

City of Whitewater

Technical &

Performance Standards

For

Erosion Control

&

Stormwater

Management

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**SECTION 1**  
**TECHNICAL STANDARDS**

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## 1.01 TECHNICAL STANDARDS AND REFERENCES

### A. Erosion Control and Stormwater Management Technical Standards

All drainage facilities and practices required to comply with the Erosion Control and Stormwater Management Ordinances shall incorporate technical standards and design methods specified in this document, maintained and periodically updated by the Director of Public Works. Where not superceded by stricter requirements in this document, the following standards are also incorporated by reference:

1. Applicable design criteria, standards, and specifications identified in the Wisconsin Construction Site Best Management Practice Handbook, Wisconsin Department of Natural Resources (DNR) Pub. WR-222, November 1993 Revision.
2. Other design guidance and technical standards identified or developed by the DNR under subchapter V of chapter NR 151, Wisconsin Administrative Code.
3. DNR is required by recent rule revisions to develop technical standards to provide guidance for measurement and evaluation of this performance standard. Measurement and evaluation of this performance standard shall be based on guidance published by the Department of Natural Resources. Until such guidance is published, total suspended solids removal shall be achieved to the maximum extent practical through implementation of approved BMP's.

## 1.02 PRECIPITATION DEPTH, DISTRIBUTION AND AVERAGES

### A. Precipitation Depths

The following references may be used as a source for design rainfall depths:

1. *Rainfall Frequency Atlas of the United States*, US Department of Commerce, Weather Bureau Technical Paper No. 40, May 1961.
2. Huff, Floyd A., and Angel, James R., *Rainfall Frequency Atlas of the Midwest*, Midwestern Climate Center, Bulletin 71, 1992.

B. Precipitation Distribution

1. Where Technical Paper No. 40 rainfall depths are used, they shall be used in conjunction with the SCS Type II rainfall distribution for a 24-hour storm duration. Technical Paper No. 40 rainfall depths shall not be allowed with Huff rainfall distributions.
2. Where Bulletin 71 rainfall depths are used, they shall be used in conjunction with the appropriate quartile Huff rainfall distribution for the storm duration producing the highest peak discharge.

C. Average Annual Rainfall

1. For applications requiring use of average annual rainfall, recorded City of Madison depths for March 12 through December 2, 1981, shall be used.

**1.03 DESIGN METHODS**

A. Stormwater Runoff Calculations

1. For design of volume-dependent practices (detention basins, retention basins, infiltration systems, etc.), a hydrograph-producing method hydrologic model shall be developed. The following computer programs shall be allowed:
  - a. TR-55
  - b. TR-20
  - c. HEC-1
  - d. HEC-HMS
  - e. Other computer programs as allowed by the Director of Public Works
2. The Rational Method may be used to calculate peak discharges for tributary areas less than 20 acres for purposes of conveyance system design.
3. Estimation of Required Storage Volume
  - a. Final detention basin sizing shall be based on hydrograph routing through the basin with the proposed outlet structure.
  - b. The Soil Conservation Service TR-55 Approximate Method may be utilized to calculate the required storage volume. This may be used for developments with watershed areas of less than 25 acres which do

not involve significant off-site drainage that must be passed through the detention basin or routing of stormwater runoff through a series of detention basins. Soil Conservation Service Type II rainfall shall be utilized to estimate storage volume and peak inflow requirements.

4. Stormwater Conveyance System Design
  - a. Storm Sewers shall be designed in accordance with procedures described in Procedures 13-25-35 through 13-25-45 of the Wisconsin Department of Transportation (WisDOT) Facilities Design Manual (FDM).
  - b. Ditches shall be designed in accordance with procedures described in Procedures 13-30-5 through 13-30-10 of the WisDOT FDM.
  - c. Cross Culverts shall be designed in accordance with procedures described in Procedure 13-15-10 of the WisDOT FDM.

#### 1.04 DESIGN CRITERIA

##### A. Wet Detention Basins

Design in accordance with the Wet Detention Basin Conservation Practice Standard (DNR), Section V.A.1, 2, 4-11 (Appendix A).

##### B. Dry Detention Basins

1. Minimum grades for the bottom of the basin shall be 2 percent unless underdrain is installed. If underdrains are installed, the minimum grade shall be 0.5 percent.
2. Basin side slopes shall not be steeper than 4:1 or flatter than 10:1.
3. Dry detention basins shall be designed to drain completely within 24 hours after the storm event.
4. Forebays shall be used to the maximum extent practical to prevent concentrated flow from entering the basin and allow sediment to settle prior to entering the basin.
  - a. Forebay area should be 10 to 25 percent of the basin's surface area.
  - b. Length to width ratio shall be at least 2:1.

- c. The forebay shall be located opposite of the basin's outlet to increase detention time.
5. The basin shall be designed with an emergency spillway designed to convey the 100-year peak discharge entering the basin.
6. The basin shall have a ponding depth of less than 10 feet, with at least 1 foot of freeboard above the 100-year flood elevation or emergency spillway elevation, whichever is higher.
7. The basin shape should be designed with a length to width ratio of 3:1 in either a long narrow shape or a teardrop shape, to the maximum extent practical.
8. The basin shall be seeded with vegetation that is tolerant of inundation.
9. The basin outlet structure shall discharge to a stable outlet.

C. Storm Sewers

1. Unless otherwise approved by the Director of Public Works, all storm sewer in the public right-of-way (R/W) shall be constructed of reinforced concrete pipe of appropriate class for the expected loading. Storm sewer materials outside of the R/W shall be subject to approval of the Director of Public Works.
2. The minimum allowable pipe diameter shall be 12 inches.
3. Sewer grades shall be designed so that, in general, a minimum of 2-foot cover is maintained over the top of the pipe. Pipe cover less than the minimum may be used upon site-specific approval by the Director of Public Works. Uniform slopes shall be maintained between inlets, manholes and inlet to manhole. Minimum and maximum allowable slopes shall be those capable of producing velocities between 2 and 12 feet per second, respectively, when the sewer is flowing full. Velocities lower than the minimum or higher than the maximum may be used upon site-specific approval by the Director of Public Works.
4. The maximum distance for overland flow of stormwater runoff to an underground storm sewer system shall be 600 feet unless a longer distance is approved by the Director of Public Works.

5. All inlets and catch basins shall be constructed with a 12-inch sump.

D. Ditches

1. Ditch side slopes shall be no steeper than 4:1.
2. Underdrains may be required for ditch grades of 0.75 percent or less.
3. Ditches and open channels shall be protected with erosion mat as necessary to prevent erosion. The erosion mat shall be of an approved type and application specified in the "Erosion Control Product Acceptability List", most current revision, by the Wisconsin Department of Transportation.

E. Culverts

1. Culverts and similar structures shall have a capacity that meets or exceeds the capacity of the surface drainageway and shall be a minimum of 12 inches in diameter. The flowline of a culvert shall match the flowline of the surface drainage way.
2. Culvert pipe materials and cover requirements shall be the same as pipe materials for storm sewers.
3. Culverts shall not create backwater that adversely impacts upstream properties. Design of new culverts shall consider impacts of future upstream development.
4. End sections shall be provided for all culverts. Grates shall be required on end sections for all culverts greater than 18 inches in diameter.

**SECTION 2**  
**PERFORMANCE STANDARDS**

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## 2.01 EROSION AND SEDIMENT CONTROL PERFORMANCE STANDARDS

### A. Total Suspended Solids Removal Goals

1. The Erosion and Sediment Control Plan shall include best management practices (BMPs) that, by design, achieve to the maximum extent practicable, a reduction of 80 percent of the sediment load carried in runoff based on an average annual rainfall, as compared with no sediment or erosion controls until the construction site has undergone final stabilization. An 80 percent sediment reduction shall meet the requirement of this paragraph. Erosion and sediment control BMPs may be used alone or in combination to meet the requirements of this paragraph. Credit toward meeting the sediment reduction may be given for limiting the duration or area, or both, of land-disturbing construction activity.
2. If BMPs cannot be designed and implemented to reduce the sediment load by 80 percent, based on an average annual rainfall, the plan shall include a written and site-specific explanation as to why the 80 percent reduction goal is not attainable, and the sediment load shall be reduced to the maximum extent practicable.
3. DNR is required by recent rule revisions to develop technical standards to provide guidance for measurement and evaluation of this performance standard. Measurement and evaluation of this performance standard shall be based on guidance published by the Department of Natural Resources. Until such guidance is published, total suspended solids removal shall be achieved to the maximum extent practical through implementation of approved BMP's.

### B. Required Best Management Practices

Where appropriate, the plan shall include sediment controls to do all of the following to the maximum extent practicable:

1. Each site shall provide an access drive and parking area of sufficient dimensions and design, surfaced with a material that will prevent erosion and minimize tracking or washing of soil onto public or private roadways. All nonpaved access drives shall be designed so that stormwater runoff from adjacent areas does not flow down the drive surface.
2. Any significant amount of runoff from upslope land area, rooftops, or other surfaces that drain across the proposed land disturbance shall be diverted

- around the disturbed area, if practical. Any diversion of upslope runoff shall be done in a manner that prevents erosion of the flow path and the outlet.
3. Any cuts and fills shall be planned and constructed to minimize the length and steepness of slope and stabilized in accordance with the approved erosion control plan timelines and standards of this document.
  4. Open channels shall be stabilized as required to prevent erosion.
  5. Inlets to storm drains, culverts, and other stormwater conveyance systems shall be protected from siltation until final site stabilization.
  6. Water pumped from the site shall be treated by temporary sedimentation basins or other appropriate controls designed for the highest dewatering pumping rate. Water may not be discharged in a manner that causes erosion of the site or receiving channels.
  7. All waste and unused building materials shall be properly disposed of and not allowed to be carried by runoff into a receiving channel or storm sewer system.
  8. All off-site sediment deposits occurring as a result of a storm event shall be cleaned up by the end of the next workday. All other off-site sediment deposits occurring as a result of land-disturbing activities shall be cleaned up by the end of the workday. Flushing may not be used unless the sediment will be controlled by a filter fabric barrier, sediment trap, sediment basin, or equivalent.
  9. All activities on the site shall be conducted in a logical sequence to minimize the area of bare soil exposed at one time. Existing vegetation shall be maintained as long as possible.
  10. Soil stockpiles shall be located no closer than 25 feet from lakes, streams, wetlands, ditches, drainageways, or roadway drainage systems. Stockpiles shall be stabilized by mulching, vegetative cover, tarps, or other means if remaining 20 days or more.
  11. For any disturbed area that remains inactive for greater than 7 working days, or where grading work extends beyond annual permanent seeding deadlines, the City of Whitewater may require the site to be treated with temporary stabilization measures.

12. When the disturbed area has been stabilized by permanent vegetation or other means, temporary BMPs such as silt fences, straw bales, and sediment traps shall be removed and these areas stabilized.

## 2.02 STORMWATER MANAGEMENT PERFORMANCE STANDARDS

### A. Total Suspended Solids

1. BMPs shall be designed, installed, and maintained to control total suspended solids carried in runoff from the postconstruction site as follows:
  - a. For new development, by design, reduce to the maximum extent practicable, the total suspended solids load by 80 percent, based on the average annual rainfall, as compared to no runoff management controls. An 80 percent total suspended solids reduction shall meet the requirements of this subdivision.
  - b. For redevelopment sites one acre or larger, by design, reduce to the maximum extent practicable, the total suspended solids load by 40 percent, based on the average annual rainfall, as compared to no runoff management controls. A 40 percent total suspended solids reduction shall meet the requirements of this subdivision.
  - c. Notwithstanding items a. and b. if the design cannot achieve the applicable total suspended solids reduction specified, the stormwater management plan shall include a written and site-specific explanation why that level of reduction is not attained, and the total suspended solids load shall be reduced to the maximum extent practicable.
  - d. Measurement and evaluation of this standard shall be based on guidance published by the DNR. In the absence of such guidance, total suspended solids removal shall be achieved to the maximum extent practical through implementation of approved BMPs.

### B. Peak Discharge

1. By design, BMPs shall be employed to maintain or reduce the peak runoff discharge rates, to the maximum extent practicable, as compared to pre-development conditions for the 2- through 100-year design storm applicable to the development site.

Hydrologic Soil Group	A	B	C	D
Runoff Curve Number	56	70	79	83

**Table 2.02-1 Maximum predevelopment Runoff Curve Numbers for Cropland Areas**

2. Predevelopment conditions shall assume "good hydrologic conditions" for appropriate land covers as identified in TR-55 or an equivalent methodology. The meaning of "hydrologic soil group" and "runoff curve number" are as determined in TR-55. However, when predevelopment land cover is cropland, rather than using TR-55 values for cropland, the runoff curve numbers in Table 2.02-1 shall be used.

C. Runoff Volume

At locations where site conditions permit and where technically feasible, infiltration of stormwater to reduce the volume of runoff may be required. If stormwater infiltration can be demonstrated, the reduced volume may be taken into account when designing practices to meet the peak flow control and pollution control requirements of this ordinance.

Where applicable, evaluation of the need for, appropriateness of, and required volume of infiltration shall be based on the most current DNR rules and technical standards. Infiltration shall not be permitted at locations specifically excluded in the DNR rules.

D. Oil and Grease

Fueling and vehicle maintenance areas shall have BMPs designed, installed, and maintained to reduce petroleum within runoff so that the runoff that leaves the site contains no visible petroleum sheen.

E. Protective Areas

1. A vegetated protective area with the width measured horizontally, specified in Table 2.02-2, shall be provided from the top of the channel (per definition in Section 5) of lakes, streams, and rivers or the delineated boundary of wetlands.
2. Impervious surfaces shall be kept out of the protective area unless impractical, with consideration of the planned use. The stormwater management plan shall contain a written site-specific explanation for any parts of the protective area that are disturbed during construction.

Type of Resource	Protective Area
Outstanding and Exceptional Resource Waters	75 feet
Perennial/Intermittent Streams per USGS Map	50 feet
Lakes and Wetlands	50 feet
Other Waterways with Drainage Areas > 130 ac	10 feet

**Table 2.02-2 Types of Resources and Protective areas**

3. Where land-disturbing construction activity occurs within a protective area, and where no impervious surface is present, adequate sod or self-sustaining vegetative cover of 70 percent or greater shall be established and maintained. The adequate sod or self-sustaining vegetative cover shall be sufficient to provide for bank stability, maintenance of fish habitat, and filtering of pollutants from upslope overland flow areas under sheet flow conditions. Nonvegetative materials, such as rock riprap, may be employed on the bank as necessary to prevent erosion, such as on steep slopes or where high velocity flows occur.

In selecting the vegetative cover for the protective area, existing natural vegetative cover shall be left undisturbed, to the maximum extent practical. Where existing vegetative cover must be disturbed, consider revegetating the protective area with native plantings, where feasible.

4. Best management practices such as filter strips, swales, or wet detention basins that are designed to control pollutants from nonpoint sources may be located in the protective area.
5. The protective area requirement does not apply to:
- a. Redevelopment sites.
  - b. In-fill development areas less than 5 acres.
  - c. Structures that cross or access surface waters such as boat landings, bridges, and culverts.
  - d. Structures constructed in accordance with s. 59.692(1v), Wis. Stats.
  - e. Postconstruction sites from which runoff does not enter the surface water, except to the extent that vegetative ground cover is necessary to maintain bank stability.

6. Stormwater Conveyance Systems
  - a. Storm Sewers shall be designed to convey the peak discharge for a 10-year frequency storm event.
  - b. Cross culverts shall be designed to convey the peak discharge for a 25-year frequency storm event.
  - c. Ditches shall be designed to convey the peak discharge for a 25-year frequency storm event.
  - d. All conveyance systems shall be designed to safely pass the 100-year storm flow without damage to adjacent structures. Unless waived by the City of Whitewater, all new structures shall be constructed at least 2 feet higher than the estimated 100-year overflow elevation.

**SECTION 3  
GENERAL REQUIREMENTS**

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### 3.01 GENERAL CONSIDERATIONS

- A. All concentrated stormwater discharges leaving a site must be conveyed into an existing channel, storm sewer, or overland flow path with adequate downstream stormwater capacity and shall not result in increased flood hazard, erosion, or other adverse impacts.
- B. Natural topography and land cover features such as natural swales, natural depressions, native soil infiltrating capacity, and natural groundwater recharge areas shall be preserved and used, to the extent possible, to meet the requirements of this section.
- C. Emergency overland flow for all stormwater facilities shall be provided to prevent exceeding the safe capacity of downstream drainage facilities and prevent endangerment of downstream property or public safety.

**SECTION 4**  
**SUBMITTAL REQUIREMENTS**

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#### 4.01 EROSION AND SEDIMENT CONTROL PLAN

Submittal requirements for Erosion and Sediment Control Plans are summarized below. The Director of Public Works may waive a portion of these submittal requirements where such information is not necessary to demonstrate compliance with the ordinance.

A. Responsible Party and Legal Description

1. Name, address, and telephone number for the following or their designees: landowner; developer; project engineer for practice design and certification; person(s) responsible for installation of stormwater management practices; and person(s) responsible for maintenance of stormwater management practices prior to the transfer, if any, of maintenance responsibility to another party.
2. A site location map and proper legal description of the property proposed to be developed, referenced to the US Public Land Survey system or to block and lot numbers within a recorded land subdivision plat.

B. Predevelopment Site Conditions Mapping

1. A USGS Quadrangle or other appropriate map showing the project location and nearby regional water resources potentially impacted by the project.
2. A copy of the applicable Soils Survey Map showing predominant soil types and hydrologic soil groups.
3. Mapping or description of existing cover type and condition.
4. A predeveloped conditions site map including the following information described below. Mapping shall include enough of the contiguous properties to show runoff patterns onto, through, and from the site.
  - a. Existing topographic contours of the site at a contour interval not to exceed 2 feet.
  - b. Property lines.
  - c. Existing flow paths and direction across the site.
  - d. Outlet locations identifying where stormwater drainage leaves the property.

- e. Drainage basin divides and subdivides to all outlet locations where stormwater drainage leaves the property.
- f. Existing drainage structures on and adjacent to the site.
- g. Watercourses that may affect or be affected by runoff from the site.
- h. Lakes, streams, wetlands, channels, ditches, and other watercourses on and immediately adjacent to the site.
- i. Limits of the 100-year floodplain.

C. Proposed Site Grading and Erosion Control Plan

A Site Grading and Erosion Control Plan shall be provided that includes the following items. The plan shall be at an appropriate scale for the size of the development.

- 1. Boundaries of the construction site.
- 2. Drainage patterns and approximate slopes anticipated after major grading activities.
- 3. Areas of soil disturbance.
- 4. Location of major structural and nonstructural controls identified in the plan.
  - a. Location of areas where stabilization practices will be employed.
  - b. Areas which will be vegetated following construction.
- 5. Extent of wetland acreage on the site and locations where stormwater is discharged to a surface water or wetland.

D. Calculations

Calculations shall be provided including computer modeling input and output files, as needed, to demonstrate compliance with ordinance performance standards. All major assumptions used in developing input parameters shall be clearly stated. The drainage basin areas used in making the calculations shall be clearly cross-referenced to the required map(s).

E. Narrative

A narrative description of the proposed Erosion and Sediment Control Plan shall be provided, including the following:

1. Name of the immediate named receiving water from the United States Geological Service 7.5 minute series topographic maps, as well as locations of all surface waters and wetlands within one mile of the construction site.
2. A description of the site and the nature of the construction activity.
3. A sequence of construction of the development site, including stripping and clearing; rough grading; construction of utilities, infrastructure, and buildings; and final grading and landscaping. Sequencing shall identify the expected date on which clearing will begin, the estimated duration of exposure of cleared areas, areas of clearing, installation of temporary erosion and sediment control measures, and establishment of permanent vegetation.
4. Estimates of the total area of the site and the total area of the site that is expected to be disturbed by construction activities.
5. Estimates, including calculations, if any, of the runoff coefficient of the site before and after construction activities are completed.
6. A description of appropriate controls and measures that will be performed at the site to prevent pollutants from reaching waters of the state. The plan shall clearly describe the appropriate control measures for each major activity and the timing during the construction process that the measures will be implemented. The description of erosion controls shall include, when appropriate, the following minimum requirements:
  - a. Description of interim and permanent stabilization practices, including a practice implementation schedule. Site plans shall ensure that existing vegetation is preserved where attainable and that disturbed portions of the site are stabilized.
  - b. Description of structural practices to divert flow away from exposed soils, store flows, or otherwise limit runoff and the discharge of pollutants from the site. Unless otherwise specifically approved in writing by the City of Whitewater, structural measures shall be installed on upland soils.

- c. Descriptions of any other practices proposed to meet requirements of the ordinance and prevent erosion from the site.

#### 4.02 STORMWATER MANAGEMENT PLAN SUBMITTAL REQUIREMENTS

Submittal requirements for Stormwater Management Plans are summarized below. The Director of Public Works may waive a portion of these submittal requirements where such information is not necessary to demonstrate compliance with the ordinance.

##### A. Responsible Party and Legal Description

The stormwater management plan required under S.08 (1) should contain, at a minimum, the following information:

1. Name, address, and telephone number for the following or their designees: landowner; developer; project engineer for practice design and certification; person(s) responsible for installation of stormwater management practices; and person(s) responsible for maintenance of stormwater management practices prior to the transfer, if any, of maintenance responsibility to another party.
2. A proper legal description of the property proposed to be developed, referenced to the U.S. Public Land Survey system or to block and lot numbers within a recorded land subdivision plat.

##### B. Predevelopment Site Conditions Mapping

1. A USGS Quadrangle or other appropriate map showing the project location and nearby regional water resources potentially impacted by the project.
2. A copy of the applicable Soils Survey Map showing predominant soil types and hydrologic soil groups.
3. Mapping or description of existing cover type and condition.
4. A predeveloped conditions site map including the following information described below. Mapping shall include enough of the contiguous properties to show runoff patterns onto, through, and from the site:
  - a. Existing topographic contours of the site at a contour interval not to exceed 2 feet.
  - b. Property lines.

- c. Existing flow paths and direction across the site.
- d. Outlet locations identifying where stormwater drainage leaves the property.
- e. Drainage basin divides and subdivides to all outlet locations where stormwater drainage leaves the property.
- f. Existing drainage structures on and adjacent to the site.
- g. Watercourses that may affect or be affected by runoff from the site.
- h. Lakes, streams, wetlands, channels, ditches, and other watercourses on and immediately adjacent to the site.
- i. Limits of the 100-year floodplain.
- j. Location of wells and wellhead protection areas covering the project area and delineated pursuant to s. NR 811.16, Wis. Adm. Code.

C. Postdevelopment Site Conditions Mapping

- 1. Proposed pervious areas including vegetative cover type and condition.
- 2. Proposed impervious surfaces including all buildings, structures, and pavement.
- 3. Proposed topographic contours of the site at a scale not to exceed one foot.
- 4. Proposed drainage network including enough of the contiguous properties to show runoff patterns onto, through, and from the site; locations and dimensions of drainage easements.
- 5. Locations of maintenance easements specified in the maintenance agreement.
- 6. Flow path and direction for all stormwater conveyance sections.
- 7. Location and type of all stormwater management conveyance and treatment practices, including the on-site and off-site tributary drainage area.
- 8. Location and type of conveyance system that will carry runoff from the drainage and treatment practices to the nearest adequate outlet such as a curbed street, storm drain, or natural drainageway.

9. Proposed drainage divides and subdivides identified to each outlet location where stormwater will discharge from the proposed development site.

D. Detailed Drawings

Detailed drawings including cross sections and profiles of all permanent stormwater conveyance and treatment practices.

E. Calculations

Calculations, including computer modeling input and output files, as needed to demonstrate compliance with ordinance performance standards. All major assumptions used in developing input parameters shall be clearly stated. The drainage basin areas used in making the calculations shall be clearly cross-referenced to the required map(s).

F. Narrative

A narrative including, at a minimum, the following:

1. A description of methodologies and major assumptions used in developing hydrologic and hydraulic analyses.
2. A summary of analysis results and conclusions that shall include the following:
  - a. Tables summarizing predeveloped and postdeveloped hydrologic parameters for each drainage basin. Tables shall include subbasin areas, runoff curve numbers, impervious areas, and times of concentration for predeveloped and postdeveloped conditions.
  - b. Tables summarizing peak discharge rates for the 2-year, 5-year, 10-year, 25-year, and 100-year storm events for predeveloped, post-developed without practices, and postdeveloped with practices conditions.
3. Explanation of the provisions to preserve and use natural topography and land cover features to minimize changes in peak flow runoff rates and volumes to surface waters and wetlands.
4. Explanation of any restrictions on stormwater management measures in the development area imposed by wellhead protection plans and ordinances.

5. Results of investigations of soils and groundwater required for the placement and design of stormwater management measures.
  6. A description and installation schedule for the stormwater management practices needed to meet the performance standards in S.07.
  7. A maintenance plan developed for the life of each stormwater management practice including the required maintenance activities and maintenance activity schedule.
  8. Cost estimates for the construction, operation, and maintenance of each stormwater management practice.
  9. Other information requested in writing by the City of Whitewater to determine compliance of the proposed stormwater management measures with the provisions of this ordinance.
- G. Certification of Site Investigations, Plans, Designs, Computations, and Drawings

All site investigations, plans, designs, computations, and drawings shall be certified by a Wisconsin-licensed professional engineer to be prepared in accordance with accepted engineering practice and requirements of the ordinance.

**SECTION 5**  
**DEFINITIONS**

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## 5.01 DEFINITIONS

- 1) **“Agricultural facilities and practices ”** has the meaning given in s. 281.16, Wis. Stats.
- 2) **“Average annual rainfall”** means a calendar year of precipitation, excluding snow, which is considered typical.
- 3) **“Best management practice” or “BMP”** means structural or non-structural measures, practices, techniques or devices employed to avoid or minimize sediment or pollutants carried in runoff to waters of the state.
- 4) **“Business day”** means a day the office of the Director of Public Works is routinely and customarily open for business.
- 5) **“Cease and desist order”** means a court-issued order to halt land disturbing construction activity that is being conducted without the required permit.
- 6) **“Combined sewer system”** means a system for conveying both sanitary sewage and stormwater runoff.
- 7) **“Connected imperviousness”** means an impervious surface that is directly connected to a separate storm sewer or water of the state via an impervious flow path.
- 8) **“Construction Site”** means an area upon which one or more land disturbing construction activities occur, including areas that are part of a larger common plan of development or sale where multiple separate and distinct land disturbing construction activities may be taking place at different times on different schedules but under one plan.
- 9) **“Design storm”** means a hypothetical discrete rainstorm characterized by a specific duration, temporal distribution, rainfall intensity, return frequency, and total depth of rainfall.
- 10) **“Development”** means residential, commercial, industrial or institutional land uses and associated roads.
- 11) **“Director of Public Works”** means the City of Whitewater Director of Public Works or designee.
- 12) **“Division of land”** means either a major subdivision or minor subdivision, as defined by Chapter 18, Land Division and Subdivision.
- 13) **“Effective infiltration area”** means the area of the infiltration system that is used to infiltrate runoff and does not include the area used for site access, berms or pretreatment.
- 14) **“Erosion”** means the process by which the land’s surface is worn away by the action of wind, water, ice or gravity.
- 15) **“Exceptional resource waters”** means waters listed in s. NR 102.11, Wis. Adm. Code.
- 16) **“Extraterritorial Jurisdiction”** means Extraterritorial Jurisdiction as defined by Section 18.04.020 of the City of Whitewater Subdivision Ordinance.
- 17) **“Final stabilization”** means that all land disturbing construction activities at the construction site have been completed and that a uniform, perennial, vegetative cover has been established, with a density of at least 70% of the cover, for the unpaved areas and areas not covered by permanent structures, or employment of equivalent permanent stabilization measures.
- 18) **“Financial guarantee”** means a performance bond, maintenance bond, surety bond, irrevocable letter of credit, or similar guarantees submitted to the Director of Public Works by the responsible party to assure that requirements of the ordinance are carried out in compliance with the stormwater management plan.
- 19) **“Governing body”** means town board of supervisors, county board of supervisors, city council, village board of trustees or village council.

- 20) **"Impervious surface"** means an area that releases as runoff all or a large portion of the precipitation that falls on it, except for frozen soil. Rooftops, sidewalks, driveways, parking lots and streets are examples of areas that typically are impervious.
- 21) **"In-fill area"** means an undeveloped area of land located within existing development.
- 22) **"Infiltration"** means the entry of precipitation or runoff into or through the soil.
- 23) **"Infiltration system"** means a device or practice such as a basin, trench, rain garden or swale designed specifically to encourage infiltration, but does not include natural infiltration in pervious surfaces such as lawns, redirecting of rooftop downspouts onto lawns or minimal infiltration from practices, such as swales or road side channels designed for conveyance and pollutant removal only.
- 24) **"Karst feature"** means an area or geologic feature subject to bedrock dissolution so that it is likely to provide a conduit to groundwater, and may include caves, enlarged fractures, mine features, exposed bedrock surfaces, sinkholes, springs, seeps or swallets.
- 25) **"Land Development Activity"** means any construction related activity that results in the addition or replacement of impervious surfaces such as rooftops, roads, parking lots, and other structures. Measurement of areas impacted by land development activity includes areas that are part of a larger common plan of development or sale where multiple separate and distinct land disturbing construction activities may be taking place at different times on different schedules but under one plan.
- 26) **"Land disturbing construction activity"** means any man-made alteration of the land surface resulting in a change in the topography or existing vegetative or non-vegetative soil cover, that may result in runoff and lead to an increase in soil erosion and movement of sediment into waters of the state. Land disturbing construction activity includes clearing and grubbing, demolition, excavating, pit trench dewatering, filling and grading activities.
- 27) **"Maintenance agreement"** means a legal document that provides for long-term maintenance of stormwater management practices.
- 28) **"MEP" or "maximum extent practicable"** means a level of implementing best management practices in order to achieve a performance standard specified in this ordinance which takes into account the best available technology, cost effectiveness and other competing issues such as human safety and welfare, endangered and threatened resources, historic properties and geographic features. MEP allows flexibility in the way to meet the performance standards and may vary based on the performance standard and site conditions.
- 29) **"New development"** means development resulting from the conversion of previously undeveloped land or agricultural land uses.
- 30) **"Off-site"** means located outside the property boundary described in the permit application.
- 31) **"On-site"** means located within the property boundary described in the permit application.
- 32) **"Ordinary high-water mark"** has the meaning given in s. NR 115.03(6), Wis. Adm. Code.
- 33) **"Outstanding resource waters"** means waters listed in s. NR 102.10, Wis. Adm. Code.
- 34) **"Percent fines"** means the percentage of a given sample of soil, which passes through a # 200 sieve.

- 35) **“Performance standard”** means a narrative or measurable number specifying the minimum acceptable outcome for a facility or practice.
- 36) **“Permit”** means a written authorization made by the Director of Public Works to the applicant to conduct land disturbing construction activity or to discharge post-construction runoff to waters of the state.
- 37) **“Permit administration fee”** means a sum of money paid to the [administering authority] by the permit applicant for the purpose of recouping the expenses incurred by the authority in administering the permit.
- 38) **“Pervious surface”** means an area that releases as runoff a small portion of the precipitation that falls on it. Lawns, gardens, parks, forests or other similar vegetated areas are examples of surfaces that typically are pervious.
- 39) **“Pollutant”** has the meaning given in s. 283.01(13), Wis. Stats.
- 40) **“Pollution”** has the meaning given in s. 281.01(10), Wis. Stats.
- 41) **“Post-construction site”** means a construction site following the completion of land disturbing construction activity and final site stabilization.
- 42) **“Pre-development condition”** means the extent and distribution of land cover types present before the initiation of land disturbing construction activity, assuming that all land uses prior to development activity are managed in an environmentally sound manner.
- 43) **“Preventive action limit”** has the meaning given in s. NR 140.05(17), Wis. Adm. Code.
- 44) **“Redevelopment”** means areas where development is replacing older development.
- 45) **“Responsible party”** means any entity holding fee title to the property.
- 46) **“Runoff”** means stormwater or precipitation including rain, snow or ice melt or similar water that moves on the land surface via sheet or channelized flow.
- 47) **“Sediment”** means settleable solid material that is transported by runoff, suspended within runoff or deposited by runoff away from its original location.
- 48) **“Separate storm sewer”** means a conveyance or system of conveyances including roads with drainage systems, streets, catch basins, curbs, gutters, ditches, constructed channels or storm drains, which meets all of the following criteria:
  - a. Is designed or used for collecting water or conveying runoff.
  - b. Is not part of a combined sewer system.
  - c. Is not draining to a stormwater treatment device or system.
  - d. Discharges directly or indirectly to waters of the state.
- 49) **“Site”** means the entire area included in the legal description of the land on which the land disturbing construction activity occurred.
- 50) **“Stop work order”** means an order issued by the Director of Public Works which requires that all construction activity on the site be stopped.
- 51) **“Stormwater management plan”** means a comprehensive plan designed to reduce the discharge of pollutants from stormwater after the site has undergone final stabilization following completion of the construction activity.
- 52) **“Stormwater management system plan”** is a comprehensive plan designed to reduce the discharge of runoff and pollutants from hydrologic units on a regional or municipal scale.
- 53) **“Technical standard”** means a document that specifies design, predicted performance and operation and maintenance specifications for a material, device or method.
- 54) **“Top of the channel”** means an edge, or point on the landscape, landward from the ordinary high water mark of a surface water of the state, where the slope of the land begins to be less than 12% continually for at least 50 feet. If the slope of the land is 12% or less continually for the initial 50 feet, landward from the ordinary high water mark, the top of the channel is the ordinary high water mark.

- 55) **“TR-55”** means the United States Department of Agriculture, Natural Resources Conservation Service (previously Soil Conservation Service), Urban Hydrology for Small Watersheds, Second Edition, Technical Release 55, June 1986.
- 56) **“Type II distribution”** means a rainfall type curve as established in the “United States Department of Agriculture, Soil Conservation Service, Technical Paper 149, published 1973”. The Type II curve is applicable to all of Wisconsin and represents the most intense storm pattern.
- 57) **“Waters of the state”** has the meaning given in s. 281.01 (18), Wis. Stats.

