APPLICATION ACCEPTED: June 18, 2013
PLANNING COMMISSION: March 13, 2014
BOARD OF SUPERVISORS: March 25, 2014; 3:30 pm

County of Fairfax, Virginia

February 25, 2014

STAFF REPORT

RZ 2013-SP-011

Concurrent with:
Resource Protection Area Encroachment Exception 5072-WRPA-001-1 &
Water Quality Impact Assessment 5072-WQ-001-01

SPRINGFIELD DISTRICT

APPLICANT:	Van Metre Communities, LLC
PRESENT ZONING:	R-1 (Residential) District - 1 dwelling unit per acre)
PROPOSED ZONING:	R-3 Cluster
PARCEL:	89-3 ((1)) 39 & 42
SITE AREA:	7.72 acres
PLAN MAP:	Residential at 2-3 dwelling units per acre
PROPOSAL:	To rezone 7.72 acres from the R-1 to the R-3 (Cluster) District for the development of 18 single-family detached houses at a density of 2.33 dwelling units per acre.

STAFF RECOMMENDATIONS:

Staff recommends approval of RZ 2013-SP-011 subject to the execution of the proffers consistent with those contained in Appendix 1.

Staff recommends approval of RPA Exception 5072-WRPA-001-1 and WQIA 5072-WQ-001-01, subject to the proposed development conditions in Appendix 2.

Joe Gorney

Department of Planning and Zoning
Zoning Evaluation Division
12055 Government Center Parkway, Suite 801
Fairfax, Virginia 22035-5505
Phone 703-324-1290 FAX 703-324-3924
www.fairfaxcounty.gov/dpz/

It should be noted that it is not the intent of staff to recommend that the Board, in adopting any conditions proffered by the owner, relieve the applicant/owner from compliance with the provisions of any applicable ordinances, regulations, or adopted standards.

It should be further noted that the content of this report reflects the analysis and recommendation of staff; it does not reflect the position of the Board of Supervisors.

The approval of this rezoning and RPA exception does not interfere with, abrogate, or annul any easement, covenants, or other agreements between parties, as they may apply to the property subject to this application.

For information, contact the Zoning Evaluation Division, Department of Planning and Zoning, 12055 Government Center Parkway, Suite 801, Fairfax, Virginia 22035-5505, (703) 324-1290.

Americans with Disabilities Act (ADA): Reasonable accommodation is available upon 48 hours advance notice. For additional information on ADA call (703) 324-1334 or TTY 711 (Virginia Relay Center).

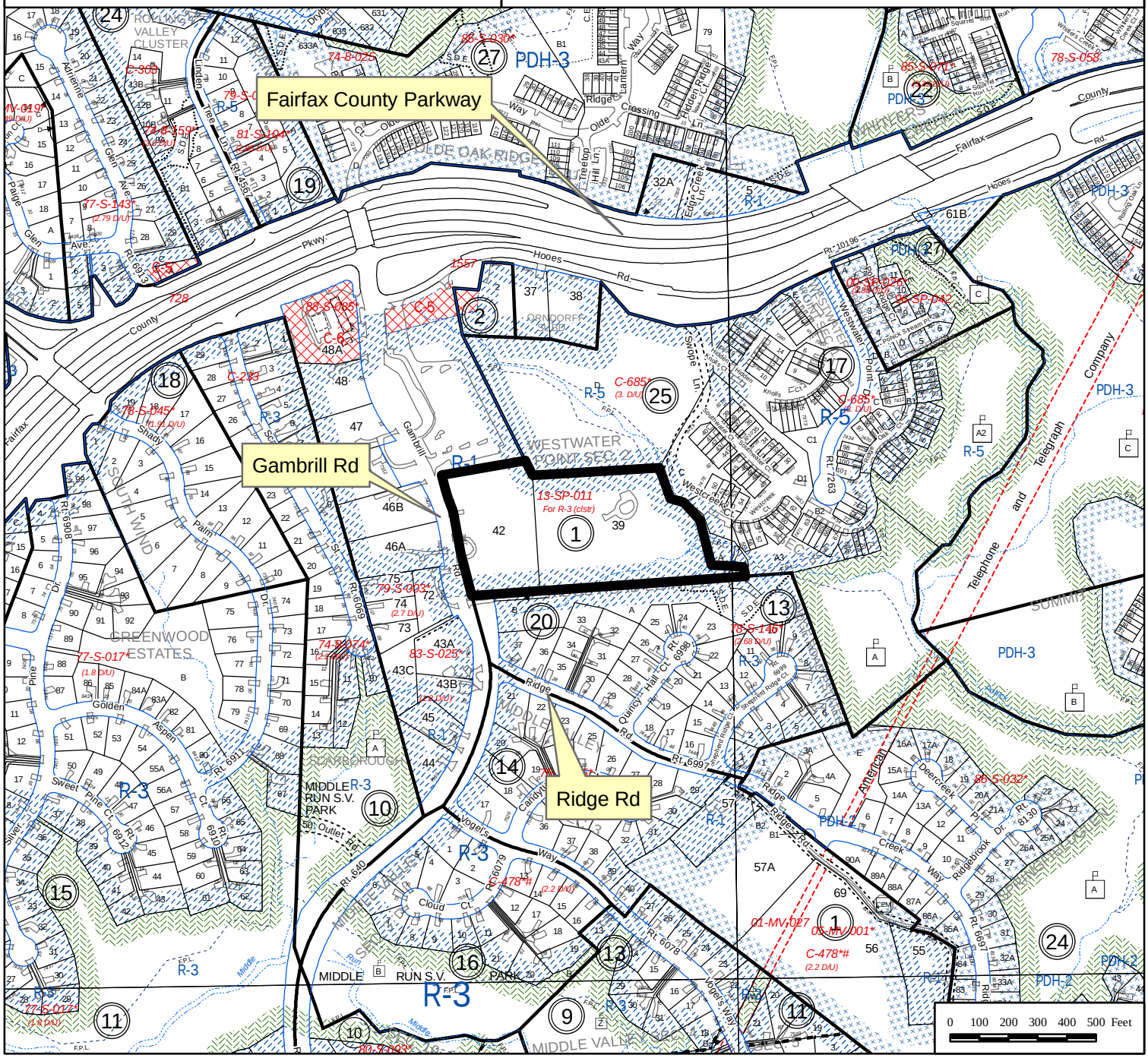
Rezoning Application

RZ 2013-SP-011

Applicant: VAN METRE COMMUNITIES, L.L.C.
Accepted: 06/18/2013
Proposed: RESIDENTIAL
Area: 7.72 AC OF LAND; DISTRICT - SPRINGFIELD

Located: EAST SIDE OF GRABRILL ROAD APPROXIMATELY 600 FEET SOUTH OF ITS INTERSECTION WITH HOOES ROAD

Zoning: FROM R- 1 TO R- 3 Cluster
Overlay Dist:
Map Ref Num: 089-3- /01/ /0039 /01/ /0042



PARK POINTE

RZ 2013-SP-011

GENERALIZED DEVELOPMENT PLAN

APPLICANT
VAN METRE COMMUNITIES L.L.C.
BY VAN METRE HOMES, INC., ITS MANAGER
9900 MAIN STREET, SUITE 500
FAIRFAX, VIRGINIA 22031
703-425-2614

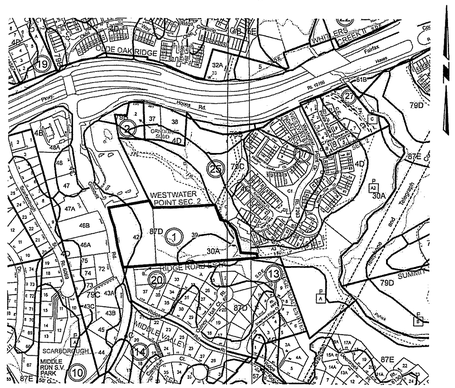
SPRINGFIELD DISTRICT
FAIRFAX COUNTY, VIRGINIA
JUNE 3, 2013
REVISION: SEPTEMBER 13, 2013
REVISION: NOVEMBER 13, 2013
REVISION: JANUARY 7, 2014
REVISION: JANUARY 31, 2014

ENGINEER
PACIULLI SIMMONS & ASSOCIATES
3975 FAIR RIDGE DRIVE
SUITE 300 SOUTH
FAIRFAX, VIRGINIA 22030
703-934-0900

ATTORNEY
WALSH, COLUCCI, LUBELEY, EMRICH & WALSH, P.C.
2200 CLARENDON BLVD, 13TH FLOOR
ARLINGTON, VIRGINIA 22201
703-528-4700

SOILS MAP DATA

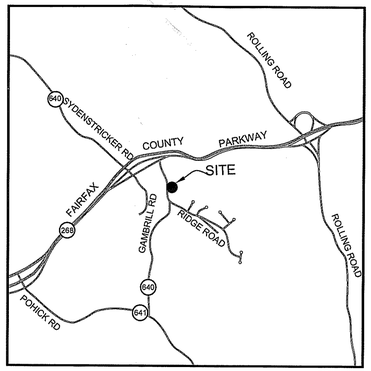
SCALE: 1"=500'



SOIL ID NUMBERS	SOIL SERIES NAME	FOUNDATION SUPPORT	SOIL DRAINAGE	EROSION POTENTIAL	PROBLEM CLASS
79C	NATHALIE GRAVELY LOAM	FAIR	GOOD	HIGH	I
87D	RHODISS SANDY LOAM	FAIR	GOOD	MEDIUM	I
30A	CODORUS AND HATBORO SOILS	POOR	POOR	LOW	III
4D	BARKER CROSSROADS NATHALIE COMPLEX	FAIR	GOOD	HIGH	IVB

VICINITY MAP

SCALE: 1"=2,000



TAX MAP REFERENCE NUMBER(S)

MAP PAGE #	DOUBLE CIRCLE #	BLOCK (SINGLE CIRCLE #)	LOT/PARCEL(S) #
89-3	1		LOTS 39 AND 42

Sheet List Table

Sheet Number	Sheet Title
1	COVER SHEET
2	EXISTING CONDITIONS
3	GENERALIZED DEVELOPMENT PLAN
4	GENERALIZED DEVELOPMENT PLAN- NOTES
5	GAMBRILL ROAD PLAN AND PROFILE
6	DRAINAGE DIVIDES NARRATIVE SWM
7	DRAINAGE DIVIDES MAP SWM
8	EVM INFORMATION (by others)
9	LANDSCAPE PLAN
10	LANDSCAPE PLAN, NOTES AND DETAILS
11	TREE CONSERVATION PLAN
12	TREE IDENTIFICATION TABLE

RECEIVED
Department of Planning & Zoning
FEB 10 2014
Zoning Evaluation Division

COMMONWEALTH OF VIRGINIA
ANN O. GERMAIN
Lic. No. 028700
1/31/14
PROFESSIONAL ENGINEER

DATE: 01-31-14
FILE NO: F 4570
DRN: LC
CKD: AOG

STORM AS-BUILTS

=271.80' 15" RCP TO 3233
3343 GRATE
TOP=270.85'
OUT=268.65' 15" RCP TO 3233
3233 CURB
TOP=279.16'
IN=270.62' 15" RCP FROM 1236
IN=268.22' 15" RCP FROM 3343
OUT=268.01' 15" RCP TO 3227
3227 CURB
TOP=278.32'
IN=266.82' 15" RCP FROM 3233
OUT=266.92' 15" RCP TO 6643

NOTES:
1- ALL ONSITE BUILDINGS WILL BE REMOVED.
2- ALL EXISTING WELLS AND/OR DRAIN FIELDS WILL BE PROPERLY ABONDONED PRIOR TO DEMOLITION OF THE EXISTING BUILDINGS AT 7407 GAMBRILL ROAD.
2- TAX MAP 89-3((25))A IS OWNED BY WILLS AND VAN METRE, INC.
3- LOT LINES, DRIVEWAYS AND BUILDINGS ON ADJACENT PROPERTIES ARE APPROXIMATE AND SHOWN PER GIS MAPPING

= SLOPES GREATER THAN 15%, REPRESENTS 2.62 ACRES OR 34% OF SITE

SLOPES:		
	0 - 15% 5.09 ACRES	(66%)
	15 - 20% 1.06 ACRES	(14%)
	20 - 25% 0.43 ACRES	(6%)
	25 - 33% 0.55 ACRES	(7%)
	33 - VERTICAL 0.58 ACRES	(7%)

EOC AREA = 2.739 ACRES (35%)
(INCLUDES 1.412 ACRES OR RPA)

PACIULLI
SIMMONS
& ASSOCIATES
Established 1944

3975 Fair Ridge Drive
Suite 300 South
Fairfax, VA 22033
PH 703.934.0900
FX 703.934.9787
EM fairfax@psaltd.com
Engineers
Planners
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Landscape Architects
Wetland Specialists
Environmental Scientists
Archaeologists

PARK POINTE

SPRINGFIELD DISTRICT
FAIRFAX COUNTY, VIRGINIA

EXISTING CONDITIONS

COMMONWEALTH OF VIRGINIA
ANN O. GERMAIN
Lic. No. 028700
1/31/14
PROFESSIONAL ENGINEER

DATE: 01-31-14
FILE NO: F 4570
DRN: LC
CKD: AOG

SHEET 2 OF 12

LEGEND:

- FRONT OF HOUSE
- CLEARING AND GRADING LIMITS
- RPA — FIELD VERIFIED RPA LIMITS
- EQC

SITE TABULATIONS:

GROSS SITE AREA:	7.72 ACRES
OPEN SPACE:	2.82 ACRES / 7.72 ACRES = 36%
EXISITING ZONING:	R-1
PROPOSED ZONING:	R-3 CLUSTER
MAXIMUM DENSITY PERMITTED [1]:	2.85 DU/AC
PROPOSED DENSITY:	2.33 DU/AC
MAXIMUM LOTS PERMITTED [1]:	22
PROPOSED LOTS:	18
MAXIMUM BUILDING HEIGHT:	35'

YARD REQUIREMENTS:

FRONT YARD	20'
SIDE YARD	8' (20' TOTAL)
REAR YARD	25'

MINIMUM LOT AREA REQUIRED: 8,500 SF
MINIMUM LOT AREA PROVIDED: 8,592 SF
AVERAGE LOT AREA REQUIRED: NONE
AVERAGE LOT AREA PROVIDED: 9,979 SF

PARKING REQUIRED: 36 (2 SPACES/DU)
PARKING PROVIDED: 72 (4 SPACES/DU)

[1] PURSUANT TO ZONING SECTION 2-308 #2, MAXIMUM DENSITY PERMITTED IS CALCULATED ON GROSS AREA EXCEPT WHEN 30% OF MORE OF A SITE IS COMPRISED OF: 1) FLOODPLAINS AND SLOPES >15%; 2) QUARRIES; 3) MARINE CLAYS; AND 4) EXISTING BODIES OF WATER.

THE SITE CONTAINS:

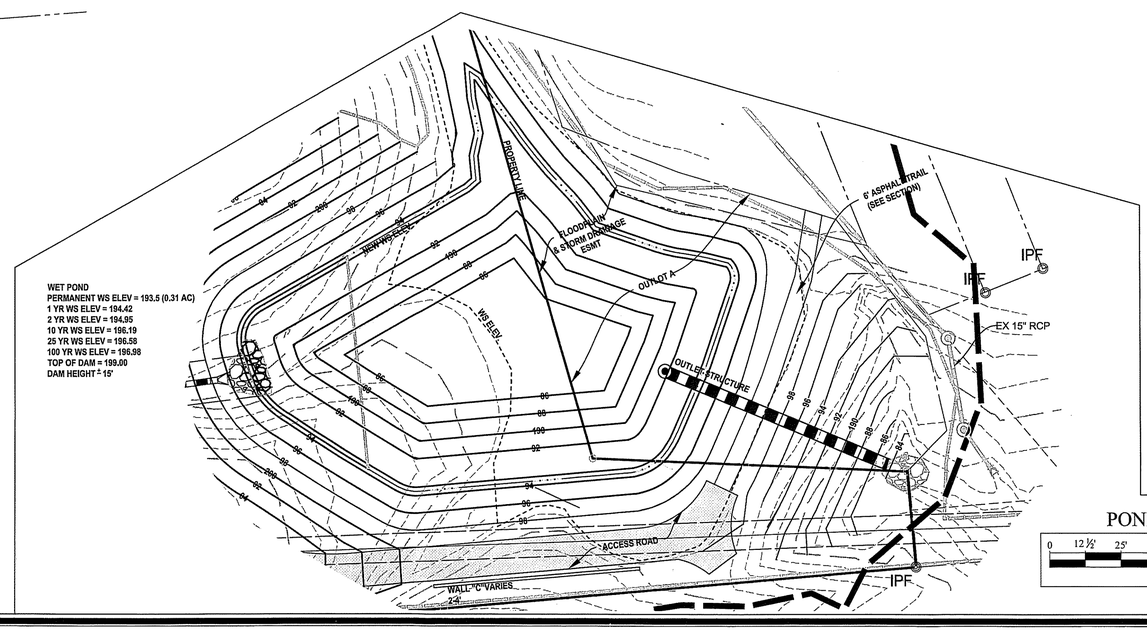
FLOODPLAINS	0 ACRES
SLOPE >15%	2.62 ACRES
QUARRIES	0 ACRES
MARINE CLAYS	0 ACRES
BODIES OF WATER	0 ACRES
TOTAL	2.62 ACRES (34% OF SITE)

WHEN 30% OF THE LOT IS COMPRISED OF ANY OR ALL OF THE ABOVE FEATURES, THEN 50% OF MAXIMUM PERMITTED DENSITY IS CALCULATED FOR THE AREA OF LOT THAT EXCEEDS 30%.

96% OF SITE OR 7.40 ACRES x 3 DU/AC =	22.20
4% OF SITE OR 0.32 ACRES x (0.5)(3 DU/AC) =	0.48
	22.68 DU

22 LOTS/7.72 ACRES = 2.85 DU/AC

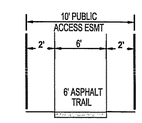
0 25' 50' 100' 150' 200'
Scale 1" = 50'



WET POND
PERMANENT WS ELEV = 193.5 (0.31 AC)
1 YR WS ELEV = 194.42
2 YR WS ELEV = 194.95
10 YR WS ELEV = 196.10
25 YR WS ELEV = 196.58
100 YR WS ELEV = 196.98
TOP OF DAM = 199.00
DAM HEIGHT ≈ 15'

POND DETAIL

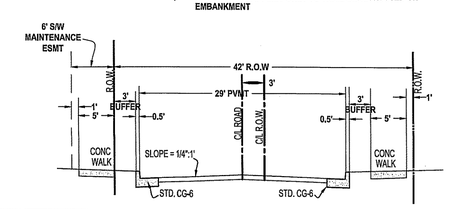
0 12½' 25' 50' 75' 100'
Scale 1" = 25'



TYPICAL TRAIL SECTION

N.T.S.

1) THIS SECTION APPLIES ONLY TO TRAIL CONSTRUCTED ON EMBANKMENT



SWOPE COURT ROAD SECTION

N.T.S.

1) AVERAGE DAILY TRAFFIC = 180

PACIULLI SIMMONS & ASSOCIATES
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PARK POINTE

SPRINGFIELD DISTRICT
FAIRFAX COUNTY, VIRGINIA

GENERALIZED DEVELOPMENT PLAN

COMMONWEALTH OF VIRGINIA
ANN O. GERMAIN
Lic. No. 028700
1/31/14
PROFESSIONAL ENGINEER

DATE: 01-31-14
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DRN: LC
CKD: AOG

SHEET 3 OF 12

GENERAL NOTES:

1. THE PROPERT THAT IS THE SUBJECT OF THIS REZONING CONSISTS OF PARCELS IDENTIFIED ON THE FAIRFAX COUNTY TAX ASSESSMENT MAP AS 89-3((1)) 39 AND 42. PARCEL 39 IS OWNED BY THE ESTATE OF HELEN HALL (DB 0002, PG 0290). PARCEL 42 IS OWNED BY LAWANDA SWOPE (DB 0789, PG 1676). THE APPLICANT/CONTRACT PURCHASER IS VAN METRE COMPANIES, L.L.C.

2. THE PROPOSED USE FOR THE SITE IS RESIDENTIAL, DETACHED DWELLINGS.

3. THERE ARE NO EXISTING UTILITY EASEMENTS HAVING A WIDTH OF 25 FEET OR MORE.

4. EXISTING TOPOGRAPHY FOR THE SITE WAS OBTAINED FROM A FIELD SURVEY PERFORMED BY PACIULLI, SIMMONS & ASSOCIATES, LTD IN FEBRUARY, 2013, NGVD 29.

5. ACCORDING TO FAIRFAX COUNTY MAPS, THE PROPOSED SITE LOCATION HAS A NATURAL STREAM LOCATED ON THE SITE; A PORTION OF THE SITE IS LOCATED WITH AN RPA BOUNDARY.

6. THERE ARE NO FLOOD HAZARD AREAS LOCATED ON THE SITE.

7. AREAS THAT ARE OUTSIDE OF THE LIMITS OF CLEARING AND GRADING SHALL NOT BE DISTURBED DURING THE CONSTRUCTION OF THE PROPOSED PROJECT, AND WILL BE MARKED ACCORDINGLY.

8. NATURAL FEATURES LOCATED ON-SITE, SUCH AS THE RPA AREA AND STREAM, THAT ARE NOT TO BE DISTURBED SHALL BE PROTECTED DURING CONSTRUCTION BY THE IMPLEMENTATION OF EROSION AND SEDIMENT CONTROLS. STREAMS ARE LOCATED NEAR THE NORTHERN AND SOUTHERN BORDERS OF THE SITE. A POND IS LOCATED ON THE SOUTHEAST CORNER OF THE SITE. THERE IS NO ENVIRONMENTAL DISTRESS ON THE SITE.

9. AS STATED IN THE PHASE 1 ENVIRONMENTAL SITE ASSESSMENT BY ECS MID-ATLANTIC, LLC, HISTORICAL REVIEW DID NOT IDENTIFY ADJOINING OR NEARBY PROPERTIES THAT ARE CONSIDERED RECOGNIZED ENVIRONMENTAL CONDITIONS (REC) OF THE SITE. AS PART OF THE PHASE 1, A REGULATORY DATABASE SEARCH REPORT DID NOT INCLUDE THIS SITE ON ANY LISTS. ECS HAS NOTED THE PRESENCE OF AN ONSITE UNDERGROUND STORAGE TANK TO BE A RECOGNIZED ENVIRONMENTAL CONDITION FOR THE PROPERTY

10. THE IMPLEMENTATION OF EROSION AND SEDIMENT CONTROLS AROUND THE PERIMETER OF THE PROPOSED LIMITS OF CLEARING AND GRADING SHALL INHIBIT ADVERSE EFFECTS ON ADJACENT PROPERTIES AS A RESULT OF THE PROPOSED DEVELOPMENT.

11. PARCEL 42 CONTAINS A 1,644 SQUARE FOOT SINGLE-FAMILY HOUSE THAT WAS CONSTRUCTED IN 1957. AN ADDITION TO THE HOUSE WAS CONSTRUCTED IN 1973. PARCEL 39 CONTAINS A 1,300 SQUARE FOOT SINGLE-FAMILY HOUSE THAT WAS CONSTRUCTED IN 1900. ALL EXISTING STRUCTURES ARE TO BE REMOVED FOR THE PROPOSED PROJECT.

12. A GROSS FLOOR AREA CALCULATION IS NOT REQUIRED FOR THE GDP DUE TO THE PROPOSED RESIDENTIAL USE OF THE PROJECT SITE.

13. THE MAXIMUM NUMBER OF DWELLINGS PROPOSED FOR THE SITE IS 18 UNITS WITH A DENSITY OF 2.33 DWELLINGS/ACRE. THERE WILL BE 2.82 ACRES (OR 36%) OF OPEN SPACE PROVIDED.

14. FRONTAGE IMPROVEMENTS WILL BE PROVIDED WITHIN VDOT RIGHT OF WAY ACROSS THE SITE FRONTAGE. AN 8" SANITARY SEWER MAIN WILL BE CONSTRUCTED WITHIN AN EXISTING SANITARY SEWER EASEMENT ON OFFSITE PROPERTY TAX MAP 89-4((25)). A STORMWATER MANAGEMENT POND WILL BE CONSTRUCTED PARTIALLY ON SITE AND PARTIALLY OFFSITE ON PROPERTY OWNED BY VAN METRE COMPANIES. THE LOCATION FOR THE POND CAN BE SEEN ON TAX MAP 89-3 AND TAX MAP 89-4. ON-SITE IMPROVEMENTS WILL INCLUDE THE FOLLOWING AND WILL BE IMPLEMENTED DURING THE CONSTRUCTION OF THE PROJECT:

14.1 THE PROPOSED SITE WILL BE SERVED BY PUBLIC WATER AND SEWER.

14.2 ALL EXISTING WELLS AND/OR DRAIN FIELDS WILL BE PROPERLY ABONDONED PRIOR TO DEMOLITION OF THE EXISTING BUILDINGS AT 7407 GAMBRILL ROAD.

14.3 A POND LOCATED AT THE SOUTHEASTERN CORNER OF THE SITE WILL BE IMPLEMENTED TO PROVIDE BOTH QUALITY AND QUANTITY STORMWATER MANAGEMENT.

14.4 A 8' CONCRETE SIDEWALK WILL BE CONSTRUCTED ACROSS THE FRONTAGE OF THE SITE TO SATISFY THE MINOR PAVED TRAIL REQUIREMENT OF THE COMPREHENSIVE TRAILS PLAN. ACCESS TO THE OPEN SPACE IS PROVIDED VIA THE STORMWATER ACCESS ROAD AT THE SOUTH OF THE SITE.

15. THERE ARE NO SPECIAL AMENITIES PROPOSED FOR THE PROPOSED PROJECT. SPECIAL AMENITIES ARE AS DEFINED BY THE FAIRFAX COUNTY ZONING ORDINANCE ARTICLE 10-102.

16. THE PROPOSED PROJECT SCHEDULE WILL BE BASED ON MARKET DEMAND.

17. THERE IS NO FLOODPLAIN LOCATED ON-SITE. AN RPA RE-DELINEATION WAS PREPARED BY WETLAND STUDIES AND SOLUTIONS, INC. (WSSI) IN FEBRUARY, 2013 AND APPROVED ON 7/10/13. RPA BOUNDARY HAS BEEN DELINEATED AND APPROXIMATE DISTANCES FROM THE PROPOSED STRUCTURES TO THE RPA BOUNDARY ARE SHOWN ON THE PLAN; EXISTING STRUCTURES IN THE RPA ARE TO BE REMOVED. THE ENVIRONMENTAL QUALITY CORRIDOR HAS BEEN DELINEATED PER WSSI INVESTIGATION.

18. GAMBRILL ROAD WILL BE WIDENED AS SHOWN ON SHEET 5.

21. AN EXISTING VEGETATION MAP (EVM) MAP HAS BEEN PROVIDED BY WSSI AND IS INCLUDED AS SHEET 8.

22. THERE IS NO KNOW GRAVE, OBJECT, OR STRUCTURE MARKING THE PLACE OF BURIAL ON THE PROPOSED SITE.

23. ALL LOTS SHALL BE ACCESSED FROM THE PROPOSED SUBDIVISION STREET.

24. LOTS 15 AND 16 ARE REVERSE FRONTAGE LOTS AND LOTS 17 AND 18 ARE PIPESTEM LOTS.

25. TREE PRESERVATION AND CANOPY REQUIREMENTS WILL BE MET AT FINAL SITE PLAN

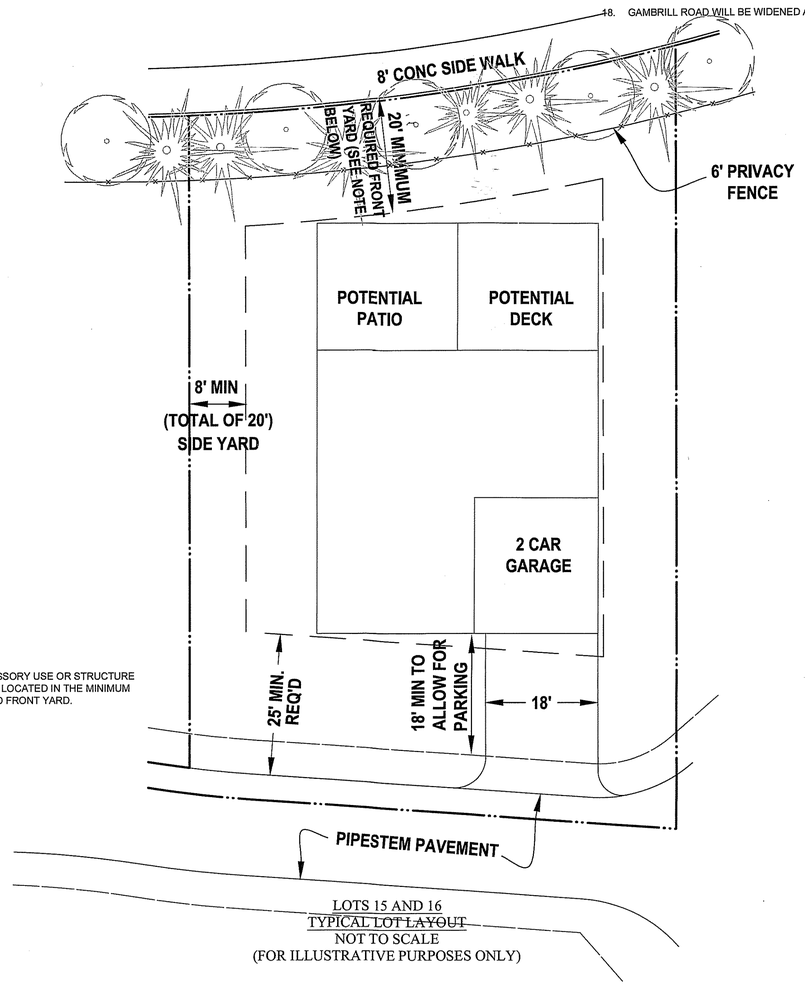
26. THE DEVELOPMENT IS IN CONFORMANCE WITH THE FAIRFAX COUNTY COMPREHENSIVE PLAN, WHICH RECOMMENDS RESIDENTIAL USE AT 2-3 DWELLING UNITS PER ACRE.

27. THIS DEVELOPMENT CONFORMS TO PROVISION OF ALL APPLICABLE ORDINANCES.

28. THERE ARE NO KNOWN HAZARDOUS OR TOXIC SUBSTANCES ON SITE

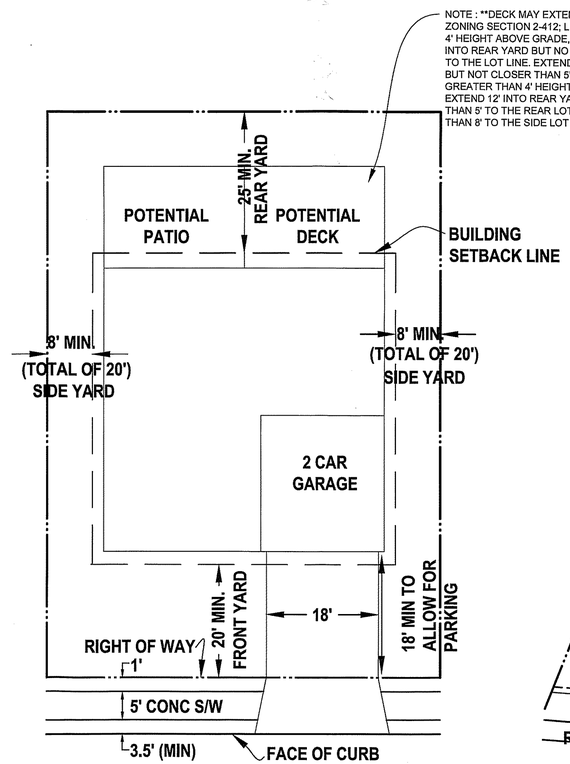
29. THERE WILL BE 0.14 ACRES RETURNED TO THE RPA DUE TO THE DEMOLITION OF SWOPE LANE AND THE SWOPE RESIDENCE

30. DRIVEWAY LOCATIONS ARE FOR ILLUSTRATIVE PURPOSES ONLY, AND SUBJECT TO CHANGE WITH FINAL ENGINEERING.

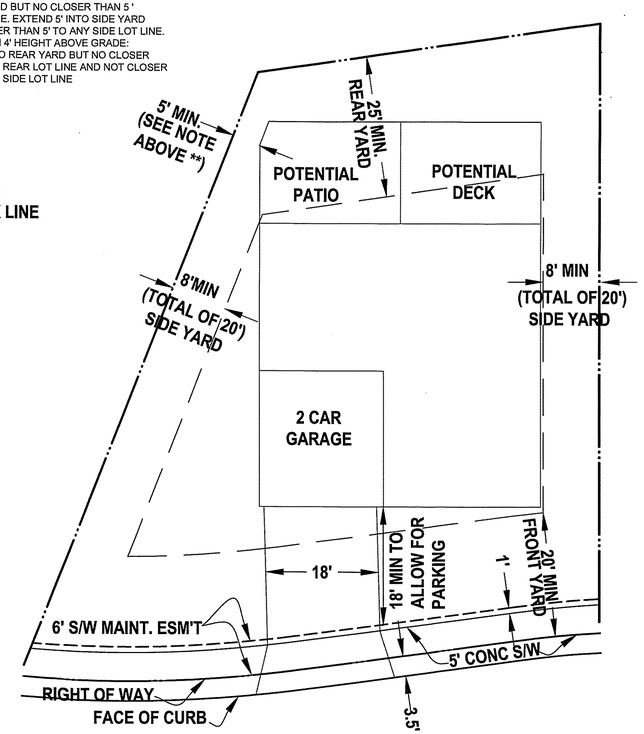


NOTE 1:
NO ACCESSORY USE OR STRUCTURE SHALL BE LOCATED IN THE MINIMUM REQUIRED FRONT YARD.

LOTS 15 AND 16
TYPICAL LOT LAYOUT
NOT TO SCALE
(FOR ILLUSTRATIVE PURPOSES ONLY)



TYPICAL MINIMUM LOT LAYOUT (LOTS 1-5)
NOT TO SCALE
(FOR ILLUSTRATIVE PURPOSES ONLY)



TYPICAL MINIMUM LOT LAYOUT (LOTS 9 - 14)
NOT TO SCALE
(FOR ILLUSTRATIVE PURPOSES ONLY)

PACIULLI SIMMONS & ASSOCIATES
Established 1944
3975 Fair Ridge Drive
Suite 300 South
Fairfax, VA 22033
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FX 703.934.9787
EM fairfax@psaltd.com
Engineers
Planners
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PARK POINTE

SPRINGFIELD DISTRICT
FAIRFAX COUNTY, VIRGINIA

GENERALIZED DEVELOPMENT PLAN- NOTES

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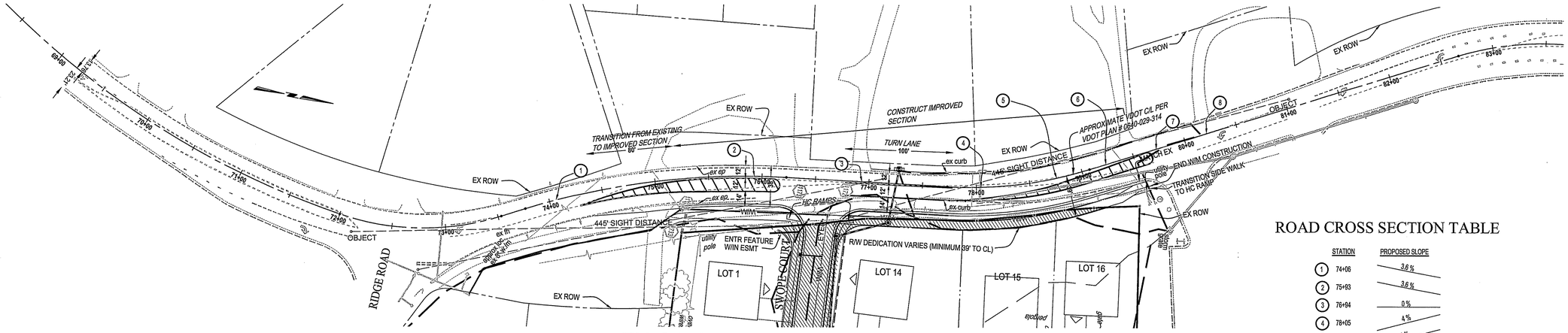
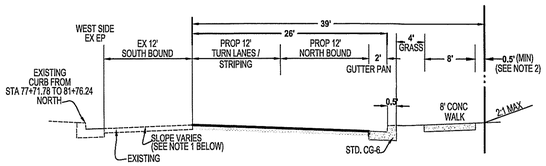


EX GAMBRILL ROAD
ROUTE 640

R/W VARIES
POSTED SPEED = 35 MPH
DESIGN SPEED = 40 MPH



IMPROVED ROAD SECTION

N.T.S.

NOTES:
1- ROAD TO BE SUPER-ELEVATED TO WORK WITH EXISTING TIE-INS.
2- EXISTING DEDICATION EXCEEDS MINIMUM ON NORTH AND SOUTH ENDS. ROW WIDTH VARIES IN THOSE LOCATIONS.

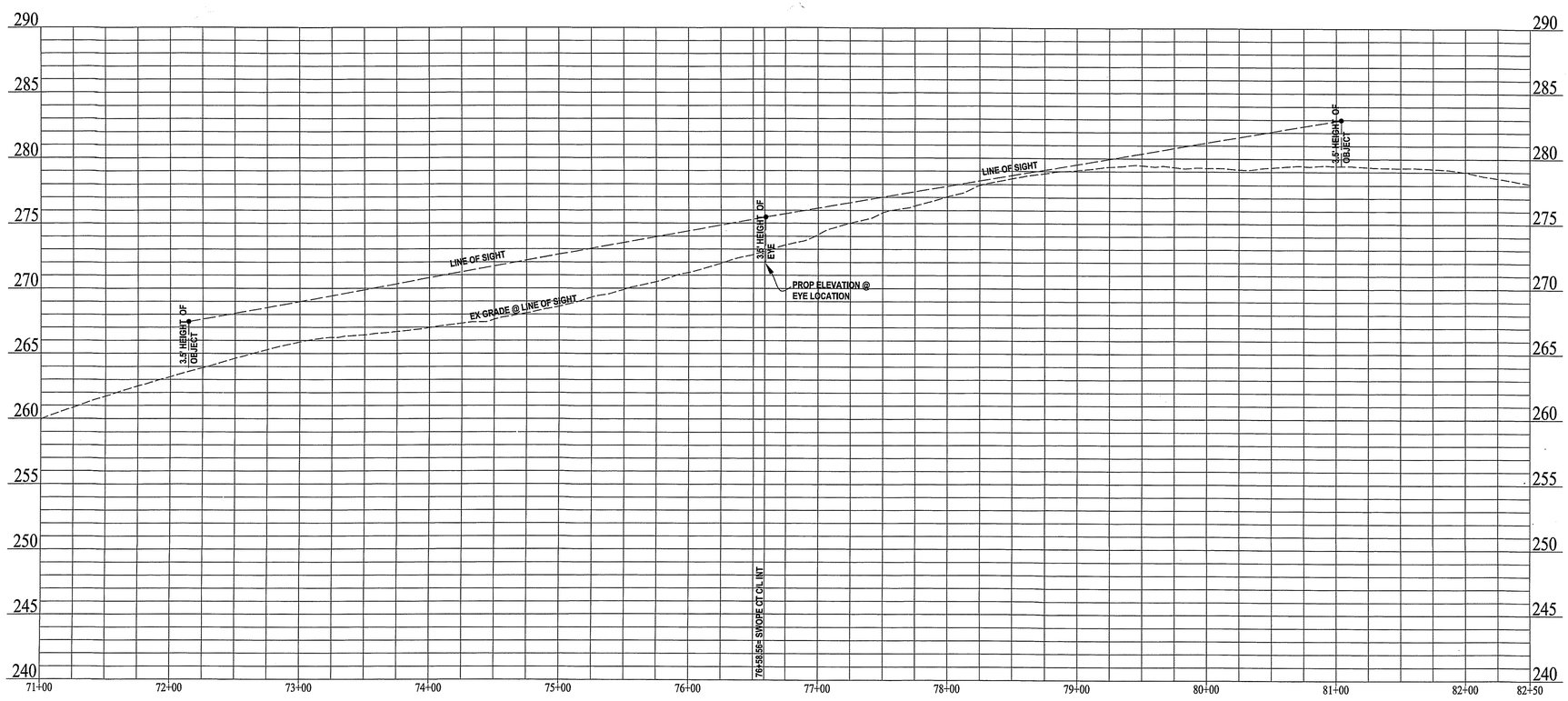
ROAD CROSS SECTION TABLE

	STATION	PROPOSED SLOPE
1	74+06	3.6 %
2	75+93	3.6 %
3	76+94	0 %
4	78+05	4 %
5	78+76	4 %
6	79+24	2.08 %
7	79+73	2.08 % / 0 %
8	80+22	2.08 % / 2.08 %

NOTES:
1- SLOPES ARE VIEWED FROM SOUTH LOOKING NORTH ALONG GAMBRILL ROAD
2- SLOPES OF CROSS SECTIONS ARE TO BE LINEARLY INTERPOLATED IN BETWEEN STATIONS SHOWN

0 25' 50' 100' 150' 200'
Scale 1" = 50'

EX GAMBRILL RD



Scale: 1" = 50' H
1" = 5' V

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PARK POINTE

SPRINGFIELD DISTRICT
FAIRFAX COUNTY, VIRGINIA

GAMBRILL ROAD PLAN AND PROFILE

COMMONWEALTH OF VIRGINIA
ANN O. GERMAIN
Lic. No. 028700
1/31/14
PROFESSIONAL ENGINEER

DATE: 01-31-14
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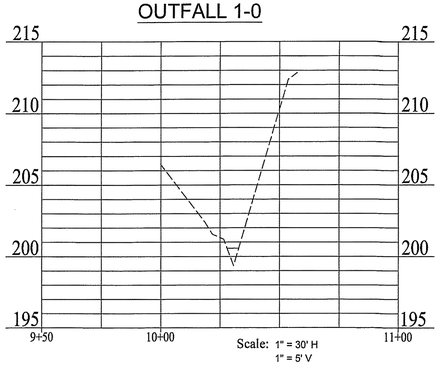
SHEET 5 OF 12

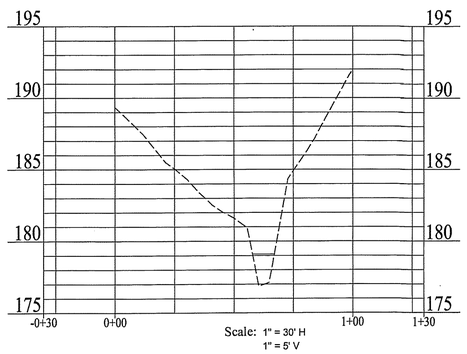
OUTFALL 1-0



2 year storm event
Q = 9.85 cfs
C = 0.43
i = 3.35
A = 6.84

Results		
Mannings Coefficier	0.045	
Water Surface Elev.	200.56	ft
Elevation Range	9.50 to 212.80	
Flow Area	2.3	ft²
Wetted Perimeter	4.85	ft
Top Width	4.36	ft
Actual Depth	1.06	ft
Critical Elevation	200.57	ft
Critical Slope	0.042381	ft/ft
Velocity	4.25	ft/s
Velocity Head	0.28	ft
Specific Energy	200.84	ft
Froude Number	1.03	
Flow Type	Supercritical	

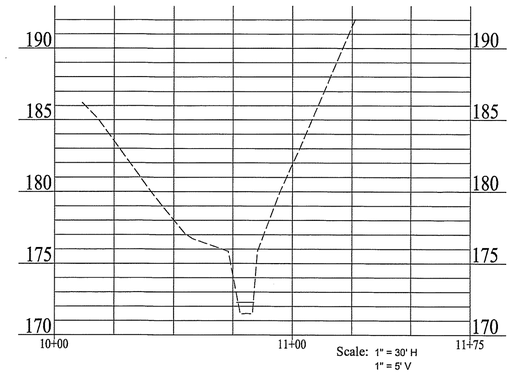
OUTFALL 1-1



2 year storm event
Q = 35.03 cfs

Results		
Mannings Coefficier	0.052	
Water Surface Elev	179.09	ft
Elevation Range	7.00 to 192.00	
Flow Area	16.0	ft²
Wetted Perimeter	11.94	ft
Top Width	10.27	ft
Actual Depth	2.09	ft
Critical Elevation	178.05	ft
Critical Slope	0.047635	ft/ft
Velocity	2.19	ft/s
Velocity Head	0.07	ft
Specific Energy	179.17	ft
Froude Number	0.31	
Flow Type	Subcritical	

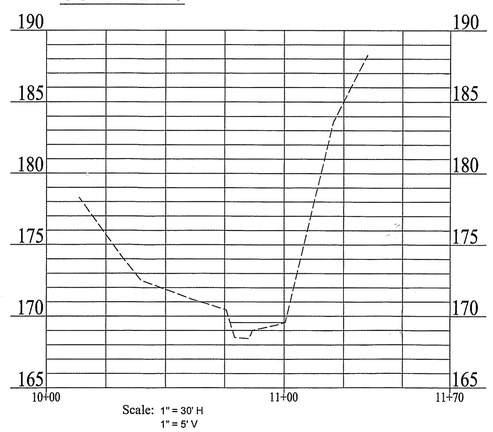
OUTFALL 1-2



2 year storm event
Q = 35.03 cfs

Results		
Mannings Coefficier	0.049	
Water Surface Elev.	172.74	ft
Elevation Range	1.50 to 192.00	
Flow Area	7.9	ft²
Wetted Perimeter	8.72	ft
Top Width	7.78	ft
Actual Depth	1.24	ft
Critical Elevation	172.56	ft
Critical Slope	0.041777	ft/ft
Velocity	4.42	ft/s
Velocity Head	0.30	ft
Specific Energy	173.05	ft
Froude Number	0.77	
Flow Type	Subcritical	

OUTFALL 1-3



2 year storm event
Q = 35.03 cfs

Results		
Mannings Coefficier	0.056	
Water Surface Elev	169.54	ft
Elevation Range	3.50 to 188.00	
Flow Area	11.8	ft²
Wetted Perimeter	23.06	ft
Top Width	22.60	ft
Actual Depth	1.04	ft
Critical Elevation	169.41	ft
Critical Slope	0.059970	ft/ft
Velocity	2.96	ft/s
Velocity Head	0.14	ft
Specific Energy	169.67	ft
Froude Number	0.72	
Flow Type	Subcritical	

STORMWATER MANAGEMENT/ADEQUATE OUTFALL NARRATIVE

THE SUBJECT PROPERTY IS COMPOSED OF TWO PARCELS (39 AND 42) LOCATED ON TAX MAP 89-3 AND IS APPROXIMATELY 7.72 ACRES. PARCEL 42 CONTAINS A 1,644 SQUARE FOOT SINGLE-FAMILY HOUSE THAT WAS CONSTRUCTED IN 1957. AN ADDITION TO THE HOUSE WAS CONSTRUCTED IN 1973. PARCEL 39 CONTAINS A 1,300 SQUARE FOOT SINGLE-FAMILY HOUSE CONSTRUCTED IN 1900. ALL EXISTING STRUCTURES ARE TO BE REMOVED FOR THE PROPOSED PROJECT. TOTAL AREA OF EXISTING IMPERVIOUS SURFACES TO BE REMOVED IS 0.55 ACRES.

THE EXISTING SITE SHEET FLOWS FROM WEST TO EAST; POST-DEVELOPMENT CONDITIONS WILL CONTINUE TO DRAIN IN THIS DIRECTION. THERE IS AN EXISTING CHANNEL RUNNING FROM WEST TO EAST ALONG THE SOUTHERN-MOST LOT LINE OF THE SITE. ADDITIONALLY, THERE IS AN EXISTING POND LOCATED IN THE SOUTHEASTERN CORNER OF THE PROPERTY. THERE ARE NO FLOOD HAZARDS OR FLOODPLAINS LOCATED ON-SITE. THERE IS AN EXISTING RPA BOUNDARY RUNNING FROM NORTH TO SOUTH ON THE EASTERN SIDE OF THE LOT. AN RPA RE-DELINEATION WAS PREPARED BY WETLAND STUDIES AND SOLUTIONS, INC. (WSSI) IN FEBRUARY, 2013 AND APPROVED ON 7/10/13. THE AREA OUTSIDE OF THE RPA IS IN A RESOURCE MANAGEMENT AREA.

THE EXISTING WET POND WILL BE RENOVATED TO MEET REQUIREMENTS FOR DAM CONSTRUCTION PER THE FAIRFAX COUNTY PFM, AND TO MEET THE DETENTION AND BEST MANAGEMENT PRACTICE REQUIREMENTS FOR THE SITE DEVELOPMENT. THE RUNOFF REDUCTION METHOD WORKSHEET SHOWS WATER QUALITY VOLUME (WQV) FOR THE PROPOSED PROJECT TO BE 9,230 CUBIC FEET AND THE ANNUAL PHOSPHOROUS REDUCTION TO BE 2.64 LBS/YEAR. THE WET POND WILL CONTAIN A PERMANENT VOLUME OF AT LEAST 27,690 CUBIC FEET (3 X WQV) AT AN ELEVATION OF APPROXIMATELY 193.5, WITH A SURFACE AREA OF APPROXIMATELY 0.24 ACRES, TO MEET WATER QUALITY REQUIREMENTS FOR THE SITE. DRAINAGE AREA TO THE WET POND IS COMPRISED OF 7.72 ACRES OF ON-SITE AREA AND 31.38 ACRES OF OFF-SITE AREA.

PRELIMINARY CALCULATIONS AND ANALYSIS FOR STORMWATER QUANTITY CONTROL ARE AS FOLLOWS:

SITE AREA = 7.72 ACRES

PRE-DEVELOPMENT CN = 63

POST-DEVELOPMENT CN = 72

1-YEAR ALLOWABLE <= 0.8 X Qpre X RVpre/ RVpost = 0.8 X 2.22 X .31/ .62 = 0.89 CFS

10-YEAR ALLOWABLE <= Qpre = 16.4 CFS

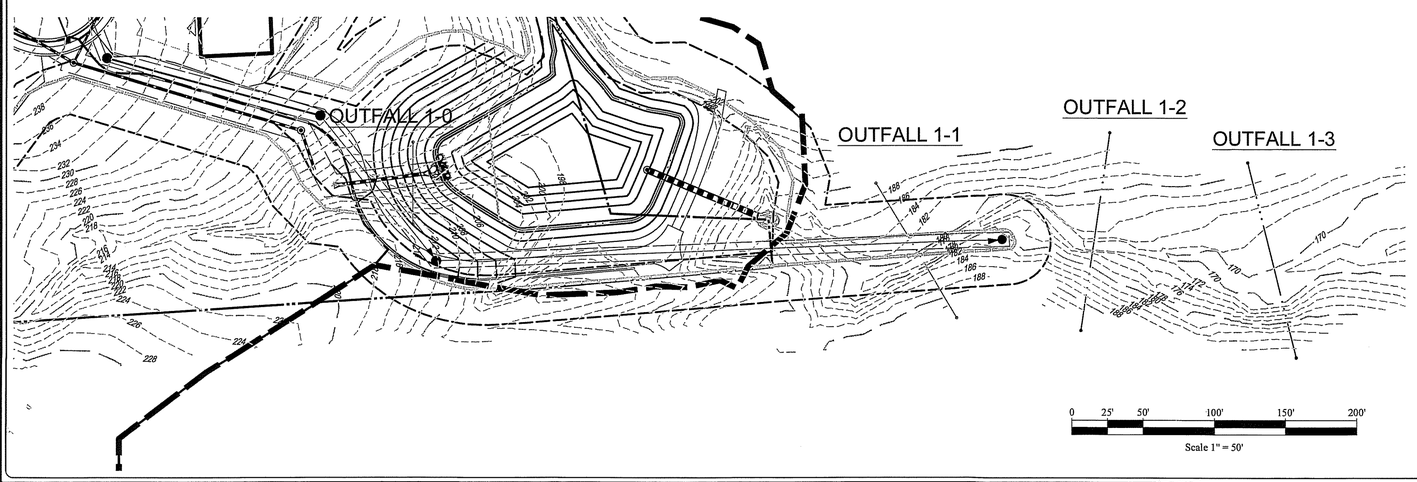
STORMWATER DETENTION WILL BE PROVIDED BY TEMPORARY STORAGE ABOVE THE PERMANENT POOL TO MEET STORMWATER QUANTITY REQUIREMENTS. PRELIMINARY DESIGN INFORMATION IS SHOWN IN THE TABLE BELOW. THE PRELIMINARY DAM TOP ELEVATION IS APPROXIMATELY 199.0, RESULTING IN A DAM HEIGHT OF APPROXIMATELY 15'. A COMBINED SPILLWAY WILL BE USED SINCE THE TOPOGRAPHY AND EXISTING CONDITIONS WILL NOT ALLOW FOR AN OVERLAND SPILLWAY TO BE CONSTRUCTED IN A CUT SITUATION. FINAL DESIGN OF THE PROPOSED POND WILL ENSURE REQUIRED FREEBOARD FOR THE SDF (100 YR) STORM AND NO OVERTOPPING FOR THE FBH (1.5 * 100 YR) STORM.

FROM THE POND, RUNOFF IS DISCHARGED VIA THE OUTLET PIPE INTO THE EXISTING OFF-SITE TRIBUTARY TO POHICK CREEK. THREE SECTIONS (1-1, 1-2 AND 1-3) TAKEN ALONG THE TRIBUTARY ARE SHOWN ON THIS SHEET TO CONVEY THE RUNOFF FROM A 2-YEAR STORM IN A BED AND BANKS CONDITION. THE SOIL WITHIN THE CHANNEL IS SOIL ID 30A (CODORUS AND HATBORO) WHICH IS A SILTY SOIL. ACCORDING TO THE VIRGINIA E&S HANDBOOK, SILT LOAM SOIL HAS A PERMISSIBLE VELOCITY OF 3.0FT/S. OUTFALL SECTION 1-2 IS THE ONLY SECTION WITH EROSIVE POTENTIAL, AND WILL BE ANALYZED FURTHER WITH THE FINAL ENGINEERING OF THE SUBDIVISION PLAN. SINCE THE RUNOFF FROM THE 1-YEAR STORM WILL BE REDUCED TO 20% BELOW THE PRE-DEVELOPMENT RUNOFF, ADEQUATE OUTFALL CONDITIONS WILL BE MET. THE TRIBUTARY DISCHARGES TO THE POHICK CREEK FLOOD PLAIN AT THE EXTENT OF THE ANALYSIS, WHERE THE DRAINAGE AREA IS MORE THAN 100 TIMES THE AREA OF THE SITE AND THE DRAINAGE AREA TO THE POND.

PRE AND POST DEVELOPMENT CALCULATIONS FOR THE SITE ARE SHOWN BELOW.

	PRE-DEVELOPMENT	WITHOUT DETENTION POST-DEVELOPMENT	ALLOWABLE POST-DEVELOPMENT
1- YR STORM	2.22	4.48	0.89
2-YR STORM	4.40	7.01	4.40
10-YR STORM	16.4	19.03	16.4

DESCRIPTION	WS ELEV	(AC) AREA	(AC-FT) VOLUME
PERMANENT	193.5	0.24	0.63
1-YR	194.4	-	0.76
10-YR	196.2	-	1.29
25-YR	196.6	-	1.43
100-YR	197.0	-	1.60
DAM TOP	199	0.45	-



MINIMUM STORMWATER INFORMATION FOR REZONING, SPECIAL EXCEPTION, SPECIAL PERMIT AND DEVELOPMENT PLAN APPLICATIONS

The following information is required to be shown or provided in all zoning applications, or a waiver request of the submission requirement with justification shall be attached. Note: Waivers will be acted upon separately. Failure to adequately address the required submission information may result in a delay in processing this application.

This information is required under the following Zoning Ordinance paragraphs:

Special Permits (8-011 2J & 2L)
Cluster Subdivision (9-615 1G & 1N)
Development Plans PRC District (16-302 2 & 4L)
FDP - P Districts (except PRC) 916-502 1F & 1Q)
Special Exceptions (9-011 2J & 2L)
Commercial Revitalization Districts (9-622 2A (12)&(14))
PRC Plan (16-303 1E & 10)
Amendments (18-202 10F & 10I)

☑ 1. Plat is at a minimum scale of 1"=50' (unless it is depicted on one sheet with a minimum scale of 1"=100).

☑ 2. A graphic depicting the stormwater management facility(ies) and limits of clearing and grading to accommodate the stormwater management facility(ies), storm drainage pipe systems and outlet protection, pond spillways, access roads, site outfalls, energy dissipation devices, and stream stabilization measures as shown on Sheet 3.

☑ 3. Provide:

Facility Name/ Type & No.	On-Site area served (acres)	Off-Site area served (acres)	Drainage area (acres)	Footprint area (sf.)	Storage Volume (cf.)	If pond, dam height (ft.)
Wet Pond	7.72	30.93	38.65	10,494	27,443	6.5
(e.g., dry pond A. infil. trench, underground vault, etc.)						
					Totals	

☑ 4. Onsite drainage channels, outfalls and pipe systems are shown on Sheet 3. Pond inlet and outlet pipe systems are shown on Sheet 3.

☑ 5. Maintenance access (road) to stormwater management facility(ies) are shown on Sheet 3. Type of maintenance access road surface noted on the plat is ~~asphalt~~/(asphalt) geoblock, gravel, etc.)

☑ 6. Landscaping and tree preservation shown in and near the stormwater management facility is shown on Sheet 3.

☑ 7. A 'stormwater management narrative' which contains a description of how detention and best management practices requirements will be met is provided on Sheet 5.

☑ 8. A description of the existing conditions of each numbered site outfall extended downstream from the site to a point which is at least 100 times the site area or which has a drainage area of at least one square mile (640 acres) is provided on Sheet 6.

☑ 9. A description of how the outfall requirements, including known changes to contributing drainage areas (i.e. drainage diversions), of the Public Facilities Manual will be satisfied is provided on Sheet 5.

☑ 10. Existing topography with maximum contour intervals of two (2) feet and a note as to whether it is an air survey or field run is provided on Sheets 3.

☐ 11. A submission waiver is requested for _____.

☐ 12. Stormwater management is not required because _____.

Revised 2-21-2006

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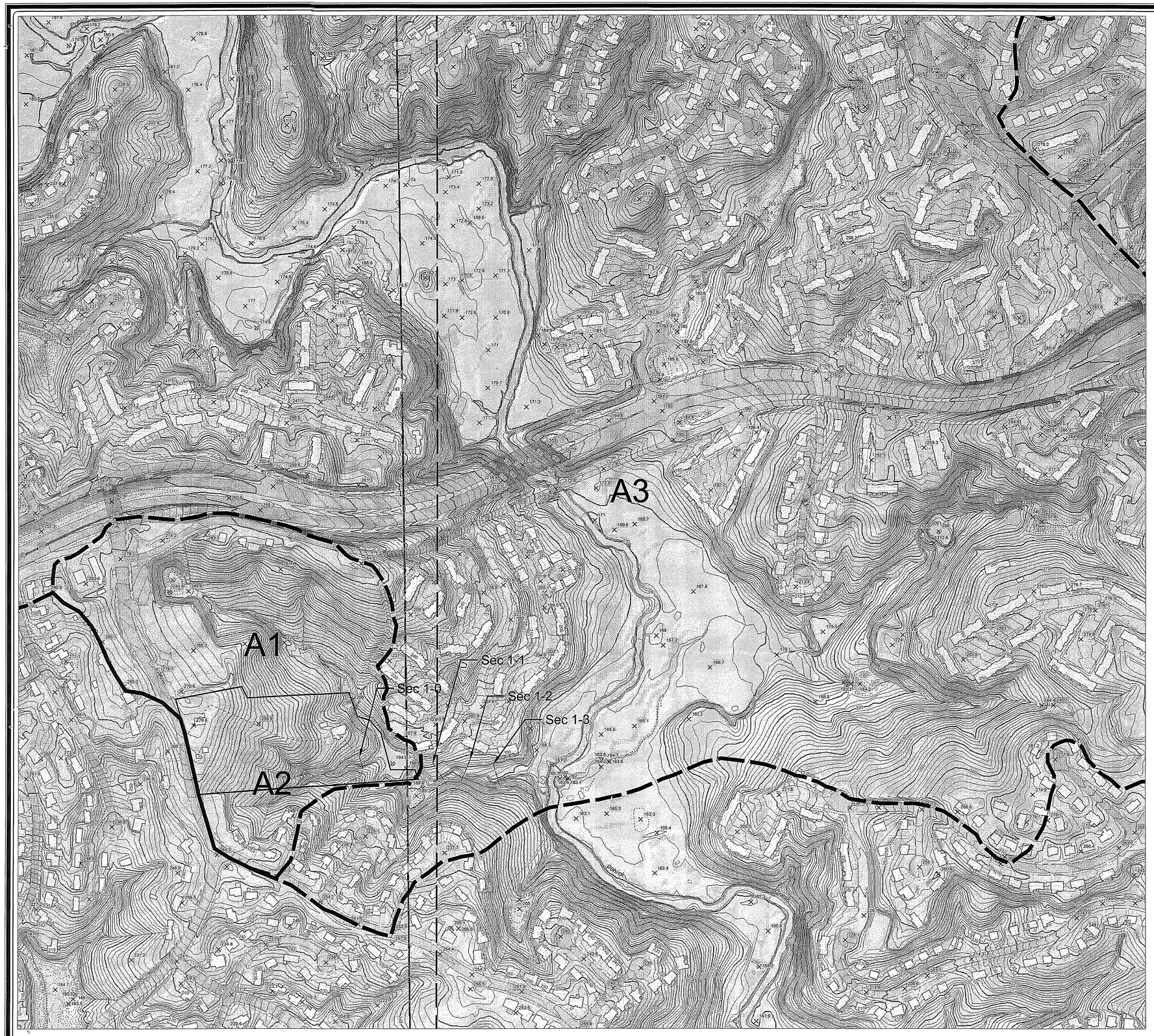
Surveyors
Landscape Architects
Wetland Specialists
Environmental Scientists
Archaeologists

PARK POINTE
SPRINGFIELD DISTRICT
FAIRFAX COUNTY, VIRGINIA

DRAINAGE DIVIDES
NARRATIVE SWM

COMMONWEALTH OF VIRGINIA
ANN O. GERMAIN
Lic. No. 028700
1/31/14
PROFESSIONAL ENGINEER

DATE: 01-31-14
FILE NO: F 4570
DRN: LC
CKD: AOG



Drainage Divides

The site has been shaded and identified in the map on the sheet. Map is taken from Fairfax County GIS mapping tool, 89-3 and 89-4.

The drainage divides shown are for the area going to the pond (A1), the area going to the intermittent stream (A2), and the drainage area to the floodplain confluence with the Pohick Creek (A3) where the total drainage area is more than 100 times greater than the area to the site and the pond.

Cross sections are shown in this plan for the intermittent stream along the southern boundary (section 1-0) and the perennial stream outfall to the east of the site (sections 1-1 to 1-3)

A detailed drainage study will be done with the subdivision plan to assure that channels within the site and the perennial stream outfall from the site will not be eroded from the peak flows of the stormwater system. Detention of the 1, 2 and 10 year storms will be provided to meet stormwater and adequate outfall requirements. See narrative on Sheet 6.

A1= 33.06 acres
A2= 6.84 acres
A3= +3900 acres
Site Area= 7.72 acres

0 100' 200' 400' 600' 800'

Scale 1" = 200'

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SPRINGFIELD DISTRICT
FAIRFAX COUNTY, VIRGINIA

DRAINAGE DIVIDES MAP SWM

COMMONWEALTH OF VIRGINIA
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LEGEND

- SITE BOUNDARY
- VEGETATION COMMUNITY BOUNDARY
- PERENNIAL STREAM (NOTE 3)
- APPROXIMATE PERENNIAL STREAM (NOTE 3)
- INTERMITTENT STREAM (NOTE 3)
- WETLAND BOUNDARY (NOTE 3)

NOTES:

1. This Existing Vegetation Map is based upon examination of background materials, such as the USGS Annandale, VA topographic quadrangle map, existing topography, the Fairfax County Soils Map, the National Wetlands Inventory Map, and aerial photography, as well as a field verification performed by Benjamin N. Rosner, PWS, PWD, CT, CE and Jessica M. Campo, WPIT of Wetland Studies and Solutions, Inc. (WSSI) on February 25, 2013.

2. Topography (2' contour data and planimetrics data) from Paciulli, Simmons & Associates, Ltd., boundary and 5' contour data provided by Fairfax County Digital Data, and a Spring 2012 WSSI Natural Color Imagery Photograph, were used as the base for this exhibit.

3. Waters of the U.S. delineation information shown hereon, was performed by WSSI as described in a report dated March 18, 2013 (WSSI #22180.02). A jurisdictional determination from the U.S. Army Corps of Engineers verifying these boundaries is pending.

	COVER TYPE	PRIMARY SPECIES	SUCCESSIONAL STAGE	CONDITION*	ACREAGE (ac)	COMMENTS
A	Upland Forest	White Oak American Beech Tulip Poplar	Sub-climax	Fair-Good	4.58	See Condition Description
B	Landscaped	Bamboo	Climax	Fair-Good	0.72	See Condition Description
C	Early Successional Forest Community	Red Maple Tulip Poplar American Beech	Sub-climax	Fair-Good	0.58	See Condition Description
D	Developed/ Landscaped Area	White Oak Magnolia Dogwood	Sub-climax	Good	1.77	See Condition Description
Total Acreage					7.65	

*CONDITION DESCRIPTION:

A. Area A is a sub-climax upland forest in fair to good overall condition and comprises the majority of the site. The canopy is dominated by white oak (*Quercus alba*), American beech (*Fagus grandifolia*), and tulip poplar (*Liriodendron tulipifera*). Sub-dominants include red oak (*Quercus rubra*) and American holly (*Ilex opaca*). The DBH of these overstory species ranges from 4 to 12 inches. The understory includes mountain laurel (*Kalmia latifolia*). Some dead trees were noted within the stand.

B. Area B is a climax landscaped community in fair to good overall condition in the northwestern portion of the site. This area is entirely dominated by an invasive bamboo. The understory includes Chinese wisteria (*Wisteria sinensis*).

C. Area C consists of a sub-climax forest community in fair to good overall condition in the southwestern portion of the site. The canopy is dominanted by red maple (*Acer rubrum*), tulip poplar, and American beech. The understory includes English ivy (*Hedera helix*).

D. Area D consists of developed and landscaped areas in the eastern and western portions of the site. The majority of the area consists of houses, sheds, pools, patios, and other maintained landscaped areas. Canopy species in these areas include white oak, southern magnolia (*Magnolia grandiflora*), and dogwood (*Cornus amomum*). The understory includes American holly, mockernut hickory (*Carya tomentosa*), and crape myrtle (*Lagerstroemia indica*).

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

Wetland Studies and Solutions, Inc.
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EXISTING VEGETATION MAP

Prepared For: Van Metre Homes

Park Pointe
Fairfax County, Virginia

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REVISIONS

No.	Date	Description	Rev. By	App. By

DATE: MARCH 2013 SCALE: 1" = 50' C.I.: 2' & 5'

Horizontal Datum: VCS NAD 83

Vertical Datum: NGVD 29

Boundary and Topo Source:
Paciulli, Simmons & Associates, Ltd.
Fairfax County Digital Data

Design	Draft	Approved
JMC	BNR	MH

Sheet #
8 of 12

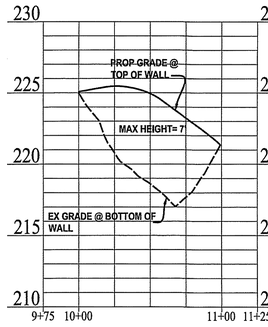
Computer File Name:
L:\2006\2100\2180.02\CADD\2-DWR\
2013-02_gvm with aerial_corrected.dwg

LEGEND:

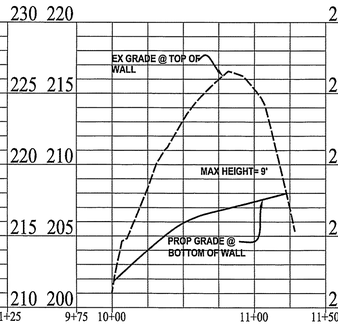
- TREE CONSERVATION AREA
- CLEARING AND GRADING LIMITS
- PROPOSED BUILDING
- VDOT PARKING BUFFER
- EXISTING TREELINE
- RPA — FIELD VERIFIED RPA LIMITS
- EQC
- RPA & EQC TO BE RESTORED = 0.14 ACRES
- DISTURBED AREA TO BE REPLANTED TO RPA STANDARDS = 0.17 ACRES
- TOTAL DISTURBANCE IN RPA AND EQC (INCLUDING OUTLOT A) = 1.36 ACRES
- DECIDUOUS TREE (SEE NOTE 1)
- DECIDUOUS TREE
- EVERGREEN TREE

NOTE:
1- A MINIMUM OF 17 TREES (2" CALIPER OR GREATER) THAT ARE NOT COUNTED TOWARDS ANY TREE CANOPY OR REFORESTATION REQUIREMENTS ARE PROVIDED TO ENHANCE WATER QUALITY.

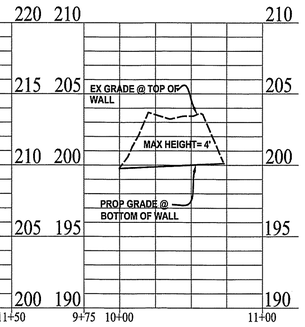
WALL "A" PROFILE



WALL "B" PROFILE



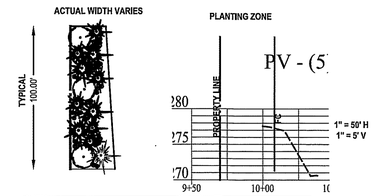
WALL "C" PROFILE



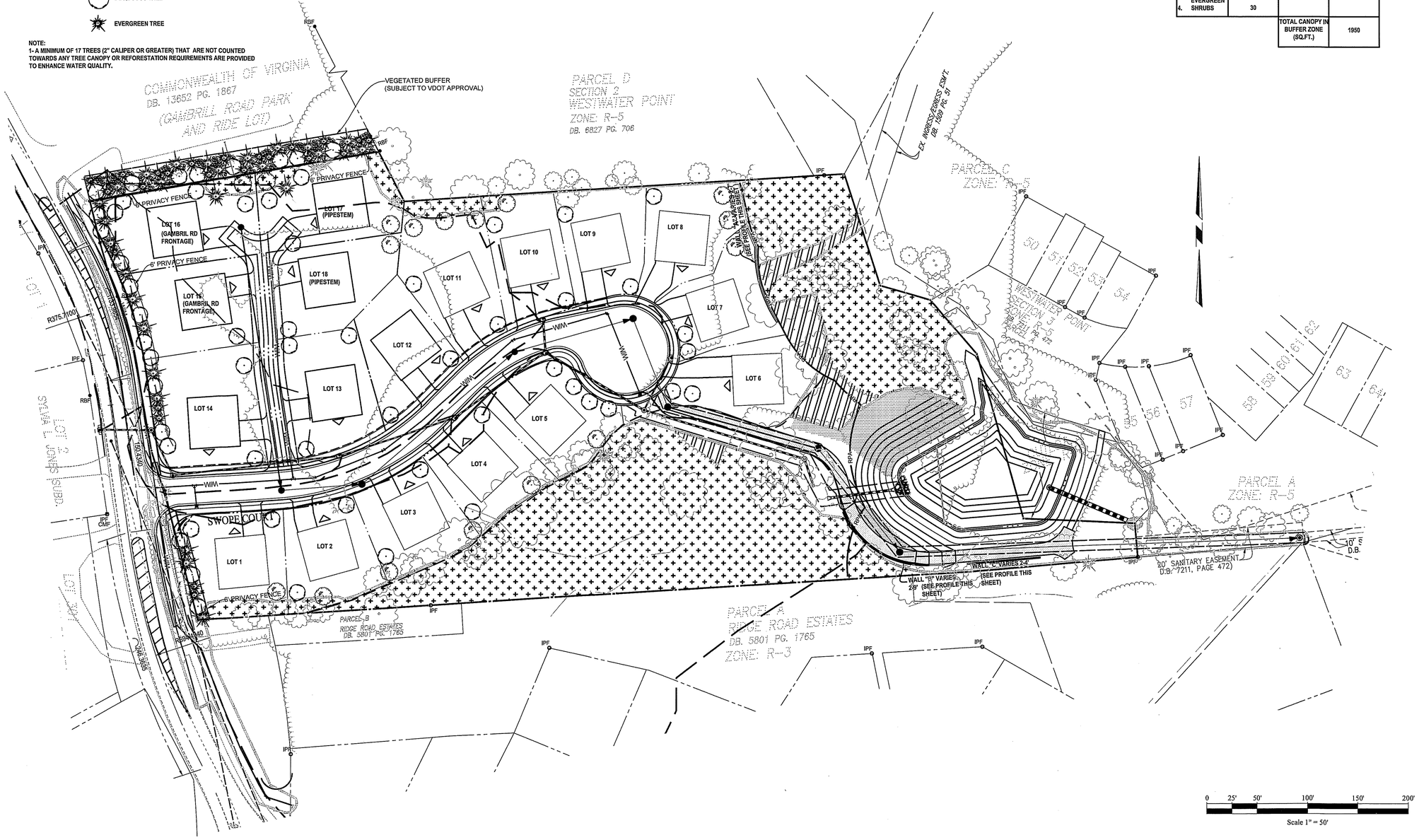
NOTE: HAND RAIL IS REQUIRED WHERE TOP OF WALL IS 30" OR MORE ABOVE BOTTOM OF WALL.

PROPOSED VEGETATED BUFFER ON VDOT PROPERTY

BUFFER SECTION



PLANT TYPES	PLANT UNIT / 100 FT	10 YEAR CANOPY (FT^2)	CANOPY COVER /100 LF (FT^2)
1. LARGE DECIDUOUS	3	200	600
2. LARGE EVERGREEN	5	150	750
3. MED. EVERGREEN	6	100	600
4. SHRUBS	30		
		TOTAL CANOPY IN BUFFER ZONE (SQ.FT.)	1950



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Environmental Scientists
Archaeologists

PARK POINTE

SPRINGFIELD DISTRICT
FAIRFAX COUNTY, VIRGINIA

LANDSCAPE PLAN

COMMONWEALTH OF VIRGINIA
ANN O. GERMAIN
Lic. No. 028700
1/31/14
PROFESSIONAL ENGINEER

DATE: 01-31-14
FILE NO: F 4570
DRN: LC
CKD: AOG

GENERAL LANDSCAPE NOTES:

1. THE LANDSCAPE CONTRACTOR SHALL PROVIDE ALL MATERIALS, LABOR AND EQUIPMENT TO COMPLETE ALL LANDSCAPE WORK AS SOWN ON THE PLANS AND SPECIFICATIONS.

2. THE LANDSCAPE CONTRACTOR SHALL STATE THE TOTAL NUMBER OF EACH PLANT WITH THE CONTRACT PRICE. THE PLANT LIST SUBMITTED WILL AUTOMATICALLY BECOME PART OF THE CONTRACT DOCUMENTS. NOTE: IF THE CONTRACTOR BIDS ACCORDING TO THE PLANT LIST, HE/SHE SHOULD DOUBLE CHECK THE PLANT LIST QUANTITIES WITH THE SYMBOLS DRAWN ON THE PLAN, TO BE SURE THERE ARE NO DISCREPANCIES. IF THERE IS A DISCREPANCY BETWEEN THE DRAWING AND THE LIST ON THE PLANS, THE CONTRACTOR SHALL REQUEST CLARIFICATION FROM THE LANDSCAPE ARCHITECT.

3. ALL PLANT MATERIAL WILL CONFORM TO THE CURRENT ISSUE OF THE AMERICAN STANDARD FOR NURSERY STOCK PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN. PLANT MATERIAL MUST BE SELECTED FROM NURSERIES THAT HAVE BEEN INSPECTED AND CERTIFIED BY STATE PLANT INSPECTORS.

4. WHEN REQUESTED BY THE OWNER OR OWNER'S REPRESENTATIVE, SAMPLES OF ALL MATERIALS OTHER THAN PLANTS SHALL BE SUBMITTED TO THE OWNER'S DESIGNATED REPRESENTATIVE FOR APPROVAL.

5. ALL APPROVALS WILL BE IN WRITING.

6. IT IS THE LANDSCAPE CONTRACTOR'S RESPONSIBILITY TO MAKE EVERY REASONABLE EFFORT TO FIND THE MATERIAL SPECIFIED BY THE LANDSCAPE ARCHITECT. THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR QUALIFYING HIS/HER PROPOSAL TO DOCUMENT ANY PLANT SUITABILITY OR AVAILABILITY PROBLEMS.

7. THE LANDSCAPE CONTRACTOR SHALL NOTIFY UTILITY COMPANIES AND/OR THE GENERAL CONTRACTOR IN ADVANCE OF CONSTRUCTION TO LOCATE UTILITIES. IF THERE IS A CONFLICT WITH THE UTILITIES AND THE PLANTING, ANY COST DUE TO RELOCATING AFTER PLANTING SHALL BE BORNE BY THE OWNER.

8. DURING PLANTING, ALL AREAS SHALL BE KEPT NEAT AND CLEAN, AND PRECAUTIONS SHALL BE TAKEN TO AVOID DAMAGE TO EXISTING PLANTS, LARGE TREES, TURF AND STRUCTURES. WHERE EXISTING TREES ARE TO BE PRESERVED, ADDITIONAL PRECAUTIONS SHOULD BE TAKEN TO AVOID UNNECESSARY ACCUMULATION OF EXCAVATED MATERIALS, SOIL COMPACTION OR ROOT DAMAGE. ANY DAMAGED AREAS CAUSED BY THE LANDSCAPE CONTRACTOR SHALL BE RESTORED TO THEIR ORIGINAL CONDITION.

9. UPON COMPLETION, ALL DEBRIS AND WASTE MATERIAL RESULTING FROM PLANTING OPERATIONS SHALL BE REMOVED FROM THE PROJECT AND THE AREA CLEANED UP.

10. THE OWNER SHALL SUPPLY WATER ON SITE AT NO COST. IF THE LANDSCAPE CONTRACTOR HAS TO SUPPLY WATER TO THE SITE, IT SHALL BE AT AN ADDITIONAL COST TO THE OWNER.

11. CONTAINER-GROWN MATERIAL AND HARDENED-OFF B&B EVERGREEN OR DECIDUOUS MATERIAL CAN BE PLANTED YEAR ROUND.

12. ALL PLANT ROOTS SHALL BE PROTECTED DURING HANDLING AND PLANTING TO GUARD AGAINST DRYING OUT AND DAMAGE.

13. THE USE OF BARE-ROOT GROUND COVER (ROOTED CUTTINGS) SHOULD BE LIMITED TO OPTIMAL PLANTING TIMES AND ONLY SPECIFIED UNDER THESE CONDITIONS KNOWING THE RISK INVOLVED, UNLESS IRRIGATION IS PROVIDED.

14. PERENNIALS CAN BE INSTALLED AS SOON AS THE GROUND IS WORKABLE IN SPRING UNTIL NOVEMBER 15. PLANTS INSTALLED AFTER NOVEMBER 15 REQUIRE A PROTECTIVE, SUPPLEMENTAL MULCH APPLIED AFTER DECEMBER 15 AND REMOVED MARCH 1.

15. INSPECTION: A VERIFICATION OF PERFORMANCE FOR WORK BY CONTRACT DOCUMENTS, TO BE CONDUCTED BY THE OWNER OR HIS/HER REPRESENTATIVE ON-SITE AND IN THE PRESENCE OF THE LANDSCAPE FOR THE PURPOSE OF ACCEPTANCE. INSPECTION SHALL BE MADE WITHIN TWO (2) WEEKS OF WRITTEN NOTIFICATION FROM THE LANDSCAPE CONTRACTOR. FAILURE OF THE OWNER TO INSPECT THE WORK SHALL VOID THE GUARANTEE. DURING INSPECTION FOR INITIAL ACCEPTANCE, THE LANDSCAPE CONTRACTOR SHOULD HAVE AN ACCEPTANCE FORM TO BE SIGNED BY THE OWNER OR OWNER'S REPRESENTATIVE.

16. INITIAL ACCEPTANCE & THE APPROVAL OF WORK INSPECTED: ACCEPTANCE CAN BE ON PARTIALLY COMPLETED WORK UNDER THE CONTRACT, IF APPROVED BY THE OWNER. IF, FOR REASONS BEYOND THE LANDSCAPE CONTRACTOR'S CONTROL, WORK HAS STOPPED, INSPECTION SHALL BE MADE ON PARTIALLY COMPLETED WORK. WARRANTY SHALL BEGIN AFTER LANDSCAPE INSPECTION AND ACCEPTANCE. MAINTENANCE AFTER INITIAL INSPECTION AND ACCEPTANCE SHALL BE THE RESPONSIBILITY OF THE OWNER, UNLESS AN OPTIONAL MAINTENANCE CONTRACT HAS BEEN SPECIFIED.

17. THE LANDSCAPE CONTRACTOR SHOULD PERIODICALLY INSPECT THE SITE DURING THE WARRANTY PERIOD AND NOTIFY THE OWNER IN WRITING IF PROPER MAINTENANCE IS NOT BEING PERFORMED.

18. FINAL INSPECTION AND ACCEPTANCE: THE LANDSCAPE CONTRACTOR SHALL CONDUCT A FINAL INSPECTION WITH THE OWNER OR OWNER'S REPRESENTATIVE AT THE END OF THE ONE YEAR PERIOD.

19. THE STANDARD WARRANTY IS FOR A ONE (1) YEAR PERIOD, COMMENCING ON THE DATE OF INITIAL ACCEPTANCE. ALL PLANTS SHALL BE ALIVE AND IN SATISFACTORY GROWTH AT THE END OF THE GUARANTEE PERIOD.

20. ANY MATERIAL THAT IS 25 % DEAD OR MORE SHALL BE CONSIDERED DEAD AND MUST BE REPLACED AT NO CHARGE. A TREE SHALL BE CONSIDERED DEAD WHEN THE MAIN LEADER HAS DIED BACK, OR 25 % OF THE CROWN IS DEAD.

21. WARRANTY MAY BE VOID IF PROPER CARE, BY OWNER OR OWNER'S MAINTENANCE CONTRACTOR, IS NOT MAINTAINED.

22. REPLACEMENTS SHALL BE MADE DURING THE NEXT PLANTING PERIOD UNLESS THE LANDSCAPE CONTRACTOR AGREES TO AN EARLIER DATE. SPRING: MARCH 15 – JUNE 15 FALL: SEPTEMBER 15 – NOVEMBER 15

23. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR A ONE-TIME REPLACEMENT ONLY.

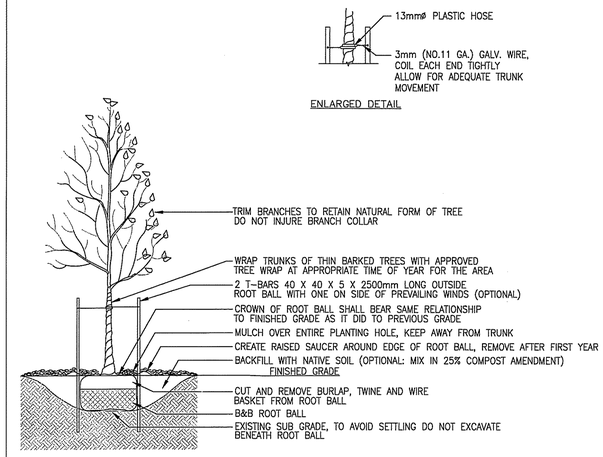
24. REPLACEMENTS SHALL BE OF THE SAME TYPE, SIZE AND QUALITY AS ORIGINAL SPECIES UNLESS OTHERWISE NEGOTIATED.

25. THE LANDSCAPE CONTRACTOR WILL NOT BE RESPONSIBLE FOR PLANT MATERIAL THAT HAS BEEN DAMAGED BY VANDALISM, FIRE, REMOVAL, RELOCATION, WILDLIFE, THEFT, IMPROPER MAINTENANCE OR OTHER ACTIVITIES BEYOND THE LANDSCAPE CONTRACTOR'S CONTROL.

26. PLANT LOSSES DUE TO ABNORMAL WEATHER CONDITIONS SUCH AS FLOODS, EXCESSIVE WIND DAMAGE, DROUGHT, SEVERE FREEZING OR ABNORMAL RAINS WILL IN NO WAY BE THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR.

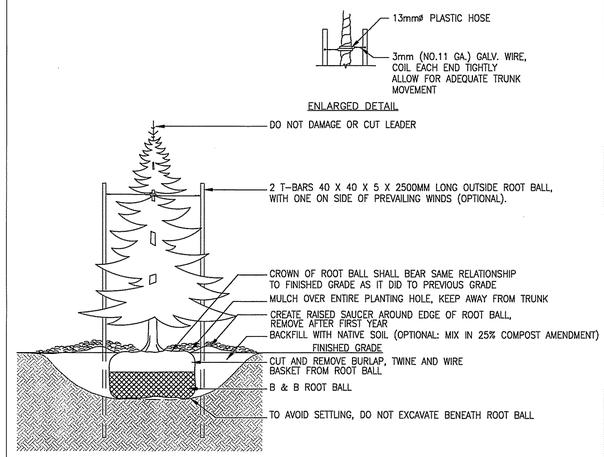
27. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING AND INSTALLING ALL PLANT MATERIAL SHOWN ON THE DRAWINGS AND PLANT LIST, AS SUBMITTED WITH THE CONTRACT. THE LANDSCAPE CONTRACTOR SHALL HAVE INVESTIGATED THE SOURCES OF SUPPLY AND SATISFIED HIMSELF/HERSELF THAT HE/SHE CAN SUPPLY ALL THE PLANTS SPECIFIED ON THE DRAWINGS IN THE SIZE, VARIETY AND QUALITY NOTED BEFORE SUBMITTING THE BID. FAILURE TO TAKE THIS PRECAUTION WILL NOT RELIEVE THE SUCCESSFUL BIDDER FROM THE RESPONSIBILITY FOR FURNISHING AND INSTALLING ALL THE PLANT MATERIAL IN STRICT ACCORDANCE WITH THE CONTRACT REQUIREMENTS AND WITHOUT ADDITIONAL EXPENSE TO THE OWNER. ON THE OTHER HAND, IF PROOF IS SUBMITTED THAT ANY PLANT SPECIFIED IS NOT OBTAINABLE, A PROPOSAL WILL BE CONSIDERED FOR USE OF NEAREST EQUIVALENT SIZE OR VARIETY WITH AN EQUITABLE ADJUSTMENT OF CONTRACT PRICE. SUCH PROOF SHALL BE SUBSTANTIATED AND SUBMITTED IN WRITING TO THE LANDSCAPE ARCHITECT WITH COPIES TO THE OWNER.

28. NO REMOVAL OF NOXIOUS WEED ARE PROPOSED WITH THIS PLAN IN AREAS OUTSIDE OF THE LIMITS OF CONSTRUCTION.



NOTES:
1. DO NOT DAMAGE MAIN ROOTS OR ROOT BALL WHEN INSTALLING TREE STAKE.
2. AERATE AREA SURROUNDING PLANTING PIT TO 6" MIN. DEPTH, 2 1/2 TIMES BALL DIAMETER.
3. WATER THOROUGHLY AFTER INSTALLATION.
4. REMOVE SAUCER AND STAKES TWO YEARS OR LESS AFTER INSTALLATION.
5. PROVIDE DRAINAGE FOR PLANTING PIT IF IN IMPERMEABLE SOIL.
6. ALL TREES MUST BE TAGGED AND APPROVED BY CONSULTANT WITHIN 14 DAYS AFTER TENDER CLOSING.

DECIDUOUS TREE DETAIL
3" CALIPER OR LESS



SPECIFICATIONS:
1. DO NOT DAMAGE MAIN ROOTS OR DESTROY ROOT BALL WHEN INSTALLING TREE STAKE.
2. AERATE AREA SURROUNDING PLANTING PIT TO 6" MIN. DEPTH, 2 1/2 TIMES BALL DIAMETER.
3. WATER THOROUGHLY AFTER INSTALLATION.
4. REMOVE SAUCER AND STAKES TWO YEARS OR LESS AFTER INSTALLATION.
5. PROVIDE DRAINAGE FOR PLANTING PIT IF IN IMPERMEABLE SOIL.
6. ALL TREES MUST BE TAGGED AND APPROVED BY CONSULTANT WITHIN 14 DAYS AFTER TENDER CLOSING.

CONIFEROUS TREE DETAIL
12' HGT OR LESS

TRANSITIONAL SCREENING AND BARRIER SUMMARY:

SUMMARY PROVIDED FOR INFORMATIONAL PURPOSES. TRANSITIONAL SCREENING AND BARRIER MODIFICATION REQUEST APPLICATION AND TRANSITIONAL SCREENING CALCULATIONS SUBMITTED UNDER SEPARATE COVER.

EXISTING USE (SITE): R-1 CONVENTIONAL

NORTHWEST BOUNDARY (COMMONWEALTH OF VIRGINIA, PARK AND RIDE):

NO TRANSITIONAL SCREENING OR BARRIERS ARE REQUIRED. IF PERMISSION IS GRANTED BY THE COMMONWEALTH OF VIRGINIA, TRANSITIONAL SCREENING WILL BE PROVIDED ON THE PARK AND RIDE LOT.

NORTHEAST AND EASTERN BOUNDARY (WESTWATER POINT):

NO TRANSITIONAL SCREENING OR BARRIERS ARE REQUIRED. ADJACENT USE IS ZONED TO A HIGHER DENSITY (R-5).

SOUTHERN BOUNDARY (RIDGE ROAD ESTATES):

NO TRANSITIONAL SCREENING OR BARRIERS ARE REQUIRED. ADJACENT USE IS ALSO R-3.

WESTERN BOUNDARY (GAMBRILL RD.):

NO TRANSITIONAL SCREENING OR BARRIERS ARE REQUIRED.

A.	**TREE PRESERVATION TARGET CALCULATIONS**	**Totals (s.f.)**
A1	Pre-development area of Existing Tree Canopy	264,109.00
A2	Percentage of Gross Site Area Covered by Existing Tree Canopy (A1/B1)	79%
A3	Percentage of 10-year Tree Canopy Required for the Site	25%
A4	Tree Preservation Target (A2*B7)	66027.25
A5	Proposed Percentage of Canopy Requirement That will be met through Tree Preservation (C4/B7)	109.0%
A6	Has the Tree Preservation Target been Met?	YES
B.	**TREE CANOPY REQUIREMENT**	
B1	Identify Gross Area	336,283.20
B2		
B3		
B4	Adjusted Gross Site Area	336,283.20
B5		
B6	Percentage of 10-year Tree Canopy Required for the Site	25%
B7	Area of 10-year Tree Canopy Required (B4xB6)	84,070.80
B8		
B9		
C.	**TREE CANOPY PRESERVATION**	
C1	Tree Preservation Target Area	84,070.80
C2	Tree Canopy Area meeting standards of §12-0400	73,336.20
C3	C2 x 1.25	91,670.25
C4	Total	91,670.25

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Engineers
Planners
Surveyors
Landscape Architects
Wetland Specialists
Environmental Scientists
Archaeologists

PARK POINTE
SPRINGFIELD DISTRICT
FAIRFAX COUNTY, VIRGINIA

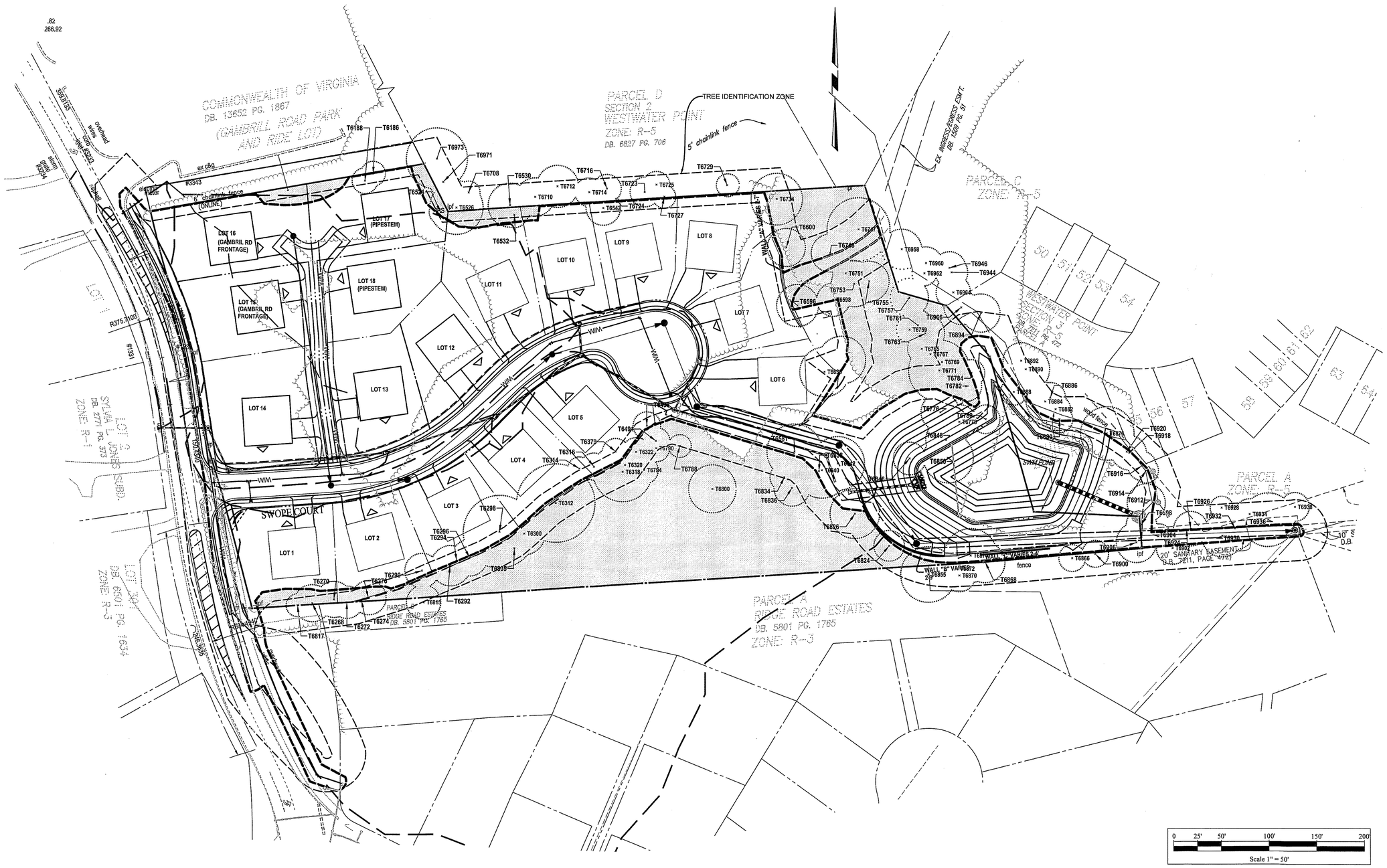
LANDSCAPE PLAN, NOTES AND DETAILS

COMMONWEALTH OF VIRGINIA
ANN O. GERMAIN
Lic. No. 028700
1/31/14
PROFESSIONAL ENGINEER

DATE: 01-31-14
FILE NO: F 4570
DRN: LC
CKD: AOG

LEGEND:

- TREE CONSERVATION AREA
- PROPOSED BUILDING
- CLEARING AND GRADING LIMITS
- TREELINE
- CRITICAL ROOT ZONE



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PARK POINTE

SPRINGFIELD DISTRICT
FAIRFAX COUNTY, VIRGINIA

TREE CONSERVATION PLAN

COMMONWEALTH OF VIRGINIA
ANN O. GERMAIN
Lic. No. 028700
1/31/14
PROFESSIONAL ENGINEER

DATE: 01-31-14
FILE NO: F 4570
DRN: LC
CKD: AOG

Tree ID#	Species	DBH (in)	Condition	Comment
T6186	Pinus virginiana, Virginia pine	13.5	Dead	Dead
T6188	Pinus virginiana, Virginia pine	13	Fair	
T6268	Liriodendron tulipifera, yellow-poplar	19.5	Good	
T6270	Liriodendron tulipifera, yellow-poplar	19	Good	
T6272	Liriodendron tulipifera, yellow-poplar	17	Good	
T6274	Liriodendron tulipifera, yellow-poplar	12	Good	
T6276	Liriodendron tulipifera, yellow-poplar	18	Good	
T6290	Liriodendron tulipifera, yellow-poplar	18	Good	
T6292	Quercus rubra, northern red oak	21	Good	
T6294	Acer rubrum, red maple	15	Fair	
T6296	Quercus rubra, northern red oak	19	Good	
T6298	Acer rubrum, red maple	38	Good	
T6300	Quercus alba, white oak	22	Good	
T6312	Quercus alba, white oak	41	Good	
T6316	Fagus grandifolia, American beech	14	Good	
T6318	Liriodendron tulipifera, yellow-poplar	31	Good	
T6320	Quercus alba, white oak	14	Good	
T6322	Pinus virginiana, Virginia pine	15	Fair	
T6379	Quercus alba, white oak	14	Good	
T6491	Quercus alba, white oak	14	Good	
T6493	Acer rubrum, red maple	14.5	Good	
T6524	Pinus virginiana, Virginia pine	12	Fair	
T6526	Liriodendron tulipifera, yellow-poplar	28	Fair	
T6530	Quercus alba, white oak	23	Good	
T6532	Quercus alba, white oak	13.5	Good	
T6542	Liriodendron tulipifera, yellow-poplar	18	Good	
T6596	Quercus alba, white oak	22	Good	
T6598	Quercus alba, white oak	17.5	Good	
T6600	Quercus alba, white oak	20	Good	
T6634	Quercus alba, white oak	25	Good	
T6636	Quercus alba, white oak	26	Good	
T6708	Pinus virginiana, Virginia pine	12	Fair	
T6710	Liriodendron tulipifera, yellow-poplar	20	Good	
T6712	Liriodendron tulipifera, yellow-poplar	22	Good	
T6714	Liriodendron tulipifera, yellow-poplar	15	Good	
T6716	Liriodendron tulipifera, yellow-poplar	15	Good	
T6723	Quercus rubra, northern red oak	16	Fair	
T6725	Quercus rubra, northern red oak	14	Good	
T6727	Quercus rubra, northern red oak	12	Good	
T6729	Acer rubrum, red maple	12	Good	
T6734	Quercus alba, white oak	27	Good	
T6745	Quercus alba, white oak	20	Good	
T6747	Liriodendron tulipifera, yellow-poplar	33	Good	
T6751	Acer rubrum, red maple	14	Good	
T6753	Quercus rubra, northern red oak	24	Good	
T6755	Fagus grandifolia, American beech	21	Good	
T6759	No ID	14	Dead	Dead
T6761	Quercus alba, white oak	16	Good	
T6763	Quercus alba, white oak	20	Good	
T6765	Fagus grandifolia, American beech	15	Good	
T6767	Quercus alba, white oak	17	Good	
T6769	Quercus alba, white oak	14	Good	
T6771	Fagus grandifolia, American beech	32	Good	
T6778	Quercus alba, white oak	18	Good	
T6782	Quercus alba, white oak	16	Good	
T6784	Quercus alba, white oak	14	Good	
T6788	Acer rubrum, red maple	12	Good	
T6790	Acer rubrum, red maple	14	Good	
T6794	Quercus alba, white oak	14	Good	
T6800	Quercus alba, white oak	25	Good	
T6805	Quercus rubra, northern red oak	12	Good	
T6815	Acer rubrum, red maple	18	Good	
T6817	Quercus rubra, northern red oak	12	Good	
T6824	Fagus grandifolia, American beech	16	Good	
T6826	Quercus rubra, northern red oak	26	Poor	Little leaf-out in canopy
T6834	Fagus grandifolia, American beech	15	Good	
T6836	Fagus grandifolia, American beech	19	Good	
T6838	Fagus grandifolia, American beech	14	Good	
T6840	Fagus grandifolia, American beech	29	Good	
T6842	Quercus alba, white oak	28	Good	
T6846	Quercus alba, white oak	20	Good	
T6848	Quercus alba, white oak	21	Good	
T6850	Quercus alba, white oak	26	Good	
T6855	Quercus rubra, northern red oak	29	Good	
T6866	Acer rubrum, red maple	13	Fair	
T6868	Quercus alba, white oak	21	Good	
T6870	Quercus alba, white oak	17	Good	
T6872	Quercus alba, white oak	16	Good	
T6874	Fagus grandifolia, American beech	28	Good	
T6876	Quercus rubra, northern red oak	20	Good	
T6880	Liriodendron tulipifera, yellow-poplar	14	Good	
T6882	Liriodendron tulipifera, yellow-poplar	15	Good	
T6884	Pinus virginiana, Virginia pine	20	Poor	Little canopy
T6886	Fagus grandifolia, American beech	16	Good	
T6888	Quercus rubra, northern red oak	14	Good	
T6890	Quercus alba, white oak	25	Good	
T6892	Quercus alba, white oak	19	Good	
T6894	Quercus alba, white oak	20	Good	
T6900	Pinus virginiana, Virginia pine	14	Poor	Little canopy
T6902	Quercus alba, white oak	13	Good	
T6904	Quercus alba, white oak	13	Good	
T6906	Quercus alba, white oak	21	Good	
T6908	Quercus alba, white oak	16	Good	
T6912	Liriodendron tulipifera, yellow-poplar	20	Poor	Leaning, unstable soil, eroding
T6914	Liriodendron tulipifera, yellow-poplar	13	Good	
T6916	Liriodendron tulipifera, yellow-poplar	15	Good	
T6918	Liriodendron tulipifera, yellow-poplar	18	Fair	
T6920	Liriodendron tulipifera, yellow-poplar	17	Good	
T6924	Liriodendron tulipifera, yellow-poplar	17	Good	
T6928	Quercus rubra, northern red oak	12	Good	
T6930	Quercus alba, white oak	22	Good	
T6932	Liriodendron tulipifera, yellow-poplar	22	Poor	Large cavities
T6934	Quercus rubra, northern red oak	16	Good	
T6936	Liriodendron tulipifera, yellow-poplar	28	Good	
T6938	Quercus alba, white oak	15	Good	
T6944	Quercus alba, white oak	17	Good	
T6946	Quercus alba, white oak	23	Good	
T6958	Quercus alba, white oak	21	Good	
T6960	Quercus alba, white oak	17	Good	
T6962	No ID	13	Dead	Dead
T6964	Quercus alba, white oak	18	Fair	
T6966	Fagus grandifolia, American beech	18	Good	
T6971	Quercus alba, white oak	15	Good	

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SIMMONS
& ASSOCIATES
Established 1944
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Environmental Scientists
Archaeologists

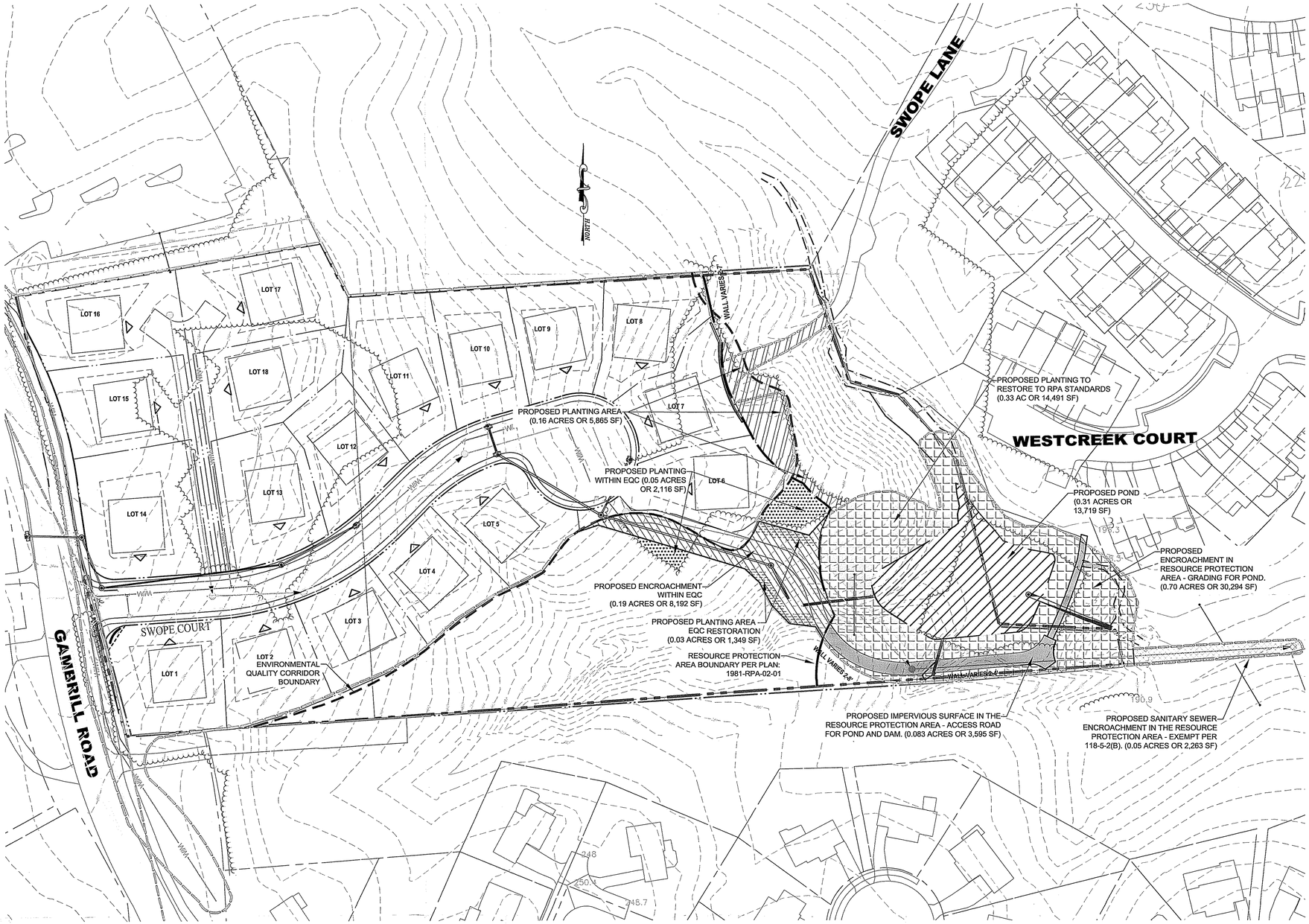
PARK POINTE

SPRINGFIELD DISTRICT
FAIRFAX COUNTY, VIRGINIA

TREE IDENTIFICATION TABLE

COMMONWEALTH OF VIRGINIA
ANN O. GERMAIN
Lic. No. 026700
1/31/14
PROFESSIONAL ENGINEER

DATE: 01-31-14
FILE NO: F 4570
DRN: LC
CKD: AOG



LEGEND

- SITE BOUNDARY
- PERENNIAL STREAM (PER WSSI'S OBSERVATIONS)
- APPROXIMATE LIMITS OF PERENNIAL STREAM (PER WSSI OBSERVATIONS – NOT SURVEYED) NOTE #15
- INTERMITTENT STREAM (PER WSSI'S OBSERVATIONS)
- JURISDICTIONAL WETLAND AREAS
- PALUSTRINE OPEN WATER (POND)
- EXISTING TREELINE
- FIELD VERIFIED RESOURCE PROTECTION AREA BOUNDARY (RPA) PER PLAN # 1981–RPA–02–01
- LIMITS OF CLEARING
- ENVIRONMENTAL QUALITY CORRIDOR (EQC)
- PROPOSED IMPERVIOUS SURFACE IN RPA
- PROPOSED ENCROACHMENT INTO RPA
- PROPOSED PLANTING AREA WITHIN RPA
- PROPOSED PLANTING AREA WITHIN EQC
- CLEARING FOR UTILITIES WITHIN RPA
- PROPOSED POND
- AREA WITHIN RPA TO BE REFORESTED
- AREA WITHIN EQC AREA TO BE REFORESTED
- PROPOSED PLANTING AREA – EQC RESTORATION

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

COWARDIN CLASSIFICATION

R3	RIVERINE UPPER PERENNIAL
R4	RIVERINE INTERMITTENT
PFO	PALUSTRINE FORESTED WETLAND
POW	PALUSTRINE OPEN WATER
PEM	PALUSTRINE EMERGENT WETLAND

RPA IMPERVIOUS AREA REDUCTION

IMPERVIOUS WITHIN RPA	SF	AC
EXISTING	3,603	0.08
PROPOSED	3,595	0.08
TOTAL NET REDUCTION	8	0.00

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www.wetlandstudies.com

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EXHIBIT 8:
Proposed Conditions/RPAE Plat

Prepared For: Van Metre Homes

PARK PONTE
Fairfax County, Virginia

COMMONWEALTH OF VIRGINIA
DANIEL C. LIBEY
No. 034207
11/14/13
PROFESSIONAL ENGINEER

REVISIONS

No.	Date	Description	Rev. By	App. By

SCALE: 1"=50' C.I.:2' & 5'

DATE: NOVEMBER 2013

Horizontal Datum:

Vertical Datum:

Boundary and Topo Source:
Paciulli, Simmons & Associates, Ltd.
Fairfax County Digital Data

Design	Draft	Approved
KHT	KHT	DCL

Sheet #
1 of 3

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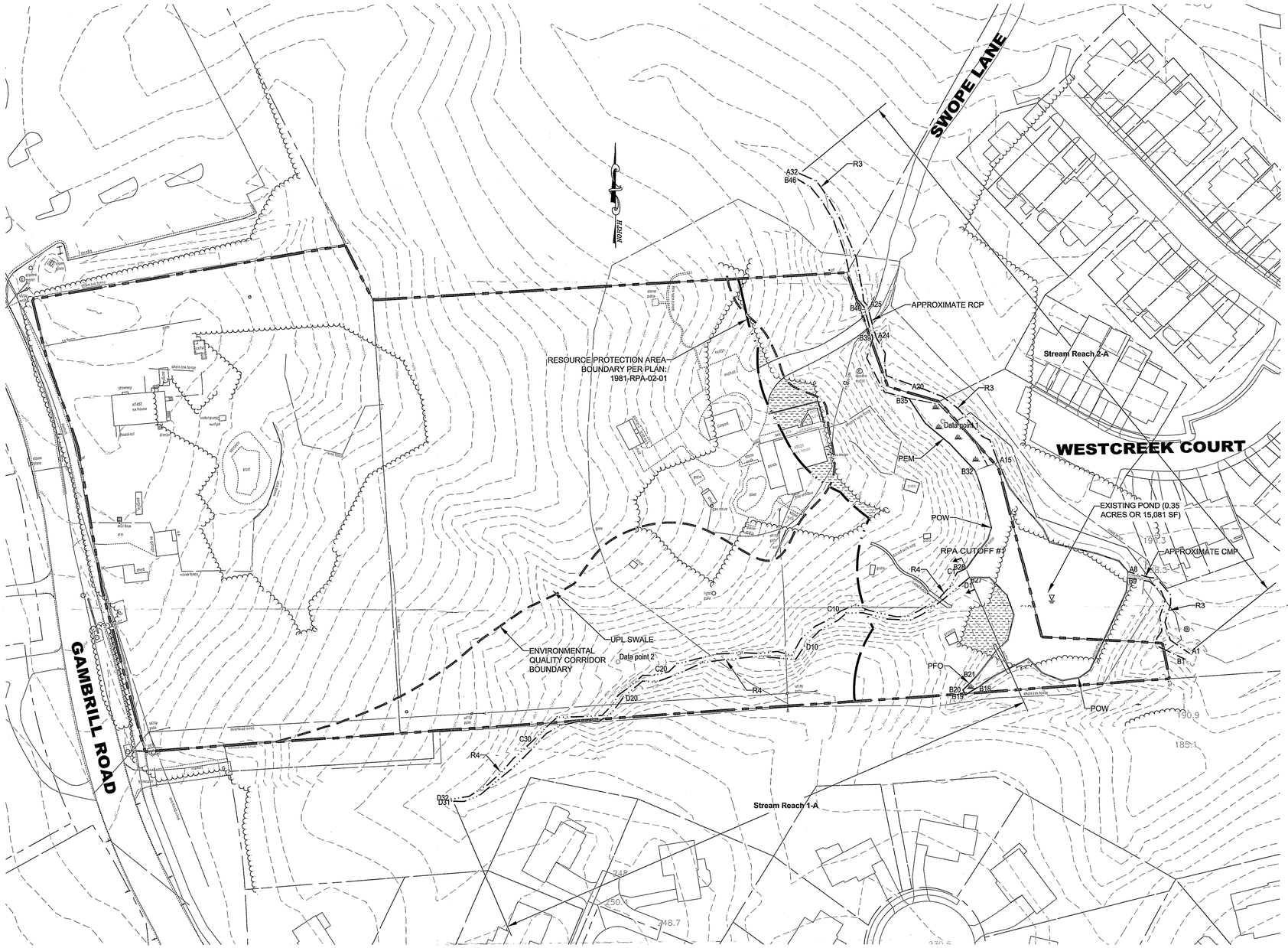

LEGEND

- SITE BOUNDARY
- PERENNIAL STREAM (PER WSSI'S OBSERVATIONS)
- APPROXIMATE LIMITS OF PERENNIAL STREAM (PER WSSI OBSERVATIONS – NOT SURVEYED) NOTE #15
- INTERMITTENT STREAM (PER WSSI'S OBSERVATIONS)
- JURISDICTIONAL WETLAND AREAS
- PALUSTRINE OPEN WATER (POND)
- FAIRFAX COUNTY MAPPED RESOURCE PROTECTION AREA BOUNDARY
- FIELD VERIFIED RESOURCE PROTECTION AREA BOUNDARY
- ENVIRONMENTAL QUALITY CORRIDOR
- RPA CUTOFF
- APPROXIMATE LOCATION OF EXISTING IMPERVIOUS SURFACES WITHIN RESOURCE PROTECTION AREA
- EXISTING TREELINE
- NON–FORESTED AREA WITHIN RESOURCE PROTECTION AREA

COWARDIN CLASSIFICATION

R3	RIVERINE UPPER PERENNIAL
R4	RIVERINE INTERMITTENT
PFO	PALUSTRINE FORESTED WETLAND
POW	PALUSTRINE OPEN WATER
PEM	PALUSTRINE EMERGENT WETLAND

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

SUMMARY OF JURISDICTIONAL AREAS WITHIN THE SWOPE HALL PROPERTIES*

COWARDIN CLASSIFICATION	AREA (SQUARE FEET)	AREA (ACRE)	LINEAR FEET OF STREAMBED
R3	3,642	0.08	453
R4	2,676	0.06	552
PFO	98	0.002	N/A
POW	15,085	0.35	N/A
PEM	1,462	0.03	N/A
TOTAL	**22,963**	**0.52**	**1,005**

* These numbers are based on the surveyed location of the delineated WOUS boundaries within the site boundary.

TOTAL IMPERVIOUS SURFACES ONSITE:
0.55 ACRES (23,958 SF) PER Paciulli, Simmons & Associates, LTD.

TOTAL IMPERVIOUS SURFACES WITHIN THE RESOURCE PROTECTION AREA:
0.083 ACRES (3,603 SF) PER Wetland Studies and Solutions Inc.

TOTAL NON-FORESTED AREA WITHIN THE RESOURCE PROTECTION AREA:
0.086 ACRES (3,758 SF) PER Wetland Studies and Solutions Inc.

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Phone: 703-679-5600 • Fax: 703-679-5601
www.wetlandstudies.com

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EXHIBIT 7:
Existing Conditions

Prepared For: Van Metre Homes

PARK PONTE
Fairfax County, Virginia

COMMONWEALTH OF VIRGINIA
DANIEL C. BOSEY
No. 0.5E2E07
PROFESSIONAL ENGINEER
11/14/2013

REVISIONS

No.	Date	Description	Rev. By	App. By

SCALE: 1"=50' C.I.:2' & 5'

DATE: NOVEMBER 2013

Horizontal Datum:

Vertical Datum:

Boundary and Topo Source:
Paciulli, Simmons & Associates, Ltd.
Fairfax County Digital Data

Design	Draft	Approved
KHT	KHT	DCL

Sheet #
1 of 1

Computer File Name:
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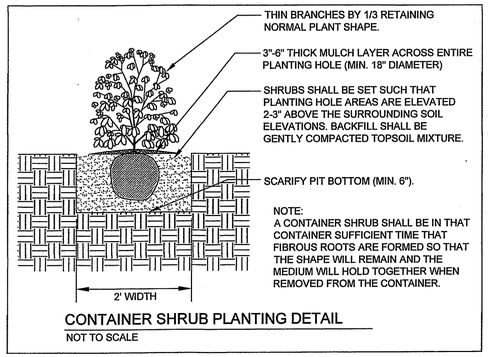
Tree Density Requirements (per CBPO118-3-3(f))

	Ratio/Ac.	Area	Required	Provided	Result
Overstory Tree Total	100	0.55	55	55	COMPLY
Understory Tree Total	200	0.55	110	110	COMPLY
Shrub Total	1,089	0.55	596	596	COMPLY

To meet diversity requirements of the Tree Conservation Ordinance (PFM 12-0514.1L) no more than 10% of the trees required to be planted shall be of one species. Because 159 trees are required, no more than 15 of each tree species may be planted for the project.

PLANTING AND SEEDING NOTES:

1. It is expected and preferred that all species in each of the Species Groups are planted. The tolerances listed in this note are intended to incorporate flexibility according to species availability. At a minimum, Contractor to provide at least:
   - a) 4 of the 5 species in Group 1,
   - b) 4 of the 5 species in Group 2,
   - c) all of Group 3,
   - d) 5 of the 6 species in Group 4,
   - e) 4 of the 5 species in Group 5,
   - f) all of Group 6,
   - g) all of Group 7,
   - h) all of Group 8,
   - i) 3 of the 5 species in Group 9,
   - j) 3 of 4 species in Group 10,
   - k) 5 of 8 in Group 11,
   - l) 4 of 5 in Group 12,
   - m) 5 of 7 in Group 13,
   - n) 5 of 6 in Group 14.
2. Substitutions for selected species based upon availability shall be requested in writing to engineer, documenting the lack of availability, if the flexibility inherent in the above schedule is still not sufficient, Engineer is under no obligation to approve substitutions.
3. The planted trees and shrubs shall be randomly spaced and species mixed throughout the planting areas.
4. Container rates and quantities shown for one gallon size. For purposes of substitution, two tubelings are the equivalent of one 1-gallon container plant in this schedule. Contractor may provide a mix of container and tubeling sizes for each species requirement, provided the ratio of tubelings to containers is not less than 2:1. Exception – Group 6 (Stream Edge) shall be planted in accordance with Note #5.
5. All seeding rates are expressed in pounds of pure live seed (PLS).



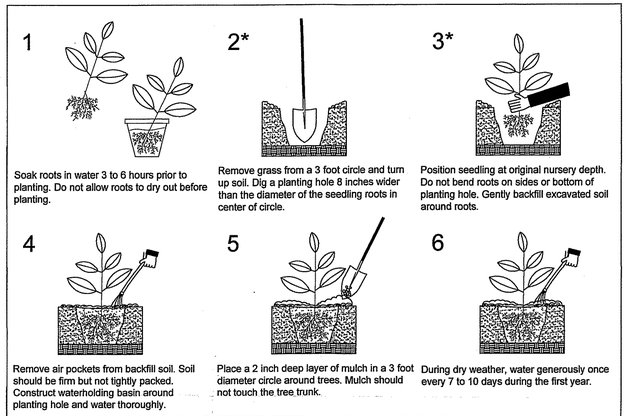
CONTAINER SHRUB PLANTING DETAIL

NOT TO SCALE

L:\22000s\22015.03\Admin\04-ENGR\WQIA\[PLANTING_SEEDING]SCHED.XLS\[RIPARIAN-WIDE RANGE SUNNY

RIPARIAN BUFFER VEGETATION SCHEDULE

CONTAINER PLANTING ZONE		SPECIES GROUP[1,2]	SPECIES[2]	INDICATOR STATUS	WILDLIFE VALUE: FUNCTIONS	WILDLIFE VALUE: PRIMARY SPECIES	WILDLIFE VALUE: PLANT PART	WILDLIFE VALUE: SEASON	PLANT SPACING[3]	CONTAINER SIZE, RATE, AND QUANTITY[4]: PLANTS PER ACRE	CONTAINER SIZE, RATE, AND QUANTITY[4]: # OF PLANTS	PLANTING QUANTITIES (BASED ON ONE-GALLON SIZE): PLANTING AREA	A
												AREA (SF):	23,821
												AREA (AC):	0.55
RIPARIAN FOREST	OVERSTORY TREE LAYER	1	QUERCUS BICOLOR (SWAMP	FACW	Food	Woodpeckers, turkey, deer, squirrels, raccoons, other small mammals	Nuts	Fall, Winter	SEE NOTE #3	67 ONE GAL – or – 134 TUBELINGS – or – MIX AT 1:2 RATIO (SEE NOTE #4)	37 (BASED ON ONE-GALLON)		37
			QUERCUS ALBA (WHITE OAK)	FACW	Food	Woodpeckers, turkey, deer, squirrels, raccoons, other small mammals	Nuts	Fall, Winter					
			QUERCUS PALUSTRIS (PIN OA	FACW	Food	Woodpeckers, turkey, deer, squirrels, raccoons, other small mammals	Nuts	Fall, Winter					
			QUERCUS PHELLOS (WILLOW	FAC	Food	Woodpeckers, turkey, deer, squirrels, raccoons, other small mammals	Nuts	Fall, Winter					
			QUERCUS RUBRA (NORTHER	FACU	Food	Woodpeckers, turkey, deer, squirrels, raccoons, other small mammals	Nuts	Fall, Winter					
		2	ACER NEGUNDO (BOX ELDER	FAC	Food	Finches, chickadees, squirrels, robins, goldfinches, other birds	Seeds, buds, flowers, pl	Spring, summer	SEE NOTE #3	33 ONE-GALLON – or – 66 TUBELINGS – or – MIX AT 1:2 RATIO (SEE NOTE #4)	18 (BASED ON ONE-GALLON)		18
			ACER RUBRUM (RED MAPLE)	FAC	Food	Finches, chickadees, squirrels, robins, goldfinches, other birds	Seeds, buds, flowers, pl	Spring, summer					
			BETULA NIGRA (RIVER BIRCH)	FACW	Food, cover	Song birds	Seeds, plant	All					
			LIQUIDAMBAR STYRACIFLUA (	FAC	Food	Finches, cardinals, chickadees, sparrows, squirrels	Seed	Summer, fall, winter					
			PLATANUS OCCIDENTALIS (A	FACW	Food	Raccoons, opossum, wood duck, pileated and other woodpeckers	Hollow trunks	All					
	OVERSTORY TREE SUBTOTAL										55		55
	UNDERSTORY TREE LAYER	3	ILEX OPACA (AMERICAN HOL	FACU	Food, cover, reproductive areas; Cover crop for oak seedlings	mockingbirds, hermit	Fruit, plant	All		100 1 Gal. or 200 TUBELINGS or MIX AT 1:2 RATIO	55		55
		4	AMELANCHIER CANADENSIS	FAC	Food, cover	mammals	Fruit, plant	All	SEE NOTE #3	100 ONE-GALLON – or – 200 TUBELINGS – or – MIX AT 1:2 RATIO	55 (BASED ON ONE-GALLON)		55
			CERCIS CANADENSIS (EASTE	FACU	Food	Honeybees, butterfly caterpillars	Flowers, leaves	Spring, summer					
			CORNUS FLORIDA (FLOWERI	FACU	Food	Wild turkey, cardinal, cedar waxwing, robin, brown thrasher, wood thrush,	Flower, fruit	Spring, fall					
			CORYLUS AMERICANA (AMER	FACU	Food, cover	mammals	Fruit	Summer, fall					
			LINDERA BENZOIN (NORTHER	FAC	Food	Thrushes vireos, catbird, bluebird, butterfly caterpillars	Fruit, leaves	Spring, summer, fall					
			SALIX NIGRA (BLACK WILLOW	OBL	Food, cover	Beaver, porcupine, deer, muskrat, ducks, fish	Seeds, plant, leaves	Spring, summer, fall					
	UNDERSTORY TREE SUBTOTAL										110		110
	SHRUB LAYER	5	CORNUS AMOMUM (SILKY DO	FACW	Food	Catbird, thrasher, thrushes, woodpeckers	Fruit	Summer, fall	SEE NOTE #3	1089 ONE-GALLON – or – 2178 TUBELINGS – or – MIX AT 1:2 RATIO (SEE NOTE #4)	596 (BASED ON ONE-GALLON)		596
			ILEX VERTICILLATA (COMMON	FACW	Food, cover, reproductive areas	thrasher, robin, yellow bellied sapsucker, mockingbird	Flower, seed, leaves	All					
			VIBURNUM DENTATUM (SOUT	FAC	Food, cover, reproductive areas	Purple finch, goldfinch, robin, junco, bluebird, hermit thrush	Flower, fruit	Spring, summer, fall					
			ROSA PALUSTRIS (SWAMP R	OBL	Food, cover, reproductive areas	Brown thrasher, catbird, thrushers, pollinators	Flowers, seeds, and foli	Spring, fall, winter					
			VIBURNUM PRUNIFOLIUM (BL	FACU	Food, cover	Catbirds, thrashers, thrushes, cover and next sites for songbirds	Fruit, plant	Spring, fall					
	SHRUB LAYER SUBTOTAL									—	596		596



PLANTING TREE SEEDLINGS AND SAPLINGS

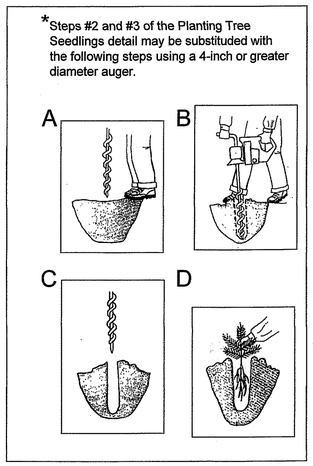


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EXHIBIT 8:
Proposed Conditions/RPAE Plat

Prepared For: Van Metre Homes

PARK PONTE
Fairfax County, Virginia

COMMONWEALTH OF VIRGINIA
DANIEL C. GLACE
No. 034207
PROFESSIONAL ENGINEER
6/24/13

REVISIONS

No.	Date	Description	Rev. By	App. By

DATE: NOVEMBER 2013
SCALE: 1"=50' C.I.:2' & 5'

Horizontal Datum:

Vertical Datum:

Boundary and Topo Source:
Paciulli, Simmons & Associates, Ltd.
Fairfax County Digital Data

Design	Draft	Approved
KHT	KHT	DCL

Sheet # 2 of 3

Computer File Name:

L:\22000s\22100\22180.03\CADD\05-ENVR\[WQIA & RPAE 2013-10-28_Proposed Planting Area.xlsx]Riparian-Wide Range Sunny

RIPARIAN BUFFER SEED MIX

SEED PLANTING ZONE	SPECIES GROUP[1,2]	SPECIES[2]	INDICATOR STATUS	WILDLIFE VALUE: FUNCTIONS	WILDLIFE VALUE: PRIMARY SPECIES	WILDLIFE VALUE: PLANT PART	WILDLIFE VALUE: SEASON	SEEDING RATE[7] (LBS/AC)	AREA PER PLANT (AC)	QUANTITY (LBS)	SEEDING QUANTITIES: AREA: / AREA (SF): / AREA (AC):	A / 23,821 / 0.55
RIPARIAN BUFFER SEED MIX	6	LOLIUM MULTIFLORUM (ANNUAL RYEGRASS)	FACU	Erosion control, food	Sparrows, finches, small mammals.	Seeds	Summer, fall	45.00	0.55	24.61		24.61
		SETARIA ITALICA (GERMAN/FOXTAIL MILLET)	FACU	Erosion control, food	Sparrows, finches, small mammals.	Seeds	Fall, winter	45.00	0.55	24.61		24.61
	7	ELYMUS RIPARIUS (RIVERBANK WILD RYE)	FACW	Food	Song birds, small mammals	Seeds, leaves	All	10.00	0.55	5.47		5.47
		ELYMUS VIRGINICUS (VIRGINIA WILD RYE)	FACW	Food	Deer, sparrows, small mammals	Seeds, leaves	All	10.00	0.55	5.47		5.47
		PANICUM CLANDESTINUM (DEER TONGUE GRASS)	FAC	Food	Song birds, waterfowl, small mammals	Seeds	Summer, fall	10.00	0.55	5.47		5.47
		PANICUM DICHOTOMIFLORUM (SMOOTH PANIC GRASS)	FACW	Food	Song birds, waterfowl, small mammals	Seeds	Summer, fall	10.00	0.55	5.47		5.47
	8	ANEMONE VIRGINIANA (THIMBLEWEED)	FACU	Food	Pollinators, butterflies, beneficial insects	Flowers	Spring, summer	0.10	0.55	0.05		0.05
		ASTER NOVAE-ANGLIAE (NEW ENGLAND ASTER)	FACW	Food	Butterflies	Flowers	Summer, fall	0.10	0.55	0.05		0.05
		ASTER PILOSUS (HEATH ASTER)	UPL	Food	Butterflies	Flowers	Summer, fall	0.10	0.55	0.05		0.05
		SOLIDAGO JUNCEA (EARLY GOLDENROD)	UPL	Food	Pollinators, butterflies, beneficial insects	Seeds	Fall, winter	0.10	0.55	0.05		0.05
	9	CAREX SCOPARIA (BLUNT BROOM SEDGE)	FACW	Food, cover	Songs birds (esp. sparrows), small mammals	Seeds, plant	Summer, fall	0.20	0.55	0.11		0.11
		CAREX SQUARROSA (SQUARROSE SEDGE)	FACW	Food	Song birds, waterfowl	Seeds	Summer, fall	0.20	0.55	0.11		0.11
		CAREX VULPINOIDEA (FOX SEDGE)	OBL	Food	Song birds, waterfowl	Seeds	Summer, fall	0.20	0.55	0.11		0.11
		JUNCUS EFFUSUS (SOFT RUSH)	FACW	Food, cover, reproduc	Waterfowl, songbirds (esp. sparrows), bluegill and other fish	Seeds, stems	Summer, fall, winter	0.20	0.55	0.11		0.11
		JUNCUS TENUIS (PATH RUSH)	FAC	Food	Songbirds, small mammals	Seeds	Summer, fall	0.20	0.55	0.11		0.11
	10	EUPATORIUM FISTULOSUS (JOE PYE WEED)	FACW	Food	Pollinators, butterflies, beneficial insects	Flowers, seeds	Summer, fall	0.10	0.55	0.05		0.05
		EUTHAMIA GRAMINIFOLIA (GRASS LEAVED GOLDENROD)	FAC	Food	Butterflies	Flowers	Summer, fall	0.10	0.55	0.05		0.05
		SOLIDAGO SPECIOSA (SHOWY GOLDENROD)	UPL	Food	Butterflies, song birds, small mammals	Flowers	Summer, fall	0.10	0.55	0.05		0.05
		ZIZIA AUREA (GOLDEN ALEXANDERS)	FAC	Food	Beneficial insects	Flowers	Spring, summer	0.10	0.55	0.05		0.05
	11	ASCLEPIAS SYRIACA (COMMON MILKWEED)	UPL	Food	Butterflies, beneficial insects	Flowers	Spring, summer	0.20	0.55	0.11		0.11
		BIDENS FRONDOSA (BEGGAR TICKS)	FACW	Food	Pollinators, butterflies, beneficial insects	Seeds	Summer, fall, winter	0.20	0.55	0.11		0.11
		HELENIUM AUTUMNALE (COMMON SNEEZEWEED)	FACW	Food	Butterflies	Flowers	Summer, fall	0.20	0.55	0.11		0.11
		HELIANTHUS ANGUSTIFOLIUS (NARROW-LEAF SUNFLOWER)	FACW	Food	Butterflies, song birds	Flowers, seeds	Summer, fall	0.20	0.55	0.11		0.11
		ONOCLEA SENSIBILIS (SENSITIVE FERN)	FACW	Food	Songbirds, small mammals	Fronds	Spring, summer, fall	0.20	0.55	0.11		0.11
		PENSTEMON DIGITALIS (PENSTEMON)	FAC	Food	Pollinators, butterflies, beneficial insects	Leaves, seeds	All	0.20	0.55	0.11		0.11
		VERBENA HASTATA (BLUE VERVAIN)	FACW	Food	Pollinators, butterflies, beneficial insects	Flowers, seeds	Spring, summer, fall	0.20	0.55	0.11		0.11
		VERBESINA ALTERNIFOLIA (WINGSTEM)	FAC	Food	Butterflies, other insects	Flowers	Summer, fall	0.20	0.55	0.11		0.11
	12	COREOPSIS LANCEOLATA (LANCE LEAVED COREOPSIS)	FACU	Food	Song birds, butterflies	Flowers, seeds	Spring, summer, fall	0.20	0.55	0.11		0.11
		HELIOPSIS HELIANTHOIDES (OXEYE SUNFLOWER)	UPL	Food	Pollinators, butterflies, beneficial insects	Flowers, seeds	Spring, summer, fall	0.20	0.55	0.11		0.11
		POLYGONUM PENSYLVANICUM (PA SMARTWEED)	FACW	Food	Sparrows, finches, blackbirds, quail, small mammals	Seeds	Fall, winter	0.20	0.55	0.11		0.11
		RUDBECKIA HIRTA (BLACK EYED SUSAN)	FACU	Food	Butterflies and other pollinators	Flowers, seeds	Summer, fall, winter	0.20	0.55	0.11		0.11
		SENNA HEBECARPA (WILD SENNA)	FAC	Food	Song birds, upland game birds	Seeds	Summer	0.20	0.55	0.11		0.11
	13	AMELANCHIER CANADENSIS (CANADIAN SERVICEBERRY)	FAC	Food, cover	Song birds, small mammals	Fruit, plant	All	0.20	0.55	0.11		0.11
		HAMAMELIS VIRGINIANA (WITCH HAZEL)	FACU	Food, cover, reproduc	Ruffed grouse, wild turkey, rabbit, deer, beaver	Flowers, fruit	Spring, fall, winter	0.20	0.55	0.11		0.11
		ILEX VERTICILLATA (WINTERBERRY)	FACW	Food, cover, reproduc	Song birds, upland game birds	Flower, seed, leaves	All	0.20	0.55	0.11		0.11
		LINDERA BENZOIN (NORTHERN SPICEBUSH)	FAC	Food	Thrushes vireos, catbird, bluebird, butterfly caterpillars	Fruit, leaves	Spring, summer, fall	0.20	0.55	0.11		0.11
		PHYSOCARPUS OPULIFOLIUS (COMMON NINEBARK)	FACW	Food, cover	Songbirds, waterfowl, small mammals, beneficial insects	Flowers, fruit	All	0.20	0.55	0.11		0.11
		VIBURNUM DENTATUM (SOUTHERN ARROW WOOD)	FAC	Food	Robins, bluebirds, other thrushes, thrashers, catbirds, vireos	Fruit	Fall	0.20	0.55	0.11		0.11
		VIBURNUM PRUNIFOLIUM (BLACK-HAW)	FACU	Food, cover	Catbirds, thrashers, thrushes, cover and next sites for songbirds	Fruit, plant	Spring, fall	0.20	0.55	0.11		0.11
	14	ACER RUBRUM (RED MAPLE)	FAC	Food	Finches, chickadees, squirrels, robins, goldfinches, other birds	Seeds, buds, flowers, plant	Spring, summer	0.20	0.55	0.11		0.11
		CARPINUS CAROLINIANA (MUSCLEWOOD)	FAC	Food	Rufted grouse, bobwhite, pheasant, wild turkey, squirrel, rabbit, deer	Fruit	Summer, fall	0.20	0.55	0.11		0.11
		CERCIS CANADENSIS (EASTERN REDBUD)	FACU	Food	Honeybees, butterfly caterpillars	Flowers, leaves	Spring, summer	0.20	0.55	0.11		0.11
		CORNUS FLORIDA (FLOWERING DOGWOOD)	FACU	Food	Wild turkey, cardinal, cedar waxwing, robin, brown thrasher, wood thrush, rabbits	Flower, fruit	Spring, fall	0.20	0.55	0.11		0.11
		NYSSA SYLVATICA (BLACK GUM)	FAC	Food, cover	Song birds, waterfowl, small mammals	Fruit, plant	All	0.20	0.55	0.11		0.11
		PLATANUS OCCIDENTALIS (AMERICAN SYCAMORE)	FAC	Food, cover	Raccoons, opossum, wood duck, pileated and other woodpeckers	Fruit, Hollow trunks	All	0.20	0.55	0.11		0.11
SEEDING TOTALS								137.00		74.91		74.91

PLANTING SPECIFICATIONS

1. PLAN DETAILS ARE INCORPORATED INTO THIS SPECIFICATION BY REFERENCE.
2. THE SUPPLIER OF ALL SEEDS AND/OR VEGETATION SHALL CERTIFY THAT THE ORIGIN OF THE SEEDS FROM WHICH THE PLANTS OR SEEDS WERE PRODUCED IS FROM HARDINESS ZONES 6 AND 7, FROM THE EASTERN OR CENTRAL PORTIONS OF THE U.S., PRIOR TO PLANTING.
3. ANY NURSERY SUPPLYING THE STOCK SHALL PROVIDE A CURRENT NURSERY INSPECTION CERTIFICATE FROM THE STATE DEPARTMENT OF AGRICULTURE, OR PROVIDE AT LEAST THIRTY DAYS ADVANCE NOTICE FOR WETLAND STUDIES AND SOLUTIONS, INC. (WSSI) TO INSPECT THE PLANT SOURCE AREAS AT WSSI'S DISCRETION. ANY SUCH INSPECTION IS NOT DEEMED APPROVAL OF THE PLANT MATERIALS.
4. ALL PLANTS SHALL BE SET STRAIGHT, OR PLUMB.
5. PLANTING SHALL ONLY BE PERMITTED BETWEEN NOVEMBER 1 AND MARCH 30. NO PLANTING SHALL OCCUR WHEN THE SOIL IS FROZEN. SEEDING SHALL BE COMPLETED DURING MARCH THROUGH MAY OR SEPTEMBER THROUGH NOVEMBER. THESE TIME LIMITS MAY NOT BE MODIFIED UNLESS APPROVED BY WETLAND STUDIES AND SOLUTIONS, INC., IN ADVANCE WITH THE RISK OF SURVIVAL BORNE SOLELY BY THE CONTRACTOR.
6. PLANTING HOLES FOR CONTAINER GROWN PLANTS SHALL BE ONE FOOT (1') DEEP PLUS THE CONTAINER DEPTH IN WHICH THE PLANT HAS BEEN GROWN AND TWO FEET (2') WIDER THAN CONTAINER.
7. BACKFILL THE PLANTING HOLES WITH THE IN-SITU SOIL MATERIALS REMOVED FOR PLANTING AFTER REMOVING ALL STONES, ROOTS, AND OTHER DEBRIS GREATER THAN 1-1/2" IN DIAMETER.
8. FOLLOWING THE BACKFILLING, WATER TO THE POINT OF SOIL SATURATION (IF NOT PLANTED IN THE "WET") AND TAMP TO COMPACT THE BACKFILL MIXTURE. ADD EXISTING SOIL TO BRING THE FINAL GRADE IN THE PLANTING HOLE TO THE SURROUNDING SOIL SURFACE. RAKE THE UNUSED EXISTING SOIL OUTSIDE THE PLANTING HOLES, TAKING CARE NOT TO MOUND THE SOIL OR TO SIGNIFICANTLY ALTER THE EXISTING GRADES AND THEN PLACE MULCH (MIN. 2" THICK) ATOP ENTIRE PLANTING HOLE. THE PLANTING HOLE AREAS MUST NOT BE DEPRESSED BELOW THE SURROUNDING SOIL SURFACE ELEVATIONS. SAID AREAS SHALL BE SLIGHTLY RAISED (2-3"), RELATIVE TO THE SOIL SURFACE.
9. AS INDICATED IN THE PLANT LIST, THE SHRUBS THAT ARE SPECIFIED AS CONTAINER GROWN SPECIMENS SHALL BE BETWEEN 15" AND 18" IN HEIGHT. THEY SHALL BE HEALTHY, VIGOROUS, WELL ROOTED AND ESTABLISHED IN THE PLANTING CONTAINER IN WHICH THEY ARE GROWING. A CONTAINER SHRUB SHALL BE IN THAT CONTAINER A SUFFICIENT TIME SUCH THAT FIBROUS ROOTS ARE FORMED SO THE SHAPE WILL REMAIN AND THE MEDIUM WILL HOLD TOGETHER WHEN REMOVED FROM THE CONTAINER (REFER TO AMERICAN STANDARD FOR NURSERY STOCK).
10. DO NOT REMOVE PLANTS FROM CONTAINERS UNTIL IMMEDIATELY BEFORE PLANTING. EXAMINE THE ROOTS TO SEE IF THEY ARE POT BOUND. CAREFULLY SEPARATE ANY POT BOUND OR CRAMPED ROOTS AND SPREAD THEM OUT WHEN PLACING THE PLANT SO THAT THE ROOTS CAN GROW WITHOUT FURTHER CONSTRUCTION OF THE ROOT BALL.
11. FERTILIZE EACH BARE ROOT, PLUG, TUBER, AND PINT CONTAINER PLANT WITH A 5 GRAM TABLET OF CONTROLLED RELEASE FERTILIZER. USE A 20 GRAM TABLET OF FERTILIZER WITH EACH 1-3 GALLON CONTAINER. GENERALLY, FOR EACH 12 TO 18 INCHES OF PLANT HEIGHT OR FOR EACH 1/2" OF TREE DIAMETER AT THE BASE, USE 20 GRAMS FOR SLOW GROWING PLANTS OR 40 GRAMS FOR FAST GROWING PLANTS OR POOR SOIL SITUATIONS. SAID FERTILIZER TABLETS SHALL BE AGRIFORM 20-10-5 OR APPROVED EQUIVALENT, APPLIED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
12. AS RECOMMENDED BY THE CONTRACTOR AND APPROVED BY ENGINEER, THE CONTRACTOR SHALL WATER THE PLANTS AS NEEDED DURING THE CARE AND REPLACEMENT PERIOD OR UNTIL FINAL ACCEPTANCE, WHICHEVER IS THE SHORTEST.
13. THE CONTRACTOR IS RESPONSIBLE FOR REPLACING NON- SURVIVING TREES AND SHRUBS DURING THE CARE AND REPLACEMENT PERIOD (12 MONTHS, UNLESS OTHERWISE SPECIFIED IN CONTRACT DOCUMENTS) OR UNTIL FINAL ACCEPTANCE, WHICHEVER IS THE SHORTEST, AS REQUIRED BY THE TERMS OF THE SURVIVAL WARRANTY SPECIFIED HEREIN AND/OR IN CONTRACT DOCUMENTS. THE SPECIFICATIONS FOR THE REPLACED PLANTS SHALL BE THOSE PROVIDED IN THE PLANT LIST.
14. REFER TO APPLICABLE SKETCHES WITHIN THIS PLAN SET FOR ADDITIONAL GUIDANCE ON PLANTING REQUIREMENTS.
15. INVASIVE AND NOXIOUS WEEDS SHALL BE REMOVED BY HAND WITH LOCALIZED APPLICATIONS OF ROUND-UP WHERE NECESSARY.
16. ACCEPTANCE OF SOIL : CONTRACTOR IS ALSO REQUIRED TO CHEMICALLY ANALYZE THE SOIL AND DETERMINE IF FERTILIZATION, LIME, ETC. IS REQUIRED TO PROVIDE PROPER GROWTH. A WRITTEN REVIEW OF SAID ANALYSIS AND RECOMMENDATIONS IS REQUIRED TO BE SUBMITTED TO WSSI 15 DAYS PRIOR TO INSTALLATION. ALL SUCH IMPROVEMENTS/AMENDMENTS SHALL BE INCLUDED WITHIN THE COST OF THIS WORK. INSTALLING ONE OR MORE PLANTS ON THIS SITE SHALL BE CONTRACTORS ACCEPTANCE THAT SITE CONDITIONS COMPLY WITH CONTRACT DOCUMENTS. CONTRACTOR MAY SAMPLE THE IN-SITU TOPSOILS AT ANY TIME DURING THE BIDDING PROCESS TO ENSURE ADEQUATE FINANCIAL COVERAGE OF THIS COST.

SITE PREPARATION

1. LIGHTLY RAKE RIPARIAN BUFFER AREAS TO MAXIMUM DEPTH OF 1 ½ INCHES (1.5").

SEEDING SPECIFICATIONS

1. IF EROSION CONTROL COVER IS ROBUST (I.E., DEFINED AS 70% GROUND COVER OR GREATER):
   A. THE SPECIFIED SEED SHALL BE BROADCAST PRIMARILY IN AREAS WITH LIMITED COVER. FOLLOWING SEEDING, MECHANICALLY SOW SEED TO A DEPTH OF 1/8TH OF AN INCH BY THE USE OF A HAND RAKE.
   B. A SEED GERMINATION AND PURITY RATE OF 75% IS REQUIRED. EVIDENCE OF SUCH SHALL BE PROVIDED TO OWNER'S REPRESENTATIVE PRIOR TO PLANTING.
2. IF EROSION CONTROL COVER IS NOT ROBUST (I.E., LESS THAN 70% GROUND COVER), THE SPECIFIED SEED MIX SHALL BE PLACED BY HYDROSEEDING AS FOLLOWS:
   A. SEED SHALL HAVE BEEN COLLECTED THE SAME YEAR OF SEEDING. A SEED GERMINATION AND PURITY RATE OF 75% IS REQUIRED. EVIDENCE OF SUCH SHALL BE PROVIDED TO OWNER'S REPRESENTATIVE PRIOR TO PLANTING.
   B. THE LANDSCAPE CONTRACTOR SHALL INSPECT THE AREAS AND CONDITIONS UNDER WHICH THE SEEDING WORK IS TO BE PERFORMED PRIOR TO COMMENCING WORK. IF CONDITIONS ARE DETRIMENTAL TO THE PROPER AND TIMELY COMPLETION OF THE WORK, HE/SHE SHALL NOTIFY THE OWNER' REPRESENTATIVE VERBALLY AND IN WRITING AND POSTPONE COMMENCING WORK UNTIL THE UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.
   C. PRIOR TO HYDROSEEDING, THE TOP SOIL SHALL BE RAKED SMOOTH AND CLEARED OF ALL STONES LARGER THAN 5" AND TRASH, DEBRIS, BRANCHES AND OTHER MATTER DETRIMENTAL TO THE SUCCESS OF SEEDING.
   D. FERTILIZER IS TO BE BROADCAST AND RAKED INTO THE TOP ONE INCH OF TOP SOIL IMMEDIATELY BEFORE SEEDING OR ADDED TO THE HYDROSEED MIX. FERTILIZER SHALL HAVE A FORMULATION OF 10-10-10 AND BE APPLIED AT A RATE OF 50 POUNDS PER 1000 SQUARE FEET.
   E. MULCH SHALL BE A CELLULOSE FIBER USED IN THE AQUEOUS MIXTURE DURING HYDROSEEDING. IT SHALL BE APPLIED AT A RATE OF 1500 POUNDS PER ACRE. STRAW CAN BE SUBSTITUTED IF APPLIED AT RATES SPECIFIED BY THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, 3RD EDITION, 1992.
   F. THE AQUEOUS MIXTURE SHALL BE CONSTANTLY AGITATED FROM THE TIME IT IS MIXED UNTIL THE TIME APPLICATION IS COMPLETED.
   G. CARE SHOULD BE EXERCISED TO INSURE UNIFORM COVERAGE AND TO AVOID SPRAYING ON THE BASAL AREAS OF ANY ADJACENT TREES AND SHRUBS. THE WATER-SEED MIXTURE SHALL BE APPLIED AT A MINIMUM RATE OF 1000 GALLONS PER ACRE.
3. ALTERNATIVELY, CONTRACTOR MAY SPECIFICALLY APPLY SEED MIX BY BROADCASTING EVENLY THROUGHOUT THE AREA. FOLLOWING SEEDING, MECHANICALLY SOW SEED TO A DEPTH OF 1/8 OF AN INCH BY THE USE OF A CULTIPACTOR, YORK RAKE, OR HAND RAKE.

PLANTING AND SEEDING SURVIVAL WARRANTY

1. LANDSCAPE CONTRACTOR SHALL GUARANTEE A MINIMUM SURVIVAL RATE OF EACH VEGETATION SPECIES AFTER TWELVE MONTHS OF 85% FOR B&B, CONTAINER GROWN, AND TUBLINGS, AND 60% FOR BARE ROOT AND TUBER STOCK.
2. IF SURVIVAL RATES ARE LESS THAN THE ABOVE WARRANTY RATES, THEN LANDSCAPE CONTRACTOR SHALL REPLACE THE QUANTITY OF DEAD PLANTS WITHIN THE NEXT PLANTING WINDOW (SEPTEMBER 30 THROUGH MARCH 30, EXCLUDING FROZEN GROUND PERIODS) FOLLOWING THE END OF THE APPLICABLE WARRANTY PERIOD.

PRODUCT HANDLING, STORAGE, AND DELIVERY

1. HANDLE PLANTS AT ALL TIMES SO THAT ROOTS OR BALLS ARE ADEQUATELY PROTECTED FROM BREAKAGE OF BALLS, FROM SUN AND DRYING WINDS. PLANTS WITH DRIED OUT TOPS OR ROOTS SHALL BE REJECTED.
2. ALL PLANT MATERIALS SHALL BE STORED AND DELIVERED IN SUCH A FASHION AND FOR TIME INTERVALS CONSISTENT WITH SOUND SILVICULTURAL PRACTICES.
3. PLANT MATERIAL WILL BE TRANSPORTED FROM THE NURSERY TO THE PLANTING AREAS BY SUCH MEANS AS TO AVOID WIND DAMAGE, OVER-CROWDING, OR OTHER MECHANISMS BY WHICH PHYSICAL DAMAGE MAY RESULT TO THE PLANTS.
4. PLANT MATERIAL MAY BE RANDOMLY INSPECTED BY THE DESIGN ENGINEER UPON ARRIVAL AT EACH PLANTING AREA AND DURING PLANTING ACTIVITIES. MATERIAL FOUND TO BE UNACCEPTABLE WILL BE REJECTED AND THE CONTRACTOR WILL BE REQUIRED TO SUPPLY REPLACEMENT MATERIAL WITHIN A REASONABLE TIME FRAME (I.E. 1-WEEK). UNACCEPTABLE MATERIAL IS TO BE DEFINED AS THE FOLLOWING:
   (A) PLANTS WITH BENT TRUNKS OR MULTIPLE LEADERS, UNLESS CHARACTERISTICS FOR THE SPECIES;
   (B) PLANTS WITH DISEASED TRUNKS, STEMS, OR LEAVES;
   (C) PLANTS WITH PEST-INFESTED TRUNKS, STEMS, OR LEAVES;
   (D) PLANTS OF INSUFFICIENT SIZE (LESS THAN A SPECIFIED HEIGHT);
   (E) PLANTS OF THE WRONG SPECIES/SUB-SPECIES;
   (F) PLANTS HAVING ROOT GIRDLING IN THE CONTAINER; UNLESS OTHERWISE APPROVED BY THE DESIGN ENGINEER. JUSTIFICATION FOR USE OF TENTATIVELY REJECTED MATERIAL MAY BE PRESENTED TO THE DESIGN ENGINEER.

Wetland Studies and Solutions, Inc.
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Gainesville, Virginia 20155
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EXHIBIT 8:
Proposed Conditions/RPAE Plat

Prepared For: Van Metre Homes

PARK PONTE
Fairfax County, Virginia

COMMONWEALTH OF VIRGINIA
DANIEL C. LASLEY
No.034207
11/4/2013
PROFESSIONAL ENGINEER

REVISIONS

No.	Date	Description	Rev. By	App. By

DATE: NOVEMBER 2013 SCALE: 1"=50' C.I.:2' & 5'

Horizontal Datum:

Vertical Datum:

Boundary and Topo Source:
Paciulli, Simmons & Associates, Ltd.
Fairfax County Digital Data

Design	Draft	Approved
KHT	KHT	DCL

Computer File Name:

A GLOSSARY OF TERMS FREQUENTLY USED IN STAFF REPORTS WILL BE FOUND AT THE BACK OF THIS REPORT

APPLICATION DESCRIPTION

The applicant, Van Metre Communities, LLC, requests approval of a rezoning of approximately 7.72 acres from the R-1 (Residential) District to the R-3 (Residential-Cluster) District to permit the development of 18 single-family detached dwellings at a density of 2.33 dwelling units per acre (du/ac). The property is located on the east side of Gambrill Road, approximately 700 feet south of Fairfax County Parkway.

The site contains both Environmental Quality Corridor (EQC) and Resource Protection Area (RPA). The RPA and approximately half of the EQC are associated with an unnamed perennial stream, which is tributary to Pohick Creek. All of the proposed lots are outside of the EQC and RPA.

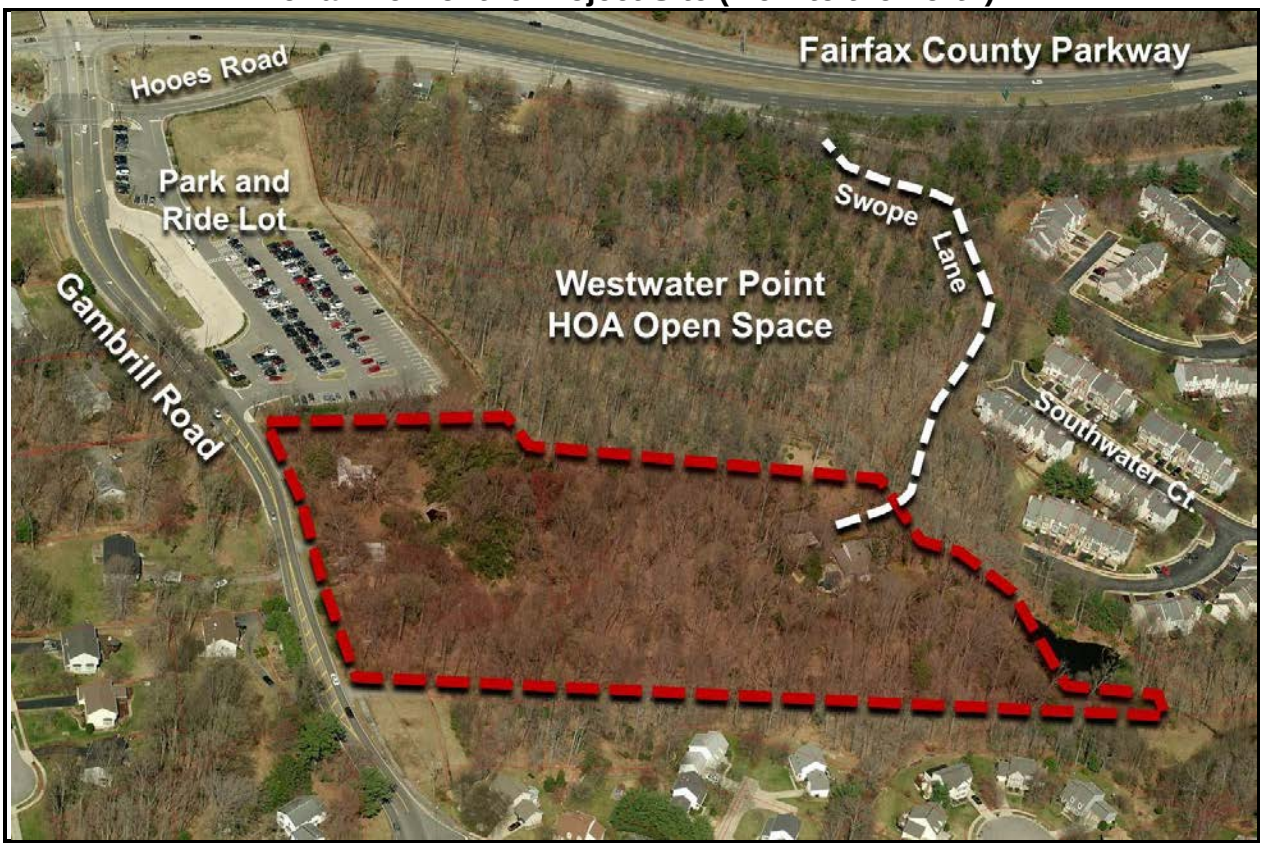
The site contains a portion of an existing farm pond and dam, which are located within the RPA. The applicant proposes the removal of the existing pond and embankment and the reconstruction of those elements, in addition to the construction of a maintenance access road, within the RPA, per Sect. 118-6-9 of the County Chesapeake Bay Preservation Ordinance (CBPO). Per Sect. 118-6-1 of the CBPO, exceptions to the criteria and requirements of the CBPO to permit encroachments into the RPA that do not qualify for administrative review may be granted by the Board of Supervisors in conjunction with a rezoning approval.

A reduced copy of the submitted Generalized Development Plan and the RPA Exception Plat is included at the front of this report. Copies of the applicant's proposed proffers, proposed development conditions (RPA Exception and WQIA), affidavit/list of heirs/real estate affidavit, and statement of justification are included in Appendices 1, 2, 3, and 4, respectively. Residential Development Criteria of the Comprehensive Plan are provided in Appendix 15. An excerpt of the CBPO with required findings is included as Appendix 17. Staff analyses are included in Appendices 5 through 11. The Staff Report for the RPA Exception and WQIA is included as Appendix 12.

LOCATION AND CHARACTER

Site Description:

Aerial View of the Project Site (view to the north)



The subject property is located in the Springfield Magisterial District, east of Gambrill Road, and approximately 700 feet south of Fairfax County Parkway. The property is surrounded by single-family detached and attached housing, open space associated with the single-family attached housing, and a park-and-ride lot.

The project site contains two single-family detached houses, one with access to Gambrill Road, which was constructed in 1900, and one with access to Hooes Road, which was constructed in 1957. (Heritage resources are discussed later in this report.) Access to Hooes Road is provided through a private driveway, known as Swope Lane, which crosses through the RPA and the adjacent open space. Both houses would be demolished and removed as part of this project. Much of the remaining project site is forested. At the southeast corner of the property is a farm pond. Approximately half of the pond is contained on-site and half is contained within a separate off-site parcel. Both properties are owned by the applicant.

SURROUNDING AREA DESCRIPTION			
Direction	**Use**	**Zoning**	**Comprehensive Plan Recommendation**
North	Park-and-ride lot; open space	R-1; & R-5	Park-and-ride facility; and Residential at 2-3 du/ac
East	Single-family attached dwellings; RPA; floodplain; farm pond	R-5	Residential at 2-3 du/ac
South	Single-family detached dwellings	R-3	Residential at 2-3 du/ac
West	Single-family detached dwellings	R-1; & R-3	Residential at 2-3 du/ac

BACKGROUND

The subject site contains several environmental features. Approximately 2.7 acres of the site is within an Environmental Quality Corridor (EQC). Approximately 1.4 acres of the EQC is classified as a Resource Protection Area (RPA). Approximately 2.6 acres, or 34% of the site, contains steep slopes, or slopes in excess of 15% grade. Finally, approximately 0.35 acres, or 5% of the site, is comprised of the existing pond. In accordance with Sect. 2-308 of the Zoning Ordinance:

> *Maximum density shall be calculated on the gross area of the lot, except when 30% or more of the total area of the lot is comprised of various features, including floodplains and adjacent slopes in excess of 15% grade, quarries, marine clays, and existing water bodies, unless a water body is a proposed integral design component of an open space system for a given development. When 30% or more of the total area of the lot is comprised of any or all of these features, then 50% of the maximum permitted density shall be calculated for that area of the lot which exceeds 30 percent of the total area of the lot.*

Applying these maximum density provisions to the property results in a maximum of 22 lots, or 2.85 du/ac. The applicant proposes 18 lots at 2.33 du/ac.

The pond and dam embankment are located within the RPA. That portion of the pond which is located off-site is used as part of the open space calculations for the adjacent Westwater Point townhome development, which was approved on August 18, 1975. The pond does not provide any stormwater management (SWM) or Best Management Practice (BMP) functions for the adjacent development and is not maintained by either the applicant or the adjacent Westwater Point homeowners' association.

COMPREHENSIVE PLAN PROVISIONS

Plan Area:	III
Planning District:	Pohick
Planning Sector:	P-2 – Main Branch
Plan Map:	Residential at 2-3 du/ac
Plan Text:	

FAIRFAX COUNTY COMPREHENSIVE PLAN, 2013 Edition AREA III, Pohick Planning District, Amended through 4-9-2013, P2-Main Branch Community Planning Sector, Page 30

Land Use Recommendations

The Main Branch Community Planning Sector is largely developed as stable residential neighborhoods. Infill development in these neighborhoods should be of a compatible use, type and intensity in accordance with the guidance provided by the Policy Plan under Land Use Objectives 8 and 14."

"Further infill development in the vicinity of the Pohick Creek tributaries should be compatible with adjacent residential development as well as provide a balance between the built and natural environments."

"Where substantial parcel consolidation is specified, it is intended that such consolidations will provide for projects that function in a well-designed, efficient manner and provides for the development of unconsolidated parcels in conformance with the Area Plan.

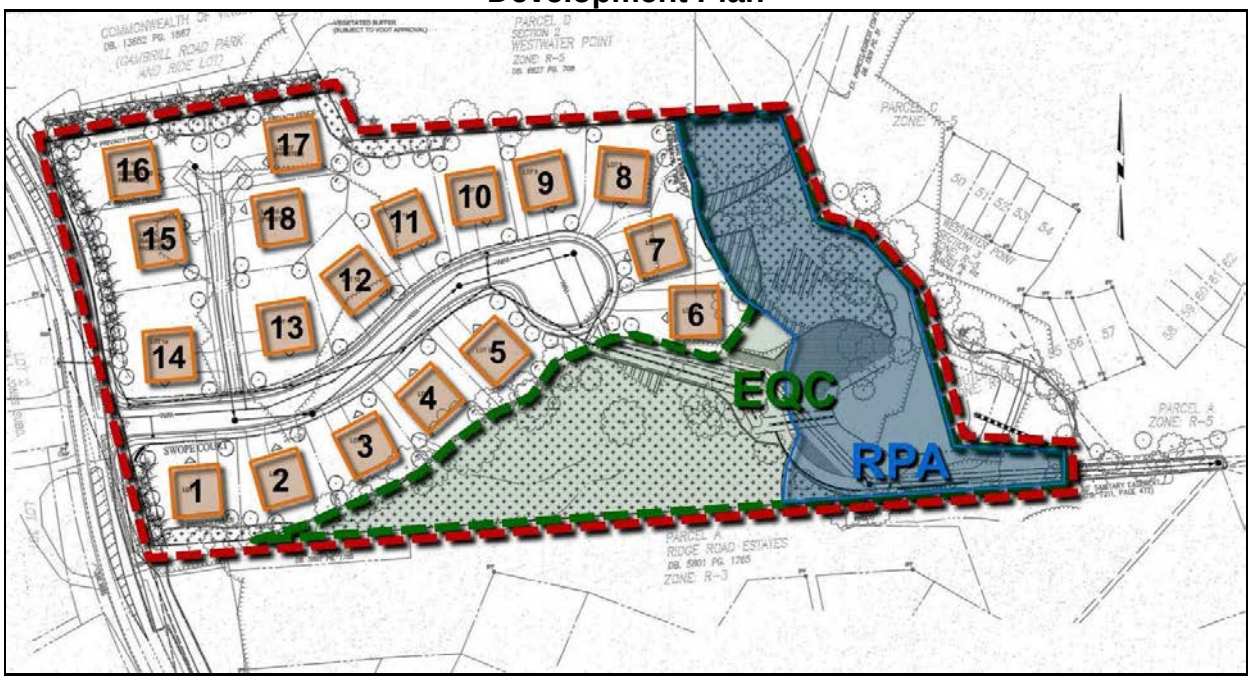
PLAN DESCRIPTIONS

Generalized Development Plan:	(copy at front of staff report)
Title:	Park Pointe
Prepared by:	Paciulli Simmons & Associates
Original and Revision Dates:	June 3, 2013, as revised through January 31, 2014

Generalized Development Plan (GDP): The GDP, which contains 12 pages, depicts the development of 18 single-family detached dwellings on 7.72 acres at a density of 2.33 du/ac. Approximately 2.82 acres, or 36.5% of the site, would remain as open space, to include a wet pond. The minimum lot size is 8,592 square feet (sf), with an average lot size of 9,979 sf. Sheet 4 of the GDP provides lot typicals that depict a minimum front yard setback of 20 feet, a minimum side yard setback of 8 feet, with total side yard setback of 20 feet, and a minimum rear yard setback of 25 feet. It should be noted that Lots 1, 14, 15, and 16 are reverse frontage lots and have setbacks of 20 feet from the Gambrill Road right-of-way. These setbacks comply with the requirements of

the R-3 (Cluster) District.

Development Plan



Vehicular and Pedestrian Access: Twelve of the lots would access a proposed public cul-de-sac, known as Swope Court, which would connect with Gambrill Road. Six lots would be located along a private shared-use driveway, which would connect to the cul-de-sac. Of the six lots, three would be reverse frontage lots along Gambrill Road (Lots 14, 15, and 16), two of which would front the shared-use driveway as pipestem lots (Lots 17 and 18), and one of which would be a corner lot along Swope Court (Lot 13). A five-foot wide sidewalk would be built along both sides of the cul-de-sac and an eight-foot wide trail would be built along the Gambrill Road frontage. This trail would connect with trail sections to the north and the south along Gambrill Road. The existing shoulder and ditch configuration along Gambrill Road would be reconfigured with a curb and gutter section. A left turn lane would be installed along Gambrill Road for access into the development.

Stormwater Management: Water quality and quantity requirements would be met through the reconstruction of an on-site wet pond within the RPA. The pond would be designed and constructed to meet new state regulations regarding stormwater management, which become effective July 1, 2014. The existing pond has several problems which will need to be corrected. First, the existing pond is filled with sediment, with water depths less than three feet. In addition, the embankment is overgrown with vegetation, which can compromise its integrity. The pond also has a clogged riser, leading to occasional overtopping of the embankment. Finally, the embankment has no vehicular access for maintenance. The reconstructed pond would be maintained by the applicant and the successor homeowners' association.

Forest Resources: Approximately 60% of the site contains upland forest in fair to good condition, with another eight percent dominated by a successional forest community. Approximately, 23% of the site is in a developed or landscaped condition. Nine percent of the site is dominated by invasive bamboo. The proposal would result in the preservation of approximately 36.5% of the 7.72-acre site as open space, including all of the EQC and RPA and approximately half of the upland forest areas. The highest concentrations of invasive species are located in areas to be developed and these plants would be removed during the site's development. Remaining invasive species located within open space areas would be removed as part of a proffered invasive species management program (see Proffer #8). Additionally, the applicant proposes the elimination of approximately 0.19 acres of impervious surfaces currently within the RPA as well as the restoration and reforestation of those areas.

Parking: Each residential lot would contain sufficient area for two parking spaces in the driveway and two spaces within an attached garage, for a total of four parking spaces per residence. Specifically, the lot typical indicates that driveways for each residence would be a minimum of 18 feet in width and a minimum of 18 feet in length to accommodate two vehicles. Additionally, the proposed proffers include language intended to ensure that garage uses do not interfere with the parking of vehicles within those garages (see Proffer #17).

RPA Exception Plat:	(copy at front of staff report)
Title:	PARK POINTE, RPAE Plat
Prepared by:	Wetland Studies and Solutions, Inc.
Date:	November 2013

The RPA Exception Plat, which contains four pages, depicts the development of a wet pond and dam embankment in the RPA associated with an unnamed perennial stream tributary to Pohick Creek. The associated Water Quality Impact Assessment (WQIA), dated November 4, 2013, analyzes various alternatives and selects a preferred alternative. The new facility would be designed and constructed to meet new state regulations regarding stormwater management, which become effective on July 1, 2014. The preferred alternative would provide the highest amount of water quality and water quantity benefits and result in safety improvements through the demolition of the existing pond and dam. The Staff Report by the Department of Public Works and Environmental Services (DPWES) and the proposed development conditions associated with the RPA Exception and WQIA are included in Appendix 12. The Board of Supervisors is scheduled to consider the RPA Exception and WQIA in conjunction with the rezoning request on March 25, 2014.

ANALYSIS

Comprehensive Plan

The Comprehensive Plan designates the subject parcels as Residential at 2-3 du/ac and states that infill development in these neighborhoods should be of a compatible use, type, and intensity. The applicant proposes 18 residential lots at a density of 2.33 du/ac (see map above under Plan Descriptions).

Residential Development Criteria (Appendix 15)

New residential development is expected to enhance the community by "fitting into the fabric of the neighborhood, respecting the environment, addressing transportation impacts, addressing impacts on other public facilities, being responsive to our historic heritage, contributing to the provision of affordable housing, and being responsive to the unique site specific considerations of the property." The following criteria are to be used in evaluating zoning requests for new residential development.

In applying these Residential Development Criteria, several factors may be considered, including:

- The size of the project;
- Site specific issues that affect the applicant's ability to address in a meaningful way relevant development issues; and
- Whether the proposal is advancing the guidance found in the area plans or other planning and policy goals, such as revitalization.

1. Site Design:
All rezoning applications for residential development should be characterized by high quality site design. Rezoning proposals for residential development, regardless of the proposed density, will be evaluated based upon the following principles, although not all of the principles may be applicable for all developments.

- Consolidation: Parcels 39 and 42 would be consolidated under the proposed rezoning. This area is surrounded by developed residential parcels to the east and the south, a park-and-ride lot to the northwest, a proffered open space associated with the Westwater Point development to the north, and three residential parcels to the west (located on the opposite side of Gambrill Road). These features preclude further consolidation.
- Layout: The proposed rezoning includes 18 lots. Twelve of the lots would access a proposed public cul-de-sac (Swope Court), which would connect with Gambrill Road, while six lots would be located along a private shared driveway, which would connect to Swope Court. Sheet 4 of the GDP provides lot typicals that depict a minimum front yard setback of 20 feet, a minimum side yard setback of 8 feet (with a total of 20 feet of required side yards between houses), and a minimum rear yard setback of 25 feet. As previously stated, Lots 1, 14, 15, and 16 are reverse frontage lots and have setbacks of 20 feet from the Gambrill Road right-of-way. These

setbacks comply with the requirements of the R-3 (Cluster) District and provide usable yard areas within the individual lots that may accommodate the future construction of decks and patios in accordance with Sect. 2-412 of the Zoning Ordinance.

- Open Space, Landscaping, and Amenities: The R-3 (Cluster) District requires 25% open space. The applicant proposes 2.74 acres, or approximately 36% of the area, as open space. The open space is comprised primarily of the EQC, which includes 1.41 acres of RPA. To allow inter-parcel access to the adjacent single-family attached development to the east (Westwater Point), the applicant proposes a 6-foot wide trail, which would extend from the terminus of the maintenance driveway for the embankment to the Westwater Point property line. Additionally, the applicant proposes supplemental plantings within a 25-foot wide off-site strip of land located within the park-and-ride lot and adjacent to Lots 16 and 17, as well as within a 12-foot wide on-site planting area between Gambrill Road and the adjacent lots (Lots 1, 14, 15, and 16).

Based on the features described above, the application satisfies Criterion #1.

2. Neighborhood Context:

All rezoning applications for residential development, regardless of the proposed density, should be designed to fit into the community within which the development is to be located. Developments should fit into the fabric of their adjacent neighborhoods, as evidenced by an evaluation of:

- *transitions to abutting and adjacent uses;*
- *lot sizes, particularly along the periphery;*
- *bulk/mass of the proposed dwelling units;*
- *setbacks (front, side and rear);*
- *orientation of the proposed dwelling units to adjacent streets and homes;*
- *architectural elevations and materials;*
- *pedestrian, bicycle and vehicular connections to off-site trails, roadways, transit facilities and land uses;*
- *existing topography and vegetative cover and proposed changes to them as a result of clearing and grading.*

The density of the proposed development is 2.33 du/ac, which is consistent with the Comprehensive Plan's recommended density range. The proposed rezoning is generally surrounded by similar residential uses, including areas zoned: R-5 to the east (3 du/ac); R-3 to the south (2.68 du/ac); R-3 to the southwest (2.7 du/ac); and R-1 to the west (1 du/ac). Proposed lot sizes range from 8,592 sf to approximately 13,450 sf, with an average lot size of 9,979 sf. These lot sizes are comparable with the lot sizes in the Ridge Road Estates development (located to the south of the subject site), which range from a minimum of 8,500 sf to a maximum of 13,362 sf. Additionally, the preservation of on-site EQC and RPA areas for tree conservation and water quality protection, along with the preservation of some limited forested areas on Lots 1, 2, 11, 16, and 17, allows a transition from the proposed lots to the neighboring developments.

The proposed trail connection to the adjacent Westwater Point development would allow residents of the Westwater Point development to walk to the park-and-ride lot to take advantage of transit services. That portion of Swope Lane within the RPA would be removed and the area restored. The remaining portion of Swope Lane, outside of the RPA and proceeding to Hooes Road, would be removed at the request of the adjacent Westwater Point Homeowners' Association (see Proffer #6).

Also, the applicant has proposed enhanced architectural treatments for the sides of the houses adjacent to Gambrill Road, in order to enhance views from the neighboring lots (see Proffer #19).

In order to minimize grading within the EQC, the applicant proposes three walls within or near the EQC:

- 2-7 feet tall & 100 feet long - along the rear lot line of Lot 7;
- 2-9 feet tall & 110 feet long - along the pond maintenance driveway; and
- 2-4 feet tall & 75 feet long - along the pond maintenance driveway.

The applicant has proffered to architecturally treat those retaining walls three feet or greater in height with masonry. The applicant has also proffered to provide fences or handrails on all walls depicted on Sheet 9 of the GDP (see Proffer #7).

By means of density, lot sizes, tree conservation areas, peripheral plantings, enhanced architectural treatments, and trail connections, the proposed development is generally consistent with the adjacent uses and generally satisfies Criterion #2.

3. Environment:
All rezoning applications for residential development should respect the environment. Rezoning proposals for residential development, regardless of the proposed density, should be consistent with the policies and objectives of the environmental element of the Policy Plan, and will also be evaluated on the following principles, where applicable.

- Preservation: The Policy Plan states that developments should conserve natural environmental resources, such as floodplains, stream valleys, EQCs, RPAs, woodlands, and wetlands. The project site includes stream valleys, EQC, RPA, and woodlands. With the exception of the wet pond, which is discussed below, the applicant proposes the preservation and/or restoration of the EQC and RPA. These resources are discussed more fully below.
- Slopes and Soils: The majority of the subject site generally slopes down to the east and includes several drainage swales. For the upland areas outside of the EQC, soil drainage is classified as good with medium to high erosion potential. The applicant generally proposes up to eight feet of grading, primarily confined to drainage swales. Grading in the EQC would be minimized through the use of landscape walls. As previously discussed, the applicant would incur a density penalty due to the presence of steep slopes and the existing pond, per Sect. 2-308 of the Zoning Ordinance. However, the proposed density is below the adjusted density (2.33 du/ac proposed versus 2.85 du/ac allowed under the density penalty).

- Water Quality and Drainage: Water quality and quantity requirements would be met through the reconstruction of an on-site wet pond within the RPA. The pond would be designed and constructed to meet new state regulations regarding stormwater management, which become effective in July 1, 2014. These issues are discussed more fully below.
- Noise: The four residences proposed along Gambrill Road can be expected to experience some traffic-generated noise. The applicant proposes an acoustical study to assess the impact of transportation noise from Gambrill Road and the implementation of noise attenuation measures for those lots impacted by noise levels in excess of 65 dBA (see Proffer #7).
- Lighting: The Policy Plan states that developments should commit to exterior lighting fixtures that minimize neighborhood glare and impacts to the night sky. The proposed residences would be required to conform to provisions of applicable ordinances, regulations, and standards.
- Energy: Proposed Proffer #11 states that the residences would be constructed to achieve either: (i) qualification in accordance with the ENERGY STAR® for Homes program; (ii) certification in accordance with the National Green Building Standard using the ENERGY STAR® Qualified Homes path for energy performance; (iii) certification in accordance with the Earth Craft House Program; or (iv) certification in accordance with the National Association of Home Builders National Green Building Program, Bronze level.

In addition to the Residential Development Criteria, the Environment Objectives of the Policy Plan state:

In general, stormwater management facilities should not be provided within EQCs unless they meet one of the following conditions:

- *They are consistent with recommendations of a watershed management plan that has been adopted by the Fairfax County Board of Supervisors; or*
- *They will:*
  - *Either:*
    - *Be more effective in protecting streams and better support goals of watershed management plans than stormwater management measures that otherwise would be provided outside of EQCs; or*
    - *Contribute to achieving pollutant reduction necessary to bring waters identified as impaired into compliance with state water quality standards or into compliance with a Municipal Separate Storm Sewer System (MS4) permit in a manner that would be more effective and/or less environmentally-disruptive than approaches that would be pursued outside of EQCs;*

    and
  - *Replace, enhance and/or be provided along with other efforts to compensate for any of the EQC purposes, as described above, that would be affected by the facilities."*

The applicant proposes the demolition of the existing farm pond, located within the

EQC, which would eliminate a safety hazard. The reconstruction of this pond will allow for the treatment the all of the on-site area and a significant portion of off-site area, which includes both a gas station and the park-and-ride lot. As described below in the Stormwater Management Analysis Section, the construction of a stormwater management pond on-site, but outside of the EQC, would not have these advantages.

Additionally, staff of the Fairfax County Park Authority (FCPA) reviewed the application to evaluate impacts to environmental resources. The Park Authority recommended that landscaping within the subject site utilize non-invasive species to reduce the spread of invasive species and to protect the environmental health of nearby countywide-serving parkland (Pohick Stream Valley Park). Staff further recommended that all planted species be native to Fairfax County. In response to these comments, Proffer #7 now specifies that the landscape plan will use only non-invasive plant species and that the applicant will use plant species native to Fairfax County to the extent practical.

Based on the details described above, Criterion #3 has been satisfactorily met.

4. Tree Preservation and Tree Cover Requirements:
All rezoning applications for residential development, regardless of the proposed density, should be designed to take advantage of the existing quality tree cover. If quality tree cover exists on site as determined by the County, it is highly desirable that developments meet most or all of their tree cover requirement by preserving and, where feasible and appropriate, transplanting existing trees. Tree cover in excess of ordinance requirements is highly desirable. Proposed utilities, including stormwater management and outfall facilities and sanitary sewer lines, should be located to avoid conflicts with tree preservation and planting areas. Air quality-sensitive tree preservation and planting efforts (see Objective 1, Policy c in the Environment section of this document) are also encouraged.

With the exception of the wet pond, the applicant proposes the preservation and/or restoration of the EQC and RPA. The applicant proposes the restoration of 0.14 acres of the EQC and RPA. Of the 1.36 acres of RPA and EQC to be disturbed for the demolition and reconstruction of the wet pond, 0.17 acres are to be replanted to RPA standards. The portion of Swope Lane within the RPA would be removed and the area restored. The remaining portion of Swope Lane, located outside of the RPA and proceeding to Hooes Road, would be removed at the request of the adjacent Westwater Point Homeowners' Association.

For those areas outside of tree preservation areas, the applicant proposes a proffer that would allow local not-for-profit organizations the opportunity to remove native plant species that are not proposed to be saved, prior to the commencement of land-disturbing activities (see Proffer #9). The proposed proffers also contain provisions for a tree preservation plan and an invasive species management program.

The plans were reviewed by the Urban Forest Management (UFM) Division. UFM staff noted that the proposed landscaping along the western property boundary adjacent to

Gambrill Road showed trees planted on the fence line and trees with significant overlap. Staff recommended that trees be located no closer than four feet from the proposed fence and that proposed trees be drawn to scale based on 10-year projected crown spread without significant overlap. The applicant updated the GDP per staff recommendations.

5. Transportation:
All rezoning applications for residential development should implement measures to address planned transportation improvements. Applicants should offset their impacts to the transportation network. Accepted techniques should be utilized for analysis of the development's impact on the network. Residential development considered under these criteria will range widely in density and, therefore, will result in differing impacts to the transportation network. Some criteria will have universal applicability while others will apply only under specific circumstances.

Additional Plan text states that, regardless of the proposed density, applications will be evaluated based upon the following principles, although not all of the principles may be applicable: transportation improvements; transit/transportation management; interconnection of the street network; streets; non-motorized facilities; and alternative street designs.

The applicant proposes a proffer for the dedication of right-of-way along the Gambrill Road frontage approximately 39 feet from the centerline (see Proffer #4). The proposed proffers require the construction of a 12-foot wide left turn lane at the entrance to the development, along with curb and gutter and an eight-foot wide sidewalk along the Gambrill Road frontage. These improvements are to be substantially complete prior to the issuance of the first Residential Use Permit (RUP). Substantially complete is defined by the proffers as the "installation of curb and gutter, storm drainage improvements, base paving, and open to traffic but not final paving or accepted for operation and maintenance by VDOT."

In addition to the eight-foot wide trail along the Gambrill Road frontage, the GDP depicts various pedestrian improvements, including a six-foot wide trail connection to the neighboring Westwater Point development and five-foot wide sidewalks on each side of the cul-de-sac.

The application was reviewed by the Virginia Department of Transportation (VDOT) and the Fairfax County Department of Transportation (FCDOT). Staff recommended a cul-de-sac width of 29 feet to accommodate on-street parking and a 4-foot wide buffer between the curb and the sidewalk. Additionally, staff noted the following, which will need to be addressed at the time of site plan:

- The pond access road entrance apron should be 20 feet wide;
- The blow-off valve at the north end of the site must be located outside the CG-12 ramp on the construction plans;
- No utility covers should be placed within sidewalks, due to ADA requirements; and
- All of the driveway aprons should meet the driveway widths.

The applicant now proposes a 29-foot wide cul-de-sac (Swope Court) with on-street parking, as depicted on the GDP. The right-of-way would be 42 feet in width with an additional sidewalk easement six feet in width adjacent to one side of Swope Court.

6. Public Facilities:
Residential development impacts public facility systems (i.e., schools, parks, libraries, police, fire and rescue, stormwater management and other publicly owned community facilities). These impacts will be identified and evaluated during the development review process. For schools, a methodology approved by the Board of Supervisors, after input and recommendation by the School Board, will be used as a guideline for determining the impact of additional students generated by the new development.

Given the variety of public facility needs throughout the County, on a case-by-case basis, public facility needs will be evaluated so that local concerns may be addressed.

All rezoning applications for residential development are expected to offset their public facility impact and to first address public facility needs in the vicinity of the proposed development. Impact offset may be accomplished through the dedication of land suitable for the construction of an identified public facility need, the construction of public facilities, the contribution of specified in-kind goods, services or cash earmarked for those uses, and/or monetary contributions to be used toward funding capital improvement projects. Selection of the appropriate offset mechanism should maximize the public benefit of the contribution.

The applications were reviewed by the Department of Facilities and Transportation Services of the Fairfax County Public Schools (FCPS). Based on current projections for the 2017-2018 school year, the local elementary school is expected to be slightly over capacity and the middle and high schools are expected to have adequate capacity to serve the proposed residences. The 18 proposed residences are expected to generate a total yield of 10 students, with a net increase of six new students above potential by-right development. Based on the approved Residential Development Criteria, a proffer contribution of $10,488 per student is recommended to offset the impact of the student growth on the surrounding schools, for a total proffer contribution of $62,928. FCPS staff also recommended an escalation clause to allow for payment of the school proffer based on either the current suggested per-student proffer contribution at the time of zoning approval or the per-student proffer contribution in effect at the time of development, whichever is greater. Staff also recommended that proffer payments be directed toward schools in Cluster VI or to schools in the West Springfield High School Pyramid at the time of site plan or building permit approval to allow the school system lead time before the arrival of students.

The applicant proposes that the contribution be made prior to the issuance of the first Residential Use Permit (RUP) and be based on the actual number of dwellings built. The applicant proposes payment of the school proffer based on the per-student contribution in effect at the time of development.

Although staff recommends that proffer payments be made at Subdivision Site Plan or no later than building permit to allow the school system lead time before the arrival of students, staff finds that the proposed proffers would be reasonable to offset the impact of student growth.

Staff of the Fairfax County Park Authority (FCPA) reviewed the application to evaluate impacts to parks. Based on an average single-family detached household size in the Pohick Planning District, the development is expected to add 50 new residents to the Springfield Supervisory District. Using adopted service level standards, staff has identified a need for various types of parkland and recreational facilities in this area. The Park Authority requests a fair share contribution of $893 per new resident with any residential rezoning application to offset impacts to park and recreation service levels, for a total fair-share contribution of $44,650. Proffer #15 anticipates a monetary contribution of $44,650 to the Board of Supervisors for recreational opportunities as determined in consultation with the Springfield District Supervisor.

7. Affordable Housing:
Ensuring an adequate supply of housing for low and moderate income families, those with special accessibility requirements, and those with other special needs is a goal of the County. Part 8 of Article 2 of the Zoning Ordinance requires the provision of Affordable Dwelling Units (ADUs) in certain circumstances. Criterion #7 is applicable to all rezoning applications and/or portions thereof that are not required to provide any Affordable Dwelling Units, regardless of the planned density range for the site.

The applicant includes a proffer (#13) regarding contributions to the Housing Trust Fund. The applicant proposes that, prior to the issuance of the first building permit, the applicant shall contribute a sum equal to one-half percent of the value of all the units approved at the time of site plan on the property.

Based on the details described above, Criterion #7 has been satisfactorily met.

8. Heritage Resources:
Heritage resources are those sites or structures, including their landscape settings, that exemplify the cultural, architectural, economic, social, political, or historic heritage of the County or its communities. Such sites or structures have been 1) listed on, or determined eligible for listing on, the National Register of Historic Places or the Virginia Landmarks Register; 2) determined to be a contributing structure within a district so listed or eligible for listing; 3) located within and considered as a contributing structure within a Fairfax County Historic Overlay District; or 4) listed on, or having a reasonable potential as determined by the County, for meeting the criteria for listing on, the Fairfax County Inventories of Historic or Archaeological Sites.

A Phase I archaeological investigation was completed for the subject properties. The investigation documented the presence of two residential complexes, one along Gambrill Road, known as the Hall property, and the other, with access from Swope

Lane, known as the Swope property. The Hall property features a farmhouse built around 1900. The Swope property includes a residence built in 1957. The archaeological investigation concluded that none of the resources were eligible for listing on the National Register of Historic Places and recommended no additional work for any of the resources.

DPZ staff made the following recommendations regarding historic resources:

- That the existing conditions of the Tax Map 89-3 ((1)) 42 (the Hall property) be photo-documented. The documentation would include: 1) photographic recordation for the purpose of recording and documenting the current conditions of the exterior of the dwelling, and the general context of the property along the streetscape; and 2) an existing conditions location map exhibit showing the footprint of the existing house and site conditions with the location of the photographic angle of views and identification of each photograph. The number and angle of photographic views and the associated map is to be coordinated with the Department of Planning and Zoning (DPZ) Historic Preservation planner prior to the taking of the photographs. This recommendation has been completed.
- All photographic recordation and dimensioned sketch plan location map be submitted to the Virginia Room of the Fairfax County Public Library and to the Fairfax County Department of Planning and Zoning (DPZ) Historic Preservation planner. The applicant has proffered to provide written documentation to DPZ that required documentation has been submitted to the Virginia Room (Proffer #21).

STORMWATER MANAGEMENT ANALYSIS

Resource Protection Area Encroachment Exception 5072-WRPA-001-1; & Water Quality Impact Assessment 5072-WQ-001-1

The applicant proposes the removal of the existing farm pond and embankment and the reconstruction of those elements, in addition to the construction of a maintenance access road, within the RPA, per Sect. 118-6-9 of the CBPO. Per Sect. 118-6-1 of the CBPO, exceptions to the criteria and requirements of the CBPO to permit encroachments into the RPA that do not qualify for administrative review may be granted by the Board of Supervisors in conjunction with a rezoning approval.

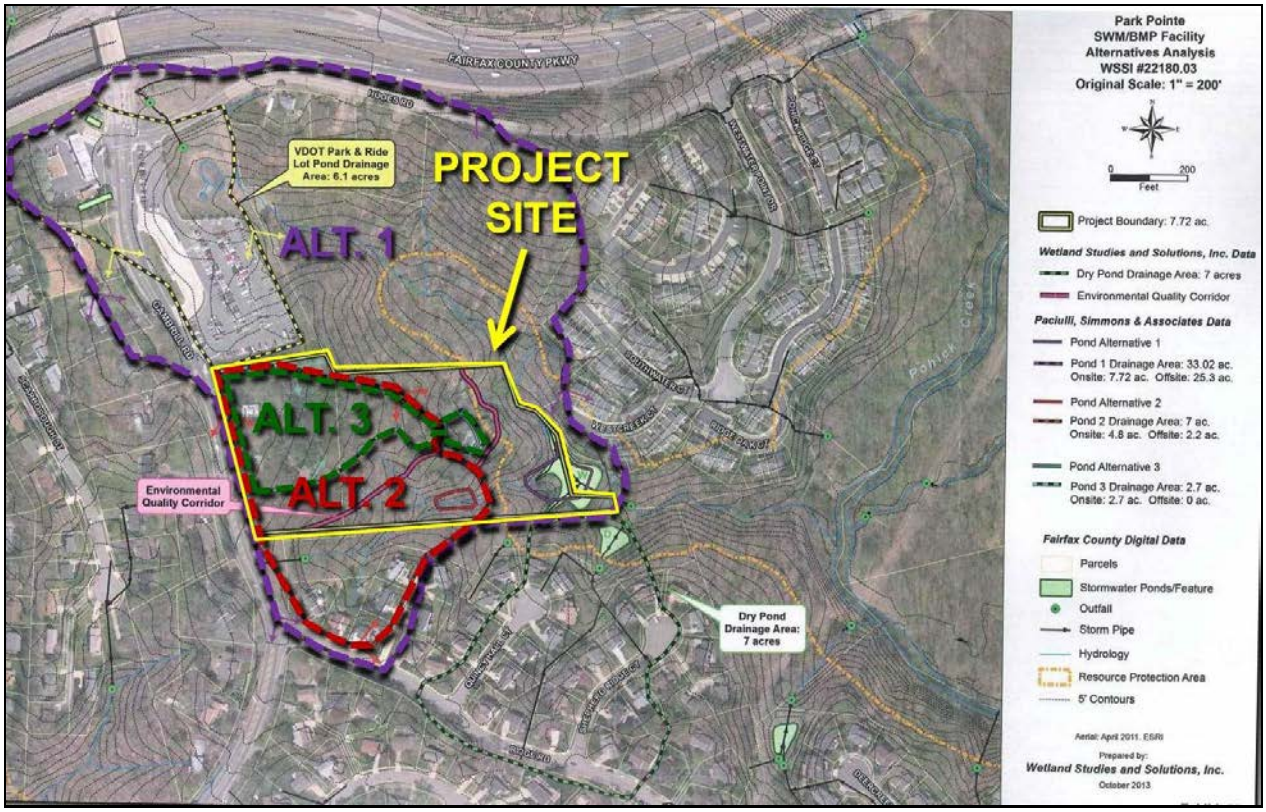
The applicant states that the existing pond is in relatively poor condition. It is filled with sediment and has water depths that average less than three feet, severely limiting the ability of the pond to provide water quality benefits. The dam embankment is overgrown with vegetation, which can compromise its structural integrity. Additionally, the pond has a clogged riser, which, when combined with the shallow water depths, causes overtopping of the dam during storms. Overtopping could lead to erosion of the dam face and the ultimate failure of the dam, resulting in the uncontrolled release of sediment and downstream flooding. The dam already has various seeps within the embankment, indicating that its integrity is beginning to be compromised.

The application considered five alternatives. The following table compares those alternatives, including the on-site and off-site areas treated and the phosphorus removal within the treated area:

Alternatives Comparison

No.	Description	On-Site Treated (acres)	Off-Site Treated (acres)	Phosphorus Removal
1	Reconstruction on-site in RPA	7.72	25.3	42%
2	Construction on-site outside RPA; within EQC	4.8	2.2	40%
3	Construction on-site outside RPA & EQC	2.7	0.0	8%
4	Off-Site Regional SWM/BMP Facility	N/A - no regional pond exists.		
5	Upgrade to off-site non-regional SWM/BMP facility	N/A - does not capture runoff.		

RPA Encroachment Alternatives



The applicant's preferred alternative is Alternative #1. Alternative #1 would provide the highest amount of water quality and water quantity benefits and result in safety improvements to an existing pond and dam, which are currently located in the RPA. According to the application, in order to improve the safety of the existing dam and

achieve the on-site and off-site removal of nonpoint source pollution, this alternative would involve encroachment within 0.70 acres of the RPA to replace the existing pond and bring the dam up to current safety standards. Of the total 0.70 acres of RPA disturbance, 0.35 acres is occupied by the existing pond. The proposed vegetation loss resulting from reconstruction of the existing pond within the RPA would be limited to 0.30 acres. For dam and pond maintenance, the applicant proposes an access road, resulting in the placement of 0.08 acres of impervious area within the RPA. However, there are multiple existing structures and impervious surfaces totaling 0.08 acres within the RPA. These structures and surfaces would be removed and the underlying areas reforested. In addition, there is approximately 0.08 acre of non-forested area located within the RPA, which would also be reforested. Therefore, in addition to the water quality benefits of Alternative #1, when construction is complete, the amount of impervious area in the RPA would decrease and the amount of forested area within the RPA would increase by 0.19 acres. By reconstructing the existing dam and pond, wetland impacts would also be minimized. In addition to the temporary impacts proposed to the pond during construction, this option requires impacts to 228 linear feet of stream channel and 0.02 acres of forested wetlands.

While Alternative #2 avoids impacts to the RPA for construction of the pond, it requires the disturbance of 0.73 acres of forested area within the EQC.

Alternative #3 would generally be constructed without disturbance to the RPA or EQC. However, this alternative would require 0.21 acres of disturbance within the EQC in order to provide an adequate outfall. Alternative #3 would capture only 2.7 acres of drainage from the 7.72-acre project area and would not capture any off-site drainage. This alternative does not meet the required BMP and stormwater retention requirements.

Only Alternative #1 proposes the demolition of the existing farm pond, eliminating a safety hazard. Alternative #1 also has the advantage of treating a significant off-site area, which includes both a gas station and a park-and-ride lot.

General RPA Encroachment Exceptions may be granted only upon the findings listed in CBPO Sect. 118-6-6 and the additional findings in CBPO Sect. 118-6-9. Staff of DPWES reviewed the application and concluded that the required findings, as discussed in the staff evaluation, were satisfied with the application (see Appendix 12). Staff concurred with the selection of Alternative #1. Staff recommends approval of RPA Exception 5072-WRPA-001-1 and WQIA 5072-WQ-001-1 and recommends that the approval be subject to the development conditions listed in Appendix 2.

ZONING ORDINANCE ANALYSIS

Cluster subdivisions are allowed within the R-3 District per Article 3 of the Zoning Ordinance. Cluster subdivisions containing a minimum district size of two acres or greater but less than three and one-half acres shall be subject to special exception approval, while cluster subdivisions containing a minimum district size of three and one-half acres or greater shall be subject to approval by the Director (Sect. 3-306). The subject site is 7.72 acres in size.

Lot Size Requirements, Bulk Regulations, and Parking

R-3 Cluster Residential Lot Requirements & Parking (Sect. 3-306, Sect. 3-307, & Article 11, Part 1)		
Standard	**Required**	**Provided**
Min. Lot Area	8,500 sf	8, 592 sf
Min. Lot Width	80 feet (corner)	+/- 105 feet (corner)
Max. Building Height	35 feet	35 feet
Front Yard	20 feet	20 feet
Side Yard(s)	8 feet (total minimum of 20 feet)	8 feet (total minimum of 20 feet)
Rear Yard	25 feet	25 feet
Parking	36 spaces at a minimum (2 spaces per dwelling)	72 spaces (2 spaces in garage & 2 spaces in driveway per dwelling)

This application meets all of the lot and bulk requirements of the R-3 (Cluster) District and all parking requirements as listed above.

Transitional Screening and Barrier Requirements

Transitional screening and barriers are not required. However, the applicant has proposed additional plantings along Gambrill Road and within the buffer area of the park-and-ride lot, adjacent to Lots 16 and 17.

CONCLUSIONS AND RECOMMENDATIONS

Staff Conclusions

Staff concludes that a rezoning to the R-3 (Cluster) District for the development of 18 single-family detached dwellings at a density of 2.33 du/ac is consistent with the

Comprehensive Plan's recommended residential density range and is in conformance with the Zoning Ordinance standards. Additionally, staff concludes that the demolition of the existing farm pond and the reconstruction of the pond within the RPA would be appropriate in order to eliminate a safety hazard and to improve water quality and water quantity control for both on-site and off-site areas. Staff finds this request in conformance with the provisions of the Chesapeake Bay Preservation Ordinance.

The proposed rezoning is generally surrounded by similar residential uses. The preservation of on-site EQC and RPA areas for tree conservation, along with tree preservation along several rear lot lines, allows a transition from the proposed lots to the neighboring developments. A trail connection to the adjacent Westwater Point development would allow these residents to walk to the park-and-ride lot to take advantage of transit services.

Additionally, the applicant has committed to Green Building Practices, has proposed proffer contributions to the Housing Trust Fund and for the expected student generation, and has proposed a proffer that would allow local not-for-profit organizations to remove native plant species within areas outside of tree preservation areas prior to construction.

Staff concludes that the proposed uses are in harmony with the Comprehensive Plan, the applicable Zoning Ordinance provisions, and the applicable Chesapeake Bay Preservation Ordinance provisions.

Recommendations

Staff recommends approval of RZ 2013-SP-005, subject to the execution of proffers consistent with those found in Appendix 1 of this report.

Staff recommends approval of RPA Exception 5072-WRPA-001-1 and WQIA 5072-WQ-001-1, subject to the proposed development conditions in Appendix 2.

It should be noted that it is not the intent of staff to recommend that the Board of Supervisors, in adopting any conditions proffered by the owner, relieve the applicants from compliance with the provisions of any applicable ordinances, regulations, or adopted standards. The approval of these applications do not and would not interfere with, abrogate, or annul any easements, covenants, or other agreements between parties, as they may apply to the properties subject to these applications.

It should be further noted that the content of this report reflects the analysis and recommendations of staff; it does not reflect the position of the Board of Supervisors.

APPENDICES

1. Proposed Proffers
2. Proposed Development Conditions (RPA Exception & WQIA)
3. Affidavit; List of Heirs/Real Estate Affidavit

4. Statement of Justification
5. DPWES - Urban Forestry Analysis
6. VDOT - Transportation Analysis
7. FCDOT - Transportation Analysis
8. Fairfax County Public Schools - Facilities Analysis
9. Fairfax County Park Authority - Parks Analysis
10. DPZ – Heritage Resources Analysis
11. DPZ – Environmental Resources Analysis
12. DPWES – Staff Report (RPA Exception & WQIA)
13. Request for RPA Exception and Approval of WQIA
14. Environmental Quality Corridor (EQC) Encroachment Request
15. Residential Development Criteria – Policy Plan
16. Environment Objective 9 (EQC) – Policy Plan
17. CBPO Excerpt - Required Findings
18. Glossary of Terms

DRAFT PROFFERS

Van Metre Communities, L.L.C.
RZ 2013-SP-011

February 12, 2014

Pursuant to Section 15.2-2303(A) of the Code of Virginia (1950, as amended) and Section 18-204 of the Zoning Ordinance of Fairfax County (1978, as amended), the property owners and Applicant, for themselves and their successors and/or assigns (hereinafter collectively referred to as the "Applicant"), hereby proffer that the development of the parcels under consideration and shown on the Fairfax County 2013 tax maps as Tax Map 89-3 ((1)) 39 and 42 (the "Property") shall be in accordance with the following conditions if, and only if, Rezoning application RZ 2013-SP-011 (this "Rezoning") is granted.

1. **Development Plan**. Development of the Property and off-site areas shall be in substantial conformance with the Generalized Development Plan ("GDP") entitled "Park Pointe" consisting of 12 sheets prepared by Paciulli Simmons & Associates and dated June, 2013, as revised through January 31, 2014. A maximum of 18 dwelling units shall be constructed on the Property.

2. **Minor Modifications**. Pursuant to Paragraph 5 of Section 18-204 of the Zoning Ordinance, minor modifications from the GDP, such as, but not limited to, locations of utilities, minor adjustment of property lines, and the general location of dwellings on the proposed lots, may be permitted when it is determined by the Zoning Administrator that such modifications are in substantial conformance with the GDP and provided that the modifications do not increase the total number of dwelling units, decrease the setbacks from the peripheries, decrease landscaping, or alter the limits of clearing and grading.

3. **Advanced Density Credit**. Advanced density credit shall be reserved as may be permitted by the provisions of Paragraph 5 of Section 2-308 of the Fairfax County Zoning Ordinance for all eligible dedications described herein, or as may be required by Fairfax County or the Virginia Department of Transportation ("VDOT") at time of site plan approval.

4. **Gambrill Road Improvements**.

   A. At the time of final record plat recordation for the Property, the Applicant shall dedicate in fee simple to the Board of Supervisors right-of-way along the Property's Gambrill Road frontage approximately 39 feet from the centerline as shown on Sheet 5 of the GDP.

   B. Subject to the approval of VDOT, the Applicant shall construct improvements along the Property's Gambrill Road frontage to accommodate a twelve (12) foot wide left turn lane at the Property's new site access, and shall install curb, gutter, and an eight (8) foot wide sidewalk as shown on Sheet 5 of the GDP. The

Applicant shall also install drainage improvements to intercept stormwater on the west side of Gambrill Road as shown on Sheet 5 of the GDP. Said improvements shall be substantially complete prior to the issuance of the first Residential Use Permit ("RUP"). Substantially complete as used herein shall be defined as installation of curb and gutter, storm drainage improvements, base paving, and open to traffic but not final paving or accepted for operation and maintenance by VDOT.

C. During construction, the Applicant shall ensure that unobstructed, safe, and continuous pedestrian access is provided along Gambrill Road to the park and ride facility located north of Parcel 42.

5. **Swope Court.**

A. At the time of final record plat recordation for the Property, the Applicant shall dedicate in fee simple to the Board of Supervisors right-of-way forty-two (42) feet in width for Swope Court, the new public street providing access to the Property, plus a sidewalk easement six (6) feet in width adjacent to one (1) side of Swope Court.

B. Subject to VDOT approval, the Applicant shall construct Swope Court as a public street in accordance with the details shown on Sheet 3 of the GDP.

C. The Applicant and the successor homeowners association shall maintain such elements that VDOT will not accept for maintenance.

6. **Pedestrian Connection**. To provide continuity and connectivity of the pedestrian circulation network, the Applicant shall provide for future pedestrian interparcel connection to the adjacent Westwater Point community by constructing a six (6) foot wide asphalt trail from the end of the access road for the stormwater management pond to the joint property line between Outlot A and the Westwater Point community as shown as Sheet 3 of the GDP. A public access easement in a form acceptable to the County Attorney shall be recorded over the pond access road and the asphalt trail.

Prior to site plan approval, the Applicant shall work with the Westwater Point Homeowners Association to address the potential removal of Swope Lane, on property identified as Fairfax County tax map reference 89-3 ((25)) C and D. The option to retain or remove Swope Lane shall be subject to consensus of the Westwater Point Homeowners Association. The Applicant shall contact the Westwater Point Homeowners Association in writing regarding this issue. Should the Westwater Point Homeowners Association not respond in writing to the Applicant with a conclusion within forty-five (45) days, the Applicant shall have the authority to either retain or remove Swope Lane in its sole discretion and shall have no further obligation under this proffer. Should the consensus of the Westwater Point Homeowners Association be to remove the private driveway, the Applicant shall remediate the driveway in accordance with PFM standards.

7. **Landscape Plan**.

A. A conceptual landscape plan for the Property illustrating the plantings and other features to be provided is shown on Sheets 9 and 10 of the GDP. As part of the site plan submission, the Applicant shall submit to the Urban Forest Management Division ("UFMD") of the Department of Public Works and Environmental Services ("DPWES") for review and approval a detailed landscape and tree cover plan which shall be generally consistent with the quality and quantity of plantings and materials shown on the GDP. The landscape plan shall be designed to ensure adequate planting space for all trees based on the requirements in the Public Facilities Manual ("PFM"). Plantings shall include only non-invasive species and, to the extent practical, plant species native to Fairfax County. Adjustments to the type and location of vegetation and the design of landscaped areas and streetscape improvements/plantings shall be permitted as approved by UFMD.

B. Subject to VDOT approval, and in consultation with UFMD at time of site plan review, the Applicant shall install a vegetated buffer, with a mixture of deciduous and evergreen trees, on land adjacent to the northwest boundary of the Property in order to buffer the Property from activity at the Gambrill Road Park and Ride Lot as shown on Sheet 9. Such buffer shall be installed prior to bond release.

C. Prior to bond release, the Applicant shall install six (6) foot fences along Gambrill Road as shown on Sheet 9 and consistent with the typical lot layout shown on Sheet 4 of the GDP. Fences shall be constructed of board on board, solid board, if required for noise attenuation purposes as determined by the noise study required by Proffer 22, brick, stone, or a combination of those elements.

D. Prior to bond release for walls not adjacent to individual lots, and prior to issuance of RUPs for the houses on a lot with a retaining wall immediately adjacent to the lot, the Applicant shall install fences or handrails on all walls shown on Sheet 9 in accordance with PFM requirements.

E. Retaining walls three (3) feet in height or greater shall be architecturally treated with masonry, excluding cinder block. Retaining walls shall not be constructed of wood.

8. **Tree Preservation**.

A. Tree Preservation Plan. For the purposes of maximizing the preservation of trees in tree conservation areas shown on Sheets 11 and 12 of the GDP, the Applicant shall prepare a Tree Preservation Plan. The Applicant shall contract with a certified arborist or registered consulting arborist (the "Project Arborist") to prepare a Tree Preservation Plan to be submitted as part of the first site plan submittal and subsequent site plan submissions. The Tree Preservation Plan shall be reviewed and approved by UFMD. The Tree Preservation Plan shall seek to preserve the trees identified on the GDP for preservation. The Tree Preservation Plan shall provide a Tree Inventory which includes the location, species, size, crown spread and condition rating percent of all trees ten (10) inches or greater in

diameter, measured 4½ feet from the ground and located within twenty (20) feet of the limits of clearing and grading of the tree conservation areas shown on the GDP. The condition analysis shall be prepared using methods outlined in the latest edition of the *Guide for Plant Appraisal*. Specific tree preservation activities designed to maximize the survivability of trees designated for preservation shall be incorporated into the Tree Preservation Plan. Activities should include, but are not limited to, crown pruning, root pruning, mulching and fertilization.

B. Invasive Species Management. The Applicant shall create and implement an invasive species management program to include all tree save areas that may contain invasive plant material (PFM 12-0404.2B and 12-0509.3D) that clearly identifies targeted areas and species, details removal and treatment techniques, replanting with herbaceous and woody material, monitoring, program duration, etc.

C. Limits of Clearing and Grading. Clearing, grading, and construction shall conform to the limits of clearing and grading as shown on the GDP, subject to the installation of necessary utility lines and other required site improvements, all of which shall be installed in the least disruptive manner possible, considering cost and engineering, as determined in accordance with the approved plans.

D. Tree Preservation Walk-Through. The Applicant shall have the limits of clearing and grading marked with a continuous line of flagging prior to the walk-through meeting. During the tree preservation walk-through meeting, the Project Arborist shall walk the limits of clearing and grading with a UFMD representative to determine where adjustments to the clearing limits can be made to increase the area of tree preservation and/or to increase the survivability of trees at the edge of the limits of clearing and grading, and such adjustment shall be implemented. The Applicant shall also work with UFMD to identify areas adjacent to the limits of clearing and grading where a mix of understory plantings and shrubs may be provided, and such adjustment shall be implemented. Trees that are identified as dead or dying may be removed as part of the clearing operation. Any tree that is so designated shall be removed using a chain saw, and such removal shall be accomplished in a manner that avoids damage to surrounding trees and associated understory vegetation. If a stump must be removed, this shall be done using a stump-grinding machine in a manner causing as little disturbance as possible to adjacent trees and associated understory vegetation and soil conditions.

E. Tree Preservation Fencing. All trees shown to be preserved on the Tree Preservation Plan shall be protected by tree protection fencing. Tree protection fencing, consisting of four (4) foot high, 14 gauge welded wire attached to six (6) foot steel posts driven eighteen (18) inches into the ground and placed no farther than ten (10) feet apart or super silt fence, to the extent that required trenching for super silt fence does not sever or wound compression roots which can lead to structural failure and/or uprooting of trees, shall be placed at the limits of clearing and grading as shown on the Phase I and Phase II erosion and sedimentary control

sheets in all areas. The tree protection fencing shall be installed after the tree preservation walk-through meeting but prior to the performance of any clearing and grading activities on the site. Prior to the commencement of any clearing or grading on the site, the Project Arborist shall verify in writing that the tree protection fencing has been properly installed.

F. Root Pruning and Mulching. The Applicant shall (1) root prune roots one inch in diameter or larger of trees to be preserved that may be damaged during clearing, demolition, grading, utility installation and/or the installation of retaining walls; and (2) mulch to a minimum depth of three (3) inches within the areas to be left undisturbed where soil conditions are poor, lacking leaf litter or prone to soil erosion. Areas that will be root pruned and mulched shall be clearly identified on the Tree Preservation Plan. All treatments for such trees and vegetation shall be clearly specified, labeled, and detailed on the erosion and sediment control sheets of the subdivision plan submission. The details for these treatments shall be included in the Tree Preservation Plan and shall be subject to the review and approval of UFMD.

All root pruning and mulching work shall be performed in a manner that protects adjacent trees and vegetation that are required to be preserved and may include, but not be limited to, the following:

(i) Root pruning shall be done with a trencher or vibratory plow to a depth of eighteen (18) inches, or as specified by UFMD at the pre-construction meeting.

(ii) Root pruning shall take place prior to installation of tree protection fencing.

(iii) Root pruning shall not sever or significantly damage structural or compression roots in a manner that may compromise the structural integrity of trees or the ability of the root system to provide anchorage for the above ground portions of the trees.

(iv) Root pruning shall be conducted with the on-site supervision of the Project Arborist.

(v) Tree protection fencing shall be installed immediately after root pruning, and shall be positioned directly in the root pruning trench and backfilled for stability, or just outside the trench within the disturbed area.

(vi) Immediately after the Phase II erosion and sedimentary control activities are complete, mulch shall be applied at a depth of three (3) inches within designated areas. Mulch may be placed within tree preservation areas at points designated by the Project Arborist to minimize impacts to existing vegetation. Motorized equipment may be used to reach over tree

protection fence to place mulch at designated points. Mulch shall be spread by hand within tree preservation areas.

(vii) Mulch shall consist of wood chips or pine bark mulch. Hay or straw mulch shall not be used within tree preservation areas.

(viii) UFMD shall be informed in writing when all root pruning and tree protection fence installation is complete.

G. Tree Protection Signage. The Applicant shall provide signs that identify and help protect all areas to be left undisturbed. These signs will be highly visible, posted in appropriate locations along the limits of clearing and grading, and attached to the tree protection fencing throughout the duration of construction. Under no circumstances will the signs be nailed or in any manner attached to the trees or vegetation within the areas to be left undisturbed.

H. Site Monitoring. During the installation of tree protection fencing, performance of root pruning and during any clearing or removal of trees, vegetation, or structures, or other activities in or adjacent to tree conservation areas prior to the approval of Phase I of the Erosion and Sediment Control Plan, the Project Arborist shall be present to effectively monitor the process and ensure that the activities are conducted in accordance with the proffers and as approved by the UFMD. Following approval of Phase I of the Erosion and Sediment Control Plan the Project Arborist shall actively monitor the Property to ensure that protection measures are maintained and functioning as intended and activities are conducted in accordance with the proffers and as approved by the UFMD. The monitoring schedule shall be described and detailed in the Tree Preservation Plan and shall be reviewed and approved in writing by UFMD. Inappropriate activities such as storage of construction materials, dumping of construction debris, and traffic by construction personnel shall not occur within these areas. Damage to understory plant materials, leaf litter and soil conditions resulting from activities not approved in writing by UFMD shall be restored to the satisfaction of UFMD.

9. **Native Plant Transplantation**. The Applicant shall provide an opportunity for not-for-profit organizations, identified by Department of Planning and Zoning (DPZ), to remove and transplant native plant species located outside the tree save area on the Property. The Applicant shall notify these not-for-profit organizations via certified mail and e-mail. In order to facilitate rescue and transplantation of native plants prior to the commencement of land disturbing activities, the Applicant will mark the general area of the tree save areas sixty (60) days prior to commencement of grading and will notify the Springfield District Supervisor's office and provide reasonable opportunity for not-for-profit organization(s) to access the Property and remove vegetation that is not proposed to be saved, unless such plant removal is determined by the UFMD to present a significant threat to offsite vegetation and/or native plant communities due to the potential for the spread of invasive plant species, plant pests, and/or plant disease.

The Applicant shall provide a schedule to the not-for-profit organization(s) identifying dates for the removal of the native plant species. This notice shall be provided not less than thirty (30) days prior to the earliest removal date. Right of access shall be subject to the party seeking access maintaining reasonable insurance and providing indemnification to the Applicant and the landowners against all risk of loss, damage, injury or death resulting from such access and/or transporting of vegetation from the Property. The Applicant will notify the Springfield District Supervisor's office again at the time of second site plan submission for the first site plan/public improvement plan submitted for the Property. The marking of the tree save areas and provision of notice as required herein shall fully satisfy the Applicant's obligation under this proffer.

10. **RPA and EQC Restoration**. The Applicants shall replant and restore existing disturbed areas within the Resource Protection Area ("RPA") and Environmental Quality Corridor ("EQC") as shown on Sheet 9 of the GDP. Plantings shall be in conformance with the requirements of Chesapeake Bay Preservation Ordinance Section 118-3-3(f) and subject to UFMD approval. Such plantings shall be complete prior to the issuance of the tenth ($10^{th)}$ RUP for new dwellings on the Property.

11. **Green Building Practices.** Dwelling units on the Property shall be constructed to achieve one of the following programs, or an alternative third-party certification that meets the substantive intent of the choices identified below. Selection of one of the following certification methods, or an alternative, shall be within the Applicant's sole discretion at time of site plan submission:

    A. Qualification in accordance with ENERGY STAR® for Homes as demonstrated through documentation to the Environment and Development Review Branch of DPZ ("EDRB") from a home energy rater certified through the Residential Energy Services Network (RESNET) that demonstrates each dwelling unit has attained qualification prior to the issuance of the RUP for each dwelling;

    B. Certification in accordance with the National Green Building Standard using the ENERGY STAR® Qualified Homes path for energy performance, as demonstrated through documentation submitted to EDRB and from a home energy rater certified through the Home Innovation Research Labs that demonstrates that each dwelling unit has attained the certification prior to the issuance of the RUP for each dwelling;

    C. Certification in accordance with the Earth Craft House Program, as demonstrated through documentation provided to EDRB prior to the issuance of the RUP for each dwelling; or

    D. Certification in accordance with the National Association of Home Builders (NAHB) National Green Building Program, Bronze level, as demonstrated through submission of a copy of the “Green Certificate” issued by NAHB in accordance with its “Green Certificate Program” prior to issuance of the RUP for each dwelling.

12. **Stormwater Management.**

A. Subject to review and approval by DPWES, stormwater management ("SWM") and Best Management Practice ("BMP") measures for the Property shall be provided in a wet pond located partially on the Property and partially on adjacent property identified on the Fairfax County 2013 tax maps as Tax Map 89-3 ((25)) A ("Outlot A") pursuant to an agreement between the Applicant and the owner of Outlot A. The SWM and BMP measures shall be provided as shown on Sheet 6 of the GDP and shall be developed in accordance with the PFM, unless waived or modified by DPWES. The Applicant shall further comply with conditions as may be approved in conjunction with #5072-WRPA-001-1 and #5072-WQ-001-1.

B. Maintenance of the SWM facilities shall be the responsibility of the Applicant and the successor homeowners association. Prior to site plan approval, the Applicant shall execute an agreement with the county in a form satisfactory to the County Attorney (the "SWM Agreement") providing for the perpetual maintenance of all of the elements of the SWM facilities. The SWM Agreement shall require the Applicant and the successor homeowner's association to contract with one or more maintenance/management companies to perform regular routine maintenance of the SWM facilities and to provide a maintenance report every five (5) years to the Fairfax County Maintenance and Stormwater Management Division of DPWES. The maintenance responsibilities under the SWM Agreement shall be disclosed to future purchasers prior to entering into a contract for sale and specified in the homeowner's association documents.

C. Prior to the issuance of the first RUP on the Property, the Applicants shall establish an account (the "SWM Maintenance Account") to be used as an escrow account for the initial maintenance of the SWM facilities. The Applicants shall make an initial contribution to the SWM Maintenance Account in an amount equal to the estimated cost for the homeowner's association maintenance responsibility for the first ten (10) years of the facilities, as approved by DPWES. Thereafter, the SWM Maintenance Account shall be funded through pro-rata assessments of subsequent owners of the Property.

D. Should future County policy permit all or part of the SWM facilities on the Property to be eligible for County maintenance, then the Applicant or the successor homeowner's association may request County maintenance for eligible facilities and thereby void the applicability of Paragraphs B and C for such facilities.

13. **Housing Trust Fund**. Prior to the issuance of the first building permit, the Applicant shall contribute to the Fairfax County Housing Trust Fund ("HTF") the sum equal to one-half percent (1/2%) of the value of all of the units approved at time of site plan. The percentage shall be based on the aggregate sales price of all of the units subject to the contribution, as if all of those units were sold at the time of the issuance of the first building permit, and is estimated through comparable sales of similar type units. The projected sales price shall be proposed by the Applicant in consultation with the Fairfax

County Department of Housing and Community Development ("HCD") and shall be approved by HCD.

14. **Public School Contribution**. Per the Residential Development Criteria Implementation Motion adopted by the Board of Supervisors on September 9, 2002, and revised September 1, 2012, the Applicant shall contribute $10,488 per expected student (based on a ratio of 0.536 students per dwelling unit) to the Fairfax County School Board to be utilized for capital improvements or capacity enhancements to schools that students generated by the Property will attend. Such contribution shall be made prior to the issuance of the first RUP for the Property and shall be based on the actual number of dwelling units built. Such contribution shall be directed to schools in Cluster VI or to schools in the West Springfield High School pyramid.

15. **Recreation Contribution**. At the time of the issuance of the first RUP on the Property, the Applicant shall provide a monetary contribution of $44,650.00to the Board of Supervisors for recreational opportunities as determined in consultation with the Springfield District Supervisor.

16. **Homeowners Association**. The Applicant shall form a homeowners association ("HOA") for the Property. The HOA shall be responsible for maintenance of any common elements. At the time that the HOA takes over the maintenance of common elements and Outlot A, the Applicant shall convey to the HOA any long-term tree and forested area management information that was prepared to satisfy tree conservation plan requirements of the subdivision plan. Information shall include data collected for the Tree Inventory, updated to note completion of tree preservation activities required by the Tree Preservation Plan approved with the subdivision plan and any additional work performed for tree preservation and/or maintenance of trees located on Outlot A, identification of any trees on the lot lost during development of the Property, any change in condition rating resulting from storm damage or construction impact, and any additional work performed for preservation and/or maintenance in tree preservation easements. A draft of the tree and forest management plan shall be submitted for review by UFMD prior to issuance of the first RUP. UFMD shall be furnished with a copy of the agreement by the HOA accepting maintenance responsibilities of the common areas and a copy of the final tree and forest management plan.

17. **Use of Garages**. A covenant shall be recorded which provides that garages shall only be used for a purpose that will not interfere with the intended purpose of garages (e.g., parking of vehicles). This shall not preclude the use of garages as sales offices in the model homes during marketing of the development, with the understanding the sales offices will be converted back to garages upon sale of the models. The covenant shall be recorded among the land records of Fairfax County in a form approved by the County Attorney prior to the sale of any lots and shall run to the benefit of the HOA and the Fairfax County Board of Supervisors. Purchasers shall be advised in writing of the use restriction prior to entering into contract of sale.

18. **Property Boundary Delineation.** The Applicant shall mark all private lot corners with a thirty-six (36) inch solid aluminum survey pipe or concrete monument post rising twelve

(12) inches above grade so that the property lines of property lots adjacent to forested common open space can be clearly and accurately delineated on the Property. Pipes/posts shall bear the initials HOA to clearly identify the boundary of the private lot and the common open space. The location of markers delineating common open space shall be shown on the subdivision plan and individual lot grading plans.

19. **Architectural Features**. The façades of Lots 1, 14. 15 and 16 adjacent to Gambrill Road shall be architecturally treated with features which may include, but not be limited to, windows, shutters, trim, and/or cornices, to be consistent with the front facades. The building materials shall vary and may be a combination of brick, stone, and siding supplemented with trim and detail features. Any façade visible from public or private streets shall vary and may be a combination of brick, stone, or siding supplemented with the trim and detail features noted herein. The character and composition of dwellings shall be of quality similar to existing homes in the area, and shall include, but not be limited to such features as brick or stone watertables, architectural doors, and/or architectural moldings around windows and around the ends of rooflines, brick soldier courses, shudders, or varying roof lines and pitches.

20. **Universal Design**. Dwelling units shall be designed with options for purchasers to add certain Universal Design features which may include, but not be limited to, front entrance doors that are a minimum of 36 inches wide, thermostats a maximum of 48 inches high, rocker light switches 44-48 inches high, electrical outlets a minimum of 18 inches high, emphasis on lighting in stairs and entrances, lever door handles, slip resistant flooring, clear knee space under the sink in the kitchen, a first-floor bathroom console sink, hand-held shower heads at tubs and showers, ADA compliant grab bars in the bathrooms, curb-less showers or showers with a curb of less than 4.5 inches high, seat in master bathroom showers, and front loading washers and dryers.

21. **Heritage Resources.** Prior to commencement of land disturbing activities, the Applicant shall submit photo documentation of the current conditions of the dwelling on Parcel 42 and an existing conditions location map showing the footprint of the existing house and site conditions with the photographic angle of views and identification of each photograph to the Virginia Room of the Fairfax County Public Library and to the Fairfax County Department of Planning and Zoning (DPZ) Historic Preservation planner. The Applicant shall provide written documentation to DPZ that the required documentation has been submitted to the Virginia Room.

22. **Noise Attenuation.** Prior to site plan approval, the Applicant shall provide to DPWES and DPZ an acoustical study that assesses the impact of transportation noise from Gambrill Road on the proposed development. In the event that the predicted traffic noise levels for any home will be in excess of 65 dBA,the Applicant shall implement industry accepted noise attenuation measures during the construction of homes on each lot for which noise levels will be in excess of 65 dBA, in order to ensure that the interior noise level is no greater than DNL 45 dBA.

23. **Septic Tank Abandonment**. Prior to issuance of a demolition permit for the existing house on Parcel 39, the Applicant shall abandon the existing septic tank and well in conformance with Fairfax County Health Department regulations and requirements.

24. **Adjustments in Contribution Amounts**. For all proffers specifying contribution amounts, with the exception of Proffer 12 related to the Housing Trust Fund, the contribution shall adjust on a yearly basis from the base year of 2014 and change effective each January 1 thereafter, based on changes in the Consumer Price Index for all urban consumers (not seasonally adjusted) ("CPI-U"), both as permitted by Virginia State Code Section 15.2-2303.3.

25. **Timing of Improvements**. Upon demonstration by the Applicant that, despite diligent efforts or due to factors beyond the Applicants' control, the required improvements have been or will be delayed beyond the time set forth in these proffers, the Zoning Administrator may agree to a later date for the completion of such improvements.

26. **Severability**. Any of these buildings within the Property may be subject to Proffered Condition Amendments and Final Development Plan Amendments without joinder or consent of the property owners of the other buildings.

27. **Successors and Assigns**. These proffers will bind and inure to the benefit of the Applicant and his/her successors and assigns.

28. **Counterparts.** These proffers may be executed in one or more counterparts, each of which when so executed and delivered shall be deemed an original document and all of which taken together shall constitute but one in the same instrument.

[SIGNATURES BEGIN ON NEXT PAGE]

APPLICANT/CONTRACT PURCHASER OF
TAX MAP 89-3 ((1)) 42, 39

VAN METRE COMMUNITIES, L.L.C.

By: Van Metre Homes, Inc., its Manager

_____

By: Roy R. Barnett
Its: Group President

[SIGNATURES CONTINUE ON NEXT PAGE]

TITLE OWNER OF TAX MAP 89-3 ((1)) 42

ESTATE OF HELEN M. HALL

_____
By: David B. Hall, Jr.
Its: Heir

_____
By: Marjorie L. Roolf
Its: Heir

[SIGNATURES CONTINUE ON NEXT PAGE]

TITLE OWNER OF TAX MAP 89-3 ((1)) 39

_____

By: Lawanda A. Swope

[SIGNATURES END]

Daniel C. Lucey, P.E.
ENCROACHMENT EXCEPTION #5072-WRPA-001-1 &
WATER QUALITY IMPACT ASSESSMENT #5072-WQ-001-1

Appendix A

February 5, 2014

PROPOSED DEVELOPMENT CONDITIONS

5072-WRPA-001-1 and 5072-WQ-001-1

If it is the intent of the Board of Supervisors to approve Resource Protection Area (RPA) Encroachment Exception #5072-WRPA-001-1and Water Quality Impact Assessment #5072-WQ-001-1 for the property located at Tax Map #0893 01 0039 and 42 to allow encroachment in the RPA pursuant to Section 118-6-9 of the Fairfax County Chesapeake Bay Preservation Ordinance (CBPO), staff recommends the following development conditions:

1. This RPA Encroachment Exception is granted for and runs with the land indicated in this application and is not transferable to other land.

2. This RPA Encroachment Exception is granted only for the purposes, structures or uses indicated on the plat approved with the application, as qualified by these development conditions.

3. Any plan submitted pursuant to this RPA Exception shall be in substantial conformance with the approved plat entitled *Park pointe RPAE Plat* prepared by Wetland Studies and Solutions, Inc., dated November 13, 2013.

4. In order that the land disturbed within the RPA can be considered to be the minimum necessary to afford relief for the proposed construction, indigenous vegetation shall be preserved to the maximum extent possible, the limits of clearing and grading must be clearly shown on any development plan, and adequate access and areas for stockpiles must be included. Any development plan will be subject to approval by the Department of Public Works and Environmental Services (DPWES). The limits of clearing and grading must be strictly observed and enforced. Any encroachment into, and/or disturbance of, the RPA not shown on the approved plan will be considered a violation of the CBPO and is subject to the penalties of CBPO Article 9.

5. In order that the project is in harmony with the purpose and intent of the CBPO, does not have a substantial detriment to water quality, and meets the additional performance criteria for RPAs, vegetated buffer area(s) shall be established in the disturbed areas

within the RPA on the property and shall be of a total area of at least 23,958 square feet (0.55 acre). 17 additional trees (2" caliber or greater) that are not counted towards tree canopy or RPA reforestation requirements will be planted within outside of RPA. The size, species, density and locations shall be consistent with the planting requirements of CBPO Section 118-3-3(f), or a vegetation plan that is equally effective in retarding runoff, preventing erosion, and filtering non-point source pollution from runoff, as determined by the Department of Public Works and Environmental Services (DPWES). The vegetation shall be randomly placed to achieve a relatively even spacing throughout the buffer. Notwithstanding any statements on the Plat and in the Water Quality Impact Assessment (WQIA), the size, species, density, and locations of the trees, shrubs, and groundcover will be subject to approval of the Director of the DPWES. In the absence of sufficient area required for the vegetative buffer within the RPA, the applicant may choose to place some buffer outside the RPA.

6. In order that the proposed construction activity does not degrade water quality, adequate erosion and sediment control measures, including, but not limited to, a super-silt fence shall be employed during construction within the RPA, and shall remain in place, and be properly maintained, for the duration of the land disturbing activity within the RPA until such time that the disturbed area is completely stabilized.

7. Detailed hydrologic and hydraulic computations should be included with subdivision plan in support of the proposed SWM/BMP facility that will provide SWM/BMP treatment for the entire 7.72 acre project reducing nonpoint source pollutants by 50.5% and will provide SWM/BMP treatment for the entire 25.3 acre offsite area reducing nonpoint source pollutants by 42%. Proposed wet pond will have a forebay to trap silt and sediment and improve pollutant removal.

This approval, contingent on the above noted conditions, does not relieve the applicant from compliance with the provisions of any applicable Federal, State, or County ordinances, regulations, or adopted standards. The applicant shall be responsible for obtaining the approval of any required plans and permits through established procedures, and this RPA Exception shall not be valid until this has been accomplished.

REZONING AFFIDAVIT

DATE: January 6, 2014
(enter date affidavit is notarized)

I, Sara V. Mariska, attorney/agent, do hereby state that I am an
(enter name of applicant or authorized agent)

121572c

(check one) [ ] applicant
[✓] applicant's authorized agent listed in Par. 1(a) below

in Application No.(s): RZ 2013-SP-011
(enter County-assigned application number(s), e.g. RZ 88-V-001)

and that, to the best of my knowledge and belief, the following information is true:

1(a). The following constitutes a listing of the names and addresses of all **APPLICANTS, TITLE OWNERS, CONTRACT PURCHASERS,** and **LESSEES** of the land described in the application,* and, if any of the foregoing is a **TRUSTEE,**** each **BENEFICIARY** of such trust, and all **ATTORNEYS** and **REAL ESTATE BROKERS,** and all **AGENTS** who have acted on behalf of any of the foregoing with respect to the application:

(**NOTE**: All relationships to the application listed above in **BOLD** print must be disclosed. Multiple relationships may be listed together, e.g., **Attorney/Agent, Contract Purchaser/Lessee, Applicant/Title Owner**, etc. For a multiparcel application, list the Tax Map Number(s) of the parcel(s) for each owner(s) in the Relationship column.)

NAME (enter first name, middle initial, and last name)	**ADDRESS** (enter number, street, city, state, and zip code)	**RELATIONSHIP(S)** (enter applicable relationships listed in **BOLD** above)
Van Metre Communities, L.L.C. Agents: Roy R. Barnett Douglas H. Wagner Juan M. Estrada	9900 Main Street, Suite 500 Fairfax, VA 22031	Applicant/Contract Purchaser of 89-3 ((1)) 42, 39
Estate of Helen M. Hall Beneficiaries: David B. Hall, Jr. Marjorie L. Roolf	15451 Wellington Drive King George, VA 22485	Title Owner of Tax Map 89-3 ((1)) 42

(check if applicable) [✓] There are more relationships to be listed and Par. 1(a) is continued on a "Rezoning Attachment to Par. 1(a)" form.

* In the case of a condominium, the title owner, contract purchaser, or lessee of 10% or more of the units in the condominium.

** List as follows: Name of trustee, Trustee for (name of trust, if applicable), for the benefit of: (state name of each beneficiary).

• Title owner died Intestate, entry for Executor and Personal Representative: David B. Hall, Jr. is removed.

121572c

Rezoning Attachment to Par. 1(a)

DATE: January 6, 2014
(enter date affidavit is notarized)

for Application No. (s): RZ 2013-SP-011
(enter County-assigned application number (s))

(**NOTE**: All relationships to the application are to be disclosed. Multiple relationships may be listed together, e.g., **Attorney/Agent, Contract Purchaser/Lessee, Applicant/Title Owner**, etc. For a multiparcel application, list the Tax Map Number(s) of the parcel(s) for each owner(s) in the Relationship column.

NAME (enter first name, middle initial, and last name)	**ADDRESS** (enter number, street, city, state, and zip code)	**RELATIONSHIP(S)** (enter applicable relationships listed in **BOLD** above)
Lawanda A. Swope	7421 Swope Lane Springfield, VA 22153	Title Owner of Tax Map 89-3 ((1)) 39
Paciulli, Simmons & Associates, Ltd.	3975 Fair Ridge Drive, Suite 300 South Fairfax, Virginia 22033	Civil Engineers/Agent
Agents: Peter J. Rigby, Jr. Ann O. Germain John D. Candler		
Walsh, Colucci, Lubeley & Walsh, P.C. f/k/a Walsh, Colucci, Lubeley, Emrich & Walsh, P.C.	2200 Clarendon Boulevard Suite 1300 Arlington, Virginia 22201	Attorneys/Planners/Agent
Agents:		
Martin D. Walsh		Attorney/Agent
Lynne J. Strobel		Attorney/Agent
Timothy S. Sampson		Attorney/Agent
M. Catharine Puskar		Attorney/Agent
Sara V. Mariska		Attorney/Agent
G. Evan Pritchard		Attorney/Agent
Jonathan D. Puvak		Attorney/Agent
Elizabeth D. Baker		Planner/Agent
Inda E. Stagg		Planner/Agent
Elizabeth A. Nicholson		Planner/Agent
Wetland Studies and Solutions, Inc.	5300 Wellington Branch Drive, #100 Gainesville, Virginia 20155	Environmental Consultant/Agent
Agents: Michael S. Rolband Mark W. Headly Daniel C. Lucey Kate H. Tomlinson		

(check if applicable) [ ] There are more relationships to be listed and Par. 1(a) is continued further on a "Rezoning Attachment to Par. 1(a)" form.

121572c

REZONING AFFIDAVIT

DATE: January 6, 2014
(enter date affidavit is notarized)

for Application No. (s): RZ 2013-SP-011
(enter County-assigned application number(s))

1(b). The following constitutes a listing*** of the **SHAREHOLDERS** of all corporations disclosed in this affidavit who own 10% or more of any class of stock issued by said corporation, and where such corporation has 10 or less shareholders, a listing of all of the shareholders, **and if the corporation is an owner of the subject land, all of the OFFICERS and DIRECTORS of such corporation:**

(**NOTE:** Include **SOLE PROPRIETORSHIPS, LIMITED LIABILITY COMPANIES,** and **REAL ESTATE INVESTMENT TRUSTS** herein.)

CORPORATION INFORMATION

NAME & ADDRESS OF CORPORATION: (enter complete name, number, street, city, state, and zip code)
Van Metre Communities, L.L.C.
9900 Main Street, Suite 500
Fairfax, VA 22031

DESCRIPTION OF CORPORATION: (check one statement)

[✓] There are 10 or less shareholders, and all of the shareholders are listed below.
[ ] There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
[ ] There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

NAMES OF SHAREHOLDERS: (enter first name, middle initial, and last name)
Manager: Van Meter Homes, Inc. Former Manager: Fourth Genpar, Inc.
Members: Albert G. Van Metre, Jr. VMFT Subtrust (11/11) f/b/o Albert G. Van Metre, Jr., Deadria Van Metre, Charis Burrett, Jeannie Van Metre, Christopher Van Metre, Alison Van Metre, Ashley Van Metre and Jake Boyle; [continued]

NAMES OF OFFICERS & DIRECTORS: (enter first name, middle initial, last name & title, e.g. **President, Vice President, Secretary, Treasurer**, etc.)

(check if applicable) [✓] There is more corporation information and Par. 1(b) is continued on a "Rezoning Attachment 1(b)" form.

*** All listings which include partnerships, corporations, or trusts, to include the names of beneficiaries, must be broken down successively until: (a) only individual persons are listed or (b) the listing for a corporation having more than 10 shareholders has no shareholder owning 10% or more of any class of stock. ***In the case of an APPLICANT, TITLE OWNER, CONTRACT PURCHASER, or LESSEE* of the land that is a partnership, corporation, or trust, such successive breakdown must include a listing and further breakdown of all of its partners, of its shareholders as required above, and of beneficiaries of any trusts. Such successive breakdown must also include breakdowns of any partnership, corporation, or trust owning 10% or more of the APPLICANT, TITLE OWNER, CONTRACT PURCHASER, or LESSEE* of the land. Limited liability companies and real estate investment trusts and their equivalents are treated as corporations, with members being deemed the equivalent of shareholders; managing members shall also be listed.*** Use footnote numbers to designate partnerships or corporations, which have further listings on an attachment page, and reference the same footnote numbers on the attachment page.

121572c

Rezoning Attachment to Par. 1(b)

DATE: January 6, 2014
(enter date affidavit is notarized)

for Application No. (s): RZ 2013-SP-011
(enter County-assigned application number (s))

NAME & ADDRESS OF CORPORATION: (enter complete name, number, street, city, state, and zip code)
Van Metre Communities, L.L.C. [continued]
9900 Main Street, Suite 500
Fairfax, VA 22031

DESCRIPTION OF CORPORATION: (check one statement)

[ ] There are 10 or less shareholders, and all of the shareholders are listed below.
[ ] There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
[ ] There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

NAMES OF THE SHAREHOLDER: (enter first name, middle initial, and last name)
Members, continued:
Alison Van Metre Paley VMFT Subtrust (11/11) f/b/o Alison Van Metre Paley William Paley, Samuel Paley and Albert Paley;
Richard J. Rabil, Albert G. Van Metre, Jr., Kenneth A. Ryan, W. Brad Gable

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NAMES OF OFFICERS & DIRECTORS: (enter first name, middle initial, last name, and title, e.g. **President, Vice-President, Secretary, Treasurer**, etc.)

NAME & ADDRESS OF CORPORATION: (enter complete name, number, street, city, state, and zip code)
Fourth Genpar, Inc. [FORMER]
9900 Main Street, Suite 500
Fairfax, VA 22031

DESCRIPTION OF CORPORATION: (check one statement)

[✓] There are 10 or less shareholders, and all of the shareholders are listed below.
[ ] There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
[ ] There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

NAMES OF THE SHAREHOLDERS: (enter first name, middle initial, and last name)
Albert G. Van Metre, Jr. VMFT Subtrust (11/11) f/b/o Albert G. Van Metre, Jr., Deadria Van Metre, Charis Burrett, Jeannie Van Metre, Christopher Van Metre, Alison Van Metre, Ashley Van Metre and Jake Boyle;
Alison Van Metre Paley VMFT Subtrust (11/11) f/b/o Alison Van Metre Paley William Paley, Samuel Paley and Albert Paley;
Richard J. Rabil, Kenneth A. Ryan, W. Brad Gable

NAMES OF OFFICERS & DIRECTORS: (enter first name, middle initial, last name, and title, e.g. **President, Vice-President, Secretary, Treasurer**, etc.)
Directors: Albert G. Van Metre, Jr., Richard J. Rabil, Kenneth A. Ryan, W. Brad Gable, Alison Van Metre Paley
Officers: Albert G. Van Metre, Jr., Chairman of the Board; Richard J. Rabil, Vice Chairman of the Board, President & CEO; Kenneth A. Ryan, Group President–Finance & Acctg, Secretary, Treasurer & CFO; W. Brad Gable, Group President–Investment Properties & Asst Secretary; Nancy Lacy, VP & Corp Controller; Tonya Bookwalter, Asst Controller; Julie van der Vate, VP & Dir Income Tax Rept [cont.]

(check if applicable) [✓] There is more corporation information and Par. 1(b) is continued further on a "Rezoning Attachment to Par. 1(b)" form.

Rezoning Attachment to Par. 1(b)

121572c

DATE: January 6, 2014
(enter date affidavit is notarized)

for Application No. (s): RZ 2013-SP-011
(enter County-assigned application number (s))

NAME & ADDRESS OF CORPORATION: (enter complete name, number, street, city, state, and zip code)

Fourth Genpar, Inc. [continued] [FORMER]
9900 Main Street, Suite 500
Fairfax, VA 22031

DESCRIPTION OF CORPORATION: (check one statement)

[ ] There are 10 or less shareholders, and all of the shareholders are listed below.
[ ] There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
[ ] There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

NAMES OF THE SHAREHOLDER: (enter first name, middle initial, and last name)

NAMES OF OFFICERS & DIRECTORS: (enter first name, middle initial, last name, and title, e.g. **President, Vice-President, Secretary, Treasurer**, etc.)

Nancy G. Gilreath, VP & Gen Counsel; Patricia A. McQuillen, VP & Assoc Gen Counsel; Juan M. Estrada, Asst VP; Leslie J. Dykes, Asst Secretary; Charles Hockensmith, Group President – Construction; Brian Davidson, EVP–Construction; George Poe, VP–Multifamily Construction; Jano Cymes, VP–Construction Finance; Merle Phillips, VP–Sales and Marketing; [conintued]

NAME & ADDRESS OF CORPORATION: (enter complete name, number, street, city, state, and zip code)

Fourth Genpar, Inc. [continued] [FORMER]
9900 Main Street, Suite 500
Fairfax, VA 22031

DESCRIPTION OF CORPORATION: (check one statement)

[ ] There are 10 or less shareholders, and all of the shareholders are listed below.
[ ] There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
[ ] There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

NAMES OF THE SHAREHOLDERS: (enter first name, middle initial, and last name)

NAMES OF OFFICERS & DIRECTORS: (enter first name, middle initial, last name, and title, e.g. **President, Vice-President, Secretary, Treasurer**, etc.)

Arthur Cohen, VP–Architecture; Laurel C. ("Candy") McCracken, VP–New Homes Operations; Michele Weissbratten, Warranty Secretary–Construction; Roy R. Barnett, Group President/Sr Advisor–Land Acquisition/Planning/Development & Planned Communities; Daniel Fulton, VP–Marketing Development; Walter Sheehan, EVP–Residential/Invest Properties; Carissa Barry, VP of Acquisitions–Invest Properties; Tom Marable, VP–Land Development; Douglas H. Wagner, VP–Engineering

(check if applicable) [✓] There is more corporation information and Par. 1(b) is continued further on a "Rezoning Attachment to Par. 1(b)" form.

121572c

Rezoning Attachment to Par. 1(b)

DATE: January 6, 2014
(enter date affidavit is notarized)

for Application No. (s): RZ 2013-SP-011
(enter County-assigned application number (s))

NAME & ADDRESS OF CORPORATION: (enter complete name, number, street, city, state, and zip code)
Paciulli, Simmons & Associates, Ltd.
3975 Fair Ridge Drive, Suite 300 South
Fairfax, Virginia 22033

DESCRIPTION OF CORPORATION: (check one statement)

[✓] There are 10 or less shareholders, and all of the shareholders are listed below.
[ ] There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
[ ] There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

NAMES OF THE SHAREHOLDER: (enter first name, middle initial, and last name)
Joseph P. Paciulli
Peter J. Rigby, Jr.
Ann O. Germain
Samuel J. Williams

NAMES OF OFFICERS & DIRECTORS: (enter first name, middle initial, last name, and title, e.g. **President, Vice-President, Secretary, Treasurer**, etc.)

NAME & ADDRESS OF CORPORATION: (enter complete name, number, street, city, state, and zip code)
Walsh, Colucci, Lubeley & Walsh, P.C. f/k/a Walsh, Colucci, Lubeley, Emrich & Walsh, P.C.
2200 Clarendon Boulevard, Suite 1300
Arlington, Virginia 22201

DESCRIPTION OF CORPORATION: (check one statement)

[ ] There are 10 or less shareholders, and all of the shareholders are listed below.
[✓] There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
[ ] There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

NAMES OF THE SHAREHOLDERS: (enter first name, middle initial, and last name)
David J. Bomgardner, E. Andrew Burcher, Thomas J. Colucci, Michael J. Coughlin, Peter M. Dolan, Jr., Jay du Von, William A. Fogarty, John H. Foote, H. Mark Goetzman, Bryan H. Guidash, Michael D. Lubeley, J. Randall Minchew, M. Catharine Puskar, John E. Rinaldi, Kathleen H. Smith, Lynne J. Strobel, Garth M. Wainman, Nan E. Walsh, Martin D. Walsh, G. Evan Pritchard, Michael J. Kalish

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NAMES OF OFFICERS & DIRECTORS: (enter first name, middle initial, last name, and title, e.g. **President, Vice-President, Secretary, Treasurer**, etc.)

(check if applicable) [ ] There is more corporation information and Par. 1(b) is continued further on a "Rezoning Attachment to Par. 1(b)" form.

121572c

Rezoning Attachment to Par. 1(b)

DATE: January 6, 2014
(enter date affidavit is notarized)

for Application No. (s): RZ 2013-SP-011
(enter County-assigned application number (s))

NAME & ADDRESS OF CORPORATION: (enter complete name, number, street, city, state, and zip code)
Wetland Studies and Solutions, Inc.
5300 Wellington Branch Drive, #100
Gainesville, Virginia 20155

DESCRIPTION OF CORPORATION: (check one statement)

[✓] There are 10 or less shareholders, and all of the shareholders are listed below.
[ ] There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
[ ] There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

NAMES OF THE SHAREHOLDER: (enter first name, middle initial, and last name)
Michael S. Rolband, Sole Shareholder

NAMES OF OFFICERS & DIRECTORS: (enter first name, middle initial, last name, and title, e.g. **President, Vice-President, Secretary, Treasurer**, etc.)

NAME & ADDRESS OF CORPORATION: (enter complete name, number, street, city, state, and zip code)
Van Metre Homes, Inc.
9900 Main Street, Suite 500
Fairfax, VA 22031

DESCRIPTION OF CORPORATION: (check one statement)

[✓] There are 10 or less shareholders, and all of the shareholders are listed below.
[ ] There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
[ ] There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

NAMES OF THE SHAREHOLDERS: (enter first name, middle initial, and last name)
Members: Albert G. Van Metre, Jr. VMFT Subtrust (11/11) f/b/o Albert G. Van Metre, Jr., Deadria Van Metre, Charis Burrett, Jeannie Van Metre, Christopher Van Metre, Alison Van Metre, Ashley Van Metre and Jake Boyle; Alison Van Metre Paley VMFT Subtrust (11/11) f/b/o Alison Van Metre Paley, William Paley, Samuel Paley and Albert Paley; Richard J. Rabil; Albert G. Van Metre, Jr.; Kenneth A. Ryan; W. Brad Gable

---

NAMES OF OFFICERS & DIRECTORS: (enter first name, middle initial, last name, and title, e.g. **President, Vice-President, Secretary, Treasurer**, etc.)
Directors: Albert G. Van Metre, Jr., Richard J. Rabil, Kenneth A. Ryan, W. Brad Gable, Alison Van Metre Paley
Officers: Albert G. Van Metre, Jr., Chairman of the Board; Richard J. Rabil, Vice Chairman of the Board, President & CEO; Kenneth A. Ryan, Group President–Finance & Acctg, Secretary, Treasurer & CFO; W. Brad Gable, Group President–Investment Properties & Asst Secretary; Roy R. Barnett, Group President/Sr Advisor–Land Acquisition Planning/Development & Planned Communities; [continued]

(check if applicable) [✓] There is more corporation information and Par. 1(b) is continued further on a "Rezoning Attachment to Par. 1(b)" form.

121572c

Rezoning Attachment to Par. 1(b)

DATE: January 6, 2014
(enter date affidavit is notarized)

for Application No. (s): RZ 2013-SP-011
(enter County-assigned application number (s))

NAME & ADDRESS OF CORPORATION: (enter complete name, number, street, city, state, and zip code)

Van Metre Homes, Inc. [continued]
9900 Main Street, Suite 500
Fairfax, VA 22031

DESCRIPTION OF CORPORATION: (check one statement)

[✓] There are 10 or less shareholders, and all of the shareholders are listed below.
[ ] There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
[ ] There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

NAMES OF THE SHAREHOLDER: (enter first name, middle initial, and last name)

NAMES OF OFFICERS & DIRECTORS: (enter first name, middle initial, last name, and title, e.g. **President, Vice-President, Secretary, Treasurer**, etc.)

Officers, continued: Walter Sheehan, EVP-Residential/Investment Properties; Carissa Barry, VP of Acquisition-Investment Properties

---

NAME & ADDRESS OF CORPORATION: (enter complete name, number, street, city, state, and zip code)

DESCRIPTION OF CORPORATION: (check one statement)

[ ] There are 10 or less shareholders, and all of the shareholders are listed below.
[ ] There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
[ ] There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

NAMES OF THE SHAREHOLDERS: (enter first name, middle initial, and last name)

NAMES OF OFFICERS & DIRECTORS: (enter first name, middle initial, last name, and title, e.g. **President, Vice-President, Secretary, Treasurer**, etc.)

(check if applicable) [ ] There is more corporation information and Par. 1(b) is continued further on a "Rezoning Attachment to Par. 1(b)" form.

121572c

REZONING AFFIDAVIT

DATE: January 6, 2014
(enter date affidavit is notarized)

for Application No. (s): RZ 2013-SP-011
(enter County-assigned application number(s))

1(c). The following constitutes a listing*** of all of the **PARTNERS,** both **GENERAL** and **LIMITED**, in any partnership disclosed in this affidavit:

PARTNERSHIP INFORMATION

PARTNERSHIP NAME & ADDRESS: (enter complete name, number, street, city, state and zip code)
None

(check if applicable) [ ] The above-listed partnership has no limited partners.

NAMES AND TITLE OF THE PARTNERS (enter first name, middle initial, last name, and title, e.g. **General Partner, Limited Partner, or General and Limited Partner**)

(check if applicable) [ ] There is more partnership information and Par. 1(c) is continued on a "Rezoning Attachment to Par. 1(c)" form.

*** All listings which include partnerships, corporations, or trusts, to include the names of beneficiaries, must be broken down successively until: (a) only individual persons are listed or (b) the listing for a corporation having more than 10 shareholders has no shareholder owning 10% or more of any class of stock. ***In the case of an APPLICANT, TITLE OWNER, CONTRACT PURCHASER, or LESSEE* of the land that is a partnership, corporation, or trust, such successive breakdown must include a listing and further breakdown of all of its partners, of its shareholders as required above, and of beneficiaries of any trusts. Such successive breakdown must also include breakdowns of any partnership, corporation, or trust owning 10% or more of the APPLICANT, TITLE OWNER, CONTRACT PURCHASER or LESSEE* of the land. Limited liability companies and real estate investment trusts and their equivalents are treated as corporations, with members being deemed the equivalent of shareholders; managing members shall also be listed.*** Use footnote numbers to designate partnerships or corporations, which have further listings on an attachment page, and reference the same footnote numbers on the attachment page.

121572c

REZONING AFFIDAVIT

DATE: January 6, 2014
(enter date affidavit is notarized)

for Application No. (s): RZ 2013-SP-011
(enter County-assigned application number(s))

1(d). One of the following boxes **must** be checked:

[ ] In addition to the names listed in Paragraphs 1(a), 1(b), and 1(c) above, the following is a listing of any and all other individuals who own in the aggregate (directly and as a shareholder, partner, and beneficiary of a trust) 10% or more of the **APPLICANT, TITLE OWNER, CONTRACT PURCHASER,** or **LESSEE*** of the land:

[✓] Other than the names listed in Paragraphs 1(a), 1(b), and 1(c) above, no individual owns in the aggregate (directly and as a shareholder, partner, and beneficiary of a trust) 10% or more of the **APPLICANT, TITLE OWNER, CONTRACT PURCHASER,** or **LESSEE*** of the land.

2. That no member of the Fairfax County Board of Supervisors, Planning Commission, or any member of his or her immediate household owns or has any financial interest in the subject land either individually, by ownership of stock in a corporation owning such land, or through an interest in a partnership owning such land.

EXCEPT AS FOLLOWS: (**NOTE**: If answer is none, enter "**NONE**" on the line below.)

None

(check if applicable) [ ] There are more interests to be listed and Par. 2 is continued on a "Rezoning Attachment to Par. 2" form.

REZONING AFFIDAVIT

DATE: January 6, 2014
(enter date affidavit is notarized)

121572e

for Application No. (s): RZ 2013-SP-011
(enter County-assigned application number(s))

3. That within the twelve-month period prior to the public hearing of this application, no member of the Fairfax County Board of Supervisors, Planning Commission, or any member of his or her immediate household, either directly or by way of partnership in which any of them is a partner, employee, agent, or attorney, or through a partner of any of them, or through a corporation in which any of them is an officer, director, employee, agent, or attorney or holds 10% or more of the outstanding bonds or shares of stock of a particular class, has, or has had any business or financial relationship, other than any ordinary depositor or customer relationship with or by a retail establishment, public utility, or bank, including any gift or donation having a value of more than $100, singularly or in the aggregate, with any of those listed in Par. 1 above.

EXCEPT AS FOLLOWS: (NOTE: If answer is none, enter "**NONE**" on line below.)
None

(NOTE: Business or financial relationships of the type described in this paragraph that arise after the filing of this application and before each public hearing must be disclosed prior to the public hearings. See Par. 4 below.)

(check if applicable) [ ] There are more disclosures to be listed and Par. 3 is continued on a "Rezoning Attachment to Par. 3" form.

4. That the information contained in this affidavit is complete, that all partnerships, corporations, and trusts owning 10% or more of the APPLICANT, TITLE OWNER, CONTRACT PURCHASER, or LESSEE* of the land have been listed and broken down, and that prior to each and every public hearing on this matter, I will reexamine this affidavit and provide any changed or supplemental information, including business or financial relationships of the type described in Paragraph 3 above, that arise on or after the date of this application.

WITNESS the following signature: Sara V. Mariska

(check one) [ ] Applicant [✓] Applicant's Authorized Agent

Sara V. Mariska, attorney/agent
(type or print first name, middle initial, last name, and title of signee)

Subscribed and sworn to before me this 6 day of January 2014, in the State/Comm. of Virginia, County/City of Arlington.

Kimberly K. Follin
Notary Public

My commission expires: 11/30/2015

KIMBERLY K. FOLLIN
Registration # 283945
Notary Public
COMMONWEALTH OF VIRGINIA

RE: RZ 2013-SP-011
121572c

Estate No FI-2011-0000709 BK 00920 PG 0536 Recorded on 04/28/2011

LIST OF HEIRS/ REAL ESTATE AFFIDAVIT
Circuit Court of Fairfax County, Virginia

Fiduciary Number FI-2011-0000709

Estate of Helen M Hall, deceased
Date of Death: 12/11/2010

David B Hall Jr of 15451 Wellington Dr, King George, VA 22485, having an interest as the Administrator having qualified in King George Circuit Court , the above named decedent's estate, do now depose and make oath to the following information as provided for in § 64.1-135 of the 1950 Code of Virginia, as amended that:

1. Helen M Hall died **INTESTATE** on 12/11/2010 and at the time of their death was a resident of 15451 Wellington Dr, King George, VA 22485.
2. The aforesaid decedent at the time of death owned real estate located in Fairfax County, Virginia, briefly described as follows (state if their interest is less than 100%),
3.

Parcel 1: 8219 Hooes Rd., - Gambrill 7162-1307 – Tax Map 0893 01 0038

Parcel 2: 7407 Gambrill Rd., - Gambrill 7123 287 – Tax Map 0893 01 0042

Parcel 3: 7306 Old Keene Mill Rd., - Monticello Forest, Lt 26 Blk 40, Sec 5 – Tax Map 0901 11400026

3. The heirs at law of the decedent are:

Name: David B Hall Jr
Address: 15451 Wellington Dr, King George, VA 22485
Relationship: Child
Age: ADULT

Name: Margie Roolf
Address: Box 63764, Pipe Creek, TX 78063
Relationship: Child
Age: ADULT

Given under my/our hand this 28th day of April, 2011.

David B Hall

David B Hall Jr

State of Virginia
County of Fairfax, to-wit:

Subscribed and sworn to before me by David B Hall Jr, this 28th day of April, 2011.

Stacey A Davison, Deputy Clerk

VIRGINIA: In the Clerk's Office of the Circuit Court of Fairfax County, this 28th day of April, 2011, the foregoing List of Heirs/Real Estate Affidavit was filed and admitted to record.

Teste: John T. Frey, Clerk

By: Stacey A Davison,
Deputy Clerk

04/28/2011
RECORDED FAIRFAX CO VA
TESTE: J. Frey
CLERK

WALSH COLUCCI
LUBELEY EMRICH
& WALSH PC

Sara V. Mariska
(703) 528-4700 Ext. 5419
smariska@arl.thelandlawyers.com

RECEIVED
Department of Planning & Zoning
APR 24 2013
Zoning Evaluation Division

April 24, 2013

Barbara C. Berlin, Director
Zoning Evaluation Division
Fairfax County Department of Planning & Zoning
12055 Government Center Parkway, Suite 801
Fairfax, Virginia 22035

Re: Application for Rezoning from R-1 District to the R-3 (Cluster) District
Fairfax County Tax Map Reference: 89-3 ((1)) 39 and 42 (the "Subject Property")
Van Metre Communities, L.L.C. (the "Applicant")

Dear Ms. Berlin:

Please accept this letter as a statement as justification for an application to rezone the Subject Property from the R-1 District to the R-3 (Cluster) District for the development of single family detached homes at a density of 2.33 dwelling units per acre.

Property Information

Zoned to the R-1 District, the approximately 7.72 acre Subject Property is located on the eastern side of Gambrill Road (Route 640), south of its intersection with Hooes Road (Route 10196) and north of its intersection with Ridge Road (Route 6997) in the Springfield Magisterial District of Fairfax County. The Subject Property is currently developed with two (2) single family houses that are proposed to be removed with this application. The Subject Property is not subject to any proffers or conditions.

Comprehensive Plan Recommendations

The Subject Property is located within the Pohick Planning District within the Main Branch Community Planning Sector (P2) within Area III of the Fairfax County Comprehensive Plan (the "Plan"). The Plan Map indicates that the Subject Property is planned for residential development at 2-3 dwelling units per acre. There is no site specific recommendation for the Subject Property in the Plan; however a general land use recommendation states, *"The Main Branch Community Planning Sector is largely developed as stable residential neighborhoods. Infill development in these neighborhoods should be of a compatible use, type and intensity in accordance with the guidance provided by the Policy Plan under Land Use Objectives 8 and 14."* Land Use Objectives 8 and 14 state:

Objective 8: Fairfax County should encourage a land use pattern that protects, enhances and/or maintains stability in established residential neighborhoods.

Objective 14: Fairfax County should seek to achieve a harmonious and attractive development pattern which minimizes undesirable visual, auditory, environmental and other impacts created by potentially incompatible uses.

The application seeks approval of single family residential development at 2.33 dwelling units per acre, which is in accordance with the recommendations of the Plan. An analysis of the residential development criteria is included below. The proposed development is compatible with the use of, and is of a similar development density to, the surrounding single family detached subdivisions, as further described in the section below.

Description of the Proposed Development

The proposed development consists of 18 single family detached lots and homes within a cluster R-3 District as depicted on the accompanying Generalized Development Plan ("GDP"). A new public street is proposed perpendicular to Gambrill Road that extends east into the Subject Property. Four (4) homes, Lots 15, 16, 17, and 18, will front on a private street that will terminate in a turnaround on its northern end.

Two parking spaces will be provided for each home in garages, and two additional parking spaces will be available in each driveway. Parking spaces will be available on-street, as permitted by the Fire Marshal.

There is a Resource Protection Area (RPA) on the eastern side of the Subject Property. The proposed development will not impact the existing RPA. A total of thirty-six percent (36%) or approximately 2.28 acres of the Subject Property will serve as attractive open space for this development.

Stormwater management will be handled by the existing pond located on property identified as Fairfax County Tax Map Reference 89-3 ((25)) A that is owned by the Applicant. The existing wet pond is proposed to be renovated to meet requirements for dam construction as well as Best Management Practices (BMPs).

The proposed single family detached development continues the existing single family detached development pattern of the surrounding area, which promotes stability of these existing neighborhoods. The proposed R-3 District classification is compatible with surrounding subdivisions to the west and south. No transitional screening or barriers are required between the proposed development and the adjacent uses because the proposed use is considered compatible with the adjacent uses.

To the best of our knowledge, the proposed use will be in conformance with all applicable ordinances, regulations and adopted standards except as modified by this application.

Residential Development Criteria

Residential Development Criteria have been adopted in order to evaluate zoning requests for new residential development. The following identifies how the proposed development meets the criteria:

I. **Site Design**—All applications are to be characterized by high-quality site design. The Applicant believes that its proposal provides high-quality site design as follows:

A. Consolidation—The Subject Property is approximately 7.72 acres in size. The Applicant has consolidated two (2) undeveloped parcels. The adjacent property to the north is encumbered with significant RPA that would make development difficult. All other adjacent parcels are developed.

B. Layout—The proposed layout provides logical, functional, and appropriate relationships between the new residential uses and adjacent existing uses. The site has been designed to respect and mirror the development pattern of adjacent properties.

C. Open Space—A total of 2.28 acres of open space will be provided on the eastern portion of the Subject Property to serve the development. This open space is in excess of Zoning Ordinance requirements.

D. Landscaping—Ample landscaping is provided on each lot, between lots, and in the existing RPA on the eastern portion of the Subject Property.

E. Amenities—The Applicant will improve Gambrill Road, construct a six (6) foot sidewalk along Gambrill Road, protect the existing RPA, in addition to providing generously sized lots, landscaping, and interior sidewalks to provide an inviting residential community.

II. **Neighborhood Context**—New developments are to fit into the fabric of their adjacent neighborhoods. Surrounding properties are developed with single-family homes or townhouses. Similar to the surrounding neighborhoods, the Applicant has provided a single point of access to Gambrill Road. To the north, the Subject Property is bordered by a park and ride lot and a vacant parcel encumbered by RPA. To the south is the Ridge Road estates subdivision. This development is separated from the Subject Property by open space, but the proposed development is consistent with the size and scale of the existing neighborhood. To the east is an existing townhome development that will be screened from the proposed development by the RPA.

III. **Environment**—Proposals should be consistent with the policies and objectives of the environmental element of the Plan.

A. Preservation—The Applicant proposes to protect the existing RPA and EQC on the Subject Property. The area will provide significant buffering to adjacent developments as well as attractive open space.

B. Slopes and Soils—Soils information available to date indicates that it will be adequate for residential development.

C. Water Quality—Best Management Practices for stormwater management will be provided in a retro-fitted existing pond southeast of the Subject Property.

D. Stormwater Management— The site is currently undeveloped. The Applicant will be providing stormwater detention in an off-site pond on property identified as Fairfax County Tax Map Reference 89-3 ((25)) A, which is owned by the Applicant.

E. Noise— Noise impacts are not anticipated, but if determined necessary, the homes will include construction measures for noise mitigation to ensure the County's noise standards are met.

F. Lighting—Lighting on the site will be shielded and directed downward in order to minimize neighborhood glare and impacts to the night sky. The Applicant commits to meet the County's adopted lighting and glare regulations.

G. Energy/Green Building Practice—The dwelling units will be constructed to meet or exceed current energy efficiency standards.

IV. **Tree Preservation and Tree Cover Requirements**—The Applicant proposes to preserve trees on the eastern portion of the Subject Property within the RPA and EQC. The Applicant will work with the Urban Forester to ensure adequate tree preservation to the extent feasible.

V. **Transportation**—Applications are to implement measures to address planned transportation improvements. The Applicant has located the intersection of the new street with Gambrill Road in a location that meets safety and sight distance standards. Traffic generation from the development will be minimal, but the Applicant will work with FCDOT to address any transportation concerns.

VI. **Public Facilities**—It is anticipated that residential development impacts to the Public Facility System will occur. These include impacts on the public schools and public parks. The Applicant anticipates making a contribution to the Board of Supervisors for school purposes and a contribution to the Park Authority. It is expected that the Public Facilities' recommendation will be satisfied with these contributions.

VII. **Affordable Housing**—Because the 18 proposed dwelling units proposed are less than the 50 units threshold in the Affordable Dwelling Unit (ADU) Ordinance, ADUs are not required with this rezoning. It is anticipated that the Applicant will make a contribution to the County's Housing Trust Fund.

VIII. **Heritage Resources**—There are no significant cultural, architectural, economic, social, political, or historic heritage sites or structures located on the Subject Property.

IX. **Density**— The Plan recommends residential development of the site with a density of 2 to 3 dwelling units per acre. The proposed 18 dwellings on approximately 7.72 acres results in a density of 2.33 dwelling units per acre in Fairfax County. Thus, the proposed density is in keeping with the Plan recommendations.

Summary

The Applicant proposes an R-3 cluster subdivision in conformance with the Plan recommended development density of 2-3 dwelling units per acre. The proposed development will enhance the existing residential community and will be an asset to Fairfax County.

Should you have any questions, or need any additional information, please do not hesitate to contact me.

Very truly yours,

WALSH, COLUCCI, LUBELEY, EMRICH & WALSH, P.C.

Sara V. Mariska

Sara V. Mariska

cc: Roy Barnett
Doug Wagner
Elizabeth D. Baker
Martin D. Walsh

{A0557271.DOCX / 1 Statement of Justification 000356 000044}

County of Fairfax, Virginia

MEMORANDUM

DATE: December 11, 2013

TO: Joe Gorney, Staff Coordinator
Zoning Evaluation Division, DPZ

FROM: Hugh Whitehead, Urban Forester II
Forest Conservation Branch, DPWES

SUBJECT: Van Metre Communities, LLC, RZ 2013-SP-011

I have reviewed the above referenced rezoning application consisting of a Generalized Development Plan, stamped as received by the Zoning Evaluation Division on November 15, 2013, and draft proffers dated November 15, 2013.

The following comments and recommendations are based on this review and a site visit conducted during review of previous submissions of this application.

1. **Comment:** Proposed landscaping along the western property boundary adjacent to Gambrill Road shows trees planted on the fence line. It is not possible to ascertain which side of the fence trees shown coinciding with the fence line are to be planted.

   Recommendation: Proposed trees should be clearly shown on one side of the fence or the other. Trees should be located not closer than four feet from the proposed fence.

2. **Comment:** Symbols representing proposed trees for screening along Gambrill road are shown with significant overlap. Trees are proposed too close together, which will likely result in abnormal form and possibly poor structural development.

   Recommendation: Symbols representing proposed trees should be drawn to scale based on the 10-year projected crown spread and shown on the plan without significant overlap.

If there are any questions or further assistance is desired, please contact me at (703)324-1770.

HCW/
UFMDID #: 183240

cc: DPZ File

Department of Public Works and Environmental Services
Urban Forest Management Division
12055 Government Center Parkway, Suite 518
Fairfax, Virginia 22035-5503
Phone 703-324-1770, TTY: 703-324-1877, Fax: 703-803-7769
www.fairfaxcounty.gov/dpwes

COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
4975 Alliance Drive
Fairfax, VA 22030

CHARLES A. KILPATRICK, P.E.
COMMISSIONER

January 28, 2014

To: Ms. Barbara Berlin
Director, Zoning Evaluation Division

From: Kevin Nelson
Virginia Department of Transportation – Land Development Section

Subject: RZ 2013-SP-011 Van Metre Communities, LLC
Tax Map # 89-3((01))0039 & 0042

All submittals subsequent to the first submittal shall provide a response letter to the previous VDOT comments. Submittals without comment response letters are considered incomplete and will be returned without review.

I have reviewed the above plan submitted on November 21, 2013, and received November 25, 2013. The following comments are offered using the same numbers as the previous submissions and can be addressed on the site plan:

9. The access road entrance apron should be a minimum of 20' wide.

10. The blow off valve at the north end of the site will need to be located outside of the CG-12 ramp on the construction plans.

11. No manholes should be placed within the sidewalks due to ADA requirements.

12. All of the driveway aprons should match the driveway widths since the driveways are short. This is especially critical in the cul-de-sac area due to the skew of the driveways.

If you have any questions, please call me.

cc: Ms. Angela Rodeheaver

fairfaxrezoning2013-SP-011rz4VanMetreCommLLCPkPte1-28-14BB

County of Fairfax, Virginia

MEMORANDUM

DATE: February 25, 2014

TO: Barbara Berlin, Director
Zoning Evaluation Division, Department of Planning & Zoning

FROM: Michael A. Davis, Acting Chief
Site Analysis Section, Department of Transportation

FILE: RZ 2013-SP-011

SUBJECT: Van Metre Communities LLC (Park Pointe)
7421 Swope Lane, Springfield VA 22153
Tax Map: #89-3 ((1)) 39 & 42

This department has reviewed the subject application including the Generalized Development Plan dated July 11, 2013, revised through January 31, 2014, and offers the following comments:

- The applicant has increased the width Swope Lane to twenty-nine (29) feet from face-of-curb to face-of-curb, however the right-of-way width was not adjusted to include all sidewalks within the public right-of-way for maintenance by VDOT. Unless the right-of-way line is adjusted, the applicant will need to accept responsibility for maintenance of any sidewalks/trails located outside of the right-of-way and commit to such maintenance in their proffer statement.

- The applicant will need to address the items outlined in VDOT memos dated January 28, 2014 and January 31, 2014 during the site plan submission as they were not addressed in the subsequent revisions to the plan.

MAD/EAI

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FAIRFAX COUNTY
PUBLIC SCHOOLS

Department of Facilities and Transportation Services
Office of Facilities Planning Services
8115 Gatehouse Road, Suite 3200
Falls Church, Virginia 22042

October 7, 2013

TO: Barbara Berlin, Director
Zoning Evaluation Division
Fairfax County Department of Planning & Zoning

FROM: Lee Ann Pender, Director
Office of Facilities Planning Services

SUBJECT: RZ/FDP 2013-SP-011, Van Metre (Updated)

ACREAGE: 7.72 acres

TAX MAP: 89-3 ((1)) 39 and 42

PROPOSAL:
The application requests to rezone the site from R-1 to R-3 (cluster) district. This project would develop the site into a subdivision with 18 single family homes. The site currently contains two single family homes. A prior version of this application was reviewed on July 30, 2013.

ANALYSIS:
School Capacities
The schools serving this area are Hunt Valley Elementary, Irving Middle and West Springfield High schools. The chart below shows the existing school capacity, enrollment, and projected enrollment.

School	Capacity 2012 / 2017	Enrollment (9/30/12)	Projected Enrollment 2013-14	Capacity Balance 2013-14	Projected Enrollment 2017-18	Capacity Balance 2017-18
Hunt Valley ES	666 / 666	620	639	27	674	-8
Irving MS	1,222 / 1,222	1,006	940	282	953	269
West Springfield HS	2,134 / 2,134	2,285	2,242	-108	2,049	85

Capacities based on 2014-2018 Capital Improvement Program (November 2012)
Project Enrollments based on 2012-13 to 2017-18 6-Year Projections (April 2012)

The school capacity chart above shows a snapshot in time for student enrollments and school capacity balances. Student enrollment projections are done on a six year timeframe, currently through school year 2017-18 and are updated annually. At this time, if development occurs within the next five years, Hunt Valley is projected to be slightly over capacity. West Springfield and Irving are projected to have capacity balances. Beyond the six year projection horizon, enrollment projections are not available.

Capital Improvement Program Projects
The 2014-18 Capital Improvement Program (CIP) includes continued funding for renovations at West Springfield High School. The renovation, which could increase capacity, is anticipated to be completed sometime between FY 2019-23.

Development Impact

Based on the number of residential units proposed, the chart below shows the number of anticipated students by school level based on the current countywide student yield ratio.

Existing (Potential By-right)

School level	Single Family Detached ratio	Potential By-right # of units	Existing Student yield
Elementary	.273	7	2
Middle	.086	7	1
High	.177	7	1
			4 total

2011 Countywide student yield ratios (August 2012)

Proposed

School level	Single Family Detached ratio	Proposed # of units	Estimated Student yield
Elementary	.273	18	5
Middle	.086	18	2
High	.177	18	3
			10 total

2011 Countywide student yield ratios (August 2012)

RECOMMENDATIONS:

Proffer Contribution

A net of 6 new students is anticipated (3 Elementary, 1 Middle and 2 High School). Based on the approved Residential Development Criteria, a proffer contribution of $62,928 (6 x $10,488) is recommended to offset the impact that new student growth will have on surrounding schools. It is recommended that the proffer contribution be directed toward schools in Cluster VI or to schools in the West Springfield High School Pyramid at the time of site plan or building permit approval. The proffers dated September 19, 2013, should be revised to provide payment at the time of site plan approval or first building permit approval.

In addition, an "escalation" proffer is recommended. The suggested per student proffer contribution is updated on an annual basis to reflect current market conditions. The amount has decreased over the last several years because of the down turn in the economy and lower construction costs for FCPS. As a result, an escalation proffer would allow for payment of the school proffer based on either the current suggested per student proffer contribution at the time of zoning approval or the per student proffer contribution in effect at the time of development, whichever is greater. This would better offset the impact that new student yields will have on surrounding schools at the time of development. For your reference, below is an example of an escalation proffer that was included as part of an approved proffer contribution to FCPS.

> *Adjustment to Contribution Amounts. Following approval of this Application and prior to the Applicant's payment of the amount(s) set forth in this Proffer, if Fairfax County should increase the ratio of students per unit or the amount of contribution per student, the Applicant shall increase the amount of the contribution for that phase of development to reflect the then-current ratio and/or contribution. If the County should decrease the ratio or contribution amount, the Applicant shall provide the greater of the two amounts.*

The proffers dated September 19, 2013, should be revised to include the escalator recommended above.

Proffer Notification

It is also recommended that the developer proffer notification be provided to FCPS when development is likely to occur or when a site plan has been filed with the County. This will allow the school system adequate time to plan for anticipated student growth to ensure classroom availability.

LAP/gjb

Attachment: Locator Map

cc: Elizabeth Schultz, School Board Member, Springfield District
Megan McLaughlin, School Board Member, Braddock District
Ilryong Moon, Chairman, School Board Member, At-Large
Ryan McElveen, School Board Member, At-Large
Ted Velkoff, School Board Member, At-Large
Jeffrey Platenberg, Assistant Superintendent, Facilities and Transportation Services
Angela Atwater, Cluster VI, Assistant Superintendent
Mark Greenfelder, Principal, West Springfield High School
Danny Little, Principal, Irving Middle School
David Fee, Principal, Hunt Valley Elementary School

FAIRFAX COUNTY PARK AUTHORITY

M E M O R A N D U M

TO: Barbara Berlin, AICP, Director
Zoning Evaluation Division
Department of Planning and Zoning

FROM: Sandy Stallman, AICP, Manager
Park Planning Branch, PDD

DATE: January 14, 2014

SUBJECT: RZ 2013-SP-011, Van Metre Communities Park Pointe – REVISED
Tax Map Number(s): 89-3 ((1)) 39 & 42

Please note:
This memorandum replaces the prior memorandum dated July 31, 2013. This revision corrects a typographical error found in the Background section; no other changes have been made.

BACKGROUND

The Park Authority staff has reviewed the proposed Development Plan dated June 17, 2013, for the above referenced application. The Development Plan shows 18 new single family detached dwelling units on a 7.72 acre parcel to be rezoned from R-1 to R-3 Cluster with proffers. Based on an average single family detached household size of 3.10 in the Pohick Planning District, the development could add 50 new residents (18 new – 2 existing = 16 x 3.1 = 50) to the Springfield Supervisory District.

COMPREHENSIVE PLAN GUIDANCE

The County Comprehensive Plan includes both general and specific guidance regarding parks and resources. The Policy Plan describes the need to mitigate adverse impacts to park and recreation facilities caused by growth and development; it also offers a variety of ways to offset those impacts, including contributions, land dedication, development of facilities, and others (Parks and Recreation, Objective 6, p.8). Resource protection is addressed in multiple objectives, focusing on protection, preservation, and sustainability of resources (Parks and Recreation Objectives 2 and 5, p.5-7).

Pohick Planning District's Concept for Future Development lists protecting the Pohick Creek watershed and its tributaries as a primary planning objective (Area III, Pohick Planning District, Overview, Concept for Future Development, p. 3). Recommendations describe natural and heritage resources present in the Planning District and emphasize protection of resources, particularly ensuring protection of EQCs and environmentally-sensitive areas through stringent

review of development proposals (Area III, Pohick Planning District, District-Wide Recommendations, Parks and Recreation, p. 17). Language within the P2 Main Branch Community Planning Sector reiterates the presence of such resources including several subwatersheds of the Pohick Creek Watershed, the floodplain and adjacent uplands of which also have a high potential for significant heritage resources (Area III, Pohick Planning District, P2 Main Branch Community Planning Sector, Character, p. 30). Land Use recommendations continue the thread stating that further infill development in the vicinity of the Pohick Creek tributaries should provide a balance between the built and natural environments (P2 Main Branch, Land Use, p. 30).

Finally, text from the Pohick District chapter of the Great Parks, Great Communities Park Comprehensive Plan echoes recommendations in the Countywide Comprehensive Plan. Recommendations speak to the degraded quality of water resources and stream valleys due to development and associated stormwater runoff. Eliminating or limiting invasive plant species on property near parks, and identifying cultural resources prior to proposed construction activity are also included.

ANALYSIS AND RECOMMENDATIONS

Park Needs:
Using adopted service level standards, staff has identified a need for all types of parkland and recreational facilities in this area. Existing nearby parks (Pohick Stream Valley, Middle Run Stream Valley) meet only a portion of the demand for parkland generated by residential development in the Pohick Planning District. In addition to parkland, the recreational facilities in greatest need in this district include trails, basketball courts, playgrounds, and rectangle fields.

Recreational Impact of Residential Development:
With the Countywide Comprehensive Policy Plan as a guide (Appendix 9, #6 of the Land Use section, as well as Objective 6, Policy a, b and c of the Parks and Recreation section), the Park Authority requests a fair share contribution of $893 per new resident with any residential rezoning application to offset impacts to park and recreation service levels. This allows the Park Authority to build additional facilities needed as the population increases. To offset the additional impact caused by the proposed development, the applicant should contribute $44,650 to the Park Authority for recreational facility development at one or more park sites located within the service area of the subject property.

Natural Resources Impact:
The subject site is within 250 ft. of the Pohick Stream Valley Park, owned and operated by the Park Authority. An outfall coming from the proposed development's stormwater pond will flow directly into a tributary of Pohick Creek and into the park. To avoid damage to the receiving channel and the parkland downstream, the flow characteristics from the post-development outfall should approximate the current state of the property which is a pre-developed forested condition. That is to say, the post-development hydrograph should be similar in shape to the pre-development hydrograph and any planned pond renovations should be designed to achieve this objective.

In addition, all plant materials installed on the site should be non-invasive to reduce the spread of invasive species and protect the environmental health of parkland, due to the proximity of the Park Authority property.

Cultural Resources Impact:
These parcels were reviewed previously and have undergone a Phase I archaeological survey. An archaeological site was encountered (44FX3659), but it was disturbed and no further archaeological work was recommended. Therefore, there are no cultural resources issues with the proposed development and no additional archaeological work is warranted.

SUMMARY OF RECOMMENDATIONS

This section summarizes the recommendations included in the preceding analysis section. Following is a table summarizing required and recommended recreation contribution amounts:

Proposed Uses	P-District Onsite Expenditure	Requested Park Proffer Amount	Total
Single-family detached units	N/A	$44,650	$44,650
Total	**N/A**	**$44,650**	**$44,650**

In addition, the analysis identified the following major issues:

- Avoid stormwater damage to downstream parkland – the post-development hydrograph should be similar in shape to the pre-development hydrograph and any planned pond renovations should be designed to achieve this objective
- Use only non-invasive plant materials

Please note the Park Authority would like to review and comment on proffers related to park and recreation issues. We request that draft and final proffers be submitted to the assigned reviewer noted below for review and comment prior to completion of the staff report and prior to final Board of Supervisors approval.

FCPA Reviewer: Anna Bentley
DPZ Coordinator: Joe Gorney

Copy: Cindy Walsh, Director, Resource Management Division
Liz Crowell, Manager, Cultural Resource Management & Protection Section
Chron Binder
File Copy

County of Fairfax, Virginia

MEMORANDUM

DATE: 5 December 2013

TO: Joe Gorney, Senior ZED Coordinator

FROM: Linda Cornish Blank, Historic Preservation Planner LCB

SUBJECT: RZ 2013-SP-011; Van Metre Communities LLC; Rezoning from R-1 to R-3 (Cluster); 7421 Swope Lane; 7407 Gambrill Road Tax map 089-3 ((1)) 39 & 42, Heritage Resource comment

Planning Location: Fairfax County Comprehensive Plan, 2013 Edition, Area III; Pohick Planning District; Amended through 4-9-2013, Overview, p. 15, P-2 Main Branch Community Planning Sector, p. 42

Heritage Resources p. 15

"Prior to any zoning action, the Department of Planning and Zoning should be consulted as to what architectural surveys are necessary to document any on-site cultural resources. Staff from the Cultural Resource Management and Protection Section of the Park Authority should be consulted to develop a scope of work for any on-site archaeological surveys prior to any development or ground disturbing activity. Should architectural or archaeological resources be discovered that are potentially eligible for inclusion in the National Register, further survey and testing should occur to evaluate these resources as to their eligibility. If such resources are found to be eligible, mitigation measures should be developed that may include avoidance, documentation, data recovery excavation and interpretation."

Heritage Resources p. 42

"Any development or ground disturbance in this sector, both on private and public land, should be preceded by heritage resource studies, and alternatives should be explored for the avoidance, preservation or recovery of significant heritage resources that are found. In those areas where significant heritage resources have been recorded, an effort should be made to preserve them. If preservation is not feasible, then, in accordance with countywide objectives and policies as cited in the Heritage Resources section of the Policy Plan, the threatened resource should be thoroughly recorded and in the case of archaeological resources, the artifacts recovered."

Heritage Resource Comment:

Background: The subject properties have not been included in any known heritage resource study and are not listed in *The Fairfax County Inventory of Historic Sites*. The mid-20th century dwelling located on the Swope Lane parcel was altered and expanded in the 1970s. The finding from cursory field observation is that further documentation of this property is not warranted.

Cursory research and assessment of the Gambrill Road property indicates that the single family dwelling may have been constructed in the late 19th or early 20th century; it is typical of two-story farm houses built during this time period in Fairfax County. Field observation yielded information that this dwelling has been extensively altered including the removal of original

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materials. These alterations greatly affect the property's integrity. Rehabilitation would require removal of inappropriate alterations and extensive use of new materials resulting in a reconstruction with little of the historic fabric remaining.

Heritage Resources countywide objectives and policies are stipulated in the Policy Plan section of the Fairfax County Comprehensive Plan. Included are the following:

Objective 1: **Identify heritage resources representing all time periods and in all areas of the County.**

Policy a. Identify heritage resources well in advance of potential damage or destruction.

Policy b. Conduct systematic County-wide field surveys to locate and document unrecorded heritage resources and to update information on resources identified in past surveys.

Because there is no known heritage resources field survey which included these properties, they have not been documented.

Findings:

1. The Gambrill Road property merits generic photographic documentation of the dwelling's exterior and general site photos to be completed prior to any ground disturbance activity.
2. The applicant agreed to provide photographic recordation and has coordinated with heritage resource staff. The applicant is in the process of completing the documentation which includes an existing conditions map showing the location of the photographic angle of views and identification of each photograph.
3. Staff appreciates the applicant's willingness to provide requested documentation.
4. A Phase I archaeological study was completed. No additional work was recommended.

Heritage Resource recommendation:

1. The existing conditions of the Application Property at tax map Tax Map #089-3 ((1)) 42 be photo documented. The documentation would include: 1) photographic recordation for the purpose of recording and documenting the current conditions of the exterior of the dwelling, and the general context of the property along the streetscape; and 2) an existing conditions location map exhibit showing the footprint of the existing house and site conditions with the location of the photographic angle of views and identification of each photograph. The number and angle of photographic views map be coordinated with the Department of Planning and Zoning (DPZ) Historic Preservation planner prior to taking of the photographs. This recommendation is in the process of being completed.
2. All photographic recordation and dimensioned sketch plan location map be submitted to the Virginia Room of the Fairfax County Public Library and to the Fairfax County Department of Planning and Zoning (DPZ) Historic Preservation planner. The applicant is to provide written documentation to DPZ that required documentation has been submitted to the Virginia Room.
3. The Cultural Resource and Protection Branch of the Fairfax County Park Authority provide comment on the completed Phase I archaeological study and submit findings to DPZ Zoning staff.

County of Fairfax, Virginia

MEMORANDUM

DATE: January 21, 2014

TO: Barbara Berlin, Director
Zoning Evaluation Division, DPZ

FROM: Pamela G. Nee, Chief PGN
Environment and Development Review Branch, DPZ

SUBJECT: Environmental Assessment: RZ 2013-SP-011 Park Pointe

This memorandum, prepared by John Bell, includes citations from the Comprehensive Plan that provide guidance for the evaluation of the development plans revised through January 7, 2014 and proffers dated November 15, 2013. The extent to which the application conforms to the applicable guidance contained in the Comprehensive Plan is noted. Possible solutions to remedy identified issues are suggested. Other solutions may be acceptable, provided that they achieve the desired degree of mitigation and are in harmony with Plan policies.

COMPREHENSIVE PLAN CITATIONS

Fairfax County Comprehensive Plan, 2013 Edition, Policy Plan, Environment, as amended through February 12, 2013, pages 7-10 states:

"Objective 2: **Prevent and reduce pollution of surface and groundwater resources. Protect and restore the ecological integrity of streams in Fairfax County.**

Policy a. Maintain a best management practices (BMP) program for Fairfax County and ensure that new development and redevelopment complies with the County's best management practice (BMP) requirements....

Policy k. For new development and redevelopment, apply better site design and low impact development (LID) techniques such as those described below, and pursue commitments to reduce stormwater runoff volumes and peak flows, to increase groundwater recharge, and to increase preservation of undisturbed areas. In order to minimize the impacts that new development and redevelopment projects may have on the County's streams, some or all of the

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following practices should be considered where not in conflict with land use compatibility objectives:

- Minimize the amount of impervious surface created.

- Site buildings to minimize impervious cover associated with driveways and parking areas and to encourage tree preservation. . . .

- Encourage cluster development when designed to maximize protection of ecologically valuable land. . . .

- Encourage fulfillment of tree cover requirements through tree preservation instead of replanting where existing tree cover permits. Commit to tree preservation thresholds that exceed the minimum Zoning Ordinance requirements.

- Where appropriate, use protective easements in areas outside of private residential lots as a mechanism to protect wooded areas and steep slopes. . . .

Objective 3: **Protect the Potomac Estuary and the Chesapeake Bay from the avoidable impacts of land use activities in Fairfax County.**

Policy a. Ensure that new development and redevelopment complies with the County's Chesapeake Bay Preservation Ordinance, as applied to Chesapeake Bay Preservation Areas adopted by the Board of Supervisors . . . ."

Fairfax County Comprehensive Plan, 2011 Edition, Policy Plan, Environment, as amended through July 27, 2010, page 14-18:

"Objective 9: **Identify, protect and enhance an integrated network of ecologically valuable land and surface waters for present and future residents of Fairfax County.**

Policy a: Identify, protect and restore an Environmental Quality Corridor system (EQC). (See Figure 4.) Lands may be included within the EQC system if they can achieve any of the following purposes:

- Habitat Quality: The land has a desirable or scarce habitat type, or one could be readily restored, or the land hosts a species of special interest. This may include: habitat for species that have been identified by state or federal agencies as being rare, threatened or endangered; rare vegetative communities; unfragmented vegetated areas that are large enough to support interior forest dwelling species; and aquatic and wetland breeding habitats (i.e., seeps, vernal pools) that are connected to and in close proximity to other EQC areas.

- Connectivity: This segment of open space could become a part of a corridor to facilitate the movement of wildlife and/or conserve biodiversity. This may include natural corridors that are wide enough to facilitate wildlife movement and/or the transfer of genetic material between core habitat areas.

- Hydrology/Stream Buffering/Stream Protection: The land provides, or could provide, protection to one or more streams through: the provision of shade; vegetative stabilization of stream banks; moderation of sheet flow stormwater runoff velocities and volumes; trapping of pollutants from stormwater runoff and/or flood waters; flood control through temporary storage of flood waters and dissipation of stream energy; separation of potential pollution sources from streams; accommodation of stream channel evolution/migration; and protection of steeply sloping areas near streams from denudation.

- Pollution Reduction Capabilities: Preservation of this land would result in significant pollutant reductions. Water pollution, for example, may be reduced through: trapping of nutrients, sediment and/or other pollutants from runoff from adjacent areas; trapping of nutrients, sediment and/or other pollutants from flood waters; protection of highly erodible soils and/or steeply sloping areas from denudation; and/or separation of potential pollution sources from streams.

The core of the EQC system will be the County's stream valleys. Additions to the stream valleys should be selected to augment the habitats and buffers provided by the stream valleys, and to add representative elements of the landscapes that are not represented within stream valleys. The stream valley component of the EQC system shall include the following elements:

- All 100 year flood plains as defined by the Zoning Ordinance;

- All areas of 15% or greater slopes adjacent to the flood plain, or if no flood plain is present, 15% or greater slopes that begin within 50 feet of the stream channel;

- All wetlands connected to the stream valleys; and

- All the land within a corridor defined by a boundary line which is 50 feet plus 4 additional feet for each % slope measured perpendicular to the stream bank. The % slope used in the calculation will be the average slope measured within 110 feet of a stream channel or, if a flood plain is present, between the flood plain boundary and a point fifty feet up slope from the flood plain. This measurement should be taken at fifty foot intervals beginning

at the downstream boundary of any stream valley on or adjacent to a property under evaluation.

Modifications to the boundaries so delineated may be appropriate if the area designated does not benefit any of the EQC purposes as described above. In addition, some disturbances that serve a public purpose such as unavoidable public infrastructure easements and rights of way may be appropriate. Disturbances for access roads should not be supported unless there are no viable alternatives to providing access to a buildable portion of a site or adjacent parcel. The above disturbances should be minimized and occur perpendicular to the corridor's alignment, if practical, and disturbed areas should be restored to the greatest extent possible

In general, stormwater management facilities should not be provided within EQCs unless they meet one of the following conditions:

- They are consistent with recommendations of a watershed management plan that has been adopted by the Fairfax County Board of Supervisors; or

- They will:

  - Either:
    - Be more effective in protecting streams and better support goals of watershed management plans than stormwater management measures that otherwise would be provided outside of EQCs; or

    - Contribute to achieving pollutant reduction necessary to bring waters identified as impaired into compliance with state water quality standards or into compliance with a Municipal Separate Storm Sewer System (MS4) permit in a manner that would be more effective and/or less environmentally-disruptive than approaches that would be pursued outside of EQCs;

  and

  - Replace, enhance and/or be provided along with other efforts to compensate for any of the EQC purposes, as described above, that would be affected by the facilities.

When stormwater management facilities within the EQC are determined to be appropriate, encourage the construction of facilities that minimize clearing and grading, such as embankment-only ponds, or facilities that are otherwise designed to maximize pollutant removal while protecting, enhancing, and/or restoring the ecological integrity of the EQC.

The following efforts within EQCs support the EQC policy and should be encouraged:

- Stream stabilization and restoration efforts where such efforts are needed to improve the ecological conditions of degraded streams. Natural channel design methods should be applied to the greatest extent possible and native species of vegetation should be used.

- Replanting efforts in EQCs that would restore or enhance the environmental values of areas that have been subject to clearing; native species of vegetation should be applied.

- Wetland and floodplain restoration efforts.

- Removal of non-native invasive species of vegetation from EQCs to the extent that such efforts would not be in conflict with county ordinances; such efforts should be pursued in a manner that is least disruptive to the EQCs.

Other disturbances to EQCs should only be considered in extraordinary circumstances and only where mitigation/compensation measures are provided that will result in a clear and substantial net environmental benefit. In addition, there should be net benefits relating to most, if not all, of the EQC purposes listed above that are applicable to the proposed disturbances.

Preservation should be achieved through dedication to the Fairfax County Park Authority, if such dedication is in the public interest. Otherwise, EQC land should remain in private ownership in separate undeveloped lots with appropriate commitments for preservation. The use of protective easements as a means of preservation should be considered.

When preservation of EQC land is achieved through the development process it is appropriate to transfer some of the density that would otherwise have been permitted on the EQC land to the non-EQC portion of the property to provide an incentive for the preservation of the EQC and to achieve the other objectives of the Plan. The amount of density transferred should not create an effective density of development that is out of character with the density normally anticipated from the land use recommendations of the Plan. For example, town homes should not normally be built adjacent to an EQC in an area planned for two to three dwelling units per acre. Likewise, an increase in the effective density on the non EQC portion of a site should not be so intense as to threaten the viability of the habitat or pollution reduction capabilities that have been preserved on the EQC portion of the site.

Policy b. To provide an incentive for the preservation of EQCs while protecting the integrity of the EQC system, allow a transfer of some of the density from the EQC portion of developing sites to the less sensitive areas of these sites. The increase in effective density on the non-EQC portion of a site should be no more than an amount which is directly proportional to the percentage of the site that is preserved. Overall site yield will decrease as site constraints increase. Maximum density should be determined according to a simple mathematical

expression based upon the ratio of EQC land to total land. This policy is in addition to other plan policies which impact density and does not supersede other land use compatibility policies.

The retention of environmental amenities on developed and developing sites is also important. The most visible of these amenities is the County's tree cover. It is possible to design new development in a manner that preserves some of the existing vegetation in landscape plans. It is also possible to restore lost vegetation through replanting. An aggressive urban forestry program could retain and restore meaningful amounts of the County's tree cover."

The Fairfax County Comprehensive Plan Policy Plan, 2013 Edition, Environment section as amended through February 12, 2013, pages 11 and 12 states:

"**Objective 4:** **Minimize human exposure to unhealthful levels of transportation generated noise.**

Policy a: Regulate new development to ensure that people are protected from unhealthful levels of transportation noise. . .

New development should not expose people in their homes, or other noise sensitive environments, to noise in excess of DNL 45 dBA, or to noise in excess of DNL 65 dBA in the outdoor recreation areas of homes. To achieve these standards new residential development in areas impacted by highway noise between DNL 65 and 75 dBA will require mitigation. New residential development should not occur in areas with projected highway noise exposures exceeding DNL 75 dBA."

Fairfax County Comprehensive Plan, 2013 Edition, Policy Plan, Environment, as amended through February 12, 2013, page 18 states:

"**Objective 10:** **Conserve and restore tree cover on developed and developing sites. Provide tree cover on sites where it is absent prior to development.**

Policy a: Protect or restore the maximum amount of tree cover on developed and developing sites consistent with planned land use and good silvicultural practices. . . ."

Fairfax County Comprehensive Plan, 2011 Edition, Policy Plan, Environment, as amended through July 27, 2010, page 19-20 states:

"**Objective 13:** **Design and construct buildings and associated landscapes to use energy and water resources efficiently and to minimize short- and long-term negative impacts on the environment and building occupants.**

Policy a. Consistent with other Policy Plan objectives, encourage the application of energy conservation, water conservation and other

green building practices in the design and construction of new development and redevelopment projects. These practices can include, but are not limited to:

- Environmentally-sensitive siting and construction of development
- Application of low impact development practices, including minimization of impervious cover (See Policy k under Objective 2 of this section of the *Policy Plan*)
- Optimization of energy performance of structures/energy-efficient design
- Use of renewable energy resources
- Use of energy efficient appliances, heating/cooling systems, lighting and/or other products
- Application of water conservation techniques such as water efficient landscaping and innovative wastewater technologies
- Reuse of existing building materials for redevelopment projects
- Recycling/salvage of non-hazardous construction, demolition, and land clearing debris
- Use of recycled and rapidly renewable building materials
- Use of building materials and products that originate from nearby sources
- Reduction of potential indoor air quality problems through measures such as increased ventilation, indoor air testing and use of low-emitting adhesives, sealants, paints/coatings, carpeting and other building materials.

Encourage commitments to implementation of green building practices through certification under established green building rating systems (e.g., the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED®) program or other comparable programs with third party certification). Encourage commitments to the attainment of the ENERGY STAR® rating where applicable and to ENERGY STAR qualification for homes. Encourage the inclusion of professionals with green building accreditation on development teams. Encourage commitments to the provision of information to owners of buildings with green building/energy efficiency measures that identifies both the benefits of these measures and their associated maintenance needs.

. . .

Policy c. Ensure that zoning proposals for residential development will qualify for the ENERGY STAR Qualified Homes designation, where such zoning proposals seek development at the high end of the Plan density range and where broader commitments to green building practices are not being applied."

ENVIRONMENTAL ANALYSIS

This section characterizes the environmental concerns raised by an evaluation of this site and the proposed development. Solutions are suggested to remedy the concerns that have been identified by staff. There may be other acceptable solutions. Particular emphasis is given to opportunities provided by this application to conserve the county's remaining natural amenities.

Resource Protection Area/Environmental Quality Corridor

The subject property includes an area of Resource Protection Area (RPA) and Environmental Quality Corridor (EQC) which is part of an unnamed tributary of Pohick Creek. There is an existing pond located within the stream channel that is mostly within the boundaries of the subject property. It is staff's understanding that there may be drainage complaints and issues of poor stream quality downstream of the subject property. It should also be noted that there is an existing WMATA park-and-ride lot, service station and a portion of Hooes Road located upstream of this existing pond. None of these existing uses have any existing water quality or quantity controls. As a result, a significant amount of upstream runoff is currently captured by this pond. It should also be noted that, due to this upstream runoff and soil conditions in the area, there is a significant amount of sediment in the pond. The applicant proposes to dredge the existing pond and regrade the area to create a new stormwater management pond which will meet current PFM standards.

Staff had initially raised a number of concerns regarding the proposal to create a new stormwater management pond in the location of the existing pond within the stream channel that is mapped as RPA and EQC. Typically such facilities are only permitted within this area when they are used to meet regional detention purposes. The location of the pond in this area will also require a Chesapeake Bay Ordinance exception. The applicant was asked to provide information regarding other possible alternatives and the potential implications, both onsite and offsite, for these possible alternatives.

The focus of these alternatives was the development of a new pond to serve the proposed development within the EQC area. Removal of the existing pond with stream restoration was considered as part of that concept. While this approach could satisfy the stormwater requirements for the subject property, it ultimately did not address any of the offsite issues. Staff recognized that this approach could lead to the continuation and/or worsening of the conditions within this portion of Pohick Creek. DPWES staff have completed their review of this request and have also agreed that the proposed pond within the RPA is an acceptable approach under the existing circumstances. The applicant has also agreed to provide some restoration areas within the RPA consistent with the guidance of the Chesapeake Bay Preservation Ordinance. Staff feels that this issue has been fully addressed.

Transportation Generated Noise

The subject property currently has frontage on a portion of Gambrill Road. Lots 1, 14, 15 and 16 are proposed with yard areas abutting this right-of-way. Staff feels that there is the potential for

noise impact in excess of 65 dBA DNL in this area. While the applicant has proposed a 6-foot tall privacy fence, this may not adequately shield these lots from the noise impacts of the adjacent roadway. While it is not anticipated that the noise impacts would be so severe as to result in a design change for the proposed development, staff does feel that a transportation noise study should be required at the time of subdivision plan submission for review and comment from staff within DPZ.

The study may conclude that the privacy fence should be a noise barrier, which is completely solid with no breaks or gaps which might permit the transmission of noise levels exceeding 65 dBA DNL into the privacy yards of the proposed dwellings. It may also conclude that the structures include building materials, such as walls, doors and windows, be designed to reduce interior noise levels to no more than 45 dBA. Staff feels that the current proffers do not address this concern and should be modified accordingly.

Green Buildings

This application proposes 18 dwellings at a density of 2.85 dwelling units per acre which is at the high end of the 2-3 du/ac Plan density range. To be in conformance with the green building Comprehensive Plan policy, the applicant should commit to the attainment of a residential green building certification program such as Energy Star Qualified Homes, Earthcraft House or 2012 National Green Building Standard (formerly known as NAHB National Green Building Certification) to be demonstrated prior to the issuance of the residential use permit for each dwelling. The applicant has modified the proposed proffers to reflect options for EarthCraft, Energy Star or National Association of Home Builders (NAHB) using the Energy Star Qualified Homes path for energy performance. Staff finds this commitment to be consistent with the green building Comprehensive Plan policy.

PGN:JRB

County of Fairfax, Virginia

To protect and enrich the quality of life for the people, neighborhoods and diverse communities of Fairfax County

February 5, 2014

DEPARTMENT OF PUBLIC WORKS & ENVIRONMENTAL SERVICES

ENVIRONMENTAL & SITE REVIEW DIVISION

STAFF REPORT

RESOURCE PROTECTION AREA ENCROACHMENT EXCEPTION #5072-WRPA-001-1 & WATER QUALITY IMPACT ASSESSMENT #5072-WQ-001-1

In conjunction with Rezoning Application #RZ 2013-SP-011

SPRINGFIELD DISTRICT

APPLICANT	:	Wetland Studies and Solutions, Inc.
PROPERTY OWNER	:	Swope Lawanda & Hall Helen M.
PROJECT LOCATION	:	7421 Swope Lane & 7407 Gambrill Road
TAX MAP REFERENCE	:	0893 01 0039 and 0893 01 0042
OFFSITE PROPERTY INVOLVED	:	089-3-25A (Owned by Wills and Van Metre Inc.)
APPLICATION FILED	:	November 5, 2013
APPLICATION ACCEPTED	:	November 5, 2013
WATERSHED	:	Pohick Creek
RPA EXCEPTION REQUEST	:	General Resource Protection Area (RPA) Encroachment Request, Chesapeake Bay Preservation Ordinance (CBPO) Section 118-6-9

Department of Public Works and Environmental Services
Land Development Services
12055 Government Center Parkway, Suite 444
Fairfax, Virginia 22035-5503
Phone 703-324-1720 • TTY 711 • FAX 703-324-8359

Daniel C. Lucey, P.E.
ENCROACHMENT EXCEPTION #5072-WRPA-001-1 &
WATER QUALITY IMPACT ASSESSMENT #5072-WQ-001-1

PROPOSAL:	Exception to allow encroachment into the 2005 RPA (Effective 7/12/2005) and 2003 RPA (Effective 11/18/2003) for reconstruction of existing pond, removal/re-installation of riser and associated structures and construction of a maintenance access.
SITE AREA OF PROPOSED DEVELOPMENT:	7.72 acres
ENCROACHMENT AREA REQUESTED:	0.70 acres
PUBLIC HEARING:	General RPA Encroachment Requests under CBPO Section 118-6-9 associated with a Rezoning Application (RZ) require approval by the Board of Supervisors through a public hearing held conjunction with the public hearing for the RZ per procedures of CBPO Section 118-6-3(d).
DESCRIPTION:	The applicant proposes dredging sediment from the existing farm pond, grading associated with reconstruction of an embankment for the proposed SWM/BMP, removal/re-installation of riser and associated structures and construction of a maintenance access within the limits of 2005 RPA.
BACKGROUND:	The site is located on the east side of Gambrill Road, approximately 1,000 feet south of intersection of Fairfax County Parkway (Route 286) and Gambrill Road in Fairfax County. The subject property is composed of two parcels (39 and 42) located on Tax Map 89-3 and is approximately 7.72 acres. Parcel 39 contains a 1300 square foot single family house that was constructed in 1900. Parcel 42 contains a 1664 square foot single family house that was constructed in 1957. An addition to the later house was done in 1990. All existing structures are to be removed for the proposed project. Total area of existing impervious surfaces to be removed is 0.55 acres. The proposed site includes the construction of R-3 Cluster residential development, including 18 residences comprised of single-family residences.

A wet pond implemented to provide quality and quantity, will be constructed on the southeastern corner partially onsite and partially offsite properties owned by Van Meter Companies(TM#089-3-25-A).

The development proposes encroachment within the RPA associated with a perennial unnamed tributary to Pohick Creek in the eastern side of the site. The proposed activities within the RPA include dredging sediment from the existing pond, grading associated with reconstruction of an embankment for the proposed wet pond, removal/re-installation of riser structure and construction of a maintenance access for the reconstructed dam within the limits of 2005 RPA.

A Resource Protection Area Delineation Study, #1981-RPA-02-1 was approved on 7/10/2013 and indicates that part of the portion of the parcel on east is located within the RPA.

DOCUMENTS AND CORRESPONDENCE:

In addition to Rezoning Application #RZ 2013-SP-011, following information is part of this application:

1. RPA Encroachment Exception Application signed dated November 4, 2013
2. Water Quality Impact Assessment and RPA Encroachment Exception Justification Statement including photos and a soils map dated November 4, 2013.

ANALYSIS:

In order to meet water quantity and quality requirement of the code of Fairfax County for the proposed residential development, the applicant has provided five (5) different scenarios and their relative comparison to minimize environmental impacts. The alternatives and benefits are summarized in the table provided below.

No.	Description of Alternatives	Onsite Treated (Ac)	Offsite Treated (Ac)	Phosphorous Removal %
1.	Reconstruction of the existing on-site dam/pond located in the RPA	7.72	25.3	42
2.	Construction of a new on-site pond outside of the RPA, within the EQC	4.8	2.2	40
3.	Construction of a new on-site pond outside of the RPA and EQC	2.7	0.00	8
4.	Utilization of an Off-Site Regional SWM/BMP Facility	N/A (No Regional Pond exists)		
5.	Upgrading/Enhancing an Existing Off-Site Non-Regional SWM/BMP Facility	N/A (Does not capture)		

Among all the alternatives listed above, the applicant has preferred alternative #1 that will provide the highest amount of water quality and water quantity benefits. In addition, this will result in much needed safety improvements to an existing pond and dam which are currently located in the RPA. The existing pond is full of sediment with current water depths averaging less than three feet which severely limits the ability of this pond to provide any sort of water quality benefits. The dam embankment is overgrown with dense vegetation which can compromise its structural integrity. Additionally, the pond has a clogged riser; when combined with the shallow water depth this causes frequent overtopping of the dam during storm events which leads to erosion of the dam face and ultimately failure of the dam

resulting in the uncontrolled release of sediment as well as downstream flooding.

According to the application, in order to improve the safety of the existing dam and achieve the on-site and off-site removal of nonpoint source pollution this alternative will involve encroachment within 0.70 acre of the RPA to replace the existing pond and bring the dam up to current safety standards. Of the total 0.70 acre RPA disturbance, 0.35 acre is occupied by the existing pond. The proposed vegetation loss resulting from reconstruction of the existing pond within the RPA will be limited to 0.30 acre. For dam and pond maintenance purposes an access road will be constructed resulting in the placement of 0.08 acre of impervious area within the RPA. However there are multiple existing structures and impervious surfaces totaling 0.08 acres within the RPA all of which will be removed with the underlying areas to be reforested. In addition there is approximately 0.08 acre of non-forested area located within the RPA which will also be reforested. Therefore, in addition to the water quality benefits of this alternative, when construction is complete the amount of impervious area in the RPA will decrease and the amount of forested area within the RPA will increase by 0.19 acre. By reconstructing the existing dam and pond, wetland impacts will also be minimized. In addition to the temporary impacts proposed to the pond during construction, this option requires impact to 228 linear feet of stream channel and 0.02 acre of forested wetlands.

There are no regulated floodplains within the limits of the development site as the total drainage area is less than 70 acres.
The preferred alternative will provide an all-weather surface maintenance access to the dam embankment which is a PFM requirement. Proposed impervious cover associated with the construction of a maintenance access road for the reconstructed SWM/BMP facility within the RPA is 3,595 square feet of area. Located elsewhere within the RPA 3,603 sf of existing impervious area is to be removed. Hence there

will be a net reduction of 8 square feet of impervious area within RPA.

REQUIRED FINDINGS: General RPA Encroachment Exceptions may be granted only upon the findings listed in CBPO Section 118-6-6 and the additional finding in CBPO Section 118-6-9. It is the opinion of County staff that the required findings, as discussed below (118-6-6 (a) through (f) of CBPO), have been satisfied with this application.

a) *The exception to the criteria is the minimum necessary to afford relief.*

Five alternatives were assessed in the RPAE to assist in determining that the proposed project plan represents the minimum impact to the RPA necessary to afford relief. The proposed plan, which requires restoring an existing pond in the RPA to current design standards, is the minimum necessary to afford relief because:

1) If the land is developed "By-Right" and thus the pond left "as-is", the clogged outlet structure and woody vegetation on the embankment will eventually cause a failure – leading to high sediment and nutrient loadings into downstream waters.
2) Moving the pond out of the RPA eliminates water quality treatment of 25.3 acres of offsite land being treated by the proposed pond restoration.
3) This application will create an HOA that will maintain and operate a SWM/BMP pond that is currently not maintained by anyone.
4) A By-Right development option could abandon the pond and build a new pond outside the RPA in the EQC (proposed to be preserved in this plan) – meeting all SWP/BMP requirements – and thus disturb more stream valley system land area than the proposal alternative and allow the existing pond to fail over time.

Thus, the proposed project is the minimum necessary to afford relief and results in the maximum environmental benefits relative to all other development alternatives.

b) *Granting the exception will not confer upon the applicant any special privileges that are denied by this part other property owners who are subject to its provisions and who are similarly situated.*

The Board has granted an exception to a property owner with a very similar situation. For Arrowbrook Center (Centreville Road and Coppermine Road), an approval was granted to rebuild and expand an existing pond in the RPA to provide SWM/BMP for the project and re-

grade several acres of major floodplain to offset the floodplain elevation increase from the pond embankment. (RPAE #1504-WRPA-001-1, SE 2002-HM-046, RZ/FDP 202-HM-043, PCA 79-C-037-5).

Since this situation is virtually identical to this Park Pointe request, except that it also had major floodplain impacts, approval of this request does not confer any special privileges that are denied to other property owners who are similarly situated.

c) *The exception is in harmony with the purpose and intent of the CBPO and is not of substantial detriment to water quality.*

The reconstructed wet pond will provide SWM/BMP treatment for the entire 7.72 acre project reducing nonpoint source pollutants by 50.5% and will provide SWM/BMP treatment for the entire 25.3 acre offsite area reducing nonpoint source pollutants by 42% through the removal of 8.0 pounds/year of phosphorous. The pond in current situation is in abandoned condition without any maintenance. The existing riser of the pond is filled with mud and inoperational. The pond itself is filled with mud brought by upstream development of road by VDOT. If the pond is left in it's as is condition it may cause pollution and water quality degradation of Pohick Creek if the dam fails in a high storm event.

d) *The exception request is not based upon conditions or circumstances that are self-created or self-imposed.*

The exception request addresses a pre-existing dam hazard problem, which is not self-created or self-imposed. The developer proposes to correct this existing problem. If the development occurred "by-right" the existing dam and outlet structure would continue to deteriorate and eventually fail – sending increased sediment and nutrient loadings downstream – the opposite of what is desired under our Chesapeake Bay TMDL.

e) *Reasonable and appropriate conditions are imposed, as warranted, that will prevent the allowed activity from causing a degradation of water quality.*

The proposed Development Conditions are included in Attachment A and specify water quality related improvements including, but not limited to, the proposed wet pond to treat entire 25.3 acre offsite area reducing nonpoint source pollutants by 42% through the removal of 8.0 pounds/year of phosphorous.

f) *General RPA Encroachment Exception requests pursuant to CBPO 118-6-9 are subject to the additional finding that the water quality benefits resulting from the proposed facility or improvement exceed the associated water quality detriments.*

The applicant proposes to reduce the existing impervious area within the limits of RPA. The application also proposes to stabilize, and reseed the disturbed area within the RPA. Furthermore, the applicant intends to establish 0.55 acre buffer area by planting 55 overstory trees, 110 under story trees, and 599 shrubs and groundcovers, which improves water quality. Details of the planting have been provided in the application.

STAFF RECOMMENDATION: Staff recommends approval of RPA Exception (#5072-WRPA-001-1) and Water Quality Impact Assessment (#5072-WQ-001-1), and recommends that the approval be subject to the Development Conditions listed in Appendix A.

It should be noted that it is not the intent of staff to recommend that the Board, in adopting any conditions, relieve the applicant from compliance with the provisions of any other applicable ordinances, regulations, or adopted standards.

It should be further noted that the content of this report reflects the analysis and recommendations of the staff; it does not reflect the position of the Board of Supervisors. For further information, contact the Site Development and Inspections Division, Office of Land Development Services, Department of Public Works and Environmental Services, 12055 Govern-ment Center Parkway, Suite 535, Fairfax, Virginia 22035-5505, 703-324-1720.

Appendix A

February 5, 2014

PROPOSED DEVELOPMENT CONDITIONS

5072-WRPA-001-1 and 5072-WQ-001-1

If it is the intent of the Board of Supervisors to approve Resource Protection Area (RPA) Encroachment Exception #5072-WRPA-001-1and Water Quality Impact Assessment #5072-WQ-001-1 for the property located at Tax Map #0893 01 0039 and 42 to allow encroachment in the RPA pursuant to Section 118-6-9 of the Fairfax County Chesapeake Bay Preservation Ordinance (CBPO), staff recommends the following development conditions:

1. This RPA Encroachment Exception is granted for and runs with the land indicated in this application and is not transferable to other land.

2. This RPA Encroachment Exception is granted only for the purposes, structures or uses indicated on the plat approved with the application, as qualified by these development conditions.

3. Any plan submitted pursuant to this RPA Exception shall be in substantial conformance with the approved plat entitled *Park pointe RPAE Plat* prepared by Wetland Studies and Solutions, Inc., dated November 13, 2013.

4. In order that the land disturbed within the RPA can be considered to be the minimum necessary to afford relief for the proposed construction, indigenous vegetation shall be preserved to the maximum extent possible, the limits of clearing and grading must be clearly shown on any development plan, and adequate access and areas for stockpiles must be included. Any development plan will be subject to approval by the Department of Public Works and Environmental Services (DPWES). The limits of clearing and grading must be strictly observed and enforced. Any encroachment into, and/or disturbance of, the RPA not shown on the approved plan will be considered a violation of the CBPO and is subject to the penalties of CBPO Article 9.

5. In order that the project is in harmony with the purpose and intent of the CBPO, does not have a substantial detriment to water quality, and meets the additional performance criteria for RPAs, vegetated buffer area(s) shall be established in the disturbed areas

within the RPA on the property and shall be of a total area of at least 23,958 square feet (0.55 acre). 17 additional trees (2" caliber or greater) that are not counted towards tree canopy or RPA reforestation requirements will be planted within outside of RPA. The size, species, density and locations shall be consistent with the planting requirements of CBPO Section 118-3-3(f), or a vegetation plan that is equally effective in retarding runoff, preventing erosion, and filtering non-point source pollution from runoff, as determined by the Department of Public Works and Environmental Services (DPWES). The vegetation shall be randomly placed to achieve a relatively even spacing throughout the buffer. Notwithstanding any statements on the Plat and in the Water Quality Impact Assessment (WQIA), the size, species, density, and locations of the trees, shrubs, and groundcover will be subject to approval of the Director of the DPWES. In the absence of sufficient area required for the vegetative buffer within the RPA, the applicant may choose to place some buffer outside the RPA.

6. In order that the proposed construction activity does not degrade water quality, adequate erosion and sediment control measures, including, but not limited to, a super-silt fence shall be employed during construction within the RPA, and shall remain in place, and be properly maintained, for the duration of the land disturbing activity within the RPA until such time that the disturbed area is completely stabilized.

7. Detailed hydrologic and hydraulic computations should be included with subdivision plan in support of the proposed SWM/BMP facility that will provide SWM/BMP treatment for the entire 7.72 acre project reducing nonpoint source pollutants by 50.5% and will provide SWM/BMP treatment for the entire 25.3 acre offsite area reducing nonpoint source pollutants by 42%. Proposed wet pond will have a forebay to trap silt and sediment and improve pollutant removal.

This approval, contingent on the above noted conditions, does not relieve the applicant from compliance with the provisions of any applicable Federal, State, or County ordinances, regulations, or adopted standards. The applicant shall be responsible for obtaining the approval of any required plans and permits through established procedures, and this RPA Exception shall not be valid until this has been accomplished.

Park Pointe

Fairfax County, Virginia

WSSI #22180.03

Request for Section 118-6-9 Exception, and Approval of Water Quality Impact Assessment (WQIA)

November 4, 2013

Prepared by:

Wetland Studies and Solutions, Inc.®
5300 Wellington Branch Drive, Suite 100
Gainesville, Virginia 20155
Tel: 703-679-5600 Email: contactus@wetlandstudies.com
www.wetlandstudies.com

Park Pointe
Fairfax County, Virginia

RPAE Request and WQIA

November 4, 2013
WSSI #22180.03

INDEX TO ATTACHMENTS

1. *RPAE and WQIA Narrative Information:*
2. *Article 3: Land Use and Performance Criteria*
3. *Article 6: Required Findings for Exceptions*
   - A. *Pond Alternative 1*
   - B. *Pond Alternative 2*
   - C. *Pond Alternative 3*
   - D. *SWM/BMP Facility Alternatives Analysis*
4. *Water Quality Impact Assessment*
5. *Vicinity Map*
6. *Photos of Existing Site Conditions*
7. *Existing Conditions Map*
8. *Proposed Conditions Map/RPAE Plat*
9. *Soils Map*
10. *Adjacent Property Owners*

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5300 Wellington Branch Drive • Suite 100 • Gainesville, VA 20155 • Phone 703.679.5600 • Fax 703.679.5601
www.wetlandstudies.com

Exhibit 1

November 4, 2013

VIA Hand Delivery

Mr. James Patteson, P.E.
Director
Department of Public Works and Environmental Services
12055 Government Center Parkway, Suite 444
Fairfax, Virginia 22035-5504

Re: Section 118-6-9 Exception Request and Water Quality Impact Assessment
Park Pointe (RZ 2013-SP-011)
Tax Map: 0893 01 0042 & 0893 01 0039
Fairfax County, Virginia
WSSI #22180.03

Dear Mr. Patteson:

Wetland Studies and Solutions, Inc. (WSSI), on behalf of Van Metre Communities, L.L.C., (hereafter referred to as the "Applicant"), is requesting authorization per the Fairfax County Chesapeake Bay Preservation Ordinance ("Ordinance") for encroachments into the Resource Protection Areas (RPAs) and Resource Management Areas (RMAs) within the Park Pointe project site. The proposed project must comply with the following articles stated in the Ordinance to demonstrate that the project does not conflict with the intent and purpose of the Ordinance as described in Article 118-1-5. To process this request WSSI has provided the following information:

I. As described in Article 118-3-2 of the Ordinance, development of land in the Chesapeake Bay Preservation Areas must comply with the Land Use and Development Performance Criteria contained in Article 3. Therefore, we are requesting confirmation that the proposed encroachment, associated with the removal and reconstruction of an existing dam embankment and pond located within the RPA is in compliance Article 3 of the Ordinance. Compliance criteria are provided in Exhibit 2.

II. For grading associated with a proposed stormwater detention facility embankment, located within the RPA we are requesting that the activities be granted an exception per Article 6 of the Ordinance. Additionally, we request confirmation that the proposed project is in compliance with the "Required Findings" as described in Article 118-6-6(a-f). Compliance criteria are provided in Exhibit 3.

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dlucey@wetlandstudies.com • www.wetlandstudies.com

III. We request approval of the Water Quality Impact Assessment (WQIA) in support of the requested Exception within the RPA proposed by this project. Compliance criteria are provided in Exhibit 4.

The site is located on the east side of Gambrill Road, approximately 1,000 feet south of the intersection of Fairfax County Parkway (Route 286) and Gambrill Road in Fairfax County, Virginia. Exhibit 5 is a vicinity map that depicts the approximate boundaries of the site and its general location. The proposed project site contains existing structures and impervious road surfaces associated with an existing residence as shown within the Photos of Existing Site Conditions provided in Exhibit 6. A map depicting the existing site conditions is provided in Exhibit 7. This exhibit also depicts the limit of the RPA based upon the approved RPA Plan for the project (prepared by WSSI, County Plan #1981-RPA-002-1).

As shown in the photos provided in Exhibit 6, the existing pond located in the RPA is in relatively poor condition. It is full of sediment with water depths averaging less than three feet which severely limits the ability of this pond to provide any sort of water quality benefits. The dam embankment is overgrown with dense vegetation which can compromise its structural integrity. Additionally, the pond has a clogged riser; when combined with the shallow water depths, causes frequent overtopping of the dam during storm events which leads to erosion of the dam face and ultimately failure of the dam resulting in the uncontrolled release of sediment as well as downstream flooding.

By rebuilding the pond and dam structure, erosion, excessive sediment deposition and pollution downstream can be greatly reduced. Therefore, the proposed activities within the RPA will result in a significant improvement within the RPA. As described further in Exhibit 3, a total of five (5) alternatives were evaluated in order to meet the SWM/BMP pollutant removal requirements for this project. Alternative 1, which is the preferred alternative, will provide SWM/BMP treatment for the entire 7.72 acre project reducing nonpoint source pollutants[1] by 50.5% (40% reduction is required) when compared to the proposed project without BMPs. Additionally, due to its location in the watershed, the reconstructed pond will provide SWM/BMP treatment for 25.3 acres of off-site area and will reduce nonpoint source pollutants by 42% through the removal of 8.0 pounds/year of phosphorous, thereby providing a regional net environmental benefit. In addition to the water quality benefits of this alternative, when construction is complete the amount of impervious area within the RPA will decrease and the amount of forested area within the RPA will increase. Details on the enhancement within the RPA and reforestation areas are provided in Exhibit 8.

In accordance with the requirements of Section 118-6-5(e), a map identifying the classification of soil types is provided within Exhibit 9. A map and list identifying the adjacent property owners in accordance with Section 118-6-3(c) is provided within Exhibit 10.

In conclusion, we request that this RPAE and WQIA be approved based on the arguments provided herein which outline the public safety and water quality benefits provided by this

[1] Pollutant removal figures were calculated by Paciulli Simmons & Associates, Inc. utilizing the *Runoff Reduction Method*.

project. In addition, the following information demonstrates that this project will enhance the currently degraded RPA, reduce pollutant loads and runoff volumes, as well as comply with all applicable SWM/BMP requirements. Thank you for your consideration and please feel free to contact me at (703) 679-5655 or by email at ktomlinson@wetlandstudies.com or Dan Lucey at (703) 679-5667 or by email at dlucey@wetlandstudies.com.

Sincerely,

WETLAND STUDIES AND SOLUTIONS, INC.

Kate H. Tomlinson
Design Engineer

Daniel C. Lucey, P.E., LEED®AP
Vice President – Regulatory

cc: Joe Gorney, AICP, LEEDAP, Fairfax County DPZ (w/enc.)
Durga Kharel, Fairfax County DPWES (w/enc.)
Doug Wagner, P.E., Van Metre Communities, L.L.C. (w/enc.)
Ann Germain, P.E., Paciulli Simmons & Associaes, Inc. (w/enc.)
Sara Mariska, Esq., WCLEW (w/enc.)

RPAE Enclosures:

Pursuant to the Submission Requirements for Exception Requests (Section 118-6-5) please find enclosed:

- Four (4) copies of the application form;
- Four (4) copies of a Water Quality Impact Assessment;
- Fourteen (14) copies of a plat which meets the submission requirements of Zoning Ordinance Section 9-011, Paragraph 2;
- Photographs of the property showing existing structures, terrain, and vegetation;
- Four (4) copies of a map identifying classification of soil types, at a scale of one inch equals five hundred feet (1”=500’), covering an area at least 500 feet beyond the perimeter of the proposed development;
- A statement of justification which addresses how the proposed development complies with the factors set forth in Sections 118-6-6(a) through (f) – provided within the body of this RPAE.

Exhibit 2

Article 3: Land Use and Development Performance Criteria
Compliance with General Performance Criteria (Section 118-3-2)

Each of the *General Performance Criteria* contained in the Ordinance are stated below, along with the required justification that the project meets or exceeds the criteria.

(a) No more land shall be disturbed than is necessary to provide for the proposed use, development, or redevelopment.

Comply: No more land will be disturbed than is necessary to provide for the proposed development of the site. The existing pond located in the RPA is full of sediment with current water depths averaging less than three feet which severely limits the ability of this pond to provide any sort of water quality benefits. The dam embankment is overgrown with dense vegetation which can compromise its structural integrity. Additionally, the pond has a clogged riser; when combined with the shallow water depth this causes frequent overtopping of the dam during storm events which leads to erosion of the dam face and ultimately failure of the dam resulting in the uncontrolled release of sediment as well as downstream flooding. Therefore, at a minimum, an encroachment into the RPA is necessary in order to rebuild the dam and dredge sediment from the pond. In order to improve the safety of the existing dam and achieve the on-site and off-site removal of nonpoint source pollution this alternative will involve encroachment within 0.70 acre of the RPA to replace the existing pond and bring the dam up to current safety standards. Of the total 0.70 acre RPA disturbance, 0.35 acre is occupied by the existing pond, an additional 0.05 acre is currently not forested and approximately 0.10 acre is occupied by vegetation that is growing on the existing dam embankment that needs to be removed. The proposed pond will decrease in size to 0.31 acre and will be shifted slightly from its current location to an area that currently is not forested. This non-forested area to be turned into the proposed pond is approximately 0.05 acres. By taking advantage of this cleared area the proposed vegetation loss resulting from reconstruction of the existing pond within the RPA will be limited to 0.30 acre[1]. The proposed development will reduce the amount of existing impervious surfaces within the RPA through removal of the existing home and driveway located within the RPA, as depicted in Exhibit 8. The proposed disturbance within the RPA to reconstruct the dam will provide valuable water quality benefits through the reduction of non-point source pollutants into downstream waters by not only providing SWM and BMP benefits for the proposed 7.72 acre project but additionally for 25.3 acres of offsite area.

(b) Indigenous vegetation shall be preserved to the maximum extent practicable consistent with the use, development, or redevelopment proposed.

Comply: The existing condition of the RPA, as shown in Exhibit 7 includes a silted in pond, a dam embankment that is covered in vegetation, a 0.05 acre non-forested passive recreation area, as well as 0.08 acre of impervious surfaces associated with

[1] 0.70 acre total disturbance – 0.35 acre existing pond – 0.05 acre existing non-forested area = 0.30 acre.

the existing house and driveway. In order to mitigate encroachment into the RPA, the existing areas of imperviousness within the RPA will be removed and reforested. Additionally, 0.33 acre of temporarily disturbed area within the RPA will be reforested and 0.08 acre of non-forested area in the RPA will be reforested.

(c) Where the best management practices utilized require regular or periodic maintenance in order to continue their functions, such maintenance shall be ensured through a maintenance agreement with the owner or through some other mechanism or agreement that achieves and equivalent objective.

Comply: Best management practices/stormwater detention facilities will be regularly maintained by the Home Owners Association (HOA) to ensure their continued success of controlling excess runoff and nonpoint source pollutants from entering downstream receiving waters.

(d) Impervious cover shall be minimized consistent with the use, development, or redevelopment proposed.

Comply: There will be a net reduction of 8 sf of impervious area within the RPA. The only impervious cover proposed within the RPA is 3,595 sf (0.08 acre) of area associated with the construction of a maintenance access road for the reconstructed dam. Providing an all-weather surface maintenance access to the dam embankment is a PFM requirement. Located elsewhere within the RPA 3,603 sf (0.08 acre) of existing impervious area is to be removed per the proposed development plans as depicted in Exhibit 8. The proposed development will reduce nonpoint source pollutants by over 40% when compared to the proposed project without BMPs, as required by the Ordinance for development projects as depicted in Exhibit 3A. Additionally, the proposed SWM/BMP facility will provide treatment for 25.3 acres of offsite area, 19.2 acres of which does not currently have any SWM/BMP controls.

(e) Any land disturbing activity that exceeds an area of 2,500 square feet shall comply with the requirements of Chapter 104 of the Fairfax County Code. The construction of single family dwellings, septic tanks, and drainfields shall not be exempt from this requirement.

Comply: The proposed land disturbing activity will meet the requirements of Chapter 104 of the Fairfax County Code.

(f) For any development or redevelopment, stormwater runoff shall be controlled by the use of best management practices (BMPs).

Comply: As required by the Ordinance, development projects must reduce the total phosphorus load by at least 40% when compared with phosphorous loads projected for the development without BMP's. Detailed calculations regarding the water quality benefits of the proposed BMP measures are provided in Exhibit 3A. These calculations demonstrate that the total on-site phosphorous load will be reduced by 50.5%. Additionally, the proposed SWM/BMP facility will provide treatment for

25.3 acres of offsite area and will reduce nonpoint source pollutants by 42% through the removal of 8.0 pounds/year of phosphorous.

(g) *The Director shall require certification on all plans of development that all wetlands permits required by law will be obtained prior to commencement of land disturbing activities in any area subject to the plan of development review. No land disturbing activity on the land subject to the plan of development shall commence until all such permits have been obtained by the application and evidence of such permits has been provided to the Director.*

Comply: The Waters of the US (WOUS) and jurisdictional wetlands were delineated and survey-located by WSSI as described in the report "Waters of the U.S. (Including Wetlands) Delineation and Resource Protection Area (RPA) Evaluation, Swope Hall Properties (±8 acres)," dated March 18, 2013. The Corps of Engineers (COE) issued a jurisdictional determination (JD) for this project on May 6, 2013 verifying the delineated boundaries of these WOUS (JD#NOA-2013-00881).

Based on the limits of disturbance proposed with the Generalized Development Plan prepared by Paciulli Simmons & Associates, Inc. dated September 11, 2013 approximately 0.02 acre of palustrine forested wetlands, 0.35 acre of palustrine open water, 156 linear feet of intermittent stream channel and 72 linear feet of perennial stream channel will be impacted by the proposed pond construction. In accordance with 118-5-2 (b) (3), a Virginia Water Protection (VWP) Individual Permit from the Virginia Department of Environmental Quality and a 12-SPGP-01 permit from the COE authorizing impacts to jurisdictional WOUS will be obtained prior to the commencement of construction.

(h) *All on-site sewage disposal systems requiring a Virginia Pollutant Discharge Elimination System (VPDES) permit shall be subject to the restrictions imposed by the State Water Control Board or the Virginia Department of Health.*

Not applicable: There are no on-site sewage disposal systems related to the disturbances for the proposed project.

(i) *Land upon which agricultural activities are being conducted, including but not limited to crop production, pasture, and dairy and feedlot operations, or lands otherwise defined as agricultural land by the local government, shall have a soil and water quality conservation assessment conducted that evaluates the effectiveness of existing practices pertaining to soil erosion and sediment control, nutrient management, and management of pesticides, and where necessary, results in a plan that outlines additional practices needed to ensure that water quality protection is being accomplished consistent with the Chesapeake Bay Preservation Act and this chapter.*

Not applicable: There are no agricultural activities associated with this project.

Compliance with Additional Performance Criteria (Section 118-3-3)

Each of the *Additional Performance Criteria* contained in the Ordinance are stated below, along with the required justification that the project meets or exceeds the criteria.

(a) Water Quality Impact Assessment.

Comply: The required WQIA (as described in Section 118-4-1 of the Ordinance) is provided in Exhibit 4.

(b) Allowable Development requirements.

Comply: With the exception of grading for reconstruction of the existing dam embankment, the installation of a sanitary sewer line (Exempt per Section 118-5-2.(b) of the Ordinance) and construction of a passive recreation trail (Exempt per Section 118-5-3.(a) of the Ordinance) no site construction will be conducted within the RPA. As described above, the proposed dam reconstruction and SWM/BMP facility construction will provide valuable water quality benefits for this project as well as 25.3 acres of off-site area.

(c) Redevelopment, outside of IDAs, is allowed within RPAs only if there is no increase in the amount of impervious area within the RPA and no further encroachment within the RPA and shall conform to the criteria set forth in this Chapter.

Not Applicable: The proposed activities do not meet the redevelopment criteria described within the Ordinance.

(d) Buffer area requirements.

Comply: The existing dam embankment located in the RPA is covered with vegetation which must be removed in order to create a stable dam. Given the amount of sediment located within the existing pond, in its current condition the pond does not provide any significant water quality benefit. Additionally, the lack of freeboard in the dam creates an overtopping hazard that must also be addressed. By contrast, approval of this project will correct these deficiencies and result in a much improved RPA buffer and, thus, better protection for downstream receiving waters. The proposed project will also reduce the amount of impervious surfaces within the RPAs by 8 sf.

(e) Agricultural land requirements.

Not Applicable: This project does not involve agricultural lands.

(f) Buffer area establishment.

Comply: Approximately 0.33 acres of disturbed area within the RPA will be reforested after construction of the new pond is complete. Replanting in and around the new dam would compromise the integrity of the structure resulting in possible dam failure and is therefore not permitted. In addition there is approximately 0.16 acre of non-forested area located within the RPA and 0.05 acre of non-forested area outside of the RPA, but within the EQC which will also be reforested. Therefore, in addition to the water quality benefits of this alternative, when construction is complete the amount of impervious area in the RPA will decrease by 8 sf and the amount of forested area within the RPA will increase by 0.19 acre[2] increasing the quality of the RPA buffer when compared to the existing conditions. Details on the enhancement within the RPA and reforestation area are provided in Exhibit 8.

[2] (0.33 acre reforested after disturbance + 0.08 acre existing impervious to be reforested + 0.08 acre existing non-forested to be forested) – 0.30 acre forested disturbance = 0.19 acre additional forested area post construction.

Exhibit 3

Article 6, Section 118-6-6 (a-f):
Resource Protection Area Encroachment
Statement of Justification

The following is the Statement of Justification which addresses how the project complies with the factors set forth in Sections 118-6-6 (a) through (f) of the Ordinance:

(a) The requested exception to the criteria is the minimum necessary to afford relief;

A total of five alternatives were evaluated in order to meet the SWM/BMP pollutant removal requirements for this project. These alternatives include: 1) reconstruction of the existing on-site dam/pond located in the RPA (the preferred alternative); 2) construction of a new pond outside of the RPA, but within the mapped Environmental Quality Corridor (EQC); 3) construction of a new pond outside of the RPA and EQC; 4) utilization of an off-site regional SWM/BMP facility; 5) upgrading/enhancing an existing non-regional off-site SWM/BMP facility to accommodate stormwater quantity and quality treatment for this project. Each of the alternatives is discussed in further detail below.

Alternative 1 – Reconstruction of the existing on-site dam/pond located in the RPA

The reconstructed dam and pond, proposed with Alternative 1, which is depicted in Exhibit 3A will remove the safety hazard caused by a dam that does not meet current design standards and is covered in dense vegetation which is a known factor in compromising the integrity of earthen dams. The new pond will provide SWM/BMP treatment for the entire 7.72 acre project reducing nonpoint source pollutants by 50.5% (40% reduction is required) when compared to the proposed project without BMPs. This level of pollutant removal not only meets current standards, but will also comply with the new state stormwater regulations that take effect on July 1, 2014. Additionally, due to its location in the watershed, the new pond will provide SWM/BMP treatment for 25.3 acres of off-site area and will reduce nonpoint source pollutants by 42% through the removal of 8.0 pounds/year of phosphorous, thereby providing a regional net environmental benefit. Therefore, this alternative will be retained for further consideration.

Alternative 2 – Construction of a new on-site pond outside of the RPA, within the EQC

While Alternative 2, which is depicted in Exhibit 3B avoids impact to the RPA for construction of the pond, it requires disturbance to 0.73 acres of forested area within the EQC. The proposed Alternative 2 pond would capture 4.8 acres of drainage from the 7.72 acre project area as well as 2.2 acres of off-site drainage that does not currently have any SWM/BMP controls. When combining treatment of the on and off-site drainage area, this pond achieves the required[1] 40% reduction in nonpoint

[1] While this pond meets current pollutant removal requirements it does not comply with the pollutant reduction requirements of the new Virginia stormwater regulations that take effect on July 1, 2014.

source pollutants when compared to the proposed project without BMPs. Therefore, this alternative will be retained for further consideration.

Alternative 3 – Construction of a new on-site pond outside of the RPA and EQC

Alternative 3, depicted in Exhibit 3C is primarily constructed without disturbance to either the RPA or EQC. However, given the distance that this pond is located away from a receiving stream, 0.21 acre of disturbance within the EQC is required in order to provide an adequate outfall. The proposed Alternative 3 pond would capture 2.7 acres of drainage from the 7.72 acre project area and would not capture any off-site drainage. Given the limited drainage area of this facility it only achieves an 8% reduction in nonpoint source pollutants when compared to the proposed project without BMPs. This alternative does not meet the required BMP and stormwater retention requirements and therefore is not a viable option.

Alternative 4 – Utilization of an Off-Site Regional SWM/BMP Facility

As depicted in Exhibit 3D there are no off-site regional SWM/BMP facilities located downstream of the project site prior to the confluence with Pohick Creek. Therefore, this alternative is not a viable option.

Alternative 5 – Upgrading/Enhancing an Existing Off-Site Non-Regional SWM/BMP Facility

As depicted in Exhibit 3D there is one off-site non-regional SWM/BMP facility located downstream of the project site prior to the confluence with Pohick Creek. However, the drainage area for this facility does not capture any of the proposed project area. Therefore, this alternative is not a viable option.

Comparison of Viable Alternatives

The preferred alternative (Alternative 1) will result in much needed safety improvements to an existing pond and dam which are currently located in the RPA. The existing pond is full of sediment with current water depths averaging less than three feet which severely limits the ability of this pond to provide any sort of water quality benefits. The dam embankment is overgrown with dense vegetation which can compromise its structural integrity. Additionally, the pond has a clogged riser; when combined with the shallow water depth this causes frequent overtopping of the dam during storm events which leads to erosion of the dam face and ultimately failure of the dam resulting in the uncontrolled release of sediment as well as downstream flooding.

In order to improve the safety of the existing dam and achieve the on-site and off-site removal of nonpoint source pollution this alternative will involve encroachment within 0.70 acre of the RPA to replace the existing pond and bring the dam up to current safety standards. Of the total 0.70 acre RPA disturbance, 0.35 acre is

occupied by the existing pond, an additional 0.05 acre is currently not forested and approximately 0.10 acre is occupied by vegetation that is growing on the existing dam embankment that needs to be removed. The proposed pond will decrease in size to 0.31 acre and will be shifted slightly from its current location to an area that currently is not forested. This non-forested area to be turned into the proposed pond is approximately 0.05 acres. By taking advantage of this cleared area the proposed vegetation loss resulting from reconstruction of the existing pond within the RPA will be limited to 0.30 acre[2]. Approximately 0.33 acre of disturbed area within the RPA will be reforested after construction of the new pond is complete. Replanting in and around the new dam would compromise the integrity of the structure resulting in possible dam failure and is therefore not permitted. For dam and pond maintenance purposes an access road will be constructed resulting in the placement of 0.08 acre of impervious area within the RPA. However there are multiple existing structures and impervious surfaces totaling 0.08 acres within the RPA all of which will be removed with the underlying areas to be reforested. In addition there is approximately 0.08 acre of non-forested area located within the RPA which will also be reforested. Therefore, in addition to the water quality benefits of this alternative, when construction is complete the amount of impervious area in the RPA will decrease[3] and the amount of forested area within the RPA will increase by 0.19 acre[4]. By reconstructing the existing dam and pond, wetland impacts will also be minimized. In addition to the temporary impacts proposed to the pond during construction, this option requires impact to 228 linear feet of stream channel and 0.02 acre of forested wetlands.

Alternative 2 does not include the repair of the existing dam; therefore, the public safety issue associated with this dam would not be addressed. When compared to Alternative 1, the on-site pollutant removal and regional net environment benefits are much lower. Construction of Alternative 2 would result in the disturbance of 0.73 acre of existing forested area where Alternative 1 would result in the disturbance of 0.45 acre[5] of existing forested area. Additionally, Alternative 2 would require disturbance to 270 linear feet of stream channel. Therefore, given the high level of on-site and regional environmental benefit proposed by construction of Alternative 1 we believe that the disturbance to the RPA required for construction is the minimum necessary to afford relief.

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[2] 0.70 acre total disturbance – 0.35 acre existing pond – 0.05 acre existing non-forested area = 0.30 acre.

[3] Per Exhibit 8: Total existing impervious area in the RPA to be removed and reforested = 3,603 sf ; total proposed impervious area in RPA for maintenance/access = 3,595 sf. Net reduction in impervious area in RPA is 8 sf.

[4] (0.33 acre reforested after disturbance + 0.08 acre existing impervious to be reforested + 0.08 acre existing non-forested to be forested) – 0.30 acre forested disturbance = 0.19 acre additional forested area post construction.

[5] The 0.73 acre of disturbance associated with Alternative 2 is located outside of the RPA. Therefore, in order to make an equitable comparison, the 0.45 acre forested disturbance associated with Alternative 1 includes 0.30 acre of forested disturbance within the RPA and 0.15 acre of forested disturbance outside of the RPA.

(b) *Granting the exception will not confer upon the applicant any special privileges that are denied by this part to other property owners who are subject to its provisions and who are similarly situated;*

Granting of this exception will not confer any special privileges upon the property Owner – the environmental benefits that will be realized by allowing this exception are well documented in this RPAE and these merits should be recognized by any similar such application presented for consideration. The RPA currently contains several non-forested areas and impervious surfaces as well as a wet pond and dam. The dam riser is clogged which has caused the water surface of the pond to rise and overtop its banks more often due to rain events, which leads to erosion of the downstream face of the dam. The dam itself is in need of repair as it is full of dense woody vegetation and does not meet current design standards.

(c) *The exception is in harmony with the purpose and intent of this Chapter and is not of substantial detriment to water quality;*

Granting this RPAE would result in a net improvement in the quality of water leaving the site as well as within 25.3 acres of off-site drainage area, 19.2 acres of which does not currently have any SWM/BMP controls; therefore there would be no detriment to water quality. It is thus in full compliance with the purpose and intent of this Chapter.

(d) *The exception request is not based upon conditions or circumstances that are self-created or self-imposed;*

Given the existing poor condition of dam and pond located in the RPA and the lack of adequate stormwater management, the proposed activities within the RPA are necessary in order to achieve environmental improvements for the site, as well as improvements to the quality of water within the on-site and off-site areas draining to the proposed SWM/BMP facility. As mentioned above, an examination of the existing conditions within the RPA indicates that the existing dam does not meet current safety standards. The riser located in the wet pond is clogged and thus cannot properly regulate the water level in the pond. This has caused an increased occurrence of events in which the pond has overtopped its banks, therefore contributing to added erosion, sediment build up and pollution downstream. The dam embankment is not in compliance with current design standards due to trees and shrubs growing on the embankment. This can, and will eventually, compromise the integrity of the dam which could ultimately lead to failure of the structure. Regardless of the proposed development, the embankment needs to be cleared and rebuilt to bring it up to code. So this encroachment within the RPA is necessary as a public safety measure as well as to improve the water quality within the pond's on and off-site drainage areas.

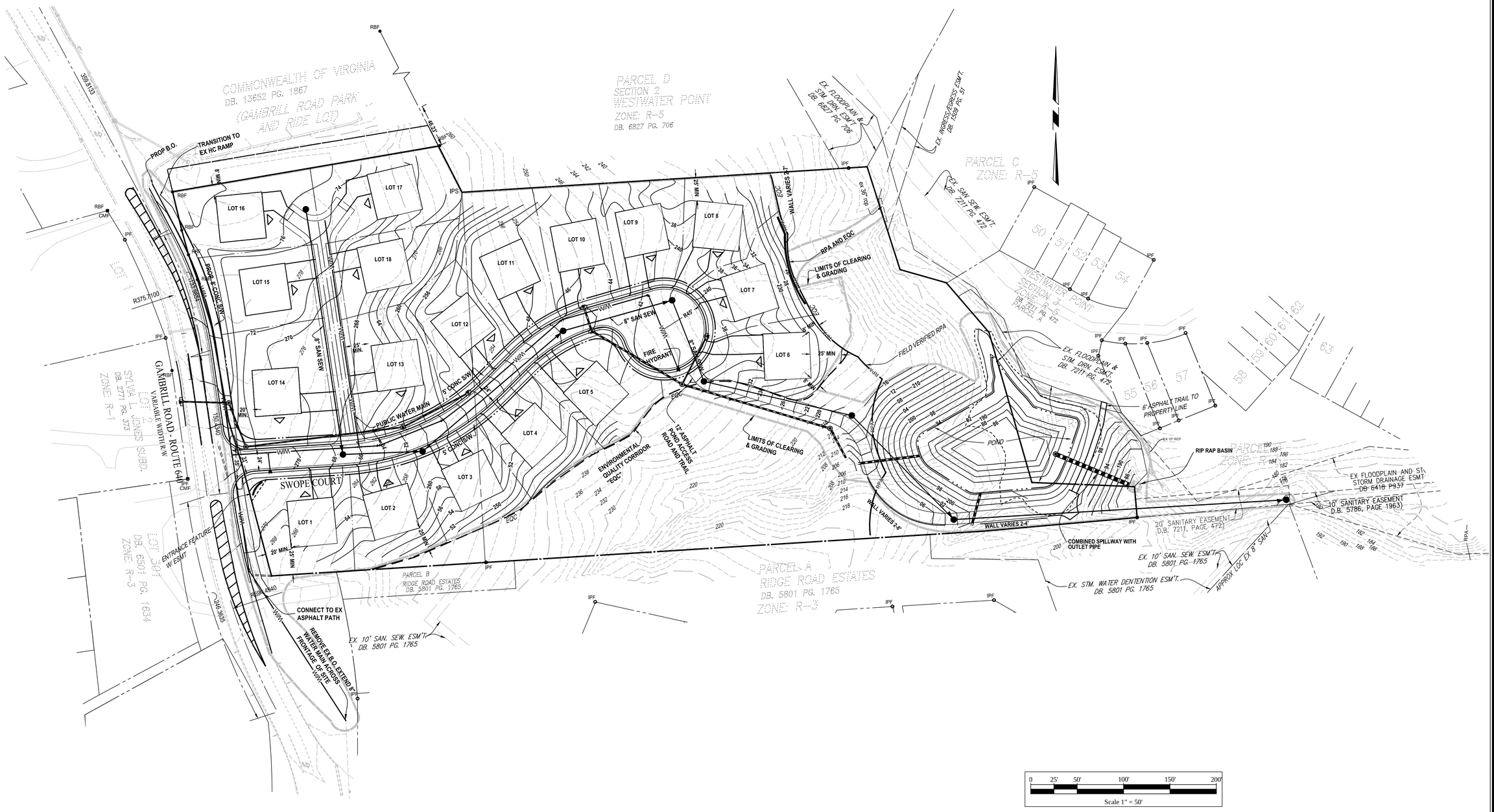
(e) Reasonable and appropriate conditions are imposed, as warranted, that will prevent the allowed activity from causing a degradation of water quality; and

As demonstrated in this RPAE, the proposed project represents no significant detriment to water quality. As discussed in the WQIA section of this report, the proposed project will exceed the Ordinance's required 40% reduction in phosphorous and will additionally achieve a 42% reduction in phosphorous for 25.3 acres of off-site drainage area; therefore, limiting the impact the proposed project has on downstream waters. In addition, the project proposes to reconstruct the existing dam to bring it into compliance with current design and safety requirements, which will decrease overtopping of the dam, decreasing erosion downstream and around the dam, and also reducing the possibility of dam failure.

(f) Other findings, as appropriate and required herein, are met.

The remainder of this submission documents the degree to which this proposed project meets and exceeds all requirements of the Ordinance.

Exhibit 3A



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PARK POINTE

SPRINGFIELD DISTRICT
FAIRFAX COUNTY, VIRGINIA

POND ALTERNATIVE 1
POND IN RPA

COMMONWEALTH OF VIRGINIA
ANN O. GERMAIN
Lic. No. 028700
PROFESSIONAL ENGINEER

DATE: 09-11-2013
FILE NO: F 4570
DRN: LC
CKD: AOG

Virginia Runoff Reduction Method Worksheet -- Revised -- 03/25/2011 - Redevelopment

Site Data

Project Name:

Date:

data input cells
calculation cells
constant values

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

Pre-Development Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	5.67	0.00	1.35	7.02
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	0.00	0.00	0.15	0.15
Impervious Cover (acres)	0.00	0.55	0.00	0.00	0.55
				Total	7.72

Post-Development Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	1.40	0.00	1.28	2.68
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	2.84	0.00	0.10	2.94
Impervious Cover (acres)	0.00	1.98	0.00	0.12	2.10
				Total	7.72

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		**Land Cover Summary**	
Pre-Development		**Post-Development**	
Forest/Open Space Cover (acres)	7.02	Forest/Open Space Cover (acres)	2.68
Weighted Rv(forest)	0.03	Weighted Rv(forest)	0.04
% Forest	91%	% Forest	35%
Managed Turf Cover (acres)	0.15	Managed Turf Cover (acres)	2.94
Weighted Rv(turf)	0.25	Weighted Rv(turf)	0.20
% Managed Turf	2%	% Managed Turf	38%
Impervious Cover (acres)	0.55	Impervious Cover (acres)	2.10
Rv(impervious)	0.95	Rv(impervious)	0.95
% Impervious	7%	% Impervious	27%
Total Site Area (acres)	7.72	**Total Site Area (acres)**	7.72
Site Rv	0.10	**Site Rv**	0.35
Pre-Development Treatment Volume (acre-ft)	0.0665	Post-Development Treatment Volume (acre-ft)	0.2245
Pre-Development Treatment Volume (cubic feet)	2,895	Post-Development Treatment Volume (cubic feet)	9,779
Pre-Development Load (TP) (lb/yr)	1.82	Post-Development Load (TP) (lb/yr)	6.14

Maximum % Reduction Required Below Pre-Development Load: 20%

Total Load (TP) Reduction Required (lb/yr): 2.98

Site Results					
Phosphorous					
TOTAL PHOSPHOROUS LOAD REDUCTION REQUIRED (LB/YEAR)	2.98				
RUNOFF REDUCTION (cf)	0				
PHOSPHOROUS LOAD REDUCTION ACHIEVED (LB/YR)	3.11				
ADJUSTED POST-DEVELOPMENT PHOSPHOROUS LOAD (TP) (lb/yr)	3.03				
REMAINING PHOSPHOROUS LOAD REDUCTION (LB/YR) NEEDED	CONGRATULATIONS!! YOU EXCEEDED THE TARGET REDUCTION BY 0.1 LB/YEAR!!				
Nitrogen (for information purposes)					
RUNOFF REDUCTION (cf)	0				
NITROGEN LOAD REDUCTION ACHIEVED (LB/YR)	8.90				
ADJUSTED POST-DEVELOPMENT NITROGEN LOAD (TP) (lb/yr)	35.06				

Drainage Area A

Drainage Area A Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	1.40	0.00	1.28	2.68
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	2.84	0.00	0.10	2.94
Impervious Cover (acres)	0.00	1.98	0.00	0.12	2.10
				Total	7.72

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

Credit	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	45% runoff volume reduction	0.45	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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 Compost Amended Soils as per specs (see Spec #4)	impervious acres draining to grass channels	30% runoff volume reduction	0.30	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00

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7.b. Infiltration #2 (Spec #8)	impervious acres draining to infiltration	90% runoff volume reduction	0.90	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	15% runoff volume reduction	0.15	0.00	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	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	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	0.00	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	0.00	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 conserved open space	50% runoff volume reduction for treated area	0.50	0.00	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	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
							TOTAL PHOSPHOROUS REMOVAL REQUIRED ON SITE (lb/yr)	2.98											
							TOTAL RUNOFF REDUCTION IN D.A. A (cf)	0											
							PHOSPHORUS REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	0.00											
																	TOTAL RUNOFF REDUCTION IN D.A. A (cf)		0
																	NITROGEN REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)		0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

Apply Practices that Remove Pollutants but Do Not Reduce Runoff Volume

Practice	Unit	Area (excluding areas treated by upstream practices)	Phosphorus Efficiency (%)	Runoff from Upstream RR Practices (cf)	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	0.00	20	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet swale	0.00	20	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
10.b. Wet Swale #2 (Spec #11)	impervious acres draining to wet swale	0.00	40	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet swale	0.00	40	0.00	0.00	0.00	0.00	0.00		20	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	0.00	60	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to filter	0.00	60	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
11.b. Filtering Practice #2 (Spec #12)	impervious acres draining to filter	0.00	65	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to filter	0.00	65	0.00	0.00	0.00	0.00	0.00		20	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	0.00	50	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wetland	0.00	50	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
12.b. Constructed Wetland #2 (Spec #13)	impervious acres draining to wetland	0.00	75	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wetland	0.00	75	0.00	0.00	0.00	0.00	0.00		20	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	2.10	50	0.00	0.00	4.54	2.27	2.27		20	0.00	32.51	6.50	26.01
	turf acres draining to wet pond	2.94	50	0.00	0.00	1.67	0.84	0.84		20	0.00	11.98	2.40	9.58
13.b. Wet Pond #1 (Coastal Plain) (Spec #14)	impervious acres draining to wet pond	0.00	45	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0.00	45	0.00	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	0.00	75	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0.00	75	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
13.d. Wet Pond #2 (Coastal Plain) (Spec #14)	impervious acres draining to wet pond	0.00	65	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0.00	65	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
14. Manufactured BMP										**14. Manufactured BMP**				
14. Insert Name of Device	impervious acres draining to device	0.00	0	0.00	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
	turf acres draining to device	0.00	0	0.00	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
						PHOSPHORUS REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. A	3.11							
						TOTAL PHOSPHORUS REMOVAL IN D.A. A (lb/yr)	3.11							

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. A	8.90
TOTAL NITROGEN REMOVAL IN D.A. A (lb/yr)	8.90

Virginia Runoff Reduction Method Worksheet -- Revised -- 03/25/2011 - Redevelopment

Site Data

Project Name:

Date:

	data input cells
	calculation cells
	constant values

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		

Pre-Development Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	10.50	0.00	3.48	13.98
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	4.08	0.00		4.08
Impervious Cover (acres)	0.00	7.24	0.00	0.00	7.24
				Total	25.30

Post-Development Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	10.50	0.00	3.48	13.98
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	4.08	0.00		4.08
Impervious Cover (acres)	0.00	7.24	0.00		7.24
				Total	25.30

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		**Land Cover Summary**	
Pre-Development		**Post-Development**	
Forest/Open Space Cover (acres)	13.98	Forest/Open Space Cover (acres)	13.98
Weighted Rv(forest)	0.03	Weighted Rv(forest)	0.03
% Forest	55%	% Forest	55%
Managed Turf Cover (acres)	4.08	Managed Turf Cover (acres)	4.08
Weighted Rv(turf)	0.20	Weighted Rv(turf)	0.20
% Managed Turf	16%	% Managed Turf	16%
Impervious Cover (acres)	7.24	Impervious Cover (acres)	7.24
Rv(impervious)	0.95	Rv(impervious)	0.95
% Impervious	29%	% Impervious	29%
Total Site Area (acres)	25.30	**Total Site Area (acres)**	25.30
Site Rv	0.32	**Site Rv**	0.32
Pre-Development Treatment Volume (acre-ft)	0.6819	Post-Development Treatment Volume (acre-ft)	0.6819
Pre-Development Treatment Volume (cubic feet)	29,704	Post-Development Treatment Volume (cubic feet)	29,704
Pre-Development Load (TP) (lb/yr)	18.66	Post-Development Load (TP) (lb/yr)	18.66

Maximum % Reduction Required Below Pre-Development Load	20%
Total Load (TP) Reduction Required (lb/yr)	3.73

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Site Results				
Phosphorous				
TOTAL PHOSPHOROUS LOAD REDUCTION REQUIRED (LB/YEAR)	3.73			
RUNOFF REDUCTION (cf)	0			
PHOSPHOROUS LOAD REDUCTION ACHIEVED (LB/YR)	8.76	* REDUCTION IS REDUCED TO 8.0 BY TREATMENT OF 6.1 ACRES IN VDOT POND UPSTREAM.		
ADJUSTED POST-DEVELOPMENT PHOSPHOROUS LOAD (TP) (lb/yr)	9.90			
REMAINING PHOSPHOROUS LOAD REDUCTION (LB/YR) NEEDED	CONGRATULATIONS!! YOU EXCEEDED THE TARGET REDUCTION BY 5 LB/YEAR!!			
Nitrogen (for information purposes)				
RUNOFF REDUCTION (cf)	0			
NITROGEN LOAD REDUCTION ACHIEVED (LB/YR)	25.08			
ADJUSTED POST-DEVELOPMENT NITROGEN LOAD (TP) (lb/yr)	108.43			

Drainage Area A

Drainage Area A Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	10.50	0.00	3.48	13.98
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	4.08	0.00	0.00	4.08
Impervious Cover (acres)	0.00	7.24	0.00	0.00	7.24
				Total	25.30

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

Credit	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	45% runoff volume reduction	0.45	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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 Compost Amended Soils as per specs (see Spec #4)	impervious acres draining to grass channels	30% runoff volume reduction	0.30	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	15% runoff volume reduction	0.15	0.00	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	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	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	0.00	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	0.00	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 conserved open space	50% runoff volume reduction for treated area	0.50	0.00	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	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00

TOTAL PHOSPHOROUS REMOVAL REQUIRED ON SITE (lb/yr)	3.73
TOTAL RUNOFF REDUCTION IN D.A. A (cf)	0
PHOSPHORUS REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	0.00

TOTAL RUNOFF REDUCTION IN D.A. A (cf)	0
NITROGEN REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

Apply Practices that Remove Pollutants but Do Not Reduce Runoff Volume

Practice	Unit	Area (excluding areas treated by upstream practices)	Phosphorus Efficiency (%)	Runoff from Upstream RR Practices (cf)	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)**				
	impervious acres draining to wet swale	0.00	20	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
10.a. Wet Swale #1 (Spec #11)	turf acres draining to wet swale	0.00	20	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	impervious acres draining to wet swale	0.00	40	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
10.b. Wet Swale #2 (Spec #11)	turf acres draining to wet swale	0.00	40	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
11. Filtering Practices										**11. Filtering Practices**				
	impervious acres draining to filter	0.00	60	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
11.a.Filtering Practice #1 (Spec #12)	turf acres draining to filter	0.00	60	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	impervious acres draining to filter	0.00	65	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
11.b. Filtering Practice #2 (Spec #12)	turf acres draining to filter	0.00	65	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
12. Constructed Wetland										**12. Constructed Wetland**				
	impervious acres draining to wetland	0.00	50	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
12.a.Constructed Wetland #1 (Spec #13)	turf acres draining to wetland	0.00	50	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	impervious acres draining to wetland	0.00	75	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
12.b. Constructed Wetland #2 (Spec #13)	turf acres draining to wetland	0.00	75	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
13. Wet Ponds										**13. Wet Ponds**				
	impervious acres draining to wet pond	7.24	50	0.00	0.00	15.67	7.83	7.83		20	0.00	112.09	22.42	89.68
13.a. Wet Pond #1 (Spec #14)	turf acres draining to wet pond	4.08	50	0.00	0.00	1.86	0.93	0.93		20	0.00	13.30	2.66	10.64
	impervious acres draining to wet pond	0.00	45	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
13.b. Wet Pond #1 (Coastal Plain) (Spec #14)	turf acres draining to wet pond	0.00	45	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	impervious acres draining to wet pond	0.00	75	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
13.c. Wet Pond #2 (Spec #14)	turf acres draining to wet pond	0.00	75	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	impervious acres draining to wet pond	0.00	65	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
13.d. Wet Pond #2 (Coastal Plain) (Spec #14)	turf acres draining to wet pond	0.00	65	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
14. Manufactured BMP										**14. Manufactured BMP**				
	impervious acres draining to device	0.00	0	0.00	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	0.00	0	0.00	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

PHOSPHORUS REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. A	8.76
TOTAL PHOSPHORUS REMOVAL IN D.A. A (lb/yr)	8.76

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. A	25.08
TOTAL NITROGEN REMOVAL IN D.A. A (lb/yr)	25.08

Exhibit 3B

NOTES:

1. BMP AND STORMWATER RETENTION REQUIREMENTS FOR SITE ARE MET.
2. A BMP DESIGN OF 50% IS NEEDED TO SATISFY PHOSPHOROUS REMOVAL; THIS DESIGN IS A TYPE 1 CONSTRUCTED WETLAND AND TYPE 1 EXTENDED DETENTION POND. WETLAND WS ELEV = 214', EXTENDED DETENTION WS ELEVATION = 215'; VOLUME AT ED W.S. ELEV. = 14,847 CUBIC FEET; TREATMENT VOLUME NEEDED FOR ENTIRE SITE* = 9,230 CUBIC FEET
3. ELEVATION OF TOP OF DAM = 220
4. GRADING IN RPA WAS AVOIDED; CLEARING FOR SANITARY SEWER IN RPA STILL NEEDED
   0.73 ACRES OF DISTURBANCE IN EQC
   0.22 ACRES OF DISTURBANCE IN RPA
5. RETAINING WALL NEEDED ON SOUTH SIDE OF POND
6. THIS POND HAS BEEN DESIGNED WITH THE R-3 CLUSTER LAYOUT USED IN THE GDP.
7. 4.90 ACRES OF SITE DRAINS TO POND.
8. 2.39 ACRES OF RIDGE ROAD ESTATES DRAINS TO THIS POND.
9. DOES NOT FIX EXISTING ISSUES WITH THE EXISTING POND
10. SITE AREA = 7.72 ACRES

*VOLUME CALCULATED FROM RUNOFF REDUCTION WORKSHEET

PACIULLI SIMMONS & ASSOCIATES
Established 1744
3975 Fair Ridge Drive
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Fairfax, VA 22033
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Engineers
Planners
Surveyors
Landscape Architects
Wetland Specialists
Environmental Scientists
Archaeologists

PARK POINTE

SPRINGFIELD DISTRICT
FAIRFAX COUNTY, VIRGINIA

POND ALTERNATIVE 2
POND IN EQC

COMMONWEALTH OF VIRGINIA
ANN O. GERMAIN
Lic. No. 028700
PROFESSIONAL ENGINEER

DATE:
FILE NO:
DRN:
CKD:

SHEET

Virginia Runoff Reduction Method Worksheet -- Revised -- 03/25/2011 - Redevelopment

Site Data

Project Name:

Date:

data input cells
calculation cells
constant values

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		

Pre-Development Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	5.67	0.00	1.35	7.02
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	0.00	0.00	0.15	0.15
Impervious Cover (acres)	0.00	0.55	0.00	0.00	0.55
				Total	7.72

Post-Development Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	1.40	0.00	1.28	2.68
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	2.84	0.00	0.10	2.94
Impervious Cover (acres)	0.00	1.98	0.00	0.12	2.10
				Total	7.72

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		**Land Cover Summary**	
Pre-Development		**Post-Development**	
Forest/Open Space Cover (acres)	7.02	Forest/Open Space Cover (acres)	2.68
Weighted Rv(forest)	0.03	Weighted Rv(forest)	0.04
% Forest	91%	% Forest	35%
Managed Turf Cover (acres)	0.15	Managed Turf Cover (acres)	2.94
Weighted Rv(turf)	0.25	Weighted Rv(turf)	0.20
% Managed Turf	2%	% Managed Turf	38%
Impervious Cover (acres)	0.55	Impervious Cover (acres)	2.10
Rv(impervious)	0.95	Rv(impervious)	0.95
% Impervious	7%	% Impervious	27%
Total Site Area (acres)	7.72	**Total Site Area (acres)**	7.72
Site Rv	0.10	**Site Rv**	0.35
Pre-Development Treatment Volume (acre-ft)	0.0665	Post-Development Treatment Volume (acre-ft)	0.2245
Pre-Development Treatment Volume (cubic feet)	2,895	Post-Development Treatment Volume (cubic feet)	9,779
Pre-Development Load (TP) (lb/yr)	1.82	Post-Development Load (TP) (lb/yr)	6.14

Maximum % Reduction Required Below Pre-Development Load	20%
Total Load (TP) Reduction Required (lb/yr)	2.98

Site Results	
Phosphorous	
TOTAL PHOSPHOROUS LOAD REDUCTION REQUIRED (LB/YEAR)	2.98
RUNOFF REDUCTION (cf)	0
PHOSPHOROUS LOAD REDUCTION ACHIEVED (LB/YR)	2.46
ADJUSTED POST-DEVELOPMENT PHOSPHOROUS LOAD (TP) (lb/yr)	3.69
REMAINING PHOSPHOROUS LOAD REDUCTION (LB/YR) NEEDED	0.52
Nitrogen (for information purposes)	
RUNOFF REDUCTION (cf)	0
NITROGEN LOAD REDUCTION ACHIEVED (LB/YR)	7.04
ADJUSTED POST-DEVELOPMENT NITROGEN LOAD (TP) (lb/yr)	36.92

Drainage Area A

Drainage Area A Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	1.40	0.00	1.28	2.68
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	2.84	0.00	0.10	2.94
Impervious Cover (acres)	0.00	1.98	0.00	0.12	2.10
				Total	7.72

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

Credit	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	45% runoff volume reduction	0.45	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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 Compost Amended Soils as per specs (see Spec #4)	impervious acres draining to grass channels	30% runoff volume reduction	0.30	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	15% runoff volume reduction	0.15	0.00	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	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	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	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	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 conserved open space	50% runoff volume reduction for treated area	0.50	0.00	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	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00

TOTAL PHOSPHOROUS REMOVAL REQUIRED ON SITE (lb/yr)	2.98
TOTAL RUNOFF REDUCTION IN D.A. A (cf)	0
PHOSPHORUS REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	0.00

TOTAL RUNOFF REDUCTION IN D.A. A (cf)	0
NITROGEN REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

Apply Practices that Remove Pollutants but Do Not Reduce Runoff Volume

Practice	Unit	Area (excluding areas treated by upstream practices)	Phosphorus Efficiency (%)	Runoff from Upstream RR Practices (cf)	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	0.00	20	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet swale	0.00	20	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
10.b. Wet Swale #2 (Spec #11)	impervious acres draining to wet swale	0.00	40	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet swale	0.00	40	0.00	0.00	0.00	0.00	0.00		20	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	0.00	60	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to filter	0.00	60	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
11.b. Filtering Practice #2 (Spec #12)	impervious acres draining to filter	0.00	65	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to filter	0.00	65	0.00	0.00	0.00	0.00	0.00		20	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	1.58	50	0.00	0.00	3.42	1.71	1.71		20	0.00	24.46	4.89	19.57
	turf acres draining to wetland	2.63	50	0.00	0.00	1.50	0.75	0.75		20	0.00	10.72	2.14	8.57
12.b. Constructed Wetland #2 (Spec #13)	impervious acres draining to wetland	0.00	75	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wetland	0.00	75	0.00	0.00	0.00	0.00	0.00		20	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		50	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet pond		50	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
13.b. Wet Pond #1 (Coastal Plain) (Spec #14)	impervious acres draining to wet pond	0.00	45	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0.00	45	0.00	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	0.00	75	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0.00	75	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
13.d. Wet Pond #2 (Coastal Plain) (Spec #14)	impervious acres draining to wet pond	0.00	65	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0.00	65	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
14. Manufactured BMP										**14. Manufactured BMP**				
14. Insert Name of Device	impervious acres draining to device	0.00	0	0.00	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
	turf acres draining to device	0.00	0	0.00	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

PHOSPHORUS REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. A	2.46
TOTAL PHOSPHORUS REMOVAL IN D.A. A (lb/yr)	2.46

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. A	7.04
TOTAL NITROGEN REMOVAL IN D.A. A (lb/yr)	7.04

Exhibit 3C

NOTES:

1. THIS POND IS UNABLE TO MEET RUNOFF REDUCTION METHOD STANDARDS BECAUSE PLACEMENT DOES NOT CAPTURE ENOUGH SITE RUNOFF.
   1.1. STORAGE AT 219.5' = 10,415.2 CUBIC FEET; TREATMENT VOLUME NEEDED FOR SITE* = 9,230 CUBIC FEET.
   1.2. 2.69 ACRES OF SITE DRAINS TO POND; UNABLE TO SUPPORT A WET POND
   1.3. POND IS UNABLE TO REMOVE SUFFICIENT PHOSPHOROUS WITH THE DESIGN OF AN EXTENDED DETENTION POND AND THE SHEET FLOW TO OPEN SPACE TO SATISFY BMP REQUIREMENTS.
2. ELEVATION OF TOP OF DAM = 224'; APPROXIMATE STORAGE AT 222' = 25,423.2 CUBIC FEET
3. GRADING IN RPA AND EQC WAS AVOIDED. CLEARING FOR STORM OUTFALL AND SANITARY SEWER STILL NEEDED IN RPA AND EQC.
   0.21 ACRES OF DISTURBANCE IN EQC
   0.22 ACRES OF DISTURBANCE IN RPA
4. A LARGE RETAINING WALL WAS PLACED ON THE CUL-DE-SAC SIDE OF THE POND TO ACHIEVE A POND OUTSIDE OF THE EQC/RPA.
5. THIS POND HAS BEEN DESIGNED WITH A PDH-3 LAYOUT
6. DOES NOT FIX EXISTING ISSUES WITH POND.
7. INLET PIPE THROUGH RETAINING WALL REQUIRES SPECIAL MAINTENANCE AGREEMENT
8. SITE AREA = 7.72 ACRES
9. DEEP SANITARY SEWER

*VOLUME CALCULATED FROM RUNOFF REDUCTION METHOD WORKSHEET

0 25' 50' 100' 150' 200'

Scale 1" = 50'

PACIULLI SIMMONS & ASSOCIATES
Established 1744
3975 Fair Ridge Drive
Suite 300 South
Fairfax, VA 22033
PH 703.934.0900
FX 703.934.9787
EM fairfax@psaltd.com
Engineers
Planners
Surveyors
Landscape Architects
Wetland Specialists
Environmental Scientists
Archaeologists

PARK POINTE

SPRINGFIELD DISTRICT
FAIRFAX COUNTY, VIRGINIA

POND ALTERNATIVE 3
POND OUTSIDE OF EQC

COMMONWEALTH OF VIRGINIA
ANN O. GERMAIN
Lic. No. 028700
PROFESSIONAL ENGINEER

DATE:
FILE NO:
DRN:
CKD:

SHEET

Virginia Runoff Reduction Method Worksheet -- Revised -- 03/25/2011 - Redevelopment

Site Data

Project Name:

Date:

	data input cells
	calculation cells
	constant values

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		

Pre-Development Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	5.67	0.00	1.35	7.02
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	0.00	0.00	0.15	0.15
Impervious Cover (acres)	0.00	0.55	0.00	0.00	0.55
				Total	7.72

Post-Development Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	1.40	0.00	1.28	2.68
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	2.84	0.00	0.10	2.94
Impervious Cover (acres)	0.00	1.98	0.00	0.12	2.10
				Total	7.72

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		**Land Cover Summary**	
Pre-Development		**Post-Development**	
Forest/Open Space Cover (acres)	7.02	Forest/Open Space Cover (acres)	2.68
Weighted Rv(forest)	0.03	Weighted Rv(forest)	0.04
% Forest	91%	% Forest	35%
Managed Turf Cover (acres)	0.15	Managed Turf Cover (acres)	2.94
Weighted Rv(turf)	0.25	Weighted Rv(turf)	0.20
% Managed Turf	2%	% Managed Turf	38%
Impervious Cover (acres)	0.55	Impervious Cover (acres)	2.10
Rv(impervious)	0.95	Rv(impervious)	0.95
% Impervious	7%	% Impervious	27%
Total Site Area (acres)	7.72	**Total Site Area (acres)**	7.72
Site Rv	0.10	**Site Rv**	0.35
Pre-Development Treatment Volume (acre-ft)	0.0665	Post-Development Treatment Volume (acre-ft)	0.2245
Pre-Development Treatment Volume (cubic feet)	2,895	Post-Development Treatment Volume (cubic feet)	9,779
Pre-Development Load (TP) (lb/yr)	1.82	Post-Development Load (TP) (lb/yr)	6.14
		Maximum % Reduction Required Below Pre-Development Load	20%
		Total Load (TP) Reduction Required (lb/yr)	2.98

Site Results	
Phosphorous	
TOTAL PHOSPHOROUS LOAD REDUCTION REQUIRED (LB/YEAR)	2.98
RUNOFF REDUCTION (cf)	0
PHOSPHOROUS LOAD REDUCTION ACHIEVED (LB/YR)	0.50
ADJUSTED POST-DEVELOPMENT PHOSPHOROUS LOAD (TP) (lb/yr)	5.65
REMAINING PHOSPHOROUS LOAD REDUCTION (LB/YR) NEEDED	2.48
Nitrogen (for information purposes)	
RUNOFF REDUCTION (cf)	0
NITROGEN LOAD REDUCTION ACHIEVED (LB/YR)	2.36
ADJUSTED POST-DEVELOPMENT NITROGEN LOAD (TP) (lb/yr)	41.59

Drainage Area A

Drainage Area A Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	1.40	0.00	1.28	2.68
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	2.84	0.00	0.10	2.94
Impervious Cover (acres)	0.00	1.98	0.00	0.12	2.10
				Total	7.72

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

Credit	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
1. Vegetated Roof													
1.a. Vegetated Roof #1 (Spec #5)	acres of green roof	45% runoff volume reduction	0.45	0.00	0	0	0	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	0.00	0	0	0	0	0.00	0.00	0.00	0.00	
2. Rooftop Disconnection													
2.a. Simple Disconnection to A/B Soils (Spec #1)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	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	0.00	0	0	0	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	0.00	0	0	0	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	0.00	0	0	0	25	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	0.00	0	0	0	25	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	0.00	0	0	0	25	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	0.00	0	0	0	50	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	0.00	0	0	0	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	0.00	0	0	0	25	0.00	0.00	0.00	0.00	
3. Permeable Pavement													
3.a. Permeable Pavement #1 (Spec #7)	acres of permeable pavement + acres of "external" (upgradient) impervious	45% runoff volume reduction	0.45	0.00	0	0	0	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	0.00	0	0	0	25	0.00	0.00	0.00	0.00	
4. Grass Channel													
4.a. Grass Channel A/B Soils (Spec #3)	impervious acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00	
	turf acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	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	0.00	0	0	0	15	0.00	0.00	0.00	0.00	
	turf acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00	
4.c. Grass Channel Compost Amended Soils as per specs (see Spec #4)	impervious acres draining to grass channels	30% runoff volume reduction	0.30	0.00	0	0	0	15	0.00	0.00	0.00	0.00	
	turf acres draining to grass channels	30% runoff volume reduction	0.30	0.00	0	0	0	15	0.00	0.00	0.00	0.00	
5. Dry Swale													
5.a. Dry Swale #1 (Spec #10)	impervious acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00	
	turf acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	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	0.00	0	0	0	40	0.00	0.00	0.00	0.00	
	turf acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00	
6. Bioretention													
6.a. Bioretention #1 or Urban Bioretention (Spec #9)	impervious acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00	
	turf acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	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	0.00	0	0	0	50	0.00	0.00	0.00	0.00	
	turf acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00	
7. Infiltration													
7.a. Infiltration #1 (Spec #8)	impervious acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00	
	turf acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00	

Credit	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. Green Roof					
1.a. Vegetated Roof #1 (Spec #5)	0	0.00	0.00	0.00	0.00
1.b. Vegetated Roof #2 (Spec #5)	0	0.00	0.00	0.00	0.00
2. Impervious Surface Disconnection					
2.a. Simple Disconnection to A/B Soils (Spec #1)	0	0.00	0.00	0.00	0.00
2.b. Simple Disconnection to C/D Soils (Spec #1)	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)	0	0.00	0.00	0.00	0.00
2.d. To Dry Well or French Drain #1 (Microinfiltration #1) (Spec #8)	15	0.00	0.00	0.00	0.00
2.e. To Dry Well or French Drain #2 (Micro-Infiltration #2) (Spec #8)	15	0.00	0.00	0.00	0.00
2.f. To Rain Garden #1 (Micro-Bioretention #1) (Spec #9)	40	0.00	0.00	0.00	0.00
2.g. To Rain Garden #2 (Micro-Bioretention #2) (Spec #9)	60	0.00	0.00	0.00	0.00
2.h. To Rainwater Harvesting (Spec #6)	0	0.00	0.00	0.00	0.00
2.i. To Stormwater Planter (Urban Bioretention) (Spec #9, Appendix A)	40	0.00	0.00	0.00	0.00
3. Permeable Pavement					
3.a. Permeable Pavement #1 (Spec #7)	25	0.00	0.00	0.00	0.00
3.b. Permeable Pavement #2 (Spec #7)	25	0.00	0.00	0.00	0.00
4. Grass Channel					
4.a. Grass Channel A/B Soils (Spec #3)	20	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)	20	0.00	0.00	0.00	0.00
	20	0.00	0.00	0.00	0.00
4.c. Grass Channel Compost Amended Soils as per specs (see Spec #4)	20	0.00	0.00	0.00	0.00
	20	0.00	0.00	0.00	0.00
5. Dry Swale					
5.a. Dry Swale #1 (Spec #10)	25	0.00	0.00	0.00	0.00
	25	0.00	0.00	0.00	0.00
5.b. Dry Swale #2 (Spec #10)	35	0.00	0.00	0.00	0.00
	35	0.00	0.00	0.00	0.00
6. Bioretention					
6.a. Bioretention #1 or Urban Bioretention (Spec #9)	40	0.00	0.00	0.00	0.00
	40	0.00	0.00	0.00	0.00
6.b. Bioretention #2 (Spec #9)	60	0.00	0.00	0.00	0.00
	60	0.00	0.00	0.00	0.00
7. Infiltration					
7.a. Infiltration #1 (Spec #8)	15	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	0.00	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	0.00	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	1.02	0	0	3517	15	0.00	2.21	0.33	1.88			10	0.00	15.79	1.58	14.21
	turf acres draining to ED	0% runoff volume reduction	0.00	1.92	0	0	1742	15	0.00	1.09	0.16	0.93			10	0.00	7.82	0.78	7.04
8.b. ED #2 (Spec #15)	impervious acres draining to ED	15% runoff volume reduction	0.15	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	15% runoff volume reduction	0.15	0.00	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	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	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	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	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 conserved open space	50% runoff volume reduction for treated area	0.50	0.00	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	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00

TOTAL PHOSPHOROUS REMOVAL REQUIRED ON SITE (lb/yr)	2.98
TOTAL RUNOFF REDUCTION IN D.A. A (cf)	0
PHOSPHORUS REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	0.50

TOTAL RUNOFF REDUCTION IN D.A. A (cf)	0
NITROGEN REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	2.36

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

Apply Practices that Remove Pollutants but Do Not Reduce Runoff Volume

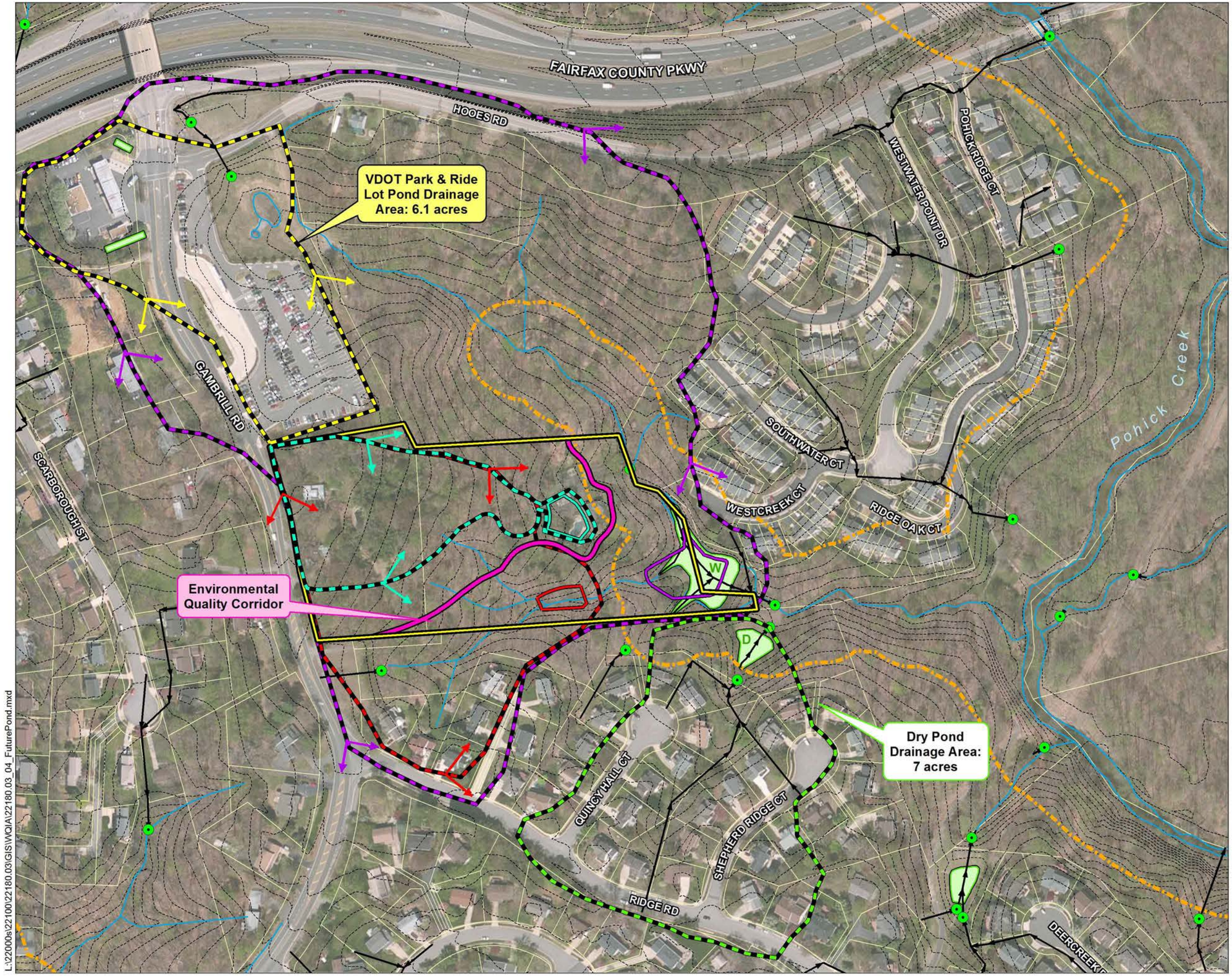
Practice	Unit	Area (excluding areas treated by upstream practices)	Phosphorus Efficiency (%)	Runoff from Upstream RR Practices (cf)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs.)	Phosphorus Removed By Practice (lbs.)	Remaining Phosphorus Load (lbs.)	Downstream 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	0.00	20	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet swale	0.00	20	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
10.b. Wet Swale #2 (Spec #11)	impervious acres draining to wet swale	0.00	40	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet swale	0.00	40	0.00	0.00	0.00	0.00	0.00		20	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	0.00	60	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to filter	0.00	60	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
11.b. Filtering Practice #2 (Spec #12)	impervious acres draining to filter	0.00	65	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to filter	0.00	65	0.00	0.00	0.00	0.00	0.00		20	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		50	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wetland		50	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
12.b. Constructed Wetland #2 (Spec #13	impervious acres draining to wetland	0.00	75	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wetland	0.00	75	0.00	0.00	0.00	0.00	0.00		20	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		50	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet pond		50	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
13.b. Wet Pond #1 (Coastal Plain) (Spec #14)	impervious acres draining to wet pond	0.00	45	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0.00	45	0.00	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	0.00	75	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0.00	75	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
13.d. Wet Pond #2 (Coastal Plain) (Spec #14)	impervious acres draining to wet pond	0.00	65	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0.00	65	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
14. Manufactured BMP										**14. Manufactured BMP**				
14. Insert Name of Device	impervious acres draining to device	0.00	0	0.00	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
	turf acres draining to device	0.00	0	0.00	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

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)	0.50

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)	2.36

Exhibit 3D



Park Pointe
SWM/BMP Facility
Alternatives Analysis
WSSI #22180.03
Original Scale: 1" = 200'

N
W E
S

0 200
Feet

Project Boundary: 7.72 ac.

Wetland Studies and Solutions, Inc. Data

Dry Pond Drainage Area: 7 acres

Environmental Quality Corridor

Paciulli, Simmons & Associates Data

Pond Alternative 1

Pond 1 Drainage Area: 33.02 ac.
Onsite: 7.72 ac. Offsite: 25.3 ac.

Pond Alternative 2

Pond 2 Drainage Area: 7 ac.
Onsite: 4.8 ac. Offsite: 2.2 ac.

Pond Alternative 3

Pond 3 Drainage Area: 2.7 ac.
Onsite: 2.7 ac. Offsite: 0 ac.

Fairfax County Digital Data

Parcels

Stormwater Ponds/Feature

Outfall

Storm Pipe

Hydrology

Resource Protection Area

5' Contours

Aerial: April 2011. ESRI

Prepared by:

Wetland Studies and Solutions, Inc.

October 2013

L:\22000s\22100\22180.03\GIS\WQIA\22180.03_04_FuturePond.mxd

Exhibit 3D

Exhibit 4

Water Quality Impact Assessment (Section 118-4-1)

Pursuant to Section 118-4-3, the following Water Quality Impact Assessment Components demonstrate the proposed project's overall compliance with the Ordinance:

(a) *Display the boundaries of RPA;*

WSSI determined the boundaries of the Resource Protection Area (RPA) on the Park Point site. The results of the RPA Determination are described in WSSI's RPA plan dated July 10, 2013 (FFX County #1981-RPA-02-01). Based on WSSI's field observations, the limits of the Fairfax County Mapped RPA are slightly less extensive than the limits of the Field Verified RPA as mapped by WSSI. The "Field Verified RPA" within the Park Pointe site is depicted in Exhibits 7 and 8 that are included within this submission.

(b) *Display and describe the location and nature of the proposed encroachment into and/or impacts to the RPA, including any clearing, grading, impervious surfaces, structures, utilities, and sewage disposal systems;*

The proposed project involves encroachment within the RPA associated with the reconstruction of an existing dam and pond as depicted in Exhibit 8. There is 30,294 sf (0.70 acre) of proposed impacts to the RPA which constitutes the grading associated with the pond and dam. The only impervious cover proposed within the RPA is 3,595 sf (0.08 acre) of area associated with the construction of a maintenance access road for the reconstructed dam. Providing an all-weather surface maintenance access to the dam embankment is a PFM requirement, thus this cannot be avoided. Of the total 0.70 acre RPA disturbance, 0.35 acre is occupied by the existing pond, an additional 0.05 acre is currently not forested and approximately 0.10 acre is occupied by vegetation that is growing on the existing dam embankment that needs to be removed. The proposed pond will decrease in size to 0.31 acre and will be shifted slightly from its current location to an area that currently is not forested. This non-forested area to be turned into the proposed pond is approximately 0.05 acres. By taking advantage of this cleared area the proposed vegetation loss resulting from reconstruction of the existing pond within the RPA will be limited to 0.30 acre[1].

(c) *Provide justification for the proposed encroachment into and/or impacts to the RPA;*

The proposed activities within the RPA will not only help to improve the quality of the buffer, but are also necessary and unavoidable in order to bring the existing dam up to current design and safety standards. Approval of this encroachment will result in a reduction of impervious surfaces within the RPA as well as the net increase of forested area within the RPA that will enhance the quality of the buffer by preventing erosion. The following points describe the proposed benefits to this

[1] 0.70 acre total disturbance – 0.35 acre existing pond – 0.05 acre existing non-forested area = 0.30 acre.

RPA, the BMP measures that will improve the quality of water leaving the site, as well as justification for why encroachments are necessary in the RPA:

- The existing pond and dam do not meet current safety standards and are contributing to erosion, sediment deposition and pollution downstream. The riser is currently clogged and is therefore not able to regulate the water surface elevations properly. This has created an increase of events in which the pond has overtopped the dam, and as mentioned earlier is increasing the amount of erosion, sediment deposition and pollution downstream. The dam itself is not up to current PFM standards as trees and shrubbery are growing along the embankment. This could lead to a possible dam failure. By rebuilding the pond and dam structures, erosion, excessive sediment deposition and pollution downstream could be greatly reduced. Therefore the proposed activities within the RPA will result in a significant improvement within the RPA as well as a significant improvement in the water quality leaving the site.

- As depicted in Exhibit 7, approximately 3,603 sf (0.08 acre) of impervious surface currently exists within this RPA. This impervious surface is associated with the existing house and driveway on the property. This will be removed and reforested, thus enhancing the buffer.

- As described further in Exhibit 3, a total of five alternatives were evaluated in order to meet the SWM/BMP pollutant removal requirements for this project. Alternative 1, which is the preferred alternative, will provide SWM/BMP treatment for the entire 7.72 acre project reducing nonpoint source pollutants by 50.5% (40% reduction is required) when compared to the proposed project without BMPs. This level of pollutant removal not only meets current standards, but will also comply with the new state stormwater regulations that take effect on July 1, 2014. Additionally, due to its location in the watershed, the new pond will provide SWM/BMP treatment for 25.3 acres of off-site area and will reduce nonpoint source pollutants by 42% through the removal of 8.0 pounds/year of phosphorous, thereby providing a regional net environmental benefit.

- Approximately 0.33 acre of temporarily disturbed area within the RPA will be reforested after construction of the new pond is complete. Replanting in and around the new dam would compromise the integrity of the structure resulting in possible dam failure and is therefore not permitted. In addition there is approximately 0.16 acre of non-forested area located within the RPA which will also be reforested. Therefore, in addition to the water quality benefits of this alternative, when construction is complete the amount of impervious area in the RPA will decrease by 8

sf[2] and the amount of forested area within the RPA will increase by 0.19 acre[3] increasing the quality of the RPA buffer when compared to the existing conditions. Details on the enhancement within the RPA and reforestation area are provided in Exhibit 8.

(d) *Describe the extent and nature of any proposed disturbance or disruption of wetlands;*

The Waters of the US (WOUS) and jurisdictional wetlands were delineated and survey-located by WSSI as described in the report "Waters of the U.S. (Including Wetlands) Delineation and Resource Protection Area (RPA) Evaluation, Swope Hall Properties (±8 acres)," dated March 18, 2013. The Corps of Engineers (COE) issued a jurisdictional determination (JD) for this project on May 6, 2013 verifying the delineated boundaries of these WOUS (JD#NOA-2013-00881).

Based on the limits of disturbance proposed with the Generalized Development Plan prepared by Paciulli Simmons & Associates, Inc. dated September 11, 2013 approximately 0.02 acre of palustrine forested wetlands, 0.35 acre of palustrine open water, 156 linear feet of intermittent stream channel and 72 linear feet of perennial stream channel will be impacted by the proposed pond construction. In accordance with 118-5-2 (b) (3), a Virginia Water Protection (VWP) Individual Permit from the Virginia Department of Environmental Quality and a 12-SPGP-01 permit from the COE authorizing impacts to jurisdictional WOUS will be obtained prior to the commencement of construction.

(e) *Display and discuss the type and location of proposed best management practices to mitigate the proposed RPA encroachment and/or adverse impacts;*

Details of the proposed SWM/BMP pond are provided within Exhibit 3A. This facility will provide SWM/BMP treatment for the entire 7.72 acre project reducing nonpoint source pollutants by 50.5% (40% reduction is required) when compared to the proposed project without BMPs. This level of pollutant removal not only meets current standards, but will also comply with the new state stormwater regulations that take effect on July 1, 2014. Additionally, due to its location in the watershed, the new pond will provide SWM/BMP treatment for 25.3 acres of off-site area and will reduce nonpoint source pollutants by 42% through the removal of 8.0 pounds/year of phosphorous, thereby providing a regional net environmental benefit.

The installation of the pond, dam and access road within the RPA, will be conducted in a manner that complies with all applicable county and state stormwater management and erosion and sediment control requirements. To the greatest extent practicable, construction techniques/methods, such as the minimal use of mechanical

---

[2] Per Exhibit 8: Total existing impervious area in the RPA to be removed and reforested = 3,603 sf ; total proposed impervious area in RPA for maintenance/access = 3,595 sf. Net reduction in impervious area in RPA is 8 sf.

[3] (0.33 acre reforested after disturbance + 0.08 acre existing impervious to be reforested + 0.08 acre existing non-forested to be forested) – 0.30 acre forested disturbance = 0.19 acre additional forested area post construction.

equipment (within the RPA), are to be utilized by the contractor to minimize the RPA disturbances during the installation of the proposed pond, dam, access road and grading within the RPA buffer. Approximately 0.33 acre of disturbed area within the RPA will be reforested after construction of the new pond is complete. Replanting in and around the new dam would compromise the integrity of the structure resulting in possible dam failure and is therefore not permitted. In addition there is approximately 0.16 acre of non-forested area located within the RPA will also be reforested. Therefore, in addition to the water quality benefits of this alternative, when construction is complete the amount of impervious area in the RPA will decrease by 8 sf and the amount of forested area within the RPA will increase by 0.19 acre increasing the quality of the RPA buffer when compared to the existing conditions. Details on the enhancement within the RPA and reforestation area are provided in Exhibit 8.

(f) Demonstrate the extent to which the proposed activity will comply with all applicable performance criteria of this Chapter; and

The proposed activity will have a positive impact on the RPA. Clearing and grading will be the minimum necessary to install the proposed pond and dam. The result will improve the riparian corridor within the RPA. The proposed reduction in sediment load will reduce phosphorus loading into the downstream waters, including the Chesapeake Bay. All work shall be performed in compliance with all applicable county and state erosion and sediment control requirements. In addition, the proposed activities more than meet the applicable performance criteria, as detailed in the RPAE section of this submission.

(g) Provide any other information deemed by the Director to be necessary to evaluate potential water quality impacts of the proposed activity.

No further information is deemed necessary.

Exhibit 5

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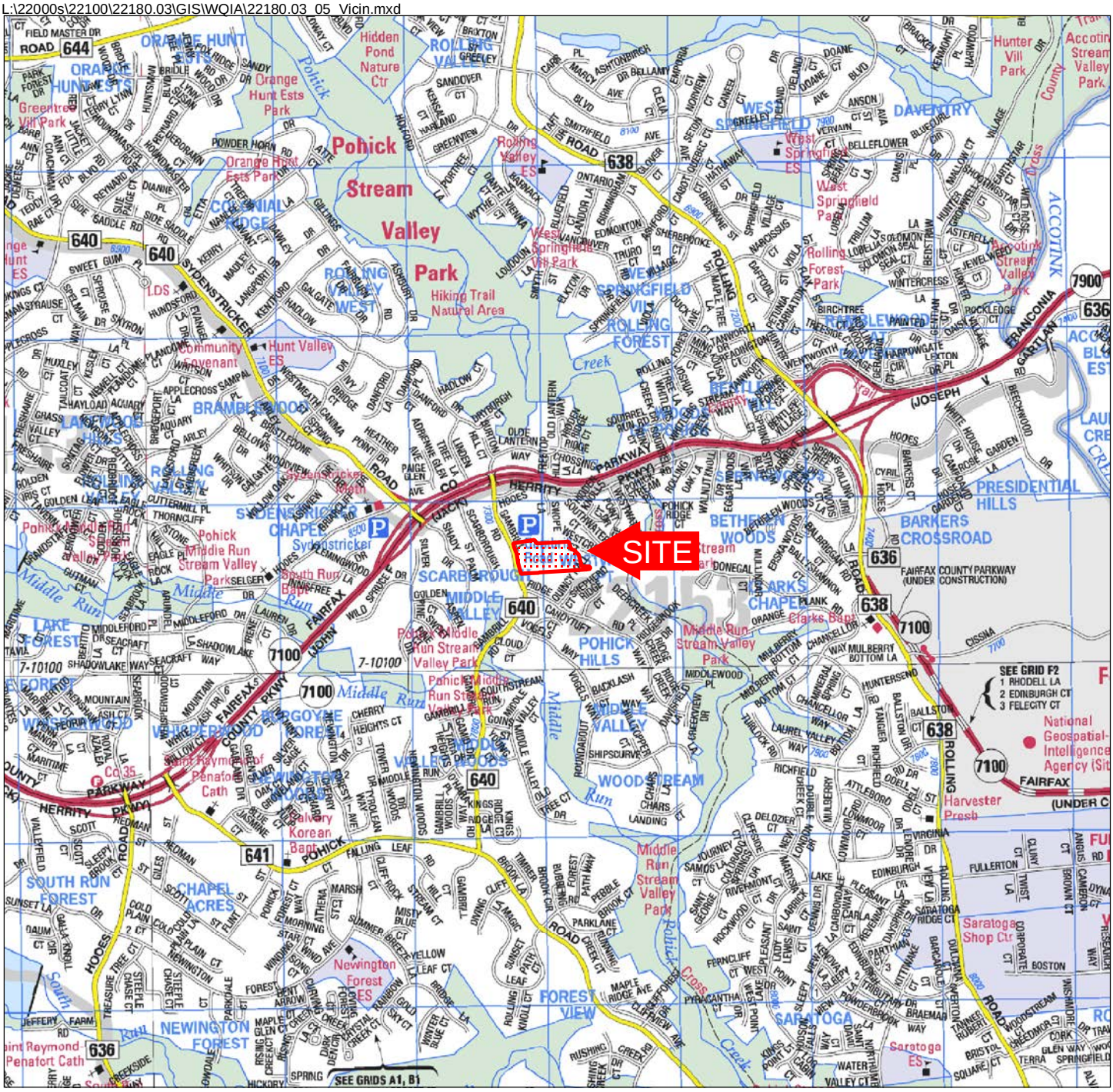
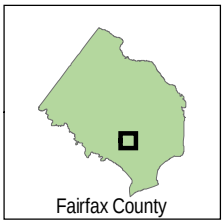
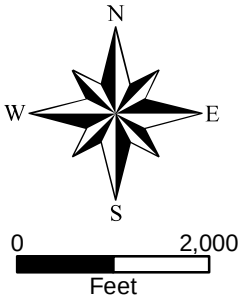


Copyright ADC The Map People
Permitted Use Number 20711184

Vicinity Map
Park Pointe
WSSI #22180.03
Original Scale: 1" = 2000'





Wetland Studies and Solutions, Inc.

Exhibit 5

Exhibit 6

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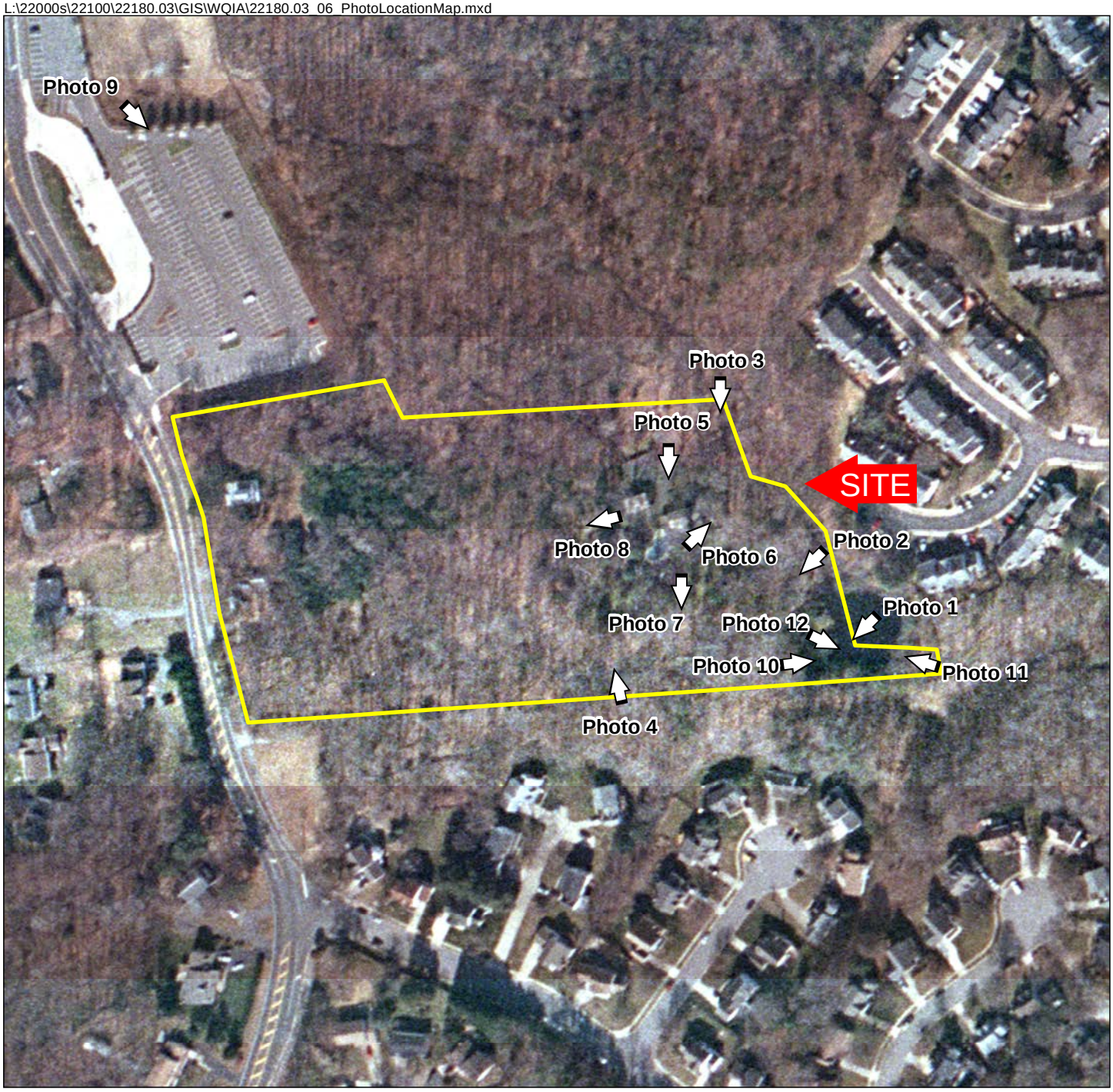
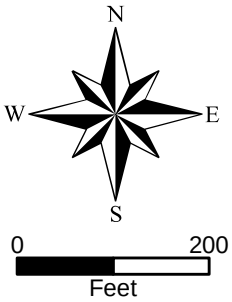


Photo Location Map
Park Pointe
WSSI #22180.03
Original Scale: 1" = 200'



February 2012 Natural Color Imagery
Source: Wetland Studies and Solutions, Inc.

Wetland Studies and Solutions, Inc.

Exhibit 6

EXHIBIT 6
SITE PHOTOGRAPHS
Park Pointe
WSSI #22180.03

1. Looking southwest at the online pond present in the southeastern portion of the site.

2. Looking southeast at which characterizes the palustrine emergent wetland present in the eastern portion of the site.

EXHIBIT 6
SITE PHOTOGRAPHS
Park Pointe
WSSI #22180.03

3. Looking southeast (downstream) at the Fairfax County-mapped unnamed perennial stream present in the eastern portion of the site.

4. Looking northwest which characterizes the upland swale present in the south-central portion of the site.

EXHIBIT 6
SITE PHOTOGRAPHS
Park Pointe
WSSI #22180.03

5. Looking South at the existing house which part of it currently lies in the RPA, on the eastern portion of the site.

6. Looking Northeast from behind the house towards a neighboring community.

EXHIBIT 6
SITE PHOTOGRAPHS
Park Pointe
WSSI #22180.03

7. Looking south from behind the existing house towards a neighboring community.

8. Looking west at one of the sheds currently on the property.

EXHIBIT 6
SITE PHOTOGRAPHS
Park Pointe
WSSI #22180.03

9. Looking at the commuter lot North of the site.

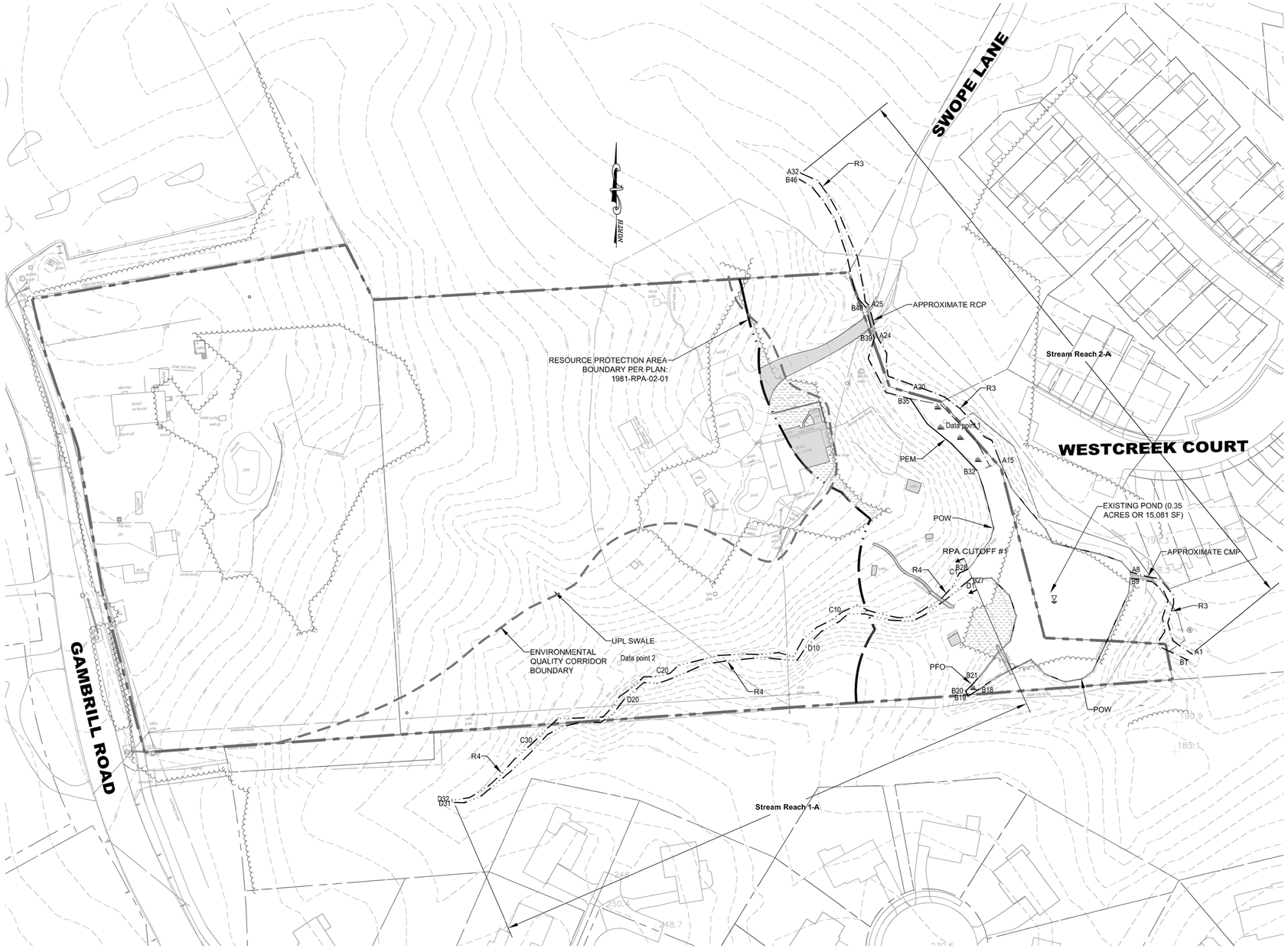
10. Looking east at existing pond on site.

EXHIBIT 6
SITE PHOTOGRAPHS
Park Pointe
WSSI #22180.03

11. Looking northwest at the backside of the dam.

12. Looking southeast at the existing pond and dam. Tree and shrub growth along the dam is depicted.

Exhibit 7



LEGEND

- SITE BOUNDARY
- PERENNIAL STREAM (PER WSSI'S OBSERVATIONS)
- APPROXIMATE LIMITS OF PERENNIAL STREAM (PER WSSI OBSERVATIONS – NOT SURVEYED) NOTE #15
- INTERMITTENT STREAM (PER WSSI'S OBSERVATIONS)
- JURISDICTIONAL WETLAND AREAS
- PALUSTRINE OPEN WATER (POND)
- FAIRFAX COUNTY MAPPED RESOURCE PROTECTION AREA BOUNDARY
- FIELD VERIFIED RESOURCE PROTECTION AREA BOUNDARY
- ENVIRONMENTAL QUALITY CORRIDOR
- RPA CUTOFF
- APPROXIMATE LOCATION OF EXISTING IMPERVIOUS SURFACES WITHIN RESOURCE PROTECTION AREA
- EXISTING TREELINE
- NON-FORESTED AREA WITHIN RESOURCE PROTECTION AREA

COWARDIN CLASSIFICATION

R3	RIVERINE UPPER PERENNIAL
R4	RIVERINE INTERMITTENT
PFO	PALUSTRINE FORESTED WETLAND
POW	PALUSTRINE OPEN WATER
PEM	PALUSTRINE EMERGENT WETLAND

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

SUMMARY OF JURISDICTIONAL AREAS
WITHIN THE SWOPE HALL PROPERTIES*

COWARDIN CLASSIFICATION	AREA (SQUARE FEET)	AREA (ACRE)	LINEAR FEET OF STREAMBED
R3	3,642	0.08	453
R4	2,676	0.06	552
PFO	98	0.002	N/A
POW	15,085	0.35	N/A
PEM	1,462	0.03	N/A
TOTAL	**22,963**	**0.52**	**1,005**

* These numbers are based on the surveyed location of the delineated WOUS boundaries within the site boundary.

TOTAL IMPERVIOUS SURFACES ONSITE:
0.55 ACRES (23,958 SF) PER Paciulli, Simmons & Associates, LTD.

TOTAL IMPERVIOUS SURFACES WITHIN THE RESOURCE PROTECTION AREA:
0.083 ACRES (3,603 SF) PER Wetland Studies and Solutions Inc.

TOTAL NON-FORESTED AREA WITHIN THE RESOURCE PROTECTION AREA:
0.086 ACRES (3,758 SF) PER Wetland Studies and Solutions Inc.

Wetland Studies and Solutions, Inc.
5300 Wellington Branch Drive • Suite 100
Gainesville, Virginia 20155
Phone: 703-679-5600 • Fax: 703-679-5601
www.wetlandstudies.com

EXHIBIT 7:
Existing Conditions

Prepared For: Van Metre Homes

PARK PONTE
Fairfax County, Virginia

COMMONWEALTH OF VIRGINIA
DANIEL C. LUCEY
No. 034207
PROFESSIONAL ENGINEER

REVISIONS

No.	Date	Description	Rev. By	App. By

SCALE: 1"=50' C.I.:2' & 5'

DATE: NOVEMBER 2013

Horizontal Datum:

Vertical Datum:

Boundary and Topo Source:
Paciulli, Simmons & Associates, Ltd.
Fairfax County Digital Data

Design	Draft	Approved
KHT	KHT	DCL

Sheet #
1 of 1

Computer File Name:
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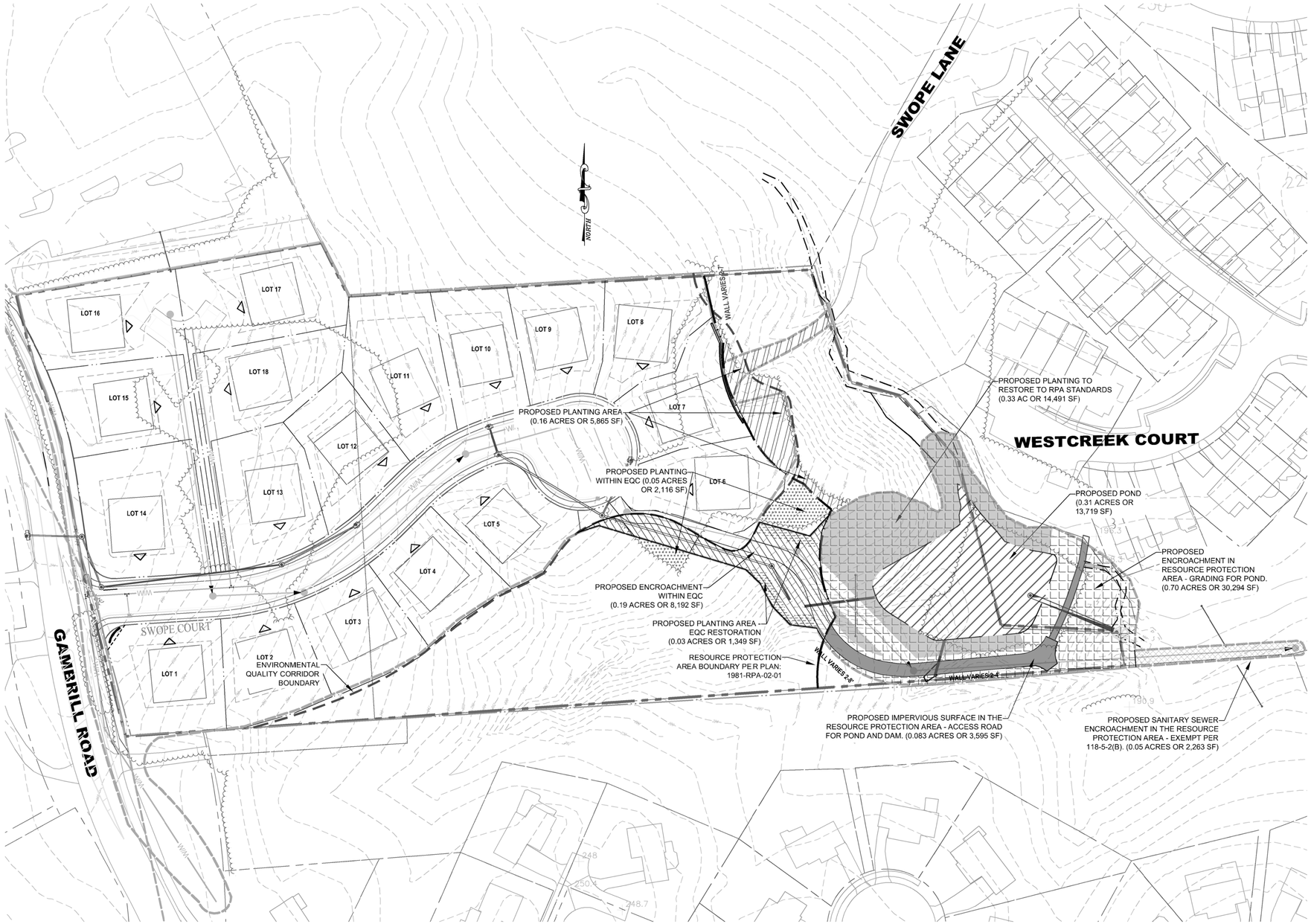
Exhibit 8



LEGEND

- SITE BOUNDARY
- PERENNIAL STREAM (PER WSSI'S OBSERVATIONS)
- APPROXIMATE LIMITS OF PERENNIAL STREAM (PER WSSI OBSERVATIONS – NOT SURVEYED) NOTE #15
- INTERMITTENT STREAM (PER WSSI'S OBSERVATIONS)
- JURISDICTIONAL WETLAND AREAS
- PALUSTRINE OPEN WATER (POND)
- EXISTING TREELINE
- FIELD VERIFIED RESOURCE PROTECTION AREA BOUNDARY (RPA) PER PLAN # 1981–RPA–02–01
- LIMITS OF CLEARING
- ENVIRONMENTAL QUALITY CORRIDOR (EQC)
- PROPOSED IMPERVIOUS SURFACE IN RPA
- PROPOSED ENCROACHMENT INTO RPA
- PROPOSED PLANTING AREA WITHIN RPA
- PROPOSED PLANTING AREA WITHIN EQC
- CLEARING FOR UTILITIES WITHIN RPA
- PROPOSED POND
- AREA WITHIN RPA TO BE REFORESTED
- AREA WITHIN EQC AREA TO BE REFORESTED
- PROPOSED PLANTING AREA – EQC RESTORATION

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

COWARDIN CLASSIFICATION

R3	RIVERINE UPPER PERENNIAL
R4	RIVERINE INTERMITTENT
PFO	PALUSTRINE FORESTED WETLAND
POW	PALUSTRINE OPEN WATER
PEM	PALUSTRINE EMERGENT WETLAND

RPA IMPERVIOUS AREA REDUCTION

IMPERVIOUS WITHIN RPA	SF	AC
EXISTING	3,603	0.08
PROPOSED	3,595	0.08
TOTAL NET REDUCTION	8	0.00

Wetland Studies and Solutions, Inc.
5300 Wellington Branch Drive • Suite 100
Gainesville, Virginia 20155
Phone: 703-679-5600 • Fax: 703-679-5601
www.wetlandstudies.com

EXHIBIT 8:
Proposed Conditions/RPAE Plat

Prepared For: Van Metre Homes

PARK PONTE
Fairfax County, Virginia

COMMONWEALTH OF VIRGINIA
DANIEL C. LUCEY
No. 034207
PROFESSIONAL ENGINEER

REVISIONS

No.	Date	Description	Rev. By	App. By

SCALE: 1"=50' C.I.:2' & 5'

DATE: NOVEMBER 2013

Horizontal Datum:

Vertical Datum:

Boundary and Topo Source:
Paciulli, Simmons & Associates, Ltd.
Fairfax County Digital Data

Design	Draft	Approved
KHT	KHT	DCL

Sheet #
1 of 3

Computer File Name:
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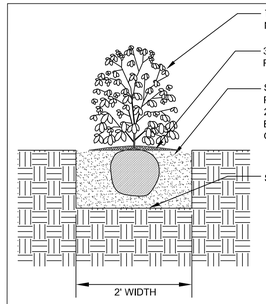
Tree Density Requirements
(per CBPO118-3-3(f))

	Ratio/Ac.	Area	Required	Provided	Result
Overstory Tree Total	100	0.55	55	55	COMPLY
Understory Tree Total	200	0.55	110	110	COMPLY
Shrub Total	1,089	0.55	596	596	COMPLY

To meet diversity requirements of the Tree Conservation Ordinance (PFM 12-0514.1L) no more than 10% of the trees required to be planted shall be of one species. Because 159 trees are required, no more than 15 of each tree species may be planted for the project.

PLANTING AND SEEDING NOTES:

1. It is expected and preferred that all species in each of the Species Groups are planted. The tolerances listed in this note are intended to incorporate flexibility according to species availability. At a minimum, Contractor to provide at least:
   - a) 4 of the 5 species in Group 1,
   - b) 4 of the 5 species in Group 2,
   - c) all of Group 3,
   - d) 5 of the 6 species in Group 4,
   - e) 4 of the 5 species in Group 5,
   - f) all of Group 6,
   - g) all of Group 7,
   - h) all of Group 8,
   - i) 3 of the 5 species in Group 9,
   - j) 3 of 4 species in Group 10,
   - k) 5 of 8 in Group 11,
   - l) 4 of 5 in Group 12,
   - m) 5 of 7 in Group 13,
   - n) 5 of 6 in Group 14.
2. Substitutions for selected species based upon availability shall be requested in writing to engineer, documenting the lack of availability, If the flexibility inherent in the above schedule is still not sufficient, Engineer is under no obligation to approve substitutions.
3. The planted trees and shrubs shall be randomly spaced and species mixed throughout the planting areas.
4. Container rates and quantities shown for one gallon size. For purposes of substitution, two tubelings are the equivalent of one 1-gallon container plant in this schedule. Contractor may provide a mix of container and tubeling sizes for each species requirement, provided the ratio of tubelings to containers is not less than 2:1. Exception -- Group 6 (Stream Edge) shall be planted in accordance with Note #5.
5. All seeding rates are expressed in pounds of pure live seed (PLS).

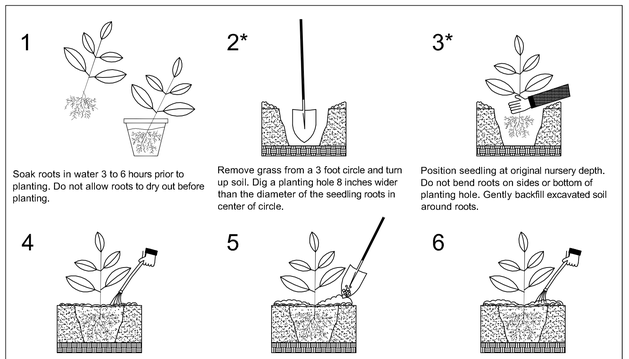


CONTAINER SHRUB PLANTING DETAIL
NOT TO SCALE

L:\22000s\22015.02\Admin\04-ENGR\WGIA\[PLANTING_SEEDING]SCHED.XLSX]RIPARIAN-WIDE RANGE SUNNY

RIPARIAN BUFFER VEGETATION SCHEDULE

CONTAINER PLANTING ZONE		SPECIES GROUP[1,2]	SPECIES[2]	INDICATOR STATUS	WILDLIFE VALUE: FUNCTIONS	WILDLIFE VALUE: PRIMARY SPECIES	WILDLIFE VALUE: PLANT PART	WILDLIFE VALUE: SEASON	PLANT SPACING[3]	CONTAINER SIZE, RATE, AND QUANTITY[4]: PLANTS PER ACRE	CONTAINER SIZE, RATE, AND QUANTITY[4]: # OF PLANTS	PLANTING QUANTITIES (BASED ON ONE-GALLON SIZE): PLANTING AREA / AREA (SF): / AREA (AC):	A / 23,821 / 0.55
RIPARIAN FOREST	OVERSTORY TREE LAYER	1	QUERCUS BICOLOR (SWAMP	FACW	Food	Woodpeckers, turkey, deer, squirrels, raccoons, other small mammals	Nuts	Fall, Winter	SEE NOTE #3	67 ONE GAL -- or -- 134 TUBELINGS -- or -- MIX AT 1:2 RATIO (SEE NOTE #4)	37 (BASED ON ONE-GALLON)		37
			QUERCUS ALBA (WHITE OAK)	FACW	Food	Woodpeckers, turkey, deer, squirrels, raccoons, other small mammals	Nuts	Fall, Winter					
			QUERCUS PALUSTRIS (PIN OA	FACW	Food	Woodpeckers, turkey, deer, squirrels, raccoons, other small mammals	Nuts	Fall, Winter					
			QUERCUS PHELLOS (WILLOW	FAC	Food	Woodpeckers, turkey, deer, squirrels, raccoons, other small mammals	Nuts	Fall, Winter					
			QUERCUS RUBRA (NORTHERI	FACU	Food	Woodpeckers, turkey, deer, squirrels, raccoons, other small mammals	Nuts	Fall, Winter					
		2	ACER NEGUNDO (BOX ELDER	FAC	Food	Finches, chickadees, squirrels, robins, goldfinches, other birds	Seeds, buds, flowers, pl	Spring, summer	SEE NOTE #3	33 ONE-GALLON -- or -- 66 TUBELINGS -- or -- MIX AT 1:2 RATIO (SEE NOTE #4)	18 (BASED ON ONE-GALLON)		18
			ACER RUBRUM (RED MAPLE)	FAC	Food	Finches, chickadees, squirrels, robins, goldfinches, other birds	Seeds, buds, flowers, pl	Spring, summer					
			BETULA NIGRA (RIVER BIRCH)	FACW	Food, cover	Song birds	Seeds, plant	All					
			LIQUIDAMBAR STYRACIFULA (	FAC	Food	Finches, cardinals, chickadees, sparrows, squirrels	Seed	Summer, fall, winter					
			PLATANUS OCCIDENTALIS (A	FACW	Food	Raccoons, opossum, wood duck, pileated and other woodpeckers	Hollow trunks	All					
	OVERSTORY TREE SUBTOTAL										55		55
	UNDERSTORY TREE LAYER	3	ILEX OPACA (AMERICAN HOLI	FACU	Food, cover, reproductive areas; Cover crop for oak seedlings	mockingbirds, hermit	Fruit, plant	All		100 1 Gal. or 200 TUBELINGS or MIX AT 1:2 RATIO	55		55
		4	AMELANCHIER CANADENSIS	FAC	Food, cover	mammals	Fruit, plant	All	SEE NOTE #3	100 ONE-GALLON -- or -- 200 TUBELINGS -- or -- MIX AT 1:2 RATIO	55 (BASED ON ONE-GALLON)		55
			CERCIS CANADENSIS (EASTE	FACU	Food	Honeybees, butterfly caterpillars	Flowers, leaves	Spring, summer					
			CORNUS FLORIDA (FLOWERIN	FACU	Food	Wild turkey, cardinal, cedar waxwing, robin, brown thrasher, wood thrush,	Flower, fruit	Spring, fall					
			CORYLUS AMERICANA (AMER	FACU	Food, cover	mammals	Fruit	Summer, fall					
			LINDERA BENZOIN (NORTHER	FAC	Food	Thrushes vireos, catbird, bluebird, butterfly caterpillars	Fruit, leaves	Spring, summer, fall					
			SALIX NIGRA (BLACK WILLOW	OBL	Food, cover	Beaver, porcupine, deer, muskrat, ducks, fish	Seeds, plant, leaves	Spring, summer, fall					
	UNDERSTORY TREE SUBTOTAL										110		110
	SHRUB LAYER	5	CORNUS AMOMUM (SILKY DO	FACW	Food	Catbird, thrasher, thrushes, woodpeckers	Fruit	Summer, fall	SEE NOTE #3	1089 ONE-GALLON -- or -- 2178 TUBELINGS -- or -- MIX AT 1:2 RATIO (SEE NOTE #4)	596 (BASED ON ONE-GALLON)		596
			ILEX VERTICILLATA (COMMON	FACW	Food, cover, reproductive areas	thrasher, robin, yellow bellied sapsucker, mockingbird	Flower, seed, leaves	All					
			VIBURNUM DENTATUM (SOUT	FAC	Food, cover, reproductive areas	Purple finch, goldfinch, robin, junco, bluebird, hermit thrush	Flower, fruit	Spring, summer, fall					
			ROSA PALUSTRIS (SWAMP RO	OBL	Food, cover, reproductive areas	Brown thrasher, catbird, thrushers, pollinators	Flowers, seeds, and foli	Spring, fall, winter					
			VIBURNUM PRUNIFOLIUM (BLA	FACU	Food, cover	Catbirds, thrashers, thrushes, cover and next sites for songbirds	Fruit, plant	Spring, fall					
	SHRUB LAYER SUBTOTAL									---	596		596



PLANTING TREE SEEDLINGS AND SAPLINGS

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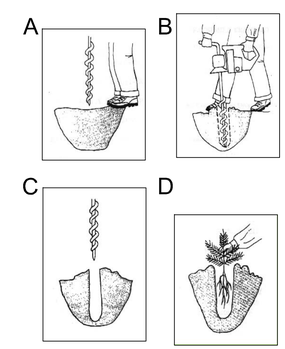
*Steps #2 and #3 of the Planting Tree Seedlings detail may be substituded with the following steps using a 4-inch or greater diameter auger.



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Prepared For: Van Metre Homes

PARK PONTE
Fairfax County, Virginia

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COMMONWEALTH OF VIRGINIA
DANIEL C. LUCEY
No. 034207
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No.	Date	Description	Rev. By	App. By

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KHT	KHT	DCL

Sheet # 2 of 3

Computer File Name:
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RIPARIAN BUFFER SEED MIX

SEED PLANTING ZONE	SPECIES GROUP[1,2]	SPECIES[2]	INDICATOR STATUS	WILDLIFE VALUE: FUNCTIONS	WILDLIFE VALUE: PRIMARY SPECIES	WILDLIFE VALUE: PLANT PART	WILDLIFE VALUE: SEASON	SEEDING RATE[7] (LBS/AC)	AREA PER PLANT (AC)	QUANTITY (LBS)	SEEDING QUANTITIES AREA (SF):	SEEDING QUANTITIES AREA (AC):	SEEDING QUANTITIES A
													23,821
													0.55
RIPARIAN BUFFER SEED MIX	6	LOLIUM MULTIFLORUM (ANNUAL RYEGRASS)	FACU	Erosion control, food	Sparrows, finches, small mammals.	Seeds	Summer, fall	45.00	0.55	24.61			24.61
		SETARIA ITALICA (GERMAN/FOXTAIL MILLET)	FACU	Erosion control, food	Sparrows, finches, small mammals.	Seeds	Fall, winter	45.00	0.55	24.61			24.61
	7	ELYMUS RIPARIUS (RIVERBANK WILD RYE)	FACW	Food	Song birds, small mammals	Seeds, leaves	All	10.00	0.55	5.47			5.47
		ELYMUS VIRGINICUS (VIRGINIA WILD RYE)	FACW	Food	Deer, sparrows, small mammals	Seeds, leaves	All	10.00	0.55	5.47			5.47
		PANICUM CLANDESTINUM (DEER TONGUE GRASS)	FAC	Food	Song birds, waterfowl, small mammals	Seeds	Summer, fall	10.00	0.55	5.47			5.47
		PANICUM DICHOTOMIFLORUM (SMOOTH PANIC GRASS)	FACW	Food	Song birds, waterfowl, small mammals	Seeds	Summer, fall	10.00	0.55	5.47			5.47
	8	ANEMONE VIRGINIANA (THIMBLEWEED)	FACU	Food	Pollinators, butterflies, beneficial insects	Flowers	Spring, summer	0.10	0.55	0.05			0.05
		ASTER NOVAE-ANGLIAE (NEW ENGLAND ASTER)	FACW	Food	Butterflies	Flowers	Summer, fall	0.10	0.55	0.05			0.05
		ASTER PILOSUS (HEATH ASTER)	UPL	Food	Butterflies	Flowers	Summer, fall	0.10	0.55	0.05			0.05
		SOLIDAGO JUNCEA (EARLY GOLDENROD)	UPL	Food	Pollinators, butterflies, beneficial insects	Seeds	Fall, winter	0.10	0.55	0.05			0.05
	9	CAREX SCOPARIA (BLUNT BROOM SEDGE)	FACW	Food, cover	Songs birds (esp. sparrows), small mammals	Seeds, plant	Summer, fall	0.20	0.55	0.11			0.11
		CAREX SQUARROSA (SQUARROSE SEDGE)	FACW	Food	Song birds, waterfowl	Seeds	Summer, fall	0.20	0.55	0.11			0.11
		CAREX VULPINOIDEA (FOX SEDGE)	OBL	Food	Song birds, waterfowl	Seeds	Summer, fall	0.20	0.55	0.11			0.11
		JUNCUS EFFUSUS (SOFT RUSH)	FACW	Food, cover, reproduc	Waterfowl, songbirds (esp. sparrows), bluegill and other fish	Seeds, stems	Summer, fall, winter	0.20	0.55	0.11			0.11
		JUNCUS TENUIS (PATH RUSH)	FAC	Food	Songbirds, small mammals	Seeds	Summer, fall	0.20	0.55	0.11			0.11
	10	EUPATORIUM FISTULOSUS (JOE PYE WEED)	FACW	Food	Pollinators, butterflies, beneficial insects	Flowers, seeds	Summer, fall	0.10	0.55	0.05			0.05
		EUTHAMIA GRAMINIFOLIA (GRASS LEAVED GOLDENROD)	FAC	Food	Butterflies	Flowers	Summer, fall	0.10	0.55	0.05			0.05
		SOLIDAGO SPECIOSA (SHOWY GOLDENROD)	UPL	Food	Butterflies, song birds, small mammals	Flowers	Summer, fall	0.10	0.55	0.05			0.05
		ZIZIA AUREA (GOLDEN ALEXANDERS)	FAC	Food	Beneficial insects	Flowers	Spring, summer	0.10	0.55	0.05			0.05
	11	ASCLEPIAS SYRIACA (COMMON MILKWEED)	UPL	Food	Butterflies, beneficial insects	Flowers	Spring, summer	0.20	0.55	0.11			0.11
		BIDENS FRONDOSA (BEGGAR TICKS)	FACW	Food	Pollinators, butterflies, beneficial insects	Seeds	Summer, fall, winter	0.20	0.55	0.11			0.11
		HELENIUM AUTUMNALE (COMMON SNEEZEWEED)	FACW	Food	Butterflies	Flowers	Summer, fall	0.20	0.55	0.11			0.11
		HELIANTHUS ANGUSTIFOLIUS (NARROW-LEAF SUNFLOWER)	FACW	Food	Butterflies, song birds	Flowers, seeds	Summer, fall	0.20	0.55	0.11			0.11
		ONOCLEA SENSIBILIS (SENSITIVE FERN)	FACW	Food	Songbirds, small mammals	Fronds	Spring, summer, fall	0.20	0.55	0.11			0.11
		PENSTEMON DIGITALIS (PENSTEMON)	FAC	Food	Pollinators, butterflies, beneficial insects	Leaves, seeds	All	0.20	0.55	0.11			0.11
		VERBENA HASTATA (BLUE VERVAIN)	FACW	Food	Pollinators, butterflies, beneficial insects	Flowers, seeds	Spring, summer, fall	0.20	0.55	0.11			0.11
		VERBESINA ALTERNIFOLIA (WINGSTEM)	FAC	Food	Butterflies, other insects	Flowers	Summer, fall	0.20	0.55	0.11			0.11
	12	COREOPSIS LANCEOLATA (LANCE LEAVED COREOPSIS)	FACU	Food	Song birds, butterflies	Flowers, seeds	Spring, summer, fall	0.20	0.55	0.11			0.11
		HELIOPSIS HELIANTHOIDES (OXEYE SUNFLOWER)	UPL	Food	Pollinators, butterflies, beneficial insects	Flowers, seeds	Spring, summer, fall	0.20	0.55	0.11			0.11
		POLYGONUM PENSYLVANICUM (PA SMARTWEED)	FACW	Food	Sparrows, finches, blackbirds, quail, small mammals	Seeds	Fall, winter	0.20	0.55	0.11			0.11
		RUDBECKIA HIRTA (BLACK EYED SUSAN)	FACU	Food	Butterflies and other pollinators	Flowers, seeds	Summer, fall, winter	0.20	0.55	0.11			0.11
		SENNA HEBECARPA (WILD SENNA)	FAC	Food	Song birds, upland game birds	Seeds	Summer	0.20	0.55	0.11			0.11
	13	AMELANCHIER CANADENSIS (CANADIAN SERVICEBERRY)	FAC	Food, cover	Song birds, small mammals	Fruit, plant	All	0.20	0.55	0.11			0.11
		HAMAMELIS VIRGINIANA (WITCH HAZEL)	FACU	Food, cover, reproduc	Ruffed grouse, wild turkey, rabbit, deer, beaver	Flowers, fruit	Spring, fall, winter	0.20	0.55	0.11			0.11
		ILEX VERTICILLATA (WINTERBERRY)	FACW	Food, cover, reproduc	Song birds, upland game birds	Flower, seed, leaves	All	0.20	0.55	0.11			0.11
		LINDERA BENZOIN (NORTHERN SPICEBUSH)	FAC	Food	Thrushes vireos, catbird, bluebird, butterfly caterpillars	Fruit, leaves	Spring, summer, fall	0.20	0.55	0.11			0.11
		PHYSOCARPUS OPULIFOLIUS (COMMON NINEBARK)	FACW	Food, cover	Songbirds, waterfowl, small mammals, beneficial insects	Flowers, fruit	All	0.20	0.55	0.11			0.11
		VIBURNUM DENTATUM (SOUTHERN ARROW WOOD)	FAC	Food	Robins, bluebirds, other thrushes, thrashers, catbirds, vireos	Fruit	Fall	0.20	0.55	0.11			0.11
		VIBURNUM PRUNIFOLIUM (BLACK-HAW)	FACU	Food, cover	Catbirds, thrashers, thrushes, cover and next sites for songbirds	Fruit, plant	Spring, fall	0.20	0.55	0.11			0.11
	14	ACER RUBRUM (RED MAPLE)	FAC	Food	Finches, chickadees, squirrels, robins, goldfinches, other birds	Seeds, buds, flowers, plant	Spring, summer	0.20	0.55	0.11			0.11
		CARPINUS CAROLINIANA (MUSCLEWOOD)	FAC	Food	Ruffed grouse, bobwhite, pheasant, wild turkey, squirrel, rabbit, deer	Fruit	Summer, fall	0.20	0.55	0.11			0.11
		CERCIS CANADENSIS (EASTERN REDBUD)	FACU	Food	Honeybees, butterfly caterpillars	Flowers, leaves	Spring, summer	0.20	0.55	0.11			0.11
		CORNUS FLORIDA (FLOWERING DOGWOOD)	FACU	Food	Wild turkey, cardinal, cedar waxwing, robin, brown thrasher, wood thrush, rabbits	Flower, fruit	Spring, fall	0.20	0.55	0.11			0.11
		NYSSA SYLVATICA (BLACK GUM)	FAC	Food, cover	Song birds, waterfowl, small mammals	Fruit, plant	All	0.20	0.55	0.11			0.11
		PLATANUS OCCIDENTALIS (AMERICAN SYCAMORE)	FAC	Food, cover	Raccoons, opossum, wood duck, pileated and other woodpeckers	Fruit, Hollow trunks	All	0.20	0.55	0.11			0.11
SEEDING TOTALS								**137.00**		**74.91**			**74.91**

PLANTING SPECIFICATIONS

1. PLAN DETAILS ARE INCORPORATED INTO THIS SPECIFICATION BY REFERENCE.
2. THE SUPPLIER OF ALL SEEDS AND/OR VEGETATION SHALL CERTIFY THAT THE ORIGIN OF THE SEEDS FROM WHICH THE PLANTS OR SEEDS WERE PRODUCED IS FROM HARDINESS ZONES 6 AND 7, FROM THE EASTERN OR CENTRAL PORTIONS OF THE U.S., PRIOR TO PLANTING.
3. ANY NURSERY SUPPLYING THE STOCK SHALL PROVIDE A CURRENT NURSERY INSPECTION CERTIFICATE FROM THE STATE DEPARTMENT OF AGRICULTURE, OR PROVIDE AT LEAST THIRTY DAYS ADVANCE NOTICE FOR WETLAND STUDIES AND SOLUTIONS, INC. (WSSI) TO INSPECT THE PLANT SOURCE AREAS AT WSSI'S DISCRETION. ANY SUCH INSPECTION IS NOT DEEMED APPROVAL OF THE PLANT MATERIALS.
4. ALL PLANTS SHALL BE SET STRAIGHT, OR PLUMB.
5. PLANTING SHALL ONLY BE PERMITTED BETWEEN NOVEMBER 1 AND MARCH 30. NO PLANTING SHALL OCCUR WHEN THE SOIL IS FROZEN. SEEDING SHALL BE COMPLETED DURING MARCH THROUGH MAY OR SEPTEMBER THROUGH NOVEMBER. THESE TIME LIMITS MAY NOT BE MODIFIED UNLESS APPROVED BY WETLAND STUDIES AND SOLUTIONS, INC., IN ADVANCE WITH THE RISK OF SURVIVAL BORNE SOLELY BY THE CONTRACTOR.
6. PLANTING HOLES FOR CONTAINER GROWN PLANTS SHALL BE ONE FOOT (1') DEEP PLUS THE CONTAINER DEPTH IN WHICH THE PLANT HAS BEEN GROWN AND TWO FEET (2') WIDER THAN CONTAINER.
7. BACKFILL THE PLANTING HOLES WITH THE IN-SITU SOIL MATERIALS REMOVED FOR PLANTING AFTER REMOVING ALL STONES, ROOTS, AND OTHER DEBRIS GREATER THAN 1-1/2" IN DIAMETER.
8. FOLLOWING THE BACKFILLING, WATER TO THE POINT OF SOIL SATURATION (IF NOT PLANTED IN THE "WET") AND TAMP TO COMPACT THE BACKFILL MIXTURE. ADD EXISTING SOIL TO BRING THE FINAL GRADE IN THE PLANTING HOLE TO THE SURROUNDING SOIL SURFACE. RAKE THE UNUSED EXISTING SOIL OUTSIDE THE PLANTING HOLES, TAKING CARE NOT TO MOUND THE SOIL OR TO SIGNIFICANTLY ALTER THE EXISTING GRADES AND THEN PLACE MULCH (MIN. 2" THICK) ATOP ENTIRE PLANTING HOLE. THE PLANTING HOLE AREAS MUST NOT BE DEPRESSED BELOW THE SURROUNDING SOIL SURFACE ELEVATIONS. SAID AREAS SHALL BE SLIGHTLY RAISED (2-3"), RELATIVE TO THE SOIL SURFACE.
9. AS INDICATED IN THE PLANT LIST, THE SHRUBS THAT ARE SPECIFIED AS CONTAINER GROWN SPECIMENS SHALL BE BETWEEN 15" AND 18" IN HEIGHT. THEY SHALL BE HEALTHY, VIGOROUS, WELL ROOTED AND ESTABLISHED IN THE PLANTING. CONTAINER IN WHICH THEY ARE GROWING. A CONTAINER SHRUB SHALL BE IN THAT CONTAINER A SUFFICIENT TIME SUCH THAT FIBROUS ROOTS ARE FORMED SO THE SHAPE WILL REMAIN AND THE MEDIUM WILL HOLD TOGETHER WHEN REMOVED FROM THE CONTAINER (REFER TO AMERICAN STANDARD FOR NURSERY STOCK).
10. DO NOT REMOVE PLANTS FROM CONTAINERS UNTIL IMMEDIATELY BEFORE PLANTING. EXAMINE THE ROOTS TO SEE IF THEY ARE POT BOUND. CAREFULLY SEPARATE ANY POT BOUND OR CRAMPED ROOTS AND SPREAD THEM OUT WHEN PLACING THE PLANT SO THAT THE ROOTS CAN GROW WITHOUT FURTHER CONSTRUCTION OF THE ROOT BALL.
11. FERTILIZE EACH BARE ROOT, PLUG, TUBER, AND PINT CONTAINER PLANT WITH A 5 GRAM TABLET OF CONTROLLED RELEASE FERTILIZER. USE A 20 GRAM TABLET OF FERTILIZER WITH EACH 1-3 GALLON CONTAINER. GENERALLY, FOR EACH 12 TO 18 INCHES OF PLANT HEIGHT OR FOR EACH 1/2" OF TREE DIAMETER AT THE BASE, USE 20 GRAMS FOR SLOW GROWING PLANTS OR 40 GRAMS FOR FAST GROWING PLANTS OR POOR SOIL SITUATIONS. SAID FERTILIZER TABLETS SHALL BE AGRIFORM 20-10-5 OR APPROVED EQUIVALENT, APPLIED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
12. AS RECOMMENDED BY THE CONTRACTOR AND APPROVED BY ENGINEER, THE CONTRACTOR SHALL WATER THE PLANTS AS NEEDED DURING THE CARE AND REPLACEMENT PERIOD OR UNTIL FINAL ACCEPTANCE, WHICHEVER IS THE SHORTEST.
13. THE CONTRACTOR IS RESPONSIBLE FOR REPLACING NON- SURVIVING TREES AND SHRUBS DURING THE CARE AND REPLACEMENT PERIOD (12 MONTHS, UNLESS OTHERWISE SPECIFIED IN CONTRACT DOCUMENTS) OR UNTIL FINAL ACCEPTANCE, WHICHEVER IS THE SHORTEST, AS REQUIRED BY THE TERMS OF THE SURVIVAL WARRANTY SPECIFIED HEREIN AND/OR IN CONTRACT DOCUMENTS. THE SPECIFICATIONS FOR THE REPLACED PLANTS SHALL BE THOSE PROVIDED IN THE PLANT LIST.
14. REFER TO APPLICABLE SKETCHES WITHIN THIS PLAN SET FOR ADDITIONAL GUIDANCE ON PLANTING REQUIREMENTS.
15. INVASIVE AND NOXIOUS WEEDS SHALL BE REMOVED BY HAND WITH LOCALIZED APPLICATIONS OF ROUND-UP WHERE NECESSARY.
16. ACCEPTANCE OF SOIL : CONTRACTOR IS ALSO REQUIRED TO CHEMICALLY ANALYZE THE SOIL AND DETERMINE IF FERTILIZATION, LIME, ETC. IS REQUIRED TO PROVIDE PROPER GROWTH. A WRITTEN REVIEW OF SAID ANALYSIS AND RECOMMENDATIONS IS REQUIRED TO BE SUBMITTED TO WSSI 15 DAYS PRIOR TO INSTALLATION. ALL SUCH IMPROVEMENTS/AMENDMENTS SHALL BE INCLUDED WITHIN THE COST OF THIS WORK. INSTALLING ONE OR MORE PLANTS ON THIS SITE SHALL BE CONTRACTORS ACCEPTANCE THAT SITE CONDITIONS COMPLY WITH CONTRACT DOCUMENTS. CONTRACTOR MAY SAMPLE THE IN-SITU TOPSOILS AT ANY TIME DURING THE BIDDING PROCESS TO ENSURE ADEQUATE FINANCIAL COVERAGE OF THIS COST.

SITE PREPARATION

1. LIGHTLY RAKE RIPARIAN BUFFER AREAS TO MAXIMUM DEPTH OF 1 ½ INCHES (1.5").

SEEDING SPECIFICATIONS

1. IF EROSION CONTROL COVER IS ROBUST (I.E., DEFINED AS 70% GROUND COVER OR GREATER):
   - A. THE SPECIFIED SEED SHALL BE BROADCAST PRIMARILY IN AREAS WITH LIMITED COVER. FOLLOWING SEEDING, MECHANICALLY SOW SEED TO A DEPTH OF 1/8TH OF AN INCH BY THE USE OF A HAND RAKE.
   - B. A SEED GERMINATION AND PURITY RATE OF 75% IS REQUIRED. EVIDENCE OF SUCH SHALL BE PROVIDED TO OWNER'S REPRESENTATIVE PRIOR TO PLANTING.
2. IF EROSION CONTROL COVER IS NOT ROBUST (I.E., LESS THAN 70% GROUND COVER), THE SPECIFIED SEED MIX SHALL BE PLACED BY HYDROSEEDING AS FOLLOWS:
   - A. SEED SHALL HAVE BEEN COLLECTED THE SAME YEAR OF SEEDING. A SEED GERMINATION AND PURITY RATE OF 75% IS REQUIRED. EVIDENCE OF SUCH SHALL BE PROVIDED TO OWNER'S REPRESENTATIVE PRIOR TO PLANTING.
   - B. THE LANDSCAPE CONTRACTOR SHALL INSPECT THE AREAS AND CONDITIONS UNDER WHICH THE SEEDING WORK IS TO BE PERFORMED PRIOR TO COMMENCING WORK. IF CONDITIONS ARE DETRIMENTAL TO THE PROPER AND TIMELY COMPLETION OF THE WORK, HE/SHE SHALL NOTIFY THE OWNER' REPRESENTATIVE VERBALLY AND IN WRITING AND POSTPONE COMMENCING WORK UNTIL THE UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.
   - C. PRIOR TO HYDROSEEDING, THE TOP SOIL SHALL BE RAKED SMOOTH AND CLEARED OF ALL STONES LARGER THAN 5" AND TRASH, DEBRIS, BRANCHES AND OTHER MATTER DETRIMENTAL TO THE SUCCESS OF SEEDING.
   - D. FERTILIZER IS TO BE BROADCAST AND RAKED INTO THE TOP ONE INCH OF TOP SOIL IMMEDIATELY BEFORE SEEDING OR ADDED TO THE HYDROSEED MIX. FERTILIZER SHALL HAVE A FORMULATION OF 10-10-10 AND BE APPLIED AT A RATE OF 50 POUNDS PER 1000 SQUARE FEET.
   - E. MULCH SHALL BE A CELLULOSE FIBER USED IN THE AQUEOUS MIXTURE DURING HYDROSEEDING. IT SHALL BE APPLIED AT A RATE OF 1500 POUNDS PER ACRE. STRAW CAN BE SUBSTITUTED IF APPLIED AT RATES SPECIFIED BY THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, 3RD EDITION, 1992.
   - F. THE AQUEOUS MIXTURE SHALL BE CONSTANTLY AGITATED FROM THE TIME IT IS MIXED UNTIL THE TIME APPLICATION IS COMPLETED.
   - G. CARE SHOULD BE EXERCISED TO INSURE UNIFORM COVERAGE AND TO AVOID SPRAYING ON THE BASAL AREAS OF ANY ADJACENT TREES AND SHRUBS. THE WATER-SEED MIXTURE SHALL BE APPLIED AT A MINIMUM RATE OF 1000 GALLONS PER ACRE.
3. ALTERNATIVELY, CONTRACTOR MAY SPECIFICALLY APPLY SEED MIX BY BROADCASTING EVENLY THROUGHOUT THE AREA. FOLLOWING SEEDING, MECHANICALLY SOW SEED TO A DEPTH OF 1/8 OF AN INCH BY THE USE OF A CULTIPACTOR, YORK RAKE, OR HAND RAKE.

PLANTING AND SEEDING SURVIVAL WARRANTY

1. LANDSCAPE CONTRACTOR SHALL GUARANTEE A MINIMUM SURVIVAL RATE OF EACH VEGETATION SPECIES AFTER TWELVE MONTHS OF 85% FOR B&B, CONTAINER GROWN, AND TUBLINGS, AND 60% FOR BARE ROOT AND TUBER STOCK.
2. IF SURVIVAL RATES ARE LESS THAN THE ABOVE WARRANTY RATES, THEN LANDSCAPE CONTRACTOR SHALL REPLACE THE QUANTITY OF DEAD PLANTS WITHIN THE NEXT PLANTING WINDOW (SEPTEMBER 30 THROUGH MARCH 30, EXCLUDING FROZEN GROUND PERIODS) FOLLOWING THE END OF THE APPLICABLE WARRANTY PERIOD.

PRODUCT HANDLING, STORAGE, AND DELIVERY

1. HANDLE PLANTS AT ALL TIMES SO THAT ROOTS OR BALLS ARE ADEQUATELY PROTECTED FROM BREAKAGE OF BALLS, FROM SUN AND DRYING WINDS. PLANTS WITH DRIED OUT TOPS OR ROOTS SHALL BE REJECTED.
2. ALL PLANT MATERIALS SHALL BE STORED AND DELIVERED IN SUCH A FASHION AND FOR TIME INTERVALS CONSISTENT WITH SOUND SILVICULTURAL PRACTICES.
3. PLANT MATERIAL WILL BE TRANSPORTED FROM THE NURSERY TO THE PLANTING AREAS BY SUCH MEANS AS TO AVOID WIND DAMAGE, OVER-CROWDING, OR OTHER MECHANISMS BY WHICH PHYSICAL DAMAGE MAY RESULT TO THE PLANTS.
4. PLANT MATERIAL MAY BE RANDOMLY INSPECTED BY THE DESIGN ENGINEER UPON ARRIVAL AT EACH PLANTING AREA AND DURING PLANTING ACTIVITIES. MATERIAL FOUND TO BE UNACCEPTABLE WILL BE REJECTED AND THE CONTRACTOR WILL BE REQUIRED TO SUPPLY REPLACEMENT MATERIAL WITHIN A REASONABLE TIME FRAME (I.E. 1-WEEK). UNACCEPTABLE MATERIAL IS TO BE DEFINED AS THE FOLLOWING:
   - (A) PLANTS WITH BENT TRUNKS OR MULTIPLE LEADERS, UNLESS CHARACTERISTICS FOR THE SPECIES;
   - (B) PLANTS WITH DISEASED TRUNKS, STEMS, OR LEAVES;
   - (C) PLANTS WITH PEST-INFESTED TRUNKS, STEMS, OR LEAVES;
   - (D) PLANTS OF INSUFFICIENT SIZE (LESS THAN A SPECIFIED HEIGHT);
   - (E) PLANTS OF THE WRONG SPECIES/SUB-SPECIES;
   - (F) PLANTS HAVING ROOT GIRDLING IN THE CONTAINER; UNLESS OTHERWISE APPROVED BY THE DESIGN ENGINEER. JUSTIFICATION FOR USE OF TENTATIVELY REJECTED MATERIAL MAY BE PRESENTED TO THE DESIGN ENGINEER.

Wetland Studies and Solutions, Inc.
5300 Wellington Branch Drive • Suite 100
Gainesville, Virginia 20155
Phone: 703-679-5600 • Fax: 703-679-5601
www.wetlandstudies.com

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EXHIBIT 8:
Proposed Conditions/RPAE Plat

Prepared For: Van Metre Homes

PARK PONTE
Fairfax County, Virginia

REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF VIRGINIA
DANIEL C. LUCEY
No. 034207

REVISIONS				
No.	Date	Description	Rev. By	App. By

SCALE: 1"=50' C.I.:2' & 5'

DATE: NOVEMBER 2013

Horizontal Datum:

Vertical Datum:

Boundary and Topo Source:
Paciulli, Simmons & Associates, Ltd.
Fairfax County Digital Data

Design	Draft	Approved
KHT	KHT	DCL

Sheet #
3 of 3

Computer File Name:
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Exhibit 9

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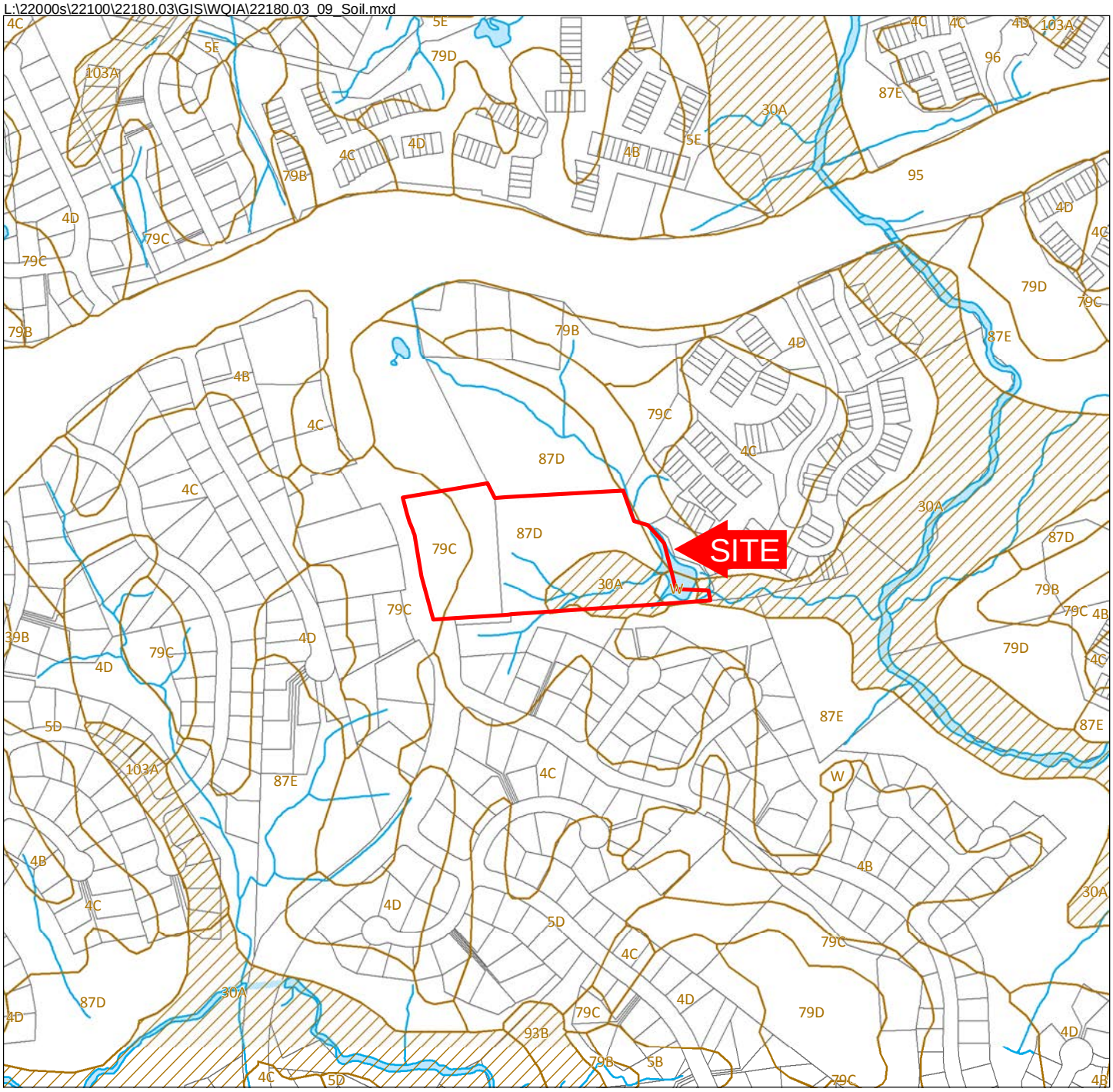

Soils Map
Fairfax County Digital Data
Park Pointe
WSSI #22180.03
Original Scale: 1" = 500'

N
W E
S

0 500
Feet

Hydric Soils

Soils with Hydric Inclusions

Non-hydric Soils

Wetland Studies and Solutions, Inc.

Exhibit 9

Exhibit 10

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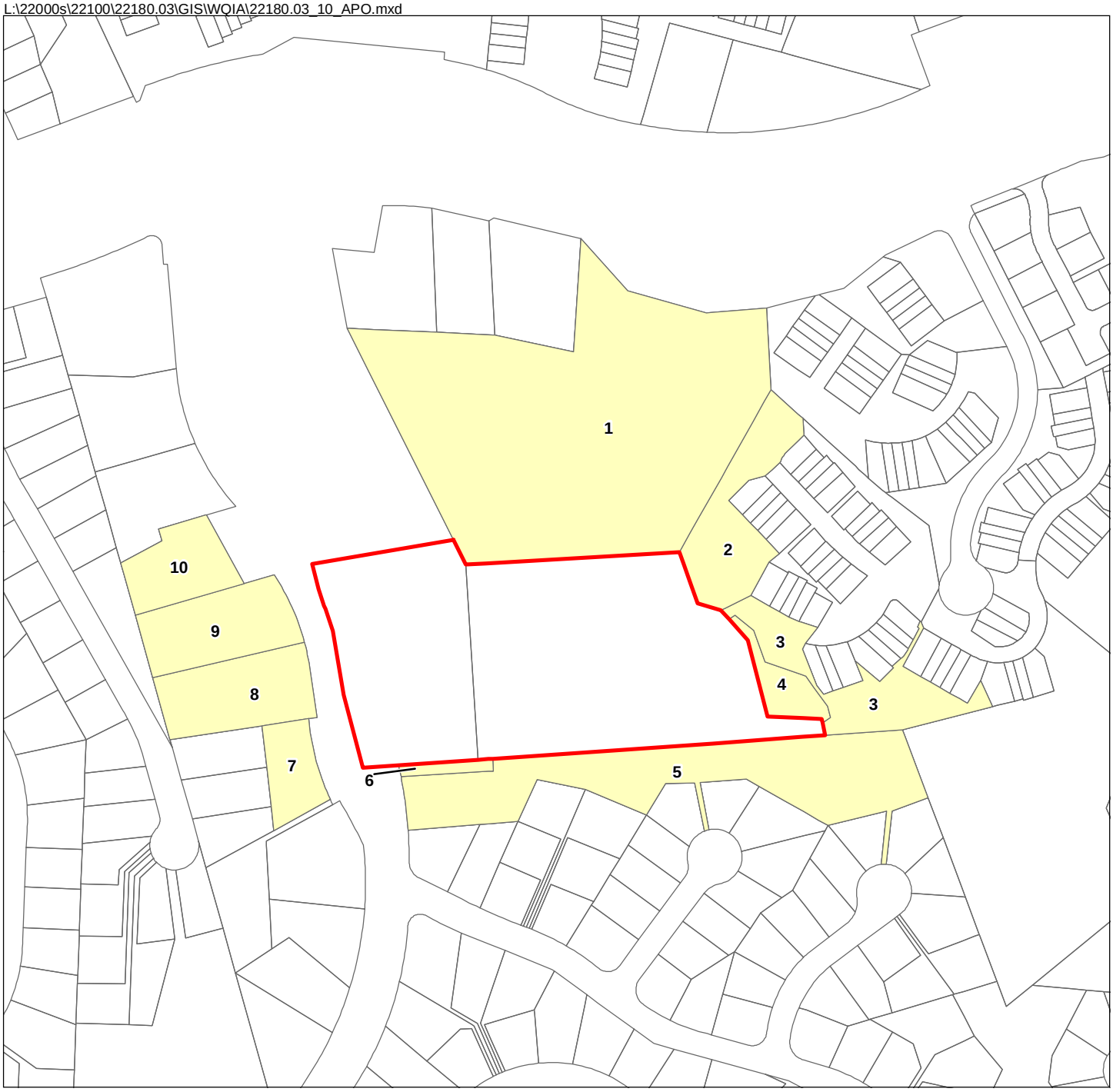

Site

Adjacent Property Owners

Adjacent Property Owners Map
Fairfax County Digital Data
Park Pointe
WSSI #22180.03
Original Scale: 1" = 300'

N
W
E
S

0 300
Feet

Wetland Studies and Solutions, Inc.

Exhibit 10

Adjacent Property Owners Table			
Map Number	**GPIN**	**Owner Name**	**Owner Address**
1	0893 25 D	WESTWATER POINT, HOMEOWNERS ASSN INC	7429 VERNON SQUARE DR C/O WILLS AND VAN METRE ALEXANDRIA VA 22306
2	0893 25 C	WESTWATER POINT, HOMEOWNERS ASSN INC	7429 VERNON SQUARE DR C/O WILLS AND VAN METRE ALEXANDRIA VA 22306
3	0894 17 A3	WESTWATER POINT, HOMEOWNERS ASSN INC	8133 LEESBURG PIKE FL 9TH C/O REES BROOME & DIAZ PC VIENNA VA 22182 2751
4	0893 25 A	WILLS AND VAN METRE INC,	9900 MAIN ST SUITE 500 FAIRFAX VA 22031
5	0893 20 A	RIDGE ROAD ESTATES, HOMEOWNERS ASSN INC	7429 VERNON SQUARE DR SUITE 204 ALEXANDRIA VA 22306
6	0893 20 B	SWOPE JOHN E, AND LAWANDA A	7421 SWOPE LN SPRINGFIELD VA 22153 1909
7	0893 01 0072	SABAH HANI A,	7402 GAMBRILL RD SPRINGFIELD VA 22153
8	0893 01 0046A	RUTHERFORD ROGER L,	7404 GAMBRILL RD SPRINGFIELD VA 22153 1807
9	0893 01 0046B	SMEDLEY THOMAS J,	7406 GAMBRILL RD SPRINGFIELD VA 22153
10	0893 01 0047A	ROSENTHAL CRAIG S, ROSENTHAL JOANNE L	7312 GAMBRILL RD SPRINGFIELD VA 22153

November 4, 2013

VIA Hand Delivery

Mr. Joseph Gorney, AICP, LEED®AP
County of Fairfax
Department of Planning and Zoning
12055 Government Center Parkway, Suite 801
Fairfax, Virginia 22035-5505

Re: Environment – Objective 9 Encroachment Request
Park Pointe (RZ 2013-SP-011)
Tax Map: 0893 01 0042 & 0893 01 0039
Fairfax County, Virginia
WSSI #22180.03

Dear Mr. Gorney:

Wetland Studies and Solutions, Inc. (WSSI), on behalf of Van Metre Communities, L.L.C., (hereafter referred to as the "Applicant"), is requesting authorization per the Fairfax County Comprehensive Plan ("Plan") for encroachment into the Environmental Quality Corridor (EQC) within the Park Pointe project site in order to demolish and rebuild an existing dam embankment and pond for the purpose of constructing a stormwater management facility. Objective 9 within the Environment section of the Plan states that in general, stormwater management facilities should not be provided within EQCs unless: they will be more effective in protecting streams and better support goals of watershed management plans than stormwater management measures that otherwise would be provided outside of EQCs; and replace, enhance and/or be provided along with other efforts to compensate for any of the EQC purposes that would be affected by the facilities.

The site is located on the east side of Gambrill Road, approximately 1,000 feet south of the intersection of Fairfax County Parkway (Route 286) and Gambrill Road in Fairfax County, Virginia. Exhibit 1 is a vicinity map that depicts the approximate boundaries of the site and its general location. The proposed project site contains existing structures and impervious road surfaces associated with an existing residence as shown within the Photos of Existing Site Conditions provided in Exhibit 2.

As shown in the photos provided in Exhibit 2, the existing pond located in the EQC is in relatively poor condition. It is full of sediment with water depths averaging less than three feet which severely limits the ability of this pond to provide any sort of water quality benefits. The dam embankment is overgrown with dense vegetation which can compromise its structural integrity. Additionally, the pond has a clogged riser; when combined with the shallow water depths, causes frequent overtopping of the dam during storm events which leads to erosion of the

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dlucey@wetlandstudies.com • www.wetlandstudies.com

dam face and ultimately failure of the dam resulting in the uncontrolled release of sediment as well as downstream flooding.

By rebuilding the pond and dam structure, erosion, excessive sediment deposition and pollution downstream can be greatly reduced. Therefore, the proposed activities within the EQC will result in a significant improvement within the watershed. As described further in Exhibit 3, a total of five (5) alternatives were evaluated in order to meet the SWM/BMP pollutant removal requirements for this project. Alternative 1, which is the preferred alternative, will provide SWM/BMP treatment for the entire 7.72 acre project reducing nonpoint source pollutants by 50.5% (40% reduction is required) when compared to the proposed project without BMPs. Additionally, due to its location in the watershed, the reconstructed pond will provide SWM/BMP treatment for 25.3 acres of off-site area and will reduce nonpoint source pollutants by 42% through the removal of 8 pounds/year of phosphorous within an area that does not currently have any SWM/BMP controls, thereby providing a regional net environmental benefit. In addition to the water quality benefits of this alternative, when construction is complete the amount of forested area within the EQC will increase by 0.12 acre as depicted in Exhibit 4.

In conclusion, we request that this encroachment within the EQC be approved based on the arguments provided herein which outline the extraordinary circumstances which must be addressed as a matter of public safety as well as the regional net environmental benefits provided by this project. In addition, the following information demonstrates that this project will enhance the currently degraded EQC, reduce pollutant loads and runoff volumes, as well as comply with all applicable SWM/BMP requirements. Thank you for your consideration and please feel free to contact me at (703) 679-5655 or by email at ktomlinson@wetlandstudies.com or Dan Lucey at (703) 679-5667 or by email at dlucey@wetlandstudies.com.

Sincerely,

WETLAND STUDIES AND SOLUTIONS, INC.

Kate H. Tomlinson
Design Engineer

Daniel C. Lucey, P.E., LEED®AP
Vice President – Regulatory

cc: Doug Wagner, P.E., Van Metre Communities, L.L.C. (w/enc.)
Ann Germain, P.E., Paciulli Simmons & Associaes, Inc. (w/enc.)
Sara Mariska, Esq., WCLEW (w/enc.)

L:\22000s\22100\22180.03\Admin\08-ENG\WQIA & RPAE\EQC Encroachment Justification Statement.docx

Exhibit 1

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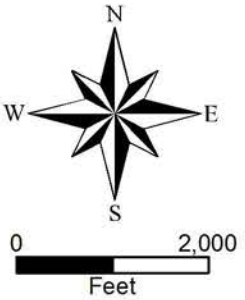
Copyright ADC The Map People
Permitted Use Number 20711184

Vicinity Map
Park Pointe
WSSI #22180.03
Original Scale: 1" = 2000'



Wetland Studies and Solutions, Inc.

Exhibit 1

Exhibit 2

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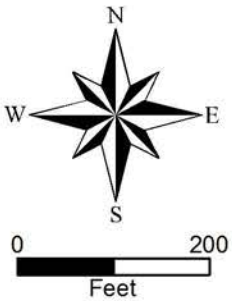
Photo Location Map
Park Pointe
WSSI #22180.03
Original Scale: 1" = 200'



February 2012 Natural Color Imagery
Source: Wetland Studies and Solutions, Inc.

EXHIBIT 2
SITE PHOTOGRAPHS
Park Pointe
WSSI #22180.03

1. Looking southwest at the online pond present in the southeastern portion of the site.

2. Looking southeast at which characterizes the palustrine emergent wetland present in the eastern portion of the site.

EXHIBIT 2
SITE PHOTOGRAPHS
Park Pointe
WSSI #22180.03

3. Looking southeast (downstream) at the Fairfax County-mapped unnamed perennial stream present in the eastern portion of the site.

4. Looking northwest which characterizes the upland swale present in the south-central portion of the site.

EXHIBIT 2
SITE PHOTOGRAPHS
Park Pointe
WSSI #22180.03

5. Looking South at the existing house which part of it currently lies in the RPA, on the eastern portion of the site.

6. Looking Northeast from behind the house towards a neighboring community.

EXHIBIT 2
SITE PHOTOGRAPHS
Park Pointe
WSSI #22180.03

7. Looking south from behind the existing house towards a neighboring community.

8. Looking west at one of the sheds currently on the property.

EXHIBIT 2
SITE PHOTOGRAPHS
Park Pointe
WSSI #22180.03

9. Looking at the commuter lot North of the site.

10. Looking east at existing pond on site.

EXHIBIT 2
SITE PHOTOGRAPHS
Park Pointe
WSSI #22180.03

11. Looking northwest at the backside of the dam.

12. Looking southeast at the existing pond and dam. Tree and shrub growth along the dam is depicted.

Exhibit 3

Exhibit 3
Environmental Quality Corridor Encroachment
Statement of Justification

A total of five alternatives were evaluated in order to meet the SWM/BMP pollutant removal requirements for this project. These alternatives include: 1) reconstruction of the existing on-site dam/pond located in the RPA/EQC (the preferred alternative); 2) construction of a new pond outside of the RPA, but within the mapped EQC; 3) construction of a new pond outside of the RPA and EQC; 4) utilization of an off-site regional SWM/BMP facility; 5) upgrading/enhancing an existing non-regional off-site SWM/BMP facility to accommodate stormwater quantity and quality treatment for this project. Each of the alternatives is discussed in further detail below.

Alternative 1 – Reconstruction of the existing dam/pond located in the RPA & EQC

The reconstructed dam and pond, proposed with Alternative 1, which is depicted in Exhibit 3A will remove the safety hazard caused by a dam that does not meet current design standards and is covered in dense vegetation which is a known factor in compromising the integrity of earthen dams. The new pond will provide SWM/BMP treatment for the entire 7.72 acre project reducing nonpoint source pollutants by 50.5% (40% reduction is required) when compared to the proposed project without BMPs. This level of pollutant removal not only meets current standards, but will also comply with the new state stormwater regulations that take effect on July 1, 2014. Additionally, due to its location in the watershed, the new pond will provide SWM/BMP treatment for 25.3 acres of off-site area and will reduce nonpoint source pollutants by 42% through the removal of 8.0 pounds/year of phosphorous[1], thereby providing a regional net environmental benefit. Therefore, this alternative will be retained for further consideration.

Alternative 2 – Construction of a new pond outside of the RPA, within the EQC

While Alternative 2, which is depicted in Exhibit 3B avoids impact to the RPA for construction of the pond, it requires disturbance to 0.73 acres of forested area within the EQC. The proposed Alternative 2 pond would capture 4.8 acres of drainage from the 7.72 acre project area as well as 2.2 acres of off-site drainage that does not currently have any SWM/BMP controls. When combining treatment of the on and off-site drainage area, this pond achieves the required[2] 40% reduction in nonpoint source pollutants when compared to the proposed project without BMPs. Therefore, this alternative will be retained for further consideration.

[1] Approximately 6.1 of the 25.3 acres of off-site area treated by this pond receive primary treatment within a dry SWM/BMP facility constructed for the VDOT Park & Ride facility located off Gambrill Road. The drainage area for this pond is depicted graphically on Exhibit 3D.
[2] While this pond meets current pollutant removal requirements, it does not comply with the pollutant reduction requirements of the new Virginia stormwater regulations that take effect on July 1, 2014.

Alternative 3 – Construction of a new on-site pond outside of the RPA and EQC

Alternative 3, depicted in Exhibit 3C is primarily constructed without disturbance to either the RPA or EQC. However, given the distance that this pond is located away from a receiving stream, 0.21 acre of disturbance within the EQC is required in order to provide an adequate outfall. The proposed Alternative 3 pond would capture 2.7 acres of drainage from the 7.72 acre project area and would not capture any off-site drainage. Given the limited drainage area of this facility it only achieves an 8% reduction in nonpoint source pollutants when compared to the proposed project without BMPs. This alternative does not meet the required BMP and stormwater retention requirements and therefore is not a viable option.

Alternative 4 – Utilization of an Off-Site Regional SWM/BMP Facility

As depicted in Exhibit 3D there are no off-site regional SWM/BMP facilities located downstream of the project site prior to the confluence with Pohick Creek. Therefore, this alternative is not a viable option.

Alternative 5 – Upgrading/Enhancing an Existing Off-Site Non-Regional SWM/BMP Facility

As depicted in Exhibit 3D there is one off-site non-regional SWM/BMP facility located downstream of the project site prior to the confluence with Pohick Creek. However, the drainage area for this facility does not capture any of the proposed project area. Therefore, this alternative is not a viable option.

Comparison of Viable Alternatives

The preferred alternative (Alternative 1) will result in much needed safety improvements to an existing pond and dam which are currently located in the RPA/EQC. The existing pond is full of sediment with current water depths averaging less than three feet which severely limits the ability of this pond to provide any sort of water quality benefits. The dam embankment is overgrown with dense vegetation which can compromise its structural integrity. Additionally, the pond has a clogged riser; when combined with the shallow water depth this causes frequent overtopping of the dam during storm events which leads to erosion of the dam face and ultimately failure of the dam resulting in the uncontrolled release of sediment as well as downstream flooding.

As depicted within Exhibit 4, in order to improve the safety of the existing dam and achieve the on-site and off-site removal of nonpoint source pollution this alternative will involve encroachment within 0.89 acre of the RPA/EQC to replace the existing pond and bring the dam up to current safety standards. Of the total 0.89 acre RPA/EQC disturbance, 0.35 acre is occupied by the existing pond, an additional 0.09 acre is currently not forested and approximately 0.10 acre is occupied by vegetation

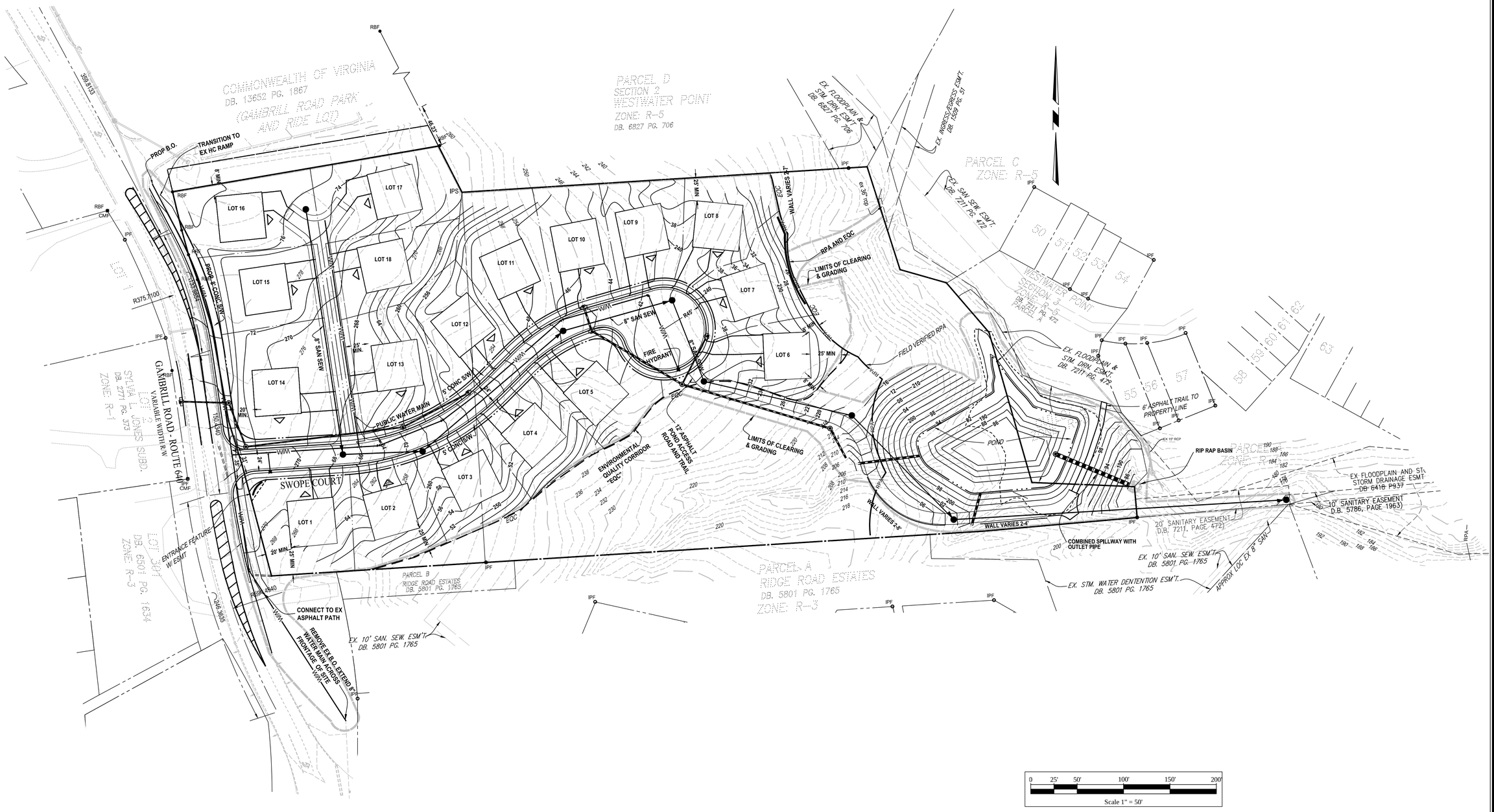
that is growing on the existing dam embankment that needs to be removed. The proposed pond will decrease in size to 0.31 acre and will be shifted slightly from its current location to an area that currently is not forested. This non-forested area to be turned into the proposed pond is approximately 0.05 acre. An additional 0.04 acre of non-forested area outside of the RPA, but within the EQC will be disturbed for construction of the storm sewer piping leading to the SWM/BMP facility. By taking advantage of these cleared areas the proposed vegetation loss resulting from reconstruction of the existing pond within the RPA/EQC will be limited to 0.45 acre[3]. Approximately 0.36 acre of disturbed area within the RPA/EQC will be reforested after construction of the new pond is complete. Replanting in and around the new dam would compromise the integrity of the structure resulting in possible dam failure and is therefore not permitted. For dam and pond maintenance purposes an access road will be constructed resulting in the placement of 0.13 acre of impervious area within the RPA/EQC. However there are multiple existing structures and impervious surfaces totaling 0.08 acres within the RPA/EQC all of which will be removed with the underlying areas to be reforested. In addition there is approximately 0.05 acre of non-forested area located within the RPA/EQC which will also be reforested. Therefore, in addition to the water quality benefits of this alternative, when construction is complete the amount of forested area within the RPA/EQC will increase by 0.12 acre[4] increasing the quality of the RPA/EQC buffer when compared to the existing conditions. By reconstructing the existing dam and pond, wetland impacts will also be minimized. In addition to the temporary impacts proposed to the pond during construction, this option requires impact to 228 linear feet of stream channel and 0.02 acre of forested wetlands.

Alternative 2 does not include the repair of the existing dam; therefore, the public safety issue associated with this dam would not be addressed. When compared to Alternative 1, the on-site pollutant removal and regional net environment benefits are much lower. Construction of Alternative 2 would result in the disturbance of 0.73 acre of existing forested area where Alternative 1 would result in the disturbance of 0.45 acre of existing forested area. Additionally, Alternative 2 would require disturbance to 270 linear feet of stream channel. Therefore, given the high level of on-site and regional environmental benefit proposed by construction of Alternative 1 as well as the public safety issues that it will address demonstrate extraordinary circumstances which justify disturbance to the EQC.

[3] 0.89 acre total disturbance – 0.35 acre existing pond – 0.09 acre existing non-forested area = 0.45 acre forested disturbance.

[4] (0.36 acre reforested after disturbance + 0.08 acre existing impervious to be reforested + 0.13 acre existing non-forested to be forested) – 0.45 acre forested disturbance = 0.12 acre additional forested area post construction.

Exhibit 3A



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Engineers
Planners
Surveyors
Landscape Architects
Wetland Specialists
Environmental Scientists
Archaeologists

PARK POINTE

SPRINGFIELD DISTRICT
FAIRFAX COUNTY, VIRGINIA

POND ALTERNATIVE 1
POND IN RPA

COMMONWEALTH OF VIRGINIA
ANN O. GERMAIN
Lic. No. 028700
PROFESSIONAL ENGINEER

DATE: 09-11-2013
FILE NO: F 4570
DRN: LC
CKD: AOG

Virginia Runoff Reduction Method Worksheet -- Revised -- 03/25/2011 - Redevelopment

Site Data

Project Name:

Date:

data input cells
calculation cells
constant values

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

Pre-Development Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	5.67	0.00	1.35	7.02
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	0.00	0.00	0.15	0.15
Impervious Cover (acres)	0.00	0.55	0.00	0.00	0.55
				Total	7.72

Post-Development Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	1.40	0.00	1.28	2.68
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	2.84	0.00	0.10	2.94
Impervious Cover (acres)	0.00	1.98	0.00	0.12	2.10
				Total	7.72

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		**Land Cover Summary**	
Pre-Development		**Post-Development**	
Forest/Open Space Cover (acres)	7.02	Forest/Open Space Cover (acres)	2.68
Weighted Rv(forest)	0.03	Weighted Rv(forest)	0.04
% Forest	91%	% Forest	35%
Managed Turf Cover (acres)	0.15	Managed Turf Cover (acres)	2.94
Weighted Rv(turf)	0.25	Weighted Rv(turf)	0.20
% Managed Turf	2%	% Managed Turf	38%
Impervious Cover (acres)	0.55	Impervious Cover (acres)	2.10
Rv(impervious)	0.95	Rv(impervious)	0.95
% Impervious	7%	% Impervious	27%
Total Site Area (acres)	7.72	**Total Site Area (acres)**	7.72
Site Rv	0.10	**Site Rv**	0.35
Pre-Development Treatment Volume (acre-ft)	0.0665	Post-Development Treatment Volume (acre-ft)	0.2245
Pre-Development Treatment Volume (cubic feet)	2,895	Post-Development Treatment Volume (cubic feet)	9,779
Pre-Development Load (TP) (lb/yr)	1.82	Post-Development Load (TP) (lb/yr)	6.14

Maximum % Reduction Required Below Pre-Development Load: 20%

Total Load (TP) Reduction Required (lb/yr): 2.98

Site Results					
Phosphorous					
TOTAL PHOSPHOROUS LOAD REDUCTION REQUIRED (LB/YEAR)	2.98				
RUNOFF REDUCTION (cf)	0				
PHOSPHOROUS LOAD REDUCTION ACHIEVED (LB/YR)	3.11				
ADJUSTED POST-DEVELOPMENT PHOSPHOROUS LOAD (TP) (lb/yr)	3.03				
REMAINING PHOSPHOROUS LOAD REDUCTION (LB/YR) NEEDED	CONGRATULATIONS!! YOU EXCEEDED THE TARGET REDUCTION BY 0.1 LB/YEAR!!				
Nitrogen (for information purposes)					
RUNOFF REDUCTION (cf)	0				
NITROGEN LOAD REDUCTION ACHIEVED (LB/YR)	8.90				
ADJUSTED POST-DEVELOPMENT NITROGEN LOAD (TP) (lb/yr)	35.06				

Drainage Area A

Drainage Area A Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	1.40	0.00	1.28	2.68
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	2.84	0.00	0.10	2.94
Impervious Cover (acres)	0.00	1.98	0.00	0.12	2.10
				Total	7.72

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

Credit	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	45% runoff volume reduction	0.45	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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 Compost Amended Soils as per specs (see Spec #4)	impervious acres draining to grass channels	30% runoff volume reduction	0.30	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	0	0	0	25	0.00	0.00	0.00	0.00			15	0.00	0.00	0.00	0.00

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7.b. Infiltration #2 (Spec #8)	impervious acres draining to infiltration	90% runoff volume reduction	0.90	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	15% runoff volume reduction	0.15	0.00	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	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	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	0.00	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	0.00	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 conserved open space	50% runoff volume reduction for treated area	0.50	0.00	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	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00
							TOTAL PHOSPHOROUS REMOVAL REQUIRED ON SITE (lb/yr)	2.98											
							TOTAL RUNOFF REDUCTION IN D.A. A (cf)	0											
							PHOSPHORUS REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	0.00											
																	TOTAL RUNOFF REDUCTION IN D.A. A (cf)		0
																	NITROGEN REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)		0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

Apply Practices that Remove Pollutants but Do Not Reduce Runoff Volume

Practice	Unit	Area (excluding areas treated by upstream practices)	Phosphorus Efficiency (%)	Runoff from Upstream RR Practices (cf)	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	0.00	20	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet swale	0.00	20	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
10.b. Wet Swale #2 (Spec #11)	impervious acres draining to wet swale	0.00	40	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet swale	0.00	40	0.00	0.00	0.00	0.00	0.00		20	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	0.00	60	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to filter	0.00	60	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
11.b. Filtering Practice #2 (Spec #12)	impervious acres draining to filter	0.00	65	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to filter	0.00	65	0.00	0.00	0.00	0.00	0.00		20	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	0.00	50	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wetland	0.00	50	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
12.b. Constructed Wetland #2 (Spec #13)	impervious acres draining to wetland	0.00	75	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wetland	0.00	75	0.00	0.00	0.00	0.00	0.00		20	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	2.10	50	0.00	0.00	4.54	2.27	2.27		20	0.00	32.51	6.50	26.01
	turf acres draining to wet pond	2.94	50	0.00	0.00	1.67	0.84	0.84		20	0.00	11.98	2.40	9.58
13.b. Wet Pond #1 (Coastal Plain) (Spec #14)	impervious acres draining to wet pond	0.00	45	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0.00	45	0.00	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	0.00	75	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0.00	75	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
13.d. Wet Pond #2 (Coastal Plain) (Spec #14)	impervious acres draining to wet pond	0.00	65	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0.00	65	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
14. Manufactured BMP										**14. Manufactured BMP**				
14. Insert Name of Device	impervious acres draining to device	0.00	0	0.00	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
	turf acres draining to device	0.00	0	0.00	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
						PHOSPHORUS REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. A	3.11							
						TOTAL PHOSPHORUS REMOVAL IN D.A. A (lb/yr)	3.11							

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. A	8.90
TOTAL NITROGEN REMOVAL IN D.A. A (lb/yr)	8.90

Virginia Runoff Reduction Method Worksheet -- Revised -- 03/25/2011 - Redevelopment

Site Data

Project Name:

Date:

	data input cells
	calculation cells
	constant values

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		

Pre-Development Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	10.50	0.00	3.48	13.98
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	4.08	0.00		4.08
Impervious Cover (acres)	0.00	7.24	0.00	0.00	7.24
				Total	25.30

Post-Development Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	10.50	0.00	3.48	13.98
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	4.08	0.00		4.08
Impervious Cover (acres)	0.00	7.24	0.00		7.24
				Total	25.30

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		**Land Cover Summary**	
Pre-Development		**Post-Development**	
Forest/Open Space Cover (acres)	13.98	Forest/Open Space Cover (acres)	13.98
Weighted Rv(forest)	0.03	Weighted Rv(forest)	0.03
% Forest	55%	% Forest	55%
Managed Turf Cover (acres)	4.08	Managed Turf Cover (acres)	4.08
Weighted Rv(turf)	0.20	Weighted Rv(turf)	0.20
% Managed Turf	16%	% Managed Turf	16%
Impervious Cover (acres)	7.24	Impervious Cover (acres)	7.24
Rv(impervious)	0.95	Rv(impervious)	0.95
% Impervious	29%	% Impervious	29%
Total Site Area (acres)	25.30	**Total Site Area (acres)**	25.30
Site Rv	0.32	**Site Rv**	0.32
Pre-Development Treatment Volume (acre-ft)	0.6819	Post-Development Treatment Volume (acre-ft)	0.6819
Pre-Development Treatment Volume (cubic feet)	29,704	Post-Development Treatment Volume (cubic feet)	29,704
Pre-Development Load (TP) (lb/yr)	18.66	Post-Development Load (TP) (lb/yr)	18.66

Maximum % Reduction Required Below Pre-Development Load	20%
Total Load (TP) Reduction Required (lb/yr)	3.73

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Site Results				
Phosphorous				
TOTAL PHOSPHOROUS LOAD REDUCTION REQUIRED (LB/YEAR)	3.73			
RUNOFF REDUCTION (cf)	0			
PHOSPHOROUS LOAD REDUCTION ACHIEVED (LB/YR)	8.76	* REDUCTION IS REDUCED TO 8.0 BY TREATMENT OF 6.1 ACRES IN VDOT POND UPSTREAM.		
ADJUSTED POST-DEVELOPMENT PHOSPHOROUS LOAD (TP) (lb/yr)	9.90			
REMAINING PHOSPHOROUS LOAD REDUCTION (LB/YR) NEEDED	CONGRATULATIONS!! YOU EXCEEDED THE TARGET REDUCTION BY 5 LB/YEAR!!			
Nitrogen (for information purposes)				
RUNOFF REDUCTION (cf)	0			
NITROGEN LOAD REDUCTION ACHIEVED (LB/YR)	25.08			
ADJUSTED POST-DEVELOPMENT NITROGEN LOAD (TP) (lb/yr)	108.43			

Drainage Area A

Drainage Area A Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	10.50	0.00	3.48	13.98
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	4.08	0.00	0.00	4.08
Impervious Cover (acres)	0.00	7.24	0.00	0.00	7.24
				Total	25.30

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

Credit	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	45% runoff volume reduction	0.45	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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 Compost Amended Soils as per specs (see Spec #4)	impervious acres draining to grass channels	30% runoff volume reduction	0.30	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	15% runoff volume reduction	0.15	0.00	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	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	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	0.00	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	0.00	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 conserved open space	50% runoff volume reduction for treated area	0.50	0.00	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	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00

TOTAL PHOSPHOROUS REMOVAL REQUIRED ON SITE (lb/yr)	3.73
TOTAL RUNOFF REDUCTION IN D.A. A (cf)	0
PHOSPHORUS REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	0.00

TOTAL RUNOFF REDUCTION IN D.A. A (cf)	0
NITROGEN REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

Apply Practices that Remove Pollutants but Do Not Reduce Runoff Volume

Practice	Unit	Area (excluding areas treated by upstream practices)	Phosphorus Efficiency (%)	Runoff from Upstream RR Practices (cf)	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)**				
	impervious acres draining to wet swale	0.00	20	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
10.a. Wet Swale #1 (Spec #11)	turf acres draining to wet swale	0.00	20	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	impervious acres draining to wet swale	0.00	40	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
10.b. Wet Swale #2 (Spec #11)	turf acres draining to wet swale	0.00	40	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
11. Filtering Practices										**11. Filtering Practices**				
	impervious acres draining to filter	0.00	60	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
11.a.Filtering Practice #1 (Spec #12)	turf acres draining to filter	0.00	60	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	impervious acres draining to filter	0.00	65	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
11.b. Filtering Practice #2 (Spec #12)	turf acres draining to filter	0.00	65	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
12. Constructed Wetland										**12. Constructed Wetland**				
	impervious acres draining to wetland	0.00	50	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
12.a.Constructed Wetland #1 (Spec #13)	turf acres draining to wetland	0.00	50	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	impervious acres draining to wetland	0.00	75	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
12.b. Constructed Wetland #2 (Spec #13)	turf acres draining to wetland	0.00	75	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
13. Wet Ponds										**13. Wet Ponds**				
	impervious acres draining to wet pond	7.24	50	0.00	0.00	15.67	7.83	7.83		20	0.00	112.09	22.42	89.68
13.a. Wet Pond #1 (Spec #14)	turf acres draining to wet pond	4.08	50	0.00	0.00	1.86	0.93	0.93		20	0.00	13.30	2.66	10.64
	impervious acres draining to wet pond	0.00	45	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
13.b. Wet Pond #1 (Coastal Plain) (Spec #14)	turf acres draining to wet pond	0.00	45	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	impervious acres draining to wet pond	0.00	75	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
13.c. Wet Pond #2 (Spec #14)	turf acres draining to wet pond	0.00	75	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	impervious acres draining to wet pond	0.00	65	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
13.d. Wet Pond #2 (Coastal Plain) (Spec #14)	turf acres draining to wet pond	0.00	65	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
14. Manufactured BMP										**14. Manufactured BMP**				
	impervious acres draining to device	0.00	0	0.00	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	0.00	0	0.00	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

PHOSPHORUS REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. A	8.76
TOTAL PHOSPHORUS REMOVAL IN D.A. A (lb/yr)	8.76

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. A	25.08
TOTAL NITROGEN REMOVAL IN D.A. A (lb/yr)	25.08

Exhibit 3B

NOTES:

1. BMP AND STORMWATER RETENTION REQUIREMENTS FOR SITE ARE MET.
2. A BMP DESIGN OF 50% IS NEEDED TO SATISFY PHOSPHOROUS REMOVAL; THIS DESIGN IS A TYPE 1 CONSTRUCTED WETLAND AND TYPE 1 EXTENDED DETENTION POND. WETLAND WS ELEV = 214', EXTENDED DETENTION WS ELEVATION = 215'; VOLUME AT ED W.S. ELEV. = 14,847 CUBIC FEET; TREATMENT VOLUME NEEDED FOR ENTIRE SITE* = 9,230 CUBIC FEET
3. ELEVATION OF TOP OF DAM = 220
4. GRADING IN RPA WAS AVOIDED; CLEARING FOR SANITARY SEWER IN RPA STILL NEEDED
   0.73 ACRES OF DISTURBANCE IN EQC
   0.22 ACRES OF DISTURBANCE IN RPA
5. RETAINING WALL NEEDED ON SOUTH SIDE OF POND
6. THIS POND HAS BEEN DESIGNED WITH THE R-3 CLUSTER LAYOUT USED IN THE GDP.
7. 4.90 ACRES OF SITE DRAINS TO POND.
8. 2.39 ACRES OF RIDGE ROAD ESTATES DRAINS TO THIS POND.
9. DOES NOT FIX EXISTING ISSUES WITH THE EXISTING POND
10. SITE AREA = 7.72 ACRES

*VOLUME CALCULATED FROM RUNOFF REDUCTION WORKSHEET

PACIULLI SIMMONS & ASSOCIATES
Established 1744
3975 Fair Ridge Drive
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Fairfax, VA 22033
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Engineers
Planners
Surveyors
Landscape Architects
Wetland Specialists
Environmental Scientists
Archaeologists

PARK POINTE

SPRINGFIELD DISTRICT
FAIRFAX COUNTY, VIRGINIA

POND ALTERNATIVE 2
POND IN EQC

COMMONWEALTH OF VIRGINIA
ANN O. GERMAIN
Lic. No. 028700
PROFESSIONAL ENGINEER

DATE:
FILE NO:
DRN:
CKD:

SHEET

Virginia Runoff Reduction Method Worksheet -- Revised -- 03/25/2011 - Redevelopment

Site Data

Project Name:

Date:

data input cells
calculation cells
constant values

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		

Pre-Development Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	5.67	0.00	1.35	7.02
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	0.00	0.00	0.15	0.15
Impervious Cover (acres)	0.00	0.55	0.00	0.00	0.55
				Total	7.72

Post-Development Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	1.40	0.00	1.28	2.68
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	2.84	0.00	0.10	2.94
Impervious Cover (acres)	0.00	1.98	0.00	0.12	2.10
				Total	7.72

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		**Land Cover Summary**	
Pre-Development		**Post-Development**	
Forest/Open Space Cover (acres)	7.02	Forest/Open Space Cover (acres)	2.68
Weighted Rv(forest)	0.03	Weighted Rv(forest)	0.04
% Forest	91%	% Forest	35%
Managed Turf Cover (acres)	0.15	Managed Turf Cover (acres)	2.94
Weighted Rv(turf)	0.25	Weighted Rv(turf)	0.20
% Managed Turf	2%	% Managed Turf	38%
Impervious Cover (acres)	0.55	Impervious Cover (acres)	2.10
Rv(impervious)	0.95	Rv(impervious)	0.95
% Impervious	7%	% Impervious	27%
Total Site Area (acres)	7.72	**Total Site Area (acres)**	7.72
Site Rv	0.10	**Site Rv**	0.35
Pre-Development Treatment Volume (acre-ft)	0.0665	Post-Development Treatment Volume (acre-ft)	0.2245
Pre-Development Treatment Volume (cubic feet)	2,895	Post-Development Treatment Volume (cubic feet)	9,779
Pre-Development Load (TP) (lb/yr)	1.82	Post-Development Load (TP) (lb/yr)	6.14

Maximum % Reduction Required Below Pre-Development Load	20%
Total Load (TP) Reduction Required (lb/yr)	2.98

Site Results	
Phosphorous	
TOTAL PHOSPHOROUS LOAD REDUCTION REQUIRED (LB/YEAR)	2.98
RUNOFF REDUCTION (cf)	0
PHOSPHOROUS LOAD REDUCTION ACHIEVED (LB/YR)	2.46
ADJUSTED POST-DEVELOPMENT PHOSPHOROUS LOAD (TP) (lb/yr)	3.69
REMAINING PHOSPHOROUS LOAD REDUCTION (LB/YR) NEEDED	0.52
Nitrogen (for information purposes)	
RUNOFF REDUCTION (cf)	0
NITROGEN LOAD REDUCTION ACHIEVED (LB/YR)	7.04
ADJUSTED POST-DEVELOPMENT NITROGEN LOAD (TP) (lb/yr)	36.92

Drainage Area A

Drainage Area A Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	1.40	0.00	1.28	2.68
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	2.84	0.00	0.10	2.94
Impervious Cover (acres)	0.00	1.98	0.00	0.12	2.10
				Total	7.72

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

Credit	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	45% runoff volume reduction	0.45	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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 Compost Amended Soils as per specs (see Spec #4)	impervious acres draining to grass channels	30% runoff volume reduction	0.30	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	0.00	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	15% runoff volume reduction	0.15	0.00	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	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	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	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	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 conserved open space	50% runoff volume reduction for treated area	0.50	0.00	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	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00

TOTAL PHOSPHOROUS REMOVAL REQUIRED ON SITE (lb/yr)	2.98
TOTAL RUNOFF REDUCTION IN D.A. A (cf)	0
PHOSPHORUS REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	0.00

TOTAL RUNOFF REDUCTION IN D.A. A (cf)	0
NITROGEN REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	0.00

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

Apply Practices that Remove Pollutants but Do Not Reduce Runoff Volume

Practice	Unit	Area (excluding areas treated by upstream practices)	Phosphorus Efficiency (%)	Runoff from Upstream RR Practices (cf)	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	0.00	20	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet swale	0.00	20	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
10.b. Wet Swale #2 (Spec #11)	impervious acres draining to wet swale	0.00	40	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet swale	0.00	40	0.00	0.00	0.00	0.00	0.00		20	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	0.00	60	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to filter	0.00	60	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
11.b. Filtering Practice #2 (Spec #12)	impervious acres draining to filter	0.00	65	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to filter	0.00	65	0.00	0.00	0.00	0.00	0.00		20	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	1.58	50	0.00	0.00	3.42	1.71	1.71		20	0.00	24.46	4.89	19.57
	turf acres draining to wetland	2.63	50	0.00	0.00	1.50	0.75	0.75		20	0.00	10.72	2.14	8.57
12.b. Constructed Wetland #2 (Spec #13)	impervious acres draining to wetland	0.00	75	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wetland	0.00	75	0.00	0.00	0.00	0.00	0.00		20	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		50	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet pond		50	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
13.b. Wet Pond #1 (Coastal Plain) (Spec #14)	impervious acres draining to wet pond	0.00	45	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0.00	45	0.00	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	0.00	75	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0.00	75	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
13.d. Wet Pond #2 (Coastal Plain) (Spec #14)	impervious acres draining to wet pond	0.00	65	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0.00	65	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
14. Manufactured BMP										**14. Manufactured BMP**				
14. Insert Name of Device	impervious acres draining to device	0.00	0	0.00	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
	turf acres draining to device	0.00	0	0.00	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

PHOSPHORUS REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. A	2.46
TOTAL PHOSPHORUS REMOVAL IN D.A. A (lb/yr)	2.46

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVAL BY PRACTICES THAT DO NOT REDUCE RUNOFF VOLUME IN D.A. A	7.04
TOTAL NITROGEN REMOVAL IN D.A. A (lb/yr)	7.04

Exhibit 3C

NOTES:

1. THIS POND IS UNABLE TO MEET RUNOFF REDUCTION METHOD STANDARDS BECAUSE PLACEMENT DOES NOT CAPTURE ENOUGH SITE RUNOFF.
   1.1. STORAGE AT 219.5' = 10,415.2 CUBIC FEET; TREATMENT VOLUME NEEDED FOR SITE* = 9,230 CUBIC FEET.
   1.2. 2.69 ACRES OF SITE DRAINS TO POND; UNABLE TO SUPPORT A WET POND
   1.3. POND IS UNABLE TO REMOVE SUFFICIENT PHOSPHOROUS WITH THE DESIGN OF AN EXTENDED DETENTION POND AND THE SHEET FLOW TO OPEN SPACE TO SATISFY BMP REQUIREMENTS.
2. ELEVATION OF TOP OF DAM = 224'; APPROXIMATE STORAGE AT 222' = 25,423.2 CUBIC FEET
3. GRADING IN RPA AND EQC WAS AVOIDED. CLEARING FOR STORM OUTFALL AND SANITARY SEWER STILL NEEDED IN RPA AND EQC.
   0.21 ACRES OF DISTURBANCE IN EQC
   0.22 ACRES OF DISTURBANCE IN RPA
4. A LARGE RETAINING WALL WAS PLACED ON THE CUL-DE-SAC SIDE OF THE POND TO ACHIEVE A POND OUTSIDE OF THE EQC/RPA.
5. THIS POND HAS BEEN DESIGNED WITH A PDH-3 LAYOUT
6. DOES NOT FIX EXISTING ISSUES WITH POND.
7. INLET PIPE THROUGH RETAINING WALL REQUIRES SPECIAL MAINTENANCE AGREEMENT
8. SITE AREA = 7.72 ACRES
9. DEEP SANITARY SEWER

*VOLUME CALCULATED FROM RUNOFF REDUCTION METHOD WORKSHEET

0 25' 50' 100' 150' 200'

Scale 1" = 50'

PACIULLI SIMMONS & ASSOCIATES
Established 1744
3975 Fair Ridge Drive
Suite 300 South
Fairfax, VA 22033
PH 703.934.0900
FX 703.934.9787
EM fairfax@psaltd.com
Engineers
Planners
Surveyors
Landscape Architects
Wetland Specialists
Environmental Scientists
Archaeologists

PARK POINTE

SPRINGFIELD DISTRICT
FAIRFAX COUNTY, VIRGINIA

POND ALTERNATIVE 3
POND OUTSIDE OF EQC

COMMONWEALTH OF VIRGINIA
ANN O. GERMAIN
Lic. No. 028700
PROFESSIONAL ENGINEER

DATE:
FILE NO:
DRN:
CKD:

SHEET

Virginia Runoff Reduction Method Worksheet -- Revised -- 03/25/2011 - Redevelopment

Site Data

Project Name:

Date:

	data input cells
	calculation cells
	constant values

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		

Pre-Development Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	5.67	0.00	1.35	7.02
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	0.00	0.00	0.15	0.15
Impervious Cover (acres)	0.00	0.55	0.00	0.00	0.55
				Total	7.72

Post-Development Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	1.40	0.00	1.28	2.68
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	2.84	0.00	0.10	2.94
Impervious Cover (acres)	0.00	1.98	0.00	0.12	2.10
				Total	7.72

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		**Land Cover Summary**	
Pre-Development		**Post-Development**	
Forest/Open Space Cover (acres)	7.02	Forest/Open Space Cover (acres)	2.68
Weighted Rv(forest)	0.03	Weighted Rv(forest)	0.04
% Forest	91%	% Forest	35%
Managed Turf Cover (acres)	0.15	Managed Turf Cover (acres)	2.94
Weighted Rv(turf)	0.25	Weighted Rv(turf)	0.20
% Managed Turf	2%	% Managed Turf	38%
Impervious Cover (acres)	0.55	Impervious Cover (acres)	2.10
Rv(impervious)	0.95	Rv(impervious)	0.95
% Impervious	7%	% Impervious	27%
Total Site Area (acres)	7.72	**Total Site Area (acres)**	7.72
Site Rv	0.10	**Site Rv**	0.35
Pre-Development Treatment Volume (acre-ft)	0.0665	Post-Development Treatment Volume (acre-ft)	0.2245
Pre-Development Treatment Volume (cubic feet)	2,895	Post-Development Treatment Volume (cubic feet)	9,779
Pre-Development Load (TP) (lb/yr)	1.82	Post-Development Load (TP) (lb/yr)	6.14
		Maximum % Reduction Required Below Pre-Development Load	20%
		Total Load (TP) Reduction Required (lb/yr)	2.98

Site Results	
Phosphorous	
TOTAL PHOSPHOROUS LOAD REDUCTION REQUIRED (LB/YEAR)	2.98
RUNOFF REDUCTION (cf)	0
PHOSPHOROUS LOAD REDUCTION ACHIEVED (LB/YR)	0.50
ADJUSTED POST-DEVELOPMENT PHOSPHOROUS LOAD (TP) (lb/yr)	5.65
REMAINING PHOSPHOROUS LOAD REDUCTION (LB/YR) NEEDED	2.48
Nitrogen (for information purposes)	
RUNOFF REDUCTION (cf)	0
NITROGEN LOAD REDUCTION ACHIEVED (LB/YR)	2.36
ADJUSTED POST-DEVELOPMENT NITROGEN LOAD (TP) (lb/yr)	41.59

Drainage Area A

Drainage Area A Land Cover (acres)

	A soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land	0.00	1.40	0.00	1.28	2.68
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	0.00	2.84	0.00	0.10	2.94
Impervious Cover (acres)	0.00	1.98	0.00	0.12	2.10
				Total	7.72

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

Credit	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
1. Vegetated Roof													
1.a. Vegetated Roof #1 (Spec #5)	acres of green roof	45% runoff volume reduction	0.45	0.00	0	0	0	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	0.00	0	0	0	0	0.00	0.00	0.00	0.00	
2. Rooftop Disconnection													
2.a. Simple Disconnection to A/B Soils (Spec #1)	impervious acres disconnected	50% runoff volume reduction for treated area	0.50	0.00	0	0	0	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	0.00	0	0	0	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	0.00	0	0	0	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	0.00	0	0	0	25	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	0.00	0	0	0	25	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	0.00	0	0	0	25	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	0.00	0	0	0	50	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	0.00	0	0	0	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	0.00	0	0	0	25	0.00	0.00	0.00	0.00	
3. Permeable Pavement													
3.a. Permeable Pavement #1 (Spec #7)	acres of permeable pavement + acres of "external" (upgradient) impervious	45% runoff volume reduction	0.45	0.00	0	0	0	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	0.00	0	0	0	25	0.00	0.00	0.00	0.00	
4. Grass Channel													
4.a. Grass Channel A/B Soils (Spec #3)	impervious acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	0.00	0.00	0.00	0.00	
	turf acres draining to grass channels	20% runoff volume reduction	0.20	0.00	0	0	0	15	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	0.00	0	0	0	15	0.00	0.00	0.00	0.00	
	turf acres draining to grass channels	10% runoff volume reduction	0.10	0.00	0	0	0	15	0.00	0.00	0.00	0.00	
4.c. Grass Channel Compost Amended Soils as per specs (see Spec #4)	impervious acres draining to grass channels	30% runoff volume reduction	0.30	0.00	0	0	0	15	0.00	0.00	0.00	0.00	
	turf acres draining to grass channels	30% runoff volume reduction	0.30	0.00	0	0	0	15	0.00	0.00	0.00	0.00	
5. Dry Swale													
5.a. Dry Swale #1 (Spec #10)	impervious acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	0.00	0.00	0.00	0.00	
	turf acres draining to dry swale	40% runoff volume reduction	0.40	0.00	0	0	0	20	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	0.00	0	0	0	40	0.00	0.00	0.00	0.00	
	turf acres draining to dry swale	60% runoff volume reduction	0.60	0.00	0	0	0	40	0.00	0.00	0.00	0.00	
6. Bioretention													
6.a. Bioretention #1 or Urban Bioretention (Spec #9)	impervious acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	0.00	0.00	0.00	0.00	
	turf acres draining to bioretention	40% runoff volume reduction	0.40	0.00	0	0	0	25	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	0.00	0	0	0	50	0.00	0.00	0.00	0.00	
	turf acres draining to bioretention	80% runoff volume reduction	0.80	0.00	0	0	0	50	0.00	0.00	0.00	0.00	
7. Infiltration													
7.a. Infiltration #1 (Spec #8)	impervious acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00	
	turf acres draining to infiltration	50% runoff volume reduction	0.50	0.00	0	0	0	25	0.00	0.00	0.00	0.00	

Credit	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. Green Roof					
1.a. Vegetated Roof #1 (Spec #5)	0	0.00	0.00	0.00	0.00
1.b. Vegetated Roof #2 (Spec #5)	0	0.00	0.00	0.00	0.00
2. Impervious Surface Disconnection					
2.a. Simple Disconnection to A/B Soils (Spec #1)	0	0.00	0.00	0.00	0.00
2.b. Simple Disconnection to C/D Soils (Spec #1)	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)	0	0.00	0.00	0.00	0.00
2.d. To Dry Well or French Drain #1 (Microinfiltration #1) (Spec #8)	15	0.00	0.00	0.00	0.00
2.e. To Dry Well or French Drain #2 (Micro-Infiltration #2) (Spec #8)	15	0.00	0.00	0.00	0.00
2.f. To Rain Garden #1 (Micro-Bioretention #1) (Spec #9)	40	0.00	0.00	0.00	0.00
2.g. To Rain Garden #2 (Micro-Bioretention #2) (Spec #9)	60	0.00	0.00	0.00	0.00
2.h. To Rainwater Harvesting (Spec #6)	0	0.00	0.00	0.00	0.00
2.i. To Stormwater Planter (Urban Bioretention) (Spec #9, Appendix A)	40	0.00	0.00	0.00	0.00
3. Permeable Pavement					
3.a. Permeable Pavement #1 (Spec #7)	25	0.00	0.00	0.00	0.00
3.b. Permeable Pavement #2 (Spec #7)	25	0.00	0.00	0.00	0.00
4. Grass Channel					
4.a. Grass Channel A/B Soils (Spec #3)	20	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)	20	0.00	0.00	0.00	0.00
	20	0.00	0.00	0.00	0.00
4.c. Grass Channel Compost Amended Soils as per specs (see Spec #4)	20	0.00	0.00	0.00	0.00
	20	0.00	0.00	0.00	0.00
5. Dry Swale					
5.a. Dry Swale #1 (Spec #10)	25	0.00	0.00	0.00	0.00
	25	0.00	0.00	0.00	0.00
5.b. Dry Swale #2 (Spec #10)	35	0.00	0.00	0.00	0.00
	35	0.00	0.00	0.00	0.00
6. Bioretention					
6.a. Bioretention #1 or Urban Bioretention (Spec #9)	40	0.00	0.00	0.00	0.00
	40	0.00	0.00	0.00	0.00
6.b. Bioretention #2 (Spec #9)	60	0.00	0.00	0.00	0.00
	60	0.00	0.00	0.00	0.00
7. Infiltration					
7.a. Infiltration #1 (Spec #8)	15	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	0.00	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	0.00	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	1.02	0	0	3517	15	0.00	2.21	0.33	1.88			10	0.00	15.79	1.58	14.21
	turf acres draining to ED	0% runoff volume reduction	0.00	1.92	0	0	1742	15	0.00	1.09	0.16	0.93			10	0.00	7.82	0.78	7.04
8.b. ED #2 (Spec #15)	impervious acres draining to ED	15% runoff volume reduction	0.15	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	15% runoff volume reduction	0.15	0.00	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	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	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	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	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 conserved open space	50% runoff volume reduction for treated area	0.50	0.00	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	0.00	0	0	0	0	0.00	0.00	0.00	0.00			0	0.00	0.00	0.00	0.00

TOTAL PHOSPHOROUS REMOVAL REQUIRED ON SITE (lb/yr)	2.98
TOTAL RUNOFF REDUCTION IN D.A. A (cf)	0
PHOSPHORUS REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	0.50

TOTAL RUNOFF REDUCTION IN D.A. A (cf)	0
NITROGEN REMOVAL FROM RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr)	2.36

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

Apply Practices that Remove Pollutants but Do Not Reduce Runoff Volume

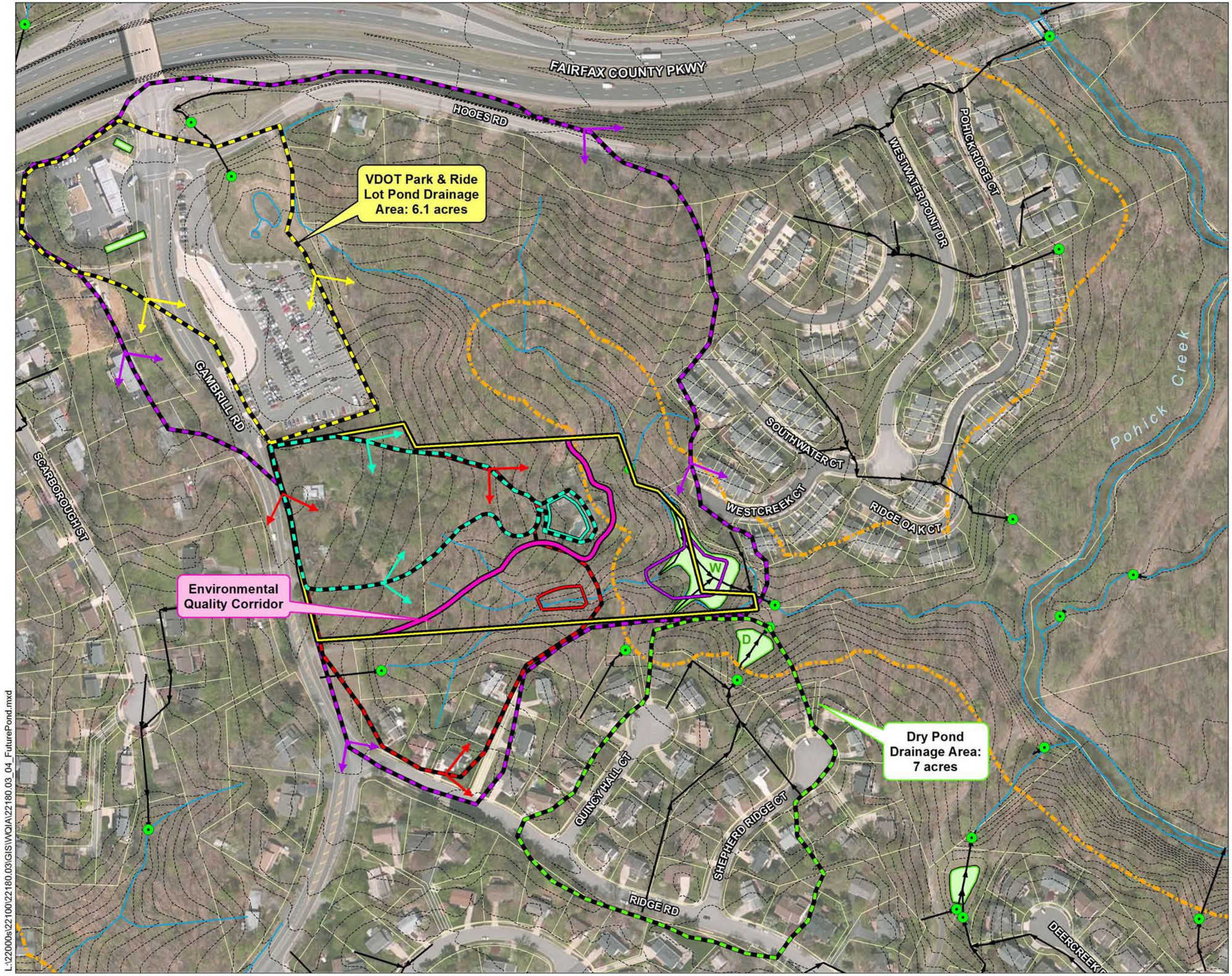
Practice	Unit	Area (excluding areas treated by upstream practices)	Phosphorus Efficiency (%)	Runoff from Upstream RR Practices (cf)	Phosphorus Load from Upstream RR Practices (lbs)	Untreated Phosphorus Load to Practice (lbs.)	Phosphorus Removed By Practice (lbs.)	Remaining Phosphorus Load (lbs.)	Downstream 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	0.00	20	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet swale	0.00	20	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
10.b. Wet Swale #2 (Spec #11)	impervious acres draining to wet swale	0.00	40	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet swale	0.00	40	0.00	0.00	0.00	0.00	0.00		20	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	0.00	60	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to filter	0.00	60	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
11.b. Filtering Practice #2 (Spec #12)	impervious acres draining to filter	0.00	65	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to filter	0.00	65	0.00	0.00	0.00	0.00	0.00		20	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		50	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wetland		50	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
12.b. Constructed Wetland #2 (Spec #13	impervious acres draining to wetland	0.00	75	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wetland	0.00	75	0.00	0.00	0.00	0.00	0.00		20	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		50	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet pond		50	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
13.b. Wet Pond #1 (Coastal Plain) (Spec #14)	impervious acres draining to wet pond	0.00	45	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0.00	45	0.00	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	0.00	75	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0.00	75	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
13.d. Wet Pond #2 (Coastal Plain) (Spec #14)	impervious acres draining to wet pond	0.00	65	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
	turf acres draining to wet pond	0.00	65	0.00	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
14. Manufactured BMP										**14. Manufactured BMP**				
14. Insert Name of Device	impervious acres draining to device	0.00	0	0.00	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
	turf acres draining to device	0.00	0	0.00	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

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)	0.50

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)	2.36

Exhibit 3D



Park Pointe
SWM/BMP Facility
Alternatives Analysis
WSSI #22180.03
Original Scale: 1" = 200'

N
W E
S

0 200
Feet

Project Boundary: 7.72 ac.

Wetland Studies and Solutions, Inc. Data

Dry Pond Drainage Area: 7 acres

Environmental Quality Corridor

Paciulli, Simmons & Associates Data

Pond Alternative 1

Pond 1 Drainage Area: 33.02 ac.
Onsite: 7.72 ac. Offsite: 25.3 ac.

Pond Alternative 2

Pond 2 Drainage Area: 7 ac.
Onsite: 4.8 ac. Offsite: 2.2 ac.

Pond Alternative 3

Pond 3 Drainage Area: 2.7 ac.
Onsite: 2.7 ac. Offsite: 0 ac.

Fairfax County Digital Data

Parcels

Stormwater Ponds/Feature

Outfall

Storm Pipe

Hydrology

Resource Protection Area

5' Contours

Aerial: April 2011. ESRI

Prepared by:

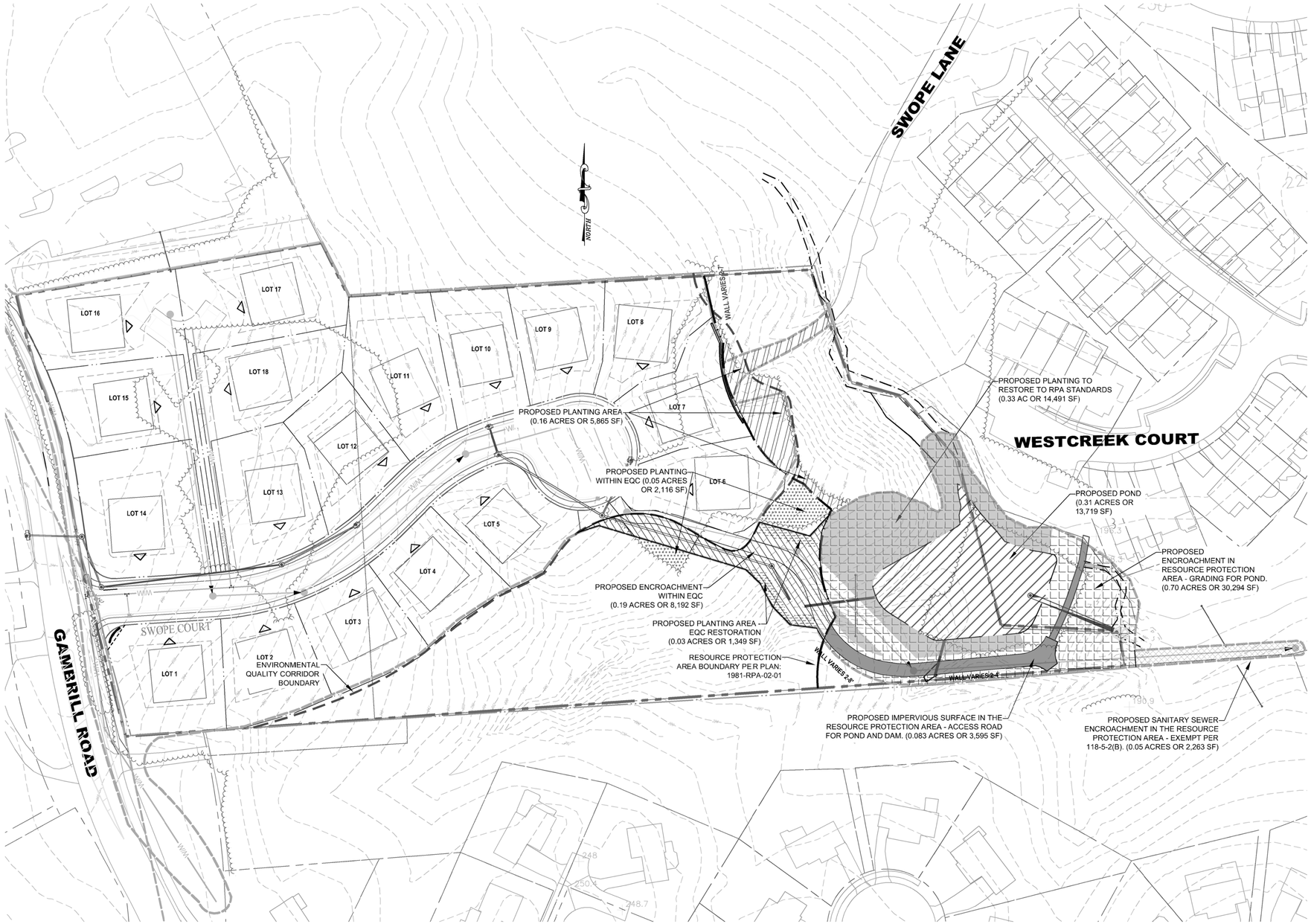
Wetland Studies and Solutions, Inc.

October 2013

L:\22000s\22100\22180.03\GIS\WQIA\22180.03_04_FuturePond.mxd

Exhibit 3D

Exhibit 4



LEGEND

- SITE BOUNDARY
- PERENNIAL STREAM (PER WSSI'S OBSERVATIONS)
- APPROXIMATE LIMITS OF PERENNIAL STREAM (PER WSSI OBSERVATIONS – NOT SURVEYED) NOTE #15
- INTERMITTENT STREAM (PER WSSI'S OBSERVATIONS)
- JURISDICTIONAL WETLAND AREAS
- PALUSTRINE OPEN WATER (POND)
- EXISTING TREELINE
- FIELD VERIFIED RESOURCE PROTECTION AREA BOUNDARY (RPA) PER PLAN # 1981–RPA–02–01
- LIMITS OF CLEARING
- ENVIRONMENTAL QUALITY CORRIDOR (EQC)
- PROPOSED IMPERVIOUS SURFACE IN RPA
- PROPOSED ENCROACHMENT INTO RPA
- PROPOSED PLANTING AREA WITHIN RPA
- PROPOSED PLANTING AREA WITHIN EQC
- CLEARING FOR UTILITIES WITHIN RPA
- PROPOSED POND
- AREA WITHIN RPA TO BE REFORESTED
- AREA WITHIN EQC AREA TO BE REFORESTED
- PROPOSED PLANTING AREA – EQC RESTORATION

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

COWARDIN CLASSIFICATION

R3	RIVERINE UPPER PERENNIAL
R4	RIVERINE INTERMITTENT
PFO	PALUSTRINE FORESTED WETLAND
POW	PALUSTRINE OPEN WATER
PEM	PALUSTRINE EMERGENT WETLAND

RPA IMPERVIOUS AREA REDUCTION

IMPERVIOUS WITHIN RPA	SF	AC
EXISTING	3,603	0.08
PROPOSED	3,595	0.08
TOTAL NET REDUCTION	8	0.00

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Gainesville, Virginia 20155
Phone: 703-679-5600 • Fax: 703-679-5601
www.wetlandstudies.com

EXHIBIT 8:
Proposed Conditions/RPAE Plat

Prepared For: Van Metre Homes

PARK PONTE
Fairfax County, Virginia

COMMONWEALTH OF VIRGINIA
DANIEL C. LUCEY
No. 034207
PROFESSIONAL ENGINEER

REVISIONS

No.	Date	Description	Rev. By	App. By

SCALE: 1"=50' C.I.:2' & 5'

DATE: NOVEMBER 2013

Horizontal Datum:

Vertical Datum:

Boundary and Topo Source:
Paciulli, Simmons & Associates, Ltd.
Fairfax County Digital Data

Design	Draft	Approved
KHT	KHT	DCL

Sheet #
1 of 3

Computer File Name:
c:\22606\221002\02.08.03\cadd\05 cnv\2013-10-24_proposed1conditions.dwg

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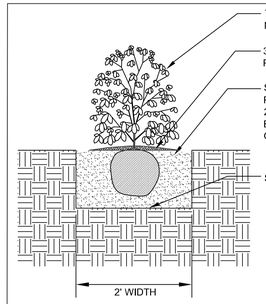
Tree Density Requirements
(per CBPO118-3-3(f))

	Ratio/Ac.	Area	Required	Provided	Result
Overstory Tree Total	100	0.55	55	55	COMPLY
Understory Tree Total	200	0.55	110	110	COMPLY
Shrub Total	1,089	0.55	596	596	COMPLY

To meet diversity requirements of the Tree Conservation Ordinance (PFM 12-0514.1L) no more than 10% of the trees required to be planted shall be of one species. Because 159 trees are required, no more than 15 of each tree species may be planted for the project.

PLANTING AND SEEDING NOTES:

1. It is expected and preferred that all species in each of the Species Groups are planted. The tolerances listed in this note are intended to incorporate flexibility according to species availability. At a minimum, Contractor to provide at least:
   - a) 4 of the 5 species in Group 1,
   - b) 4 of the 5 species in Group 2,
   - c) all of Group 3,
   - d) 5 of the 6 species in Group 4,
   - e) 4 of the 5 species in Group 5,
   - f) all of Group 6,
   - g) all of Group 7,
   - h) all of Group 8,
   - i) 3 of the 5 species in Group 9,
   - j) 3 of 4 species in Group 10,
   - k) 5 of 8 in Group 11,
   - l) 4 of 5 in Group 12,
   - m) 5 of 7 in Group 13,
   - n) 5 of 6 in Group 14.
2. Substitutions for selected species based upon availability shall be requested in writing to engineer, documenting the lack of availability, If the flexibility inherent in the above schedule is still not sufficient, Engineer is under no obligation to approve substitutions.
3. The planted trees and shrubs shall be randomly spaced and species mixed throughout the planting areas.
4. Container rates and quantities shown for one gallon size. For purposes of substitution, two tubelings are the equivalent of one 1-gallon container plant in this schedule. Contractor may provide a mix of container and tubeling sizes for each species requirement, provided the ratio of tubelings to containers is not less than 2:1. Exception -- Group 6 (Stream Edge) shall be planted in accordance with Note #5.
5. All seeding rates are expressed in pounds of pure live seed (PLS).

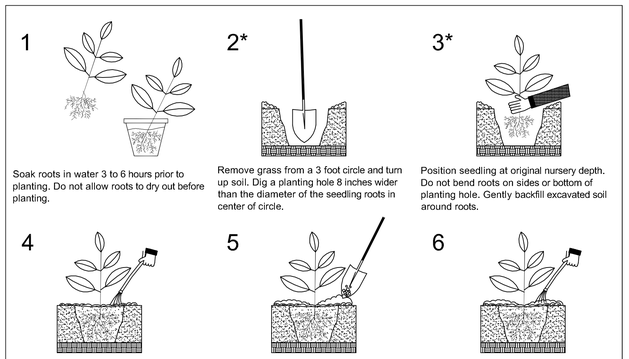


CONTAINER SHRUB PLANTING DETAIL
NOT TO SCALE

L:\22000s\22015.02\Admin\04-ENGR\WGIA\[PLANTING_SEEDING]SCHED.XLSX]RIPARIAN-WIDE RANGE SUNNY

RIPARIAN BUFFER VEGETATION SCHEDULE

CONTAINER PLANTING ZONE		SPECIES GROUP[1,2]	SPECIES[2]	INDICATOR STATUS	WILDLIFE VALUE: FUNCTIONS	WILDLIFE VALUE: PRIMARY SPECIES	WILDLIFE VALUE: PLANT PART	WILDLIFE VALUE: SEASON	PLANT SPACING[3]	CONTAINER SIZE, RATE, AND QUANTITY[4]: PLANTS PER ACRE	CONTAINER SIZE, RATE, AND QUANTITY[4]: # OF PLANTS	PLANTING QUANTITIES (BASED ON ONE-GALLON SIZE): PLANTING AREA / AREA (SF): / AREA (AC):	A / 23,821 / 0.55
RIPARIAN FOREST	OVERSTORY TREE LAYER	1	QUERCUS BICOLOR (SWAMP	FACW	Food	Woodpeckers, turkey, deer, squirrels, raccoons, other small mammals	Nuts	Fall, Winter	SEE NOTE #3	67 ONE GAL -- or -- 134 TUBELINGS -- or -- MIX AT 1:2 RATIO (SEE NOTE #4)	37 (BASED ON ONE-GALLON)		37
			QUERCUS ALBA (WHITE OAK)	FACW	Food	Woodpeckers, turkey, deer, squirrels, raccoons, other small mammals	Nuts	Fall, Winter					
			QUERCUS PALUSTRIS (PIN OA	FACW	Food	Woodpeckers, turkey, deer, squirrels, raccoons, other small mammals	Nuts	Fall, Winter					
			QUERCUS PHELLOS (WILLOW	FAC	Food	Woodpeckers, turkey, deer, squirrels, raccoons, other small mammals	Nuts	Fall, Winter					
			QUERCUS RUBRA (NORTHERI	FACU	Food	Woodpeckers, turkey, deer, squirrels, raccoons, other small mammals	Nuts	Fall, Winter					
		2	ACER NEGUNDO (BOX ELDER	FAC	Food	Finches, chickadees, squirrels, robins, goldfinches, other birds	Seeds, buds, flowers, pl	Spring, summer	SEE NOTE #3	33 ONE-GALLON -- or -- 66 TUBELINGS -- or -- MIX AT 1:2 RATIO (SEE NOTE #4)	18 (BASED ON ONE-GALLON)		18
			ACER RUBRUM (RED MAPLE)	FAC	Food	Finches, chickadees, squirrels, robins, goldfinches, other birds	Seeds, buds, flowers, pl	Spring, summer					
			BETULA NIGRA (RIVER BIRCH)	FACW	Food, cover	Song birds	Seeds, plant	All					
			LIQUIDAMBAR STYRACIFULA (	FAC	Food	Finches, cardinals, chickadees, sparrows, squirrels	Seed	Summer, fall, winter					
			PLATANUS OCCIDENTALIS (A	FACW	Food	Raccoons, opossum, wood duck, pileated and other woodpeckers	Hollow trunks	All					
	OVERSTORY TREE SUBTOTAL										55		55
	UNDERSTORY TREE LAYER	3	ILEX OPACA (AMERICAN HOLI	FACU	Food, cover, reproductive areas; Cover crop for oak seedlings	mockingbirds, hermit	Fruit, plant	All		100 1 Gal. or 200 TUBELINGS or MIX AT 1:2 RATIO	55		55
		4	AMELANCHIER CANADENSIS	FAC	Food, cover	mammals	Fruit, plant	All	SEE NOTE #3	100 ONE-GALLON -- or -- 200 TUBELINGS -- or -- MIX AT 1:2 RATIO	55 (BASED ON ONE-GALLON)		55
			CERCIS CANADENSIS (EASTE	FACU	Food	Honeybees, butterfly caterpillars	Flowers, leaves	Spring, summer					
			CORNUS FLORIDA (FLOWERIN	FACU	Food	Wild turkey, cardinal, cedar waxwing, robin, brown thrasher, wood thrush,	Flower, fruit	Spring, fall					
			CORYLUS AMERICANA (AMER	FACU	Food, cover	mammals	Fruit	Summer, fall					
			LINDERA BENZOIN (NORTHER	FAC	Food	Thrushes vireos, catbird, bluebird, butterfly caterpillars	Fruit, leaves	Spring, summer, fall					
			SALIX NIGRA (BLACK WILLOW	OBL	Food, cover	Beaver, porcupine, deer, muskrat, ducks, fish	Seeds, plant, leaves	Spring, summer, fall					
	UNDERSTORY TREE SUBTOTAL										110		110
	SHRUB LAYER	5	CORNUS AMOMUM (SILKY DO	FACW	Food	Catbird, thrasher, thrushes, woodpeckers	Fruit	Summer, fall	SEE NOTE #3	1089 ONE-GALLON -- or -- 2178 TUBELINGS -- or -- MIX AT 1:2 RATIO (SEE NOTE #4)	596 (BASED ON ONE-GALLON)		596
			ILEX VERTICILLATA (COMMON	FACW	Food, cover, reproductive areas	thrasher, robin, yellow bellied sapsucker, mockingbird	Flower, seed, leaves	All					
			VIBURNUM DENTATUM (SOUT	FAC	Food, cover, reproductive areas	Purple finch, goldfinch, robin, junco, bluebird, hermit thrush	Flower, fruit	Spring, summer, fall					
			ROSA PALUSTRIS (SWAMP RO	OBL	Food, cover, reproductive areas	Brown thrasher, catbird, thrushers, pollinators	Flowers, seeds, and foli	Spring, fall, winter					
			VIBURNUM PRUNIFOLIUM (BLA	FACU	Food, cover	Catbirds, thrashers, thrushes, cover and next sites for songbirds	Fruit, plant	Spring, fall					
	SHRUB LAYER SUBTOTAL									---	596		596



PLANTING TREE SEEDLINGS AND SAPLINGS

WSSB Crosend_detail.dwg

*Steps #2 and #3 of the Planting Tree Seedlings detail may be substituded with the following steps using a 4-inch or greater diameter auger.

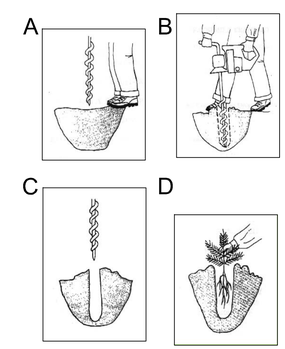


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EXHIBIT 8:
Proposed Conditions/RPAE Plat

Prepared For: Van Metre Homes

PARK PONTE
Fairfax County, Virginia

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COMMONWEALTH OF VIRGINIA
DANIEL C. LUCEY
No. 034207
PROFESSIONAL ENGINEER

No.	Date	Description	Rev. By	App. By

REVISIONS

SCALE: 1"=50' C.I.:2' & 5'

DATE: NOVEMBER 2013

Horizontal Datum:

Vertical Datum:

Boundary and Topo Source:
Paciulli, Simmons & Associates, Ltd.
Fairfax County Digital Data

Design	Draft	Approved
KHT	KHT	DCL

Sheet # 2 of 3

Computer File Name:
U:\22000s\22100\22180.03\cadd\05-civil\2013-10-24_proposed conditions.dwg

RIPARIAN BUFFER SEED MIX

SEED PLANTING ZONE	SPECIES GROUP[1,2]	SPECIES[2]	INDICATOR STATUS	WILDLIFE VALUE: FUNCTIONS	WILDLIFE VALUE: PRIMARY SPECIES	WILDLIFE VALUE: PLANT PART	WILDLIFE VALUE: SEASON	SEEDING RATE[7] (LBS/AC)	AREA PER PLANT (AC)	QUANTITY (LBS)	SEEDING QUANTITIES AREA (SF):	SEEDING QUANTITIES AREA (AC):	SEEDING QUANTITIES A
													23,821
													0.55
RIPARIAN BUFFER SEED MIX	6	LOLIUM MULTIFLORUM (ANNUAL RYEGRASS)	FACU	Erosion control, food	Sparrows, finches, small mammals.	Seeds	Summer, fall	45.00	0.55	24.61			24.61
		SETARIA ITALICA (GERMAN/FOXTAIL MILLET)	FACU	Erosion control, food	Sparrows, finches, small mammals.	Seeds	Fall, winter	45.00	0.55	24.61			24.61
	7	ELYMUS RIPARIUS (RIVERBANK WILD RYE)	FACW	Food	Song birds, small mammals	Seeds, leaves	All	10.00	0.55	5.47			5.47
		ELYMUS VIRGINICUS (VIRGINIA WILD RYE)	FACW	Food	Deer, sparrows, small mammals	Seeds, leaves	All	10.00	0.55	5.47			5.47
		PANICUM CLANDESTINUM (DEER TONGUE GRASS)	FAC	Food	Song birds, waterfowl, small mammals	Seeds	Summer, fall	10.00	0.55	5.47			5.47
		PANICUM DICHOTOMIFLORUM (SMOOTH PANIC GRASS)	FACW	Food	Song birds, waterfowl, small mammals	Seeds	Summer, fall	10.00	0.55	5.47			5.47
	8	ANEMONE VIRGINIANA (THIMBLEWEED)	FACU	Food	Pollinators, butterflies, beneficial insects	Flowers	Spring, summer	0.10	0.55	0.05			0.05
		ASTER NOVAE-ANGLIAE (NEW ENGLAND ASTER)	FACW	Food	Butterflies	Flowers	Summer, fall	0.10	0.55	0.05			0.05
		ASTER PILOSUS (HEATH ASTER)	UPL	Food	Butterflies	Flowers	Summer, fall	0.10	0.55	0.05			0.05
		SOLIDAGO JUNCEA (EARLY GOLDENROD)	UPL	Food	Pollinators, butterflies, beneficial insects	Seeds	Fall, winter	0.10	0.55	0.05			0.05
	9	CAREX SCOPARIA (BLUNT BROOM SEDGE)	FACW	Food, cover	Songs birds (esp. sparrows), small mammals	Seeds, plant	Summer, fall	0.20	0.55	0.11			0.11
		CAREX SQUARROSA (SQUARROSE SEDGE)	FACW	Food	Song birds, waterfowl	Seeds	Summer, fall	0.20	0.55	0.11			0.11
		CAREX VULPINOIDEA (FOX SEDGE)	OBL	Food	Song birds, waterfowl	Seeds	Summer, fall	0.20	0.55	0.11			0.11
		JUNCUS EFFUSUS (SOFT RUSH)	FACW	Food, cover, reproduc	Waterfowl, songbirds (esp. sparrows), bluegill and other fish	Seeds, stems	Summer, fall, winter	0.20	0.55	0.11			0.11
		JUNCUS TENUIS (PATH RUSH)	FAC	Food	Songbirds, small mammals	Seeds	Summer, fall	0.20	0.55	0.11			0.11
	10	EUPATORIUM FISTULOSUS (JOE PYE WEED)	FACW	Food	Pollinators, butterflies, beneficial insects	Flowers, seeds	Summer, fall	0.10	0.55	0.05			0.05
		EUTHAMIA GRAMINIFOLIA (GRASS LEAVED GOLDENROD)	FAC	Food	Butterflies	Flowers	Summer, fall	0.10	0.55	0.05			0.05
		SOLIDAGO SPECIOSA (SHOWY GOLDENROD)	UPL	Food	Butterflies, song birds, small mammals	Flowers	Summer, fall	0.10	0.55	0.05			0.05
		ZIZIA AUREA (GOLDEN ALEXANDERS)	FAC	Food	Beneficial insects	Flowers	Spring, summer	0.10	0.55	0.05			0.05
	11	ASCLEPIAS SYRIACA (COMMON MILKWEED)	UPL	Food	Butterflies, beneficial insects	Flowers	Spring, summer	0.20	0.55	0.11			0.11
		BIDENS FRONDOSA (BEGGAR TICKS)	FACW	Food	Pollinators, butterflies, beneficial insects	Seeds	Summer, fall, winter	0.20	0.55	0.11			0.11
		HELENIUM AUTUMNALE (COMMON SNEEZEWEED)	FACW	Food	Butterflies	Flowers	Summer, fall	0.20	0.55	0.11			0.11
		HELIANTHUS ANGUSTIFOLIUS (NARROW-LEAF SUNFLOWER)	FACW	Food	Butterflies, song birds	Flowers, seeds	Summer, fall	0.20	0.55	0.11			0.11
		ONOCLEA SENSIBILIS (SENSITIVE FERN)	FACW	Food	Songbirds, small mammals	Fronds	Spring, summer, fall	0.20	0.55	0.11			0.11
		PENSTEMON DIGITALIS (PENSTEMON)	FAC	Food	Pollinators, butterflies, beneficial insects	Leaves, seeds	All	0.20	0.55	0.11			0.11
		VERBENA HASTATA (BLUE VERVAIN)	FACW	Food	Pollinators, butterflies, beneficial insects	Flowers, seeds	Spring, summer, fall	0.20	0.55	0.11			0.11
		VERBESINA ALTERNIFOLIA (WINGSTEM)	FAC	Food	Butterflies, other insects	Flowers	Summer, fall	0.20	0.55	0.11			0.11
	12	COREOPSIS LANCEOLATA (LANCE LEAVED COREOPSIS)	FACU	Food	Song birds, butterflies	Flowers, seeds	Spring, summer, fall	0.20	0.55	0.11			0.11
		HELIOPSIS HELIANTHOIDES (OXEYE SUNFLOWER)	UPL	Food	Pollinators, butterflies, beneficial insects	Flowers, seeds	Spring, summer, fall	0.20	0.55	0.11			0.11
		POLYGONUM PENSYLVANICUM (PA SMARTWEED)	FACW	Food	Sparrows, finches, blackbirds, quail, small mammals	Seeds	Fall, winter	0.20	0.55	0.11			0.11
		RUDBECKIA HIRTA (BLACK EYED SUSAN)	FACU	Food	Butterflies and other pollinators	Flowers, seeds	Summer, fall, winter	0.20	0.55	0.11			0.11
		SENNA HEBECARPA (WILD SENNA)	FAC	Food	Song birds, upland game birds	Seeds	Summer	0.20	0.55	0.11			0.11
	13	AMELANCHIER CANADENSIS (CANADIAN SERVICEBERRY)	FAC	Food, cover	Song birds, small mammals	Fruit, plant	All	0.20	0.55	0.11			0.11
		HAMAMELIS VIRGINIANA (WITCH HAZEL)	FACU	Food, cover, reproduc	Ruffed grouse, wild turkey, rabbit, deer, beaver	Flowers, fruit	Spring, fall, winter	0.20	0.55	0.11			0.11
		ILEX VERTICILLATA (WINTERBERRY)	FACW	Food, cover, reproduc	Song birds, upland game birds	Flower, seed, leaves	All	0.20	0.55	0.11			0.11
		LINDERA BENZOIN (NORTHERN SPICEBUSH)	FAC	Food	Thrushes vireos, catbird, bluebird, butterfly caterpillars	Fruit, leaves	Spring, summer, fall	0.20	0.55	0.11			0.11
		PHYSOCARPUS OPULIFOLIUS (COMMON NINEBARK)	FACW	Food, cover	Songbirds, waterfowl, small mammals, beneficial insects	Flowers, fruit	All	0.20	0.55	0.11			0.11
		VIBURNUM DENTATUM (SOUTHERN ARROW WOOD)	FAC	Food	Robins, bluebirds, other thrushes, thrashers, catbirds, vireos	Fruit	Fall	0.20	0.55	0.11			0.11
		VIBURNUM PRUNIFOLIUM (BLACK-HAW)	FACU	Food, cover	Catbirds, thrashers, thrushes, cover and next sites for songbirds	Fruit, plant	Spring, fall	0.20	0.55	0.11			0.11
	14	ACER RUBRUM (RED MAPLE)	FAC	Food	Finches, chickadees, squirrels, robins, goldfinches, other birds	Seeds, buds, flowers, plant	Spring, summer	0.20	0.55	0.11			0.11
		CARPINUS CAROLINIANA (MUSCLEWOOD)	FAC	Food	Ruffed grouse, bobwhite, pheasant, wild turkey, squirrel, rabbit, deer	Fruit	Summer, fall	0.20	0.55	0.11			0.11
		CERCIS CANADENSIS (EASTERN REDBUD)	FACU	Food	Honeybees, butterfly caterpillars	Flowers, leaves	Spring, summer	0.20	0.55	0.11			0.11
		CORNUS FLORIDA (FLOWERING DOGWOOD)	FACU	Food	Wild turkey, cardinal, cedar waxwing, robin, brown thrasher, wood thrush, rabbits	Flower, fruit	Spring, fall	0.20	0.55	0.11			0.11
		NYSSA SYLVATICA (BLACK GUM)	FAC	Food, cover	Song birds, waterfowl, small mammals	Fruit, plant	All	0.20	0.55	0.11			0.11
		PLATANUS OCCIDENTALIS (AMERICAN SYCAMORE)	FAC	Food, cover	Raccoons, opossum, wood duck, pileated and other woodpeckers	Fruit, Hollow trunks	All	0.20	0.55	0.11			0.11
SEEDING TOTALS								**137.00**		**74.91**			**74.91**

PLANTING SPECIFICATIONS

1. PLAN DETAILS ARE INCORPORATED INTO THIS SPECIFICATION BY REFERENCE.
2. THE SUPPLIER OF ALL SEEDS AND/OR VEGETATION SHALL CERTIFY THAT THE ORIGIN OF THE SEEDS FROM WHICH THE PLANTS OR SEEDS WERE PRODUCED IS FROM HARDINESS ZONES 6 AND 7, FROM THE EASTERN OR CENTRAL PORTIONS OF THE U.S., PRIOR TO PLANTING.
3. ANY NURSERY SUPPLYING THE STOCK SHALL PROVIDE A CURRENT NURSERY INSPECTION CERTIFICATE FROM THE STATE DEPARTMENT OF AGRICULTURE, OR PROVIDE AT LEAST THIRTY DAYS ADVANCE NOTICE FOR WETLAND STUDIES AND SOLUTIONS, INC. (WSSI) TO INSPECT THE PLANT SOURCE AREAS AT WSSI'S DISCRETION. ANY SUCH INSPECTION IS NOT DEEMED APPROVAL OF THE PLANT MATERIALS.
4. ALL PLANTS SHALL BE SET STRAIGHT, OR PLUMB.
5. PLANTING SHALL ONLY BE PERMITTED BETWEEN NOVEMBER 1 AND MARCH 30. NO PLANTING SHALL OCCUR WHEN THE SOIL IS FROZEN. SEEDING SHALL BE COMPLETED DURING MARCH THROUGH MAY OR SEPTEMBER THROUGH NOVEMBER. THESE TIME LIMITS MAY NOT BE MODIFIED UNLESS APPROVED BY WETLAND STUDIES AND SOLUTIONS, INC., IN ADVANCE WITH THE RISK OF SURVIVAL BORNE SOLELY BY THE CONTRACTOR.
6. PLANTING HOLES FOR CONTAINER GROWN PLANTS SHALL BE ONE FOOT (1') DEEP PLUS THE CONTAINER DEPTH IN WHICH THE PLANT HAS BEEN GROWN AND TWO FEET (2') WIDER THAN CONTAINER.
7. BACKFILL THE PLANTING HOLES WITH THE IN-SITU SOIL MATERIALS REMOVED FOR PLANTING AFTER REMOVING ALL STONES, ROOTS, AND OTHER DEBRIS GREATER THAN 1-1/2" IN DIAMETER.
8. FOLLOWING THE BACKFILLING, WATER TO THE POINT OF SOIL SATURATION (IF NOT PLANTED IN THE "WET") AND TAMP TO COMPACT THE BACKFILL MIXTURE. ADD EXISTING SOIL TO BRING THE FINAL GRADE IN THE PLANTING HOLE TO THE SURROUNDING SOIL SURFACE. RAKE THE UNUSED EXISTING SOIL OUTSIDE THE PLANTING HOLES, TAKING CARE NOT TO MOUND THE SOIL OR TO SIGNIFICANTLY ALTER THE EXISTING GRADES AND THEN PLACE MULCH (MIN. 2" THICK) ATOP ENTIRE PLANTING HOLE. THE PLANTING HOLE AREAS MUST NOT BE DEPRESSED BELOW THE SURROUNDING SOIL SURFACE ELEVATIONS. SAID AREAS SHALL BE SLIGHTLY RAISED (2-3"), RELATIVE TO THE SOIL SURFACE.
9. AS INDICATED IN THE PLANT LIST, THE SHRUBS THAT ARE SPECIFIED AS CONTAINER GROWN SPECIMENS SHALL BE BETWEEN 15" AND 18" IN HEIGHT. THEY SHALL BE HEALTHY, VIGOROUS, WELL ROOTED AND ESTABLISHED IN THE PLANTING. CONTAINER IN WHICH THEY ARE GROWING. A CONTAINER SHRUB SHALL BE IN THAT CONTAINER A SUFFICIENT TIME SUCH THAT FIBROUS ROOTS ARE FORMED SO THE SHAPE WILL REMAIN AND THE MEDIUM WILL HOLD TOGETHER WHEN REMOVED FROM THE CONTAINER (REFER TO AMERICAN STANDARD FOR NURSERY STOCK).
10. DO NOT REMOVE PLANTS FROM CONTAINERS UNTIL IMMEDIATELY BEFORE PLANTING. EXAMINE THE ROOTS TO SEE IF THEY ARE POT BOUND. CAREFULLY SEPARATE ANY POT BOUND OR CRAMPED ROOTS AND SPREAD THEM OUT WHEN PLACING THE PLANT SO THAT THE ROOTS CAN GROW WITHOUT FURTHER CONSTRUCTION OF THE ROOT BALL.
11. FERTILIZE EACH BARE ROOT, PLUG, TUBER, AND PINT CONTAINER PLANT WITH A 5 GRAM TABLET OF CONTROLLED RELEASE FERTILIZER. USE A 20 GRAM TABLET OF FERTILIZER WITH EACH 1-3 GALLON CONTAINER. GENERALLY, FOR EACH 12 TO 18 INCHES OF PLANT HEIGHT OR FOR EACH 1/2" OF TREE DIAMETER AT THE BASE, USE 20 GRAMS FOR SLOW GROWING PLANTS OR 40 GRAMS FOR FAST GROWING PLANTS OR POOR SOIL SITUATIONS. SAID FERTILIZER TABLETS SHALL BE AGRIFORM 20-10-5 OR APPROVED EQUIVALENT, APPLIED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
12. AS RECOMMENDED BY THE CONTRACTOR AND APPROVED BY ENGINEER, THE CONTRACTOR SHALL WATER THE PLANTS AS NEEDED DURING THE CARE AND REPLACEMENT PERIOD OR UNTIL FINAL ACCEPTANCE, WHICHEVER IS THE SHORTEST.
13. THE CONTRACTOR IS RESPONSIBLE FOR REPLACING NON- SURVIVING TREES AND SHRUBS DURING THE CARE AND REPLACEMENT PERIOD (12 MONTHS, UNLESS OTHERWISE SPECIFIED IN CONTRACT DOCUMENTS) OR UNTIL FINAL ACCEPTANCE, WHICHEVER IS THE SHORTEST, AS REQUIRED BY THE TERMS OF THE SURVIVAL WARRANTY SPECIFIED HEREIN AND/OR IN CONTRACT DOCUMENTS. THE SPECIFICATIONS FOR THE REPLACED PLANTS SHALL BE THOSE PROVIDED IN THE PLANT LIST.
14. REFER TO APPLICABLE SKETCHES WITHIN THIS PLAN SET FOR ADDITIONAL GUIDANCE ON PLANTING REQUIREMENTS.
15. INVASIVE AND NOXIOUS WEEDS SHALL BE REMOVED BY HAND WITH LOCALIZED APPLICATIONS OF ROUND-UP WHERE NECESSARY.
16. ACCEPTANCE OF SOIL : CONTRACTOR IS ALSO REQUIRED TO CHEMICALLY ANALYZE THE SOIL AND DETERMINE IF FERTILIZATION, LIME, ETC. IS REQUIRED TO PROVIDE PROPER GROWTH. A WRITTEN REVIEW OF SAID ANALYSIS AND RECOMMENDATIONS IS REQUIRED TO BE SUBMITTED TO WSSI 15 DAYS PRIOR TO INSTALLATION. ALL SUCH IMPROVEMENTS/AMENDMENTS SHALL BE INCLUDED WITHIN THE COST OF THIS WORK. INSTALLING ONE OR MORE PLANTS ON THIS SITE SHALL BE CONTRACTORS ACCEPTANCE THAT SITE CONDITIONS COMPLY WITH CONTRACT DOCUMENTS. CONTRACTOR MAY SAMPLE THE IN-SITU TOPSOILS AT ANY TIME DURING THE BIDDING PROCESS TO ENSURE ADEQUATE FINANCIAL COVERAGE OF THIS COST.

SITE PREPARATION

1. LIGHTLY RAKE RIPARIAN BUFFER AREAS TO MAXIMUM DEPTH OF 1 ½ INCHES (1.5").

SEEDING SPECIFICATIONS

1. IF EROSION CONTROL COVER IS ROBUST (I.E., DEFINED AS 70% GROUND COVER OR GREATER):
   - A. THE SPECIFIED SEED SHALL BE BROADCAST PRIMARILY IN AREAS WITH LIMITED COVER. FOLLOWING SEEDING, MECHANICALLY SOW SEED TO A DEPTH OF 1/8TH OF AN INCH BY THE USE OF A HAND RAKE.
   - B. A SEED GERMINATION AND PURITY RATE OF 75% IS REQUIRED. EVIDENCE OF SUCH SHALL BE PROVIDED TO OWNER'S REPRESENTATIVE PRIOR TO PLANTING.
2. IF EROSION CONTROL COVER IS NOT ROBUST (I.E., LESS THAN 70% GROUND COVER), THE SPECIFIED SEED MIX SHALL BE PLACED BY HYDROSEEDING AS FOLLOWS:
   - A. SEED SHALL HAVE BEEN COLLECTED THE SAME YEAR OF SEEDING. A SEED GERMINATION AND PURITY RATE OF 75% IS REQUIRED. EVIDENCE OF SUCH SHALL BE PROVIDED TO OWNER'S REPRESENTATIVE PRIOR TO PLANTING.
   - B. THE LANDSCAPE CONTRACTOR SHALL INSPECT THE AREAS AND CONDITIONS UNDER WHICH THE SEEDING WORK IS TO BE PERFORMED PRIOR TO COMMENCING WORK. IF CONDITIONS ARE DETRIMENTAL TO THE PROPER AND TIMELY COMPLETION OF THE WORK, HE/SHE SHALL NOTIFY THE OWNER' REPRESENTATIVE VERBALLY AND IN WRITING AND POSTPONE COMMENCING WORK UNTIL THE UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.
   - C. PRIOR TO HYDROSEEDING, THE TOP SOIL SHALL BE RAKED SMOOTH AND CLEARED OF ALL STONES LARGER THAN 5" AND TRASH, DEBRIS, BRANCHES AND OTHER MATTER DETRIMENTAL TO THE SUCCESS OF SEEDING.
   - D. FERTILIZER IS TO BE BROADCAST AND RAKED INTO THE TOP ONE INCH OF TOP SOIL IMMEDIATELY BEFORE SEEDING OR ADDED TO THE HYDROSEED MIX. FERTILIZER SHALL HAVE A FORMULATION OF 10-10-10 AND BE APPLIED AT A RATE OF 50 POUNDS PER 1000 SQUARE FEET.
   - E. MULCH SHALL BE A CELLULOSE FIBER USED IN THE AQUEOUS MIXTURE DURING HYDROSEEDING. IT SHALL BE APPLIED AT A RATE OF 1500 POUNDS PER ACRE. STRAW CAN BE SUBSTITUTED IF APPLIED AT RATES SPECIFIED BY THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, 3RD EDITION, 1992.
   - F. THE AQUEOUS MIXTURE SHALL BE CONSTANTLY AGITATED FROM THE TIME IT IS MIXED UNTIL THE TIME APPLICATION IS COMPLETED.
   - G. CARE SHOULD BE EXERCISED TO INSURE UNIFORM COVERAGE AND TO AVOID SPRAYING ON THE BASAL AREAS OF ANY ADJACENT TREES AND SHRUBS. THE WATER-SEED MIXTURE SHALL BE APPLIED AT A MINIMUM RATE OF 1000 GALLONS PER ACRE.
3. ALTERNATIVELY, CONTRACTOR MAY SPECIFICALLY APPLY SEED MIX BY BROADCASTING EVENLY THROUGHOUT THE AREA. FOLLOWING SEEDING, MECHANICALLY SOW SEED TO A DEPTH OF 1/8 OF AN INCH BY THE USE OF A CULTIPACTOR, YORK RAKE, OR HAND RAKE.

PLANTING AND SEEDING SURVIVAL WARRANTY

1. LANDSCAPE CONTRACTOR SHALL GUARANTEE A MINIMUM SURVIVAL RATE OF EACH VEGETATION SPECIES AFTER TWELVE MONTHS OF 85% FOR B&B, CONTAINER GROWN, AND TUBLINGS, AND 60% FOR BARE ROOT AND TUBER STOCK.
2. IF SURVIVAL RATES ARE LESS THAN THE ABOVE WARRANTY RATES, THEN LANDSCAPE CONTRACTOR SHALL REPLACE THE QUANTITY OF DEAD PLANTS WITHIN THE NEXT PLANTING WINDOW (SEPTEMBER 30 THROUGH MARCH 30, EXCLUDING FROZEN GROUND PERIODS) FOLLOWING THE END OF THE APPLICABLE WARRANTY PERIOD.

PRODUCT HANDLING, STORAGE, AND DELIVERY

1. HANDLE PLANTS AT ALL TIMES SO THAT ROOTS OR BALLS ARE ADEQUATELY PROTECTED FROM BREAKAGE OF BALLS, FROM SUN AND DRYING WINDS. PLANTS WITH DRIED OUT TOPS OR ROOTS SHALL BE REJECTED.
2. ALL PLANT MATERIALS SHALL BE STORED AND DELIVERED IN SUCH A FASHION AND FOR TIME INTERVALS CONSISTENT WITH SOUND SILVICULTURAL PRACTICES.
3. PLANT MATERIAL WILL BE TRANSPORTED FROM THE NURSERY TO THE PLANTING AREAS BY SUCH MEANS AS TO AVOID WIND DAMAGE, OVER-CROWDING, OR OTHER MECHANISMS BY WHICH PHYSICAL DAMAGE MAY RESULT TO THE PLANTS.
4. PLANT MATERIAL MAY BE RANDOMLY INSPECTED BY THE DESIGN ENGINEER UPON ARRIVAL AT EACH PLANTING AREA AND DURING PLANTING ACTIVITIES. MATERIAL FOUND TO BE UNACCEPTABLE WILL BE REJECTED AND THE CONTRACTOR WILL BE REQUIRED TO SUPPLY REPLACEMENT MATERIAL WITHIN A REASONABLE TIME FRAME (I.E. 1-WEEK). UNACCEPTABLE MATERIAL IS TO BE DEFINED AS THE FOLLOWING:
   - (A) PLANTS WITH BENT TRUNKS OR MULTIPLE LEADERS, UNLESS CHARACTERISTICS FOR THE SPECIES;
   - (B) PLANTS WITH DISEASED TRUNKS, STEMS, OR LEAVES;
   - (C) PLANTS WITH PEST-INFESTED TRUNKS, STEMS, OR LEAVES;
   - (D) PLANTS OF INSUFFICIENT SIZE (LESS THAN A SPECIFIED HEIGHT);
   - (E) PLANTS OF THE WRONG SPECIES/SUB-SPECIES;
   - (F) PLANTS HAVING ROOT GIRDLING IN THE CONTAINER; UNLESS OTHERWISE APPROVED BY THE DESIGN ENGINEER. JUSTIFICATION FOR USE OF TENTATIVELY REJECTED MATERIAL MAY BE PRESENTED TO THE DESIGN ENGINEER.

Wetland Studies and Solutions, Inc.
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EXHIBIT 8:
Proposed Conditions/RPAE Plat

Prepared For: Van Metre Homes

PARK PONTE
Fairfax County, Virginia

REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF VIRGINIA
DANIEL C. LUCEY
No. 034207

REVISIONS				
No.	Date	Description	Rev. By	App. By

SCALE: 1"=50' C.I.:2' & 5'

DATE: NOVEMBER 2013

Horizontal Datum:

Vertical Datum:

Boundary and Topo Source:
Paciulli, Simmons & Associates, Ltd.
Fairfax County Digital Data

Design	Draft	Approved
KHT	KHT	DCL

Sheet #
3 of 3

Computer File Name:
L:\22000s\22100\22180.03\cadd\05-env\2013-10-24_proposed condition.dwg

FAIRFAX COUNTY COMPREHENSIVE PLAN, 2013 Edition, POLICY PLAN, Land Use – Appendix, Amended through 2-12-2013
Pages 24-30

APPENDIX 9
RESIDENTIAL DEVELOPMENT CRITERIA

Fairfax County expects new residential development to enhance the community by: fitting into the fabric of the neighborhood, respecting the environment, addressing transportation impacts, addressing impacts on other public facilities, being responsive to our historic heritage, contributing to the provision of affordable housing and, being responsive to the unique site specific considerations of the property. To that end, the following criteria are to be used in evaluating zoning requests for new residential development. The resolution of issues identified during the evaluation of a specific development proposal is critical if the proposal is to receive favorable consideration.

Where the Plan recommends a possible increase in density above the existing zoning of the property, achievement of the requested density will be based, in substantial part, on whether development related issues are satisfactorily addressed as determined by application of these development criteria. Most, if not all, of the criteria will be applicable in every application; however, due to the differing nature of specific development proposals and their impacts, the development criteria need not be equally weighted. If there are extraordinary circumstances, a single criterion or several criteria may be overriding in evaluating the merits of a particular proposal. Use of these criteria as an evaluation tool is not intended to be limiting in regard to review of the application with respect to other guidance found in the Plan or other aspects that the applicant incorporates into the development proposal. Applicants are encouraged to submit the best possible development proposals. In applying the Residential Development Criteria to specific projects and in determining whether a criterion has been satisfied, factors such as the following may be considered:

- the size of the project
- site specific issues that affect the applicant's ability to address in a meaningful way relevant development issues
- whether the proposal is advancing the guidance found in the area plans or other planning and policy goals (e.g. revitalization).

When there has been an identified need or problem, credit toward satisfying the criteria will be awarded based upon whether proposed commitments by the applicant will significantly advance problem resolution. In all cases, the responsibility for demonstrating satisfaction of the criteria rests with the applicant.

1. Site Design:

All rezoning applications for residential development should be characterized by high quality site design. Rezoning proposals for residential development, regardless of the

proposed density, will be evaluated based upon the following principles, although not all of the principles may be applicable for all developments.

a) Consolidation: Developments should provide parcel consolidation in conformance with any site specific text and applicable policy recommendations of the Comprehensive Plan. Should the Plan text not specifically address consolidation, the nature and extent of any proposed parcel consolidation should further the integration of the development with adjacent parcels. In any event, the proposed consolidation should not preclude nearby properties from developing as recommended by the Plan.

b) Layout: The layout should:

- provide logical, functional and appropriate relationships among the various parts (e. g. dwelling units, yards, streets, open space, stormwater management facilities, existing vegetation, noise mitigation measures, sidewalks and fences);
- provide dwelling units that are oriented appropriately to adjacent streets and homes;
- include usable yard areas within the individual lots that accommodate the future construction of decks, sunrooms, porches, and/or accessory structures in the layout of the lots, and that provide space for landscaping to thrive and for maintenance activities;
- provide logical and appropriate relationships among the proposed lots including the relationships of yards, the orientation of the dwelling units, and the use of pipestem lots;
- provide convenient access to transit facilities;
- Identify all existing utilities and make every effort to identify all proposed utilities and stormwater management outfall areas; encourage utility collocation where feasible.

c) Open Space: Developments should provide usable, accessible, and well-integrated open space. This principle is applicable to all projects where open space is required by the Zoning Ordinance and should be considered, where appropriate, in other circumstances.

d) Landscaping: Developments should provide appropriate landscaping: for example, in parking lots, in open space areas, along streets, in and around stormwater management facilities, and on individual lots.

e) Amenities: Developments should provide amenities such as benches, gazebos, recreational amenities, play areas for children, walls and fences, special paving treatments, street furniture, and lighting.

2. Neighborhood Context:

All rezoning applications for residential development, regardless of the proposed density, should be designed to fit into the community within which the development is to

be located. Developments should fit into the fabric of their adjacent neighborhoods, as evidenced by an evaluation of:

- transitions to abutting and adjacent uses;
- lot sizes, particularly along the periphery;
- bulk/mass of the proposed dwelling units;
- setbacks (front, side and rear);
- orientation of the proposed dwelling units to adjacent streets and homes;
- architectural elevations and materials;
- pedestrian, bicycle and vehicular connections to off-site trails, roadways, transit facilities and land uses;
- existing topography and vegetative cover and proposed changes to them as a result of clearing and grading.

It is not expected that developments will be identical to their neighbors, but that the development fit into the fabric of the community. In evaluating this criterion, the individual circumstances of the property will be considered: such as, the nature of existing and planned development surrounding and/or adjacent to the property; whether the property provides a transition between different uses or densities; whether access to an infill development is through an existing neighborhood; or, whether the property is within an area that is planned for redevelopment.

3. Environment:

All rezoning applications for residential development should respect the environment. Rezoning proposals for residential development, regardless of the proposed density, should
be consistent with the policies and objectives of the environmental element of the Policy Plan, and will also be evaluated on the following principles, where applicable.

a) Preservation: Developments should conserve natural environmental resources by protecting, enhancing, and/or restoring the habitat value and pollution reduction potential of floodplains, stream valleys, EQCs, RPAs, woodlands, wetlands and other environmentally sensitive areas.

b) Slopes and Soils: The design of developments should take existing topographic conditions and soil characteristics into consideration.

c) Water Quality: Developments should minimize off-site impacts on water quality by commitments to state of the art best management practices for stormwater management and better site design and low impact development (LID) techniques.

d) Drainage: The volume and velocity of stormwater runoff from new development should be managed in order to avoid impacts on downstream properties. Where drainage is a particular concern, the applicant should demonstrate that off-site drainage impacts will be mitigated and that stormwater management facilities are

designed and sized appropriately. Adequate drainage outfall should be verified, and the location of drainage outfall (onsite or offsite) should be shown on development plans.

e) Noise: Developments should protect future and current residents and others from the adverse impacts of transportation generated noise.

f) Lighting: Developments should commit to exterior lighting fixtures that minimize neighborhood glare and impacts to the night sky.

g) Energy: Developments should use site design techniques such as solar orientation and landscaping to achieve energy savings, and should be designed to encourage and facilitate walking and bicycling. Energy efficiency measures should be incorporated into building design and construction.

4. Tree Preservation and Tree Cover Requirements:

All rezoning applications for residential development, regardless of the proposed density, should be designed to take advantage of the existing quality tree cover. If quality tree cover exists on site as determined by the County, it is highly desirable that developments meet most or all of their tree cover requirement by preserving and, where feasible and appropriate, transplanting existing trees. Tree cover in excess of ordinance requirements is highly desirable. Proposed utilities, including stormwater management and outfall facilities and sanitary sewer lines, should be located to avoid conflicts with tree preservation and planting areas. Air quality-sensitive tree preservation and planting efforts (see Objective 1, Policy c in the Environment section of this document) are also encouraged.

5. Transportation:

All rezoning applications for residential development should implement measures to address planned transportation improvements. Applicants should offset their impacts to the transportation network. Accepted techniques should be utilized for analysis of the development's impact on the network. Residential development considered under these criteria will range widely in density and, therefore, will result in differing impacts to the transportation network. Some criteria will have universal applicability while others will apply only under specific circumstances. Regardless of the proposed density, applications will be evaluated based upon the following principles, although not all of the principles may be applicable.

a) Transportation Improvements: Residential development should provide safe and adequate access to the road network, maintain the ability of local streets to safely accommodate traffic, and offset the impact of additional traffic through commitments to the following:

- Capacity enhancements to nearby arterial and collector streets;

- Street design features that improve safety and mobility for non-motorized forms of
- transportation;
- Signals and other traffic control measures;
- Development phasing to coincide with identified transportation improvements;
- Right-of-way dedication;
- Construction of other improvements beyond ordinance requirements;
- Monetary contributions for improvements in the vicinity of the development.

b) Transit/Transportation Management: Mass transit usage and other transportation measures to reduce vehicular trips should be encouraged by:

- Provision of bus shelters;
- Implementation and/or participation in a shuttle bus service;
- Participation in programs designed to reduce vehicular trips;
- Incorporation of transit facilities within the development and integration of transit with adjacent areas;
- Provision of trails and facilities that increase safety and mobility for non-motorized travel.

c) Interconnection of the Street Network: Vehicular connections between neighborhoods should be provided, as follows:

- Local streets within the development should be connected with adjacent local streets to improve neighborhood circulation;
- When appropriate, existing stub streets should be connected to adjoining parcels. If street connections are dedicated but not constructed with development, they should be identified with signage that indicates the street is to be extended;
- Streets should be designed and constructed to accommodate safe and convenient usage by buses and non-motorized forms of transportation;
- Traffic calming measures should be implemented where needed to discourage cut-through traffic, increase safety and reduce vehicular speed;
- The number and length of long, single-ended roadways should be minimized;
- Sufficient access for public safety vehicles should be ensured.

d) Streets: Public streets are preferred. If private streets are proposed in single-family detached developments, the applicant shall demonstrate the benefits for such streets. Applicants should make appropriate design and construction commitments for all private streets so as to minimize maintenance costs which may accrue to future property owners. Furthermore, convenience and safety issues such as parking on private streets should be considered during the review process.

e) Non-motorized Facilities: Non-motorized facilities, such as those listed below, should be provided:

- Connections to transit facilities;
- Connections between adjoining neighborhoods;

- Connections to existing non-motorized facilities;
- Connections to off-site retail/commercial uses, public/community facilities, and natural and recreational areas;
- An internal non-motorized facility network with pedestrian and natural amenities, particularly those included in the Comprehensive Plan;
- Offsite non-motorized facilities, particularly those included in the Comprehensive Plan;
- Driveways to residences should be of adequate length to accommodate passenger vehicles without blocking walkways;
- Construction of non-motorized facilities on both sides of the street is preferred. If construction on a single side of the street is proposed, the applicant shall demonstrate the public benefit of a limited facility.

f) Alternative Street Designs: Under specific design conditions for individual sites or where existing features such as trees, topography, etc. are important elements, modifications to the public street standards may be considered.

6. Public Facilities:

Residential development impacts public facility systems (i.e., schools, parks, libraries, police, fire and rescue, stormwater management and other publicly owned community facilities). These impacts will be identified and evaluated during the development review process. For schools, a methodology approved by the Board of Supervisors, after input and recommendation by the School Board, will be used as a guideline for determining the impact of additional students generated by the new development.

Given the variety of public facility needs throughout the County, on a case-by-case basis, public facility needs will be evaluated so that local concerns may be addressed.

All rezoning applications for residential development are expected to offset their public facility impact and to first address public facility needs in the vicinity of the proposed development. Impact offset may be accomplished through the dedication of land suitable for the construction of an identified public facility need, the construction of public facilities, the contribution of specified in-kind goods, services or cash earmarked for those uses, and/or monetary contributions to be used toward funding capital improvement projects. Selection of the appropriate offset mechanism should maximize the public benefit of the contribution.

Furthermore, phasing of development may be required to ensure mitigation of impacts.

7. Affordable Housing:

Ensuring an adequate supply of housing for low and moderate income families, those with special accessibility requirements, and those with other special needs is a goal of the County. Part 8 of Article 2 of the Zoning Ordinance requires the provision of Affordable Dwelling Units (ADUs) in certain circumstances. Criterion #7 is applicable to

all rezoning applications and/or portions thereof that are not required to provide any Affordable Dwelling Units, regardless of the planned density range for the site.

a) Dedication of Units or Land: If the applicant elects to fulfill this criterion by providing affordable units that are not otherwise required by the ADU Ordinance: a maximum density of 20% above the upper limit of the Plan range could be achieved if 12.5% of the total number of single-family detached and attached units are provided pursuant to the Affordable Dwelling Unit Program; and, a maximum density of 10% or 20% above the upper limit of the Plan range could be achieved if 6.25% or 12.5%, respectively of the total number of multifamily units are provided to the Affordable Dwelling Unit Program. As an alternative, land, adequate and ready to be developed for an equal number of units may be provided to the Fairfax County Redevelopment and Housing Authority or to such other entity as may be approved by the Board.

b) Housing Trust Fund Contributions: Satisfaction of this criterion may also be achieved by a contribution to the Housing Trust Fund or, as may be approved by the Board, a monetary and/or in-kind contribution to another entity whose mission is to provide affordable housing in Fairfax County, equal to 0.5% of the value of all of the units approved on the property except those that result in the provision of ADUs. This contribution shall be payable prior to the issuance of the first building permit. For forsale projects, the percentage set forth above is based upon the aggregate sales price of all of the units subject to the contribution, as if all of those units were sold at the time of the issuance of the first building permit, and is estimated through comparable sales of similar type units. For rental projects, the amount of the contribution is based upon the total development cost of the portion of the project subject to the contribution for all elements necessary to bring the project to market, including land, financing, soft costs and construction. The sales price or development cost will be determined by the Department of Housing and Community Development, in consultation with the Applicant and the Department of Public Works and Environmental Services. If this criterion is fulfilled by a contribution as set forth in this paragraph, the density bonus permitted in a) above does not apply.

8. Heritage Resources:

Heritage resources are those sites or structures, including their landscape settings, that exemplify the cultural, architectural, economic, social, political, or historic heritage of the County or its communities. Such sites or structures have been 1) listed on, or determined eligible for listing on, the National Register of Historic Places or the Virginia Landmarks Register; 2) determined to be a contributing structure within a district so listed or eligible for listing; 3) located within and considered as a contributing structure within a Fairfax County Historic Overlay District; or 4) listed on, or having a reasonable potential as determined by the County, for meeting the criteria for listing on, the Fairfax County Inventories of Historic or Archaeological Sites.

In reviewing rezoning applications for properties on which known or potential heritage resources are located, some or all of the following shall apply:

a) Protect heritage resources from deterioration or destruction until they can be documented, evaluated, and/or preserved;

b) Conduct archaeological, architectural, and/or historical research to determine the presence, extent, and significance of heritage resources;

c) Submit proposals for archaeological work to the County for review and approval and, unless otherwise agreed, conduct such work in accordance with state standards;

d) Preserve and rehabilitate heritage resources for continued or adaptive use where feasible;

e) Submit proposals to change the exterior appearance of, relocate, or demolish historic structures to the Fairfax County Architectural Review Board for review and approval;

f) Document heritage resources to be demolished or relocated;

g) Design new structures and site improvements, including clearing and grading, to enhance rather than harm heritage resources;

h) Establish easements that will assure continued preservation of heritage resources with an appropriate entity such as the County's Open Space and Historic Preservation Easement Program; and

i) Provide a Fairfax County Historical Marker or Virginia Historical Highway Marker on or near the site of a heritage resource, if recommended and approved by the Fairfax County History Commission.

ROLE OF DENSITY RANGES IN AREA PLANS

Density ranges for property planned for residential development, expressed generally in terms of dwelling units per acre, are recommended in the Area Plans and are shown on the Comprehensive Plan Map. Where the Plan text and map differ, the text governs. In defining the density range:

- the "base level" of the range is defined as the lowest density recommended in the Plan range, i.e., 5 dwelling units per acre in the 5-8 dwelling unit per acre range;
- the "high end" of the range is defined as the base level plus 60% of the density range in a particular Plan category, which in the residential density range of 5-8 dwelling units per acre would be considered as 6.8 dwelling units per acre and above; and,
- the upper limit is defined as the maximum density called for in any Plan range, which, in the 5-8 dwelling unit per acre range would be 8 dwelling units per acre.

- In instances where a range is not specified in the Plan, for example where the Plan calls for residential density up to 30 dwelling units per acre, the density cited in the Plan shall be construed to equate to the upper limit of the Plan range, and the base level shall be the upper limit of the next lower Plan range, in this instance, 20 dwelling units per acre.

FAIRFAX COUNTY COMPREHENSIVE PLAN, 2013 Edition, POLICY PLAN, Environment, Amended through 2-12-2013, Pages 14-18

Objective 9: Identify, protect and enhance an integrated network of ecologically valuable land and surface waters for present and future residents of Fairfax County.

Policy a: Identify, protect and restore an Environmental Quality Corridor system (EQC). (See Figure 4.) Lands may be included within the EQC system if they can achieve any of the following purposes:

- Habitat Quality: The land has a desirable or scarce habitat type, or one could be readily restored, or the land hosts a species of special interest. This may include: habitat for species that have been identified by state or federal agencies as being rare, threatened or endangered; rare vegetative communities; unfragmented vegetated areas that are large enough to support interior forest dwelling species; and aquatic and wetland breeding habitats (i.e., seeps, vernal pools) that are connected to and in close proximity to other EQC areas.
- Connectivity: This segment of open space could become a part of a corridor to facilitate the movement of wildlife and/or conserve biodiversity. This may include natural corridors that are wide enough to facilitate wildlife movement and/or the transfer of genetic material between core habitat areas.
- Hydrology/Stream Buffering/Stream Protection: The land provides, or could provide, protection to one or more streams through: the provision of shade; vegetative stabilization of stream banks; moderation of sheet flow stormwater runoff velocities and volumes; trapping of pollutants from stormwater runoff and/or flood waters; flood control through temporary storage of flood waters and dissipation of stream energy; separation of potential pollution sources from streams; accommodation of stream channel evolution/migration; and protection of steeply sloping areas near streams from denudation.
- Pollution Reduction Capabilities: Preservation of this land would result in significant pollutant reductions. Water pollution, for example, may be reduced through: trapping of nutrients, sediment and/or other pollutants from runoff from adjacent areas; trapping of nutrients, sediment and/or other pollutants from flood waters; protection of highly erodible soils and/or steeply sloping areas from denudation; and/or separation of potential pollution sources from streams.

The core of the EQC system will be the County's stream valleys. Additions to the stream valleys should be selected to augment the habitats and buffers provided by the stream valleys, and to add representative elements of the landscapes that are not represented within stream valleys. The stream valley component of the EQC system shall include the following elements (See Figure 4):

- All 100 year flood plains as defined by the Zoning Ordinance;
- All areas of 15% or greater slopes adjacent to the flood plain, or if no flood plain is present, 15% or greater slopes that begin within 50 feet of the stream channel;

- All wetlands connected to the stream valleys; and
- All the land within a corridor defined by a boundary line which is 50 feet plus 4 additional feet for each % slope measured perpendicular to the stream bank. The % slope used in the calculation will be the average slope measured within 110 feet of a stream channel or, if a flood plain is present, between the flood plain boundary and a point fifty feet up slope from the flood plain. This measurement should be taken at fifty foot intervals beginning at the downstream boundary of any stream valley on or adjacent to a property under evaluation.

Modifications to the boundaries so delineated may be appropriate if the area designated does not benefit any of the EQC purposes as described above. In addition, some disturbances that serve a public purpose such as unavoidable public infrastructure easements and rights of way may be appropriate. Disturbances for access roads should not be supported unless there are no viable alternatives to providing access to a buildable portion of a site or adjacent parcel. The above disturbances should be minimized and occur perpendicular to the corridor's alignment, if practical, and disturbed areas should be restored to the greatest extent possible

In general, stormwater management facilities should not be provided within EQCs unless they meet one of the following conditions:

- They are consistent with recommendations of a watershed management plan that has been adopted by the Fairfax County Board of Supervisors; or
- They will:
  - Either:
    - Be more effective in protecting streams and better support goals of watershed management plans than stormwater management measures that otherwise would be provided outside of EQCs; or
    - Contribute to achieving pollutant reduction necessary to bring waters identified as impaired into compliance with state water quality standards or into compliance with a Municipal Separate Storm Sewer System (MS4) permit in a manner that would be more effective and/or less environmentally-disruptive than approaches that would be pursued outside of EQCs;

  and
  - Replace, enhance and/or be provided along with other efforts to compensate for any of the EQC purposes, as described above, that would be affected by the facilities.

When stormwater management facilities within the EQC are determined to be appropriate, encourage the construction of facilities that minimize clearing and grading, such as embankment-only ponds, or facilities that are otherwise designed to maximize pollutant removal while protecting, enhancing, and/or restoring the ecological integrity of the EQC.

The following efforts within EQCs support the EQC policy and should be encouraged:

- Stream stabilization and restoration efforts where such efforts are needed to improve the ecological conditions of degraded streams. Natural channel design methods should be applied to the greatest extent possible and native species of vegetation should be used.
- Replanting efforts in EQCs that would restore or enhance the environmental values of areas that have been subject to clearing; native species of vegetation should be applied.
- Wetland and floodplain restoration efforts.
- Removal of non-native invasive species of vegetation from EQCs to the extent that such efforts would not be in conflict with county ordinances; such efforts should be pursued in a manner that is least disruptive to the EQCs.

Other disturbances to EQCs should only be considered in extraordinary circumstances and only where mitigation/compensation measures are provided that will result in a clear and substantial net environmental benefit. In addition, there should be net benefits relating to most, if not all, of the EQC purposes listed above that are applicable to the proposed disturbances.

Preservation should be achieved through dedication to the Fairfax County Park Authority, if such dedication is in the public interest. Otherwise, EQC land should remain in private ownership in separate undeveloped lots with appropriate commitments for preservation. The use of protective easements as a means of preservation should be considered.

When preservation of EQC land is achieved through the development process it is appropriate to transfer some of the density that would otherwise have been permitted on the EQC land to the non-EQC portion of the property to provide an incentive for the preservation of the EQC and to achieve the other objectives of the Plan. The amount of density transferred should not create an effective density of development that is out of character with the density normally anticipated from the land use recommendations of the Plan. For example, town homes should not normally be built adjacent to an EQC in an area planned for two to three dwelling units per acre. Likewise, an increase in the effective density on the non EQC portion of a site should not be so intense as to threaten the viability of the habitat or pollution reduction capabilities that have been preserved on the EQC portion of the site.

Policy b. To provide an incentive for the preservation of EQCs while protecting the integrity of the EQC system, allow a transfer of some of the density from the EQC portion of developing sites to the less sensitive areas of these sites. The increase in effective density on the non-EQC portion of a site should be no more than an amount which is directly proportional to the percentage of the site that is preserved. Overall site yield will decrease as site constraints increase. Maximum density should be determined according to a simple mathematical expression based upon the ratio of EQC land to total land. This

policy is in addition to other plan policies which impact density and does not supersede other land use compatibility policies.

The retention of environmental amenities on developed and developing sites is also important. The most visible of these amenities is the County's tree cover. It is possible to design new development in a manner that preserves some of the existing vegetation in landscape plans. It is also possible to restore lost vegetation through replanting. An aggressive urban forestry program could retain and restore meaningful amounts of the County’s tree cover.

CHESAPEAKE BAY PRESERVATION ORDINANCE
(Excerpts)

CHAPTER 118

Section 118-4-1. Purpose and Intent.

The purpose of the Water Quality Impact Assessment (WQIA) is to ensure protection of Resource Protection Areas consistent with the goals, objectives, and requirements of this Chapter through (1) the identification of the impacts of proposed development or redevelopment on water quality on lands within RPAs; (2) the assurance that, where development or redevelopment does take place within RPAs, it will be located on those portions of a site and in a manner that will be least disruptive to the natural functions of RPAs; and (3) the requirement of mitigation measures which will address water quality protection.

Section 118-4-2. Applicability.

A Water Quality Impact Assessment shall be required for any land disturbance, development, or redevelopment within an RPA unless exempt under Article 5 or unless waived by the Director in accordance with the provisions of Section 118-6-5.

Section 118-4-3. Water Quality Impact Assessment Components.

The Water Quality Impact Assessment shall:

(a) Display the boundaries of the RPA;
(b) Display and describe the location and nature of the proposed encroachment into and/or impacts to the RPA, including any clearing, grading, impervious surfaces, structures, utilities, and sewage disposal systems;
(c) Provide justification for the proposed encroachment into and/or impacts to the RPA;
(d) Describe the extent and nature of any proposed disturbance or disruption of wetlands;
(e) Display and discuss the type and location of proposed best management practices to mitigate then proposed RPA encroachment and/or adverse impacts;
(f) Demonstrate the extent to which the proposed activity will comply will all applicable performance criteria of this Chapter; and
(g) Provide any other information deemed by the Director to be necessary to evaluate potential water quality impacts of the proposed activity.

Section 118-6-6. Required Findings.

Exceptions to the criteria and requirements of this Chapter may be granted only by a finding that:

(a) The requested exception to the criteria is the minimum necessary to afford relief;
(b) Granting the exception will not confer upon the applicant any special privileges that are denied by this part to other property owners who are subject to its provisions and who are similarly situated;
(c) The exception is in harmony with the purpose and intent of this Chapter and is not of substantial detriment to water quality;
(d) The exception request is not based upon conditions or circumstances that are self-created or self-imposed;
(e) Reasonable and appropriate conditions are imposed, as warranted, that will prevent the allowed activity from causing a degradation of water quality; and
(f) Other findings, as appropriate and required herein, are met.

Section 118-6-9. General Resource Protection Area Encroachment Request.

Exceptions to the criteria and requirements of this Chapter to permit encroachment into the RPA that do not qualify for review under Section 118-6-7 [Exceptions for Loss of Buildable Area in a Resource Protection Area] or Section 118-6-8 [Exceptions for Accessory Structures] may be granted provided that the exception meets the required findings listed in Section 118-6-6 and subject to the additional finding that the water quality benefits resulting from the proposed facility or improvement exceed the associated water quality detriments. Where practicable, a vegetated area that will maximize water quality protection, mitigate the effects of the buffer encroachment, and is equal to the area of encroachment into the buffer area shall be established elsewhere on the lot or parcel.

GLOSSARY

This Glossary is provided to assist the public in understanding
the staff evaluation and analysis of development proposals.
It should not be construed as representing legal definitions.
Refer to the Fairfax County Zoning Ordinance, Comprehensive Plan,
or Public Facilities Manual for additional information.

ABANDONMENT: Refers to road or street abandonment, an action taken by the Board of Supervisors, usually through the public hearing process, to abolish the public's right-of-passage over a road or road right-of way. Upon abandonment, the right-of-way automatically reverts to the underlying fee owners. If the fee to the owner is unknown, Virginia law presumes that fee to the roadbed rests with the adjacent property owners if there is no evidence to the contrary.

ACCESSORY DWELLING UNIT (OR APARTMENT): A secondary dwelling unit established in conjunction with and clearly subordinate to a single family detached dwelling unit. An accessory dwelling unit may be allowed if a special permit is granted by the Board of Zoning Appeals (BZA). Refer to Sect. 8-918 of the Zoning Ordinance.

AFFORDABLE DWELLING UNIT (ADU) DEVELOPMENT: Residential development to assist in the provision of affordable housing for persons of low and moderate income in accordance with the affordable dwelling unit program and in accordance with Zoning Ordinance regulations. Residential development which provides affordable dwelling units may result in a density bonus (see below) permitting the construction of additional housing units. See Part 8 of Article 2 of the Zoning Ordinance.

AGRICULTURAL AND FORESTAL DISTRICTS: A land use classification created under Chapter 114 or 115 of the Fairfax County Code for the purpose of qualifying landowners who wish to retain their property for agricultural or forestal use for use/value taxation pursuant to Chapter 58 of the Fairfax County Code.

BARRIER: A wall, fence, earthen berm, or plant materials which may be used to provide a physical separation between land uses. Refer to Article 13 of the Zoning Ordinance for specific barrier requirements.

BEST MANAGEMENT PRACTICES (BMPs): Stormwater management techniques or land use practices that are determined to be the most effective, practicable means of preventing and/or reducing the amount of pollution generated by nonpoint sources in order to improve water quality.

BUFFER: Graduated mix of land uses, building heights or intensities designed to mitigate potential conflicts between different types or intensities of land uses; may also provide for a transition between uses. A landscaped buffer may be an area of open, undeveloped land and may include a combination of fences, walls, berms, open space and/or landscape plantings. A buffer is not necessarily coincident with transitional screening.

CHESAPEAKE BAY PRESERVATION ORDINANCE: Regulations which the State has mandated must be adopted to protect the Chesapeake Bay and its tributaries. These regulations must be incorporated into the comprehensive plans, zoning ordinances and subdivision ordinances of the affected localities. Refer to Chesapeake Bay Preservation Act, Va. Code Section 10.1-2100 et seq and VR 173-02-01, Chesapeake Bay Preservation Area Designation and Management Regulations.

CLUSTER DEVELOPMENT: Residential development in which the lots are clustered on a portion of a site so that significant environmental/historical/cultural resources may be preserved or recreational amenities provided. While smaller lot sizes are permitted in a cluster subdivision to preserve open space, the overall density cannot exceed that permitted by the applicable zoning district. See Sect. 2-421 and Sect. 9-615 of the Zoning Ordinance.

COUNTY 2232 REVIEW PROCESS: A public hearing process pursuant to Sect. 15.2-2232 (Formerly Sect. 15.1-456) of the Virginia Code which is used to determine if a proposed public facility not shown on the adopted Comprehensive Plan is in substantial accord with the plan. Specifically, this process is used to determine if the general or approximate location, character and extent of a proposed facility is in substantial accord with the Plan.

dBA: The momentary magnitude of sound weighted to approximate the sensitivity of the human ear to certain frequencies; the dBA value describes a sound at a given instant, a maximum sound level or a steady state value. See also Ldn.

DENSITY: Number of dwelling units (du) divided by the gross acreage (ac) of a site being developed in residential use; or, the number of dwelling units per acre (du/ac) except in the PRC District when density refers to the number of persons per acre.

DENSITY BONUS: An increase in the density otherwise allowed in a given zoning district which may be granted under specific provisions of the Zoning Ordinance when a developer provides excess open space, recreation facilities, or affordable dwelling units (ADUs), etc.

DEVELOPMENT CONDITIONS: Terms or conditions imposed on a development by the Board of Supervisors (BOS) or the Board of Zoning Appeals (BZA) in connection with approval of a special exception, special permit or variance application or rezoning application in a "P" district. Conditions may be imposed to mitigate adverse impacts associated with a development as well as secure compliance with the Zoning Ordinance and/or conformance with the Comprehensive Plan. For example, development conditions may regulate hours of operation, number of employees, height of buildings, and intensity of development.

DEVELOPMENT PLAN: A graphic representation which depicts the nature and character of the development proposed for a specific land area: information such as topography, location and size of proposed structures, location of streets trails, utilities, and storm drainage are generally included on a development plan. A development plan is s submission requirement for rezoning to the PRC District. A GENERALIZED DEVELOPMENT PLAN (GDP) is a submission requirement for a rezoning application for all conventional zoning districts other than a P District. A development plan submitted in connection with a special exception (SE) or special permit (SP) is generally referred to as an SE or SP plat. A CONCEPTUAL DEVELOPMENT PLAN (CDP) is a submission requirement when filing a rezoning application for a P District other than the PRC District; a CDP characterizes in a general way the planned development of the site. A FINAL DEVELOPMENT PLAN (FDP) is a submission requirement following the approval of a conceptual development plan and rezoning application for a P District other than the PRC District; an FDP further details the planned development of the site. See Article 16 of the Zoning Ordinance.

EASEMENT: A right to or interest in property owned by another for a specific and limited purpose. Examples: access easement, utility easement, construction easement, etc. Easements may be for public or private purposes.

ENVIRONMENTAL QUALITY CORRIDORS (EQCs): An open space system designed to link and preserve natural resource areas, provide passive recreation and protect wildlife habitat. The system includes stream valleys, steep slopes and wetlands. For a complete definition of EQCs, refer to the Environmental section of the Policy Plan for Fairfax County contained in Vol. 1 of the Comprehensive Plan.

ERODIBLE SOILS: Soils that wash away easily, especially under conditions where stormwater runoff is inadequately controlled. Silt and sediment are washed into nearby streams, thereby degrading water quality.

FLOODPLAIN: Those land areas in and adjacent to streams and watercourses subject to periodic flooding; usually associated with environmental quality corridors. The 100 year floodplain drains 70 acres or more of land and has a one percent chance of flood occurrence in any given year.

FLOOR AREA RATIO (FAR): An expression of the amount of development intensity (typically, non-residential uses) on a specific parcel of land. FAR is determined by dividing the total square footage of gross floor area of buildings on a site by the total square footage of the site itself.

FUNCTIONAL CLASSIFICATION: A system for classifying roads in terms of the character of service that individual facilities are providing or are intended to provide, ranging from travel mobility to land access. Roadway system functional classification elements include Freeways or Expressways which are limited access highways, Other Principal (or Major) Arterials, Minor Arterials, Collector Streets, and Local Streets. Principal arterials are designed to accommodate travel; access to adjacent properties is discouraged. Minor arterials are designed to serve both through traffic and local trips. Collector roads and streets link local streets and properties with the arterial network. Local streets provide access to adjacent properties.

GEOTECHNICAL REVIEW: An engineering study of the geology and soils of a site which is submitted to determine the suitability of a site for development and recommends construction techniques designed to overcome development on problem soils, e.g., marine clay soils.

HYDROCARBON RUNOFF: Petroleum products, such as motor oil, gasoline or transmission fluid deposited by motor vehicles which are carried into the local storm sewer system with the stormwater runoff, and ultimately, into receiving streams; a major source of non-point source pollution. An oil-grit separator is a common hydrocarbon runoff reduction method.

IMPERVIOUS SURFACE: Any land area covered by buildings or paved with a hard surface such that water cannot seep through the surface into the ground.

INFILL: Development on vacant or underutilized sites within an area which is already mostly developed in an established development pattern or neighborhood.

INTENSITY: The magnitude of development usually measured in such terms as density, floor area ratio, building height, percentage of impervious surface, traffic generation, etc. Intensity is also based on a comparison of the development proposal against environmental constraints or other conditions which determine the carrying capacity of a specific land area to accommodate development without adverse impacts.

Ldn: Day night average sound level. It is the twenty-four hour average sound level expressed in A-weighted decibels; the measurement assigns a "penalty" to night time noise to account for night time sensitivity. Ldn represents the total noise environment which varies over time and correlates with the effects of noise on the public health, safety and welfare.

LEVEL OF SERVICE (LOS): An estimate of the effectiveness of a roadway to carry traffic, usually under anticipated peak traffic conditions. Level of Service efficiency is generally characterized by the letters A through F, with LOS-A describing free flow traffic conditions and LOS-F describing jammed or grid-lock conditions.

MARINE CLAY SOILS: Soils that occur in widespread areas of the County generally east of Interstate 95. Because of the abundance of shrink-swell clays in these soils, they tend to be highly unstable. Many areas of slope failure are evident on natural slopes. Construction on these soils may initiate or accelerate slope movement or slope failure. The shrink-swell soils can cause movement in structures, even in areas of flat topography, from dry to wet seasons resulting in cracked foundations, etc. Also known as slippage soils.

OPEN SPACE: That portion of a site which generally is not covered by buildings, streets, or parking areas. Open space is intended to provide light and air; open space may be function as a buffer between land uses or for scenic, environmental, or recreational purposes.

OPEN SPACE EASEMENT: An easement usually granted to the Board of Supervisors which preserves a tract of land in open space for some public benefit in perpetuity or for a specified period of time. Open space easements may be accepted by the Board of Supervisors, upon request of the land owner, after evaluation under criteria established by the Board. See Open Space Land Act, Code of Virginia, Sections 10.1-1700, et seq.

P DISTRICT: A "P" district refers to land that is planned and/or developed as a Planned Development Housing (PDH) District, a Planned Development Commercial (PDC) District or a Planned Residential Community (PRC) District. The PDH, PDC and PRC Zoning Districts are established to encourage innovative and creative design for land development; to provide ample and efficient use of open space; to promote a balance in the mix of land uses, housing types, and intensity of development; and to allow maximum flexibility in order to achieve excellence in physical, social and economic planning and development of a site. Refer to Articles 6 and 16 of the Zoning Ordinance.

PROFFER: A written condition, which, when offered voluntarily by a property owner and accepted by the Board of Supervisors in a rezoning action, becomes a legally binding condition which is in addition to the zoning district regulations applicable to a specific property. Proffers are submitted and signed by an owner prior to the Board of Supervisors public hearing on a rezoning application and run with the land. Once accepted by the Board, proffers may be modified only by a proffered condition amendment (PCA) application or other zoning action of the Board and the hearing process required for a rezoning application applies. See Sect. 15.2-2303 (formerly 15.1-491) of the Code of Virginia.

PUBLIC FACILITIES MANUAL (PFM): A technical text approved by the Board of Supervisors containing guidelines and standards which govern the design and construction of site improvements incorporating applicable Federal, State and County Codes, specific standards of the Virginia Department of Transportation and the County's Department of Public Works and Environmental Services.

RESOURCE MANAGEMENT AREA (RMA): That component of the Chesapeake Bay Preservation Area comprised of lands that, if improperly used or developed, have a potential for causing significant water quality degradation or for diminishing the functional value of the Resource Protection Area. See Fairfax County Code, Ch. 118, Chesapeake Bay Preservation Ordinance.

RESOURCE PROTECTION AREA (RPA): That component of the Chesapeake Bay Preservation Area comprised of lands at or near the shoreline or water's edge that have an intrinsic water quality value due to the ecological and biological processes they perform or are sensitive to impacts which may result in significant degradation of the quality of state waters. In their natural condition, these lands provide for the removal, reduction or assimilation of sediments from runoff entering the Bay and its tributaries, and minimize the adverse effects of human activities on state waters and aquatic resources. New development is generally discouraged in an RPA. See Fairfax County Code, Ch. 118, Chesapeake Bay Preservation Ordinance.

SITE PLAN: A detailed engineering plan, to scale, depicting the development of a parcel of land and containing all information required by Article 17 of the Zoning Ordinance. Generally, submission of a site plan to DPWES for review and approval is required for all residential, commercial and industrial development except for development of single family detached dwellings. The site plan is required to assure that development complies with the Zoning Ordinance.

SPECIAL EXCEPTION (SE) / SPECIAL PERMIT (SP): Uses, which by their nature, can have an undue impact upon

or can be incompatible with other land uses and therefore need a site specific review. After review, such uses may be allowed to locate within given designated zoning districts if appropriate and only under special controls, limitations, and regulations. A special exception is subject to public hearings by the Planning Commission and Board of Supervisors with approval by the Board of Supervisors; a special permit requires a public hearing and approval by the Board of Zoning Appeals. Unlike proffers which are voluntary, the Board of Supervisors or BZA may impose reasonable conditions to assure, for example, compatibility and safety. See Article 8, Special Permits and Article 9, Special Exceptions, of the Zoning Ordinance.

STORMWATER MANAGEMENT: Engineering practices that are incorporated into the design of a development in order to mitigate or abate adverse water quantity and water quality impacts resulting from development. Stormwater management systems are designed to slow down or retain runoff to re-create, as nearly as possible, the pre-development flow conditions.

SUBDIVISION PLAT: The engineering plan for a subdivision of land submitted to DPWES for review and approved pursuant to Chapter 101 of the County Code.

TRANSPORTATION DEMAND MANAGEMENT (TDM): Actions taken to reduce single occupant vehicle automobile trips or actions taken to manage or reduce overall transportation demand in a particular area.

TRANSPORTATION SYSTEM MANAGEMENT (TSM) PROGRAMS: This term is used to describe a full spectrum of actions that may be applied to improve the overall efficiency of the transportation network. TSM programs usually consist of low-cost alternatives to major capital expenditures, and may include parking management measures, ridesharing programs, flexible or staggered work hours, transit promotion or operational improvements to the existing roadway system. TSM includes Transportation Demand Management (TDM) measures as well as H.O.V. use and other strategies associated with the operation of the street and transit systems.

URBAN DESIGN: An aspect of urban or suburban planning that focuses on creating a desirable environment in which to live, work and play. A well-designed urban or suburban environment demonstrates the four generally accepted principles of design: clearly identifiable function for the area; easily understood order; distinctive identity; and visual appeal.

VACATION: Refers to vacation of street or road as an action taken by the Board of Supervisors in order to abolish the public's right-of-passage over a road or road right-of-way dedicated by a plat of subdivision. Upon vacation, title to the road right-of-way transfers by operation of law to the owner(s) of the adjacent properties within the subdivision from whence the road/road right-of-way originated.

VARIANCE: An application to the Board of Zoning Appeals which seeks relief from a specific zoning regulation such as lot width, building height, or minimum yard requirements, among others. A variance may only be granted by the Board of Zoning Appeals through the public hearing process and upon a finding by the BZA that the variance application meets the required Standards for a Variance set forth in Sect. 18-404 of the Zoning Ordinance.

WETLANDS: Land characterized by wetness for a portion of the growing season. Wetlands are generally delineated on the basis of physical characteristics such as soil properties indicative of wetness, the presence of vegetation with an affinity for water, and the presence or evidence of surface wetness or soil saturation. Wetland environments provide water quality improvement benefits and are ecologically valuable. Development activity in wetlands is subject to permitting processes administered by the U.S. Army Corps of Engineers

TIDAL WETLANDS: Vegetated and nonvegetated wetlands as defined in Chapter 116 Wetlands Ordinance of the Fairfax County Code: includes tidal shores and tidally influenced embayments, creeks, and tributaries to the Occoquan and Potomac Rivers. Development activity in tidal wetlands may require approval from the Fairfax County Wetlands Board.

Abbreviations Commonly Used in Staff Reports

A&F	Agricultural & Forestal District
ADU	Affordable Dwelling Unit
ARB	Architectural Review Board
BMP	Best Management Practices
BOS	Board of Supervisors
BZA	Board of Zoning Appeals
COG	Council of Governments
CBC	Community Business Center
CDP	Conceptual Development Plan
CRD	Commercial Revitalization District
DOT	Department of Transportation
DP	Development Plan
DPWES	Department of Public Works and Environmental Services
DPZ	Department of Planning and Zoning
DU/AC	Dwelling Units Per Acre
EQC	Environmental Quality Corridor
FAR	Floor Area Ratio
FDP	Final Development Plan
GDP	Generalized Development Plan
GFA	Gross Floor Area
HC	Highway Corridor Overlay District
HCD	Housing and Community Development
LOS	Level of Service
Non-RUP	Non-Residential Use Permit
OSDS	Office of Site Development Services, DPWES
PCA	Proffered Condition Amendment
PD	Planning Division
PDC	Planned Development Commercial
PDH	Planned Development Housing
PFM	Public Facilities Manual
PRC	Planned Residential Community
RC	Residential-Conservation
RE	Residential Estate
RMA	Resource Management Area
RPA	Resource Protection Area
RUP	Residential Use Permit
RZ	Rezoning
SE	Special Exception
SEA	Special Exception Amendment
SP	Special Permit
TDM	Transportation Demand Management
TMA	Transportation Management Association
TSA	Transit Station Area
TSM	Transportation System Management
UP & DD	Utilities Planning and Design Division, DPWES
VC	Variance
VDOT	Virginia Dept. of Transportation
VPD	Vehicles Per Day
VPH	Vehicles per Hour
WMATA	Washington Metropolitan Area Transit Authority
WS	Water Supply Protection Overlay District
ZAD	Zoning Administration Division, DPZ
ZED	Zoning Evaluation Division, DPZ
ZPRB	Zoning Permit Review Branch