CERTIFICATE OF AUTHENTICITY

THIS IS TO CERTIFY THAT THE FOLLOWING ELECTRONIC RECORDS ARE TRUE AND ACCURATE REPRODUCTIONS OF THE ORIGINAL RECORDS OF JAMES CITY COUNTY GENERAL SERVICES DEPARTMENT- STORMWATER DIVISION; WERE SCANNED IN THE REGULAR COURSE OF BUSINESS PURSUANT TO GUIDELINES ESTABLISHED BY THE LIBRARY OF VIRGINIA AND ARCHIVES; AND HAVE BEEN VERIFIED IN THE CUSTODY OF THE INDIVIDUAL LISTED BELOW.

BMP NUMBER: **PC0102**

DATE VERIFIED: **May 23, 2012**

QUALITY ASSURANCE TECHNICIAN: **Leah Hardenbergh**

Leah Hardenbergh

LOCATION: WILLIAMSBURG, VIRGINIA

Stormwater Division

MEMORANDUM

DATE: February 24, 2010

TO: Michael J. Gillis, Virginia Correctional Enterprises Document Management Services

FROM: Jo Anna Ripley, Stormwater

PO: 270712

RE: Files Approved for Scanning

BMP ID or General File ID PC102

PIN: 46101000007

Subdivision, Tract, Business or Owner Name (if known): Greensprings General: Greenpsrings Apartments & Condos; Greensprings Plantation; Greensprings West; Legacy Golf Links; Williamsburg National Golf Course; Greensprings Office Park

Property Description: Parcel C Greensprings Plantation

Site Address: 3900 John Tyler Highway

(For internal use only) **Box:** GP001 **Drawer:** 1

Agreements: (in file as of scan date) **N** **Book or Doc#:** **Page:**

Comments:

FOUNDATION ENGINEERING SCIENCE, INC.

RECEIVED NOV 0 8 2000

- Geotechnical Engineering [Drilling; Foundation, Retaining Wall & Pavement Design]
- Environmental Management [Phase I & I I, Asbestos and Lead Paint Samplings]
- Construction Materials Testing & Inspection [Quality Control & Quality Assurance]
- Foundation Settlement & Pavement Evaluations
- Value Engineering During Design & Construction

Mr. Mel Spruill
Bush Construction Corporation
4029 Ironbound Road, Suite 200
Williamsburg, Virginia 23188

November 6, 2000

Re: Geotechnical Engineering Services Report
Certification of Detention/BMP Facilities
Greensprings Commerce Center
James City County, Virginia
FES Project No. 1-83132.030

Dear Mr. Spruill:

Pursuant to Mr. Your request, an experienced Professional Geotechnical Engineer with Foundation Engineering Science, Inc. (FES) reviewed the project plans, specifications, FES field compaction density reports [FES Project No. 1-83132] and performed site visual evaluations of the detention/BMP site as shown on Sheet C-3 of Rickmond Engineering, Inc., dated May 29, 1998 for Greensprings Commerce Center located in James City County, Virginia.

Based upon our site evaluations, review of the project plans, specifications and FES field compaction density test reports, FES certifies to the best of our engineering judgement, professional opinion, knowledge and belief, that the structure and the berm along the Detention/BMP was constructed in general accordance with the plans and specifications.

FES appreciates the opportunity of providing consulting services to **Bush Construction Corporation** on this important project and look forward to its successful completion. Should you have any questions regarding this report or if you need further assistance, please do not hesitate to call our office.

Respectfully submitted,

FOUNDATION ENGINEERING SCIENCE, INC.

11/6/00

Raja S. Elawar, P.E.
Principal Engineer
VA Reg. No. 26383

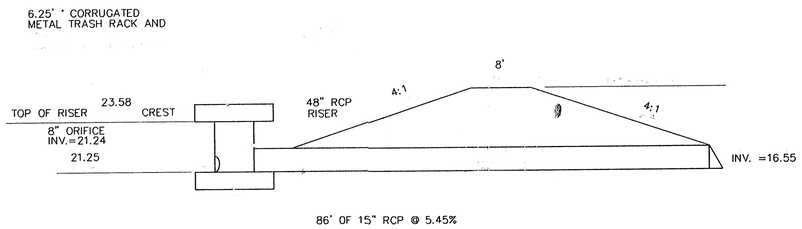
RAJA S. ELAWAR
No. 026383
PROFESSIONAL ENGINEER

XCopies: *(1) Client*

C:\company\1997\1-83132.030

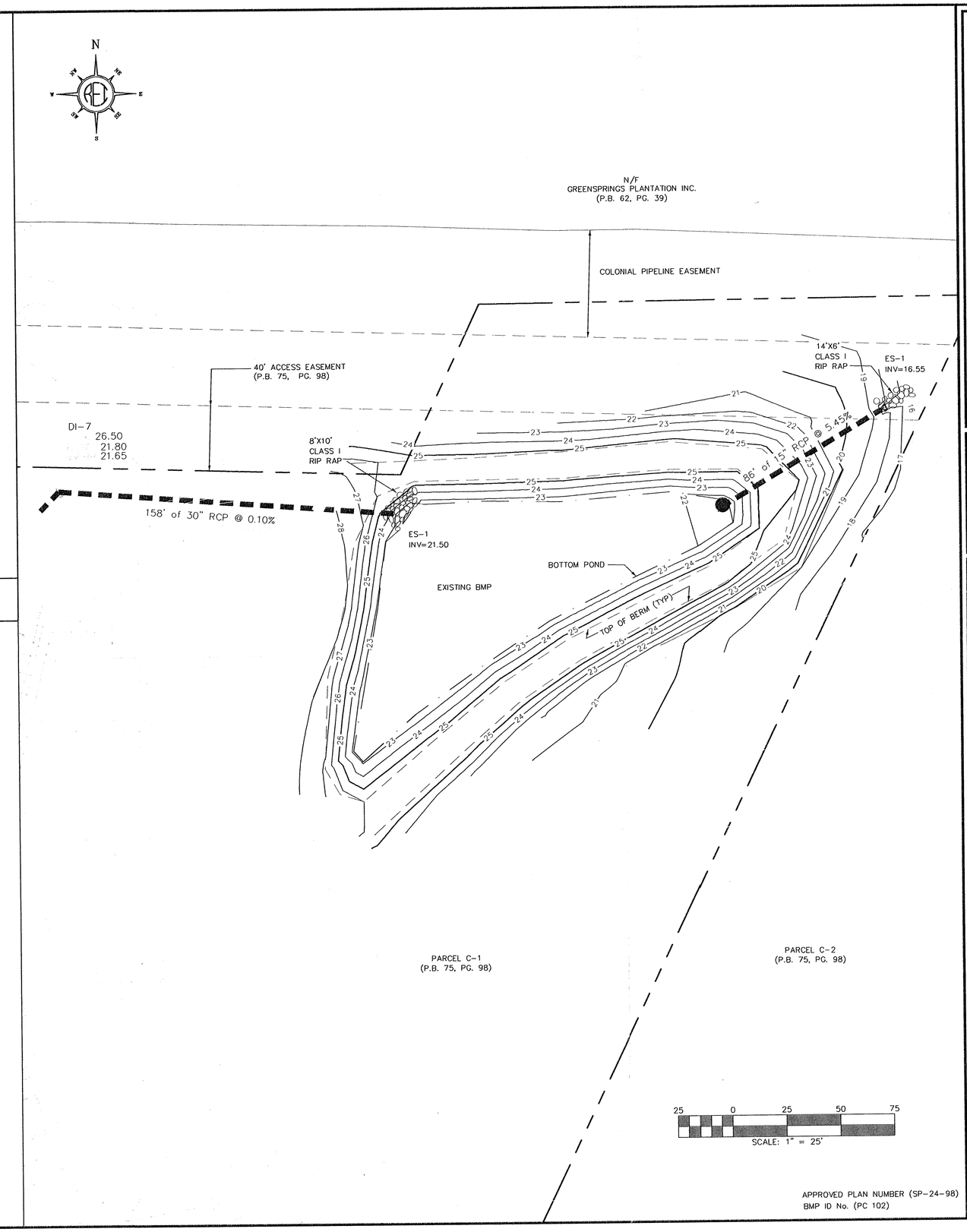
PC102
SP-24-98

11843-B Canon Boulevard ➢ Newport News, Virginia 236060 ➢ Phone: 757-873-4113 Fax: 757-873-4114
5709 Charles City Circle ➢ Richmond, Virginia 23231 ➢ Phone: 804-236-3855 Fax: 804-236-3856



DETENTION BASIN OUTLET STRUCTURE

F.B. 163, PG. 47



APPROVED PLAN NUMBER (SP-24-98)
BMP ID No. (PC 102)

Rickmond Engineering, Inc.
Civil Engineering
Environmental Engineering
Land Surveying
1643 Merrimac Trail
Williamsburg, VA 23185
(757)229-1776
Fax No. (757) 229-4683
e-mail: rickmond@tni.net

Designed By:	Drawn By:	Scale:	Date:	Job No.:	File Name:
M.J.B	M.J.B	1"=25'	01/04/01	00171	00171POND

1-4-01

No.	By	Revision	App	Date
1	MCG	REV. PER ENVIRONMENTAL DIV. LTR. DTD 9.11.2000	CBD	01.10.01

GREENSPRINGS PLANTATION COMMERCIAL DEVELOPMENT

RECORD DRAWING OF BMP

BERKLEY DIST. JAMES CITY COUNTY, VIRGINIA

Job Number	Sheet No.
00171	1 OF 1

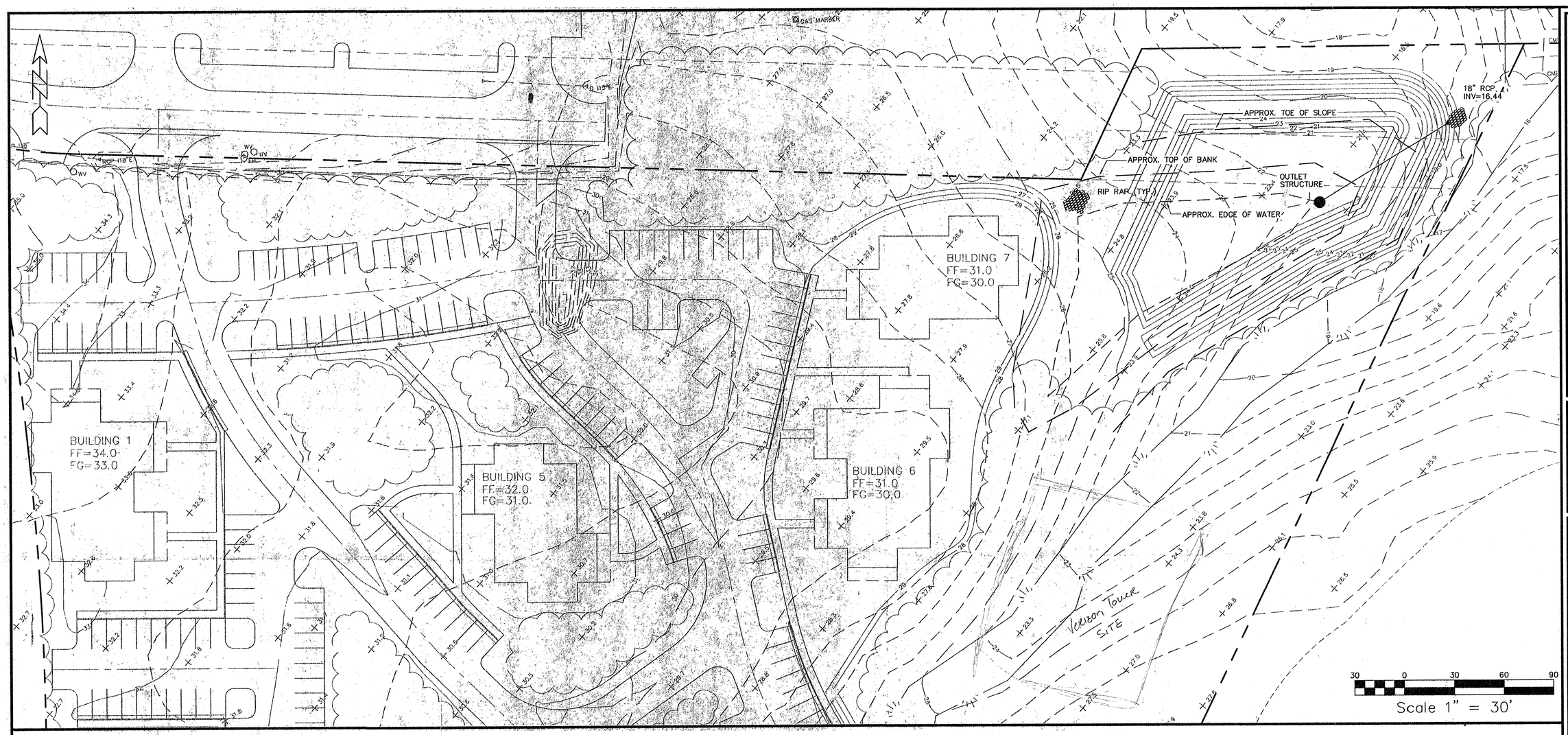
APPROVED JAN 2 8 2001

SP-24-98

PC 102

I:\00171\pond asbuilt\00171pond_asbuilt.dwg, 01/18/01 08:34:38 AM

PC102_GREENSPRINGS_PLANTATION_COMM_DEV - 004



Rickmond Engineering, Inc.
Civil Engineering
Environmental Engineering
Land Surveying
1643 Merrimac Trail
Williamsburg VA 23185
(757)229-1776
Fax No. (757) 229-4683
e-mail: rickmond@mi.net

Designed By:	Drawn By:	Scale:	Date:	Job No.:	File Name:
JBR	RJH	1"=30'	7/5/00	00171	00171POND

PRELIMINARY
For Plan Review Only

No.	By	Revision	App.	Date

GREENSPRINGS PLANTATION
COMMERCIAL DEVELOPMENT

RECORD DRAWING OF BMP
LOCATION
VIRGINIA

Job Number	Sheet No.
00171	C1

Letter of Transmittal	Date: January 18, 2001
Rickmond Engineering, Inc. 1643 Merrimac Trail Williamsburg, VA 23185 Phone: 757-229-1776 Fax: 757-229-4683 Email: rei@rickmond.com www.rickmond.com	Project #: 00171 SP-24-98 PC102 Project Title: Greensprings Plantation Record Drawing of BMP

To: James City County Service Authority

Address: P.O. Box 8784

City/State/Zip: Williamsburg, VA 23187-8784

Attn: Mr. B. Keith Letchworth, Engineering Technician

Phone No.: 253-6805

We are sending you (X) Attached ( ) Under Separate Cover _____

The following items:

( ) Shop Drawings ( ) Prints ( ) Samples ( ) Specifications ( ) Copy of Letter
( ) Change Order (X) Other Record Drawings (Mylar included)

Copies	Date	# of Pages	Description
1		2	Blueline of Sheet 1 (including Mylar)

These are transmitted as checked below:

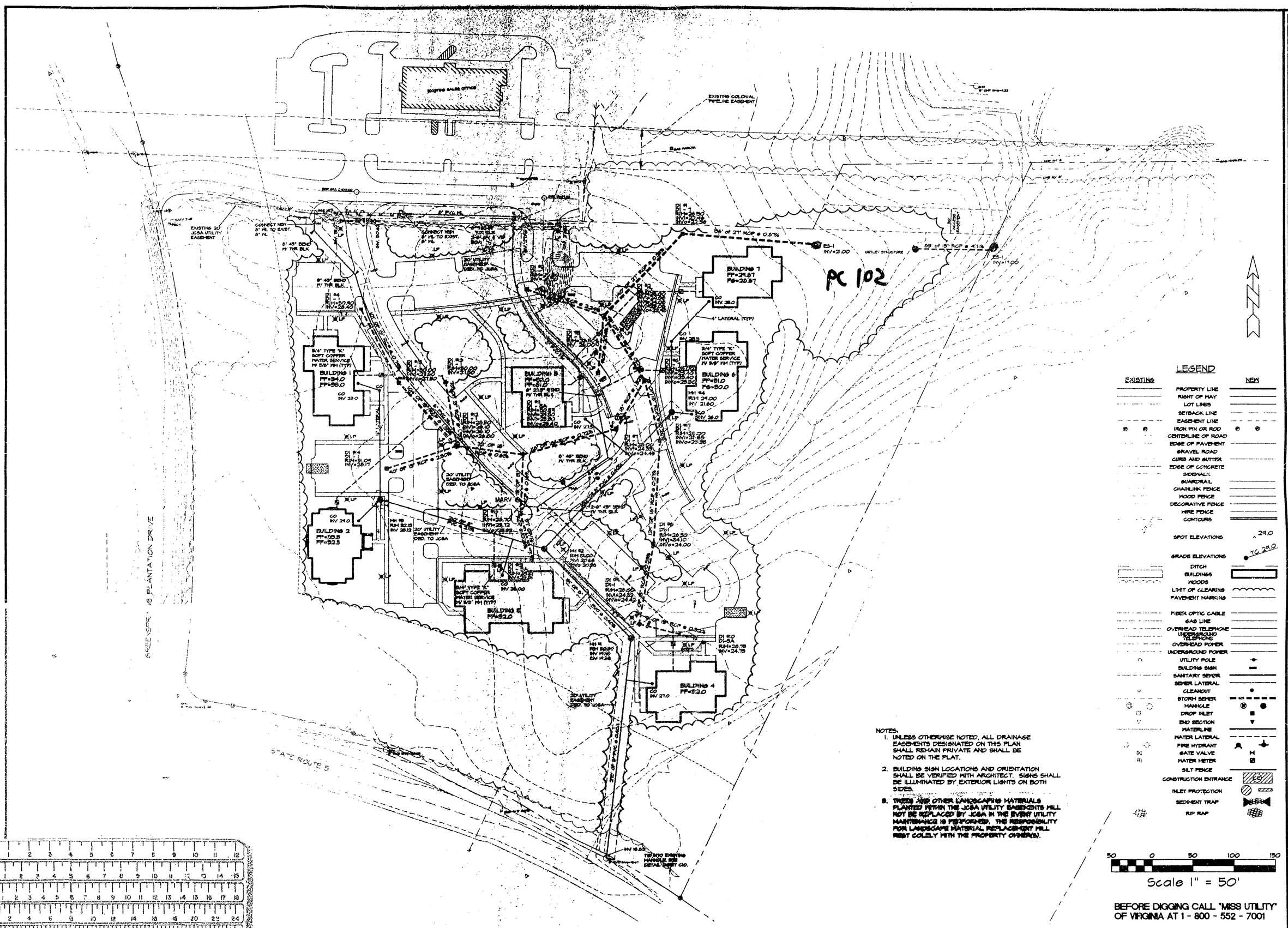
(X) For Approval ( ) For Your Use ( ) As Requested (X) For Review and Comment
( ) Other _____

Remarks: Should you have any questions or require additional information, please contact our office.

Copy to:

Signed: _____
Craig B. Davenport, L.S.
Survey Department Manager

J:\REI\Projects\2000\00171,LOTtoLetchworth,CBD,Jan'01.doc



NOTES:

1. UNLESS OTHERWISE NOTED, ALL DRAINAGE EASEMENTS DESIGNATED ON THIS PLAN SHALL REMAIN PRIVATE AND SHALL BE NOTED ON THE PLAT.
2. BUILDING SIGN LOCATIONS AND ORIENTATION SHALL BE VERIFIED WITH ARCHITECT. SIGNS SHALL BE ILLUMINATED BY EXTERIOR LIGHTS ON BOTH SIDES.
3. TREES AND OTHER LANDSCAPING MATERIALS PLANTED WITHIN THE JCSA UTILITY EASEMENTS WILL NOT BE REPLACED BY JCSA IN THE EVENT UTILITY MAINTENANCE IS PERFORMED. THE RESPONSIBILITY FOR LANDSCAPE MATERIAL REPLACEMENT WILL REST SOLELY WITH THE PROPERTY OWNER(S).

LEGEND

EXISTING		NEW
	PROPERTY LINE	
	RIGHT OF WAY	
	LOT LINES	
	SETBACK LINE	
	EASEMENT LINE	
	IRON PIN OR ROD	
	CENTERLINE OF ROAD	
	EDGE OF PAVEMENT	
	GRAVEL ROAD	
	CURB AND GUTTER	
	EDGE OF CONCRETE	
	SIDEWALK	
	GUARDRAIL	
	CHAINLINK FENCE	
	WOOD FENCE	
	DECORATIVE FENCE	
	WIRE FENCE	
	CONTOURS	
	SPOT ELEVATIONS	× 29.0
	GRADE ELEVATIONS	TG 29.0
	DITCH	
	BUILDINGS	
	WOODS	
	LIMIT OF CLEARING	
	PAVEMENT MARKING	
	FIBER OPTIC CABLE	
	GAS LINE	
	OVERHEAD TELEPHONE	
	UNDERGROUND TELEPHONE	
	OVERHEAD POWER	
	UNDERGROUND POWER	
	UTILITY POLE	
	BUILDING SIGN	
	SANITARY SEWER	
	SEWER LATERAL	
	CLEANOUT	
	STORM SEWER	
	MANHOLE	
	DROP INLET	
	END SECTION	
	WATERLINE	
	WATER LATERAL	
	FIRE HYDRANT	
	GATE VALVE	
	WATER METER	
	SILT FENCE	
	CONSTRUCTION ENTRANCE	
	INLET PROTECTION	
	SEDIMENT TRAP	
	RIP RAP	

50 0 50 100 150

Scale 1" = 50'

BEFORE DIGGING CALL "MISS UTILITY" OF VIRGINIA AT 1 - 800 - 552 - 7001

Rickmond Engineering, Inc.
1643 Merrimac Trail
Williamsburg, VA 23185
(757)229-1776
Fax No. (757) 229-4683
Civil Engineering
Environmental Engineering
Land Surveying
e-mail: rickmond@mi.net

Designed By	Drawn By	Scale	Date	Job No.	File Name
RCS/C.A.N.	C.A.N.	1"=50'	2/25/98	98104	98104UP

COMMONWEALTH OF VIRGINIA
RALPH C. SIMMONS
No. 018288
PROFESSIONAL ENGINEER
9/19/98

No.	By	Revision	App	Date
5	RJH	REV PER JCC LTR DTD 10/5/98	RCS	11/20/98
4	C.A.N.	REVISED PER ENGINEER	RCS	7/30/98
3	BR	COUNTY COMMENTS LTR. DATED 5/22/98	BR	6/24/98
2	RJH	COUNTY COMMENTS LTR. DATED 4-7-98	BR	4/10/98
1	RJH			

GREENSPRINGS PLANTATION COMMERCIAL DEVELOPMENT

UTILITY PLAN

JAMES CITY COUNTY VIRGINIA

Job Number	Sheet No.
98104	C4

4/15

SP. 24. 98

VICINITY MAP
SCALE: 1" = 2,000'

OCT 1998
RECEIVED
PLANNING DEPARTMENT

COUNTY OF JAMES CITY
FINAL SITE PLAN

APPROVALS		DATE
	JD/JS	9.22.98
	VJ/JS	3.5.98
	BMG/JS	9.16.98
	[initials]	10/23/98
	DEC	10/21/98
County Adm.	[initials]	10/23/98
JCSA	DWP/JS	10.22.98
County Eng.	WNB/JS	5.8.98
REA	MS/JS	5.27.98
Other		

GREENSPRINGS PLANTATION COMMERCIAL DEVELOPMENT

JAMES CITY COUNTY, VIRGINIA

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C4 UTILITY PLAN
C5 LANDSCAPE PLAN
C6 LANDSCAPE DETAILS
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C8 STORM SEWER PROFILES
C9 SANITARY SEWER PROFILES
C10 PAVEMENT DETAILS
C11 DRAINAGE DETAILS
C12 E&SC NOTES AND DETAILS
C13 SANITARY SEWER DETAILS
C14 WATER LINE DETAILS
C15 SOILS MAP

STATISTICAL INFORMATION

ZONED	R-4
SITE AREA	13.74 Ac.
TAX MAP NO.	46-1, 1-7
WATER	PUBLIC
SEWER	PUBLIC
DISTURBED AREA	6.72 Ac.
PAVED AREA	2.32 Ac.
BUILDING AREA	38,160SF
TOTAL IMPERVIOUS	3.25 Ac. (24%)
PARKING SPACES	
REQUIRED:	1 SP/250 SF = 153
PROVIDED:	(INCL 7 HC) 236
MAXIMUM BLDG HEIGHT	25'

ROUTE 5 GREENBELT:

THE OWNER SHALL DESIGNATE 150-FOOT GREENBELT BUFFERS ALONG THE PROPERTY'S ROUTE 5 FRONTAGE MEASURED FROM THE EXISTING ROUTE 5 RIGHT-OF-WAY. THE GREENBELT BUFFERS SHALL BE EXCLUSIVE OF ANY LOTS AND, EXCEPT AS SET FORTH BELOW, SHALL BE UNDISTURBED. UTILITIES, DRAINAGE IMPROVEMENTS, COMMUNITY ENTRANCE ROADS AS SHOWN GENERALLY ON THE AMENDED MASTER PLAN (LIMITED TO ONE ENTRANCE FOR RELOCATED ROUTE 614, ONE ENTRANCE TO LAND BAY M-10, AND ONE ENTRANCE TO EACH OF THE PUBLIC USE SITES SHOWN ON THE AMENDED MASTER PLAN), PEDESTRIAN/BICYCLE TRAILS AND SIGNS AS APPROVED BY THE DEVELOPMENT REVIEW COMMITTEE. IN THE PORTIONS OF THE GREENBELT BUFFER LOCATED WITHIN 250 FEET OF THE INTERSECTION OF ROUTE 5 AND LEGACY DRIVE, OWNER MAY:

(I) ENGAGE IN SELECT HAND CLEARING AND TRIMMING OF TREES AND OTHER PLANTS WITH A CALIPER OF THREE INCHES OR LESS.
(II) MAY ENGAGE IN SELECT HAND CLEARING OR TRIMMING OF TREES AND PLANTS WITH A CALIPER OF MORE THAN THREE INCHES WITH THE PRIOR SPECIFIC APPROVAL OF THE DIRECTOR OF PLANNING ON A CASE BY CASE BASIS ON THE CONDITION SUCH TREES OR PLANTS WITH A CALIPER IN EXCESS OF THREE INCHES SO CLEARED ARE REPLACED WITH NEW TREES OR PLANTS WITH A CALIPER IN EXCESS OF THREE INCHES.
(III) MAY PLANT ENHANCED LANDSCAPING, INCLUDING TREES AND SHRUBS.
(IV) INSTALL FENCING, ALL IN ACCORDANCE WITH A LANDSCAPE PLAN APPROVED BY THE DEVELOPMENT REVIEW COMMITTEE AND THE DIRECTOR OF PLANNING.

THE GOAL OF THE PRECEDING SENTENCE IS TO ALLOW THE OWNER TO CREATE A MORE ATTRACTIVE BUFFER THAN CURRENTLY EXISTS THAT ALLOWS PARTIAL VISIBILITY (BUT NOT AN OBSTRUCTED VIEW) OF THE DEVELOPMENT IN ADJACENT LANDBAYS COMPARABLE TO THE VISIBILITY PROVIDED BY THE GREENBELT BUFFER ALONG THE ROUTE 5 FRONTAGE OF THE GOVERNOR'S LAND AT TWO RIVERS DEVELOPMENT. UNLESS OTHERWISE APPROVED BY THE DIRECTOR OF PLANNING, BUILDINGS CONSTRUCTED AFTER THE DATE HEREOF ADJACENT TO THE PORTIONS OF THE GREENBELT BUFFER LOCATED WITHIN 250 FEET OF THE INTERSECTION OF ROUTE 5 AND LEGACY DRIVE SHALL UTILIZE MATERIALS (OTHER THAN ROOFING MATERIALS) OF BRICK AND/OR EARTH TONE (FROM CREAM TO TAN) COLORS EXCEPT DOORS, TRIM AND SHUTTERS MAY BE OF ANY COLOR FROM THE CITY OF WILLIAMSBURG APPROVED COLOR PALETTE.

NEIGHBORHOOD COMMERCIAL CENTER

(A) THE NEIGHBORHOOD COMMERCIAL CENTER SHALL BE LOCATED GENERALLY AS SHOWN ON THE AMENDED MASTER PLAN AND SHALL CONTAIN NO MORE THAN 50,000 SQUARE FEET OF GROSS FLOOR AREA (AS DEFINED IN THE COUNTY ZONING ORDINANCE). WITHIN THE NEIGHBORHOOD COMMERCIAL CENTER NO MORE THAN ONE RETAIL ESTABLISHMENT SHALL HAVE A GROSS FLOOR AREA OF MORE THAN 8,500 SQUARE FEET. THE ONE RETAIL ESTABLISHMENT WHICH MAY EXCEED 8,500 FEET SHALL HAVE A GROSS FLOOR AREA OF NO MORE THAN 12,000 SQUARE FEET. NO BUILDING WITHIN THE NEIGHBORHOOD COMMERCIAL CENTER SHALL HAVE A HEIGHT IN EXCESS OF 35 FEET FROM GRADE UNLESS OTHERWISE APPROVED BY THE PLANNING COMMISSION.
(B) WITHIN THE NEIGHBORHOOD COMMERCIAL CENTER THE FOLLOWING USES, OTHERWISE PERMITTED WITHIN THE R-4 ZONING DISTRICT, SHALL NOT BE PERMITTED: ANY OFFICE USE WITH OUTDOOR EQUIPMENT STORAGE, AND HOTEL/MOTEL/TOURIST HOMES/ CONVENTION CENTERS.

REALIGNED ROUTE 614 AND FUTURE RIGHT-OF-WAY GREENBELT

THE OWNER SHALL DESIGNATE A GREENBELT BUFFER ALONG REALIGNED ROUTE 614 AND ALONG THE RIGHT-OF-WAY SHOWN ON THE AMENDED MASTER PLAN AS MONTICELLO AVENUE MEASURED FROM A LINE 60 FEET FROM THE CENTER LINE OF REALIGNED ROUTE 614 AND MONTICELLO AVENUE. SUCH LINE SHALL HEREINAFTER BE CALLED THE "GREENBELT LINE". NO STRUCTURE EXCEPT THE ROAD AND RELATED IMPROVEMENTS IN LAND BAY S-3 SHOWN ON THE AMENDED MASTER PLAN AND THE EXISTING MAINTENANCE FACILITY LOCATED IN LAND BAY M-8, TOGETHER WITH ANY EXPANSIONS THEREOF SO LONG AS ANY SUCH EXPANSION IS LOCATED NO CLOSER TO THE GREENBELT LINE THAN THE EXISTING MAINTENANCE FACILITY AND ANY ROAD OR CART PATHS NECESSARY FOR ACCESS FROM THE FACILITY TO LEGACY DRIVE AND THE TIMESHARE BUILDINGS AND DEVELOPMENT WITHIN THE M LAND BAYS MAY BE LOCATED WITHIN 150 FEET OF THE GREENBELT LINE. WHERE THE ROAD IN LAND BAY S-3 PARALLELS REALIGNED ROUTE 614, THE GREENBELT BUFFER SHALL BE NO LESS THAN 115 FEET FROM THE GREENBELT LINE OF REALIGNED ROUTE 614. WHERE GOLF COURSE FAIRWAYS ABUT RELOCATED ROUTE 614 OR MONTICELLO AVENUE, THE GREENBELT BUFFER SHALL HAVE A MINIMUM WIDTH OF 75 FEET. WHERE TEE BOXES OR THE PUTTING SURFACE OF GREENS ARE LOCATED WITHIN 100 FEET OF THE GREENBELT LINE, ENHANCED LANDSCAPING APPROVED BY THE DEVELOPMENT REVIEW COMMITTE IN THE GOLF COURSE SITE PLAN REVIEW PROCESS SHALL BE PROVIDED BETWEEN THE TEE OR GREEN AND THE 75 FOOT GREENBELT BUFFER. IN ALL OTHER AREAS, A MINIMUM 150 FOOT BUFFER SHALL BE MAINTAINED. WHERE GOLF COURSE FAIRWAYS ABUT REALIGNED ROUTE 614 OR MONTICELLO AVENUE, SELECTIVE HAND THINNING OF TREES (BUT NO REMOVAL OF STUMPS) SHALL BE PERMITTED AS PART OF A LANDSCAPING PLAN APPROVED BY THE DEVELOPMENT REVIEW COMMITTEE. WITHIN THIS GREENBELT THE LAND SHALL BE EXCLUSIVE OF ANY LOTS AND UNDISTURBED EXCEPT FOR APPROVED UTILITIES, STORMWATER MANAGEMENT IMPROVEMENTS, ENTRANCE ROADS TO LAND BAYS AS SHOWN GENERALLY ON THE AMENDED MASTER PLAN, PEDESTRIAN/BICYCLE TRAILS GOLF CART PATH CROSSINGS AND TUNNELS AND PROJECT SIGNS AS APPROVED BY THE DEVELOPMENT REVIEW COMMITTEE. NO SIGNS OTHER THAN PROJECT SIGNS AND THOSE REQUESTED BY VDOT AND/OR THE COUNTY SHALL BE ALLOWED. IN THE PORTIONS OF THE GREENBELT BUFFER LOCATED WITHIN 250 FEET OF THE INTERSECTION OF ROUTE 5 AND LEGACY DRIVE, OWNER MAY;

(I) ENGAGE IN SELECT HAND CLEARING AND TRIMMING OF TREES AND OTHER PLANTS WITH A CALIPER OF THREE INCHES OR LESS.
(II) MAY ENGAGE IN SELECT HAND CLEARING OR TEIMMING OF TREES AND PLANTS WITH A CALIPER OF MORE THAN THREE INCHES WITH THE PRIOR SPECIFIC APPROVAL OF THE DIRECTOR OF PLANNING ON A CASE BY CASE BASIS ON THE CONDITION SUCH TREES OR PLANTS WITH A CALIPER IN EXCESS OF THREE INCHES.
(III) MAY PLANT ENHANCED LANDSCAPING, INCLUDING TREES AND SHRUBS.
(IV) INSTALL FENCING, ALL IN ACCORDANCE WITH A LANDSCAPE PLAN APPROVED BY THE DEVELOPMENT REVIEW COMMITTEE AND THE DIRECTOR OF PLANNING.

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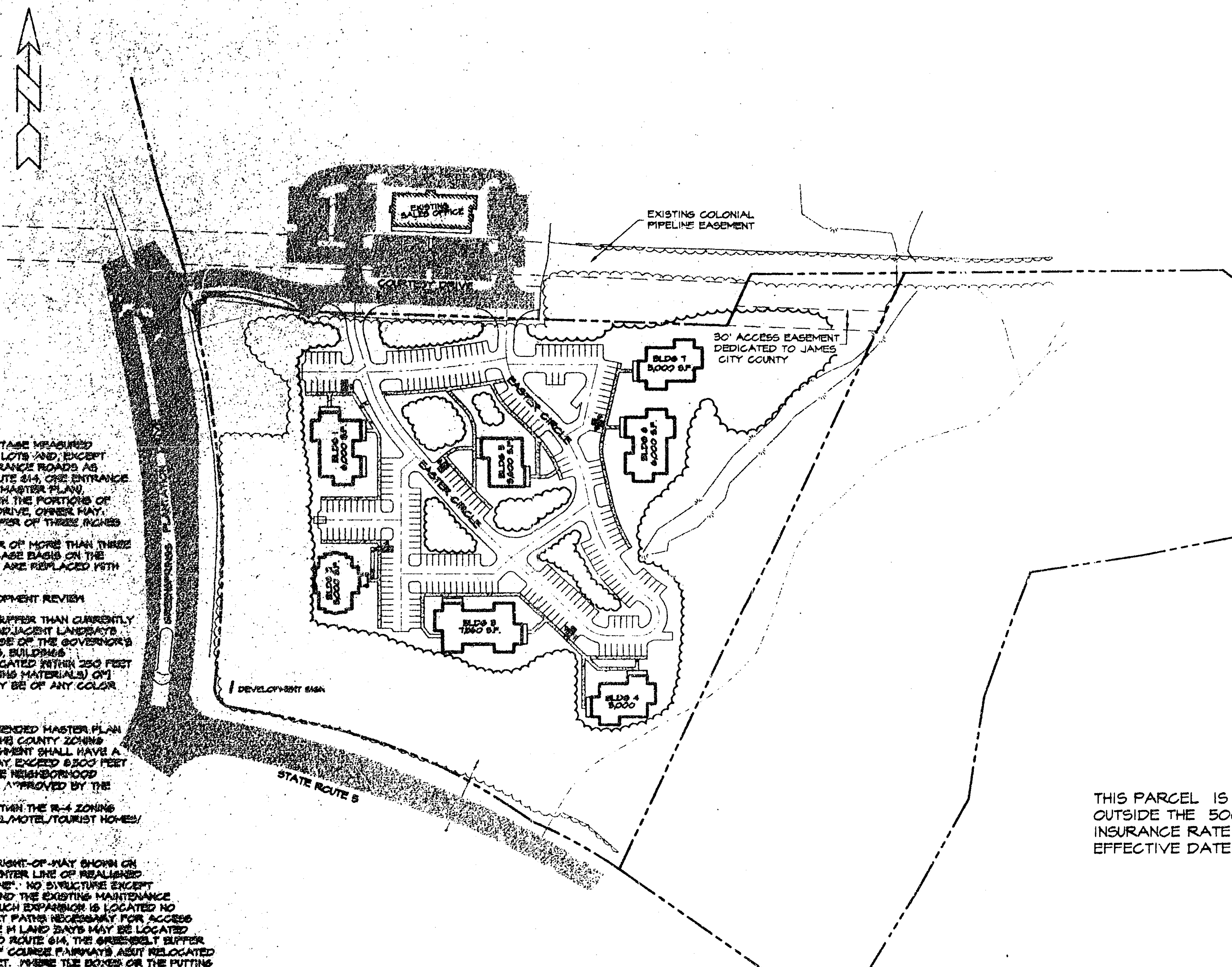

SITE PLAN

100 0 100 200 300

Scale 1" = 100'

THIS PARCEL IS IN FLOODPLAIN ZONE X (DETERMINED TO BE OUTSIDE THE 500 YEAR FLOODPLAIN) AS SHOWN ON FLOOD INSURANCE RATE MAP COMMUNITY-PANEL NUMBER 510201 0035 B, EFFECTIVE DATE FEBRUARY 6, 1991.

No.	By	Revision	App.	Date
5	RJH	REV PER JCC LTR DTD 10/5/98	RCS	9.28.98
4	RJH	REVISED PER ENGINEER	RCS	7/31/98
3	RJH	REVISED PER COUNTY REQUEST	RCS	7/7/98
2	JBR	COUNTY COMMENTS LTR. DATED 5/22/98	JBR	5/29/98
1	RJH	COUNTY COMMENTS LTR. DATED 4-7-98	JBR	4/10/98

BEFORE DIGGING CALL "MISS UTILITY" OF VIRGINIA AT 1 - 800 - 552 - 7001

OWNER/DEVELOPER

BUSH CONSTRUCTION
4029 IRONBOUND ROAD, SUITE 200
WILLIAMSBURG, VIRGINIA 23188

COMMONWEALTH OF VIRGINIA
RALPH G. SIMMONS
No.018289
PROFESSIONAL ENGINEER

Rickmond Engineering, Inc.
1643 Merrimac Trail
Williamsburg VA 23185
(757)229-1776
Fax No. (757) 229-4683
Civil Engineering
Environmental Engineering
Land Surveying
e-mail: rickmond@tni.net

Date: 2/25/98 Project No: 98104/FINAL File: 98104CVR Sheet No: C1

(46-1)(01-0-0007-)
SP-24-98
Greensprings Plantation Commerical Development

(46-1) (01-7) SP-24-98 Greensprings Plantation Commercial Development 1/15

PC 102

GREENSPRINGS PLANTATION COMMERCIAL DEVELOPMENT

EROSION AND SEDIMENT CONTROL NARRATIVE AND DRAINAGE CALCULATIONS

Rickmond

Prepared by:
Rickmond Engineering, Inc.
1643 Merrimac Trail
Williamsburg, VA 23185
(757) 229-1776

COMMONWEALTH OF VIRGINIA
RALPH C. SIMMONS
No.018289
9/9/98
PROFESSIONAL ENGINEER

February 25, 1998
Rev: April 4, 1998
Rev: July 30, 1998
Project No. 98104

J:\REI\PROJECTS\1998\98104DRC.225

RECORD COMPS
9/11/00 SJT.

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- Storm Sewer Design Computations
- Storm Sewer Summary Report
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  - 10-year storm
  - ~~100-year storm~~

Extended Dry Detention Basin Design
- Reservoir Report
- Outlet Structure Report
- Hydrograph Reports
  - Existing Flow to Basin
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    - 10-year storm
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Temporary Sediment Basin Design

Narrative

Project Description

The project consists of 7 office buildings with parking lots, sidewalks, waterlines, sanitary sewer lines, and storm sewer lines. The total disturbed area is 6.72 acres.

Existing Conditions

Currently the site is wooded and draining to Powhatan Swamp. The site falls from approximately elevation 34 near the intersection of Route 5 and Route 614 to elevation 16 at the northeast corner of the site near the Swamp.

Adjacent Areas

The site is bounded on the north by the Sales Office for Greensprings Plantation, on the east by land dedicated to James City County for public use, on the south by Route 5 and on the west by Route 614.

Off-site Areas

The only off-site area to be disturbed is at the discretion of the Contractor. Construction will generate some excess material which the Contractor is responsible for wasting off-site in a lawful manner.

Soils

The on-site soils consist of Craven-Uchee complex (11C), Newflat silt loam (23), and Peawick silt loam (27).

Craven soils are deep and moderately well drained. Typically, the surface layer of this soil is dark grayish brown fine sandy loam about 4 inches thick. The subsurface layer is pale olive fine sandy loam 5 inches thick. The subsoil extends to a depth of 42 inches. It is yellowish brown sandy clay loam. The substratum to a depth of at least 72 inches is brownish yellow fine sandy loam to light gray loamy fine sand. The erosion hazard is slight.

Uchee soils are deep and well drained. Typically, the surface layer of this soil is dark grayish brown loamy fine sandy about 5 inches thick. The subsurface layers are light yellowish brown loamy fine sand about 6 inches thick and very pale brown loamy fine sand about 13 inches thick. The subsoil extends to a depth of 56 inches. It is strong brown sandy clay loam. The substratum to a depth of at least 65 inches is variegated yellowish red, yellowish brown, very pale brown, light gray, and strong brown strata of sandy loam and sandy clay loam. The erosion hazard is slight.

Newflat soils are deep and somewhat poorly drained. Typically, the surface layer of this soil is

dark grayish brown silt loam about 2 inches thick. The subsurface layer is light yellowish brown silt loam 6 inches thick. The subsoil extends to a depth of at least 80 inches. It is pale brown silty clay loam to light olive brown clay to olive gray clay to gray clay to light gray clay. The erosion hazard is slight.

Peawick soils are deep and moderately well drained. Typically, the surface layer of this soil is dark grayish brown silty clay loam about 2 inches thick. The subsoil extends to a depth of at least 99 inches. It is light yellowish brown silty clay loam to yellowish brown silty clay to mottled yellowish brown, gray, and strong brown silty clay to gray silty clay to gray clay. The erosion hazard is slight.

The previous soils information was taken from "Soil Survey of James City and York Counties and the City of Williamsburg Virginia", by the United State Department of Agriculture Soil Conservation Service, issued April 1985.

Critical Erosion Areas

The critical erosion area on this site is the outfall pipe from the basin. This outfall pipe discharges to areas containing wetlands which would experience serious degradation if sediment was to leave the site and enter these areas. To prevent sediment from entering these areas it is imperative that the contractor install all erosion and sediment control measures shown on these plans before any land disturbing activities commence. The contractor should take additional care in constructing the basin by installing the silt fence first. Regular inspection and maintenance is also required for all erosion and sediment control measures to keep them functioning as designed.

Erosion and Sediment Control Measures

The following E&S measures are used on-site:

1. A construction entrance is installed at all entrances to reduce the amount of mud transported onto paved public roads by motor vehicles and runoff.

2. Silt fence is placed around the limits of clearing to intercept and detain small amounts of sediment from disturbed areas during construction operations.

3. Inlet protection is installed at all drainage inlets to prevent sediment from entering the storm drainage systems prior to permanent stabilization for the disturbed areas.

4. The permanent detention basin structure is modified to function as a temporary sediment basin during construction to detain sediment laden runoff from upstream disturbed areas long enough to allow the majority of the sediment to settle out.

Permanent Stabilization

All areas disturbed by construction shall be stabilized with permanent seeding immediately following finish grading. Seeding shall be done with Kentucky 31 Tall Fescue according to Std. and Spec. 3.32, PERMANENT SEEDING, of the handbook. Mulch (straw or fiber) will be used to protect the site from erosion and to allow seed to germinate properly. In all seeding operations, seed, fertilizer and lime will be applied prior to mulching.

Stormwater Management

The development's Chesapeake Bay Preservation Act (CBPA) requirements are met due to the credits established elsewhere in the development. This project will construct a dry detention basin to meet the requirements of stormwater management for the proposed construction. The design of this basin is described in detail later in this report.

Maintenance

In general, all erosion and sediment control measures will be checked daily and after each significant rainfall. The following items will be checked in particular:

1. The sediment basin will be checked regularly and cleaned out when the sediment reaches the limit elevation.

2. The gravel outlets will be checked regularly for sediment buildup which will prevent drainage. If the gravel is clogged by sediment, it shall be removed and cleaned or replaced.

3. The silt fence barrier will be checked regularly for undermining or deterioration of the fabric. Sediment shall be removed when the level for sediment deposition reaches half way to the barrier.

4. The seeded areas will be checked regularly to ensure that a good stand is maintained. Areas should be fertilized and reseeded as needed.

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1643 A Merrimac Trail
Williamsburg, Virginia 23185-5624
(757) 229-1776 or (757) 898-4149
Fax Number (757) 229-4683

JOB 98104
SHEET NO. _____ OF _____
CALCULATED BY JBR DATE 2-24-98
CHECKED BY _____ DATE _____
SCALE _____

Drainage Area Calculations

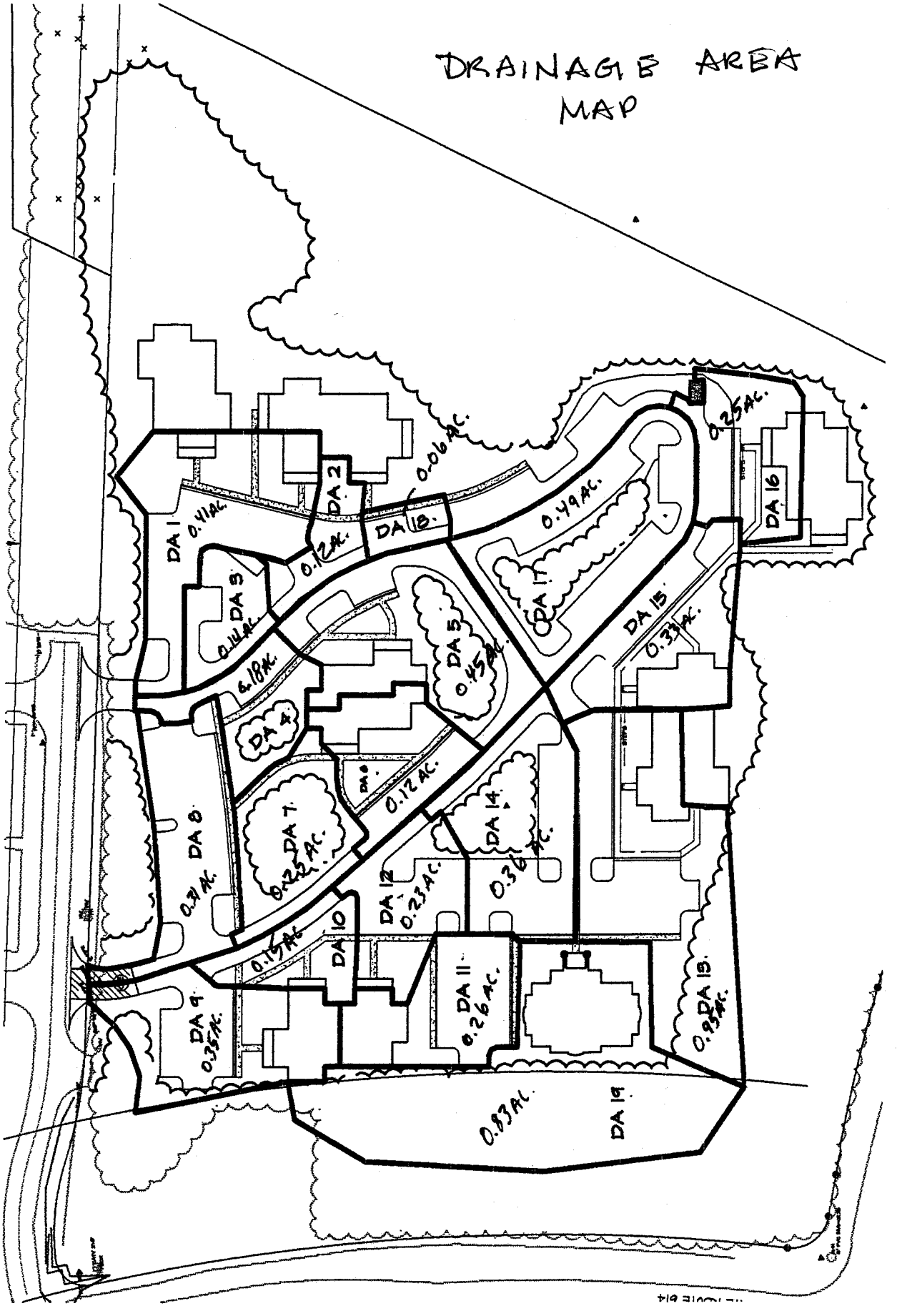
		A		C		CA	
①	Pvmt	0.29 AC	×	0.9	=	0.26	CA / A = CW
	Grass	0.22 AC	×	0.2	=	0.04	
	Woods	0		0.15			
		0.51 AC				0.30	C_W = 0.59

70' @ 0.5% grass — 19 min
35' @ 1.05% pvmt — 1 min
35' @ 5% grass — 7
T_c = 27 min

②	Pvmt	0.33 AC	×	0.9	=	0.30	
	Grass	0.17 AC	×	0.2	=	0.03	
	Woods	0.12 AC	×	0.15	=	0.02	
		0.62				0.35	C_W = 0.56

175' @ 0.75% grass — T_c = 26 min

DRAINAGE AREA MAP



I:\98104\RON Thu Jul 23 10:05:43 1998

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JOB GREENSPRINGS COMMERCIAL
SHEET NO. 1 DI#1 OF 19
CALCULATED BY DATE 7/22/98
CHECKED BY DATE
SCALE

DA- 1

c= 0.63 (CA/A)
A= 0.41 Ac:

	C	A	CA
PAVE	0.9	0.26	0.23
GRASS	0.2	0.15	0.03
WOODS	0.15		
	0.41 Ac		0.26

OVERLAND FLOW

L= 180 ft.
S= 2.29 %
Tc= 9 min.

CHANNEL FLOW

H= — ft.
L= — ft.
Tc= — min.

Tc= 26 min.

i_{10}= 6.1 in/hr

Q=CAi=(0.63)(0.41 Ac.)(6.1 in/hr)(C_f 1.0)

C_f for storms 25 yr+
(VDOT Manual Pg. 1-11)

Q= 1.58 cfs

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JOB GREENSPRINGS COMMERCIAL
SHEET NO. 3 DI #2 OF 19
CALCULATED BY DATE 7/22/98
CHECKED BY DATE
SCALE

DA- 3

c= 0.50
A= 0.14 Ac:

	C	A	CA
PAVE	0.9	0.06	0.05
GRASS	0.2	0.08	0.02
WOODS	0.15		
		0.14 Ac	0.07

OVERLAND FLOW

L= 85 ft.
S= 3.08 % 30.62 - 28.50
Tc= 8 min.

CHANNEL FLOW

H= - ft.
L= - ft.
Tc= - min.

Tc= 8 min.

i_{10}= 6.2 in/hr

Q=CAi=(0.50)(0.14 Ac.)(6.2 in/hr)(C_f 1.0)

C_f for storms 25 yr+
(VDOT Manual Pg. 1-11)

Q= 0.43 cfs

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JOB GREENSPRINGS COMMERCIAL
SHEET NO. 8 DI#3 OF 19
CALCULATED BY DATE 7/22/98
CHECKED BY DATE
SCALE

DA- 8

c= 1.03
A= 0.31 Ac:

	C	A	CA
PAVE	0.9	0.27	0.24
GRASS	0.2	0.04	0.08
WOODS	0.15		
		0.31 AC	0.32

OVERLAND FLOW

L= 160 ft.
S= 2.75 % 33.20 - 28.80
Tc= 5.0 min.

CHANNEL FLOW

H= ____ ft.
L= ____ ft.
Tc= ____ min.

Tc= ____ min.

i_{10}= 7.2 in/hr

Q=CAi=(1.03)(0.31 Ac.)(7.2 in/hr)(C_f 1.0)

C_f for storms 25 yr+
(VDOT Manual Pg. 1-11)

Q= 2.30 cfs

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JOB GREENSPRINGS COMMERCIAL
SHEET NO. 9 DI#4 OF 19
CALCULATED BY DATE 7/22/98
CHECKED BY DATE
SCALE

DA- 9

		C	A	CA
c= 0.60	PAVE	0.9	0.21	0.19
A= 0.35 Ac:	GRASS	0.2	0.14	0.03
OVERLAND FLOW	WOODS	0.15		
			0.35 Ac	0.21

L= 120 ft.
S= 2.10 % 33.20 - 32.30
Tc= 7.75 min.

CHANNEL FLOW

H= — ft.
L= — ft.
Tc= — min.

Tc= 7.75 min.

i_{10}= 6.5 in/hr

Q=CAi=(0.60)(0.35 Ac.)(6.5 in/hr)(C_f 1.00)

C_f for storms 25 yr+
(VDOT Manual Pg. 1-11)

Q= 1.37 cfs

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JOB GREENSPRINGS COMMERCIAL
SHEET NO. 4 DI#5 OF 19
CALCULATED BY DATE 7/22/98
CHECKED BY DATE
SCALE

DA- 4

c= 0.56 Ac
A= 0.18 Ac:

	C	A	CA
PAVE	0.9	0.09	0.08
GRASS	0.2	0.03	0.01
WOODS	0.15	0.06	0.01
		0.18	0.10

OVERLAND FLOW

L= 110 ft.
S= 0.50 % 30.74 - 30.19
Tc= 11.5 min.

CHANNEL FLOW

H= 0.08 ft.
L= 30 ft. 30.19 - 30.11
Tc= 2 min.

Tc= 13.5 min.

i_{10}= 5.4 in/hr

Q=CAi=(0.56)(0.18 Ac.)(5.4 in/hr)(C_f 1.0) C_f for storms 25 yr+ (VDOT Manual Pg. 1-11)

Q= 0.54 cfs

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JOB GREENSPRINGS COMMERCIAL
SHEET NO. 2 DI#6 OF 19
CALCULATED BY _____ DATE 7/22/98
CHECKED BY _____ DATE _____
SCALE _____

DA- 2

c= 0.42
A= 0.12 Ac:

	C	A	CA
PAVE	0.9	0.05	0.04
GRASS	0.2	0.07	0.01
WOODS	0.15		
		0.12 Ac	= 0.05

OVERLAND FLOW

L= 65 ft.
S= 3.07 %
Tc= 8.5 min.

CHANNEL FLOW

H= — ft.
L= — ft.
Tc= — min.

Tc= 8.5 min.

i_{10}= 6.4 in/hr

Q=CAi=(0.42)(0.12 Ac.)(6.4 in/hr)(C_f 1.00)

C_f for storms 25 yr+
(VDOT Manual Pg. 1-11)

Q= 0.32 cfs

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JOB GREENSPRINGS COMMERCIAL
SHEET NO. 5 DI#7 OF 19
CALCULATED BY DATE 7/22/98
CHECKED BY DATE
SCALE

DA- 5

c= 0.26
A= 0.45 Ac:

	C	A	CA
PAVE	0.9	0.25	0.23
GRASS	0.2	0.11	0.02
WOODS	0.15	0.09	0.01
		0.45 Ac	0.26

OVERLAND FLOW

L= 110 ft.
S= 2.48 % 30.23 - 27.50
Tc= 15 min.

CHANNEL FLOW

H= / ft.
L= / ft.
Tc= / min.

Tc= 15 min.

i_{10}= 7.2 in/hr

Q=CAi=(0.26)(0.45 Ac.)(5.1 in/hr)(C_f 1.0)

C_f for storms 25 yr+
(VDOT Manual Pg. 1-11)

Q= 0.60 cfs

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JOB GREENSPRINGS COMMERCIAL
SHEET NO. 17 D1#8 OF 19
CALCULATED BY
DATE 7/22/98
CHECKED BY
DATE
SCALE

DA- 17

c= 0.59
A= 0.49 Ac:

	C	A	CA
PAVE	0.9	0.28	0.25
GRASS	0.2	0.11	0.02
WOODS	0.15	0.10	0.02
		0.49 Ac	0.29

OVERLAND FLOW

L= 135 ft.
S= 2.76 % 30.23 - 26.50
Tc= 8.2 min.

CHANNEL FLOW

H= - ft.
L= - ft.
Tc= - min.

Tc= 8.2 min.

i_{10}= 6.3 in/hr

Q=CAi=(0.59)(0.49 Ac.)(6.3 in/hr)(C_f 1.0)

C_f for storms 25 yr+
(VDOT Manual Pg. 1-11)

Q= 1.82 cfs

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JOB GREENSPRINGS COMMERCIAL
SHEET NO. 15 DI#9 OF 19
CALCULATED BY DATE 7/22/98
CHECKED BY DATE
SCALE

DA- 15

	C	A	CA
PAVE	0.9	0.18	0.16
GRASS	0.2	0.14	0.03
WOODS	0.15	0.01	0.01
		0.33 ac	0.22

c= 0.67
A= 0.33 Ac:

OVERLAND FLOW

L= 80 ft.
S= 1.72 % 30.27 - 29.84 Y. 25
Tc= 6.5 min.

CHANNEL FLOW

H= 0.5 ft.
L= 108 ft. 29.62 29.12
Tc= 2 min.

Tc= 8.5 min.

i_{10}= 6.4 in/hr

Q=CAi=(0.67)(0.33 Ac.)(6.4 in/hr)(C_f 1.00) C_f for storms 25 yr+ (VDOT Manual Pg. 1-11)

Q= 1.42 cfs

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JOB GREENSPRINGS COMMERCIAL
SHEET NO. 16 DI#10 OF 19
CALCULATED BY DATE 7/22/98
CHECKED BY DATE
SCALE

DA- 16

c= 0.56
A= 0.25 Ac:

	C	A	CA
PAVE	0.92	0.12	0.11
GRASS	0.2	0.13	0.03
WOODS	0.15		
		0.25 Ac	0.14

OVERLAND FLOW

L= 80' ft.
S= 2.81 % 3100 - 2875
Tc= 7.25 min.

CHANNEL FLOW

H= - ft.
L= - ft.
Tc= - min.

Tc= 7.25 min.

i_{10}= 5.1 in/hr

Q=CAi=(0.56)(0.25 Ac.)(5.1 in/hr)(C_f 1.00)

C_f for storms 25 yr+
(VDOT Manual Pg. 1-11)

Q= 0.71 cfs

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JOB GREENSPRINGS COMMERCIAL
SHEET NO. 6 DI#11 OF 19
CALCULATED BY DATE 7/22/98
CHECKED BY DATE
SCALE

DA- 6

c= 0.50
A= 0.12 Ac:

	C	A	CA
PAVE	0.9	0.06	0.05
GRASS	0.2	0.06	0.01
WOODS	0.15		
		0.12 Ac	0.06

OVERLAND FLOW

L= 60 ft.
S= 0.33 % 31.00 - 30.80
Tc= 10.2 min.

CHANNEL FLOW

H= 0.50 ft. 30.80 - 30.30
L= 85 ft.
Tc= 2 min.

Tc= 12.2 min.

i_{10}= 5.5 in/hr

Q=CAi=(0.5)(0.12 Ac.)(5.5 in/hr)(C_f 1.00) C_f for storms 25 yr+ (VDOT Manual Pg. 1-11)

Q= 0.33 cfs

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JOB GREENSPRINGS COMMERCIAL
SHEET NO. 12 DI#12 OF 19
CALCULATED BY DATE 7/22/98
CHECKED BY DATE
SCALE

DA- 12

c= 0.70
A= 0.23 Ac:

	C	A	CA
PAVE	0.9	0.14	0.13
GRASS	0.2	0.08	0.02
WOODS	0.15	0.01	0.01
		0.23 Ac	0.16

OVERLAND FLOW

L= 140 ft.
S= 39.3 % 34.00 - 28.50
Tc= 6.5 min.

CHANNEL FLOW

H= / ft.
L= / ft.
Tc= / min.

Tc= 6.5 min.

i_{10}= 6.7 in/hr

Q=CAi=(0.70)(0.23 Ac.)(6.7 in/hr)(C_f 1.0) C_f for storms 25 yr+ (VDOT Manual Pg. 1-11)

Q= 1.08 cfs

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JOB GREENSPRINGS COMMERCIAL
SHEET NO. 10 DI#13 OF 19
CALCULATED BY DATE 7/22/98
CHECKED BY DATE
SCALE

DA- 10

	C	A	CA
PAVE	0.9	0.06	0.05
GRASS	0.2	0.09	0.02
WOODS	0.15	—	—
		0.15 AC	0.07

c= 0.47
A= 0.15 Ac:

OVERLAND FLOW

L= 45 ft. 33.22 - 31.05
S= 4.82 %
Tc= 6.5 min.

CHANNEL FLOW

H= 1.05 ft. 31.05 - 30.00
L= 95 ft.
Tc= 1.5 min.

Tc= 8.0 min.

i_{10}= 6.2 in/hr

Q=CAi=(0.47)(0.15 Ac.)(6.2 in/hr)(C_f 1.0) C_f for storms 25 yr+ (VDOT Manual Pg. 1-11)

Q= 0.44 cfs

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JOB GREENSPRINGS COMMERCIAL
SHEET NO. 11 DI #14 OF 19
CALCULATED BY DATE 7/22/98
CHECKED BY DATE
SCALE

DA- 11

c= 0.81
A= 0.26 Ac:

	C	A	CA
PAVE	0.9	0.22	0.20
GRASS	0.2	0.04	0.01
WOODS	0.15	-	-
		0.26Ac	0.21

OVERLAND FLOW

L= 135 ft.
S= 1.44 % 34.00 - 32.05
Tc= 6.25 min.

CHANNEL FLOW

H= ✓ ft.
L= ✓ ft.
Tc= ✓ min.

Tc= 6.25 min.

i_{10}= 6.9 in/hr

Q=CAi=(0.81)(0.26 Ac.)(6.9 in/hr)(C_f 1.0)

C_f for storms 25 yr+
(VDOT Manual Pg. 1-11)

Q= 1.45 cfs

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JOB GREENSPRINGS COMMERCIAL
SHEET NO. 13 DI#15 OF 19
CALCULATED BY DATE 7/22/98
CHECKED BY DATE
SCALE

DA- 13

c= 0.44
A= 0.95 Ac:

	C	A	CA
PAVE	0.9	0.35	0.32
GRASS	0.2	0.25	0.05
WOODS	0.15	0.35	0.05
		0.95 Ac	0.42

OVERLAND FLOW

L= 185 ft.
S= 1.74 % 33.7 - 30.48
Tc= 13 min.

CHANNEL FLOW

H= 0.48 ft. 30.48 - 30.00
L= 115 ft.
Tc= min.

Tc= 3.5 min.

i_{10}= 16.5 in/hr

Q=CAi=(0.44)(0.95 Ac.)(4.9 in/hr)(C_f 1.0)

C_f for storms 25 yr+
(VDOT Manual Pg. 1-11)

Q= 2.05 cfs

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JOB GREENSPRINGS COMMERCIAL
SHEET NO. 14 DI#16 OF 19
CALCULATED BY DATE 7/22/98
CHECKED BY DATE
SCALE

DA- 14

c= 0.42
A= 0.36 Ac:

	C	A	CA
PAVE	0.9	0.12	0.11
GRASS	0.2	0.15	0.03
WOODS	0.15	0.09	0.01
		0.36 AC	0.15

OVERLAND FLOW

L= 160 ft.
S= 2.01 % 31.91 - 28.70
Tc= 12.3 min.

CHANNEL FLOW

H= — ft.
L= — ft.
Tc= — min.

Tc= 12.3 min.

i_{10}= 5.5 in/hr

Q=CAi=(0.42)(0.36 Ac.)(5.5 in/hr)(C_f 1.0)

C_f for storms 25 yr+
(VDOT Manual Pg. 1-11)

Q= 0.83 cfs

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JOB GREENSPRINGS COMMERCIAL
SHEET NO. 18 DI#17 OF 19
CALCULATED BY _____ DATE 7/22/98
CHECKED BY _____ DATE _____
SCALE _____

DA- 18

c= 0.83
A= 0.06 Ac:

	C	A	CA
PAVE	0.9	0.05	0.05
GRASS	0.2	0.01	0.00
WOODS	0.15		
		0.06	0.05

OVERLAND FLOW

L= 60 ft.
S= 4.08 % 30.00 - 27.55
Tc= 5 min.

CHANNEL FLOW

H= 1 ft.
L= 1 ft.
Tc= 1 min.

Tc= 5 min.

i_{10}= 7.2 in/hr

Q=CAi=(0.83)(0.06 Ac.)(7.2 in/hr)(C_f 1.00)

C_f for storms 25 yr+
(VDOT Manual Pg. 1-11)

Q= 0.35 cfs

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JOB GREENSPRINGS COMMERCIAL
SHEET NO. 2 01# 18 OF 19
CALCULATED BY DATE 7/22/98
CHECKED BY DATE
SCALE

DA- 7

		C	A	C.A.
c= 0.36	PAVE	0.9	0.05	0.05
A= 0.25 Ac:	GRASS	0.2	0.1	0.02
OVERLAND FLOW	WOODS	0.15	0.1	0.02
			0.25 AC	0.09

L= 100 ft.
S= 1.16 % 31.16 - 30.00
Tc= 13.8 min.

CHANNEL FLOW

H= — ft.
L= — ft.
Tc= — min.

Tc= 13.8 min.

i_{10}= 5.3 in/hr

Q=CAi=(0.36)(0.25 Ac.)(5.3 in/hr)(C_f) C_f for storms 25 yr+ (VDOT Manual Pg. 1-11)

Q= 0.48 cfs

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JOB GREENSPRINGS COMMERCIAL
SHEET NO. 19 BLDG 3 OF 19
CALCULATED BY DATE 7/22/98
CHECKED BY DATE
SCALE

DA- 19

	C	A	CA
PAVE	0.9	0.12	0.11
GRASS	0.2	0.14	0.03
WOODS	0.5	0.57	0.09
		0.83 AC	0.23

c= 0.28
A= 0.83 Ac:

OVERLAND FLOW

L= 80 ft.
S= 2.81 % 31.00 - 28.75
Tc= 12 min.

CHANNEL FLOW

H= 1 ft.
L= 1 ft.
Tc= 1 min.

Tc= 12 min.

i_{10}= 5.6 in/hr

Q=CAi=(0.28)(0.83 Ac.)(5.6 in/hr)(C_f 1.00)

C_f for storms 25 yr+
(VDOT Manual Pg. 1-11)

Q= 1.30 cfs

7/30/98

User Name: ??

Project: i:\98104\survey\storm\98104st2.STM

Network: 02 Description: STORM3

Date: 07-30-98

Time: 12:49:29

S T O R M S E W E R S U M M A R Y R E P O R T

RAINFALL FILE: i:\98104\survey\storm\98104st2.rnd 10 YEAR DESIGN STORM I = 124.520/ (Tc + 17.870) ^ 0.920

LINE ID		FLOW RATE INFO						PIPE INFO					HYDRAULIC INFO			
LINE#	DESCRIPTION DOWNLINE#	INC AR TOT AR (ac)	RUNOFFC WEIGHTD C	INLTIME Tc (min)	INLT I TOTL I (in/h)	INC CIA TOT CIA (cfs)	INPUTQ TOTALQ (cfs)	UNIFORM FLOWCAP (cfs)	SIZE/ TYPE (in)	INVERT UP/DOWN (ft)	PLAN LEN (ft)	NVAL INVSLOP (ft/ft)	HGLSLOPE JLC (ft/ft)	HYD GRD UP/DOWN (ft)	VEL UP/DOWN (ft/s)	
														3.2		
1	DI-1 FROM OUTFA	0.4	0.63	26.00	3.84	1.00	0.00		27D	22.36	156	0.013	0.009	23.34	6.90	26.
	DNLN = 0	5.4	0.55	26.00	3.84	11.44	11.53	29.1	27D	21.00		0.009	1.00	21.98	6.90	
														3.6		
2	DI-2 FROM DI-1	0.1	0.50	8.00	6.24	0.44	0.00		27D	22.98	140	0.013	0.002	24.38	5.12	28.0
	DNLN = 1	5.0	0.54	16.12	4.86	13.21	13.32	19.1	27D	22.46		0.004	1.00	24.08	4.33	
														1.7		
3	DI-3 FOM DI-2	0.3	1.00	5.00	6.99	2.19	0.00		15D	26.30	99	0.013	0.023	27.12	3.83	28.9
	DNLN = 2	0.3	1.00	5.00	6.99	2.17	2.19	9.9	15D	24.08		0.023	1.00	24.79	3.05	
														2.8		
4	DI-6 FROM DI-2	0.1	0.42	8.50	6.14	0.31	0.00		21D	23.30	93	0.013	0.004	25.20	4.60	28.
	DNLN = 2	4.4	0.51	15.80	4.90	10.97	11.06	7.9	21D	23.08		0.002	1.00	24.79	4.63	
														2.4		
5	DI-17 FROM DI-6	0.1	0.83	5.00	6.99	0.35	0.00		18D	23.55	75	0.013	0.001	25.63	2.28	28.
	DNLN = 4	1.1	0.62	10.59	5.72	4.00	4.04	4.8	18D	23.40		0.002	1.00	25.53	2.28	
														.98		
6	DI-8 FROM DI-17	0.5	0.59	8.20	6.20	1.81	0.00		18D	24.00	129	0.013	0.001	25.88	2.19	26.9
	DNLN = 5	1.1	0.61	9.64	5.90	3.84	3.87	5.6	18D	23.65		0.003	1.00	25.71	2.19	
														1.9		
7	DI-9 FROM DI-8	0.3	0.67	8.50	6.14	1.37	0.00		15D	24.42	98	0.013	0.001	26.07	1.80	28.
	DNLN = 6	0.6	0.62	8.77	6.08	2.19	2.21	3.8	15D	24.10		0.003	1.00	25.96	1.80	
														2.6		
8	DI-10 FROM DI-9	0.3	0.56	7.25	6.42	0.91	0.00		15D	24.75	71	0.013	0.000	26.14	0.74	28.
	DNLN = 7	0.3	0.56	7.25	6.42	0.90	0.91	3.8	15D	24.52		0.003	1.00	26.12	0.74	
														2.1		
9	DI-5 FROM DI-2	0.2	0.56	13.50	5.23	0.53	0.00		15D	26.00	70	0.013	0.023	26.38	2.54	28.
	DNLN = 2	0.2	0.56	13.50	5.23	0.53	0.53	11.0	15D	24.08		0.029	1.00	24.79	0.74	
														2.2		
10	DI-7 FROM DI-6	0.5	0.26	15.00	5.01	0.59	0.00		18D	24.45	69	0.013	0.004	25.80	4.41	28.
	DNLN = 4	3.1	0.48	15.55	4.93	7.34	7.40	13.3	18D	23.40		0.016	1.00	25.53	4.19	
														3.9		
11	DI-11 FROM DI-7	0.1	0.50	12.20	5.44	0.33	0.00		18D	25.40	118	0.013	0.003	26.51	4.91	30.3
	DNLN = 10	2.7	0.51	15.12	4.99	6.85	6.90	9.1	18D	24.55		0.007	1.00	26.11	3.91	
														1.6		
12	DI-12 FROM DI-1	0.2	0.70	6.50	6.60	1.07	0.00		18D	26.00	82	0.013	0.000	26.92	3.32	28.5
	DNLN = 11	1.2	0.60	14.65	5.06	3.75	3.79	8.4	18D	25.50		0.006	1.00	26.89	2.22	
														2		
13	DI-13 FROM DI-1	0.1	0.47	8.00	6.24	0.44	0.00		15D	27.50	104	0.013	0.009	28.02	3.57	30.
	DNLN = 12	0.5	0.56	8.34	6.17	1.73	1.74	7.6	15D	26.10		0.014	1.00	27.09	1.67	

User Name: ??
Project: i:\98104\survey\storm\98104st2.STM
Network: 02 Description: STORM3

Date: 07-30-98
Time: 12:49:29
Page: 2 of 2

S T O R M S E W E R S U M M A R Y R E P O R T

RAINFALL FILE: i:\98104\survey\storm\98104st2.rnd 10 YEAR DESIGN STORM I = 124.520/ (Tc + 17.870) ^ 0.920

LINE ID		FLOW RATE INFO							PIPE INFO				HYDRAULIC INFO				
LINE#	DESCRIPTION DOWNLINE#	INC AR TOT AR (ac)	RUNOFFC WEIGHTD C	INLTIME Tc (min)	INLT I TOTL I (in/h)	INC CIA TOT CIA (cfs)	INPUTQ TOTALQ (cfs)	UNIFORM FLOWCAP (cfs)	SIZE/ TYPE (in)	INVERT UP/DOWN (ft)	PLAN LEN (ft)	NVAL INVSLOP (ft/ft)	HGLSLOPE JLC (ft/ft)	HYD GRD UP/DOWN (ft)	VEL UP/DOWN (ft/s)	
														2.1		
14	DI-18 FROM DI-1	0.3	0.36	13.80	5.18	0.47	0.00		15D	27.50	78	0.013	0.010	27.86	2.45	30.
	DNLN = 12	0.3	0.36	13.80	5.18	0.47	0.47	8.9	15D	26.10		0.019	1.00	27.09	0.45	
														1.7		
15	DI-16 FROM DI-1	0.4	0.42	12.30	5.42	0.83	0.00		15D	25.62	73	0.013	0.002	27.05	2.54	28.
	DNLN = 11	1.3	0.43	12.30	5.42	3.09	3.11	2.7	15D	25.50		0.002	1.00	26.89	2.54	
														2.4		
16	DI-15 FROM DI-1	0.9	0.44	3.50	7.44	3.14	0.00		15D	25.81	55	0.013	0.004	27.37	2.56	29.
	DNLN = 15	0.9	0.44	3.50	7.44	3.11	3.14	2.7	15D	25.72		0.002	1.00	27.15	2.56	
														2.3		
17	DI-14 FROM DI-1	0.3	0.81	6.25	6.66	1.41	0.00		15D	28.17	90	0.013	0.019	28.81	3.35	31.
	DNLN = 12	0.3	0.81	6.25	6.66	1.40	1.41	10.0	15D	26.10		0.024	1.00	27.09	1.35	
														1.9		
18	DI-4 FROM DI-13	0.3	0.60	7.75	6.30	1.33	0.00		15D	28.40	101	0.013	0.008	29.02	3.29	30.
	DNLN = 13	0.3	0.60	7.75	6.30	1.32	1.33	5.9	15D	27.60		0.008	1.00	28.22	2.18	

RICKMOND ENGINEERING, INC.
1643 A Merrimac Trail
Williamsburg, Virginia 23185-5624
(757) 229-1776 or (757) 898-4149
Fax Number (757) 229-4683

JOB 98104
SHEET NO. _____ OF _____
CALCULATED BY JBR DATE 2-24-98
CHECKED BY _____ DATE _____
SCALE _____

Extended Dry Detention Basin Design

- Assume 60% impervious for site
  13.74 AC × 0.6 = 8.24 AC

- $8.24\,AC \times \frac{1}{2}'' \times \frac{43560\,SF}{AC} \times \frac{FT}{12''} = 14{,}955.6\,CF$ Required

RAINFALL REPORT

RAINFALL TYPE : CUSTOM RAINFALL

RAINFALL FILENAME : 98104st

INTERMEDIATE INTENSITIES (in/hr)

	[5 min]	[15 min]	[30 min]	[60 min]	[6 hr]	[24 hr]
[2 yr]	5.64	3.88	2.57	1.62	0.36	0.10
[5 yr]	6.48	4.60	3.16	2.03	0.47	0.14
[10 yr]	7.08	5.14	3.58	2.32	0.55	0.16
[25 yr]	8.04	5.96	4.19	2.73	0.63	0.18
[50 yr]	8.82	6.58	4.66	3.04	0.68	0.19
[100 yr]	9.52	7.20	5.13	3.37	0.78	0.21

[BDE VALUES Intensity = B/(time_conc + D)^E]

	[B]	[D]	[E]
[2 yr]	88.17	14.16	0.93
[5 yr]	103.51	16.02	0.91
[10 yr]	128.72	18.12	0.92
[25 yr]	178.21	20.78	0.95
[50 yr]	204.04	21.65	0.96
[100 yr]	250.64	23.58	0.97

RESERVOIR REPORT

RECORD NUMBER : 1
STORAGE TYPE : MAN STAGE/AREA
DISCHARGE TYPE : COMP STAGE/DIS
DESCRIPTION : Proposed Basin

[RATING CURVE LIMIT]

Minimum Elevation..... = 21.00 (ft)
Maximum Elevation..... = 25.00 (ft)
Elevation Increment..... = 0.10 (ft)

[STAGE STORAGE INFORMATION]

Input file = NULL
Output file = NULL

[Manual Contour Area vs. Elevation]

ELEVATION (ft)	CONTOUR AREA (sqft)
21.00	8802.00
22.00	10108.00
23.00	11480.00
24.00	12917.00
25.00	15126.00

[STAGE DISCHARGE INFORMATION]

OUTLET STRUCTURE:

STR # : 1
TYPE : STAND PIPE WEIR
DESCRIPTION : 48" Stand Pipe with 8" orifice

OUTLET STRUCTURE REPORT

RECORD NUMBER : 1
TYPE : STAND PIPE WEIR
DESCRIPTION : 48" Stand Pipe with 8" orifice

[RATING CURVE LIMIT]

Minimum Elevation..... = 21.00 (ft)
Maximum Elevation..... = 25.00 (ft)
Elevation Increment..... = 0.10 (ft)

[STANDPIPE INFORMATION]

CIRC. STAND PIPE WEIR DESCRIPTION :

[OUTLET STRUCTURE INFORMATION]

Radius..... = 2.00 (ft)
Crest Length..... = 12.57 (ft)
Crest Elevation..... = 23.00 (ft)
Fraction Open Area..... = 1.00000

[RECTANGULAR STAND PIPE EQUATION]

ORIFICE EQ: Q = Co*A(2gh)^0.5
WEIR EQ: Q = Cw*L*H^exp
Coefficient Co ..... = 0.60000
Coefficient Cw ..... = 3.33000
Exponential..... = 1.50000

[DEFINITIONS]

H = Headwater depth above inlet control section invert, (ft)
A = Wetted area, (sqft)
L = Crest length, (ft)

[ORIFICE INFORMATION]

1 SUBRECORD :
CIRCULAR DESCRIPTION :

[OUTLET STRUCTURE INFORMATION]

Radius..... = 0.33 (ft)
Invert Elevation..... = 21.00 (ft)
Coefficient Co..... = 0.60000
# of Openings..... = 1

[CIRCULAR ORIFICE EQUATION]

Q = Co*A*[2gh]/k]^0.5
A = Wetted area, (sqft)
K = 1

[CULVERT INFORMATION]

DESCRIPTION : CIRCULAR CONCRETE w/ square edge w/ headwall

[OUTLET STRUCTURE INFORMATION]

Circular Radius.....	=	0.62500	(ft)
Culvert Invert Elevation.....	=	21.00000	(ft)
Pipe Length.....	=	16.00000	(ft)
Slope.....	=	0.00500	
Manning's N-value.....	=	0.01300	
Orifice Coefficient.....	=	0.60000	
Tailwater.....	=	21.90000	(ft)
Number barrels.....	=	1	

[UNSUBMERGED EQUATION]

H/Diam = Hc/Diam + K *(Q/A*Diam^0.5))^M - 0.5*S^2

Coefficient K.....	=	0.00980
coefficient M.....	=	2.00000

[SUBMERGED EQUATION]

H/Diam = c*(Q/(A*Diam^0.5))^Z + Y - 0.5*S^2

Coefficient c.....	=	0.03980
Coefficient Y.....	=	0.67000

[DEFINITIONS]

H = Headwater depth above inlet control section invert, (ft)
Diam = Inerior height of culvert barrel, (ft)
Hc = Specific head at critical depth (dc + Vc^2/2g), (ft)
Q = Discharge, (cuft/s)
A = Full cross sectional area of culvert barrel, (sqft)
S = Culvert barrel slope, (ft/ft)

HYDROGRAPH REPORT

RECORD NUMBER : 1
TYPE : UNIV. RATIONAL
DESCRIPTION : Existing flow to basin

[HYDROGRAPH INFORMATION]

Peak Discharge	=	2.15	(cfs)
Volume	=	0.29	(acft)
Time Interval	=	1.00	(min)
Time to Peak	=	90.00	(min)
Time of Base	=	330.00	(min)
Multiplication factor	=	1.00	

[RATIONAL HYDROGRAPH INFORMATION]

Flow Multiplier	=	1.00000
Receding limb factor	=	1.00000

[BASIN DESCRIPTION]

Watershed Area	=	5.50	(ac)
Curve Number	=	0	
Runoff coefficient	=	0.15	

[TIME CONCENTRATION -- USER DEFINED]

Time of Concentration	=	30.00	(min)

[RAINFALL DESCRIPTION]

Distribution Type	=	SYNTHETIC	
Total Precipitation	=	1.30	(in)
Return Period	=	2	(yr)
Storm Duration	=	0.50	(hr)

HYDROGRAPH REPORT

RECORD NUMBER : 2
TYPE : UNIV. RATIONAL
DESCRIPTION : Propoed flow to basin

[HYDROGRAPH INFORMATION]

Peak Discharge.....	=	7.01	(cfs)
Volume.....	=	0.99	(acft)
Time Interval.....	=	1.00	(min)
Time to Peak.....	=	93.00	(min)
Time of Base.....	=	341.00	(min)
Multiplication factor.....	=	1.00	

[RATIONAL HYDROGRAPH INFORMATION]

Flow Multiplier.....	=	1.00000
Receding limb factor.....	=	1.00000

[BASIN DESCRIPTION]

[WEIGHTED WATERSHED AREA]

DESCRIPTION	AREA	CN#	RUNOFF COEF
9	0.49	0	0.59000
8	0.88	0	0.45000
7	0.20	0	0.60000
6	1.12	0	0.32000
5	0.54	0	0.63000
4	0.79	0	0.48000
3	0.35	0	0.63000
2	0.62	0	0.56000
1	0.51	0	0.59000
Overall Approximation	5.50	0	0.50030

[TIME CONCENTRATION -- USER DEFINED]

Time of Concentration.....	=	31.00	(min)

[RAINFALL DESCRIPTION]

Distribution Type.....	=	SYNTHETIC	
Total Precipitation.....	=	1.32	(in)
Return Period.....	=	2	(yr)
Storm Duration.....	=	0.52	(hr)

HYDROGRAPH REPORT

RECORD NUMBER : 3
TYPE : RESER STOR. IND
DESCRIPTION : Routing through basin Q_2

[HYDROGRAPH INFORMATION]

Peak Discharge	=	2.15	(cfs)
Volume	=	0.98	(acft)
Time Interval	=	1.00	(min)
Time to Peak	=	174.00	(min)
Time of Base	=	1440.00	(min)
Peak Elevation	=	22.97	(ft)

[RESERVOIR STRUCTURE INFORMATION]

Reservoir #	=	1
Description	=	Proposed Basin
Storage type	=	MAN STAGE/AREA
Max storage	=	46469.00 Cuft
Discharge type	=	COMP STAGE/DIS
Max discharge	=	10.94 cfs

[RESERVOIR INFORMATION]

Reservoir #	=	1
Reservoir Description	=	Proposed Basin

[INFLOW HYDROGRAPH INFORMATION]

Hydrograph #	=	2
Hydrograph Description	=	Propoed flow to basin

HYDROGRAPH REPORT

RECORD NUMBER : 1
TYPE : UNIV. RATIONAL
DESCRIPTION : Existing flow to basin

[HYDROGRAPH INFORMATION]

Peak Discharge	=	3.01	(cfs)
Volume	=	0.41	(acft)
Time Interval	=	1.00	(min)
Time to Peak	=	90.00	(min)
Time of Base	=	330.00	(min)
Multiplication factor	=	1.00	

[RATIONAL HYDROGRAPH INFORMATION]

Flow Multiplier	=	1.00000
Receding limb factor	=	1.00000

[BASIN DESCRIPTION]

Watershed Area	=	5.50	(ac)
Curve Number	=	0	
Runoff coefficient	=	0.15	

[TIME CONCENTRATION -- USER DEFINED]

Time of Concentration	=	30.00	(min)

[RAINFALL DESCRIPTION]

Distribution Type	=	SYNTHETIC	
Total Precipitation	=	1.82	(in)
Return Period	=	10	(yr)
Storm Duration	=	0.50	(hr)

HYDROGRAPH REPORT

RECORD NUMBER : 2
TYPE : UNIV. RATIONAL
DESCRIPTION : Propoed flow to basin

[HYDROGRAPH INFORMATION]

Peak Discharge.....	=	9.85	(cfs)
Volume.....	=	1.39	(acft)
Time Interval.....	=	1.00	(min)
Time to Peak.....	=	93.00	(min)
Time of Base.....	=	341.00	(min)
Multiplication factor.....	=	1.00	

[RATIONAL HYDROGRAPH INFORMATION]

Flow Multiplier.....	=	1.00000
Receding limb factor.....	=	1.00000

[BASIN DESCRIPTION]

[WEIGHTED WATERSHED AREA]

DESCRIPTION	AREA	CN#	RUNOFF COEF
9	0.49	0	0.59000
8	0.88	0	0.45000
7	0.20	0	0.60000
6	1.12	0	0.32000
5	0.54	0	0.63000
4	0.79	0	0.48000
3	0.35	0	0.63000
2	0.62	0	0.56000
1	0.51	0	0.59000
Overall Approximation	5.50	0	0.50030

[TIME CONCENTRATION -- USER DEFINED]

Time of Concentration.....	=	31.00	(min)

[RAINFALL DESCRIPTION]

Distribution Type.....	=	SYNTHETIC	
Total Precipitation.....	=	1.85	(in)
Return Period.....	=	10	(yr)
Storm Duration.....	=	0.52	(hr)

HYDROGRAPH REPORT

RECORD NUMBER : 3
TYPE : RESER STOR. IND
DESCRIPTION : Routing through basin Q_{10}

[HYDROGRAPH INFORMATION]

Peak Discharge	=	5.73	(cfs)
Volume	=	1.38	(acft)
Time Interval	=	1.00	(min)
Time to Peak	=	121.00	(min)
Time of Base	=	1440.00	(min)
Peak Elevation	=	23.19	(ft)

[RESERVOIR STRUCTURE INFORMATION]

Reservoir #	=	1
Description	=	Proposed Basin
Storage type	=	MAN STAGE/AREA
Max storage	=	46469.00 Cuft
Discharge type	=	COMP STAGE/DIS
Max discharge	=	10.94 cfs

[RESERVOIR INFORMATION]

Reservoir #	=	1
Reservoir Description	=	Proposed Basin

[INFLOW HYDROGRAPH INFORMATION]

Hydrograph #	=	2
Hydrograph Description	=	Propoed flow to basin

HYDROGRAPH REPORT

RECORD NUMBER : 1
TYPE : UNIV. RATIONAL
DESCRIPTION : Existing flow to basin

[HYDROGRAPH INFORMATION]

Peak Discharge	=	4.35	(cfs)
Volume	=	0.59	(acft)
Time Interval	=	1.00	(min)
Time to Peak	=	90.00	(min)
Time of Base	=	330.00	(min)
Multiplication factor	=	1.00	

[RATIONAL HYDROGRAPH INFORMATION]

Flow Multiplier	=	1.00000
Receding limb factor	=	1.00000

[BASIN DESCRIPTION]

Watershed Area	=	5.50	(ac)
Curve Number	=	0	
Runoff coefficient	=	0.15	

[TIME CONCENTRATION -- USER DEFINED]

Time of Concentration	=	30.00	(min)

[RAINFALL DESCRIPTION]

Distribution Type	=	SYNTHETIC	
Total Precipitation	=	2.64	(in)
Return Period	=	100	(yr)
Storm Duration	=	0.50	(hr)

HYDROGRAPH REPORT

RECORD NUMBER : 2
TYPE : UNIV. RATIONAL
DESCRIPTION : Propoed flow to basin

[HYDROGRAPH INFORMATION]

Peak Discharge.....	=	14.25	(cfs)
Volume.....	=	2.00	(acft)
Time Interval.....	=	1.00	(min)
Time to Peak.....	=	93.00	(min)
Time of Base.....	=	341.00	(min)
Multiplication factor.....	=	1.00	

[RATIONAL HYDROGRAPH INFORMATION]

Flow Multiplier.....	=	1.00000
Receding limb factor.....	=	1.00000

[BASIN DESCRIPTION]

[WEIGHTED WATERSHED AREA]

DESCRIPTION	AREA	CN#	RUNOFF COEF
9	0.49	0	0.59000
8	0.88	0	0.45000
7	0.20	0	0.60000
6	1.12	0	0.32000
5	0.54	0	0.63000
4	0.79	0	0.48000
3	0.35	0	0.63000
2	0.62	0	0.56000
1	0.51	0	0.59000
Overall Approximation	5.50	0	0.50030

[TIME CONCENTRATION -- USER DEFINED]

Time of Concentration.....	=	31.00	(min)

[RAINFALL DESCRIPTION]

Distribution Type.....	=	SYNTHETIC	
Total Precipitation.....	=	2.68	(in)
Return Period.....	=	100	(yr)
Storm Duration.....	=	0.52	(hr)

HYDROGRAPH REPORT

RECORD NUMBER : 3
TYPE : RESER STOR. IND
DESCRIPTION : Routing through basin Q100

[HYDROGRAPH INFORMATION]

Peak Discharge	=	8.25	(cfs)
Volume	=	2.00	(acft)
Time Interval	=	1.00	(min)
Time to Peak	=	121.00	(min)
Time of Base	=	1440.00	(min)
Peak Elevation	=	23.63	(ft)

[RESERVOIR STRUCTURE INFORMATION]

Reservoir #	=	1
Description	=	Proposed Basin
Storage type	=	MAN STAGE/AREA
Max storage	=	46469.00 Cuft
Discharge type	=	COMP STAGE/DIS
Max discharge	=	10.94 cfs

[RESERVOIR INFORMATION]

Reservoir #	=	1
Reservoir Description	=	Proposed Basin

[INFLOW HYDROGRAPH INFORMATION]

Hydrograph #	=	2
Hydrograph Description	=	Propoed flow to basin

TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET

(with or without an emergency spillway)

Project Greensprings Plantation Commercial Dev.

Basin # 1 Location EAST OF BLDG 7

Total area draining to basin: 5.5 acres.

Basin Volume Design

Wet Storage:

1. Minimum required volume = 67 cu. yds. x Total Drainage Area (acres).

   67 cu. yds. x 5.5 acres = 368.5 cu. yds.

2. Available basin volume = 1721 cu. yds. at elevation 25. (From storage - elevation curve)

3. Excavate 0 cu. yds. to obtain required volume*.

   * Elevation corresponding to required volume = invert of the dewatering orifice.

4. Available volume before cleanout required.

   33 cu. yds. x 5.5 acres = 181.5 cu. yds.

5. Elevation corresponding to cleanout level = 21.55.

   (From Storage - Elevation Curve)

6. Distance from invert of the dewatering orifice to cleanout level = 1.0 ft. (Min. = 1.0 ft.)

Dry Storage:

7. Minimum required volume = 67 cu. yds. x Total Drainage Area (acres).

   67 cu. yds. x 5.5 acres = 368.5 cu. yds.

8. Total available basin volume at crest of riser* = 750 cu. yds. at elevation 23.0. (From Storage - Elevation Curve)

* Minimum = 134 cu. yds./acre of total drainage area.

9. Diameter of dewatering orifice = 10 in.

10. Diameter of flexible tubing = 12 in. (diameter of dewatering orifice plus 2 inches).

Preliminary Design Elevations

11. Crest of Riser = 23.0

Top of Dam = 25.0

Design High Water = 23.43 (Q_2)

Upstream Toe of Dam = 21.0

Basin Shape

12. Length of Flow / Effective Width — L / We = 175 / 65 = 2.7

If > 2, baffles are not required ✓

If < 2, baffles are required _____

Runoff

13. Q_2 = 5.2 cfs (From Chapter 5)

14. Q_{25} = 9.1 cfs (From Chapter 5)

Principal Spillway Design

15. With emergency spillway, required spillway capacity $Q_p = Q_2 =$ 5.2 cfs. (riser and barrel)

Without emergency spillway, required spillway capacity $Q_p = Q_{25} =$ 9.1 cfs. (riser and barrel)

16. With emergency spillway:

Assumed available head (h) = _____ ft. (Using Q_2)

h = Crest of Emergency Spillway Elevation - Crest of Riser Elevation

Without emergency spillway:

Assumed available head (h) = 1.5 ft. (Using Q_{25})

h = Design High Water Elevation - Crest of Riser Elevation = 24.5 - 23.0

17. Riser diameter (D_r) = 48 in. Actual head (h) = 0.45 ft.

(From Plate 3.14-8.)

Note: Avoid orifice flow conditions.

18. Barrel length (l) = 75 ft.

Head (H) on barrel through embankment = 2.1 ft.

(From Plate 3.14-7).

19. Barrel diameter = 15" in.

(From Plate 3.14-B [concrete pipe] or Plate 3.14-A [corrugated pipe]).

20. Trash rack and anti-vortex device

Diameter = 72 inches.

Height = 21 inches.

(From Table 3.14-D).

Emergency Spillway Design None Required

21. Required spillway capacity $Q_e = Q_{25} - Q_p$ = _____cfs.

22. Bottom width (b) = _____ ft.; the slope of the exit channel (s) = _____ ft./foot; and the minimum length of the exit channel (x) = _____ ft.
(From Table 3.14-C).

Anti-Seep Collar Design

23. Depth of water at principal spillway crest (Y) = 2.7 ft.

Slope of upstream face of embankment (Z) = 3 :1.

Slope of principal spillway barrel (S_b) = 0.5 %

Length of barrel in saturated zone (L_s) = 20 ft.

24. Number of collars required = 2 dimensions = 2.5

(from Plate 3.14-12).

Final Design Elevations

25. Top of Dam = 25

Design High Water = 23.73 (Q_{25})

Emergency Spillway Crest = NONE

Principal Spillway Crest = 23.0

Dewatering Orifice Invert = 22.55

Cleanout Elevation = 21.55

Elevation of Upstream Toe of Dam
or Excavated Bottom of "Wet Storage
Area" (if excavation was performed) = None

RESERVOIR REPORT

RECORD NUMBER : 2
STORAGE TYPE : MAN STAGE/AREA
DISCHARGE TYPE : COMP STAGE/DIS
DESCRIPTION : Sediment Basin

[RATING CURVE LIMIT]

Minimum Elevation..... = 21.00 (ft)
Maximum Elevation..... = 25.00 (ft)
Elevation Increment..... = 0.05 (ft)

[STAGE STORAGE INFORMATION]

Input file = NULL
Output file = NULL

[Manual Contour Area vs. Elevation]

ELEVATION (ft)	CONTOUR AREA (sqft)
21.00	8802.00
22.00	10108.00
23.00	11480.00
24.00	12917.00
25.00	15126.00

[STAGE DISCHARGE INFORMATION]

OUTLET STRUCTURE:

STR # : 3
TYPE : STAND PIPE WEIR
DESCRIPTION : Sediment Basin

[Reservoir Discharge Value vs. Stage]
(the elevation increment is 0.1)

STAGE (ft)	ELEVATION (ft)	CONTOUR AREA (sqft)	STORAGE (cuft)	DISCHARGE (cfs)
0.00	21.00	8802.00	0.00	0.00
0.05	21.05	8867.30	441.73	0.01
0.10	21.10	8932.60	886.73	0.04
0.15	21.15	8997.90	1334.99	0.08
0.20	21.20	9063.20	1786.52	0.13

[Reservoir Discharge Value vs. Stage]
(the elevation increment is 0.1)

STAGE (ft)	ELEVATION (ft)	CONTOUR AREA (sqft)	STORAGE (cuft)	DISCHARGE (cfs)
0.25	21.25	9128.50	2241.31	0.20
0.30	21.30	9193.80	2699.37	0.28
0.35	21.35	9259.10	3160.69	0.37
0.40	21.40	9324.40	3625.28	0.47
0.45	21.45	9389.70	4093.13	0.57
0.50	21.50	9455.00	4564.25	0.67
0.55	21.55	9520.30	5038.63	0.77
0.60	21.60	9585.60	5516.28	0.86
0.65	21.65	9650.90	5997.19	0.94
0.70	21.70	9716.20	6481.37	1.00
0.75	21.75	9781.50	6968.81	1.07
0.80	21.80	9846.80	7459.52	1.13
0.85	21.85	9912.10	7953.49	1.66
0.90	21.90	9977.40	8450.73	2.57
0.95	21.95	10042.70	8951.23	3.73
1.00	22.00	10108.00	9455.00	5.09
1.05	22.05	10176.60	9962.11	6.63
1.10	22.10	10245.20	10472.66	7.90
1.15	22.15	10313.80	10986.64	8.59
1.20	22.20	10382.40	11504.04	9.36
1.25	22.25	10451.00	12024.88	10.14
1.30	22.30	10519.60	12549.14	10.82
1.35	22.35	10588.20	13076.83	11.68
1.40	22.40	10656.80	13607.96	12.54
1.45	22.45	10725.40	14142.51	13.40
1.50	22.50	10794.00	14680.50	14.26
1.55	22.55	10862.60	15221.92	0.00
1.60	22.60	10931.20	15766.76	0.00
1.65	22.65	10999.80	16315.04	0.00
1.70	22.70	11068.40	16866.74	0.00
1.75	22.75	11137.00	17421.87	0.00
1.80	22.80	11205.60	17980.44	0.00
1.85	22.85	11274.20	18542.43	0.00
1.90	22.90	11342.80	19107.86	0.00
1.95	22.95	11411.40	19676.71	0.00
2.00	23.00	11480.00	20249.00	0.00
2.05	23.05	11551.85	20824.80	0.00
2.10	23.10	11623.70	21404.18	0.00
2.15	23.15	11695.55	21987.17	0.00
2.20	23.20	11767.40	22573.74	0.00
2.25	23.25	11839.25	23163.91	0.00
2.30	23.30	11911.10	23757.66	0.00
2.35	23.35	11982.95	24355.02	0.00
2.40	23.40	12054.80	24955.96	0.00
2.45	23.45	12126.65	25560.50	0.00

[Reservoir Discharge Value vs. Stage]
(the elevation increment is 0.1)

STAGE (ft)	ELEVATION (ft)	CONTOUR AREA (sqft)	STORAGE (cuft)	DISCHARGE (cfs)
2.50	23.50	12198.50	26168.62	0.00
2.55	23.55	12270.35	26780.35	0.00
2.60	23.60	12342.20	27395.66	0.00
2.65	23.65	12414.05	28014.57	0.00
2.70	23.70	12485.90	28637.06	0.00
2.75	23.75	12557.75	29263.16	0.00
2.80	23.80	12629.60	29892.84	0.00
2.85	23.85	12701.45	30526.12	0.00
2.90	23.90	12773.30	31162.98	0.00
2.95	23.95	12845.15	31803.45	0.00
3.00	24.00	12917.00	32447.50	0.00
3.05	24.05	13027.45	33096.11	0.00
3.10	24.10	13137.90	33750.24	0.00
3.15	24.15	13248.35	34409.90	0.00
3.20	24.20	13358.80	35075.08	0.00
3.25	24.25	13469.25	35745.78	0.00
3.30	24.30	13579.70	36422.00	0.00
3.35	24.35	13690.15	37103.75	0.00
3.40	24.40	13800.60	37791.02	0.00
3.45	24.45	13911.05	38483.81	0.00
3.50	24.50	14021.50	39182.12	0.00
3.55	24.55	14131.95	39885.96	0.00
3.60	24.60	14242.40	40595.32	0.00
3.65	24.65	14352.85	41310.20	0.00
3.70	24.70	14463.30	42030.60	0.00
3.75	24.75	14573.75	42756.53	0.00
3.80	24.80	14684.20	43487.98	0.00
3.85	24.85	14794.65	44224.95	0.00
3.90	24.90	14905.10	44967.44	0.00
3.95	24.95	15015.55	45715.46	0.00
4.00	25.00	15126.00	46469.00	0.00

HYDROGRAPH REPORT

RECORD NUMBER : 4
TYPE : RESER STOR. IND
DESCRIPTION : Sediment Basin Routing

[HYDROGRAPH INFORMATION]

Peak Discharge.....	=	5.23	(cfs) (Q_2)
Volume.....	=	0.98	(acft)
Time Interval.....	=	1.00	(min)
Time to Peak.....	=	110.00	(min)
Time of Base.....	=	1440.00	(min)
Peak Elevation.....	=	23.43	(ft)

[RESERVOIR STRUCTURE INFORMATION]

Reservoir #.....	=	2
Description.....	=	Sediment Basin
Storage type.....	=	MAN STAGE/AREA
Max storage.....	=	31195.57 Cuft
Discharge type.....	=	COMP STAGE/DIS
Max discharge.....	=	33.85 cfs

[RESERVOIR INFORMATION]

Reservoir #.....	=	2
Reservoir Description.....	=	Sediment Basin

[INFLOW HYDROGRAPH INFORMATION]

Hydrograph #.....	=	2
Hydrograph Description.....	=	Propoed flow to basin

HYDROGRAPH REPORT

RECORD NUMBER : 4
TYPE : RESER STOR. IND
DESCRIPTION : Sediment Basin Routing

[HYDROGRAPH INFORMATION]

Peak Discharge..... = 9.10 (cfs) (Q25)
Volume..... = 1.62 (acft)
Time Interval..... = 1.00 (min)
Time to Peak..... = 107.00 (min)
Time of Base..... = 1440.00 (min)
Peak Elevation..... = 23.73 (ft)

[RESERVOIR STRUCTURE INFORMATION]

Reservoir #..... = 2
Description..... = Sediment Basin
Storage type..... = MAN STAGE/AREA
Max storage..... = 31195.57 Cuft
Discharge type..... = COMP STAGE/DIS
Max discharge..... = 33.85 cfs

[RESERVOIR INFORMATION]

Reservoir #..... = 2
Reservoir Description..... = Sediment Basin

[INFLOW HYDROGRAPH INFORMATION]

Hydrograph #..... = 2
Hydrograph Description..... = Propoed flow to basin

DEVELOPMENT MANAGEMENT

101-E MOUNTS BAY ROAD, P.O. BOX 8784, WILLIAMSBURG, VIRGINIA 23187-8784
(757) 253-6671 Fax: (757) 253-6850 E-MAIL: devtman@james-city.va.us

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(757) 253-6626
codecomp@james-city.va.us

ENVIRONMENTAL DIVISION
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PLANNING
(757) 253-6685
planning@james-city.va.us

COUNTY ENGINEER
(757) 253-6678
INTEGRATED PEST MANAGEMENT
(757) 253-2620

September 11, 2000

Rickmond Engineering, Inc.
1643 Merrimac Trail
Williamsburg, Va. 23185
Attn: Mr. Steve Stafford, P.E.

Re: Greensprings Plantation Commercial Development (Plan No. SP-24-98)
Corner of State Route 5 & SR 614 Legacy Drive
Stormwater Management/BMP Facility

Dear Mr. Stafford:

The Environmental Division has reviewed a record drawing as submitted to our office on July 24th for the above referenced project. The record drawing dated July 5th 2000 provides as-built information for an extended dry-detention stormwater management/BMP facility located in the northeast corner of the site.

Based on our review of the drawing and a concurrent field observation, the following items must be addressed prior to release of the developer's surety instrument for the stormwater management/BMP facility:

Record Drawing and Construction Certification Items

✓ 1. In accordance with Note # 18 on Sheet C-12 of the approved plan, construction certification for the BMP is required. None was provided. RECEIVED NOV 13 2000, CERT DATED NOV 6 2000.

✓ 2. Add the detention basin outlet structure detail as provided on Sheet C11 of the approved plan to the as-built (record) drawing for the facility. This detail provides important information about the facility. Annotate the detail as necessary with constructed information. ADDED TO DRAWING.

✓ 3. The location of the riprap outfall (ES-1 Inv. 21.0) and line segments (polylines) as shown for the top of bank, toe of slope and approximate edge of water (shallow marsh) appear correct. However, grading (contours) shown on the same plan are offset and do not correspond with these locations. Show as-built contours, spot elevations, etc as required to match the facility as constructed.

✓ 4. Show the following additional information on the record drawing: low flow orifice size, elevation and trash rack type; riser size and crest elevation; spot elevations along the top of dam (berm) perimeter at sufficient intervals; outlet barrel invert in, slope, length and size; and class of riprap and dimensions for the barrel's outlet protection.

5. Construction data is also necessary for the primary storm drain inflow located near Building 7 including pipe size, length, slope, invert out elevation and dimensions and class of riprap for its outlet protection. Also provide some indication that positive drainage exists from this primary inflow pipe across the pond interior to the riser structure.

6. Identify the type, location and elevations of the last access structure connected to the primary storm drain which flows into the BMP. The approved plan shows a DI-7 inlet.

7. A professional seal and signature on all record drawing sheets.

8. If possible add the following County identifiers to the lower right hand corner of each record drawing: Approved Plan Number (SP-24-98) and BMP ID No. (PC 102).

Construction Related Items

9. Remove trees and vegetation within 10 feet of the pond riser and clean the low flow orifice.

10. The approved plan specified a metal grating type trash rack for the 8 inch low flow orifice on the riser. None was provided. NO TRASH RACK, BUT ACCEPTABLE.

11. Remove trees, vegetation and sediment from the outfall of the primary storm drain inflow pipe into the pond. This inflow point is located near Building 7 in the west corner of the dry pond. Cleaning and removal only pertains to the area around the vicinity of the pipe's outfall only, not established vegetation downstream and interior to the pond.

12. Based on visual observation, the flared end section at the outfall end of the pond barrel (downstream embankment) was displaced from the outfall pipe alignment at the last joint. Flow from within the outlet barrel was being conveyed downward through the displaced joint and being directed under the outlet barrel and flared end section. This non-routine maintenance item will cause piping of the embankment and is of serious concern. The end section needs properly removed, reconnected to the outlet barrel and backfilled. Flow through the pond's riser and barrel must properly outlet via the flared end section to the riprap outlet protection pad.

INSPECTED 12-19-00 BY SJT

One reproducible and one blue/black line set of the record drawings are requested once the above items are adequately addressed. Please contact me at 757-253-6639 if you have any further comments or questions relative to record drawing or construction certification requirements for this project.

Sincerely,

Scott J. Thomas, P.E.
Civil Engineer
Environmental Division

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4029 Ironbound Road – Suite 200
Williamsburg, Virginia 23187
757-220-2874 – 757-259-0203 Fax
msharp@bushcos.com (sender of this Fax)

Greensprings Plantation

Fax

To:	Darryl Cook – JCC Environmental Division	**From:**	Marc Sharp
Fax:	253-6850	**Pages:**	1
Phone:	253-6673	**Date:**	9/18/00
Re:	Greensprings ~~Office~~ Commercial Park	**CC:**	

☐ **Urgent** ☐ **For Review** ☐ **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

Dear Darryl:

I have in my possession a letter requesting a renewal of our E & S surety in the amount of $5,000 for the Greensprings Office Park.

It is my understanding that Rickmond Engineering delivered the BMP as-built drawings to your office about a month ago (along with a bill to us for $950.00 in connection with the work).

I further understand from our employee, Linwood Burton, that the work discussed between Linwood and Pat Mancino and Mike Wolson in the conduct of the inspection we requested has all been completed and Linwood left a message requesting that the completed work be reviewed.

If the Rickmond Drawings are not in accordance with what was called for in our approved site plan or the remedial work completed after Mike's and Pat's inspection was insufficient, please Fax or e-mail me a description of the deficiencies and we will complete the work immediately (and provide you with short-term surety in the form of a cashier's check.)

Thanks for your help with the Sunterra bonds
Marc B. Sharp

DEVELOPMENT MANAGEMENT

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September 11, 2000

Rickmond Engineering, Inc.
1643 Merrimac Trail
Williamsburg, Va. 23185
Attn: Mr. Steve Stafford, P.E.

Re: Greensprings Plantation Commercial Development (Plan No. SP-24-98)
Corner of State Route 5 & SR 614 Legacy Drive
Stormwater Management/BMP Facility

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3. The location of the riprap outfall (ES-1 Inv. 21.0) and line segments (polylines) as shown for the top of bank, toe of slope and approximate edge of water (shallow marsh) appear correct. However, grading (contours) shown on the same plan are offset and do not correspond with these locations. Show as-built contours, spot elevations, etc as required to match the facility as constructed.

4. Show the following additional information on the record drawing: low flow orifice size, elevation and trash rack type; riser size and crest elevation; spot elevations along the top of dam (berm) perimeter at sufficient intervals; outlet barrel invert in, slope, length and size; and class of riprap and dimensions for the barrel's outlet protection.

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6. Identify the type, location and elevations of the last access structure connected to the primary storm drain which flows into the BMP. The approved plan shows a DI-7 inlet.

7. A professional seal and signature on all record drawing sheets.

8. If possible add the following County identifiers to the lower right hand corner of each record drawing: Approved Plan Number (SP-24-98) and BMP ID No. (PC 102) .

Construction Related Items

9. Remove trees and vegetation within 10 feet of the pond riser and clean the low flow orifice.

10. The approved plan specified a metal grating type trash rack for the 8 inch low flow orifice on the riser. None was provided.

11. Remove trees, vegetation and sediment from the outfall of the primary storm drain inflow pipe into the pond. This inflow point is located near Building 7 in the west corner of the dry pond. Cleaning and removal only pertains to the area around the vicinity of the pipe's outfall only, not established vegetation downstream and interior to the pond.

12. Based on visual observation, the flared end section at the outfall end of the pond barrel (downstream embankment) was displaced from the outfall pipe alignment at the last joint. Flow from within the outlet barrel was being conveyed downward through the displaced joint and being directed under the outlet barrel and flared end section. This non-routine maintenance item will cause piping of the embankment and is of serious concern. The end section needs properly removed, reconnected to the outlet barrel and backfilled. Flow through the pond's riser and barrel must properly outlet via the flared end section to the riprap outlet protection pad.

One reproducible and one blue/black line set of the record drawings are requested once the above items are adequately addressed. Please contact me at 757-253-6639 if you have any further comments or questions relative to record drawing or construction certification requirements for this project.

Sincerely,

Scott J. Thomas, P.E.
Civil Engineer
Environmental Division

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GREENSPRINGS PLANTATION

NOV 2000
RECEIVED
ENVIRONMENTAL DIVISION

November 13, 2000

Mr. Darryl E. Cook
Environmental Director
Development Management – James City County
101-E Mounts Bay Road – P.O. Box 8784
Williamsburg, Virginia 23187-8784

Re: Greensprings Plantation – Commercial Development

Dear Darryl:

James City County is holding a $5,000 cash surety in connection with previously uncompleted matters at our commercial office park site at the corner of John Tyler Highway and Greensprings Plantation Drive. Our deposit was made in contemplation of the completion of all items in your letter to Mr. Stafford at Rickmond Engineering dated September 11, 2000.

In that letter, our employees completed construction items numbered 9 through 12. Completion was under the direction of our site construction supervisor, Linwood Burton. With respect to item 12, we found it necessary to replace the flared end section rather than just resetting it. Linwood has asked that I request a final inspection of this work. Please consider this letter to be that request. Should your inspection find any problems, I would be obliged if you would communicate them to me by fax at 259-0203.

In reviewing the Record Drawing and Construction Certification Items, it may be inappropriate for Rickmond to provide the construction certification required by item number 1 in your letter. This is because we used Foundation Engineering Science, Inc. ("FES") for inspections and certification at the commercial site. (Rickmond Engineering personnel were, in fact, present on the site during the construction period and observed the testing.) A copy of the FES certification is enclosed. If it does not meet your standards for such certification, please advise me by fax. Presumably, the other Record Drawing matters have been corrected by Rickmond Engineering and resubmitted.

If you are not able to release our funds, please provide me your reasons in writing, and I will attempt to promptly satisfy your need for additional documentation or work..

Thanks for your help in these matters.

Sincerely,

GREENSPRINGS OFFICE PARK ASSOCIATES, LLC

Marc B. Sharp

Marc B. Sharp
Manager / Co-Owner

Encl.

CC: Rickmond Engineering
Steve Stafford

4029 Ironbound Road, Suite 200, Williamsburg, Virginia 23188

James City County Environmental Division
Stormwater Management / BMP Inspection Report
Detention and Retention Pond Facilities

Database Inventory No. (if known): PC102 (PH III)

Name of Facility: GREENSPRING PLANT COMM DEV BMP No.: 1 Date: 08/25/00

Location: INTX SR 614 LEGACY DRIVE + ROUTE 5; NE CORNER OF SITE NEAR BLDG 7.

Name of Owner: Greensprings Plantation Inc.

Inspector: St Thomas MD Noerson

Type of Facility: DRY DET BASIN

Weather Conditions: P. SUNNY, MID 80'S

If an inspection item is not applicable, mark NA, otherwise mark the appropriate column.

O.K. - The item checked is in adequate condition and the maintenance program is currently satisfactory.
Routine - The item checked requires attention, but does not present an immediate threat to the function of the BMP.
Urgent - The item checked requires immediate attention to keep the BMP operational and prevent damage to the facility.

Provide an explanation and details in the comment column, if routine or urgent are marked.

Facility Item	O.K.	Routine	Urgent	Comments
Embankments and Side Slopes:				
Grass Height	X			Cut + Groomed 2" Height
Vegetated Condition	X			OK
Weed Growth	X			None.
Erosion	X			None, Minor
Trash & Debris	X			None
Seepage	X			None
Fencing or Benches	X			Flat D/S SLOPE AT BARREL
Constructed Wetlands (Interior Landscaped & Planted) Areas: NATURAL VEGETATION				
Vegetated Conditions	X			CATTAILS, SEDGES + RUSHES
Trash & Debris	X			None
Floatables	X			None
Erosion	X			
Sediment	X			LESS THAN 4"
Dead Plant	X			
Aesthetics	X			NATURAL INTERIOR LOOK
Other	X			Black Willow +

Facility Item	O.K.	Routine	Urgent	Comments
Water Pools ☐ Permanent Pool (Retention Basin) ☒ Shallow Marsh (Detention Basin)				
Shoreline Erosion	X			Noticeable in Select Areas, Minor
Algae	X			
Trash & Debris	X			
Sediment	X			Very Minimal
Aesthetics	X			
Other				Water << 1" in place
Inflow Stuctures (Describe Locations): 24" INFLOW PIPE				
Condition of Structure	X			
Erosion	X			
Trash and Debris	X			
Sediment		X		Sed. + Veg Needs Removed @ Pipe Out
Aesthetics	X			
Other				GOOD SLOPE STABIL, RIPRAP AT PIPE
Principal Flow Control Structure - Intake, Riser, etc. (Describe Location): 48" RCP RISER; 6' CMP CAP				
Condition of Structure	X			6" BMP ORIFICE, MINOR VEG BLOCKAGE
Corrosion	X			
Trash and Debris	X			
Sediment	X			
Aesthetics	X			
Other	X			HW MARK 1' BELOW TOP OF CAP 3" WATER IN BOTTOM DUE TO BARREL LIP
Principal Outlet Structure - Barrel, Conduit, etc. :				
Condition of Structure			X	END SECTION SETTLEMENT, DISPLACED
Settlement		X		~~CORRECT~~ RUNOFF FLOWING OUT OF PIPE + UNDER END SECTION
Trash & Debris	X			
Sediment	X			
Erosion	X			
Other	X			OP IS OK, GOOD CONDITION
Emergency Spillway (Overflow): NONE				
Vegetation				
Lining				
Erosion				
Trash & Debris				
Other				

→ Clear All veg within 10' of Riser to ensure unobst flow to RISER & BMP ORIFICE.

Facility Item	O.K.	Routine	Urgent	Comments
Nuisance Type Conditions:				
Mosquito Breeding	X			
Animal Burrows	X			
Graffiti	X			
Other				
Surrounding Perimeter Conditions:		Wooded & Groomed Grass; 2 Buildings		
Land Uses	X			
Vegetation	X			
Trash & Debris	X			
Aesthetics	X			
Access /Maintenance Roads or Paths	X			
Other	X			Cont. DA Very Good, Well Maintained

Remarks:

- HW MARK 1' BELOW TOP ANT-Vert/Trash RACK (CMP)
- 3" WATER IN BOTTOM OF RISER
- DISPLACED END SECTION Need Repair
- CLEAR VEG @ RISER
- CLEAR SED & VEG AT STORM DRAIN Pipe INFLOW.
- 1 ACCESS Structure BACK, 01-7 (4.5' DEEP) GOOD CONDITION

Overall Environmental Division Internal Rating: 2

Signature: _____ **Date:** _____

Title: _____

SWMProg\BMP\CoInspProg\DetRet.wpd

WATERSHED	PC	MAINTENANCE PLAN	No	CTRL STRUC DESC	RCP
BMP ID NO	102	SITE AREA acre	13.74	CTRL STRUC SIZE inches	48
PLAN NO	SP-24-98	LAND USE	Comm-Business	OTLT BARRL DESC	RCP
TAX PARCEL	(46-1)(01-0-007)	old BMP TYP	Ext Dry Det	OTLT BARRL SIZE inch	15
PIN NO	4610100007	JCC BMP CODE			
CONSTRUCTION DATE	7/1/2000	POINT VALUE		EMERG SPILLWAY	No
PROJECT NAME	Greensprings Plant. Comm.			DESIGN HW ELEV	23.63
FACILITY LOCATION	NE Corn near Bldg 7			PERM POOL ELE	None
CITY-STATE		SVC DRAIN AREA acres	6.24	2-YR OUTFLOW cfs	2.15
CURRENT OWNER	Greenspring Plantation, Inc.			10-YR OUTFLOW cfs	5.73
OWNER ADDRESS	4029 Ironbound Road			REC DRAWING	Yes
OWNER ADDRESS 2		SERVICE AREA DESCRI	Bldg 1-7 and Assoc. Parking Area		
CITY-STATE-ZIP CODE	Williamsburg Va. 23188	IMPERV AREA acres	8.00	CONSTR CERTI	Yes
OWNER PHONE		RECV STREAM	UT of Powhatan Creek		
MAINT AGREEMENT	Yes	EXT DET-WQ-CTRL	Yes	LAST INSP DATE	8/25/2000
EMERG ACTION PLAN	No	WTR QUAL VOL acre-ft	0.343	INTERNAL RATING	2
		CHAN PROT CTRL	No	MISC/COMMENTS	
		CHAN PROT VOL acre-ft	0		
		SW/FLOOD CONTROL	Yes		
		GEOTECH REPORT	No		

Get Last BMP No

Return to Menu

Greensprings Plantation Commercial Development
SP-24-98
Punch list from site visit, May 18, 2000

✓1. Anti-vortex device on riser pipe to be installed per detail as shown on Sheet C11.
2. Metal grating on riser pipe to be installed per detail as shown on Sheet C11.
3. Place additional riprap at end section of the outfall of the BMP as shown on Sheet C3.
4. As-built survey of the BMP.
5. Remove all silt fencing on entire project. - CIP along Greencastle Drive - swale by Eastin Circle & Sutton
6. Reseed all barren areas on entire project.
7. Provide a Professional Engineering certification of the dam structure of the BMP.

Site Visit 7.12.00
limits of selective clearing exceeded
landscaping not in

RECORD DRAWING SUBMISSION