

### 33 46 00 Permanent Stormwater Treatment System

#### 1. Applicability

- 1.1. Projects with “Construction Activities” as defined in Minn. R. 7090.0080 that are to be constructed on University of Minnesota property in the State of Minnesota shall comply with this standard for design and permitting of permanent stormwater treatment systems.
- 1.2. Pavement rehabilitation that does not disturb the underlying soils (e.g., mill and overlay or grind and pave projects) is not construction activity.

#### 2. Permanent Stormwater Treatment System Design Parameters

- 2.1. Use Table 1 to determine if a Stormwater Treatment Design Worksheet (Appendix M) is required.
- 2.2. Use Table 2 to determine if the Construction Activity is considered linear or non-linear.
- 2.3. Use Table 3 to determine the design requirements of the permanent stormwater treatment system.
- 2.4. When connecting to storm sewer systems owned by another jurisdiction, utility connection permits may be required by that jurisdiction. This may require the design to meet additional permanent stormwater treatment requirements that are not listed in Table 3.

Table 1: Permanent Stormwater Treatment System Required

Construction Activity Disturbed Area <sup>1</sup>	Construction Activity is part of a common plan of development <sup>2</sup> that is greater than 1 acre of disturbed area	Permanent Stormwater Treatment System Requirements	Stormwater Treatment Design Worksheet Required (Appendix M)
≥ 1 Acre	N/A	See Table 3	Yes
< 1 Acre	Yes	See Table 3	Yes
	No	None <sup>4</sup>	No
	No, but installing permanent stormwater treatment system	None <sup>4</sup>	Yes <sup>3</sup>

<sup>1</sup> Includes linear projects

<sup>2</sup> Common plan of development as defined by the MPCA (<https://www.pca.state.mn.us/sites/default/files/wq-strm2-22.pdf>).

<sup>3</sup> Stand-alone stormwater sump structure meeting minimum requirements of UMN standard plate STM-0005 does not require completion of Appendix M.

<sup>4</sup>TMDL requirements always apply.

Table 2: Linear and Non-Linear Construction Activity Examples

<b>Project Type</b>	<b>Construction Activity</b>	<b>Example Construction Activity</b>
Non-Linear	<ul style="list-style-type: none"><li>• New Building</li><li>• Building Addition</li><li>• Plaza</li><li>• Parking Lot</li><li>• Regrading</li></ul>	<ul style="list-style-type: none"><li>• Adding an addition onto an already existing building</li><li>• Building a new building</li><li>• Regrading an area that disturbs the underlying soils and results in a change in the topography</li></ul>
Linear	<ul style="list-style-type: none"><li>• Road</li><li>• Sidewalk</li><li>• Trail</li><li>• Utility Line</li></ul>	<ul style="list-style-type: none"><li>• Reconstructing an existing roadway, disturbing under the base layer</li><li>• Digging a trench to install a new chilled water pipe line</li></ul>

Table 3: Permanent Stormwater Treatment System Design Requirements

Project Type (Table 2)	Construction Activity is inside an Urban/Non-Urban Area boundary <sup>1</sup>	Impervious Area <sup>4</sup>	Water Quality Volume Calculation <sup>4</sup>	Rate Control <sup>2</sup>	Pollutant Load Reduction <sup>3</sup>
Non-Linear	Urban	Sum of new and fully reconstructed impervious is greater than or equal to 1 acre	1" x (New Impervious + Fully Reconstructed Impervious)	Yes	Yes
		Sum of new and fully reconstructed impervious is less than 1 acre	None	Yes	No
	Non-Urban	Net increase in impervious area is greater than or equal to 1 acre	1" x (New Impervious + Fully Reconstructed Impervious)	No	Yes
		Net increase in impervious area is less than 1 acre	None	No	No
Linear	Urban	Sum of new and fully reconstructed impervious is greater than or equal to 1 acre	Whichever is larger: 1" x New Impervious OR 0.5" x (New Impervious + Fully Reconstructed Impervious)	Yes	Yes
		Sum of new and fully reconstructed impervious is less than 1 acre	None	Yes	No
	Non-Urban	Net increase in impervious area is greater than or equal to 1 acre	Whichever is larger: 1" x New Impervious OR 0.5" x (New Impervious + Fully Reconstructed Impervious)	No	Yes
		Net increase in impervious area is less than 1 acre	None	No	No

<sup>1</sup><https://umn-egis.maps.arcgis.com/apps/View/index.html?appid=6f53c64bdbdb44b5a2b4a2ebbf85a92>

<sup>2</sup>Rate control requirements per Standard 33 40 00 always apply.

<sup>3</sup>TMDL requirements always apply.

<sup>4</sup> Fully Reconstructed Impervious: Areas where impervious surfaces have been removed down to the underlying soils. Activities such as structure (i.e., interior building) renovation, mill and overlay projects, and other pavement rehabilitation projects that do not expose the underlying soils beneath the structure, pavement, or activity are not considered fully reconstructed. Maintenance activities such as catch basin repair/replacement, utility repair/replacement, pipe repair/replacement, lighting, and pedestrian ramp improvements are not considered fully reconstructed. (NPDES MN040000 Item 27.12)

### **3. Design of Permanent Stormwater Treatment Systems**

- 3.1. Permanent Stormwater Treatment Systems must prevent or reduce water pollution after construction activity is completed.
- 3.2. All Permanent Stormwater Treatment Systems must be designed by a professional engineer.
  - 3.2.A. The Stormwater Treatment Design Worksheet (Appendix M) shall be completed by the system designer.
  - 3.2.B. Exception: Design of a stand-alone stormwater sump structure meeting minimum requirements of UMN standard plate STM-0005 does not require completion of Appendix M.
- 3.3. Water Quality Volume:
  - 3.3.A. Must treat the water quality volume if required per Table 3.
  - 3.3.B. Volume reduction practices must be considered first when designing the permanent stormwater treatment system.
  - 3.3.C. Volume reduction practices may be prohibited by Minn. R. 7090.0080. Refer to Item 20.9 in the Minnesota Pollution Control Agency Small MS4 General Permit MNR040000 (November 16, 2020 issuance date). Volume reduction practices may be prohibited by the UMN due to proximity to underground structures, facility program, or other regulatory prohibitions.
    - 3.3.C.1. If volume reduction practices are prohibited, the water quality volume shall be treated via other practices.
    - 3.3.C.2. For projects where the full volume reduction requirement cannot be met on-site, the project shall document the reasons in the Stormwater Treatment Design worksheet (Appendix M).
    - 3.3.C.3. UMN EHS Contamination Screening Checklist is required when infiltration practices are proposed.
- 3.4. Rate Control:
  - 3.4.A. Must provide the following rate control if required per Table 3.
    - 3.4.A.1. Site discharge shall not exceed existing conditions for the 2-year, 10-year, or 100-year storm events.
  - 3.4.B. Refer to Division 33 40 00 Stormwater Utilities, storm sewer design standards for other rate control requirements.
- 3.5. Pollutant Load Reduction:
  - 3.5.A. Must provide the following pollutant load reduction if required per Table 3.
    - 3.5.A.1. TSS: 80% reduction in Total Suspended Solids for the water quality volume from the proposed un-treated condition.

- 3.5.A.2. TP: No net increase in Total Phosphorus for the water quality volume from the proposed un-treated condition.
- 3.6. Discharges to Impaired Waters with a USEPA-Approved Total Maximum Daily Load (TMDL) that includes an Applicable Waste Load Allocation (WLA):
  - 3.6.A. Must meet applicable requirements in Section 23 of the Minnesota Pollution Control Agency Construction Stormwater General Permit MNR1000001.
  - 3.6.B. UMTC: Contact the UMN Civil Engineer for TMDL and applicable WLA location.
  - 3.6.C. UMD: TMDL and applicable WLA information can be found on the UMD FM stormwater website (<https://fm.d.umn.edu/stormwater/design-construction-assistance>).
  - 3.6.D. All MS4 approved TMDL and applicable WLAs can be found on the MPCA website (<https://stormwater.pca.state.mn.us/index.php?title=File:Wq-strm4-93b.xlsx>).
- 3.7. Rainfall and event distribution data:
  - 3.7.A. All Permanent Stormwater Treatment Systems shall be designed using the following rainfall and distribution data.
  - 3.7.B. Rainfall Data:
    - 3.7.B.1. NOAA Atlas 14, Volume 8, Version 2, Midwestern States
    - 3.7.B.2. 24-hour duration precipitation frequency depth
  - 3.7.C. Event Distribution:
    - 3.7.C.1. UMTC Campus: NRCS MN MSE 3 24-hour storm distribution
    - 3.7.C.2. All other UMN Properties: SCS/NRCS Type II 24-hour storm distribution

#### **4. Submittals**

- 4.1. Reference UMN CPM Design Deliverable guidelines for submittal requirements.
- 4.2. Predesign:
  - 4.2.A. Stormwater Treatment Design Worksheet (Appendix M)
- 4.3. 30% CD/Schematic Design
  - 4.3.A. Stormwater Treatment Design Worksheet (Appendix M)
  - 4.3.B. UMN EHS Contamination Screening Checklist (if infiltration practices are proposed)
- 4.4. 60% CD/Design Development
  - 4.4.A. Stormwater Treatment Design Worksheet (Appendix M)
  - 4.4.B. UMN EHS Contamination Screening Checklist (if infiltration practices are proposed)
  - 4.4.C. Drainage Area Map (proposed and existing)
  - 4.4.D. Proposed Storm Utility Site Plan
  - 4.4.E. Stormwater Calculations (submit for any proposed Stormwater Treatment System)
- 4.5. 95% CD/Permit Set
  - 4.5.A. Stormwater Treatment Design Worksheet (Appendix M)
  - 4.5.B. UMN EHS Contamination Screening Checklist (if infiltration practices are proposed)
  - 4.5.C. Drainage Area Map (proposed and existing)
  - 4.5.D. Proposed Storm Utility Site Plan and Details
  - 4.5.E. Stormwater Calculations (submit for any proposed Stormwater Treatment System)
  - 4.5.F. Specifications

- 4.6. Construction:
  - 4.6.A. Shop Drawings, Engineer of Record approved
- 4.7. Post-Construction:
  - 4.7.A. Shop Drawings, Engineer of Record approved
  - 4.7.B. Proprietary Systems Operations and Maintenance Plan
  - 4.7.C. As-Builts

**5. Permits**

- 5.1. Utility Permit
  - 5.1.A. Reviewed by UMN Civil Engineer in conjunction with BCD.
  - 5.1.B. Appendix M must be approved by UMN Civil Engineer prior to submitting for permits.
- 5.2. Other permits may apply.

**END OF SECTION**