Z-0005-2014

PLANNING DIVISION

FEB 02 2015

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Project Description

The Peninsula Pentecostals Rezoning of the 40.3± acre Greenmount Kirby Tract (Lots P-1, P-2 & P-3) contemplates development of a House of Worship, Day Care, Administration Offices, Ministry Support Apartment, Family Life Center, Accessory/Utility Structure, multi-purpose recreational fields, 480 car parking lot and associated drive aisles and sidewalks on the 24.8± acre Lot P-1. The Peninsula Pentecostals Rezoning of the 40.3± acre Greenmount Kirby Tract also contemplates a Commercial Mixed Use development on the 10.8± acre Lot P-2 and 4.7± acre Lot P-3. The 40.3± acre Greenmount Kirby Tract (Lots P-1, P-2 & P-3) is located on the northerly side of US Route 60 (Pocahontas Trail) near the corporate boundary between James City County and Newport News.

Existing Site Conditions

Lot P-1 is 24.8± acres in size, half of which is wooded. The other half is in cropland. Lot P-1 is also encumbered by a high voltage electricity transmission line and appurtenant easement. The easement is maintained in a cleared condition. 15± acres of the Lot P-1 is anticipated to be disturbed as a part of this project. The western boundaries of Lot P-1 is the centerline of a tributary stream to Skiffes Creek. The northern boundary is the centerline of Skiffes Creek. There are wetlands and buffers upland and along the northern and western boundaries. The southern boundary is US Route 60 (Pocahontas Trail) a Community Character Corridor and the eastern boundary is the centerline of the 120' wide easement for the existing high voltage electricity transmission line.

Lot P-2 is 10.8 acres in size, 4.5± acres are wooded and 6.3± acres are open, in cropland. Lot P-2 is also encumbered by an high voltage electricity transmission line and appurtenant easement. The easement is maintained in a cleared condition.

Lot P-3 is 4.7± acres in size, 3.5± acres are wooded and 1.2± acres are open, in cropland. Part of Lot P-3 has been identified as corridor for the preferred alternative for the Skiffes Creek Connector (US Route 60 Realignment) project.

Lots P-2 and P-3 are bound on the west by Lot P-1, the north and erast by Skiffes Creek and south by US Route 60 (Pocahontas Trail) a Community Character Corridor.

Slopes vary from less than 2% across the cropland areas to 3:1 or steeper along embankments leading down to the streams. Elevations range from 16 to 60 feet above sea level.

Adjacent Area

Adjacent property to the west, north and east of Lots P-1, P-2 and P-3 is part of Skiffes Creek and Skiffes Creek Reservoir. Erosion and sediment control measures will need to be designed to protect these sensitive lands from construction activities on Lots P-1, P-2 and P-3. Stormwater runoff from Lots P-1, P-2 and P-3 during and after construction will need to conform to water quality and water quantity design criteria defined by Code.

Offsite Disturbed Area

No off-site disturbance is anticipated with this project.

Critical Erosion Areas

Disturbance of steep slopes will be avoided to the extent practicable, other than the work necessary for stormwater BMPs discharge and sanitary sewer connection. Such disturbances will have protective covering applied immediately in order to accelerate stabilization as will constructed slopes 3:1 and steeper.

Demolition

Demolition will involve clearing and grubbing the portion of Lots P-1, P-2 and P-3 as needed for construction.

Utilities

The proposed buildings will be served by underground electric, telephone, sanitary, and gas utilities. The existing overhead utilities along U.S. Route 60 (Pocahontas Trail) will remain as will the existing overhead high voltage electricity transmission line.

Proposed Grading and Paving

Lots P-1, P-2 and P-3 will be graded to direct stormwater runoff away from the proposed buildings to perimeter grass lined swales and BMPs.

Stormwater Management Considerations

The site naturally drains south to north.from US Route 60 to Skiffes Creek. This drainage pattern will be maintained to the extent practicable.

The buildings, parking areas, drive aisles and sidewalks will create 8.7± acres of impervious surfaces on Lot P-1. Additionally, 6± acres of woods and cropland will be converted into managed turf and landscaped areas. The stormwater runoff from these areas will need to conform to water quality and water quantity design criteria defined by Code. Multiple areas will be available to accommodate stormwater BMPs. Stormwater runoff from the constructed improvements will be conveyed via grass lined swales to the BMPs for quality improvement and quantity control prior to discharge to a stilling basin upstream of wetlands, thus dissipating the energy from the concentrated flow before discharging to the receiving channel, Skiffes Creek. The point of discharge to Skiffes Creek is located approximately 1,000 feet upstream of Skiffes Creek Reservior. At the point of discharge, the receiving channel is a mild gradient meandering channel, several feet wide, stable condition and within a broad, moderately wooded floodplain. Channel protection criteria will be as required by the minimum stadards published in section 9CAC25-870-66 Water Quantity of the Virginia Stormwater Management Regulations.

Two options are proposed to provide compliance with Code required water quality and water quantity discharge criteria. Exhibit A provides an option using several bioretention basins and an extended detention pond. The bioretention basins are proposed to be located in areas of the site suitable to treat most of the parking area and the building roof. Bioretention basins A, B, and C are located in drainage area #1 which covers most of the front half of the site. Drainage area #1 is 6.3± acres and will require all three basins because of the Code requirement limiting each bioretention cell to 2.5 acres of drainage area. Drainage area #2 is 4.0± acres and receives runoff from the middle of the parking lot and the building roof. Basin D is shown as a single bioretention basin and will need to be designed as two separate cells since the drainage area is larger than 2.5 acres. Drainage area #3 is 2.0 acres and covers the rear of the proposed building and part of the roof. Bioretention basins E and F are sized much larger than required since the contributing drainage area may change depending on roof drainage design. Overflow from all of the bioretention basins will be conveyed to the extended detention basin in the rear of the site via open channels or underground conduits. Exhibit B provides an option using wet ponds. Grass lined channels will convey the runoff from the improved areas wet ponds. A single wet pond near the rear of Lot P-1 is preferable, however, it may necessary to construct supplemental wet ponds around the front parking area in order to achieve the treatment shown in the VRRM Worksheet.

In both of these scenarios, a storm sewer system will convey discharge from the ponds' outlet control structures to a stilling basin located upland of the wetlands, requiring encroachment into the RPA buffer. Encroachment into the RPA buffer will be limited to construction of the BMP discharge structure and stilling basin.

Virginia Runoff Reduction Method New Development Worksheet - v2.8 - June 2014					
To be used w/ 2011 BMP Standards and Specifications					
Site Data					
Project Name: Peninsula Pentecostal Lot P-1 - Exhibit A Bioretention					
Date: 1/2015					
	data input cells				
	calculation cells				
	constant values				
1. Post-Development Project & Land Cover Information					
Constants					
Annual Rainfall (inches)	43				
Target Rainfall Event (inches)	1.00				
Phosphorus EMC (mg/L)	0.26		Nitrogen EMC (mg/L)	1.86	
Target Phosphorus Target Load (lb/acre/yr)	0.41				
Pj	0.90				
Land Cover (acres)					
	A soils	**B Soils**	**C Soils**	**D Soils**	**Totals**
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.0000	0.0000	5.2700	0.0000	5.2700
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.0000	0.0000	10.8600	0.0000	10.8600
Impervious Cover (acres)	0.0000	0.0000	8.6700	0.0000	8.6700
				Total	24.8000
Rv Coefficients					
	A soils	**B Soils**	**C Soils**	**D Soils**	
Forest/Open Space	0.02	0.03	0.04	0.05	
Managed Turf	0.15	0.20	0.22	0.25	
Impervious Cover	0.95	0.95	0.95	0.95	
Land Cover Summary					
Forest/Open Space Cover (acres)	5.2700				
Weighted Rv(forest)	0.0400				
% Forest	21%				
Managed Turf Cover (acres)	10.8600				
Weighted Rv(turf)	0.2200				
% Managed Turf	44%				
Impervious Cover (acres)	8.6700				
Rv(impervious)	0.95				
% Impervious	35%				
Total Site Area (acres)	24.8000				
Site Rv	0.44				
Post-Development Treatment Volume (acre-ft)	0.90				
Post-Development Treatment Volume (cubic feet)	39,336				
Post_Development Load (TP) (lb/yr)	24.72		Post_Development Load (TN) (lb/yr)	176.81	
Total Load (TP) Reduction Required (lb/yr)	14.55				

Drainage Area A

Drainage Area A Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres)	0.0000	0.0000	0.0000	0.0000	0.0000	0.00
Managed Turf (acres)	0.0000	0.0000	8.0000	0.0000	8.0000	0.22
Impervious Cover (acres)	0.0000	0.0000	8.6700	0.0000	8.6700	0.95
			Total		16.6700	

Post Development Treatment Volume (cf): 36287

Apply Runoff Reduction Practices to Reduce Treatment Volume & Post-Development Load in Drainage Area A

Practice	Unit	Description of Credit	Credit	Credit Area (acres)	Volume from Upstream RR Practice (cf)	Runoff Reduction (cf)	Remaining Runoff Volume (cf)	Phosphorus Efficiency (%)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs.)	Phosphorus Removed By Practice (lbs.)	Remaining Phosphorus Load (lbs.)	Downstream Treatment to be Employed	Nitrogen Efficiency (%)	Nitrogen Load from Upstream RR Practices (lbs)	Untreated Nitrogen Load to Practice (lbs.)	Nitrogen Removed By Practice (lbs.)	Remaining Nitrogen Load (lbs.)
1. Vegetated Roof														**1. Green Roof**				
1.a. Vegetated Roof #1 (Spec #5)	acres of green roof	45% runoff volume reduction	0.45	0.0000	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
1.b. Vegetated Roof #2 (Spec #5)	acres of green roof	60% runoff volume reduction	0.60	0.0000	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2. Rooftop Disconnection														**2. Impervious Surface Disconnection**				
2.a. Simple Disconnection to A/B Soils (Spec #1)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.0000	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 (Spec #1)	impervious acres disconnected	25% runoff volume reduction for treated area	0.25	0.0000	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) (Spec #4)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.0000	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 (Microinfiltration #1) (Spec #8)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.0000	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) (Spec #8)	impervious acres disconnected	90% runoff volume reduction for treated area	0.90	0.0000	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) (Spec #9)	impervious acres disconnected	40% of volume captured	0.40	0.0000	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) (Spec #9)	impervious acres disconnected	80% runoff volume reduction for treated area	0.80	0.0000	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 (Spec #6)	impervious acres captured	based on tank size and design spreadsheet (See Spec #6)	0.00	0.0000	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) (Spec #9, Appendix A)	impervious acres disconnected	40% runoff volume reduction for treated area	0.40	0.0000	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
3. Permeable Pavement														**3. Permeable Pavement**				
3.a. Permeable Pavement #1 (Spec #7)	acres of permeable pavement + acres of "external" (upgradient) impervious pavement	45% runoff volume reduction	0.45	0.0000	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 (Spec #7)	acres of permeable pavement	75% runoff volume reduction	0.75	0.0000	0	0	0	25	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
4. Grass Channel														**4. Grass Channel**				
4.a. Grass Channel A/B Soils (Spec #3)	impervious acres draining to grass channels	20% runoff volume reduction	0.20	0.0000	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	20% runoff volume reduction	0.20	0.0000	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 (Spec #3)	impervious acres draining to grass channels	10% runoff volume reduction	0.10	0.0000	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	10% runoff volume reduction	0.10	0.0000	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 (see Spec #4)	impervious acres draining to grass channels	30% runoff volume reduction	0.30	0.0000	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	30% runoff volume reduction	0.30	0.0000	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
5. Dry Swale														**5. Dry Swale**				
5.a. Dry Swale #1 (Spec #10)	impervious acres draining to dry swale	40% runoff volume reduction	0.40	0.0000	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	40% runoff volume reduction	0.40	0.0000	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 (Spec #10)	impervious acres draining to dry swale	60% runoff volume reduction	0.60	0.0000	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	60% runoff volume reduction	0.60	0.0000	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
6. Bioretention														**6. Bioretention**				
6.a. Bioretention #1 or Urban Bioretention (Spec #9)	impervious acres draining to bioretention	40% runoff volume reduction	0.40	0.0000	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
	turf acres draining to bioretention	40% runoff volume reduction	0.40	0.0000	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 (Spec #9)	impervious acres draining to bioretention	80% runoff volume reduction	0.80	6.4800	0	17877	4469	50	0.00	14.02	12.62	1.40	8.a. ED #1	60	0.00	100.33	92.30	8.03
	turf acres draining to bioretention	80% runoff volume reduction	0.80	6.0200	0	3846	962	50	0.00	3.02	2.72	0.30	8.a. ED #1	60	0.00	21.58	19.86	1.73
7. Infiltration														**7. Infiltration**				
7.a. Infiltration #1 (Spec #8)	impervious acres draining to infiltration	50% runoff volume reduction	0.50	0.0000	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	50% runoff volume reduction	0.50	0.0000	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 (Spec #8)	impervious acres draining to infiltration	90% runoff volume reduction	0.90	0.0000	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	90% runoff volume reduction	0.90	0.0000	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														**8. Extended Detention Pond**				
8.a. ED #1 (Spec #15)	impervious acres draining to ED	0% runoff volume reduction	0.00	2.1900	4469	0	12021	15	1.40	4.74	0.92	5.22		10	8.03	33.91	4.19	37.74
	turf acres draining to ED	0% runoff volume reduction	0.00	1.9800	962	0	2543	15	0.30	0.99	0.19	1.10		10	1.73	7.10	0.88	7.94
8.b. ED #2 (Spec #15)	impervious acres draining to ED	15% runoff volume reduction	0.15	0.0000	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
	turf acres draining to ED	15% runoff volume reduction	0.15	0.0000	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														**9. Sheetflow to Conservation Area or Filter Strip**				
9.a. Sheetflow to Conservation Area with A/B Soils (Spec #2)	impervious acres draining to conserved open space	75% runoff volume reduction for treated area	0.75	0.0000	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
	turf acres draining to conserved open space	75% runoff volume reduction for treated area	0.75	0.0000	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 with C/D Soils (Spec #2)	impervious acres draining to conserved open space	50% runoff reduction volume for treated area	0.50	0.0000	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
	turf acres draining to conserved open space	50% runoff reduction volume for treated area	0.50	0.0000	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 in A Soils or Compost Amended B/C/D Soils (Spec #2 & #4)	impervious acres draining to filter strip	50% runoff reduction volume for treated area	0.50	0.0000	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
	turf acres draining to filter strip	50% runoff reduction volume for treated area	0.50	0.0000	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): 8.6700
TOTAL TURF AREA TREATED (ac): 8.0000

AREA CHECK OK

TOTAL PHOSPHORUS REMOVAL REQUIRED ON SITE (lbs/yr): 14.55
TOTAL RUNOFF REDUCTION IN D.A. A (cf): 21,723
PHOSPHORUS REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. A (lbs/yr): 16.45

TOTAL RUNOFF REDUCTION IN D.A. A (cf): 21,723
NITROGEN REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. A (lbs/yr): 162.92

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

Apply Practices that Remove Pollutants but Do Not Reduce Runoff Volume

Practice	Unit	Description of Credit	Credit	Credit Area (acres)	Volume from Upstream RR Practice (cf)	Runoff Reduction (cf)	Remaining Runoff Volume (cf)	Phosphorus Efficiency (%)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs.)	Phosphorus Removed By Practice (lbs.)	Remaining Phosphorus Load (lbs.)	Downstream Treatment to be Employed	Nitrogen Efficiency (%)	Nitrogen Load from Upstream RR Practices (lbs)	Untreated Nitrogen Load to Practice (lbs.)	Nitrogen Removed By Practice (lbs.)	Remaining Nitrogen Load (lbs.)
10. Wet Swale (Coastal Plain)														**10. Wet Swale (Coastal Plain)**				
10.a. Wet Swale #1 (Spec #11)	impervious acres draining to wet swale	0% runoff volume reduction	0.00	0.0000	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
	turf acres draining to wet swale	0% runoff volume reduction	0.00	0.0000	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
10.b. Wet Swale #2 (Spec #11)	impervious acres draining to wet swale	0% runoff volume reduction	0.00	0.0000	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
	turf acres draining to wet swale	0% runoff volume reduction	0.00	0.0000	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
11. Filtering Practices														**11. Filtering Practices**				
11.a.Filtering Practice #1 (Spec #12)	impervious acres draining to filter	0% runoff volume reduction	0.00	0.0000	0	0	0	60	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
	turf acres draining to filter	0% runoff volume reduction	0.00	0.0000	0	0	0	60	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
11.b. Filtering Practice #2 (Spec #12)	impervious acres draining to filter	0% runoff volume reduction	0.00	0.0000	0	0	0	65	0.00	0.00	0.00	0.00		45	0.00	0.00	0.00	0.00
	turf acres draining to filter	0% runoff volume reduction	0.00	0.0000	0	0	0	65	0.00	0.00	0.00	0.00		45	0.00	0.00	0.00	0.00
12. Constructed Wetland														**12. Constructed Wetland**				
12.a.Constructed Wetland #1 (Spec #13)	impervious acres draining to wetland	0% runoff volume reduction	0.00	0.0000	0	0	0	50	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
	turf acres draining to wetland	0% runoff volume reduction	0.00	0.0000	0	0	0	50	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
12.b. Constructed Wetland #2 (Spec #13)	impervious acres draining to wetland	0% runoff volume reduction	0.00	0.0000	0	0	0	75	0.00	0.00	0.00	0.00		55	0.00	0.00	0.00	0.00
	turf acres draining to wetland	0% runoff volume reduction	0.00	0.0000	0	0	0	75	0.00	0.00	0.00	0.00		55	0.00	0.00	0.00	0.00
13. Wet Ponds														**13. Wet Ponds**				
13.a. Wet Pond #1 (Spec #14)	impervious acres draining to wet pond	0% runoff volume reduction	0.00	0.0000	0	0	0	50	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0% runoff volume reduction	0.00	0.0000	0	0	0	50	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
13.b. Wet Pond #1 (Coastal Plain) (Spec #14)	impervious acres draining to wet pond	0% runoff volume reduction	0.00	0.0000	0	0	0	45	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0% runoff volume reduction	0.00	0.0000	0	0	0	45	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	impervious acres draining to wet pond	0% runoff volume reduction	0.00	0.0000	0	0	0	75	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00

13.c. Wet Pond #2 (Spec #14)	turf acres draining to wet pond	0% runoff volume reduction	0.00	0.0000	0	0	0	75	0.00	0.00	0.00	0.00			40	0.00	0.00	0.00	0.00
	impervious acres draining to wet pond	0% runoff volume reduction	0.00	0.0000	0	0	0	65	0.00	0.00	0.00	0.00			30	0.00	0.00	0.00	0.00
13.d. Wet Pond #2 (Coastal Plain) (Spec #14)	turf acres draining to wet pond	0% runoff volume reduction	0.00	0.0000	0	0	0	65	0.00	0.00	0.00	0.00			30	0.00	0.00	0.00	0.00
14. Manufactured BMP															**14. Manufactured BMP**				
	impervious acres draining to device	0% runoff volume reduction	0.00	0.0000	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
14. Insert Name of Device	turf acres draining to device	0% runoff volume reduction	0.00	0.0000	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)	8.6700
TOTAL TURF AREA TREATED (ac)	8.0000

AREA CHECK OK

PHOSPHORUS REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. A	0.00
TOTAL PHOSPHORUS REMOVAL IN D.A. A (lb/yr)	16.45

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. A	0.00
TOTAL NITROGEN REMOVAL IN D.A. A (lb/yr)	162.92

Site Results

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	AREA CHECK
IMPERVIOUS COVER	8.6700	0.0000	0.0000	0.0000	0.0000	OK.
IMPERVIOUS COVER TREATED	8.6700	0.0000	0.0000	0.0000	0.0000	OK.
TURF AREA	8.0000	0.0000	0.0000	0.0000	0.0000	OK.
TURF AREA TREATED	8.0000	0.0000	0.0000	0.0000	0.0000	OK.
AREA CHECK	OK.	OK.	OK.	OK.	OK.	

Phosphorus

TOTAL TREATMENT VOLUME (cf)	39,336
TOTAL PHOSPHORUS LOAD REDUCTION REQUIRED (LB/YEAR)	14.55
RUNOFF REDUCTION (cf)	21723
PHOSPHORUS LOAD REDUCTION ACHIEVED (LB/YR)	16.45
ADJUSTED POST-DEVELOPMENT PHOSPHORUS LOAD (TP) (lb/yr)	8.26
REMAINING PHOSPHORUS LOAD REDUCTION (LB/YR) NEEDED	CONGRATULATIONS!! YOU EXCEEDED THE TARGET REDUCTION BY 1.9 LB/YEAR!

Nitrogen (for information purposes)

TOTAL TREATMENT VOLUME (cf)	39,336
RUNOFF REDUCTION (cf)	21723
NITROGEN LOAD REDUCTION ACHIEVED (LB/YR)	162.92
ADJUSTED POST-DEVELOPMENT NITROGEN LOAD (TN) (lb/yr)	13.89

			1-year storm	2-year storm	10-year storm		
Target Rainfall Event (in)			0.00	0.00	0.00		
Drainage Area A							
Drainage Area (acres)		16.6700					
Runoff Reduction Volume (cf)		21,723					
Drainage Area B							
Drainage Area (acres)		0.0000					
Runoff Reduction Volume (cf)		0					
Drainage Area C							
Drainage Area (acres)		0.0000					
Runoff Reduction Volume (cf)		0					
Drainage Area D							
Drainage Area (acres)		0.0000					
Runoff Reduction Volume (cf)		0					
Drainage Area E							
Drainage Area (acres)		0.0000					
Runoff Reduction Volume (cf)		0					
Based on the use of Runoff Reduction practices in the selected drainage areas, the spreadsheet calculates an adjusted $RV_{Developed}$ and adjusted Curve Number.							
Drainage Area A			**A soils**	**B Soils**	**C Soils**	**D Soils**	
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)		0.0000	0.0000	0.0000	0.0000	
	CN		30	55	70	77	
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)		0.0000	0.0000	8.0000	0.0000	
	CN		39	61	74	80	
Impervious Cover	Area (acres)		0.0000	0.0000	8.6700	0.0000	
	CN		98	98	98	98	
						Weighted CN	**S**
						86	1.63
			1-year storm	**2-year storm**	**10-year storm**		
$RV_{Developed}$ (in) with no Runoff Reduction			0.00	0.00	0.00		
$RV_{Developed}$ (in) with Runoff Reduction			-0.36	-0.36	-0.36		
	Adjusted CN		**#N/A**	**#N/A**	**#N/A**		
Drainage Area B			**A soils**	**B Soils**	**C Soils**	**D Soils**	
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)		0.0000	0.0000	0.0000	0.0000	
	CN		30	55	70	77	
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)		0.0000	0.0000	0.0000	0.0000	
	CN		39	61	74	80	
Impervious Cover	Area (acres)		0.0000	0.0000	0.0000	0.0000	
	CN		98	98	98	98	
						Weighted CN	**S**
						0	1000.00
			1-year storm	**2-year storm**	**10-year storm**		
$RV_{Developed}$ (in) with no Runoff Reduction			0.00	0.00	0.00		
$RV_{Developed}$ (in) with Runoff Reduction			0.00	0.00	0.00		
	Adjusted CN		**100**	**100**	**100**		
Drainage Area C			**A soils**	**B Soils**	**C Soils**	**D Soils**	
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)		0.0000	0.0000	0.0000	0.0000	
	CN		30	55	70	77	
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)		0.0000	0.0000	0.0000	0.0000	
	CN		39	61	74	80	
Impervious Cover	Area (acres)		0.0000	0.0000	0.0000	0.0000	
	CN		98	98	98	98	
						Weighted CN	**S**
						0	1000.00
			1-year storm	**2-year storm**	**10-year storm**		
$RV_{Developed}$ (in) with no Runoff Reduction			0.00	0.00	0.00		
$RV_{Developed}$ (in) with Runoff Reduction			0.00	0.00	0.00		
	Adjusted CN		**100**	**100**	**100**		
Drainage Area D			**A soils**	**B Soils**	**C Soils**	**D Soils**	
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)		0.0000	0.0000	0.0000	0.0000	
	CN		30	55	70	77	
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)		0.0000	0.0000	0.0000	0.0000	
	CN		39	61	74	80	
Impervious Cover	Area (acres)		0.0000	0.0000	0.0000	0.0000	
	CN		98	98	98	98	
						Weighted CN	**S**
						0	1000.00
			1-year storm	**2-year storm**	**10-year storm**		
$RV_{Developed}$ (in) with no Runoff Reduction			0.00	0.00	0.00		
$RV_{Developed}$ (in) with Runoff Reduction			0.00	0.00	0.00		
	Adjusted CN		**100**	**100**	**100**		
Drainage Area E			**A soils**	**B Soils**	**C Soils**	**D Soils**	
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)		0.0000	0.0000	0.0000	0.0000	
	CN		30	55	70	77	

Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed		Area (acres)	0.0000	0.0000	0.0000	0.0000	
		CN	39	61	74	80	
Impervious Cover		Area (acres)	0.0000	0.0000	0.0000	0.0000	
		CN	98	98	98	98	
						Weighted CN	**S**
						0	1000.00
			1-year storm	**2-year storm**	**10-year storm**		
		$RV_{Developed}$ (in) with no Runoff Reduction	0.00	0.00	0.00		
		$RV_{Developed}$ (in) with Runoff Reduction	0.00	0.00	0.00		
		Adjusted CN	**100**	**100**	**100**		
.							

ı Runoff Reduction Method New Development Worksheet - v2.8 - June 2014

Site Data Summary

Total Rainfall = 43 inches

Site Land Cover Summary

	A Soils	B Soils	C Soils	D Soils	Total	% of Total
Forest (acres)	0.0000	0.0000	5.2700	0.0000	5.2700	*21.25*
Turf (acres)	0.0000	0.0000	10.8600	0.0000	10.8600	*43.79*
Impervious (acres)	0.0000	0.0000	8.6700	0.0000	8.6700	*34.96*
					24.8000	*100.00*

Site Rv	0.44
Post Development Treatment Volume (ft3)	39336
Post Development TP Load (lb/yr)	24.72
Post Development TN Load (lb/yr)	176.81
Total TP Load Reduction Required (lb/yr)	14.55

Total Runoff Volume Reduction (ft^3)	21723
Total TP Load Reduction Achieved (lb/yr)	16.45
Total TN Load Reduction Achieved (lb/yr)	162.92
Adjusted Post Development TP Load (lb/yr)	8.26
Remaining Phosphorous Load Reduction (Lb/yr) Required	0.00

Drainage Area Summary

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	Total
Forest (acres)	0.0000	0.0000	0.0000	0.0000	0.0000	*0.0000*
Turf (acres)	8.0000	0.0000	0.0000	0.0000	0.0000	*8.0000*
Impervious (acres)	8.6700	0.0000	0.0000	0.0000	0.0000	*8.6700*
						16.6700

Drainage Area Compliance Summary

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	Total
TP Load Red. (lb/yr)	16.45	0.00	0.00	0.00	0.00	*16.45*
TN Load Red. (lb/yr)	162.92	0.00	0.00	0.00	0.00	*162.92*

Drainage Area A Summary

Land Cover Summary

	A Soils	B Soils	C Soils	D Soils	Total	% of Total
Forest (acres)	0.00	0.00	0.00	0.00	0.00	*0.00*
Turf (acres)	0.00	0.00	8.00	0.00	8.00	*47.99*
Impervious (acres)	0.00	0.00	8.67	0.00	8.67	*52.01*
					16.67	

BMP Selections

Practice	Credit Area (acres)	Downstream Practice

Total Impervious Cover Treated (acres)	8.67
Total Turf Area Treated (acres)	8.00
Total TP Load Reduction Achieved in D.A. A (lb/yr)	16.45
Total TN Load Reduction Achieved in D.A. A (lb/yr)	162.92

Channel and Flood Protection

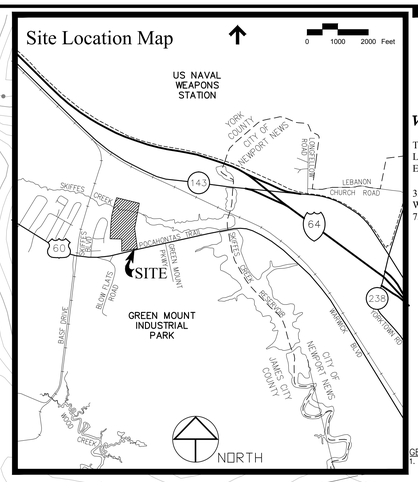
	Weighted CN	1-year storm Adjusted CN	2-year storm Adjusted CN	10-year storm Adjusted CN
Target Rainfall Event (in)		0.00	0.00	0.00
D.A. A CN	86	#N/A	#N/A	#N/A
D.A. B CN	0	100	100	100
D.A. C CN	0	100	100	100
D.A. D CN	0	100	100	100
D.A. E CN	0	100	100	100

Version 2.8 - June 2014 - 2011 BMP Stnds & 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

BMP Summary

Drainage Area #	BMP's	Drainage Area (ac.)	Impervious Area (ac.)	Pervious Area (ac.)	# of Cells
1	A, B, C	6.30	3.41	2.89	3
2	D	4.00	2.00	2.00	2
3	E, F	2.20	1.07	1.13	1
TOTAL 1-3	Bioretention	12.50	6.48	6.02	6
4	Extended Detention	4.17	2.19	6.89	N/A



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Vanasse Hangen Brustlin, Inc.
Transportation
Land Development
Environmental Services
351 McLaws Circle, Suite 3
Williamsburg, Virginia 23185
757.220.0500 • FAX 757.220.8544

N

GENERAL NOTES:

1. THE PROPERTY IS IDENTIFIED ON THE JAMES CITY COUNTY GEOGRAPHIC INFORMATION SYSTEM MAP SERIES AS GPIN:6010100006 AND IS ZONED M2, GENERAL INDUSTRIAL. THE PROPERTY IS FURTHER DESCRIBED AS 9230 POCAHONTAS TRAIL. THE PROPERTY IS IDENTIFIED ON THE JAMES CITY COUNTY GEOGRAPHIC INFORMATION SYSTEM MAP SERIES AS GPIN:6010100007 AND IS ZONED M2, GENERAL INDUSTRIAL. THE PROPERTY IS FURTHER DESCRIBED AS 9240 POCAHONTAS TRAIL. THE PROPERTY IS IDENTIFIED ON THE JAMES CITY COUNTY GEOGRAPHIC INFORMATION SYSTEM MAP SERIES AS GPIN:6010100008 AND IS ZONED M2, GENERAL INDUSTRIAL. THE PROPERTY IS FURTHER DESCRIBED AS 9250 POCAHONTAS TRAIL. ; THE PARCELS ARE LOCATED WITHIN THE PRIMARY SERVICE AREA AND OUTSIDE THE 100 YEAR FLOOD PLAIN. THE COMPREHENSIVE PLAN DESIGNATION FOR THESE PARCELS IS MIXED USE.
2. BOUNDARY INFORMATION IS FROM PLAT OF RECORD RECORDED IN PB. 52, PG. 47, TOPOGRAPHIC AND EXISTING FEATURES INFORMATION DEPICTED HEREON IS FROM JAMES CITY COUNTY GEOGRAPHIC INFORMATION SYSTEM MAPPING.
3. POCAHONTAS TRAIL IS CLASSIFIED AS COMMUNITY CHARACTER CORRIDOR ALONG THE FRONTAGE OF THE SUBJECT PROPERTY.

SUMMARY TABULATION

PROPOSED DEVELOPMENT PROGRAM:

- ADDRESS: P-1 9230 POCAHONTAS TRAIL WILLIAMSBURG, VA. 23185
- ADDRESS: P-2 9240 POCAHONTAS TRAIL WILLIAMSBURG, VA. 23185
- ADDRESS: P-3 9250 POCAHONTAS TRAIL WILLIAMSBURG, VA. 23185
- PARCEL ID: 6010100006(P-1), 6010100007(P-2), 6010100008(P-3)
- ZONING: M2 GENERAL INDUSTRIAL
- WATERSHED: SKIFFES CREEK
- RECEIVING STREAM: SKIFFES CREEK

GROSS SITE AREA: 40.3± ACRES (TOTAL PARCEL)
DEVELOPABLE AREA (SEC. 24-2): 27.4± OR 1,193,545± S.F.
IMPERVIOUS AREA: MAXIMUM 60%
PERVIOUS AREA: MINIMUM 40%

PROPERTY APPEARS TO BE IN ZONE X (AREAS OF 0.2% ANNUAL CHANCE OF FLOOD) FIRM MAP NUMBER 51095C0230C DATED SEPTEMBER 28, 2007

SOILS WITHIN SITE AREA:
11C=CRAVEN-UCHEE COMPLEX-HYDROLOGIC SOIL GROUP C K=0.37 HIGH ERODIBILITY
14B=EMPORIA FINE SANDY LOAM-HYDROLOGIC SOIL GROUP C K=0.28 MODERATE ERODIBILITY
15E=EMPORIA COMPLEX-HYDROLOGIC SOIL GROUP C K=0.28 MODERATE ERODIBILITY
17=JOHNSTON COMPLEX-HYDROLOGIC SOIL GROUP D K=.20 LOW ERODIBILITY
29B=SLAGLE FINE SANDY LOAM-HYDROLOGIC SOIL GROUP C K=0.24 MODERATE ERODIBILITY

60 0 60 120
SCALE IN FEET

No.	Revision	Date	Appvd.

Designed by SAR | Drawn by VHB | Checked by PS
CAD checked by | Approved by SAR
Scale 1"=60' | Date January 20, 2015

Project Title
Peninsula Pentecostal Church

Pocahontas Trail
Williamsburg, Virginia

Issued for
Not Approved for Construction

Drawing Title
Stormwater Management Exhibit A
Bioretention Option

COMMONWEALTH OF VIRGINIA
STEPHEN A. ROMEO
Lic. No. 1448-B
LAND SURVEYOR

Drawing Number
CP-1
Sheet 1 of 1
Project Number 33749.00

PENINSULA PENTECOSTAL-CP_3.DWG

Virginia Runoff Reduction Method New Development Worksheet - v2.8 - June 2014

To be used w/ 2011 BMP Standards and Specifications

Site Data

Project Name: Peninsula Pentecostal Lot P-1 - Exhibit B Wet Pond

Date: 1/2015

	data input cells
	calculation cells
	constant values

1. Post-Development Project & Land Cover Information

Constants

Annual Rainfall (inches)	43		
Target Rainfall Event (inches)	1.00		
Phosphorus EMC (mg/L)	0.26	Nitrogen EMC (mg/L)	1.86
Target Phosphorus Target Load (lb/acre/yr)	0.41		
Pj	0.90		

Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.0000	0.0000	5.2700	0.0000	5.2700
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.0000	0.0000	10.8600	0.0000	10.8600
Impervious Cover (acres)	0.0000	0.0000	8.6700	0.0000	8.6700
				Total	24.8000

Rv Coefficients

	A soils	B Soils	C Soils	D Soils
Forest/Open Space	0.02	0.03	0.04	0.05
Managed Turf	0.15	0.20	0.22	0.25
Impervious Cover	0.95	0.95	0.95	0.95

Land Cover Summary

Forest/Open Space Cover (acres)	5.2700		
Weighted Rv(forest)	0.0400		
% Forest	21%		
Managed Turf Cover (acres)	10.8600		
Weighted Rv(turf)	0.2200		
% Managed Turf	44%		
Impervious Cover (acres)	8.6700		
Rv(impervious)	0.95		
% Impervious	35%		
Total Site Area (acres)	24.8000		
Site Rv	0.44		
Post-Development Treatment Volume (acre-ft)	0.90		
Post-Development Treatment Volume (cubic feet)	39,336		
Post_Development Load (TP) (lb/yr)	24.72	Post_Development Load (TN) (lb/yr)	176.81
Total Load (TP) Reduction Required (lb/yr)	14.55		

Drainage Area A

Drainage Area A Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres)	0.0000	0.0000	0.0000	0.0000	0.0000	0.00
Managed Turf (acres)	0.0000	0.0000	8.0000	0.0000	8.0000	0.22
Impervious Cover (acres)	0.0000	0.0000	8.6700	0.0000	8.6700	0.95
			Total		16.6700	

Post Development Treatment Volume (cf): 36287

Apply Runoff Reduction Practices to Reduce Treatment Volume & Post-Development Load in Drainage Area A

Practice	Unit	Description of Credit	Credit	Credit Area (acres)	Volume from Upstream RR Practice (cf)	Runoff Reduction (cf)	Remaining Runoff Volume (cf)	Phosphorus Efficiency (%)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs.)	Phosphorus Removed By Practice (lbs.)	Remaining Phosphorus Load (lbs.)	Downstream Treatment to be Employed	Nitrogen Efficiency (%)	Nitrogen Load from Upstream RR Practices (lbs)	Untreated Nitrogen Load to Practice (lbs.)	Nitrogen Removed By Practice (lbs.)	Remaining Nitrogen Load (lbs.)
1. Vegetated Roof														**1. Green Roof**				
1.a. Vegetated Roof #1 (Spec #5)	acres of green roof	45% runoff volume reduction	0.45	0.0000	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
1.b. Vegetated Roof #2 (Spec #5)	acres of green roof	60% runoff volume reduction	0.60	0.0000	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2. Rooftop Disconnection														**2. Impervious Surface Disconnection**				
2.a. Simple Disconnection to A/B Soils (Spec #1)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.0000	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 (Spec #1)	impervious acres disconnected	25% runoff volume reduction for treated area	0.25	0.0000	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) (Spec #4)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.0000	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 (Microinfiltration #1) (Spec #8)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.0000	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) (Spec #8)	impervious acres disconnected	90% runoff volume reduction for treated area	0.90	0.0000	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) (Spec #9)	impervious acres disconnected	40% of volume captured	0.40	0.0000	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) (Spec #9)	impervious acres disconnected	80% runoff volume reduction for treated area	0.80	0.0000	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 (Spec #6)	impervious acres captured	based on tank size and design spreadsheet (See Spec #6)	0.00	0.0000	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) (Spec #9, Appendix A)	impervious acres disconnected	40% runoff volume reduction for treated area	0.40	0.0000	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
3. Permeable Pavement														**3. Permeable Pavement**				
3.a. Permeable Pavement #1 (Spec #7)	acres of permeable pavement + acres of "external" (upgradient) impervious pavement	45% runoff volume reduction	0.45	0.0000	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 (Spec #7)	acres of permeable pavement	75% runoff volume reduction	0.75	0.0000	0	0	0	25	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
4. Grass Channel														**4. Grass Channel**				
4.a. Grass Channel A/B Soils (Spec #3)	impervious acres draining to grass channels	20% runoff volume reduction	0.20	0.0000	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	20% runoff volume reduction	0.20	0.0000	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 (Spec #3)	impervious acres draining to grass channels	10% runoff volume reduction	0.10	7.5222	0	2594	23346	15	0.00	16.28	3.83	12.45	13.d. Wet Pond #2 (Coastal Plain)	20	0.00	116.46	32.61	83.85
	turf acres draining to grass channels	10% runoff volume reduction	0.10	5.7899	0	462	4161	15	0.00	2.90	0.68	2.22	13.d. Wet Pond #2 (Coastal Plain)	20	0.00	20.76	5.81	14.95
4.c. Grass Channel with Compost Amended Soils as per specs (see Spec #4)	impervious acres draining to grass channels	30% runoff volume reduction	0.30	0.0000	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to grass channels	30% runoff volume reduction	0.30	0.0000	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
5. Dry Swale														**5. Dry Swale**				
5.a. Dry Swale #1 (Spec #10)	impervious acres draining to dry swale	40% runoff volume reduction	0.40	0.0000	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	40% runoff volume reduction	0.40	0.0000	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 (Spec #10)	impervious acres draining to dry swale	60% runoff volume reduction	0.60	0.0000	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
	turf acres draining to dry swale	60% runoff volume reduction	0.60	0.0000	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
6. Bioretention														**6. Bioretention**				
6.a. Bioretention #1 or Urban Bioretention (Spec #9)	impervious acres draining to bioretention	40% runoff volume reduction	0.40	0.0000	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
	turf acres draining to bioretention	40% runoff volume reduction	0.40	0.0000	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 (Spec #9)	impervious acres draining to bioretention	80% runoff volume reduction	0.80	0.0000	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
	turf acres draining to bioretention	80% runoff volume reduction	0.80	0.0000	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
7. Infiltration														**7. Infiltration**				
7.a. Infiltration #1 (Spec #8)	impervious acres draining to infiltration	50% runoff volume reduction	0.50	0.0000	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	50% runoff volume reduction	0.50	0.0000	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 (Spec #8)	impervious acres draining to infiltration	90% runoff volume reduction	0.90	0.0000	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
	turf acres draining to infiltration	90% runoff volume reduction	0.90	0.0000	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														**8. Extended Detention Pond**				
8.a. ED #1 (Spec #15)	impervious acres draining to ED	0% runoff volume reduction	0.00		0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
	turf acres draining to ED	0% runoff volume reduction	0.00		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 (Spec #15)	impervious acres draining to ED	15% runoff volume reduction	0.15	0.0000	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
	turf acres draining to ED	15% runoff volume reduction	0.15	0.0000	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														**9. Sheetflow to Conservation Area or Filter Strip**				
9.a. Sheetflow to Conservation Area with A/B Soils (Spec #2)	impervious acres draining to conserved open space	75% runoff volume reduction for treated area	0.75	0.0000	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
	turf acres draining to conserved open space	75% runoff volume reduction for treated area	0.75	0.0000	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 with C/D Soils (Spec #2)	impervious acres draining to conserved open space	50% runoff volume reduction for treated area	0.50	0.0000	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
	turf acres draining to conserved open space	50% runoff reduction volume for treated area	0.50	0.0000	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 in A Soils or Compost Amended B/C/D Soils (Spec #2 & #4)	impervious acres draining to filter strip	50% runoff volume reduction for treated area	0.50	0.0000	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
	turf acres draining to filter strip	50% runoff reduction volume for treated area	0.50	0.0000	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): 7.5222
TOTAL TURF AREA TREATED (ac): 5.7899

AREA CHECK OK.

TOTAL PHOSPHORUS REMOVAL REQUIRED ON SITE (lb/yr): 14.55
TOTAL RUNOFF REDUCTION IN D.A. A (cf): 3,056
PHOSPHORUS REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr): 4.51

TOTAL RUNOFF REDUCTION IN D.A. A (cf): 3,056
NITROGEN REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr): 137.22

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

Apply Practices that Remove Pollutants but Do Not Reduce Runoff Volume

Practice	Unit	Description of Credit	Credit	Credit Area (acres)	Volume from Upstream RR Practice (cf)	Runoff Reduction (cf)	Remaining Runoff Volume (cf)	Phosphorus Efficiency (%)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs.)	Phosphorus Removed By Practice (lbs.)	Remaining Phosphorus Load (lbs.)	Downstream Treatment to be Employed	Nitrogen Efficiency (%)	Nitrogen Load from Upstream RR Practices (lbs)	Untreated Nitrogen Load to Practice (lbs.)	Nitrogen Removed By Practice (lbs.)	Remaining Nitrogen Load (lbs.)
10. Wet Swale (Coastal Plain)														**10. Wet Swale (Coastal Plain)**				
10.a. Wet Swale #1 (Spec #11)	impervious acres draining to wet swale	0% runoff volume reduction	0.00	0.0000	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
	turf acres draining to wet swale	0% runoff volume reduction	0.00	0.0000	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
10.b. Wet Swale #2 (Spec #11)	impervious acres draining to wet swale	0% runoff volume reduction	0.00	0.0000	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
	turf acres draining to wet swale	0% runoff volume reduction	0.00	0.0000	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
11. Filtering Practices														**11. Filtering Practices**				
11.a.Filtering Practice #1 (Spec #12)	impervious acres draining to filter	0% runoff volume reduction	0.00	0.0000	0	0	0	60	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
	turf acres draining to filter	0% runoff volume reduction	0.00	0.0000	0	0	0	60	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
11.b. Filtering Practice #2 (Spec #12)	impervious acres draining to filter	0% runoff volume reduction	0.00	0.0000	0	0	0	65	0.00	0.00	0.00	0.00		45	0.00	0.00	0.00	0.00
	turf acres draining to filter	0% runoff volume reduction	0.00	0.0000	0	0	0	65	0.00	0.00	0.00	0.00		45	0.00	0.00	0.00	0.00
12. Constructed Wetland														**12. Constructed Wetland**				
12.a.Constructed Wetland #1 (Spec #13)	impervious acres draining to wetland	0% runoff volume reduction	0.00	0.0000	0	0	0	50	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
	turf acres draining to wetland	0% runoff volume reduction	0.00	0.0000	0	0	0	50	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
12.b. Constructed Wetland #2 (Spec #13)	impervious acres draining to wetland	0% runoff volume reduction	0.00	0.0000	0	0	0	75	0.00	0.00	0.00	0.00		55	0.00	0.00	0.00	0.00
	turf acres draining to wetland	0% runoff volume reduction	0.00	0.0000	0	0	0	75	0.00	0.00	0.00	0.00		55	0.00	0.00	0.00	0.00
13. Wet Ponds														**13. Wet Ponds**				
13.a. Wet Pond #1 (Spec #14)	impervious acres draining to wet pond	0% runoff volume reduction	0.00	0.0000	0	0	0	50	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0% runoff volume reduction	0.00	0.0000	0	0	0	50	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
13.b. Wet Pond #1 (Coastal Plain) (Spec #14)	impervious acres draining to wet pond	0% runoff volume reduction	0.00	0.0000	0	0	0	45	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0% runoff volume reduction	0.00	0.0000	0	0	0	45	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
13.c. Wet Pond #2 (Spec #14)	impervious acres draining to wet pond	0% runoff volume reduction	0.00	0.0000	0	0	0	75	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0% runoff volume reduction	0.00	0.0000	0	0	0	75	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
13.d. Wet Pond #2 (Coastal Plain) (Spec #14)	impervious acres draining to wet pond	0% runoff volume reduction	0.00	1.1478	23,346	0	27304	65	12.45	2.48	9.71	5.23		30	83.85	17.77	30.49	71.14
	turf acres draining to wet pond	0% runoff volume reduction	0.00	2.2101	4,161	0	5926	65	2.22	1.11	2.16	1.16		30	14.95	7.92	6.86	16.01
14. Manufactured BMP														**14. Manufactured BMP**				
14. Insert Name of Device	impervious acres draining to device	0% runoff volume reduction	0.00	0.0000	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
	turf acres draining to device	0% runoff volume reduction	0.00	0.0000	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): 8.6700
TOTAL TURF AREA TREATED (ac): 8.0000

AREA CHECK OK.

PHOSPHORUS REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. A: 11.87
TOTAL PHOSPHORUS REMOVAL IN D.A. A (lb/yr): 16.38

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. A: 37.35
TOTAL NITROGEN REMOVAL IN D.A. A (lb/yr): 174.57

Site Results

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	AREA CHECK
IMPERVIOUS COVER	8.6700	0.0000	0.0000	0.0000	0.0000	OK.
IMPERVIOUS COVER TREATED	8.6700	0.0000	0.0000	0.0000	0.0000	OK.
TURF AREA	8.0000	0.0000	0.0000	0.0000	0.0000	OK.
TURF AREA TREATED	8.0000	0.0000	0.0000	0.0000	0.0000	OK.
AREA CHECK	OK.	OK.	OK.	OK.	OK.	

Phosphorus

TOTAL TREATMENT VOLUME (cf)	39,336
TOTAL PHOSPHORUS LOAD REDUCTION REQUIRED (LB/YEAR)	14.55
RUNOFF REDUCTION (cf)	3056
PHOSPHORUS LOAD REDUCTION ACHIEVED (LB/YR)	16.38
ADJUSTED POST-DEVELOPMENT PHOSPHORUS LOAD (TP) (lb/yr)	8.33
REMAINING PHOSPHORUS LOAD REDUCTION (LB/YR) NEEDED	CONGRATULATIONS!! YOU EXCEEDED THE TARGET REDUCTION BY 1.8 LB/YEAR!

Nitrogen (for information purposes)

TOTAL TREATMENT VOLUME (cf)	39,336
RUNOFF REDUCTION (cf)	3056
NITROGEN LOAD REDUCTION ACHIEVED (LB/YR)	174.57
ADJUSTED POST-DEVELOPMENT NITROGEN LOAD (TN) (lb/yr)	2.24

			1-year storm	2-year storm	10-year storm		
Target Rainfall Event (in)			0.00	0.00	0.00		
Drainage Area A							
Drainage Area (acres)		16.6700					
Runoff Reduction Volume (cf)		3,056					
Drainage Area B							
Drainage Area (acres)		0.0000					
Runoff Reduction Volume (cf)		0					
Drainage Area C							
Drainage Area (acres)		0.0000					
Runoff Reduction Volume (cf)		0					
Drainage Area D							
Drainage Area (acres)		0.0000					
Runoff Reduction Volume (cf)		0					
Drainage Area E							
Drainage Area (acres)		0.0000					
Runoff Reduction Volume (cf)		0					
Based on the use of Runoff Reduction practices in the selected drainage areas, the spreadsheet calculates an adjusted $RV_{Developed}$ and adjusted Curve Number.							
Drainage Area A			**A soils**	**B Soils**	**C Soils**	**D Soils**	
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)		0.0000	0.0000	0.0000	0.0000	
	CN		30	55	70	77	
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)		0.0000	0.0000	8.0000	0.0000	
	CN		39	61	74	80	
Impervious Cover	Area (acres)		0.0000	0.0000	8.6700	0.0000	
	CN		98	98	98	98	
						Weighted CN	**S**
						86	1.63
			1-year storm	**2-year storm**	**10-year storm**		
$RV_{Developed}$ (in) with no Runoff Reduction			0.00	0.00	0.00		
$RV_{Developed}$ (in) with Runoff Reduction			-0.05	-0.05	-0.05		
	Adjusted CN		**#N/A**	**#N/A**	**#N/A**		
Drainage Area B			**A soils**	**B Soils**	**C Soils**	**D Soils**	
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)		0.0000	0.0000	0.0000	0.0000	
	CN		30	55	70	77	
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)		0.0000	0.0000	0.0000	0.0000	
	CN		39	61	74	80	
Impervious Cover	Area (acres)		0.0000	0.0000	0.0000	0.0000	
	CN		98	98	98	98	
						Weighted CN	**S**
						0	1000.00
			1-year storm	**2-year storm**	**10-year storm**		
$RV_{Developed}$ (in) with no Runoff Reduction			0.00	0.00	0.00		
$RV_{Developed}$ (in) with Runoff Reduction			0.00	0.00	0.00		
	Adjusted CN		**100**	**100**	**100**		
Drainage Area C			**A soils**	**B Soils**	**C Soils**	**D Soils**	
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)		0.0000	0.0000	0.0000	0.0000	
	CN		30	55	70	77	
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)		0.0000	0.0000	0.0000	0.0000	
	CN		39	61	74	80	
Impervious Cover	Area (acres)		0.0000	0.0000	0.0000	0.0000	
	CN		98	98	98	98	
						Weighted CN	**S**
						0	1000.00
			1-year storm	**2-year storm**	**10-year storm**		
$RV_{Developed}$ (in) with no Runoff Reduction			0.00	0.00	0.00		
$RV_{Developed}$ (in) with Runoff Reduction			0.00	0.00	0.00		
	Adjusted CN		**100**	**100**	**100**		
Drainage Area D			**A soils**	**B Soils**	**C Soils**	**D Soils**	
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)		0.0000	0.0000	0.0000	0.0000	
	CN		30	55	70	77	
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)		0.0000	0.0000	0.0000	0.0000	
	CN		39	61	74	80	
Impervious Cover	Area (acres)		0.0000	0.0000	0.0000	0.0000	
	CN		98	98	98	98	
						Weighted CN	**S**
						0	1000.00
			1-year storm	**2-year storm**	**10-year storm**		
$RV_{Developed}$ (in) with no Runoff Reduction			0.00	0.00	0.00		
$RV_{Developed}$ (in) with Runoff Reduction			0.00	0.00	0.00		
	Adjusted CN		**100**	**100**	**100**		
Drainage Area E			**A soils**	**B Soils**	**C Soils**	**D Soils**	
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)		0.0000	0.0000	0.0000	0.0000	
	CN		30	55	70	77	

Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed		Area (acres)	0.0000	0.0000	0.0000	0.0000	
		CN	39	61	74	80	
Impervious Cover		Area (acres)	0.0000	0.0000	0.0000	0.0000	
		CN	98	98	98	98	
						Weighted CN	**S**
						0	1000.00
			1-year storm	**2-year storm**	**10-year storm**		
		$RV_{Developed}$ (in) with no Runoff Reduction	0.00	0.00	0.00		
		$RV_{Developed}$ (in) with Runoff Reduction	0.00	0.00	0.00		
		Adjusted CN	**100**	**100**	**100**		
.							

ı Runoff Reduction Method New Development Worksheet - v2.8 - June 2014

Site Data Summary

Total Rainfall = 43 inches

Site Land Cover Summary

	A Soils	B Soils	C Soils	D Soils	Total	% of Total
Forest (acres)	0.0000	0.0000	5.2700	0.0000	5.2700	*21.25*
Turf (acres)	0.0000	0.0000	10.8600	0.0000	10.8600	*43.79*
Impervious (acres)	0.0000	0.0000	8.6700	0.0000	8.6700	*34.96*
					24.8000	*100.00*

Site Rv	0.44
Post Development Treatment Volume (ft3)	39336
Post Development TP Load (lb/yr)	24.72
Post Development TN Load (lb/yr)	176.81
Total TP Load Reduction Required (lb/yr)	14.55

Total Runoff Volume Reduction (ft^3)	3056
Total TP Load Reduction Achieved (lb/yr)	16.38
Total TN Load Reduction Achieved (lb/yr)	174.57
Adjusted Post Development TP Load (lb/yr)	8.33
Remaining Phosphorous Load Reduction (Lb/yr) Required	0.00

Drainage Area Summary

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	Total
Forest (acres)	0.0000	0.0000	0.0000	0.0000	0.0000	*0.0000*
Turf (acres)	8.0000	0.0000	0.0000	0.0000	0.0000	*8.0000*
Impervious (acres)	8.6700	0.0000	0.0000	0.0000	0.0000	*8.6700*
						16.6700

Drainage Area Compliance Summary

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	Total
TP Load Red. (lb/yr)	16.38	0.00	0.00	0.00	0.00	*16.38*
TN Load Red. (lb/yr)	174.57	0.00	0.00	0.00	0.00	*174.57*

Drainage Area A Summary

Land Cover Summary

	A Soils	B Soils	C Soils	D Soils	Total	% of Total
Forest (acres)	0.00	0.00	0.00	0.00	0.00	*0.00*
Turf (acres)	0.00	0.00	8.00	0.00	8.00	*47.99*
Impervious (acres)	0.00	0.00	8.67	0.00	8.67	*52.01*
					16.67	

BMP Selections

Practice	Credit Area (acres)	Downstream Practice

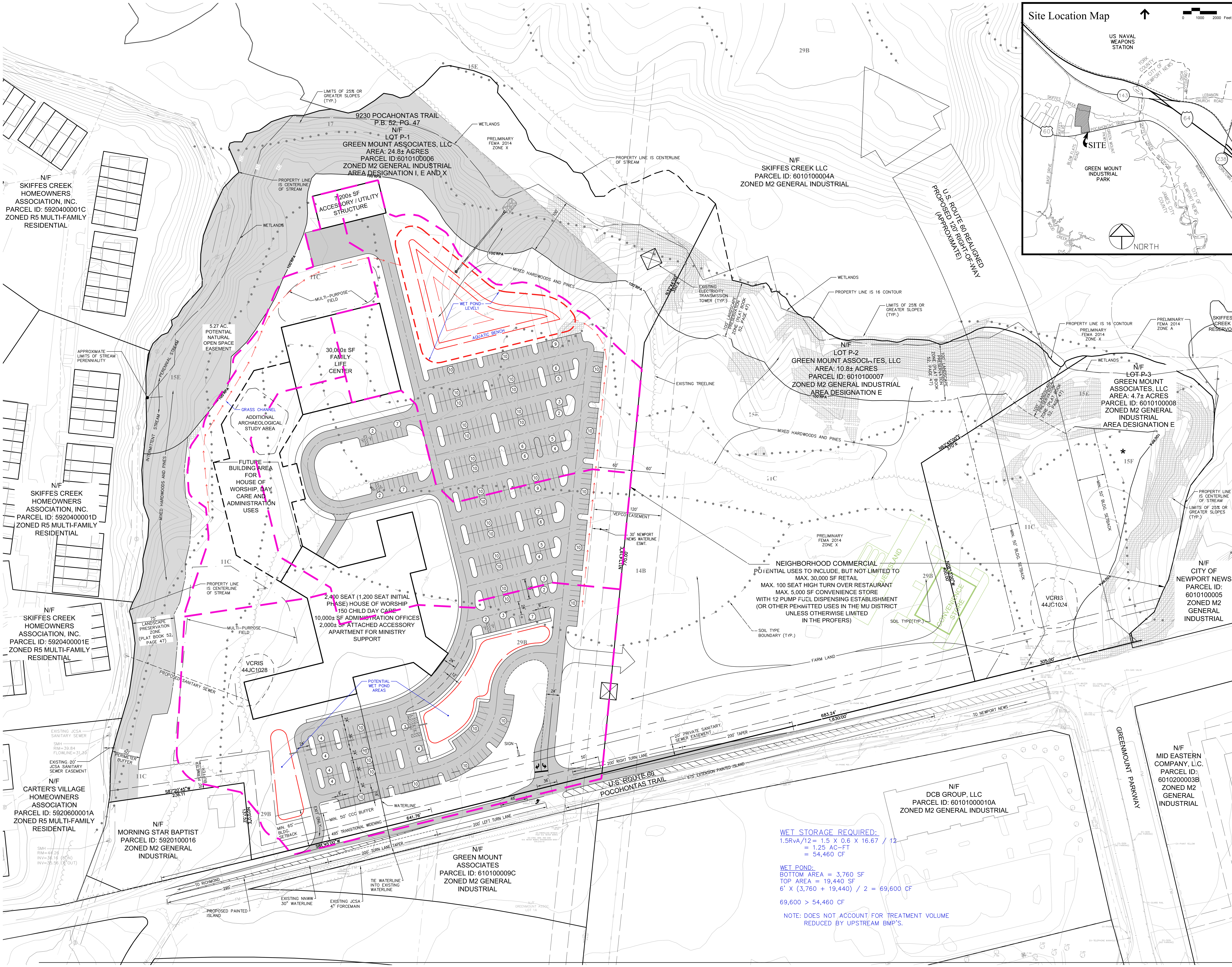
Total Impervious Cover Treated (acres)	8.67
Total Turf Area Treated (acres)	8.00
Total TP Load Reduction Achieved in D.A. A (lb/yr)	16.38
Total TN Load Reduction Achieved in D.A. A (lb/yr)	174.57

Channel and Flood Protection

	Weighted CN	1-year storm Adjusted CN	2-year storm Adjusted CN	10-year storm Adjusted CN
Target Rainfall Event (in)		0.00	0.00	0.00
D.A. A CN	86	#N/A	#N/A	#N/A
D.A. B CN	0	100	100	100
D.A. C CN	0	100	100	100
D.A. D CN	0	100	100	100
D.A. E CN	0	100	100	100

Version 2.8 - June 2014 - 2011 BMP Stnds & 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



Site Location Map
US NAVAL WEAPONS STATION
SITE
GREEN MOUNT INDUSTRIAL PARK
NORTH
9230 POCAHONTAS TRAIL
P.B. 52, PG. 47
N/F
LOT P-1
GREEN MOUNT ASSOCIATES, LLC
AREA: 24.8± ACRES
PARCEL ID:6010100006
ZONED M2 GENERAL INDUSTRIAL
AREA DESIGNATION I, E AND X
N/F
SKIFFES CREEK LLC
PARCEL ID: 6010100004A
ZONED M2 GENERAL INDUSTRIAL
U.S. ROUTE 60 REALIGNED
PROPOSED 120' RIGHT-OF-WAY
(APPROXIMATE)
N/F
LOT P-2
GREEN MOUNT ASSOCIATES, LLC
AREA: 10.8± ACRES
PARCEL ID: 6010100007
ZONED M2 GENERAL INDUSTRIAL
AREA DESIGNATION E
N/F
LOT P-3
GREEN MOUNT ASSOCIATES, LLC
AREA: 4.7± ACRES
PARCEL ID: 6010100008
ZONED M2 GENERAL INDUSTRIAL
AREA DESIGNATION E
N/F
SKIFFES CREEK HOMEOWNERS ASSOCIATION, INC.
PARCEL ID: 5920400001C
ZONED R5 MULTI-FAMILY RESIDENTIAL
N/F
SKIFFES CREEK HOMEOWNERS ASSOCIATION, INC.
PARCEL ID: 5920400001D
ZONED R5 MULTI-FAMILY RESIDENTIAL
N/F
SKIFFES CREEK HOMEOWNERS ASSOCIATION, INC.
PARCEL ID: 5920400001E
ZONED R5 MULTI-FAMILY RESIDENTIAL
N/F
CARTER'S VILLAGE HOMEOWNERS ASSOCIATION
PARCEL ID: 5920600001A
ZONED R5 MULTI-FAMILY RESIDENTIAL
N/F
MORNING STAR BAPTIST
PARCEL ID: 5920100016
ZONED M2 GENERAL INDUSTRIAL
N/F
GREEN MOUNT ASSOCIATES
PARCEL ID: 610100009C
ZONED M2 GENERAL INDUSTRIAL
N/F
DCB GROUP, LLC
PARCEL ID: 60101000010A
ZONED M2 GENERAL INDUSTRIAL
N/F
MID EASTERN COMPANY, L.C.
PARCEL ID: 6010200003B
ZONED M2 GENERAL INDUSTRIAL
N/F
CITY OF NEWPORT NEWS
PARCEL ID: 6010100005
ZONED M2 GENERAL INDUSTRIAL
7,200± SF ACCESSORY / UTILITY STRUCTURE
30,000± SF FAMILY LIFE CENTER
FUTURE BUILDING AREA FOR HOUSE OF WORSHIP, DAY CARE AND ADMINISTRATION USES
2,400 SEAT (1,200 SEAT INITIAL PHASE) HOUSE OF WORSHIP
150 CHILD DAY CARE
10,000± SF ADMINISTRATION OFFICES
2,000± SF ATTACHED ACCESSORY APARTMENT FOR MINISTRY SUPPORT
5.27 AC. POTENTIAL NATURAL OPEN SPACE EASEMENT
ADDITIONAL ARCHAEOLOGICAL STUDY AREA
MULTI-PURPOSE FIELD
WET POND LEVEL 1
AQUATIC BENCH
GRASS CHANNEL
POTENTIAL WET POND AREAS
NEIGHBORHOOD COMMERCIAL
POTENTIAL USES TO INCLUDE, BUT NOT LIMITED TO
MAX. 30,000 SF RETAIL
MAX. 100 SEAT HIGH TURN OVER RESTAURANT
MAX. 5,000 SF CONVENIENCE STORE
WITH 12 PUMP FUEL DISPENSING ESTABLISHMENT
(OR OTHER PERMITTED USES IN THE MU DISTRICT
UNLESS OTHERWISE LIMITED
IN THE PROFERS)
VCRIS 44JC1028
VCRIS 44JC1024
U.S. ROUTE 60
POCAHONTAS TRAIL
GREENMOUNT PARKWAY
SKIFFES CREEK RESERVOIR
WET STORAGE REQUIRED:
1.5RvA/12= 1.5 X 0.6 X 16.67 / 12
= 1.25 AC-FT
= 54,460 CF
WET POND:
BOTTOM AREA = 3,760 SF
TOP AREA = 19,440 SF
6' X (3,760 + 19,440) / 2 = 69,600 CF
69,600 > 54,460 CF
NOTE: DOES NOT ACCOUNT FOR TREATMENT VOLUME
REDUCED BY UPSTREAM BMP'S.

VHB
Vanasse Hangen Brustlin, Inc.
Transportation
Land Development
Environmental Services
351 McLaws Circle, Suite 3
Williamsburg, Virginia 23185
757.220.0500 • FAX 757.220.8544

GENERAL NOTES:

1. THE PROPERTY IS IDENTIFIED ON THE JAMES CITY COUNTY GEOGRAPHIC INFORMATION SYSTEM MAP SERIES AS GPIN:6010100006 AND IS ZONED M2, GENERAL INDUSTRIAL. THE PROPERTY IS FURTHER DESCRIBED AS 9230 POCAHONTAS TRAIL. THE PROPERTY IS IDENTIFIED ON THE JAMES CITY COUNTY GEOGRAPHIC INFORMATION SYSTEM MAP SERIES AS GPIN:6010100007 AND IS ZONED M2, GENERAL INDUSTRIAL. THE PROPERTY IS FURTHER DESCRIBED AS 9240 POCAHONTAS TRAIL. THE PROPERTY IS IDENTIFIED ON THE JAMES CITY COUNTY GEOGRAPHIC INFORMATION SYSTEM MAP SERIES AS GPIN:6010100008 AND IS ZONED M2, GENERAL INDUSTRIAL. THE PROPERTY IS FURTHER DESCRIBED AS 9250 POCAHONTAS TRAIL. ; THE PARCELS ARE LOCATED WITHIN THE PRIMARY SERVICE AREA AND OUTSIDE THE 100 YEAR FLOOD PLAIN. THE COMPREHENSIVE PLAN DESIGNATION FOR THESE PARCELS IS MIXED USE.
2. BOUNDARY INFORMATION IS FROM PLAT OF RECORD RECORDED IN PB. 52, PG. 47, TOPOGRAPHIC AND EXISTING FEATURES INFORMATION DEPICTED HEREON IS FROM JAMES CITY COUNTY GEOGRAPHIC INFORMATION SYSTEM MAPPING.
3. POCAHONTAS TRAIL IS CLASSIFIED AS COMMUNITY CHARACTER CORRIDOR ALONG THE FRONTAGE OF THE SUBJECT PROPERTY.

SUMMARY TABULATION

PROPOSED DEVELOPMENT PROGRAM:

- ADDRESS: P-1 9230 POCAHONTAS TRAIL WILLIAMSBURG, VA. 23185
- ADDRESS: P-2 9240 POCAHONTAS TRAIL WILLIAMSBURG, VA. 23185
- ADDRESS: P-3 9250 POCAHONTAS TRAIL WILLIAMSBURG, VA. 23185
- PARCEL ID: 6010100006(P-1), 6010100007(P-2), 6010100008(P-3)
- ZONING: M2 GENERAL INDUSTRIAL
- WATERSHED: SKIFFES CREEK
- RECEIVING STREAM: SKIFFES CREEK

GROSS SITE AREA: 40.3± ACRES (TOTAL PARCEL)
DEVELOPABLE AREA (SEC. 24-2): 27.4± OR 1,193,545± S.F.
IMPERVIOUS AREA: MAXIMUM 60%
PERVIOUS AREA: MINIMUM 40%

PROPERTY APPEARS TO BE IN ZONE X (AREAS OF 0.2% ANNUAL CHANCE OF FLOOD) FIRM MAP NUMBER 51095C0230C DATED SEPTEMBER 28, 2007

SOILS WITHIN SITE AREA:
11C=CRAVEN-UCHEE COMPLEX-HYDROLOGIC SOIL GROUP C K=0.37 HIGH ERODIBILITY
14B=EMPORIA FINE SANDY LOAM-HYDROLOGIC SOIL GROUP C K=0.28 MODERATE ERODIBILITY
15E=EMPORIA COMPLEX-HYDROLOGIC SOIL GROUP C K=0.28 MODERATE ERODIBILITY
17=JOHNSTON COMPLEX-HYDROLOGIC SOIL GROUP D K=.20 LOW ERODIBILITY
29B=SLAGLE FINE SANDY LOAM-HYDROLOGIC SOIL GROUP C K=0.24 MODERATE ERODIBILITY

SCALE IN FEET (60 0 60 120)

No.	Revision	Date	Appvd

Designed by SAR | Drawn by VHB | Checked by PS
CAD checked by | Approved by SAR
Scale 1"=60' | Date January 20, 2015

Project Title
Peninsula Pentecostal Church
Pocahontas Trail
Williamsburg, Virginia

Issued for
Not Approved for Construction

Drawing Title
Stormwater Management Exhibit B Wet Pond Option

COMMONWEALTH OF VIRGINIA — STEPHEN A. ROMEO Lic. No. 1448-B — LAND SURVEYOR

Drawing Number CP-1
Sheet 1 of 1
Project Number 33749.00