CONCEPTUAL DEVELOPMENT PLAN AMENDMENT (CDPA) AND FINAL DEVELOPMENT PLAN AMENDMENT (FDPA) FOR PCA 78-C-098-2

BOXWOODS

HUNTER MILL MAGISTERIAL DISTRICT
FAIRFAX COUNTY, VIRGINIA

GENERAL NOTES

1. THE PROPERTY IS IDENTIFIED ON FAIRFAX COUNTY TAX ASSESSMENT MAP: 17-4 ((1))-01.
2. THE ABOVE REFERENCED PROPERTY IS CURRENTLY ZONED PDC PER CDPA#78-C-098.
3. THE BOUNDARY INFORMATION SHOWN HEREON IS BASED ON ALTA/ACSM LAND TITLE SURVEY, PREPARED BY BURGESS & NIPLE, DATED SEPTEMBER 2002.
4. THE TOPOGRAPHY SHOWN HEREON IS AT A TWO-FOOT CONTOUR INTERVAL, COMPILED BY UEA. ALL TOPOGRAPHY WAS OBTAINED VIA AIR SURVEY.
5. THE PROPERTY SHOWN ON THIS CDPA & FDPA PLAN IS LOCATED IN THE HUNTER MILL DISTRICT.
6. THIS PROPOSED DEVELOPMENT IS IN CONFORMANCE WITH THE COMPREHENSIVE PLAN AND ALL APPLICABLE ORDINANCES, REGULATIONS AND ADOPTED CONDITIONS EXCEPT FOR:
   A: A WAIVER UNDER PAR. 5 OF SECTION 6-206 OF THE ZONING ORDINANCE IS HEREBY REQUESTED. TO ALLOW GROSS FLOOR AREA FOR DWELLINGS AS A SECONDARY USE TO EXCEED 50% OF THE GROSS FLOOR AREA OF THE PRINCIPAL USE, AND
   B: A WAIVER UNDER PAR. 8 OF SECTION 16401 OF THE ZONING ORDINANCE IS HEREBY REQUESTED TO ALLOW FOR WALLS GREATER THAN 4' IN HEIGHT IN THE FRONT YARD.
7. THIS SITE IS SERVED BY PUBLIC SEWER AND WATER.
8. STORM WATER MANAGEMENT (SWM) AND BEST MANAGEMENT PRACTICES (BMP) ARE PROVIDED BY ONSITE AND OR OFFSITE SWM/BMP FACILITIES. SEE STORMWATER MANAGEMENT NARRATIVE AND OUTFALL NARRATIVE THIS SHEET.
9. UTILITY LOCATIONS SHOWN ARE APPROXIMATE. THERE ARE NO KNOWN EXISTING UTILITY EASEMENTS OF 25' OR MORE IN WIDTH ON THE SITE.
10. INDIVIDUAL UTILITY PLANS AND PROFILES WILL BE SUBMITTED DURING THE SITE PLAN STAGE FOR CONSTRUCTION PURPOSES.
11. THERE ARE NO KNOWN HAZARDOUS OR TOXIC SUBSTANCES ON THIS SITE. IF ANY SUBSTANCES ARE FOUND, THE METHODS FOR DISPOSAL SHALL ADHERE TO COUNTY, STATE, OR FEDERAL LAW.
12. NO HAZARDOUS OR TOXIC SUBSTANCES, HAZARDOUS WASTES OR PETROLEUM PRODUCTS ARE TO BE GENERATED, UTILIZED, STORED, TREATED AND/OR DISPOSED OF ON THIS SITE. EXCEPT FOR STORAGE OF DEISEL FUEL FOR GENERATORS AND GASOLINE FOR LAWN MAINTENANCE EQUIPMENT. THERE ARE NO EXISTING STORAGE FACILITIES FOR SUCH PRODUCTS ON THIS SITE.
13. THERE ARE NO KNOWN BURIAL SITES.
14. ALL PUBLIC STREETS SHALL CONFORM TO FAIRFAX COUNTY AND/OR VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT) STANDARDS AND SPECIFICATIONS UNLESS MODIFIED. PRIVATE STREETS SHALL CONFORM TO STANDARDS SET BY THE FAIRFAX COUNTY PUBLIC FACILITIES MANUAL SECTION 7 UNLESS MODIFIED.
15. IN ACCORDANCE WITH PARAGRAPH 4 OF SECTION 16-403 OF THE ZONING ORDINANCE, MINOR MODIFICATIONS TO THE SIZE, DIMENSIONS, FOOTPRINTS, AND LOCATION OF BUILDINGS, PARKING SPACES, GARAGES, RETAINING WALLS AND SIDEWALKS MAY OCCUR WITH FINAL ENGINEERING AND DESIGN.
16. THERE ARE NO DESIGNATED FLOOD PLAINS, ENVIRONMENTAL QUALITY CORRIDORS, OR RPAs ON THE SUBJECT SITE PER FAIRFAX COUNTY MAPS.
17. THERE ARE SCENIC ASSETS OR NATURAL FEATURES ON THE SUBJECT SITE WHICH WOULD DESERVE PROTECTION OR PRESERVATION, SUCH AS THE MANOR HOUSE, GAZEBO, TREES, AND POND.
18. THE SPECIAL AMENITIES PROPOSED WITH THIS SITE SHALL INCLUDE:
   * PEDESTRIAN SIDEWALKS
   * CABANA
   * GAZEBO
19. THE DEVELOPMENT SCHEDULE SHALL BE DETERMINED BY THE APPLICANT BASED UPON MARKET CONDITIONS.
20. THE PROPOSED PUBLIC ROAD IMPROVEMENTS ILLUSTRATE THE REQUIRED IMPROVEMENTS PER THE COMPREHENSIVE PLAN. THE APPROVAL OF THIS PLAN WILL ONLY BIND THE OWNER TO CONSTRUCTING THE ROAD IMPROVEMENTS AS SHOWN. AT THIS TIME THERE ARE NO REQUIRED IMPROVEMENTS.
21. SIGNAGE WILL BE PROVIDED IN ACCORDANCE WITH THE FAIRFAX COUNTY ZONING ORDINANCE.
22. AFFORDABLE DWELLING UNITS ARE NOT REQUIRED PER PAR. 1 OF SECTION 2-803.
23. ARCHITECTURAL SKETCHES OF STRUCTURES PROVIDED ON SHEET #16.
24. OMITTED.
25. TABULATIONS FOR SITE, BUILDING, PARKING AND LOADING DATA ARE PROVIDED ON THIS SHEET.
26. UTILITY LAYOUT SUBJECT TO CHANGE WITH FINAL SITE PLAN.
27. THERE ARE EXISTING BUILDINGS ON SITE.
28. LOCATIONS OF MECHANICAL EQUIPMENT (INCLUDING TRANSFORMERS AND GENERATORS) ON SITE TO BE PROVIDED WITH THE FINAL SITE PLAN.
29. THE EXISTING ORIGINAL HOUSE IS TO REMAIN WITH MINOR MODIFICATIONS TO UPDATE IT WITH STAIRS AND/OR ELEVATORS AS A HOTEL USE. THE DETACHED EXISTING GARAGE WILL BE DEMOLISHED AND A CABANA WILL BE CONSTRUCTED.
30. THE EXISTING PRISON FELLOWSHIP OFFICE BUILDING, GARAGE AND BATHHOUSE WILL BE DEMOLISHED AND REPLACED WITH THE NEW RESIDENTIAL PROJECT. MOST OF THE MECHANICAL EQUIPMENT AND STRUCTURES TO THE EXISTING BUILDING WILL BE REMOVED.
31. THE PROPOSED LANDSCAPING AND TREE PRESERVATION AREAS IN AND NEAR THE EXISTING STORMWATER MANAGEMENT FACILITY ARE SHOWN ON SHEETS #6-8 OF THIS PLAN.
32. THE APPLICANT RESERVES THE RIGHT TO INSTALL COVERED SIDEWALKS ON THE SITE WITH THE FINAL SITE PLAN.

STORMWATER MANAGEMENT NARRATIVE

STORMWATER MANAGEMENT (SWM) AND BEST MANAGEMENT PRACTICES (BMP) ARE PROVIDED FOR THIS PROPERTY BY A SERIES OF EXISTING ONSITE AND OFFSITE PONDS AS SHOWN ON THE APPROVED FAIRFAX COUNTY PLAN #8766-SP-001-2, ENTITLED "SALLIEMAE," PREPARED BY DEWBERRY & DAVIS, APPROVED ON JUNE 29, 1994. FOR INFORMATION PURPOSES, SHEETS #9-15 OF THIS APPLICATION ARE REFERENCED FROM APPROVED PLAN #8766-SP-001-2 TO DEMONSTRATE THAT THE EXISTING FACILITIES SERVE THIS DEVELOPMENT. SHEET #10 IS PROVIDED TO SHOW THE PONDS LOCATIONS IN PLAN VIEW. SHEET #12 IS INCLUDED TO SHOW THAT THE EXISTING FACILITIES WERE DESIGNED TO ACCOMMODATE SWM FOR USES CONSISTENT WITH THIS APPLICATION. SHEET #11 IS INCLUDED TO SHOW THAT THE EXISTING FACILITIES WERE DESIGNED TO ACCOMMODATE BMP FOR USES CONSISTENT WITH THIS APPLICATION. THE NARRATIVE ON SHEET #9 DESCRIBES HOW THE EXISTING ONSITE POND WAS RECONSTRUCTED WITH PLAN #8766-SP-001-2. THEREFORE, THERE ARE NO ADDITIONAL SWM OR BMP REQUIREMENTS FOR THIS PLAN.

AS CAN BE SEEN IN THE DESIGN DATA REFERENCED ABOVE, THE DESIGN CALCULATIONS CONTEMPLATED A LEVEL OF DEVELOPMENT FOR THE SUBJECT SITE WITH IMPACTS EXCEEDING THOSE PROPOSED WITH THIS PLAN. AT THE TIME OF FINAL SITE PLAN, ONCE FINAL DEVELOPMENT CONDITIONS ARE KNOWN, THE EXISTING POND WILL BE ANALYZED FOR SWM AND BMP PURPOSES. IF POSSIBLE, THE EXISTING POND WILL BE RETROFITTED TO PROVIDE SWM AND BMP FOR THIS SITE. IF ADEQUATE CAPACITIES CANNOT BE ACHIEVED ONSITE, THE APPLICANT WILL PURSUE OTHER OPTIONS TO MEET THESE REQUIREMENTS, WHICH MAY INCLUDE ENTERING INTO A MAINTENANCE AGREEMENT THAT RUNS WITH THE LAND WITH THE OWNER OF THE OFFSITE FACILITIES.

OUTFALL NARRATIVE

THIS SITE DRAINS NORTH TO SOUTH TO THE EXISTING ONSITE WET POND. A PRELIMINARY LAYOUT OF THE ON-SITE STORM DRAINAGE INLETS AND PIPES IS SHOWN ON SHEET #4. THE CHARACTERISTICS OF THE EXISTING FACILITY ARE PROVIDED IN THE CHECKLIST ON THIS SHEET. RUNOFF IS THEN CONVEYED UNDER OLD RESTON AVENUE THROUGH EXISTING CLOSED CONDUIT PIPES. THIS IS THE ONLY SITE OUTFALL, LABELED AS "SITE OUTFALL #1" ON SHEET #4. THE EXISTING POND FUNCTIONS IN SERIES WITH 3 ADDITIONAL PONDS ACROSS OLD RESTON AVENUE TO PROVIDE SWM AND BMP FOR A 158.3 AC DRAINAGE SHED. AS SHOWN ON SHEET #9, CROSS-SECTION 20 VERIFIES THE ADEQUACY OF THE EXISTING CHANNEL IMMEDIATELY DOWNSTREAM OF THE EXISTING FACILITIES. THE EXISTING VEGETATED CHANNEL PROCEEDS THROUGH THE HIDDEN CREEK GOLF COURSE. THE CHANNEL ENTERS THE FAIRFAX COUNTY MAPPED FLOODPLAIN APPROXIMATELY 1500 FT. DOWNSTREAM OF CROSS-SECTION 20. THE CHANNEL CONTINUES AND AT A POINT APPROXIMATELY 2400 FT. DOWNSTREAM OF CROSS-SECTION 20, THE TOTAL DRAINAGE AREA IS 568 ACRES. THIS DRAINAGE AREA IS OVER 100 TIMES THE SITE AREA. IT IS THE OPINION OF URBAN ENGINEERING THAT AN ADEQUATE OUTFALL IS PROVIDED. FURTHER, THE ADEQUATE OUTFALL REQUIREMENTS OF THE PUBLIC FACILITIES MANUAL WILL BE SATISFIED WITH THE FINAL SITE PLAN; INCLUDING CROSS SECTIONAL ANALYSIS TO DEMONSTRATE THAT THE EXISTING NATURAL CHANNEL IS ADEQUATE TO HANDLE THE 2-YEAR POST-DEVELOPMENT ROUTED FLOWS AT NON-EROSIVE VELOCITIES.

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)	Special Exceptions (9-011 2J & 2L)
Cluster Subdivision (9-615 1G & 1N)	Commercial Revitalization Districts (9-622 2A (12) & (14))
Development Plans PRC District (16-302 3 & 4L)	PRC Plan (16-303 1E & 1O)
FDP P Districts (except PRC) (16-502 1F & 1Q)	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'). SHOWN ON SHEET #4

☑ 2. A graphic depicting the stormwater management facility(ies) and limits of clearing and grading 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 4. FACILITY IS EXISTING AS SHOWN ON SHEET #4.

☑ 3. Provide:

Facility Name/ Type & No. (e.g. dry pond A, mult. marsh, underground vault, etc.)	On-site area served (acres)	Off-site area served (acres)	Drainage area (acres)	Footprint area (sf)	Storage Volume (cf)	If pond, dam height (ft)
EXISTING ON-SITE WET POND	5.1862	17.06	22.25	9140	27,420	10.5
Totals						

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

☑ 5. Maintenance access (road) to stormwater management facility(ies) are shown on Sheet 4. 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 4.

☑ 7. A 'stormwater management narrative' which contains a description of how detention and best management practices requirements will be met is provided on Sheet 1.

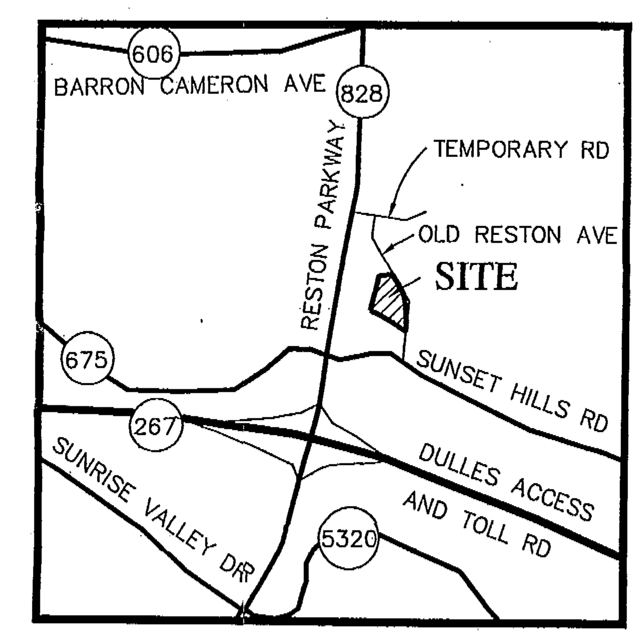
☑ 8. A description of the existing conditions of each numbered site outfall extended downstream from the site to a point which is at least 100 times the site area or which has a drainage area of at least one square mile (640 acres) is provided on Sheet 1.

☑ 9. A description of how the outfall requirements, including contributing drainage areas of the Public Facilities Manual will be satisfied is provided on Sheet 1. OUTFALL NARRATIVE

☑ 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 1 & 4.

☑ 11. A submission waiver is requested for N/A

☑ 12. Stormwater management is not required because N/A



VICINITY MAP
SCALE: 1" = 2000'

ZONING TABULATIONS

SITE AREA= 225,910.87 SF. OR 5.1862 ACRES
EXISTING ZONING= PDC
PROPOSED ZONING= PDC
PROPOSED USE= MULTIFAMILY RESIDENTIAL AND HOTEL
BUILDING GROSS FLOOR AREA = 7,169 GSF HOTEL (INCLUDES MANOR HOUSE, MANOR HOUSE EXPANSION AND CABANA)
140,637 GSF MULTIFAMILY RESIDENTIAL
147,806 GSF TOTAL

NUMBER OF HOTEL ROOMS = 6 ROOMS
NUMBER OF RESIDENTIAL UNITS = 60 UNITS
MAXIMUM FAR = 1.5
BUILDING F.A.R. PROVIDED = 147,806/225,910.87 = 0.65
RESIDENTIAL DENSITY = 60 UNITS/5.1862 AC. = 11.57 UNITS/ACRE
MAXIMUM BUILDING HEIGHT ALLOWED = NO MAXIMUM
MAXIMUM BUILDING HEIGHT PROVIDED= 40 FT. FOR HOTEL
= 49.97 FT. FOR MULTIFAMILY RESIDENTIAL
= 25.00 FT. FOR CABANA
= 12.25 FT. FOR PORTICO
= 25.00 FT FOR EX. GAZEBO (TO REMAIN)

YARDS REQUIRED = FRONT(NONE) SIDE (NONE) REAR (NONE)
YARDS PROVIDED = FRONT (35') SIDE (40') REAR (25')
OPEN SPACE REQUIRED = 15% OR 33,900 SF.
OPEN SPACE PROVIDED = 45% OR 101,660 SF.

PARKING TABULATIONS
HOTEL USE = 1 SPACE/ROOM + 4 SP./50 ROOMS = 7 SPACES
MULTIFAMILY USE = 1.6 SPACES/UNIT= 60 X 1.6 = 96 SPACES
TOTAL 103 SPACES

PARKING PROVIDED:
85 SPACES IN THE GARAGE
56 SURFACE SPACES
141 TOTAL
HANDICAPPED PARKING REQUIRED:
5 SPACES (1 VAN ACCESSIBLE)
HANDICAPPED PARKING PROVIDED:
5 SPACES (2 VAN ACCESSIBLE)

LOADING SPACES REQUIRED:
MULTIFAMILY RESIDENTIAL - 1SP/25,000 GSF+1 SP./100,000 GSF = 2 SPACES
HOTEL - 1 SP./10,000 GSF+ 1 SP./100,000 GSF = 1 SPACE
TOTAL = 3 SPACES

LOADING SPACES PROVIDED:
3 SPACES

SHEET INDEX

1. COVER SHEET
2. EXISTING CONDITIONS AND SOILS MAP
3. CERTIFIED PLAT
4. CONCEPTUAL AND FINAL DEVELOPMENT PLAN
5. GARAGE LAYOUT
6. LANDSCAPE PLAN
7.-8. EXISTING VEGETATION MAP AND TREE SURVEY
9-15. SWM/BMP DETAILS
16. SECTION PLAN

Application No. PCA 78-C-098-2 Staff C. Lewis
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 3-31-06
Date of (BOS) (PC) approval 4-3-06
Sheet 1 of 16

OWNER/ DEVELOPER

GREGOR L.L.C.
11307 SUNSET HILLS ROAD
RESTON VA. 20190

RECEIVED
Department of Planning & Zoning
MAR 14 2006
Zoning Evaluation Division

No.	DATE	DESCRIPTION	REV.BY	APPROVED	DATE

REVISION APPROVED BY DIVISION OF DESIGN REVIEW

PLAN DATE
09-28-05
10-18-05
11-30-05
01-12-06
02-08-06
02-14-06

URBAN ENGINEERING & ASSOC.,INC.
CIVIL ENGINEERS • LANDSCAPE ARCHITECTS • LAND SURVEYORS
7712 LITTLE RIVER TURNPIKE
ANNANDALE, VIRGINIA 22003 (703) 642-8080

COMMONWEALTH OF VIRGINIA
ERIC S. SIEGEL
No. 023416
02/14/06
PROFESSIONAL ENGINEER

COVER SHEET
BOXWOODS
HUNTER MILL MAGISTERIAL DISTRICT
FAIRFAX COUNTY, VIRGINIA

SCALE: AS NOTED C.I. = N/A DATE: SEPT., 2005

SHEET 1 OF 16

FILE No. ZP-1612

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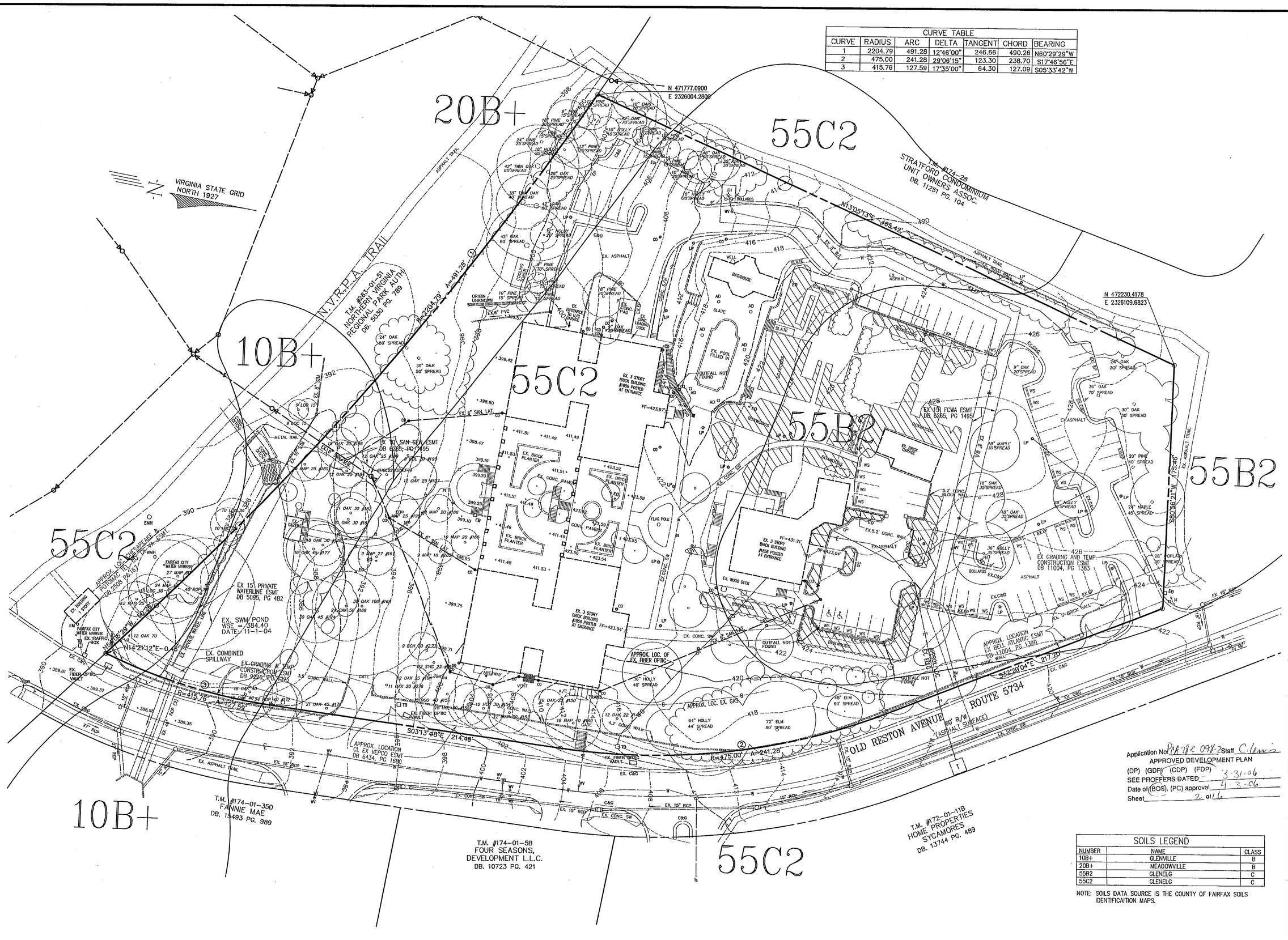
CURVE TABLE						
CURVE	RADIUS	ARC	DELTA	TANGENT	CHORD	BEARING
1	2204.79	491.28	12°46'00"	246.66	490.26	N60°29'29"W
2	475.00	241.28	29°06'15"	123.30	238.70	S17°46'56"E
3	415.76	127.59	17°35'00"	64.30	127.09	S05°33'42"W



Application No. PCA 78-C 098-2 Staff C. Lewis
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 3-31-06
Date of (BOS), (PC) approval 4-3-06
Sheet 2 of 16

SOILS LEGEND		
NUMBER	NAME	CLASS
10B+	GLENVILLE	B
20B+	MEADOWVILLE	B
55B2	GLENELG	C
55C2	GLENELG	C

NOTE: SOILS DATA SOURCE IS THE COUNTY OF FAIRFAX SOILS IDENTIFICAITION MAPS.

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PLAN DATE
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11-30-05
02-09-06
03-06-06
02-14-06

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COMMONWEALTH OF VIRGINIA
ERIC S. SIEGEL
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02/14/06

EXISTING CONDITIONS AND SOILS MAP

BOXWOODS
HUNTER MILL MAGISTERIAL DISTRICT
FAIRFAX COUNTY, VIRGINIA

SCALE: 1"=30' C.I. = 2' DATE: SEPT., 2005

SHEET 2 OF 16

FILE No. ZP-1612

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CURVE TABLE						
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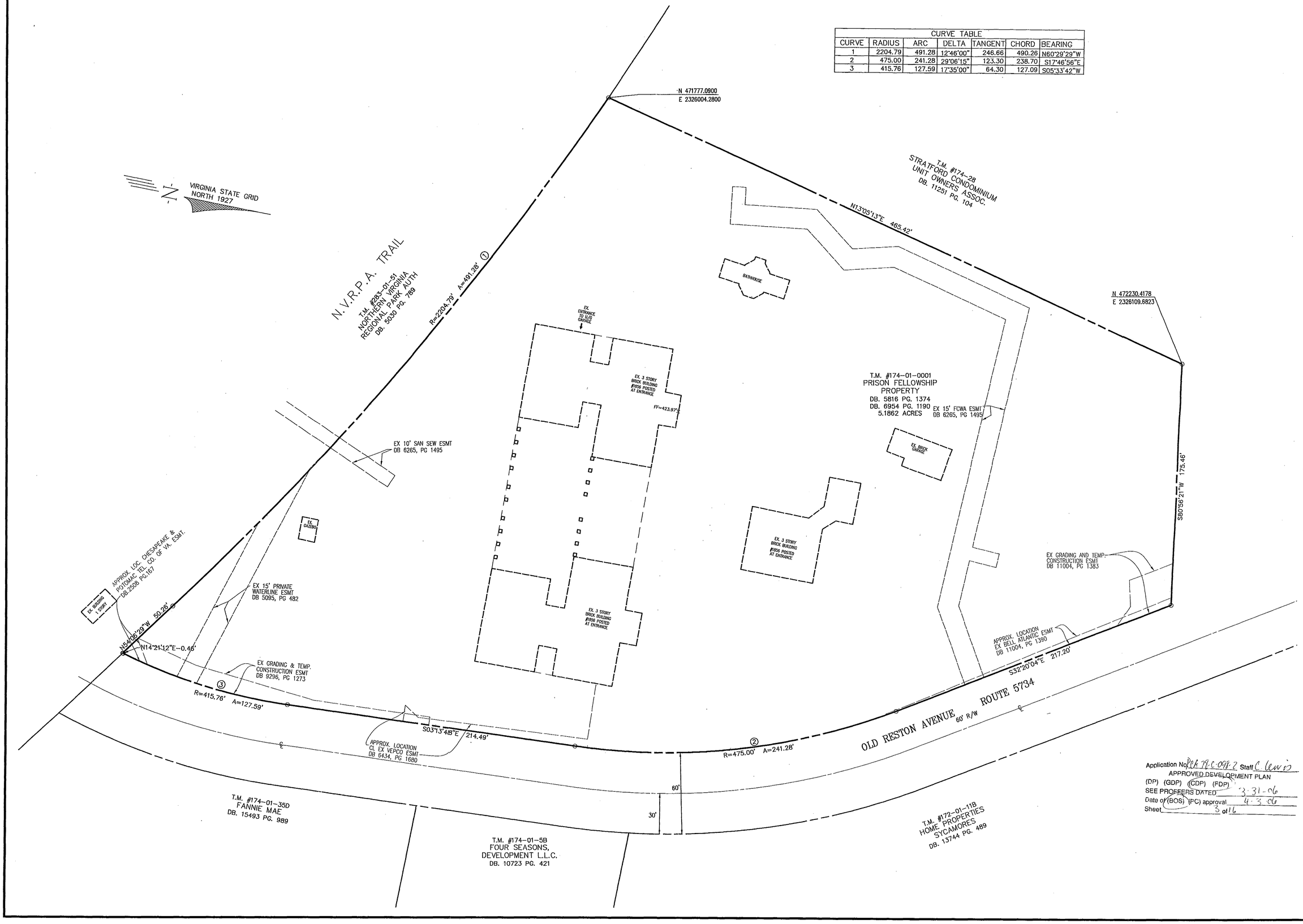

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Sheet 3 of 16

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PLAN DATE
09-28-05
10-19-05
11-30-05
01-31-06
02-14-06

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COMMONWEALTH OF VIRGINIA
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No. 023416
02/14/06
PROFESSIONAL ENGINEER

CERTIFIED PLAT
BOXWOODS
HUNTER MILL MAGISTERIAL DISTRICT
FAIRFAX COUNTY, VIRGINIA
SCALE: 1"=30' C.I. = N/A DATE: SEPT., 2005

SHEET 3 OF 16

FILE No. ZP-1612

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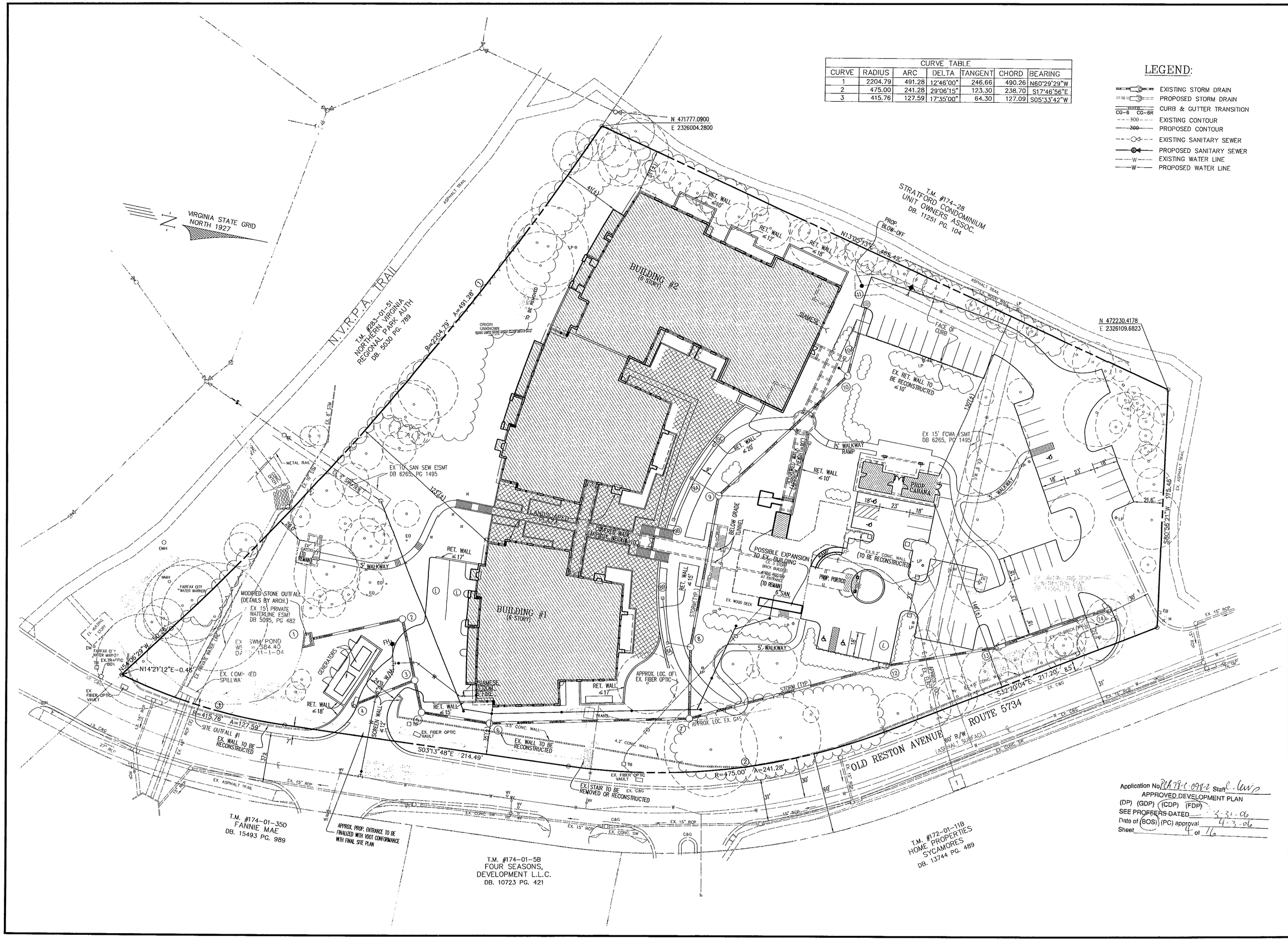
LEGEND:

- EXISTING STORM DRAIN
- PROPOSED STORM DRAIN
- CG-6 CG-6R CURB & GUTTER TRANSITION
- 300 EXISTING CONTOUR
- 300 PROPOSED CONTOUR
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- W EXISTING WATER LINE
- W PROPOSED WATER LINE



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Sheet 4 of 16

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09-28-05
10-18-05
11-30-05
01-23-06
02-08-06
02-14-06

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COMMONWEALTH OF VIRGINIA
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02/14/06
PROFESSIONAL ENGINEER

CONCEPTUAL AND FINAL DEVELOPMENT PLAN

BOXWOODS

HUNTER MILL MAGISTERIAL DISTRICT
FAIRFAX COUNTY, VIRGINIA

SCALE: 1"=30' C.I. = 2' DATE: SEPT., 2005

SHEET 4 OF 16

FILE No. ZP-1612

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GARAGE LAYOUT

BOXWOODS

HUNTER MILL MAGISTERIAL DISTRICT
FAIRFAX COUNTY, VIRGINIA

SCALE: 1"=30' C.I. = N/A DATE: SEPT., 2005

SHEET 5 OF 16

FILE No. ZP-1612

COMMONWEALTH OF VIRGINIA
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PLAN DATE
09-28-05
11-30-05
2-14-06

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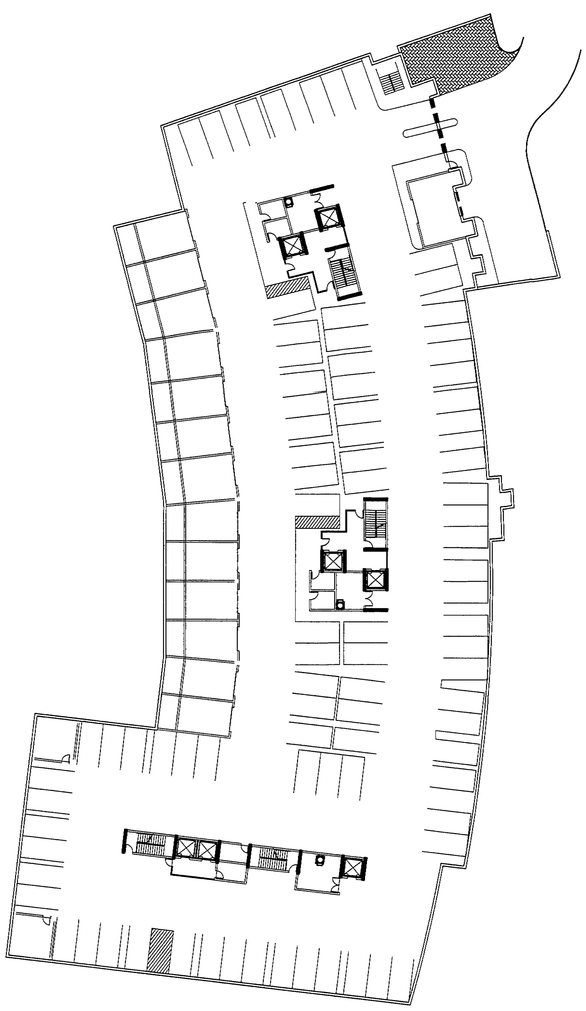
Sheet 5 of 16



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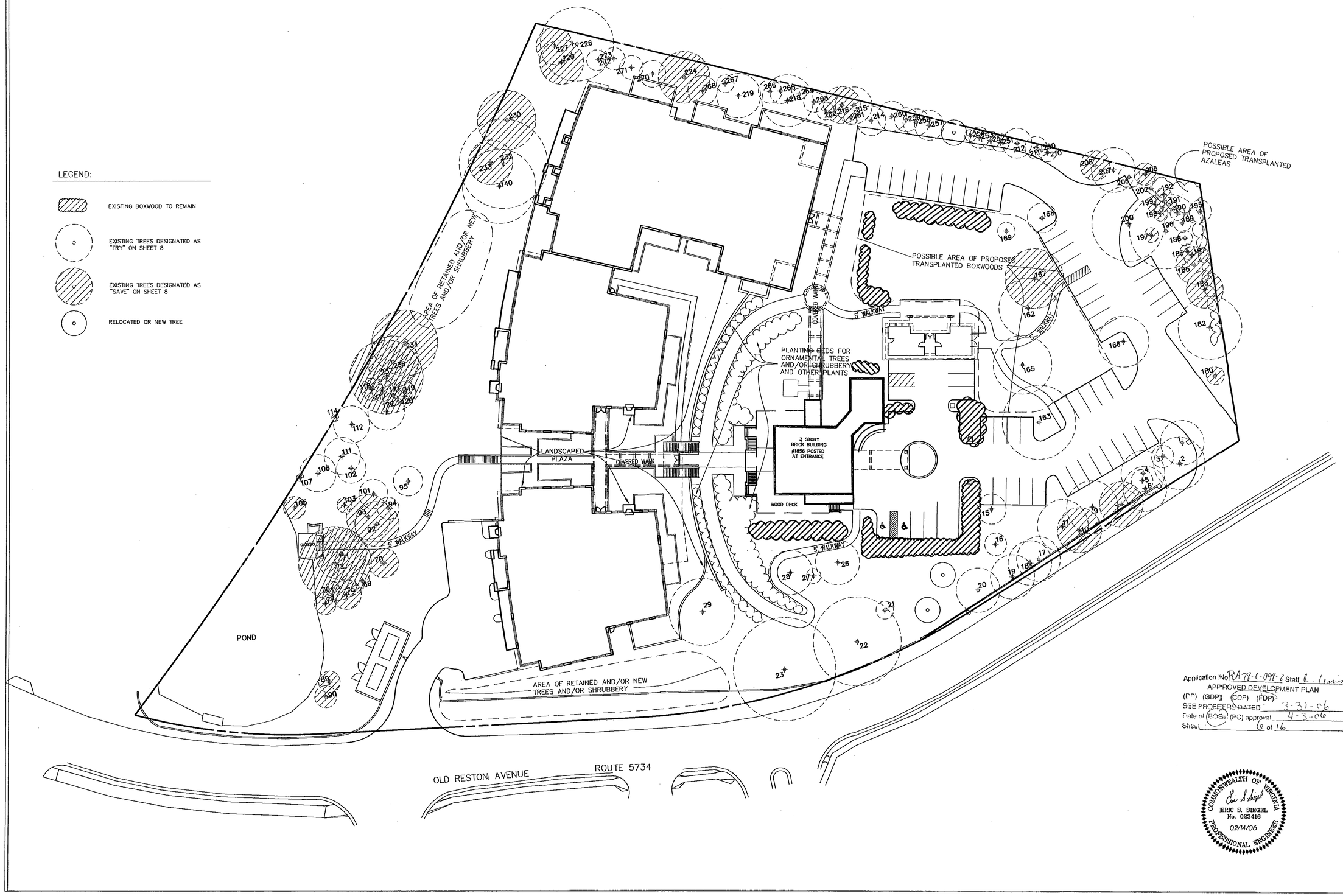
LEGEND:

- EXISTING BOXWOOD TO REMAIN
- EXISTING TREES DESIGNATED AS "TRY" ON SHEET 8
- EXISTING TREES DESIGNATED AS "SAVE" ON SHEET 8
- RELOCATED OR NEW TREE



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Sheet 6 of 16

COMMONWEALTH OF VIRGINIA
ERIC S. SIEGEL
No. 023416
02/14/06
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229 Prince George Street
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Balt. 410.269.5886 Wash. 301.858.5330
Fax 410.268.4032
www.grahamlandarch.com

REVISIONS

02-08-06

02-14-06

These drawings and specifications and the ideas represented thereby are and shall remain the property of the Landscape Architect. No part thereof shall be copied or used in connection with any work or project or by any other person for any purpose other than for the specific project for which they have been prepared and developed without the written consent of the Landscape Architect.

BOXWOODS

FAIRFAX COUNTY, VIRGINIA

W S N E

LANDSCAPE PLAN

DRAWN BY:	AMH
APPROVED BY:	
PROJECT #:	2512
SCALE:	1" = 30'0"

L 1.0

SHEET 6 of 16

19 SEPTEMBER 2005

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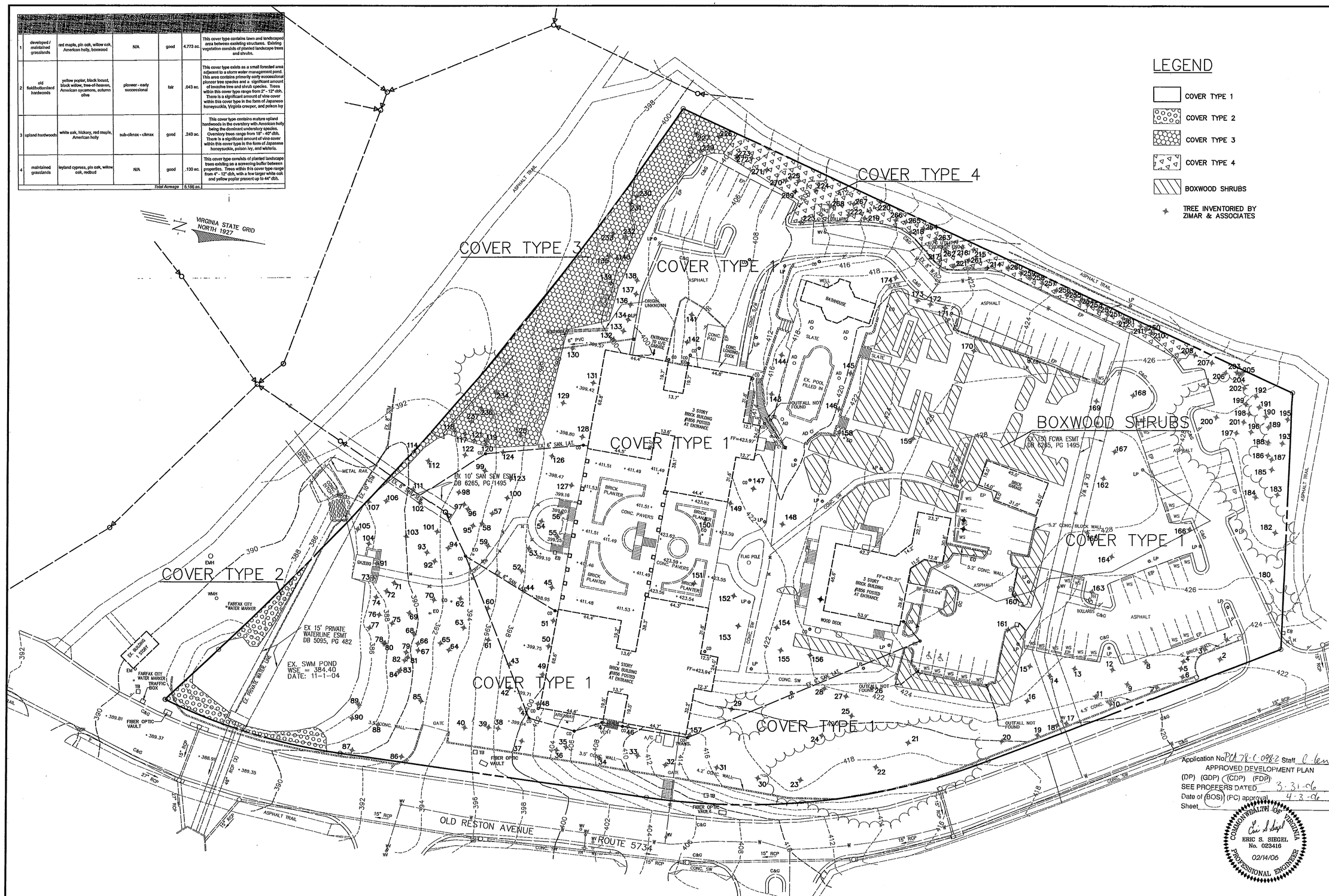
1	developed / maintained grasslands	red maple, pin oak, willow oak, American holly, boxwood	N/A	good	4.773 ac.	This cover type contains lawn and landscaped area between existing structures. Existing vegetation consists of planted landscape trees and shrubs.
2	old field/bottomland hardwoods	yellow poplar, black locust, black willow, tree-of-heaven, American sycamore, autumn olive	pioneer - early successional	fair	.043 ac.	This cover type exists as a small forested area adjacent to a storm water management pond. This area contains primarily early successional pioneer tree species and a significant amount of invasive tree and shrub species. Trees within this cover type range from 2" - 12" dbh. There is a significant amount of vine cover within this cover type in the form of Japanese honeysuckle, Virginia creeper, and poison ivy
3	upland hardwoods	white oak, hickory, red maple, American holly	sub-climax - climax	good	.240 ac.	This cover type contains mature upland hardwoods in the overstory with American holly being the dominant understory species. Overstory trees range from 18" - 40" dbh. There is a significant amount of vine cover within this cover type in the form of Japanese honeysuckle, poison ivy, and wisteria.
4	maintained grasslands	leyland cypress, pin oak, willow oak, redbud	N/A	good	.130 ac.	This cover type consists of planted landscape trees existing as a screening buffer between properties. Trees within this cover type range from 4" - 12" dbh, with a few larger white oak and yellow poplar present up to 44" dbh.
				Total Acreage	5.186 ac.	



REVISION	
02-08-06	
02-14-06	

Zimar & Associates, Inc.
ARBORICULTURE FORESTRY CONSULTING
10105 Residency Road, Suite 207
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EXISTING VEGETATION MAP & TREE SURVEY
FOR
BOXWOODS
FAIRFAX COUNTY, VIRGINIA

SCALE: 1"=30'
DATE: 06-13-05
DRAWN BY: JMM
SHEET 7

ZP-1612

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Zimar Survey									Spatium Notes	
Tree #	Species	Size *DBH (in)	*Condition	Canopy Position	Crown Density	Crown Spread	Problems	Comments	Affected by Development?	Action Plan
1	American sycamore	14	65	dominant	45	30	dieback, exposed roots, thin crown		Yes	Try
2	American sycamore	12	70	codominant	65	35	thin crown, dieback		Yes	Try
3	dogwood	4	75	supressed	95	15	trunk decay		Yes	Try
4	ash	10	75	codominant	70	30	dieback		Yes	Try
5	dogwood	5	75	supressed	80	15	small deadwood, exposed roots, root damage		No	Try
6	eastern redcedar	16	80	codominant	80	30	small deadwood		Yes	Try
7	eastern redcedar	15	80	codominant	80	30	broken limbs, large deadwood		Yes	Save
8	black cherry	8	50	codominant	50	15	decline, trunk decay		Yes	Lose
9	sweetgum	9	75	codominant	80	35	trunk decay, exposed roots		Yes	Try
10	red maple	10	80	codominant	80	30			Yes	Save
11	willow oak	15	80	codominant	85	35	exposed roots, small deadwood		Yes	Try
12	dogwood	4	75	supressed	70	15	thin crown, small deadwood		Yes	Lose
13	sugar maple	7	85	codominant	90	25	small deadwood		Yes	Move
14	American holly	3	70	codominant	75	5	thin crown		Yes	Lose
15	hickory	12	80	dominant	85	40	small deadwood		Yes	Try
16	dogwood	4	75	codominant	70	15	small deadwood		Yes	Try
17	eastern redcedar	15	70	codominant	80	30	excessive lean, heavy vines, small deadwood		Yes	Try
18	eastern redcedar	12	75	codominant	80	30	small deadwood, heavy vines		Yes	Try
19	American holly	13	80	codominant	85	30	exposed roots, girdling roots, small deadwood		Yes	Try
20	red maple	11	75	dominant	80	30	exposed roots	poor form	Yes	Try
21	dogwood	3	80	codominant	85	12	small deadwood		Yes	Try
22	basswood	34	75	dominant	85	60	exposed roots, large deadwood, weak codominant union	4 codom leads, existing lightning protection	No	Try
23	post oak	47	80	dominant	85	70	basal decay, large deadwood		No	Try
24	hickory	6	85	intermediate	75	15	small deadwood		Yes	Lose
25	American holly	6	80	intermediate	85	15	small deadwood		Yes	Lose
26	willow oak	13	85	dominant	85	30	exposed roots, small deadwood		Yes	Try
27	dogwood	2	80	supressed	75	10	thin crown		Yes	Try
28	willow oak	12	85	dominant	85	30	small deadwood		Yes	Try
29	American holly	17	75	dominant	95	45	trunk decay, branch decay	3 codom leads	Yes	Try
30	red mulberry	11	65	supressed	75	35	excessive lean, large deadwood, weak codominant union		Yes	Lose
31	pin oak	13	80	codominant	80	35	small deadwood, exposed roots		Yes	Lose
32	red maple	16	60	codominant	80	40	exposed roots, trunk decay, broken limbs, storm damage		Yes	Lose
33	pin oak	15	80	codominant	75	35	exposed roots, root damage, small deadwood		Yes	Lose
34	Norway maple	13	75	codominant	80	40	exposed roots, root damage, girdling roots		Yes	Lose
35	American holly	12	80	codominant	80	40	weak codominant union, small deadwood		Yes	Lose
36	American holly	17	85	dominant	85	35	trunk decay, small deadwood		Yes	Lose
37	dogwood	16	60	intermediate	80	35	branch decay, large deadwood	overmature	Yes	Lose
38	pin oak	14	85	dominant	90	35	small deadwood		Yes	Lose
39	American holly	2	85	supressed	90	10	exposed roots		Yes	Lose
40	pin oak	11	85	codominant	85	30	small deadwood, exposed roots		Yes	Lose
41	American sycamore	13	65	dominant	30	25	exposed roots, dieback, thin crown		Yes	Lose
42	sweet cherry	8	75	codominant	80	15	exposed roots, root damage, trunk wound		Yes	Lose
43	ash	8	75	codominant	80	25	exposed roots, root damage		Yes	Lose
44	red maple	7	75	dominant	75	25	exposed roots, small deadwood		Yes	Lose
45	Norway maple	9	80	codominant	85	25	exposed roots, root damage		Yes	Lose
46	European hornbeam	6	80	intermediate	80	15	broken limbs, exposed roots		Yes	Lose
47	European hornbeam	5	80	intermediate	85	15	weak codominant union, small deadwood	multistem	Yes	Lose
48	European hornbeam	6	80	intermediate	85	20	exposed roots, girdling roots, small deadwood		Yes	Lose
49	European hornbeam	6	75	codominant	85	20	weak codominant union, trunk decay, exposed roots		Yes	Lose
50	European hornbeam	6	75	codominant	85	15	exposed roots, girdling roots, root damage		Yes	Lose
51	European hornbeam	7	80	codominant	80	15	exposed roots, trunk decay		Yes	Lose
52	American holly	6	80	intermediate	75	15	thin crown, small deadwood		Yes	Lose
53	silver maple	10	85	dominant	90	20			Yes	Lose
54	dogwood	7	80	codominant	80	15	small deadwood		Yes	Lose
55	dogwood	3	80	codominant	80	15	small deadwood	multistem	Yes	Lose
56	dogwood	4	80	codominant	80	12	small deadwood		Yes	Lose
57	honey locust	12	75	dominant	80	35	exposed roots, root damage		Yes	Lose
58	dogwood	3	75	supressed	80	20	large deadwood	multistem	Yes	Lose
59	red maple	10	80	codominant	80	35			Yes	Lose
60	willow oak	8	85	codominant	85	15			Yes	Lose
61	red maple	7	80	dominant	75	15	excessive lean	cabled upright from ground	Yes	Lose
62	red maple	10	75	codominant	90	35	exposed roots, root damage		Yes	Lose
63	American holly	2	80	intermediate	90	10	broken limbs	poor form	Yes	Lose
64	white oak	35	60	dominant	80	50	trunk decay, basal decay, storm damage		Yes	Lose
65	white oak	24	65	dominant	75	40	trunk decay, large deadwood, excessive lean		Yes	Lose
66	American holly	6	80	supressed	85	20	branch decay		Yes	Lose
67	eastern redcedar	7	85	supressed	80	15	small deadwood		Yes	Lose
68	black locust	8	75	intermediate	75	20	one-sided, small deadwood		Yes	Lose
69	red maple	3	80	intermediate	70	10	exposed roots		Yes	Try
70	willow oak	7	85	codominant	75	20			Yes	Save
71	hickory	16	80	codominant	75	35	storm damage, small deadwood		Yes	Save
72	white oak	37	80	dominant	75	50	large deadwood, scaffold		Yes	Save
73	eastern redcedar	1	90	supressed	80	5		planting box	Yes	Lose
74	dogwood	1	80	supressed	85	5			Yes	Lose
75	sugar maple	4	85	intermediate	80	20			Yes	Save

Zimar Survey									Spatium Notes	
Tree #	Species	Size	*Condition	Canopy Position	Crown Density	Crown Spread	Problems	Comments	Affected by Development?	Action Plan
76	hemlock	2	80	supressed	75	10	small deadwood	2 codom leads	Yes	Save
77	American sycamore	5	80	intermediate	75	15	small deadwood		Yes	Save
78	hemlock	4	80	supressed	85	15	small deadwood		Yes	Lose
79	white oak	32	0		0	0	dead		Yes	Lose
80	eastern redcedar	4	75	supressed	70	10	small deadwood		Yes	Lose
81	eastern redcedar	3	75	supressed	70	5	small deadwood		Yes	Lose
82	eastern redcedar	2	75	supressed	60	5	suppressed		Yes	Lose
83	eastern redcedar	2	80	supressed	75	10			Yes	Lose
84	eastern redcedar	4	80	supressed	75	10			Yes	Lose
85	redbud	3	80	intermediate	80	15	exposed roots		Yes	Lose
86	black walnut	20	80	codominant	80	40	conflicting branches		Yes	Lose
87	yellow poplar	34	70	dominant	70	35	trunk decay, large deadwood	poor form	Yes	Lose
88	little leaf linden	5	75	supressed	80	10	exposed roots, root damage		Yes	Lose
89	eastern redcedar	7	80	intermediate	85	15		2 codom leads	Yes	Save
90	black willow	6	75	intermediate	70	15	small deadwood, thin crown		Yes	Save
91	eastern redcedar	0	85	supressed	95	1		2 small trees in box	Yes	Lose
92	white oak	22	80	codominant	80	30	one-sided, small deadwood		No	Save
93	white oak	22	80	codominant	75	30	one-sided, small deadwood		No	Save
94	dogwood	4	75	supressed	75	15	small deadwood		No	Try
95	dogwood	3	75	supressed	75	20	small deadwood		No	Try
96	American holly	8	80	intermediate	75	20	one-sided		Yes	Lose
97	American holly	6	80	intermediate	75	15	one-sided		Yes	Lose
98	pin oak	12	75	codominant	80	30	exposed roots, root damage		Yes	Lose
99	American holly	10	80	intermediate	85	20			Yes	Lose
100	rhododendron	1	50	supressed	10	1	dieback		Yes	Lose
101	American holly	5	85	supressed	90	20		multistem	No	Try
102	sweetgum	12	75	codominant	80	20	exposed roots, root damage, small deadwood		No	Try
103	hemlock	3	80	intermediate	75	10	mechanical damage, small deadwood		No	Save
104	rhododendron	0	90	supressed	95	5			No	Lose
105	hemlock	6	75	intermediate	80	15	weak codominant union	2 codom leads	Yes	Save
106	silver maple	13	70	codominant	70	25	exposed roots, root damage, branch decay, broken limbs		No	Try
107	American holly	1	90	supressed	75	5			No	Save
111	willow oak	13	75	codominant	75	25	exposed roots, root damage		No	Try
112	red maple	8	75	intermediate	70	25	exposed roots, root damage, trunk decay		No	Try
114	American holly	1	80	supressed	75	5			No	Save
117	American holly	5	85	supressed	80	15	one-sided, small deadwood		No	Try
118	American holly	4	80	supressed	80	15	one-sided		No	Save
119	Virginia pine	6	75	intermediate	50	15	thin crown, suppressed		No	Try
120	rhododendron	2	80	supressed	70	10			No	Save
121	American holly	4	80	supressed	85	15	small deadwood		No	Save
122	sweetgum	10	75	dominant	80	25	exposed roots, root damage		No	Try
123	American holly	12	85	codominant	85	25			Yes	Lose
124	rhododendron	1	80	supressed	75	10			No	Lose
125	American holly	8	80	intermediate	90	25			Yes	Lose
126	yellow poplar	10	85	dominant	80	20			Yes	Lose
127	Norway maple	7	75	codominant	75	25	exposed roots, root damage, weak codominant union		Yes	Lose
128	red maple	8	80	codominant	80	25			Yes	Lose
129	yellow poplar	8	80	dominant	75	15	thin crown		Yes	Lose
130	yellow poplar	7	85	codominant	90	25			Yes	Lose
131	European hornbeam	8	80	codominant	85	20	weak codominant union		Yes	Lose
132	European hornbeam	8	80	intermediate	85	20	weak codominant union		Yes	Lose
133	eastern redcedar	9	70	codominant	60	10	large deadwood, small deadwood, dieback		Yes	Lose
134	eastern redcedar	9	75	codominant	75	15	trunk decay		Yes	Lose
135	eastern redcedar	13	75	codominant	75	15	large deadwood		Yes	Lose
136	eastern redcedar	10	80	codominant	75	15			Yes	Lose
137	eastern redcedar	8	80	codominant	75	15			Yes	Lose
138	eastern redcedar	8	80	codominant	70	15	dieback		Yes	Lose
139	eastern redcedar	6	80	supressed	75	10			Yes	Lose
140	white oak	40	75	dominant	75	50	large deadwood, trunk decay		Yes	Try
141	eastern white pine	14	80	dominant	80	35	exposed roots, girdling roots		Yes	Lose
142	European hornbeam	12	80	dominant	85	20	exposed roots		Yes	Move
143	flowering cherry	12	70	dominant	50	35	dieback, thin crown		Yes	Lose
144	flowering cherry	12	50	dominant	70	25	trunk decay, decline, large deadwood		Yes	Lose
145	flowering cherry	8	75	codominant	70	20	dieback, small deadwood		Yes	Lose
146	flowering cherry	6	70	codominant	65	20	large deadwood, trunk decay, dieback, broken limbs		Yes	Lose
147	red maple	8	85	dominant	85	20			Yes	Lose
148	southern magnolia	16	80	dominant	80	25	branch decay		Yes	Lose
149	Foster's holly	5	80	dominant	80	10	small deadwood		Yes	Lose
150	dogwood	3	55	dominant	60	10	dieback, large deadwood, decline		Yes	Lose
151	dogwood	5	80	dominant	85	15	small deadwood, conflicting branches		Yes	Lose
152	Foster's holly	6	85	dominant	80	15	small deadwood		Yes	Lose
153	red maple	9	75	dominant	80	25	trunk decay, basal decay, dieback		Yes	Lose
154	dogwood	5	80	codominant	80	20	small deadwood, dieback		Yes	Lose
155	willow oak	16	90	dominant	90	30			Yes	Lose
156	dogwood	3	60	dominant	65	10	dieback, trunk decay		No	Lose
157	Foster's holly	4	80	intermediate	80	10	exposed roots		Yes	Lose
158	redbud	3	90	dominant	95	15			Yes	Lose
159	cherry	5	90	dominant	95	20			Yes	Lose
160	ginko	4	90	dominant	85	15			Yes	Lose
161	ginko	5	90	dominant	90	20			Yes	Lose
162	pin oak	16	80	dominant	85	40	exposed roots, dieback		No	Try
163	American holly	13	65	codominant	80	50	trunk decay, weak codominant union	4 codom leads	Yes	Try
164	Callery pear	16	65	codominant	80	45	exposed roots, weak codominant union, trunk decay, root damage		Yes	Lose
165	pin oak	15	80	codominant	85	40	exposed roots, large deadwood		Yes	Try

Zimar Survey									Spatium Notes	
Tree #	Species	Size	*Condition	Canopy Position	Crown Density	Crown Spread	Problems	Comments	Affected by Development?	Action Plan
166	American holly	10	80	dominant	90	35	conflicting branches, weak codominant union	4 codom leads	Yes	Try
167	fringe tree	5	75	dominant	70	40	small deadwood, trunk decay	multistem	No	Save
168	willow oak	8	80	dominant	75	20	dieback, small deadwood	poor form	Yes	Try
169	little leaf linden	3	90	dominant	90	12			Yes	Try
170	dogwood	9	75	dominant	70	20	dieback, small deadwood		Yes	Try
171	dogwood	3	80	codominant	80	15			Yes	Lose
172	dogwood	1	75	codominant	70	10	thin crown		Yes	Lose
173	dogwood	2	80	codominant	80	10	small deadwood		Yes	Lose
174	little leaf linden	6	85	dominant	85	20			Yes	Lose
180	yellow-poplar	7	85	intermediate	75	12			No	Save
182	red maple	21	70	dominant	85	43	weak codominant union, root damage, girdling roots, exposed roots		No	Try
183	leyland cypress	15	80	codominant	70	25	large deadwood		No	Save
184	leyland cypress	20	70	codominant	75	30	large deadwood, weak codominant union, basal decay		Yes	Lose
185	leyland cypress	18	75	codominant	75	25	large deadwood, weak codominant union		No	Save
186	redbud	2	70	supressed	55	10	dieback, thin crown		No	Try
187	redbud	2	80	supressed	80	12			No	Try
188	redbud	2	75	supressed	60	10	small deadwood, thin crown, dieback		No	Try
189	redbud	2	80	supressed	70	12	small deadwood		No	Try
190	redbud	2	65	supressed	50	10	thin crown, dieback, small deadwood		No	Try
191	redbud	2	80	supressed	80	10	small deadwood		No	Save
192	redbud	2	85	supressed	80	10			No	Save
195	dogwood	5	80	supressed	75	15	one-sided, branch decay, trunk wound, small deadwood		No	Try
196	white oak	35	75	dominant	85	50	large deadwood, one-sided		No	Try
197	dogwood	2	75	supressed	80	10	small deadwood	main stem has old vine	No	Save
198	dogwood	2	80	supressed	85	10	one-sided		No	Save
199	dogwood	3	80	supressed	80	12	small deadwood		No	Save
200	white oak	35	70	dominant	80	50	trunk decay, basal decay, large deadwood		Yes	Try
201	eastern white pine	6	80	supressed	75	10			Yes	Lose
202	white oak	23	75	dominant	75	0	dieback, large deadwood		Yes	Try
203	dogwood	2	75	supressed	75	8	one-sided		Yes	Lose
204	American holly	0	80	supressed	80	5	one-sided		Yes	Lose
205	blackgum	3	75	intermediate	80	15	heavy vines, conflicting branches		No	Save
206	dogwood	3	80	supressed	80	15	small deadwood		Yes	Try
207	eastern white pine	12	85	codominant	80	30			Yes	Try
208	arborvitae	9	75	codominant	80	20	weak codominant union	multistem	Yes	Save
210	white oak	5	85	intermediate	80	12			Yes	Try
211	black gum	6	60	codominant	50	15	thin crown, dieback, decline		Yes	Try
212	willow oak	8	80	codominant	80	20			Yes	Try
214	redbud	2	80	supressed	80	20			Yes	Try
215	silver maple	8	80	dominant	80	25	exposed roots		Yes	Try
216	pin oak	6	80	codominant	75	25	broken limbs		Yes	Save
217	redbud	2	80	intermediate	80	15	one-sided		Yes	Lose
218	yellow poplar	15	80	dominant	80	35		poor form	Yes	Try
219	black gum	11	75	intermediate	75	30	weak codominant union, excessive lean		Yes	Try
221	dogwood	3	85	intermediate	85	15			Yes	Lose
222	yellow poplar	20	80	dominant	80	35			Yes	Lose
223	American holly	15	70	codominant	75	30	excessive lean, branch decay		Yes	Lose
224	white oak	28	75	dominant	70	35			Yes	Save
225	yellow poplar	44	65	dominant	65	40	storm damage, one-sided	main stem broken	Yes	Lose
226	white oak	40	80	dominant	70	50	large deadwood, dieback		Yes	Try
227	American holly	8	80	codominant	80	25		2 codom leads	Yes	Save
229	American holly	13	80	intermediate	80	30			Yes	Save
230	white oak	24	80	codominant	75	40	heavy vines		Yes	Save
232	white oak	40	80	dominant	80	60	heavy vines	2 codom leads	Yes	Try
233	white oak	30	75	codominant	75	30	one-sided,, heavy vines, conflicting branches		Yes	Save
234	hickory	22	80	codominant	75	45	large deadwood		No	Save
236	white oak	18	75	codominant	75	35	small deadwood, weak codominant union		No	Save
237	white oak	28	80	dominant	80	50			No	Save
250	eastern red cedar	6	80%	supressed	100%	8			Yes	Try
251	leyland cypress	14	70%	codominant	80%	12			Yes	Try
252	leyland cypress	8	70%	codominant	60%	12			Yes	Try
253	leyland cypress	8	70%	codominant	60%	14			Yes	Try
254	leyland cypress	8	70%	codominant	60%	8			Yes	Try
255	leyland cypress	2	70%	supressed	70%	6			Yes	Lose
256	leyland cypress	3	70%	supressed	100%	6			Yes	Lose
257	leyland cypress	16	75%	codominant	80%	20		multi-stem	Yes	Try
258	leyland cypress	12	75%	codominant	80%	18		multi-stem	Yes	Try
259	leyland cypress	12	75%	codominant	80%	16		multi-stem	Yes	Try
260	leyland cypress	12	75%	codominant	80%	20		multi-stem	Yes	Try
261	eastern red cedar	12	80%	supressed	60%	10			Yes	Try
262	eastern red cedar	12	80%	codominant	60%	12			Yes	Try
263	leyland cypress	9	80%	codominant	90%	14		multi-stem	Yes	Try
264	eastern red cedar	9	60%	supressed	60%	8			Yes	Try
265	leyland cypress	9	60%	essed/codom	60%	15			Yes	Try
266	leyland cypress	9	60%	essed/codom	60%	16			Yes	Try
267	leyland cypress	9	70%	supressed	60%	12			Yes	Try
268	leyland cypress	12	70%	codominant	70%	20			Yes	Try
269	leyland cypress	12	70%	essed/codom	60%	15			Yes	Lose
270	leyland cypress	13	70%	essed/codom	70%	18			Yes	Try
271	eastern red cedar	13	60%	supressed	50%	16			Yes	Try
272	leyland cypress	13	70%	supressed	50%	15			Yes	Try
273	leyland cypress	14	80%	supressed	80%	14			Yes	Try

TREE COVER CALCULATIONS

Gross Site Area (SQ. FT)	227,568
Retention Pond (SQ. FT)	9,639
Building Footprints (SQ. FT)	40,752
ADJUSTED GROSS SITE AREA (AGSA)	177,177
Percent Coverage - 10% of AGSA (SG. FT.)	**17,718**
Square Footage of Trees in Zimar EVM Cover Type 2 that will be preserved	1,860
Square Footage of Trees in Zimar EVM Cover Type 3 that will be preserved	10,383
Square Footage of Trees in Zimar EVM Cover Type 4 that will be preserved	4,049
Square Footage of all other trees that will be preserved or transplanted on site	36,984
	*** 53,276**

* SUBJECT TO CHANGE WITH FINAL SITE PLAN, WILL MAINTAIN A MINIMUM OF 20% TREE COVERAGE.

*DBH= Diameter at Breast Height (measured 4.5 feet above ground)
*Condition Ratings are provided as percentages based on guidelines set forth in the latest edition of the "Guide For Plants Appraisal" Published by International Society of Arboriculture.

LEGEND:

SAVE= TREE TO BE SAVED

TRY = APPLICANT WILL USE REASONABLE EFFORTS TO SAVE THIS TREE

LOSE = TREE WILL BE REMOVED AS A RESULT OF ITS CONDITION OR AFFECTS OF THE PROPOSED DEVELOPMENT/OR TRANSPLANTED ON PROPERTY.

MOVE = TREE TO BE TRANSPLANTED ON PROPERTY.

Application No. PRA 78-C-098-2 Staff C. Lewis
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED
Date of (BOS) (PC) approval
Sheet 8 of 11

COMMONWEALTH OF VIRGINIA
ERIC S. SIEGEL
No. 023416
02/14/06
PROFESSIONAL ENGINEER

REVISION
02-08-06
02-14-06

Zimar & Associates, Inc.
ARBORICULTURE FORESTRY CONSULTING
10105 Residency Road, Suite 207
Manassas, Virgina 20110
Tel (703) 331-3731 Fax (703) 331-1359

EXISTING VEGETATION MAP & TREE PRESERVATION

FOR

BOXWOODS

FAIRFAX COUNTY, VIRGINIA

SCALE: 1"=30'

DATE: 06-13-05

DRAWN BY: JMM

SHEET 8

ZP-1612

Q:\Jobs\RESTON\Prison\zcpa\1612-vegplan.dwg

STORMWATER MANAGEMENT AND OUTFALL NARRATIVE

PROJECT DESCRIPTION:

STORMWATER MANAGEMENT FOR THE PROPOSED SALLIE MAE DEVELOPMENT IS PROVIDED BY A SERIES OF FOUR WET PONDS ON A TRIBUTARY TO COLVIN RUN.

THE MOST UPSTREAM POND IS LOCATED UPSTREAM OF OLD RESTON AVENUE. THE PROPOSED POND IS THE RECONSTRUCTION OF AN EXISTING POND WHICH HAS FILLED UP WITH SILT. A NEW SPILLWAY AND OUTLET CULVERT WILL BE CONSTRUCTED ALONG WITH THE ROAD IMPROVEMENTS. THE CONSTRUCTION DETAILS FOR THIS POND ARE INCLUDED WITH THE PLANS ENTITLED OLD RESTON AVENUE, WATERBRIDGE RESIDENTIAL, COUNTY PLAN NUMBER 4062-PI-06-2. THESE WERE DEVELOPED FOR A PREVIOUS PROJECT CALLED WATERBRIDGE SQUARE WHICH IS BEING REPLACED BY THE SALLIE MAE DEVELOPMENT. THE PLANS ARE BEING MODIFIED TO MEET THE NEEDS OF THIS DEVELOPMENT.

ON THE SALLIE MAE SITE DIRECTLY DOWNSTREAM OF OLD RESTON AVENUE TWO PONDS EXIST. THE TWO PONDS ARE SEPARATED BY NARROW STRIP OF LAND WITH A SHALLOW OVERFLOW PORTION THAT EQUALIZES THE WATER LEVELS OF THE BOTH PONDS. PROPOSED POND A AND POND B WILL REPLACE THE EXISTING PONDS. POND A WILL REPLACE THE EXISTING UPPER POND. THE PROPOSED MODIFICATIONS INCLUDE THE RECONSTRUCTION OF THE DAM EMBANKMENT, LOWERING OF THE NORMAL POOL OF THE EXISTING POND BY 2.8 FEET TO ELEVATION 377.0, AND CONSTRUCTION OF A SPILLWAY AND WATER FEATURE. POND B WILL REPLACE THE EXISTING LOWER POND, MODIFICATIONS INCLUDE RECONSTRUCTION OF THE DAM EMBANKMENT, LOWERING THE NORMAL POOL OF THE EXISTING POND BY 7.8 FEET TO ELEVATION 372.0, EXCAVATION TO EXPAND THE POND, AND CONSTRUCTION OF A SPILLWAY AND WATER FEATURE. POND C WILL BE A NEW POND CONSTRUCTED DOWNSTREAM OF POND B.

BOTH OFFSITE AND ONSITE WATER FLOWS INTO THE PONDS. THE PORTION OF THE FLOW THAT PASSES THROUGH THE POND A WATER FEATURE FLOWS INTO POND B, THE REMAINING FLOW PASSES THROUGH A SPILLWAY RISER DIRECTLY INTO POND C BYPASSING POND B. ALL OF THE OUTFLOW FROM POND B FLOWS INTO POND C. MOST OF THE SITE DRAINS TO EITHER POND B OR POND C. THE FOLLOWING TABLE SUMMARIZES THE DRAINAGE AREAS TO EACH POND:

LOCATION	POND A	POND B	POND C	DOWNSTREAM PROPERTY LINE
ONSITE DRAINAGE AREA (AC)	1.3	4.2	12.6	25.4
OFFSITE DRAINAGE AREA (AC)	62.0	43.1	111.8	146.8
TOTAL DRAINAGE AREA (AC)	63.3	47.3	124.4	172.2

DRAINAGE AREA, LANDUSE, AND SOILS MAPS ARE PROVIDED ON SHEET P6.

ENGINEERING ANALYSIS:

DISCHARGES WERE CALCULATED FOR THREE CONDITIONS OF LANDUSE.

1. EXISTING CONDITIONS: REPRESENTING DEVELOPMENT THAT NOW EXIST WITHIN THE WATERSHED.
2. PROPOSED CONDITIONS: REPRESENTING THE PROPOSED DEVELOPMENT ONSITE AND EXISTING CONDITIONS OFFSITE.
3. ULTIMATE CONDITIONS: REPRESENTING LANDUSE AS SPECIFIED IN THE FAIRFAX COUNTY COMPREHENSIVE PLAN.

THE U.S. CORPS OF ENGINEERS HEC-1 HYDROLOGIC COMPUTER PROGRAM WAS USED TO CALCULATE THE DISCHARGES. SCS TR-55 METHODOLOGY WAS USED TO CALCULATE THE WATERSHED PARAMETERS FOR 6 SUBBASINS INCLUDING THE RUNOFF CURVE NUMBER AND THE TIME OF CONCENTRATION. CURVE NUMBER AND TIME OF CONCENTRATION CALCULATIONS ARE PROVIDED ON SHEET P8. THE SCS TYPE II DISTRIBUTION WITH A 24-HOUR DURATION WAS USED TO REPRESENT THE RAINFALL. HEC-1 PRINTOUTS ARE PROVIDED ON SHEETS P9, P10, AND P11.

STORMWATER MANAGEMENT DETENTION:

FOR CALCULATING THE STORMWATER MANAGEMENT REQUIREMENTS THE 2 AND 10-YEAR FLOODS WERE ANALYZED. THE ENTIRE SITE DRAINS TO DESIGN POINT 6 WHICH IS AT THE DOWNSTREAM PROPERTY LINE OF THE SALLIE MAE DEVELOPMENT. THE FOLLOWING TABLE COMPARES THE DISCHARGES CALCULATED AT DESIGN POINT 6:

CONDITION	DISCHARGES (CFS) 2-YEAR	10-YEAR
EXISTING CONDITIONS	141	370
PROPOSED CONDITIONS	80	262
DIFFERENCE	-61	-108

THE PROPOSED STORMWATER MANAGEMENT PONDS REDUCE THE DISCHARGES BELOW EXISTING LEVELS. THE 2-YEAR DISCHARGE WAS DETAINED BELOW EXISTING LEVELS IN ORDER TO INSURE THAT AN ADEQUATE OUTFALL IS PROVIDED (SEE ADEQUATE OUTFALL NARRATIVE ON THIS SHEET).

THE THREE WET PONDS PROVIDE ALSO PROVIDE MORE THAN THE REQUIRED WATER QUALITY (BMP) DETENTION (SEE CALCULATIONS ON SHEET P7).

SPILLWAY DESIGN FLOOD AND FREEBOARD DETERMINATION:

THE DAM EMBANKMENTS WERE DESIGNED TO MEET THE PROPOSED FAIRFAX COUNTY DAM DESIGN AND CONSTRUCTION STANDARDS. THE 100-YEAR, 1.5*100-YEAR, AND 2.5*100-YEAR STORMS WERE ANALYZED TO EVALUATE THE SAFETY OF THE DAM EMBANKMENTS. BASED ON THE PROPOSED DAM STANDARDS THE SPILLWAY DESIGN STORM FOR POND A IS THE 1.5*100-YEAR AND THE FREEBOARD HYDROGRAPH IS THE 2.5*100-YEAR FLOOD. FOR POND B AND POND C A 100-YEAR SPILLWAY DESIGN STORM AND A 1.5*100-YEAR FREEBOARD HYDROGRAPH IS REQUIRED.

THE PROPOSED DEVELOPMENT IS BEING BUILT ON A FORMER DISTILLERY AND THE EXISTING GROUND IN THE VICINITY OF THE DAM EMBANKMENTS IS COMPOSED OF FILL. THIS FILL AND OTHER SITE CONSTRAINTS DO NOT ALLOW FOR A OVERLAND EMERGENCY SPILLWAY, THEREFORE, COMBINED PRINCIPAL AND EMERGENCY SPILLWAYS ARE BEING PROVIDED FOR EACH POND. WHEN CALCULATING THE SPILLWAY CAPACITY FOR THE 100-YEAR, SPILLWAY DESIGN STORM, AND FREEBOARD DESIGN STORM THE LOWER ORIFICES AND WEIRS WERE BLOCKED AS REQUIRED BY THE DAM STANDARDS.

THE FOLLOWING TABLE COMPARES THE FLOOD ELEVATIONS TO THE TOP OF DAM ELEVATIONS:

	ELEVATIONS (FT) TOP OF DAM	100-YEAR FLOOD	SPILLWAY DESIGN FLOOD	FREEBOARD HYDROGRAPH
POND A	383.0	380.3	381.0 (1.5*100-YR)	382.3 (2.5*100-YR)
POND B	377.1	375.1	375.1 (100-YR)	375.6 (1.5*100-YR)
POND C	365.5	363.5	363.5 (100-YR)	365.4 (1.5*100-YR)

THE TOP OF DAM ELEVATIONS ARE ABOVE THE FREEBOARD HYDROGRAPH ELEVATIONS. THE PROPOSED EMBANKMENTS WILL ALSO BE AT LEAST 2 FEET ABOVE THE SPILLWAY DESIGN FLOOD AS REQUIRED BY THE DAM STANDARDS.

CONCLUSION:

THE PROPOSED DESIGN PROVIDES MORE THAN THE REQUIRED 2 AND 10-YEAR DETENTION WHILE MEETING THE PROPOSED FAIRFAX COUNTY DAM DESIGN AND CONSTRUCTION STANDARDS.

DRAINAGE OUTFALL NARRATIVE

THE ENTIRE SALLIE MAE DEVELOPMENT WILL DRAIN TO A TRIBUTARY TO COLVIN RUN. DIRECTLY DOWNSTREAM OF THE ENTRANCE ROAD CULVERT THE TRIBUTARY PASSES OVER THE DOWNSTREAM PROPERTY LINE WHERE IT CONTINUES THROUGH THE HIDDEN CREEK COUNTRY CLUB GOLF COURSE. THE TRIBUTARY ENTERS THE GOLF COURSE BY PASSING THROUGH TWO 29 INCH STEEL PIPES UNDER A CART PATH WHICH LEADS TO A GOLF COURSE MAINTENANCE BUILDING. AFTER EXITING THE CULVERTS IT PASSES THROUGH A WELL DEFINED GRASS AND TREE LINED CHANNEL THROUGH THE GOLF COURSE. THIS OUTFALL IS AN ADEQUATE BED AND BANK CHANNEL AS DESCRIBED AND JUSTIFIED BELOW.

FLOW CAPACITY:

THE PROPOSED PONDS ON THE SALLIE MAE SITE WERE DESIGNED TO REDUCE THE 2-YEAR DISCHARGE TO LEVELS THAT WOULD INSURE AN ADEQUATE OUTFALL. THE EXISTING CART PATH CULVERTS AND THE CHANNEL DOWNSTREAM WERE ANALYZED TO DETERMINE THE FLOW CAPACITY. STORMWATER DETENTION WAS THAN PROVIDED ONSITE TO ACHIEVE A 2-YEAR DISCHARGE WHICH WOULD NOT EXCEED THIS CAPACITY.

DETENTION BELOW EXISTING LEVELS WAS REQUIRED SINCE THE EXISTING 2-YEAR DISCHARGE AT THE OUTFALL WAS CALCULATED TO BE 141 CFS, WHICH EXCEEDS THE CAPACITY OF BOTH THE CULVERTS AND THE CHANNEL. THE STORMWATER MANAGEMENT PROVIDED WITH THE SALLIE MAE DEVELOPMENT WOULD REDUCE THE PROPOSED CONDITION 2-YEAR DISCHARGE TO 80 CFS. THIS IS WELL BELOW EXISTING CONDITION 2-YEAR DISCHARGE.

TO DETERMINE THE OUTFALL CAPACITY THE CART PATH CULVERTS AND CHANNEL DOWNSTREAM WERE MODELED USING THE U.S. ARMY CORPS OF ENGINEERS HEC-2 HYDRAULIC COMPUTER MODEL. A HEC-2 MODEL OF THE PROPOSED 2-YEAR DISCHARGE (80 CFS) IS INCLUDED ON THIS SHEET. AS CAN BE SEEN FROM THE HEC-2 PRINTOUT THE PROPOSED 2-YEAR DISCHARGE PASSES THROUGH THE CULVERTS WITHOUT OVERTOPPING THE CART PATH AND IS CONTAINED WITHIN THE EXISTING CHANNEL DOWNSTREAM. THEREFORE, THE OUTFALL HAS SUFFICIENT CAPACITY FOR THE PROPOSED 2-YEAR DISCHARGE AND MEETS ADEQUATE OUTFALL CAPACITY REQUIREMENTS.

FLOW VELOCITIES:

THE EXISTING CHANNEL DOWNSTREAM OF THE CART PATH CULVERTS IS A WELL MAINTAINED GRASS LINED CHANNEL. AS SHOWN IN THE HEC-2 PRINTOUT THE FLOW VELOCITIES DO NOT EXCEED 4.5 FT/SEC DURING THE PEAK OF THE 2-YEAR FLOOD. THE BOTTOM OF THE STREAM IS LINED WITH COBBLES AND THE SIDES WITH GRASS AND TREES. DIRECTLY DOWNSTREAM OF THE PROJECT THE CHANNEL APPEARS STABLED AND THERE IS LITTLE EVIDENCE OF EROSION.

THE FAIRFAX COUNTY SOILS MAPS IDENTIFY THE SOILS IN THIS SECTION OF THE TRIBUTARY TO BE MIXED ALLUVIAL (SOIL NO. 1). FAIRFAX COUNTY DEFINES THE EROSION POTENTIAL OF THESE SOILS TO BE "SLIGHT" , AND HAS DESIGNATED THE PERMISSIBLE VELOCITY FOR GRASS MIXTURE CHANNELS WITH EROSION RESISTANT SOILS TO BE 5 FT/SEC. THEREFORE, THE PROPOSED 2-YEAR DISCHARGE SHOULD NOT CAUSE EROSIVE VELOCITIES DOWNSTREAM.

CONCLUSION:

THE TRIBUTARY DOWNSTREAM OF THE PROJECT IS A LEGITIMATE BED AND BANK CHANNEL AND HAS THE CAPACITY TO SERVE AS AN ADEQUATE OUTFALL FOR THE PROPOSED SALLIE MAE DEVELOPMENT.

WE ARE OF THE OPINION THAT AN ADEQUATE OUTFALL EXIST FOR THIS PROJECT.

COMMONWEALTH OF VIRGINIA — EDWARD ... BRADENKOPF — No. 17335 — 3-4-94 — PROFESSIONAL ENGINEER — ENGINEER'S SEAL & SIGNATURE

VIRGINIA POWER SUBSTATION STORMWATER MANAGEMENT:

THE BMP AND STORMWATER MANAGEMENT PROVIDED BY THE SALLIE MAE PROJECT INCLUDES THE PROPOSED EXPANSION OF THE VIRGINIA POWER SUBSTATION. APPROXIMATELY 1.5 ACRES OF THE EXPANSION DRAINS TO A SWM FACILITY THAT WILL BE REMOVED TO CONSTRUCT THE ENTRANCE ROAD TO THE SALLIE MAE DEVELOPMENT. THE PROPOSED SALLIE MAE PONDS PROVIDE ADDITIONAL BMP AND SWM DETENTION TO OVERCOMPENSATE FOR THE 1.5 ACRES THAT WILL GO OFF UNDETAINED. THE PORTION OF THE VIRGINIA POWER SUBSTATION THAT DRAINS TO THE WATERSHED STUDIED, INCLUDING THE AREA DRAINING TO THE DISPLACED SUBSTATION POND, IS SHOWN AS PART OF "ONSITE DEVELOPED - UNCONTROLLED" (D1) AREA IN THE BMP CALCULATIONS ON SHEET P7. THIS AREA IS ALSO SHOWN AS PROPOSED INDUSTRIAL DEVELOPMENT IN THE SWM CALCULATIONS, SHEETS P6 AND P8. THE CALCULATIONS ILLUSTRATE THAT THE PROPOSED SALLIE MAE PONDS PROVIDE MORE THAN THE REQUIRED BMP AND SWM DETENTION REQUIRED TO OVERCOMPENSATE FOR THE PORTION OF THE VIRGINIA POWER SUBSTATION EXPANSION BEING IMPACTED.

HYDRAULIC ANALYSIS OF OUTFALL

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**************************************
 HEC-2 WATER SURFACE PROFILES
 VERSION   4.6.2;  MAY 1991
**************************************

T1 SALLIE MAE                            (FILE: SMH2-OF.DAT)
T2 OUTFALL ANALYSIS          2-YEAR FLOOD
T3       EXISTING CHANNEL AND TRAIL CULVERTS DOWNSTREAM OF THE PROJECT

J1  ICHECK   INQ     NINV    IDIR    STRT    METRIC   HVINS   Q      WSEL    FQ
      0       2       0       0      0.01     0        0      80     350.6    0
J2  NPROF    IPLOT   PRFVS   XSECV   XSECH   FN       ALLDC   IBW    CHNIM   ITRACE
      1       0      -1       0       0       0       -1      0       0       0
J3  VARIABLE CODES FOR SUMMARY PRINTOUT
     38       1       3      55      26      56       13      14      15      86
     46       8       4

NC    0.1     0.1     0.05    0.1     0.3
X1    10      13      193     207     0       0       0
X3    10
GR    360     30      348.1   90      348.6   145     349.6   193     345.9   197
GR    345.9   203     349.7   207     350     219     352     228     353.3   238
GR    353.2   250     356     260     360     285

X1    20      13      194     206     190     170     185
GR    360     130     356     130.1   354     181     352     191     351     194
GR    348     197     348     203     351     206     351.3   250     352     258
GR    356     310     358     390     360     435

NC                            0.3     0.5
X1    30      13      245     255     115     120     130
X3    10                                                      351.62  351.62
GR    360     86      358     124     356     185     354     241     352.2   245
GR    349.2   248     349.2   252     352.2   255     352.2   262     354     277
GR    356     380     358     435     360     463
  EXISTING GOLF CART PATH TRAIL 2- 29" STEEL CULVERTS
SC    2.010   0.80    2.65    0       2.42    0       22      2.3     349.5   349.2
X1    31      13      232     243     22      22      22
X2                    2       351.92  355
X3    10                                                      355     355
BT    7       100     360     0       130     358     0       185     356     0
BT    260     355     0       386     356     0       445     358     0       473
BT    360     0
GR    360     100     358     131     356     169     354     230     352     232
GR    349.2   236     349.2   240     352     243     354     270     354     342
GR    356     393     358     429     360     456
```

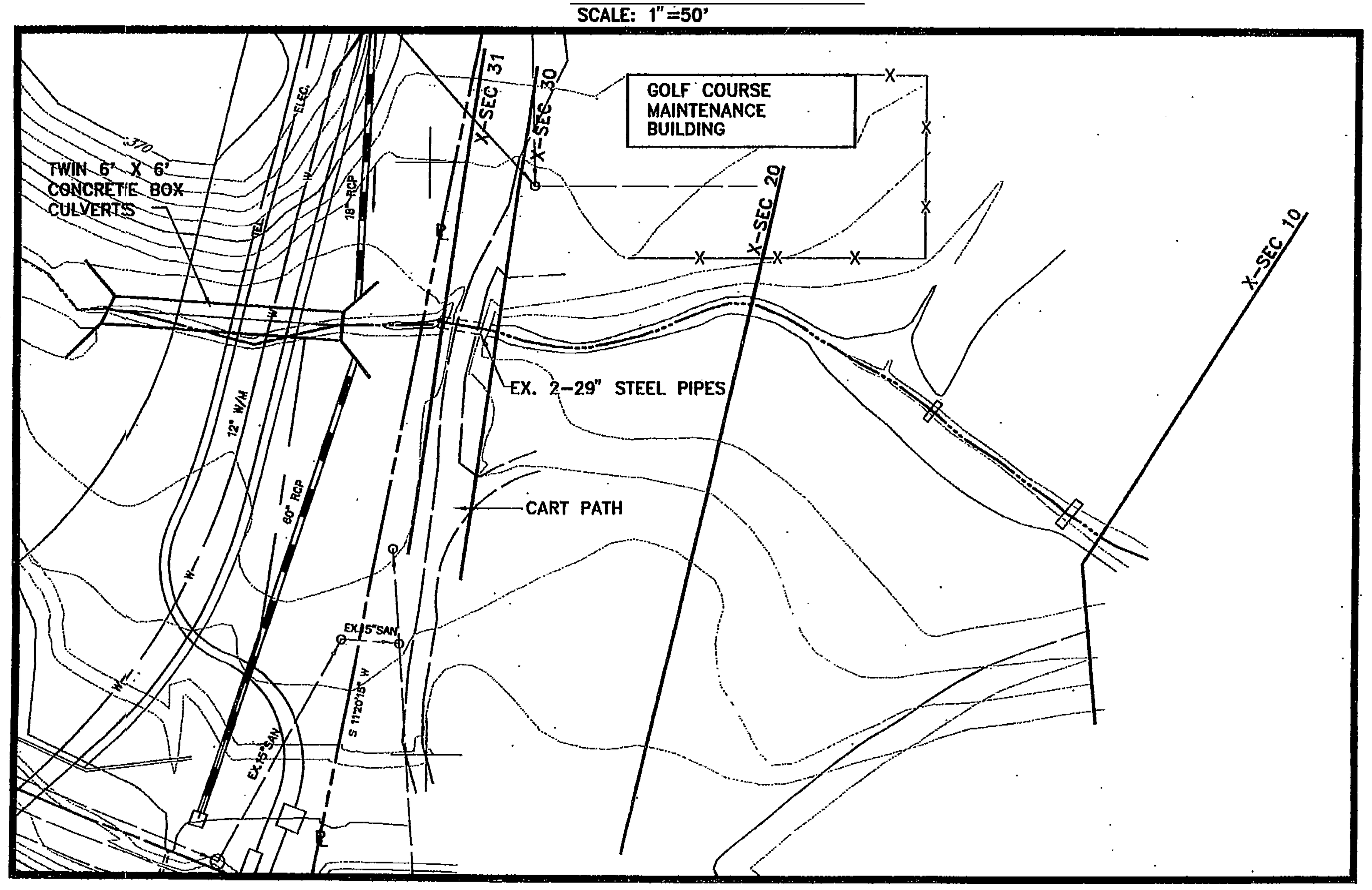
SUMMARY PRINTOUT

	SECNO	CWSEL	EG	VLOB	VCH	VROB	QLOB	QCH	QROB	QCULV	QWEIR	DEPTH	TOPWID
	10.000	348.26	348.50	.00	3.99	.00	.00	80.00	.00	.00	.00	2.36	11.03
	20.000	350.26	350.54	.00	4.29	.00	.00	80.00	.00	.00	.00	2.26	10.52
	30.000	351.86	352.18	.00	4.50	.00	.00	80.00	.00	.00	.00	2.66	9.33
*	31.000	354.94	354.97	.00	1.50	.00	.00	80.00	.00	80.00	.00	5.74	11.00

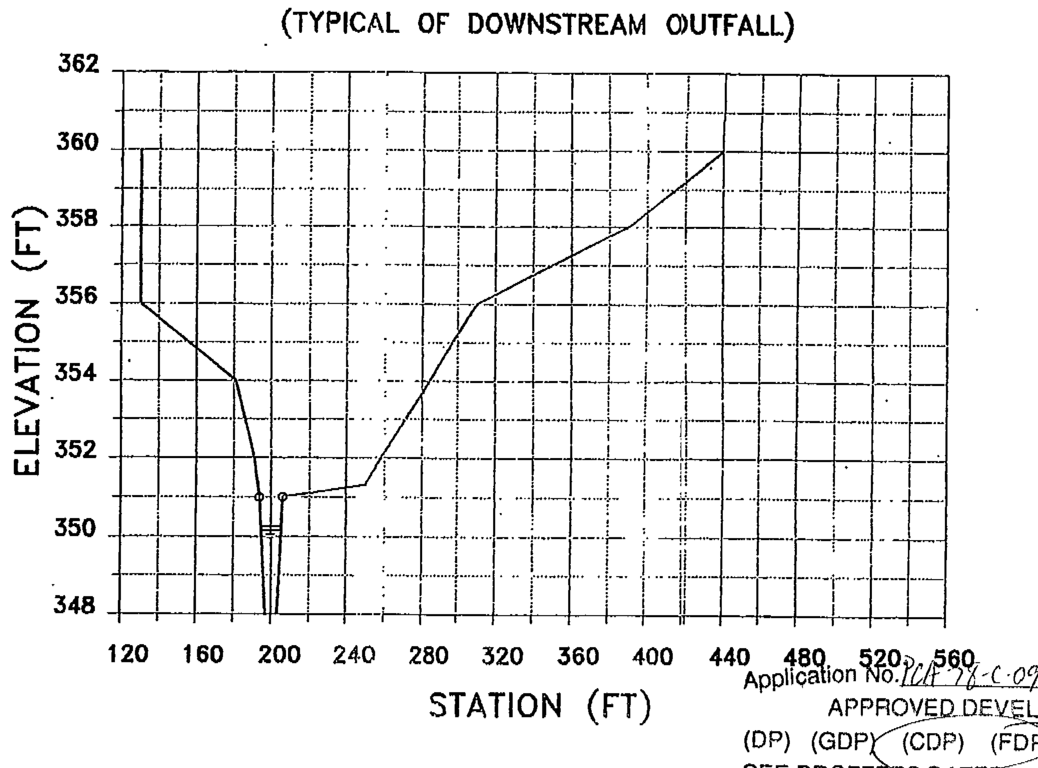
SUMMARY OF ERRORS AND SPECIAL NOTES
WARNING SECNO= 31.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

OUTFALL ANALYSIS PLAN VIEW

SCALE: 1"=50'



CROSS-SECTION 20
(TYPICAL OF DOWNSTREAM OUTFALL)



Application No. PCA 78-C-098-... Staff C. Lewis
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 3-31-06
Date of (BOS) (PC) approval 4-3-06
Sheet 9 of 16

COMMONWEALTH OF VIRGINIA — Eric S Siegel — ERIC S. SIEGEL No. 023416 09/28/05 — PROFESSIONAL ENGINEER

FOR INFORMATION PURPOSES ONLY!

SHEET 9 OF 16
ZP-1612

NO.	DESCRIPTION	REV. BY	APPROVED	DATE

REVISION APPROVED BY: DIVISION OF DESIGN REVIEW

DATE	DESIGNER	ENGINEER

ENGINEER'S SEAL & SIGNATURE

REVISION STAMP

Dewberry & Davis
Architects Engineers Planners Surveyors
8401 Arlington Blvd., Fairfax, VA 22031
703 849-0100

STORMWATER MANAGEMENT AND ADEQUATE OUTFALL NARRATIVE

SallieMae
Virginia Consolidation Project

Drawn by: L. E. MORILLO
Designed by: G. A. SORENSEN
Checked by:
Date: MARCH, 1994
Scale: ---------
Plan number: 8766-SP-01
Zoned: PDC
Sheet: P5 OF 17 ~~34 of 73~~
File number: ~~SP-1744~~

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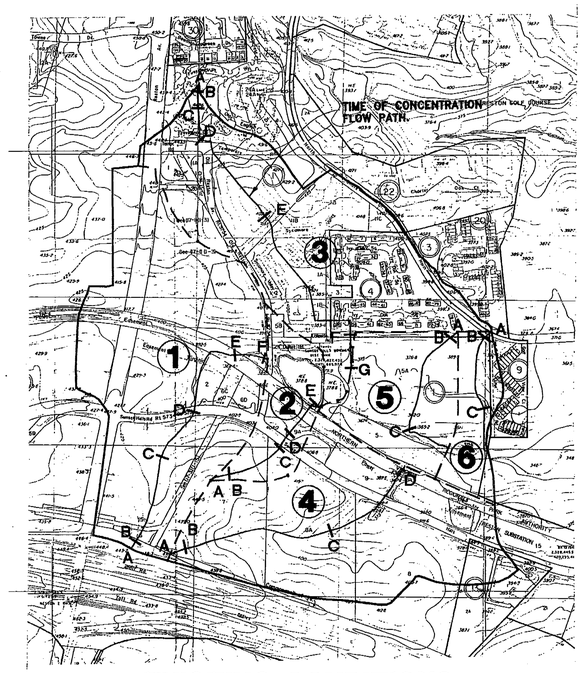
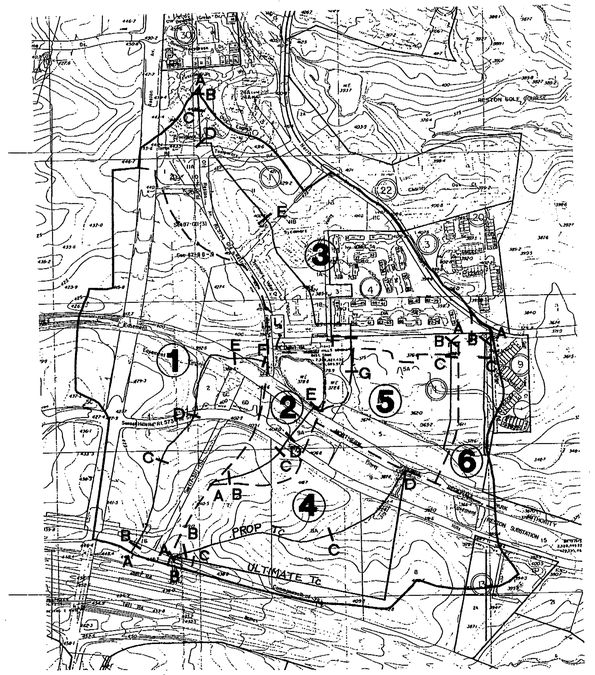
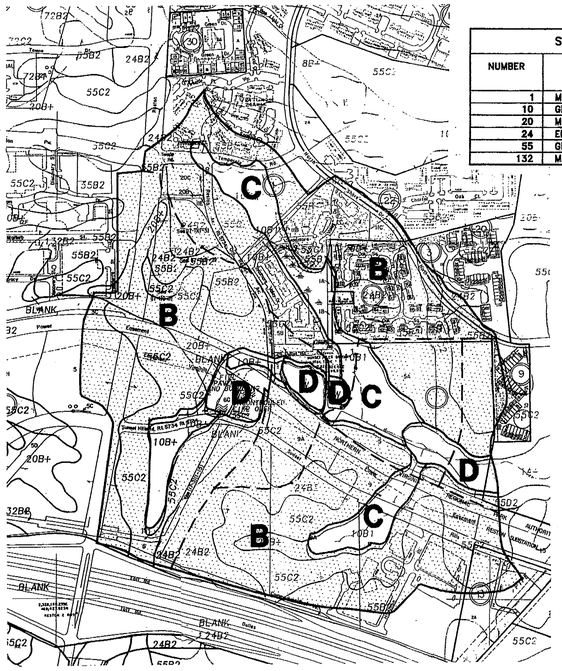


EXISTING CONDITIONS DRAINAGE AREA MAP

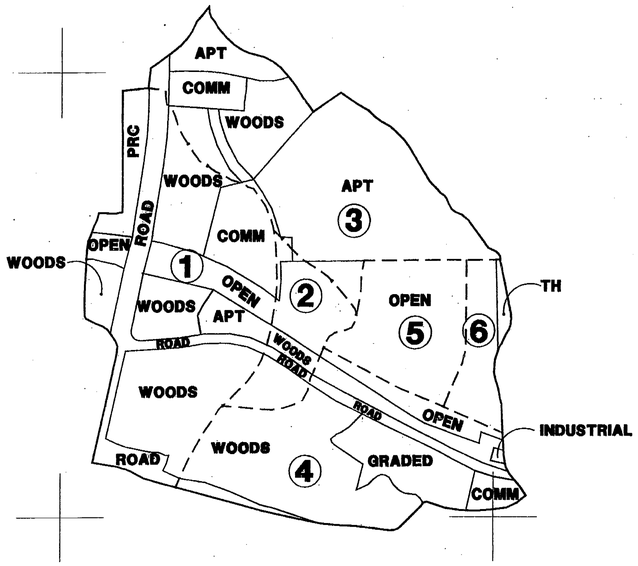


PROPOSED & ULTIMATE CONDITIONS DRAINAGE AREA MAP

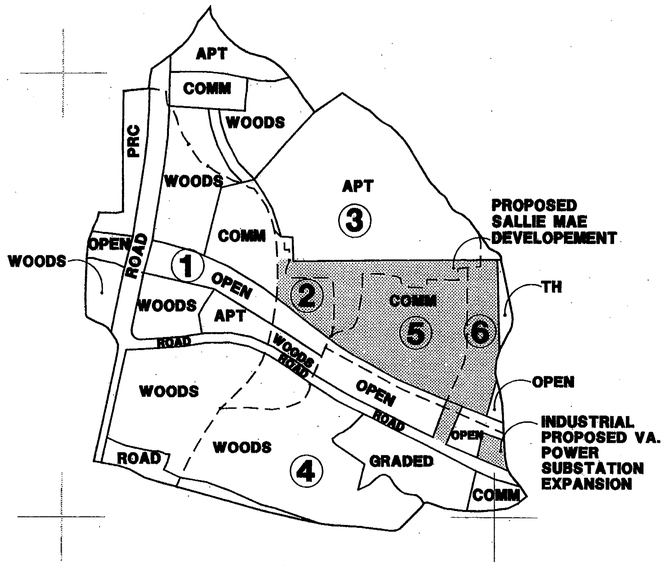


SOILS MAP

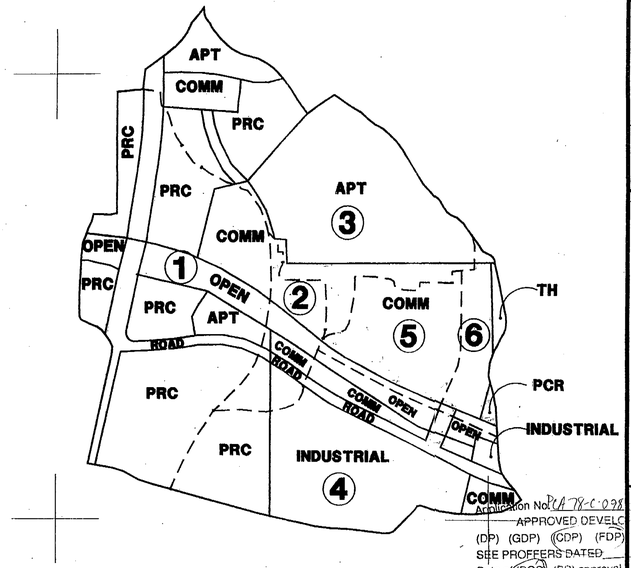
SOILS MAP INDEX		
NUMBER	NAME	HYDROLOGIC GROUP
1	MIXED ALLUVIAL	D
10	GLENVILLE	C
20	MEADOWVILLE	B
24	ELIOAK	B
55	GLENELG	B
132	MAYODAN	B



EXISTING CONDITIONS LAND USE



PROPOSED CONDITIONS LAND USE



ULTIMATE CONDITIONS LAND USE

Application No. PCA 78-C-098-2 Staff C. Lewis
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 3-31-06
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Sheet 10 of 16

COMMONWEALTH OF VIRGINIA
ERIC S. SIEGEL
No. 023416
09/28/05
PROFESSIONAL ENGINEER

FOR INFORMATION PURPOSES ONLY!

Dewberry & Davis
Architects Engineers Planners Surveyors
8401 Arlington Blvd., Fairfax, VA 22031
☎ 703 849-0100

DATE	DESIGNER	NO.	DESCRIPTION	REV. BY	APPROVED	DATE

ENGINEER

REVISION APPROVED BY: DIVISION OF DESIGN REVIEW

DRAINAGE, SOILS AND LAND USE MAPS

SalleMae
Virginia Consolidation Project
Hunter Mill District Fairfax County, Virginia

ENGINEER'S SEAL & SIGNATURE

COMMONWEALTH OF VIRGINIA
EDWARD O. SOBENKOFF
No. 17-93
PROFESSIONAL ENGINEER

REVISION STAMP

SHEET 10 OF 16
ZP-1612

Drawn by: L. E. MORILLO
Designed by: G. A. SORENSEN
Checked by: GLC
Date: NOV. 1, 1993
Scale: 1" = 500'
Plan number: 8766-SP-01
Zoned: PDC
Sheet: P6 OF 17
~~35 of 73~~
File number: ~~SP-1744~~

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WATER QUALITY CALCULATIONS

BMP FACILITY DESIGN CALCULATIONS

Plan Name: SALLIE MAE, VIRGINIA CONSOLIDATION PROJECT
Plan Number: 8766-SP-01

I. Water Quality Narrative

The area included in the site consists of 23.6 acres of commercial use, 1.5 acres of industrial use and 0.3 acres of road. 18.1 acres of this site area and 106.5 acres of offsite developed area will drain to the three wet ponds located on the site. 7.3 developed acres drain uncontrolled from the site. The three wet ponds will be privately maintained. The site is located in the Chesapeake Bay Preservation area; therefore, 40% phosphorous removal is required.

II. Watershed Information

Part 1: List all of the Subareas and "C" Factors used in the BMP Computations

Subarea Designation and Description (1)	"C" (2)	Acres (3)
A1 Offsite Developed to Pond A	0.73	62.00
A2 Onsite Developed to Pond A	0.85	1.30
B1 Offsite Developed to Pond B	0.73	43.30
B2 Onsite Developed to Pond B	0.85	4.20
C1 Offsite Developed to Pond C	0.35	1.20
C2 Onsite Developed to Pond C	0.85	12.60
D1 Onsite Developed - Uncontrolled	0.84	7.30

::

IIIa. Phosphorus Removal - "Occoquan Method"

Part 2: Compute the Weighted Average "C" Factor for the Site

(A) Area of the site (a) 25.40 acres

(B) Subarea Designation (1)	"C" (2)	Acres (3)	Product (2)x(3)
A2 Onsite Developed to Pond A	0.85	1.30	1.105
B2 Onsite Developed to Pond B	0.85	4.20	3.570
C2 Onsite Developed to Pond C	0.85	12.60	10.710
D1 Onsite Developed - Uncontrolled	0.84	7.30	6.132

(b) Total 21.517

(C) Weighted Average "C" Factor (b)/(a)=(c) 0.85

Part 3: Compute the Total Phosphorus Removal for the Site

Subarea Designation (1)	BMP Type (2)	Removal Eff. (%) (3)		Area Ratio (4)	C Factor Ratio (5)	Product (6)
A1	Wet Pond	50	(0.2)A1/25.4=	0.488	0.86	21.035
A2	Wet Pond	50	A2/25.4=	0.051	1.00	2.588
B1	Wet Pond	50	(0.2)B1/25.4=	0.341	0.86	14.690
B2	Wet Pond	50	B2/25.4=	0.165	1.00	8.296
C1	Wet Pond	50	(0.2)C1/25.4=	0.009	0.41	0.195
C2	Wet Pond	50	C2/25.4=	0.496	1.00	24.887
D1	Uncontrolled	—	—		—	0.000

(a) Total 71.67 %

Since 71.67% > 40% Phosphorus removal requirement is satisfied

IV. Site Coverage

Part 5: Determine Compliance with Site Coverage Requirement

Sum all the uncontrolled onsite areas and compute a weighted average "C" factor. Do not include qualifying open space.

(B) Subarea Designation (1)	"C" (2)	Acres (3)	Product (2)x(3)
D1 Onsite Developed - Uncontrolled	0.84	7.30	6.132

(A) Total equivalent uncontrolled area (a) Total 6.132

(B) Total uncontrolled area (b) Total 7.3

(C) Weighted average "C" factor (a)/(b)=(c) 0.84

(D) If Line 5(b) < 20% of Line 2(a), then the site coverage requirement is satisfied. Line 5(a) is the equivalent offsite area for which coverage may be required.

(100)x(line 5b)/(line 2a)= 28.74 > 20%

Part 6: Determine the Offsite Areas for which Coverage is Required.

(A) For the offsite areas listed in Part 1 which flow to proposed BMPs compute the equivalent areas.

Subarea Designation (1)	"C" (2)	Acres (3)		Product (2)x(3)
A1 Offsite Developed to Pond A	0.73	(0.2)(62)=	12.4	9.052
B1 Offsite Developed to Pond B	0.73	(0.2)(43.3)=	8.66	6.322
C1 Offsite Developed to Pond C	0.35	(0.2)(1.2)=	0.24	0.084

(a) Total 15.458

V. Storage

Part 7: Compute the Weighted Average "C" Factor for each Proposed BMP Facility

(A) List the areas to be controlled by the proposed BMPs

(B) Subarea Designation - POND A (1)	"C" (2)	Acres (3)		Product (2)x(3)
A1 Offsite Developed to Pond A	0.73	(0.2)(62)=	12.40	9.052
A2 Onsite Developed to Pond A	0.85		1.30	1.105

(B) Total (a) 13.7; Total (b) 10.157

(C) Weighted average "C" factor (b)/(a)=(c) 0.74

(B) Subarea Designation - POND B (1)	"C" (2)	Acres (3)		Product (2)x(3)
B1 Offsite Developed to Pond B	0.73	(0.2)(43.3)=	8.66	6.322
B2 Onsite Developed to Pond B	0.85		4.20	3.570

(B) Total (a) 12.86; Total (b) 9.892

(C) Weighted average "C" factor (b)/(a)=(c) 0.77

(B) Subarea Designation - POND C (1)	"C" (2)	Acres (3)		Product (2)x(3)
C1 Offsite Developed to Pond C	0.35	(0.2)(1.2)=	0.24	0.084
C2 Onsite Developed to Pond C	0.85		12.60	10.710

(B) Total (a) 12.84; Total (b) 10.794

(C) Weighted average "C" factor (b)/(a)=(c) 0.84

Part 8: Determine the storage required for each facility

(B) Wet Pond (POND A)
Volume of runoff per acre from mean storm.
[1452 x "C"] = 1452 x Line 7(c) (b) 1076 cf/ac

Design 2 (4.0 x Volume of runoff from mean storm)
4.0 x Line 7(a) x line 8(b) = 59000 cf=1.35 AC-FT

(B) Wet Pond (POND B)
Volume of runoff per acre from mean storm.
[1452 x "C"] = 1452 x Line 7(c) (b) 1117 cf/ac

Design 2 (4.0 x Volume of runoff from mean storm)
4.0 x Line 7(a) x line 8(b) = 57500 cf=1.32 AC-FT

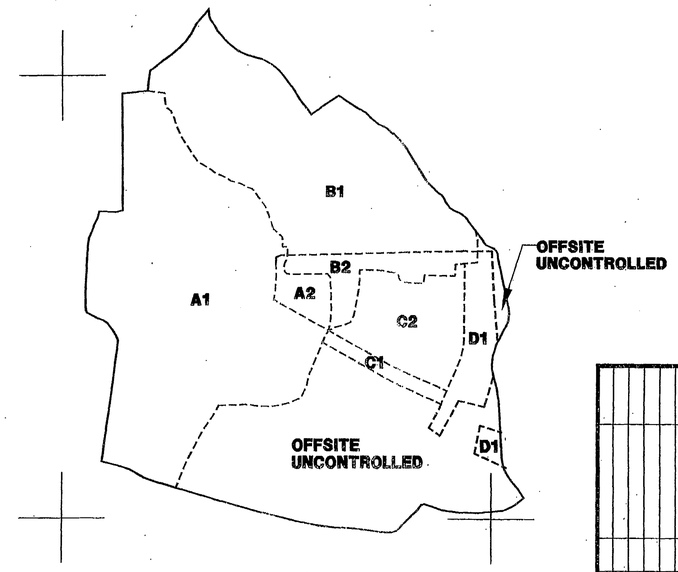
(B) Wet Pond (POND C)
Volume of runoff per acre from mean storm.
[1452 x "C"] = 1452 x Line 7(c) (b) 1221 cf/ac

Design 2 (4.0 x Volume of runoff from mean storm)
4.0 x Line 7(a) x line 8(b) = 62700 cf=1.44 AC-FT

VI. SUMMARY

STORAGE VOLUME AT NORMAL POOL

	REQUIRED (AC-FT)	PROVIDED (AC-FT)
POND A	1.35	5.25
POND B	1.32	4.02
POND C	1.44	4.22



PROPOSED CONDITIONS DRAINAGE AREA MAP

FOR INFORMATION PURPOSES ONLY!

Application No. 90A98-C-098-2 Staff C. Lin
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 3-31-06
Date of (BOS) (PC) approval 4-3-06
Sheet 11 of 16

COMMONWEALTH OF VIRGINIA
ERIC S. SIEGEL
No. 023416
09/28/05
PROFESSIONAL ENGINEER

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NO.	DATE	DESCRIPTION	REV. BY	APPROVED	DATE

DESIGNER
ENGINEER
REVISION APPROVED BY: DIVISION OF DESIGN REVIEW

WATER QUALITY CALCULATIONS

SallieMae
Virginia Consolidation Project
FAIRFAX COUNTY, VIRGINIA
HUNTER MILL DISTRICT

ENGINEER'S SEAL & SIGNATURE

REVISION STAMP

Drawn by: L. E. MORILLO
Designed by: G. A. SORENSEN
Checked by: GLC
Date: NOV 1, 1993
Scale: ---
Plan number: 8766-SP-01
Zoned: PDC
Sheet P7 OF 17
36 of 73
File number: SP 1744

SHEET 11 OF 16
ZP-1612

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CURVE NUMBER COMPUTATIONS

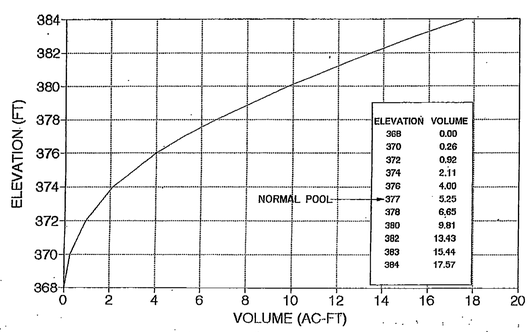
AREAS (ac)

LANDUSE	SOIL GROUP	CURVE NUMBER	SUBBASIN 1 EX & PROP	SUBBASIN 1 ULTIMATE	SUBBASIN 2 EXISTING	SUBBASIN 2 PROPOSED	SUBBASIN 2 ULTIMATE	SUBBASIN 3 EXISTING	SUBBASIN 3 PROPOSED	SUBBASIN 3 ULTIMATE	SUBBASIN 4 EXISTING	SUBBASIN 4 PROPOSED	SUBBASIN 4 ULTIMATE	SUBBASIN 5 EXISTING	SUBBASIN 5 PROP & ULT	SUBBASIN 6 EXISTING	SUBBASIN 6 PROPOSED	SUBBASIN 6 ULTIMATE
Woods	B	55	22.9		3.9	3.9		6.1	6.1		19.3	19.3						
	C	70	2.8					2.6	2.6		1.2	1.2						
	D	77																
Open	B	61	4.9	4.9	3.4	1.7	1.7	0.7			7.6	6.0	3.0	9.1	1.0	4.5	0.4	0.3
	C	74	0.4	0.4	0.4			0.7			0.4	0.4	0.4	5.0	0.2			
	D	80	1.3	1.3										1.7		1.8	0.2	
Newly graded area	B	86									6.0	6.0						
	C	91									2.0	2.0						
	D	94																
Planned residential community	B	75	4.8	26.6			2.1			6.3			8.6					0.1
	C	83		3.7						2.4								
	D	87																0.2
Townhouses	B	85														1.0	1.0	1.0
	C	90																
	D	92																
Apartments	B	85	0.4	0.4				25.9	25.7	25.7							0.2	0.2
	C	90	0.2	0.2				3.9	3.9	3.9								
	D	92	1.4	1.4														
Commercial	B	92	5.2	5.2	0.3	1.0	1.0	2.7	5.3	5.3	1.6	1.6	3.9		6.1		3.9	3.9
	C	94	0.4	0.4	0.1	0.7	0.7	0.9	2.5	2.5			0.8		4.8			
	D	95													1.7		1.6	1.6
Industrial	B	88					1.8				0.2	1.5	18.1					
	C	91											3.2					
	D	93																
Road & water surface	all	98	9.1	9.1	2.4	2.4	2.4	1.2	1.2	1.2	2.2	2.5	2.5					
Total Area (ac)			53.6	53.6	10.5	9.7	9.7	44.7	47.3	47.3	40.5	40.5	40.5	15.8	13.8	7.3	7.3	7.3
Calculated curve number			71.3	80.7	68.9	73.3	83.8	80.9	82.3	85.6	67.1	68.2	84.5	67.2	90.6	69.0	89.5	89.9
USE CURVE NUMBER			71	81	69	73	84	81	82	86	67	68	85	67	91	69	90	90

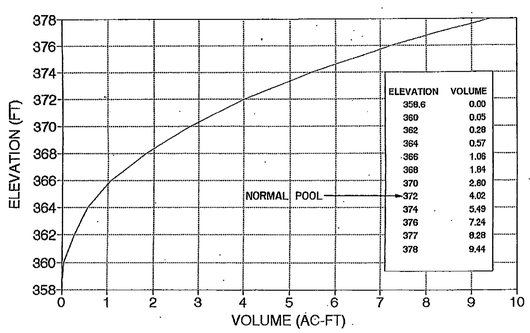
TIME OF CONCENTRATION COMPUTATIONS

LAND USE CONDITION (existing, proposed, or ultimate)		SUBBASIN 1 EX & PROP	SUBBASIN 1 ULT	SUBBASIN 2 EX & PROP	SUBBASIN 2 ULT	SUBBASIN 3 EX & PROP	SUBBASIN 3 ULT	SUBBASIN 4 EX & PROP	SUBBASIN 4 ULT	SUBBASIN 5 EX	SUBBASIN 5 PROP & ULT	SUBBASIN 6 EX	SUBBASIN 6 PROP & ULT
		SEGMENT AB											
1. SHEET FLOW													
a. Surface description		grass	grass	woods	grass	grass	grass	woods	grass	grass	grass	grass	grass
b. Manning's roughness coeff., n		0.24	0.24	0.40	0.24	0.24	0.24	0.40	0.24	0.24	0.24	0.24	0.24
c. Flow length, L	(ft)	100	50	100	50	50	50	100	50	50	50	50	50
d. Two-yr 24-hr rainfall, P2	(inches)	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
e. Land slope, s	(ft/ft)	0.020	0.020	0.030	0.020	0.020	0.020	0.040	0.020	0.030	0.030	0.030	0.030
f. Tt = [0.007(nL)^0.8]/[(P2^0.5)(s^0.4)]	(hr)	0.24	0.14	0.30	0.14	0.14	0.14	0.27	0.14	0.12	0.12	0.12	0.12
		SEGMENT BC											
2. SHALLOW CONCENTRATED FLOW													
a. Surface description		unpaved	paved	unpaved	paved	paved	paved	unpaved	paved	unpaved	paved	unpaved	paved
b. Flow length, L	(ft)	650	100	400	100	100	100	1025	100	750	100	500	100
c. Watercourse slope, s	(ft/ft)	0.039	0.020	0.090	0.020	0.020	0.020	0.080	0.020	0.045	0.030	0.080	0.030
d. Average velocity, V	(ft/sec)	3.2	3.9	4.9	2.9	2.9	2.9	4.0	2.9	3.4	3.5	4.0	3.5
e. Tt = L/(3600*V)	(hr)	0.06	0.01	0.02	0.01	0.01	0.01	0.07	0.01	0.06	0.01	0.03	0.01
		SEGMENT CD											
3. CHANNEL FLOW													
a. Flow type (natural channel, ditch, sewer)		natural	sewer	sewer	sewer	sewer	sewer	natural	sewer	natural	sewer	natural	sewer
b. Flow length, L	(ft)	400	1580	100	450	400	2330	700	2240	300	840	300	870
c. Slope or elevation difference	(ft)	12						18		2.5		15	
d. Computation Method		Kirpich	assumed	assumed	assumed	assumed	assumed	Kirpich	assumed	Kirpich	assumed	Kirpich	assumed
e. Velocity, V	(ft/sec)	2.2	10.0	10.0	10.0	10.0	10.0	2.3	10.0	1.2	10.0	2.5	10.0
f. Tt = L/(3600*V)	(hr)	0.05	0.04	0.00	0.01	0.01	0.06	0.08	0.06	0.07	0.02	0.03	0.02
		SEGMENT DE											
a. Flow type (natural channel, ditch, sewer)		sewer		natural	natural	natural							
b. Flow length, L	(ft)	580		300	300	580							
c. Slope or elevation difference	(ft)			24	24	30							
d. Computation Method		assumed		Kirpich	Kirpich	Kirpich							
e. Velocity, V	(ft/sec)	10		2.9	2.8	3.2							
f. Tt = L/(3600*V)	(hr)	0.02	0.00	0.03	0.03	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		SEGMENT EF											
a. Flow type (natural channel, ditch, sewer)		ex pond				sewer							
b. Flow length, L	(ft)	100				1150							
c. Slope or elevation difference	(ft)	0											
d. Computation Method		–				assumed							
e. Velocity, V	(ft/sec)	0				10.0							
f. Tt = L/(3600*V)	(hr)	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		SEGMENT FG											
a. Flow type (natural channel, ditch, sewer)						ditch							
b. Flow length, L	(ft)					200							
c. Slope or elevation difference	(ft)					10							
d. Computation Method						Kirpich							
e. Velocity, V	(ft/sec)					2.4							
f. Tt = L/(3600*V)	(hr)	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4. WATERSHED TIME OF CONCENTRATION	(hr)	0.36	0.19	0.36	0.19	0.26	0.21	0.42	0.21	0.24	0.14	0.18	0.14
5. LAG TIME (0.6*Tc)	(hr)	0.22	0.11	0.21	0.11	0.16	0.13	0.25	0.13	0.15	0.09	0.11	0.09

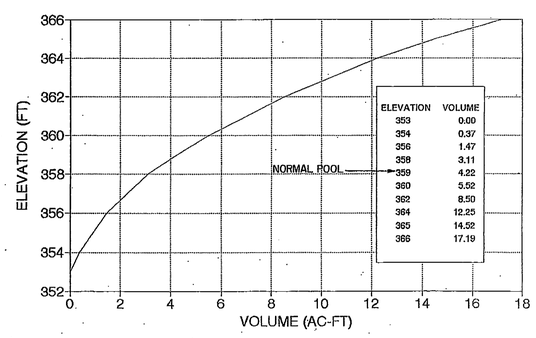
POND A
STAGE-STORAGE CURVE



POND B
STAGE-STORAGE CURVE



POND C
STAGE-STORAGE CURVE



Application No. PA 76-C-0048-2 Staff C. Lewis
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 3-31-06
Date of (DP) (GDP) (CDP) approval 4-3-06
Sheet 12 of 16

FOR INFORMATION PURPOSES ONLY!

COMMONWEALTH OF VIRGINIA
ERIC S. SIEGEL
No. 023416
09/28/05
PROFESSIONAL ENGINEER

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8401 Arlington Blvd., Fairfax, VA 22031
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DATE	DESCRIPTION	NO.	DESIGNER	DATE	APPROVED	EST. BY

REVISION APPROVED BY: DIVISION OF DESIGN REVIEW

ENGINEER

HYDROLOGIC CALCULATIONS

ENGINEER'S SEAL & SIGNATURE

REVISION STAMP

Virginia Consolidation Project
HUNTER MILL DISTRICT FAIRFAX COUNTY, VIRGINIA

Drawn by: L. E. MORILLO
Designed by: G. A. SORENSEN
Checked by: GAG
Date: NOV. 2, 1993
Scale: ----------
Plan number: 8766-SP-01
Zoned: PDC
Sheet: P8 OF 17
37 of 73
File number: SP 1744

SHEET 12 OF 16
ZP-1612

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CURVE NUMBER COMPUTATIONS

AREAS (ac)

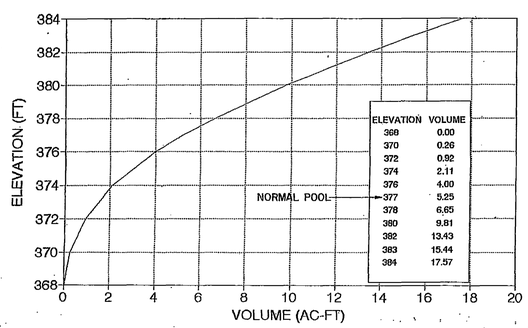
LANDUSE	SOIL GROUP	CURVE NUMBER	SUBBASIN 1 EX & PROP	SUBBASIN 1 ULTIMATE	SUBBASIN 2 EXISTING	SUBBASIN 2 PROPOSED	SUBBASIN 2 ULTIMATE	SUBBASIN 3 EXISTING	SUBBASIN 3 PROPOSED	SUBBASIN 3 ULTIMATE	SUBBASIN 4 EXISTING	SUBBASIN 4 PROPOSED	SUBBASIN 4 ULTIMATE	SUBBASIN 5 EXISTING	SUBBASIN 5 PROP & ULT	SUBBASIN 6 EXISTING	SUBBASIN 6 PROPOSED	SUBBASIN 6 ULTIMATE
Woods	B	55	22.9		3.9	3.9		6.1	6.1		19.3	19.3						
	C	70	2.6					2.6	2.6		1.2	1.2						
	D	77																
Open	B	61	4.9	4.9	3.4	1.7	1.7	0.7			7.6	6.0	3.0	9.1	1.0	4.5	0.4	0.3
	C	74	0.4	0.4	0.4			0.7			0.4	0.4	0.4	5.0	0.2			
	D	80	1.3	1.3										1.7		1.8	0.2	
Newly graded area	B	86									6.0	6.0						
	C	91									2.0	2.0						
	D	94																
Planned residential community	B	75	4.8	26.6			2.1			6.3			8.6					0.1
	C	83		3.7						2.4								
	D	87																0.2
Townhouses	B	85														1.0	1.0	1.0
	C	90																
	D	92																
Apartments	B	85	0.4	0.4				25.9	25.7	25.7							0.2	0.2
	C	90	0.2	0.2				3.9	3.9	3.9								
	D	92	1.4	1.4														
Commercial	B	92	5.2	5.2	0.3	1.0	1.0	2.7	5.3	5.3	1.6	1.6	3.9		6.1		3.9	3.9
	C	94	0.4	0.4	0.1	0.7	0.7	0.9	2.5	2.5			0.8		4.8			
	D	95													1.7		1.6	1.6
Industrial	B	88					1.8				0.2	1.5	18.1					
	C	91											3.2					
	D	93																
Road & water surface	all	98	9.1	9.1	2.4	2.4	2.4	1.2	1.2	1.2	2.2	2.5	2.5					
Total Area (ac)			53.6	53.6	10.5	9.7	9.7	44.7	47.3	47.3	40.5	40.5	40.5	15.8	13.8	7.3	7.3	7.3
Calculated curve number			71.3	80.7	68.9	73.3	83.8	80.9	82.3	85.6	67.1	68.2	84.5	67.2	90.6	69.0	89.5	89.9
USE CURVE NUMBER			71	81	69	73	84	81	82	86	67	68	85	67	91	69	90	90

TIME OF CONCENTRATION COMPUTATIONS

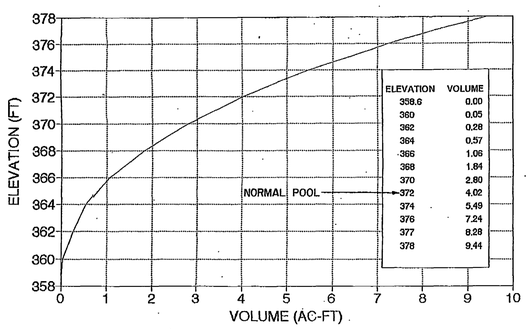
LAND USE CONDITION (existing, proposed, or ultimate)

		SUBBASIN 1 EX & PROP	SUBBASIN 1 ULT	SUBBASIN 2 EX & PROP	SUBBASIN 2 ULT	SUBBASIN 3 EX & PROP	SUBBASIN 3 ULT	SUBBASIN 4 EX & PROP	SUBBASIN 4 ULT	SUBBASIN 5 EX	SUBBASIN 5 PROP & ULT	SUBBASIN 6 EX	SUBBASIN 6 PROP & ULT
SEGMENT AB													
1. SHEET FLOW													
a. Surface description		grass	grass	woods	grass	grass	grass	woods	grass	grass	grass	grass	grass
b. Manning's roughness coeff., n		0.24	0.24	0.40	0.24	0.24	0.24	0.40	0.24	0.24	0.24	0.24	0.24
c. Flow length, L	(ft)	100	50	100	50	50	50	100	50	50	50	50	50
d. Two-yr 24-hr rainfall, P2	(inches)	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
e. Land slope, s	(ft/ft)	0.020	0.020	0.030	0.020	0.020	0.020	0.040	0.020	0.030	0.030	0.030	0.030
f. Tt = [0.007(nL)^0.8]/[(P2^0.5)(s^0.4)]	(hr)	0.24	0.14	0.30	0.14	0.14	0.14	0.27	0.14	0.12	0.12	0.12	0.12
SEGMENT BC													
2. SHALLOW CONCENTRATED FLOW													
a. Surface description		unpaved	paved	unpaved	paved	paved	paved	unpaved	paved	unpaved	paved	unpaved	paved
b. Flow length, L	(ft)	650	100	400	100	100	100	1025	100	750	100	500	100
c. Watercourse slope, s	(ft/ft)	0.039	0.020	0.080	0.020	0.020	0.020	0.060	0.020	0.045	0.030	0.080	0.030
d. Average velocity, V	(ft/sec)	3.2	3.9	4.9	2.9	2.9	2.9	4.0	2.9	3.4	3.5	4.0	3.5
e. Tt = L/(3600*V)	(hr)	0.06	0.01	0.02	0.01	0.01	0.01	0.07	0.01	0.06	0.01	0.03	0.01
SEGMENT CD													
3. CHANNEL FLOW													
a. Flow type (natural channel, ditch, sewer)		natural	sewer	sewer	sewer	sewer	sewer	natural	sewer	natural	sewer	natural	sewer
b. Flow length, L	(ft)	400	1580	100	450	400	2330	700	2240	300	640	300	670
c. Slope or elevation difference	(ft)	12						18		2.5		15	
d. Computation Method		Kirpich	assumed	assumed	assumed	assumed	assumed	Kirpich	assumed	Kirpich	assumed	Kirpich	assumed
e. Velocity, V	(ft/sec)	2.2	10.0	10.0	10.0	10.0	10.0	2.3	10.0	1.2	10.0	2.5	10.0
f. Tt = L/(3600*V)	(hr)	0.05	0.04	0.00	0.01	0.01	0.06	0.08	0.06	0.07	0.02	0.03	0.02
SEGMENT DE													
a. Flow type (natural channel, ditch, sewer)		sewer		natural	natural	natural							
b. Flow length, L	(ft)	580		300	300	580							
c. Slope or elevation difference	(ft)			24	24	30							
d. Computation Method		assumed		Kirpich	Kirpich	Kirpich							
e. Velocity, V	(ft/sec)	10		2.9	2.8	3.2							
f. Tt = L/(3600*V)	(hr)	0.02	0.00	0.03	0.03	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEGMENT EF													
a. Flow type (natural channel, ditch, sewer)		ex pond				sewer							
b. Flow length, L	(ft)	100				1150							
c. Slope or elevation difference	(ft)	0											
d. Computation Method		–				assumed							
e. Velocity, V	(ft/sec)	0				10.0							
f. Tt = L/(3600*V)	(hr)	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SEGMENT FG													
a. Flow type (natural channel, ditch, sewer)						ditch							
b. Flow length, L	(ft)					200							
c. Slope or elevation difference	(ft)					10							
d. Computation Method						Kirpich							
e. Velocity, V	(ft/sec)					2.4							
f. Tt = L/(3600*V)	(hr)	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4. WATERSHED TIME OF CONCENTRATION	(hr)	0.36	0.19	0.36	0.19	0.26	0.21	0.42	0.21	0.24	0.14	0.18	0.14
5. LAG TIME (0.6*Tc)	(hr)	0.22	0.11	0.21	0.11	0.16	0.13	0.25	0.13	0.15	0.09	0.11	0.09

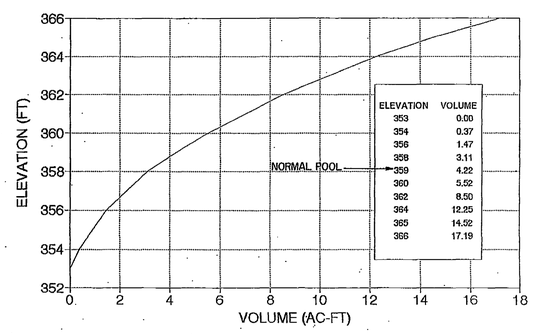
POND A
STAGE-STORAGE CURVE



POND B
STAGE-STORAGE CURVE



POND C
STAGE-STORAGE CURVE



Application No. PCA 78-C-098-2 Staff C. Lee
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 3-31-06
Date of (BOS) (PC) approval 4-3-06
Sheet 13 of 16

FOR INFORMATION PURPOSES ONLY!

COMMONWEALTH OF VIRGINIA
ERIC S. SIEGEL
No. 023416
09/28/05
PROFESSIONAL ENGINEER

SHEET 13 OF 16
ZP-1612

Dewberry & Davis
Architects Engineers Planners Surveyors
8401 Arlington Blvd., Fairfax, VA 22031
☎ 703 849-0100

DATE	DESIGNER	NO.	DESCRIPTION	REV. BY	APPROVED	DATE

ENGINEER

REVISION APPROVED BY:
DIVISION OF DESIGN REVIEW

HYDROLOGIC CALCULATIONS

ENGINEER'S SEAL & SIGNATURE

COMMONWEALTH OF VIRGINIA
EDWARD J. DEBKOFF
No. 17324
10-27-05
PROFESSIONAL ENGINEER

Virginia Consolidation Project
HUNTER MILL DISTRICT FAIRFAX COUNTY, VIRGINIA

Drawn by: L. E. MORILLO
Designed by: G. A. SORENSEN
Checked by: GAS
Date: NOVEMBER 1993
Scale: ————
Plan number: 8766-SP-01
Zoned: PDC
Sheet: P8 OF 17
37 of 73
File number: SP 1771

REVISION STAMP

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EXISTING HEC-1 HYDROLOGIC MODELS

```
                                   HEC-1 INPUT                                                                   PAGE  1
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  1           ID   SALLIE MAE
  2           ID   EXISTING CONDITIONS LANDUSE
  3           ID   2, 10                                  YEARFLOODS        FILE NAME: SMH1-EXN.DAT
  4           IT      5                        300
  5           IO      5
  6           JR    PREC    0.44    0.71    0.82     1.0     1.5     2.5

  7           KK      1
  8           KM   RUNOFF HYDROGRAPH FOR SUBBASIN 1
  9           BA    .084
 10           PB    7.3
              *  24 HOUR DURATION, TYPE II DISTRIBUTION RAINFALL
 11           IN      6
 12           PC     0.0  .00101  .00202  .00305  .00408  .00513  .00618  .00725  .00832  .00941
 13           PC   .01050  .01161  .01272  .01385  .01498  .01613  .01728  .01845  .01962  .02081
 14           PC    .022  .02321  .02442  .02565  .02688  .02813  .02938  .03065  .03192  .03321
 15           PC   .03450  .03581  .03712  .03845  .03978  .04113  .04248  .04385  .04522  .04661
 16           PC    .048  .04941  .05084  .05229  .05376  .05525  .05676  .05829  .05984  .06141
 17           PC    .063  .06461  .06624  .06789  .06956  .07125  .07296  .07469  .07644  .07821
 18           PC     .08  .08181  .08364  .08549  .08736  .08925  .09116  .09309  .09504  .09701
 19           PC    .099  .10101  .10304  .10509  .10716  .10925  .11136  .11349  .11564  .11781
 20           PC     .12  .12225  .12460  .12705  .12960  .13225    .135  .13785  .14080  .14385
 21           PC    .147   .1502  .15340   .1566   .1598    .163  .16628  .16972  .17332  .17708
 22           PC    .181  .18512  .18948  .19408  .19892    .204   .2094   .2152   .2214    .228
 23           PC    .235  .24268  .25132  .26092  .27148    .283  .30684  .35436  .43079  .56786
 24           PC    .663  .68196  .69864  .71304  .72516    .735  .74344  .75136  .75876  .76564
 25           PC    .772  .77796  .78364  .78904  .79416    .799   .8036    .808   .8122   .8162
 26           PC     .82  .82367  .82726  .83079  .83424  .83763  .84094  .84419  .84736  .85047
 27           PC   .85350  .85647  .85936  .86219  .86494  .86763  .87024  .87279  .87526  .87767
 28           PC     .88  .88229  .88455  .88679    .889  .89119  .89335  .89549   .8976  .89969
 29           PC   .90175  .90379   .9058  .90779  .90975  .91169   .9136  .91549  .91735  .91919
 30           PC    .921  .92279  .92455  .92629    .928  .92969  .93135  .93299   .9346  .93619
 31           PC   .93775  .93929   .9408  .94229  .94375  .94519   .9466  .94799  .94935  .95069
 32           PC    .952   .9533  .95459  .95588  .95716  .95844  .95971  .96098  .96224   .9635
 33           PC   .96475    .966  .96724  .96848  .96971  .97094  .97216  .97338  .97459   .9758
 34           PC    .977   .9782  .97939  .98058  .98176  .98294  .98411  .98528  .98644  .98760
 35           PC   .98875   .9899  .99104  .99218  .99331  .99444  .99556  .99668  .99779   .9989
 36           PC     1.0
 37           LS              71
 38           UD    .22

 39           KK   R AVE
 40           KM   ROUTE THROUGH EXISTING POND BEHIND OLD RESTON AVENUE
 41           RS      1    ELEV     385
 42           SA    .22    0.26    0.38    0.67     1.2
 43           SE    385     386     388     390     392
 44           SS    385     9.4       3     1.5
 45           ST    385       0       3     1.5
 46           SW      0       1     110     175     280
 47           SE    385     387     388     390     392

 48           KK      2
 49           KM   RUNOFF HYDROGRAPH FOR SUBBASIN 2
 50           BA    .016
 51           LS              69
 52           UD    .21

 53           KK      2
 54           KM   ADD HYDROGRAPHS
 55           HC      2

 56           KK      3
 57           KM   RUNOFF HYDROGRAPH FOR SUBBASIN 3
 58           BA    .070
 59           LS              81
 60           UD    .16

 61           KK      3
 62           KM   ADD HYDROGRAPHS
 63           HC      2

 64           KK   3 TO 5
 65           KM   ROUTE THROUGH NATURAL CHANNEL
 66           RM      1    .10     0.5

 67           KK      4
 68           KM   RUNOFF HYDROGRAPH FOR SUBBASIN 4
 69           BA   0.063
 70           LS              67
 71           UD    .25

 72           KK   4 TO 5
 73           KM   ROUTE THROUGH NATURAL CHANNEL
 74           RM      1    .05     .5

 75           KK      5
 76           KM   RUNOFF HYDROGRAPH FOR SUBBBASIN 5
 77           BA    .025
 78           LS              67
 79           UD   0.15

 80           KK      5
 81           KM   ADD HYDROGRAPHS (1+2+3)+4+5
 82           HC      3

 83           KK   5 TO 6
 84           KM   ROUTE THROUGH NATURAL CHANNEL
 85           RM      1    .04     .5

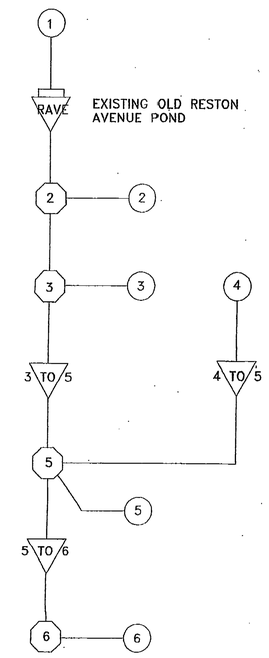
 86           KK      6
 87           KM   RUNOFF HYDROGRAPH FOR SUBBASIN 6
 88           BA   0.011
 89           LS              69
 90           UD   0.11

 91           KK      6
 92           KM   ADD HYDROGRAPHS AT DOWNSTREAM PROPERTY LINE (1+2+3+4+5)+6
 93           HC      2
 94           ZZ
```

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1 .44	RATIO 2 .71	RATIO 3 .82	RATIO 4 1.00	RATIO 5 1.50	RATIO 6 2.50
					2-YR	10-YR				
HYDROGRAPH AT										
+	1	.08	1	FLOW	41.	116.	150.	209.	379.	725.
				TIME	12.17	12.08	12.08	12.08	12.08	12.08
ROUTED TO										
+	R AVE	.08	1	FLOW	38.	115.	148.	206.	375.	720.
				TIME	12.17	12.17	12.17	12.08	12.08	12.08
			** PEAK STAGES IN FEET **							
			1	STAGE	386.21	387.35	387.56	387.78	388.21	388.77
				TIME	12.17	12.17	12.17	12.08	12.08	12.08
HYDROGRAPH AT										
+	2	.02	1	FLOW	7.	21.	27.	39.	71.	139.
				TIME	12.08	12.08	12.08	12.08	12.08	12.08
2 COMBINED AT										
+	2	.10	1	FLOW	45.	135.	174.	245.	445.	859.
				TIME	12.17	12.17	12.17	12.08	12.08	12.08
HYDROGRAPH AT										
+	3	.07	1	FLOW	73.	154.	188.	244.	400.	713.
				TIME	12.08	12.08	12.08	12.08	12.08	12.00
2 COMBINED AT										
+	3	.17	1	FLOW	110.	275.	358.	489.	846.	1566.
				TIME	12.08	12.08	12.08	12.08	12.08	12.08
ROUTED TO										
+	3 TO 5	.17	1	FLOW	109.	273.	356.	488.	847.	1571.
				TIME	12.17	12.17	12.17	12.17	12.17	12.17
HYDROGRAPH AT										
+	4	.06	1	FLOW	21.	69.	91.	130.	244.	482.
				TIME	12.17	12.17	12.17	12.17	12.17	12.08
ROUTED TO										
+	4 TO 5	.06	1	FLOW	21.	69.	91.	131.	248.	493.
				TIME	12.25	12.17	12.17	12.17	12.17	12.17
HYDROGRAPH AT										
+	5	.03	1	FLOW	11.	34.	45.	63.	118.	234.
				TIME	12.08	12.08	12.08	12.08	12.00	12.00
3 COMBINED AT										
+	5	.26	1	FLOW	138.	367.	480.	665.	1181.	2228.
				TIME	12.17	12.17	12.17	12.17	12.17	12.17
ROUTED TO										
+	5 TO 6	.26	1	FLOW	139.	364.	479.	649.	1157.	2202.
				TIME	12.25	12.25	12.25	12.25	12.17	12.17
HYDROGRAPH AT										
+	6	.01	1	FLOW	6.	18.	24.	33.	61.	118.
				TIME	12.00	12.00	12.00	12.00	12.00	12.00
2 COMBINED AT										
+	6	.27	1	FLOW	141.	370.	482.	659.	1186.	2257.
				TIME	12.25	12.25	12.25	12.25	12.17	12.17

HEC-1 SHEMATIC



LEGEND

(2)	SUBBASIN HYDROGRAPH
3 TO 5	CHANNEL ROUTING
(2)	COMBINED POINT
RAVE	POND ROUTING

FOR INFORMATION PURPOSES ONLY!

COMMONWEALTH OF VIRGINIA
ERIC S. SIEGEL
No. 023416
04/28/05
PROFESSIONAL ENGINEER

Application No. PCA 78-C-094-2 Staff R. Lewis
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 3-31-06
Date of (BOS) (PC) approval 4-3-06
Sheet 14 of 76

SHEET 14 OF 16
ZP-1612

Dewberry & Davis
Architects Engineers Planners Surveyors
8401 Arlington Blvd., Fairfax, VA 22031
☎ 703 849-0100

NO.	DATE	DESCRIPTION	REV. BY	APPROVED	DATE

REVISION APPROVED BY: DIVISION OF DESIGN REVIEW

DESIGNER | DATE | ENGINEER

HYDROLOGIC CALCULATIONS

Virginia Consolidation Project
HUNTER MILL DISTRICT FAIRFAX COUNTY, VIRGINIA

ENGINEER'S SEAL & SIGNATURE

Drawn by: L. E. MORILLO
Designed by: G.A. SORENSEN
Checked by:
Date: NOV. 1, 1993
Scale: ----------
Plan number: 8766-SP-01
Zoned: PDC
Sheet: 9 OF 17 (36 of 75)
File number: SP-1744

REVISION STAMP

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PROPOSED HEC-1 HYDROLOGIC MODEL

```
                              HEC-1 INPUT

LINE   ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

       ID   SALLIE MAE
       ID   PROPOSED CONDITIONS LANDUSE WITH PROPOSED PONDS
       ID   2 AND 10-YEARFLOODS                                      FILE NAME:  SMH1-PRO.DAT
       IT       5                    300
       IO       5
       JR    PREC    0.44    0.71

       KK       1
       KM   RUNOFF HYDROGRAPH FOR SUBBASIN 1
       BA    .084
       PB     7.3
       *  24 HOUR DURATION, TYPE II DISTRIBUTION RAINFALL
       IN       6
       PC     0.0  .00101  .00202  .00305  .00408  .00513  .00618  .00725  .00832  .00941
       PC  .01050  .01161  .01272  .01385  .01498  .01613  .01728  .01845  .01962  .02081
       PC    .022  .02321  .02442  .02565  .02688  .02813  .02938  .03065  .03192  .03321
       PC  .03450  .03581  .03712  .03845  .03978  .04113  .04248  .04385  .04522  .04661
       PC    .048  .04941  .05084  .05229  .05376  .05525  .05676  .05829  .05984  .06141
       PC    .063  .06461  .06624  .06789  .06956  .07125  .07296  .07469  .07644  .07821
       PC     .08  .08181  .08364  .08549  .08736  .08925  .09116  .09309  .09504  .09701
       PC    .099  .10101  .10304  .10509  .10716  .10925  .11136  .11349  .11564  .11781
       PC     .12  .12225  .12460  .12705  .12960  .13225    .135  .13785  .14080  .14385
       PC    .147   .1502  .15340   .1566   .1598    .163  .16628  .16972  .17332  .17708
       PC    .181  .18512  .18948  .19408  .19892    .204   .2094   .2152   .2214    .228
       PC    .235  .24268  .25132  .26092  .27148    .283  .30684  .35436  .43079  .56786
       PC    .663  .68196  .69864  .71304  .72516    .735  .74344  .75136  .75876  .76584
       PC    .772  .77796  .78364  .78904  .79416    .799   .8036    .808   .8122   .8162
       PC     .82  .82367  .82726  .83079  .83424  .83763  .84094  .84419  .84736  .85047
       PC  .85350  .85647  .85936  .86219  .86494  .86763  .87024  .87279  .87526  .87767
       PC     .88  .88229  .88455  .88679    .889  .89119  .89335  .89549   .8976  .89969
       PC  .90175  .90379   .9058  .90779  .90975  .91169   .9136  .91549  .91735  .91919
       PC    .921  .92279  .92455  .92629    .928  .92969  .93135  .93299   .9346  .93619
       PC  .93775  .93929   .9408  .94229  .94375  .94519   .9466  .94799  .94935  .95069
       PC    .952   .9533  .95459  .95588  .95716  .95844  .95971  .96098  .96224   .9635
       PC  .96475    .966  .96724  .96848  .96971  .97094  .97216  .97338  .97459   .9758
       PC    .977   .9782  .97939  .98058  .98176  .98294  .98411  .98528  .98644  .98760
       PC  .98875   .9899  .99104  .99218  .99331  .99444  .99556  .99668  .99779   .9989
       PC     1.0
       LS               71
       UD     .22

       KK   R AVE
       KM   ROUTE THROUGH PROPOSED POND BEHIND OLD RESTON AVENUE
       RS       1    ELEV     385
       SA     .22    0.26    0.38    0.67     1.2
       SE     385     386     388     390     392
       SS     385      23       3     1.5
       ST     387      13       3     1.5
       SW       0     290     520
       SE  389.17     390     392

       KK       2
       KM   RUNOFF HYDROGRAPH FOR SUBBASIN 2
       BA    .015
       LS               73
       UD     .21

       KK       2
       KM   ADD HYDROGRAPHS AT PROPOSED POND A
       HC       2

       KK   POND A
       KM   ROUTE THROUGH PROPOSED POND A
       RS       1    ELEV     377
       SA   0.058   0.222   0.452   0.743   1.168   1.327   1.477   1.684   1.944   2.070
       SA   2.200
       SE     368     370     372     374     376     377     378     380     382     383
       SE     384
       SL  377.25       1     0.6     0.5
       SS   378.5      50     3.0     1.5
       ST

       KK   DIV AB
       KM   DIVERT FLOW THAT PASSES THROUGH POND A WATER FEATURE INTO POND B
       DT   DIVAB
       DI       0     2.4     4.2     5.4    59.4   157.2   283.6   432.9   602.3   789.3
       DI   978.5   996.1  1013.6
       DQ       0     2.4     4.2     5.4     6.4     7.2     8.0     8.7     9.3     9.9
       DQ    10.5    11.0    11.6

       KK   RET AB
       KM   RETREIVE DIVERTED FLOW TO BE ADDED INTO POND B
       DR   DIVAB

       KK       3
       KM   RUNOFF HYDROGRAPH FOR SUBBASIN 3
       BA    .074
       LS               82
       UD     .16

       KK    AB+3
       KM   ADD DIVERTED HYDROGRAPH TO SUBBASIN 3 HYDROGRAPH
       HC       2

       KK   POND B
       KM   ROUTE THROUGH PROPOSED POND B
       RS       1    ELEV     372
       SA       0   0.103   0.129   0.161   0.344   0.433   0.533   0.688   0.778   0.979
       SA   1.104   1.212
       SE   358.6     360     362     364     366     368     370     372     374     376
       SE     377     378
       SL  372.25       1     0.6     0.5
       SS   373.5      50     3.0     1.5
       ST

       KK       5
       KM   RUNOFF HYDROGRAPH FOR SUBBBASIN 5
       BA    .022
       LS               91
       UD    0.09

       KK       5
       KM   ADD HYDROGRAPHS AT PROPOSED POND C (POND A OUTFLOW + POND B OUTFLOW + 5)
       HC       3

       KK   POND C
       KM   ROUTE THROUGH PROPOSED POND C
       RS       1    ELEV     359
       SA   0.310   0.441   0.661   0.989   1.238   1.360   1.631   2.122   2.438   2.900
       SE     353     354     356     358     359     360     362     364     365     366
       SS     359      14       3     1.5
       ST   361.5      66       3     1.5

       KK   5 TO 6
       KM   ROUTE THROUGH CHANNEL AND CULVERT
       RM       1     .04      .5

       KK       4
       KM   RUNOFF HYDROGRAPH FOR SUBBASIN 4
       BA   0.063
       LS               68
       UD     .25

       KK   4 TO 6
       KM   ROUTE THROUGH STORM SEWER
       RM       1     .02      .5

       KK       6
       KM   RUNOFF HYDROGRAPH FOR SUBBASIN 6
       BA   0.011
       LS               90
       UD    0.09

       KK       6
       KM   ADD HYDROGRAPHS AT DOWNSTREAM PROPERTY LINE  (PDA+PDB+5)+4+6
       HC       3
       ZZ
```

```
PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
                 FLOWS IN CUBIC FEET PER SECOND,  AREA IN SQUARE MILES
                               TIME TO PEAK IN HOURS

                                                          RATIOS APPLIED TO PRECIPITATION
OPERATION       STATION     AREA    PLAN             RATIO 1  RATIO 2
                                                        .44      .71

                                                       2-YR    10-YR
HYDROGRAPH AT
+                     1      .08       1    FLOW        41.     116.
                                            TIME      12.17    12.08

ROUTED TO
+                 R AVE      .08       1    FLOW        41.     115.
                                            TIME      12.17    12.17

                                       ** PEAK STAGES IN FEET **
                                       1    STAGE    385.71   386.40
                                            TIME      12.17    12.17

HYDROGRAPH AT
+                     2      .01       1    FLOW         9.      23.
                                            TIME      12.08    12.08

 2 COMBINED AT
+                     2      .10       1    FLOW        50.     136.
                                            TIME      12.17    12.17

ROUTED TO
+                POND A      .10       1    FLOW         5.      98.
                                            TIME      13.75    12.33

                                       ** PEAK STAGES IN FEET **
                                       1    STAGE    378.46   379.22
                                            TIME      13.75    12.33

DIVERSION TO
+                 DIVAB      .10       1    FLOW         5.       7.
                                            TIME      13.75    12.33

HYDROGRAPH AT
+                DIV AB      .10       1    FLOW         0.      91.
                                            TIME        .08    12.33

HYDROGRAPH AT
+                RET AB      .00       1    FLOW         5.       7.
                                            TIME      13.75    12.33

HYDROGRAPH AT
+                     3      .07       1    FLOW        81.     167.
                                            TIME      12.08    12.08

 2 COMBINED AT
+                  AB+3      .07       1    FLOW        83.     173.
                                            TIME      12.08    12.08

ROUTED TO
+                POND B      .07       1    FLOW        72.     169.
                                            TIME      12.17    12.08

                                       ** PEAK STAGES IN FEET **
                                       1    STAGE    374.07   374.55
                                            TIME      12.17    12.08

                                                       2-YR    10-YR
HYDROGRAPH AT
+                     5      .02       1    FLOW        41.      72.
                                            TIME      12.00    12.00

 3 COMBINED AT
+                     5      .19       1    FLOW        88.     229.
                                            TIME      12.08    12.17

ROUTED TO
+                POND C      .19       1    FLOW        57.     199.
                                            TIME      12.33    12.33

                                       ** PEAK STAGES IN FEET **
                                       1    STAGE    360.22   361.68
                                            TIME      12.33    12.33

ROUTED TO
+                5 TO 6      .19       1    FLOW        57.     203.
                                            TIME      12.33    12.33

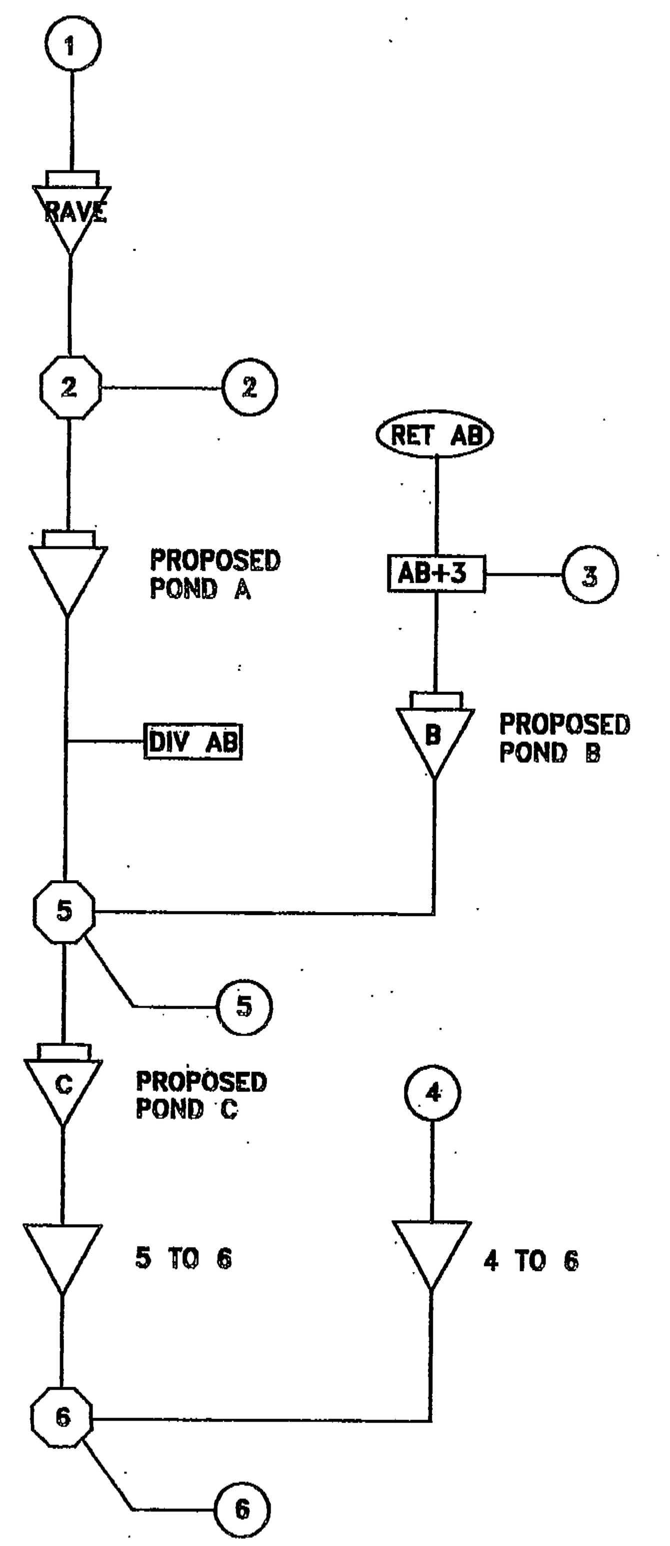
HYDROGRAPH AT
+                     4      .06       1    FLOW        23.      72.
                                            TIME      12.17    12.17

ROUTED TO
+                4 TO 6      .06       1    FLOW        23.      73.
                                            TIME      12.17    12.17

HYDROGRAPH AT
+                     6      .01       1    FLOW        20.      35.
                                            TIME      12.00    12.00

 3 COMBINED AT
+                     6      .27       1    FLOW        80.     262.
                                            TIME      12.25    12.33
```

HEC-1 SCHEMATIC



LEGEND

(1) SUBBASIN HYDROGRAPH

3 TO 5 CHANNEL ROUTING

(2) COMBINED POINT

RAVE POND ROUTING

DIV AB DIVERTED FLOW

RET AB RETRIEVED FLOW

FOR INFORMATION PURPOSES ONLY!

Application No. PCA 78-C-098-2 Staff P. Len
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 3-31-06
Date of (BOS) (PC) approval 4-3-06
Sheet 15 of 16

ERIC S. SIEGEL No. 023416 09/28/05 — COMMONWEALTH OF VIRGINIA PROFESSIONAL ENGINEER

SHEET 15 OF 16
ZP-1612

Dewberry & Davis
Architects Engineers Planners Surveyors
8401 Arlington Blvd., Fairfax, VA 22031
☎ 703 849-0100

HYDROLOGIC CALCULATIONS

NO.	DESCRIPTION	REV. BY	APPROVED	DATE

REVISION APPROVED BY: DIVISION OF DESIGN REVIEW

DATE	DESIGNER	ENGINEER

ENGINEER'S SEAL & SIGNATURE

REVISION STAMP

SallieMae
Virginia Consolidation Project
HUNTER MILL DISTRICT FAIRFAX COUNTY, VIRGINIA

Drawn by: L. E. MORILLO
Designed by: G.A. SORENSEN
Checked by: GLC
Date: NOV.1,1993
Scale: ————
Plan number: 8766-SP-01
Zoned: PDC
Sheet: P10 OF 17 ~~39 of 73~~
File number: ~~SP 1744~~

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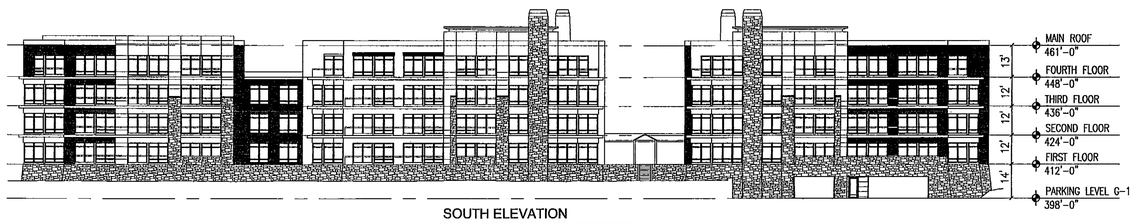
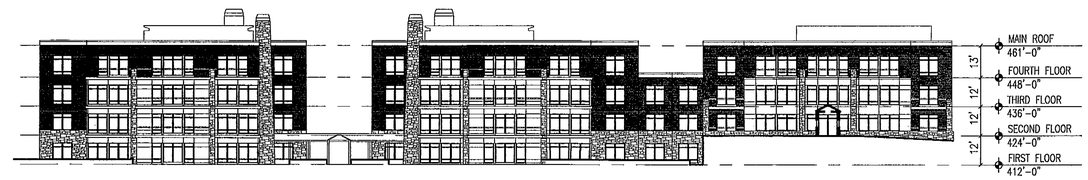


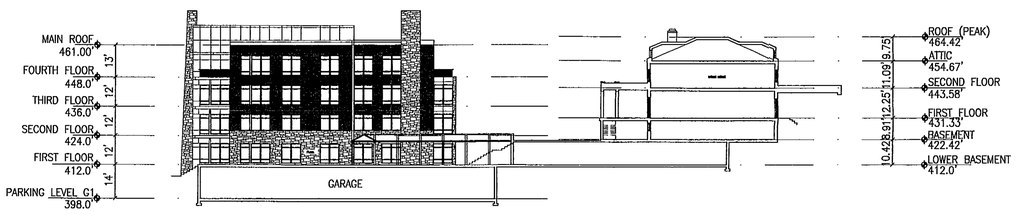
SOUTH ELEVATION

Exterior finishes to be a combination of slate, stone and brick.



NORTH ELEVATION

Exterior finishes to be a combination of slate, stone and brick.



Application No. PCA 78-C-098-2 Staff. Levin
APPROVED DEVELOPMENT PLAN
(DP) (GDP) (CDP) (FDP)
SEE PROFFERS DATED 3-31-06
Date of (BOS) (PC) approval 4-3-06
Sheet 16 of 16

No.	DATE	DESCRIPTION	REV.BY	APPROVED	DATE
		REVISION APPROVED BY DIVISION OF DESIGN REVIEW			

PLAN DATE
09-28-05
11-30-05
01-12-06
02-08-06
02-14-06

URBAN ENGINEERING & ASSOC.,INC.
CIVIL ENGINEERS • LANDSCAPE ARCHITECTS • LAND SURVEYORS
7712 LITTLE RIVER TURNPIKE
ANNANDALE, VIRGINIA 22003 (703) 642-0080

COMMONWEALTH OF VIRGINIA
ERIC S. SIEGEL
No. 023416
02/14/05
PROFESSIONAL ENGINEER

SECTION PLANS

BOXWOODS

HUNTER MILL MAGISTERIAL DISTRICT
FAIRFAX COUNTY, VIRGINIA

SCALE: 1"=30'
C.I. = N/A
DATE: SEPT., 2005

SHEET
16
OF
16

FILE No.
ZP-1612

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