DEQ Virginia Runoff Reduction Method New Development Compliance Spreadsheet - **Version 4.1**

Project Name:	**White Oak Creek - Banister River (030101050103)**
Date:	**5/28/2025**

BMP Design Specifications List: **2024 Stds & Specs**

CLEAR ALL
(Ctrl+Shift+R)

data input cells
constant values
calculation cells
final results

Site Information

Post-Development Project (Treatment Volume and Loads)

Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest (acres) -- undisturbed, protected forest or reforested land					0.00
Mixed Open (acres) -- undisturbed/infrequently maintained grass or shrub land		12.75		0.77	13.52
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed					0.00
Impervious Cover (acres)					0.00
					13.52

Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr)	**1.18**

LAND COVER SUMMARY -- POST DEVELOPMENT

Land Cover Summary

Forest Cover (acres)	0.00
Weighted Rv (forest)	0.00
% Forest	0%
Mixed Open (acres)	13.52
Weighted Rv (mixed open)	0.11
% Mixed Open	100%
Managed Turf Cover (acres)	0.00
Weighted Rv (turf)	0.00
% Managed Turf	0%
Impervious Cover (acres)	0.00
Rv (impervious)	0.95
% Impervious	0%
Site Area (acres)	**13.52**
Site Rv	**0.11**

Treatment Volume and Nutrient Loads

Treatment Volume (acre-ft)	0.1265
Treatment Volume (cubic feet)	5,510
TP Load (lb/yr)	4.70
TN Load (lb/yr)	21.48

Drainage Area A

VRRM 4.1, 2024

Drainage Area A Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv	Composite Loading P	Composite Loading N
Forest (acres)					0.00	0.00	0.00	0.00
Mixed Open (acres)					0.00	0.00	0.00	0.00
Managed Turf (acres)					0.00	0.00	0.00	0.00
Impervious Cover (acres)					0.00	0.00	0.00	0.00
				Total	0.00			

CLEAR BMP AREAS

Total Phosphorus Available for Removal in D.A. A (lb/yr) 0.00

Post Development Treatment Volume in D.A. A (ft^3) 0

Stormwater Best Management Practices (RR = Runoff Reduction)

--Select from dropdown lists--

Practice	Runoff Reduction Credit (%)	Mixed Open Credit Area (acres)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft^3)	Runoff Reduction (ft^3)	Remaining Runoff Volume (ft^3)	Total BMP Treatment Volume (ft^3)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed	Nitrogen Removal Efficiency (%)	Nitrogen Load from Upstream Practices (lbs)	Untreated Nitrogen Load to Practice (lbs)	Nitrogen Removed By Practice (lbs)	Remaining Nitrogen Load (lbs)
1. Vegetated Roof (RR)																			
1.a. Vegetated Roof #1 (P-FIL-02)	45					0	0	0	0		0.00	0.00	0.00		0		0.00	0.00	0.00
1.b. Vegetated Roof #2 (P-FIL-02)	60					0	0	0	0		0.00	0.00	0.00		0		0.00	0.00	0.00
2. Rooftop Disconnection (RR)																			
2.a. Simple Disconnection to A/B Soils (P-FIL-01)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.b. Simple Disconnection to C/D Soils (P-FIL-01)	25				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (P-FIL-08)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.d. To Dry Well or French Drain #1, Micro-Infiltration #1 (P-FIL-04)	50				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.e. To Dry Well or French Drain #2, Micro-Infiltration #2 (P-FIL-04)	90				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.f. To Rain Garden #1, Micro-Bioretention #1 (P-FIL-05)	40				0	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
2.g. To Rain Garden #2, Micro-Bioretention #2 (P-FIL-05)	80				0	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
2.h. To Rainwater Harvesting (P-BAS-04)	0				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.i. To Stormwater Planter, Urban Bioretention (P-FIL-05)	40				0	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
3. Permeable Pavement (RR)																			
3.a. Permeable Pavement #1 (P-FIL-03)	45				0	0	0	0	25	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
3.b. Permeable Pavement #2 (P-FIL-03)	75					0	0	0	25		0.00	0.00	0.00		25		0.00	0.00	0.00
4. Grass Channel (RR)																			
4.a. Grass Channel A/B Soils (P-CNV-01)	20				0	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.b. Grass Channel C/D Soils (P-CNV-01)	10				0	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.c. Grass Channel with Compost Amended Soils as per specs (P-FIL-08)	20				0	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
5. Dry Swale (RR)																			
5.a. Dry Swale #1 (P-CNV-02)	40				0	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
5.b. Dry Swale #2 (P-CNV-02)	60				0	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
6. Bioretention (RR)																			
6.a. Bioretention #1 or Micro-Bioretention #1 or Urban Bioretention (P-FIL-05)	40				0	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
6.b. Bioretention #2 or Micro-Bioretention #2 (P-FIL-05)	80				0	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
7. Infiltration (RR)																			
7.a. Infiltration #1 (P-FIL-04)	50				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
7.b. Infiltration #2 (P-FIL-04)	90				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
8. Extended Detention Pond (RR)																			
8.a. ED #1 (P-BAS-03)	0				0	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
8.b. ED #2 (P-BAS-03)	15				0	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
9. Sheetflow to Filter/Open Space (RR)																			
9.a. Sheetflow to Conservation Area, A/B Soils (P-FIL-07)	75				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
9.b. Sheetflow to Conservation Area, C/D Soils (P-FIL-07)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
9.c. Sheetflow to Vegetated Filter Strip, A Soils or Compost Amended B/C/D Soils (Spec P-FIL-07 & P-FIL-08)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
10. Regenerative Stormwater Conveyance																			
10.a. Regenerative Stormwater Conveyance (P-CNV-04)	0				0	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
10.b. Regenerative Stormwater Conveyance (P-CNV-04)	0				0	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
11. Tree BMP																			
11.a. Trees over Pervious, A/B (P-FIL-09)	16				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
11.b. Trees over Pervious, C/D (P-FIL-09)	12				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
11.c. Trees over Impervious (P-FIL-09)	3.5				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac)	0.00	AREA CHECK: OK.
TOTAL MIXED OPEN TREATED (ac)	0.00	AREA CHECK: OK.
TOTAL MANAGED TURF AREA TREATED (ac)	0.00	AREA CHECK: OK.
TOTAL RUNOFF REDUCTION IN D.A. A (ft^3)	0	
TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. A (lb/yr)	0.00	
TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	0.00	
TOTAL PHOSPHORUS REMAINING AFTER APPLYING RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	0.00	

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

TOTAL RUNOFF REDUCTION IN D.A. A (ft^3)	0
NITROGEN REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE CALCULATIONS (Information Only)

Practice	Runoff Reduction Credit (%)	Mixed Open Credit Area (acres)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft^3)	Runoff Reduction (ft^3)	Remaining Runoff Volume (ft^3)	Total BMP Treatment Volume (ft^3)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed	Nitrogen Removal Efficiency (%)	Nitrogen Load from Upstream Practices (lbs)	Untreated Nitrogen Load to Practice (lbs)	Nitrogen Removed By Practice (lbs)	Remaining Nitrogen Load (lbs)
12. Wet Swale (no RR)															**12. Wet Swale (Coastal Plain) (no RR)**				
12.a. Wet Swale #1 (P-CNV-03)	0				0	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
12.b. Wet Swale #2 (P-CNV-03)	0				0	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
13. Filtering Practices (no RR)															**13. Filtering Practices (no RR)**				
13.a.Filtering Practice #1 (P-FIL-06)	0				0	0	0	0	60	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
13.b. Filtering Practice #2 (P-FIL-06)	0				0	0	0	0	65	0.00	0.00	0.00	0.00		45	0.00	0.00	0.00	0.00
14. Constructed Wetland (no RR)															**14. Constructed Wetland (no RR)**				
14.a.Constructed Wetland #1 (P-BAS-01)	0				0	0	0	0	50	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
14.b. Constructed Wetland #2 (P-BAS-01)	0				0	0	0	0	75	0.00	0.00	0.00	0.00		55	0.00	0.00	0.00	0.00
15. Wet Ponds (no RR)															**15. Wet Ponds (no RR)**				
15.a. Wet Pond #1 (P-BAS-02)	0				0	0	0	0	50	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
15.b. Wet Pond #1 (Coastal Plain) (P-BAS-02)	0				0	0	0	0	45	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
15.c. Wet Pond #2 (P-BAS-02)	0				0	0	0	0	75	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
15.d. Wet Pond #2 (Coastal Plain) (P-BAS-02)	0				0	0	0	0	65	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
16. Manufactured Treatment Devices (no RR)															**16. Manufactured BMP (no RR)**				
16.a. Manufactured Treatment Device-Hydrodynamic	0				0	0	0	0	20	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
16.b. Manufactured Treatment Device-Filtering	0				0	0	0	0	20	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
16.c. Manufactured Treatment Device-Generic	0				0	0	0	0	20	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac)	0.00	AREA CHECK: OK.
TOTAL MIXED OPEN TREATED (ac)	0.00	AREA CHECK: OK.
TOTAL MANAGED TURF AREA TREATED (ac)	0.00	AREA CHECK: OK.
TOTAL PHOSPHORUS REMOVAL REQUIRED ON SITE (lb/yr)	1.18	
TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. A (lb/yr)	0.00	
TOTAL PHOSPHORUS REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	0.00	
TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	0.00	
TOTAL PHOSPHORUS LOAD REDUCTION ACHIEVED IN D.A. A (lb/yr)	0.00	
TOTAL PHOSPHORUS REMAINING AFTER APPLYING BMP LOAD REDUCTIONS IN D.A. A (lb/yr)	0.00	

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	0.00
NITROGEN REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	0.00
TOTAL NITROGEN REMOVED IN D.A. A (lb/yr)	0.00

Drainage Area B

VRRM 4.1, 2024

Drainage Area B Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv	Composite Loading P	Composite Loading N
Forest (acres)					0.00	0.00	0.00	0.00
Mixed Open (acres)					0.00	0.00	0.00	0.00
Managed Turf (acres)					0.00	0.00	0.00	0.00
Impervious Cover (acres)					0.00	0.00	0.00	0.00
				Total	0.00			

CLEAR BMP AREAS

Total Phosphorus Available for Removal in D.A. B (lb/yr) 0.00

Post Development Treatment Volume in D.A. B (ft^3) 0

Stormwater Best Management Practices (RR = Runoff Reduction)

--Select from dropdown lists--

Practice	Runoff Reduction Credit (%)	Mixed Open Credit Area (acres)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft^3)	Runoff Reduction (ft^3)	Remaining Runoff Volume (ft^3)	Total BMP Treatment Volume (ft^3)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed	Nitrogen Removal Efficiency (%)	Nitrogen Load from Upstream Practices (lbs)	Untreated Nitrogen Load to Practice (lbs)	Nitrogen Removed By Practice (lbs)	Remaining Nitrogen Load (lbs)
1. Vegetated Roof (RR)																			
1.a. Vegetated Roof #1 (P-FIL-02)	45					0	0	0	0		0.00	0.00	0.00		0		0.00	0.00	0.00
1.b. Vegetated Roof #2 (P-FIL-02)	60					0	0	0	0		0.00	0.00	0.00		0		0.00	0.00	0.00
2. Rooftop Disconnection (RR)																			
2.a. Simple Disconnection to A/B Soils (P-FIL-01)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.b. Simple Disconnection to C/D Soils (P-FIL-01)	25				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (P-FIL-08)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.d. To Dry Well or French Drain #1, Micro-Infiltration #1 (P-FIL-04)	50				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.e. To Dry Well or French Drain #2, Micro-Infiltration #2 (P-FIL-04)	90				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.f. To Rain Garden #1, Micro-Bioretention #1 (P-FIL-05)	40				0	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
2.g. To Rain Garden #2, Micro-Bioretention #2 (P-FIL-05)	80				0	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
2.h. To Rainwater Harvesting (P-BAS-04)	0				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.i. To Stormwater Planter, Urban Bioretention (P-FIL-05)	40				0	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
3. Permeable Pavement (RR)																			
3.a. Permeable Pavement #1 (P-FIL-03)	45				0	0	0	0	25	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
3.b. Permeable Pavement #2 (P-FIL-03)	75					0	0	0	25		0.00	0.00	0.00		25		0.00	0.00	0.00
4. Grass Channel (RR)																			
4.a. Grass Channel A/B Soils (P-CNV-01)	20				0	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.b. Grass Channel C/D Soils (P-CNV-01)	10				0	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.c. Grass Channel with Compost Amended Soils as per specs (P-FIL-08)	20				0	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
5. Dry Swale (RR)																			
5.a. Dry Swale #1 (P-CNV-02)	40				0	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
5.b. Dry Swale #2 (P-CNV-02)	60				0	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
6. Bioretention (RR)																			
6.a. Bioretention #1 or Micro-Bioretention #1 or Urban Bioretention (P-FIL-05)	40				0	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
6.b. Bioretention #2 or Micro-Bioretention #2 (P-FIL-05)	80				0	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
7. Infiltration (RR)																			
7.a. Infiltration #1 (P-FIL-04)	50				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
7.b. Infiltration #2 (P-FIL-04)	90				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
8. Extended Detention Pond (RR)																			
8.a. ED #1 (P-BAS-03)	0				0	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
8.b. ED #2 (P-BAS-03)	15				0	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
9. Sheetflow to Filter/Open Space (RR)																			
9.a. Sheetflow to Conservation Area, A/B Soils (P-FIL-07)	75				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
9.b. Sheetflow to Conservation Area, C/D Soils (P-FIL-07)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
9.c. Sheetflow to Vegetated Filter Strip, A Soils or Compost Amended B/C/D Soils (Spec P-FIL-07 & P-FIL-08)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
10. Regenerative Stormwater Conveyance																			
10.a. Regenerative Stormwater Conveyance (P CNV-04)	0				0	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
10.b. Regenerative Stormwater Conveyance (P-CNV-04)	0				0	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
11. Tree BMP																			
11.a. Trees over Pervious, A/B (P-FIL-09)	16				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
11.b. Trees over Pervious, C/D (P-FIL-09)	12				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
11.c. Trees over Impervious (P-FIL-09)	3.5				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac)	0.00	AREA CHECK: OK.
TOTAL MIXED OPEN TREATED (ac)	0.00	AREA CHECK: OK.
TOTAL MANAGED TURF AREA TREATED (ac)	0.00	AREA CHECK: OK.
TOTAL RUNOFF REDUCTION IN D.A. B (ft^3)	0	
TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. B (lb/yr)	0.00	
TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. B (lb/yr)	0.00	
TOTAL PHOSPHORUS REMAINING AFTER APPLYING RUNOFF REDUCTION PRACTICES IN D.A. B (lb/yr)	0.00	

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

TOTAL RUNOFF REDUCTION IN D.A. B (ft^3)	0
NITROGEN REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. B (lb/yr)	0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE CALCULATIONS (Information Only)

Practice	Runoff Reduction Credit (%)	Mixed Open Credit Area (acres)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft^3)	Runoff Reduction (ft^3)	Remaining Runoff Volume (ft^3)	Total BMP Treatment Volume (ft^3)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed	Nitrogen Removal Efficiency (%)	Nitrogen Load from Upstream Practices (lbs)	Untreated Nitrogen Load to Practice (lbs)	Nitrogen Removed By Practice (lbs)	Remaining Nitrogen Load (lbs)
12. Wet Swale (no RR)															**12. Wet Swale (Coastal Plain) (no RR)**				
12.a. Wet Swale #1 (P-CNV-03)	0				0	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
12.b. Wet Swale #2 (P-CNV-03)	0				0	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
13. Filtering Practices (no RR)															**13. Filtering Practices (no RR)**				
13.a.Filtering Practice #1 (P-FIL-06)	0				0	0	0	0	60	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
13.b. Filtering Practice #2 (P-FIL-06)	0				0	0	0	0	65	0.00	0.00	0.00	0.00		45	0.00	0.00	0.00	0.00
14. Constructed Wetland (no RR)															**14. Constructed Wetland (no RR)**				
14.a.Constructed Wetland #1 (P-BAS-01)	0				0	0	0	0	50	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
14.b. Constructed Wetland #2 (P-BAS-01)	0				0	0	0	0	75	0.00	0.00	0.00	0.00		55	0.00	0.00	0.00	0.00
15. Wet Ponds (no RR)															**15. Wet Ponds (no RR)**				
15.a. Wet Pond #1 (P-BAS-02)	0				0	0	0	0	50	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
15.b. Wet Pond #1 (Coastal Plain) (P-BAS-02)	0				0	0	0	0	45	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
15.c. Wet Pond #2 (P-BAS-02)	0				0	0	0	0	75	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
15.d. Wet Pond #2 (Coastal Plain) (P-BAS-02)	0				0	0	0	0	65	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
16. Manufactured Treatment Devices (no RR)															**16. Manufactured BMP (no RR)**				
16.a. Manufactured Treatment Device-Hydrodynamic	0				0	0	0	0		0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
16.b. Manufactured Treatment Device-Filtering	0				0	0	0	0		0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
16.c. Manufactured Treatment Device-Generic	0				0	0	0	0		0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac)	0.00	AREA CHECK: OK.
TOTAL MIXED OPEN TREATED (ac)	0.00	AREA CHECK: OK.
TOTAL MANAGED TURF AREA TREATED (ac)	0.00	AREA CHECK: OK.
TOTAL PHOSPHORUS REMOVAL REQUIRED ON SITE (lb/yr)	1.18	
TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. B (lb/yr)	0.00	
TOTAL PHOSPHORUS REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. B (lb/yr)	0.00	
TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. B (lb/yr)	0.00	
TOTAL PHOSPHORUS LOAD REDUCTION ACHIEVED IN D.A. B (lb/yr)	0.00	
TOTAL PHOSPHORUS REMAINING AFTER APPLYING BMP LOAD REDUCTIONS IN D.A. B (lb/yr)	0.00	

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. B (lb/yr)	0.00
NITROGEN REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. B (lb/yr)	0.00
TOTAL NITROGEN REMOVED IN D.A. B (lb/yr)	0.00

Drainage Area C

VRRM 4.1, 2024

Drainage Area C Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv	Composite Loading P	Composite Loading N
Forest (acres)					0.00	0.00	0.00	0.00
Mixed Open (acres)					0.00	0.00	0.00	0.00
Managed Turf (acres)					0.00	0.00	0.00	0.00
Impervious Cover (acres)					0.00	0.00	0.00	0.00
				Total	0.00			

CLEAR BMP AREAS

Total Phosphorus Available for Removal in D.A. C (lb/yr) 0.00

Post Development Treatment Volume in D.A. C (ft^3) 0

Stormwater Best Management Practices (RR = Runoff Reduction)

--Select from dropdown lists--

Practice	Runoff Reduction Credit (%)	Mixed Open Credit Area (acres)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft^3)	Runoff Reduction (ft^3)	Remaining Runoff Volume (ft^3)	Total BMP Treatment Volume (ft^3)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed	Nitrogen Removal Efficiency (%)	Nitrogen Load from Upstream Practices (lbs)	Untreated Nitrogen Load to Practice (lbs)	Nitrogen Removed By Practice (lbs)	Remaining Nitrogen Load (lbs)
1. Vegetated Roof (RR)																			
1.a. Vegetated Roof #1 (P-FIL-02)	45					0	0	0	0		0.00	0.00	0.00		0		0.00	0.00	0.00
1.b. Vegetated Roof #2 (P-FIL-02)	60					0	0	0	0		0.00	0.00	0.00		0		0.00	0.00	0.00
2. Rooftop Disconnection (RR)																			
2.a. Simple Disconnection to A/B Soils (P-FIL-01)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.b. Simple Disconnection to C/D Soils (P-FIL-01)	25				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (P-FIL-08)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.d. To Dry Well or French Drain #1, Micro-Infiltration #1 (P-FIL-04)	50				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.e. To Dry Well or French Drain #2, Micro-Infiltration #2 (P-FIL-04)	90				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.f. To Rain Garden #1, Micro-Bioretention #1 (P-FIL-05)	40				0	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
2.g. To Rain Garden #2, Micro-Bioretention #2 (P-FIL-05)	80				0	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
2.h. To Rainwater Harvesting (P-BAS-04)	0				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.i. To Stormwater Planter, Urban Bioretention (P-FIL-05)	40				0	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
3. Permeable Pavement (RR)																			
3.a. Permeable Pavement #1 (P-FIL-03)	45				0	0	0	0	25	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
3.b. Permeable Pavement #2 (P-FIL-03)	75					0	0	0	25		0.00	0.00	0.00		25		0.00	0.00	0.00
4. Grass Channel (RR)																			
4.a. Grass Channel A/B Soils (P-CNV-01)	20				0	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.b. Grass Channel C/D Soils (P-CNV-01)	10				0	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.c. Grass Channel with Compost Amended Soils as per specs (P-FIL-08)	20				0	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
5. Dry Swale (RR)																			
5.a. Dry Swale #1 (P-CNV-02)	40				0	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
5.b. Dry Swale #2 (P-CNV-02)	60				0	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
6. Bioretention (RR)																			
6.a. Bioretention #1 or Micro-Bioretention #1 or Urban Bioretention (P-FIL-05)	40				0	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
6.b. Bioretention #2 or Micro-Bioretention #2 (P-FIL-05)	80				0	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
7. Infiltration (RR)																			
7.a. Infiltration #1 (P-FIL-04)	50				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
7.b. Infiltration #2 (P-FIL-04)	90				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
8. Extended Detention Pond (RR)																			
8.a. ED #1 (P-BAS-03)	0				0	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
8.b. ED #2 (P-BAS-03)	15				0	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
9. Sheetflow to Filter/Open Space (RR)																			
9.a. Sheetflow to Conservation Area, A/B Soils (P-FIL-07)	75				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
9.b. Sheetflow to Conservation Area, C/D Soils (P-FIL-07)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
9.c. Sheetflow to Vegetated Filter Strip, A Soils or Compost Amended B/C/D Soils (Spec P-FIL-07 & P-FIL-08)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
10. Regenerative Stormwater Conveyance																			
10.a. Regenerative Stormwater Conveyance (P CNV-04)	0				0	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
10.b. Regenerative Stormwater Conveyance (P-CNV-04)	0				0	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
11. Tree BMP																			
11.a. Trees over Pervious, A/B (P-FIL-09)	16				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
11.b. Trees over Pervious, C/D (P-FIL-09)	12				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
11.c. Trees over Impervious (P-FIL-09)	3.5				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac)	0.00	AREA CHECK: OK.
TOTAL MIXED OPEN TREATED (ac)	0.00	AREA CHECK: OK.
TOTAL MANAGED TURF AREA TREATED (ac)	0.00	AREA CHECK: OK.
TOTAL RUNOFF REDUCTION IN D.A. C (ft3)	0	
TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. C (lb/yr)	0.00	
TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. C (lb/yr)	0.00	
TOTAL PHOSPHORUS REMAINING AFTER APPLYING RUNOFF REDUCTION PRACTICES IN D.A. C (lb/yr)	0.00	

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

TOTAL RUNOFF REDUCTION IN D.A. C (ft^3)	0
NITROGEN REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. C (lb/yr)	0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE CALCULATIONS (Information Only)

Practice	Runoff Reduction Credit (%)	Mixed Open Credit Area (acres)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft^3)	Runoff Reduction (ft^3)	Remaining Runoff Volume (ft^3)	Total BMP Treatment Volume (ft^3)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed	Nitrogen Removal Efficiency (%)	Nitrogen Load from Upstream Practices (lbs)	Untreated Nitrogen Load to Practice (lbs)	Nitrogen Removed By Practice (lbs)	Remaining Nitrogen Load (lbs)
12. Wet Swale (no RR)															**12. Wet Swale (Coastal Plain) (no RR)**				
12.a. Wet Swale #1 (P-CNV-03)	0				0	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
12.b. Wet Swale #2 (P-CNV-03)	0				0	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
13. Filtering Practices (no RR)															**13. Filtering Practices (no RR)**				
13.a.Filtering Practice #1 (P-FIL-06)	0				0	0	0	0	60	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
13.b. Filtering Practice #2 (P-FIL-06)	0				0	0	0	0	65	0.00	0.00	0.00	0.00		45	0.00	0.00	0.00	0.00
14. Constructed Wetland (no RR)															**14. Constructed Wetland (no RR)**				
14.a.Constructed Wetland #1 (P-BAS-01)	0				0	0	0	0	50	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
14.b. Constructed Wetland #2 (P-BAS-01)	0				0	0	0	0	75	0.00	0.00	0.00	0.00		55	0.00	0.00	0.00	0.00
15. Wet Ponds (no RR)															**15. Wet Ponds (no RR)**				
15.a. Wet Pond #1 (P-BAS-02)	0				0	0	0	0	50	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
15.b. Wet Pond #1 (Coastal Plain) (P-BAS-02)	0				0	0	0	0	45	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
15.c. Wet Pond #2 (P-BAS-02)	0				0	0	0	0	75	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
15.d. Wet Pond #2 (Coastal Plain) (P-BAS-02)	0				0	0	0	0	65	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
16. Manufactured Treatment Devices (no RR)															**16. Manufactured BMP (no RR)**				
16.a. Manufactured Treatment Device-Hydrodynamic	0				0	0	0	0		0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
16.b. Manufactured Treatment Device-Filtering	0				0	0	0	0		0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
16.c. Manufactured Treatment Device-Generic	0				0	0	0	0		0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac)	0.00	AREA CHECK: OK.
TOTAL MIXED OPEN TREATED (ac)	0.00	AREA CHECK: OK.
TOTAL MANAGED TURF AREA TREATED (ac)	0.00	AREA CHECK: OK.
TOTAL PHOSPHORUS REMOVAL REQUIRED ON SITE (lb/yr)	1.18	
TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. C (lb/yr)	0.00	
TOTAL PHOSPHORUS REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. C (lb/yr)	0.00	
TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. C (lb/yr)	0.00	
TOTAL PHOSPHORUS LOAD REDUCTION ACHIEVED IN D.A. C (lb/yr)	0.00	
TOTAL PHOSPHORUS REMAINING AFTER APPLYING BMP LOAD REDUCTIONS IN D.A. C (lb/yr)	0.00	

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. C (lb/yr)	0.00
NITROGEN REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. C (lb/yr)	0.00
TOTAL NITROGEN REMOVED IN D.A. C (lb/yr)	0.00

Drainage Area D

VRRM 4.1, 2024

Drainage Area D Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv	Composite Loading P	Composite Loading N
Forest (acres)					0.00	0.00	0.00	0.00
Mixed Open (acres)					0.00	0.00	0.00	0.00
Managed Turf (acres)					0.00	0.00	0.00	0.00
Impervious Cover (acres)					0.00	0.00	0.00	0.00
				Total	0.00			

CLEAR BMP AREAS

Total Phosphorus Available for Removal in D.A. D (lb/yr): 0.00
Post Development Treatment Volume in D.A. D (ft3): 0

Stormwater Best Management Practices (RR = Runoff Reduction)

--Select from dropdown lists--

Practice	Runoff Reduction Credit (%)	Mixed Open Credit Area (acres)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft^3)	Runoff Reduction (ft^3)	Remaining Runoff Volume (ft^3)	Total BMP Treatment Volume (ft^3)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed	Nitrogen Removal Efficiency (%)	Nitrogen Load from Upstream Practices (lbs)	Untreated Nitrogen Load to Practice (lbs)	Nitrogen Removed By Practice (lbs)	Remaining Nitrogen Load (lbs)
1. Vegetated Roof (RR)															**1. Vegetated Roof (RR)**				
1.a. Vegetated Roof #1 (P-FIL-02)	45					0	0	0	0		0.00	0.00	0.00		0		0.00	0.00	0.00
1.b. Vegetated Roof #2 (P-FIL-02)	60					0	0	0	0		0.00	0.00	0.00		0		0.00	0.00	0.00
2. Rooftop Disconnection (RR)															**2. Rooftop Disconnection (RR)**				
2.a. Simple Disconnection to A/B Soils (P-FIL-01)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.b. Simple Disconnection to C/D Soils (P-FIL-01)	25				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (P-FIL-08)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.d. To Dry Well or French Drain #1, Micro-Infiltration #1 (P-FIL-04)	50				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.e. To Dry Well or French Drain #2, Micro-Infiltration #2 (P-FIL-04)	90				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.f. To Rain Garden #1, Micro-Bioretention #1 (P-FIL-05)	40				0	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
2.g. To Rain Garden #2, Micro-Bioretention #2 (P-FIL-05)	80				0	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
2.h. To Rainwater Harvesting (P-BAS-04)	0				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.i. To Stormwater Planter, Urban Bioretention (P-FIL-05)	40				0	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
3. Permeable Pavement (RR)															**3. Permeable Pavement (RR)**				
3.a. Permeable Pavement #1 (P-FIL-03)	45				0	0	0	0	25	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
3.b. Permeable Pavement #2 (P-FIL-03)	75					0	0	0	25		0.00	0.00	0.00		25		0.00	0.00	0.00
4. Grass Channel (RR)															**4. Grass Channel (RR)**				
4.a. Grass Channel A/B Soils (P-CNV-01)	20				0	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.b. Grass Channel C/D Soils (P-CNV-01)	10				0	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.c. Grass Channel with Compost Amended Soils as per specs (P-FIL-08)	20				0	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
5. Dry Swale (RR)															**5. Dry Swale (RR)**				
5.a. Dry Swale #1 (P-CNV-02)	40				0	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
5.b. Dry Swale #2 (P-CNV-02)	60				0	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
6. Bioretention (RR)															**6. Bioretention (RR)**				
6.a. Bioretention #1 or Micro-Bioretention #1 or Urban Bioretention (P-FIL-05)	40				0	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
6.b. Bioretention #2 or Micro-Bioretention #2 (P-FIL-05)	80				0	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
7. Infiltration (RR)															**7. Infiltration (RR)**				
7.a. Infiltration #1 (P-FIL-04)	50				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
7.b. Infiltration #2 (P-FIL-04)	90				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
8. Extended Detention Pond (RR)															**8. Extended Detention Pond (RR)**				
8.a. ED #1 (P-BAS-03)	0				0	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
8.b. ED #2 (P-BAS-03)	15				0	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
9. Sheetflow to Filter/Open Space (RR)															**9. Sheetflow to Filter/Open Space (RR)**				
9.a. Sheetflow to Conservation Area, A/B Soils (P-FIL-07)	75				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
9.b. Sheetflow to Conservation Area, C/D Soils (P-FIL-07)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
9.c. Sheetflow to Vegetated Filter Strip, A Soils or Compost Amended B/C/D Soils (Spec P-FIL-07 & P-FIL-08)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
10. Regenerative Stormwater Conveyance															**10. Regenerative Stormwater Conveyance**				
10.a. Regenerative Stormwater Conveyance (P-CNV-04)	0				0	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
10.b. Regenerative Stormwater Conveyance (P-CNV-04)	0				0	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
11. Tree BMP															**11. Tree BMP**				
11.a. Trees over Pervious, A/B (P-FIL-09)	16				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
11.b. Trees over Pervious, C/D (P-FIL-09)	12				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
11.c. Trees over Impervious (P-FIL-09)	3.5				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac): 0.00 — AREA CHECK: OK.
TOTAL MIXED OPEN TREATED (ac): 0.00 — AREA CHECK: OK.
TOTAL MANAGED TURF AREA TREATED (ac): 0.00 — AREA CHECK: OK.
TOTAL RUNOFF REDUCTION IN D.A. D (ft3): 0

TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. D (lb/yr): 0.00
TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. D (lb/yr): 0.00
TOTAL PHOSPHORUS REMAINING AFTER APPLYING RUNOFF REDUCTION PRACTICES IN D.A. D (lb/yr): 0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

TOTAL RUNOFF REDUCTION IN D.A. D (ft3): 0
NITROGEN REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. D (lb/yr): 0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE CALCULATIONS (Information Only)

12. Wet Swale (no RR)															**12. Wet Swale (Coastal Plain) (no RR)**				
12.a. Wet Swale #1 (P-CNV-03)	0				0	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
12.b. Wet Swale #2 (P-CNV-03)	0				0	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
13. Filtering Practices (no RR)															**13. Filtering Practices (no RR)**				
13.a.Filtering Practice #1 (P-FIL-06)	0				0	0	0	0	60	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
13.b. Filtering Practice #2 (P-FIL-06)	0				0	0	0	0	65	0.00	0.00	0.00	0.00		45	0.00	0.00	0.00	0.00
14. Constructed Wetland (no RR)															**14. Constructed Wetland (no RR)**				
14.a.Constructed Wetland #1 (P-BAS-01)	0				0	0	0	0	50	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
14.b. Constructed Wetland #2 (P-BAS-01)	0				0	0	0	0	75	0.00	0.00	0.00	0.00		55	0.00	0.00	0.00	0.00
15. Wet Ponds (no RR)															**15. Wet Ponds (no RR)**				
15.a. Wet Pond #1 (P-BAS-02)	0				0	0	0	0	50	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
15.b. Wet Pond #1 (Coastal Plain) (P-BAS-02)	0				0	0	0	0	45	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
15.c. Wet Pond #2 (P-BAS-02)	0				0	0	0	0	75	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
15.d. Wet Pond #2 (Coastal Plain) (P-BAS-02)	0				0	0	0	0	65	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
16. Manufactured Treatment Devices (no RR)															**16. Manufactured BMP (no RR)**				
16.a. Manufactured Treatment Device-Hydrodynamic	0				0	0	0	0		0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
16.b. Manufactured Treatment Device-Filtering	0				0	0	0	0		0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
16.c. Manufactured Treatment Device-Generic	0				0	0	0	0		0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac): 0.00 — AREA CHECK: OK.
TOTAL MIXED OPEN TREATED (ac): 0.00 — AREA CHECK: OK.
TOTAL MANAGED TURF AREA TREATED (ac): 0.00 — AREA CHECK: OK.

TOTAL PHOSPHORUS REMOVAL REQUIRED ON SITE (lb/yr): 1.18

TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. D (lb/yr): 0.00
TOTAL PHOSPHORUS REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. D (lb/yr): 0.00
TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. D (lb/yr): 0.00
TOTAL PHOSPHORUS LOAD REDUCTION ACHIEVED IN D.A. D (lb/yr): 0.00
TOTAL PHOSPHORUS REMAINING AFTER APPLYING BMP LOAD REDUCTIONS IN D.A. D (lb/yr): 0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. D (lb/yr): 0.00
NITROGEN REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. D (lb/yr): 0.00
TOTAL NITROGEN REMOVED IN D.A. D (lb/yr): 0.00

Drainage Area E

VRRM 4.1, 2024

Drainage Area E Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv	Composite Loading P	Composite Loading N
Forest (acres)					0.00	0.00	0.00	0.00
Mixed Open (acres)					0.00	0.00	0.00	0.00
Managed Turf (acres)					0.00	0.00	0.00	0.00
Impervious Cover (acres)					0.00	0.00	0.00	0.00
				Total	0.00			

CLEAR BMP AREAS

Total Phosphorus Available for Removal in D.A. E (lb/yr) 0.00
Post Development Treatment Volume in D.A. E (ft3) 0

Stormwater Best Management Practices (RR = Runoff Reduction)

--Select from dropdown lists--

Practice	Runoff Reduction Credit (%)	Mixed Open Credit Area (acres)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft^3)	Runoff Reduction (ft^3)	Remaining Runoff Volume (ft^3)	Total BMP Treatment Volume (ft^3)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed	Nitrogen Removal Efficiency (%)	Nitrogen Load from Upstream Practices (lbs)	Untreated Nitrogen Load to Practice (lbs)	Nitrogen Removed By Practice (lbs)	Remaining Nitrogen Load (lbs)
1. Vegetated Roof (RR)															**1. Vegetated Roof (RR)**				
1.a. Vegetated Roof #1 (P-FIL-02)	45					0	0	0	0		0.00	0.00	0.00		0		0.00	0.00	0.00
1.b. Vegetated Roof #2 (P-FIL-02)	60					0	0	0	0		0.00	0.00	0.00		0		0.00	0.00	0.00
2. Rooftop Disconnection (RR)															**2. Rooftop Disconnection (RR)**				
2.a. Simple Disconnection to A/B Soils (P-FIL-01)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.b. Simple Disconnection to C/D Soils (P-FIL-01)	25				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (P-FIL-08)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.d. To Dry Well or French Drain #1, Micro-Infiltration #1 (P-FIL-04)	50				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.e. To Dry Well or French Drain #2, Micro-Infiltration #2 (P-FIL-04)	90				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.f. To Rain Garden #1, Micro-Bioretention #1 (P-FIL-05)	40				0	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
2.g. To Rain Garden #2, Micro-Bioretention #2 (P-FIL-05)	80				0	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
2.h. To Rainwater Harvesting (P-BAS-04)	0				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.i. To Stormwater Planter, Urban Bioretention (P-FIL-05)	40				0	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
3. Permeable Pavement (RR)															**3. Permeable Pavement (RR)**				
3.a. Permeable Pavement #1 (P-FIL-03)	45				0	0	0	0	25	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
3.b. Permeable Pavement #2 (P-FIL-03)	75					0	0	0	25		0.00	0.00	0.00		25		0.00	0.00	0.00
4. Grass Channel (RR)															**4. Grass Channel (RR)**				
4.a. Grass Channel A/B Soils (P-CNV-01)	20				0	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.b. Grass Channel C/D Soils (P-CNV-01)	10				0	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.c. Grass Channel with Compost Amended Soils as per specs (P-FIL-08)	20				0	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
5. Dry Swale (RR)															**5. Dry Swale (RR)**				
5.a. Dry Swale #1 (P-CNV-02)	40				0	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
5.b. Dry Swale #2 (P-CNV-02)	60				0	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
6. Bioretention (RR)															**6. Bioretention (RR)**				
6.a. Bioretention #1 or Micro-Bioretention #1 or Urban Bioretention (P-FIL-05)	40				0	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
6.b. Bioretention #2 or Micro-Bioretention #2 (P-FIL-05)	80				0	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
7. Infiltration (RR)															**7. Infiltration (RR)**				
7.a. Infiltration #1 (P-FIL-04)	50				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
7.b. Infiltration #2 (P-FIL-04)	90				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
8. Extended Detention Pond (RR)															**8. Extended Detention Pond (RR)**				
8.a. ED #1 (P-BAS-03)	0				0	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
8.b. ED #2 (P-BAS-03)	15				0	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
9. Sheetflow to Filter/Open Space (RR)															**9. Sheetflow to Filter/Open Space (RR)**				
9.a. Sheetflow to Conservation Area, A/B Soils (P-FIL-07)	75				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
9.b. Sheetflow to Conservation Area, C/D Soils (P-FIL-07)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
9.c. Sheetflow to Vegetated Filter Strip, A Soils or Compost Amended B/C/D Soils (Spec P-FIL-07 & P-FIL-08)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
10. Regenerative Stormwater Conveyance															**10. Regenerative Stormwater Conveyance**				
10.a. Regenerative Stormwater Conveyance (P-CNV-04)	0				0	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
10.b. Regenerative Stormwater Conveyance (P-CNV-04)	0				0	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
11. Tree BMP															**11. Tree BMP**				
11.a. Trees over Pervious, A/B (P-FIL-09)	16				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
11.b. Trees over Pervious, C/D (P-FIL-09)	12				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
11.c. Trees over Impervious (P-FIL-09)	3.5				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac) 0.00 AREA CHECK: OK.
TOTAL MIXED OPEN TREATED (ac) 0.00 AREA CHECK: OK.
TOTAL MANAGED TURF AREA TREATED (ac) 0.00 AREA CHECK: OK.
TOTAL RUNOFF REDUCTION IN D.A. E (ft3) 0

TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. E (lb/yr) 0.00
TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. E (lb/yr) 0.00
TOTAL PHOSPHORUS REMAINING AFTER APPLYING RUNOFF REDUCTION PRACTICES IN D.A. E (lb/yr) 0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

TOTAL RUNOFF REDUCTION IN D.A. E (ft3) 0
NITROGEN REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. E (lb/yr) 0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE CALCULATIONS (Information Only)

12. Wet Swale (no RR)															**12. Wet Swale (Coastal Plain) (no RR)**				
12.a. Wet Swale #1 (P-CNV-03)	0				0	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
12.b. Wet Swale #2 (P-CNV-03)	0				0	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
13. Filtering Practices (no RR)															**13. Filtering Practices (no RR)**				
13.a.Filtering Practice #1 (P-FIL-06)	0				0	0	0	0	60	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
13.b. Filtering Practice #2 (P-FIL-06)	0				0	0	0	0	65	0.00	0.00	0.00	0.00		45	0.00	0.00	0.00	0.00
14. Constructed Wetland (no RR)															**14. Constructed Wetland (no RR)**				
14.a.Constructed Wetland #1 (P-BAS-01)	0				0	0	0	0	50	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
14.b. Constructed Wetland #2 (P-BAS-01)	0				0	0	0	0	75	0.00	0.00	0.00	0.00		55	0.00	0.00	0.00	0.00
15. Wet Ponds (no RR)															**15. Wet Ponds (no RR)**				
15.a. Wet Pond #1 (P-BAS-02)	0				0	0	0	0	50	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
15.b. Wet Pond #1 (Coastal Plain) (P-BAS-02)	0				0	0	0	0	45	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
15.c. Wet Pond #2 (P-BAS-02)	0				0	0	0	0	75	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
15.d. Wet Pond #2 (Coastal Plain) (P-BAS-02)	0				0	0	0	0	65	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
16. Manufactured Treatment Devices (no RR)															**16. Manufactured BMP (no RR)**				
16.a. Manufactured Treatment Device-Hydrodynamic	0				0	0	0	0	20	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
16.b. Manufactured Treatment Device-Filtering	0				0	0	0	0	20	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
16.c. Manufactured Treatment Device-Generic	0				0	0	0	0	20	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac) 0.00 AREA CHECK: OK.
TOTAL MIXED OPEN TREATED (ac) 0.00 AREA CHECK: OK.
TOTAL MANAGED TURF AREA TREATED (ac) 0.00 AREA CHECK: OK.

TOTAL PHOSPHORUS REMOVAL REQUIRED ON SITE (lb/yr) 1.18

TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. E (lb/yr) 0.00
TOTAL PHOSPHORUS REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. E (lb/yr) 0.00
TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. E (lb/yr) 0.00
TOTAL PHOSPHORUS LOAD REDUCTION ACHIEVED IN D.A. E (lb/yr) 0.00
TOTAL PHOSPHORUS REMAINING AFTER APPLYING BMP LOAD REDUCTIONS IN D.A. E (lb/yr) 0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. E (lb/yr) 0.00
NITROGEN REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. E (lb/yr) 0.00
TOTAL NITROGEN REMOVED IN D.A. E (lb/yr) 0.00

Site Results (Water Quality Compliance) VRRM 4.1, 2024

Area Checks	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	AREA CHECK
FOREST (ac)	0.00	0.00	0.00	0.00	0.00	OK.
MIXED OPEN AREA (ac)	0.00	0.00	0.00	0.00	0.00	OK.
MIXED OPEN AREA TREATED (ac)	0.00	0.00	0.00	0.00	0.00	OK.
MANAGED TURF AREA (ac)	0.00	0.00	0.00	0.00	0.00	OK.
MANAGED TURF AREA TREATED (ac)	0.00	0.00	0.00	0.00	0.00	OK.
IMPERVIOUS COVER (ac)	0.00	0.00	0.00	0.00	0.00	OK.
IMPERVIOUS COVER TREATED (ac)	0.00	0.00	0.00	0.00	0.00	OK.
AREA CHECK	OK.	OK.	OK.	OK.	OK.	

Site Treatment Volume (ft^3)	5,510

Runoff Reduction Volume and TP By Drainage Area

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	TOTAL
RUNOFF REDUCTION VOLUME ACHIEVED (ft^3)	0	0	0	0	0	0
TP LOAD AVAILABLE FOR REMOVAL (lb/yr)	0.00	0.00	0.00	0.00	0.00	0.00
TP LOAD REDUCTION ACHIEVED (lb/yr)	0.00	0.00	0.00	0.00	0.00	0.00
TP LOAD REMAINING (lb/yr)	0.00	0.00	0.00	0.00	0.00	0.00
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	0.00	0.00	0.00	0.00	0.00	0.00

Total Phosphorus

FINAL POST-DEVELOPMENT TP LOAD (lb/yr)	4.70
TP LOAD REDUCTION REQUIRED (lb/yr)	1.18
TP LOAD REDUCTION ACHIEVED (lb/yr)	0.00
TP LOAD REMAINING (lb/yr):	4.70
REMAINING TP LOAD REDUCTION REQUIRED (lb/yr):	1.18

Total Nitrogen (For Information Purposes)

POST-DEVELOPMENT LOAD (lb/yr)	21.48
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	0.00
REMAINING POST-DEVELOPMENT NITROGEN LOAD (lb/yr)	21.48

Runoff Volume and Curve Number Calculations,VRRM 4.1, 2024

Enter design storm rainfall depths (in):

1-year storm	2-year storm	10-year storm
0.00	0.00	0.00

Use NOAA Atlas 14 (http://hdsc.nws.noaa.gov/hdsc/pfds/)

***Notes (see below):**

[1] The curve numbers and runoff volumes computed in this spreadsheet for each drainage area are limited in their applicability for determining and demonstrating compliance with water quantity requirements. See VRRM User's Guide and Documentation for additional information.

[2] Runoff Volume (RV) for pre- and post-development drainage areas must be in volumetric units (e.g., acre-feet or cubic feet) when using the Energy Balance Equation. Runoff measured in watershed-inches and shown in the spreadsheet as RV(watershed-inch) can only be used in the Energy Balance Equation when the pre- and post-development drainage areas are equal. Otherwise RV(watershed-inch) must be multiplied by the drainage area.

[3] Adjusted CNs are based on runoff reduction volumes as calculated in D.A. tabs. An alternative CN adjustment calculation for Vegetated Roofs is included in BMP specification No. 5.

Drainage Area Curve Numbers and Runoff Depths*

Drainage Area A		A Soils	B Soils	C Soils	D Soils
Forest -- undisturbed, protected forest or reforested land	Area (acres)	0.00	0.00	0.00	0.00
	CN	30	55	70	77
Mixed Open -- undisturbed/infrequently maintained grass or shrub land	Area (acres)	0.00	0.00	0.00	0.00
	CN	34	59	72	79
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)	0.00	0.00	0.00	0.00
	CN	39	61	74	80
Impervious Cover	Area (acres)	0.00	0.00	0.00	0.00
	CN	98	98	98	98

Total Area (acres):	0.00
Runoff Reduction Volume (ft^3):	0

$CN_{(D.A. A)}$
0

	1-year storm	2-year storm	10-year storm
$RV_{Developed}$ *(watershed-inch)* with no Runoff Reduction*	0.00	0.00	0.00
$RV_{Developed}$ *(watershed-inch)* with Runoff Reduction*	0.00	0.00	0.00
Adjusted CN*	0	0	0

**See Notes above*

Drainage Area B		A Soils	B Soils	C Soils	D Soils
Forest -- undisturbed, protected forest or reforested land	Area (acres)	0.00	0.00	0.00	0.00
	CN	30	55	70	77
Mixed Open -- undisturbed/infrequently maintained grass or shrub land	Area (acres)	0.00	0.00	0.00	0.00
	CN	34	59	72	79
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)	0.00	0.00	0.00	0.00
	CN	39	61	74	80
Impervious Cover	Area (acres)	0.00	0.00	0.00	0.00
	CN	98	98	98	98

Total Area (acres):	0.00
Runoff Reduction Volume (ft^3):	0

$CN_{(D.A. B)}$
0

	1-year storm	2-year storm	10-year storm
$RV_{Developed}$ *(watershed-inch)* with no Runoff Reduction*	0.00	0.00	0.00
$RV_{Developed}$ *(watershed-inch)* with Runoff Reduction*	0.00	0.00	0.00
Adjusted CN*	0	0	0

*See Notes above

Drainage Area C		A Soils	B Soils	C Soils	D Soils
Forest -- undisturbed, protected forest or reforested land	Area (acres)	0.00	0.00	0.00	0.00
	CN	30	55	70	77
Mixed Open -- undisturbed/infrequently maintained grass or shrub land	Area (acres)	0.00	0.00	0.00	0.00
	CN	34	59	72	79
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)	0.00	0.00	0.00	0.00
	CN	39	61	74	80
Impervious Cover	Area (acres)	0.00	0.00	0.00	0.00
	CN	98	98	98	98
					$CN_{(D.A.\ C)}$
					0

	1-year storm	2-year storm	10-year storm
$RV_{Developed}$ *(watershed-inch)* with no Runoff Reduction*	0.00	0.00	0.00
$RV_{Developed}$ *(watershed-inch)* with Runoff Reduction*	0.00	0.00	0.00
Adjusted CN*	0	0	0

Total Area (acres):	0.00
Runoff Reduction Volume (ft^3):	0

*See Notes above

Drainage Area D		A Soils	B Soils	C Soils	D Soils
Forest -- undisturbed, protected forest or reforested land	Area (acres)	0.00	0.00	0.00	0.00
	CN	30	55	70	77
Mixed Open -- undisturbed/infrequently maintained grass or shrub land	Area (acres)	0.00	0.00	0.00	0.00
	CN	34	59	72	79
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)	0.00	0.00	0.00	0.00
	CN	39	61	74	80
Impervious Cover	Area (acres)	0.00	0.00	0.00	0.00
	CN	98	98	98	98
					$CN_{(D.A.\ D)}$
					0

	1-year storm	2-year storm	10-year storm
$RV_{Developed}$ *(watershed-inch)* with no Runoff Reduction*	0.00	0.00	0.00
$RV_{Developed}$ *(watershed-inch)* with Runoff Reduction*	0.00	0.00	0.00
Adjusted CN*	0	0	0

Total Area (acres):	0.00
Runoff Reduction Volume (ft^3):	0

*See Notes above

Drainage Area E		A Soils	B Soils	C Soils	D Soils
Forest -- undisturbed, protected forest or reforested land	Area (acres)	0.00	0.00	0.00	0.00
	CN	30	55	70	77
Mixed Open -- undisturbed/infrequently maintained grass or shrub land	Area (acres)	0.00	0.00	0.00	0.00
	CN	34	59	72	79
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)	0.00	0.00	0.00	0.00
	CN	39	61	74	80
Impervious Cover	Area (acres)	0.00	0.00	0.00	0.00
	CN	98	98	98	98
					$CN_{(D.A.\ E)}$
					0

	1-year storm	2-year storm	10-year storm
$RV_{Developed}$ *(watershed-inch)* with no Runoff Reduction*	0.00	0.00	0.00
$RV_{Developed}$ *(watershed-inch)* with Runoff Reduction*	0.00	0.00	0.00
Adjusted CN*	0	0	0

Total Area (acres):	0.00
Runoff Reduction Volume (ft^3):	0

*See Notes above

.

DEQ Virginia Runoff Reduction Method New Development Compliance Spreadsheet - Version 4.1

BMP Design Specifications List: **2024 Stds & Specs**

Site Summary

Project Title: White Oak Creek - Banister River (030101050103)

Date: 05/28/2025

Site Land Cover Summary

	A soils	B Soils	C Soils	D Soils	Totals	% of Total
Forest (acres)	0.00	0.00	0.00	0.00	0.00	0
Mixed Open (acres)	0.00	12.75	0.00	0.77	13.52	100
Managed Turf (acres)	0.00	0.00	0.00	0.00	0.00	0
Impervious Cover (acres)	0.00	0.00	0.00	0.00	0.00	0
					13.52	100

Site Tv and Land Cover Nutrient Loads

Site Rv	0.11
Treatment Volume (ft^3)	5,510
TP Load (lb/yr)	4.70
TN Load (lb/yr)	21.48

Total TP Load Reduction Required (lb/yr)	1.18

Site Compliance Summary

Total Runoff Volume Reduction (ft^3)	0
Total TP Load Reduction Achieved (lb/yr)	0.00
Total TN Load Reduction Achieved (lb/yr)	0.00
Remaining Post Development TP Load (lb/yr)	4.70
Remaining TP Load Reduction (lb/yr) Required	**1.18**

Drainage Area Summary

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	Total
Forest (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Mixed Open (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Managed Turf (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Impervious Cover (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Total Area (acres)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Constants

Target Rainfall Event (inches)	1.00
Target TP Load (lb/acre/yr)	0.26

Runoff Coefficients (Rv)

	A Soils	B Soils	C Soils	D Soils
Forest	0.02	0.03	0.04	0.05
Mixed Open	0.08	0.11	0.13	0.15
Managed Turf	0.15	0.20	0.22	0.25
Impervious Cover	0.95	0.95	0.95	0.95

Phosphorus Loading Rates (lb/acre/yr)

	A Soils	B Soils	C Soils	D Soils
Forest	0.042	0.062	0.083	0.104
Mixed Open	0.239	0.341	0.385	0.454
Managed Turf	0.508	0.677	0.745	0.846
Impervious Cover	0.858	0.858	0.858	0.858

Nitrogen Loading Rates (lb/acre/yr)

	A Soils	B Soils	C Soils	D Soils
Forest	0.702	1.054	1.405	1.756
Mixed Open	1.091	1.559	1.760	2.075
Managed Turf	5.405	7.207	7.928	9.009
Impervious Cover	12.334	12.334	12.334	12.334

Practice	Runoff Reduction Credit (%)	Phosphorus Removal Efficiency (%)	Nitrogen Removal Efficiency (%)
1. Vegetated Roof (RR)			
1.a. Vegetated Roof #1 (Spec #5)	45	0	0

1.b. Vegetated Roof #2 (Spec #5)	60	0	0

2. Rooftop Disconnection (RR)			
2.a. Simple Disconnection to A/B Soils (Spec #1)	50	0	0
2.b. Simple Disconnection to C/D Soils (Spec #1)	25	0	0
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (Spec #4)	50	0	0
2.d. To Dry Well or French Drain #1, Micro-Infilration #1 (Spec #8)	50	25	15
2.e. To Dry Well or French Drain #2, Micro-Infiltration #2 (Spec #8)	90	25	15
2.f. To Rain Garden #1, Micro-Bioretention #1 (Spec #9)	40	25	40
2.g. To Rain Garden #2, Micro-Bioretention #2 (Spec #9)	80	50	60
2.h. To Rainwater Harvesting (Spec #6)	Enter on DA Tab	0	0
2.i. To Stormwater Planter, Urban Bioretention (Spec #9, Appendix A)	40	25	40

3. Permeable Pavement (RR)			
3.a. Permeable Pavement #1 (Spec #7)	45	25	25
3.b. Permeable Pavement #2 (Spec #7)	75	25	25

4. Grass Channel (RR)			
4.a. Grass Channel A/B Soils (Spec #3)	20	15	20
4.b. Grass Channel C/D Soils (Spec #3)	10	15	20

4.c. Grass Channel with Compost Amended Soils as per specs (see Spec #4)	20	15	20
5. Dry Swale (RR)			
5.a. Dry Swale #1 (Spec #10)	40	20	25
5.b. Dry Swale #2 (Spec #10)	60	40	35
6. Bioretention (RR)			
6.a. Bioretention #1 or Micro-Bioretention #1 or Urban Bioretention (Spec #9)	40	25	40
6.b. Bioretention #2 or Micro-Bioretention #2 (Spec #9)	80	50	60
7. Infiltration (RR)			
7.a. Infiltration #1 (Spec #8)	50	25	15
7.b. Infiltration #2 (Spec #8)	90	25	15
8. Extended Detention Pond (RR)			
8.a. ED #1 (Spec #15)	0	15	10
8.b. ED #2 (Spec #15)	15	15	10
9. Sheetflow to Filter/Open Space (RR)			
9.a. Sheetflow to Conservation Area, A/B Soils (Spec #2)	75	0	0
9.b. Sheetflow to Conservation Area, C/D Soils (Spec #2)	50	0	0
9.c. Sheetflow to Vegetated Filter Strip, A Soils or Compost Amended B/C/D Soils (Spec #2 & #4)	50	0	0

10. Regenerative Stormwater Conveyance (RR)			
10.a. Regenerative Stormwater Conveyance (P-CNV-04)	0	20	25
10.b. Regenerative Stormwater Conveyance (P-CNV-04)	0	40	35

11. Trees (RR)			
11.a. Trees over Pervious, A/B (P-FIL-09)	16	0	0
11.b. Trees over Pervious, C/D (P-FIL-09)	12	0	0
11.c. Trees over Impervious (P-FIL-09)	3.5	0	0

12. Wet Swale (no RR)			
12.a. Wet Swale #1 (Spec #11)	0	20	25
12.b. Wet Swale #2 (Spec #11)	0	40	35

13. Filtering Practices (no RR)			
13.a.Filtering Practice #1 (Spec #12)	0	60	30
13.b. Filtering Practice #2 (Spec #12)	0	65	45

14. Constructed Wetland (no RR)			
14.a.Constructed Wetland #1 (Spec #13)	0	50	25
14.b. Constructed Wetland #2 (Spec #13)	0	75	55

15. Wet Ponds (no RR)			
15.a. Wet Pond #1 (Spec #14)	0	50	30
15.b. Wet Pond #1 (Coastal Plain) (Spec #14)	0	45	20
15.c. Wet Pond #2 (Spec #14)	0	75	40
15.d. Wet Pond #2 (Coastal Plain) (Spec #14)	0	65	30

16. Manufactured Treatment Devices (no RR)			
16.a. Manufactured Treatment Device-Hydrodynamic	0	Enter on DA Tab	Enter on DA Tab
16.b. Manufactured Treatment Device-Filtering	0	Enter on DA Tab	Enter on DA Tab
16.c. Manufactured Treatment Device-Generic	0	Enter on DA Tab	Enter on DA Tab

Curve Numbers (CN)

	A Soils	B Soils	C Soils	D Soils
Forest	30	55	70	77
Mixed Open	34	59	72	79
Managed Turf	39	61	74	80
Impervious	98	98	98	98

Version 2.8 - June 2014 - 2011 BMP Stds & Specs

1 Fixed summary sheet - totals /percentage column fixed
2 Corrected nitrogen efficiency percentages
3 Corrected the Rv value in column J for managed turf
4 Checked and revised runoff reduction credit values assigned

Version 3.0 - 2011 and draft 2013 BMP Stds & Specs

General

1 Added error checks and user prompts to Site tab, DA tabs, and Runoff Volume and CN tab for data input errors.
2 Various format changes thoughout the spreadsheet.
3 Combined 2011 and 2013 BMP spreadsheets into one spreadsheet with a user selection option included in Site tab (row 2).
4 User input cell color changed from cyan blue to green; calculation cells changed from mid-grey to light grey; and added final result cell i

Site tab

5 Locked annual rainfall of 43 inches for use throughout Virginia since regulatory site based TP load limit is based on this value.
6 Corrected error in formula for summation of nitrogen removal from runoff reduction practices for each Drainage Area tab (cell V79).
7 Added button and shortcut (Ctrl+Shift+R) to clear user inputs from all worksheets.
8 Added shortcut (Ctrl+Shift+D) to clear land cover data from Site tab.
9 Added data entry instruction when user inputs blank (row 8).
10 Moved and revised TP load reduction requirement (now in blue) to columns A to H, rows 27-30.

D.A. tabs

11 Added MTDs: Hydrodynamic, Filtering, Generic.
12 Added "Total BMP Treatment Volume (ft^3)" column.
13 Rearranged previous Turf and Impervious input rows to adjacent cells in same row so each practice now located in one row.
14 Consolidated BMP Practice heading and added (RR or no RR label) to each practice to identify those with and without Runoff Reductio
15 Added " Total Phosphorus Available for Removal in D.A. _ (lbs)".
16 Added button to clear BMP credit areas entered for each practice.
17 Added user prompts to assist with user-input Rainwater Harvesting runoff reduction credit, and MTDs.
18 Renamed Credit and Phosphorus/Nitrogen Efficiency column headers to Runoff Removal Credit and Phosphorus/Nitrogen Removal Ef
19 Removed "RR" from Column headings referring to runoff volume and TP load from upstream practices (which may be RR or non-RR p
20 Renamed "10. Wet Swale (Coastal Plain)" to "10. Wet Swale" in BMP heading in order to improve clarity. The practice is well suited for

21 Renamed "14. Manufactured BMPs" section heading to "14. Manufactured Treatment Device"s for consistency with Virginia BMP Clear

22 Added "Micro-Bioretention #1" and "Micro-Bioretention #2" to Bioretention headings (6.a and 6.b on tab, respectively) from Spec 9.

23 Replaced zero values from all data entry cells with blank cells, blocked out calculation and data entry cells where input or calculations a

Water Quality Compliance tab

24 Optimized and reorganized for improved information output.

25 Added "Runoff Reduction Volume and TP By Drainage Area".

26 Made correction to site volume carried forward from Site tab. (08/22/2017)

Runoff Volume and CN tab

27 Reorganized and renamed Channel and Flood Protection tab to Runoff Volume and CN to more accurately reflect information provided

28 Added user notes regarding limitations of Runoff Volume and CN tab for water quantity calculations.

29 Renamed $CN_{weighted}$ to $CN_{(D.A.\ X)}$ for the CNs based on soils and land cover types for each drainage area

Summary tab

30 Added "Print Preview" button.

31 Fixed runtime error in Summary tab update macro.

32 Added "BMP Treatment Volume", "TP Load from Upstream practice", "TP Removed" and "TP remaining" columns to Summary tab.

33 Optimized macro efficiency and eliminated screen updating/flashing during macros.

34 Corrected Summary tab macro -Turf missing routine missing "<>".

35 Added Error Summary Table to Summary tab (appears only if errors on Site tab or Drainage Area tabs are present)

36 Expanded and improved Runoff Coefficient and CN calculation section.

37 Macro glitch with MS Excel 2016 corrected. (08/22/2017)

38 Added Project Title and Date from Site tab. (8/22/2017)

Version 4.0 - 2023 (pre-release)

General

1 Created a new tab called Constants and moved all constant values to that tab. Constants in all other tabs reference this new sheet.

2 Separated "Forest/Open Space" category into "Forest" and "Mixed Open" - See VRRM User Guide for additional details.

3 All nutrient calculations were updated to utilize loading rates instead of the SIMPLE Method used in previous versions of the spreadshe

4 The option for use of the 2011 Specifications was removed from the spreadsheet. Specifications updated with Virginia Stormwater Har

Site tab

5 Post-Development Requirements section and Nitrogen Loads section moved to just below the Land Cover table.

6 Constants table and Runoff Coefficients table removed. Values for target rainfall, total phosphorus, total nitrgoen, and Pj removed from

7 Rows added to Land Cover, Post-Development Land Cover, and Land Cover Summary sections, for new land use classification Mixed

D.A. tabs

8 Rows added to Land Cover and Total Cover Treated sections for new land use classification, Mixed Open. "Forest/Open Space" was r

9 Columns added after Land Cover Rv column for Composite Loading P and Composite Loading N. Values were calculated by multiplyin

10 Untreated Phosphorus Load and Untreated Nitrogen Load were calculated by multiplying each land cover total for a BMP type by the c

11 Regenerative Stormwater Conveyance and Tree BMPs were integrated

Water Quality Compliance tab

12 Rows added for each Area Check table for Mixed Open area and Mixed Open area treated. "Forest/Open Space" was renamed to "For

Runoff Volume and CN tab

13 Rows added for each Drainage Area table for Mixed Open. "Forest/Open Space" was renamed to "Forest"

Summary tab

14 Rows added for each Land Cover Summary table for Mixed Open. "Forest/Open Space" was renamed to "Forest"

Version 4.1 - 2024

General

1 Adjustments to loading rate constants based on updated model data

2 Adjustment to nutrient target constant based on newest guidance

3 Modifications to efficiency values for Trees and Regenerative Stormwater Conveyance (RSC) bmps

4 Note: RSC bmp efficiency values are still under review. Runoff reduction efficiency

in indigo.

n.

ficiency for clarity.
ractices).
but not limited to the Coastal Plain.

ringhouse.

are not applicable.

l.

eet.
ndbook (expected 2024) to be incorporated.

spreadsheet entirely.

Open. Utilize DEQ guidance documents for definition of uses that qualify as mixed open category.