



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.

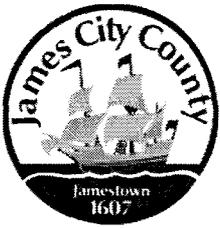
BMP NUMBER: 99103

DATE VERIFIED: May 25, 2012

QUALITY ASSURANCE TECHNICIAN: Leah Hardenbergh

Leah Hardenbergh

LOCATION: WILLIAMSBURG, VIRGINIA



Stormwater Division

MEMORANDUM

DATE: March 13, 2010
TO: Michael J. Gillis, Virginia Correctional Enterprises Document Management Services
FROM: Jo Anna Ripley, Stormwater
PO: 270712
RE: Files Approved for Scanning

General File ID or BMP ID: 99103

PIN:

Subdivision, Tract, Business or Owner

Name (if known):

Property Description:

Site Address:

Greensprings General: Greensprings Apartments &
 Condos; Greensprings Plantation; Greensprings
 West; Legacy Golf Links; Williamsburg National
 Golf Course; Greensprings Office Park
 General Files

(For internal use only)

Box GP001

Drawer: 1

Agreements: (in file as of scan date)

Y

Book or Doc#:

060028406

Page:

050009304

725

102-104

707

100-103

701

659-668

Comments

Contents for Stormwater Management Facilities As-built Files

Each File is to contain:

- 1. Maintenance Agreement
- 2. Construction certification
- 3. As-Built plan
- 4. Design Calculations
- 6. Correspondence
- 7. Inspection records
- 8. Miscellaneous

DECLARATION OF COVENANTS

INSPECTION/MAINTENANCE OF DRAINAGE SYSTEM

THIS DECLARATION, made this 17 day of NOVEMBER, 2006,
 between WILLIAMSBURG NATIONAL, LLC, and
 all successors in interest, ("COVENANTOR(S),") owner(s) of the following property:
 Parcel Identification Number: 3630200001C
 Legal Description: PARCEL 1, WILLIAMSBURG NATIONAL
 Project or Subdivision Name: GREENSPRINGS WEST, PHASE 1
 Document No. 056009304
 OR Deed Book _____, Page No. _____,
 and the County of James City, Virginia ("COUNTY.")

WITNESSETH:

We, the COVENANTOR(S), with full authority to execute deeds, mortgages, other covenants, and all rights, titles and interests in the property described above, do hereby covenant with the COUNTY as follows:

1. The COVENANTOR(S) shall provide maintenance for the drainage system including any runoff control facilities, conveyance systems and associated easements, hereinafter referred to as the "SYSTEM," located on and serving the above-described property to ensure that the SYSTEM is and remains in proper working condition in accordance with approved design standards, and with the law and applicable executive regulations. The SYSTEM shall not include any elements located within any Virginia Department of Transportation rights-of-way.
2. If necessary, the COVENANTOR(S) shall levy regular or special assessments against all present or subsequent owners of property served by the SYSTEM to ensure that the SYSTEM is properly maintained.
3. The COVENANTOR(S) shall provide and maintain perpetual access from public right-of-ways to the SYSTEM for the COUNTY, its agent and its contractor.
4. The COVENANTOR(S) shall grant the COUNTY, its agent and its contractor a right of entry to the SYSTEM for the purpose of inspecting, monitoring, operating, installing, constructing, reconstructing, maintaining or repairing the SYSTEM.
5. If, after reasonable notice by the COUNTY, the COVENANTOR(S) shall fail to maintain the SYSTEM in accordance with the approved design standards and with the law and applicable executive regulations, the COUNTY may perform all necessary repair or maintenance

Contract # 060028406
Recorded on 11/17/06

work, and the COUNTY may assess the COVENANTOR(S) and/or all property served by the SYSTEM for the cost of the work and any applicable penalties.

6. The COVENANTOR(S) shall indemnify and save the COUNTY harmless from any and all claims for damages to persons or property arising from the installation, construction, maintenance, repair, operation or use of the SYSTEM.

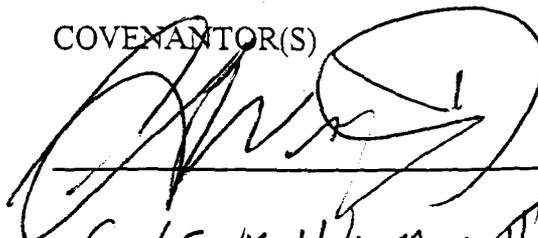
7. The COVENANTOR(s) shall promptly notify the COUNTY when the COVENANTOR(S) legally transfers any of the COVENANTOR(S)' responsibilities for the SYSTEM. The COVENANTOR(S)' shall supply the COUNTY with a copy of any document of transfer, executed by both parties.

8. The covenants contained herein shall run with the land and shall bind the COVENANTOR(S) and the COVENANTOR(S)' heirs, executors, administrators, successors and assignees, and shall bind all present and subsequent owners of property served by the SYSTEM.

9. This COVENANT shall be recorded in the County Land Records.

IN WITNESS WHEREOF, the COVENANTOR(S) have executed this DECLARATION OF COVENANTS as of the date first above written.

COVENANTOR(S)



Print Name/Title

C. LEWIS WALTRIP, II, MGR

ATTEST:



COVENANTOR(S)

Print Name/Title

ATTEST:

COMMONWEALTH OF VIRGINIA

CITY/COUNTY OF JAMES CITY

I hereby certify that on this 17 day of Nov, 2006, before the subscribed, a Notary Public for the Commonwealth of Virginia, personally appeared C. LEWIS WALTRIP, II and did acknowledge the foregoing instrument to be their Act.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this 17 day of NOVEMBER, 2006.

[Signature]
Notary Public

My Commission expires: 9/30/07

Approved as to form:

[Signature]
Asst. County Attorney

This Declaration of Covenants prepared by:

ROBERT OLVER
(Print Name)

SIR OF DEVEL
(Title)

213 WGRAM RD
(Address)

WMBG, VA 23186
(City) (State) (Zip)

220-0456
(Phone Number)

drainage1.pre

015715

DECLARATION OF COVENANTS

INSPECTION/MAINTENANCE OF RUNOFF CONTROL FACILITY

THIS DECLARATION, made this 21st day of September, 1994, between Greensprings Plantation, Inc., and all successors in interest, hereinafter referred to as the "COVENANTOR(S)," owner(s) of the LAKE "A" (As shown in Yellow on Exhibit "A") following property: Legacy Golf Links at Greensprings (Plat Book 58, Pages 96-102), and James City County, Virginia, hereinafter referred to as the "COUNTY."

WITNESSETH:

We, the COVENANTOR(S), with full authority to execute deeds, mortgages, other covenants, and all rights, titles and interest in the property described above, do hereby covenant with the COUNTY as follows:

1. The COVENANTOR(S) shall provide maintenance for the runoff control facility, hereinafter referred to as the "FACILITY," located on and serving the above-described property to ensure that the FACILITY is and remains in proper working condition in accordance with approved design standards, and with the law and applicable executive regulations.

2. If necessary, the COVENANTOR(S) shall levy regular or special assessments against all present or subsequent owners of property served by the FACILITY to ensure that the FACILITY is properly maintained.

3. The COVENANTOR(S) shall provide and maintain perpetual access from public rights-of-way to the FACILITY for the COUNTY, its agent and its contractor.

1-4

-2-

4. The COVENANTOR(S) shall grant the COUNTY, its agents and its contractor a right of entry to the FACILITY for the purpose of inspecting, operating, installing, constructing, reconstructing, maintaining or repairing the FACILITY.

5. If, after reasonable notice by the COUNTY, the COVENANTOR(S) shall fail to maintain the FACILITY in accordance with the approved design standards and with the law and applicable executive regulations, the COUNTY may perform all necessary repair or maintenance work, and the COUNTY may assess the COVENANTOR(S) and/or all property served by the FACILITY for the cost of the work and any applicable penalties.

6. The COVENANTOR(S) shall indemnify and save the COUNTY harmless from any and all claims for damages to persons or property arising from the installation, construction, maintenance, repair, operation or use of the FACILITY.

7. The COVENANTOR(S) shall promptly notify the COUNTY when the COVENANTOR(S) legally transfers any of the COVENANTOR(S)' responsibilities for the FACILITY. The COVENANTOR(S)' shall supply the COUNTY with a copy of any document of transfer, executed by both parties.

8. The covenants contained herein shall run with the land and shall bind the COVENANTOR(S) and the COVENANTOR(S)' heirs, executors, administrators, successors and assignees, and shall bind all present and subsequent owners of property served by the FACILITY.

9. This COVENANT shall be recorded in the County Land Records.

24

IN WITNESS WHEREOF, the COVENANTOR(S) have executed this DECLARATION OF COVENANTS as of this 21st day of SEPTEMBER, 1994.

COVENANTOR(S)
GREENSPRINGS PLANTATION, INC.

Marc B. Sharp
MARC B. SHARP, President

ATTEST:

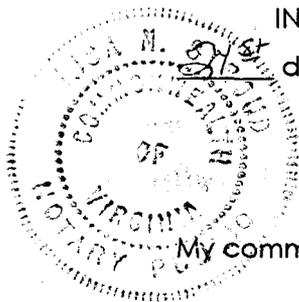
Michele J. Ball

STATE OF VIRGINIA
CITY/COUNTY OF

I hereby certify that on this 21st day of September 1994,
before the subscribed, a Notary Public of the State of Virginia, and for the City/County of
James City, aforesaid personally appeared
before me Marc B. Sharp
(Name of Acknowledging Party)

and did acknowledge the foregoing instrument to be their Act.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this
21st day of September, 1994.



Lisa N. Stroud
Notary Public

My commission expires: 10-31-97

Approved as to form:

Les P. Rogers

0621U
Revised 3/91

PLAT RECORDED IN
DB 707 PAGE 103

34

VIRGINIA: City of Williamsburg and County of James City, to Wit:

In the Clerk's office of the Circuit Court of the City of Williamsburg and County of James City the 26 day of Sept, 1994. This Covenants was presented with certificate annexed and admitted to record at 3:31 o'clock

Teste: Helene S. Ward, Clerk
by Helene S. Ward
Deputy Clerk

✓

BOOK 0725 PAGE 102
DECLARATION OF COVENANTS

001788

INSPECTION/MAINTENANCE OF RUNOFF CONTROL FACILITY

THIS DECLARATION, made this 12th day of January, 1995, between Legacy Greensprings, Lim.Part., and all successors in interest, hereinafter referred to as the "COVENANTOR(S)," owner(s) of the ~~following property~~: Detention Basin (As Shown on the attached plat copy) located between Parcel F, Parcel G and State Route 614. Following property: Greensprings Plantation (ref. Plat Book 58, PGs 96-102) , and James City County, Virginia, hereinafter referred to as the "COUNTY."

WITNESSETH:

We, the COVENANTOR(S), with full authority to execute deeds, mortgages, other covenants, and all rights, titles and interests in the property described above, do hereby covenant with the COUNTY as follows:

1. The COVENANTOR(S) shall provide maintenance for the runoff control facility, hereinafter referred to as the "FACILITY," located on and serving the above-described property to ensure that the FACILITY is and remains in proper working condition in accordance with approved design standards, and with the law and applicable executive regulations.
2. If necessary, the COVENANTOR(S) shall levy regular or special assessments against all present or subsequent owners of property served by the FACILITY to ensure that the FACILITY is properly maintained.
3. The COVENANTOR(S) shall provide and maintain perpetual access from public right-of-ways to the FACILITY for the COUNTY, its agent and its contractor.
4. The COVENANTOR(S) shall grant the COUNTY, its agent and its contractor a right of entry to the FACILITY for the purpose of inspecting, operating, installing, constructing, reconstructing, maintaining or repairing the FACILITY.
5. If, after reasonable notice by the COUNTY, the COVENANTOR(S) shall fail to maintain the FACILITY in accordance with the approved design standards and with the law and applicable executive regulations, the COUNTY may perform all necessary repair or maintenance work, and the COUNTY may assess the COVENANTOR(S) and/or all property served by the FACILITY for the cost of the work and any applicable penalties.
6. The COVENANTOR(S) shall indemnify and save the COUNTY harmless from any and all claims for damages to persons or property arising from the installation, construction, maintenance, repair, operation or use of the FACILITY.
7. The COVENANTOR(s) shall promptly notify the COUNTY when the COVENANTOR(S) legally transfers any of the COVENANTOR(S)' responsibilities for the FACILITY. The COVENANTOR(S)' shall supply the COUNTY with a copy of any document of transfer, executed by both parties.
8. The covenants contained herein shall run with the land and shall bind the COVENANTOR(S) and the COVENANTOR(S)' heirs, executors, administrators, successors and assignees, and shall bind all present and subsequent owners of property served by the FACILITY.
9. This DECLARATION shall be recorded in the County Land Records.

IN WITNESS WHEREOF, the COVENANTOR(S) have executed this DECLARATION OF COVENANTS as of this 12th day of January, 1995.

COVENANTOR(S)

LEGACY (GREENSPRINGS) Limited Partnership

By: Michael Winston Sanders
Michael Winston Sanders, President
Club Development Associates, Inc., it's
Managing General Partner

ATTEST:

Peter Deje

COVENANTOR(S)

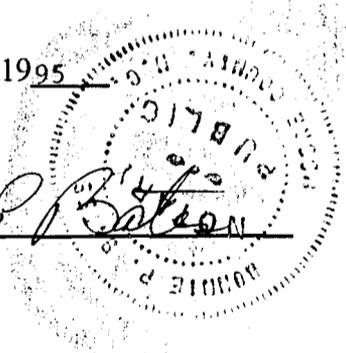
ATTEST:

STATE OF NORTH CAROLINA
~~COMMONWEALTH OF VIRGINIA~~
CITY/COUNTY OF Moore

I, the undersigned Notary Public, in and for the jurisdiction aforesaid, do certify that Michael Winston Sanders, whose name is signed as such to the foregoing writing bearing date 12th day of January, 1995, this day sworn the same before me in my jurisdiction aforesaid.

GIVEN under my hand this 12th day of January, of 1995

Bonnie P. Bolton
Notary Public



My Commission expires: November 6, 1999

Approved as to form:

Lee P. Rogers

0261U.Wpf
Revised 9/92

VIRGINIA: City of Williamsburg and County of James City, to Wit:

In the Clerk's office of the Circuit Court of the City of Williamsburg and County of James City the 2 day of Feb, 1995. This Covenant was presented with certificate annexed and admitted to record at 12:35 o'clock

Teste: Helene S. Ward, Clerk

by Helene S. Ward
Deputy Clerk

PLAT RECORDED IN
DB 725 PAGE 104

013624

DECLARATION OF COVENANTS

COPY

INSPECTION/MAINTENANCE OF RUNOFF CONTROL FACILITY

THIS DECLARATION, made this 8th day of July, 1994, between Greensprings Plantation, Inc. & Legacy (Greensprings Limited Partnership), and all successors in interest, hereinafter referred to as the "COVENANTOR(S)," owner(s) of the BMP #1 (As shown in Yellow on Exhibit "A") following property: Legacy Golf Links at Greensprings (Plat Book 58, Pages 96-102), and James City County, Virginia, hereinafter referred to as the "COUNTY."

WITNESSETH:

We, the COVENANTOR(S), with full authority to execute deeds, mortgages, other covenants, and all rights, titles and interest in the property described above, do hereby covenant with the COUNTY as follows:

1. The COVENANTOR(S) shall provide maintenance for the runoff control facility, hereinafter referred to as the "FACILITY," located on and serving the above-described property to ensure that the FACILITY is and remains in proper working condition in accordance with approved design standards, and with the law and applicable executive regulations.

2. If necessary, the COVENANTOR(S) shall levy regular or special assessments against all present or subsequent owners of property served by the FACILITY to ensure that the FACILITY is properly maintained.

3. The COVENANTOR(S) shall provide and maintain perpetual access from public rights-of-way to the FACILITY for the COUNTY, its agent and its contractor.

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-2-

4. The COVENANTOR(S) shall grant the COUNTY, its agents and its contractor a right of entry to the FACILITY for the purpose of inspecting, operating, installing, constructing, reconstructing, maintaining or repairing the FACILITY.

5. If, after reasonable notice by the COUNTY, the COVENANTOR(S) shall fail to maintain the FACILITY in accordance with the approved design standards and with the law and applicable executive regulations, the COUNTY may perform all necessary repair or maintenance work, and the COUNTY may assess the COVENANTOR(S) and/or all property served by the FACILITY for the cost of the work and any applicable penalties.

6. The COVENANTOR(S) shall indemnify and save the COUNTY harmless from any and all claims for damages to persons or property arising from the installation, construction, maintenance, repair, operation or use of the FACILITY.

7. The COVENANTOR(S) shall promptly notify the COUNTY when the COVENANTOR(S) legally transfers any of the COVENANTOR(S)' responsibilities for the FACILITY. The COVENANTOR(S)' shall supply the COUNTY with a copy of any document of transfer, executed by both parties.

8. The covenants contained herein shall run with the land and shall bind the COVENANTOR(S) and the COVENANTOR(S)' heirs, executors, administrators, successors and assignees, and shall bind all present and subsequent owners of property served by the FACILITY.

9. This COVENANT shall be recorded in the County Land Records.

2-5

IN WITNESS WHEREOF, the COVENANTOR(S) have executed this DECLARATION OF COVENANTS as of this 8TH day of July, 1994.

COVENANTOR(S)
GREENSPRINGS PLANTATION, INC.

Marc B. Sharp
MARC B. SHARP, President

ATTEST:

Michelle Z. Ball

COVENANTOR(S)
LEGACY (GREENSPRINGS) LIMITED PARTNERSHIP

MP. Sanders
By: Club Development Associates, Inc
i/e: Managing General Partner
By: Michael W. Sanders
i/e: President

ATTEST:

Barry Embler

STATE OF VIRGINIA
CITY/COUNTY OF James City

I hereby certify that on this 8th day of July 1994, before the subscribed, a Notary Public of the State of Virginia, and for the City/County of James City, aforesaid personally appeared before me Marc B. Sharp
(Name of Acknowledging Party)

and did acknowledge the foregoing instrument to be their Act.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this 8th day of July, 1994.

Lisa N. Stroud
Notary Public

My commission expires: 10-31-97

STATE OF North Carolina
CITY/COUNTY OF Moore

I hereby certify that on this 11th day of July 1994, before the subscribed, a Notary Public of the State of Virginia, and for the City/County of Moore, aforesaid personally appeared before me Michael W Sanders
(Name of Acknowledging Party)

and did acknowledge the foregoing instrument to be their Act.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this 11th day of July, 1994.

Bonnie P Bates
Notary Public



My commission expires: November 6, 1994

Approved as to form:

Les P. Roper

0621U
Revised 3/91

VIRGINIA: City of Williamsburg and County of James City, to Wit:

In the Clerk's office of the Circuit Court of the City of Williamsburg and County of James City, the 23 day of Aug 1994. This Dec 4
Documents presented with certificate annexed and admitted to record at 3:42 o'clock
Teste: Helene S. Ward, Clerk
by [Signature]
Deput. Clerk

PLAT RECORDED IN
DB 701 PAGE 663

4-5

013625

DECLARATION OF COVENANTS

COPY

INSPECTION/MAINTENANCE OF RUNOFF CONTROL FACILITY

THIS DECLARATION, made this 11th day of July, 1994, between Greensprings Plantation, Inc. & Legacy (Greensprings Limited Partnership), and all successors in interest, hereinafter referred to as the "COVENANTOR(S)," owner(s) of the LAKE "C" (As shown in Yellow on Exhibit "A") following property: Legacy Golf Links at Greensprings (Plat Book 58, Pages 96-102), and James City County, Virginia, hereinafter referred to as the "COUNTY."

WITNESSETH:

We, the COVENANTOR(S), with full authority to execute deeds, mortgages, other covenants, and all rights, titles and interest in the property described above, do hereby covenant with the COUNTY as follows:

1. The COVENANTOR(S) shall provide maintenance for the runoff control facility, hereinafter referred to as the "FACILITY," located on and serving the above-described property to ensure that the FACILITY is and remains in proper working condition in accordance with approved design standards, and with the law and applicable executive regulations.

2. If necessary, the COVENANTOR(S) shall levy regular or special assessments against all present or subsequent owners of property served by the FACILITY to ensure that the FACILITY is properly maintained.

3. The COVENANTOR(S) shall provide and maintain perpetual access from public rights-of-way to the FACILITY for the COUNTY, its agent and its contractor.

1-5

-2-

4. The COVENANTOR(S) shall grant the COUNTY, its agents and its contractor a right of entry to the FACILITY for the purpose of inspecting, operating, installing, constructing, reconstructing, maintaining or repairing the FACILITY.

5. If, after reasonable notice by the COUNTY, the COVENANTOR(S) shall fail to maintain the FACILITY in accordance with the approved design standards and with the law and applicable executive regulations, the COUNTY may perform all necessary repair or maintenance work, and the COUNTY may assess the COVENANTOR(S) and/or all property served by the FACILITY for the cost of the work and any applicable penalties.

6. The COVENANTOR(S) shall indemnify and save the COUNTY harmless from any and all claims for damages to persons or property arising from the installation, construction, maintenance, repair, operation or use of the FACILITY.

7. The COVENANTOR(S) shall promptly notify the COUNTY when the COVENANTOR(S) legally transfers any of the COVENANTOR(S)' responsibilities for the FACILITY. The COVENANTOR(S)' shall supply the COUNTY with a copy of any document of transfer, executed by both parties.

8. The covenants contained herein shall run with the land and shall bind the COVENANTOR(S) and the COVENANTOR(S)' heirs, executors, administrators, successors and assignees, and shall bind all present and subsequent owners of property served by the FACILITY.

9. This COVENANT shall be recorded in the County Land Records.

2-5

IN WITNESS WHEREOF, the COVENANTOR(S) have executed this DECLARATION OF COVENANTS as of this 11th day of July, 1994.

COVENANTOR(S)
GREENSPRINGS PLANTATION, INC.

Marc B. Sharp
MARC B. SHARP, President

ATTEST:

Michele J. Bull

COVENANTOR(S)
LEGACY (GREENSPRINGS) LIMITED PARTNERSHIP

M.W. Sanders
By: Club Development Associates, Inc.
i/e: Managing General Partner
By: Michael W. Sanders
i/e: President

ATTEST:

Danny Embley

STATE OF VIRGINIA
CITY/COUNTY OF James City

I hereby certify that on this 11th day of July 1994, before the subscribed, a Notary Public of the State of Virginia, and for the City/County of James City, aforesaid personally appeared before me Marc B. Sharp
(Name of Acknowledging Party)

and did acknowledge the foregoing instrument to be their Act.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this 11th day of July, 1994.

Lisa N. Stroud
Notary Public

My commission expires: 10-31-97

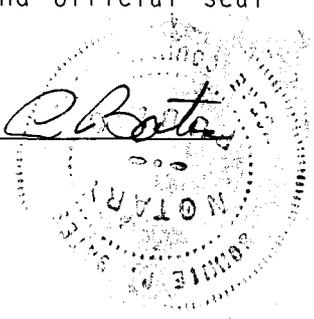
STATE OF North Carolina
CITY/COUNTY OF Moore

I hereby certify that on this 11th day of July 1994, before the subscribed, a Notary Public of the State of Virginia, and for the City/County of Moore, aforesaid personally appeared before me Michael W Sanders
(Name of Acknowledging Party)

and did acknowledge the foregoing instrument to be their Act.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this 11th day of July, 1994.

Bonnie C. Bots
Notary Public



My commission expires: November 6, 1994

Approved as to form:

Leo P. Rogers

0621U
Revised 3/91

VIRGINIA: City of Williamsburg and County of James City, to Wit:

In the Clerk's office of the Circuit Court of the City of Williamsburg and County of James City, the 23 day of July 1994. This Consent

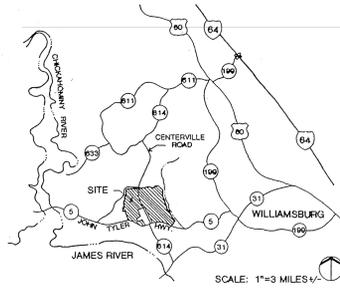
was presented with certificate annexed and admitted to record at 3:45 o'clock

Teste: Helene S. Ward, Clerk

by [Signature]
Deputy Clerk

415

LOCATION MAP



LEGACY GOLF LINKS

JAMES CITY COUNTY, VIRGINIA

OWNER: GREENSPRINGS PLANTATION, INCORPORATED
 4029 IRONBOUND ROAD
 SUITE 200
 WILLIAMSBURG, VIRGINIA 23188
 CONTACT: MR. MARC B. SHARP
 (804) 220-2874

DEVELOPER: CLUB DEVELOPMENT ASSOCIATES, INCORPORATED
 P.O. BOX 3230
 PINEHURST, NORTH CAROLINA 28374
 CONTACT: MR. ALLEN JORDON
 (919) 944-8838

ZONING R-4

BASE TOPOGRAPHY AND LAND PLAN PROVIDED BY
 LANGLEY MCDONALD ENGINEERS
 VIRGINIA BEACH, VIRGINIA

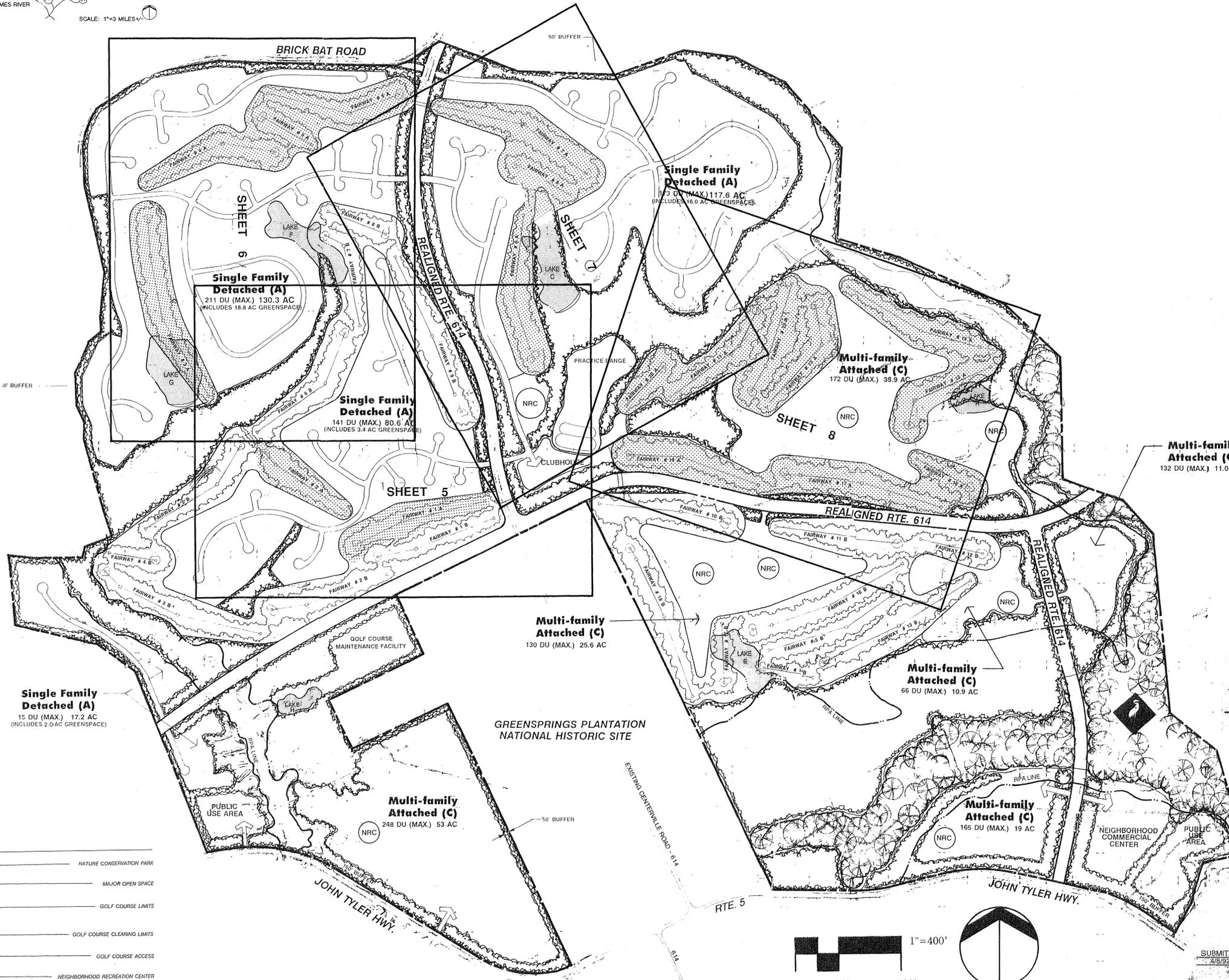
STATISTICS

TOTAL GREENSPRINGS PLANTATION SITE IS 1402 ACRES AND THE TOTAL AREA OF THE PROPOSED LEGACY GOLF LINKS CORRIDOR IS APPROXIMATELY 190 ACRES.

THE LIMITS OF CONSTRUCTION FOR COMPLETE CLEARING ARE APPROXIMATELY 117 ACRES WITH APPROXIMATELY 12 ACRES OF LAKES AND 30 ACRES OF OPTIONAL PARK CLEARING.

THE SITE OF THE LEGACY GOLF LINKS IS ZONED R-4, PLANNED RESIDENTIAL COMMUNITY.

THE SITE OF THE LEGACY GOLF LINKS IS PART OF TAX PARCEL 46-1(1-1).



Golf Course Design by: GOLDEN BEAR DESIGN ASSOCIATE
 A Division of Golden Bear International
 © Golden Bear International, Inc. 1994

Jim Lippe
 JIM LIPE

WILLIAMSBURG ENVIRONMENTAL GROUP, INC.
 Environmental Consultants
 5248 OLDE TOWNE ROAD SUITE #7 P.O. BOX 3584 WILLIAMSBURG, VIRGINIA 23187 (804) 220-5567

- LEGEND**
- NATURE CONSERVATION PARK
 - MAJOR OPEN SPACE
 - GOLF COURSE LIMITS
 - GOLF COURSE CLEARING LIMITS
 - GOLF COURSE ACCESS
 - NEIGHBORHOOD RECREATION CENTER
 - RPA LINE
 - 100 YR FLOODPLAIN BOUNDARY

SHEET INDEX

NO.	DESCRIPTION
01	COVER SHEET
02	CONCEPTUAL PLAN/DRAINAGE AREAS
03	CONCEPTUAL PLAN/DRAINAGE AREAS
04	CONSTRUCTION PHASING PLAN
05	DRAINAGE & EROSION AND SEDIMENT CONTROL
06	DRAINAGE & EROSION AND SEDIMENT CONTROL
07	DRAINAGE & EROSION AND SEDIMENT CONTROL
08	DRAINAGE & EROSION AND SEDIMENT CONTROL
09	DETAILS
10	EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

SUBMITTAL REVISIONS

NO.	DATE	DESCRIPTION
1	6/30/92	
2	4-8-93	
3	5-10-93	
4		

*SB Amendment to SP-33-92 for addition of pump house, July 21, 1994



SP-85-94

EXHIBIT "A"

LEGACY GOLF LINKS AT GREENSPRINGS

BEING A

SUBDIVISION OF PROPERTY OF
GREENSPRINGS PLANTATION, INC.

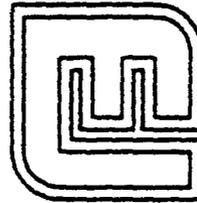
BERKELEY DISTRICT

JAMES CITY COUNTY, VIRGINIA

FEBRUARY 18, 1994

SCALE: 1"=600'

SHEET 1 OF 7



Langley and McDonald, P.C.

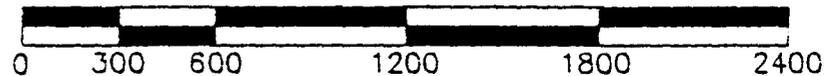
Engineers - Surveyors - Planners

Landscape Architects - Environmental Consultants

VIRGINIA BEACH

WILLIAMSBURG

GRAPHIC SCALE IN FEET



SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

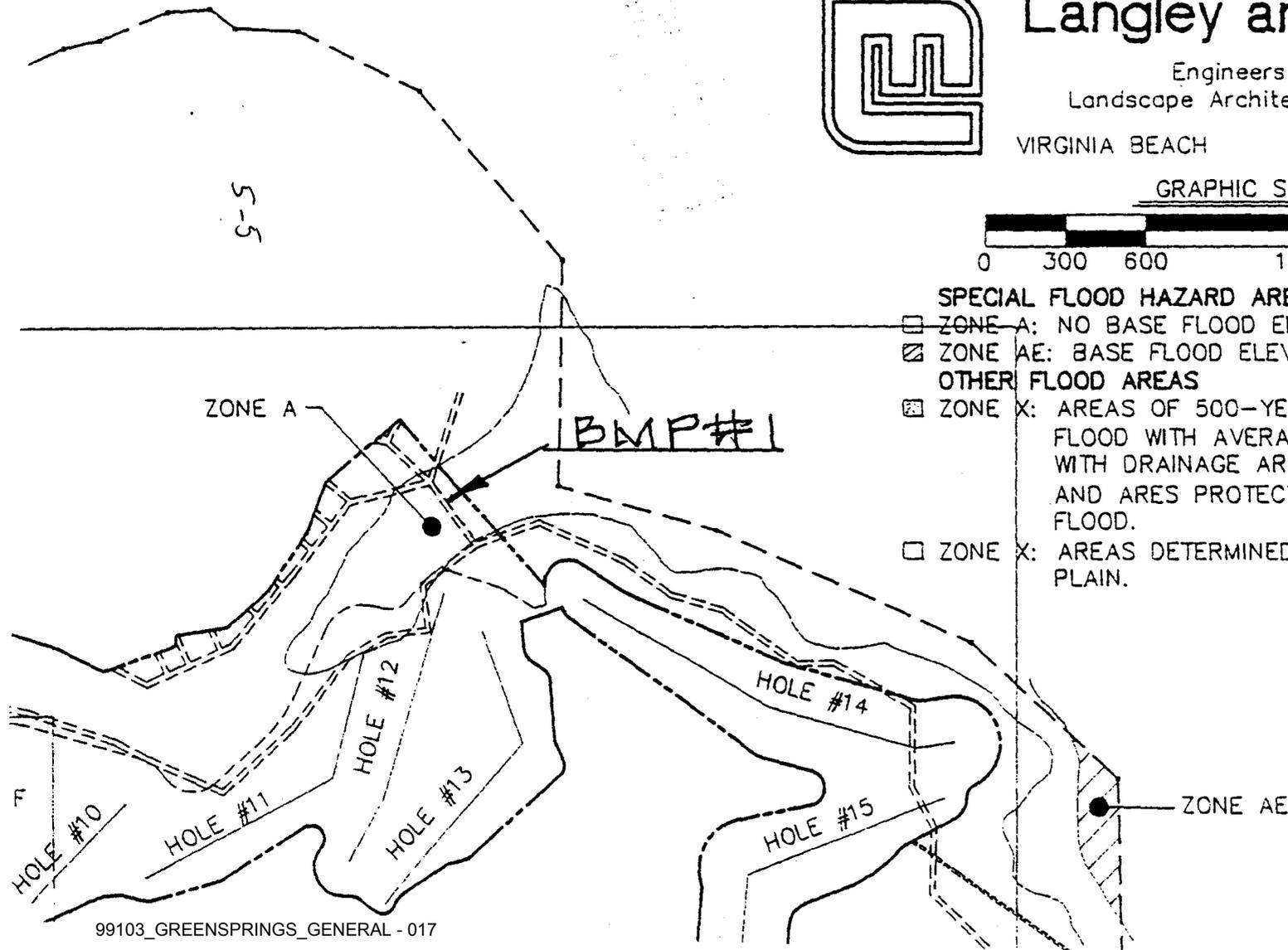
ZONE A: NO BASE FLOOD ELEVATIONS DETERMINED

ZONE AE: BASE FLOOD ELEVATIONS DETERMINED

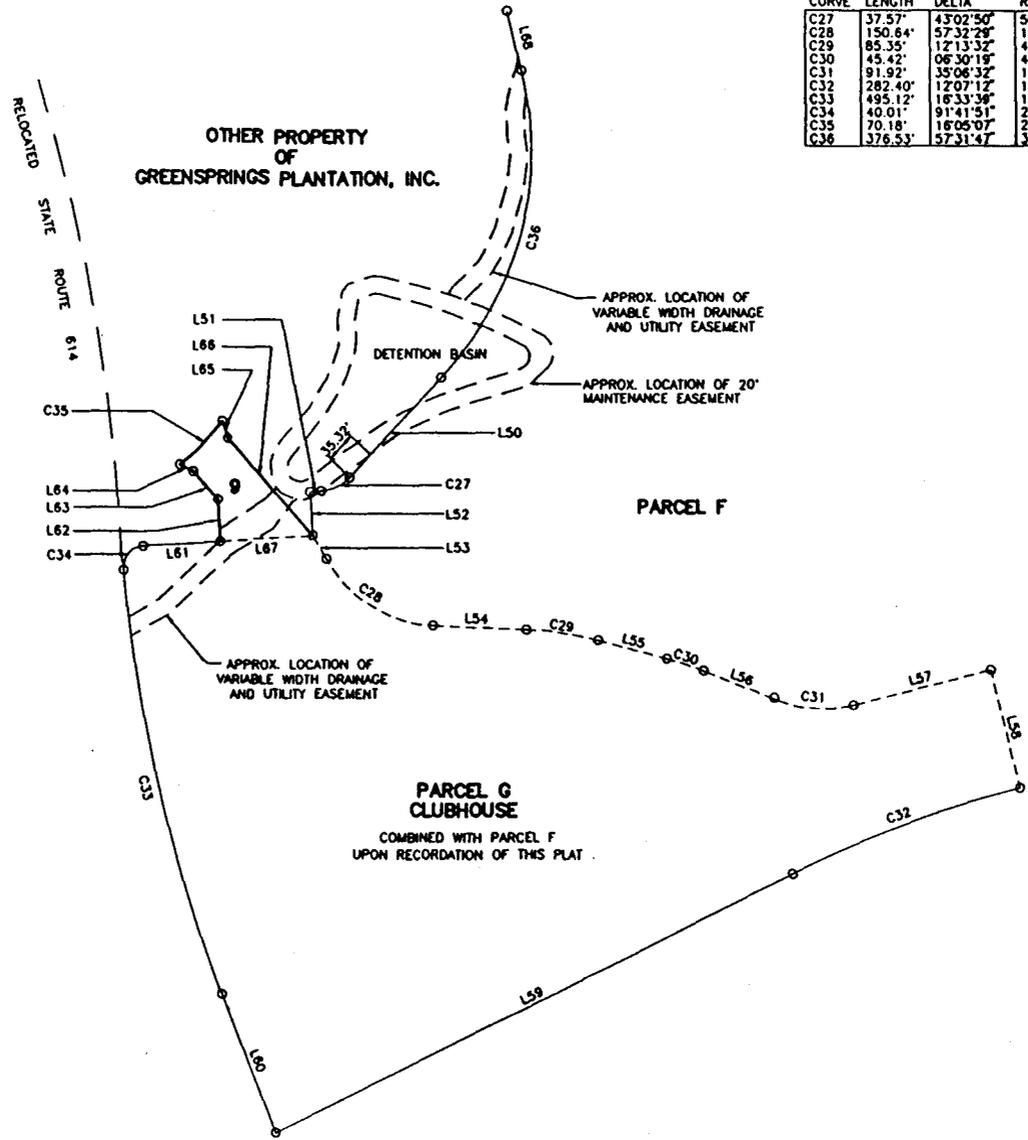
OTHER FLOOD AREAS

ZONE X: AREAS OF 500-YEAR FLOOD, AREAS OF 100-YEAR FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT (WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND ARE PROTECTED BY LEVEES FROM 100-YEAR FLOOD.

ZONE X: AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOOD-PLAIN.



BOOK 701 PAGE 663



CURVE	LENGTH	DELTA	RADIUS	TANGENT	DIRECTION	CHORD
C27	37.57'	43°02'50"	50.00'	19.72'	N65°13'56" E	36.69'
C28	150.64'	57°32'29"	150.00'	82.36'	S56°45'30" E	144.39'
C29	85.35'	12°13'32"	400.00'	42.84'	S81°24'58" E	85.19'
C30	45.42'	06°30'19"	400.00'	22.73'	S72°03'03" E	45.39'
C31	91.92'	35°06'32"	150.00'	47.45'	S86°21'10" E	90.48'
C32	282.40'	12°07'12"	1335.00'	141.73'	N70°01'58" E	281.87'
C33	495.12'	16°33'38"	1713.00'	249.30'	S13°13'19" E	493.40'
C34	40.01'	91°41'51"	25.00'	25.75'	N40°54'26" E	35.88'
C35	70.18'	16°05'07"	250.00'	35.32'	N45°50'27" E	69.95'
C36	376.53'	57°31'47"	375.00'	205.66'	N14°56'30" E	360.91'

LINE	DIRECTION	DISTANCE
L50	S43°42'31" W	155.81'
L51	S86°45'21" W	13.31'
L52	N03°14'39" W	50.00'
L53	N29°59'15" W	30.57'
L54	S87°31'44" E	106.82'
L55	S75°18'12" E	82.72'
L56	N68°47'54" W	90.87'
L57	N76°05'34" E	165.40'
L58	S13°54'26" E	137.41'
L59	N63°58'22" E	671.92'
L60	S21°30'08" E	170.13'
L61	S86°45'21" W	89.76'
L62	S03°14'39" E	48.24'
L63	S41°50'02" E	42.78'
L64	N64°20'02" W	17.27'
L65	S19°20'02" E	20.35'
L66	S41°50'02" E	148.79'
L67	N86°45'21" E	109.50'
L68	S13°49'16" E	69.43'

AREA BREAKDOWN:

- AREA 1 = 0.1705 Ac
- AREA 2 = 0.0189 Ac
- AREA 3 = 0.2237 Ac
- AREA 4 = 0.0534 Ac
- AREA 5 = 0.1642 Ac
- AREA 6 = 4.4546 Ac
- AREA 7 = 1.0577 Ac
- AREA 8 = 0.7834 Ac
- AREA 9 = 0.2050 Ac

AREA ADJUSTMENT:

- ORIGINAL AREA PARCEL E = 19.1879 Ac
- ORIGINAL AREA PARCEL F = 149.6993 Ac
- ORIGINAL AREA PARCEL G = 8.4050 Ac

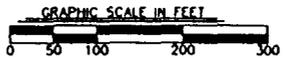
- NEW ADJUSTED AREA PARCEL E = 13.7738 Ac
- NEW ADJUSTED AREA PARCEL F = 163.9374 Ac
- PARCEL G (CLUBHOUSE PARCEL) ELIMINATED

NOTE:

THIS PROPERTY IS SUBJECT TO RESTRICTIONS OF RECORD.

REFERENCE:

P.B. 58, PGS. 96-102, DATED MARCH 14, 1994

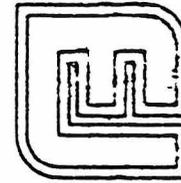


BOUNDARY LINE ADJUSTMENT
LEGACY (GREENSPRINGS) LIMITED PARTNERSHIP,
A VIRGINIA LIMITED PARTNERSHIP
 AT GREENSPRINGS
 BEING A
 SUBDIVISION OF PROPERTY OF
GREENSPRINGS PLANTATION, INC.
 BERKELEY DISTRICT
 JAMES CITY COUNTY, VIRGINIA
 JANUARY 5, 1995
 SCALE: 1"=100'
 SHEET 2 OF 2



Langley and McDonald, P.C.
 Engineers - Surveyors - Planners
 Landscape Architects - Environmental Consultants
 VIRGINIA BEACH WILLIAMSBURG

LEGACY GOLF LINKS
 AT GREENSPRINGS
 BEING A
 SUBDIVISION OF PROPERTY OF
 GREENSPRINGS PLANTATION, INC.
 BERKELEY DISTRICT
 JAMES CITY COUNTY, VIRGINIA
 FEBRUARY 18, 1994
 SCALE: 1"=600'
 SHEET 1 OF 7



Langlely and McDonald, P.C.

Engineers - Surveyors - Planners
 Landscape Architects - Environmental Consultants

VIRGINIA BEACH

WILLIAMSBURG

GRAPHIC SCALE IN FEET



- SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD
- ☐ ZONE A: NO BASE FLOOD ELEVATIONS DETERMINED
 - ☐ ZONE AE: BASE FLOOD ELEVATIONS DETERMINED
- OTHER FLOOD AREAS
- ☐ ZONE X: AREAS OF 500-YEAR FLOOD, AREAS OF 100-YEAR FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND ARE PROTECTED BY LEVEES FROM 100-YEAR FLOOD.
 - ☐ ZONE X: AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOOD-PLAIN.

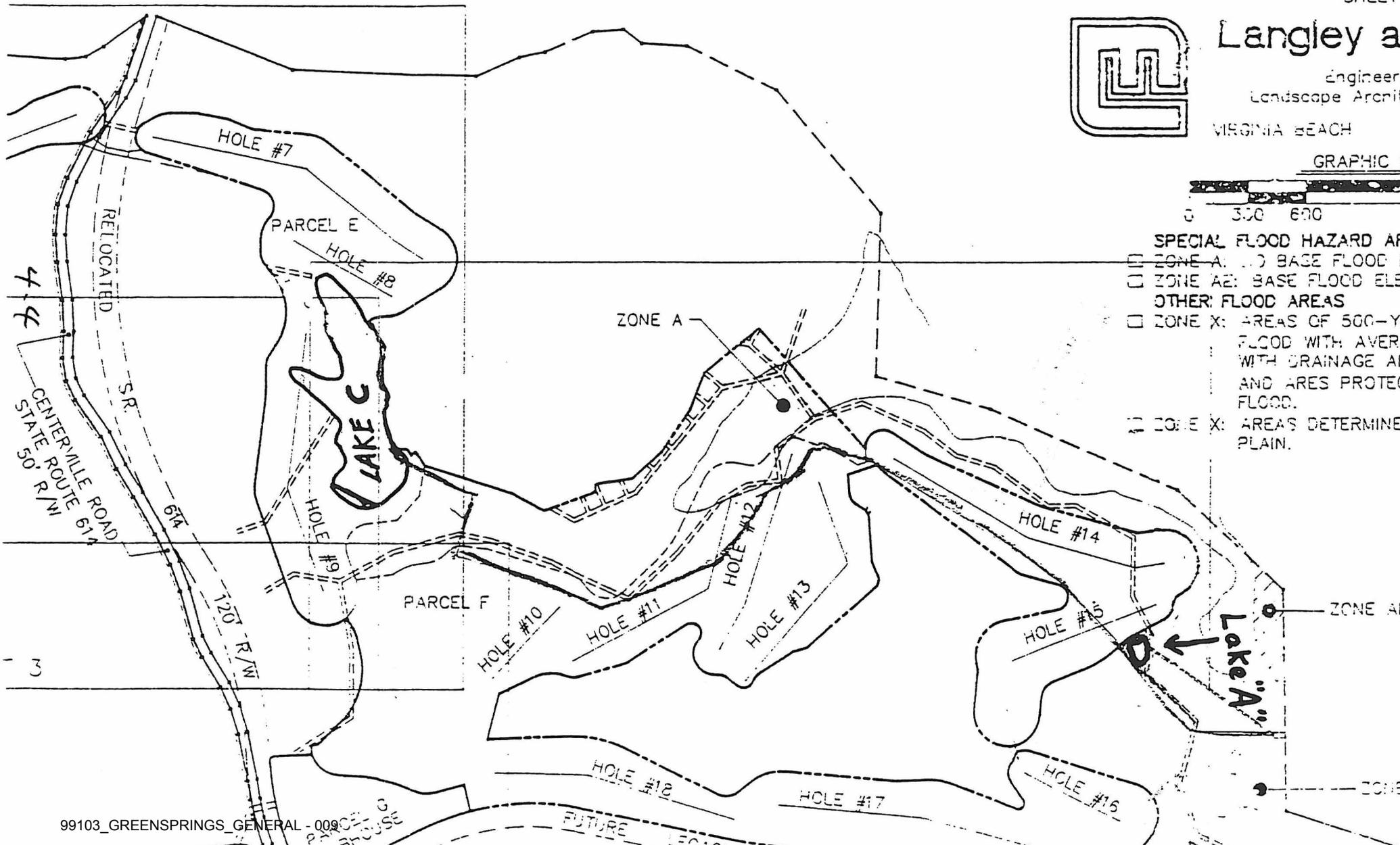
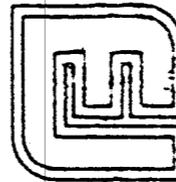


EXHIBIT A
 BOOK 707 PAGE 103

LEGACY GOLF LINKS
 AT GREENSPRINGS
 BEING A
 SUBDIVISION OF PROPERTY OF
 GREENSPRINGS PLANTATION, INC.
 BERKELEY DISTRICT
 JAMES CITY COUNTY, VIRGINIA
 FEBRUARY 18, 1994
 SCALE: 1"=600'
 SHEET 1 OF 7



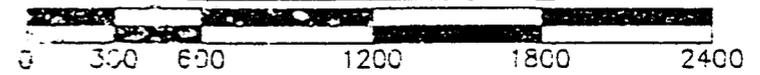
Langlely and McDonald, P.C.

Engineers - Surveyors - Planners
 Landscape Architects - Environmental Consultants

VIRGINIA BEACH

WILLIAMSBURG

GRAPHIC SCALE IN FEET



SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

- ZONE A: NO BASE FLOOD ELEVATIONS DETERMINED
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- ZONE X: AREAS OF 500-YEAR FLOOD, AREAS OF 100-YEAR FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 100-YEAR FLOOD.
- ZONE X: AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOOD-PLAIN.

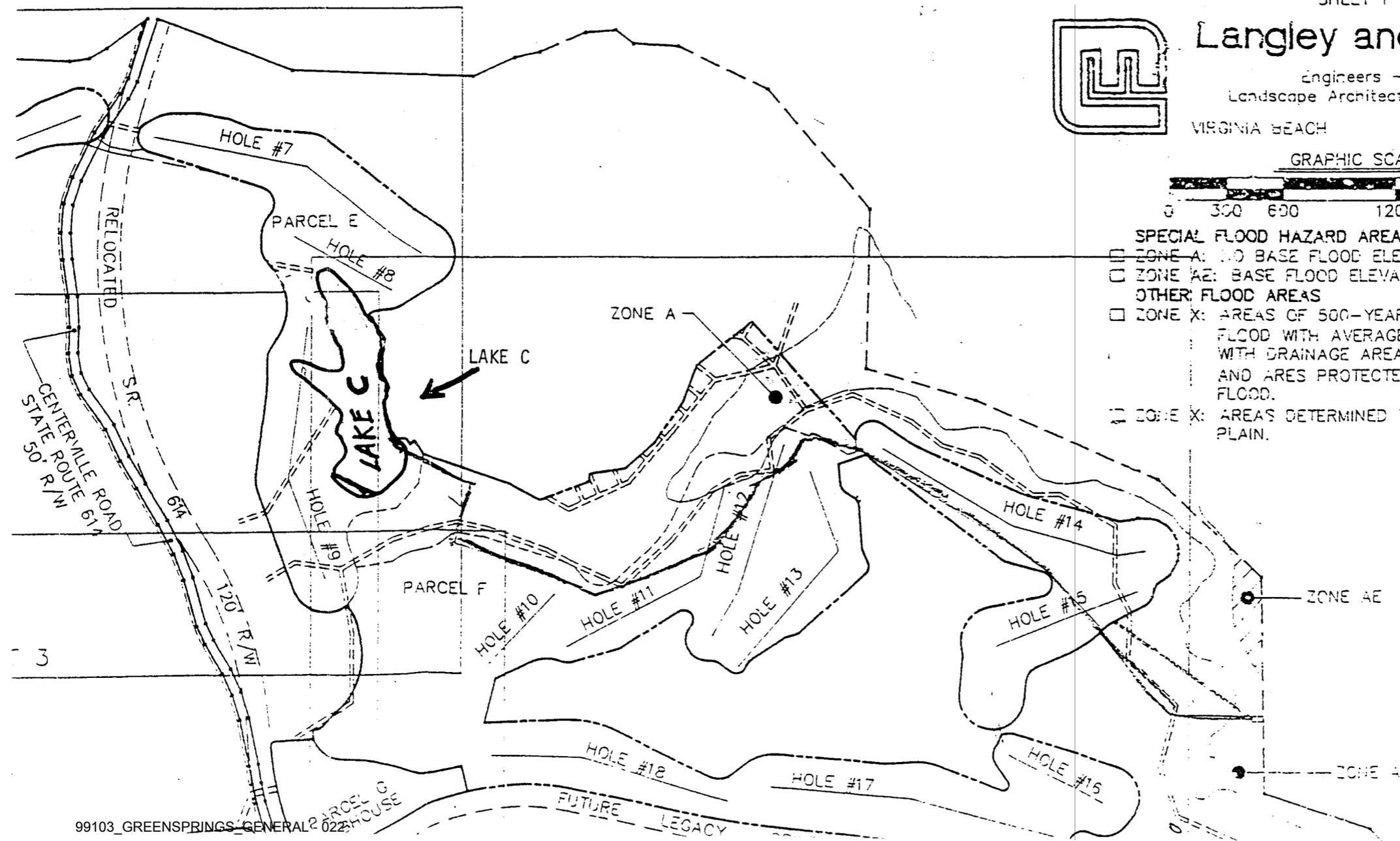
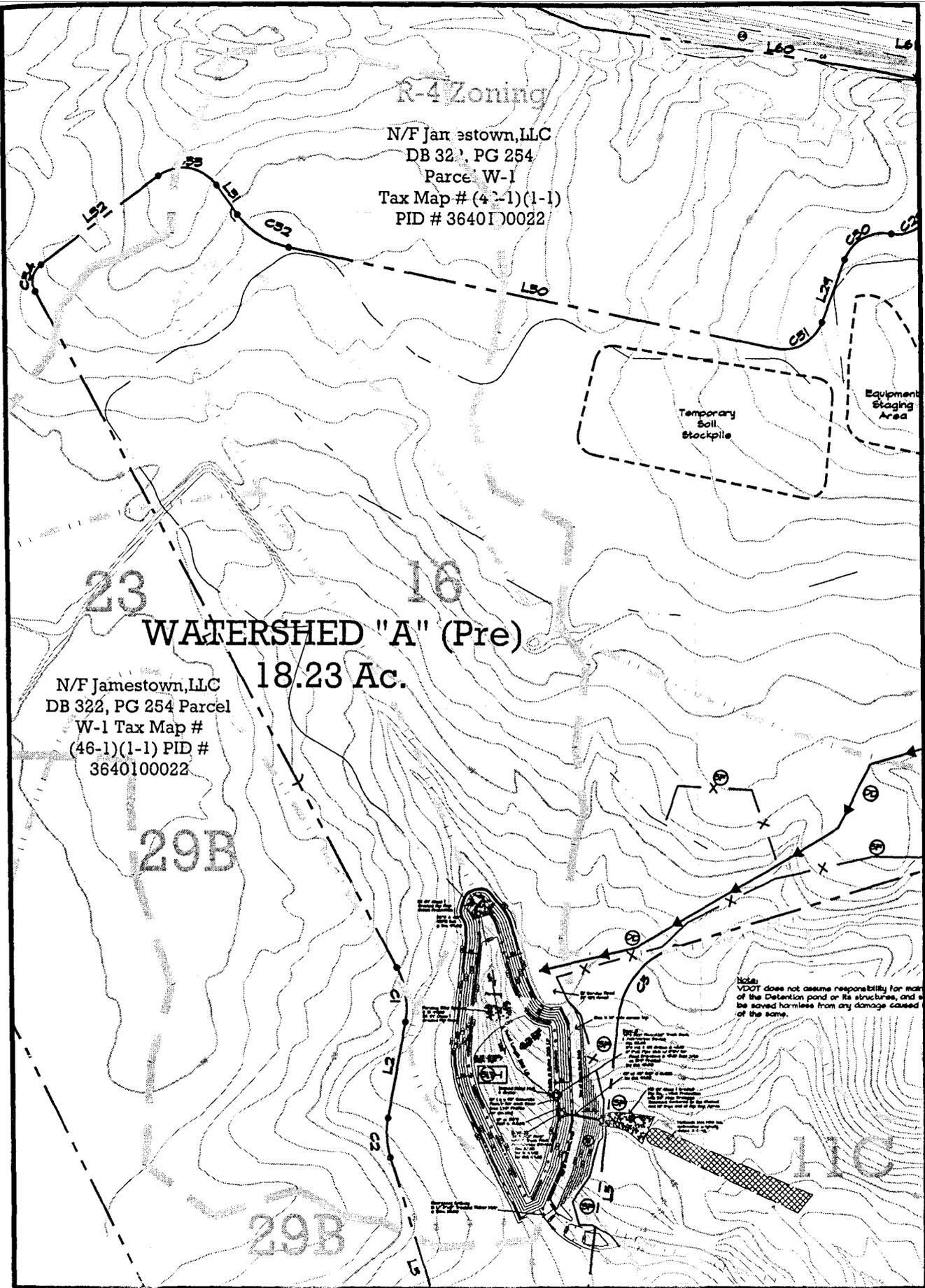


EXHIBIT A

BOOK 701 PAGE 668

rawings Samson\drawgs 2003\03-286 greensprings redo - bush\03-286 greensprings redo.dwg, d a plan, 3/18/2004 8:08:50 AM



R-4 Zoning

N/F Jamestown, LLC
DB 32, PG 254
Parcel W-1
Tax Map # (46-1)(1-1)
PID # 364010022

WATERSHED "A" (Pre)
18.23 Ac.

N/F Jamestown, LLC
DB 32, PG 254 Parcel
W-1 Tax Map #
(46-1)(1-1) PID #
364010022

Note: YDOT does not assume responsibility for maintenance of the Detention pond or its structures, and shall be saved harmless from any damage caused by the same.



Greensprings Condominiums
Pre-Development Drainage Area Map

Simmons Engineering, Inc.
Civil & Structural Engineering Design and Consulting



LEGACY GOLF LINKS AT GREENSPRINGS PLANTATION

DRAINAGE CALCULATIONS

- Hydrologic Routings For Lakes C and G
 - Hydraulic Calculations for Storm Sewers
 - Hydrologic Calculations For Golf Course Drainage Areas
 - 10-Point BMP Worksheet
- A Stormwater Management Plan for Greensprings

SUBAREA HYDROLOGY

Input Data for Q=CiA Computations for Greenspring Plantation Golf Course drainage structures.
3/30/92

Using IDF curve for Richmond for the 10-yr storm

G=Golf
RES=Residential areas
RD=Road

Pipe/Drainage Basin	Land Use	Area (ac)	C Value	10-YR i	Q=CiA (cfs)
1-1 ✓	G	0.6	0.2	3.9	
		0.6	0.2	3.9	0.5
		Total A	Ave. C		Q
Drainage Basin					
1-2 ✓	G	0.5	0.2	4.5	
		0.5	0.2	4.5	0.5
		Total A	Ave. C		Q
Drainage Basin					
1-3 ✓	G	0.8	0.2	3.9	
		0.8	0.2	3.9	0.6
		Total A	Ave. C		Q
Drainage Basin					
1-4 ✓	G	0.7	0.2	4.0	
		0.7	0.2	4.0	0.6
		Total A	Ave. C		Q
Drainage Basin					
1-5	G	0.1	0.2	5.3	
		0.1	0.2	5.3	0.1
		Total A	Ave. C		Q
Drainage Basin					
1-6	G+RD	0.9	0.3	4.0	
		0.9	0.3	4.0	1.1
		Total A	Ave. C		Q
Drainage Basin					
2-1	G	0.2	0.2	4.4	
		0.2	0.2	4.4	0.2
		Total A	Ave. C		Q
Drainage Basin					
3-1	RES	8.3	0.4	3.2	
		8.3	0.4	3.2	10.6
		Total A	Ave. C		Q
Drainage Basin					
3-3	G	1.7	0.2	4.0	
	RES	1.0	0.4		
		2.7	0.3	4.0	3.0
		Total A	Ave. C		Q
Drainage Basin					
3-10	G	3.5	0.2	4.0	
	RES	3.1	0.4		
		6.6	0.3	4.0	7.8
		Total A	Ave. C		Q
Drainage Basin					
3-9	G	0.7	0.2	3.3	
	RES	1.4	0.4		

	RES	0.0	0.4		
		1.3	0.2	4.2	1.1
		Total A	Ave. C		Q
Drainage Basin					
11-2	G	0.2	0.2	4.5	
	RES	0.0	0.4		
		0.2	0.2	4.5	0.2
		Total A	Ave. C		Q
Drainage Basin					
12-1	G	0.5	0.2	4.1	
	RES	0.0	0.4		
		0.5	0.2	4.1	0.4
		Total A	Ave. C		Q
Drainage Basin					
13-1b	G	0.1	0.2	4.5	
	RES	0.5	0.4		
		0.6	0.4	4.5	1.0
		Total A	Ave. C		Q
Drainage Basin					
13-2	G	0.4	0.2	4.4	
	RES	0.6	0.4		
		1.0	0.3	4.4	1.4
		Total A	Ave. C		Q
Drainage Basin					
13-3	G	0.2	0.2	4.5	
	RES	0.0	0.4		
		0.2	0.2	4.5	0.2
		Total A	Ave. C		Q
Drainage Basin					
13-1	G	1.8	0.2	4.0	
	RES	1.1	0.4		
		2.9	0.3	4.0	3.2
		Total A	Ave. C		Q
Drainage Basin					
14-1	G	0.0	0.2	4.0	
	RES	3.1	0.4		
		3.1	0.4	4.0	5.0
		Total A	Ave. C		Q
Drainage Basin					
14-2	G	1.1	0.2	4.1	
	RES	0.0	0.4		
		1.1	0.2	4.1	0.9
		Total A	Ave. C		Q
Drainage Basin					
14-5	G	0.5	0.2	4.0	
	RES	0.3	0.4		
		0.8	0.3	4.0	0.9
		Total A	Ave. C		Q
Drainage Basin					
14-7	G	0.3	0.2	4.5	
	RES	0.0	0.4		
		0.3	0.2	4.5	0.3
		Total A	Ave. C		Q
Drainage Basin					
15-1	G	0.0	0.2	3.7	
	RES	2.6	0.4		
		2.6	0.4	3.7	3.8
		Total A	Ave. C		Q

Drainage Basin					
15-3	G	1.3	0.2	3.6	
	RES	12.5	0.4		
		13.8	0.4	3.6	18.9
		Total A	Ave. C		Q
Drainage Basin					
15-4	G	0.8	0.2	4.0	
	RES	1.2	0.4		
		2.0	0.3	4.0	2.6
		Total A	Ave. C		Q
Drainage Basin					
15-4	G	0.4	0.2	4.0	
	RES	0.0	0.4		
		0.4	0.2	4.0	0.3
		Total A	Ave. C		Q
Drainage Basin					
15-5	G	0.7	0.2	4.0	
	RES	0.9	0.4		
		1.6	0.3	4.0	2.0
		Total A	Ave. C		Q
Drainage Basin					
15-8	G	2.5	0.2	4.0	
	RES	12.0	0.4		
		14.5	0.4	4.0	21.2
		Total A	Ave. C		Q
Drainage Basin					
15-7	G	0.4	0.2	4.1	
	RES	0.3	0.4		
		0.7	0.3	4.1	0.8
		Total A	Ave. C		Q
Drainage Basin					
16-1	G	0.8	0.2	4.5	
	RES	0.3	0.4		
		1.1	0.3	4.5	1.3
		Total A	Ave. C		Q
Drainage Basin					
17-1	G	3.2	0.2	3.6	
	RES	2.3	0.4		
		5.5	0.3	3.6	5.6
		Total A	Ave. C		Q
Drainage Basin					
17-2	G	0.5	0.2	2.8	
	RES	5.4	0.4		
		5.9	0.4	2.8	6.3
		Total A	Ave. C		Q
Drainage Basin					
17-3	G	1.0	0.2	3.9	
	RES	1.0	0.4		
		2.0	0.3	3.9	2.3
		Total A	Ave. C		Q
Drainage Basin					
18-1	G	0.2	0.2	4.5	
	RES	0.0	0.4		
		0.2	0.2	4.5	0.2
		Total A	Ave. C		Q

PIPE HYDRAULICS

Return Period = 10 Yrs
 Rainfall file: JAMES CITY CO.....

LINE 1 / Q = 11.0 / HT = 15 / WID = 15 / N = .013 / L = 120 / JLC = .9

..... / Outfall 3-1 → 3-2

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	55.00	15.00	53.00	8.97	56.25	0.00	.25	1.23
UPSTRM	62.36	14.58	60.00	9.04	63.62	4.95	.75	1.22

Drainage area (ac) = 0	Slope of invert (%) = 5.833
Runoff coefficient = 0	Slope energy grade line (%) = 5.195
Time of conc (min) = 0	Critical depth (in) = 14.57
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 11	Confluence angle (deg) = 0
Default Q (cfs) = 11	Natural ground elev (ft) = 62
Line capac. (cfs) = 15.6	Line storage (cuft) = 147

7754 - 3 A
 (JOB NO.) (HOLD NO.) (SYSTEMS ON HOLD)
 A=1
 B=2
 C=3

HYDRAULIC ANALYSIS

Run date: 04-26-1992
 File: A:7754-3AA.ST3

Return Period = 10 Yrs
 Rainfall file: JAMES CITY CO.....

LINE 1 / Q = 11.0 / HT = 15 / WID = 15 / N = .013 / L = 120 / JLC = .9

..... / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	56.94	15.00	53.00	8.97	58.19	0.00	.25	1.23
UPSTRM	62.36	14.58	60.00	9.04	63.62	4.95	.75	1.22

Drainage area (ac) = 0	Slope of invert (%) = 5.833
Runoff coefficient = 0	Slope energy grade line (%) = 3.579
Time of conc (min) = 0	Critical depth (in) = 14.57
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 11	Confluence angle (deg) = 0
Default Q (cfs) = 11	Natural ground elev (ft) = 62
Line capac. (cfs) = 15.6	Line storage (cuft) = 147

7754 - 3 A A
 (JOB NO) (HOLE NO.) (SYSTEM) (10 YEAR ELEV. OF LAKE)

HYDRAULIC ANALYSIS

Run date: 04-26-1992
 File: A:7754-3B.ST3

Return Period = 10 Yrs
 Rainfall file: JAMES CITY CO.....

LINE 1 / Q = 3.0 / HT = 8 / WID = 8 / N = .013 / L = 40 / JLC = .9

..... / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	55.00	8.00	53.00 /	8.60	56.15	0.00	6.03	0.35
UPSTRM	59.60	7.93	57.90 /	8.61	60.75	1.48	1.13	0.35

Drainage area (ac) = 0	Slope of invert (%) = 12.250
Runoff coefficient = 0	Slope energy grade line (%) = 8.909
Time of conc (min) = 0	Critical depth (in) = 7.93
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 3	Confluence angle (deg) = 0
Default Q (cfs) = 3	Natural ground elev (ft) = 59.7
Line capac. (cfs) = 4.2	Line storage (cuft) = 14

HYDRAULIC ANALYSIS

Run date: 04-26-1992
File: A:7754-3BB.ST3

Return Period = 10 Yrs
Rainfall file: JAMES CITY CO.....

LINE 1 / Q = 3.0 / HT = 8 / WID = 8 / N = .013 / L = 40 / JLC = .9

..... / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	56.94 ✓	8.00	53.00	8.60	58.09	0.00	6.03	0.35
UPSTRM	60.44 ✓	8.00	57.90	8.59	61.59	0.00	1.13	0.35

Drainage area (ac) =	0	Slope of invert (%) =	12.250
Runoff coefficient =	0	Slope energy grade line (%) =	6.172
Time of conc (min) =	0	Critical depth (in) =	7.93
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	3	Confluence angle (deg) =	0
Default Q (cfs) =	3	Natural ground elev (ft) =	59.7
Line capac. (cfs) =	4.2	Line storage (cuft) =	14

HYDRAULIC ANALYSIS

Run date: 04-26-1992
File: A:7754-3C.ST3

Return Period = 10 Yrs
Rainfall file: JAMES CITY CD.....

LINE 1 / Q = 14.1 / HT = 18 / WID = 18 / N = .013 / L = 20 / JLC = 1.1

..... / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	55.00	18.00	53.00	7.98	55.99	0.00	1	1.77
UPSTRM	55.36	18.00	53.50	7.98	56.35	0.00	.59	1.77

Drainage area (ac) =	0	Slope of invert (%) =	2.500
Runoff coefficient =	0	Slope energy grade line (%) =	1.803
Time of conc (min) =	7	Critical depth (in) =	16.93
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	14.1	Confluence angle (deg) =	0
Default Q (cfs) =	14.1	Natural ground elev (ft) =	55.6
Line capac. (cfs) =	16.6	Line storage (cuft) =	35

LINE 2 / Q = 13.9 / HT = 18 / WID = 18 / N = .013 / L = 60 / JLC = 1.1

..... / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	56.45	18.00	53.50	7.87	57.41	0.00	.59	1.77
UPSTRM	57.50	18.00	55.00	7.87	58.46	0.00	2	1.77

Drainage area (ac) =	0	Slope of invert (%) =	2.500
Runoff coefficient =	0	Slope energy grade line (%) =	1.752
Time of conc (min) =	7	Critical depth (in) =	16.71
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	13.9	Confluence angle (deg) =	0
Default Q (cfs) =	13.9	Natural ground elev (ft) =	58.5
Line capac. (cfs) =	16.6	Line storage (cuft) =	106

LINE 3 / Q = 13.3 / HT = 18 / WID = 18 / N = .013 / L = 90 / JLC = 1.1

..... / DNLN = 2

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	58.56	18.00	55.00	7.53	59.44	0.00	2	1.77
UPSTRM	60.00	18.00	57.00	7.53	60.88	0.00	4	1.77

Drainage area (ac) = 0	Slope of invert (%) = 2.222
Runoff coefficient = 0	Slope energy grade line (%) = 1.604
Time of conc (min) = 7	Critical depth (in) = 16.47
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 13.3	Confluence angle (deg) = 10
Default Q (cfs) = 13.3	Natural ground elev (ft) = 62.5
Line capac. (cfs) = 15.7	Line storage (cuft) = 159

LINE 4 / Q = 10.3 / HT = 18 / WID = 18 / N = .013 / L = 570 / JLC = 1.1

..... / DNLN = 3

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	60.97	18.00	57.00	5.83	61.50	0.00	4	1.77
UPSTRM	67.95	15.03	66.70	6.53	68.62	13.36	2.5	1.58

Drainage area (ac) = 0	Slope of invert (%) = 1.702
Runoff coefficient = 0	Slope energy grade line (%) = 1.249
Time of conc (min) = 3	Critical depth (in) = 15.00
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 10.3	Confluence angle (deg) = 0
Default Q (cfs) = 10.3	Natural ground elev (ft) = 70.7
Line capac. (cfs) = 13.7	Line storage (cuft) = 953

LINE 5 / Q = 2.5 / HT = 12 / WID = 12 / N = .013 / L = 310 / JLC = 1.2

..... / DNLN = 4

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	68.68	12.00	66.70	3.18	68.84	0.00	3	0.79
UPSTRM	70.14	10.06	69.30	3.55	70.33	8.83	3.19	0.70

Drainage area (ac) = 0	Slope of invert (%) = 0.839
Runoff coefficient = 0	Slope energy grade line (%) = 0.482
Time of conc (min) = 2	Critical depth (in) = 8.50
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 2.5	Confluence angle (deg) = -5
Default Q (cfs) = 2.5	Natural ground elev (ft) = 73.5
Line capac. (cfs) = 3.3	Line storage (cuft) = 231

LINE 6 / Q = 0.2 / HT = 8 / WID = 8 / N = .013 / L = 130 / JLC = 1.2

..... / DNLN = 5

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	70.37	8.00	69.60	0.57	70.38	0.00	3.23	0.35
UPSTRM	72.23	2.76	72.00	1.88	72.28	7.60	1.83	0.11

Drainage area (ac) = 0	Slope of invert (%) = 1.846
Runoff coefficient = 0	Slope energy grade line (%) = 1.466
Time of conc (min) = 1	Critical depth (in) = 2.74
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = .2	Confluence angle (deg) = -57
Default Q (cfs) = .2	Natural ground elev (ft) = 74.5
Line capac. (cfs) = 1.6	Line storage (cuft) = 30

LINE 7 / Q = 0.2 / HT = 8 / WID = 8 / N = .013 / L = 118 / JLC = 1.1

..... / DNLN = 6

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	72.30	3.54	72.00	1.26	72.32	7.98	1.83	0.16
UPSTRM	73.23	2.76	73.00	1.88	73.28	7.60	1.83	0.11

Drainage area (ac)	=	0	Slope of invert (%)	=	0.847
Runoff coefficient	=	0	Slope energy grade line (%)	=	0.817
Time of conc (min)	=	0	Critical depth (in)	=	2.74
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	0.0
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	0.0
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	0
Flow contrib (cfs)	=	.2	Confluence angle (deg)	=	85
Default Q (cfs)	=	.2	Natural ground elev (ft)	=	75.5
Line capac. (cfs)	=	1.1	Line storage (cuft)	=	16

LINE 8 / Q = 0.2 / HT = 8 / WID = 8 / N = .013 / L = 70 / JLC = .9

..... / DNLN = 7

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	73.29	3.48	73.00	1.35	73.32	7.94	1.83	0.15
UPSTRM	74.28	2.76	74.00	1.88	74.33	7.60	.83	0.11

Drainage area (ac)	=	0	Slope of invert (%)	=	1.429
Runoff coefficient	=	0	Slope energy grade line (%)	=	1.450
Time of conc (min)	=	0	Critical depth (in)	=	2.74
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	0.0
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	0.0
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	0
Flow contrib (cfs)	=	.2	Confluence angle (deg)	=	35
Default Q (cfs)	=	.2	Natural ground elev (ft)	=	75.5
Line capac. (cfs)	=	1.4	Line storage (cuft)	=	9

LINE 9 / Q = 0.2 / HT = 8 / WID = 8 / N = .013 / L = 65 / JLC = .9

..... / DNLN = 5

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	70.37	8.00	69.60	0.57	70.38	0.00	3.23	0.35
UPSTRM	70.58	2.76	70.30	1.88	70.63	7.60	1.63	0.11

Drainage area (ac)	= 0	Slope of invert (%)	= 1.077
Runoff coefficient	= 0	Slope energy grade line (%)	= 0.316
Time of conc (min)	= 0	Critical depth (in)	= 2.74
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 0.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 0.0
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 0
Flow contrib (cfs)	= .2	Confluence angle (deg)	= 0
Default Q (cfs)	= .2	Natural ground elev (ft)	= 72.6
Line capac. (cfs)	= 1.3	Line storage (cuft)	= 15

HYDRAULIC ANALYSIS

Run date: 04-26-1992
File: A:7754-300.ST3

Return Period = 10 Yrs
Rainfall file: JAMES CITY CO.....

3-13

LINE 1 / Q = 14.1 / HT = 18 / WID = 18 / N = .013 / L = 20 / JLC = 1.1

..... / Outfall 3-14 ?

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	56.94	18.00	53.00	7.98	57.93	0.00	1	1.77
UPSTRM	57.30	18.00	53.50	7.98	58.29	0.00	.59	1.77

Drainage area (ac) = 0	Slope of invert (%) = 2.500
Runoff coefficient = 0	Slope energy grade line (%) = 1.803
Time of conc (min) = 7	Critical depth (in) = 16.93
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 14.1	Confluence angle (deg) = 0
Default Q (cfs) = 14.1	Natural ground elev (ft) = 55.6
Line capac. (cfs) = 16.6	Line storage (cuft) = 35

3-12

LINE 2 / Q = 13.9 / HT = 18 / WID = 18 / N = .013 / L = 60 / JLC = 1.1

..... / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	58.39	18.00	53.50	7.87	59.35	0.00	.59	1.77
UPSTRM	59.44	18.00	55.00	7.87	60.40	0.00	2	1.77

Drainage area (ac) = 0	Slope of invert (%) = 2.500
Runoff coefficient = 0	Slope energy grade line (%) = 1.752
Time of conc (min) = 7	Critical depth (in) = 16.71
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 13.9	Confluence angle (deg) = 0
Default Q (cfs) = 13.9	Natural ground elev (ft) = 58.5
Line capac. (cfs) = 16.6	Line storage (cuft) = 106

LINE 3 / Q = 13.3 / HT = 18 / WID = 18 / N = .013 / L = 90 / JLC = 1.1

..... / DNLN = 2

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	60.50	18.00	55.00	7.53	61.38	0.00	2	1.77
UPSTRM	61.94	18.00	57.00	7.53	62.82	0.00	4	1.77

Drainage area (ac) =	0	Slope of invert (%) =	2.222
Runoff coefficient =	0	Slope energy grade line (%) =	1.604
Time of conc (min) =	7	Critical depth (in) =	16.47
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	13.3	Confluence angle (deg) =	10
Default Q (cfs) =	13.3	Natural ground elev (ft) =	62.5
Line capac. (cfs) =	15.7	Line storage (cuft) =	159

LINE 4 / Q = 10.3 / HT = 18 / WID = 18 / N = .013 / L = 570 / JLC = 1.1

..... / DNLN = 3

3-10

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	62.91	18.00	57.00	5.83	63.44	0.00	4	1.77
UPSTRM	68.19	17.84	66.70	5.84	68.72	3.34	2.5	1.76

Drainage area (ac) =	0	Slope of invert (%) =	1.702
Runoff coefficient =	0	Slope energy grade line (%) =	0.926
Time of conc (min) =	3	Critical depth (in) =	15.00
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	10.3	Confluence angle (deg) =	0
Default Q (cfs) =	10.3	Natural ground elev (ft) =	70.7
Line capac. (cfs) =	13.7	Line storage (cuft) =	1006

LINE 5 / Q = 2.5 / HT = 12 / WID = 12 / N = .013 / L = 310 / JLC = 1.2

..... / DNLN = 4

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	68.77	12.00	66.70	3.18	68.93	0.00	3	0.79
UPSTRM	70.19	10.72	69.30	3.38	70.37	7.42	3.19	0.74

Drainage area (ac) = 0	Slope of invert (%) = 0.839
Runoff coefficient = 0	Slope energy grade line (%) = 0.466
Time of conc (min) = 2	Critical depth (in) = 8.50
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 2.5	Confluence angle (deg) = -5
Default Q (cfs) = 2.5	Natural ground elev (ft) = 73.5
Line capac. (cfs) = 3.3	Line storage (cuft) = 236

LINE 6 / Q = 0.2 / HT = 8 / WID = 8 / N = .013 / L = 130 / JLC = 1.2

..... / DNLN = 5

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	70.41	8.00	69.60	0.57	70.41	0.00	3.23	0.35
UPSTRM	72.23	2.76	72.00	1.88	72.28	7.60	1.83	0.11

Drainage area (ac) = 0	Slope of invert (%) = 1.846
Runoff coefficient = 0	Slope energy grade line (%) = 1.441
Time of conc (min) = 1	Critical depth (in) = 2.74
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = .2	Confluence angle (deg) = -57
Default Q (cfs) = .2	Natural ground elev (ft) = 74.5
Line capac. (cfs) = 1.6	Line storage (cuft) = 30

LINE 7 / Q = 0.2 / HT = 8 / WID = 8 / N = .013 / L = 118 / JLC = 1.1

..... / DNLN = 6

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	72.30	3.54	72.00	1.26	72.32	7.98	1.83	0.16
UPSTRM	73.23	2.76	73.00	1.88	73.28	7.60	1.83	0.11

Drainage area (ac) =	0	Slope of invert (%) =	0.847
Runoff coefficient =	0	Slope energy grade line (%) =	0.817
Time of conc (min) =	0	Critical depth (in) =	2.74
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	.2	Confluence angle (deg) =	85
Default Q (cfs) =	.2	Natural ground elev (ft) =	75.5
Line capac. (cfs) =	1.1	Line storage (cuft) =	16

LINE 8 / Q = 0.2 / HT = 8 / WID = 8 / N = .013 / L = 70 / JLC = .9

..... / DNLN = 7

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	73.29	3.48	73.00	1.35	73.32	7.94	1.83	0.15
UPSTRM	74.28	2.76	74.00	1.88	74.33	7.60	.83	0.11

Drainage area (ac) =	0	Slope of invert (%) =	1.429
Runoff coefficient =	0	Slope energy grade line (%) =	1.450
Time of conc (min) =	0	Critical depth (in) =	2.74
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	.2	Confluence angle (deg) =	35
Default Q (cfs) =	.2	Natural ground elev (ft) =	75.5
Line capac. (cfs) =	1.4	Line storage (cuft) =	9

LINE 9 / Q = 0.2 / HT = 8 / WID = 8 / N = .013 / L = 65 / JLC = .9

..... / DNLN = 5

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	70.41	8.00	69.60	0.57	70.41	0.00	3.23	0.35
UPSTRM	70.58	2.80	70.30	1.84	70.63	7.63	1.63	0.11

Drainage area (ac)	=	0	Slope of invert (%)	=	1.077
Runoff coefficient	=	0	Slope energy grade line (%)	=	0.269
Time of conc (min)	=	0	Critical depth (in)	=	2.74
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	0.0
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	0.0
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	0
Flow contrib (cfs)	=	.2	Confluence angle (deg)	=	0
Default Q (cfs)	=	.2	Natural ground elev (ft)	=	72.6
Line capac. (cfs)	=	1.3	Line storage (cuft)	=	15

HYDRAULIC ANALYSIS

Run date: 04-26-1992
File: A:7754-456.ST3

Return Period = 10 Yrs
Rainfall file: JAMES CITY CO.....

LINE 1 / Q = 72.0 / HT = 42 / WID = 42 / N = .013 / L = 30 / JLC = 1.2

..... / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	59.71	32.49	57.00	9.01	60.97	35.15	-3.5	7.99
UPSTRM	59.93	32.76	57.20	8.94	61.17	34.80	-.2	8.05

Drainage area (ac) =	0	Slope of invert (%) =	0.667
Runoff coefficient =	0	Slope energy grade line (%) =	0.673
Time of conc (min) =	8	Critical depth (in) =	32.49
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	72	Confluence angle (deg) =	0
Default Q (cfs) =	72	Natural ground elev (ft) =	60.5
Line capac. (cfs) =	82.1	Line storage (cuft) =	241

LINE 2 / Q = 42.6 / HT = 36 / WID = 36 / N = .013 / L = 65 / JLC = 1

..... / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	61.42	36.00	57.20	6.03	61.98	0.00	.29	7.07
UPSTRM	61.69	36.00	57.50	6.03	62.25	0.00	0	7.07

Drainage area (ac) =	0	Slope of invert (%) =	0.462
Runoff coefficient =	0	Slope energy grade line (%) =	0.408
Time of conc (min) =	3	Critical depth (in) =	26.30
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	42.6	Confluence angle (deg) =	-68
Default Q (cfs) =	42.6	Natural ground elev (ft) =	60.5
Line capac. (cfs) =	45.3	Line storage (cuft) =	459

LINE 3 / Q = 40.7 / HT = 36 / WID = 36 / N = .013 / L = 160 / JLC = 1.1

..... / DNLN = 2

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	62.25	36.00	57.50	5.76	62.76	0.00	0	7.07
UPSTRM	62.85	36.00	58.50	5.76	63.36	0.00	2	7.07

Drainage area (ac) =	0	Slope of invert (%) =	0.625
Runoff coefficient =	0	Slope energy grade line (%) =	0.372
Time of conc (min) =	2	Critical depth (in) =	25.49
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	40.7	Confluence angle (deg) =	0
Default Q (cfs) =	40.7	Natural ground elev (ft) =	63.5
Line capac. (cfs) =	52.7	Line storage (cuft) =	1131

LINE 4 / Q = 37.5 / HT = 36 / WID = 36 / N = .013 / L = 350 / JLC = 1.1

..... / DNLN = 3

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	63.41	36.00	58.50	5.31	63.85	0.00	2	7.07
UPSTRM	64.48	35.78	61.50	5.31	64.92	5.61	1	7.06

Drainage area (ac) =	0	Slope of invert (%) =	0.857
Runoff coefficient =	0	Slope energy grade line (%) =	0.306
Time of conc (min) =	0	Critical depth (in) =	24.66
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	37.5	Confluence angle (deg) =	-9
Default Q (cfs) =	37.5	Natural ground elev (ft) =	65.5
Line capac. (cfs) =	61.7	Line storage (cuft) =	2473

LINE 5 / Q = 35.2 / HT = 30 / WID = 30 / N = .013 / L = 65 / JLC = .9

..... / DNLN = 4

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	64.96	30.00	61.50	7.17	65.76	0.00	1.5	4.91
UPSTRM	66.16	30.00	62.00	7.17	66.96	0.00	1.5	4.91

Drainage area (ac) =	0	Slope of invert (%) =	0.769
Runoff coefficient =	0	Slope energy grade line (%) =	1.842
Time of conc (min) =	0	Critical depth (in) =	24.99
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	35.2	Confluence angle (deg) =	30
Default Q (cfs) =	35.2	Natural ground elev (ft) =	66
Line capac. (cfs) =	36.0	Line storage (cuft) =	319

LINE 6 / Q = 29.4 / HT = 30 / WID = 30 / N = .013 / L = 180 / JLC = 1.2

..... / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	61.42	30.00	57.20	5.99	61.98	0.00	.79	4.91
UPSTRM	62.35	30.00	58.50	5.99	62.90	0.00	2.5	4.91

Drainage area (ac) =	0	Slope of invert (%) =	0.722
Runoff coefficient =	0	Slope energy grade line (%) =	0.514
Time of conc (min) =	7	Critical depth (in) =	22.57
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	29.4	Confluence angle (deg) =	60
Default Q (cfs) =	29.4	Natural ground elev (ft) =	63.5
Line capac. (cfs) =	34.9	Line storage (cuft) =	883

LINE 7 / Q = 16.7 / HT = 24 / WID = 24 / N = .013 / L = 450 / JLC = 1.2

..... / DNLN = 6

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	63.01	24.00	58.50	5.32	63.45	0.00	3	3.14
UPSTRM	70.51	18.11	69.00	6.57	71.18	20.66	8.5	2.54

Drainage area (ac) =	0	Slope of invert (%) =	2.333
Runoff coefficient =	0	Slope energy grade line (%) =	1.717
Time of conc (min) =	5	Critical depth (in) =	18.06
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	16.7	Confluence angle (deg) =	-10
Default Q (cfs) =	16.7	Natural ground elev (ft) =	79.5
Line capac. (cfs) =	34.5	Line storage (cuft) =	1279

LINE 8 / Q = 9.5 / HT = 18 / WID = 18 / N = .013 / L = 455 / JLC = 1.1

..... / DNLN = 7

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	71.31	18.00	69.00	5.38	71.76	0.00	9	1.77
UPSTRM	74.93	14.76	73.70	6.13	75.51	13.83	3.3	1.55

Drainage area (ac) =	0	Slope of invert (%) =	1.033
Runoff coefficient =	0	Slope energy grade line (%) =	0.824
Time of conc (min) =	2	Critical depth (in) =	14.65
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	9.5	Confluence angle (deg) =	57
Default Q (cfs) =	9.5	Natural ground elev (ft) =	78.5
Line capac. (cfs) =	10.7	Line storage (cuft) =	755

LINE 9 / Q = 5.6 / HT = 15 / WID = 15 / N = .013 / L = 160 / JLC = 1

..... / DNLN = 8

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	75.57	15.00	73.70	4.56	75.89	0.00	3.55	1.23
UPSTRM	76.77	15.00	74.90	4.56	77.10	0.00	2.34	1.23

Drainage area (ac) = 0	Slope of invert (%) = 0.750
Runoff coefficient = 0	Slope energy grade line (%) = 0.752
Time of conc (min) = 1	Critical depth (in) = 11.91
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 5.6	Confluence angle (deg) = -30
Default Q (cfs) = 5.6	Natural ground elev (ft) = 78.5
Line capac. (cfs) = 5.6	Line storage (cuft) = 196

LINE 10 / Q = 4.2 / HT = 15 / WID = 15 / N = .013 / L = 110 / JLC = 1

..... / DNLN = 9

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	77.10	15.00	74.90	3.42	77.28	0.00	2.34	1.23
UPSTRM	77.56	15.00	75.70	3.42	77.75	0.00	1.25	1.23

Drainage area (ac) = 0	Slope of invert (%) = 0.727
Runoff coefficient = 0	Slope energy grade line (%) = 0.423
Time of conc (min) = 1	Critical depth (in) = 10.28
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 4.2	Confluence angle (deg) = 9
Default Q (cfs) = 4.2	Natural ground elev (ft) = 78.2
Line capac. (cfs) = 5.5	Line storage (cuft) = 135

LINE 11 / Q = 0.3 / HT = 8 / WID = 8 / N = .013 / L = 105 / JLC = .9

..... / DNLN = 10

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	77.75	8.00	75.70	0.86	77.76	0.00	1.83	0.35
UPSTRM	79.14	3.34	78.80	2.17	79.22	7.89	1.03	0.14

Drainage area (ac) =	0	Slope of invert (%) =	2.952
Runoff coefficient =	0	Slope energy grade line (%) =	1.391
Time of conc (min) =	0	Critical depth (in) =	3.32
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	.3	Confluence angle (deg) =	11
Default Q (cfs) =	.3	Natural ground elev (ft) =	80.5
Line capac. (cfs) =	2.1	Line storage (cuft) =	26

LINE 12 / Q = 4.7 / HT = 18 / WID = 18 / N = .013 / L = 65 / JLC = 1

..... / DNLN = 6

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	63.01	18.00	58.50	2.66	63.12	0.00	3.5	1.77
UPSTRM	63.14	18.00	59.00	2.66	63.25	0.00	1.7	1.77

Drainage area (ac) =	0	Slope of invert (%) =	0.769
Runoff coefficient =	0	Slope energy grade line (%) =	0.200
Time of conc (min) =	1	Critical depth (in) =	10.60
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	4.7	Confluence angle (deg) =	102
Default Q (cfs) =	4.7	Natural ground elev (ft) =	62.2
Line capac. (cfs) =	9.2	Line storage (cuft) =	115

LINE 13 / Q = 0.2 / HT = 8 / WID = 8 / N = .013 / L = 100 / JLC = .9

..... / DNLN = 12

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	63.25	8.00	59.00	0.57	63.26	0.00	2.53	0.35
UPSTRM	63.29	8.00	60.80	0.57	63.29	0.00	2.53	0.35

Drainage area (ac) =	0	Slope of invert (%) =	1.800
Runoff coefficient =	0	Slope energy grade line (%) =	0.032
Time of conc (min) =	0	Critical depth (in) =	2.74
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	.2	Confluence angle (deg) =	-22
Default Q (cfs) =	.2	Natural ground elev (ft) =	64
Line capac. (cfs) =	1.6	Line storage (cuft) =	35

LINE 14 / Q = 8.0 / HT = 15 / WID = 15 / N = .013 / L = 260 / JLC = 1.1

..... / DNLN = 6

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	63.01	15.00	58.50	6.52	63.67	0.00	3.75	1.23
UPSTRM	70.63	13.53	69.50	6.87	71.36	8.92	2.05	1.17

Drainage area (ac) =	0	Slope of invert (%) =	4.231
Runoff coefficient =	0	Slope energy grade line (%) =	2.956
Time of conc (min) =	1	Critical depth (in) =	13.51
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	8	Confluence angle (deg) =	-73
Default Q (cfs) =	8	Natural ground elev (ft) =	72.8
Line capac. (cfs) =	13.3	Line storage (cuft) =	311

LINE 15 / Q = 7.6 / HT = 15 / WID = 15 / N = .013 / L = 190 / JLC = .9

..... / DNLN = 14

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	71.43	15.00	69.50	6.19	72.03	0.00	2.05	1.23
UPSTRM	74.60	15.00	72.50	6.19	75.20	0.00	1.75	1.23

Drainage area (ac) =	0	Slope of invert (%) =	1.579
Runoff coefficient =	0	Slope energy grade line (%) =	1.668
Time of conc (min) =	0	Critical depth (in) =	13.28
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	7.6	Confluence angle (deg) =	-38
Default Q (cfs) =	7.6	Natural ground elev (ft) =	75.5
Line capac. (cfs) =	8.1	Line storage (cuft) =	233

LINE 16 / Q = 0.1 / HT = 8 / WID = 8 / N = .013 / L = 70 / JLC = 1

..... / DNLN = 14

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	71.43	8.00	69.50	0.29	71.43	0.00	2.63	0.35
UPSTRM	71.65	1.86	71.50	1.63	71.70	6.75	2.83	0.06

Drainage area (ac) =	0	Slope of invert (%) =	2.857
Runoff coefficient =	0	Slope energy grade line (%) =	0.374
Time of conc (min) =	0	Critical depth (in) =	1.84
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	.1	Confluence angle (deg) =	-65
Default Q (cfs) =	.1	Natural ground elev (ft) =	75
Line capac. (cfs) =	2.0	Line storage (cuft) =	14

LINE 17 / Q = 0.1 / HT = 8 / WID = 8 / N = .013 / L = 50 / JLC = .9

..... / DNLN = 16

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	71.70	2.35	71.50	1.16	71.72	7.30	2.83	0.09
UPSTRM	72.99	1.86	72.80	1.63	73.03	6.75	1.03	0.06

Drainage area (ac) =	0	Slope of invert (%) =	2.600
Runoff coefficient =	0	Slope energy grade line (%) =	2.633
Time of conc (min) =	0	Critical depth (in) =	1.84
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	.1	Confluence angle (deg) =	-55
Default Q (cfs) =	.1	Natural ground elev (ft) =	74.5
Line capac. (cfs) =	1.9	Line storage (cuft) =	4

LINE 18 / Q = 15.0 / HT = 15 / WID = 15 / N = .013 / L = 70 / JLC = .9

..... / DNLN = 7

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	71.31	15.00	69.00	12.23	73.63	0.00	9.25	1.23
UPSTRM	82.83	14.93	79.50	12.23	85.16	2.04	1.25	1.23

Drainage area (ac) =	0	Slope of invert (%) =	15.000
Runoff coefficient =	0	Slope energy grade line (%) =	13.476
Time of conc (min) =	0	Critical depth (in) =	14.92
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	15	Confluence angle (deg) =	-30
Default Q (cfs) =	15	Natural ground elev (ft) =	82
Line capac. (cfs) =	25.0	Line storage (cuft) =	86

HYDRAULIC ANALYSIS

Run date: 04-26-1992
File: A:7754-7A.ST3

Return Period = 10 Yrs
Rainfall file: JAMES CITY CO.....

LINE 1 / Q = 11.1 / HT = 15 / WID = 15 / N = .013 / L = 400 / JLC = 1.1

..... / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	50.00	15.00	47.50	9.05	51.27	0.00	1.25	1.23
UPSTRM	67.71	14.58	66.50	9.12	69.01	4.95	1.75	1.22

Drainage area (ac) = 0	Slope of invert (%) = 4.750
Runoff coefficient = 0	Slope energy grade line (%) = 4.434
Time of conc (min) = 2	Critical depth (in) = 14.57
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 11.1	Confluence angle (deg) = 0
Default Q (cfs) = 11.1	Natural ground elev (ft) = 69.5
Line capac. (cfs) = 14.1	Line storage (cuft) = 489

LINE 2 / Q = 8.7 / HT = 15 / WID = 15 / N = .013 / L = 330 / JLC = .9

..... / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	69.13	15.00	66.50	7.09	69.92	0.00	1.75	1.23
UPSTRM	75.83	15.00	73.00	7.09	76.61	0.00	1.75	1.23

Drainage area (ac) = 0	Slope of invert (%) = 1.970
Runoff coefficient = 0	Slope energy grade line (%) = 2.028
Time of conc (min) = 0	Critical depth (in) = 13.93
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 8.7	Confluence angle (deg) = -28
Default Q (cfs) = 8.7	Natural ground elev (ft) = 76
Line capac. (cfs) = 9.1	Line storage (cuft) = 405

LINE 3 / Q = 1.7 / HT = 12 / WID = 12 / N = .013 / L = 210 / JLC = .9

..... / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	69.13	12.00	66.50	2.16	69.21	0.00	2	0.79
UPSTRM	69.68	12.00	68.50	2.16	69.75	0.00	1	0.79

Drainage area (ac) =	0	Slope of invert (%) =	0.952
Runoff coefficient =	0	Slope energy grade line (%) =	0.228
Time of conc (min) =	0	Critical depth (in) =	7.07
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	1.7	Confluence angle (deg) =	-65
Default Q (cfs) =	1.7	Natural ground elev (ft) =	70.5
Line capac. (cfs) =	3.5	Line storage (cuft) =	165

HYDRAULIC ANALYSIS

Run date: 04-26-1992
File: A:7754-7AA.ST3

Return Period = 10 Yrs
Rainfall file: JAMES CITY CO.....

LINE 1 / Q = 11.1 / HT = 15 / WID = 15 / N = .013 / L = 400 / JLC = 1.1

..... / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	51.98	15.00	47.50	9.05	53.25	0.00	1.25	1.23
UPSTRM	67.71	14.58	66.50	9.12	69.01	4.95	1.75	1.22

Drainage area (ac) = 0	Slope of invert (%) = 4.750
Runoff coefficient = 0	Slope energy grade line (%) = 3.939
Time of conc (min) = 2	Critical depth (in) = 14.57
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 11.1	Confluence angle (deg) = 0
Default Q (cfs) = 11.1	Natural ground elev (ft) = 69.5
Line capac. (cfs) = 14.1	Line storage (cuft) = 489

LINE 2 / Q = 8.7 / HT = 15 / WID = 15 / N = .013 / L = 330 / JLC = .9

..... / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	69.13	15.00	66.50	7.09	69.92	0.00	1.75	1.23
UPSTRM	75.83	15.00	73.00	7.09	76.61	0.00	1.75	1.23

Drainage area (ac) = 0	Slope of invert (%) = 1.970
Runoff coefficient = 0	Slope energy grade line (%) = 2.028
Time of conc (min) = 0	Critical depth (in) = 13.93
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 8.7	Confluence angle (deg) = -28
Default Q (cfs) = 8.7	Natural ground elev (ft) = 76
Line capac. (cfs) = 9.1	Line storage (cuft) = 405

LINE 3 / Q = 1.7 / HT = 12 / WID = 12 / N = .013 / L = 210 / JLC = .9

..... / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	69.13	12.00	66.50	2.16	69.21	0.00	2	0.79
UPSTRM	69.68	12.00	68.50	2.16	69.75	0.00	1	0.79

Drainage area (ac) =	0	Slope of invert (%) =	0.952
Runoff coefficient =	0	Slope energy grade line (%) =	0.228
Time of conc (min) =	0	Critical depth (in) =	7.07
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	1.7	Confluence angle (deg) =	-65
Default Q (cfs) =	1.7	Natural ground elev (ft) =	70.5
Line capac. (cfs) =	3.5	Line storage (cuft) =	165

HYDRAULIC ANALYSIS

Run date: 04-26-1992
 File: A:7754-8A.ST3

Return Period = 10 Yrs
 Rainfall file: JAMES CITY CO.....

LINE 1 / Q = 1.3 / HT = 8 / WID = 8 / N = .013 / L = 125 / JLC = .9

..... / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	50.00	8.00	47.50	3.72	50.22	0.00	6.83	0.35
UPSTRM	56.80	6.68	56.00	4.18	57.07	5.94	2.33	0.31

Drainage area (ac) =	0	Slope of invert (%) =	6.800
Runoff coefficient =	0	Slope energy grade line (%) =	5.290
Time of conc (min) =	0	Critical depth (in) =	6.67
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	1.3	Confluence angle (deg) =	0
Default Q (cfs) =	1.3	Natural ground elev (ft) =	59
Line capac. (cfs) =	3.1	Line storage (cuft) =	41

HYDRAULIC ANALYSIS

Run date: 04-26-1992
File: A:7754-8AA.ST3

Return Period = 10 Yrs
Rainfall file: JAMES CITY CO.....

LINE 1 / Q = 1.3 / HT = 8 / WID = 8 / N = .013 / L = 125 / JLC = .9

..... / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	51.98	8.00	47.50	3.72	52.20	0.00	1.83	0.35
UPSTRM	56.80	6.68	56.00	4.18	57.07	5.94	2.33	0.31

Drainage area (ac) =	0	Slope of invert (%) =	6.800
Runoff coefficient =	0	Slope energy grade line (%) =	3.706
Time of conc (min) =	0	Critical depth (in) =	6.67
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	1.3	Confluence angle (deg) =	0
Default Q (cfs) =	1.3	Natural ground elev (ft) =	59
Line capac. (cfs) =	3.1	Line storage (cuft) =	41

HYDRAULIC ANALYSIS

Run date: 04-26-1992
File: A:7754-8B.ST3

Return Period = 10 Yrs
Rainfall file: JAMES CITY CO.....

LINE 1 / Q = 35.7 / HT = 30 / WID = 30 / N = .013 / L = 110 / JLC = 1.1

..... / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	50.00	30.00	47.00	7.27	50.82	0.00	.5	4.91
UPSTRM	50.83	30.00	48.00	7.27	51.66	0.00	1	4.91

Drainage area (ac) =	0	Slope of invert (%) =	0.909
Runoff coefficient =	0	Slope energy grade line (%) =	0.758
Time of conc (min) =	1	Critical depth (in) =	24.99
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	35.7	Confluence angle (deg) =	0
Default Q (cfs) =	35.7	Natural ground elev (ft) =	51.5
Line capac. (cfs) =	39.1	Line storage (cuft) =	540

LINE 2 / Q = 33.8 / HT = 30 / WID = 30 / N = .013 / L = 100 / JLC = 1.1

..... / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	51.74	30.00	48.00	6.89	52.47	0.00	1	4.91
UPSTRM	52.42	30.00	49.00	6.89	53.15	0.00	2	4.91

Drainage area (ac) =	0	Slope of invert (%) =	1.000
Runoff coefficient =	0	Slope energy grade line (%) =	0.679
Time of conc (min) =	0	Critical depth (in) =	24.42
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	33.8	Confluence angle (deg) =	-18
Default Q (cfs) =	33.8	Natural ground elev (ft) =	53.5
Line capac. (cfs) =	41.0	Line storage (cuft) =	491

LINE 3 / Q = 31.8 / HT = 24 / WID = 24 / N = .013 / L = 85 / JLC = .9

..... / DNLN = 2

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	53.23	24.00	49.00	10.12	54.82	0.00	2.5	3.14
UPSTRM	56.34	24.00	51.00	10.12	57.93	0.00	3	3.14

Drainage area (ac) =	0	Slope of invert (%) =	2.353
Runoff coefficient =	0	Slope energy grade line (%) =	3.662
Time of conc (min) =	0	Critical depth (in) =	22.85
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	31.8	Confluence angle (deg) =	-20
Default Q (cfs) =	31.8	Natural ground elev (ft) =	56
Line capac. (cfs) =	34.7	Line storage (cuft) =	267

LINE 4 / Q = 0.9 / HT = 8 / WID = 8 / N = .013 / L = 145 / JLC = .9

..... / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	51.74	8.00	48.00	2.58	51.84	0.00	2.83	0.35
UPSTRM	52.66	6.34	52.00	3.03	52.80	6.49	3.03	0.30

Drainage area (ac) =	0	Slope of invert (%) =	2.759
Runoff coefficient =	0	Slope energy grade line (%) =	0.573
Time of conc (min) =	0	Critical depth (in) =	5.66
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	.9	Confluence angle (deg) =	56
Default Q (cfs) =	.9	Natural ground elev (ft) =	55.7
Line capac. (cfs) =	2.0	Line storage (cuft) =	47

HYDRAULIC ANALYSIS

Run date: 04-26-1992
 File: A:7754-8BB.ST3

Return Period = 10 Yrs
 Rainfall file: JAMES CITY CO.....

LINE 1 / Q = 35.7 / HT = 30 / WID = 30 / N = .013 / L = 110 / JLC = 1.1

..... / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	51.98	30.00	47.00	7.27	52.80	0.00	.5	4.91
UPSTRM	52.81	30.00	48.00	7.27	53.64	0.00	1	4.91

Drainage area (ac) =	0	Slope of invert (%) =	0.909
Runoff coefficient =	0	Slope energy grade line (%) =	0.758
Time of conc (min) =	1	Critical depth (in) =	24.99
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	35.7	Confluence angle (deg) =	0
Default Q (cfs) =	35.7	Natural ground elev (ft) =	51.5
Line capac. (cfs) =	39.1	Line storage (cuft) =	540

LINE 2 / Q = 33.8 / HT = 30 / WID = 30 / N = .013 / L = 100 / JLC = 1.1

..... / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	53.72	30.00	48.00	6.89	54.45	0.00	1	4.91
UPSTRM	54.40	30.00	49.00	6.89	55.13	0.00	2	4.91

Drainage area (ac) =	0	Slope of invert (%) =	1.000
Runoff coefficient =	0	Slope energy grade line (%) =	0.679
Time of conc (min) =	0	Critical depth (in) =	24.42
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	33.8	Confluence angle (deg) =	-18
Default Q (cfs) =	33.8	Natural ground elev (ft) =	53.5
Line capac. (cfs) =	41.0	Line storage (cuft) =	491

LINE 3 / Q = 31.8 / HT = 24 / WID = 24 / N = .013 / L = 85 / JLC = .9

..... / DNLN = 2

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	55.21	24.00	49.00	10.12	56.80	0.00	2.5	3.14
UPSTRM	58.32	24.00	51.00	10.12	59.91	0.00	3	3.14

Drainage area (ac) =	0	Slope of invert (%) =	2.353
Runoff coefficient =	0	Slope energy grade line (%) =	3.662
Time of conc (min) =	0	Critical depth (in) =	22.85
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	31.8	Confluence angle (deg) =	-20
Default Q (cfs) =	31.8	Natural ground elev (ft) =	56
Line capac. (cfs) =	34.7	Line storage (cuft) =	267

LINE 4 / Q = 0.9 / HT = 8 / WID = 8 / N = .013 / L = 145 / JLC = .9

..... / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	53.72	8.00	48.00	2.58	53.82	0.00	2.83	0.35
UPSTRM	54.62	8.00	52.00	2.58	54.72	0.00	3.03	0.35

Drainage area (ac) =	0	Slope of invert (%) =	2.759
Runoff coefficient =	0	Slope energy grade line (%) =	0.555
Time of conc (min) =	0	Critical depth (in) =	5.66
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	.9	Confluence angle (deg) =	56
Default Q (cfs) =	.9	Natural ground elev (ft) =	55.7
Line capac. (cfs) =	2.0	Line storage (cuft) =	51

HYDRAULIC ANALYSIS

Run date: 04-26-1992
 File: A:7754-9A.ST3

Return Period = 10 Yrs
 Rainfall file: JAMES CITY CO.....

LINE 1 / Q = 14.7 / HT = 24 / WID = 24 / N = .013 / L = 165 / JLC = .9

..... / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	50.00	24.00	47.50	4.68	50.34	0.00	.5	3.14
UPSTRM	52.95	17.05	51.00	6.16	53.54	21.77	1.25	2.39

Drainage area (ac) = 0	Slope of invert (%) = 2.121
Runoff coefficient = 0	Slope energy grade line (%) = 1.618
Time of conc (min) = 0	Critical depth (in) = 16.99
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 14.7	Confluence angle (deg) = 0
Default Q (cfs) = 14.7	Natural ground elev (ft) = 54.25
Line capac. (cfs) = 32.9	Line storage (cuft) = 456

HYDRAULIC ANALYSIS

Run date: 04-26-1992
 File: A:7754-9AA.ST3

Return Period = 10 Yrs
 Rainfall file: JAMES CITY CO.....

LINE 1 / Q = 14.7 / HT = 24 / WID = 24 / N = .013 / L = 165 / JLC = .9

..... / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	51.98	24.00	47.50	4.68	52.32	0.00	.5	3.14
UPSTRM	53.00	18.82	51.00	5.56	53.48	19.75	1.25	2.64

Drainage area (ac) =	0	Slope of invert (%) =	2.121
Runoff coefficient =	0	Slope energy grade line (%) =	0.442
Time of conc (min) =	0	Critical depth (in) =	16.99
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	14.7	Confluence angle (deg) =	0
Default Q (cfs) =	14.7	Natural ground elev (ft) =	54.25
Line capac. (cfs) =	32.9	Line storage (cuft) =	477

HYDRAULIC ANALYSIS

Run date: 04-26-1992
File: A:7754-9B.ST3

Return Period = 10 Yrs
Rainfall file: JAMES CITY CO.....

LINE 1 / Q = 28.4 / HT = 30 / WID = 30 / N = .013 / L = 95 / JLC = 1.1

..... / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	37.88	22.57	36.00	6.97	38.64	25.11	11.5	4.08
UPSTRM	38.49	22.64	36.60	7.15	39.28	25.82	4.6	3.97

Drainage area (ac) =	0	Slope of invert (%) =	0.632
Runoff coefficient =	0	Slope energy grade line (%) =	0.678
Time of conc (min) =	1	Critical depth (in) =	22.57
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	28.4	Confluence angle (deg) =	0
Default Q (cfs) =	28.4	Natural ground elev (ft) =	43.7
Line capac. (cfs) =	32.6	Line storage (cuft) =	382

LINE 2 / Q = 26.9 / HT = 24 / WID = 24 / N = .013 / L = 220 / JLC = .9

..... / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	39.36	24.00	36.60	8.56	40.50	0.00	5.1	3.14
UPSTRM	44.94	21.99	42.00	8.92	46.18	13.28	1.7	3.02

Drainage area (ac) =	0	Slope of invert (%) =	2.455
Runoff coefficient =	0	Slope energy grade line (%) =	2.077
Time of conc (min) =	0	Critical depth (in) =	21.96
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	26.9	Confluence angle (deg) =	-39
Default Q (cfs) =	26.9	Natural ground elev (ft) =	45.7
Line capac. (cfs) =	35.4	Line storage (cuft) =	677

HYDRAULIC ANALYSIS

Run date: 04-26-1992
File: A:7754-9C.ST3

Return Period = 10 Yrs
Rainfall file: JAMES CITY CD.....

LINE 1 / Q = 18.3 / HT = 24 / WID = 24 / N = .013 / L = 55 / JLC = 1

..... / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	37.59	19.06	36.00	6.84	38.31	19.40	-1	2.68
UPSTRM	38.99	19.11	37.40	6.82	39.72	19.33	4.59	2.68

Drainage area (ac) = 0	Slope of invert (%) = 2.545
Runoff coefficient = 0	Slope energy grade line (%) = 2.546
Time of conc (min) = 2	Critical depth (in) = 19.06
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 18.3	Confluence angle (deg) = 0
Default Q (cfs) = 18.3	Natural ground elev (ft) = 44
Line capac. (cfs) = 36.1	Line storage (cuft) = 147

LINE 2 / Q = 18.2 / HT = 24 / WID = 24 / N = .013 / L = 135 / JLC = 1.2

..... / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	39.72	24.00	37.40	5.79	40.24	0.00	4.59	3.14
UPSTRM	42.09	19.11	40.50	6.79	42.81	19.33	9	2.68

Drainage area (ac) = 0	Slope of invert (%) = 2.296
Runoff coefficient = 0	Slope energy grade line (%) = 1.904
Time of conc (min) = 1	Critical depth (in) = 19.06
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 18.2	Confluence angle (deg) = 0
Default Q (cfs) = 18.2	Natural ground elev (ft) = 51.5
Line capac. (cfs) = 34.3	Line storage (cuft) = 393

LINE 3 / Q = 18.1 / HT = 24 / WID = 24 / N = .013 / L = 80 / JLC = .9

..... / DNLN = 2

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	42.95	24.00	40.50	5.76	43.47	0.00	9	3.14
UPSTRM	44.73	19.11	42.50	6.75	45.44	19.33	2	2.68

Drainage area (ac) = 0	Slope of invert (%) = 2.500
Runoff coefficient = 0	Slope energy grade line (%) = 2.462
Time of conc (min) = 0	Critical depth (in) = 19.06
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 18.1	Confluence angle (deg) = 15
Default Q (cfs) = 18.1	Natural ground elev (ft) = 46.5
Line capac. (cfs) = 35.8	Line storage (cuft) = 233

LINE 4 / Q = 0.1 / HT = 8 / WID = 8 / N = .013 / L = 50 / JLC = .9

..... / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	39.72	8.00	37.40	0.29	39.72	0.00	5.93	0.35
UPSTRM	40.19	1.86	40.00	1.63	40.23	6.75	2.33	0.06

Drainage area (ac) = 0	Slope of invert (%) = 5.200
Runoff coefficient = 0	Slope energy grade line (%) = 1.033
Time of conc (min) = 0	Critical depth (in) = 1.84
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = .1	Confluence angle (deg) = -90
Default Q (cfs) = .1	Natural ground elev (ft) = 43
Line capac. (cfs) = 2.8	Line storage (cuft) = 10

LINE 5 / Q = 0.1 / HT = 8 / WID = 8 / N = .013 / L = 55 / JLC = 1

..... / DNLN = 2

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	42.95	8.00	40.50	0.29	42.95	0.00	10.33	0.35
UPSTRM	44.15	1.86	44.00	1.63	44.20	6.75	7.33	0.06

Drainage area (ac) =	0	Slope of invert (%) =	6.364
Runoff coefficient =	0	Slope energy grade line (%) =	2.262
Time of conc (min) =	1	Critical depth (in) =	1.84
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	.1	Confluence angle (deg) =	-90
Default Q (cfs) =	.1	Natural ground elev (ft) =	52
Line capac. (cfs) =	3.0	Line storage (cuft) =	11

LINE 6 / Q = 0.1 / HT = 8 / WID = 8 / N = .013 / L = 60 / JLC = 1

..... / DNLN = 5

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	44.20	2.35	44.00	1.16	44.22	7.30	7.33	0.09
UPSTRM	45.15	1.86	45.00	1.63	45.20	6.75	2.43	0.06

Drainage area (ac) =	0	Slope of invert (%) =	1.667
Runoff coefficient =	0	Slope energy grade line (%) =	1.632
Time of conc (min) =	0	Critical depth (in) =	1.84
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	.1	Confluence angle (deg) =	-40
Default Q (cfs) =	.1	Natural ground elev (ft) =	48.1
Line capac. (cfs) =	1.6	Line storage (cuft) =	4

LINE 7 / Q = 0.1 / HT = 8 / WID = 8 / N = .013 / L = 50 / JLC = .9

..... / DNLN = 6

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	45.20	2.35	45.00	1.16	45.22	7.30	2.43	0.09
UPSTRM	47.19	1.86	47.00	1.63	47.23	6.75	1.83	0.06

Drainage area (ac)	=	0	Slope of invert (%)	=	4.000
Runoff coefficient	=	0	Slope energy grade line (%)	=	3.958
Time of conc (min)	=	0	Critical depth (in)	=	1.84
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	0.0
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	0.0
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	0
Flow contrib (cfs)	=	.1	Confluence angle (deg)	=	0
Default Q (cfs)	=	.1	Natural ground elev (ft)	=	49.5
Line capac. (cfs)	=	2.4	Line storage (cuft)	=	4

HYDRAULIC ANALYSIS

Run date: 04-26-1992
File: A:7754-14A.ST3

Return Period = 10 Yrs
Rainfall file: JAMES CITY CO.....

LINE 1 / Q = 5.9 / HT = 12 / WID = 12 / N = .013 / L = 70 / JLC = 1.1

..... / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	39.96	11.55	39.00	7.61	40.86	4.58	-5	0.78
UPSTRM	42.06	11.56	41.10	7.60	42.96	4.52	4.4	0.78

Drainage area (ac) = 0	Slope of invert (%) = 3.000
Runoff coefficient = 0	Slope energy grade line (%) = 3.000
Time of conc (min) = 1	Critical depth (in) = 11.55
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 5.9	Confluence angle (deg) = 0
Default Q (cfs) = 5.9	Natural ground elev (ft) = 46.5
Line capac. (cfs) = 6.2	Line storage (cuft) = 54

LINE 2 / Q = 5.0 / HT = 12 / WID = 12 / N = .013 / L = 130 / JLC = .9

..... / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	43.05	12.00	41.10	6.37	43.68	0.00	4.4	0.79
UPSTRM	56.53	11.16	55.00	6.57	57.20	6.13	3	0.76

Drainage area (ac) = 0	Slope of invert (%) = 10.692
Runoff coefficient = 0	Slope energy grade line (%) = 10.402
Time of conc (min) = 0	Critical depth (in) = 11.14
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = 5	Confluence angle (deg) = 0
Default Q (cfs) = 5	Natural ground elev (ft) = 59
Line capac. (cfs) = 11.6	Line storage (cuft) = 101

LINE 3 / Q = 0.4 / HT = 8 / WID = 8 / N = .013 / L = 80 / JLC = .9

..... / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	43.05	8.00	41.10	1.29	43.08	0.00	4.73	0.35
UPSTRM	45.22	3.94	44.80	2.63	45.33	8.00	1.03	0.17

Drainage area (ac)	=	0	Slope of invert (%)	=	4.625
Runoff coefficient	=	0	Slope energy grade line (%)	=	2.699
Time of conc (min)	=	0	Critical depth (in)	=	3.92
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	0.0
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	0.0
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	0
Flow contrib (cfs)	=	.4	Confluence angle (deg)	=	-120
Default Q (cfs)	=	.45	Natural ground elev (ft)	=	46.5
Line capac. (cfs)	=	2.6	Line storage (cuft)	=	21

HYDRAULIC ANALYSIS

Run date: 04-26-1992
 File: A:7754-14B.ST3

Return Period = 10 Yrs
 Rainfall file: JAMES CITY CO.....

LINE 1 / Q = 0.9 / HT = 8 / WID = 8 / N = .013 / L = 230 / JLC = .9

..... / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	26.47	5.66	26.00	3.29	26.64	7.10	-.66	0.27
UPSTRM	33.13	5.68	32.50	3.39	33.31	7.26	1.83	0.27

Drainage area (ac) = 0	Slope of invert (%) = 2.826
Runoff coefficient = 0	Slope energy grade line (%) = 2.831
Time of conc (min) = 0	Critical depth (in) = 5.66
Inlet time (min) = 0	Req'd length curb inlet (ft) = 0.0
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 0.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 0
Flow contrib (cfs) = .9	Confluence angle (deg) = 0
Default Q (cfs) = .9	Natural ground elev (ft) = 35
Line capac. (cfs) = 2.0	Line storage (cuft) = 62

HYDRAULIC ANALYSIS

Run date: 04-26-1992
File: A:7754-14C.ST3

Return Period = 10 Yrs
Rainfall file: JAMES CITY CO.....

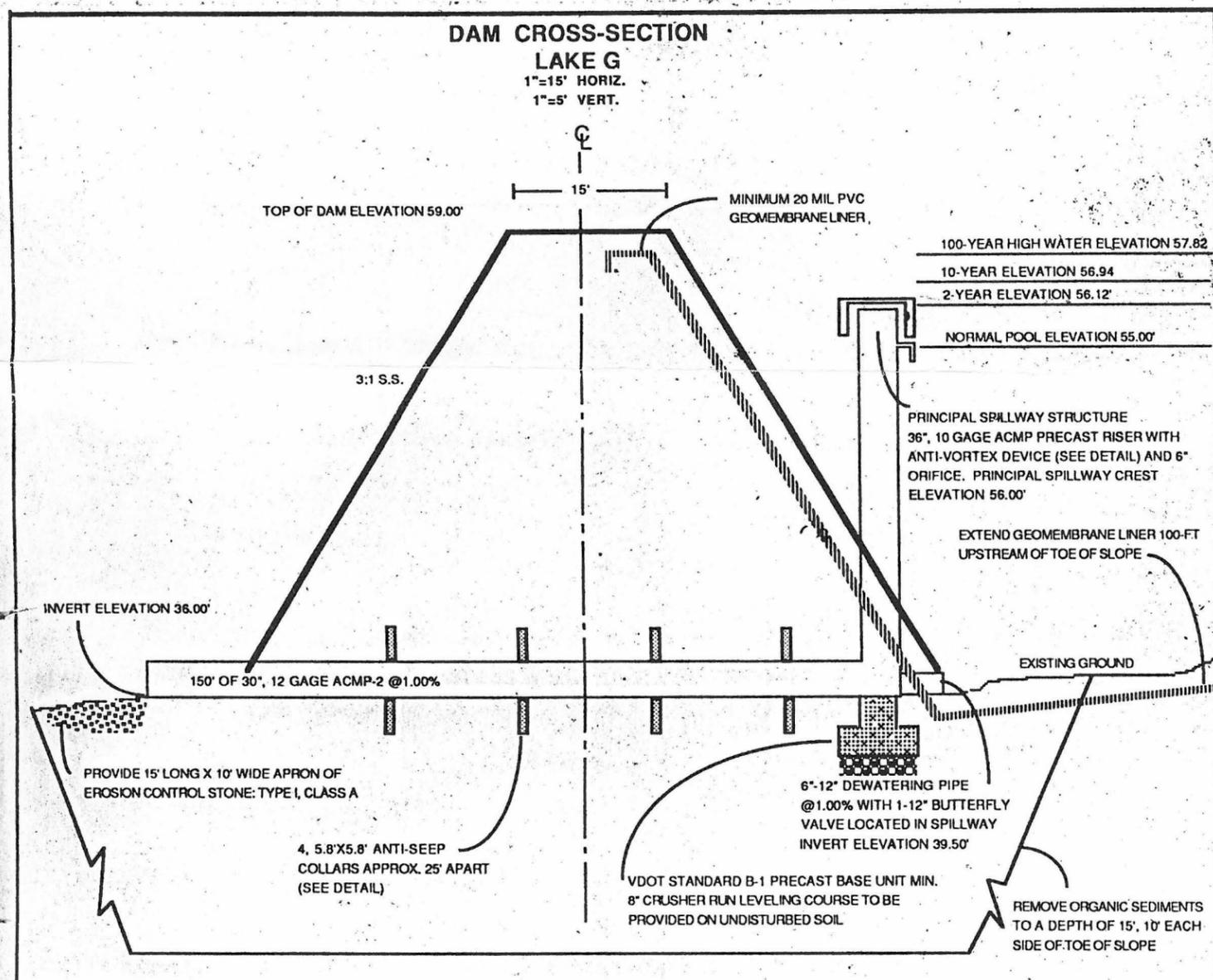
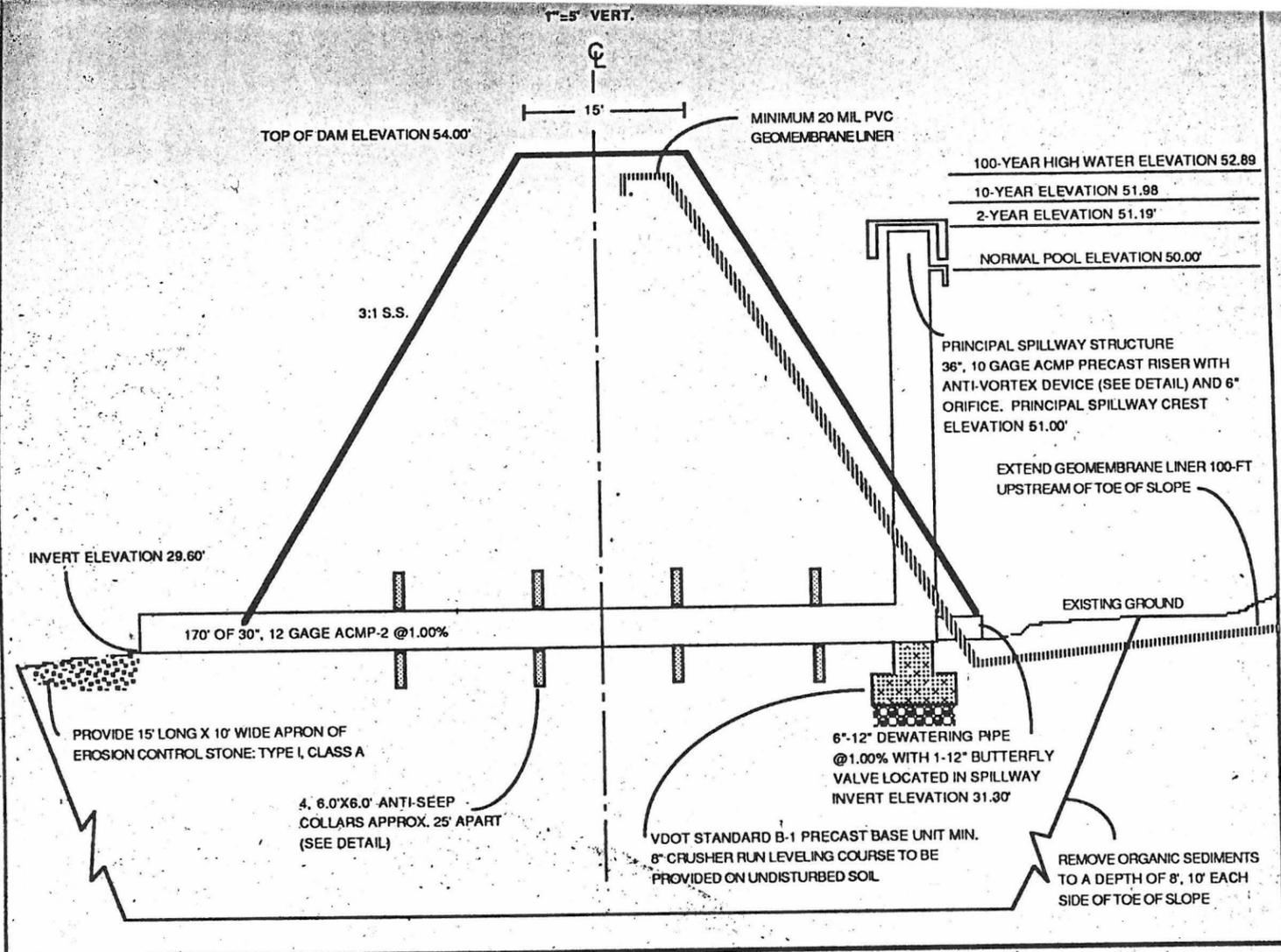
LINE 1 / Q = 0.3 / HT = 8 / WID = 8 / N = .013 / L = 100 / JLC = .9

..... / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	21.58	3.32	21.30	2.03	21.64	7.94	-.96	0.15
UPSTRM	22.14	3.34	21.80	2.17	22.22	7.89	1.03	0.14

Drainage area (ac) =	0	Slope of invert (%) =	0.500
Runoff coefficient =	0	Slope energy grade line (%) =	0.511
Time of conc (min) =	0	Critical depth (in) =	3.32
Inlet time (min) =	0	Req'd length curb inlet (ft) =	0.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	0.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	0
Flow contrib (cfs) =	.3	Confluence angle (deg) =	0
Default Q (cfs) =	.3	Natural ground elev (ft) =	23.5
Line capac. (cfs) =	0.9	Line storage (cuft) =	14

LAKE ROUTINGS



LAKE AND BMP SPECIFICATIONS: CORRUGATED STEEL PIPE SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM A760 (AASHTO M36). COATING SHALL BE ALUMINIZED TYPE 2 CONFORMING TO ASTM A819 (AASHTO M274). PIPE SHALL HAVE A MINIMUM OF TWO FACTORY ROLLED ANNULAR CORRUGATIONS AT EACH END. PIPE MAY BE ASPHALT COATED IN ACCORDANCE WITH AASHTO M190 OR EQUIVALENT. CONNECTING BANDS SHALL BE FURNISHED WITH HUGGER RINGS WITH O-RING GASKETS OR FLAT GASKETS.

TRASH PROTECTION FOR 6 INCH ORIFICE PROVIDED BY SUBMERGED INLET. ELBOW IN PIPE ESTABLISHES NORMAL POOL ELEVATION WHILE MAINTAINING APPROXIMATELY 1 FOOT OF COVERAGE TO AVOID CLOGGING.

MAINTAINED TUR

NOTE: INFILTR THE TWO FOR TH

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NATURAL

INSTALL, CORRECT

C. W.

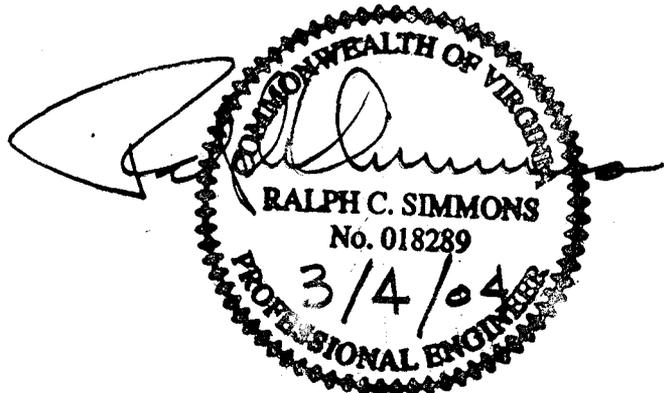
2: SOURCE

**Greensprings Condominiums
(Previously Greenspring Apartments
And Condominiums)**

**Stormwater Drainage
and
Management Calculations**

**Project Number 03-286
(Previous Project Number 01-135)**

**August 1, 2001
(Revised February 25, 2004)**



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III. Stormwater Management Pond & BMP

This division is divided into three sections. The first section, "Water Quality Analysis" determines the level of treatment required to meet the JCC Chesapeake Bay Ordinance. The second sections presents design calculations for the Water Quality, Two, Ten and 100-year storm events for the Stormwater Management Pond.

A. Water Quality Analysis

Water Quality Treatment is accomplished for the Watershed "A" of 1,591,606 SF (36.54 acres). The breakdown of the watershed areas is provided in Appendix B, "Watershed Area Pre and Post Development Tables". Approximately 1,211,448 SF (27.81 acres) is considered onsite, with the balance of approximately 380,158 SF (8.73 acres) offsite from the future golf course site. Offsite areas represent 24% of the watershed's total area. As can be seen in the following "Worksheet for BMP Point System", 7.5 points is accomplished using a combination of a "4 Point BMP", and "Open Space Credits" for onsite areas only. This revision also increased the "Open Space" on the plans and depicts them on the Cover Sheet of the plans. Revised calculated "Open Area" onsite is 10.77 acres.

As requested, an update was completed of the Greensprings Plantation 10-Point BMP Plan and is located in Appendix L. Additionally, a separate letter with the update is sent to Mr. Daryl Cook, PE of JCC Environmental Division. Two tables in the Appendix are shown. The first is a spreadsheet used to calibrate my spreadsheet with the previous calculations of the last update of 7/13/94. Although some differences are noted in the calculations from method (I assume) the bottom line answer was the same. Based on that spreadsheet given the construction of BMP and dedication of "Open Space", 9.9 credits would be achieved.

The second table uses the information from the first and depicts the results of "As-Built" information provided by Mr. Scott Thomas, PE of Environmental Division and other information compiled from the Division's files. Over the years numerous projects have been designed and constructed with BMP that are not depicted on the Master Plan. In several cases several ponds are constructed in areas that only one was originally planned. Consequently, a larger area is covered by BMPs than planned. The results in the updated table (Thru March 1, 2002) show that 10.3 credits are earned, given that the amount of "Open Space" is not reduced. This is also based on the calculation that Pond E is designed as a "6-Point" BMP instead of the "10-Point" BMP originally called for in the Master Plan.



current criteria would call this only a 4 PE BMP, however, the 6-pt value is allowable because the original calcs of 10 pts were based on "old" values for BMPs.

Worksheet for BMP Point System

A. STRUCTURAL BMP POINT ALLOCATION

BMP	BMP Points	Fraction of Site Served by BMP	Weighted BMP Points
F2 (onsite)	4	$\frac{27.81}{27.81/39.92}$	2.79
F2 (offsite)	4	$\frac{8.1}{8.1/39.92}$.9
TOTAL WEIGHTED STRUCTURAL BMP POINTS:			<u>3.69</u>

B. NATURAL OPEN SPACE CREDIT

Fraction of Site	Natural Open Space Credit	Points for Natural Open Space
$\frac{26.98}{39.92} \times 100\% = 67.6\%$	0.1	2.7
TOTAL NATURAL OPEN SPACE CREDIT:		<u>2.7</u>

Handwritten notes: onsite, 10.71, 10.19, 15.55, 26.98, 39.92

C. TOTAL WEIGHTED POINTS

<u>3.69</u>	+	<u>2.70</u>	=	<u>6.39</u>
Structural BMP Points		Natural Open Space Points		Total
				<u>7.5</u>

see overall calculation dated thru 3/1/02

A - 2/4/04

R - 2/10/02

**Greensprings Condominiums
Natural Open Space Calculations**

Open Space:	SF	Acreage
Area 1	96,190	2.21
Area 2	76,868	1.76
Area 3	14,745	0.34
Area 4	3,984	0.09
Area 5	29,424	0.68
Area 6	1,858	0.04
Area 7	3,043	0.07
Area 8	17,331	0.40
Area 9	42,508	0.98
Area 10	82,928	1.90
Area 11	5,293	0.12
Area 12	9,785	0.22
Area 13	8,622	0.20
Area 14	7,131	0.16
Area 15	59,941	1.38
Area 16	9,360	0.21
Total Open Space	469,011	<u>10.77</u>

B. BMP Design

The BMP is design to first provide water treatment of stormwater runoff from Watershed "A", approximately 489,596 SF of impervious area, as shown in the "Watershed Pre and Post Development Tables" of Appendix "B". Additionally, it provides control and detention of the one (channel erosion) and Ten Year storm events, and routs the 100-year storm event. BMP "F2", Dry Extended Detention with Forebay is sized as follows:

1. Water Quality Treatment: Watershed "A", approximately 544,103 SF of impervious area, as shown in the revised "Watershed Pre and Post Development Tables" of Appendix "B".

$$V_{wq} = 544,103 \text{ SF} \times 1 \text{ in} / 12 \text{ in} / \text{ft} = 45,342 \text{ CF or } 1.04 \text{ ac-ft}$$

Appendix D, "BMP Stormwater Management Calculations" contains calculations that size and determine the maximum flow rates and size the outlet structure. Using the "Stage-Storage Worksheet" the "Stage-Storage-Discharge Worksheet" and "Storage- Elevation Curve" were developed. The Water Quality Volume (V_{wq}) level is set @ 48.2 and provides in excess of 45,342 cf of storage as required, with a total discharge of 0.42 cfs at that level. The orifice is 3" diameter.

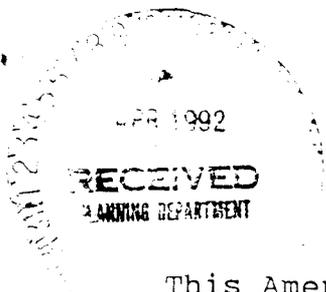
2. Appendix D also calculates and sizes the BMP to control the one year (CE), and ten year storms event to predevelopment flow rates. The storm water calculations in Appendix D and summarized in the table below are based on the Graphical Peak Discharge Method IAW the *Virginia Storm Water Management Handbook*. Drainage area and "C" value calculations for the

BMP are located in Appendix B, as previously referred, are used to determine the "CN" & acreage.

3. The 100-year storm event is routed to elevation 53.4 leaving over one foot free broad to the top of berm which is set at 54.5. An emergency spillway (dry) is set at elevation 53.5.

	Required		Design		
	V	Q	Outlet Structure		
	V	Q	V	Q	EI
Water Quality	45,342	0.42	47,065	0.42	48.2
Chnl Ersn	87,543	1.01	87,938	0.52	49.9
10 Year	169,884	27.5	168,312	26.18	52.6
100 Year	N/A	136.4	N/A	139	53.4

Marked to show
changes



AMENDED AND RESTATED
GREENSPRINGS PROFFER AGREEMENT

This Amended and Restated Proffer Agreement is made as of this ___ day of _____, 1992, by Greensprings Plantation, Inc., a Virginia corporation ("Owner").

RECITALS

A. Greensprings Plantation, Inc. is the owner of certain real property consisting of approximately 1402 acres, located in James City County, Virginia (the "Property") along Route 5 and being more particularly described in Exhibit A attached hereto.

B. In 1989 the Owner applied for and James City County (the "County") granted a rezoning of the Property from the Limited and General Agricultural Districts, A-2/A-1, to the Residential Planned Community District, R-4, with proffered conditions as set forth in a Greensprings Proffer Agreement dated February 6, 1989 and recorded in James City County Deed Book 427, page 466 (the "Original Proffers").

C. Owner has now applied for an amendment to the approved Master Plan for the Property pursuant to Sections 20-215 (b) and 20-15 of the County Zoning Ordinance and, in connection therewith, desires to amend and restate the Original Proffers.

NOW, THEREFORE, in consideration of the County of James City granting approval of the amendment of the original Master Plan and pursuant to Section 15.1-491.2:1, et seq. of the Code of Virginia, 1950, as amended, and Section 20-15, et seq. of Chapter 20 of the Code of James City County, Virginia, the Owner agrees

that in addition to the regulations provided for in the Residential Planned Community District, R-4, it will meet and comply with all of the following conditions to the development of the Property. If the County fails to grant the requested amendment to the approved Master Plan, this Amended and Restated Greensprings Proffer Agreement shall thereupon be void and the Original Proffers shall remain in full force and effect.

1. Number of Dwelling Units. The number of residential units shall be limited in relation to the areas as designated on the Amended Master Plan submitted herewith dated _____ and made by Langley & McDonald, P.C. (the "Amended Master Plan") as follows:

<u>Project Land Bay</u>	<u>R-4 Master Plan Designation</u>	<u>Maximum Number of Dwelling Units</u>
S- 1	A	209
S- 2	A	141
S- 3	A	175
S- 4	A	15
M- 5	D	172
M- 6	D	130
M- 7	D	66
M- 8	D	132
M- 9	D	165
M-10	D	248

The foregoing limits are subject to the possible addition of twenty-five additional units pursuant to Condition 10 hereof, with the distribution of such units among the Land Bays subject to the approval of the Development Review Committee.

2. Route 5 Greenbelt. The Owner shall designate 220-foot greenbelt buffers along the Property's Route 5 frontage measured from the existing Route 5 right-of-way. If and when a final

determination is made by the County and the Virginia Department of Transportation ("VDOT") to widen Route 5 to a four lane road across the Property's Route 5 frontage and the new right-of-way is determined, the greenbelt buffer may be reduced to 150 feet measured from the new right-of-way line. If and when a final determination is made by the County and VDOT to construct the new road from Route 5 to Route 199 across the Property in the area shown on the Amended Master Plan as "Future Right-of-Way", the Route 5 greenbelt buffer may be reduced to 150 feet from the existing Route 5 right-of-way. The greenbelt buffers shall be exclusive of any lots and shall be undisturbed, except for approved 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.

3. Golf Facilities. The areas on the Amended Master Plan designated as golf courses, clubhouse, practice range and golf maintenance facilities shall be used only for those purposes or such areas shall be left as Major Open Space and subject to Condition 14 hereof. If golf facilities are constructed on the Property, all owners of lots in areas with a Master Plan Area designation "A" and owners of units in Land Bays M-5 through M-7 shall have the right to use the aforementioned golf facilities upon payment of any applicable fees and subject to the other

rules and regulations governing use of such facilities as in effect from time to time. Development of golf courses on the Property shall be subject to the following conditions:

(a) All disturbed slopes steeper than 25% shall be sodded immediately after clearing and grubbing associated with cut and fill operations. The sod shall be staked into place, as necessary, and temporary fill diversions shall be constructed to minimize water flow over slopes, until sod has become fixed to the slope by establishment of root structure. Owner acknowledges that disturbance of slopes steeper than 25% requires an exception under the County's Chesapeake Bay Preservation Ordinance, Chapter 19B of the County Code.

(b) All disturbed slopes exceeding 10% shall be stabilized immediately upon reaching final grade with sod or excelsior blanket and seed, or other approved erosion control matting at vertical increments not exceeding 10 feet, or at the end of the work day, should a fill greater than 10 feet occur during that period.

(c) A construction phasing plan shall be provided as part of the site plan to be approved by the Director of Code Compliance. That plan will divide the construction into four or five phases. Land disturbance beyond the first phase shall be permitted based upon the demonstrated adequacy of erosion and sedimentation control measures installed in prior phases.

(d) Grass depressions and catchment areas shall be used

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throughout the construction area as a means of runoff detention and Best Management Practices.

(e) An operation and maintenance plan, including an integrated pest management plan, shall be submitted as part of the site plan submittal for approval by the Director of Code Compliance before final site plan approval.

(f) The golf course and driving range will not be illuminated for use after dark.

(g) Water for irrigation of the golf courses shall be provided from surface water collection or withdrawn from Powhatan Creek.

If either of the golf courses shown on the Amended Master Plan have not then been constructed, the County shall not be obligated to grant final approval of a subdivision plat or site plan for more than 100 single-family lots or multi-family units until Owner shall have constructed a regulation size, combined soccer/softball field in the location designated on the Alternate Recreation Plan sheet of the Amended Master Plan or other location approved by the Development Review Committee and a pedestrian/bicycle trail in the general location shown on the Alternate Recreation Plan sheet of the Amended Master Plan. Owner shall retain the right to construct the golf course in the designated area at any time and in the event the course is built, the soccer/softball field and trail may be removed.

4. Neighborhood Recreational Facilities.

(a) Single-Family Neighborhood Recreation Center. The Single-Family Neighborhood Recreation Center ("SNRC") shown on the Amended Master Plan in Land Bay S-3 and labeled "SNRC" shall be located generally as shown on the Amended Master Plan. The SNRC shall contain at least one 25 meter swimming pool and one wading pool with a total water surface area of at least 4,000 square feet, one community center/bath house of at least 2,000 square feet, two hard surface, regulation size tennis courts and one tot lot with playground equipment. The tennis courts and tot lot with playground equipment shall be completed before the County is obligated to grant final approval of subdivision plats for more than 50 single-family lots and the remaining facilities proffered above shall be completed before the County is obligated to grant final approval of subdivision plats for more than 250 single family lots. An additional play area with playground equipment for younger and older children, an open play area of a minimum of one-half acre and an outdoor basketball or multi-use court shall be provided in a Land Bay with a Master Plan area designation "A" at a location approved by the Development Review Committee. These facilities shall be completed before the County is obligated to grant final approval for more than 100 lots in Land Bays with a Master Plan area designation "A". The SNRC and the additional recreational areas and facilities proffered above shall be available for use by all residents of lots in areas with a Master Plan Area designation "A", subject to the provisions of any applicable restrictive covenants and rules and regulations

adopted thereunder. Owner shall maintain the SNRC and the additional recreational areas and facilities proferred above until such time as it is conveyed to an owners association, at which time such association shall assume responsibility for its maintenance.

(b) Multi-Family Neighborhood Recreation Centers. (i) Unless Owner elects to construct a single central multi-family neighborhood recreational center pursuant to subparagraph (ii) below, before the County shall be obligated to issue Certificates of Occupancy for more than 50 units in Land Bays M-5 through M-9 shown on the Amended Master Plan, residents of each of those Land Bays shall have access to at least one Multi-Family Neighborhood Recreation Center ("MNRC") serving (but not necessarily located in) that Land Bay. There shall be a MNRC within Land Bay M-10 containing at least one swimming pool and at least two regulation size, hard surface tennis courts. The MNRCs for all multi-family Land Bays in the aggregate shall be provided with swimming pools with a total minimum water surface area of 5,000 square feet with no single pool having a minimum water surface area of less than 750 square feet and a total of at least six regulation size, hard surface tennis courts. The MNRCs in Land Bay M-5, M-6, M-8, M-9 and M-10 shall have an open play area of at least one-fourth an acre and a tot lot with playground equipment. The pools and tennis courts shall be distributed as follows:

Land Bay

Minimum Facilities

M-5
M-6

1 pools, 1 tennis court
1 pool, 1 tennis court

M-7 and M-8
M-9
M-10

1 pool, 1 tennis court
1 pool, 1 tennis court
1 pools, 2 tennis courts

Each MNRC shall be open for use by owners of units within the Land Bay(s) which it serves subject to the provisions of any applicable restrictive covenants and rules and regulations adopted thereunder.

(ii) In the alternative to providing facilities in the individual Land Bays as set forth in subparagraph (i) above, Owner may construct a single central multi-family neighborhood recreational center containing at a minimum pools with a total water surface area of at least 5,000 square feet, six regulation hard surface tennis courts, an open play area of at least one-half acre and an outdoor basketball or multi-use court, with pedestrian access to the center from all multi-family Land Bays. Owner shall maintain each MNRC until such time as it is conveyed to an owners association, at which time the association shall assume responsibility for its maintenance.

(c) Trail System. Owner shall provide a central pedestrian/bicycle trail system along one side of realigned Route 614, [^] and along one side of the new road which may be constructed in the area shown on the Amended Master Plan as "Future Right-of-Way" when and if such road is constructed. Owner shall provide a soft surface pedestrian trail along its Route 5 frontage. Such trail system shall be located in or adjacent to the road right-of-way of the roads listed above and shall be constructed when the adjacent road is constructed or, in the case

of the trail adjacent to Route 5, prior to completion of development of the Land Bay adjoining the segment of the trail in question. Internal trails shall be provided in each Land Bay in accordance with the County's Sidewalk Policy or as shown on the Amended Master Plan. The internal trails shall be connected with the central trail system. Before the County is obligated to grant final approval of a site plan for Land Bay M-9, Owner shall submit to the County a feasibility study of providing pedestrian access from Land Bay M-9 to the Neighborhood Commercial Center.

4. Public Use Sites. Within 60 days of the request of the County Administrator, the Owner shall convey to the County, free of charge a public use site of at least 6 acres and a public use site of at least 10 acres in the locations shown on the Amended Master Plan, accessible from a public road.

5. 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 establishment shall have a Gross Floor Area of more than 8,500 square feet. The one establishment which may exceed 8,500 square feet shall have a Gross Floor Area of no more than 20,000 square feet and shall be used only for a grocery store. 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.

6. Archaeological Sites. A Phase I Archaeological Study of the Property meeting the guidelines set forth in the Virginia Department of Historic Resource's Guidelines for Preparing Archaeological Resource Management Reports and conducted under the supervision of a qualified archaeologist who meets, at a minimum the qualifications set forth in the Secretary of the Interior's Professional Qualification Standards shall be prepared and submitted to the Director of Planning. Owner shall undertake a Phase II and/or, subject to the following sentence, a Phase III study of archaeological sites identified in the Phase I study, if identified by the Phase I study heretofore submitted as warranting Phase II or Phase III study, and shall submit such studies to the County for review and approval prior to any land disturbing on or adjacent to such sites. Owner may at its option leave undisturbed an archaeological site planned for development in lieu of performing a Phase III study thereon. The recommendations of such studies shall be incorporated into the plan of development for the site and the clearing, grading or construction activities thereon. If as a result of a Phase II study of a site, the County determines the site is eligible for

inclusion in the National Register of Historic Places based on the criteria established by the Department of the Interior , Owner shall develop and implement a plan for inclusion of the site on the National Register of Historic Places and for the mitigation of potential adverse impacts on the site. All sites to be left undisturbed or upon which a Phase III study is to be conducted shall be protected from development activities by temporary fencing until development activities adjacent to the site or the Phase III study, as the case may be, is complete.

7. Nature/Conservation Park. At the request of the County Administrator, the Owner and/or the owners association shall grant, free of charge, an easement to the County or its assignee over the area designated on the Amended Master Plan as Nature/Conservation Park generally in the locations shown on the Amended Master Plan. The Nature/Conservation Park shall remain undisturbed and in its natural state except as set forth below, preserving indigenous vegetation to the maximum extent possible. With the prior approval of the County Engineer or his designee on a case by case basis, (i) dead, diseased and dying trees or shrubbery and invasive or poisonous plants may be removed from the Nature/Conservation Park; (ii) select hand clearing and pruning of trees shall be permitted in the Nature/Conservation Park to permit sight lines or vistas and (iii) utilities (including the irrigation intake shown on the Amended Master Plan), stormwater best management practices, roads, pedestrian and golf cart paths, trails and bridges may intrude into or cross

the Nature/Conservation Park. If vegetation is removed from the Nature/Conservation Park it shall be replaced by vegetation that is equally or more effective in retarding runoff, preventing erosion and filtering nonpoint source pollution. Utility crossings shall be generally perpendicular through the Nature/Conservation Park and Owner shall endeavor to design utility systems that do not intrude into the Nature/Conservation Park. The Nature/Conservation Park shall be maintained by Owner unless the County assumes responsibility therefor under its easement or the Park is conveyed to an owners association, at which time the association shall assume responsibility for its maintenance.

8. Historic Site Buffer. There shall be a 50-foot buffer (undisturbed and exclusive of any lots) along the eastern and western boundaries of the Greensprings National Historic Site subject only to appropriate stormwater management and utility improvements/easements as approved by the Development Review Committee.

9. Water Lines. In addition to any other conditions to subdivision or site plan approval, before the County is obligated to grant final approval of any subdivision plat or site plan for single family lots, multi-family units or the Neighborhood Commercial Center (but not for site plans for roads or the golf facilities), the Owner shall contract to complete the James City Service Authority water line system loop from the Ford's Colony

area to Route 5, connecting to the existing JCSA water line adjacent to St. George's Hundred.

10. Future Road Right-of-Way. There shall be preserved a 120' road right-of-way for future road construction in the locations shown on the Amended Master Plan as "Future Right-of-Way". Upon the request of the County Administrator, Owner shall convey the "Future Right-of-Way", free of charge, to the County for dedication to VDOT. Upon the final determination by the County and VDOT not to construct a road connecting Route 5 and Route 199 through the area shown on the Amended Master Plan as "Future Right-of-Way", the area shown as "Future Right-of-Way" shall revert to Owner and the total number of lots and/or units that may be constructed on the Property shall be increased by 25.

11. 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 "Future Right-of-Way" measured from the edge of the proffered 120-foot right-of-way. No structure except the road and related improvements in Land Bay S-3 shown on the Amended Master Plan shall be located within 150 feet of the road right-of-way. Where the road in Land Bay S-3 parallels realigned Route 614, the greenbelt buffer shall be no less than 115 feet from the 120 foot right-of-way of realigned Route 614. Where golf course fairways abut relocated Route 614 or the "Future Right-of-Way", the greenbelt buffer shall have a minimum width of 75 feet. Where

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tee boxes or the putting surface of greens are located within 100 feet of the road right-of-way, enhanced landscaping approved by the Development Review Committee 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 the "Future Right-of-Way", selective hand thinning of trees (but no removal of stumps) shall be permitted as a 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.

12. Entrances. The number of entrances and driveways to the project off of Route 5, realigned Route 614 and, if constructed, the new road which may be built in the "Future Right-of-Way" shall be limited to those shown on the Amended Master Plan.

13. Owners Association. All property owners at Greensprings by virtue of ownership of their lot or unit shall become members of an incorporated owners association although there may be different associations for different Land Bays. Each owners association shall adopt an annual budget for

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maintenance of all common open space, recreation areas, sidewalks, parking, private streets, if any, and other privately owned but common facilities serving the portion of the Property in question and owned or maintained by the association in question.

14. Major Open Space. Areas shown on the Amended Master Plan as "Major Open Space" and areas within subdivisions or sites shown on the subdivision plat or site plan as greenspace areas shall be exclusive of any lots and undisturbed, except as provided below. With the prior approval of the County Engineer or his designee on a case by case basis, (i) dead, diseased and dying trees or shrubbery and invasive or poisonous plants may be removed from such areas; (ii) select hand clearing and pruning of trees shall be permitted in such areas to permit sight lines or vistas; and (iii) utilities, stormwater best management practices, roads, pedestrian and golf cart paths, trails and bridges may intrude into or cross such areas. If vegetation is removed from such areas it shall be replaced by vegetation that is equally or more effective in retarding runoff, preventing erosion and filtering nonpoint source pollution. Utility crossings shall be generally perpendicular through the such areas and Owner shall endeavor to design utility systems that do not intrude into such areas. All such Major Open Space and greenspace areas and other common areas shall be maintained by Owner until conveyed by Owner to an owners association, at which

time the association shall assume responsibility for such maintenance.

15. Road and Intersection Improvements. (a) Owner shall make a contribution into an interest-bearing escrow account with NationsBank, N.A. or another institutional lender approved by the County Attorney of \$2,000 per lot or unit payable upon the sale by Owner of the first 475 lots or units on the Property. All interest earned shall be retained in the escrow account until the account is disbursed as provided below. The escrow agreement creating and governing the account shall be consistent with the terms of this Condition 15 and shall be subject to the approval of the County Attorney.

(b) The County shall not be obligated to grant final approval of subdivision plats or site plans for a total of more than 766 lots and/or units until:

(i) The County and VDOT approve a plan, including a funding plan, for the improvement of Route 5 to a four-lane divided highway (or such equivalent or lower design standard approved by the County and VDOT) from John Rolfe Lane to Route 199; or

(ii) The County and VDOT approve a plan, including a funding plan, for the construction of a new road from Route 5 to Route 199 through the area shown as "Future Right-of-Way" on the Amended Master Plan.

This limitation shall not apply to the Neighborhood Commercial Center or the golf courses, clubhouse, golf maintenance and related facilities shown on the Amended Master Plan.

(c) If Owner desires to receive final subdivision or site plan approval for more than 766 lots and/or units and the plan, including the funding plan, for the improvement of Route 5 or the construction of the new road as described in Condition 15 (b) above has been approved by the County and VDOT, Owner shall:

(i) Cause all funds held in the escrow account described in Condition 15 (a) above, including accrued interest, to be paid to the County, to be used by the County for the construction of the new road, the improvement of Route 5 or for any other project included in the County's capital improvement program, the need for which (in whole or in part) is generated by the development of the Property;

(ii) Remain liable for and make the \$2,000 per lot or unit contributions directly to the County up to the 475 lot or unit maximum if contributions for less than the full 475 lots and/or units have then been made into the escrow account; and

(iii) (y) If the County and VDOT have selected the alternative of construction of the new road described in Condition 15 (b) (ii) above,

when requested to do so by the County and VDOT, contract to construct (and thereafter diligently pursue construction to completion) a two lane road meeting VDOT standards in the areas of the "Future Right-of-Way" shown as "Future Road A" on the Amended Master Plan or (z) if the County and VDOT have selected the alternative of improving Route 5 as described in Condition 15 (b) (i) above, when requested to do so by the County and VDOT, convey to the County for dedication to VDOT, free of charge, the required right-of-way for such improvements and contract to construct (and thereafter diligently pursue construction to completion) such improvements where the Property abuts Route 5. In no event shall Owner be required to comply with both (y) and (z) above.

Upon compliance with this Condition 15 (c), Owner shall be relieved of the limitation proffered in Condition 15 (b) above and shall be free to obtain final subdivision plat and/or site plan approval for the balance of the lots and/or units allowed under the Amended Master Plan.

(d) If the County and VDOT approve a plan, including a funding plan, for either of the road improvement alternatives described in Condition 15 (b) (i) and (ii) above prior to the

time Owner desires to exceed the limitation proffered in Condition 15 (b) above and the County, by all necessary action, removes the 766 lot and/or unit limitation proffered in Condition 15 (b) above, Owner shall promptly take all the actions and be subject to all the obligations proffered in Condition 15 (c) (i), (ii) and (iii) (y).

(e) Owner shall join with other owners in the corridor of Route 5 and/or of the new road described in Condition 15 (b) (ii) above in a petition to create a transportation improvement district to fund road construction costs shortfalls, if and only if an equitable agreement (as determined by Owner) is reached among Owner and other participants in the district with respect to the terms hereof.

(f) The Owner shall provide roadway and intersection improvements in accordance with the schedule set forth below. Each of such improvements shall be commenced and bonds approved by the County Attorney for completion of the improvements shall be posted as provided in the schedule set forth below.

Proffered Improvement

Timing

- | | |
|---|--|
| 1. Commence construction of realigned Route 614 from existing Route 5 to northern boundary. A 120 right-of-way shall be dedicated to allow for future improvements. As part of this construction the following intersection improvements shall be made: | Before approval of any subdivision plat or site plan, other than golf course |
| a. Realigned Route 614 shall be four lanes from existing Route 5 through the intersection with Land Bay M-9 and the Neighborhood | |

Commercial Center. The remainder of realigned Route 614 shall be built as two lanes, offset within the right-of-way to allow for future widening.

- b. At Brick Bat Road: The intersection of Brick Bat Road and Route 614 shall be relocated and part of Brick Bat Road reconstructed so that Brick Bat intersects Route 614 at approximately 90 degrees. Relocated Brick Bat Road shall have a separate left turn lane. North and southbound left turn lanes and a southbound right turn lane shall be built on Route 614.
 - c. At Old Route 614 at North Boundary of Historical Site: A "T" intersection with a northbound right turn lane, a southbound left turn lane and westbound right and left turn lanes shall be constructed.
 - d. At Entrance to Land Bay M-5: A "T" intersection with a northbound left turn lane, an eastbound right turn lane and an eastbound left turn lane. The first 50 feet of the entrance to Land Bay M-5 shall be constructed with adequate width for southbound right and through lanes.
 - e. At existing Route 5: An eastbound left turn lane and a westbound right turn lane on existing Route 5. Southbound right and left turn lanes and one through lane shall be constructed as part of realigned Route 614.
2. Construct northbound and southbound left turn lanes into Land Bay M-9 and Neighborhood Commercial Center. Prior to issuance of Certificate of Occupancy in Area M-9 or the Neighborhood Commercial

- | | |
|---|--|
| 3. Construct northbound right turn lane, westbound left and right turn lanes and one west bound through lane at Neighborhood Commercial Center. | Center. |
| 4. Construct southbound right turn lane and eastbound left and right turn lanes, and one eastbound through lane at Land Bay M-9. | Prior to issuance of Certificate of Occupancy in Land Bay M-9. |
| 5. Construct southbound left turn lane, northbound right turn lane, westbound combined left and through lanes, and westbound right turn lane at Land Bay M-8. | Prior to issuance of Certificate of Occupancy in Land Bay M-8. |
| 6. Construct southbound right turn lane, eastbound combined left turn lane and through lane, and eastbound right turn lane at Land Bay M-7. | Prior to issuance of Certificate of Occupancy in Land Bay M-7. |
| 7. Construct eastbound right turn lane, westbound left turn lane, and separate northbound left and right turn lanes at Land Bay M-6. | Prior to issuance of Certificate of Occupancy in Land Bay M-6. |
| 8. Construct northbound and southbound left turn lanes, northbound right turn lane, westbound left turn lane, and right turn lane at clubhouse. | Prior to issuance of Certificate of Occupancy for Clubhouse. |
| 9. Construct southbound right turn lane, eastbound and combined eastbound left turn and through lane and and eastbound right turn lane at Land Bay S-2. | Prior to recordation of subdivision plat for Land Bay S-2. |
| 10. Construct northbound left turn, southbound right turn lane, eastbound right | Prior to recordation of subdivision plat for Land Bay S-1. |

turn lane and combined eastbound through and left turn lanes at Land Bay S-1.

11. Construct northbound right turn lane into western portion of Land Bay S-3. Prior to recordation of subdivision plat for western portion of Land Bay S-3.
12. Construct northbound right turn lane, westbound right turn lane and combined westbound left turn and through lane at Land Bay S-3. Prior to recordation of subdivision plat for the eastern portion of Land Bay S-3.
13. Construction or payment for construction of a traffic signal at the intersection of Realigned Route 614 and existing Route 5. When warranted by MUTCD and requested by VDOT

14. Restrictions on Timeshares. Owner shall not create or operate a "time-share project" as defined in the Virginia Real Estate Time-Share Act, Va. Code, §§55-360 et. seq. in Land Bays S-1, S-2, S-3, M-9 or M-10.

15. Severability. Each condition hereof is severable. The invalidity of any particular condition shall not affect the validity of the remaining conditions.

16. Definitions. All terms used herein and defined in the County Zoning Ordinance shall have the meaning set forth therein unless otherwise specifically defined herein.

WITNESS the following signature and seal.

GREENSPRINGS PLANTATION, INC.

By: _____
Title:

STATE OF VIRGINIA

CITY/COUNTY OF _____ to-wit:

The foregoing instrument was acknowledged before me this
____ day of _____, 1992, by _____,
_____ of Greensprings Plantation, Inc., on behalf of
the corporation.

Notary Public

My commission expires: _____

OPEN SPACE

50' BUFFER

TUNNEL

PEDESTRIAN TRAIL

S-3
Single Family
Detached (A)

175 DU (MAX.) 117.6 AC
(INCLUDES 16.0 AC GREENSPACE)

DRY/MARSH
BMP

ALIGNED RTE. 614

FAIRWAY # 9 A

FAIRWAY # 6 A

LAKE D

LAKE C

PRACTICE RANGE

SNRC

CLUBHOUSE

FAIRWAY # 18 A

FAIRWAY # 10

FAIRWAY # 11

FAIRWAY # 12 A

FAIRWAY # 13 A

2
Family
Detached (A)
30.6 AC
(GREENSPACE)

S.S. OPEN SPACE
BMP 10-PT.

4/26/93

Simmons Engineering, Inc.

Civil Engineering Design and Consulting

4732 Longhill Road, Suite 3103

Williamsburg, VA 23188

(757) 258-5000 Fax (757) 258-3758

E-mail: rcsPE@QixNet.net



February 28, 2002

Mr. Daryl Cook, PE
Environmental Division
James City County
101-E Mounts Bay Road
Williamsburg, VA 23187

re: Update of the Greensprings Plantation 10-Point BMP Plan
Greensprings Apartments and Condominiums
Project # 01-135

Dear Mr. Cook:

This letter is provided to present an update of the referenced BMP Plan. This letter is also attached to, and is used to support the design manual *Greensprings Apartments and Condominiums Stormwater Drainage and Management Calculations*.

As requested, an update was completed of the Greensprings Plantation 10-Point BMP Plan. Two tables are attached. The first is a spreadsheet used to calibrate my spreadsheet with the previous calculations of the last update dated 7/13/94. Although some differences are noted in the calculations from method (I assume) the bottom line answer was the same. Based on that spreadsheet, given the construction of BMPs and dedication of "Open Space", 9.9 credits would be achieved.

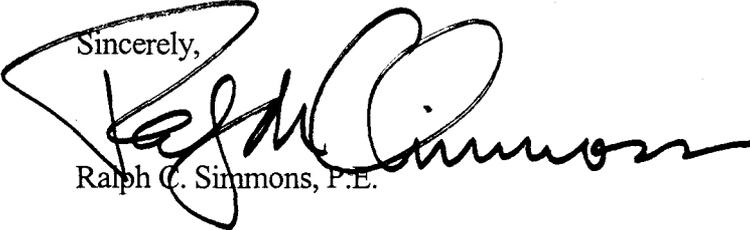
The second table uses the information from the first and depicts the results of "As-Built" or "Record Drawing" information provided by Mr. Scott Thomas, PE of Environmental Division and other information compiled from the Division's files. Over the years numerous projects have been designed and constructed with BMPs that are not depicted on the Master Plan. In several cases, several ponds are constructed in areas that only one was originally planned. Consequently, a larger area is covered by BMPs than master planned. The results in the updated table (Thru March 1, 2002) show that 10.3 credits are earned, given that the amount of "Open Space" is not reduced. This is also based on the calculation that Pond E is designed as a "6-Point" BMP instead of the "10-Point" BMP originally called for in the Master Plan.

Given the information from this update, the Greensprings Apartments and Condominiums is designed as an "F2" type structure, Dry Extended Detention with forebay. I would hope that you would not interpret this as a need to do a revision to the Master BMP Plan. I think the intent of the Plan is met, and actually exceeded.

Again, thank you for your support. It was very helpful to me to understand how you are using the record drawings and documents for BMPs, it certainly made my task a lot easier to have that information already available. Please, extend my thanks to Joan and Scott, I appreciated their assistance and courtesy. You have a great staff.

I look forward to hearing from you. Please call me with questions.

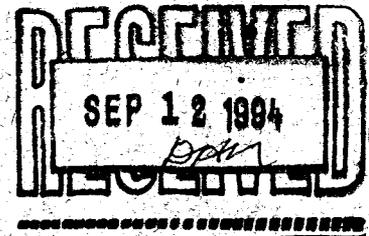
Sincerely,



Ralph C. Simmons, P.E.

President

cc: Greensprings Plantation, Inc



TRANSMITTAL LETTER

Environmental Consultants

TO

Mr. Steve Romeo
Langley & McDonald
201 Packets Court
Williamsburg, VA 23185

DATE
6-Sep-94

RE
Greensprings Open Space

WE ARE SENDING ATTACHED UNDER SEPERATE COVER VIA _____

Plans Contracts Letters
 Prints Literature Other:
 Copies Samples

COPIES	DATED	DESCRIPTION
1	4/26/93	10-pt Plan for Greensprings Plantation
1	4/26/93	Portion of Master Plan showing open space for S-3 Subdivision
1	7/13/94	Summary Table for Greensprings Plantation 10-pt Plan
1	7/13/94	NE Quadrant 10-pt plan with S-3 area map showing open space

THESE ARE BEING SENT:

As per your request For your comments For your signature
 For your review For your use/files For your _____

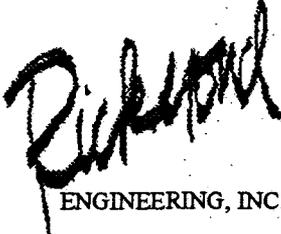
NOTES

Attached are previously accepted open space calcs for the Greensprings Plantation 10-pt Plan, and a portion of the original open space map which estimated the potential open space. Also attached are the recently reviewed values for open space and BMP credits, as shown on the two tables dated 7/13/94. The NE quadrant table demonstrates current compliance with the County requirements, and the other table shows how the entire project meets the plan. The figure shows the open space attributed to the S-3 subdivision, and the approximate drainage boundary for Lake C. Of course, the "approval" letter from the County (7/13/93) stated that additional BMPs are expected to be included where appropriate. I hope this information is helpful, please call if you have questions.

COPY TO

SIGNATURE
Lee Godwin

TITLE DATE
Environmental Planner 6-Sep-94

Letter of Transmittal		Date/Time: 2/4/00
 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 #: 98218	Project Title: Greensprings Plantation Ponds Record Drawings

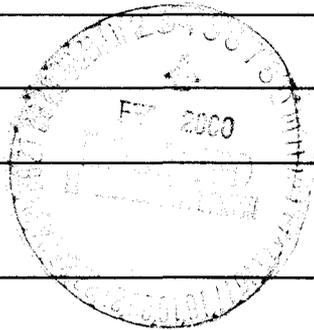
To: James City County Environmental Division

Address: P.O. Box 8784

City/State/Zip: Williamsburg, Va. 23187

Attn: David Meder

Phone No.: _____



We are sending you Attached () Under Separate Cover _____

The following items:

- () Shop Drawings Prints () Samples () Specifications () Copy of Letter
 () Change Order () Other _____

Copies	Date	# of Pages	Description
1	12/8/98	2	Record Drawings

These are transmitted as checked below:

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

Remarks: The safety benches were found on lake "G" & lake "C", but there is no emergency spillway at Dry Pond 1.

Copy to: _____ Signed: Kenneth Jenkins

Williamsburg Environmental Group, Inc.

Post Office Box 3584
Williamsburg, Virginia 23187
(804) 220-6869
Fax (804) 229-4507

TRANSMITTAL LETTER

TO

MR. MIKE FREDA
PLANNER
J.C.C.

DATE

APRIL 26, 1993

RE

LEGACY GOLF LINKS

WE ARE SENDING ATTACHED UNDER SEPERATE COVER VIA _____

Plans Contracts Letters
 Prints Literature Other:
 Copies Samples

COPIES	DATED	DESCRIPTION
1	4/26/93	STORMWATER MGMT PLAN FOR GREENSPRINGS WITH OPEN SPACE
1	4/26/93	2 SHEETS - 200 SCALE CONCEPTUAL PLAN - SHEETS 2+3 of LEGACY PLANS showing potential open space.
1	4/26/93	OPEN SPACE STATISTICS TABLE
3		LEGACY GOLF LINKS PLANS - DRAFT.

THESE ARE BEING SENT:

As per your request For your comments For your signature
 For your review For your use/files For your _____

NOTES

PLANS FOR YOUR REVIEW - CHANGES AS PER DARRYL COOK'S COMMENTS AND REVISED STATISTICS ON COVER PAGE. NOTE: BRIDGE SHEETS REMOVED - TO BE SUPPLIED OR REVISED FOR FINAL SUBMITTAL LATER THIS WEEK.

I'll see you tomorrow at 11:30 AM FOR MTG. TO REVIEW OPEN SPACE AND THE 10-POINT PLAN FOR LEGACY AND GREENSPRING PLANTATION PROJECT.

COPY TO

SIGNATURE

Lee Johnson

TITLE

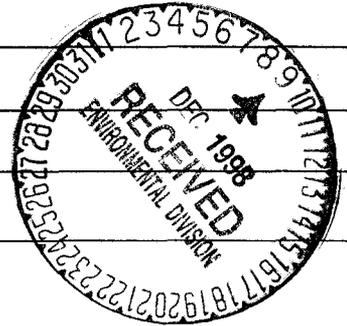
ENV. PLANNER

DATE

4/26/93

Letter of Transmittal	Date/Time: 12/8/98
Rickmond Engineering, Inc. 1643 Merrimac Trail Williamsburg, Virginia 23185 (757) 229-1776 • Fax (757) 229-4683 e-mail: rickmond@tmi.net www.rickmond.com	Project #: 98218
	Project Title: Greensprings Plantation Retention Ponds

To: James City County Environmental Division
 Address: P.O. Box 8784
 City/State/Zip: Williamsburg, Va. 23187
 Attn: Daryl Cook



We are sending you Attached () Under Separate cover

The following items:

- () Shop Drawings Prints () Samples () Specifications () Copy of Letter () Change Order
 () Other

873-6867

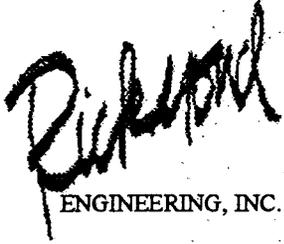
Copies	Date	# of Pages	Description
1	12/8/98	2	Revised Drawings

These are transmitted as checked below:

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

Remarks:

Copy to: _____ Signed: Renned Jenkins

Letter of Transmittal		Date/Time: 1/13/00
 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 #: 99218	Project Title: Greensprings Plantation Pond As-Built

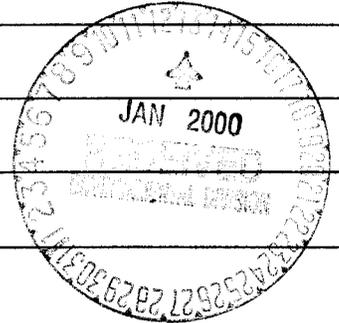
To: James City County Environmental Division

Address: P.O. Box 8784

City/State/Zip: Williamsburg, Va. 23187

Attn: Darryl Ceck

Phone No.: _____



We are sending you Attached () Under Separate Cover _____

The following items:

- () Shop Drawings Prints () Samples () Specifications () Copy of Letter
 () Change Order () Other _____

Copies	Date	# of Pages	Description
4	12/8/98	2	Revised Plans

These are transmitted as checked below:

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

Remarks:

Copy to:

Signed: Rennoff Jenkins



**Outline of the
Environmental Management Plan
for the Legacy Golf Links**

prepared for :

**The Bush Companies
4029 Ironbound Road
Suite 200
Williamsburg, Virginia 23188**

prepared by:

**Williamsburg Environmental Group, Inc.
P. O. Box 3584
Williamsburg, Virginia 23187**

April, 1993

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4.4	NON-TURF CHEMICALS
4.5	OTHER IPM MECHANISMS/METHODS
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8.0	REFERENCES
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1.0 INTRODUCTION

The preparation of an Environmental Management Plan, including Integrated Pest Management (IPM) concepts, for the Legacy Golf Links was proffered as part of the rezoning for the Greensprings Plantation Development including the golf course construction. This document is submitted as part of the final site plan to address the requirement, although the actual working plan will be submitted to James City County at a later date prior to opening the course for public play. The necessary information to prepare a complete plan is not available at the early stages of planning for a golf course and only after construction has begun and certain management decisions are made can the plan be prepared with complete and accurate information. For instance, of primary importance to developing any management plan for a golf course, particularly an IPM plan, the specific grass types need to be known to understand the potential pests and the appropriate control strategies. This document outlines the sections of the plan and the specific objectives of each section in providing management strategies and goals with specific guidance for implementing environmental management methods including IPM components.

2.0 PHYSICAL SETTING

The physical setting of the golf course will be reviewed to provide information which will guide general management decisions and dictate some specific components. Three major subjects will be reviewed including climate, soils, and water resources. Specific climatic conditions for the Legacy Golf Links site will be provided and discussed. This provides the background information for determining the timing for irrigation scheduling and other cultural practices for the golf course, as well as identifying potential diseases and control methods. Climatic conditions are relevant in making specific IPM recommendations.

Soils information for the site will be provided to determine the general types of soils which can affect management decisions regarding infiltration and percolation rates for protecting groundwater from chemical leachate and runoff. Also, identifying the importance of certain cultural management decisions and specific methods for practices such as aerating and watering can be determined by soil types.

The third major topic in this section is water resources. The surface and groundwater resources present on the site will be reviewed. Surface water and groundwater will be discussed with regards to the potential threat of pollution from the golf course management activities.

3.0 GOLF COURSE FEATURES AND DYNAMICS

The layout and design of the Legacy Golf Links was accomplished through the coordinated efforts of the golf course architect, the potential golf course developer, the current land owner, and Williamsburg Environmental Group, Inc. (WEG) to best minimize potential environmental impacts while maintaining a viable golf course and residential development. As part of the course design, the architect will choose appropriate turfgrass types which provide the surface characteristics which meet the overall course description, while accounting for establishment and maintenance costs and potential management problems.

Selection of appropriate grass types for golf courses has been enhanced in recent years by the successful breeding of new hybrids which are composed of the beneficial attributes of the species. Selecting the general type of grass is the first step in the selection process. Species of cool or warm season grasses with desirable growth patterns can be selected and then the second round of characteristics can be reviewed for selection of the hybrids. Disease resistance, drought tolerance, heat resistance, cold tolerance, pest resistance and other attributes are considered in selecting the most appropriate turfgrass hybrid. The type of grass will be a major factor in determining the potential problems which may arise on the course. The common pest species which have historically caused problems on other course in the region with similar grass types will be reviewed to better understand their biology and how best to manage outbreaks.

A final point will be covered in this section regarding the irrigation source and water management system for the course. This information is necessary to understand the adequate supply of water for irrigating the course which is imperative to ensure proper management of the course. In addition, the stormwater management system will demonstrate how the runoff from the site will be treated and how this minimizes the potential for water quality impacts related to the golf course activities.

4.0 INTEGRATED PEST MANAGEMENT (IPM)

This section introduces the IPM methodology and concepts which will be employed on the course. The use of IPM to reduce the chemical use on golf courses while providing an acceptable (or better) turfgrass quality has been well documented. The IPM plan provides the decision making process which drives the plan and demonstrates how the long term benefits of IPM techniques can include not only environmental protection but cost savings.

4.1 IPM COMPONENTS

The major components of an IPM plan include positive, accurate identification of the pest species; development of a reliable monitoring system; determination of levels of infestation or damage which warrants artificial control measures (i.e. action levels); utilizing natural or biological controls; pesticide management; and evaluating and following up the program to determine the effectiveness of prior management decisions. In addition, cultural management practices which can be used will be reviewed with respect to their benefit of avoiding the use of chemicals on the course both by promoting a healthy turf and reducing stress which would otherwise allow disease and pest infestation.

4.2 FERTILIZERS

The major principles of managing nutrients on a golf course are using minimal rates necessary to sustain high quality turf, improving uptake efficacy through proper timing and rate of applications, choosing appropriate application techniques, recognizing patterns of traffic and adjusting application rates accordingly, using properly calibrated equipment, and maintaining good turfgrass growing conditions. Specific management practices are necessary to ensure that these nutrient management principles are accomplished, and these will be discussed in the final plan.

4.3 PESTICIDES AND RELATED CHEMICALS

The critical principles of pest management include several items which will be addressed in the plan. Using pesticides according to label directions and selecting appropriate pesticides for the problem based on target species or disease, site characteristics, and pesticide characteristics are the primary considerations in any pesticide management program. In addition, reducing the frequency of pesticide applications, selecting less toxic or mobile (including less persistent) pesticides and using alternative control strategies are important components to the IPM techniques. Also, controlling the timing and

amount of pesticide applications and acting on action levels are of primary concern in IPM methodology. Specific methodologies for accomplishing these goals will be a part of this section.

4.4 NON-TURF CHEMICALS

Non-turf chemicals which are used within golf course operation and management are a concern within the scope of environmental management for the Legacy Golf Course. Concepts regarding chemical use and specific guidance for their proper use and accident prevention will be covered. The safety concerns associated with the types of equipment and the chemicals used for maintaining a golf course warrant special precautions to avoid not only personal injury but also environmental damage.

4.5 OTHER IPM MECHANISMS/METHODS

Other mechanisms which are either currently being used successfully on other courses, or which show promise in the near future, will be reviewed. Since this plan is a dynamic one, it may be updated as changes which promote environmental management goals occur in the industry. Specific biological controls and potential cultural methods of maintaining turfgrass which may prove beneficial for the Legacy Course will be reviewed. The decision to incorporate new methods will be made by the golf course superintendent who will best understand their potential benefits or detriments for the course.

5.0 **CHEMICAL HANDLING AND STORAGE**

Guidelines for handling and storing chemicals will be reviewed in light of the current federal and state laws which address these issues. In addition, suggestions about storage facilities will be included, and the major components of the an accident contingency plan will be provided as a guide.

6.0 ENVIRONMENTAL PROTECTION

This section of the plan will provide the synthesis of how the components of the plan will meet the objectives. The physical and methodological features of the golf course and the environmental management plan will be reviewed to demonstrate that the protection of surface water, groundwater, wildlife, and other environmental features will be accomplished through the implementation of the IPM techniques provided.

7.0 SUMMARY

A summary of the plan will be provided to reiterate the major components of the plan. The use of IPM methods in the turf management system for the Legacy Golf Course will ensure the proffer associated with the rezoning of the golf course site (within the Greensprings Plantation project) is addressed to the satisfaction of the County.

8.0 REFERENCES

A list of referenced material will be included. Background material and current references will be used to address the wide spectrum of topics covered in the plan. This list will not be an exhaustive bibliography on the many subjects condensed in the plan.

APPENDIX A
RECOMMENDED CONTROL MEASURES

The recommended control measures will be included in a table or matrix which will provide the County and the superintendent with the guidelines for which chemicals are preferred and the application rates with suggestions for timing. These recommended control measures are subject to change as industry standards warrant based on new technological advances or scientific research that demonstrates more effective control with similar or enhanced environmental protection through alternative methods.

Greensprings Plantation
 Updated Summary Table for 10-Point BMP Plan
 Thru March 1, 2002

BMP/DA	BMP Ref #	Location	Total Area (acres)	% of Site	Open Space (acres)	BMP Points			BMP Points Based on Entire Development		
						Structural	Open Space	Total	Structural	Open Space	Total
Lake C	PC058	Greenspring SF (NE)	91.3	7%	9	11	1.0	12.0	0.72	0.06	0.8
Lake F	JR048	Greensprings West	154.8	11%	6	11	0.4	11.4	1.21	0.04	1.3
Lake G	JC052	Greensprings West	63.8	5%	5	11	0.8	11.8	0.50	0.04	0.5
Lake E		Greensprings A&C	36.3	3%	15	6	4.2	10.2	0.16	0.11	0.3
Lake H:	???	Monticello Ave (West)	3.4	0%	0	9	0.0	9.0	0.02	0.00	0.0
	JR053	Golf Crse Maintenance	6.4	0%	0	9	0.0	9.0	0.04	0.00	0.0
	???	FH #5	2.1	0%	1	9	4.8	13.8	0.01	0.01	0.0
Lake A	PC060	Timeshares	21.0	1%	6	9	2.9	11.9	0.13	0.04	0.2
Wetpond 1	???	Timeshares	15.0	1%	4	9	2.7	11.7	0.10	0.03	0.1
Drypond 1	PC064	NE Quad	252.0	18%	56	9	2.2	11.2	1.62	0.40	2.0
Drypond 2		Greensprings West	124.0	9%	28	9	2.3	11.3	0.80	0.20	1.0
Drypond 4		Greensprings West	47.0	3%	3	9	0.6	9.6	0.30	0.02	0.3
Drypond 5	PC129	Fairway Villas	22.0	2%	19	6	8.5	14.5	0.09	0.13	0.2
Drypond 6:	JR006	Patriots Colony #1	74.0	5%	6	9	0.8	9.8	0.48	0.04	0.5
	JR015	Patriots Colony #2	16.7	1%	0	9	0.0	9.0	0.11	0.00	0.1
	JR024	Patriots Colony #3	2.8	0%	0	9	0.0	9.0	0.02	0.00	0.0
Not in Master Plan:											
Drypond 7	PC102	Commercial Center	6.2	0%	9	9	14.4	23.4	0.04	0.06	0.1
Drypond 8	PC068	Timeshare Maintence & Monticello Ave (East)	16.0	1%	4	9	2.5	11.5	0.10	0.03	0.1
Drypond 9	PC165	Golf Club Hse	17.1	1%	0	9	0.0	9.0	0.11	0.00	0.1
Subtotal			971.8	69%	171	9.0	1.8	10.8	6.6	1.2	7.8
Default*			430	31%	349	0	8.1	8.1	0	2.5	2.5
Total			1402	100%	520	6.2	3.7	9.9	6.6	3.7	10.3

not treated by a structure in conceptual stormwater management plan

12/21/04

Lake E Drng Area - $28.47 + 36.54 = 65.0$

Lake E Point Value - 10

New Point Total - STRUCTURAL $\frac{65}{1402} \times 10 = 0.46$

Open Space - 0

$10.3 - (.16 - .11) + (.46 + 0) = 10.49 - OK$

$\frac{520}{1402} = 3.7 \text{ pts}$

CODE COMPLIANCE REVIEW COMMENTS
GREENSPRINGS LEGACY GOLF COURSE
PLAN NO. SP-33-92
April 29, 1992

DCC

1. A Land Disturbing Permit and Siltation Agreement, with surety, are required for this project.
2. As-built drawings shall be provided for all detention basins upon completion.
3. The Land Disturbing Permit shall require construction of the sediment basins and traps prior to any other construction activities on the remainder of the project.
4. Provide appropriate outlet protection for all pipe systems with special attention paid to those systems that outfall at the tops of slopes.
5. Provide inlets or manholes at all junctions of pipes for those systems that incorporate public drainage; those that accept drainage from public roads or residential areas.
6. Provide a safety bench in all wet ponds.
7. Provide calculations for sizing of the anti-seep collars.
8. Provide a table that specifies the volume, drainage area, outlet structure length, and approximate dimensions of each sediment trap.
9. Provide a table that specifies the volume, drainage area, outlet structure pipe sizes, and the elevations of pipes, embankment, and spillways.
10. Provide BMP calculations for the golf course by itself and set aside any areas of natural open space in conservation easements.
11. Submit calculations for the extended dry detention basins. Show the removal of unsuitable material under the dry basins embankments.
12. Provide removable ends on the outlet spreaders for the dry basins to allow for maintenance access.
13. For hole 14, provide more information regarding the mitigation of the encroachment into the RPA. Show the area controlled by the BMP and submit the efficiency of the structure provided. Request an exception from the Director of Code Compliance to permit this encroachment.
14. Submit a request for an exception to the Director of Code Compliance to disturb slopes in excess of 25%.

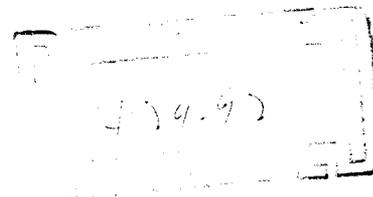
CODE COMPLIANCE REVIEW COMMENTS
GREENSPRINGS LEGACY GOLF COURSE
PLAN NO. SP-33-92
April 29, 1992

DCL

1. A Land Disturbing Permit and Siltation Agreement, with surety, are required for this project.
2. As-built drawings shall be provided for all detention basins upon completion.
3. The Land Disturbing Permit shall require construction of the sediment basins and traps prior to any other construction activities on the remainder of the project.
4. Provide appropriate outlet protection for all pipe systems with special attention paid to those systems that outfall at the tops of slopes.
5. Provide inlets or manholes at all junctions of pipes for those systems that incorporate public drainage; those that accept drainage from public roads or residential areas.
6. Provide a safety bench in all wet ponds.
7. Provide calculations for sizing of the anti-seep collars.
8. Provide a table that specifies the volume, drainage area, outlet structure length, and approximate dimensions of each sediment trap.
9. Provide a table that specifies the volume, drainage area, outlet structure pipe sizes, and the elevations of pipes, embankment, and spillways.
10. Provide BMP calculations for the golf course by itself and set aside any areas of natural open space in conservation easements.
11. Submit calculations for the extended dry detention basins. Show the removal of unsuitable material under the dry basins embankments.
12. Provide removable ends on the outlet spreaders for the dry basins to allow for maintenance access.
13. For hole 14, provide more information regarding the mitigation of the encroachment into the RPA. Show the area controlled by the BMP and submit the efficiency of the structure provided. Request an exception from the Director of Code Compliance to permit this encroachment.
14. Submit a request for an exception to the Director of Code Compliance to disturb slopes in excess of 25%.

15. Submit a construction phasing plan for the golf course that divides the construction into four or five phases.
16. Show the source of irrigation water for the project.
17. Copies of any Army Corps of Engineer's wetlands permits needed to construct the golf course must be provided to the county prior to the issuance of a land disturbance permit.

TRANSMITTAL



DATE: April 16, 1992

TO: BERNIE FARMER#

DARRYL COOK*

FROM: Mike Freda, Planner

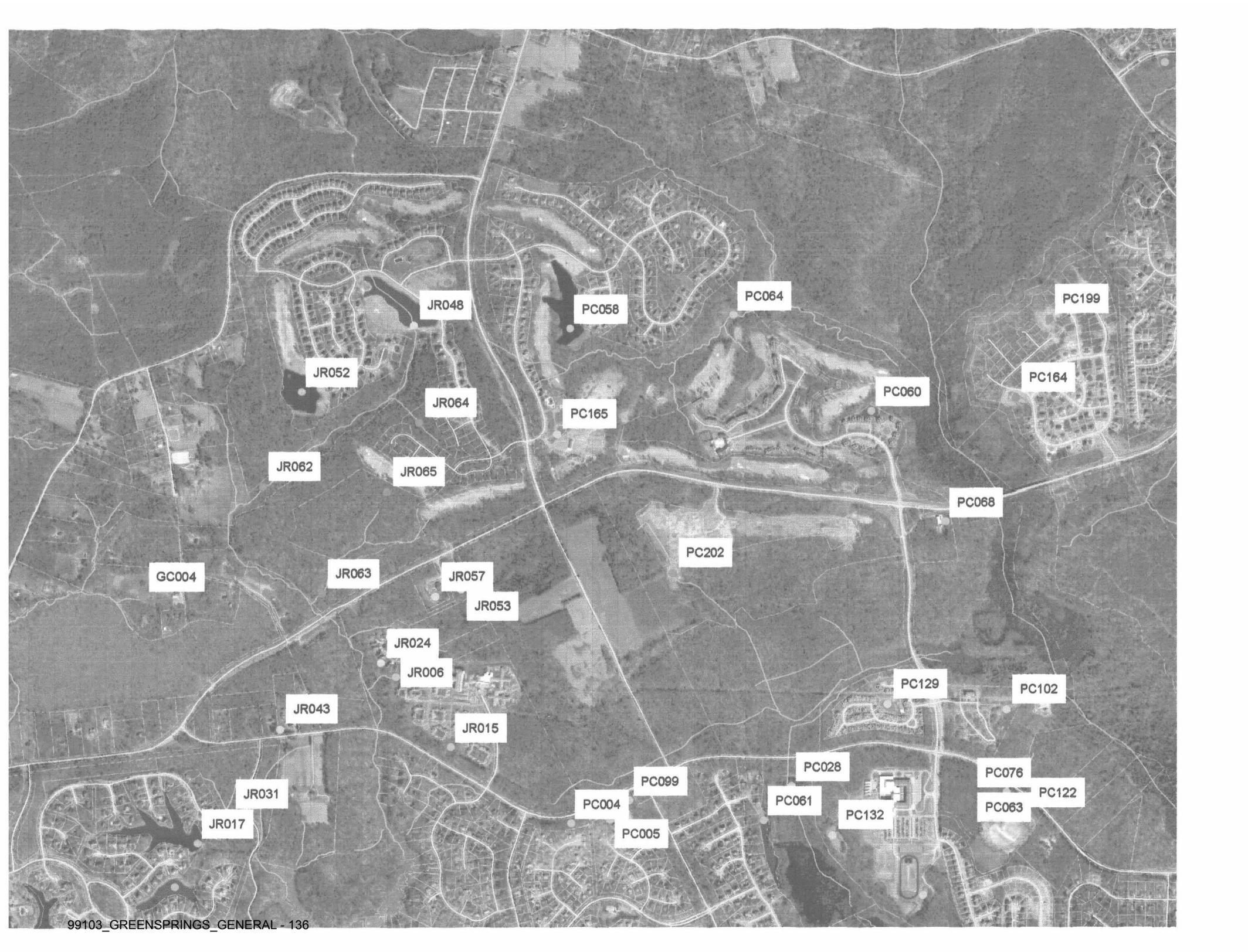
SUBJECT: SP-33-92. Legacy Golf Links

ITEMS ATTACHED: *drainage calculations and map
#exception request and drainage map

INSTRUCTIONS: Please review and comment.

RETURN REQUIRED BY: April 24, 1992

AGENCY'S COMMENTS:



Greensprings Plantation
Summary Table for 10-Point BMP Plan
Based on 7/13/94 Update

BMP/DA	BMP Ref #	Total Area (acres)	% of Site	Open Space (acres)	BMP Points			BMP Points Based on Entire Development		
					Structural	Open Space	Total	Structural	Open Space	Total
<i>PC058</i> Lake C	Greenspring SF (NE)	122	9%	9	11	0.7	11.7	0.96	0.06	1.0
<i>JR048</i> Lake F	Greenspring West	119	8%	6	11	0.5	11.5	0.93	0.04	1.0
<i>JR052</i> Lake G	Greenspring West	64	5%	5	11	0.8	11.8	0.50	0.04	0.5
Lake E	Greensprings A&C	<u>79</u>	6%	<u>2</u>	<u>10</u>	<u>0.3</u>	<u>10.3</u>	<u>0.56</u>	<u>0.01</u>	<u>0.6</u>
Lake H	Monticello & GC Maint	22	2%	0	9	0.0	9.0	0.14	0.00	0.1
<i>PC060</i> Lake A	Timeshares	28	2%	6	9	2.1	11.1	0.18	0.04	0.2
Wetpond 1	Timeshares	15	1%	4	9	2.7	11.7	0.10	0.03	0.1
<i>PC064</i> Drypond 1	NE Quad	220	16%	56	9	2.5	11.5	1.41	0.40	1.8
Drypond 2	Greenspring West	124	9%	28	9	2.3	11.3	0.80	0.20	1.0
Drypond 4	Greenspring West	47	3%	3	9	0.6	9.6	0.30	0.02	0.3
<i>PC129</i> Drypond 5	Fairway Villas	16	1%	2	6	1.3	7.3	0.07	0.01	0.1
<i>JR015</i> Drypond 6	Patriots Colony	32	2%	6	9	1.9	10.9	0.21	0.04	0.2
Subtotal		888	63%	127	9.3	1.4	10.8	6.2	0.9	7.1
Default*		514	37%	393	0	7.6	7.6	0	2.8	2.8
Total		1402	100%	520	6.2	3.7	9.9	6.2	3.7	9.9

* Denotes area not treated by a structure in conceptual stormwater management plan

28-Feb-02

WET Pond 1
Fairway

Greensprings Plantation- Summary Table for 10-Point BMP Plan

4/26/93

BMPs Coincide With Those Shown on SWMP for Greenspring Plantation

Total site area= 1402 acres

BMP/DA	Total Area (ac)	% of site	Open Space (ac)	BMP Points		
				Structural	Open Space	Total
<u>PC058</u> \ Lake C <u>Gully</u>	91	7%	9	11	1.0	12.0
- Lake F	119	8%	6	11	0.5	11.5
<u>PC059</u> \ Lake G <u>Gully</u>	64	5%	5	11	0.8	11.8
- Lake E	79	6%	2	10	0.3	10.3
- Lake H	22	2%	0	9	0.0	9.0
<u>PC060</u> \ Lake A <u>Timesup</u>	31	2%	4	9	1.3	10.3
? Wetpond 1	22	2%	2	9	1.0	10.0
<u>PC064</u> \ Drypond 1 <u>BMP 1</u>	246	18%	56	9	2.3	11.3
- Drypond 2	124	9%	28	9	2.3	11.3
- Drypond 4	47	3%	3	9	0.6	9.6
- Drypond 5 <u>Fairway</u> <u>Mud</u>	16	1%	2	6	1.3	7.3
<u>TR015</u> \ Drypond 6 <u>Post. Col.</u>	32	2%	6	9	1.9	10.9
Subtotal	892	64%	123	9.6	1.4	11.0
Default*	510	36%	393	0.0	7.7	7.7
TOTAL	1402	100%	516	6.1	3.7	9.8

*Area not treated by a structure in conceptual stormwater management plan

BMP 1 - 3 30" ACMP-2
8.74 ac ft = 24% Vol. - 25.67'
7.1 ac ft = BMP Vol. - 24.80'
252 ac = D.A. 6/1/94

Lake C
30" ACMP-2
BMP - 50.0'
24% 51.19'
54.4 ac ft
108.34 ac ft
11 pt 6/1/94
D.A. 70.1 ac

Lake G
30" ACMP-2
BMP - 55.0'
24% 56.12'
27.6 ac ft
5.25 ac ft
11 pt 6/1/94
28 ac = D.A.

Lake A 9 pt BMP
DA = 21 acres
BMP - 1.23 ac ft
24% 0.56 ac ft
24" ACMP-2 2000
11-01-94

Greensprings Plantation- Summary Table for 10-Point BMP Plan
7/13/94

BMPs Coincide With Those Shown on Mark-Up SWMP for Greenspring Plantation
for NE Quadrant to Compare with 4/26/93 Master SWMP.

Total site area= 1402 acres

BMP/DA	Total Area (ac)	% of site	Open Space (ac)	BMP Points		
				Structural	Open Space	Total
Lake C	122	9%	9	11	0.7	11.7
Lake F	119	8%	6	11	0.5	11.5
Lake G	64	5%	5	11	0.8	11.8
Lake E	79	6%	2	10	0.3	10.3
Lake H	22	2%	0	9	0.0	9.0
Lake A	28	2%	6	9	2.0	11.0
Wetpond 1	15	1%	4	9	2.7	11.7
Drypond 1	220	16%	56	9	2.5	11.5
Drypond 2	124	9%	28	9	2.3	11.3
Drypond 4	47	3%	3	9	0.6	9.6
Drypond 5	16	1%	2	6	1.3	7.3
Drypond 6	32	2%	6	9	1.9	10.9
Subtotal	887	63%	127	9.7	1.4	11.1
Default*	515	37%	393	0.0	7.6	7.6
TOTAL	1402	100%	520	6.2	3.7	9.9

*Area not treated by a structure in conceptual stormwater management plan

Greensprings Plantation- Summary Table for 10-Point BMP Plan
7/13/94

BMPs for Greenspring Plantation
for NE Quadrant

Total site area= 481 acres

BMP/DA	Total Area (ac)	% of site	Open Space (ac)	BMP Points		
				Structural	Open Space	Total
Lake C	122	25%	9	11	0.7	11.7
Lake A	28	6%	6	9	2.0	11.0
Wetpond 1	15	3%	4	9	2.7	11.7
Drypond 1	220	46%	56	9	2.5	11.5
Subtotal	385	80%	75	9.6	1.9	11.6
Default*	96	20%	53	0.0	5.5	5.5
TOTAL	481	100%	128	7.7	2.7	10.4

*Area not treated by a structure

Greensprings Legacy Golf Links

site 190 AC. R-4
Dist 117 AC.

* Dry Pond 1 PC064

* Lake C PC058

Lake F

* Lake G JR052

Dry Pond 2

Dry Pond 4

Williamsburg

National B

Course Expansion

SP-145-03

Dry Pond 2

Dry Pond 4

SP-33-92

Note #21 on Sheet 10 of Legacy GC plans stated "As built DWS shall be provided for all detention basins upon completion."

Received AS Lake C, G + Dry Pond #1

GREENSPRING PLANTATION OPEN SPACE STATISTICS

AREA TYPE	TOTAL AREA (AC)
RPA buffer	231
RMA wetlands	57
Property buffer	24
Road buffer	95
Subtotal of Environmental Constraints	407
Additional natural areas	109

Total Natural Area (not including golf course corridor)	516
--	-----

TRANSMITTAL

DATE: April 26, 1993

TO: B. Farmer

FROM: Michael A. Freda, Senior Planner

SUBJECT: SP-33-92. Legacy Golf Course

ITEMS ATTACHED: Environmental Management Plan

RETURN BY: 4/30/93

AGENCY COMMENTS:

[Faint, illegible handwritten or stamped text]

Greensprings Plantation- Summary Table for 10-Point BMP Plan
7/13/94

BMPs for Greenspring Plantation
for NE Quadrant

Total site area= 481 acres

BMP/DA	Total Area (ac)	% of site	Open Space (ac)	BMP Points		
				Structural	Open Space	Total
Lake C	122	25%	9	11	0.7	11.7
Lake A	28	6%	6	9	2.0	11.0
Wetpond 1	15	3%	4	9	2.7	11.7
Drypond 1	220	46%	56	9	2.5	11.5
Subtotal	385	80%	75	9.6	1.9	11.6
Default*	96	20%	53	0.0	5.5	5.5
TOTAL	481	100%	128	7.7	2.7	10.4

*Area not treated by a structure

Greensprings Plantation- Summary Table for 10-Point BMP Plan

7/13/94

BMPs Coincide With Those Shown on Mark-Up SWMP for Greenspring Plantation
for NE Quadrant to Compare with 4/26/93 Master SWMP.

Total site area= 1402 acres

BMP/DA	Total Area (ac)	% of site	Open Space (ac)	BMP Points		
				Structural	Open Space	Total
Lake C	122	9%	9	11	0.7	11.7
Lake F	119	8%	6	11	0.5	11.5
Lake G	64	5%	5	11	0.8	11.8
Lake E	79	6%	2	10	0.3	10.3
Lake H	22	2%	0	9	0.0	9.0
Lake A	28	2%	6	9	2.0	11.0
Wetpond 1	15	1%	4	9	2.7	11.7
Drypond 1	220	16%	56	9	2.5	11.5
Drypond 2	124	9%	28	9	2.3	11.3
Drypond 4	47	3%	3	9	0.6	9.6
Drypond 5	16	1%	2	6	1.3	7.3
Drypond 6	32	2%	6	9	1.9	10.9
Subtotal	887	63%	127	9.7	1.4	11.1
Default*	515	37%	393	0.0	7.6	7.6
TOTAL	1402	100%	520	6.2	3.7	9.9

*Area not treated by a structure in conceptual stormwater management plan

APPROVED PLAN
 SEE JULY 13, 1993
 JCC LETTER.

Greensprings Plantation- Summary Table for 10-Point BMP Plan

4/26/93

BMPs Coincide With Those Shown on SWMP for Greenspring Plantation

(ATTACHED 5-3 SUBD. PORTION)

Total site area= 1402 acres

BMP/DA	Total Area (ac)	% of site	Open Space (ac)	BMP Points		
				Structural	Open Space	Total
Lake C	91	7%	9	11	1.0	12.0
Lake F	119	8%	6	11	0.5	11.5
Lake G	64	5%	5	11	0.8	11.8
Lake E	79	6%	2	10	0.3	10.3
Lake H	22	2%	0	9	0.0	9.0
Lake A	31	2%	4	9	1.3	10.3
Wetpond 1	22	2%	2	9	1.0	10.0
Drypond 1	246	18%	56	9	2.3	11.3
Drypond 2	124	9%	28	9	2.3	11.3
Drypond 4	47	3%	3	9	0.6	9.6
Drypond 5	16	1%	2	6	1.3	7.3
Drypond 6	32	2%	6	9	1.9	10.9
Subtotal	892	64%	123	9.6	1.4	11.0
Default*	510	36%	393	0.0	7.7	7.7
TOTAL	1402	100%	516	6.1	3.7	9.8

*Area not treated by a structure in conceptual stormwater management plan

Williamsburg Environmental Group, Inc.

Post Office Box 3584
Williamsburg, Virginia 23187
(804) 220-6869
Fax (804) 229-4507

MEMORANDUM

TO: Mike Freda
FROM: Ron Boyd
DATE: April 15, 1993
SUBJECT: Greensprings Plantation - Legacy Golf Course Plans

As we have discussed, I am submitting the revised Legacy Golf Course plans for approval and coordination with the road plans submitted by Langley and McDonald. Though state and federal permits are still pending for the project, we hope to have plans approved in order to obtain a land disturbance permit within the next 1 to 2 months. The plans have been revised based on the comments received from the County in September 1992 (copy attached). Also included are:

- Anti-seep collar calculations for the dams
- Status summary of the state and federal permits
- BMP worksheets for the golf course and the overall development - the golf course alone will not need to meet the 10-pt BMP goal, though 3 of the regional-scale BMPs will be constructed as part of the golf course. I understand we will meet with your staff to discuss open space requirements for the project since natural areas are available within the golf course corridor.

A detailed Integrated Pest Management plan for the golf course is impossible to prepare at this time since the grass types have not been selected. As with other projects, this plan is typically completed during the construction phase of the project, prior to planting/sprigging of the turf. If a plan is required to keep our preliminary site plan approval valid, I would suggest preparing an interim plan to establish the framework for the final plan and address any management practices which may be appropriate during construction. This should be the last issue associated with the conditions and proffers on the project since the Phase 1 Archaeological study has been approved by the state and your department has a copy of the report.

WORKSHEET FOR BMP POINT SYSTEM
for Proposed Legacy Golf Links
in conjunction with Greensprings Plantation Overall Stormwater Plan

Total site acreage (golf course corridor)= 190 - 117ac disturbed

A. STRUCTURAL BMP POINT ALLOCATION

BMP	BMP Points	Percentage of Site Served by BMP	Weighted BMP Points
LAKE G	11	X 6	= 0.66
LAKE C	11	X 13	= 1.43
DRYPOND-1	9	X 38	= 3.42
		X	
		57	
TOTAL WEIGHTED STRUCTURAL BMP POINTS:			5.51

B. NATURAL OPEN SPACE CREDIT

Percentage Of Site	Natural Open Space Credit	Points for Natural Open Space
45	X (0.1 per 1%)	= 4.50
<small>Assume approximately 72 acres (45% of 160 acres construction site) of RPA open space applied to requirements for 10-pts.</small>		

C. TOTAL WEIGHTED POINTS

5.51	+	4.50	=	10.01
Structural BMP Points		Natural Open Space Points		TOTAL

Greensprings Plantation- Summary Table for 10-Point BMP Plan

1/7/93

BMPs Coincide With Those Shown on SWMP for Greenspring Plantation

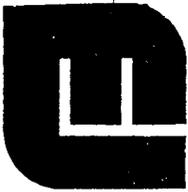
Total site area= 1402 acres

BMP/DA	Total Area (ac)	% of site	Open Space (ac)	BMP Points		
				Structural	Open Space	Total
Lake C	91	7%	22	11	2.4	13.4
Lake F	119	8%	21	11	1.8	12.8
Lake G	64	5%	18	11	2.9	13.9
Lake E	79	6%	2	10	0.3	10.3
Lake H	22	2%	0	9	0.0	9.0
Lake A	31	2%	6	9	1.9	10.9
Wetpond 1	22	2%	2	9	1.0	10.0
Drypond 1	246	18%	103	9	4.2	13.2
Drypond 2	124	9%	38	9	3.1	12.1
Drypond 4	47	3%	4	9	0.8	9.8
Drypond 5	16	1%	2	6	1.1	7.1
Drypond 6	32	2%	6	9	2.0	11.0
Subtotal	892	64%	225	9.6	2.5	12.2
Default*	510	36%	350	0.0	6.9	6.9
TOTAL	1402	100%	575	6.1	4.1	10.2

440

135

*Area not treated by a structure



Langley and McDonald

Transmittal

ENGINEERS • PLANNERS • SURVEYORS

5544 Greenwich Road
 Virginia Beach, Virginia 23462
(804) 473-2000

201 Packets Court
Williamsburg, Virginia 23185
(804) 253-2975

Project: GREENSPRINGS PLANTATION

To: DARRYL COOK From: STEPHEN ROMEO L.S.

CODE COMPLIANCE / JAMES CITY COUNTY Date: 9/18/96

P.O. Box 8784 Reply requested: Yes No

Williamsburg, VA 23187 Reply to: _____

We are sending you:

- Attached
- Under separate cover via: _____

- Prints
- Copy of letter
- Plans
- Specifications
- Shop drawings
- _____

Transmitted as checked below:

- For your use
- As requested
- For review and comment
- For approval
- Return for correction
- Approved as noted
- Approved
- _____



Copies Date No. Description

Copies	Date	No.	Description
1	9/18/96		1 SET AS-BUILT DRAWINGS

Remarks: _____

- Copies
1. File: 91053-59
 2. _____
 3. _____
 4. _____

Enclosures

Langley and McDonald

By: MEC

If enclosures are not as noted, kindly notify us at once.

3/13/98

BMP.1 - MIDDLE RISER IS BENT & BARREL APPEARS SEPARATED. LARGE HOLE IN DAM

LAKE C - BACK SIDE OF DAM IS ERODING. LARGE GULLIES. DEBRIS HAS BEEN DEPOSITED IN GULLIES.

LAKE G - DAM IS ERODING; NEEDS TOPSOIL & STABILIZATION. NEEDS AN EMERGENCY SPILLWAY AS PER PLAN.

Surety by Site Name

SUBDIVISION			SILTATION			NAME
SURETY	RELEASED?	EXPIRATION	SURETY	RELEASED?	EXPIRATION	
\$0	<input type="checkbox"/>		BOND \$39,000	* <input type="checkbox"/>		GREENSPRINGS - WMSBG NATIONAL GOLF CLUBHOUSE
\$0	<input type="checkbox"/>		BOND \$39,000	* <input type="checkbox"/>		GREENSPRINGS - WMSBG NATIONAL GOLF COURSE MAINTENANCE CENTER

Number Listed: 2

WORKSHEET FOR BMP POINT SYSTEM

Fore Golf Course Allocated

Alternative/Description:

Total Site Area= 1402
 Total area treated = 938.40
 Total open space= 526.10

A. STRUCTURAL BMP POINT ALLOCATION

<u>BMP</u>	<u>BMP Points</u>		<u>Percentage of Site Served by BMP</u>	<u>Weighted BMP Points</u>
LAKE C	11	X	5 70.1 AC	0.53
LAKE E	10	X	5	0.50
LAGE F	11	X	9	1.04
LAKE G	11	X	2 28 AC	0.24
LAKE H	9	X	2	0.14
LAKE A	9	X	2 28 AC	0.21
WP 1	9	X	1	0.13
DP1	9	X	18 252.4 AC	1.66
DP2	9	X	4	0.32
DP3	9	X	5	0.49
DP4	9	X	4	0.33
DP5	9	X	1	0.05
DP6	9	X	4	0.34
		X	0	0.00

TOTAL WIEGHTED STRUCTURAL BMP POINTS: 5.99

B. NATURAL OPEN SPACE CREDIT

<u>Percentage Of Site</u>		<u>Natural Open Space Credit</u>		<u>Points for Natural Open Space</u>
40.16	X	(0.1 per 1%)	=	4.02

(This includes approx. 130 acres within golf course corridor)

C. TOTAL WEIGHTED POINTS

<u>5.99</u>	+	<u>4.02</u>	=	<u>10.00</u>
Structural BMP Points		Natural Open Space Points		TOTAL

Dave -

12/28

Please compare these to
the design plans.

Darryl

October 21, 1999

Surety by Site Name

Ending Date:

SUBDIVISION SURETY	SUBDIVISION EXPIRATION	SILTATION SURETY	SILTATION EXPIRATION	NAME
				GREENSPRINGS
		L/C - 26,000	9/9/00	GREENSPRINGS - FAIRWAY VILLAS
L/C - 200,000	11/20/99	BOND - 134,000*		GREENSPRINGS - LAND BAY 3 - PHASE I
L/C - 200,000*	11/20/99	BOND - 134,000*		GREENSPRINGS - LAND BAY 3 - PHASE II
CHECK - 15,000				GREENSPRINGS - PARCEL 3 - LETHER INVESTMENTS
		BOND - 134,000*		GREENSPRINGS - RECREATION CENTER - SINGLE FAMILY AREA
BOND - 207,000*R		BOND - 44,000 R		GREENSPRINGS - RECREATION CENTER - TIMESHARE AREA
		BOND - 20,000		GREENSPRINGS - ROUTE 614 - REALIGNMENT & WATERLINE (1)
BOND - 45,000		BOND - 75,000		GREENSPRINGS - ROUTE 614 - REALIGNMENT & WATERLINE (2)
		BOND - 39,000*		GREENSPRINGS - WMSBG NATIONAL GOLF CLUBHOUSE
		BOND - 39,000*		GREENSPRINGS - WMSBG NATIONAL GOLF COURSE MAINTENANCE C
		BOND - 8,000 R		GREENSPRINGS CHAPEL - BUILDING ADDITION
				GREENSPRINGS CHAPEL PARKING LOT ADDITION
		BOND - 10,000 R		GREENSPRINGS COMMONS - PHASE 1
		BOND - 7,000		GREENSPRINGS COMMONS - PHASE 2
				GREENSPRINGS GREENWAY - PHASE 2 - HIKING TRAIL SURFACE IMPR
		L/C - 19,000	6/25/00	GREENSPRINGS PLANTATION - COMMERCIAL DEVELOPMENT
		BOND-50,000		GREENSPRINGS PLANTATION - LEGACY GOLF LINKS
		BOND - 20,000 R		GREENSPRINGS PLANTATION - OFFSITE WATER LINE

Page 1

6615

Greensprings Plantation- Summary Table for 10-Point BMP Plan
7/13/94

BMPs for Greenspring Plantation
for NE Quadrant

Total site area= 481 acres

BMP/DA	Total Area (ac)	% of site	Open Space (ac)	BMP Points		
				Structural	Open Space	Total
Lake C	122	25%	9	11	0.7	11.7
Lake A	28	6%	6	9	2.0	11.0
Wetpond 1	15	3%	4	9	2.7	11.7
Drypond 1	220	46%	56	9	2.5	11.5
Subtotal	385	80%	75	9.6	1.9	11.6
Default*	96	20%	53	0.0	5.5	5.5
TOTAL	481	100%	128	7.7	2.7	10.4

*Area not treated by a structure

Greensprings Plantation- Summary Table for 10-Point BMP Plan

7/13/94

BMPs Coincide With Those Shown on Mark-Up SWMP for Greenspring Plantation
for NE Quadrant to Compare with 4/26/93 Master SWMP.

Total site area= 1402 acres

BMP/DA	Total Area (ac)	% of site	Open Space (ac)	BMP Points		
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Lake C	122	9%	9	11	0.7	11.7
Lake F	119	8%	6	11	0.5	11.5
Lake G	64	5%	5	11	0.8	11.8
Lake E	79	6%	2	10	0.3	10.3
Lake H	22	2%	0	9	0.0	9.0
Lake A	28	2%	6	9	2.0	11.0
Wetpond 1	15	1%	4	9	2.7	11.7
Drypond 1	220	16%	56	9	2.5	11.5
Drypond 2	124	9%	28	9	2.3	11.3
Drypond 4	47	3%	3	9	0.6	9.6
Drypond 5	16	1%	2	6	1.3	7.3
Drypond 6	32	2%	6	9	1.9	10.9
Subtotal	887	63%	127	9.7	1.4	11.1
Default*	515	37%	393	0.0	7.6	7.6
TOTAL	1402	100%	520	6.2	3.7	9.9

*Area not treated by a structure in conceptual stormwater management plan

APPROVED PLAN
 16 JULY 13, 1993
 LETTER.

Greensprings Plantation- Summary Table for 10-Point BMP Plan
 4/26/93

BMPs Coincide With Those Shown on SWMP for Greenspring Plantation
 (ATTACHED 5-3 SUBD. PORTION)

Total site area= 1402 acres

BMP/DA	Total Area (ac)	% of site	Open Space (ac)	BMP Points		
				Structural	Open Space	Total
Lake C	91	7%	9	11	1.0	12.0
Lake F	119	8%	6	11	0.5	11.5
Lake G	64	5%	5	11	0.8	11.8
Lake E	79	6%	2	10	0.3	10.3
Lake H	22	2%	0	9	0.0	9.0
Lake A	31	2%	4	9	1.3	10.3
Wetpond 1	22	2%	2	9	1.0	10.0
Drypond 1	246	18%	56	9	2.3	11.3
Drypond 2	124	9%	28	9	2.3	11.3
Drypond 4	47	3%	3	9	0.6	9.6
Drypond 5	16	1%	2	6	1.3	7.3
Drypond 6	32	2%	6	9	1.9	10.9
Subtotal	892	64%	123	9.6	1.4	11.0
Default*	510	36%	393	0.0	7.7	7.7
TOTAL	1402	100%	516	6.1	3.7	9.8

*Area not treated by a structure in conceptual stormwater management plan

WORKSHEET FOR BMP POINT SYSTEM
for Proposed Legacy Golf Links



Total site acreage (golf course corridor)= 160

A. STRUCTURAL BMP POINT ALLOCATION

<u>BMP</u>	<u>BMP Points</u>		<u>Percentage of Site Served by BMP</u>	=	<u>Weighted BMP Points</u>
LAKE G	11	X	4	=	0.40
LAKE C	11	X	12	=	1.34
DRYPOND-1	9	X	42	=	3.78
DRYPOND-3	9	X	22	=	1.98
			80		
TOTAL WEIGHTED STRUCTURAL BMP POINTS:					<u>7.50</u>

B. NATURAL OPEN SPACE CREDIT

<u>Percentage Of Site</u>	X	<u>Natural Open Space Credit</u>	=	<u>Points for Natural Open Space</u>
25	X	(0.1 per 1%)	=	2.50

Assume approximately 40 acres (25% of 160 acres construction site) of RPA open space applied to requirements for 10-pts.

C. TOTAL WEIGHTED POINTS

<u>7.50</u>	+	<u>2.50</u>	=	<u>10.00</u>
Structural BMP Points		Natural Open Space Points		TOTAL

Greensprings Plantation- Summary Table for 10-Point BMP Worksheets
4/28/92

Total site area= 1402

BMP/DA	Total Area	% of site	Open Space	BMP Points		
				Structural	Open Space	Total
C	91.3	7%	22.2	11	2.43	13.43
F	118.5	8%	20.8	11	1.76	12.76
G	63.8	5%	18.3	11	2.87	13.87
E	78.9	6%	2.0	10	0.25	10.25
H	21.8	2%	0.0	9	0.00	9.00
A	31.0	2%	6.0	9	1.94	10.94
WP 1	22.0	2%	2.2	9	1.00	10.00
DPI	245.5	18%	103.4	9	4.21	13.21
2	57.6	4%	28.8	9	5.00	14.00
3	66.5	5%	9.3	9	1.40	10.40
4	47.2	3%	3.7	9	0.78	9.78
5	8.3	1%	1.7	9	2.05	11.05
6	31.8	2%	6.4	9	2.01	11.01
Subtotal	884.2	63%	224.8	10	2.54	12.25
Default*	517.8	37%	338.2	0	6.53	6.53
TOTAL	1402	100%	563	6.12	4.02	10.14

*Area not treated by a structure

WORKSHEET FOR BMP POINT SYSTEM

A. STRUCTURAL BMP POINT ALLOCATION

<u>BMP</u>	<u>BMP Points</u>		<u>Percentage of Site Served by BMP</u>	=	<u>Weighted BMP Points</u>
<u>LAKE C</u>	<u>11</u>	X	<u>100</u>	=	<u>11.00</u>
<u> </u>	<u> </u>	X	<u> </u>	=	<u> </u>
<u> </u>	<u> </u>	X	<u> </u>	=	<u> </u>
<u> </u>	<u> </u>	X	<u> </u>	=	<u> </u>
			<u>100</u>		
TOTAL WEIGHTED STRUCTURAL BMP POINTS:					<u>11.00</u>

B. NATURAL OPEN SPACE CREDIT

<u>Percentage Of Site</u>		<u>Natural Open Space Credit</u>	=	<u>Points for Natural Open Space</u>
<u>24</u>	X	<u>(0.1 per 1%)</u>	=	<u>2.43</u>

C. TOTAL WEIGHTED POINTS

<u>11.00</u>	+	<u>2.43</u>	=	<u>13.43</u>
Structural BMP Points		Natural Open Space Points		TOTAL

WORKSHEET FOR BMP POINT SYSTEM

A. STRUCTURAL BMP POINT ALLOCATION

<u>BMP</u>	<u>BMP Points</u>		<u>Percentage of Site Served by BMP</u>	<u>Weighted BMP Points</u>
LAKE F	11	X	100	= 11.00
		X		=
		X		=
		X		=
			100	
TOTAL WEIGHTED STRUCTURAL BMP POINTS:				<u>11.00</u>

B. NATURAL OPEN SPACE CREDIT

<u>Percentage Of Site</u>		<u>Natural Open Space Credit</u>		<u>Points for Natural Open Space</u>
18	X	(0.1 per 1%)	=	1.76

C. TOTAL WEIGHTED POINTS

<u>11.00</u>	+	<u>1.76</u>	=	<u>12.76</u>
Structural BMP Points		Natural Open Space Points		TOTAL

WORKSHEET FOR BMP POINT SYSTEM

A. STRUCTURAL BMP POINT ALLOCATION

<u>BMP</u>	<u>BMP Points</u>		<u>Percentage of Site Served by BMP</u>	=	<u>Weighted BMP Points</u>
LAKE G	11	X	100	=	11.00
		X		=	
		X		=	
		X		=	
			100		
TOTAL WEIGHTED STRUCTURAL BMP POINTS:					<u>11.00</u>

B. NATURAL OPEN SPACE CREDIT

<u>Percentage Of Site</u>		<u>Natural Open Space Credit</u>	=	<u>Points for Natural Open Space</u>
29	X	(0.1 per 1%)	=	2.87

C. TOTAL WEIGHTED POINTS

<u>11.00</u>	+	<u>2.87</u>	=	<u>13.87</u>
Structural BMP Points		Natural Open Space Points		TOTAL

WORKSHEET FOR BMP POINT SYSTEM

A. STRUCTURAL BMP POINT ALLOCATION

<u>BMP</u>	<u>BMP Points</u>		<u>Percentage of Site Served by BMP</u>	<u>Weighted BMP Points</u>
<u>LAKE E</u>	<u>10</u>	X	<u>100</u>	<u>10.00</u>
<u> </u>	<u> </u>	X	<u> </u>	<u> </u>
<u> </u>	<u> </u>	X	<u> </u>	<u> </u>
<u> </u>	<u> </u>	X	<u> </u>	<u> </u>
			100	
TOTAL WEIGHTED STRUCTURAL BMP POINTS:				<u>10.00</u>

B. NATURAL OPEN SPACE CREDIT

<u>Percentage Of Site</u>		<u>Natural Open Space Credit</u>		<u>Points for Natural Open Space</u>
<u>3</u>	X	<u>(0.1 per 1%)</u>	=	<u>0.25</u>

C. TOTAL WEIGHTED POINTS

<u>10.00</u>	+	<u>0.25</u>	=	<u>10.25</u>
Structural BMP Points		Natural Open Space Points		TOTAL

WORKSHEET FOR BMP POINT SYSTEM

A. STRUCTURAL BMP POINT ALLOCATION

<u>BMP</u>	<u>BMP Points</u>		<u>Percentage of Site Served by BMP</u>	<u>Weighted BMP Points</u>
LAKE H	9	X	100	= 9.00
		X		=
		X		=
		X		=
			100	
TOTAL WEIGHTED STRUCTURAL BMP POINTS:				<u>9.00</u>

B. NATURAL OPEN SPACE CREDIT

<u>Percentage Of Site</u>	<u>Natural Open Space Credit</u>		<u>Points for Natural Open Space</u>
	X (0.1 per 1%)	=	

C. TOTAL WEIGHTED POINTS

<u>9.00</u>	+	<u> </u>	=	<u>9.00</u>
Structural BMP Points		Natural Open Space Points		TOTAL

WORKSHEET FOR BMP POINT SYSTEM

A. STRUCTURAL BMP POINT ALLOCATION

<u>BMP</u>	<u>BMP Points</u>		<u>Percentage of Site Served by BMP</u>	<u>Weighted BMP Points</u>
LAKE A	9	X	100	9.00
_____	_____	X	_____	_____
_____	_____	X	_____	_____
_____	_____	X	_____	_____
			100	
TOTAL WEIGHTED STRUCTURAL BMP POINTS:				<u>9.00</u>

B. NATURAL OPEN SPACE CREDIT

<u>Percentage Of Site</u>		<u>Natural Open Space Credit</u>		<u>Points for Natural Open Space</u>
19	X	(0.1 per 1%)	=	1.94

C. TOTAL WEIGHTED POINTS

<u>9.00</u>	+	<u>1.94</u>	=	<u>10.94</u>
Structural BMP Points		Natural Open Space Points		TOTAL

WORKSHEET FOR BMP POINT SYSTEM

A. STRUCTURAL BMP POINT ALLOCATION

<u>BMP</u>	<u>BMP Points</u>		<u>Percentage of Site Served by BMP</u>	<u>Weighted BMP Points</u>
WP-1	9	X	100	= 9.00
_____	_____	X	_____	= _____
_____	_____	X	_____	= _____
_____	_____	X	_____	= _____
			100	
TOTAL WEIGHTED STRUCTURAL BMP POINTS:				<u>9.00</u>

B. NATURAL OPEN SPACE CREDIT

<u>Percentage Of Site</u>		<u>Natural Open Space Credit</u>		<u>Points for Natural Open Space</u>
10	X	(0.1 per 1%)	=	1.00

C. TOTAL WEIGHTED POINTS

<u>9.00</u>	+	<u>1.00</u>	=	<u>10.00</u>
Structural BMP Points		Natural Open Space Points		TOTAL

WORKSHEET FOR BMP POINT SYSTEM

A. STRUCTURAL BMP POINT ALLOCATION

<u>BMP</u>	<u>BMP Points</u>		<u>Percentage of Site Served by BMP</u>	<u>Weighted BMP Points</u>
DP-1	9	X	100	9.00
		X		
		X		
		X		
			100	
TOTAL WEIGHTED STRUCTURAL BMP POINTS:				<u>9.00</u>

B. NATURAL OPEN SPACE CREDIT

<u>Percentage Of Site</u>		<u>Natural Open Space Credit</u>		<u>Points for Natural Open Space</u>
42	X	(0.1 per 1%)	=	4.21

C. TOTAL WEIGHTED POINTS

<u>9.00</u>	+	<u>4.21</u>	=	<u>13.21</u>
Structural BMP Points		Natural Open Space Points		TOTAL

WORKSHEET FOR BMP POINT SYSTEM

A. STRUCTURAL BMP POINT ALLOCATION

<u>BMP</u>	<u>BMP Points</u>		<u>Percentage of Site Served by BMP</u>	<u>Weighted BMP Points</u>
DP-2	9	X	100	9.00
_____	_____	X	_____	_____
_____	_____	X	_____	_____
_____	_____	X	_____	_____
			100	
TOTAL WEIGHTED STRUCTURAL BMP POINTS:				<u>9.00</u>

B. NATURAL OPEN SPACE CREDIT

<u>Percentage Of Site</u>		<u>Natural Open Space Credit</u>		<u>Points for Natural Open Space</u>
50	X	(0.1 per 1%)	=	5.00

C. TOTAL WEIGHTED POINTS

<u>9.00</u>	+	<u>5.00</u>	=	<u>14.00</u>
Structural BMP Points		Natural Open Space Points		TOTAL

WORKSHEET FOR BMP POINT SYSTEM

A. STRUCTURAL BMP POINT ALLOCATION

<u>BMP</u>	<u>BMP Points</u>		<u>Percentage of Site Served by BMP</u>	<u>Weighted BMP Points</u>
DP-3	9	X	100	= 9.00
_____	_____	X	_____	= _____
_____	_____	X	_____	= _____
_____	_____	X	_____	= _____
			100	
TOTAL WEIGHTED STRUCTURAL BMP POINTS:				<u>9.00</u>

B. NATURAL OPEN SPACE CREDIT

<u>Percentage Of Site</u>		<u>Natural Open Space Credit</u>		<u>Points for Natural Open Space</u>
14	X	(0.1 per 1%)	=	<u>1.40</u>

C. TOTAL WEIGHTED POINTS

<u>9.00</u>	+	<u>1.40</u>	=	<u>10.40</u>
Structural BMP Points		Natural Open Space Points		TOTAL

WORKSHEET FOR BMP POINT SYSTEM

A. STRUCTURAL BMP POINT ALLOCATION

<u>BMP</u>	<u>BMP Points</u>		<u>Percentage of Site Served by BMP</u>	<u>Weighted BMP Points</u>
DP-4	9	X	100	9.00
		X		
		X		
		X		
			100	
TOTAL WEIGHTED STRUCTURAL BMP POINTS:				<u>9.00</u>

B. NATURAL OPEN SPACE CREDIT

<u>Percentage Of Site</u>		<u>Natural Open Space Credit</u>		<u>Points for Natural Open Space</u>
8	X	(0.1 per 1%)	=	0.78

C. TOTAL WEIGHTED POINTS

<u>9.00</u>	+	<u>0.78</u>	=	<u>9.78</u>
Structural BMP Points		Natural Open Space Points		TOTAL

WORKSHEET FOR BMP POINT SYSTEM

A. STRUCTURAL BMP POINT ALLOCATION

<u>BMP</u>	<u>BMP Points</u>		<u>Percentage of Site Served by BMP</u>	=	<u>Weighted BMP Points</u>
DP-5	9	X	100	=	9.00
		X		=	
		X		=	
		X		=	
			100		
TOTAL WEIGHTED STRUCTURAL BMP POINTS:					<u>9.00</u>

B. NATURAL OPEN SPACE CREDIT

<u>Percentage Of Site</u>		<u>Natural Open Space Credit</u>	=	<u>Points for Natural Open Space</u>
21	X	(0.1 per 1%)	=	2.05

C. TOTAL WEIGHTED POINTS

<u>9.00</u>	+	<u>2.05</u>	=	<u>11.05</u>
Structural BMP Points		Natural Open Space Points		TOTAL

WORKSHEET FOR BMP POINT SYSTEM

A. STRUCTURAL BMP POINT ALLOCATION

<u>BMP</u>	<u>BMP Points</u>		<u>Percentage of Site Served by BMP</u>	<u>Weighted BMP Points</u>
DP-6	9	X	100	9.00
		X		
		X		
		X		
			100	
TOTAL WEIGHTED STRUCTURAL BMP POINTS:				<u>9.00</u>

B. NATURAL OPEN SPACE CREDIT

<u>Percentage Of Site</u>		<u>Natural Open Space Credit</u>	<u>Points for Natural Open Space</u>
20	X	(0.1 per 1%)	2.01

C. TOTAL WEIGHTED POINTS

<u>9.00</u>	+	<u>2.01</u>	=	<u>11.01</u>
Structural BMP Points		Natural Open Space Points		TOTAL

WORKSHEET FOR BMP POINT SYSTEM

A. STRUCTURAL BMP POINT ALLOCATION

<u>BMP</u>	<u>BMP Points</u>	<u>Percentage of Site Served by BMP</u>	<u>Weighted BMP Points</u>
DEFAULT-NOT		X	=
TREATED BY		X	=
STRUCTURAL		X	=
BMP		X	=

TOTAL WEIGHTED STRUCTURAL BMP POINTS: _____

B. NATURAL OPEN SPACE CREDIT

<u>Percentage Of Site</u>	<u>Natural Open Space Credit</u>	<u>Points for Natural Open Space</u>
65	X (0.1 per 1%)	= 6.53

C. TOTAL WEIGHTED POINTS

<u>Structural BMP Points</u>	+	<u>6.53</u> Natural Open Space Points	=	<u>6.53</u> TOTAL
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WORKSHEET FOR BMP POINT SYSTEM

Alternative/Description:

Total Site Area= 1402

A. STRUCTURAL BMP POINT ALLOCATION

<u>BMP</u>	<u>BMP Points</u>		<u>Percentage of Site Served by BMP</u>	=	<u>Weighted BMP Points</u>
LAKE C	11	X	5	=	0.53
LAKE E	10	X	5	=	0.50
LAGE F	11	X	9	=	1.04
LAKE G	11	X	2	=	0.24
LAKE H	9	X	2	=	0.14
LAKE A	9	X	2	=	0.21
WP 1	9	X	1	=	0.13
DP1	9	X	18	=	1.66
DP2	9	X	4	=	0.32
DP3	9	X	5	=	0.49
DP4	9	X	4	=	0.33
DP5	9	X	1	=	0.05
DP6	9	X	4	=	0.34
		X	0	=	0.00

TOTAL WIEGHTED STRUCTURAL BMP POINTS: 5.99

B. NATURAL OPEN SPACE CREDIT

<u>Percentage Of Site</u>	X	<u>Natural Open Space Credit</u>	=	<u>Points for Natural Open Space</u>
40.16	X	(0.1 per 1%)	=	4.02

(This includes approx. 130 acres within golf course corridor)

C. TOTAL WEIGHTED POINTS

<u>5.99</u>	+	<u>4.02</u>	=	<u>10.00</u>
Structural BMP Points		Natural Open Space Points		TOTAL