



**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)  
DISCHARGES OF STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITIES  
POST-CONSTRUCTION STORMWATER MANAGEMENT (PCSM) MODULE 2**

Applicant: M&G Realty, Inc.

Project Site Name: Rutters #82

Surface Water Name(s): Tributary 16017 To Sandy Run

Surface Water Use(s): HQ-CWF

**PCSM PLAN INFORMATION**

1. Identify all structural and non-structural PCSM BMPs that have been selected and provide the information requested.

Discharge Point(s)	BMP ID	BMP Name	BMP Manual	Latitude	Longitude	DA Treated (ac)
1	1	Rain Garden/Bioretention	6.4.5	40.5673	-78.3373	3.34
1	2	Rain Garden/Bioretention	6.4.5	40.5676	-78.3377	1.45
1	3	Vegetated Swale	6.4.8	40.5674	-78.3383	1.30
1	4	Rain Garden/Bioretention	6.4.5	40.5673	-78.3386	2.44
1	5	Rain Garden/Bioretention	6.4.5	40.5666	-78.3390	0.80
1	6	Rain Garden/Bioretention	6.4.5	40.5668	-78.3390	3.11
1	7	Subsurface Infiltration Basin	6.4.3	40.5665	-78.3379	0.97

**Undetained Areas:** 0.14 acre(s)

The Project Qualifies as a Site Restoration Project (25 Pa. Code §102.8(n))

2. Describe the sequence of PCSM BMP implementation in relation to earth disturbance activities and a schedule of inspections for the critical stages of PCSM BMP installation.

**Per NPDES NOI Instructions, "If the sequence and critical stages are provided on the PCSM Plan Drawings, then identify this in the space provided (including the location in the drawings)."**

**This information can be found on Plan Sheet PCSM-02, under the "Construction Sequence - Convenience Store Site and Highway Improvements" heading.**

3. <input checked="" type="checkbox"/> Plan drawings have been developed for the project and will be available on-site.
4. <input checked="" type="checkbox"/> Plan drawings have been developed for the project and are attached to the NOI/application.
5. <input checked="" type="checkbox"/> Recycling and proper disposal of materials associated with PCSM BMPs are addressed as part of long-term operation and maintenance of the PCSM BMPs.
6. Identify naturally occurring geologic formations or soil conditions that may have the potential to cause pollution after earth disturbance activities are completed and PCSM BMPs are operational and the applicant's plan to avoid or minimize potential pollution and its impacts.  <b>According to the Pennsylvania Geologic Survey Geologic Map of the State of Pennsylvania, the project site is underlain by the Devonian age Keyser and Tonoloway Formations, undivided (geologic symbol DSkt).</b>  <b>According to the Pennsylvania Geologic Survey publication, The Engineering Characteristics of the Rocks of Pennsylvania, Second Edition, 1982, these formations are described as follows:</b>  <b>Keyser Formation: Comprised of dark-gray, highly fossiliferous and crystalline to nodular limestone with shaly limestone near the top. The formation is well-bedded, flaggy to thick, with some massive beds. Fracturing is along moderately to highly abundant platy or blocky patterned joints which are regularly spaced with a moderate to close distance between open and steeply dipping fractures. This formation is moderately resistant to weathering which occurs to a moderate or shallow depth, with a thin soil mantle which may be characterized by pinnacles.</b>  <b>Tonoloway Formation: Consists of medium-gray, laminated limestone; containing interbedded zones of medium-dark-gray to light-olive gray shale and siltstone. Bedding is well-developed, flaggy to thick. Fracturing is along moderately to highly abundant platy, and rarely, blocky patterned joints. Spacing between fractures is moderate to close, open and steeply dipping. This formation is moderately resistant to weathering which occurs to a moderate or shallow depth, with a thin soil mantle which may be characterized by pinnacles.</b>  <b>Additionally, these formations are comprised of carbonate lithology which are subject to dissolution and the development of sinkholes and other karst-related features. The Sinkhole Map of Pennsylvania, prepared by William Kochonov of the Pennsylvania Geologic Survey, does not show any mapped karst features across the property or on adjacent lands. It should be noted, no karst features (i.e. bedrock outcrops, sinkholes and/or surface depressions) were observed at the time of the site reconnaissance.</b>
7. Identify whether the potential exists for thermal impacts to surface waters from post-construction stormwater. If such potential exists, identify BMPs that will be implemented to avoid, minimize, or mitigate potential thermal impacts.  <b>Potential thermal impacts from the impervious surfaces on this site are being reduced by retaining on-site stormwater in underground basins and slowly releasing the runoff. Additionally, some of the on-site runoff will flow into a proposed raingarden and will either be cooled down, infiltrated, evaporated or transpired by the vegetation in the rain garden.</b>  <b>Following construction, the runoff from all areas will be conveyed through a storm sewer system/channels. This provides additional time for the runoff to cool down. Overall, ample time is provided for the stormwater to be significantly cooled down and diluted prior to reaching Tributary 16017 of Sandy Run</b>
8. <input checked="" type="checkbox"/> The PCSM Plan has been planned, designed, and will be implemented to be consistent with the E&S Plan.
9. <input checked="" type="checkbox"/> A pre-development site characterization has been performed.

**STORMWATER ANALYSIS – RUNOFF VOLUME**

**Surface Water Name:** Tributary 16017 To Sandy Run **Discharge Point(s):** 1

1.  The design standard is based on volume management requirements in an Act 167 Plan approved by DEP within the past five years.

2.  The design standard is based on managing the net change for storms up to and including the 2-year/24-hour storm.

3.  An alternative design standard is being used.

4.  A printout of DEP's PCSM Spreadsheet – Volume Worksheet is attached.

5. 2-Year/24-Hour Storm Event: **2.61** inches Source of precipitation data: **NOAA ATLAS 14**

6. Stormwater Runoff Volume, Pre-Construction Conditions: **12,819** CF  Calculations attached

7. Stormwater Runoff Volume, Post-Construction Conditions: **71,857** CF  Calculations attached

8. Net Change (Post-Construction – Pre-Construction Volumes): **59,037** CF

9. Identify all selected structural PCSM BMPs and provide the information requested.  Calculations attached

DP No.	BMP ID	Series	Vol. Routed to BMP (CF)	Inf. Area (SF)	Inf. Rate (in/hr)	Inf. Period (hrs)	Veg?	Media Depth (ft)	Storage Vol. (CF)	Inf. Credit (CF)	ET Credit (CF)
1	1	Offsite	17,453	10,660	0.25	72	<input checked="" type="checkbox"/>	2	11,112	13,511	3,943
1	2	Offsite	3,426	4,363	0.25	72	<input checked="" type="checkbox"/>	2	4,507	3,416	0
1	3	Offsite	1,220	5,500	0.25	60	<input checked="" type="checkbox"/>	2	2,750	1,220	0
1	4	Offsite	7,587	4,250	0.25	72	<input checked="" type="checkbox"/>	2	4,429	5,385	2,202
1	5	Offsite	3,519	5,035	0.25	72	<input checked="" type="checkbox"/>	2	5,197	3,519	0
1	6	Offsite	21,398	11,300	0.25	84	<input checked="" type="checkbox"/>	3	20,446	17,798	3,601
1	7	Offsite	8,616	7,680	0.20	96	<input type="checkbox"/>	2	8,616	8,616	0
							<input type="checkbox"/>				
							<input type="checkbox"/>				

**Total Infiltration & ET Credits (CF): 63,209**

**Non-Structural BMP Volume Credits (CF) (Attach Calculations): 0**

**Managed Release Credits (CF) (Attach MRC Design Summary): 0**

**Volume Required to Reduce/Manage (CF): 59,037**

**Total Credits (CF): 63,209**

<b>INFILTRATION INFORMATION</b>	
<b>BMP ID: 7 (Underground Infiltration)</b>	<input checked="" type="checkbox"/> Soil/geologic test results are attached.
1. No. of infiltration tests completed: <b>4</b>	
2. Method(s) used for infiltration testing: <b>Double Ring Infiltrometer</b>	
3. Test Pit Identifiers (from PCSM Plan Drawings): <b>IT-5, IT-6, B-15, and B-12</b>	
4. Avg Infiltration Rate: <b>0.20</b> in/hr	5. FOS: <b>N/A</b> : 1
6. Infiltration rate used for design: <b>0.20</b> in/hr	
7. Separation distance between the BMP bottom and bedrock: <b>6 (min)</b> feet	
8. Separation distance between the BMP bottom and seasonal high-water table: <b>6 (min)</b> feet	
9. Comments:	
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<b>BMP ID: 1 through 6</b>	<input checked="" type="checkbox"/> Soil/geologic test results are attached.
1. No. of infiltration tests completed: <b>15</b>	
2. Method(s) used for infiltration testing: <b>Double Ring Infiltrometer</b>	
3. Test Pit Identifiers (from PCSM Plan Drawings): <b>IT-1, IT-2, B-13, B-14, and B-1 to B-11</b>	
4. Avg Infiltration Rate: <b>N/A</b> in/hr	5. FOS: <b>N/A</b> : 1
6. Infiltration Rate Used for Design: <b>N/A</b> in/hr	
7. Separation distance between the BMP bottom and bedrock: <b>-</b> feet	
8. Separation distance between the BMP bottom and seasonal high-water table: <b>-</b> feet	
9. Comments: <b>Due to the results of the geotechnical testing with encountering bedrock, infiltration is not proposed. Per Chapter 102 requirements, the applicant is choosing to utilize the water quality approach for compliance.</b>	
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<b>BMP ID:</b>	<input type="checkbox"/> Soil/geologic test results are attached.
1. No. of infiltration tests completed:	
2. Method(s) used for infiltration testing:	
3. Test Pit Identifiers (from PCSM Plan Drawings):	
4. Avg Infiltration Rate: in/hr	5. FOS: : 1
6. Infiltration Rate Used for Design: in/hr	
7. Separation distance between the BMP bottom and bedrock: feet	
8. Separation distance between the BMP bottom and seasonal high-water table: feet	
9. Comments:	

**STORMWATER ANALYSIS – PEAK RATE**

**Surface Water Name:** Tributary 16017 To Sandy Run **Discharge Point(s):** 1

1.  The design standard is based on rate requirements in an Act 167 Plan approved by DEP within the past five years.
2.  The design standard is based on managing the net change for 2-, 10-, 50-, and 100-year/24-hour storms.
3.  An alternative design standard is being used.
4.  A printout of DEP's PCSM Spreadsheet – Rate Worksheet is attached.
5.  Alternative rate calculations are attached.

6. Identify precipitation amounts. Source of precipitation data: NOAA Atlas 14 and Antis Township STM Ordinance

2-Year Storm:	2.61 inches	10-Year Storm:	3.80 inches
50-Year Storm:	5.13 inches	100-Year Storm:	6.10 inches

7. Report peak discharge rates, pre- and post-construction (without BMPs), based on a time of concentration analysis.

Design Storm	Pre-Construction Peak Rate (cfs)	Post-Construction Peak Rate (cfs)	Difference (cfs)
2-Year	9.04	19.46	10.42
10-Year	29.41	41.91	12.50
50-Year	58.23	71.96	13.73
100-Year	81.58	95.61	14.03

8. Identify all BMPs used to mitigate peak rate differences and provide the requested information.

BMP ID	Inflow to BMP (cfs)				Outflow from BMP (cfs)			
	2-Yr	10-Yr	50-Yr	100-Yr	2-Yr	10-Yr	50-Yr	100-Yr
BMP 1 - Bio Basin No. 1	4.49	8.70	13.74	17.50	0.03	1.30	7.43	13.03
BMP 2 - Bio Basin No. 2	0.66	1.97	3.77	5.21	0.00	0.06	0.68	2.72
BMP 4 - Bio Basin No. 3	1.54	4.00	7.24	9.79	0.00	0.79	5.54	8.93
BMP 5 - Bio Basin No. 4	1.15	2.39	3.92	5.07	0.00	0.00	0.15	0.60
BMP 6 - Bio Basin No. 5	8.19	13.80	20.11	24.97	0.00	0.39	1.36	2.96
BMP 7 - Underground Infiltration	3.60	5.28	9.16	15.96	0.00	0.59	2.81	9.62

9. Report peak rates for pre-construction and post-construction with BMPs and identify the differences.

Design Storm	Pre-Construction Peak Rate (cfs)	Post-Construction Peak Rate (with BMPs) (cfs)	Difference (cfs)
2-Year	9.04	5.93	-3.11
10-Year	29.41	18.82	-10.59
50-Year	58.23	36.92	-21.31
100-Year	81.58	52.03	-29.55

**STORMWATER ANALYSIS – WATER QUALITY**

A printout of DEP’s PCSM Spreadsheet – Quality Worksheet is attached for all surface waters receiving discharges.

**LONG-TERM O&M**

Describe the long-term operation and maintenance (O&M) requirements for each selected PCSM BMP.

BMP ID	O&M Requirements
1	<p>The BMP shall be inspected twice a year and after any storm larger than a 25 year event. Inspection of the facility also includes any upslope drainage area contributory to the system. The BMP shall be cleaned at least twice a year. Repairs to any damage of the system shall be made immediately. The BMP is expected to last the life of the development as long as routine maintenance is performed. If damage would occur to the system from unforeseen conditions, the specific component shall be replaced. The costs associated with the repair and reconstruction will vary due to the situation. Inspections will be performed by the owner at no additional cost. See drawing sheet PCSM-02.</p>
2	<p>The BMP shall be inspected twice a year and after any storm larger than a 25 year event. Inspection of the facility also includes any upslope drainage area contributory to the system. The BMP shall be cleaned at least twice a year. Repairs to any damage of the system shall be made immediately. The BMP is expected to last the life of the development as long as routine maintenance is performed. If damage would occur to the system from unforeseen conditions, the specific component shall be replaced. The costs associated with the repair and reconstruction will vary due to the situation. Inspections will be performed by the owner at no additional cost. See drawing sheet PCSM-02.</p>
3	<p>The BMP shall be inspected twice a year and after any storm larger than a 25 year event. Inspection of the facility also includes any upslope drainage area contributory to the system. The BMP shall be cleaned at least twice a year. Repairs to any damage of the system shall be made immediately. The BMP is expected to last the life of the development as long as routine maintenance is performed. If damage would occur to the system from unforeseen conditions, the specific component shall be replaced. The costs associated with the repair and reconstruction will vary due to the situation. Inspections will be performed by the owner at no additional cost. See drawing sheet PCSM-02.</p>
4	<p>The BMP shall be inspected twice a year and after any storm larger than a 25 year event. Inspection of the facility also includes any upslope drainage area contributory to the system. The BMP shall be cleaned at least twice a year. Repairs to any damage of the system shall be made immediately. The BMP is expected to last the life of the development as long as routine maintenance is performed. If damage would occur to the system from unforeseen conditions, the specific component shall be replaced. The costs associated with the repair and reconstruction will vary due to the situation. Inspections will be performed by the owner at no additional cost. See drawing sheet PCSM-02.</p>
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7	<p>The BMP shall be inspected twice a year and after any storm larger than a 25 year event. Inspection of the facility also includes any upslope drainage area contributory to the system. The BMP shall be cleaned at least twice a year. Repairs to any damage of the system shall be made immediately. The BMP is expected to last the life of the development as long as routine maintenance is performed. If damage would occur to the system from unforeseen conditions, the specific component shall be replaced. The costs associated with the repair and reconstruction will vary due to the situation. Inspections will be performed by the owner at no additional cost. See drawing sheet PCSM-02.</p>


**PCSM PLAN DEVELOPER**

I am trained and experienced in PCSM methods.

I am a licensed professional.

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Exp. Date: 09/30/2021

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**PCSM Plan Developer Signature**

\_\_\_\_\_  
**Date**

**STORMWATER ANALYSIS – WATER QUALITY**

A printout of DEP’s PCSM Spreadsheet – Quality Worksheet is attached for all surface waters receiving discharges.

**LONG-TERM O&M**

Describe the long-term operation and maintenance (O&M) requirements for each selected PCSM BMP.

BMP ID	O&M Requirements
	<b>SEE SEPARATE SHEET</b>

**PCSM PLAN DEVELOPER**

I am trained and experienced in PCSM methods.

I am a licensed professional.

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 Exp. Date: 09/30/2021

  
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 PCSM Plan Developer Signature

11/23/20  
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 Date