



PCSMP Checklist
SM-05

Engineering Department
City of Bismarck
221 N. 5th Street
P.O. Box 5503
Bismarck, ND 58506
701-355-1505

For Office Use Only:
Date Received:
TRAKiT #:

POST-CONSTRUCTION STORMWATER MANAGEMENT PERMIT CHECKLIST

(Complete all applicable items)

Project Information:			
Site Address: _____			
Description of Work: _____			
Lot & Block Number:		Subdivision:	
General Submittal Materials			
Standard Application Materials	Complete	Comment	
Stormwater Management Permit Application (SM-01)	<input type="checkbox"/> Yes		
Stormwater Permit Fee	<input type="checkbox"/> Yes		
Approved Mandatory Stormwater Scoping Sheet (SM-04)	<input type="checkbox"/> Yes		
Stormwater Management Plan & Exhibits <i>See Required Items Below</i>	<input type="checkbox"/> Yes		
Design Waivers or Variances (if Acceptable)	<input type="checkbox"/> Yes <input type="checkbox"/> N/A		
Optional Materials for Conditional Approval (Required for Expedited Review Process)	Complete	Comment	
Construction Plans & Basis of Design Report	<input type="checkbox"/> Yes <input type="checkbox"/> N/A		
Geotechnical Report	<input type="checkbox"/> Yes <input type="checkbox"/> N/A		
Access & Drainage Easements	<input type="checkbox"/> Yes <input type="checkbox"/> N/A		
Operation and Maintenance Manuals	<input type="checkbox"/> Yes <input type="checkbox"/> N/A		
Summary of Site Cover			
	Pervious Area (square feet)	Impervious Area (square feet)	Total Area (square feet)
Existing Conditions			
Post-Construction Conditions			
Change in Area (+/-)			

Stormwater Management Plan Narrative				
<i>Provide a SWMP Narrative consistent with the requirements of the SWDSM and the approved Mandatory Stormwater Scoping Sheet. Attach this checklist to the SWMP Narrative that matches the outline as defined in Section 3.4.2 of the SWDSM</i>				
Item	Description	Yes	N/A	Page
1.0	Site & Applicant Information 3.4.2 of the SWDSM			
1.0A	Applicant, Contact Name, Address, Phone, & Email			
1.0B	Site Address and Subdivision Lot & Block as Applicable			
1.1	Brief Description of Project			
1.2	Project Size and Impervious Surface Created			

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Item	Description	Yes	N/A	Page
2.0	Recommendations for the Project Area 3.4.2 of the SWDSM			
2.0A	Summary Table by Lot & Block of allowable Post-Construction Pervious CN and % Impervious for future Expedited SWMP or Basis of Design Reports.			
2.0B	Summary Table of the Existing Conditions and Post-Construction peak flow and volumes at the Point(s) of Analysis for all storm events required by Table 4-1 of the SWDSM.			
2.1	Required Easements for Post-Construction Stormwater BMPs			
2.2	Inter-Lot Drainage Requirements to be Addressed by Future Grading Plans and CSMP.			
2.3	Post-Construction Stormwater BMPs Required to be Implemented by Future Development			
2.4	Additional Project Specific Recommendations as Necessary			
3.0	Project Stormwater Management Summary 3.4.2 of the SWDSM The SWMP shall include a brief description of the following items.			
3.1	Description of the Point(s) of Analysis			
3.2	Description of the Point(s) of Discharge			
3.3	Description of existing channels, pipes, culverts, or other stormwater features.			
3.4	Description of existing wetlands on and adjacent to the project including the source (i.e. field delineation, NWI, LWI, etc.)			
3.5	Identify FEMA FIRM map and location.			
3.6	Report the NRCS soil types for the project area. Note if NRCS soils are listed as Hydric Soils.			
3.7	Description of how Project proposes to manage post-construction stormwater runoff consistent with the requirements of the SWDSM.			
4.0	Hydrologic Analysis Summary 3.4.2 of the SWDSM The SWMP shall include a description of each catchment by Point of Analysis that includes a brief description of the existing and post-construction conditions of each catchment. The design engineer can utilize sub-catchments to define specific areas within the overall Point of Analysis.			
4.1	Description of Existing Zoning & Land-use			
4.2	Summary Table for the Existing Conditions Catchment by Point of Analysis that Includes: <ol style="list-style-type: none"> 1. Tributary Area (both onsite and off-site run-on); 2. Impervious Coverage Area; 3. Impervious Coverage Curve Number; 4. Pervious Coverage Area; 5. Pervious Coverage Curve Number; and 6. Time of Concentration. 			

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Item	Description	Yes	N/A	Page
4.3	Post-Construction Zoning & Land-use			
4.4	Summary Table for the Post-Construction Catchment by Point of Analysis that Includes: <ol style="list-style-type: none"> 1. Tributary Area (both on- site and off-site run-on); 2. Impervious Coverage Area; 3. Impervious Coverage CN; 4. Pervious Coverage Area; 5. Pervious Coverage Curve Number; and 6. Time of Concentration. 			
4.0A	Included as an appendix to the SWMP modeling results for the existing and post-construction condition hydrographs to each Point of Discharge for the storm events listed Table 4-1 of the SWSDM.			
4.5	The SWMP hydrologic analysis and reporting shall account for and consider the following: <ol style="list-style-type: none"> 1. The project shall safely pass the 100-year 24-hour event without impacting of inundating any homes, structures or other buildings. 2. If the off-site contributing areas are greater than 50-percent of the catchment total, provide a description of the impact of future development in the off-site watershed on the proposed post-construction stormwater BMPs and make any applicable recommendations. 			
5.0	Post-Construction Stormwater Management BMPs Summary The SWMP shall include documentation that the Project meets the Performance Requirements, Design Standards and Analysis Method of the SWDSM for A) Post-Construction Peak Flow Compliance (Section 4.0) B) Post-Construction Water Quality Compliance (Section 5.0) and C) Post-Construction Drainage and Conveyance.			
5.1	Post-Construction Peak Flow Compliance BMP (<i>Section 4 of the SWDSM</i>)			
5.1.1	Engineered Outlets The SWMP shall include a summary of the proposed engineered outlet structure in a table that reports: <ol style="list-style-type: none"> 1. Outlet configuration including size and inverts; 2. Outlet culvert discharge velocity and depth for all storm events required by Table 4-1 of the SWDSM; 3. Calculated water surface elevation for all storm events required by Table 4-1 of the SWDSM; 4. Maximum available storage in the proposed basin (to emergency spillway or overflow elevation); and 5. Reference to where the Stage/Storage/Discharge report is contained in the SWMP. 			

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5.1.2	<p>Emergency Spillway and Uncontrolled Overflows The SWMP shall include the hydrologic and hydraulic summary demonstrating that the proposed emergency spillway\overflow satisfies the following conditions:</p> <ol style="list-style-type: none"> 1. Capable of passing the post-construction 100-year 24-hour event without overtopping the detention basin berm during a clogged outlet structure condition; 2. Properly armored to resist the erosive forces during the post-construction 100-year 24-hour event; and 3. Will not be utilized during the normal function of the detention basin. 			
5.0A	Included as an appendix to the SWMP modeling results for the inflow and outflow hydrographs for the post-construction condition for each of the storm events listed Table 4-1 of the SWDSM.			
5.2	Post-Construction Water Quality Compliance BMP (<i>Section 5 of the SWDSM</i>)			
5.2.1	<p>Wet Detention Basins The SWMP shall include a summary table that reports:</p> <ol style="list-style-type: none"> 1. Required Water Quality Volume (Vwqreq); 2. Proposed Water Quality Volume in the form of a Stage-Storage relationship; 3. Calculated drawdown time; and 4. Reference to where the Stage/Storage/Discharge report is contained in the SWMP. 			
5.2.2	<p>Dry Detention Basins (w/Extended Detention) The SWMP shall include a summary table that reports:</p> <ol style="list-style-type: none"> 1. Required Extended Detention Water Quality Volume (Vwqreq); 2. Proposed Extended Detention Water Quality Volume in the form of a Stage-Storage relationship; 3. Calculated drawdown time; and 4. Reference to where the Stage/Storage/Discharge report is contained in the SWMP. 			
5.2.3	<p>Infiltration The SWMP shall include a summary table that reports:</p> <ol style="list-style-type: none"> 1. Required Water Quality Volume (Vwqreq); 2. Proposed Water Quality Volume in the form of a Stage-Storage relationship; 3. Calculated infiltration time; and 4. Reference to where the Stage/Storage/Discharge report is contained in the SWMP. 			
5.2.4	If applicable, Alternative BMP Method analysis and reporting requirements consistent with Section 5.2.2 of the SWDSM.			

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5.0B	Included as an attachment to the SWMP modeling results for post-construction water quality BMPs demonstrating compliance with Table 5-1 of the SWSDM.			
5.3	Post-Construction Drainage & Conveyance BMPs (<i>Section 6 of the SWDSM</i>)			
5.3.1	Streets Demonstrate compliance with Table 6-1 and Table 6-2 if the SWDSM Summary table listing: <ol style="list-style-type: none"> 1. Street Classification; 2. Critical Design Grade; 3. Calculated Maximum Street Flow Depth; and 4. Maximum Encroachment. 			
5.3.2	Storm Sewer Brief summary of the storm sewer system. <i>Detailed design calculations meeting the requirements of Section 6.0 of the SWDSM can be included in future Basis of Design Report.</i>			
5.3.3	Culverts Brief summary of required culverts. <i>Detailed design calculations meeting the requirements of Section 6.0 of the SWDSM can be included in future Basis of Design Report.</i>			
5.3.4	Open Channels When engineered open channels are utilized as a post-construction BMP include the following information: <ol style="list-style-type: none"> 1. The size and shape of open channels shall be based on flow quantities calculated using the hydrologic methods set forth in Section 4.3.1 of the SWDSM. 2. Post-Construction flows and the maximum Froude number for each design event. 3. Calculations reporting the velocity and shear stress to support the channel lining material selection. 4. Graphical profile of the channel longitudinal section reporting the design slope and 5-year 24-hour and 100-year 24-hour storm hydraulic grade lines. 			
5.4	Identification of Parties Responsible for the Operation and Maintenance of the Post-Construction Stormwater Structural and Non-Structural BMPs. <i>Note: O&M Manuals for each approved post-construction BMP shall be required as a condition of approval of the PCSMP.</i>			

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6.0	Construction Schedule & Phasing			
6.1	Narrative of proposed project construction phases and the necessary future submittals and approvals as required by the SWDSM. For example, grading project, water sewer project, final site development, etc.			
6.0A	Summary table indicating future PCSMP application materials and approximate timing. Examples include Basis of Design Report, Construction Plans, Geotechnical Report, and Certification Report			
7.0	Engineer's Statement of Compliance & Seal			

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(Complete all applicable items)

Stormwater Management Plan – Required Exhibits

All Stormwater Management Plans are to include the exhibits listed below. Additional exhibits may be required for complex sites or multiple phase projects.

General Requirements:

1. Paper Size
2. Minimum = 11x17
3. Maximum = 24x36
4. All Exhibits must have a unique name and number
5. All Exhibits are to be labeled "For Regulatory Review Only – Not Approved for Construction"

Item	Description	Yes	N/A	Page
1	Exhibit 1.0 – Cover Sheet & Location Map (if more than one sheet is required use 1.0, 1.1, 1.2, etc.)			
A	Name of Project or Name of the Plat			
B	Owner with Contact Information			
C	Applicant			
D	Engineer			
E	Site Location by Address and/or PLSS			
F	SWMP Exhibits Sheet Index by Number & Title			
G	Location Map – GIS data is sufficient for accuracy. The purpose of the location map is to demonstrate where the proposed project fits in the existing Public Storm Sewer System. <ol style="list-style-type: none"> 1. North Arrow 2. Scale 3. Project Site Highlighted 4. Streets 5. Adjacent Parcels 6. Existing Offsite Stormwater Facilities 7. Regional Stormwater Facilities (If Used for the Project) 8. Stormwater Master Plan Study Boundary 9. Point(s) of Analysis 			
2	Exhibit 2.0 – Existing Conditions Site Plan (if more than one sheet is required use 2.0, 2.1, 2.2, etc.)			
A	North Arrow and Bar Scale			
B	Existing topography at a minimum of 1-foot interval. For sites with grades steeper than 10%, the existing topography can be shown at 2-foot contour intervals.			
C	Identify the Point(s) of Analysis and delineate each corresponding drainage area.			
D	Identify the Point(s) of Discharge to the Public Storm Sewer System and delineate the sub-catchment area boundary(s) including any upstream areas that flow on to the project site.			
E	Time of concentration path for each catchment or sub-catchment.			
F	Property boundaries and street ROW			

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Item	Description	Yes	N/A	Page
G	Existing underground public utilities			
H	Existing above ground public utilities			
I	Existing impervious ground cover			
J	Existing pervious ground cover			
K	Location of wetlands			
L	FEMA Floodplains and Floodways			
M	NRCS Soils Boundaries			
N	Legend identifying all layers or features.			
O	Notes Identifying: <ol style="list-style-type: none"> 1. Source and Date of Topography 2. Source of NRCS Soil Boundaries 3. Total Site Impervious and Pervious Area 4. Point(s) of Analysis Total Drainage Area 			
	Exhibit 3.0 – Post-Construction Site Plan (if more than one sheet is required use 3.0, 3.1, 3.2, etc.)			
A	North Arrow and Bar Scale			
B	Post-construction grading at a minimum of 1-foot interval. For sites with grades steeper than 10% the existing topography can be shown at 2-foot contour intervals.			
C	Identify the Point(s) of Analysis			
D	Identify the Point(s) of Discharge to the Public Storm Sewer System and delineate the corresponding Catchment area including any upstream areas that flow on to the project site.			
E	All catchments and sub-catchments labeled with identifiers that match the hydrologic modeling results.			
F	Post-construction impervious ground cover			
G	Post-construction pervious ground cover			
H	Post-construction BMPs			
I	Post-construction time of concentration paths for each catchment or sub-catchment			
J	Legend identifying all layers or features.			

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Item	Description	Yes	N/A	Page
	Exhibit 4.0 – Post-Construction BMP Details (if more than one sheet required use 4.0, 4.1, 4.2, etc.)			
A	Peak Flow and/or Water Quality Basin Typical Section and Outlet Structure Detail with: <ol style="list-style-type: none"> 1. Outlet structure including sizes of orifices, weirs and culverts; 2. Invert elevations for all outlet orifices, weirs and culverts; 3. Invert elevation for emergency spillway or overflow structure; 4. Elevation of the top of embankment or basin structure; 5. Calculated water surface elevation for all storm events required by Table 4-1 of the SWDSM; 6. Post-Construction Outlet Protection, and 7. If applicable, the elevation of the nearest adjacent finished floor or other critical elements. 			

Design Engineer

All PCSMP application materials; SWMP, Construction Plans, Basis of Design Report, Geotechnical Report and Certification Report are to be submitted under the seal and signature of a Professional Engineer registered in the State of North Dakota.

Have all items included in this PCSMP application been sealed and signed by a Professional Engineer registered in the State of North Dakota?

Yes

No

Page

Submittal Copies:

1 PDF Copy Uploaded to TRAKiT

Application Fee Paid

Comments:

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(Complete all applicable items)

Required Summary Tables:

(Note: The Design Engineer may reproduce the following tables electronically and attach to this checklist as a summary.)

Project Hydrologic Modeling Summary – Existing Conditions			
Storm Event	Peak Flow (cfs) by Point of Analysis		
	<i>Point 1</i>	<i>Point 2</i>	<i>Point 3</i>
2-year 24-hour			
5-year 24-hour			
10-year 24-hour			
100-year 24-hour			

Project Hydrologic Modeling Summary – Existing Conditions			
Storm Event	Total Volume (acre-feet) by Point of Analysis		
	<i>Point 1</i>	<i>Point 2</i>	<i>Point 3</i>
2-year 24-hour			
5-year 24-hour			
10-year 24-hour			
100-year 24-hour			

Project Hydrologic Modeling Summary – Post-Construction Conditions			
Storm Event	Peak Flow (cfs) by Point of Analysis		
	<i>Point 1</i>	<i>Point 2</i>	<i>Point 3</i>
2-year 24-hour			
5-year 24-hour			
10-year 24-hour			
100-year 24-hour			

Project Hydrologic Modeling Summary – Post-Construction Conditions			
Storm Event	Total Volume (acre-feet) by Point of Analysis		
	<i>Point 1</i>	<i>Point 2</i>	<i>Point 3</i>
2-year 24-hour			
5-year 24-hour			
10-year 24-hour			
100-year 24-hour			