

# **SWMPSTORMWATER MANAGEMENT PERMIT GUIDELINES**

**Engineering Department  
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West Bend, WI 53095  
Phone: 262-335-5130**

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The following guidelines are intended to supplement City of West Bend Municipal Code Chapter 23 – the Storm Water Management Code. If followed, these guidelines should assist the Developer and his Engineer in the development of all information required by the City Engineer to expedite the Storm Water Management Permit review process, to minimize redesign prior to final approval, as well as provide an aid to understanding requirements related to the construction of the proposed facilities.

These guidelines shall not be construed as being all inclusive since project conditions or downstream conditions may dictate the need for additional design considerations. In any case where there is conflict between the provisions of this document and Chapter 23 of the Municipal Code, the Municipal Code shall be taken as correct.

These guidelines do not supersede any other applicable federal, state or local regulation such as ch. 30, Wis. Stats or NR 103, Wis. Adm. Code. Facilities designed for any portion of the City annexed after June 10, 2008 must also meet requirements of the Washington County Code, Chapter 17. Regarding the Washington County Code, particular attention should be given to the infiltration requirements.

In addition to the requirements outlined within this document, the project may also be subject to approval/permit requirements from other agencies such as the Wisconsin Department of Natural Resources, Army Corps of Engineers, Wisconsin Department of Commerce, etc. The Applicant shall be responsible for checking with all appropriate agencies.

Variations from the design guidelines will be considered if valid justification for the variance is submitted in writing at the time of review.

## GENERAL PROCEDURE

1. The Developer or his Engineer should complete the “Stormwater Management Permit Applicability Checklist” in order to determine if the City of West Bend’s stormwater management permit requirements apply to the proposed development.
2. If no “Yes” boxes are checked on the Applicability Checklist, the Developer or his Engineer should submit the completed Applicability Checklist, along with a proposed site plan and brief narrative describing the project, to the Engineering Department. The Engineering Department will then review the submittal and make a final determination if a Storm Water Management Permit will need to be obtained.
3. If any “Yes” boxes are checked on the Applicability Checklist, a stormwater management permit must be obtained. The Developer or his Engineer should submit the following items to the City of West Bend Engineering Department (third floor, City Hall) in order to start the permit review process:
  - a. One (1) hard copy of the completed “City of West Bend Application for Approval Storm Water Management Plans” form with original signature.
  - b. Application fee of \$50.00.
  - c. One (1) hard copy of Storm Water Management Plan report & plan sheets.
  - d. One (1) hard copy of Operations & Maintenance Plan.
  - e. One (1) hard copy of the Draft Storm Water Management Practices Maintenance Agreement.
  - f. One (1) hard copy of a completed “Storm Water Management Permit Checklist.”
  - g. One (1) electronic version (PDF format preferred) of the submitted Storm Water Management Plan report & plan sheets, Operations & Maintenance Plan, Draft Maintenance Agreement, completed Permit Application, and completed Storm Water Management Permit Checklist.
  - h. Original WinSLAMM model files (if applicable to the project) transmitted with electronic submittal.
4. Copies of the City of West Bend Application for Approval Storm Water Management Plans, Template Storm Water Management Practices Maintenance Agreement, and Storm Water Management Permit Checklist are available from the City of West Bend Engineering Department webpage:  
  
<http://www.ci.west-bend.wi.us/Engineering-Documents/>
5. Guidance on all information that must be contained within the Storm Water Management submittal can be found within the “Storm Water Management Plan Contents” and “Design Guidelines” portions of this document.
6. **Reviews are generally completed within two weeks of the submission date.** Note that complex plans may take longer to review. Once a review has been completed, written notice will be sent to the applicant indicating approval with any conditions or if the permit is not approved, a list of deficiencies will be sent.
7. The Applicant should submit a revised report & plans based on the review comments. Each submission should include a complete submittal of items listed in #2 above, with the exception of items 2a & 2b. This review process continues until the Storm Water Management Permit has been approved.
8. Upon approval of the Storm Water Management Permit, the Applicant will be charged for the time spent on review. The application fee is subtracted from the total charge for review time and an invoice is issued upon approval of the permit. If the permit is withdrawn by the Applicant, an invoice for review time will be sent.

# **STORM WATER MANAGEMENT PLAN CONTENTS**

Following is a list of all information that must be included within all SWM Plans submitted to the City. All site investigations, plans, designs, computations and drawings shall be stamped by a Professional Engineer licensed in the State of Wisconsin and prepared in accordance with accepted engineering practice and requirements.

## **Introduction**

1. Name of proposed development.
2. Brief narrative outlining project and SWM design intent for the proposed development.
3. Location of proposed development
  - a. Street Address of the property (if assigned).
  - b. Tax Key Number.
  - c. Legal Description of the property.
  - d. Location Map (may be attached to SWM Plan as an exhibit).
  - e. Total site area & total area in square feet analyzed as part of the SWM Plan.

## **Peak Discharge Requirements**

### **Existing Site Conditions**

1. Brief narrative describing the existing drainage patterns of the site and any off-site contiguous areas draining onto, through, or from the site.
2. At least one 24" x 36" map (attached to the SWM Plan as an exhibit) at a scale of not less than one inch equals one hundred feet (1" = 100') showing existing site conditions. At a minimum, the map must contain the following information:
  - a. Clear delineation of existing subwatershed boundaries (including contiguous property from which runoff drains onto, through, or from the site) used in hydrology computations. For each subwatershed, identify:
    - i. Subwatersheds specifically named E1, E2, E3, E4, etc.
    - ii. Area (in square feet) of subwatershed.
    - iii. Soil types & hydrologic soil groups. Include soil boring logs & location map if performed.
    - iv. Existing cover types & curve number.
    - v. Time of concentration (Tc) path (indicate elevations at the beginning and end of each segment of the travel time (Tt) path).
  - b. Topography and drainage network, including enough of the contiguous property, to show runoff patterns onto, through, and from the site.
  - c. Existing topographic contours of the site not to exceed 2 foot intervals.
  - d. Flow path and direction for all storm water conveyance sections.
  - e. Lakes, streams, wetlands, channels, ditches, and other watercourses on and in the proximity of the site.
  - f. Limits of the 100-year floodplain, flood fringe, and wetland boundaries.
  - g. Watercourses within ¼ mile downgradient of the site that may affect or be affected by runoff from the site.
  - h. Location of wells and wellhead protection areas covering the project area and delineated pursuant to NR 811.16, Wis. Adm. Code.

3. Hydrology computations for each subwatershed including curve number calculations, time of concentration calculations, and peak discharge computations for the 1-, 2-, 10-, and 100-year, 24-hour storm events under the existing conditions.
4. Include completed Existing Conditions Summary Table below within SWM Plan.

<b>Existing Conditions Summary Table</b>							
<b>Watershed</b>	<b>Area (sf)</b>	<b>Composite CN</b>	<b>Tc (min)</b>	<b>Peak Discharge (cfs)</b>			
				<b>1-yr</b>	<b>2-yr</b>	<b>10-yr</b>	<b>100-yr</b>
<b>Existing Total</b>							

### **Proposed Site Conditions**

1. Brief narrative describing the proposed drainage patterns of the site and any off-site contiguous areas draining onto, through, or from the site.
2. Explanation of the proposed provisions which preserve and use natural topography and land cover features to minimize changes in peak flow runoff rates and volumes to surface waters and wetlands.
3. Explanation of any restrictions on SWM measures in the development area imposed by wellhead protection plans and ordinances.
4. At least one 24" x 36" map (attached to the SWM Plan as an exhibit) at a scale of not less than one inch equals one hundred feet (1" = 100') showing proposed site conditions. At a minimum, the map must contain the following information:
  - a. Clear delineation of proposed subwatershed boundaries (including contiguous property from which runoff drains onto or through the site) used in hydrology computations. For each subwatershed, identify:
    - i. Subwatersheds specifically named P1, P2, P3, P4, etc.
    - ii. Area (in square feet) of subwatershed.
    - iii. Soil types & hydrologic soil groups.
    - iv. Proposed cover types & curve number.
    - v. Time of concentration (Tc) path (indicate elevations at the beginning and end of each segment of the travel time (Tt) path).
  - b. Topography and drainage network including enough of the contiguous property to show runoff patterns onto, through, and from the site.
  - c. Existing topographic contours of the site not to exceed 2 foot intervals.
  - d. Flow path and direction for all storm water conveyance sections.
  - e. Lakes, streams, wetlands, channels, ditches, and other watercourses on and in the proximity of the site.
  - f. Limits of the 100-year floodplain, flood fringe, and wetland boundaries.
  - g. Watercourses within ¼ mile downgradient of the site that may affect or be affected by runoff from the site.
  - h. Location of wells and wellhead protection areas covering the project area and delineated pursuant to NR 811.16, Wis. Adm. Code.

5. At least one 24" x 36" Grading & Storm Sewer map (attached to the SWM Plan as an exhibit) at a scale of not less than one inch equals one hundred feet (1" = 100'), showing both existing contours (dashed line) and proposed contours (solid line), any proposed on-site storm sewer (include pipe materials, diameters, lengths and invert elevations at each end) with structures numbered, all ditch designs (cross-sections & proposed stabilization), and pond details (contours, inlet and outlet structures, outfall capacities, normal water surface elevation, emergency spillway design detail, infiltration areas, etc.).
6. Hydrology computations for each subwatershed including curve number calculations, time of concentration calculations, and peak discharge computations for the 1-, 2-, 10-, and 100-year, 24-hour storm events under the proposed conditions.
7. Include completed Proposed Conditions Summary Table below within SWM Plan.

<b>Proposed Conditions Summary Table</b>							
<b>Watershed</b>	<b>Area (sf)</b>	<b>Composite CN</b>	<b>Tc (min)</b>	<b>Peak Discharge (cfs)</b>			
				<b>1-yr</b>	<b>2-yr</b>	<b>10-yr</b>	<b>100-yr</b>
<b>Existing Total</b>							

8. When applicable, provide a storage basin detail and table indicating surface area in square-feet for chosen elevations within the basin.
9. For all ditches and storm outfalls, provide velocity calculations in ditches and at outfalls with specific proposed cross-sections and stabilization measures selected based on velocity.
10. Estimated starting and completion dates for the construction of storm water management measures.
11. If public storm sewer is proposed, or a connection to public storm sewer is proposed, include a storm sewer capacity analysis which demonstrates flow coming to the pipe vs. pipe capacity for the 10-year and the 100-year events, including at each catch basin structure the inlet capacity and amount of water left flowing on the surface.

**Total Suspended Solids Removal Requirements**

1. Outline TSS removal requirements for the development based on NR 151.122. If the development is exempt from TSS removal requirements, or if TSS removal requirements do not apply to the development, provide an explanation of the exemption or non-applicability.
2. Provide summary of input parameters and results from WinSLAMM analysis.
3. Describe compliance with NR 151.122 in writing, and explain any BMPs utilized to achieve the requirements.
4. If the design cannot achieve the applicable TSS reduction specified, include a written and site-specific explanation why that level of reduction is not attained.

### **Infiltration Requirements**

1. Outline infiltration requirements for the development based on NR 151.124. If the development is exempt from infiltration requirements, or if infiltration requirements do not apply to the development, provide an explanation of the exemption or non-applicability.
2. Describe pre-treatment measures used for parking lot runoff and for runoff from new road construction in commercial, industrial and institutional areas that will enter an infiltration system.
3. Provide summary of input parameters, results from WinSLAMM analysis, and any other calculations necessary to demonstrate that required infiltration requirements are achieved.
4. Describe compliance with NR 151.124 in writing, and explain any BMPs utilized to achieve the requirements.
5. If the design cannot achieve the applicable infiltration requirements specified, include a written and site-specific explanation why that level of infiltration is not attained.

### **Protective Area Requirements**

1. Outline protective area requirements for the development based on NR 151.125. If the development is exempt from protective area requirements, or if protective area requirements do not apply to the development, provide an explanation of the exemption or non-applicability.
2. Provide an exhibit identifying protective areas within the development. Also identify any impervious surfaces or BMPs on the site to demonstrate proximity to the protective area.
3. Describe compliance with NR 151.125 in writing, and explain any BMPs located in the protective area.

### **Fueling and Vehicle Maintenance Area Requirements**

1. Outline fueling and vehicle maintenance area performance standards for the development based on NR 151.126. If the development is exempt from fueling and vehicle maintenance area requirements, or if the requirements do not apply to the development, provide an explanation of the exemption or non-applicability.
2. Describe, in writing, measures proposed for compliance with NR 151.126 in writing. Provide any special details as necessary with the submitted plans.

### **Operations & Maintenance Plan**

1. Provide an operations and maintenance plan for all proposed stormwater BMPs proposed as part of the development.

## **SEWRPC Planning Report No. 173**

Regional Planning Commission (SEWRPC) Community Assistance Planning Report No. 173, *A Stormwater Management Plan for the City of West Bend Washington County, Wisconsin*, otherwise known as the Storm Water Management System Plan. This report is available from the SEWRPC website:

[http://www.sewrpc.org/SEWRPCFiles/Publications/CAPR/capr-173\\_vol-01\\_Stormwater\\_Management\\_Plan\\_City\\_West\\_Bend.pdf](http://www.sewrpc.org/SEWRPCFiles/Publications/CAPR/capr-173_vol-01_Stormwater_Management_Plan_City_West_Bend.pdf)

[http://www.sewrpc.org/SEWRPCFiles/Publications/CAPR/capr-173\\_vol-02\\_Stormwater\\_Management\\_Plan\\_City\\_West\\_Bend.pdf](http://www.sewrpc.org/SEWRPCFiles/Publications/CAPR/capr-173_vol-02_Stormwater_Management_Plan_City_West_Bend.pdf)

[http://www.sewrpc.org/SEWRPCFiles/Publications/CAPR/capr-173\\_vol-03\\_Stormwater\\_Management\\_Plan\\_City\\_West\\_Bend.pdf](http://www.sewrpc.org/SEWRPCFiles/Publications/CAPR/capr-173_vol-03_Stormwater_Management_Plan_City_West_Bend.pdf)

[http://www.sewrpc.org/SEWRPCFiles/Publications/CAPR/capr-173\\_vol-4\\_Stormwater\\_Management\\_Plan\\_City\\_West\\_Bend.pdf](http://www.sewrpc.org/SEWRPCFiles/Publications/CAPR/capr-173_vol-4_Stormwater_Management_Plan_City_West_Bend.pdf)

### **Alternative Requirements**

Other information may be requested in writing by the City of West Bend Engineering Department in order to determine compliance of the proposed SWM measures with the provisions of the Storm Water Management Code. The City Engineer may also establish additional SWM Plan submittal requirements for applicants seeking an exemption to on-site SWM requirements outlined within the “Design Guidelines” portion of this document.

# DESIGN GUIDELINES

## General Requirements

A Storm Water Management Plan shall prevent or minimize the pollution of surface waters and groundwater resources, damage to downstream property and local flooding as a result of permanent storm water discharges from the proposed land development.

Runoff draining to a stormwater BMP from off-site must be accounted for hydraulically in any BMP design.

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 the Stormwater Code.

Emergency overland flow for all storm water facilities shall be provided to prevent exceeding the safe capacity of downstream drainage facilities and prevent endangerment of downstream property or public safety.

All SWM Plans must satisfy water quality requirements contained within NR 151 and NR 216.

## Peak Discharge Requirements

Design runoff computations shall be based on NRCS TR-55.

Requirements apply to each subwatershed or stormwater discharge point independently and cannot be averaged for the site.

Storm water management facilities shall limit the calculated post-development peak runoff rate to a rate equal to or less than the calculated peak runoff rate of the property prior to the development activity for the 1, 2, 10, and 100-year – 24 hour design storms. The following design storm rainfall depths shall be used:

<b>City of West Bend Rainfall Depths</b>				
<b>Design Storm</b>	1-year 24-hour	2-year 24-hour	10-year 24-hour	100-year 24-hour
<b>Rainfall Depth</b>	2.35 inches	2.65 inches	3.82 inches	6.41 inches

Pre-development conditions shall assume “good hydrologic conditions” for appropriate land covers as identified in TR-55. The meaning of “hydrologic soil group” and “runoff curve number” are as determined in TR-55. However, when pre-development land cover is woodland, grassland or cropland, the runoff numbers in the following table shall be used:

<b>Maximum Pre-Development Runoff Curve Numbers</b>				
<b>Hydrologic Soil Group</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
Woodland	30	55	70	77
Grassland	39	61	71	78
Cropland	55	69	78	83

BMPs shall be installed before the construction has undergone final stabilization.

## Total Suspended Solids (TSS) Requirements

SWM Plans must satisfy water quality requirements contained within NR 151.122. BMPs shall be designed, installed and maintained to control TSS carried in runoff from the post-construction site as follows:



<b>TSS Reduction Standards</b>	
<b>Development Type</b>	<b>TSS Reduction</b>
New Development	80%
In-fill $\geq$ 5 acres	80%
Redevelopment	40% of load from parking areas and roads

WinSLAMM, v10.2 or newer, must be used as a pollutant loading model to evaluate the efficiency of the design in reducing TSS. Modeling involving average annual rainfall or runoff volumes shall use rainfall data from Milwaukee, 1969 (Mar. 28 – Dec. 6) as the typical annual rainfall pattern for the City of West Bend.

When designing BMPs, runoff draining to the BMP from off-site shall be taken into account in determining the treatment efficiency practice. Any impact on the efficiency shall be compensated for by increasing the size of the BMP accordingly.

BMPs shall be installed before the construction site has undergone final stabilization.

**Redevelopment**

Except as provided in NR 151.121(5), the redevelopment TSS reduction standard shown in the table above applies to redevelopment.

**Maximum Extent Practicable**

If the design cannot achieve the applicable TSS reduction specified, the SWM Plan shall include a written and site-specific explanation why that level of reduction is not attained and identify the maximum extent practicable for the development.

**Infiltration Requirements**

SWM Plans must satisfy infiltration requirements contained within NR 151.124. BMPs shall be designed, installed, and maintained to infiltrate runoff in accordance with the performance standards in the following table:

<b>Post-Development Infiltration Performance Standards</b>			
<b>Percent Connected Impervious Surface</b>	<b>Description</b>	<b>Post-Development Infiltration Volume<sup>a</sup></b>	<b>Maximum Effective Infiltration Area</b>
< 40%	Low imperviousness	90% of pre-development	1% of site
>40% up to 80%	Moderate imperviousness	75% of pre-development	2% of site
>80%	High imperviousness	60% of pre-development	2% of site

<sup>a</sup>All percentages are based on average annual rainfall.

The pre-development condition shall be the same as stated above for Peak Discharge.

WinSLAMM, v10.2 or newer, may be used as a model to calculate runoff volume for purposes of demonstrating compliance with this performance standard. Modeling involving average annual rainfall or runoff volumes shall use rainfall data from Milwaukee, 1969 (Mar. 28 – Dec. 6) as the typical annual rainfall pattern for the City of West Bend.

BMPs shall be installed before the construction site has undergone final stabilization.

**Pre-Treatment**

Before infiltrating runoff, pre-treatment shall be required for parking lot runoff and for runoff from new road construction in commercial, industrial and institutional areas that will enter an infiltration system. The pre-treatment shall be designed to protect the infiltration system from clogging prior to scheduled maintenance and to protect groundwater quality. Pre-treatment options may include, but are not limited to oil/grease separation, sedimentation, biofiltration, filtration, swales or filter strips.

### Separation Distances

Infiltration practices shall be located so that the characteristics of the soil and the separation distance between the bottom of the infiltration system and the elevation of seasonal high groundwater or the top of bedrock are as follows:

Separation Distances and Soil Characteristics		
Source Area	Separation Distance	Soil Characteristics
Industrial, Commercial, Institutional Parking Lots and Roads	5 ft or more	Filtering Layer
Residential Arterial Roads	5 ft or more	Filtering Layer
Roofs Draining to Subsurface Infiltration Practices	1 ft or more	Native or Engineered Soil with Particles Finer than Coarse Sand
Roofs Draining to Surface Infiltration Practices	N/A	
All Other Impervious Sources Areas	3 ft or more	Filtering Lay

Applicable requirements for injection wells classified under NR 815 shall be followed.

### Alternate Uses

Where alternate uses of runoff are employed, such as for toilet flushing, laundry or irrigation or storage on green roofs where an equivalent portion of runoff is captured permanently by rooftop vegetation, such alternate use shall be given equal credit toward the infiltration volume required by this section.

### Groundwater Standards

Infiltration systems shall, to the extent technically and economically feasible, minimize the level of pollutants infiltrating to groundwater and shall maintain compliance with the preventative action limit at a point of standards application in accordance with NR 140.

However, if the site specific information indicates that compliance with a preventative action limit is not achievable, the infiltration BMP may not be installed or shall be modified to prevent infiltration to the maximum extent practicable.

The discharge from the BMP shall remain below the enforcement standard at the point of standards application.

### Exclusions

Runoff from the following areas may not be infiltrated and may not qualify as contributing to meeting the requirements of this section:

- a. Areas associated with a tier 1 industrial facility identified in NR 216.21(2)(a), Wis. Adm. Code, including storage, loading, rooftop and parking.
- b. Storage and loading areas of tier 2 industrial facilities identified in NR 213.21(2)(b), Wis. Adm. Code. Rooftop and parking lot runoff may be infiltrated but may require pre-treatment.
- c. Fueling and vehicle maintenance areas.
- d. Areas within 1,000 feet upgradient or within 100 feet downgradient of direct conduits to groundwater.
- e. Areas with less than three (3) feet separation distance from the bottom of the infiltration system to the elevation of seasonal high groundwater or the top of bedrock.
- f. Areas with runoff from industrial, commercial and institutional parking lots and roads and residential arterial roads with less than five (5) feet separation distance from the bottom of the infiltration system to the elevation of season high groundwater or the top of bedrock.
- g. Areas within 400 feet of a community water system well as specified in NR 811.16(4) or within the separation distances listed in NR 812.08 for any private well or non-community well for

runoff infiltrated from commercial, multi-family residential, industrial and institutional land uses or regional devices for one- and two-family residential development.

- h. Areas where contaminants of concern, as defined in NR 720.03(2), are present in the soil through which infiltration will occur.
- i. Any area where the soil does not exhibit one of the following characteristics between the bottom of the infiltration system and the season high groundwater and top of bedrock:
  - 1. At least a 3-foot soil layer with 20% fines or greater.
  - 2. At least a 5-foot soil layer with 10% fines or greater.

This exclusion does not apply where the soil medium within the infiltration system provides an equivalent level of protection. This exclusion does not prohibit infiltration from roof runoff.

### **Exemptions**

Runoff from the following areas may be credited toward meeting the requirement when infiltrated, but the decision to infiltrate runoff from these source areas is optional:

- a. Parking areas and access roads less than 5,000 square feet for commercial development.
- b. Parking areas and access roads less than 5,000 square feet for industrial development not subject to exclusions listed above.
- c. Except as provided under NR 151.121(5), redevelopment post-construction sites.
- d. In-fill development areas less than 5 acres.
- e. Roads in commercial, industrial, and institutional land uses, and arterial residential roads.
- f. Where the infiltration rate of the soil measured at the proposed bottom of the infiltration system is less than 0.6 inches per hour using a scientifically credible field test method.
- g. Where the least permeable soil horizon to 5 feet below the proposed bottom of the infiltration system using the US Department of Agriculture method of soils analysis is one of the following: sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay or clay.

### **Maximum Extent Practicable**

Where the conditions of the exclusions and exemptions sections above limit or restrict the use of infiltration practices, the SWM Plan shall include a written and site specific explanation why that level of infiltration is not attained and identify the maximum extent practicable for the development.

## **Protective Area Requirements**

SWM Plans must satisfy performance standards contained within NR 151.125. The following requirements shall be met:

Impervious surfaces shall be kept out of the protective area entirely or to the maximum extent practicable. If there is no practical alternative to locating an impervious surface in the protective area, the SWM Plan shall contain a written, site-specific explanation.

Where land disturbing construction activity occurs within a protective area, adequate sod or self-sustaining vegetative cover of 70 percent or greater shall be established and maintained where no impervious surface is present. 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. Non-vegetative 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.

BMPs such as filter strips, swales, or wet detention ponds, that are designed to control pollutants from non-point sources, may be located in the protective area. Other laws, such as ch. 30, Wis. Stats, and NR 103, 115, 116, and 117 and their associated review and approval processes may apply in the protective area.

BMPs shall be installed before the construction has undergone final stabilization.

### **Applicability**

This section applies to post-construction sites located within a protective area.

## **Exemptions**

This section does not apply to the following:

- a. Except as provided under NR 151.121(5), redevelopment post-construction 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. Areas of post-construction sites from which the runoff does not enter the surface water, including wetlands, without first being treated by a BMP to meet the requirements of NR 151.122 to NR 151.123, except to the extent that vegetative ground cover is necessary to maintain bank stability.

## **Fueling and Vehicle Maintenance Area Requirements**

All SWM Plans must satisfy performance standards contained within NR 151.126. Fueling and vehicle maintenance areas shall have BMPs designed, installed, and maintained to reduce petroleum within runoff, so that the runoff that enters waters of the state contains no visible petroleum sheen, or to the maximum extent practicable.

A combination of the following BMPs may be used: oil/grease separators, canopies, petroleum spill cleanup materials, or any other structural or non-structural method of preventing or treating petroleum in runoff.

BMPs shall be installed before the construction has undergone final stabilization.

## **Operations & Maintenance Plan Requirements**

All SWM Plans shall include a maintenance and operations plan covering all BMPs and SWM facilities proposed as part of the development. The plan should be developed for the life of each BMP or SWM facility including required maintenance activities and maintenance activity schedule.

If a DNR Technical Standard exists for a given BMP, the plan provided should meet maintenance and operation requirements outlined within the Technical Standard, at a minimum.

## **SEWRPC Planning Report No. 173**

To the extent practicable, all storm water management plans shall be consistent with Southeastern Wisconsin Regional Planning Commission (SEWRPC) Community Assistance Planning Report No. 173, *A Stormwater Management Plan for the City of West Bend Washington County, Wisconsin*, otherwise known as the Storm Water Management System Plan.

## **BMP Location and Regional Treatment Option**

To comply with storm water management requirements, BMPs may be located on-site or off-site as part of a regional storm water device, practice, or system, but shall be installed in accordance with NR 151.003.

All BMPs shall be located to treat runoff prior to discharge to navigable surface waters.

The City Engineer may approve off-site management measures provided that all of the following conditions are met:

1. The post-construction site runoff is covered by a SWM Plan that is approved by the City Engineer and that contains management requirements consistent with the purpose and intent of the SWM Code.
2. The off-site facility meets all of the following conditions:
  - a. The facility is in place.

- b. The facility is designed and adequately sized to provide a level of storm water control equal to or greater than that which would be afforded by on-site practices meeting the performance standards of NR 151.
- c. The facility has a legally obligated entity responsible for its long-term operation and maintenance.

Where a regional treatment option exists such that the City Engineer exempts the Applicant for all or part of the minimum on-site SWM requirements, the Applicant may be required to pay a fee in an amount determined in negotiation with the City. In determining the fee for post-construction runoff, the City shall consider an equitable distribution of the cost for land, engineering design, construction, and past and/or future maintenance of the regional treatment option.

### **Alternative Requirements**

The City Engineer may establish SWM requirements more stringent those set forth in these guidelines if it is determined that an added level of protection is needed to protect sensitive resources.

### **Work Within the City Right-of-Way**

All work proposed within the City right-of-way may require a Street Opening Permit from the Department of Public Works, and must be constructed in accordance with the Standard Specifications for Public Works Construction, City of West Bend, latest edition. A copy of these Standard Specifications is located on the City of West Bend Engineering Department webpage:

<http://www.ci.west-bend.wi.us/Standard-Specifications/>

## **MAINTENANCE AGREEMENT**

A Storm Water Management Practices Maintenance Agreement (agreement) is required for each development in order to obtain a Stormwater Management Permit. A draft agreement must be submitted with the Storm Water Management Permit Application for review.

A template agreement is posted on the Engineering Department's webpage. This template may be used, but is not required so long as the draft agreement, at a minimum, includes the following provisions:

1. Identification of the storm water facilities and designation of the drainage area served by the facilities.
2. A schedule for regular maintenance of each aspect of the SWM system consistent with the SWM plan. Maintenance activities shall include regular inspections by the owner of the facility. These inspections are necessary to make periodic evaluation of the condition of each aspect of the SWM system and to determine if maintenance is required in addition to the activities scheduled. Written inspection reports are required.
3. Identification of the responsible party(s), organization or city, county, town or village responsible for long term maintenance of the SWM practices identified in the SWM plan.
4. Requirement that the responsible party(s), organization, or city, county, town or village shall maintain SWM practices in accordance with the schedule included in par. 2.
5. Authorization for the City Engineer to access the property to conduct inspections of SWM practices as necessary to ascertain that the practices are being maintained and operated in accordance with the agreement.
6. The owner of the SWM practice shall submit to the City Engineer the results of the site inspections and maintenance performed. The City Engineer will maintain records of the inspections and maintenance reports for 10 years.
7. Agreement that the party designated under par. 3, as responsible for long term maintenance of the SWM practices, shall be notified by the City Engineer of maintenance problems which require correction. The specified corrective actions shall be undertaken within a reasonable time frame as set by the City Engineer.
8. Authorization for the City Engineer to perform the corrective actions identified in the notice to the responsible party designated under par. 3 if the required corrections are not made in the specified time period. The City Engineer shall enter the amount due on the tax rolls and collect the money as a special charge against the property pursuant to subch. VII of ch. 66, Wis. Stats.

Once the draft agreement has been approved by City Engineering staff, the applicant must submit one complete version of the agreement with the Owner's signature with notarization. **A Storm Water Management Permit will not be approved until the original signature agreement has been received.**

Once received, the Engineering Department will schedule for the agreement to be placed on a City Council meeting agenda for approval. Once the agreement is approved by City Council, the City will send the agreement, with signatures, for recording to the County Register of Deeds as a property deed restriction so that it is binding upon all subsequent owners of the land served by the SWM practices. An invoice will subsequently be sent to the Owner for the recording fees.

## DEFINITIONS

**“Adm.”** – Administrative, as Administrative Code.

**“Average Annual Rainfall”** – a calendar year of precipitation, excluding snow, which is considered typical.

**“BMP”** – Best Management Practice.

**“Ch.”** – Chapter.

**“Connected Imperviousness”** – an impervious surface connected to waters of the state via a separate storm sewer, an impervious flow path, or a minimally pervious flow path. Note: An example of a minimally pervious flow path would be roof runoff flowing across a lawn of less than 20 feet, to the driveway, to the street, and finally to the storm sewer.

**“DNR”** – Wisconsin Department of Natural Resources.

**“Effective Infiltration Area”** – 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.

**“Exceptional Resources Waters”** – waters listed in s. NR 102.11, Wis. Adm. Code.

**“In-fill Area”** – an undeveloped area of land located within the urban service area.

**“Maintenance Agreement”** – a legal document that provides for long-term maintenance of SWM practices.

**“Maximum Extent Practicable”** or **“MEP”** – the highest level of performance that is achievable but is not equivalent to a performance standard identified in the Storm Water Management Code. The highest level of performance that is achievable shall be determined in accordance with NR 151.006, Wis. Ad. Code.

**“New Development”** – development resulting from the conversion of previously undeveloped land or agricultural uses.

**“NR XXX”** – Chapter Designation, Department of Natural Resources, Wisconsin Administrative Code.

**“NRCS”** – Natural Resources Conservation Service of the United States Department of Agriculture.

**“Ordinary High-Water Mark”** – the point on the bank or shore up to which the presence or action of surface water is so continuous as to leave a distinctive mark such as by erosion, destruction or prevention of terrestrial vegetation, predominance of aquatic vegetation, or other easily recognized characteristic. Where the bank or shore at any particular place is of such character that it is difficult or impossible to ascertain where the point of ordinary high-water mark is, recourse may be had to the opposite bank of a stream or to other places on the shore of a lake or flowage to determine whether a given stage of water is above or below the ordinary high-water mark.

**“Outstanding Resource Waters”** – waters listed in s. NR 102.10, Wis. Adm. Code.

**“Performance Standard”** – a narrative or measurable number specifying the minimum acceptable outcome for a facility or practice.

**“Permit”** – a written authorization made by the administering authority to the applicant to conduct land disturbing construction activity or to discharge post-construction runoff to waters of the state.

**“Pre-Development Condition”** – the extent and distribution of land cover types present before the initiation of land disturbing construction activity, assuming that all land uses prior to the development activity are managed in an environmentally sound manner.

**“Preventative Action Limit”** – meaning given in s. NR 140.05(17), Wis. Adm. Code.

**“Protective Area”** – an area of land that commences at the top of the channel of lakes, streams and rivers, or at the delineated boundary of wetlands, and that is the greatest of the following widths, as measured horizontally from the top of the channel or delineated wetland boundary to the closest impervious surface:

- (a) For outstanding resource waters and exceptional resource waters, 75 feet.
- (b) For perennial an intermittent stream identified on a US Geological Survey 7.5-minute series topographic map, or a county soil survey map, whichever is more current, 50 feet.
- (c) For lakes, 50 feet.
- (d) For wetlands not subject to par (e) or (f), 50 feet.
- (e) For highly susceptible wetlands, 75 feet. Highly susceptible wetlands include calcareous fens, sedge meadows, open and coniferous bogs, low prairies, coniferous swamps, lowland hardwood swamps, and ephemeral ponds.
- (f) For less susceptible wetlands, 10 percent of the average wetland width, but no less than 10 feet nor more than 30 feet. Less susceptible wetlands include degraded wetlands dominated by invasive species such as reed canary grass, cultivated hydric soils, and any gravel pits, or dredged material or fill material disposal sites that take on the attributes of a wetland.
- (g) In pars (d) to (f), determinations to the extent of the protective area adjacent to wetlands shall be made on the basis of sensitivity and runoff susceptibility of the wetland in accordance with the standards and criteria in NR 103.03.
- (h) Wetland boundary delineation shall be made in accordance with NR 103.08 (1m). This paragraph does not apply to wetlands that have been completely filled in compliance with all applicable state and federal regulations. The protective area for wetlands that have been partially filled in compliance with all applicable state and federal regulations shall be measured from the wetland boundary delineation after fill has been placed. Where there is a legally authorized wetland fill, the

protective area standard need not be met in that location.

- (i) For concentrated flow channels with drainage areas greater than 130 acres, 10 feet.
- (j) Notwithstanding pars (a) to (i), the greatest protective area width shall apply where rivers, streams, lakes, and wetlands are contiguous. A stream or lake is not eligible for a lower protective area width even if contiguous to a less susceptible wetland.

Does not include any area of land adjacent to any stream enclosed within a pipe or culvert, so that runoff cannot enter the enclosure at this location.

**“Responsible Party”** – any entity holding fee title to the property or other person contracted or obligated by other agreement to implement and maintain post-construction storm water BMPs.

**“Separate Storm Sewer”** – a conveyance system 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 part of a publicly owned wastewater treatment works that provides secondary or more stringent treatment. (d) discharges directly or indirectly to waters of the state.

**“SWM”** – Storm Water Management.

**“Technical Standard”** – a document that specifies design, predicted performance and operation and maintenance specifications for a material, device or method.

**“Top of the Channel”** – 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.

**“TR-55”** – 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.

**“Type II Distribution”** – 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.

**“USDA”** – United States Department of Agriculture

**“Wis.”** – Wisconsin.