), June 2008.

## **3.0 Operation & Maintenance Plans**

All structural and vegetative BMPs installed as a requirement under this section of the permit shall include a plan for maintaining maximum design performance through long-term operation and maintenance.

OSEH/EHS will oversee annual inspections of the BMPs, and report the findings to the facility manager(s) for remedy.

More frequent inspections of BMPs may be required, based on the O&M plan. All inspections, other than the annual inspection by OSEH/EHS shall be the responsibility of the facility manager. A copy of all inspection reports shall be forwarded to OSEH/EHS for recordkeeping.

## **4.0 Project Submittals**

The project team (AEC, developer and/or contractors) shall submit the post-construction storm water management plan, all calculations, and BMP details, including TSS designed removal rates and the O&M plan to UM-OSEH/EHS for review and comment.

The project team must ensure that the storm water plan and all supporting information are deemed acceptable by UM-OSEH prior to beginning any earth disturbance.

A statement is required to be signed by a Professional Engineer familiar with the project, certifying that the design meets the minimum treatment

volume standard and channel protection criteria.

A second certification from the engineer is required after construction has been completed, stating that the as-built conditions meet the post-construction storm water requirements required in the permit.

### **5.0 Enforcement**

OSEH/EHS will administer and enforce the storm water management program for UM, including developing and maintaining procedures, guidance, information, etc. to aid UM staff and contractors in complying with the post-construction requirements for storm water management on regulated sites. Enforcement may include, but is not limited to, letters of warning, stop work orders, withholding SESC permits, withholding payment to the contractor, etc. and shall be implemented with the participation of AEC or Other Project Managers at UM.

### **TECHNICAL SUPPORT:**

All referenced regulations and other documents are available through the OSEH Environmental Protection & Permitting Program (734-936-1920) or EHS at UMD (313-593-4914) or UMF (810-766-6763).

### **ATTACHMENTS:**

- A. [UM Storm Water Permit – NPDES #MIS040090](#), April 2009
- B. [90 Percent Annual Non-Exceedance Storms](#), March 2006 – MDEQ
- C. [Rainfall Atlas of the Midwest](#), 1992 – NOAA
- D. [Computing Flood Discharges for Small Ungaged Watersheds](#), June 2008 - MDEQ
- E. [Post-Construction Storm Water Worksheet](#)